

NAT. HIST.
AA. 3
BUL. 1942-50

IOWA GEOLOGICAL SURVEY
IOWA CITY, IOWA

H. GARLAND HERSHEY, Director and State Geologist

WATER-SUPPLY BULLETIN NO. 3

SURFACE WATER RESOURCES OF IOWA

OCTOBER 1, 1942, TO SEPTEMBER 30, 1950

by

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WATER RESOURCES DIVISION

UNITED STATES DEPARTMENT OF INTERIOR

GEOLOGICAL SURVEY

Records collected in cooperation with

IOWA GEOLOGICAL SURVEY

CORPS OF ENGINEERS, DEPARTMENT OF THE ARMY

IOWA INSTITUTE OF HYDRAULIC RESEARCH

IOWA STATE CONSERVATION COMMISSION

CERTAIN IOWA CITIES

PUBLISHED BY

THE STATE OF IOWA

1953

FOREWORD

Systematic collection of Iowa stream-flow records was started on a cooperative basis by the State and Federal governments in 1914, although some authenticated records extend back to 1873. Utility of these records is increased materially by publication, and the discharge records through 1942 have been printed by the State of Iowa as Water Supply Bulletins Nos. 1 and 2. Publication was curtailed by the State during and after World War II because of paper and personnel shortages and for other reasons.

This report, Water Supply Bulletin No. 3, continues the policy of publishing stream-flow records on a daily basis in Iowa for the period 1943-1950. The report is arranged for convenient use and is designed to facilitate detailed consideration of surface-water problems in the State. These data are useful to public officials engaged in work on water resources including sediment and flood control; to engineers who plan, construct or maintain dams, bridges, sewage disposal or water works, industrial and agricultural developments, drainage projects, and power plants; and to others in the hydrologic field.

Basic information in this Bulletin was acquired through cooperative agreements between the U. S. Geological Survey and the Iowa Geological Survey, together with other Federal and State departments, and some other groups and individuals. Detailed acknowledgment of this cooperative effort is contained in the text of the report.

Measurement of stage, flow, sediment and mineral content, and temperature of Iowa rivers and streams is being continued on a state-wide systematic basis. Publications on these subjects are in preparation. In the future it is hoped that the results can be printed and distributed annually or biennially in order to increase their utility.

H. GARLAND HERSHEY,
State Geologist

Iowa City, Iowa
July 1, 1953

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Surface Water Resources of Iowa¹

For the Period
October 1, 1942, to September 30, 1950

by
SAMUEL MUMMEY, JR.

Scope and Arrangement of Records

The State and Federal cooperative program for the systematic collection of stream-flow 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 and lakes for periods of various lengths. The longest records are those for the Mississippi River at Le Claire and at Keokuk where authenticated data have been used to extend the record back to 1873 with decreasing accuracy for the earlier years. In addition to the records of daily stages or discharges, hundreds of measurements of a miscellaneous character also have been made at other points.

The gaging stations that have been maintained on streams and lakes in Iowa at various times are listed in table 1, pages 4 to 6, which shows the periods of operation and other pertinent data. Summaries of stream-flow records were published in Iowa Geological Survey Water-Supply Bulletins No. 1 (1873-1940) and No. 2 (1941-42). The location of all stream-gaging stations and lake gages that have been operated by the United States Geological Survey in cooperation with other agencies is shown in plate 5. Although gaging stations are now maintained on nearly all the principal rivers of the State, a relatively large number of stations have been in operation only a few years. Stations with dates followed by a dash in table 1 were active on September 30, 1950.

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

During the period October 1, 1942, to September 30, 1950, about 90 stations were maintained on rivers and lakes in Iowa by the Water Resources Division of the United States Geological Survey in cooperation with various State and municipal or other Federal agencies, especially the Corps of Engineers, Department of the Army.

The State of Iowa is naturally divided into two major drainage basins (see pl. 5), one of which, comprising about two thirds of the total area, is in the Upper Mississippi River Basin, and includes the Des Moines, Skunk, Iowa-Cedar, Wapsipicon, Maquoketa, Turkey, Upper Iowa Rivers, and other smaller 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.

For the purpose of measuring and reporting stream flow, the United States Geological Survey has divided the United States into areas comprising 14 major drainage basins as indicated below:

- Part 1. North Atlantic slope basins (St. John River to York River).
2. South Atlantic slope and eastern Gulf of Mexico basins (James River to Mississippi River).
 3. Ohio River Basin.
 4. St. Lawrence River Basin.
 5. *Hudson Bay and Upper Mississippi River Basins.*
 6. *Missouri River Basin.*
 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 slope 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 (Part 5 and Part 6) as previously outlined, for each of which a water-supply paper is issued annually by the United States Geological Survey. However, a state publication to be most useful should contain records on a state-wide basis and in one volume. Therefore, this bulletin has been prepared as one of a series of water-supply bulletins of the Iowa Geological Survey presenting results of measurements made on streams and lakes in both the Upper Mississippi and Missouri River Basins in Iowa for the water years ending September 30, 1943, to September 30, 1950. Records of daily flow or lake stages, obtained at about 90 gaging or lake stations during the eight-year period, are given together with other related data. These records are also published in 16 United States 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 State interests.

The gaging stations records are presented in accordance with the regular practice used by the United States Geological Survey in its water-supply papers, the main drainage basin subdivisions included in this report being the Upper Mississippi and the Missouri River Basins in Iowa. In these basins the stations on the main stem are listed first, in downstream order, and then stations in the major tributary basins are listed in a similar manner beginning with the uppermost basin. In the table of contents the stations are listed in the order in which the records are presented in this report; in the index the stations are arranged alphabetically according to stream and place names; other items of importance are also included in the index.

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

Stream (or Lake) Station	Place	Drainage Area (sq. mi.)	Type of Gage	Altitude of zero above M.S.L. (feet)	Discharge Records Available	Maximum Gage Height (feet)	Discharge in Second-Feet				Average
							Maximum		Minimum		
							Date	Flow	Date	Flow	
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	Jan. 27-31, 1948.....	**1	131
Beaver Creek.....	New Hartford.....	350	Wire-weight.....	.....	1948-	11.52	Mar. 7, 1950	5,000	Feb. 14, 15, 1950.....	**6.2	126
Boone.....	Webster City.....	842	Recorder.....	.....	1940-	13.7	June 14, 1944	10,200	July 25, 1940.....	2.4	371
Cedar Creek.....	Bussey.....	384	Recorder.....	.....	1947-	27.50	May 9, 1950	29,300	Sept. 16, 1948.....	.3	184
Cedar.....	Cedar Rapids.....	6,640	Recorder.....	700.33	1903-	20.1	Mar. 19, 1929	72,000	Jan. 6, 1950.....	53	3,093
Cedar.....	Conesville.....	7,840	Recorder.....	581.85	1939-	15.35	June 18, 1947	60,000	Feb. 2, 1940.....	323	4,259
Cedar.....	Janesville.....	1,660	Recorder.....	.....	1905-6, 1915-27, 1932-42, 1946-..	15.43	April 1, 1933	30,400	Oct. 21, 1922.....	28	675
Cedar.....	Mitchell.....	845	Staff.....	.....	1933-42	89.7	April 4, 1934	13,000	1933-1935.....	5	288
Cedar.....	Waterloo.....	5,190	Recorder.....	824.09	1941-	18.70	June 13, 1947	55,600	Dec. 11, 1948.....	165	2,856
Clear Lake.....	Clear Lake.....	.....	Staff.....	1,222.24	1933-	5.78	June 14-16, 1944	.....	.....	.....	.....
Des Moines.....	Boone.....	5,490	Recorder.....	871.52	1920-27, 1933-	19.85	June 24, 1947	37,100	Jan. 28, 1940.....	**17	1,603
Des Moines.....	Des Moines.....	6,180	Recorder.....	773.84	1893-94, 1897- 1927, 1932-.....	26.5	June 26, 1947	39,500	Jan. 29, 30, 1940.....	**24	2,066
Des Moines 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	4,216
Des Moines.....	Eldon.....	13,300	Chain.....	.....	1930-35.....	*14.99	April 8, 1933	35,400	June 11, 1934.....	44	.....
Des Moines.....	Fort Dodge (near).....	3,770	Chain.....	.....	1911-13.....	8.9	Mar. 29, 1912	.....	Aug. 4, 1911.....	29	.....
Des Moines.....	Fort Dodge (at).....	4,210	Recorder.....	969.38	1905-6, 1949-..	9.9	Mar. 26, 1906	12,000	Sept. 13-16, 18, 1906.....	430	.....
Des Moines.....	Kalo.....	4,290	Recorder.....	.....	1913-27.....	14.0	May 30, 1915	19,700	Oct. 9-15, 1922, Sept. 13, 1925.....	14	1,451
Des Moines.....	Keosauqua.....	13,900	Recorder.....	558.10	1903-6, 1910-..	27.85	June 1, 1903	135,000	Jan. 30, 1940.....	**40	5,155
Des Moines.....	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	4,578
Des Moines.....	Tracy.....	12,400	Recorder.....	671.78	1920-27, 1933- 35, 1940-.....	26.5	June 14, 1947	155,000	Feb. 28, 1940.....	**95	4,515
E. Fk. Des Moines.....	Hardy.....	1,230	Wire-weight.....	.....	1940-	15.4	June 23, 1947	13,000	Sept. 23, 1948.....	5.0	528
E. Fk. Iowa River.....	Klemme.....	120	Wire-weight.....	1,180.13	1948-	*8.36	Mar. 27, 1949	685	Sept. 16, 1948.....	.8	29.0
English.....	Kalona.....	580	Recorder.....	633.45	1939-	19.74	Jan. 7, 1946	16,400	Jan. 25-29, 1940.....	**2	337
Fox.....	Cantril.....	161	Recorder.....	657.98	1940-	18.94	June 18, 1946	16,500	Aug. and Sept. 1941.....	0	96.2
Iowa.....	Belle Plaine.....	2,420	Recorder.....	749.82	1939-	17.07	June 14, 1947	34,000	Jan. 5, 1940.....	**19	1,319
Iowa.....	Iowa City.....	3,230	Recorder.....	627.27	1903-	19.45	June 7, 1918	36,200	Dec. 26, 1916.....	**10	1,534
Iowa.....	Marshalltown.....	1,500	Recorder.....	853.10	1903, 1915-27, 1933-.....	17.74	June 4, 1918	42,000	Nov. 24, 1917.....	2	706
Iowa.....	Rowan.....	396	Recorder.....	1,143.35	1940-	*12.02	June 14, 1944	3,840	Aug. 26, 27, 1948, Feb. 4, 5, 1950.....	**4.2	186
Iowa.....	Wapello.....	12,480	Recorder.....	548.98	1915-	*16.85	June 18, 1947	94,000	Dec. 15-17, 1916.....	400	6,135
Lake Ahquabi.....	Indianola.....	.....	Staff.....	.....	1936-	9.95	June 5, 1947	.....	.....	.....	.....
Lake Keomah.....	Oskaloosa.....	.....	Staff.....	.....	1936-	7.30	May 21, 1944	.....	.....	.....	.....

Lake Macbride	Solon		Recorder	1936-	13.64	May 20, 1944					
Lake Wapello	Drakesville	7.6	Recorder	1936-	12.70	June 12, 1941					
Lime Creek	Mason City	535	Recorder	1,069.59	15.70	Mar. 30, 1933	9,400	Aug. 30 to Sept. 1, 1933.	0	209	
Little Maquoketa	Durango	130	Recorder	612.03	21.23	June 13, 1947	23,000	July 12, 13, 1936.	5	81.6	
Lower Pine Lake	Eldora		Staff		7.59	June 2, 1942					
Maquoketa	Delhi	348	Recorder	774.32	89.2	Mar. 4, 1937	6,130				
Maquoketa	Manchester	306	Recorder	895.06	21.36	June 13, 1947	20,000	June 8, 29, 1934.	**5	136	
Maquoketa	Maquoketa	957	Chain		14.1				**6	189	
Maquoketa	Maquoketa	1,550	Recorder	636.52	24.70	June 27, 1944	48,000	Sept. 15, 1931			
Middle	Indianola	502	Recorder	773.34	26.40	June 13, 1947	34,000	July 27, 1940	39	969	
Mississippi	Clayton	79,200	Staff	602.60	15.36	April 3, 1936	137,000	Dec. 14, 1933	1.3	301	
Mississippi	Clinton	85,600	Recorder	568.16	*18.60	June 13, 1942	**169,600	Dec. 27-30, 1939	**5,540	45,670	
Mississippi	Keokuk	119,000	Recorder	477.41	19.6	May 16, 1888	314,000	Dec. 27, 1933	**12,000	61,150	
Mississippi	LeClaire	88,600	Recorder	562.61	14.5	June 25, 1880	250,000	Dec. 25-27, 1933.	**5,000	47,780	
Mississippi	McGregor	67,500	Recorder	605.30	*18.45	Mar. 29, 1945	**127,700	Dec. 9, 1936	**6,500	31,520	
North	North	348	Recorder	788.45	25.3	June 13, 1947	32,000	Sept. 9, 30, Oct. 1-18, 24-31, 1949	**1	215	
N. Lizard Creek	Clare	257	Wire-weight		16.0	June 23, 1947	10,000	Sept. 30, 1943	0	94.9	
N. Skunk	Sigourney	750	Wire-weight		22.57	Jan. 7, 1946	13,900	Feb. 9, 10, 1948	**4	487	
Raccoon	Jefferson	1,630	Recorder		22.3	June 23, 1947	29,100	Sept. 28, 1948, Jan. 30 to Feb. 5, 1950.	**12	677	
Raccoon	Van Meter	3,410	Recorder	841.16	21.4	June 12, 1947	46,800	Jan. 22-31, 1940.	**10	1,155	
Raidston Creek	Iowa City	3.01	Recorder	663.81	8.32	July 1, 1950	1,510	In every year	0	1.48	
Rapid Creek	Iowa City	24.5	Recorder		12.66	May 20, 1944	3,530	1940-41, 1945, 1947-49.	0	13.3	
Salt Creek	Elberon	200	Recorder		17.6	June 13, 1947		Sept. 19, 20, Oct. 2, 1948.	**3.1	126	
Shell Rock	Clarksville	1,660	Chain		16.7	Mar. 31, 1933	19,800	Aug. 2, 1934	10	558	
Shell Rock	Greene	1,375	Staff		101.70	June 25, 1938	12,000	1935 and 1936	6	500	
Shell Rock	Northwood	380	Wire-weight	1,176.48	9.72	Mar. 28, 1950	1,800	Jan. 29 to Feb. 5, 1950.	**11	104	
Shell Rock	Marble Rock	1,330	Recorder	961.17	*8.56	June 12, 1944	15,900	Sept. 19, 1948, Jan. 27, Feb. 3, 4, 1950.	**38	667	
Skunk	Ames	320	Recorder	893.6	13.90	May 29, 1944	8,060	1934 and 1937	0	130	
Skunk	Augusta	4,290	Recorder	521.69	23.04	May 26, 1944	44,800	Aug. 27 to Sept. 1, 1934.	**7	2,202	
Skunk	Coppock	2,890	Wire-weight		22.27	May 24, 1944	41,500	Jan. 27, 28, 1940	**8	1,382	
Skunk	Oskaloosa	1,640	Recorder		18.27	Mar. 9, 1949	10,800	Jan. 28-30, 1950	**28	592	
South	Ackworth	475	Recorder	761.91	24.60	June 5, 1947	34,000	July 21-25, 1940.	**3	254	
South Raccoon	Redfield	995	Recorder		24.3	June 12, 1947	23,800	July 26, 1940.	18	437	
Springbrook La'e	Guthrie Center		Staff		7.00	July 25, 1942					
Squaw Creek	Ames	210	Chain		14.5	June 1, 1947					
Sugar Creek	Keokuk	113	Recorder		*20.6	Sept. 16, 1926	6,900	Aug. and Sept. 1919.	0	110	
Turkey	Elkader	892	Wire-weight	701.61	*34.3	May 31, 1941	3,040		0		
Turkey	Garber	1,530	Recorder	635.34	*28.06	June 13, 1947	19,300	Jan. 23, 26, 29, 31, 1940.	21	484	
Upper Iowa	Decorah	560	Recorder	829.8	15.19	May 29, 1941	29,000	June 29, 1934.	46	863	
Upper Pine Lake	Eldora		Staff		8.06	June 2, 1942	28,500	1933-34.	**10	328	
Wapsipinicon	Dewitt	2,300	Recorder	599.73	12.07	June 27, 1944	26,000	Jan. 17-24, 1940	**70	1,373	
Wapsipinicon	Independence	1,060	Recorder	882.85	18.74	June 14, 1947	21,500	1933 and 1934.	7	514	
Wapsipinicon	Stone City	1,310	Chain		14.9						
W. Fk. Iowa River	Klemme	110	Wire-weight	1,180.83	*8.58	Mar. 27, 1949	538	Jan. 12, 1950.	0	23.0	
W. Fk. Shell Rock	Finchford	860	Wire-weight		*14.80	June 13, 1947	13,900	Feb. 7, 8, 1950.	**16	363	
Whitebreast Creek	Knoxville	380	Recorder		19.6	June 6, 1947	14,000	Oct. 1, 1949.	.8	215	
Yellow	Ion	224	Wire-weight	664.65	15.2	May 29, 1941	18,500	Dec. 30, 31, 1939.	**14	134	

See footnotes at end of table.

Table 1.—List of Gaging Stations and Lake Gages Maintained in Iowa Showing Period of Records 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)	Discharge Records Available	Maximum Gage Height (feet)	Discharge in Second-Foot				Average
							Maximum		Minimum		
							Date	Flow	Date	Flow	
1	2	3	4	5	6	7	8	9	10	11	12
MISSOURI RIVER BASIN											
Big Sioux	Akron	8,851	Recorder	1,118.90	1928	19.23	June 4, 1942	21,400	Feb. 26-28, 1936	**7	782
Boyer	Logan	810	Wire-weight†	1,009.38	1918-25, 1937-	*20.7	June 18, 1950	18,800	Sept. 27-29, 1918	0	299
Chariton	Centerville	727	Recorder	825.68	1938	24.20	June 20, 1946	21,700	Oct. 11, 1938, Sept. 30, Oct. 1, 1940	.1	409
Dry Creek	Hawarden	48	Wire-weight	1,170.42	1948	*13.5	Mar. 5, 1949	686	1949, 1950	0	.....
E. Nishnabotna	Red Oak	890	Recorder	1,010.45	1918-25, 1936-	23.23	June 13, 1947	36,200	Aug. 18, 1936	**6	346
Floyd	James	918	Recorder	1,102.59	1934	*19.23	May 13, 1944	7,440	Aug. 20, 27, 1936	1	157
Little Sioux	Correctionville	2,450	Recorder	1,096.49	1918-25, 1928- 32, 1936	21.93	Aug. 5, 1945	17,000	July 17, 25, 1936	2.6	699
Little Sioux	Kennebec	2,730	Recorder	1,027.89	1939	*25.03	June 13, 1944	10,800	Jan. 25-31, 1940	**24	779
Little Sioux	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	Turin	4,460	Wire-weight	1,020.00	1939	*26.0	Aug. 8, 1945	6,620	1939, '40, '48, '49, '50	0	418
Maple	Mapleton	661	Wire-weight†	1,085.86	1941	22.1	June 12, 1950	13,000	Sept. 21, 22, 1945	0	222
Maple	Turin	725	Wire-weight	1,028.45	1939-41	19.42	June 4, 1940	2,920	Jan. 18-23, 1940	**4	.....
Missouri	Nebraska City	414,400	Recorder	903.94	1929	*25.8	June 14, 1944	214,000	Dec. 31, 1946	1,600	33,350
Missouri	Omaha	322,800	Recorder	958.24	1928	*22.45	April 12, 1943	200,000	Jan. 6, 1937	2,200	28,110
Missouri	Sioux City	314,600	Recorder	1,076.96	1928-31, 1938-	18.44	April 25, 1950	252,000	Dec. 29, 1941	2,500	29,600
Missouri	Turin	4,460	Wire-weight	1,020.00	1939	*25.6	June 18, 1950	13,200	Sept. 8, 1941	3	760
Monona-Harrison Ditch	Hamburg	2,800	Staff	894.17	1922-23, 1928-	26.03	June 24, 1947	55,500	Aug. 30, 1934	4.5	896
Nishnabotna	Hamburg	2,800	Wire-weight	960.36	1918-25, 1936-	25.3	June 13, 1947	31,100	Aug. 25, 1919	0	275
Nodaway	Clarinda	740	Recorder	1,391.76	1933	5.42	June 15, 1945	.....	.....	.....	.....
Okoboji Lake	Millford	.....	Recorder	.....	.....	.....	.....	.....	.....	.....	.....
Perry Creek	Sioux City	60	Wire-weight†	.....	1945	21.80	Sept. 10, 1949	7,780	July 14, 20, Aug. 30 to Sept. 2, 1946	0	18.1
Rock	Rock Valley	.....	Wire-weight†	1,316.00	1948	12.30	Mar. 6, 1949	5,790	Dec. 23-26, 1949	**8	277
Soldier	Pisgah	417	Wire-weight	1,036.34	1940	28.17	June 12, 1950	22,500	Jan. 2-10, 1945	**2	122
Spirit Lake	Orleans	.....	Recorder	1,357.25	1933	15.74	June 19, 1944	.....	.....	.....	.....
Tarkio	Blanchard	200	Recorder	940.32	1934-40	23.12	Mar. 12, 1939	9,950	1934, 1937, 1939	0	43.0
Thompson (Grand)	Davis City	702	Recorder	875.55	1918-25, 1941-	20.14	June 14, 1947	24,400	Sept. 18-24, 27-29, Oct. 15, 16, 1918	1	398
Waubonsie Creek	Bartlett	30	Wire-weight†	936.96	1946	37.8	May 8, 1950	14,500	Aug. 2-4, 1946	**1	17.0
W. Fork Ditch	Holly Springs	395	Wire-weight	1,052.82	1939	*22.4	June 19, 1950	6,300	Oct. 25, 1943	.4	84.9
W. Nishnabotna	Randolph	1,310	Wire-weight†	.....	1948	*24.8	May 9, 1950	29,600	Jan. 18 to Feb. 5, 1950	**50	500
W. Nishnabotna	White Cloud	920	Chain	.....	1918-24	18.9	April 19, 1920	12,000	Sept. 15-18, 1918	**9	.....
W. Nodaway	Villisca	360	Chain	.....	1918-25	*21.2	June 9, 1924	6,200	1918, 1921, 1925	**1	.....

* Occurred at a time other than date given for extreme of discharge.

** Mean daily discharge.

† Auxiliary high-stage recorder.

Units and Definitions

The following definitions of terms are used in connection with the presentation of hydrometric data and are taken largely from the water-supply papers of the United States Geological Survey.

The volume of water flowing in a stream—the *runoff* or *discharge*—is expressed in various terms, each of which has become associated with a certain type of work. These terms may be divided into two groups: (1) those that represent a rate of flow, as second-feet, millions of gallons per day, discharge in second-feet per square mile; (2) those that represent the actual quantity of water, as runoff in inches of depth on the drainage basin, acre-feet, and million gallons.

Million gallons is a unit often mentioned and used in Iowa in connection with pumping and storage for water supplies and related facilities. It should be understood that this term is used with two meanings: (1) to indicate rate of flow, and (2) to express an actual quantity of water. In the former sense *million gallons daily* is implied, 1,000,000 gallons being taken as the unit of quantity and 24 hours as the unit of time. In the latter sense *million gallons* is taken as an absolute quantity.

The units in which stream-flow data are given in this report, and other terms of importance, may be defined as follows:

Second-foot is an abbreviation for *cubic feet per second*. A second-foot is a rate of flow of one cubic foot per second, or the rate of discharge that is equivalent to a stream flowing in a pipe or open channel when the cross-sectional area is one square foot and the average velocity is one foot per second. It is generally used as a fundamental unit from which others are computed and is the *natural* unit, as the foot and the second are the units used in making the physical determinations.

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

Runoff in inches is the depth to which the drainage area would be covered if all the water flowing from it in a given period were distributed uniformly over its surface. It is used principally for comparing runoff with rainfall, which is usually expressed in depth in inches.

Acre-foot is commonly used in connection with storage of water for irrigation or power. An acre-foot, equivalent to 43,560 cubic feet, is the quantity of water required to cover an acre of surface to a depth of one foot.

Second-foot day is the volume of water represented by a flow of one second-foot for 24 hours. It is equivalent to 86,400 cubic feet, 1.983 acre-feet, or 646,317 gallons, and represents a runoff of 0.0372 inch from one square mile.

Control is a term used to designate a channel condition downstream from the gage that determines the stage-discharge relation at the gage. It may be a natural section, a reach of the channel, or an artificial structure, and is not necessarily the same for all stages.

Crest is (1) the top of a dam, spillway or weir, frequently restricted to the overflow portion; (2) the summit of a wave or the peak stage of a flood.

Datum is a plane of reference for gage heights.

Drainage area may be most appropriately used to refer to numerical units of an area drained by a stream system upstream from some designated point on the stream; whereas *drainage basin* may advantageously be used to refer in a general way to the region drained by a surface stream system; under some usage the terms are synonymous with *catchment area*.

Gage height is the height of water surface in relation to a datum corresponding to the zero of the staff or other type of gage from which the height is obtained; it is often considered synonymous with the more general term of *stage*.

Stage-discharge relation means the relation between gage height and rate of flow. By means of this relation, which is defined by discharge measurements, it is possible to determine the discharge of a stream from the observed or recorded gage heights.

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

Water loss is generally used to designate that part of the total precipitation which is removed from a drainage basin by the evaporation process, that is, interception, transpiration, and direct evaporation. However, it has occasionally been used to

represent that part of rainfall which does not produce runoff, including seepage or infiltration. The concept is expressed, however, by various authors using one of the following terms: loss, evaporation loss, evaporation, evaporation and transpiration, evapo-transpiration, consumptive use, or fly-off. As used in some studies, the water loss of a drainage basin is taken as the difference between average precipitation over the basin and the runoff from the basin for a given period, usually several years.

Water-stage recorder is an instrument for automatically obtaining a continuous, graphical record of the fluctuation of a water surface with respect to time.

Yield is the total amount of water that flows from a drainage area. The term runoff should probably, strictly speaking, be confined to that part of the yield which runs off over the land surface into the stream channel; but this quantity is so inseparable from ground-water discharge that runoff is generally used to refer to all the water that reaches the stream to which the area drains.

Three general methods for the graphical analysis of stream-flow records are as follows: hydrograph, mass diagram, and flow-duration curve. The mass, or Rippl method, consists in graphically representing in chronological order the cumulative average quantities of water available at any time for storage, or draft from storage. The flow-duration curve involves the frequency of the occurrence of various rates of flow regardless of chronological sequence. It indicates the percent of time for the period of record during which selected rates of flow were equalled or exceeded. A deficiency curve can be obtained directly from a flow-duration curve by simply reversing the scale of the duration curve. Either type of curve is a useful tool in the analysis of water-supply problems, particularly those involving studies of possible sources of domestic or industrial water supply, or those involving the disposal and dilution of sewage or industrial wastes. The flow-duration curve has also been utilized in probability studies to determine the probability of possible rates of flow in relation to time.

Previous State and Federal Publications

The records of the United States Geological Survey and cooperating agencies form the original source of practically all the existing quantitative stream-flow information in Iowa. The annual water-supply papers of the Survey that include basic data for rivers in Iowa are shown (Part 5 and 6) in table 2. This table

gives, by years and drainage basins, the serial numbers of the water-supply papers published from 1899 to 1950 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.

The data for any particular station will, in general, be found in Survey reports covering the years during which the station was maintained. For example, the data for 1943 for any station in Iowa, that is covered by Parts 5 and 6, are published in Water-Supply Papers 975 and 976. These reports contain station records for a number of States in the Upper Mississippi and Missouri River Basins for that year. Miscellaneous 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.

Each of the United States Geological Survey Water-Supply Papers 871 to 884 for the year 1939 (see table 2, p. 12) contains a summary of yearly discharge at gaging stations in the area covered by that report. Only gaging stations at which ten or more complete years of record had been collected were included in those summaries. Such summaries are available also in separate reprints. The records for certain stations in Iowa are presented in Water-Supply Papers 875 and 876, which contain stream-flow records collected in Iowa and adjacent States in 1939.

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 collaboration among the Iowa Institute of Hydraulic Research, various relief administrations, and the United States Geological Survey. It contains records that are largely based on field data collected by the 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 stream-flow records for 37 gaging stations in Iowa prior to December 31, 1932, together with a gazetteer of streams supplementing Water-Supply Paper 395-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 United States 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 1943-50. In addition, duration curves, flood discharge hydrographs, deficiency tables, and hourly precipitation were published for a few stations.

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.

In connection with local and specialized investigations for the collection of hydrologic information, mention is made of the following reports: (1) A Summary of Hydrologic Data, Ralston Creek Watershed, 1924-35, by F. T. Marvis and Edward Soucek, University of Iowa Studies, Bulletin 9, 1936, published by the Iowa Institute of Hydraulic Research; contains detailed summaries of the data pertaining to rainfall, runoff, and groundwater levels, together with annual summaries of land use within the noteworthy Ralston Creek investigational area; (2) Soil and Water Conservation Investigations, Technical Bulletin No. 558, U. S. Department of Agriculture, 1937, published as a part of a cooperative project with the Iowa State College; gives results of studies of runoff and erosional losses from five areas of less than five acres each, on the 200-acre Lawson farm near Clarinda; and (3) Rainfall and Discharge Records for Northern Iowa Drainage Districts, by W. J. Schlick, Bulletin 141, Iowa State College, 1939; is a rainfall and runoff report covering the growing season

Table 2.—Numbers of United States Geological Survey Water-Supply Papers Containing Results of Stream Measurements 1899-1950

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1899 a.....	35	b35, 36	36	36	36	e36, 37	37	37	d37, 38	38, e39	38, f39	38	38	38
1900 g.....	47, h48	48	48, i49	49	49	49, j50	50	50	50	51	51	51	51	51
1901.....	65, 75	65, 75	65, 75	65, 75	k65, 66, 75	66, 75	k65, 66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75
1902.....	82	b82, 83	83	m82, 83	k83, 85	84	k83, 84	84	85	85	85	85	85	85
1903.....	97	b97, 98	98	97	k98, 99, n100	99	k98, 99	99	100	100	100	100	100	100
1904.....	o124, p125, q126	q126, 127	128	129	k128, 130	130, r131	k128, 131	132	133	133, s134	134	135	135	135
1905.....	o165, p166, q167	q167, 168	169	170	171	172	k169, 173	174	175, t177	176, s177	177	178	178	u177, 178
1906.....	o201, p202, q203	q203, 204	205	206	207	208	k205, 209	210	211, t213	212, s213	213	214	214	214
1907-8.....	241	242	243	244	245	246	247	248	249	250, s251	251	252	252	252
1909.....	261	262	263	264	265	266	267	268	269	270, s271	271	272	272	272
1910.....	281	282	283	284	285	286	287	288	289	290	291	292	292	292
1911.....	301	302	303	304	305	306	307	308	309	310	311	312	312	312
1912.....	321	322	323	324	325	326	327	328	329	330	331	332-A	332-B	332-C
1913.....	351	352	353	354	355	356	357	358	359	360	361	362-A	362-B	362-C
1914.....	381	382	383	384	385	386	387	388	389	390	391	392	393	394
1915.....	401	402	403	404	405	406	407	408	409	410	411	412	413	414
1916.....	431	432	433	434	435	436	437	438	439	440	441	442	443	444
1917.....	451	452	453	454	455	456	457	458	459	460	461	462	463	464
1918.....	471	472	473	474	475	476	477	478	479	480	481	482	483	484
1919-20.....	501	502	503	504	505	506	507	508	509	510	511	512	513	514
1921.....	521	522	523	524	525	526	527	528	529	530	531	532	533	534
1922.....	541	542	543	544	545	546	547	548	549	550	551	552	553	554
1923.....	561	562	563	564	565	566	567	568	569	570	571	572	573	574
1924.....	581	582	583	584	585	586	587	588	589	590	591	592	593	594
1925.....	601	602	603	604	605	606	607	608	609	610	611	612	613	614
1926.....	621	622	623	624	625	626	627	628	629	630	631	632	633	634
1927.....	641	642	643	644	645	646	647	648	649	650	651	652	653	654
1928.....	661	662	663	664	665	666	667	668	669	670	671	672	673	674

1899.....	681	682	683	684	685	686	687	688	689	690	691	692	693	694
1900.....	696	697	698	699	700	701	702	703	704	705	706	707	708	709
1911.....	711	712	713	714	715	716	717	718	719	720	721	722	723	724
1912.....	726	727	728	729	730	731	732	733	734	735	736	737	738	739
1913.....	741	742	743	744	745	746	747	748	749	750	751	752	753	754
1914.....	756	757	758	759	760	761	762	763	764	765	766	767	768	769
1915.....	781	782	783	784	785	786	787	788	789	790	791	792	793	794
1934.....	801	802	803	804	805	806	807	808	809	810	811	812	813	814
1937.....	821	822	823	824	825	826	827	828	829	830	831	832	833	834
1938.....	851	852	853	854	855	856	857	858	859	860	861	862	863	864
1939.....	871	872	873	874	875	876	877	878	879	880	881	882	883	884
1940.....	891	892	893	894	895	896	897	898	899	900	901	902	903	904
1941.....	921	922	923	924	925	926	927	928	929	930	931	932	933	934
1942.....	951	952	953	954	955	956	957	958	959	960	961	962	963	964
1943.....	971	972	973	974	975	976	977	978	979	980	981	982	983	984
1944.....	1001	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013	1014
1945.....	1031	1032	1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044
1946.....	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061	1062	1063	1064
1947.....	1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092	1093	1094
1948.....	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121	1122	1123	1124
1949.....	1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152	1153	1154
1950.....	1171	1172	1173	1174	1175	1176	1177	1178	1179	1180	1181	1182	1183	1184

- a Rating tables and index to WSP 35-39 contained in WSP 39. Monthly discharge for 1899 in 21st Annual Report, part 4.
 b James River only.
 c Gallatin River.
 d Green and Gunnison Rivers and Colorado River above Gunnison River.
 e Mojave River only.
 f Kings and Kern Rivers and south Pacific slope.
 g Rating tables and index to WSP 47-52 contained in WSP 52. Monthly discharge for 1900 in 22nd Annual Report, part 4.
 h Schuylkill River to James River.
 i Scioto River.
 j Loup, Platte, and Elkhorn Rivers and tributaries below Platte River.
 k Tributaries of Mississippi River from east.
 m Lake Ontario and tributaries to St. Lawrence River proper.
 n Hudson Bay only.
 o New England Rivers only.
 p Hudson River to Delaware River.
 q Susquehanna River to Yadkin River.
 r Platte and Kansas Rivers.
 s The Great Basin in California, except Truckee and Carson River Basins.
 t Below mouth of Gila River.
 u Rogue, Umpqua, and Siletz Rivers only.

during 1920-32 in several drainage districts of northern Iowa, released by the Iowa Engineering Experiment Station at Ames, Iowa.

A historical publication entitled "Iowa: The Rivers of Her Valleys," by William J. Petersen, was issued in 1941 in the usual attractive format of the State Historical Society of Iowa. This publication presents interesting material of historical character together with some associated technical information.

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 No. 2 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 Geological Survey in Iowa City, and at public libraries in the principal cities. Lists of the Geological Survey publications, both for the State of Iowa and the United States, may be obtained upon application.

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.

Cooperation and Acknowledgments

The data presented in this report were collected by the district office of the Water-Resources Division of the United States Geological Survey, located since 1932 in the Hydraulic Laboratory of the Iowa Institute of Hydraulic Research at the State University of Iowa. The activities of the Survey office are carried on in cooperation with several agencies and under the general sanction of State and Federal statutes authorizing the investigations and providing modest funds therefor. The availability of the basic 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 municipal, State, and Federal agencies, as well as private organizations, have cooperated in the execution of the work whereby the records of stream flow have been obtained. The various agencies and organizations have cooperated either by furnishing data or by assisting in their collection. Acknowledgments for cooperation of the first kind are usually made in connection with the description for each station affected; cooperation of the second kind in effect at the time of this publication is outlined in some detail in the following paragraphs.

During the period (1942-50) covered by this report, the following state agencies have contributed continuous support to the overall program: Iowa Geological Survey, Iowa Conservation Commission and the State University of Iowa Institute of Hydraulic Research.

During the fiscal years ended June 30, 1949, and 1950, the work in the State program in Iowa was accomplished under cooperative agreements between the United States Geological Survey and the following 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, Dr. H. G. 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: Iowa State Conservation Commission; School of Civil Engineering at Iowa State College; Appanoose and Decatur Counties; the cities of Ames, Boone, Cedar Rapids, Clarinda, Des Moines, Fort Dodge, Independence, Iowa City, Marshalltown, Mason City, Ottumwa, Red Oak, Sioux City, and Waterloo; Des Moines Water Works; Jacob E. Decker & Sons; Interstate Power Co.; Iowa Electric Co.; Iowa Electric Light & Power Co.; and Union Electric Power Co. 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 Engi-

neers, 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.

Acknowledgment is made to the United States 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 Hydrologic Network.

Prof. J. W. Howe, Head of the Department of Mechanics and Hydraulics of the College of Engineering at the State University of Iowa, has given continued encouragement and advice in connection with the collection and dissemination of basic hydrologic data, particularly with reference to the Ralston Creek and Rapid Creek project.

The stream-flow records for the station on the Big Sioux River at Akron were collected and furnished by the district office of the United States Geological Survey at Pierre, South Dakota, in cooperation with the Corps of Engineers.

The stream-gaging work in Iowa is conducted by the personnel of the Water-Resources Division of the United States Geological Survey—V. R. Bennion, district engineer since 1949, and L. C. Crawford prior to 1949. The station records were arranged and prepared for State and Federal publications and local requests under their general direction. The computations incident to the presentation of the records and their assembly for publication were made by the technical staff of the United States Geological Survey office in Iowa City where field data were analyzed and the station manuscripts processed.

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.

Explanation of Field and Office Work

This report contains records for the water years ending September 30, 1943, to September 30, 1950. 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 60 water-stage recorder installations were being operated in Iowa by the Survey on September 30, 1950. Typical structures and equipment in use at gaging stations are shown on plates 1, 2, 3.

Measurements of discharge are usually made with a United States Geological Survey type-A, pygmy, or other model 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 Survey for stream-flow measurements are described in "Stream-gaging Procedure—A manual describing methods and practices of the Geological Survey" published as Water-Supply Paper 888.

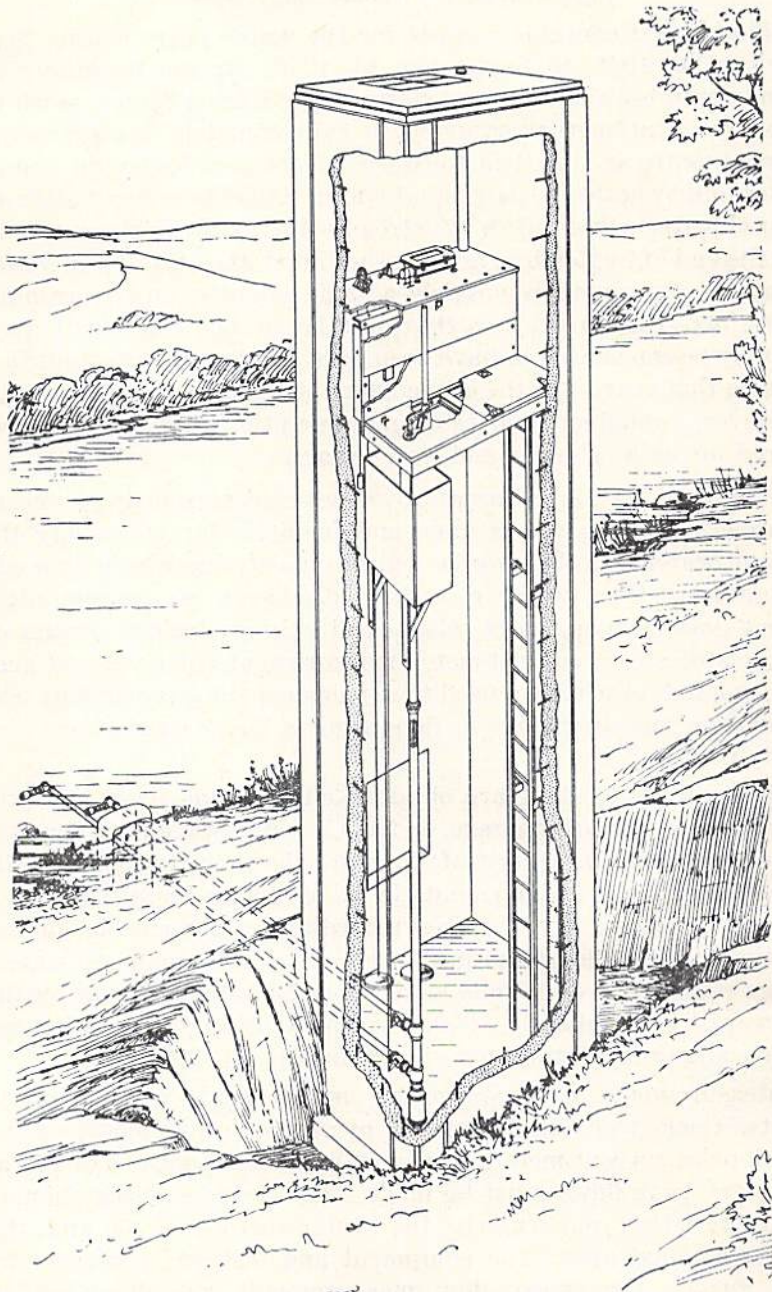


Figure 1.—Typical design of river-measurement station showing reinforced concrete well and house for water-stage recorder.

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. Unless otherwise noted, daily discharges are ascertained by applying the rating tables to daily mean gage heights obtained from the water-stage recorder graphs, or for days of considerable fluctuation in stage by averaging discharges for intervals of a day. The proper application of these rating tables to the daily mean 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 semi-logarithmic 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 eight-year period ended September 30, 1950, more than 8,000 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 mean daily gage height may not be the true mean discharge for the day. If such stations are equipped with water-stage recorders, the mean daily discharge may be obtained

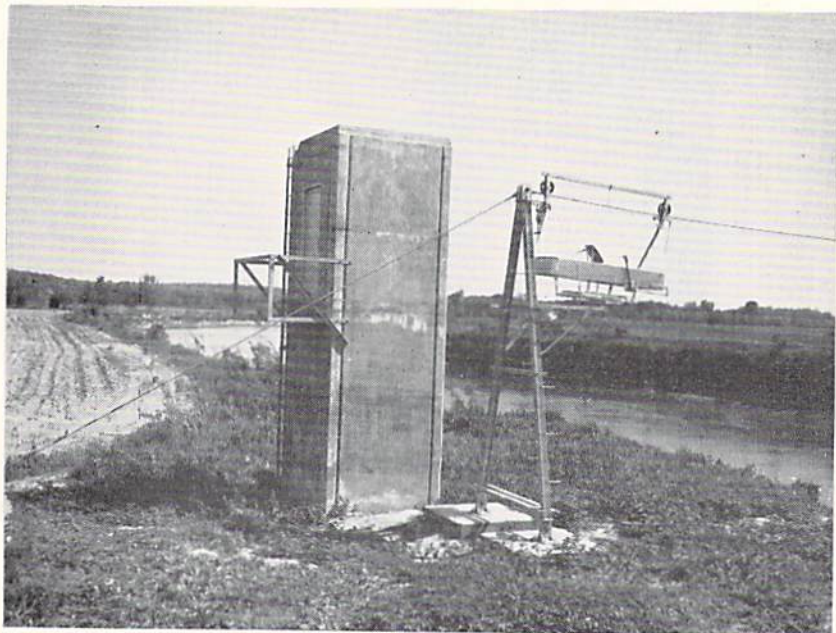
by averaging the discharge at intervals during the day, or by means of an instrument known as the discharge integrator in which a flexible curve is set to correspond with the rating curve of a station and the mean daily discharge is determined directly from a continuous gage-height graph.

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. The days during the winter period on which discharge measurements were made are indicated by symbols and footnotes in connection with the station records.

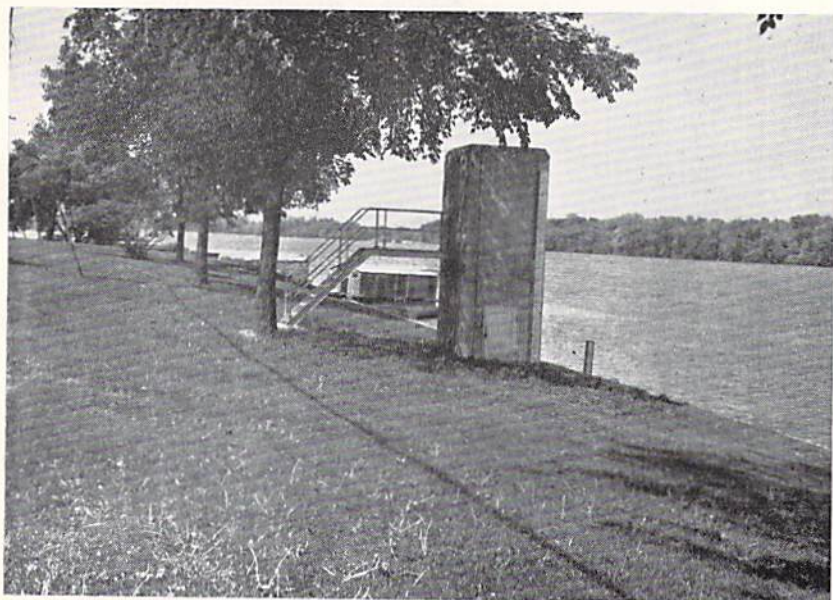
At gaging stations on the Mississippi River the stage-discharge relation is affected by the operation of the locks and dams in the navigation development. The existence of those variable conditions necessitates the consideration of the slope or fall in a reach of the river as a factor in the determination 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; however, with present funds and equipment it is not practicable to determine completely all such conditions, especially those that are relatively insignificant in most respects when compared with the total volume of flow.

Accuracy of Field Data and Computed Results

The station description under the "Gaging station records" gives statements in regard to the equipment and relative to the probable accuracy of the records. *Excellent* indicates that, in general, the daily discharge records are accurate within 5 percent; *good*, within 10 percent; *fair*, within 15 percent; and *poor*, percentages greater than 15 percent. These notes are very general, and the appraisal is determined by considering the accuracy of the rating curve, the reliability and number of gage readings, the ranges and fluctuations in stage, and various local conditions.



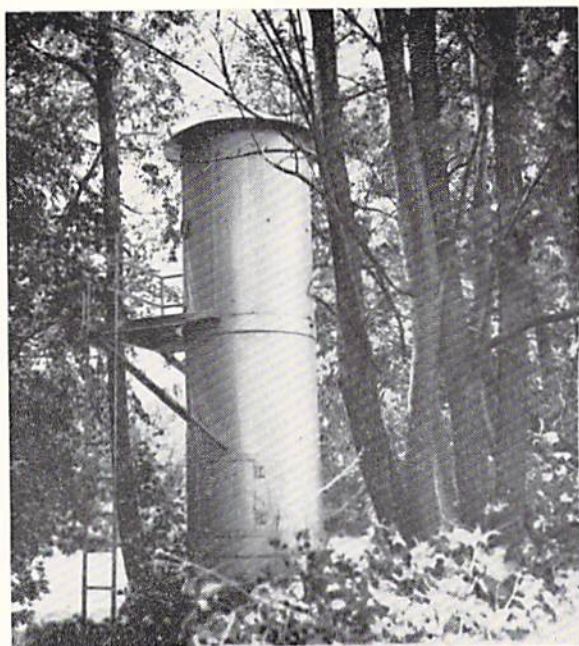
A. CONCRETE GAGE HOUSE AND CABLEWAY ON NISHNABCTNA RIVER ABOVE HAMBURG, IOWA



B. CONCRETE GAGE HOUSE ON MISSISSIPPI RIVER AT MCGREGOR, IOWA



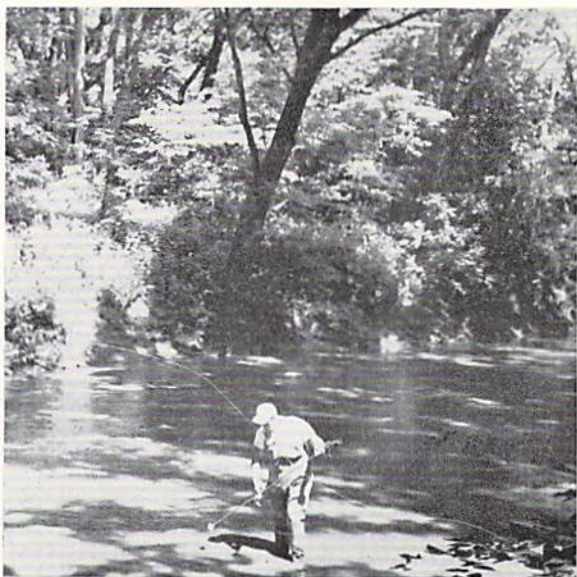
A BRICK GAGE HOUSE AND CONCRETE WELL ON DES MOINES RIVER AT FORT DODGE, IOWA



B. STEEL GAGE HOUSE ON CEDAR RIVER AT JANESVILLE, IOWA



A. CONCRETE BLOCK GAGE HOUSE ON NORTH SKUNK RIVER NEAR
SIGOURNEY, IOWA



B. FLOW MEASUREMENT BY WADING



A. MISSOURI RIVER AT CREST OF APRIL 1952 FLOOD AT SIOUX CITY, IOWA
(Courtesy Corps of Engineers)



B. TRUCK-MOUNTED EQUIPMENT USED FOR FLOOD MEASUREMENTS

The accuracy of stream-flow data depends primarily on: (1) the permanency of the stage-discharge relation, and (2) the accuracy and frequency of observations of stage, measurements of flow, and interpretations of records. The purposes for which the records are collected and the funds available for the work determine to a large extent the ultimate accuracy of the records.

Permanence of the stage-discharge relation will be affected by any change in the control due to growth of vegetation in the stream bed, effects of floods, artificial or natural changes. In general, the error in an individual measurement of discharge by a current meter is considerably less than five percent if it is possible to find suitable conditions for the measurement.

For uniformity, computations of discharge are generally carried to not more than three significant figures; however, some base data, or their uses, may not warrant such refinement. The refinement used in the recording and computation of stream-flow records is such that the average error is not more than two percent in the daily discharge, although an accuracy to this degree is not necessarily implied.

At some stations, the stage-discharge relation is known to be affected at times by changing stage for which it is usually not feasible to make a correction, nor is it practical to use the rate of change of stage as a factor in the determination of daily discharge under ordinary conditions of operation of gaging stations in Iowa. There is, nevertheless, at some stations a fairly wide difference between rising stage and falling stage discharge for the same gage height and a mean curve would not give the true discharge for any particular time, except under constant stage conditions or at the crest of a rise. However, it is recognized that in using the ordinary rating curve for computations of daily discharge, such discrepancies tend to compensate to an appreciable degree.

If errors resulting from various sources in the computation of daily discharge are compensating, the actual error in the determination of mean monthly discharge will be much less than the probable error of the associated determination of individual daily discharges. Experience with records of daily discharges and monthly means computed from them shows that large errors in the daily figures may be compensating to such extent that errors in the monthly means are small. Therefore, the monthly means, and especially the yearly mean, for many stations may represent

with comparatively high accuracy the average quantity of water flowing past the gage. For example, it can be demonstrated for fluctuating stages that the average error in the monthly mean discharge resulting from a two percent average error in mean daily discharge is about one-third of one percent.

The related figures showing discharge per square mile and depth of runoff in inches may be subject to errors, because of inaccuracies in the determination of drainage areas, even though the averages for periods of a month or longer for any station may represent the flow past the gage with a high degree of accuracy. In addition, yield of water, or flow, at some stations, as indicated by monthly means, may vary widely from the natural yield owing to: diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or other factors. A table of monthly discharge gives a general idea of the flow at the station and may be used for preliminary consideration; tables of daily or hourly discharge allow more detailed studies of the variation in flow.

Records of flow as originally published in water-supply papers were based on information available at the time. Subsequent field work and office analyses have occasionally indicated the need for revising the original computations. Such revised records, which are usually published in later reports, are often overlooked by the users of the data.

It should be borne in mind, however, that the observations in each succeeding year may be expected to throw new light on data previously published, and that greater degrees of refinement in computations and records may be warranted with the increase in data and the use of improved equipment.

Gaging Station Records

The data presented in this report cover the eight years beginning October 1, 1942, and ending September 30, 1950. The technical data given for each gaging station comprise a descriptive history of the station, yearly tables showing the daily discharge of the stream, yearly tables of monthly and yearly discharge, and runoff.

In general, the description of the station gives: location, latitude and longitude, and land-line reference; drainage area; period for which records are available; type and history of gage, and frequency of nonrecording gage readings; average discharge

for all complete water years during period of record; discharge corresponding to maximum and minimum recorded stages or indices with related information, including occasional historical data antedating the period of systematic records; and under remarks, notes on general accuracy of the records, diversions and artificial regulations, backwater, and other pertinent facts. The description is concluded by statements concerning items relating to cooperation.

Drainage areas and point locations have been determined by planimeter from the latest and best maps available, or have been obtained from other sources. As opportunities develop, these determinations are reconciled with similar data of other interested agencies. Under *extremes*, for individual years, are given the maximum discharge and gage height, and the minimum daily discharge. Maximum gage-height, discharge, and minimum discharge are given for the period of record.

The table of daily discharge gives, in general, the discharge in second-feet corresponding to the daily gage height, which may be the mean of two or more readings in the case of a nonrecording gage, or the mean daily gage height obtained from a water-stage recorder graph. For floods at nonrecording gages, the mean daily discharge is determined from gage-height graphs based on gage readings made as stated in the station description. The methods for obtaining the true mean daily discharge under conditions of sudden or rapidly changing stage are further discussed in the section *Explanation of field and office work*.

In the table of monthly discharges, the column headed *Second-foot-days* gives the sum for each month of the daily discharges as listed in the table for that month. The column headed *Maximum* gives the maximum daily discharge, and not the momentary discharge when the water surface was at crest height which is given in the station description under the heading *Extremes*. Likewise, in the column headed *Minimum*, the quantity given is the minimum daily discharge and not the momentary minimum. The column headed *Mean* is the average flow in cubic feet per second during the month. On this average flow are based the computations recorded in the remaining vertical column or columns, which are defined on page 7. It will be noted that runoff in second-feet per square mile and depth in inches on the drainage area are given for stations in the Upper Mississippi River Basin, but for stations in the Missouri River Basin in Iowa, the runoff in acre-feet is also given. For all of the foregoing headings the

horizontal columns show the summaries for the calendar and water years that are discussed in the first paragraph of the section *Explanation of field and office work*.

The daily discharge as reported in each instance on September 30, 1945, is technically the mean for a 25-hour day. The runoff in inches or acre-feet for the month of September 1945 was computed, however, in the usual manner, no correction being made for the insignificant error resulting from the fact that at 2 a. m. on September 30 the clocks in all the time zones of the country were set back to 1 a. m. Prior to that time, records in this report were collected in Iowa on the basis of central war time and, thereafter, by central standard time. In the tabular presentations in this report, 12 o'clock noon is designated "m", and 12 o'clock midnight is designated "p. m."

Supplementary Data

The tables of mean daily and monthly discharge for stations on the largest Iowa rivers, or on other rivers where the rate of rise is relatively slow, generally give all the details that are desired or necessary for the consideration of most problems. On smaller rivers and streams, however, there is a recognized need for detailed records of flood characteristics that will show not only the mean daily discharges and the maximum rate of discharge during a flood, as are commonly published for a gaging station, but also the stages and rates of discharge at frequent intervals during the flood period. The determination of the stages and discharges at stations in a basin at any given time during the progress of the flood is satisfactorily made only through the use of data obtained by recording gages.

Such detailed data are essential to a thorough analysis of the characteristics of floods, including the detentive and retentive effects of the land, channel-storage, and valley-storage, in modifying the form of the flood hydrograph. In addition, they furnish basic information for studying the behavior of flood crests, such as the time of travel of crests from headwaters of tributaries to the main stream, and the simultaneous progress of flood crests in the discharge of flood waters. They further provide information necessary in a determination of the feasibility of detention reservoirs, channel improvements, controlled use of land, soil treatment, and other measures that are proposed for ameliorating damage and losses caused by runoff, erosion, and floods. Only for very large stream systems can average flow rates for periods

greater than six hours be used to advantage in modern hydraulic methodology involving such procedures as flood routing and the evaluation of the effects of channel storage. Procedures of hydrology relating to stream flow must be based upon reasonably accurate patterns of time and discharge.

The records that are included for a number of Iowa lakes are presented after the records from stream-flow measurement stations in each major drainage basin subdivision. The records that are collected at the lake gaging stations constitute a part of the program carried on in cooperation with the Iowa State Conservation Commission. For the lake gages, the data presented comprise a general description of the station with detailed summary of annual extremes and a table of daily stage or gage heights during the period of 1942-50.

The gaging-station records at most of the stream-flow and lake gages discussed in this report extended over a series of years, and other associated data may be found in the State and Federal publications.

Additional information concerning these and other basic data may be obtained in the district office of the United States Geological Survey in Iowa City.

UPPER MISSISSIPPI RIVER BASIN

Mississippi River at McGregor, Iowa

LOCATION.—Lat. 43°01'40", long. 91°10'22", in SE¼SE¼ sec. 22, T. 95N., 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 mouth of Ohio River.

DRAINAGE AREA.—67,500 square miles.

RECORDS AVAILABLE.—August 1936 to September 1950.

GAGE.—Water-stage recorder. Datum of gage is 605.30 feet above mean sea level, adjustment of 1912. Auxiliary water-stage recorder 14.2 miles upstream in tailwater of dam 9, at datum 5.30 feet lower.

AVERAGE DISCHARGE.—14 years, 31,520 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum				Minimum Daily	
	Date	Daily Discharge (sec.-ft.)	Date	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	June 28	124,600	July 6	16.89	Dec. 12	14,000
1943-44...	June 24	122,500	June 26	16.17	Feb. 3	12,100
1944-45...	Mar. 29	127,700	Mar.28	16.80	Jan. 19	12,400
1945-46...	Mar. 29	101,200	Mar. 26	15.84	Aug. 28, 29	12,500
1946-47...	Apr. 21	85,500	Apr. 19	13.70	Aug. 19	11,700
1947-48...	Apr. 11	84,000	Apr. 3	12.81	Sept. 13	9,080
1948-49...	Apr. 4, 13	73,100	Apr. 13	11.42	Oct. 7	8,760
1949-50...	May 17	123,300	May 18	15.26	Oct. 4	8,300

1936-50: Maximum daily discharge, 127,700 second-feet March 29, 1945; maximum gage height, 18.45 feet Sept. 18, 1938; minimum daily discharge, 6,200 second-feet Dec. 9, 1936 (discharge measurement); minimum gage-height, -0.86 foot 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. Discharge computed by using fall as determined from auxiliary water-stage recorder as a factor. Flow regulated by reservoirs and navigation dams.

COOPERATION.—Services of observer and part of gage-height record furnished by Corps of Engineers.

Mississippi River at McGregor, Iowa—Continued
Daily Discharge, in Second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	76,100	26,500	17,600	21,400	22,200	18,500	72,900	58,500	44,200	109,800	24,500	27,700
2.....	71,600	26,400	18,800	20,100	19,600	21,700	72,000	55,700	50,400	111,100	23,000	27,000
3.....	67,300	27,100	18,300	20,300	19,700	23,300	72,500	52,600	58,200	114,900	32,500	27,400
4.....	65,300	28,200	18,700	18,100	19,800	23,400	76,400	49,200	68,000	117,700	36,200	26,500
5.....	63,400	29,100	18,800	18,300	20,300	23,400	78,100	47,600	75,700	117,300	37,800	25,600
6.....	61,100	30,100	17,100	18,600	18,200	24,300	80,500	48,500	83,500	114,500	35,000	28,300
7.....	57,900	30,000	15,900	18,800	17,200	24,600	84,700	46,800	85,500	113,200	32,500	29,900
8.....	55,600	31,000	16,000	18,800	17,700	25,000	85,900	45,800	85,900	111,000	32,000	27,000
9.....	55,100	31,900	16,800	18,800	16,800	25,900	92,600	45,400	91,800	107,300	32,900	25,900
10.....	54,900	32,200	14,900	18,800	16,200	25,500	99,400	45,000	95,600	102,800	33,800	26,700
11.....	54,300	31,200	15,000	18,900	15,100	25,100	106,600	44,600	98,700	98,900	33,900	28,700
12.....	52,200	30,700	14,000	19,600	15,100	23,100	111,100	43,400	101,600	93,500	34,100	29,500
13.....	47,900	30,700	14,500	21,400	14,600	22,700	112,800	42,500	100,200	88,100	35,600	29,800
14.....	41,900	31,200	14,800	21,000	15,300	21,500	115,100	41,500	100,500	84,200	39,200	29,400
15.....	37,100	30,800	15,100	23,600	15,600	25,000	114,500	41,500	100,400	78,700	36,500	28,800
16.....	34,100	31,300	*15,300	24,100	15,600	28,700	114,100	42,900	99,200	73,900	37,500	27,900
17.....	31,600	30,000	16,900	25,400	15,600	31,500	111,000	41,600	98,300	69,800	36,100	26,900
18.....	29,100	31,600	18,900	25,100	15,600	28,900	108,400	39,500	97,000	64,800	31,400	25,800
19.....	21,100	31,500	20,800	27,100	18,300	28,100	103,900	38,500	97,000	59,800	29,900	23,600
20.....	19,500	31,000	21,800	28,300	18,300	29,300	99,200	39,300	99,000	55,800	28,400	20,600
21.....	19,000	30,200	21,100	27,500	19,600	30,000	93,300	38,800	105,300	51,200	29,800	20,200
22.....	21,200	29,500	20,700	26,700	20,600	28,400	88,300	40,400	112,800	44,200	29,900	19,200
23.....	24,700	27,300	21,100	26,400	22,200	28,700	84,500	41,600	119,600	38,000	33,200	19,300
24.....	26,100	22,700	21,100	26,200	18,700	29,800	80,300	42,300	123,400	35,500	35,900	18,600
25.....	26,400	19,000	21,100	25,900	17,700	35,800	76,900	42,300	124,300	35,900	35,500	17,400
26.....	26,500	21,200	21,400	25,500	15,200	39,700	72,500	42,200	124,300	35,300	30,200	16,400
27.....	26,500	18,300	21,700	25,200	14,800	46,400	70,700	42,400	123,900	34,900	27,900	15,600
28.....	26,000	18,000	21,700	24,900	15,300	54,600	66,800	41,700	124,600	33,300	26,400	15,400
29.....	26,100	18,400	21,600	*24,300	.....	61,600	63,100	41,000	120,400	29,100	23,000	15,800
30.....	27,500	17,100	21,600	23,800	.....	66,800	61,700	40,600	114,100	21,800	22,100	17,000
31.....	27,300	.....	21,500	23,200	.....	70,700	.....	41,300	.....	21,400	24,500	.....
1943-44												
1.....	17,100	20,400	19,200	27,300	14,200	34,500	27,200	62,400	85,900	98,800	29,900	24,100
2.....	17,900	20,400	18,100	26,400	12,300	34,300	25,400	63,700	83,800	94,200	29,600	26,100
3.....	17,800	20,100	19,600	27,200	12,100	35,600	30,600	64,600	81,700	89,800	21,400	26,800
4.....	18,200	19,500	20,300	27,500	15,700	31,300	35,400	67,100	80,100	86,500	23,900	25,000
5.....	19,100	18,700	20,600	26,400	15,700	24,800	31,600	66,500	79,200	82,900	25,900	23,200
6.....	19,400	18,400	21,100	25,500	16,900	23,700	30,900	67,400	78,000	80,200	25,800	22,600
7.....	19,000	19,400	22,400	24,600	18,200	26,900	32,100	67,600	75,600	77,300	24,900	21,900
8.....	18,600	24,300	22,000	23,600	20,700	25,500	35,200	68,500	74,700	75,800	23,800	20,500
9.....	18,600	30,700	21,900	22,200	20,100	24,800	42,000	70,400	74,800	73,700	24,200	18,500
10.....	18,000	35,300	21,500	20,000	21,000	26,200	42,600	72,800	75,500	71,200	26,300	17,600
11.....	18,000	36,900	21,800	18,400	19,700	25,600	42,400	76,600	77,700	69,400	29,200	17,300
12.....	18,600	35,700	21,300	17,500	18,900	31,800	43,700	81,700	82,800	68,000	30,200	18,600
13.....	19,000	31,600	18,300	17,200	19,000	38,800	45,500	86,300	92,600	67,000	30,100	19,900
14.....	20,400	25,300	20,000	16,900	19,600	41,400	47,100	90,100	100,300	65,800	31,100	20,100
15.....	20,600	20,400	20,300	*16,700	20,100	39,900	51,400	92,700	104,500	64,400	31,500	20,200
16.....	20,500	17,200	20,200	16,500	21,800	31,500	52,500	96,200	106,700	62,900	33,200	20,700
17.....	20,100	17,000	19,700	16,300	22,200	26,900	52,500	99,100	111,200	62,200	36,800	21,200
18.....	19,600	19,100	20,200	16,100	21,700	26,300	53,200	101,000	113,400	61,100	32,200	22,300
19.....	20,400	*20,000	19,400	16,400	21,000	22,200	53,400	105,400	112,700	59,800	29,700	25,100
20.....	20,400	20,700	18,600	16,400	20,600	20,600	54,600	108,300	111,200	58,900	28,400	29,800
21.....	21,700	20,800	18,400	16,100	19,800	20,700	55,700	110,300	112,200	57,000	28,200	30,100
22.....	24,300	21,300	18,600	16,100	18,900	23,000	55,600	110,800	114,400	55,100	29,300	25,000
23.....	24,600	22,100	19,000	16,100	18,500	31,200	55,900	108,500	119,900	54,100	29,300	23,400
24.....	24,500	22,600	19,700	16,100	18,500	*39,900	56,800	106,300	122,500	50,700	29,900	22,000
25.....	24,600	23,100	20,600	16,600	18,800	44,600	57,100	104,200	120,900	50,300	28,300	21,100
26.....	24,400	24,700	21,400	17,300	21,900	39,600	57,300	102,400	119,700	50,500	24,100	19,900
27.....	24,600	25,400	23,900	18,400	24,800	40,100	58,000	99,200	120,700	50,500	22,000	19,600
28.....	22,300	25,200	31,400	20,200	29,300	37,800	58,000	95,900	118,300	48,200	21,600	20,200
29.....	20,500	23,900	29,900	21,600	34,200	34,200	58,900	92,900	112,200	42,100	21,700	19,900
30.....	19,700	22,300	28,300	23,100	.....	32,200	60,100	90,200	105,900	38,000	21,200	18,400
31.....	20,200	.....	26,900	23,500	.....	28,300	.....	87,400	.....	35,000	23,000	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 30 to Dec. 31, 1942, Jan. 1 to Mar. 25, Dec. 13-31, 1943, Jan. 1 to Feb. 3, Feb. 11-26, Mar. 7-10, 1944.

Mississippi River at McGregor, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	18,600	17,300	19,500	17,600	16,000	18,000	123,500	73,900	63,200	70,900	41,500	24,200
2.....	18,300	17,800	19,300	17,500	15,800	18,200	120,700	75,600	65,600	68,300	43,600	28,800
3.....	19,700	17,000	18,800	17,200	15,600	18,400	115,400	76,400	68,300	64,500	40,300	31,500
4.....	22,700	16,900	19,600	17,200	14,900	18,100	110,400	75,100	69,400	61,500	27,300	35,600
5.....	24,300	16,900	20,100	17,300	14,300	18,000	105,900	74,000	69,800	59,400	31,100	30,400
6.....	24,400	17,300	21,000	17,500	14,300	19,100	99,700	71,800	70,500	56,900	42,100	38,700
7.....	24,000	17,300	20,600	18,600	14,400	18,900	94,900	70,000	72,000	54,600	46,400	41,100
8.....	23,200	17,600	19,100	20,200	14,600	19,500	88,200	67,900	72,900	52,200	37,200	35,700
9.....	21,500	17,700	18,500	20,300	15,500	19,700	81,400	65,100	75,200	51,900	26,600	27,700
10.....	20,300	18,800	18,100	20,100	15,500	19,600	78,500	62,600	76,600	50,900	24,000	24,000
11.....	19,900	18,700	17,900	19,900	15,500	19,900	76,100	58,900	77,100	50,000	28,500	23,400
12.....	19,900	18,200	17,500	20,500	15,600	21,400	74,800	56,200	75,600	50,400	35,400	22,900
13.....	19,200	18,700	16,800	23,300	15,500	23,400	73,400	51,200	73,300	50,700	40,600	22,400
14.....	18,800	18,200	17,800	22,500	15,500	26,900	71,400	44,900	71,400	49,000	46,700	22,200
15.....	18,900	19,400	17,600	19,500	16,000	38,500	69,700	39,500	67,800	46,700	47,000	19,800
16.....	18,400	20,500	17,000	17,800	15,900	51,300	70,200	34,100	66,200	42,400	32,200	18,300
17.....	18,100	21,800	16,900	15,400	15,600	74,000	71,600	33,100	64,500	37,500	30,600	18,100
18.....	17,900	23,200	16,900	13,400	15,800	94,200	70,700	30,700	63,500	31,100	31,800	17,400
19.....	17,200	23,600	16,500	12,400	15,900	114,600	69,900	30,500	63,100	28,600	33,300	18,300
20.....	16,900	24,500	17,400	13,700	16,000	118,900	70,100	28,300	62,900	27,600	33,700	20,700
21.....	16,900	25,300	17,300	15,100	16,100	118,600	70,100	31,900	62,800	31,400	32,100	20,900
22.....	17,800	24,400	17,400	15,500	16,100	116,400	68,900	44,900	63,000	40,800	30,200	23,100
23.....	17,700	22,900	17,000	16,100	16,100	112,700	70,200	52,300	64,400	39,300	27,200	25,300
24.....	17,400	21,900	16,000	16,500	16,900	109,200	70,600	54,700	66,300	29,400	26,300	27,100
25.....	17,000	20,800	15,400	16,300	17,600	107,500	70,700	53,100	68,300	20,600	25,300	33,000
26.....	17,100	20,100	15,400	15,700	17,500	112,900	71,900	53,800	70,200	16,500	23,000	33,600
27.....	17,400	19,500	15,800	15,800	18,000	120,100	70,800	57,400	71,400	20,700	20,800	32,900
28.....	17,100	19,000	16,500	15,800	18,000	125,900	70,700	60,500	73,400	21,500	22,500	34,200
29.....	17,100	18,800	17,200	15,800	.....	*127,700	71,000	61,100	73,700	25,200	21,300	35,100
30.....	17,300	18,800	17,800	16,200	.....	124,500	72,700	61,100	72,800	27,700	21,400	36,200
31.....	17,300	.....	17,500	16,100	.....	125,800	.....	60,000	.....	32,700	22,200	.....
1945-46												
1.....	36,700	19,400	21,700	32,100	16,100	20,900	93,200	33,500	34,700	62,800	21,500	12,700
2.....	35,900	22,000	27,300	25,400	15,900	23,500	90,000	31,000	35,400	66,000	20,500	13,000
3.....	30,500	23,200	30,900	22,000	16,000	27,600	85,500	27,900	36,400	71,000	19,200	13,000
4.....	30,100	21,900	24,100	22,600	17,100	32,000	84,100	28,500	35,600	76,100	18,400	13,500
5.....	31,300	20,500	21,200	29,000	19,100	36,600	78,600	27,200	34,800	81,000	20,100	13,300
6.....	30,600	22,500	22,700	38,700	24,600	48,500	75,300	22,000	33,800	84,500	22,700	20,100
7.....	30,100	23,600	23,200	42,600	*28,000	53,100	72,800	20,500	33,100	86,700	22,500	26,600
8.....	29,900	25,800	23,400	39,300	34,100	55,000	71,500	20,200	33,100	86,900	19,400	40,800
9.....	27,300	29,500	23,400	32,800	33,200	55,400	69,100	23,500	32,300	85,800	16,400	44,700
10.....	21,100	32,300	21,400	26,100	28,200	57,300	66,400	22,900	30,600	84,100	15,700	45,100
11.....	20,600	29,200	18,900	26,200	23,700	55,700	64,500	23,000	33,700	79,900	15,100	36,200
12.....	20,700	28,600	17,200	26,800	19,400	52,900	62,900	23,200	38,500	74,400	16,200	24,300
13.....	20,700	28,300	14,900	26,200	17,500	54,700	61,300	23,600	42,400	70,500	15,100	20,800
14.....	21,600	25,400	13,500	25,300	16,600	61,600	60,700	23,500	45,600	66,400	14,800	21,700
15.....	21,600	24,400	14,400	23,400	18,300	63,200	59,900	23,000	51,400	60,000	14,400	22,400
16.....	22,200	27,200	14,400	21,600	18,400	64,300	58,700	20,800	58,500	55,200	14,000	21,600
17.....	22,100	30,500	14,600	22,300	18,500	65,700	57,000	20,200	64,900	51,700	17,700	21,900
18.....	21,900	30,600	14,500	22,900	18,000	75,600	56,200	19,100	68,800	49,300	22,300	22,100
19.....	22,100	29,200	*14,800	23,000	19,500	80,600	55,000	17,200	70,000	47,200	16,700	22,400
20.....	21,900	27,800	16,000	21,800	19,700	83,400	51,900	17,100	69,300	43,000	15,500	24,500
21.....	20,600	26,100	18,500	21,000	19,600	84,300	50,100	17,500	66,300	39,400	14,500	23,900
22.....	19,800	26,000	20,500	20,700	20,500	85,800	49,100	18,600	62,900	32,400	14,500	21,500
23.....	19,000	24,100	21,000	17,200	19,600	91,900	47,300	22,100	54,800	27,100	14,500	26,600
24.....	18,700	21,800	22,700	16,600	18,400	96,300	42,900	31,100	52,200	24,800	14,800	21,900
25.....	18,400	19,800	25,700	15,700	17,900	97,300	42,400	34,200	48,500	22,500	14,500	21,600
26.....	18,400	19,100	26,900	15,400	18,600	100,000	40,800	33,500	46,800	19,700	14,600	20,900
27.....	18,400	18,600	28,000	15,800	20,800	*101,100	37,200	33,800	45,600	19,200	13,900	22,200
28.....	19,800	19,200	29,600	15,700	20,800	101,000	35,300	34,400	46,000	20,800	12,500	23,400
29.....	19,000	19,800	30,300	15,800	.....	101,200	34,300	33,700	49,000	21,600	12,600	25,000
30.....	19,600	20,900	30,200	16,200	.....	99,300	34,100	34,100	58,000	22,900	12,900	25,800
31.....	18,000	.....	30,600	16,400	.....	95,700	.....	34,300	.....	22,100	13,000	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 1-5, 11-31, 1944, Jan. 1 to Mar. 13, Dec. 4, 5, 9-31, 1945, Jan. 1 to Mar. 1, 1946.

Mississippi River at McGregor, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1	25,500	40,500	23,600	21,900	22,300	17,400	37,600	83,800	56,000	59,100	19,100	18,800
2	21,800	40,500	24,100	21,500	19,600	17,300	37,200	82,800	55,400	57,200	19,400	19,600
3	19,600	39,700	24,700	20,500	18,100	17,300	37,300	83,300	52,700	55,400	19,300	23,500
4	19,400	37,800	24,700	19,900	18,100	16,600	39,100	83,100	47,800	52,100	17,000	23,500
5	19,800	39,000	24,000	19,400	19,200	16,700	43,400	82,000	46,300	51,500	16,200	26,600
6	20,200	39,600	27,900	19,100	17,800	16,900	48,800	82,100	45,400	49,600	15,300	24,000
7	20,500	41,800	32,900	19,900	17,000	17,000	59,600	82,000	44,700	48,400	14,900	24,400
8	25,100	42,200	30,300	19,400	16,700	16,600	66,600	82,100	44,900	45,500	15,200	22,300
9	30,400	40,000	24,500	19,400	17,600	17,200	67,600	82,400	43,600	42,600	15,500	17,100
10	29,100	41,300	24,400	19,400	17,600	18,600	69,200	82,400	43,300	40,500	15,400	16,000
11	32,300	41,300	25,600	19,400	17,400	20,600	74,400	82,500	44,700	40,200	15,200	14,900
12	36,000	41,300	28,600	19,400	17,800	20,600	76,400	81,500	44,200	39,800	15,600	17,100
13	36,900	42,600	29,400	20,200	18,400	23,200	76,900	80,800	52,700	36,300	15,900	20,900
14	33,300	44,700	22,000	20,600	19,000	24,300	87,200	79,100	57,600	38,200	15,100	22,800
15	32,200	45,600	16,800	23,100	19,400	33,000	79,300	77,400	57,600	38,700	14,400	20,400
16	33,700	45,700	14,600	23,000	19,700	33,000	81,600	76,000	56,500	39,700	14,200	18,100
17	36,200	45,900	15,400	22,800	21,100	32,600	83,100	74,200	55,100	39,600	13,900	17,000
18	36,500	45,700	15,000	22,900	21,800	30,000	83,600	73,200	56,100	38,000	12,900	15,800
19	34,500	44,000	15,400	22,900	20,200	24,300	84,200	72,200	56,900	34,000	11,700	15,300
20	34,000	44,000	15,300	21,800	20,200	23,800	85,300	70,900	58,000	34,100	14,600	15,600
21	33,800	44,800	15,300	20,200	21,100	25,200	85,500	69,700	57,700	35,000	19,800	15,600
22	32,400	44,400	18,000	20,200	20,600	27,100	84,100	68,400	56,500	33,800	26,400	15,900
23	32,000	40,700	19,600	19,400	20,100	30,100	84,800	67,100	56,100	24,300	26,800	15,700
24	32,600	37,800	21,000	18,500	18,000	34,200	83,100	66,300	56,200	19,700	23,700	13,100
25	33,500	*35,500	20,500	17,800	17,700	41,100	81,600	65,100	55,200	18,700	22,400	13,600
26	32,800	32,800	20,200	19,300	17,800	42,300	80,700	63,600	54,600	13,900	20,300	13,000
27	34,700	25,300	20,600	20,000	17,800	47,800	79,300	61,000	53,000	25,500	18,600	13,100
28	37,600	19,600	20,700	23,100	17,300	46,900	78,900	63,600	51,400	41,200	16,700	13,900
29	38,600	20,000	22,200	23,400	.....	44,200	79,300	61,400	54,600	34,400	19,200	15,200
30	37,500	22,600	22,300	26,200	.....	39,700	80,700	60,000	57,700	23,200	23,100	16,200
31	38,300	.....	23,000	23,500	.....	36,900	.....	56,200	.....	20,600	21,000	.....
1947-48												
1	18,800	18,000	16,800	16,200	13,000	45,500	74,100	61,100	22,600	19,200	14,100	16,900
2	22,400	17,600	16,500	16,300	12,800	45,800	75,100	61,500	19,900	17,400	14,400	14,500
3	23,600	17,000	16,100	16,400	12,700	44,000	76,100	62,600	14,100	16,600	14,600	14,100
4	21,800	17,200	16,100	16,200	12,300	37,200	78,200	63,600	13,700	16,400	14,600	12,700
5	13,800	18,300	17,200	15,400	12,600	32,900	80,400	65,600	15,200	15,900	13,500	11,900
6	13,000	18,100	18,100	15,100	13,100	30,300	81,500	67,900	17,700	15,000	12,200	12,100
7	12,300	18,600	17,700	15,500	13,200	28,100	82,000	65,100	19,200	14,100	11,800	11,100
8	12,000	20,200	18,000	15,400	13,000	30,800	83,800	62,500	17,800	13,000	11,700	10,500
9	13,700	20,600	18,500	14,800	13,200	26,300	83,600	61,400	16,600	12,700	11,700	10,700
10	15,200	21,100	18,400	14,400	13,700	26,800	83,000	60,500	15,800	12,900	13,900	10,600
11	15,900	19,700	17,500	14,800	13,600	25,400	84,600	60,100	15,600	12,100	20,500	16,500
12	15,800	18,600	17,100	14,400	13,400	27,100	81,200	58,800	15,000	12,900	23,400	9,940
13	15,700	18,200	17,400	14,400	13,400	25,800	80,000	55,700	14,600	13,100	24,500	9,680
14	15,600	19,100	17,300	14,700	13,200	24,800	78,200	51,800	13,200	13,000	22,800	10,400
15	14,800	18,300	16,800	14,900	13,000	24,900	77,300	52,700	12,500	13,600	21,600	10,700
16	14,500	20,800	16,800	15,000	12,700	29,800	77,100	51,100	12,400	14,300	21,200	11,100
17	15,100	20,400	17,900	15,100	13,600	32,400	74,800	49,200	12,400	13,900	19,200	9,720
18	14,700	*20,300	17,400	15,100	15,400	35,000	74,500	46,900	12,500	13,000	19,300	9,540
19	14,800	19,800	17,200	14,900	16,100	43,800	73,600	45,300	12,700	11,700	17,300	9,660
20	15,200	18,600	16,100	*15,000	17,000	53,000	73,200	41,300	13,200	11,000	16,100	14,100
21	15,300	18,600	15,500	14,000	16,300	54,900	71,700	40,100	11,700	10,100	15,100	15,000
22	15,300	18,500	15,000	13,400	16,300	57,100	70,300	35,100	15,900	9,440	15,300	14,800
23	14,000	18,200	15,000	13,100	16,300	*61,300	69,900	35,100	17,600	9,400	13,600	13,800
24	14,800	18,300	15,600	13,400	16,700	66,600	67,400	35,800	17,600	10,400	13,000	12,200
25	14,800	18,200	16,400	13,400	18,200	72,400	64,200	30,700	19,000	11,000	13,100	12,000
26	16,400	18,200	16,700	13,600	20,400	75,500	63,200	26,700	19,500	10,300	13,400	11,800
27	20,800	18,000	16,700	13,800	23,800	74,800	62,500	22,200	20,100	9,350	12,700	11,700
28	26,500	18,000	16,600	13,500	36,000	73,800	61,200	18,600	22,200	9,610	12,800	11,400
29	21,600	17,100	16,400	12,800	42,000	73,900	61,400	20,600	22,200	11,100	11,600	11,100
30	18,100	17,400	16,500	12,500	.....	72,800	61,000	21,300	20,900	11,600	15,200	9,520
31	17,700	.....	16,400	12,900	.....	73,400	.....	22,600	.....	13,000	17,100	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 2, 3, 14-31, 1946, Jan. 1 to Mar. 19, Nov. 16 to Dec. 31, 1947, Jan. 1 to Mar. 18, 1948.

Mississippi River at McGregor, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1	10,500	10,900	14,000	11,700	12,500	14,200	69,400	35,400	19,000	15,700	32,300	13,000
2	9,500	9,890	12,300	11,500	12,500	14,500	71,400	36,400	16,600	15,800	30,600	12,800
3	9,310	10,100	11,700	11,500	12,000	15,400	72,700	32,400	14,200	17,000	26,200	11,800
4	9,110	10,200	12,200	11,700	11,600	20,200	73,100	30,000	14,700	17,800	22,200	12,400
5	8,940	11,500	12,000	12,200	11,600	32,800	72,200	26,000	16,100	19,100	22,800	10,400
6	9,310	14,400	13,100	14,200	11,600	40,000	70,800	26,800	16,600	21,800	22,700	10,800
7	8,760	15,300	12,900	15,300	11,700	47,400	70,300	32,800	16,000	24,500	22,300	11,300
8	9,150	14,500	12,800	15,500	11,700	48,800	69,900	35,600	14,900	31,900	21,800	11,300
9	10,000	14,100	12,000	14,500	12,400	45,300	70,300	36,600	14,800	35,900	20,700	11,200
10	10,800	13,600	12,000	11,800	12,500	40,600	70,800	41,000	15,000	34,500	17,900	12,400
11	11,000	14,200	11,900	11,500	12,500	35,700	72,200	42,700	13,800	33,300	14,900	12,800
12	11,100	13,300	11,800	11,100	12,400	33,800	73,000	45,500	14,800	32,600	16,200	12,400
13	11,900	13,300	11,500	11,100	12,400	32,000	73,100	45,600	16,600	30,600	16,500	15,600
14	12,100	13,700	10,200	11,100	12,400	31,200	72,900	47,500	19,900	28,800	16,600	16,700
15	14,200	14,400	9,790	11,300	12,400	27,800	72,500	48,500	18,600	30,000	15,400	16,700
16	12,900	14,000	9,850	11,700	12,300	24,100	69,900	47,300	15,900	30,000	13,200	16,600
17	13,500	13,900	10,300	13,200	12,300	23,500	68,000	43,000	14,500	24,000	12,500	15,200
18	14,000	12,700	11,000	14,200	13,100	23,200	66,100	37,200	13,200	18,500	12,100	14,400
19	11,800	11,100	11,500	13,800	13,500	23,800	62,900	31,700	13,800	18,700	11,700	12,600
20	12,200	13,400	12,000	13,400	13,400	24,300	61,700	28,500	14,600	19,200	12,400	12,700
21	10,900	13,400	12,200	12,400	13,000	24,100	60,500	26,100	18,000	22,200	12,600	11,300
22	10,600	15,400	12,200	12,300	12,400	26,500	58,300	26,900	20,200	22,700	12,500	11,200
23	8,980	14,400	12,100	11,700	12,700	33,200	57,000	23,500	19,000	21,600	13,300	11,400
24	9,960	13,800	12,100	11,600	13,000	37,900	53,900	15,900	18,600	17,400	13,000	11,800
25	10,600	11,600	12,700	12,500	13,700	40,800	51,100	14,100	19,800	17,600	13,100	12,700
26	10,600	12,000	12,900	12,700	14,000	46,300	50,600	13,800	20,100	17,700	13,200	12,200
27	9,840	13,500	13,300	12,700	14,200	53,900	47,700	14,100	23,100	20,200	13,000	15,600
28	9,660	14,000	13,300	12,600	14,200	62,300	43,600	15,100	24,100	27,000	12,900	8,910
29	10,000	14,500	13,200	12,600	.....	65,800	42,500	15,200	20,700	36,500	13,000	9,640
30	11,000	14,500	13,200	12,500	.....	64,900	40,100	16,300	15,200	36,700	13,200	9,680
31	11,900	.....	12,500	12,500	.....	65,800	.....	19,200	.....	33,700	12,400	.....
1949-50												
1	9,800	15,400	15,100	13,800	13,300	14,900	84,000	109,200	75,500	25,000	34,000	17,700
2	9,400	14,600	16,200	13,400	13,400	15,100	85,200	105,300	73,700	24,900	33,100	16,600
3	9,200	15,900	17,600	13,000	13,500	13,500	85,300	104,000	72,500	25,200	27,600	15,500
4	8,300	15,000	18,500	13,000	13,500	13,200	82,800	101,000	70,300	25,900	21,200	13,900
5	10,600	15,800	17,000	14,500	13,600	13,500	79,800	98,100	67,200	24,100	17,500	12,300
6	11,200	15,800	16,200	14,600	13,600	21,800	77,000	97,400	63,900	21,800	16,800	11,700
7	13,100	15,500	15,000	14,600	13,700	39,500	76,400	89,200	61,800	19,100	17,500	11,600
8	14,100	13,900	12,600	14,500	14,000	44,000	75,200	85,400	61,500	19,000	18,300	11,200
9	15,000	13,200	12,200	14,500	14,900	48,000	73,900	86,600	60,100	18,500	19,900	11,000
10	17,400	13,700	11,800	13,900	15,200	52,000	74,200	84,500	60,400	19,000	20,700	11,700
11	15,700	15,300	11,000	13,800	15,200	51,000	75,800	84,900	55,500	20,800	22,300	13,000
12	16,300	9,100	11,300	13,800	15,200	48,000	74,600	89,900	53,200	22,500	21,800	14,800
13	16,700	17,600	11,300	14,000	14,300	42,000	74,100	99,800	53,200	27,700	21,000	15,300
14	17,600	17,300	12,000	14,400	14,200	33,000	74,200	110,900	60,700	25,600	19,700	15,300
15	20,500	17,200	12,000	14,800	14,100	22,000	74,600	118,300	69,100	23,500	18,800	15,400
16	21,600	17,200	12,000	14,600	13,200	19,500	75,000	123,000	72,000	36,500	17,300	15,200
17	21,800	17,800	12,000	14,000	13,200	21,000	75,700	123,300	70,600	36,800	15,900	15,000
18	22,100	20,100	12,300	14,500	13,200	22,000	76,600	122,300	66,800	33,500	15,800	14,300
19	21,700	20,600	13,400	14,500	13,300	21,700	77,100	120,100	60,400	30,500	15,100	13,700
20	21,600	19,600	15,000	13,300	13,300	20,000	77,100	117,800	50,200	31,700	13,600	13,500
21	21,600	18,200	14,700	13,000	13,600	17,500	76,400	113,000	48,400	31,500	12,300	16,400
22	22,700	17,400	14,600	13,000	14,300	17,500	78,500	107,500	37,900	27,800	11,500	18,800
23	21,600	15,600	14,600	12,000	14,300	22,000	81,700	102,400	27,100	21,000	11,500	16,700
24	21,200	15,700	14,800	11,500	14,600	28,000	86,600	98,400	27,100	23,700	12,700	16,100
25	19,100	16,000	15,000	11,500	15,000	37,000	96,800	95,900	27,200	26,900	12,400	14,200
26	16,300	17,000	15,200	11,400	15,200	50,000	104,000	90,500	28,900	29,100	13,200	13,600
27	16,400	16,400	15,200	11,300	15,200	65,000	109,500	87,600	25,100	28,800	14,000	14,600
28	16,000	15,100	15,200	12,000	15,000	82,400	112,900	84,300	23,400	29,000	16,000	12,900
29	17,000	14,500	14,500	12,600	.....	90,600	111,900	81,000	23,800	28,500	19,200	13,500
30	15,500	15,100	14,400	12,500	.....	90,200	111,400	79,100	25,000	28,700	19,000	14,100
31	14,500	.....	14,000	*12,400	.....	85,400	.....	77,900	.....	31,700	18,900	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 8-12, 18-31, 1948, Jan. 1 to Mar. 4, Dec. 4-31, 1949, Jan. 1 to Mar. 27, 1950.

Mississippi River at McGregor, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Per square mile	Runoff in inches
		Maximum	Minimum	Mean			
October, 1942	1,274,400	76,100	19,000	41,110	0.609	0.70	
November	825,500	32,200	17,100	27,520	.408	.45	
December	572,600	21,800	14,000	18,470	.274	.32	
Calendar year 1942	13,552,900	113,800	13,000	37,130	.550	7.47	
January, 1943	706,100	28,300	18,100	22,780	.337	.39	
February	490,900	22,200	14,600	17,530	.260	.27	
March	993,000	70,700	18,500	32,030	.475	.55	
April	2,669,800	115,100	61,700	88,990	1.32	1.47	
May	1,365,000	58,500	38,500	44,030	.652	.75	
June	2,923,400	124,600	44,200	97,450	1.44	1.61	
July	2,267,700	117,700	21,400	73,150	1.08	1.25	
August	980,800	39,200	22,100	31,640	.469	.54	
September	717,900	29,900	15,400	23,930	.355	.40	
Water year 1942-43	15,787,100	124,600	14,000	43,250	.641	8.70	
October, 1943	632,700	24,600	17,100	20,410	.302	.35	
November	702,400	36,900	17,000	23,410	.347	.39	
December	664,600	31,400	18,100	21,440	.318	.37	
Calendar year 1943	15,114,300	124,600	14,600	41,410	.613	8.34	
January, 1944	624,200	27,500	16,100	20,140	.298	.34	
February	576,200	34,200	12,100	19,870	.294	.32	
March	964,200	44,600	20,600	31,100	.461	.53	
April	1,402,700	60,100	25,400	46,760	.693	.77	
May	2,716,500	110,800	62,400	87,630	1.30	1.50	
June	2,969,100	122,500	74,700	98,970	1.47	1.64	
July	2,001,400	98,800	35,000	64,500	.956	1.10	
August	839,900	36,800	21,200	27,090	.401	.46	
September	661,300	30,100	17,300	22,040	.327	.36	
Water year 1943-44	14,755,200	122,500	12,100	40,310	.597	8.13	
October, 1944	592,300	24,400	16,900	19,110	.283	.33	
November	592,900	25,300	16,900	19,760	.293	.33	
December	550,200	21,000	15,400	17,750	.263	.30	
Calendar year 1944	14,490,900	122,500	12,100	39,590	.587	7.98	
January, 1945	537,100	23,300	12,400	17,330	.257	.30	
February	444,500	18,000	14,300	15,880	.235	.24	
March	2,071,900	127,700	18,000	66,840	.990	1.14	
April	2,443,800	123,800	68,900	81,460	1.21	1.35	
May	1,719,900	76,400	28,300	55,190	.818	.94	
June	2,075,200	77,100	62,800	69,170	1.02	1.14	
July	1,311,200	70,900	16,500	42,300	.627	.72	
August	992,600	47,400	20,800	32,020	.474	.55	
September	828,600	41,100	17,400	27,620	.409	.46	
Water year 1944-45	14,151,200	127,700	12,400	38,770	.574	7.80	
October, 1945	728,500	36,700	18,000	23,500	.348	.40	
November	736,100	32,300	18,600	24,540	.364	.41	
December	676,300	30,900	13,500	21,820	.323	.37	
Calendar year 1945	14,556,700	127,700	12,400	39,880	.591	8.02	
January, 1946	736,600	42,600	15,400	23,760	.352	.41	
February	578,100	34,100	15,900	20,650	.306	.32	
March	2,124,900	101,200	20,900	68,550	1.02	1.17	
April	1,788,100	93,200	34,100	59,600	.883	.99	
May	795,200	34,400	17,100	25,650	.380	.44	
June	1,413,000	70,000	30,600	47,100	.698	.78	
July	1,655,000	86,900	19,200	53,390	.791	.91	
August	510,400	22,700	12,500	16,460	.244	.28	
September	713,000	45,100	12,700	23,770	.352	.39	
Water year 1945-46	12,455,200	101,200	12,500	34,120	.505	6.87	

Mississippi River at McGregor, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October, 1946.....	960,800	38,600	19,400	30,990	0.459	0.53
November.....	1,166,200	45,900	19,600	38,870	.576	.64
December.....	682,500	32,900	14,600	22,020	.326	.38
Calendar year 1946.....	13,123,800	101,200	12,500	35,960	.533	7.24
January 1947.....	648,100	26,200	17,800	20,910	.310	.36
February.....	529,400	22,300	16,700	18,910	.280	.29
March.....	859,000	47,800	16,600	27,710	.411	.47
April.....	2,127,200	85,500	37,200	70,910	1.05	1.17
May.....	2,293,200	83,800	56,200	73,970	1.10	1.26
June.....	1,572,500	58,000	43,300	52,420	.777	.87
July.....	1,171,700	59,100	13,900	37,800	.560	.65
August.....	548,800	26,800	11,700	17,700	.262	.30
September.....	539,000	24,400	13,000	18,000	.267	.30
Water year 1946-47.....	13,098,400	85,500	11,700	35,890	.532	7.22
October 1947.....	514,000	26,500	12,000	16,580	.246	.28
November.....	560,000	20,800	17,000	18,670	.277	.31
December.....	521,200	18,500	15,000	16,810	.249	.29
Calendar year 1947.....	11,884,100	85,500	11,700	32,560	.482	6.55
January 1948.....	450,400	16,400	12,500	14,530	.215	.25
February.....	477,000	42,000	12,300	16,450	.244	.26
March.....	1,426,200	75,500	24,800	46,010	.682	.79
April.....	2,223,900	84,000	61,000	74,130	1.10	1.23
May.....	1,452,600	67,000	18,600	46,860	.694	.80
June.....	492,200	22,600	11,700	16,410	.243	.27
July.....	368,100	19,200	9,350	12,840	.190	.22
August.....	490,700	24,500	11,660	15,830	.235	.27
September.....	353,160	16,900	9,080	11,770	.174	.19
Water year 1947-48.....	9,359,460	84,000	9,080	25,570	.379	5.16
October 1948.....	334,120	14,200	8,760	10,780	.160	.18
November.....	395,890	15,400	9,890	13,200	.196	.22
December.....	374,540	14,000	9,790	12,080	.179	.21
Calendar year 1948.....	8,868,810	84,000	8,760	24,230	.359	4.89
January 1949.....	388,400	15,500	11,100	12,530	.186	.21
February.....	354,000	14,200	11,600	12,640	.187	.20
March.....	1,120,100	65,800	14,200	36,130	.535	.62
April.....	1,908,500	73,100	40,100	63,620	.943	1.05
May.....	950,700	48,500	13,800	30,670	.454	.52
June.....	512,200	24,100	13,200	17,070	.253	.28
July.....	773,600	36,700	15,700	24,940	.369	.43
August.....	523,000	32,300	11,700	16,870	.250	.29
September.....	373,930	16,700	8,910	12,460	.185	.21
Water year 1948-49.....	8,008,380	73,100	8,760	21,940	.325	4.42
October 1949.....	515,600	22,700	8,300	16,630	.246	.28
November.....	488,000	20,600	13,200	16,270	.241	.27
December.....	435,800	18,500	11,000	14,060	.208	.24
Calendar year 1949.....	8,343,230	73,100	8,300	22,860	.339	4.60
January 1950.....	415,300	14,800	11,300	13,400	.198	.23
February.....	395,100	15,200	13,200	14,110	.269	.22
March.....	1,161,300	90,600	13,200	37,460	.555	.64
April.....	2,518,300	112,900	73,900	83,940	1.24	1.39
May.....	3,088,000	123,300	77,900	99,610	1.48	1.70
June.....	1,576,500	75,500	23,400	52,550	.778	.87
July.....	818,100	36,800	18,500	26,390	.391	.45
August.....	568,900	34,000	11,500	18,350	.272	.31
September.....	430,200	18,800	11,200	14,340	.212	.24
Water year 1949-50.....	12,411,100	123,300	8,300	34,000	.504	6.84

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 of 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 mouth of Ohio River.

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

RECORDS AVAILABLE.—October 1932 to September 1950 (prior to October 1939, published as "at Le Claire") in reports of U. S. Geological Survey. June 1873 to December 1932 in report of Iowa State Planning Board (published as "at Le Claire").

GAGE.—Water-stage recorder. Datum of base gage is 568.16 feet above mean sea level, datum of 1929. June 1873 to June 2, 1934, stone well with inside staff gage, 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, known as Camanche gage, at datum 5.48 feet lower.

AVERAGE DISCHARGE.—11 years, 45,670 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum				Minimum Daily	
	Date	Daily Discharge (sec.-ft.)	Date	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	June 30	158,700	June 30	17.30	Dec. 14, 15	22,400
1943-44...	June 28	168,500	June 28	18.60	Feb. 1	16,200
1944-45...	Mar. 31	164,400	Mar. 31	17.69	Jan. 26	19,400
1945-46...	Mar. 28	144,800	Mar. 29	16.48	Sept. 4	19,900
1946-47...	June 15	125,500	June 16	15.18	Dec. 19	18,400
1947-48...	Mar. 21	108,300	Mar. 21	13.66	Sept. 12	12,800
1948-49...	Apr. 7	85,300	Apr. 7	11.08	Oct. 6	14,400
1949-50...	May 22	129,900	May 22	15.24	Feb. 16	13,400

1939-50: Maximum daily discharge, 169,600 second-feet June 13, 1942; maximum gage height, 18.60 feet June 28, 1944; minimum daily discharge, 12,000 second-feet Dec. 27-30, 1939; minimum gage height, -0.70 foot Dec. 30, 1939.

Flood of June 25, 1880, reached a stage of about 19.6 feet (21.4 feet at Camanche gage); discharge estimated, 243,000 second-feet (data from Corps of Engineers).

REMARKS.—Records good except those for periods of ice effect, which are fair. Stage-discharge relation affected by backwater from Wapsipinicon River and dam 14. Discharge computed by using fall as determined from auxiliary water-stage recorder as a factor. Flow regulated by reservoirs and navigation dams.

COOPERATION.—Services of observer and part of gage-height record furnished by Corps of Engineers.

Mississippi River at Clinton, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	122,600	40,500	31,400	33,800	34,000	34,100	82,900	78,600	54,700	157,500	32,100	35,800
2.....	123,000	40,500	26,600	33,400	34,200	34,400	86,200	74,300	70,200	153,500	31,500	36,300
3.....	118,900	40,500	25,600	32,400	34,300	36,200	88,700	73,000	82,200	148,300	30,800	36,000
4.....	112,300	40,900	26,900	31,300	29,700	37,700	91,700	68,700	85,500	144,100	35,500	35,400
5.....	101,100	40,600	27,200	30,900	25,800	38,200	93,600	65,100	79,000	141,100	43,900	35,700
6.....	92,000	44,000	26,400	30,500	25,200	37,300	95,300	62,000	78,500	145,000	43,800	36,300
7.....	87,700	45,600	25,200	30,100	25,200	37,300	100,200	62,500	86,700	148,700	45,200	37,100
8.....	82,800	47,100	24,400	29,300	25,200	37,700	108,200	62,300	98,100	153,100	41,300	37,700
9.....	78,800	48,000	24,100	30,400	25,100	38,000	115,900	61,100	111,100	156,000	41,200	37,900
10.....	77,500	52,500	23,800	32,700	25,200	38,300	122,500	59,000	121,100	155,800	41,000	36,500
11.....	76,000	56,300	23,100	32,900	25,600	38,300	130,200	58,500	130,300	152,100	42,100	34,500
12.....	73,900	55,100	22,500	33,300	26,000	37,900	139,800	57,100	138,500	146,100	41,600	34,400
13.....	73,600	52,900	22,500	34,200	26,400	36,700	143,900	57,700	142,900	138,400	53,000	35,400
14.....	72,800	51,900	22,400	35,300	27,800	37,200	150,300	57,000	142,600	129,600	81,600	39,000
15.....	71,400	50,600	22,400	35,600	30,300	42,900	151,700	54,900	140,100	119,300	81,000	38,300
16.....	70,400	49,900	22,600	35,700	29,200	73,000	153,800	55,100	136,200	107,000	64,300	38,700
17.....	64,600	49,200	22,800	35,600	26,700	91,000	153,800	58,400	132,100	95,800	52,100	38,000
18.....	52,300	49,300	23,100	35,200	27,800	75,500	152,500	60,500	128,000	85,500	49,100	35,900
19.....	46,900	48,200	24,300	35,500	30,900	55,400	151,700	61,000	122,600	85,600	45,400	33,000
20.....	41,700	47,200	24,600	35,900	33,200	53,400	148,400	58,200	118,600	80,500	39,600	32,600
21.....	33,300	45,700	25,100	35,400	35,500	55,100	142,900	54,500	115,500	74,500	37,200	30,800
22.....	30,500	45,000	26,300	35,700	37,000	56,600	136,600	54,300	114,800	68,400	37,800	28,800
23.....	31,700	43,400	27,800	35,900	40,000	58,300	129,400	54,100	117,900	64,100	38,100	28,200
24.....	33,000	42,900	29,200	36,000	41,700	57,900	111,900	53,900	123,800	54,800	41,500	27,200
25.....	34,500	40,200	29,200	35,900	39,800	54,700	110,100	54,800	131,400	47,200	45,200	24,900
26.....	35,700	37,400	32,000	36,000	36,900	57,000	96,900	55,100	139,200	47,000	49,700	24,700
27.....	36,400	36,600	40,500	36,100	35,400	62,900	95,200	55,700	146,600	46,100	49,700	24,700
28.....	36,700	34,100	40,400	36,000	34,100	65,200	91,300	56,400	152,800	44,300	41,000	26,400
29.....	37,400	33,800	36,800	35,500	.....	66,000	85,500	55,000	157,400	43,700	35,700	25,000
30.....	38,400	32,000	35,000	34,400	.....	71,400	84,200	53,600	158,700	43,700	34,300	23,300
31.....	39,400	.....	34,400	33,800	.....	79,300	.....	53,100	.....	37,100	32,700	.....
1943-44												
1.....	23,500	29,100	32,300	42,800	16,200	45,700	47,300	76,900	115,800	150,000	45,300	34,700
2.....	23,500	28,700	29,000	40,000	17,400	50,300	44,500	79,500	109,600	141,600	41,000	31,500
3.....	23,800	29,400	27,600	37,400	17,600	52,800	44,800	81,500	104,100	134,000	32,700	33,600
4.....	24,700	29,600	27,800	35,000	17,800	57,300	46,000	84,600	98,800	127,400	29,800	38,600
5.....	27,000	29,300	27,600	34,900	19,100	53,900	48,500	83,000	96,400	120,200	31,100	35,200
6.....	27,500	27,900	30,600	36,500	19,700	42,600	50,300	82,300	95,700	111,500	39,100	32,200
7.....	27,600	28,900	32,800	36,500	19,500	34,600	46,600	81,800	90,700	102,200	35,600	31,300
8.....	27,300	30,900	30,800	36,600	24,400	26,900	46,900	81,300	88,100	96,300	34,100	30,100
9.....	27,000	37,100	32,100	34,100	27,700	25,600	47,500	81,500	88,300	96,200	32,200	27,700
10.....	26,700	43,600	32,800	33,000	25,100	28,100	51,400	81,500	88,300	93,200	31,200	26,400
11.....	26,500	40,800	33,100	31,700	24,600	30,100	55,800	82,400	86,800	87,900	31,700	24,700
12.....	26,200	43,600	32,100	31,400	27,400	37,800	60,100	87,300	85,700	85,100	34,200	26,400
13.....	26,900	44,200	28,900	30,100	30,900	48,800	59,700	90,800	93,800	80,600	35,600	28,000
14.....	26,400	42,100	21,600	28,700	31,900	56,200	58,900	94,200	104,500	78,900	37,000	29,600
15.....	26,800	39,600	22,900	26,600	32,200	80,600	60,900	95,500	106,000	77,900	38,200	27,700
16.....	28,600	38,300	25,700	25,400	31,900	86,000	66,300	100,200	112,200	76,600	38,700	27,700
17.....	29,500	35,300	29,600	23,900	31,900	72,900	67,900	105,000	120,600	73,800	42,400	28,900
18.....	28,300	36,400	29,500	23,000	31,700	61,600	69,200	108,600	128,200	72,600	45,200	29,200
19.....	27,100	32,600	27,100	22,500	29,700	50,200	68,700	111,500	135,500	71,900	44,100	30,700
20.....	26,900	31,900	25,100	22,100	28,100	41,300	68,200	116,400	138,100	72,200	38,000	33,800
21.....	30,500	30,400	24,300	21,700	27,300	36,600	68,900	123,300	138,600	70,600	34,100	38,600
22.....	39,100	31,900	22,600	20,700	26,300	34,200	69,400	129,700	140,700	68,000	33,800	41,400
23.....	37,100	32,200	28,300	20,900	24,800	37,400	71,800	134,700	143,000	65,100	35,900	39,200
24.....	34,200	31,900	30,600	19,700	20,500	49,200	82,800	138,900	143,700	65,100	37,400	32,700
25.....	35,300	32,400	33,600	19,500	22,800	62,800	84,700	141,000	142,700	63,600	36,800	29,600
26.....	35,000	32,200	35,300	19,700	29,600	64,600	79,200	141,800	144,200	61,600	35,100	28,100
27.....	34,200	31,900	36,800	21,700	43,500	65,500	75,700	140,100	154,100	64,700	33,400	27,300
28.....	33,400	33,700	40,400	28,600	47,700	57,100	75,400	137,000	168,500	64,800	30,800	27,600
29.....	31,300	34,000	44,400	28,600	43,700	54,900	75,200	131,700	167,000	61,600	28,400	29,300
30.....	29,700	33,800	43,700	28,100	.....	54,900	75,200	125,700	158,800	56,500	28,700	29,700
31.....	28,700	.....	43,000	25,800	.....	49,000	.....	121,100	.....	48,500	30,900	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 2-31, 1942, Jan. 1 to Mar. 20, Dec. 13-29, 1943, Jan. 6 to Feb. 26, Mar. 6-11, 1944.

Mississippi River at Clinton, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	29,600	24,600	27,400	23,000	19,700	28,700	163,800	91,200	89,800	98,200	41,300	35,300
2.....	28,100	24,500	26,600	24,200	19,900	27,100	162,200	91,000	97,900	92,300	48,400	36,400
3.....	26,900	26,900	25,300	25,800	19,800	26,700	156,900	93,800	101,100	87,600	49,000	34,000
4.....	27,000	27,800	*24,600	25,800	19,800	28,500	153,900	96,200	105,400	84,300	48,600	35,900
5.....	27,800	25,400	24,400	26,500	20,100	28,500	153,700	96,500	106,600	81,700	42,200	44,700
6.....	29,500	24,500	24,300	29,600	20,100	27,900	149,800	93,900	106,500	77,300	42,600	49,200
7.....	32,300	24,200	24,600	30,000	20,000	28,900	144,600	94,000	106,200	74,200	51,400	50,700
8.....	32,800	24,400	25,700	30,500	20,000	28,400	137,300	90,700	105,800	70,700	55,500	51,100
9.....	31,700	25,600	26,600	31,000	19,700	27,400	128,700	87,300	105,600	67,700	51,100	50,600
10.....	29,600	26,600	26,300	31,200	20,400	26,200	120,400	83,200	106,700	66,400	39,000	47,800
11.....	28,200	26,900	26,500	30,400	20,900	27,500	110,000	78,700	112,600	63,700	34,000	35,800
12.....	28,000	26,800	25,100	26,700	20,900	29,900	103,000	79,300	112,400	59,300	35,200	31,700
13.....	27,400	26,700	22,900	25,400	21,000	30,500	99,100	72,800	111,000	58,500	40,400	32,400
14.....	26,300	26,500	23,800	22,900	21,100	37,000	96,200	78,200	108,400	58,900	61,800	33,900
15.....	26,300	26,400	22,800	21,400	21,200	46,000	94,500	80,200	104,300	59,000	73,000	35,700
16.....	26,000	26,500	21,100	20,500	21,700	57,500	93,900	69,000	101,600	58,700	65,600	31,700
17.....	25,600	27,900	20,800	23,100	*22,300	70,600	99,800	57,000	97,700	55,500	55,000	28,300
18.....	25,200	29,600	22,000	22,400	22,200	73,700	102,300	52,600	93,300	50,500	44,000	28,200
19.....	23,700	30,200	21,700	21,100	22,000	83,100	96,700	45,200	87,700	45,400	42,800	27,600
20.....	23,800	30,700	20,800	20,800	23,200	95,200	96,300	40,700	85,600	40,600	42,400	26,900
21.....	23,500	30,700	20,700	21,500	24,800	107,300	93,700	41,900	83,200	36,200	42,400	27,600
22.....	23,300	30,700	20,500	22,300	25,000	118,400	91,100	44,400	80,000	38,900	43,000	28,300
23.....	23,800	30,200	22,100	22,500	29,400	124,700	91,700	51,800	77,500	45,600	41,200	33,600
24.....	23,400	30,100	21,700	*21,800	29,500	128,900	92,000	59,600	77,000	48,600	39,500	37,800
25.....	23,500	29,700	21,900	19,600	28,600	132,900	93,300	69,200	80,400	45,300	35,500	40,100
26.....	23,500	28,300	22,200	19,400	31,600	136,200	95,500	75,100	80,700	36,600	34,000	30,600
27.....	23,600	27,300	23,200	20,900	34,300	*144,000	95,200	73,100	82,900	32,500	32,400	46,100
28.....	24,100	26,700	23,300	21,800	32,300	153,600	94,200	77,400	85,700	31,100	29,500	51,200
29.....	24,300	26,800	23,200	22,200	.....	159,900	94,900	88,900	96,500	30,700	30,900	49,500
30.....	24,600	27,400	23,100	21,700	.....	163,200	93,100	86,600	101,000	31,800	32,700	45,600
31.....	24,400	.....	22,600	19,500	.....	164,400	.....	88,100	.....	34,700	33,400	.....
1945-46												
1.....	46,100	25,800	31,400	36,800	25,400	27,300	133,400	41,800	48,300	71,200	28,100	20,200
2.....	50,400	27,400	33,200	36,000	27,500	32,700	129,000	41,800	48,300	71,800	27,700	21,400
3.....	45,700	32,600	35,500	35,000	24,400	37,300	121,900	39,700	47,900	76,600	27,900	20,600
4.....	41,600	33,200	41,400	32,600	*25,200	38,300	118,400	39,100	47,900	82,100	26,000	19,900
5.....	39,600	33,000	40,800	39,900	26,700	42,300	112,300	36,200	45,900	87,400	25,700	20,700
6.....	38,100	32,800	34,400	70,000	31,600	60,100	103,400	37,900	43,200	89,300	25,400	21,300
7.....	38,400	33,400	31,500	86,400	42,800	87,200	98,100	33,100	42,100	94,900	26,800	34,600
8.....	39,000	36,600	32,800	89,800	43,500	88,100	94,500	30,600	41,700	96,700	26,900	53,900
9.....	39,700	*39,400	33,700	88,700	42,800	79,300	91,510	28,800	41,600	97,700	28,700	60,900
10.....	36,300	47,400	29,800	82,400	45,200	76,500	85,600	29,000	41,200	98,300	28,300	62,400
11.....	30,800	45,600	27,300	73,500	46,000	77,200	83,600	28,500	40,600	98,900	23,600	59,800
12.....	30,700	43,100	22,700	67,600	45,000	77,000	82,900	32,000	41,500	97,100	23,500	52,000
13.....	30,300	48,500	23,000	55,800	37,700	90,800	80,200	32,600	46,200	93,000	22,600	40,300
14.....	30,100	48,100	23,400	53,300	33,200	98,700	75,800	32,600	51,000	89,600	22,300	36,600
15.....	30,100	44,700	23,400	48,600	31,500	98,500	75,800	32,900	54,600	85,900	22,100	29,500
16.....	29,900	43,700	21,200	45,000	31,200	97,700	75,100	31,200	59,200	81,300	21,700	31,000
17.....	29,400	43,800	21,100	42,300	26,100	98,100	71,400	29,900	64,300	77,300	24,200	31,200
18.....	29,800	45,500	23,700	39,800	25,900	103,500	72,200	27,200	71,700	70,700	35,000	30,900
19.....	30,700	49,800	24,700	36,400	*26,100	104,500	68,800	26,900	76,900	67,400	41,900	29,800
20.....	30,300	49,200	28,300	34,300	28,100	104,300	69,200	27,500	84,000	61,400	28,800	30,000
21.....	29,800	49,200	*32,400	34,600	27,000	107,600	64,700	27,600	86,100	55,000	26,900	30,200
22.....	29,000	49,700	32,300	33,000	29,100	112,400	63,800	27,200	86,400	51,200	23,200	30,200
23.....	28,700	43,600	33,000	32,800	28,600	117,200	62,800	26,900	81,900	43,700	22,300	37,300
24.....	28,100	38,900	31,300	30,600	32,000	124,700	60,500	25,400	77,500	39,100	21,200	41,400
25.....	27,600	35,700	32,300	27,800	29,100	132,400	56,400	32,500	74,900	32,900	20,900	36,500
26.....	27,700	31,100	37,100	25,500	28,000	*138,400	52,400	39,000	71,200	28,900	21,000	31,300
27.....	27,400	30,100	38,700	24,700	28,000	143,400	49,000	43,100	66,500	26,400	21,700	31,000
28.....	26,500	31,600	39,200	23,600	26,600	144,800	47,400	44,100	60,700	25,000	20,800	33,000
29.....	25,500	31,800	40,200	23,100	.....	144,400	44,300	44,500	54,900	24,700	21,100	33,500
30.....	26,200	32,100	40,000	22,500	.....	142,000	42,800	44,800	61,300	26,400	20,700	32,800
31.....	26,100	.....	38,400	25,500	.....	138,600	.....	47,400	.....	28,000	20,800	.....

*Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 12-31, 1944, Jan. 1 to Feb. 25, Nov. 22 to Dec. 31, 1945, Jan. 1 to Feb. 21, 1946.

Mississippi River at Clinton, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	33,100	48,200	32,100	38,000	30,200	27,000	52,800	99,900	89,900	91,200	32,800	30,300
2.....	32,600	49,500	33,000	36,300	29,100	26,700	41,300	101,700	87,700	88,400	29,300	29,500
3.....	30,100	55,300	29,500	35,600	29,800	20,000	50,800	101,900	96,500	84,100	29,400	27,800
4.....	27,100	54,100	28,800	36,000	29,500	24,400	52,000	103,200	89,100	79,600	29,200	28,200
5.....	27,700	52,300	27,700	33,500	28,000	23,600	60,600	102,900	86,500	80,700	28,900	36,700
6.....	27,900	50,900	32,800	31,500	27,400	* 23,000	83,000	101,900	89,500	87,800	26,400	37,000
7.....	28,000	51,800	36,400	30,700	26,000	24,100	79,100	99,400	84,500	82,500	24,700	33,500
8.....	29,000	55,400	36,800	29,700	24,600	23,100	78,700	99,600	79,400	74,900	24,700	31,500
9.....	30,200	55,400	40,900	27,900	25,500	23,700	80,700	99,200	72,400	67,900	25,400	30,200
10.....	34,700	55,600	40,800	28,700	24,500	23,000	93,700	98,500	70,100	62,800	24,800	26,800
11.....	37,200	55,100	38,400	29,800	25,400	21,800	104,500	99,400	69,000	56,800	24,000	22,900
12.....	39,600	54,900	35,900	29,600	24,800	21,800	107,400	99,600	65,000	52,300	23,800	23,800
13.....	42,300	55,300	33,700	27,600	24,400	23,700	108,900	99,600	75,500	59,500	21,900	26,800
14.....	43,600	55,400	35,200	30,000	27,200	30,200	109,100	99,200	112,700	67,200	23,800	30,200
15.....	41,900	56,900	32,600	34,400	30,600	42,000	111,200	96,300	125,500	66,600	27,700	30,100
16.....	40,500	60,900	*24,700	37,400	35,800	45,300	112,500	96,400	125,200	60,600	22,500	30,300
17.....	41,500	63,100	29,700	35,400	37,800	46,300	116,200	95,600	115,600	55,100	22,500	25,500
18.....	43,200	61,400	20,000	35,900	36,500	46,500	115,800	94,200	104,900	55,100	22,000	24,900
19.....	44,100	59,800	18,400	34,800	36,700	47,800	115,400	90,800	98,400	54,100	22,000	24,800
20.....	43,800	*55,800	19,700	*32,700	34,600	48,300	116,200	89,900	92,200	51,500	21,200	24,500
21.....	42,000	57,900	22,200	32,800	33,000	47,900	116,100	88,900	87,300	48,800	22,400	30,700
22.....	39,100	57,600	24,300	31,600	32,200	41,500	116,000	88,100	86,100	44,500	26,700	26,600
23.....	38,900	55,300	26,800	31,000	32,200	40,400	113,300	88,900	86,600	44,400	31,700	25,100
24.....	38,900	51,700	27,300	31,500	31,100	48,600	111,100	88,200	85,700	43,400	32,900	23,600
25.....	43,700	50,500	27,700	29,100	29,000	50,600	110,200	88,200	81,100	35,800	32,600	23,300
26.....	45,600	49,700	27,900	28,600	27,400	55,800	106,400	89,600	78,100	32,100	29,400	22,800
27.....	44,200	43,900	30,100	28,000	27,200	56,600	104,800	88,500	75,600	35,600	27,100	22,000
28.....	44,200	38,600	32,600	28,000	27,100	59,100	100,700	85,800	74,000	36,900	26,100	21,900
29.....	45,400	33,200	32,700	27,900	.....	61,000	98,200	87,500	73,700	46,500	26,500	21,800
30.....	47,400	29,700	33,000	29,100	.....	60,000	99,800	88,200	84,700	50,900	31,700	23,500
31.....	48,500	.....	35,500	30,400	.....	* 56,200	.....	86,500	.....	40,200	28,100	.....
1947-48												
1.....	23,900	24,000	22,100	22,000	18,700	81,600	102,900	72,300	29,300	24,100	18,800	18,000
2.....	25,800	23,800	22,800	24,900	19,000	75,000	103,400	72,100	29,300	23,600	18,000	18,200
3.....	26,800	23,800	24,000	24,600	18,300	70,600	101,400	72,100	27,200	21,600	17,400	19,300
4.....	29,100	*23,400	25,200	24,200	17,900	66,900	100,600	72,700	23,200	21,400	17,200	19,100
5.....	29,700	25,800	29,500	23,400	17,600	66,800	101,100	73,700	20,200	20,500	17,400	17,100
6.....	24,100	27,200	27,400	22,700	17,600	62,500	101,100	79,200	22,600	21,000	17,100	15,700
7.....	22,500	25,800	25,800	22,300	17,700	58,800	101,100	79,800	25,200	21,500	15,900	15,900
8.....	22,400	27,500	26,500	22,200	17,900	54,900	101,800	80,700	24,800	20,000	16,200	14,700
9.....	23,000	27,100	25,300	*22,000	17,900	46,500	100,000	80,400	24,400	19,500	16,600	14,200
10.....	22,500	27,100	27,000	21,500	*18,100	38,200	96,100	84,200	23,900	19,100	18,000	13,600
11.....	22,200	27,200	27,600	22,500	18,100	39,600	96,800	83,100	23,100	19,200	18,800	13,000
12.....	22,300	26,400	28,300	20,600	18,200	45,000	96,800	87,900	22,500	18,100	20,400	12,800
13.....	22,200	25,500	27,900	22,100	18,100	42,900	95,300	82,000	22,700	18,400	24,000	13,700
14.....	22,200	23,500	27,700	24,600	18,200	39,800	94,500	77,500	22,500	21,300	24,900	15,800
15.....	22,400	22,800	26,800	23,700	18,300	43,400	91,300	76,400	20,800	18,000	25,100	15,100
16.....	22,400	27,000	24,500	23,200	18,900	54,600	83,100	78,400	20,500	20,900	22,500	15,300
17.....	23,200	28,500	24,600	22,900	21,700	67,900	89,900	76,400	19,900	20,200	21,800	15,700
18.....	23,100	27,800	25,000	22,800	29,400	80,100	88,100	69,400	20,400	20,500	20,900	15,000
19.....	23,100	28,100	25,800	22,500	33,800	93,200	86,100	64,100	20,200	20,700	21,300	15,400
20.....	22,900	28,100	25,400	21,100	36,200	107,600	86,500	58,500	19,300	18,100	18,700	17,000
21.....	22,600	28,000	24,500	20,600	34,000	108,300	84,700	58,900	18,700	16,300	18,000	20,700
22.....	22,200	28,100	23,400	20,500	30,200	94,400	83,200	55,000	19,000	16,600	17,700	20,200
23.....	20,900	27,300	22,700	20,400	28,900	86,100	83,300	46,900	20,700	16,400	17,900	19,300
24.....	21,300	26,000	23,200	20,600	27,900	* 853,000	82,100	41,400	25,900	16,600	17,500	17,200
25.....	21,000	25,900	23,300	19,500	28,100	84,400	81,300	41,600	24,900	18,000	17,000	16,900
26.....	21,200	25,000	23,300	19,400	30,500	84,800	78,300	43,800	24,000	17,100	16,600	16,300
27.....	22,400	25,500	23,400	19,500	35,400	92,000	76,700	39,000	24,400	16,800	16,700	16,300
28.....	27,100	26,000	23,100	19,500	58,600	98,200	76,100	33,100	25,800	16,000	16,000	15,500
29.....	34,400	24,000	23,100	19,500	77,400	101,800	75,200	26,000	33,000	16,200	14,800	15,900
30.....	32,300	22,200	23,100	19,400	.....	98,700	72,300	23,500	27,800	16,700	13,400	16,100
31.....	27,100	.....	23,800	18,900	.....	101,400	.....	26,800	.....	17,300	20,600	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 23 to Dec. 31, 1946, Jan. 1 to March 12, Nov. 29 to Dec. 31, 1947, Jan. 1 to Mar. 2, 1948.

Mississippi River at Clinton, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	15,500	16,100	21,700	18,700	18,500	33,900	77,000	49,300	22,400	27,700	37,400	18,600
2.....	15,800	16,400	20,400	18,800	17,800	31,500	79,000	44,800	22,400	31,200	33,600	17,200
3.....	15,800	16,600	20,000	17,900	17,500	30,800	81,600	42,800	22,600	25,200	33,200	17,100
4.....	15,800	17,100	19,600	19,600	17,500	29,900	82,100	41,900	23,700	23,800	32,400	17,200
5.....	14,600	18,700	22,200	28,500	17,200	42,000	84,000	40,300	23,800	24,200	29,200	16,500
6.....	14,400	20,200	20,000	31,700	17,500	58,000	84,400	36,800	22,400	25,000	26,000	16,600
7.....	15,800	19,000	19,100	27,400	17,700	68,000	85,300	40,500	20,200	29,200	24,800	17,000
8.....	16,900	19,300	18,900	24,500	17,800	73,100	84,400	41,700	18,700	27,800	24,600	18,400
9.....	18,800	20,400	18,600	26,300	17,800	75,200	83,500	41,300	17,800	35,600	24,600	17,500
10.....	18,400	20,800	18,900	24,400	18,000	73,600	83,500	41,700	18,300	38,400	23,400	18,100
11.....	17,500	19,000	17,200	21,200	18,300	72,100	83,400	41,900	18,300	35,500	27,300	18,600
12.....	17,500	17,700	16,200	20,400	19,000	61,500	83,000	48,000	18,400	38,000	31,600	20,000
13.....	16,600	18,100	15,100	20,600	19,200	50,700	82,800	53,300	18,500	36,600	22,600	21,400
14.....	16,600	18,700	14,800	19,400	19,500	46,800	83,500	54,400	26,600	35,400	21,800	21,900
15.....	17,100	18,400	16,300	19,700	19,800	41,600	83,600	55,600	30,800	34,700	21,200	21,600
16.....	16,900	19,600	19,400	29,000	19,800	34,400	83,500	55,900	26,000	34,200	19,300	20,600
17.....	16,600	19,500	20,500	29,500	19,700	28,800	83,900	56,500	21,800	33,000	18,300	20,400
18.....	17,100	19,100	16,400	25,700	19,700	29,400	81,500	55,100	19,600	27,400	18,600	18,400
19.....	17,200	19,200	17,300	24,800	20,800	31,400	78,900	50,200	19,400	23,000	18,700	18,800
20.....	17,400	20,900	18,400	23,000	22,700	31,700	75,400	40,000	19,200	21,900	20,600	17,700
21.....	17,600	23,200	18,700	22,500	23,000	33,200	73,900	33,100	19,800	23,600	22,000	16,700
22.....	17,100	23,200	17,700	21,800	22,000	37,200	73,300	34,300	21,800	28,600	21,200	16,600
23.....	16,000	22,600	16,300	21,000	21,200	42,000	73,100	36,700	22,800	30,400	20,800	16,600
24.....	15,300	20,400	16,000	20,500	28,200	45,000	67,500	30,000	27,200	25,800	20,600	16,100
25.....	15,500	19,300	16,000	20,000	41,200	51,800	62,100	25,700	38,400	24,800	20,200	15,900
26.....	14,800	18,900	16,000	20,000	47,500	53,300	61,700	20,400	38,200	23,000	19,500	15,800
27.....	14,600	18,900	16,000	19,800	43,400	56,400	61,100	20,200	29,600	23,700	18,600	15,900
28.....	14,600	18,300	16,400	19,600	37,800	62,800	56,000	21,200	30,600	26,400	18,400	15,000
29.....	15,100	18,400	16,700	19,500	.....	69,300	54,600	21,100	32,400	29,300	18,400	15,000
30.....	15,300	21,500	18,000	19,300	.....	72,500	52,300	21,400	31,400	38,800	18,400	15,300
31.....	15,300	.....	18,100	19,200	.....	74,000	.....	20,900	.....	40,000	19,000	.....
1949-50												
1.....	16,000	19,800	17,900	22,800	19,600	23,000	108,600	127,300	90,500	34,700	55,400	23,900
2.....	15,700	18,300	18,800	23,100	18,700	22,000	109,400	127,100	94,700	36,400	57,800	23,700
3.....	15,400	19,600	19,300	21,800	19,200	22,000	106,900	125,100	95,500	36,500	46,200	22,300
4.....	15,200	19,500	23,900	19,200	18,000	22,500	102,000	124,700	88,500	34,800	36,700	19,700
5.....	15,800	20,000	25,300	18,000	18,200	28,400	100,400	120,500	83,400	34,600	26,700	18,600
6.....	17,100	19,900	23,600	20,500	18,200	42,000	97,300	124,000	80,500	32,500	25,700	17,000
7.....	17,800	20,200	22,900	20,800	18,800	66,200	94,400	118,400	77,000	29,400	25,700	17,300
8.....	18,600	19,300	21,700	22,000	21,500	87,500	91,300	126,100	72,700	25,000	25,500	17,500
9.....	19,900	18,300	16,500	21,700	23,800	77,600	87,200	106,200	70,100	23,900	25,800	17,600
10.....	21,700	17,500	14,000	21,200	25,600	75,800	89,000	106,000	70,900	24,100	26,200	18,500
11.....	19,200	17,400	13,800	20,900	23,500	68,600	91,300	105,000	72,200	24,200	27,400	18,400
12.....	20,700	18,900	15,500	19,900	21,500	65,900	91,600	103,500	69,700	25,100	29,600	19,400
13.....	21,000	20,100	18,500	21,300	21,000	68,100	85,800	103,600	70,600	27,600	29,900	20,400
14.....	20,200	20,800	20,800	24,000	20,400	70,300	84,000	104,300	82,700	29,800	30,000	20,400
15.....	21,100	20,600	20,500	24,800	15,800	69,900	83,000	108,200	78,400	29,400	30,100	20,200
16.....	22,500	20,600	17,500	24,700	13,400	64,000	84,000	114,400	85,500	37,900	25,600	20,200
17.....	23,400	26,600	15,800	24,700	14,400	50,500	86,000	118,200	85,000	71,100	22,800	20,000
18.....	23,600	21,100	15,800	23,000	17,400	37,900	87,200	122,000	87,000	75,200	21,800	18,800
19.....	24,100	22,700	17,900	22,000	18,300	32,000	89,000	124,800	94,200	76,000	21,200	18,400
20.....	24,400	23,200	21,100	21,000	18,500	32,500	91,700	127,100	91,300	73,500	20,600	18,400
21.....	25,200	23,200	22,200	20,000	18,500	28,700	90,700	129,000	81,600	61,500	20,400	39,500
22.....	25,700	22,600	22,700	19,000	19,800	30,600	89,500	129,900	72,700	50,000	18,700	46,500
23.....	24,800	19,800	21,600	19,200	20,500	36,400	90,100	128,200	58,400	48,500	18,200	29,600
24.....	23,800	20,800	21,700	19,500	20,500	47,300	96,400	125,100	47,900	40,700	18,400	25,200
25.....	23,300	21,000	22,000	25,400	20,200	48,200	107,000	120,200	50,900	36,300	18,300	24,000
26.....	20,700	20,600	20,500	37,100	20,200	49,400	112,800	121,500	53,300	36,100	19,600	22,100
27.....	19,800	20,400	19,800	33,300	20,200	73,000	115,900	120,100	44,200	37,800	21,500	21,200
28.....	19,000	20,400	19,500	20,500	20,200	63,200	120,400	112,800	38,500	38,600	23,200	20,100
29.....	20,500	18,700	19,500	19,600	.....	101,600	126,800	102,700	33,500	37,900	23,200	20,700
30.....	19,800	18,900	19,600	19,400	.....	100,700	123,100	98,600	33,600	36,500	24,800	20,700
31.....	19,800	.....	20,400	19,400	.....	103,500	.....	94,600	.....	44,100	24,400	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 23-27, 1948, Jan. 19 to Feb. 22, Dec. 9-18, 24-30, 1949, Jan. 4-10, 14-24, Jan. 28 to Feb. 8, Feb. 15 to Mar. 4, 1950.

Mississippi River at Clinton, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1942.....	2,027,300	123,000	30,500	65,400	0.764	0.88
November.....	1,342,900	56,300	32,000	44,760	.523	.58
December.....	849,000	40,500	22,400	27,390	.320	.37
Calendar year 1942.....	19,355,700	169,600	18,800	53,030	.620	8.41
January 1943.....	1,054,600	36,100	29,300	34,020	.397	.46
February.....	868,200	41,700	25,100	31,010	.362	.38
March.....	1,594,900	91,000	34,100	51,450	.601	.69
April.....	3,545,300	153,800	82,900	118,180	1.38	1.54
May.....	1,845,300	78,600	53,100	59,530	.695	.80
June.....	3,557,100	158,700	54,700	118,570	1.39	1.55
July.....	3,213,900	157,500	37,100	103,670	1.21	1.40
August.....	1,382,100	81,800	30,800	44,550	.521	.60
September.....	988,500	39,000	23,300	32,950	.385	.43
Water year 1942-43.....	22,269,100	158,700	22,400	61,010	.713	9.68
October 1943.....	900,400	39,100	23,500	29,050	.339	.39
November.....	1,023,700	44,230	27,900	34,120	.399	.44
December.....	962,300	44,400	21,600	31,040	.363	.42
Calendar year 1943.....	20,936,300	158,700	21,600	57,360	.670	9.10
January 1944.....	886,300	42,800	19,500	28,590	.334	.39
February.....	790,000	47,700	16,200	27,240	.318	.34
March.....	1,548,600	86,900	25,600	49,950	.584	.67
April.....	1,867,900	84,700	44,800	62,260	.727	.81
May.....	3,270,800	141,800	76,900	105,560	1.23	1.42
June.....	3,588,500	168,500	85,700	119,600	1.40	1.56
July.....	2,640,000	150,000	48,500	85,170	.995	1.15
August.....	1,102,500	45,300	28,400	35,560	.415	.48
September.....	930,900	41,400	24,700	31,030	.362	.40
Water year 1943-44.....	19,512,100	168,500	16,200	53,310	.623	8.47
October 1944.....	817,800	32,800	23,300	26,380	.308	.36
November.....	820,600	30,700	24,200	27,350	.320	.36
December.....	727,800	27,400	20,500	23,480	.274	.32
Calendar year 1944.....	18,991,900	168,500	16,200	51,890	.606	8.26
January 1945.....	745,500	31,200	19,400	24,050	.281	.32
February.....	654,500	34,300	19,700	23,380	.273	.28
March.....	2,362,800	164,400	26,200	76,220	.890	1.03
April.....	3,397,800	163,800	91,100	113,300	1.32	1.48
May.....	2,327,600	96,500	40,700	75,080	.877	1.01
June.....	2,891,100	112,600	77,000	96,370	1.13	1.25
July.....	1,762,500	98,200	30,700	56,850	.664	.77
August.....	1,357,800	73,000	29,500	43,800	.512	.59
September.....	1,147,300	51,200	26,900	38,240	.447	.50
Water year 1944-45.....	19,013,100	164,400	19,400	52,090	.609	8.28
October 1945.....	1,019,600	50,400	25,500	32,890	.384	.44
November.....	1,177,700	49,800	25,800	39,260	.459	.51
December.....	981,400	41,400	21,100	31,660	.370	.43
Calendar year 1945.....	19,825,600	164,400	19,400	54,320	.635	8.62
January 1946.....	1,402,900	89,800	22,500	45,250	.529	.61
February.....	894,300	46,000	24,400	31,940	.373	.39
March.....	2,965,300	144,800	27,300	95,650	1.12	1.29
April.....	2,387,200	133,400	42,800	79,570	.930	1.04
May.....	1,061,800	47,400	26,900	34,250	.400	.46
June.....	1,759,500	86,400	40,600	58,650	.685	.76
July.....	2,069,900	98,900	24,700	66,770	.780	.90
August.....	777,800	41,900	20,700	25,090	.293	.34
September.....	1,037,900	62,400	19,900	34,600	.404	.45
Water year 1945-46.....	17,535,300	144,800	19,900	48,040	.561	7.62

Mississippi River at Clinton, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1946	1,196,000	48,500	27,100	38,580	0.451	0.52
November	1,578,200	63,100	29,700	52,610	.615	.69
December	939,300	40,800	18,400	30,300	.354	.41
Calendar year 1946	18,070,100	144,800	18,400	49,510	.578	7.86
January 1947	979,800	38,000	26,600	31,610	.369	.43
February	827,600	37,800	24,400	29,560	.345	.36
March	1,202,000	61,000	21,800	38,770	.453	.52
April	2,874,500	116,200	50,800	95,820	1.12	1.25
May	2,937,600	103,200	85,800	94,760	1.11	1.28
June	2,652,500	125,500	65,000	88,420	1.03	1.15
July	1,837,800	91,200	32,100	59,280	.693	.80
August	822,200	32,900	21,200	26,520	.310	.36
September	816,900	37,000	21,800	27,230	.318	.35
Water year 1946-47	18,664,400	125,500	18,400	51,140	.597	8.12
October 1947	748,300	34,400	20,000	24,140	.282	.33
November	778,400	28,500	22,200	25,950	.303	.34
December	776,100	29,500	22,100	25,040	.293	.34
Calendar year 1947	17,253,700	125,500	20,900	47,270	.552	7.51
January 1948	673,600	24,900	18,900	21,730	.254	.29
February	762,600	77,400	17,600	28,300	.307	.33
March	2,271,300	108,300	38,200	73,270	.856	.99
April	2,721,100	103,400	72,300	90,700	1.06	1.18
May	1,966,900	93,100	23,500	63,450	.741	.85
June	706,200	33,000	18,700	23,540	.275	.31
July	591,700	24,100	16,000	19,090	.223	.26
August	577,200	25,100	13,400	18,620	.218	.25
September	489,000	20,700	12,800	16,300	.190	.21
Water year 1947-48	13,062,400	108,300	12,800	35,690	.417	5.68
October 1948	503,500	18,800	14,400	16,240	.190	.22
November	579,500	23,200	16,100	19,320	.226	.25
December	556,900	22,200	14,800	17,960	.210	.24
Calendar year 1948	12,399,500	108,300	12,800	33,880	.396	5.38
January 1949	694,300	31,700	17,900	22,400	.262	.30
February	640,100	47,500	17,200	22,860	.267	.28
March	1,541,900	75,200	28,800	49,740	.581	.67
April	2,279,900	85,300	52,300	76,000	.888	.99
May	1,217,000	56,500	20,200	39,260	.459	.53
June	722,900	38,400	17,500	24,100	.282	.31
July	928,200	40,000	21,900	29,940	.350	.40
August	726,300	37,400	18,300	23,430	.274	.32
September	532,500	21,900	15,000	17,750	.207	.23
Water year 1948-49	10,923,000	85,300	14,400	29,930	.350	4.74
October 1949	635,800	25,700	15,200	20,510	.240	.28
November	605,100	23,200	17,400	20,170	.236	.26
December	610,700	25,300	13,800	19,700	.230	.27
Calendar year 1949	11,134,700	85,300	13,800	30,510	.356	4.84
January 1950	689,800	37,100	18,000	22,250	.260	.30
February	544,900	25,600	13,400	19,460	.227	.24
March	1,739,300	103,500	22,000	56,110	.655	.76
April	2,932,800	126,800	83,000	97,760	1.14	1.27
May	3,619,200	129,900	94,600	116,700	1.36	1.57
June	2,156,500	95,800	33,500	71,880	.840	.94
July	1,249,700	76,000	23,900	40,310	.471	.54
August	841,400	57,800	18,200	27,140	.317	.37
September	660,300	46,500	17,000	22,010	.257	.29
Water year 1949-50	16,285,500	129,900	13,400	44,620	.521	7.09

Mississippi River at Keokuk, Iowa

LOCATION.—Lat. 40°23'35", long. 91°22'25", near right bank 100 feet downstream from U.S.E.D. 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 mouth of Ohio River.

DRAINAGE AREA.—119,000 square miles.

RECORDS AVAILABLE.—October 1932 to September 1950 in reports of U. S. Geological Survey. January 1878 to December 1932 in report of Iowa State Planning Board. May 1913 to September 1937 adjusted for change in contents in Keokuk Reservoir, those after September 1937 unadjusted. Prior to 1913 at site 8 miles upstream.

GAGE.—Water-stage recorder. Datum of gage is 477.41 feet above mean sea level, datum of 1929 (levels by Corps of Engineers); 477.83 feet above mean sea level, adjustment of 1912; 477.34 feet above mean gulf level; and 484.65 feet above Memphis datum. Jan. 1, 1878, to May 1913, staff gage at Nashville (now called Galland) eight miles upstream at datum of the low-water mark of 1864.

AVERAGE DISCHARGE.—72 years (1878-1950), 61,150 second-feet.

EXTREMES.—Maximum and minimum discharge for water years 1943-50 are contained in the following table:

Water Year	Maximum Daily		Minimum Daily	
	Date	Discharge (sec.-ft.)	Date	Discharge (sec.-ft.)
1942-43.....	Apr. 18	174,000	Sept. 26	27,500
1943-44.....	May 27	254,500	Jan. 23	23,400
1944-45.....	Mar. 26	203,300	Feb. 4	17,000
1945-46.....	Jan. 11	223,300	Sept. 1	19,900
1946-47.....	June 21	245,700	Sept. 28	21,700
1947-48.....	Mar. 23	233,600	Sept. 12	11,200
1948-49.....	Mar. 12	150,700	Sept. 25	14,200
1949-50.....	Apr. 25, 26	175,900	Oct. 2	12,800

1878-1950: Maximum discharge, 314,000 second-feet May 16, 1888 (gage height, 19.6 feet); minimum daily, 5,000 second-feet Dec. 27, 1933.

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 of daily discharge furnished by Union Electric Power Co., and measurements of total river flow made periodically by Corps of Engineers, and the Geological Survey to check plant ratings.

Mississippi River at Keokuk, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	120,500	45,200	45,100	80,800	45,500	81,500	111,900	137,600	74,600	161,400	54,800	49,000
2.....	126,900	49,800	41,000	71,900	44,400	62,800	117,600	131,300	76,700	163,200	43,400	49,100
3.....	130,600	51,900	35,500	68,400	44,600	53,500	122,000	123,800	85,500	165,100	61,300	51,400
4.....	133,100	50,600	32,200	54,100	48,900	58,700	127,600	113,200	106,000	166,600	88,300	49,200
5.....	130,900	51,600	29,900	48,700	54,200	58,700	130,400	99,900	117,600	165,600	85,500	48,100
6.....	124,800	52,400	28,100	46,200	62,900	57,300	128,400	93,800	128,000	161,000	88,700	47,000
7.....	116,700	52,900	29,300	49,400	64,600	50,800	129,700	87,500	132,200	159,200	91,300	50,700
8.....	107,300	54,900	30,600	49,300	64,800	54,100	130,500	88,500	131,400	156,400	87,100	47,700
9.....	103,400	59,200	31,000	48,400	64,800	56,100	132,700	86,300	131,000	156,100	73,700	49,000
10.....	95,800	59,500	30,400	48,700	*64,100	56,900	143,600	86,500	135,500	158,700	67,100	50,600
11.....	93,700	60,900	32,000	48,400	63,200	56,900	145,700	86,400	143,100	161,300	63,100	49,900
12.....	89,800	67,500	30,200	48,200	66,200	56,800	151,300	82,600	145,100	162,200	59,600	46,800
13.....	87,300	72,100	27,600	46,700	62,000	63,100	156,500	80,500	157,500	162,100	66,300	46,900
14.....	84,400	69,200	29,900	43,600	60,500	69,000	159,000	78,700	163,500	159,500	73,000	50,000
15.....	81,600	65,000	31,100	41,800	57,300	78,400	163,600	77,900	166,500	152,800	95,700	51,200
16.....	81,300	64,500	31,000	43,200	51,700	77,400	169,600	98,600	171,100	145,500	106,500	53,200
17.....	77,000	66,800	31,400	43,500	51,700	91,600	171,400	113,300	171,600	140,500	97,700	52,700
18.....	73,600	65,700	31,800	44,100	51,300	120,500	174,000	115,500	169,600	129,500	77,000	50,900
19.....	63,800	62,000	31,100	42,500	51,100	128,900	172,300	118,800	165,100	119,500	67,300	47,100
20.....	55,700	61,400	29,300	44,700	49,900	129,700	171,800	127,500	159,900	109,500	63,200	46,600
21.....	52,000	67,400	31,800	44,100	48,600	123,800	169,400	129,000	154,000	101,500	57,700	41,900
22.....	45,500	59,900	31,800	43,500	52,700	117,300	167,300	123,500	153,500	94,800	52,300	40,600
23.....	42,400	59,400	32,300	45,100	58,400	114,500	165,800	115,200	156,700	84,800	49,400	38,300
24.....	39,300	57,600	35,000	43,100	60,200	110,600	158,000	109,000	150,200	75,300	50,400	35,000
25.....	37,200	56,700	32,000	44,500	67,900	113,100	156,200	99,000	143,800	71,500	53,200	31,300
26.....	39,100	53,000	33,600	46,100	72,600	112,700	149,000	92,100	148,000	59,100	56,400	27,500
27.....	38,800	51,100	57,000	40,800	69,500	108,700	152,900	85,900	145,700	60,900	61,100	31,000
28.....	40,300	47,800	92,200	45,100	85,800	108,300	153,300	83,400	151,800	59,000	62,900	33,100
29.....	40,700	45,500	98,100	45,700	.....	107,500	145,900	81,500	154,800	58,400	56,700	31,300
30.....	41,100	47,400	96,800	44,300	.....	107,700	146,700	80,600	157,700	55,300	49,900	27,800
31.....	42,000	.....	88,700	43,600	.....	111,500	.....	76,200	.....	55,200	49,100	.....
1943-44												
1.....	27,600	37,300	39,000	37,900	30,500	76,900	79,400	123,000	203,800	213,900	59,100	38,700
2.....	28,900	36,000	38,900	36,200	31,000	73,000	70,500	121,400	191,800	204,100	53,800	39,100
3.....	28,300	35,100	36,700	39,900	33,900	77,200	66,100	118,000	179,600	192,700	50,900	39,900
4.....	28,800	34,100	33,900	39,900	32,400	82,100	64,400	127,000	165,200	179,100	46,800	42,700
5.....	29,800	34,000	31,900	39,800	28,600	79,800	64,700	122,400	153,300	167,900	43,200	43,500
6.....	30,300	34,400	34,100	39,200	26,000	81,100	66,000	125,700	141,900	158,700	38,500	43,500
7.....	32,100	38,600	34,900	39,600	32,900	69,700	69,900	123,400	130,400	150,600	42,400	42,300
8.....	32,200	44,500	36,700	39,500	33,800	51,200	66,400	128,300	127,200	140,500	50,100	39,700
9.....	32,300	46,000	38,200	38,200	34,300	49,800	64,500	126,900	123,200	131,600	47,200	34,800
10.....	29,500	50,100	38,800	40,400	34,900	45,300	67,800	126,500	121,300	123,200	44,000	29,900
11.....	30,400	52,300	40,500	40,100	35,400	50,500	88,500	127,100	122,600	117,700	42,500	31,600
12.....	30,500	52,900	39,300	38,200	29,900	51,700	88,300	126,000	123,700	115,400	39,400	30,400
13.....	30,500	52,400	39,600	36,800	26,100	55,100	89,000	129,100	123,500	107,900	37,700	30,400
14.....	30,000	55,100	37,000	35,900	32,700	66,400	90,000	128,900	122,500	100,900	41,800	31,800
15.....	31,500	53,900	33,400	35,300	34,100	138,900	96,700	129,000	128,900	95,900	44,000	34,300
16.....	30,500	47,500	33,500	32,300	33,900	144,600	100,200	130,200	141,400	92,600	57,900	33,800
17.....	31,900	44,900	32,800	34,500	34,100	150,200	105,800	129,000	151,300	90,000	56,100	33,600
18.....	34,900	42,700	31,300	33,300	35,500	157,200	109,800	131,700	162,400	88,900	52,600	36,200
19.....	36,700	41,400	29,700	32,000	34,500	151,100	107,500	137,000	177,100	82,900	52,600	35,900
20.....	33,900	40,300	31,400	31,000	32,800	136,800	108,300	140,000	188,400	82,700	52,400	37,900
21.....	34,900	38,000	30,600	29,100	34,800	120,100	106,700	146,800	197,900	81,300	50,200	45,500
22.....	41,100	38,500	30,800	27,300	35,800	101,400	119,500	163,000	206,100	81,200	45,300	46,700
23.....	45,500	37,800	31,500	23,400	40,100	86,300	149,400	181,400	206,400	81,200	41,200	48,800
24.....	49,400	38,800	34,600	26,600	45,800	77,300	156,000	197,100	200,300	82,600	41,500	52,200
25.....	43,500	38,200	39,600	27,100	53,000	88,300	160,200	215,500	195,800	72,700	41,000	42,600
26.....	43,000	39,000	38,300	28,100	53,800	95,500	167,000	242,600	200,000	73,700	42,000	38,700
27.....	43,700	37,100	38,500	27,900	66,900	96,600	164,200	254,500	201,800	71,300	44,500	34,300
28.....	42,600	35,500	42,000	27,900	79,400	96,000	144,700	249,700	202,500	68,200	41,100	32,800
29.....	40,700	40,100	43,400	26,900	82,800	88,000	129,400	239,800	212,600	73,300	40,300	34,100
30.....	38,100	40,600	48,000	28,800	.....	76,700	125,000	229,700	221,000	71,500	38,500	34,400
31.....	36,360	.....	44,400	33,800	.....	83,000	.....	216,300	.....	68,900	37,300	.....

* Winter discharge measurement made on this date.

Mississippi River at Keokuk, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1	33,500	28,700	31,600	25,300	26,800	52,500	200,400	123,100	124,000	120,000	42,800	39,100
2	35,300	28,900	29,600	30,500	27,200	54,200	202,200	123,500	130,400	126,900	45,300	41,300
3	45,000	30,300	28,300	31,400	23,900	55,300	197,200	123,600	134,300	127,200	52,700	42,100
4	40,900	42,600	29,500	33,100	17,000	50,000	191,800	116,300	141,000	121,000	52,600	44,300
5	37,300	40,600	30,000	33,100	26,700	56,700	189,000	117,700	147,000	115,100	52,200	47,200
6	39,400	37,600	30,500	32,400	26,800	58,400	183,400	117,600	151,200	104,300	51,400	52,300
7	40,100	35,000	31,600	27,800	27,100	55,500	186,300	124,400	151,400	100,200	53,600	55,000
8	38,200	35,800	31,200	36,100	27,200	52,900	182,700	128,500	147,000	93,900	56,100	56,700
9	39,000	35,900	31,200	38,100	27,000	52,400	177,000	125,700	154,100	89,000	59,200	56,700
10	39,800	36,100	31,700	38,700	25,400	52,900	172,700	122,600	153,000	82,900	56,400	56,400
11	37,800	36,000	34,400	37,200	18,700	51,600	164,400	112,700	151,800	81,100	51,600	55,600
12	36,400	33,200	30,600	36,200	27,900	51,000	156,400	107,600	150,800	76,300	48,600	47,700
13	33,200	35,300	26,800	33,000	28,200	53,300	153,600	98,300	154,100	74,300	50,800	42,500
14	30,300	35,600	27,400	22,200	30,700	57,900	144,300	108,500	156,300	70,500	54,600	41,200
15	27,500	35,500	28,500	28,600	37,300	58,800	131,800	136,100	160,200	70,100	72,900	40,700
16	30,800	35,800	28,000	27,700	41,000	62,300	129,600	144,300	188,800	67,500	87,100	41,400
17	30,600	35,800	26,600	26,400	41,500	79,600	137,800	152,800	166,100	67,600	84,800	42,700
18	30,500	34,900	28,600	26,600	41,100	94,300	137,700	143,600	151,200	67,100	73,000	37,400
19	29,400	34,300	28,000	20,400	43,300	107,300	137,500	132,700	139,500	58,800	61,700	34,900
20	28,500	38,100	28,000	23,800	41,900	115,200	143,200	120,400	130,500	54,900	61,100	32,000
21	27,600	40,500	29,100	17,500	48,700	127,000	143,400	103,100	122,000	52,700	61,400	32,600
22	26,000	40,600	28,200	27,200	47,100	143,800	140,600	97,600	114,600	47,700	60,300	32,600
23	27,400	36,200	26,400	27,400	45,100	163,800	138,800	90,000	108,100	48,300	60,200	30,300
24	26,600	38,100	25,800	27,100	41,700	177,600	138,200	89,400	103,700	52,400	59,600	42,200
25	26,700	37,400	25,500	27,000	36,000	192,000	138,200	98,400	98,400	54,500	54,400	50,200
26	26,000	33,800	27,900	27,100	46,200	203,300	137,700	94,600	94,800	53,400	50,900	51,700
27	26,600	35,100	30,000	25,200	49,600	200,600	134,200	100,100	99,800	47,000	44,800	51,100
28	26,400	35,200	30,700	17,600	50,300	198,800	130,400	106,000	101,700	42,800	41,500	64,000
29	25,600	35,000	29,600	27,200	.....	199,000	127,600	105,800	107,300	37,900	40,400	80,000
30	27,500	32,600	27,900	28,000	.....	200,000	124,500	111,900	110,100	41,000	39,800	74,000
31	28,900	.....	25,500	26,800	.....	201,000	.....	124,600	.....	42,200	39,900	.....
1945-46												
1	66,800	32,900	43,000	42,200	44,800	41,900	193,300	56,000	64,800	87,200	35,800	19,900
2	72,600	33,400	44,700	41,300	41,800	42,400	188,000	55,500	62,700	89,300	39,300	20,800
3	73,600	33,700	49,400	42,700	38,600	47,000	178,400	57,400	60,800	97,000	40,700	21,400
4	67,400	33,800	53,700	44,300	42,400	52,100	171,900	66,700	59,000	99,000	39,400	23,200
5	60,100	36,600	55,700	69,800	46,300	57,700	164,900	63,000	56,800	102,800	39,100	22,900
6	55,000	37,400	53,100	105,300	45,300	78,300	158,100	62,700	55,300	102,700	35,800	25,800
7	52,900	38,400	52,900	118,200	43,700	92,900	148,800	61,500	52,100	104,300	34,200	30,600
8	53,000	40,900	48,500	127,800	50,200	114,500	139,400	56,600	51,400	104,400	34,600	45,000
9	51,800	42,900	44,300	159,400	51,500	130,400	130,900	51,400	51,100	107,100	32,100	60,600
10	49,900	48,600	41,200	203,900	58,300	135,800	124,600	48,600	50,100	109,500	30,900	72,100
11	47,700	49,600	35,800	223,300	66,500	131,700	121,400	49,600	49,400	110,900	34,100	71,600
12	41,200	50,500	32,100	208,400	72,900	130,400	111,900	45,300	60,500	109,200	33,500	72,300
13	38,900	59,500	30,300	184,200	74,000	133,300	105,600	45,200	77,100	109,800	30,800	67,000
14	37,400	54,800	32,700	166,300	52,800	138,100	102,100	45,400	75,700	107,900	31,000	56,200
15	38,700	58,200	30,600	158,800	49,300	148,300	102,300	44,600	79,500	102,900	27,800	45,900
16	39,100	55,400	25,400	139,100	54,900	160,700	95,500	43,700	76,000	98,700	28,100	44,500
17	38,700	54,700	31,500	118,700	59,400	173,000	92,000	46,300	80,700	94,400	26,600	44,900
18	37,600	55,300	30,600	104,600	57,500	172,200	91,500	44,900	123,900	89,600	32,400	44,600
19	35,800	55,600	31,700	93,400	55,200	174,600	84,500	42,500	129,200	87,100	48,900	42,100
20	35,100	59,100	34,000	74,400	51,100	179,800	87,700	41,000	128,200	77,500	59,600	38,900
21	35,300	57,200	39,600	53,400	51,300	185,300	79,800	40,400	139,900	70,900	39,000	37,500
22	36,000	52,800	41,100	46,500	54,100	187,700	80,000	39,600	147,400	60,700	38,000	35,500
23	36,500	59,900	41,200	40,400	53,900	180,900	79,700	37,700	147,700	58,100	33,600	43,300
24	36,200	53,200	38,800	44,500	53,900	187,900	76,300	37,800	136,700	52,800	28,000	48,200
25	34,700	44,700	41,200	47,500	49,700	181,900	74,700	38,300	120,100	48,400	24,200	56,600
26	32,800	44,500	42,700	47,800	49,700	195,000	66,400	42,200	111,000	41,900	26,200	58,100
27	31,600	40,200	43,600	46,300	48,400	195,500	63,100	52,200	105,600	33,800	26,700	50,100
28	29,300	39,200	43,500	43,000	46,400	196,500	60,000	57,400	97,000	30,900	24,900	51,500
29	30,200	39,900	45,500	42,100	.....	197,900	58,800	58,500	87,100	31,200	23,300	45,900
30	32,000	41,800	44,800	44,200	.....	198,700	56,200	55,800	81,800	32,800	23,500	47,400
31	33,100	.....	42,500	46,600	.....	194,500	.....	58,900	.....	32,900	23,400	.....

Mississippi River at Keokuk, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1	45,000	59,600	40,900	28,800	32,500	39,200	83,200	147,000	130,200	174,700	53,300	33,200
2	43,600	64,400	41,700	38,200	29,900	34,400	76,800	146,600	133,900	170,900	43,800	36,300
3	40,300	66,400	41,100	38,600	35,100	35,200	75,100	144,900	141,400	166,600	40,900	35,500
4	38,800	72,900	39,800	38,200	33,300	36,100	80,600	142,700	149,300	158,500	40,800	34,800
5	33,800	76,800	38,400	33,000	31,700	36,100	130,200	141,000	171,400	149,200	38,700	34,600
6	28,900	73,800	37,800	36,400	31,600	34,600	143,200	137,900	184,600	145,100	38,200	40,500
7	33,800	64,600	38,700	38,700	32,800	31,200	141,500	136,300	201,900	142,300	37,700	37,600
8	34,900	70,800	41,400	38,800	29,400	26,200	151,700	133,800	207,300	139,000	31,000	42,600
9	37,200	71,800	45,600	38,500	26,300	27,000	155,000	129,700	208,200	136,900	29,600	38,400
10	38,700	70,200	47,900	38,600	31,100	32,300	148,500	126,400	205,700	129,400	29,100	35,200
11	41,400	73,100	51,600	33,500	31,800	34,800	141,100	124,100	203,000	117,900	29,700	29,600
12	43,600	69,700	50,000	31,500	32,400	38,700	145,700	121,400	186,400	108,000	30,600	28,400
13	42,700	69,900	49,000	37,300	30,500	43,800	151,800	119,100	177,000	99,800	30,000	28,900
14	47,700	69,100	42,700	37,300	35,100	49,900	159,600	120,400	166,200	90,700	30,400	25,300
15	50,800	65,000	46,000	39,400	36,800	53,500	166,600	118,200	160,600	99,300	28,600	34,500
16	49,700	70,000	45,800	45,900	40,800	55,200	171,500	121,400	172,800	101,200	27,800	37,900
17	47,800	71,300	39,200	47,900	49,100	65,000	171,000	120,200	189,900	91,600	22,600	35,800
18	51,200	73,900	29,100	47,200	55,600	82,800	174,700	121,600	213,600	82,100	27,200	30,900
19	52,900	76,100	25,500	47,700	58,900	78,500	178,400	116,300	234,600	76,300	28,300	29,200
20	53,700	73,300	26,900	49,800	67,000	77,100	189,600	115,000	243,100	76,300	27,000	27,100
21	57,300	70,100	26,000	44,100	62,500	80,900	196,600	111,000	245,700	71,800	28,300	44,900
22	55,400	69,700	24,900	37,300	56,600	72,600	198,600	108,200	230,600	69,900	28,000	59,800
23	51,400	67,800	30,200	39,100	47,900	67,600	199,400	110,900	210,000	62,600	32,400	38,900
24	49,500	67,100	33,500	44,400	47,100	69,200	200,100	108,000	193,500	60,800	31,900	33,800
25	46,600	65,100	26,900	42,700	43,700	75,500	191,500	106,600	184,400	57,600	39,100	32,000
26	49,900	58,800	35,600	42,100	43,300	87,900	178,100	108,900	177,000	50,000	42,800	30,600
27	63,300	59,200	37,300	47,500	42,300	89,300	171,000	109,500	169,400	47,400	39,400	27,800
28	62,600	57,000	36,200	44,000	42,600	80,600	160,100	112,600	160,300	55,400	33,800	21,700
29	59,600	52,500	36,800	44,100	.....	87,000	154,400	116,100	160,700	53,700	32,300	26,600
30	59,700	44,500	35,600	43,100	.....	86,500	152,900	124,000	162,900	56,900	29,600	28,300
31	59,900	.....	37,100	39,100	.....	87,300	.....	127,400	162,900	62,600	33,600	.....
1947-48												
1	31,300	34,200	23,200	37,100	18,200	144,800	151,900	91,100	37,800	35,700	27,400	27,500
2	30,800	27,400	25,900	32,400	22,200	148,700	148,400	87,900	40,700	29,200	26,900	26,500
3	30,300	35,100	34,400	27,400	23,300	148,400	145,300	87,000	40,400	27,200	24,800	27,700
4	30,200	31,700	40,100	28,600	22,500	147,700	144,300	89,100	38,100	27,800	22,800	24,800
5	32,500	30,200	46,900	33,800	20,700	139,800	140,600	90,900	29,300	55,600	21,900	22,300
6	34,600	34,900	49,100	36,800	19,900	134,200	136,500	95,800	25,000	42,200	21,700	19,700
7	31,400	33,300	46,300	35,000	18,300	129,000	134,400	95,600	31,200	42,500	19,800	18,800
8	28,400	27,200	43,800	37,100	17,100	125,800	132,200	101,000	35,200	31,900	17,700	19,200
9	29,100	28,600	43,600	37,500	19,900	111,500	129,100	99,400	35,100	29,600	18,600	19,700
10	28,100	37,000	39,300	36,500	20,800	75,200	124,200	106,200	34,900	26,500	19,300	16,300
11	27,000	37,400	40,400	31,600	21,200	51,800	128,500	104,400	34,000	24,300	20,000	12,500
12	23,500	34,100	39,500	33,600	21,400	52,300	123,400	109,500	30,200	26,700	26,100	11,200
13	27,500	31,600	35,500	33,100	21,300	57,700	121,100	114,400	29,000	24,100	32,600	14,000
14	26,500	30,000	34,500	27,300	18,900	82,000	116,600	115,700	30,800	28,600	32,100	16,800
15	26,500	30,900	40,000	24,200	16,900	104,600	115,900	114,200	31,600	30,500	31,700	16,600
16	27,000	25,100	35,000	24,100	21,500	117,400	116,400	106,900	31,200	27,000	31,100	14,900
17	27,200	36,500	31,800	22,400	27,400	115,900	110,900	107,100	29,300	31,800	26,800	16,200
18	25,000	36,500	35,200	21,300	36,500	130,800	109,600	106,400	26,900	26,600	26,500	12,200
19	24,500	39,000	37,900	25,300	47,800	179,800	107,800	104,300	23,000	27,300	27,200	12,600
20	26,600	37,700	35,300	27,000	47,300	193,900	105,600	95,200	22,400	28,700	26,600	15,900
21	26,700	36,100	31,700	27,600	47,300	213,900	101,500	87,900	25,900	31,600	22,500	28,800
22	26,100	35,500	33,100	26,300	45,000	230,200	100,900	81,800	24,900	38,000	22,500	29,700
23	26,300	35,500	33,500	24,400	40,700	233,600	98,500	81,900	27,900	42,200	22,000	25,500
24	26,600	37,300	33,200	22,800	39,500	224,100	97,900	70,600	28,400	33,600	20,100	22,900
25	25,700	37,400	29,800	20,100	37,200	216,900	98,200	60,000	38,700	38,000	19,600	19,600
26	22,400	36,300	29,700	23,800	39,500	204,600	94,900	56,500	36,500	61,500	18,300	16,700
27	24,700	31,700	29,200	24,500	55,800	196,800	96,800	60,000	29,800	37,000	18,200	18,800
28	26,100	34,100	27,700	24,500	106,300	176,000	95,000	68,300	32,100	40,200	19,700	18,600
29	34,500	31,300	31,900	23,000	133,700	165,600	91,100	48,200	40,300	32,400	14,400	17,700
30	41,600	21,800	35,600	22,500	.....	158,900	91,500	36,300	43,900	21,900	20,000	17,300
31	41,100	.....	39,200	20,300	.....	154,900	.....	32,700	.....	23,000	24,800	.....

Mississippi River at Keokuk, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1	15,600	17,800	24,200	25,800	35,000	94,900	123,200	65,200	29,000	54,900	55,100	20,100
2	15,100	18,900	30,000	24,100	33,500	95,600	129,500	64,100	32,000	46,700	46,900	20,200
3	14,800	20,300	25,300	25,600	31,300	89,200	128,500	59,900	29,100	43,600	42,900	17,900
4	17,000	22,200	23,800	29,100	28,700	85,500	124,300	54,900	31,900	42,700	42,600	15,800
5	16,600	25,600	20,600	35,500	25,500	94,800	127,700	56,100	32,300	35,900	41,600	15,400
6	15,000	21,900	23,700	40,700	24,400	105,300	125,800	55,450	34,900	37,700	32,300	18,700
7	16,900	19,700	23,100	51,400	28,000	121,630	122,100	52,000	33,100	45,400	28,000	18,700
8	18,900	24,800	24,300	50,100	27,500	137,100	120,600	48,900	31,000	48,800	29,500	17,500
9	19,700	27,400	24,200	47,700	27,800	147,500	116,800	50,400	25,300	43,600	30,200	17,400
10	21,300	26,200	19,700	45,500	27,600	144,300	114,300	55,300	20,400	52,900	29,200	16,800
11	22,100	23,200	17,300	39,000	25,800	147,200	107,900	54,000	19,800	52,600	31,600	19,100
12	18,400	24,700	16,200	37,500	22,800	150,700	107,400	53,200	20,900	55,400	53,500	27,400
13	19,200	21,200	17,700	31,800	36,500	150,300	105,000	55,100	22,300	52,000	46,400	36,500
14	19,600	18,700	20,900	34,200	43,300	138,600	104,500	58,100	31,600	49,400	33,500	30,900
15	19,100	20,700	23,600	39,800	39,800	114,600	104,900	55,700	48,900	45,500	30,600	30,300
16	17,600	22,200	21,800	54,500	38,700	95,700	106,700	65,700	46,600	42,400	26,600	28,300
17	17,100	22,800	25,500	47,900	41,800	70,100	107,300	63,600	43,300	42,300	23,900	23,000
18	17,900	24,600	27,100	53,200	49,900	59,400	102,400	59,400	31,500	43,000	21,000	22,100
19	18,400	26,700	20,100	44,300	56,900	52,800	104,500	63,600	27,600	38,200	24,500	22,800
20	19,800	24,400	20,900	38,700	59,900	53,800	102,400	59,600	27,800	29,900	24,300	21,100
21	19,000	25,500	24,300	38,900	58,500	51,400	97,000	51,800	26,500	30,300	22,300	19,800
22	20,100	33,000	22,900	35,300	60,400	55,500	95,200	41,500	28,800	40,600	24,700	17,800
23	16,300	33,400	24,600	35,300	60,300	56,500	91,400	43,700	31,600	44,600	24,400	16,800
24	16,200	30,600	24,400	38,400	60,300	67,200	93,700	52,900	32,100	39,900	23,300	15,700
25	18,500	24,600	21,600	38,100	60,800	73,800	89,400	42,600	53,200	41,000	21,400	14,200
26	17,400	24,100	18,500	37,700	70,500	85,600	81,200	31,200	76,600	34,700	20,300	16,500
27	17,000	22,600	21,700	38,600	83,200	90,000	77,400	28,300	70,900	29,700	18,400	19,100
28	16,700	21,000	22,700	39,400	88,700	97,200	76,500	24,900	62,400	27,200	16,500	18,200
29	16,200	24,000	25,900	35,200	.....	101,900	75,600	25,500	56,500	34,600	20,900	17,300
30	15,500	25,700	24,300	31,600	.....	109,300	65,700	27,600	54,900	47,400	21,700	16,500
31	14,700	.....	22,500	35,600	.....	110,000	.....	29,900	.....	53,600	20,200	.....
1949-50												
1	13,600	22,500	21,400	31,000	36,200	53,800	138,700	164,600	114,600	58,000	61,400	35,600
2	12,800	21,600	24,300	33,800	35,000	43,300	143,000	164,500	107,200	62,600	75,800	32,100
3	15,100	20,200	19,400	43,700	32,600	39,600	152,600	162,900	106,900	60,400	72,500	28,900
4	16,200	21,100	19,500	32,900	30,300	51,600	152,300	159,900	106,500	70,300	61,900	30,300
5	17,400	18,900	25,500	20,700	27,700	55,000	156,500	149,200	107,800	59,600	50,800	26,600
6	19,000	20,600	33,200	22,000	31,900	58,600	147,500	162,200	104,500	51,200	39,700	22,200
7	20,400	23,100	27,700	20,700	31,600	96,600	138,900	156,700	96,600	50,700	39,000	18,700
8	20,900	22,800	26,900	25,900	38,500	132,900	136,900	148,200	91,700	41,800	42,700	17,800
9	20,300	22,000	22,500	29,700	50,200	139,200	127,100	153,000	89,900	35,400	41,300	17,900
10	21,900	21,700	14,600	29,200	54,900	144,400	117,800	153,800	79,600	35,000	39,200	20,500
11	24,800	20,300	19,400	29,400	55,200	147,900	118,000	148,300	78,900	36,700	40,500	22,600
12	24,800	19,400	22,300	30,200	57,800	140,800	116,600	142,400	77,400	35,800	42,700	25,200
13	25,700	22,600	19,000	35,400	52,000	133,400	116,500	137,800	85,600	34,900	38,900	25,800
14	27,400	25,100	21,000	33,200	44,400	131,300	116,800	135,800	91,400	36,600	40,300	26,500
15	24,500	25,100	23,900	36,400	.....	142,400	110,600	134,100	99,300	40,900	37,900	26,300
16	23,800	25,600	26,700	34,100	27,900	135,100	107,000	131,600	113,400	40,600	37,000	23,700
17	26,900	25,700	19,900	36,100	25,600	116,200	104,400	132,400	106,700	55,900	34,200	22,600
18	28,800	26,700	25,600	32,400	23,200	89,600	104,500	132,300	116,400	71,600	30,700	24,600
19	29,200	23,300	25,500	32,400	22,300	68,000	104,100	135,900	171,100	88,400	27,100	24,700
20	29,900	25,000	31,000	30,500	26,900	54,300	104,700	138,600	175,000	92,300	25,800	27,800
21	30,000	28,100	37,500	28,400	30,800	53,800	108,000	140,400	170,400	94,400	25,300	32,700
22	26,400	28,100	34,400	28,600	33,800	49,800	106,600	144,500	163,500	82,500	26,700	50,400
23	27,000	25,700	19,500	32,000	29,600	46,300	107,800	149,300	145,400	69,800	19,800	53,400
24	31,900	21,300	21,400	31,000	27,700	54,200	135,500	148,000	122,000	68,600	21,200	45,600
25	32,300	23,500	27,100	40,500	23,300	66,300	175,900	145,600	99,600	63,000	22,500	40,000
26	29,100	22,300	29,100	39,100	20,100	76,100	175,900	144,300	94,800	56,700	20,180	42,000
27	24,900	22,900	28,500	44,900	28,600	73,300	170,800	139,800	94,100	56,900	25,300	37,400
28	20,600	25,200	26,400	47,500	30,700	100,600	166,000	136,500	91,900	58,600	27,700	33,000
29	19,500	25,200	26,600	42,900	.....	118,300	164,700	134,900	79,100	59,400	30,700	30,600
30	19,900	23,900	26,000	36,600	.....	127,500	163,900	130,000	68,200	59,100	37,200	26,600
31	22,100	.....	28,600	31,700	.....	134,600	.....	122,900	.....	58,800	36,600	.....

Mississippi River at Keokuk, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1942.....	2,436,600	133,100	37,200	78,600	0.661	0.76
November.....	1,728,900	72,100	45,200	57,630	.484	.54
December.....	1,267,800	98,100	27,600	40,900	.344	.40
Calendar year 1942.....	25,398,400	200,900	21,500	69,580	.585	7.94
January 1943.....	1,502,500	80,800	41,800	48,470	.407	.47
February.....	1,639,400	72,600	44,400	58,550	.492	.51
March.....	2,696,400	129,700	50,800	86,980	.731	.84
April.....	4,474,100	174,000	111,900	149,140	1.25	1.40
May.....	3,103,600	137,600	76,200	100,120	.841	.97
June.....	4,243,200	171,600	74,600	141,440	1.19	1.33
July.....	3,831,500	166,600	55,200	123,600	1.04	1.20
August.....	2,109,700	106,500	43,400	68,050	.572	.66
September.....	1,324,500	53,200	27,500	44,160	.371	.41
Water year 1942-43.....	30,358,600	174,000	27,500	83,170	.699	9.49
October 1943.....	1,079,300	49,400	27,600	34,820	.293	.34
November.....	1,257,100	55,100	34,000	41,900	.352	.39
December.....	1,132,700	48,000	29,700	36,540	.307	.35
Calendar year 1943.....	28,394,400	174,000	27,500	77,790	.654	8.87
January 1944.....	1,046,500	40,400	23,400	33,760	.284	.33
February.....	1,139,700	82,800	26,000	39,300	.330	.36
March.....	2,797,800	157,200	45,300	90,250	.758	.87
April.....	3,083,900	167,000	64,400	102,800	.864	.96
May.....	4,887,000	254,500	118,000	157,600	1.32	1.53
June.....	5,023,900	221,000	121,300	167,500	1.41	1.57
July.....	3,462,800	213,900	68,200	111,700	.939	1.08
August.....	1,415,900	59,100	37,300	45,670	.384	.44
September.....	1,140,100	52,200	29,900	38,000	.319	.36
Water year 1943-44.....	27,466,700	254,500	23,400	75,050	.631	8.58
October 1944.....	998,800	45,000	25,600	32,220	.271	.31
November.....	1,070,500	42,600	28,700	35,680	.300	.33
December.....	898,700	34,400	25,500	28,990	.244	.28
Calendar year 1944.....	26,965,600	254,500	23,400	73,680	.619	8.42
January 1945.....	892,700	38,700	17,500	28,800	.242	.28
February.....	971,400	50,300	17,000	34,690	.292	.30
March.....	3,279,000	203,300	50,000	105,800	.889	1.02
April.....	4,672,600	202,200	124,500	155,800	1.31	1.46
May.....	3,594,200	152,800	89,400	115,900	.974	1.12
June.....	4,043,200	188,800	94,800	134,800	1.13	1.26
July.....	2,288,600	127,200	37,900	73,830	.620	.72
August.....	1,720,900	87,100	39,800	55,510	.466	.54
September.....	1,415,300	80,000	30,300	47,180	.396	.44
Water year 1944-45.....	25,845,900	203,300	17,000	70,810	.595	8.06
October 1945.....	1,361,300	73,900	29,300	43,910	.369	.43
November.....	1,402,200	59,900	32,900	46,740	.393	.44
December.....	1,265,700	55,700	25,400	40,830	.343	.40
Calendar year 1945.....	26,907,100	203,300	17,000	73,720	.619	8.40
January 1946.....	2,928,400	223,300	40,400	94,460	.794	.92
February.....	1,463,900	74,000	38,600	52,280	.439	.46
March.....	4,452,900	198,700	41,900	143,600	1.21	1.39
April.....	3,290,800	193,300	56,200	109,700	.922	1.03
May.....	1,547,700	66,700	37,700	49,930	.420	.48
June.....	2,618,300	147,700	49,400	87,280	.733	.82
July.....	2,485,600	110,900	30,900	80,180	.674	.78
August.....	1,025,600	59,600	23,300	33,080	.278	.32
September.....	1,344,400	72,300	19,900	44,810	.377	.42
Water year 1945-46.....	25,186,600	223,300	19,900	69,000	.580	7.89

Mississippi River at Keokuk, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1946	1,471,700	63,300	28,900	47,470	0.399	0.46
November	2,013,900	76,800	44,500	67,130	.564	.63
December	1,175,300	51,600	24,900	37,910	.319	.37
Calendar year 1946	25,818,300	223,300	19,900	70,730	.594	8.08
January 1947	1,252,200	49,800	28,800	40,390	.339	.39
February	1,137,400	67,000	26,300	40,620	.341	.36
March	1,797,000	89,300	26,200	57,970	.487	.56
April	4,638,500	200,100	75,100	154,600	1.30	1.45
May	3,827,200	147,000	106,600	123,500	1.04	1.20
June	5,575,600	245,700	130,200	185,800	1.56	1.74
July	3,104,500	174,700	47,400	100,100	.841	.97
August	1,037,300	53,300	22,600	33,460	.281	.32
September	1,019,000	59,800	21,700	33,970	.285	.32
Water year 1946-47	28,049,600	245,700	21,700	76,850	.646	8.77
October 1947	889,500	41,600	22,400	28,690	.241	.28
November	993,700	39,000	21,800	33,120	.278	.31
December	1,113,300	49,100	23,200	35,910	.302	.35
Calendar year 1947	26,385,200	245,700	21,700	72,290	.607	8.25
January 1948	871,900	37,500	20,100	28,130	.236	.27
February	1,028,100	133,700	16,900	35,450	.298	.32
March	4,566,800	233,600	51,800	147,300	1.24	1.43
April	3,509,000	151,900	91,100	117,000	.983	1.10
May	2,696,300	115,700	32,700	86,980	.731	.84
June	964,500	43,900	22,400	32,150	.270	.30
July	1,023,700	61,500	21,900	33,020	.277	.32
August	723,700	32,600	14,400	23,350	.196	.23
September	580,700	29,700	11,200	19,360	.163	.18
Water year 1947-48	18,961,200	233,600	11,200	51,810	.435	5.93
October 1948	547,700	22,100	14,700	17,670	.148	.17
November	718,500	33,400	17,800	23,950	.201	.22
December	703,100	30,000	16,200	22,680	.191	.22
Calendar year 1948	17,934,000	233,600	11,200	49,000	.412	5.60
January 1949	1,190,100	54,500	24,100	38,390	.323	.37
February	1,247,400	88,700	22,800	44,550	.374	.39
March	3,047,400	150,700	51,400	98,300	.826	.95
April	3,128,900	129,500	65,700	104,300	.876	.98
May	1,552,500	65,700	24,900	50,080	.421	.49
June	1,112,800	76,600	19,800	37,090	.312	.35
July	1,329,500	55,400	27,200	42,890	.360	.42
August	928,000	55,100	16,500	29,940	.252	.29
September	612,500	36,500	14,200	20,420	.172	.19
Water year 1948-49	16,118,400	150,700	14,200	44,160	.371	5.04
October 1949	726,800	32,300	12,800	23,450	.197	.23
November	698,900	28,100	18,900	23,300	.196	.22
December	774,400	37,500	14,600	24,980	.210	.24
Calendar year 1949	16,349,200	150,700	12,800	44,700	.376	5.12
January 1950	1,022,000	47,500	20,700	32,070	.277	.32
February	963,500	57,800	20,100	34,410	.289	.30
March	2,874,800	147,900	39,600	92,740	.779	.90
April	3,989,600	175,960	104,100	133,000	1.12	1.25
May	4,480,400	164,600	122,300	144,500	1.21	1.40
June	3,249,500	175,000	68,200	108,300	.910	1.02
July	1,786,500	94,400	34,900	57,630	.484	.56
August	1,172,500	75,800	19,800	37,820	.318	.37
September	892,100	53,400	17,800	29,740	.250	.28
Water year 1949-50	22,631,000	175,960	12,800	62,000	.521	7.09

Upper Iowa River near Decorah, Iowa

LOCATION.—Lat. $43^{\circ}18'20''$, long. $91^{\circ}44'50''$, in $E\frac{1}{2}$ sec. 14, T. 98 N., 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 1950.

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 and datum 3.96 feet lower. Aug. 29, 1920, to June 30, 1927, water-stage recorder at present site and datum. July 1, 1933, to Sept. 30, 1936, gage 4 miles downstream at different datum.

AVERAGE DISCHARGE.—24 years (1919-26, 1933-50), 328 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Mar. 15	8,900	9.83	Aug. 8	106
1943-44...	June 17	7,700	9.29	Jan. 16, Feb. 11, 12	70
1944-45...	Mar. 17	16,400	(¹)12.2	Jan. 31	60
1945-46...	Jan. 5	16,200	12.14	Aug. 14	80
1946-47...	June 13	9,650	9.93	Jan. 10, 11	110
1947-48...	Feb. 28	11,000	11.85	Aug. 26-28	56
1948-49...	Mar. 5	6,410	8.64	Sept. 23	47
1949-50...	Mar. 26	13,400	11.37	Nov. 22, Dec. 8, 9	45

(1) Floodmark.

1913-14, 1919-27, 1933-50: Maximum discharge, 28,500 second-feet May 29, 1941 (gage height, 15.19 feet, from floodmarks), by slope-area method; minimum daily, 10 second-feet on many days during 1933-34.

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

Upper Iowa River near Decorah, Iowa—Continued
Daily Discharge, in Second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	467	354	260	264	188	579	1,590	245	450	226	118	345
2.....	436	364	230	234	176	518	1,160	245	268	192	126	300
3.....	1,140	345	a235	223	163	533	940	230	a250	185	126	276
4.....	1,870	340	a200	199	170	492	825	226	a240	192	124	272
5.....	2,000	502	a235	188	170	456	728	238	331	185	129	502
6.....	1,430	421	252	216	176	378	671	272	a300	502	118	426
7.....	1,060	416	292	216	212	340	620	249	a290	284	111	502
8.....	874	397	219	226	166	296	569	241	a270	252	106	548
9.....	782	382	241	209	163	280	a420	245	a250	226	114	397
10.....	713	397	249	209	163	a350	a400	a230	a230	195	114	327
11.....	661	364	234	209	154	a300	a360	a220	a230	185	118	300
12.....	909	359	220	200	148	a350	a340	a210	a240	188	629	463
13.....	558	345	a195	190	140	a400	a410	a200	256	170	2,350	402
14.....	528	322	a215	180	135	a2,000	a450	a190	292	195	1,360	314
15.....	497	322	*223	180	130	a7,500	a420	345	a320	170	841	292
16.....	472	314	210	175	140	a6,000	a390	327	340	298	543	272
17.....	451	309	212	175	148	a3,000	359	300	292	238	359	260
18.....	436	296	209	180	154	a1,500	354	364	252	170	292	245
19.....	416	296	195	175	148	a900	a340	314	223	173	252	241
20.....	412	296	216	175	160	776	a340	284	205	154	234	256
21.....	392	296	209	185	199	697	a340	264	192	154	219	238
22.....	387	292	219	205	322	635	a340	249	192	137	205	226
23.....	382	284	223	188	564	811	a400	234	188	140	1,190	219
24.....	364	280	219	176	502	2,190	a450	234	173	134	589	212
25.....	354	a270	216	195	407	4,540	a390	234	163	140	793	209
26.....	331	a290	223	173	392	6,290	a340	241	166	134	1,520	205
27.....	327	a240	249	188	455	4,060	a290	230	160	126	1,500	202
28.....	322	a210	245	*166	625	1,790	a270	226	350	134	702	195
29.....	336	268	241	166	.....	1,340	a260	212	195	182	518	195
30.....	364	252	241	166	.....	1,450	a250	219	202	134	412	195
31.....	382	.....	230	173	.....	1,850	.....	252	.....	132	378	.....
1943-44												
1.....	284	195	182	108	216	331	803	507	692	a487	276	219
2.....	245	185	179	114	209	280	1,100	512	533	472	272	199
3.....	209	192	179	108	202	245	782	620	451	416	260	182
4.....	205	185	173	106	176	216	579	1,140	387	387	436	179
5.....	192	179	173	105	170	199	426	1,440	359	373	364	163
6.....	188	179	188	100	124	182	416	852	340	349	284	166
7.....	182	219	179	95	135	85	373	687	318	327	280	154
8.....	182	284	185	95	120	90	336	661	305	314	264	a143
9.....	182	284	179	100	105	125	314	589	378	296	241	a148
10.....	179	309	166	100	80	125	288	594	359	292	226	a160
11.....	179	268	105	95	70	1,740	276	553	354	623	219	a151
12.....	170	276	100	95	70	2,060	252	472	431	677	205	a182
13.....	188	272	95	110	90	1,130	241	416	1,000	327	202	195
14.....	199	238	95	*85	100	1,210	249	378	1,650	322	199	157
15.....	185	249	90	75	100	1,240	318	359	1,450	774	296	154
16.....	192	205	90	70	95	917	502	365	1,810	451	620	148
17.....	185	216	110	75	90	708	523	364	4,070	487	268	143
18.....	182	*230	120	75	85	482	416	407	1,830	368	230	146
19.....	176	223	124	75	80	378	364	645	1,420	354	202	642
20.....	195	219	126	75	90	492	349	1,170	1,030	288	195	436
21.....	202	238	120	80	100	734	402	1,150	836	272	195	268
22.....	182	238	110	85	1,960	793	879	787	787	252	185	238
23.....	199	223	100	85	1,240	890	373	697	2,410	630	734	212
24.....	216	212	100	85	912	1,750	1,300	929	a1,290	305	234	195
25.....	192	205	110	100	946	*1,200	1,690	825	a1,030	264	185	185
26.....	182	212	118	125	1,720	682	1,070	682	a852	1,610	176	166
27.....	176	192	116	1,200	1,220	482	798	579	a830	682	202	170
28.....	173	185	110	1,540	912	467	661	671	a1,190	456	230	185
29.....	163	182	110	620	462	446	574	528	a355	359	195	163
30.....	170	182	108	407	.....	318	523	446	a533	318	226	151
31.....	199	.....	105	300	.....	318	.....	487	.....	305	292	.....

* Winter discharge measurement made on this date.

a No gage-height record; discharge computed on basis of once daily gage reading of U. S. E. D. gage at Decorah and records for nearby stations.

Note—Stage-discharge relation affected by ice Dec. 12, 16, 19, 1942, Jan. 12-21, Feb. 13-16, Dec. 11-18, 21-25, 28, 29, 31, 1943, Jan. 5-26, Feb. 7-21, Mar. 7-10, 1944.

Upper Iowa River near Decorah, Iowa—Continued
Daily Discharge, in Second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	148	126	82	82	66	126	476	471	3,430	403	234	266
2.....	146	131	94	86	74	136	425	660	3,240	363	220	244
3.....	144	134	102	82	78	141	416	690	2,050	342	210	237
4.....	148	124	113	82	80	131	485	712	1,420	321	207	224
5.....	157	122	115	80	82	138	444	610	1,170	325	7,530	224
6.....	157	124	113	80	86	128	499	533	1,020	305	5,580	207
7.....	146	122	115	80	86	122	595	561	912	285	2,230	204
8.....	141	122	*104	82	82	117	630	448	840	281	990	285
9.....	141	124	104	84	82	124	930	425	756	297	722	213
10.....	134	119	a104	86	84	165	972	425	722	416	605	207
11.....	138	119	a109	88	92	606	739	407	706	313	542	194
12.....	131	117	a 95	92	86	1,130	620	407	706	274	533	194
13.....	134	117	a100	96	* 82	2,570	600	398	640	255	700	191
14.....	128	131	a110	102	88	5,350	600	407	571	241	3,400	188
15.....	126	131	98	104	98	6,750	552	385	571	230	1,040	182
16.....	131	126	84	*105	146	11,800	706	355	561	224	695	179
17.....	126	126	78	104	176	9,950	756	338	499	248	552	179
18.....	128	126	80	100	154	a3,170	1,050	317	462	241	476	165
19.....	126	124	82	96	134	a1,990	762	305	435	227	421	176
20.....	126	119	74	90	119	a1,260	625	458	421	217	416	176
21.....	126	115	70	86	113	a 924	542	1,580	407	1,980	412	173
22.....	124	117	66	84	104	a 786	610	3,030	389	458	342	191
23.....	124	117	72	84	96	a 695	780	3,170	381	301	321	207
24.....	122	115	78	78	113	630	1,530	1,510	537	262	305	244
25.....	124	113	84	78	108	2,320	1,380	2,530	467	234	293	204
26.....	124	117	88	78	134	1,670	840	3,930	385	217	281	191
27.....	122	117	92	78	124	1,230	680	1,990	513	241	270	188
28.....	119	113	96	74	134	900	595	1,510	991	943	296	248
29.....	119	113	98	68	.....	700	533	1,330	557	313	363	234
30.....	122	84	100	64	.....	* 605	481	1,040	439	277	270	207
31.....	122	.....	98	60	.....	528	.....	966	.....	259	277	.....
1945-46												
1.....	213	213	165	100	130	518	372	154	134	154	134	104
2.....	198	198	213	110	120	566	346	148	144	134	117	98
3.....	191	168	217	100	110	1,240	325	151	126	134	111	96
4.....	185	165	198	100	110	1,430	317	148	117	122	104	96
5.....	179	154	182	5,400	500	1,930	305	151	117	126	98	994
6.....	173	151	210	11,400	800	7,260	293	146	113	113	94	6,850
7.....	171	154	198	3,150	*1,000	*3,010	289	144	113	138	88	3,810
8.....	165	227	194	1,030	1,100	1,220	305	146	106	508	94	1,560
9.....	157	210	146	680	940	557	317	136	106	162	194	1,240
10.....	159	182	122	513	800	439	338	144	124	134	100	1,850
11.....	159	176	110	435	820	372	325	148	124	122	86	972
12.....	162	191	120	372	800	3,520	301	146	122	111	86	670
13.....	157	204	130	251	740	5,200	274	146	119	104	82	523
14.....	157	188	130	241	600	2,030	259	134	111	108	80	444
15.....	157	179	120	313	500	1,040	248	134	131	111	84	381
16.....	151	182	120	274	420	792	237	134	151	100	88	334
17.....	154	179	120	234	280	1,140	224	134	1,040	106	1,730	309
18.....	162	165	*120	237	240	984	217	134	363	113	2,500	281
19.....	154	168	110	244	200	780	207	146	297	297	444	274
20.....	151	162	100	182	180	585	198	148	281	151	248	313
21.....	151	171	110	170	170	513	188	144	237	122	220	293
22.....	146	124	120	160	176	458	185	138	224	108	185	277
23.....	146	119	130	150	165	439	179	162	210	100	162	350
24.....	151	151	140	140	159	912	176	a180	185	104	148	309
25.....	148	159	130	130	165	630	168	a200	185	98	136	293
26.....	148	159	120	140	213	537	165	a230	162	98	124	289
27.....	146	154	110	130	210	513	162	220	151	94	122	297
28.....	151	159	100	130	251	547	165	185	194	88	131	270
29.....	148	154	110	135	.....	467	162	159	188	114	122	293
30.....	146	151	110	130	.....	416	151	148	198	552	113	285
31.....	146	.....	110	130	.....	385	.....	138	.....	188	113	.....

* Winter discharge measurement made on this date.

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

Note—Stage-discharge relation affected by ice Dec. 15-31, 1944, Jan. 1 to Feb. 9, Dec. 11-31, 1945, Jan. 1 to Feb. 21, 1946.

Upper Iowa River near Decorah, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	259	346	234	130	150	176	571	435	363	918	230	a180
2.....	237	416	194	130	150	173	a480	485	372	739	230	a180
3.....	227	398	210	130	140	168	425	615	338	840	227	a170
4.....	217	430	241	120	130	*168	605	571	334	576	217	a170
5.....	210	376	244	130	130	176	3,200	435	350	552	213	173
6.....	201	342	227	130	140	244	3,500	394	334	542	207	162
7.....	191	342	227	120	140	389	2,300	394	828	547	204	162
8.....	188	342	220	120	140	385	1,010	372	1,260	476	201	148
9.....	185	329	230	120	140	346	804	363	1,140	467	198	144
10.....	210	372	227	110	140	355	4,010	329	675	448	188	146
11.....	321	398	230	110	140	421	3,500	301	494	430	185	141
12.....	485	499	237	120	130	581	1,920	281	528	471	179	204
13.....	471	537	171	120	130	2,110	1,140	309	5,530	828	176	204
14.....	350	448	159	1,500	300	1,000	870	325	4,430	728	176	207
15.....	301	398	160	800	600	600	750	407	2,200	942	168	198
16.....	281	394	160	350	930	453	768	407	1,390	750	165	173
17.....	262	372	150	150	630	367	750	471	1,390	595	162	171
18.....	270	394	*150	150	467	325	712	537	2,070	528	162	148
19.....	259	367	150	150	412	293	655	444	1,710	490	157	144
20.....	241	329	160	150	342	281	571	407	1,030	471	168	136
21.....	230	321	160	150	317	259	518	381	840	448	168	141
22.....	217	274	171	*165	274	293	481	407	1,030	313	173	131
23.....	207	244	171	170	237	650	680	412	665	305	165	122
24.....	305	317	159	180	224	2,590	605	458	600	293	159	126
25.....	481	301	150	200	213	1,640	706	416	566	285	154	124
26.....	810	270	140	220	204	712	595	385	533	277	151	126
27.....	561	266	150	220	191	494	504	338	490	270	a160	126
28.....	430	255	180	200	179	435	453	321	504	259	a180	131
29.....	394	251	170	180	.....	363	425	394	2,060	251	a200	126
30.....	376	248	150	170	.....	317	416	407	1,420	244	a190	119
31.....	334	.....	140	160	.....	309	.....	381	.....	234	a190	.....
1947-48												
1.....	124	136	113	79	59	1,410	241	198	141	179	71	108
2.....	124	128	124	77	58	876	227	182	138	141	71	94
3.....	124	126	134	75	58	665	217	176	136	119	73	80
4.....	124	124	126	75	59	518	207	173	131	108	71	75
5.....	115	128	119	75	*60	300	201	182	546	100	71	75
6.....	117	128	113	77	60	260	191	207	297	98	75	75
7.....	111	126	104	77	60	210	207	210	210	94	71	75
8.....	108	a125	96	75	60	180	220	234	182	92	71	73
9.....	108	a124	92	75	60	150	241	305	159	92	77	71
10.....	106	a123	92	75	62	150	266	924	146	90	71	71
11.....	104	a122	96	75	64	150	244	1,120	136	90	70	71
12.....	102	a121	104	71	70	150	224	680	144	88	71	70
13.....	104	a120	117	66	84	160	220	509	141	88	70	68
14.....	100	a119	117	60	94	190	217	439	141	84	68	70
15.....	100	a118	117	62	126	1,300	201	412	131	88	68	68
16.....	108	a117	106	64	210	4,670	188	363	134	90	68	68
17.....	108	a117	104	65	453	3,410	176	325	119	90	73	68
18.....	108	*117	*102	66	645	2,160	171	289	119	90	70	66
19.....	111	117	100	67	750	3,140	162	262	117	86	70	66
20.....	111	117	106	68	281	1,300	157	241	117	86	66	84
21.....	102	124	104	*70	244	1,030	151	224	126	86	63	82
22.....	100	138	98	70	227	728	148	207	115	86	63	73
23.....	106	124	88	70	227	586	162	191	126	80	63	75
24.....	108	157	82	70	262	*485	168	182	111	80	60	82
25.....	113	141	79	68	321	416	176	176	106	80	60	84
26.....	126	111	79	66	430	376	191	171	104	82	56	82
27.....	138	104	80	64	990	350	217	162	113	77	56	77
28.....	191	96	80	63	*10,300	325	230	159	119	73	56	75
29.....	171	90	80	62	5,370	313	227	151	108	75	109	73
30.....	148	90	79	60	.....	281	210	148	176	80	439	75
31.....	144	.....	79	60	.....	262	.....	146	.....	73	141	.....

* Winter discharge measurement made on this date.

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

Note—Stage-discharge relation affected by ice Dec. 15-21, 25-31, 1946, Jan. 1 to Feb. 15, Nov. 27 to Dec. 2, Dec. 6-12, 16-19, 22-31, 1947, Jan. 1 to Feb. 29, Mar. 5-14, 1948.

Upper Iowa River near Decorah, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1	71	63	86	56	76	141	2,610	210	84	144	116	86
2	71	63	88	56	74	134	1,200	204	106	131	88	86
3	71	61	90	56	73	154	780	188	111	115	86	86
4	71	66	92	94	72	2,410	640	185	100	115	86	86
5	70	82	94	134	71	3,740	561	176	128	102	86	86
6	71	102	90	98	70	3,150	504	176	117	122	82	82
7	70	100	86	90	69	1,780	458	171	94	106	82	82
8	90	98	84	84	68	1,670	407	165	90	100	80	82
9	82	94	83	81	67	1,450	376	159	84	115	80	82
10	80	92	82	79	*66	900	346	151	82	117	80	82
11	79	90	82	79	65	685	329	151	82	106	80	82
12	77	90	82	*80	65	533	325	148	84	96	80	86
13	71	90	82	80	64	439	297	146	183	98	80	86
14	71	88	82	80	64	363	259	159	134	112	86	71
15	71	90	82	788	63	274	281	151	115	136	88	64
16	70	88	81	1,350	63	250	274	138	100	96	88	63
17	80	86	80	343	62	230	274	138	96	96	88	63
18	66	88	78	176	62	215	317	136	94	133	90	61
19	66	88	75	120	62	201	439	128	92	100	88	55
20	66	90	72	115	62	191	458	128	90	98	88	53
21	63	90	71	105	62	464	435	122	149	380	86	50
22	63	90	68	100	62	1,180	421	128	170	132	82	48
23	60	90	66	97	62	1,020	359	119	182	96	82	47
24	60	90	65	94	450	840	317	115	1,110	92	82	48
25	61	90	64	92	280	1,970	289	113	467	90	82	53
26	60	90	62	90	277	2,180	266	108	372	88	82	52
27	60	90	61	87	224	2,310	244	102	417	88	82	48
28	60	86	60	85	173	1,770	234	100	266	88	82	50
29	61	82	59	82	.....	938	224	94	194	88	82	50
30	61	86	58	80	.....	810	217	92	165	86	82	50
31	61	.....	57	78	.....	2,400	.....	90	.....	86	82	.....
1949-50												
1	50	50	52	140	74	58	451	158	134	100	1,520	125
2	50	50	52	100	74	58	361	143	152	97	810	119
3	50	50	54	80	74	60	332	140	155	102	555	116
4	47	52	54	60	74	64	282	137	143	89	427	114
5	47	52	52	62	72	620	240	2,260	131	80	361	108
6	50	50	50	66	70	2,500	208	1,380	128	77	315	108
7	50	50	47	66	66	*8,600	191	1,020	116	75	278	108
8	48	50	45	64	66	2,500	174	870	111	70	258	111
9	48	54	45	60	68	1,000	181	840	1,040	68	254	108
10	52	52	48	58	70	400	184	870	438	66	834	108
11	54	50	97	56	70	280	194	840	378	64	901	114
12	48	52	143	54	70	230	198	730	247	122	465	119
13	50	58	77	90	68	210	218	620	2,180	171	357	131
14	54	56	74	150	68	208	187	520	427	100	298	131
15	54	52	*77	80	66	198	165	404	286	1,230	258	119
16	50	50	68	84	64	162	152	362	229	7,570	229	116
17	48	52	64	80	62	162	143	218	194	6,250	208	114
18	48	52	60	82	60	131	134	174	303	2,070	187	102
19	50	54	58	*73	58	125	128	174	211	1,650	178	100
20	50	56	60	68	54	122	122	171	181	2,280	171	100
21	54	54	58	64	54	140	114	165	187	1,660	165	158
22	54	45	56	60	*53	162	111	158	184	990	155	137
23	56	54	56	58	52	1,120	108	149	543	900	146	119
24	54	52	58	56	50	2,570	191	146	539	774	143	116
25	54	54	48	66	50	2,670	387	254	211	525	128	116
26	54	54	64	72	52	9,430	250	184	171	480	131	108
27	52	54	68	70	56	10,100	218	165	146	409	131	102
28	54	54	64	70	60	3,370	201	149	131	357	140	102
29	54	54	64	74	.....	780	174	155	119	315	174	111
30	50	52	66	76	.....	575	171	146	105	1,230	140	108
31	50	.....	110	74	.....	500	.....	143	.....	1,410	128	.....

* Winter discharge measurement made on this date.

Note—Stage-discharge relation affected by ice Dec. 6-31, 1948, Jan. 1-4, 8-10, 13, Jan. 19 to Feb. 24, Mar. 16-18, Dec. 14-31, 1949, Jan. 1 to Mar. 7, Mar. 13, 1950. No gage-height record Nov. 23 to Dec. 9, 1949, Mar. 8-12, 1950; discharge computed on basis of records for nearby stations.

Upper Iowa River near Decorah, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1942	19,753	2,000	322	637	1.14	1.31
November	9,823	502	210	327	.584	.65
December	7,057	292	195	228	.407	.47
Calendar year 1942	197,696	8,920	85	542	.968	13.13
January 1943	6,004	264	166	194	.346	.40
February	6,670	625	130	238	.425	.44
March	52,601	7,500	280	1,697	3.03	3.49
April	15,016	1,590	250	501	.895	1.00
May	7,770	364	190	251	.448	.52
June	7,510	450	160	250	.446	.50
July	5,927	502	126	191	.341	.39
August	16,190	2,350	106	522	.932	1.08
September	9,036	548	195	301	.538	.60
Water year 1942-43	163,357	7,500	106	448	.800	10.85
October 1943	5,953	284	163	192	.343	.40
November	6,676	309	179	223	.398	.44
December	4,045	188	90	130	.232	.27
Calendar year 1943	143,398	7,500	90	393	.702	9.53
January 1944	6,488	1,540	70	209	.373	.43
February	11,879	1,960	70	410	.732	.79
March	20,315	2,060	85	655	1.17	1.35
April	17,538	1,690	241	585	1.04	1.16
May	20,515	1,440	359	662	1.18	1.36
June	29,560	4,070	305	985	1.76	1.96
July	13,837	1,610	252	446	.796	.92
August	8,032	620	176	259	.462	.53
September	6,000	642	143	200	.357	.40
Water year 1943-44	150,838	4,070	70	412	.736	10.01
October 1944	4,104	157	119	132	.236	.27
November	3,605	134	84	120	.214	.24
December	2,889	115	66	93.2	.166	.19
Calendar year 1944	144,762	4,070	66	396	.707	9.60
January 1945	2,633	105	60	84.9	.152	.17
February	2,901	176	66	104	.186	.19
March	56,892	11,800	117	1,835	3.28	3.78
April	20,853	1,530	416	695	1.24	1.38
May	31,898	3,930	305	1,029	1.84	2.12
June	26,198	3,430	381	873	1.56	1.74
July	11,293	1,980	217	364	.650	.75
August	30,733	7,530	207	991	1.77	2.04
September	6,222	266	165	207	.370	.41
Water year 1944-45	200,221	11,800	60	549	.980	13.28
October 1945	4,982	213	146	161	.288	.33
November	5,117	227	119	171	.305	.34
December	4,315	217	100	139	.248	.29
Calendar year 1945	204,037	11,800	60	559	.998	13.54
January 1946	26,911	11,400	100	868	1.55	1.79
February	11,899	1,100	110	425	.759	.79
March	40,430	7,260	372	1,304	2.33	2.68
April	7,398	372	151	247	.441	.49
May	4,776	230	134	154	.275	.32
June	5,873	1,040	106	196	.350	.39
July	4,714	552	88	152	.271	.31
August	8,138	2,500	80	263	.470	.54
September	24,155	6,850	96	805	1.44	1.60
Water year 1945-46	148,708	11,400	80	407	.727	9.87

Upper Iowa River near Decorah, Iowa—Continued
 Monthly Discharge for Calendar and Water Years 1947 and 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946.....	9,711	810	185	313	0.559	0.64
November.....	10,576	537	244	353	.630	.70
December.....	5,722	244	140	185	.330	.38
Calendar year 1946.....	160,303	11,460	80	439	.784	10.63
January 1947.....	6,855	1,500	110	221	.395	.46
February.....	7,320	930	130	261	.466	.49
March.....	17,073	2,590	168	551	.984	1.13
April.....	33,954	4,010	416	1,132	2.02	2.25
May.....	12,582	615	281	406	.725	.84
June.....	35,474	5,530	334	1,182	2.11	2.36
July.....	15,517	942	234	501	.895	1.03
August.....	5,703	230	151	184	.329	.38
September.....	4,633	207	119	154	.275	.31
Water year 1946-47.....	165,120	5,530	110	452	.807	10.97
October 1947.....	3,664	191	100	118	.211	.24
November.....	3,628	157	90	121	.216	.24
December.....	3,110	134	79	100	.179	.21
Calendar year 1947.....	149,513	5,530	79	410	.732	9.94
January 1948.....	2,147	79	60	69.3	.124	.14
February.....	21,744	10,300	58	750	1.34	1.44
March.....	26,591	4,670	150	858	1.53	1.77
April.....	6,058	266	148	202	.361	.40
May.....	9,348	1,120	146	302	.539	.62
June.....	4,589	546	104	153	.273	.30
July.....	2,865	179	73	92.4	.165	.19
August.....	2,582	439	56	83.3	.149	.17
September.....	2,274	108	66	75.8	.135	.15
Water year 1947-48.....	88,600	10,300	56	242	.432	5.87
October 1948.....	2,134	90	60	68.8	.123	.14
November.....	2,593	102	61	86.4	.154	.17
December.....	2,362	94	57	76.2	.136	.16
Calendar year 1948.....	85,287	10,300	56	233	.416	5.65
January 1949.....	5,029	1,350	56	162	.280	.33
February.....	2,928	450	62	105	.187	.19
March.....	34,792	3,740	134	1,122	2.00	2.31
April.....	14,141	2,610	217	471	.841	.94
May.....	4,391	210	90	142	.254	.29
June.....	5,558	1,110	82	185	.330	.37
July.....	3,552	380	86	115	.205	.24
August.....	2,628	116	80	84.8	.151	.17
September.....	2,020	86	47	67.3	.120	.13
Water year 1948-49.....	82,128	3,740	47	225	.402	5.44
October 1949.....	1,584	56	47	51.1	.091	.11
November.....	1,569	58	45	52.3	.093	.10
December.....	1,999	143	45	64.5	.115	.13
Calendar year 1949.....	80,191	3,740	45	220	.393	5.31
January 1950.....	2,313	150	54	74.6	.133	.15
February.....	1,775	74	50	63.4	.113	.12
March.....	49,105	10,100	58	1,584	2.83	3.26
April.....	6,170	451	108	206	.368	.41
May.....	13,785	2,260	137	445	.795	.92
June.....	9,520	2,180	105	317	.566	.63
July.....	31,381	7,570	64	1,012	1.81	2.08
August.....	10,445	1,520	128	337	.602	.69
September.....	3,448	158	100	115	.205	.23
Water year 1950.....	133,094	10,100	45	365	.652	8.83

Yellow River at Ion, Iowa

LOCATION.—Lat. 43°06'35", long. 91°15'45", in SE¼SW¼ sec. 24, T. 96 N., R. 4 W., on downstream side of county 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 1950.

GAGE.—Wire-weight gage and crest-stage indicator; gage read once daily, more often at high stages. Datum of gage 664.65 feet above mean sea level, adjustment of 1912.

AVERAGE DISCHARGE.—16 years, 134 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Aug. 13	8,320	12.20	Feb. 11	40
1943-44...	June 16	12,200	13.48	Feb. 19	31
1944-45...	June 1	11,600	13.04	Dec. 18	23
1945-46...	Jan. 5	13,000	13.00	Dec. 16	35
1946-47...	June 13	6,900	(¹)10.40	Dec. 17	32
1947-48...	Mar. 19	11,400	(¹)12.46	Jan. 14	32
1948-49...	Mar. 4	4,650	(¹) 8.50	Jan. 14	20
1949-50...	Mar. 26	15,700	12.82	Jan. 10, 11	20

(1) Observed.

1934-50: Maximum discharge, 18,500 second-feet May 29, 1941 (gage height, 15.2 feet, from floodmarks), from rating curve extended above 7,300 second-feet on basis of slope-area determination of peak flow; minimum observed, 14 second-feet Dec. 30, 31, 1939.

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

COOPERATION.—Services of observer furnished by Corps of Engineers.

Yellow River at Ion, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	103	119	65	100	65	323	331	100	107	65	58	119
2.....	100	126	55	97	70	198	291	107	170	63	56	113
3.....	94	116	70	100	80	291	261	94	113	63	58	110
4.....	735	113	90	63	70	249	245	94	103	67	58	103
5.....	253	367	90	48	60	156	230	103	91	63	56	230
6.....	194	173	95	70	60	156	212	132	97	94	54	142
7.....	180	145	80	80	50	119	208	126	97	100	52	119
8.....	162	135	90	70	60	84	201	107	94	65	52	113
9.....	156	139	100	80	60	110	194	100	91	60	60	107
10.....	145	166	105	80	60	120	184	100	87	60	56	103
11.....	139	142	100	70	40	100	166	100	84	94	79	100
12.....	132	139	55	45	45	119	187	100	84	63	1,730	776
13.....	129	142	55	55	45	119	180	94	81	60	5,210	371
14.....	123	132	90	75	45	754	166	91	84	63	774	215
15.....	123	132	95	60	45	3,000	152	87	84	63	351	166
16.....	119	139	*97	70	45	2,600	159	238	81	58	287	145
17.....	119	*135	97	65	50	510	145	166	107	276	234	135
18.....	116	126	97	60	50	363	139	145	81	84	194	126
19.....	113	126	76	60	55	327	145	135	76	65	180	123
20.....	113	126	84	65	60	264	139	132	76	60	170	139
21.....	110	129	91	75	100	245	129	119	72	60	156	123
22.....	116	119	113	80	250	230	126	119	187	58	148	116
23.....	113	116	103	80	500	264	135	113	79	55	755	110
24.....	107	119	94	70	427	792	126	119	70	56	291	107
25.....	110	116	84	60	253	814	119	113	65	56	187	107
26.....	110	123	84	60	234	720	113	119	65	55	283	103
27.....	103	79	107	65	184	525	116	113	65	56	166	100
28.....	110	75	103	65	508	395	107	103	335	56	139	100
29.....	103	75	100	*65	.....	355	107	103	100	60	132	97
30.....	116	70	103	70	.....	423	113	97	70	91	126	97
31.....	145	.....	103	75	.....	419	.....	113	.....	60	119	.....
1943-44												
1.....	92	108	87	68	57	76	330	208	330	252	119	105
2.....	89	92	86	68	52	70	454	182	366	312	121	92
3.....	87	87	84	62	52	70	155	235	215	249	115	86
4.....	86	84	82	61	50	68	128	270	200	208	348	86
5.....	82	86	82	65	48	65	95	187	187	208	229	84
6.....	82	82	103	62	44	66	102	182	178	213	146	81
7.....	82	115	112	40	45	44	105	164	164	182	122	76
8.....	82	192	97	45	48	46	95	178	155	182	122	76
9.....	82	155	89	58	44	43	100	173	200	178	115	79
10.....	81	142	84	55	46	42	98	168	202	164	112	76
11.....	81	134	76	54	34	210	89	155	155	146	108	87
12.....	79	136	86	51	33	622	95	155	235	150	105	82
13.....	92	130	43	52	39	175	92	155	1,550	155	102	86
14.....	86	126	40	*54	39	1,000	86	142	636	155	98	84
15.....	82	130	35	57	36	682	102	140	491	164	97	79
16.....	79	113	40	58	40	686	122	153	3,770	155	132	79
17.....	78	119	40	54	35	444	105	140	3,170	146	103	76
18.....	76	*113	45	56	34	235	98	130	1,460	146	98	76
19.....	76	113	45	60	31	142	98	240	904	618	95	87
20.....	76	105	50	52	37	142	98	229	714	166	86	178
21.....	294	105	50	55	38	187	202	195	593	146	92	86
22.....	175	92	45	57	1,860	164	173	192	501	134	86	76
23.....	108	102	40	57	294	843	150	706	535	138	94	76
24.....	100	100	40	57	363	*523	629	690	417	150	94	76
25.....	92	98	50	60	398	264	398	622	382	134	84	76
26.....	89	98	60	62	1,480	142	324	385	1,690	392	84	75
27.....	86	92	65	89	276	98	240	333	424	208	92	72
28.....	84	90	55	414	132	122	252	300	354	190	92	150
29.....	84	92	50	102	92	258	226	580	330	146	92	105
30.....	81	89	50	86	.....	88	226	288	264	134	84	79
31.....	108	.....	55	65	.....	84	.....	276	.....	122	153	.....

* Winter discharge measurement made on this date.

Note—Stage-discharge relation affected by ice Nov. 28 to Dec. 16, 1942, Jan. 6 to Feb. 3, Mar. 9, 10, Dec. 14-30, 1943.

Yellow River at Ion, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1	76	55	38	34	29	62	205	192	4,830	197	98	84
2	72	54	32	33	32	97	173	258	1,530	168	97	79
3	69	57	51	32	34	142	164	229	760	168	102	79
4	73	55	51	33	40	108	372	208	604	150	103	76
5	78	52	49	34	47	98	288	192	505	224	529	76
6	73	55	*49	35	47	102	315	178	444	146	157	72
7	69	57	47	36	50	92	258	164	385	130	112	66
8	68	56	47	34	46	79	229	150	357	130	100	110
9	66	56	46	32	48	86	243	148	348	164	97	95
10	68	54	48	33	47	215	208	159	294	126	102	79
11	65	54	46	36	42	495	197	150	288	121	95	75
12	63	52	36*	40	46	1,040	246	148	276	112	87	62
13	63	52	46	46	*45	1,150	240	148	270	112	86	65
14	60	54	58	47	47	1,320	218	150	246	113	576	66
15	58	58	48	47	44	1,870	208	150	522	108	136	66
16	62	56	38	*42	65	751	573	130	354	98	102	63
17	58	54	27	42	50	566	614	124	235	105	97	62
18	62	54	23	46	40	382	430	124	229	105	89	62
19	60	54	30	44	40	321	348	121	218	98	86	63
20	60	54	28	43	52	294	312	117	200	95	84	62
21	57	52	26	46	70	246	324	140	192	110	291	60
22	55	51	24	44	48	213	392	542	187	105	117	61
23	55	51	25	35	49	218	354	221	178	95	92	63
24	57	49	26	34	39	195	288	197	255	94	87	92
25	55	48	28	40	49	498	270	376	246	92	82	72
26	55	55	27	36	97	440	252	229	185	87	79	66
27	55	54	28	42	70	372	229	168	208	89	78	65
28	55	52	29	29	66	291	208	279	1,890	430	202	68
29	54	52	31	30	.....	261	197	213	408	112	563	95
30	55	49	32	29	.....	218	182	187	229	97	138	76
31	56	.....	34	28	.....	208	.....	202	.....	100	112	.....
1945-46												
1	79	97	55	61	70	546	113	61	52	411	50	44
2	70	197	108	65	70	150	108	60	51	134	79	43
3	65	76	105	60	85	205	108	60	51	105	48	41
4	62	62	106	60	150	202	108	61	50	87	45	40
5	62	61	90	4,000	1,970	105	95	62	48	79	44	39
6	63	58	89	3,900	* 732	2,940	98	58	48	76	45	4,080
7	60	60	76	573	238	* 312	92	60	50	70	46	1,120
8	60	58	86	357	161	178	100	57	48	134	45	732
9	60	142	75	303	102	105	97	56	48	73	342	279
10	62	79	60	261	102	97	94	56	51	73	98	324
11	60	69	60	249	115	92	92	56	65	65	58	202
12	58	68	62	230	102	2,820	87	57	57	57	50	159
13	58	288	61	190	89	2,580	82	55	54	57	47	132
14	57	108	62	170	84	395	81	55	50	55	46	124
15	58	89	40	150	81	300	82	56	58	58	48	110
16	58	82	35	125	68	246	79	54	56	54	82	102
17	60	79	40	115	48	478	76	54	65	54	4,260	94
18	58	75	45	125	56	246	79	55	100	55	3,960	86
19	58	68	*60	110	68	208	76	58	82	126	300	86
20	57	70	50	100	46	182	72	60	98	57	155	119
21	58	72	45	90	62	168	76	56	76	50	105	86
22	57	80	45	85	58	155	81	59	65	47	100	82
23	57	86	50	90	57	153	70	62	60	48	82	440
24	57	70	45	80	54	150	68	73	57	48	65	208
25	57	76	48	70	52	142	68	86	55	50	60	164
26	56	70	73	70	65	138	65	73	54	46	55	140
27	55	68	60	75	68	136	63	56	52	46	52	122
28	56	66	63	80	73	134	62	55	51	46	60	115
29	56	62	65	85	.....	126	62	54	235	46	55	102
30	55	61	62	80	.....	122	61	52	698	68	50	97
31	55	.....	60	75	.....	119	.....	54	.....	60	47	.....

* Winter discharge measurement made on this date.

Note—Stage-discharge relation affected by ice Dec. 19-31, 1944, Jan. 1-12, Jan. 29 to Feb. 4, Dec. 16-24, 1945, Jan. 5, Jan. 12 to Feb. 4, 1946.

Yellow River at Ion, Iowa—Continued
Daily Discharge, in Second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1	94	92	73	60	63	52	742	178	340	340	112	83
2	89	182	70	73	35	72	230	220	473	215	113	a75
3	87	138	79	75	44	62	198	174	361	205	112	67
4	87	130	79	63	40	* 58	305	162	389	284	112	64
5	86	115	81	72	58	a 75	1,010	150	340	240	109	382
6	94	98	84	70	65	89	824	160	284	202	105	83
7	73	122	87	72	65	300	410	156	258	195	105	71
8	72	134	82	70	57	246	333	150	243	170	101	66
9	70	119	82	62	a59	197	a350	148	238	158	101	64
10	78	138	84	65	a61	173	2,690	139	225	158	101	64
11	82	146	82	68	63	192	800	132	228	136	95	63
12	79	126	81	63	65	224	501	129	240	137	91	170
13	76	128	82	65	58	2,380	410	132	4,230	3,150	88	136
14	79	126	84	964	357	500	a360	143	1,460	284	84	78
15	70	124	84	155	586	190	312	126	930	270	83	68
16	79	128	68	82	a440	a160	354	124	770	a240	80	65
17	73	119	32	44	297	136	312	126	630	a210	80	64
18	73	112	*72	46	155	134	270	129	586	182	78	63
19	69	110	68	52	110	132	255	132	522	172	76	61
20	66	110	68	69	a100	182	235	118	445	166	428	60
21	62	112	75	36	a95	147	218	116	375	160	94	64
22	61	98	70	*68	a90	136	205	122	326	150	81	60
23	62	89	73	62	a80	410	238	129	322	150	75	60
24	60	98	69	73	76	1,650	298	122	270	146	73	60
25	100	102	68	178	79	294	215	122	246	139	70	a59
26	81	*95	65	95	76	170	215	121	246	134	68	58
27	76	94	68	97	50	164	208	116	222	129	68	58
28	73	86	124	76	52	178	184	118	215	132	68	63
29	108	90	73	65	.....	143	182	205	361	122	274	62
30	110	87	49	36	.....	137	180	414	438	119	139	58
31	100	.....	60	65	.....	119	.....	298	.....	119	98	.....
1947-48												
1	58	64	60	52	48	154	112	68	75	60	51	58
2	58	63	60	49	48	129	113	a68	75	59	49	56
3	150	61	60	46	46	101	106	a68	73	60	49	49
4	69	61	60	47	46	95	109	a68	72	a60	51	46
5	64	63	60	48	*50	94	105	67	73	a58	51	44
6	64	66	60	49	48	89	101	95	78	a58	51	42
7	61	64	60	49	48	a 85	96	92	76	a56	51	43
8	60	61	56	48	46	a 80	96	84	75	a54	53	43
9	a60	60	55	48	44	76	89	77	72	a52	56	42
10	a59	58	56	47	42	68	78	170	72	a50	54	41
11	58	58	58	48	42	65	74	122	70	48	53	40
12	58	58	60	46	44	63	87	118	70	57	52	39
13	57	56	60	40	46	62	84	113	69	60	52	40
14	56	56	60	32	48	66	81	116	72	57	52	40
15	56	58	58	34	50	613	82	122	70	48	51	40
16	56	64	58	38	54	2,220	84	116	64	81	51	40
17	57	*60	59	40	70	717	76	109	65	68	56	40
18	56	59	*58	42	500	588	72	102	64	57	62	39
19	55	58	57	43	544	3,950	70	96	65	54	55	39
20	54	58	56	*44	79	403	72	95	64	56	52	80
21	54	60	55	44	46	249	68	91	64	52	52	69
22	a54	69	43	44	44	160	69	88	69	50	52	57
23	a54	66	37	45	37	136	69	86	65	50	51	56
24	54	66	34	45	45	*119	66	83	64	49	49	51
25	58	64	36	47	200	109	65	82	64	48	49	45
26	59	62	36	48	78	109	66	82	62	a48	50	41
27	61	60	44	48	1,000	110	68	80	62	a48	49	38
28	264	58	44	50	3,000	112	69	81	66	48	a49	39
29	215	58	43	47	296	118	69	77	63	50	a100	40
30	76	58	49	48	.....	119	69	77	60	52	710	39
31	66	.....	50	47	.....	118	.....	76	.....	53	78	.....

* Winter discharge measurement made on this date.

a No gage-height record; discharge interpolated or based on weather records.

Note—Stage-discharge relation affected by ice Nov. 26 to Dec. 3, Dec. 6-12, 1947, Jan. 12-28, Feb. 2-18, 25, 27, 28, 1948.

Yellow River at Ion, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	39	36	27	21	35	74	178	72	47	73	67	a33
2.....	40	36	29	21	36	72	156	71	110	57	52	a34
3.....	40	37	29	23	36	70	a115	69	63	53	63	a34
4.....	40	37	30	45	36	1,300	a100	69	53	50	61	a34
5.....	40	36	35	100	36	1,300	91	68	43	51	58	a34
6.....	39	35	37	54	35	532	a 85	69	38	61	53	a34
7.....	52	36	35	48	35	270	a 82	67	37	52	50	a33
8.....	56	36	34	43	35	515	79	63	36	54	52	a33
9.....	47	38	33	38	34	312	75	60	37	50	50	a33
10.....	40	35	32	34	*33	150	73	62	36	46	49	a34
11.....	39	35	32	30	33	112	71	a62	36	44	44	37
12.....	38	34	32	25	32	88	67	a62	34	a42	40	36
13.....	37	35	32	*23	32	88	66	a61	47	a41	36	39
14.....	a36	35	32	20	32	85	59	a64	49	a41	32	37
15.....	a34	34	32	30	31	66	73	a61	51	a43	33	38
16.....	a32	33	31	49	31	68	264	a60	49	a48	31	38
17.....	31	33	30	49	31	68	166	59	a43	63	60	37
18.....	30	33	30	29	31	a 64	84	a59	a37	a50	47	38
19.....	33	34	29	23	31	a 62	86	a59	a35	a52	44	37
20.....	35	44	28	24	30	a 58	88	a59	a34	66	43	37
21.....	36	34	27	36	30	142	88	a60	43	483	a 35	36
22.....	36	39	26	33	30	192	95	60	38	170	a 33	35
23.....	36	33	26	31	31	202	89	59	39	79	a 32	32
24.....	37	33	25	31	500	a160	89	59	324	68	a 32	30
25.....	38	33	24	30	375	246	88	58	154	54	a 32	26
26.....	38	32	23	30	252	139	83	56	124	51	a32	25
27.....	37	33	23	30	141	148	79	53	116	50	a32	26
28.....	36	31	23	30	105	a260	77	52	515	47	a32	24
29.....	a36	32	22	33	.....	a230	73	51	263	41	a32	24
30.....	a37	31	22	34	.....	a200	73	49	129	37	a33	23
31.....	38	.....	21	35	.....	a190	.....	47	.....	33	a33	.....
1949-50												
1.....	27	26	a27	29	27	23	245	49	91	74	a400	64
2.....	26	26	a30	38	28	22	207	46	97	72	a250	63
3.....	27	a28	a28	54	28	24	140	49	80	74	a190	60
4.....	26	a28	a26	40	29	35	109	146	71	71	a150	a56
5.....	24	a28	a25	31	29	1,780	92	575	56	71	a130	a32
6.....	26	a28	a24	27	30	3,310	80	479	50	68	a115	a49
7.....	26	a28	a23	24	32	4,560	74	386	46	67	a100	a47
8.....	29	a30	a23	22	33	778	70	371	45	64	a100	a45
9.....	30	a30	a23	21	33	151	65	1,360	678	64	a100	a44
10.....	31	a30	a23	20	32	75	a 80	523	207	63	a100	44
11.....	29	a30	37	30	31	a 60	a100	200	153	60	a200	45
12.....	27	a35	127	30	30	a 50	a 90	125	129	57	a130	50
13.....	24	a32	94	45	29	a 45	a 74	96	3,710	54	a100	45
14.....	23	a30	78	65	28	a 41	a 66	83	715	49	a 84	45
15.....	23	a29	*37	40	28	a 50	a 60	75	515	44	a 76	44
16.....	a24	a28	31	30	28	a120	a 58	74	248	4,520	a 70	46
17.....	a24	27	28	39	28	a 60	a 54	65	a150	1,160	67	45
18.....	a24	a27	a26	38	27	a 50	a 52	60	a600	484	65	49
19.....	24	a26	a26	*35	27	a 45	50	56	a400	390	64	50
20.....	24	a26	a28	33	26	a 80	49	53	a250	282	64	53
21.....	27	a26	a27	31	26	a150	50	50	a210	228	67	167
22.....	27	a26	a26	30	*26	279	51	47	a180	197	65	104
23.....	27	a26	a25	30	25	334	56	46	a400	184	63	74
24.....	26	a28	25	29	25	890	58	46	a280	180	61	63
25.....	23	a26	27	29	24	770	a130	770	a200	165	60	53
26.....	24	a28	a29	28	24	9,810	a80	197	a150	153	63	47
27.....	24	a26	a27	28	23	1,900	a70	153	a120	140	64	46
28.....	24	a25	a26	28	24	980	a60	146	a100	131	63	53
29.....	23	a26	a26	27	.....	556	a54	a120	a 90	123	84	54
30.....	27	a26	a25	27	.....	426	51	a105	a 80	121	67	61
31.....	29	.....	25	26	.....	256	.....	97	.....	a600	65	.....

* Winter discharge measurement made on this date.

a No, or doubtful, gage-height record; discharge computed on basis of records for nearby stations.

Note—Stage-discharge relation affected by ice Dec. 2-31, 1948, Jan. 1-15, Jan. 23 to Feb. 24, Dec. 16, 17, 24, 25, 31, 1949, Jan. 1 to Mar. 4, 1950.

Yellow River at Ion, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1942.....	4,591	735	94	148	0.661	0.76
November.....	3,959	367	70	132	.589	.66
December.....	2,771	113	55	89.4	.399	.46
Calendar year 1942.....	52,841	3,930	29	145	.647	8.79
January 1943.....	2,178	100	45	70.3	.314	.36
February.....	3,571	508	40	128	.571	.59
March.....	15,234	3,000	84	491	2.19	2.53
April.....	5,126	331	107	171	.763	.85
May.....	3,582	238	87	116	.518	.59
June.....	2,996	335	65	99.9	.446	.50
July.....	2,249	276	55	72.6	.324	.37
August.....	12,271	5,210	52	396	1.77	2.04
September.....	4,615	776	97	154	.688	.77
Water year 1942-43.....	63,143	5,210	40	173	.772	10.48
October 1943.....	2,951	294	76	95.2	.425	.49
November.....	3,320	192	82	111	.496	.55
December.....	1,966	112	35	63.4	.283	.33
Calendar year 1943.....	60,059	5,210	35	165	.737	9.97
January 1944.....	2,236	414	40	72.1	.322	.37
February.....	5,777	1,860	31	169	.888	.96
March.....	7,711	1,000	42	249	1.11	1.28
April.....	5,467	629	86	182	.812	.91
May.....	8,153	705	130	263	1.17	1.35
June.....	20,772	3,770	155	692	3.09	3.45
July.....	6,043	618	122	195	.871	1.00
August.....	3,620	348	84	117	.522	.60
September.....	2,626	178	72	87.5	.391	.44
Water year 1943-44.....	70,642	3,770	31	193	.862	11.73
October 1944.....	1,932	78	54	62.3	.278	.32
November.....	1,606	58	48	53.5	.239	.27
December.....	1,148	58	23	37.0	.165	.19
Calendar year 1944.....	67,091	3,770	23	183	.817	11.14
January 1945.....	1,162	47	28	37.5	.167	.19
February.....	1,379	97	29	49.2	.220	.23
March.....	12,430	1,870	62	401	1.79	2.06
April.....	8,537	614	164	285	1.27	1.42
May.....	5,994	542	117	193	.862	1.00
June.....	16,873	4,830	178	562	2.51	2.80
July.....	4,081	430	87	132	.589	.68
August.....	4,776	576	78	154	.688	.79
September.....	2,180	110	60	72.7	.325	.36
Water year 1944-45.....	62,098	4,830	23	170	.759	10.31
October 1945.....	1,844	79	55	59.5	.266	.31
November.....	2,597	288	58	86.6	.387	.43
December.....	1,982	108	35	63.9	.285	.33
Calendar year 1945.....	63,835	4,830	28	175	.781	10.60
January 1946.....	12,084	4,000	60	390	1.74	2.01
February.....	4,926	1,970	46	176	.786	.82
March.....	13,930	2,940	92	449	2.60	2.31
April.....	2,495	113	61	83.2	.371	.41
May.....	1,831	86	52	59.1	.264	.30
June.....	2,585	698	48	86.2	.385	.43
July.....	2,435	411	46	78.5	.350	.40
August.....	10,579	4,260	44	341	1.52	1.76
September.....	9,512	4,080	39	317	1.42	1.58
Water year 1945-46.....	66,800	4,260	35	183	.817	11.09

Yellow River at Ion, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1946	2,469	110	60	80	0.357	0.41
November	3,448	182	86	115	.513	.57
December	2,316	124	32	75	.335	.38
Calendar year 1946	68,610	4,260	32	188	.839	11.38
January 1947	3,141	964	36	101	.451	.52
February	3,376	586	35	121	.540	.56
March	9,222	2,380	52	207	1.32	1.53
April	13,044	2,690	180	435	1.94	2.17
May	4,811	414	116	155	.692	.80
June	16,213	4,230	215	540	2.41	2.69
July	8,594	3,150	119	277	1.24	1.43
August	3,362	428	68	117	.482	.56
September	2,449	382	58	81.6	.364	.41
Water year 1946-47	72,445	4,230	32	198	.884	12.03
October 1947	2,281	264	54	73.6	.329	.38
November	1,827	69	56	60.9	.272	.30
December	1,642	60	34	53.0	.237	.27
Calendar year 1947	70,245	4,230	34	192	.857	11.66
January 1948	1,403	52	32	45.3	.202	.23
February	6,689	3,000	37	231	1.03	1.11
March	11,177	3,950	62	361	1.61	1.86
April	2,465	113	65	82.2	.367	.41
May	2,875	176	67	92.7	.414	.48
June	2,053	78	60	68.4	.305	.34
July	1,701	81	48	54.9	.245	.28
August	2,341	710	49	75.5	.337	.39
September	1,376	80	38	45.9	.205	.23
Water year 1947-48	37,830	3,950	32	103	.460	6.28
October 1948	1,183	56	30	38.2	.171	.20
November	1,043	44	31	34.8	.155	.17
December	891	37	21	28.7	.128	.15
Calendar year 1948-49	35,197	3,950	21	96.2	.429	5.85
January 1949	1,082	100	20	34.9	.156	.18
February	2,129	500	30	76.0	.339	.35
March	7,463	1,300	58	241	1.08	1.24
April	2,892	264	59	96.4	.430	.48
May	1,880	72	47	60.6	.271	.31
June	2,660	515	34	88.7	.396	.44
July	2,150	483	33	69.4	.310	.36
August	1,323	67	31	42.7	.191	.22
September	991	39	23	33.0	.147	.16
Water year 1948-49	25,687	1,300	20	70.4	.314	4.26
October 1949	799	31	23	25.8	.115	.13
November	835	35	25	27.8	.124	.14
December	1,052	127	23	33.9	.151	.17
Calendar year 1949	25,256	1,300	20	69.2	.309	4.18
January 1950	994	65	20	32.1	.143	.17
February	780	33	23	27.9	.125	.13
March	27,710	9,810	22	894	3.99	4.60
April	2,475	245	49	82.5	.368	.41
May	6,648	1,360	46	214	.955	1.10
June	10,101	3,710	45	337	1.50	1.68
July	10,010	4,520	44	323	1.44	1.66
August	3,287	400	60	106	.473	.55
September	1,718	167	44	57.3	.256	.29
Water year 1949-50	66,409	9,810	20	182	.812	11.03

Turkey River at Garber, Iowa

LOCATION.—Lat. 42°44'25", long. 91°15'45", in sec. 36, 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 one mile downstream from Volga River.

DRAINAGE AREA.—1,530 square miles.

RECORDS AVAILABLE.—August 1913 to November 1916, May 1919 to September 1927, and November 1932 to September 1950 in reports of U. S. 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 entitled "Stream Flow Records of Iowa, 1873-1932."

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, same site and datum.

AVERAGE DISCHARGE.—29 years (1913-16, 1919-27, 1929-30, 1933-50), 863 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Mar. 16	17,600	21.02	Feb. 14, 16	330
1943-44...	June 16	16,900	20.60	Jan. 12	180
1944-45...	June 2	13,000	18.19	Dec. 27	120
1945-46...	Jan. 5	24,100	24.30	Sept. 5	158
1946-47...	June 13	29,000	26.55	Dec. 18	100
1947-48...	Mar. 19	19,000	(¹)	Sept. 19	102
1948-49...	Mar. 4	16,800	20.5	Sept. 29	87
1949-50...	Mar. 7	23,700	23.70	Oct. 10	77

(1) Maximum gage-height 23.65 feet Feb. 28.

1913-16, 1919-27, 1929-30, 1932-50: Maximum discharge, 29,000 second-feet June 13, 1947; maximum gage height, 28.06 feet Feb. 23, 1922 (from floodmarks); minimum discharge observed, 46 second-feet June 29, 1934.

REMARKS.—Records good except those computed from wire-weight gage readings, which are fair, and those for periods of ice effect, which are poor. Slight diurnal fluctuation caused by hydroelectric plant at Elkader.

COOPERATION.—Services of observer and several discharge measurements furnished by Corps of Engineers.

Turkey River at Garber, Iowa—Continued
Daily Discharge, in Second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	959	923	735	760	390	2,630	3,320	804	699	766	381	670
2.....	884	923	678	760	390	1,820	2,770	751	2,270	687	377	631
3.....	872	910	680	710	460	1,490	2,080	711	1,560	644	381	600
4.....	3,190	892	680	550	500	1,490	1,740	666	1,270	622	449	536
5.....	4,550	982	680	500	500	1,190	1,510	640	968	618	408	715
6.....	3,280	1,460	630	530	480	1,060	1,340	974	828	586	373	847
7.....	2,550	1,310	470	600	460	1,100	1,240	1,260	785	540	362	735
8.....	1,900	959	470	630	430	1,200	1,170	959	758	532	339	801
9.....	1,460	1,080	540	600	460	1,300	1,110	785	735	527	453	715
10.....	1,210	1,470	540	650	480	1,300	1,070	754	723	449	369	661
11.....	1,110	1,390	470	600	350	1,200	1,040	735	703	505	365	505
12.....	1,040	1,170	400	480	370	1,500	1,120	715	682	457	1,840	785
13.....	977	1,090	470	450	350	1,800	1,310	682	644	457	12,200	1,130
14.....	932	996	500	430	330	1,860	1,180	653	540	453	10,900	793
15.....	901	1,230	450	420	340	7,970	1,020	774	622	453	6,010	719
16.....	880	1,060	420	420	330	15,000	959	1,810	674	572	3,870	635
17.....	859	987	*510	410	360	9,640	901	1,930	778	1,090	2,050	514
18.....	843	941	500	400	350	4,170	872	1,370	762	973	1,320	492
19.....	816	*832	420	380	400	4,150	855	1,160	618	847	1,020	470
20.....	801	820	450	360	1,000	4,140	808	1,020	545	474	896	496
21.....	797	797	420	350	1,700	3,310	793	892	514	470	793	509
22.....	797	785	540	370	4,000	3,270	735	847	2,330	492	801	487
23.....	789	778	560	400	4,500	2,470	797	797	1,130	483	812	466
24.....	778	774	560	440	3,750	3,270	801	778	793	478	824	432
25.....	754	774	500	410	2,710	*5,040	808	766	635	466	950	400
26.....	743	778	610	400	2,070	6,060	762	754	540	505	941	404
27.....	739	644	800	390	1,830	5,670	778	739	518	496	828	416
28.....	735	670	780	400	2,380	2,600	731	707	4,090	410	816	408
29.....	739	687	780	400	.....	2,550	774	687	1,380	572	804	388
30.....	797	711	780	*410	.....	3,300	820	674	945	545	770	384
31.....	954	.....	760	410	.....	2,910	.....	703	.....	449	731	.....
1943-44												
1.....	377	563	388	300	581	674	1,390	1,350	1,660	982	653	527
2.....	377	536	396	310	466	604	1,840	996	1,680	1,210	600	500
3.....	365	505	392	290	483	591	1,560	1,140	1,890	950	554	453
4.....	432	470	377	290	432	545	1,150	1,340	1,600	839	1,140	420
5.....	436	445	373	250	445	478	914	1,990	1,280	828	1,660	392
6.....	350	440	466	210	244	400	832	1,790	1,130	793	1,320	396
7.....	362	627	496	190	240	206	789	1,300	1,040	762	876	373
8.....	365	678	518	190	300	200	770	1,150	1,000	743	699	347
9.....	347	774	492	200	280	250	770	1,080	1,100	715	649	332
10.....	347	782	461	200	260	350	743	1,060	1,080	703	563	343
11.....	339	723	404	190	240	1,810	797	996	1,150	774	558	408
12.....	336	627	384	180	210	3,700	824	950	1,330	723	514	449
13.....	362	556	285	190	230	2,690	888	884	4,340	743	466	509
14.....	354	540	265	*195	280	8,470	1,240	816	4,440	731	488	420
15.....	350	527	250	210	290	7,030	843	812	3,230	719	457	388
16.....	354	509	250	220	280	3,960	996	901	14,500	835	478	369
17.....	373	449	270	230	260	2,850	1,120	851	8,810	754	514	365
18.....	358	470	310	240	250	2,040	954	828	7,450	731	536	339
19.....	358	492	400	250	240	1,210	880	2,070	5,800	918	532	365
20.....	365	*461	390	270	240	1,060	855	3,190	3,960	649	449	631
21.....	1,040	453	370	290	290	1,080	1,150	4,500	2,430	600	440	457
22.....	751	461	340	300	1,820	1,170	1,490	3,170	2,300	577	436	408
23.....	500	453	320	300	2,570	*3,630	1,520	5,900	1,970	554	470	424
24.....	408	440	320	360	2,430	5,850	1,870	4,600	1,670	545	591	404
25.....	424	440	350	400	1,750	3,310	2,510	4,700	1,460	545	470	384
26.....	392	424	340	500	4,100	2,080	2,070	3,960	1,720	1,790	432	365
27.....	381	432	340	2,690	2,210	1,230	1,300	2,990	1,250	1,690	424	350
28.....	365	416	350	3,070	1,340	1,090	1,270	2,380	1,120	1,370	420	445
29.....	365	392	310	987	932	1,260	1,090	2,810	1,170	892	449	428
30.....	365	404	290	867	.....	1,010	1,560	2,250	1,060	743	449	388
31.....	509	.....	280	812	.....	867	.....	1,840	.....	687	657	.....

* Winter discharge measurement made on this date.

Note—Stage-discharge relation affected by ice Dec. 3-31, 1942, Jan. 1 to Feb. 23, Mar. 7-12, Dec. 14-31, 1943, Jan. 1-26, Feb. 7-21, Mar. 8-10, 1944. Gage heights obtained from wire-weight gage readings or graph based on wire-weight gage readings Oct. 3, 4, 9, 10, Nov. 6-12, 15-18, Dec. 3, 4, 12-16, 20-22, 1942, Jan. 5, 12-21, 25, 26, Mar. 8-14, 16-24, 28-30, June 13, 14, July 10-21, 26-31, Aug. 1-5, 22-31, Sept. 26, 27, 1943, Jan. 29 to May 16, May 19-26, 29, June 14, 18-29, 1944.

Turkey River at Garber, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1	368	269	197	150	140	449	1,340	1,080	6,160	1,750	739	502
2	356	284	200	130	150	1,100	1,220	1,120	11,900	1,480	679	445
3	356	310	190	140	160	1,020	1,140	1,220	7,810	1,300	637	449
4	364	276	250	150	170	950	3,580	1,290	4,330	1,210	555	441
5	372	287	270	150	180	1,180	2,490	1,280	2,900	1,140	930	441
6	384	265	*280	160	190	930	1,960	1,176	2,440	1,040	1,080	424
7	384	298	287	160	200	702	1,910	1,050	2,100	970	1,720	437
8	360	276	313	150	210	716	1,770	970	1,890	995	1,200	462
9	344	280	254	140	220	*865	1,870	895	1,730	1,320	930	510
10	325	272	234	140	220	1,800	1,650	860	1,810	940	796	428
11	325	262	237	140	220	2,740	1,490	835	1,560	865	734	428
12	321	262	230	150	230	3,890	1,470	811	1,460	830	693	412
13	310	276	230	150	240	4,110	1,340	801	1,390	796	656	404
14	313	280	300	160	250	5,400	1,460	1,940	1,290	763	5,310	404
15	313	284	340	160	*240	7,810	1,500	1,350	1,220	711	4,470	400
16	325	284	270	150	460	8,380	3,290	1,230	2,150	693	2,170	396
17	302	287	250	*160	360	10,100	4,030	1,100	1,570	670	1,550	396
18	306	291	220	170	310	7,250	3,460	950	1,340	688	1,180	380
19	298	287	200	170	300	3,990	2,580	875	1,180	670	985	336
20	295	258	190	170	290	2,970	2,060	835	1,110	656	865	340
21	287	284	180	170	290	2,230	1,810	875	1,040	1,420	910	340
22	265	265	170	160	295	1,820	1,620	1,770	990	855	855	372
23	284	265	160	160	321	1,610	1,710	4,780	940	683	729	433
24	280	272	150	150	310	1,440	1,910	2,710	1,310	642	660	559
25	295	262	140	150	524	2,340	2,410	2,370	3,120	614	619	466
26	265	276	130	150	697	4,840	2,170	2,880	1,610	633	532	416
27	269	272	120	140	619	4,260	1,650	3,850	1,500	559	550	466
28	265	276	130	140	488	2,810	1,390	4,350	6,710	2,490	674	642
29	262	265	140	140	.....	2,060	1,260	3,040	6,020	1,290	697	532
30	272	244	150	140	.....	1,700	1,170	2,740	2,350	885	587	510
31	284	.....	170	130	.....	1,500	.....	2,120	.....	796	532	.....
1945-46												
1	519	344	400	310	460	637	1,040	396	348	1,060	203	178
2	462	497	683	320	440	763	975	384	291	995	471	172
3	441	454	739	340	420	725	890	376	272	384	212	175
4	412	372	697	380	460	820	845	388	302	344	186	194
5	392	348	591	8,800	1,800	1,320	796	376	276	280	175	158
6	380	352	564	19,200	*5,900	16,600	768	380	287	313	192	2,730
7	356	*340	537	14,270	4,060	8,050	739	372	265	251	186	4,400
8	325	769	532	4,590	5,450	*3,680	758	360	258	298	200	3,500
9	372	744	502	2,260	3,960	1,900	739	356	230	546	352	1,910
10	336	458	480	1,560	3,280	1,240	744	352	227	396	348	1,890
11	336	428	400	1,260	2,800	1,080	725	360	244	329	284	2,510
12	329	480	280	1,120	2,400	3,160	683	348	227	218	212	1,540
13	325	920	290	816	2,000	11,500	642	348	258	234	212	1,000
14	313	642	300	850	1,500	7,320	624	348	306	224	197	772
15	298	524	280	830	1,000	4,580	614	340	280	221	192	642
16	340	471	270	806	1,200	2,930	578	332	291	230	192	189
17	332	441	260	725	1,300	4,000	541	336	306	237	380	515
18	332	428	250	700	1,200	3,250	532	344	874	224	1,120	424
19	325	384	*250	680	1,150	2,710	471	348	619	248	910	428
20	317	408	250	640	1,000	2,210	497	368	623	356	524	506
21	310	404	250	630	1,030	1,930	471	360	506	237	376	458
22	291	356	260	560	915	1,650	471	348	466	224	298	801
23	325	258	280	560	840	1,470	488	344	388	224	262	2,190
24	310	340	300	550	702	1,510	449	364	356	203	192	905
25	310	392	310	540	610	1,800	437	404	356	218	221	796
26	306	396	320	500	555	1,820	416	372	321	218	209	716
27	310	408	330	480	502	1,800	412	356	306	189	212	610
28	302	380	330	480	471	1,600	400	396	321	172	224	550
29	295	368	320	500	.....	1,410	416	356	424	172	206	528
30	332	364	320	520	.....	1,800	404	329	1,050	189	192	528
31	313	.....	330	500	.....	1,120	.....	310	.....	194	197	.....

* Winter discharge measurement made on this date.

Note—Stage-discharge relation affected by ice Dec. 3-5, 12-31, 1944, Jan. 1 to Feb. 21, Dec. 10-31, 1945, Jan. 1-5, Jan. 18 to Feb. 6, Feb. 11-19, 1946. Gage heights obtained from wire-weight gage readings or graph based on wire-weight gage readings Feb. 24, 25, Mar. 2, 3, 6-9, 27-29, 1945, Feb. 9, 10, 20-23, Mar. 7, 23, 24, 26, 1946.

Turkey River at Garber, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	462	830	454	240	360	320	1,330	1,320	3,040	6,940	702	475
2.....	388	1,100	408	200	340	340	1,320	1,400	4,300	4,240	603	462
3.....	404	915	388	160	300	340	1,180	1,290	3,100	3,680	679	428
4.....	384	980	424	140	260	360	1,970	1,190	2,290	2,840	660	400
5.....	364	840	466	120	220	*370	4,780	1,120	3,880	2,970	651	665
6.....	352	725	458	140	200	380	5,460	1,010	2,870	4,750	624	573
7.....	356	706	437	180	200	560	4,690	1,060	2,610	2,990	605	412
8.....	304	706	408	220	260	680	3,380	1,000	2,340	2,120	582	392
9.....	352	702	420	280	340	840	2,230	965	2,000	1,75c	573	396
10.....	356	729	433	340	400	2,000	7,960	910	1,940	1,560	497	376
11.....	368	758	424	380	440	2,900	9,450	850	1,640	1,410	528	356
12.....	396	820	420	420	500	3,450	66,640	816	2,530	1,640	532	1,130
13.....	559	875	396	440	880	6,200	3,970	816	22,500	6,540	506	925
14.....	582	792	329	2,000	1,000	3,980	2,850	845	19,700	6,840	403	550
15.....	497	716	295	3,540	2,400	2,200	2,290	845	11,900	4,400	475	445
16.....	449	702	200	3,300	3,000	1,800	2,230	895	5,740	2,910	471	408
17.....	424	651	*120	3,000	2,700	1,260	2,350	890	6,430	2,200	462	388
18.....	458	660	100	2,500	2,300	1,110	2,200	865	6,880	1,800	441	356
19.....	462	679	120	2,000	1,800	960	1,880	880	5,220	1,590	462	348
20.....	424	642	160	1,000	1,500	935	1,740	865	3,840	1,520	433	340
21.....	400	614	360	500	1,000	885	1,560	820	2,970	1,330	428	396
22.....	416	519	520	*230	900	855	1,410	792	2,510	1,180	441	340
23.....	388	506	500	260	820	1,220	g1,930	940	2,230	1,090	420	g348
24.....	601	475	480	600	640	2,420	g3,070	1,000	2,020	1,020	420	g313
25.....	706	568	460	1,000	460	2,790	g2,610	980	1,800	945	471	g302
26.....	744	532	500	1,200	380	1,840	1,790	990	1,69c	905	454	g295
27.....	975	506	800	1,000	340	1,440	1,520	811	1,560	880	428	g284
28.....	748	493	1,180	700	320	1,130	1,330	910	1,740	830	412	g317
29.....	702	466	475	500	.....	1,020	1,240	2,060	17,100	782	524	h340
30.....	739	493	360	460	.....	890	1,260	3,340	11,000	739	555	g321
31.....	683	.....	280	400	.....	850	.....	2,690	.....	697	564	.....
1947-48												
1.....	317	428	400	300	250	5,000	990	725	519	420	160	515
2.....	298	392	450	310	250	1,500	860	714	519	392	158	368
3.....	295	364	500	320	250	900	768	697	484	368	165	272
4.....	647	392	580	310	260	700	720	688	471	g306	150	244
5.....	488	*380	700	300	270	600	693	688	591	g317	150	215
6.....	372	364	800	300	280	550	688	940	915	420	144	140
7.....	344	372	820	*310	280	500	674	g985	702	364	160	138
8.....	329	348	820	290	280	450	697	880	647	g298	167	153
9.....	g302	340	600	270	280	400	720	875	596	g230	153	138
10.....	302	310	480	250	280	350	720	5,600	532	g203	144	134
11.....	g310	352	450	240	290	300	885	g2,750	493	g200	183	138
12.....	316	317	480	240	300	350	945	1,760	475	810	148	132
13.....	321	g205	500	250	310	400	870	1,570	471	902	150	120
14.....	276	g284	470	260	340	500	763	1,280	454	458	144	108
15.....	276	380	400	270	380	2,000	679	g2,340	475	e350	134	104
16.....	295	396	370	270	440	g10,100	660	1,930	445	e300	148	132
17.....	269	380	380	270	550	g13,700	647	1,300	420	e260	140	116
18.....	262	388	*400	260	2,000	g 8,180	633	1,100	412	e240	136	110
19.....	321	376	420	*250	2,300	g16,100	596	975	412	e230	134	102
20.....	272	364	410	240	2,200	g 7,510	591	880	396	e220	140	189
21.....	265	376	390	240	1,500	g 2,990	587	830	396	e210	124	200
22.....	258	412	380	230	1,000	g 1,850	541	777	449	e200	126	186
23.....	230	420	350	230	800	* 1,380	605	716	416	183	118	140
24.....	240	420	340	230	750	1,160	693	665	392	175	118	138
25.....	302	412	340	230	1,000	985	734	660	384	200	108	126
26.....	424	388	360	240	2,000	885	729	628	380	183	110	118
27.....	547	350	370	240	4,000	g 1,740	773	610	376	167	106	114
28.....	1,150	300	360	240	16,000	g 1,440	840	587	796	155	116	110
29.....	697	280	340	250	11,000	1,220	860	555	775	206	120	122
30.....	541	300	320	250	.....	1,260	768	532	550	189	1,120	116
31.....	466	.....	310	250	.....	1,140	.....	497	.....	162	674	.....

* Winter discharge measurement made on this date.

e Gage reading not representative of average for day; discharge computed on basis of records for stations on Maquoketa River near Maquoketa and Upper Iowa River near Decorah.

g Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 16-27, 30, 31, 1946, Jan. 1-14, Jan. 16 to Mar. 11, Nov. 27 to Dec. 31, 1947, Jan. 1 to Mar. 15, 1948. Discharge computed from once daily wire-weight gage readings Apr. 26 to May 7, Oct. 1-3, 10, 13-25, 1947, July 14, July 23 to Aug. 29, Sept. 2-30, 1948.

Turkey River at Garber, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	120	118	124	150	220	400	3,720	449	234	475	209	95
2.....	116	114	140	150	220	370	2,850	445	400	437	124	99
3.....	118	132	150	150	210	450	1,690	428	325	332	122	128
4.....	112	126	160	1,400	210	4,500	1,200	412	251	306	124	619
5.....	120	134	172	2,530	210	11,700	1,000	400	269	295	124	441
6.....	116	138	234	955	200	8,480	905	388	230	454	112	112
7.....	280	128	134	806	200	4,800	806	368	206	400	112	114
8.....	348	122	146	730	200	4,260	711	372	142	506	104	112
9.....	280	142	190	660	*190	3,630	665	396	138	368	104	106
10.....	206	134	200	620	190	2,290	596	380	138	298	110	106
11.....	172	126	220	600	190	1,570	573	372	140	272	802	110
12.....	172	132	230	590	190	1,180	532	368	144	158	568	146
13.....	138	183	240	580	180	1,030	502	340	200	153	360	114
14.....	118	124	240	580	180	955	497	332	348	462	200	118
15.....	122	122	250	700	180	665	550	340	356	209	240	110
16.....	120	165	250	980	180	619	550	376	284	158	254	112
17.....	126	153	240	750	180	596	596	352	340	138	144	110
18.....	116	136	230	570	180	546	734	332	162	189	218	108
19.....	126	186	220	460	170	506	1,030	340	142	148	130	95
20.....	106	248	200	420	170	506	1,100	298	258	140	118	101
21.....	126	165	190	380	170	806	980	178	180	215	117	95
22.....	124	148	190	340	170	3,090	905	466	258	400	116	97
23.....	120	197	190	320	160	2,450	806	400	224	336	114	88
24.....	122	150	180	290	410	1,480	711	372	1,420	178	101	118
25.....	118	148	180	280	1,800	1,300	642	325	1,830	218	101	99
26.....	124	138	180	270	1,000	1,990	642	280	806	209	106	92
27.....	126	160	170	240	700	3,900	573	240	734	132	104	88
28.....	130	142	160	250	500	3,090	528	206	782	165	99	88
29.....	126	*128	160	240	.....	2,070	488	153	782	126	94	87
30.....	120	120	150	230	.....	1,420	466	190	454	118	103	88
31.....	128	.....	150	230	.....	2,360	.....	240	.....	120	106	.....
1949-50												
1.....	82	88	92	110	110	120	1,060	528	528	905	6,140	353
2.....	87	84	114	115	110	120	805	489	930	855	1,910	337
3.....	87	87	95	170	110	120	780	461	958	830	1,340	322
4.....	84	92	85	250	105	120	662	595	595	780	1,060	311
5.....	85	88	94	150	100	5,000	618	780	528	730	905	304
6.....	94	90	112	110	105	12,400	550	1,080	449	662	780	300
7.....	104	92	116	105	115	22,700	505	1,220	401	640	708	290
8.....	90	90	116	100	120	18,600	465	730	381	618	935	293
9.....	88	88	110	96	120	6,210	477	2,990	2,980	595	708	286
10.....	77	92	110	96	120	1,740	505	3,440	2,630	572	955	252
11.....	87	87	262	92	115	800	595	1,910	1,030	550	880	300
12.....	92	104	388	100	115	680	550	1,140	730	528	755	256
13.....	90	85	150	600	110	620	505	905	6,970	572	662	307
14.....	82	88	*115	1,300	115	600	461	780	3,280	550	640	311
15.....	85	97	105	1,500	120	590	429	685	2,700	528	572	318
16.....	85	97	100	600	125	* 540	409	618	1,370	8,470	528	311
17.....	87	85	100	250	120	520	393	618	1,000	9,530	493	296
18.....	80	84	100	*140	125	500	377	572	3,120	10,000	461	304
19.....	88	88	100	125	120	485	373	528	3,180	4,200	441	413
20.....	90	97	95	120	125	572	349	505	1,840	2,900	421	457
21.....	94	94	90	115	*120	818	345	497	1,400	3,440	413	4,300
22.....	101	94	96	115	115	2,500	330	489	1,080	2,580	401	805
23.....	90	104	100	110	120	3,820	318	481	955	1,630	393	595
24.....	85	99	92	110	115	6,910	1,030	685	8,790	1,220	385	505
25.....	92	95	100	110	115	5,930	2,140	4,010	9,830	1,080	365	505
26.....	87	110	105	110	115	15,600	1,110	1,980	3,160	1,030	353	453
27.....	84	99	100	110	120	15,600	805	1,280	1,910	930	365	393
28.....	88	88	100	110	125	5,240	618	880	1,430	830	465	425
29.....	92	97	105	110	.....	2,520	528	708	1,170	730	437	441
30.....	90	94	105	110	.....	1,430	505	618	1,030	1,760	385	413
31.....	87	.....	110	110	.....	1,200	.....	618	.....	6,380	369	.....

* Winter discharge measurement made on this date.

Note—Stage-discharge relation affected by ice Nov. 30, Dec. 2-4, 9-31, 1948, Jan. 1-4, Jan. 8 to Mar. 4, Dec. 9, 10, 13-31, 1949, Jan. 1 to Mar. 5, Mar. 11-18, 1950. Gage heights obtained from wire-weight gage readings or graph based on wire-weight gage readings Oct. 1-7, Oct. 9 to Nov. 29, Dec. 1, 5-8, 1948, May 8 to June 23, July 3-5, 10-13, July 15 to Aug. 10, Aug. 13 to Dec. 12, Dec. 17-31, 1949, Jan. 1, 2, 5-12, Jan. 17 to Feb. 13, Feb. 15 to Mar. 3, Mar. 9-26, Apr. 2-23, May 1-5, 25, June 2-4, 6, 7, 25, 26, Sept. 17, 18, 24-26, 1950.

Turkey River at Garber, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1942.....	38,636	4,550	735	1,246	0.814	0.94
November.....	28,823	1,470	644	961	.628	.70
December.....	17,843	800	400	576	.376	.43
Calendar year 1942.....	404,570	10,600	230	1,108	.724	9.83
January 1943.....	15,020	760	350	485	.317	.37
February.....	31,670	4,500	330	1,131	.739	.77
March.....	106,406	15,000	1,060	3,434	2.24	2.60
April.....	35,214	3,320	731	1,174	.767	.86
May.....	27,497	1,930	640	887	.580	.67
June.....	30,039	4,090	514	1,001	.654	.73
July.....	17,624	1,090	416	569	.372	.43
August.....	53,433	12,200	339	1,724	1.13	1.30
September.....	17,744	1,130	384	591	.386	.43
Water year 1942-43.....	420,003	15,000	330	1,151	.752	10.22
October 1943.....	12,807	1,040	336	413	.270	.31
November.....	15,519	782	392	517	.338	.38
December.....	11,137	518	250	359	.235	.27
Calendar year 1943.....	374,164	15,000	250	1,025	.670	9.11
January 1944.....	15,181	3,070	180	490	.320	.37
February.....	23,693	4,100	210	817	.534	.58
March.....	61,695	8,470	200	1,990	1.30	1.50
April.....	35,985	2,510	743	1,200	.784	.87
May.....	64,594	5,900	812	2,084	1.36	1.57
June.....	84,620	14,500	1,000	2,821	1.84	2.06
July.....	26,095	1,790	545	842	.550	.63
August.....	18,944	1,660	420	611	.399	.46
September.....	12,379	631	332	413	.270	.30
Water year 1943-44.....	382,649	14,500	180	1,045	.683	9.30
October 1944.....	9,749	384	262	314	.205	.24
November.....	8,269	310	244	276	.180	.20
December.....	6,582	340	120	212	.139	.16
Calendar year 1944.....	367,786	14,500	120	1,005	.657	8.94
January 1945.....	4,680	170	130	151	.099	.11
February.....	8,284	697	140	296	.193	.20
March.....	92,962	10,100	449	3,000	1.96	2.26
April.....	59,310	4,630	1,140	1,977	1.29	1.44
May.....	53,147	4,780	801	1,714	1.12	1.29
June.....	82,990	11,900	940	2,766	1.81	2.02
July.....	30,354	2,490	559	979	.640	.74
August.....	34,124	5,310	532	1,101	.720	.83
September.....	13,171	642	336	439	.287	.32
Water year 1944-45.....	403,622	11,900	120	1,106	.723	9.81
October 1945.....	10,646	519	291	343	.224	.26
November.....	13,470	920	258	449	.293	.33
December.....	11,905	739	250	384	.251	.29
Calendar year 1945.....	415,043	11,900	130	1,137	.743	10.09
January 1946.....	66,277	19,200	310	2,138	1.40	1.61
February.....	47,405	5,900	420	1,693	1.11	1.15
March.....	96,385	16,600	657	3,109	2.03	2.34
April.....	18,565	1,040	400	619	.405	.45
May.....	11,151	404	310	360	.235	.27
June.....	11,278	1,050	227	376	.246	.27
July.....	9,628	1,060	172	311	.203	.23
August.....	9,337	1,120	175	301	.197	.23
September.....	31,915	4,400	158	1,164	.761	.78
Water year 1945-46.....	337,962	19,200	158	926	.605	8.21

Turkey River at Garber, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946.....	15,503	975	352	500	0.327	0.38
November.....	20,700	1,100	466	690	.451	.50
December.....	12,775	1,180	100	412	.269	.31
Calendar year 1946.....	350,919	19,200	100	961	.628	8.52
January 1947.....	27,450	3,540	120	885	.578	.67
February.....	24,260	3,000	200	866	.566	.59
March.....	46,325	6,200	320	1,494	.976	1.13
April.....	87,620	9,450	1,180	2,921	1.91	2.13
May.....	35,075	3,340	792	1,151	.739	.85
June.....	159,470	22,500	1,560	5,316	3.47	3.88
July.....	75,088	6,940	697	2,422	1.58	1.83
August.....	16,186	702	412	522	.341	.39
September.....	13,081	1,130	284	436	.285	.32
Water year 1946-47.....	533,533	22,500	100	1,462	.956	12.98
October 1947.....	11,732	1,150	230	378	.247	.29
November.....	10,850	428	280	363	.237	.26
December.....	14,290	820	310	461	.301	.35
Calendar year 1947.....	521,457	22,500	120	1,429	.934	12.69
January 1948.....	8,140	320	230	263	.172	.20
February.....	49,840	16,000	250	1,719	1.12	1.21
March.....	86,140	16,100	300	2,779	1.82	2.09
April.....	21,929	990	541	731	.478	.53
May.....	35,734	5,600	497	1,153	.754	.87
June.....	15,343	915	376	511	.334	.37
July.....	9,327	902	155	301	.197	.23
August.....	5,843	1,120	106	159	.124	.14
September.....	4,938	515	102	165	.108	.12
Water year 1947-48.....	274,141	16,100	102	749	.490	6.66
October 1948.....	4,496	348	106	145	.095	.11
November.....	4,359	248	114	145	.095	.11
December.....	5,870	250	124	189	.124	.14
Calendar year 1948.....	251,964	16,100	102	688	.450	6.12
January 1949.....	17,471	2,530	150	564	.369	.42
February.....	8,760	1,800	160	313	.205	.21
March.....	73,009	11,700	370	2,355	1.54	1.77
April.....	27,548	3,720	466	918	.600	.67
May.....	10,538	466	153	340	.222	.26
June.....	12,207	1,830	138	407	.266	.30
July.....	8,175	506	118	264	.173	.20
August.....	5,440	802	94	175	.114	.13
September.....	3,996	619	87	133	.087	.10
Water year 1948-49.....	181,869	11,700	87	498	.325	4.42
October 1949.....	2,734	104	77	88.2	.058	.07
November.....	2,767	110	82	92.2	.060	.07
December.....	3,662	388	85	118	.077	.09
Calendar year 1949.....	176,307	11,700	77	483	.316	4.29
January 1950.....	7,349	1,500	92	237	.155	.18
February.....	3,250	125	100	116	.076	.08
March.....	134,575	22,700	120	4,341	2.84	3.27
April.....	18,597	2,140	318	620	4.05	.45
May.....	32,820	4,010	461	1,059	.692	.80
June.....	66,355	9,830	381	2,212	1.45	1.61
July.....	66,625	10,000	528	2,149	1.40	1.62
August.....	25,625	6,140	353	827	.541	.62
September.....	15,216	4,300	282	507	.331	.37
Water year 1949-50.....	379,575	22,700	77	1,040	.680	9.23

Little Maquoketa River near Durango, Iowa

LOCATION.—Lat. 42°33'20", long. 90°44'40", in NE ¼ sec. 5, T. 89 N., R. 2 E., on left bank 10 feet upstream from bridge on county road, 500 feet southeast of U. S. Highway 52, 1.5 miles east of Durango, 5 miles northwest of Dubuque, and 7.5 miles upstream from mouth.

DRAINAGE AREA.—130 square miles.

RECORDS AVAILABLE.—October 1934 to September 1950.

GAGE.—Water-stage recorder. Datum of gage is 612.03 feet above mean sea level, datum of 1929. Oct. 10, 1934 to Jan. 4, 1939, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—16 years, 81.6 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Aug. 13	6,000	14.95	Oct. 26, 27	19
1943-44...	June 13	18,000	19.82	Feb. 11, 12	12
1944-45...	July 21	4,720	12.60	Dec. 26, 27	15
1945-46...	Mar. 6	10,400	17.05	Sept. 2, 3	15
1946-47...	June 13	23,000	21.23	Jan. 5	12
1947-48...	Feb. 27	11,300	17.40	Aug. 25-28, Sept. 16, 17	16
1948-49...	Mar. 4	5,790	13.94	Aug. 31, Sept. 1	11
1949-50...	Mar. 5	6,550	14.80	Oct. 1, 2, Sept. 4-11, 16, 17	12

1934-50: Maximum discharge, 23,000 second-feet June 13, 1947 (gage height, 21.23 feet), from rating curve extended above 6,300 second-feet on basis of slope-area studies; minimum observed, 5 second-feet July 12, 13, 1936.

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

REMARKS.—Records good except those for periods of ice effect or days of rapidly changing stage which are poor.

COOPERATION.—Services of observer and several discharge measurements furnished by Corps of Engineers.

Little Maquoketa River near Durango, Iowa—Continued
Daily Discharge, in Second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	25	40	43	63	32	112	112	122	94	47	27	34
2.....	25	38	35	60	31	77	98	120	497	46	37	29
3.....	25	31	36	51	30	90	92	106	142	43	94	28
4.....	28	29	35	b49	35	91	92	95	168	46	41	29
5.....	28	80	36	b39	40	97	84	90	105	43	34	63
6.....	27	52	38	b55	45	70	81	104	106	46	28	49
7.....	25	41	32	b52	45	69	94	87	95	44	26	35
8.....	25	39	30	b51	55	56	87	80	84	38	25	28
9.....	27	118	35	b50	55	59	83	72	80	36	190	27
10.....	26	143	37	b49	59	59	84	74	77	35	47	25
11.....	24	78	36	b45	51	61	77	76	74	36	30	24
12.....	22	70	30	b34	44	68	123	68	87	35	32	32
13.....	22	61	30	b39	43	120	94	63	68	34	1,790	37
14.....	22	54	30	b46	36	130	84	56	73	34	112	31
15.....	22	54	35	46	32	1,260	80	106	67	31	76	28
16.....	23	52	34	39	36	889	85	213	80	65	61	25
17.....	23	78	*32	37	37	*216	77	110	85	83	51	24
18.....	23	56	31	35	39	176	73	98	61	40	44	24
19.....	22	54	24	35	77	153	81	88	55	34	39	24
20.....	22	52	26	33	1,260	143	73	84	49	31	36	29
21.....	24	50	29	35	507	134	69	80	50	30	35	27
22.....	23	45	32	38	733	193	68	72	456	27	34	24
23.....	23	45	34	40	481	264	104	68	83	26	111	24
24.....	21	46	32	35	243	209	84	78	68	27	60	23
25.....	21	45	30	32	191	162	77	74	60	26	166	24
26.....	19	45	36	30	138	148	70	74	54	26	68	24
27.....	19	32	123	30	161	130	210	67	52	26	49	24
28.....	22	45	87	30	167	120	126	60	112	26	45	24
29.....	23	40	77	32	.....	114	170	56	56	119	40	23
30.....	117	41	70	*32	.....	122	154	56	50	43	37	23
31.....	73	.....	64	32	.....	120	.....	63	.....	30	36	.....
1943-44												
1.....	23	43	28	21	25	49	106	119	95	158	50	56
2.....	21	33	29	22	36	53	109	104	86	148	48	44
3.....	21	31	26	21	33	48	82	122	80	131	47	39
4.....	21	31	26	22	28	47	73	112	72	116	122	38
5.....	21	29	27	24	32	41	68	96	84	106	88	34
6.....	21	31	75	22	21	43	66	95	70	98	55	34
7.....	21	193	52	18	28	30	68	89	65	90	50	32
8.....	21	80	44	17	24	33	66	90	68	589	46	32
9.....	21	61	41	18	17	34	72	88	317	192	44	32
10.....	22	52	35	20	17	33	82	79	142	114	42	31
11.....	21	42	23	21	12	204	127	76	162	104	45	60
12.....	23	42	27	19	12	260	187	76	2,040	103	41	119
13.....	32	39	17	17	15	70	152	75	4,830	89	39	122
14.....	32	37	16	18	21	1,440	129	66	827	82	38	50
15.....	27	37	14	19	24	231	139	66	732	79	37	42
16.....	24	32	16	*20	23	183	119	185	2,000	72	37	38
17.....	24	35	20	20	23	135	108	137	g591	73	263	37
18.....	24	35	21	21	20	103	98	98	g369	92	53	34
19.....	25	34	25	23	18	70	90	347	g273	72	40	64
20.....	26	*32	24	22	18	65	98	433	g224	64	36	198
21.....	576	31	25	22	21	62	101	289	g196	59	36	66
22.....	69	28	20	22	1,230	62	95	226	852	56	35	45
23.....	42	27	16	21	427	*162	372	240	276	66	40	43
24.....	38	24	16	21	315	126	444	353	198	60	34	42
25.....	34	27	17	31	244	92	258	312	172	55	32	38
26.....	30	30	19	44	1,430	70	193	221	4,780	104	31	g36
27.....	29	26	23	315	150	68	162	172	512	77	35	g36
28.....	29	25	23	117	89	75	135	146	307	61	42	44
29.....	30	30	21	46	57	80	121	126	219	56	36	41
30.....	29	23	21	40	.....	65	124	112	180	54	75	38
31.....	64	.....	20	40	.....	72	.....	100	.....	50	191	.....

*Winter discharge measurement made on this day.

h Computed from once daily wire-weight gage readings.

g Computed from graph based on once daily wire-weight gage readings.

Note—Stage-discharge relation affected by ice Jan. 17 to Feb. 7, Dec. 11-16, 1943, Feb. 9-13, 1944.

Little Maquoketa River near Durango, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	35	32	32	20	17	168	110	82	201	116	54	43
2.....	42	39	26	19	20	517	103	136	172	102	51	36
3.....	59	89	28	18	24	394	102	116	136	91	50	36
4.....	43	47	32	18	26	319	761	95	122	93	46	36
5.....	84	37	*36	19	26	746	214	95	114	96	56	35
6.....	56	35	35	20	26	382	160	86	107	82	70	34
7.....	44	35	34	22	27	201	138	82	105	74	50	33
8.....	40	36	32	25	26	158	125	78	100	72	45	73
9.....	38	36	33	28	27	*154	116	71	96	69	43	62
10.....	37	35	31	30	31	172	106	78	734	65	43	40
11.....	36	34	28	34	31	158	103	72	168	59	42	35
12.....	35	33	26	36	29	152	103	75	140	57	40	35
13.....	34	33	25	35	32	133	120	73	128	59	41	33
14.....	34	65	25	34	34	134	102	766	120	55	601	124
15.....	33	47	25	31	*37	140	93	295	402	52	115	129
16.....	31	40	24	30	40	172	683	188	283	50	80	53
17.....	31	36	22	*29	45	130	310	250	164	50	68	44
18.....	32	34	22	28	40	107	193	172	136	51	58	41
19.....	32	34	22	30	36	122	158	145	120	48	54	39
20.....	31	34	26	29	35	112	145	136	112	47	49	40
21.....	32	33	22	31	38	99	133	140	106	743	49	39
22.....	31	34	18	32	42	92	120	130	99	129	45	43
23.....	31	35	17	32	38	89	116	110	89	82	43	68
24.....	32	34	16	33	38	86	123	122	98	72	43	396
25.....	32	33	16	28	70	325	119	320	164	67	40	103
26.....	31	38	15	27	130	729	105	134	95	58	36	51
27.....	29	42	15	26	100	298	93	487	96	57	44	76
28.....	29	36	16	25	96	198	91	702	774	93	156	242
29.....	30	36	18	22	.....	154	89	232	292	68	53	124
30.....	30	31	20	20	.....	134	80	181	138	60	43	90
31.....	33	.....	22	18	.....	123	.....	164	.....	58	40	.....
1945-46												
1.....	122	42	59	41	34	125	86	41	30	64	18	16
2.....	87	43	185	40	30	91	85	42	32	42	51	15
3.....	74	40	138	40	32	64	78	42	30	37	41	15
4.....	62	38	104	60	32	67	78	60	29	33	27	16
5.....	67	39	91	4,000	*1,000	625	72	56	28	30	23	16
6.....	59	40	90	493	*130	2,130	70	46	28	30	23	31
7.....	62	40	86	188	50	125	68	43	29	29	21	171
8.....	53	446	86	138	75	98	70	42	29	36	21	686
9.....	54	138	67	131	55	67	67	41	26	33	74	138
10.....	52	77	62	127	49	65	63	42	27	28	36	152
11.....	51	65	54	100	48	60	60	42	26	26	23	54
12.....	49	100	52	81	44	1,060	58	39	29	23	20	42
13.....	45	160	57	60	45	440	57	38	44	23	20	36
14.....	44	77	60	55	38	225	57	37	30	21	20	33
15.....	44	67	52	55	35	*352	57	38	43	23	21	30
16.....	43	64	49	57	38	305	53	38	45	25	23	28
17.....	45	63	44	60	41	404	51	37	40	27	29	26
18.....	45	59	43	63	40	285	49	42	90	30	370	24
19.....	43	54	41	64	42	225	49	43	64	26	45	24
20.....	41	53	*42	58	43	188	46	44	86	23	30	51
21.....	41	63	42	54	42	167	45	40	46	20	26	38
22.....	41	49	42	43	39	154	48	37	39	20	23	140
23.....	40	58	45	49	39	140	70	37	36	20	20	322
24.....	40	52	52	56	36	178	53	45	30	21	19	76
25.....	41	51	53	52	39	140	46	45	45	23	18	56
26.....	41	50	54	41	50	138	45	39	38	20	18	48
27.....	40	57	52	38	37	124	43	36	30	20	18	42
28.....	40	54	49	42	36	107	45	35	79	20	18	39
29.....	40	56	50	44	.....	101	45	32	119	19	18	37
30.....	39	56	50	40	.....	94	43	31	268	19	17	35
31.....	39	.....	45	37	.....	86	.....	32	.....	19	16	.....

*Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 12-17, 23-31, 1944, Jan. 1-9, 28, Feb. 16-18, 25-27, Dec. 19-23, 1945, Jan. 4, 5, 14-17, Jan. 30 to Feb. 9, 1946. Discharge computed on basis of wire-weight gage readings or graph based on wire-weight gage readings Aug. 11-14, Aug. 16 to Sept. 5, Sept. 22 to Oct. 10, 1945.

Little Maquoketa River near Durango, Iowa—Continued
Daily Discharge, in Second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	33	45	36	21	24	41	118	178	1,720	220	64	48
2.....	30	86	29	18	22	40	107	242	981	152	61	45
3.....	29	68	35	16	24	40	93	198	422	136	52	43
4.....	28	58	35	14	26	40	215	158	315	125	52	140
5.....	27	52	38	12	30	*42	1,480	130	2,240	1,060	48	145
6.....	26	49	37	16	32	64	482	125	470	208	46	45
7.....	26	76	37	22	34	129	285	124	352	150	44	41
8.....	26	79	38	26	36	96	230	107	290	125	41	38
9.....	27	64	39	31	38	79	198	97	232	112	42	37
10.....	29	69	37	30	40	108	1,480	92	302	106	54	38
11.....	35	64	35	32	41	139	449	85	200	97	63	40
12.....	32	56	36	32	42	114	288	83	1,360	216	61	41
13.....	29	53	31	32	46	551	218	85	6,590	1,540	62	40
14.....	29	52	29	1,050	205	208	182	83	752	220	60	38
15.....	28	51	32	348	600	94	165	78	476	259	58	35
16.....	27	61	31	138	330	84	212	73	365	215	60	34
17.....	28	58	*27	75	150	76	200	100	1,260	136	53	33
18.....	62	50	27	52	97	70	162	92	440	125	45	32
19.....	45	49	27	53	90	68	148	84	330	110	44	31
20.....	33	48	28	52	92	88	210	84	275	100	44	32
21.....	30	48	30	*33	72	89	148	73	235	94	42	47
22.....	29	38	31	36	58	96	136	69	210	88	42	40
23.....	28	42	31	40	58	171	497	70	210	84	41	35
24.....	308	46	28	80	47	129	205	66	188	78	40	34
25.....	132	*47	27	122	47	139	152	68	162	74	40	34
26.....	73	41	31	93	44	86	130	68	150	73	34	33
27.....	55	41	34	61	46	88	114	60	136	410	42	32
28.....	50	40	92	46	40	85	104	130	129	93	45	47
29.....	47	40	36	35	.....	84	107	839	372	79	173	47
30.....	46	39	31	24	.....	69	260	220	888	73	78	39
31.....	42	.....	27	27	.....	73	.....	162	.....	68	54	.....
1947-48												
1.....	35	36	28	28	22	68	90	76	54	31	19	184
2.....	36	35	36	27	23	44	70	202	51	29	19	70
3.....	36	35	50	27	22	42	58	147	48	27	19	34
4.....	42	35	63	27	21	40	54	113	47	26	21	27
5.....	37	*38	114	28	*21	35	51	96	62	28	19	23
6.....	35	36	61	29	21	30	46	528	244	27	18	23
7.....	35	38	54	29	20	27	51	230	81	25	19	22
8.....	33	36	51	*31	20	24	47	156	58	24	23	23
9.....	32	34	49	31	20	21	39	562	54	23	23	23
10.....	32	35	44	29	20	21	38	1,750	48	23	23	21
11.....	32	35	42	27	20	21	81	404	46	23	26	20
12.....	33	35	42	26	20	22	51	348	49	23	27	19
13.....	33	31	40	23	21	25	41	288	54	24	28	18
14.....	32	35	38	19	21	177	39	235	46	27	23	17
15.....	32	47	35	19	21	1,690	36	755	46	28	20	17
16.....	33	50	34	18	33	947	35	290	41	27	64	16
17.....	33	42	33	18	300	185	31	218	39	23	61	16
18.....	34	40	33	19	500	113	31	167	41	21	29	17
19.....	33	38	*31	*20	250	1,580	31	137	40	21	23	17
20.....	31	37	31	22	61	192	30	122	38	22	21	20
21.....	31	39	31	23	45	134	28	107	40	27	20	26
22.....	31	41	30	23	35	*100	30	93	41	26	19	23
23.....	31	35	30	21	30	81	154	85	39	23	18	21
24.....	31	34	29	19	70	72	119	78	35	21	17	20
25.....	34	33	29	18	100	66	75	73	31	22	16	20
26.....	41	30	30	18	61	168	92	68	31	24	16	19
27.....	42	29	29	18	1,930	632	124	67	37	21	16	18
28.....	92	27	28	19	955	147	88	63	45	20	16	18
29.....	45	26	27	19	113	145	70	60	52	20	18	18
30.....	39	25	29	20	.....	114	63	57	37	36	244	20
31.....	37	.....	29	21	.....	112	.....	56	.....	23	38	.....

*Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Jan. 2-7, 20-23, Feb. 1-9, 15-17, Nov. 24 to Dec. 1, Dec. 7-10, 15-18, 1947, Jan. 1-4, 12-17, Jan. 22 to Feb. 26, Mar. 4-11, 1948. Discharge computed on basis of wire-weight gage readings or graph based on wire-weight gage readings Aug. 3-26, Oct. 25-28, 1947.

Little Maquoketa River near Durango, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1	20	23	21	14	25	64	160	37	27	213	18	11
2	19	22	23	14	25	60	106	41	33	162	17	12
3	18	27	23	15	24	107	83	33	31	58	16	14
4	18	29	24	500	24	1,760	70	32	22	44	16	20
5	18	29	31	222	23	956	67	31	20	67	16	17
6	20	28	42	66	23	342	58	29	19	74	14	15
7	88	23	29	61	23	238	55	29	18	40	14	16
8	60	22	24	225	23	295	47	27	16	35	13	14
9	30	23	21	137	*23	265	44	30	16	35	12	13
10	23	23	20	47	22	104	41	28	15	28	13	14
11	23	22	18	45	22	79	40	24	15	25	78	14
12	22	21	19	32	21	63	39	27	15	22	101	13
13	21	22	21	31	21	73	39	26	15	22	32	19
14	21	22	23	29	21	83	40	27	171	33	22	16
15	21	21	48	258	21	44	63	27	76	31	22	15
16	19	27	45	300	21	41	54	27	35	23	21	15
17	20	69	31	54	21	39	83	27	26	20	168	14
18	19	34	25	40	21	38	92	27	21	25	39	14
19	20	41	22	33	21	35	73	26	19	26	21	14
20	20	73	20	30	24	54	62	26	17	19	17	12
21	20	38	18	29	25	142	56	28	24	92	16	12
22	21	32	17	28	23	342	60	128	23	38	14	12
23	21	29	16	27	23	101	50	60	60	26	14	12
24	21	28	15	26	500	83	42	41	259	22	14	12
25	21	28	14	25	380	86	42	34	165	20	14	12
26	21	30	13	24	305	88	49	31	62	39	12	12
27	21	27	13	24	171	243	45	29	44	49	12	12
28	21	25	15	23	78	104	39	27	85	26	12	12
29	21	23	15	23	.....	85	36	24	44	20	12	12
30	22	23	14	23	.....	80	35	23	35	17	12	12
31	25	.....	14	24	.....	222	.....	23	.....	17	11	.....
1949-50												
1	12	13	16	80	18	27	59	56	43	41	258	13
2	12	13	17	46	16	30	54	47	709	38	52	13
3	13	14	17	41	16	29	53	42	198	36	35	13
4	13	14	17	17	16	45	52	68	116	35	30	12
5	13	14	16	16	16	2,300	43	59	86	36	26	12
6	14	14	15	15	50	*1,940	37	39	68	30	24	12
7	26	14	16	15	130	1,220	35	32	56	26	23	12
8	23	15	13	14	75	178	33	30	47	24	21	12
9	15	15	13	16	117	64	40	289	77	22	21	12
0	14	15	14	17	200	51	64	89	43	21	21	12
11	13	15	77	14	76	37	89	65	33	21	22	12
12	13	16	62	14	60	30	54	57	30	21	20	15
13	13	18	33	302	77	26	42	47	876	26	18	14
14	13	16	*17	160	42	23	40	39	124	22	17	13
15	13	16	13	43	23	41	36	34	117	19	17	13
16	13	16	14	33	23	74	34	34	86	20	16	12
17	13	16	16	29	24	39	34	40	63	21	15	12
18	13	16	18	*23	22	29	35	31	717	28	15	13
19	13	15	19	19	21	26	34	28	185	50	14	14
20	13	15	21	17	18	46	31	28	130	40	13	15
21	14	15	19	16	*17	165	30	31	104	26	13	300
22	15	15	16	15	17	230	29	35	85	22	13	46
23	13	15	14	17	17	926	79	29	81	20	14	23
24	13	17	13	18	17	288	657	256	458	19	14	17
25	13	17	14	60	16	256	249	1,360	122	19	13	15
26	13	17	16	56	16	514	118	169	89	22	13	14
27	13	17	14	32	15	249	84	107	71	18	15	14
28	13	17	13	50	18	118	68	80	68	17	23	14
29	13	17	15	60	.....	69	62	64	74	16	17	15
30	13	17	14	37	.....	64	57	59	51	229	15	14
31	13	.....	25	33	.....	59	.....	70	.....	500	14	.....

*Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 8-13, 18-31, 1948, Jan. 1-4, 18-28, Jan. 31 to Feb. 24, Mar. 1, 2, 16, Dec. 31, 1949, Jan. 1, 21-26, 28, 29, Feb. 1-7, Mar. 1-4 1950.

Little Maquoketa River near Durango, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1942.....	871	117	19	28.1	0.216	0.25
November.....	1,654	143	29	55.1	.424	.47
December.....	1,279	123	24	41.3	.318	.37
Calendar year 1942.....	18,983	725	18	52.0	.400	5.44
January 1943.....	1,274	63	30	41.1	.316	.36
February.....	4,703	1,260	30	168	1.29	1.35
March.....	6,322	1,870	56	204	1.57	1.81
April.....	2,886	210	68	96.2	.740	.83
May.....	2,660	213	56	85.8	.660	.76
June.....	3,188	497	49	106	.815	.91
July.....	1,253	119	26	40.4	.311	.36
August.....	3,501	1,790	25	113	.869	1.00
September.....	865	63	23	28.8	.222	.25
Water year 1942-43.....	30,456	1,870	19	83.4	.642	8.72
October 1943.....	1,441	576	21	46.5	.358	.41
November.....	1,220	193	23	40.7	.313	.35
December.....	807	75	14	26.0	.200	.23
Calendar year 1943.....	30,120	1,870	14	82.5	.635	8.62
January 1944.....	1,124	315	17	36.3	.279	.32
February.....	4,410	1,430	12	152	1.17	1.26
March.....	4,106	1,440	30	132	1.02	1.17
April.....	4,044	444	66	135	1.04	1.16
May.....	4,850	433	66	156	1.20	1.39
June.....	20,819	4,830	65	694	5.34	5.96
July.....	3,270	589	50	105	.808	.94
August.....	1,808	263	31	58.3	.448	.52
September.....	1,565	198	31	52.2	.402	.45
Water year 1943-44.....	49,464	4,830	12	135	1.04	14.16
October 1944.....	1,147	84	29	37.0	.285	.33
November.....	1,163	89	31	38.8	.298	.33
December.....	759	36	15	24.5	.188	.22
Calendar year 1944.....	49,065	4,830	12	134	1.03	14.05
January 1945.....	829	36	18	26.7	.205	.24
February.....	1,161	130	17	41.5	.319	.33
March.....	6,898	746	86	223	1.72	1.97
April.....	5,014	761	80	167	1.28	1.43
May.....	5,813	766	71	188	1.45	1.66
June.....	5,611	774	89	187	1.44	1.61
July.....	2,875	743	47	92.7	.713	.82
August.....	2,248	601	36	72.5	.558	.64
September.....	3,233	396	33	74.4	.572	.64
Water year 1944-45.....	35,751	774	15	97.9	.753	10.22
October 1945.....	1,584	122	39	51.1	.393	.45
November.....	2,251	446	38	75.0	.577	.64
December.....	1,996	185	41	64.4	.495	.57
Calendar year 1945.....	38,513	774	17	106	.815	11.00
January 1946.....	6,407	4,000	37	207	1.59	1.83
February.....	2,219	1,000	30	79.2	.609	.63
March.....	8,430	2,130	60	272	2.09	2.41
April.....	1,757	86	43	58.6	.451	.50
May.....	1,262	60	31	40.7	.313	.36
June.....	1,515	268	26	50.5	.388	.43
July.....	830	64	19	26.8	.206	.24
August.....	1,147	370	16	37.0	.285	.33
September.....	2,437	686	15	81.2	.625	.70
Water year 1945-46.....	31,835	4,000	15	87.2	.671	9.09

Little Maquoketa River near Durango, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946.....	1,469	308	26	47.4	0.365	0.42
November.....	1,610	86	38	53.7	.413	.46
December.....	1,062	92	27	34.3	.264	.30
Calendar year 1946.....	30,141	4,000	15	82.6	.635	8.61
January 1947.....	2,667	1,050	12	86.0	.662	.76
February.....	2,411	600	22	86.1	.662	.69
March.....	3,280	551	40	106	.815	.94
April.....	8,775	1,480	93	292	2.25	2.51
May.....	4,123	839	60	133	1.02	1.18
June.....	22,052	6,590	129	735	5.65	6.31
July.....	6,626	1,540	68	214	1.65	1.90
August.....	1,685	173	34	54.4	.418	.48
September.....	1,364	145	31	45.5	.350	.39
Water year 1946-47.....	57,124	6,590	12	157	1.20	16.34
October 1947.....	1,133	92	31	36.5	.281	.32
November.....	1,067	50	25	35.6	.274	.31
December.....	1,230	114	27	39.7	.305	.35
Calendar year 1947.....	56,413	6,590	12	155	1.19	16.14
January 1948.....	716	31	18	23.1	.178	.20
February.....	4,796	1,930	20	165	1.27	1.37
March.....	7,075	1,690	21	228	1.75	2.02
April.....	1,793	154	28	59.8	.460	.51
May.....	7,631	1,750	56	246	1.89	2.18
June.....	1,575	244	31	52.5	.404	.45
July.....	765	36	20	24.7	.190	.22
August.....	963	244	16	31.1	.239	.28
September.....	830	184	16	27.7	.213	.24
Water year 1947-48.....	29,574	1,930	16	80.8	.622	8.45
October 1948.....	755	88	18	24.4	.188	.22
November.....	884	73	21	29.5	.227	.25
December.....	694	48	13	22.4	.172	.20
Calendar year 1948.....	28,477	1,930	13	77.8	.598	8.14
January 1949.....	2,429	500	14	78.4	.603	.69
February.....	1,954	500	21	69.8	.537	.56
March.....	6,316	1,760	35	204	1.57	1.81
April.....	1,770	160	35	59.0	.454	.51
May.....	1,029	128	23	33.2	.255	.29
June.....	1,428	259	15	47.6	.366	.41
July.....	1,368	213	17	44.1	.339	.39
August.....	813	168	11	26.2	.202	.23
September.....	412	20	11	13.7	.105	.12
Water year 1948-49.....	19,852	1,760	11	54.4	.418	5.68
October 1949.....	431	26	12	13.9	.107	.12
November.....	464	18	13	15.5	.119	.13
December.....	617	77	13	19.9	.153	.18
Calendar year 1949.....	19,031	1,760	11	52.1	.401	5.44
January 1950.....	1,325	302	14	42.7	.328	.38
February.....	1,173	200	15	41.9	.322	.34
March.....	9,193	2,300	23	297	2.28	2.63
April.....	2,332	657	29	77.7	.598	.67
May.....	3,414	1,360	28	110	.846	.98
June.....	5,007	876	30	167.9	1.28	1.43
July.....	1,485	500	16	47.9	.368	.42
August.....	842	255	13	27.2	.209	.24
September.....	728	300	12	24.3	.187	.21
Water year 1949-50.....	27,011	2,300	12	74.0	.569	7.73

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 300 feet above concrete control, 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 1950.

GAGE.—Water-stage recorder and concrete control. Datum of gage is 895.06 feet above mean sea level, adjustment of 1912. Apr. 24, 1933, to May 9, 1935, a Gurley printing recorder at same site and datum. May 10-31, 1935, a temporary staff below control was used while control was being constructed.

AVERAGE DISCHARGE.—17 years, 189 second-feet.

EXTERMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Mar. 16	5,320	11.69	Sept. 26	40
1943-44...	June 16	8,010	13.96	Dec. 5	18
1944-45...	Aug. 14	3,060	9.91	Dec. 24	32
1945-46...	Jan. 6	9,130	14.86	Sept. 4, 5	40
1946-47...	June 13	20,000	(1)21.36	Feb. 5-8	40
1947-48...	Feb. 28	7,340	13.40	Feb. 8	30
1948-49...	Mar. 5	6,020	12.29	June 10	34
1949-50...	Mar. 7	8,920	14.72	Oct. 2, Apr. 20	25

(1) From Floodmarks.

1933-50: Maximum discharge, 20,000 second-feet June 13, 1947 (gage height, 21.36 feet from floodmarks), from rating curve extended above 9,000 second-feet by velocity area curves; minimum daily, 6 second-feet June 8, 29, 1934.

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

COOPERATION.—Services of observer furnished by Iowa Electric Co. which also furnished supplementary gage-height readings at hydroelectric plant 2 miles above gaging station. Several discharge measurements furnished by Corps of Engineers.

Maquoketa River near Manchester, Iowa—Continued
Daily Discharge, in Second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	212	399	213	259	150	408	520	314	190	262	102	95
2.....	199	282	140	255	160	275	420	257	296	206	90	92
3.....	182	229	165	218	170	200	360	192	501	183	84	92
4.....	272	214	212	188	190	190	200	193	468	152	108	88
5.....	392	354	191	182	200	200	240	180	271	148	86	147
6.....	283	656	178	242	206	130	244	105	249	157	94	160
7.....	238	405	157	215	187	70	284	331	217	128	84	115
8.....	207	303	140	203	181	140	297	257	207	117	82	112
9.....	202	391	163	183	193	150	272	201	194	114	90	84
10.....	193	1,200	179	187	162	140	270	178	178	130	102	76
11.....	190	762	162	150	150	100	255	190	172	138	83	78
12.....	167	422	162	172	176	120	408	187	182	124	98	87
13.....	174	328	144	156	149	190	439	169	165	115	118	85
14.....	165	282	182	194	130	220	292	172	139	114	140	90
15.....	157	260	194	170	126	1,260	238	302	145	105	143	88
16.....	150	253	153	156	f136	3970	218	1080	198	117	106	144
17.....	134	342	175	133	f138	828	183	818	247	138	88	152
18.....	142	291	167	130	f136	489	191	423	175	138	84	148
19.....	145	271	160	118	f178	295	177	317	158	118	85	80
20.....	146	263	137	160	f266	280	194	277	152	114	82	114
21.....	160	242	161	188	f554	244	178	246	132	112	80	142
22.....	130	207	192	203	f2,280	244	170	228	848	104	78	95
23.....	128	206	183	192	2,760	410	176	200	1,560	88	132	84
24.....	142	238	192	181	1,650	527	198	184	461	91	150	84
25.....	104	226	132	132	697	483	202	191	280	101	180	68
26.....	124	190	183	f120	437	418	180	188	204	94	190	40
27.....	136	172	288	f125	385	371	323	177	144	95	134	70
28.....	144	195	363	f130	415	314	272	178	753	100	101	61
29.....	129	204	345	f140	.....	309	310	170	1,380	94	102	57
30.....	231	176	313	f150	.....	340	472	152	419	85	92	56
31.....	630	.....	298	170	.....	470	.....	174	.....	90	96	.....
1943-44												
1.....	60	76	47	36	77	93	198	390	172	156	94	96
2.....	62	78	33	34	86	121	248	320	153	240	97	76
3.....	61	86	24	40	74	95	230	304	130	166	87	86
4.....	66	77	40	38	73	104	178	316	130	142	155	79
5.....	71	67	18	36	69	82	154	245	137	132	282	102
6.....	70	82	57	35	54	69	138	213	112	116	218	113
7.....	71	123	55	32	73	60	125	195	108	120	122	157
8.....	72	154	106	47	62	56	130	166	109	116	106	98
9.....	66	152	96	32	52	42	138	170	218	122	100	69
10.....	72	108	80	40	48	75	154	162	198	114	90	71
11.....	66	100	83	*34	40	122	218	137	196	117	89	90
12.....	67	102	50	*32	40	310	492	145	234	194	72	94
13.....	70	82	47	36	42	270	374	123	623	118	76	110
14.....	69	68	41	34	45	1,040	278	131	755	116	82	93
15.....	64	78	44	48	50	2,830	236	121	374	106	80	84
16.....	60	67	42	36	50	564	232	416	4,780	117	87	66
17.....	55	84	43	33	42	392	203	391	2,910	108	230	71
18.....	71	76	64	36	44	254	182	344	660	118	120	74
19.....	67	75	37	36	54	180	172	809	430	106	90	95
20.....	60	73	54	33	51	162	161	1,990	344	101	81	206
21.....	72	70	45	45	50	162	226	1,700	174	102	81	206
22.....	89	65	37	38	386	161	313	1,470	850	87	93	116
23.....	88	65	40	45	607	318	252	688	826	77	98	119
24.....	74	68	39	40	656	1310	294	556	388	84	80	106
25.....	72	62	37	50	593	*311	258	462	264	86	84	100
26.....	68	63	41	60	815	276	186	446	305	98	73	88
27.....	62	56	43	110	488	204	166	347	252	262	81	85
28.....	60	42	38	247	230	173	140	270	205	178	84	81
29.....	72	53	36	182	126	192	126	226	166	98	84	78
30.....	81	49	39	70	.....	173	134	192	146	82	90	72
31.....	86	.....	34	90	.....	162	.....	187	.....	92	120	.....

* Winter discharge measurement made on this day.

f Fragmentary gage-height record; discharge computed from partly estimated gage-height record.

Note—Stage-discharge relation affected by ice Jan. 26 to Feb. 5, 1943, Jan. 12-27, Feb. 2, 5-22, 1944. No gage-height record Mar. 3-15, Apr. 1-5, Sept. 26, 27, Nov. 27 to Dec. 31, 1943, Jan 1-11, Mar. 1-25, May 1, 4-17, 1944; discharge computed on basis of records for hydro-electric plant at Manchester.

Maquoketa River near Manchester, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	74	68	64	36	40	176	190	162	800	281	116	110
2.....	90	67	66	45	40	434	182	196	628	220	101	94
3.....	95	84	42	36	51	526	176	204	382	199	112	79
4.....	84	86	78	36	47	484	1,940	202	306	153	77	97
5.....	90	72	68	36	45	696	1,180	191	261	180	110	92
6.....	77	70	66	57	45	666	480	160	240	160	112	89
7.....	86	72	66	34	45	434	336	152	202	145	103	95
8.....	72	72	66	37	45	343	244	153	202	142	97	92
9.....	71	76	*72	37	45	318	241	132	180	143	96	86
10.....	70	72	54	37	55	485	221	133	440	137	74	95
11.....	67	74	66	37	40	708	202	136	351	139	90	95
12.....	62	66	58	37	41	722	247	126	263	132	98	74
13.....	61	68	60	50	43	610	260	148	234	128	92	81
14.....	70	73	55	37	50	508	246	938	219	122	2,160	82
15.....	76	71	52	*37	*60	570	223	1,280	232	112	1,580	88
16.....	70	74	60	37	53	832	1,740	558	272	114	416	81
17.....	74	71	35	37	55	588	2,240	452	275	112	314	84
18.....	76	80	55	37	50	382	740	324	202	114	150	88
19.....	75	66	58	37	50	312	417	277	194	105	142	76
20.....	74	69	58	58	55	270	336	244	157	106	152	86
21.....	73	70	55	40	44	194	290	232	146	103	146	73
22.....	64	66	60	37	55	179	258	239	144	190	132	84
23.....	65	61	37	43	55	188	250	202	138	114	121	94
24.....	72	66	32	52	71	171	250	186	158	118	130	126
25.....	68	74	40	52	82	1,020	236	214	852	116	114	100
26.....	62	66	50	48	79	2,000	220	228	810	103	97	100
27.....	62	79	46	55	100	974	210	303	400	121	108	118
28.....	66	70	45	40	130	449	196	1,470	388	168	128	221
29.....	58	66	45	52	.....	300	168	1,000	679	144	126	209
30.....	63	68	60	40	.....	255	157	458	470	120	126	158
31.....	64	.....	40	40	.....	202	.....	364	.....	120	98	.....
1945-46												
1.....	185	78	138	50	60	86	182	103	88	612	65	52
2.....	176	92	402	55	70	92	136	90	80	325	64	50
3.....	141	86	508	70	60	89	204	94	72	176	68	43
4.....	127	69	307	75	80	108	192	134	76	122	61	40
5.....	121	84	218	3,360	750	172	182	102	75	124	59	40
6.....	113	74	200	*7,110	1,100	*3,200	160	112	75	122	61	54
7.....	86	84	172	1,000	280	1,090	149	104	75	114	54	102
8.....	105	95	134	388	*215	302	138	104	73	117	60	692
9.....	102	210	70	f263	184	216	164	94	68	110	70	230
10.....	77	193	100	f184	138	124	162	102	74	90	72	190
11.....	96	148	95	f161	131	156	145	98	72	86	76	133
12.....	74	154	100	f176	120	388	146	90	84	83	62	112
13.....	87	222	100	f124	92	2,740	150	86	88	90	64	104
14.....	85	243	80	f133	91	1,530	152	96	85	84	66	87
15.....	90	144	80	f123	77	1,320	134	84	111	92	62	74
16.....	78	142	85	112	107	1,320	128	96	110	79	64	83
17.....	78	138	80	106	82	1,650	122	90	110	81	84	43
18.....	86	132	*75	100	98	1,210	119	97	350	84	64	42
19.....	88	128	70	93	96	770	110	89	717	84	60	62
20.....	82	118	65	81	80	632	100	97	567	90	64	107
21.....	82	120	65	75	88	560	104	95	340	79	62	98
22.....	80	55	75	80	82	513	124	84	201	77	58	258
23.....	74	80	55	84	88	495	125	82	148	74	58	746
24.....	73	110	55	85	76	656	116	100	122	74	62	506
25.....	72	60	50	80	91	578	116	98	142	73	53	238
26.....	74	104	45	80	86	474	106	88	126	72	54	178
27.....	78	111	45	55	80	644	100	90	106	74	59	159
28.....	70	109	55	80	86	434	96	78	98	59	56	152
29.....	88	112	75	80	.....	336	103	79	109	68	58	142
30.....	82	114	55	80	.....	288	98	76	462	70	58	130
31.....	71	.....	55	65	.....	248	.....	77	.....	60	60	.....

* Winter discharge measurement made on this day.

f Fragmentary gage-height record; discharge computed from partly estimated gage-height record.

Note—Stage-discharge relation affected by ice Dec. 12-31, 1944, Jan. 1 to Feb. 23, Nov. 8, 9, 22-25, Dec. 9-31, 1945, Jan. 1-4, 21, 22, Feb. 1-8, 20, 1946. No gage-height record Jan. 9-12, 1945; discharge computed on basis of records for hydroelectric plant at Manchester.

Maquoketa River near Manchester, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	115	222	92	50	55	90	210	476	5,890	1,320	164	108
2.....	108	468	106	55	50	72	266	516	5,340	495	172	110
3.....	103	533	123	55	50	114	244	423	1,260	478	164	106
4.....	93	334	119	55	45	*100	493	344	682	409	169	105
5.....	98	258	116	50	40	97	2,170	246	5,920	2,390	156	126
6.....	86	223	112	55	40	99	2,320	234	1,950	1,660	147	100
7.....	88	247	120	60	40	142	808	270	836	660	140	80
8.....	84	286	104	60	40	182	500	246	1,150	512	140	108
9.....	86	270	146	60	50	136	468	207	754	430	135	100
10.....	86	254	118	60	60	198	2,420	200	561	383	130	101
11.....	92	258	121	70	84	209	3,240	168	468	343	133	95
12.....	94	248	116	50	102	214	858	160	1,280	338	133	98
13.....	80	222	96	90	124	472	552	176	16,000	3,320	132	94
14.....	99	194	96	160	247	646	451	172	5,110	1,900	106	123
15.....	95	181	64	150	1,070	312	401	170	1,520	710	72	108
16.....	93	213	102	100	1,390	281	517	174	974	539	71	100
17.....	93	180	106	110	1,010	*82	726	264	1,370	528	70	96
18.....	148	210	*86	121	476	150	538	292	1,310	649	68	99
19.....	161	174	88	82	330	147	403	262	889	446	73	92
20.....	141	165	92	110	256	143	474	251	788	324	98	94
21.....	118	169	98	62	171	134	466	222	710	281	102	81
22.....	113	134	80	92	120	104	358	192	674	242	106	100
23.....	102	148	80	*112	84	186	678	190	657	267	109	92
24.....	403	130	85	116	122	304	900	248	637	247	84	93
25.....	461	156	80	156	110	344	480	204	343	187	124	90
26.....	336	149	80	114	103	226	352	194	338	214	108	85
27.....	256	132	85	138	81	186	288	186	306	216	109	78
28.....	200	129	90	110	84	175	184	372	289	206	102	87
29.....	153	131	70	77	.....	160	207	1,980	383	196	142	98
30.....	168	137	60	60	.....	129	534	1,180	896	192	154	90
31.....	194	.....	55	50	.....	172	.....	632	.....	180	97	.....
1947-48												
1.....	89	135	94	110	34	284	302	182	130	88	58	98
2.....	67	92	104	85	35	110	216	250	120	89	65	70
3.....	82	110	98	98	36	198	164	287	110	80	62	60
4.....	131	104	112	68	37	134	106	230	110	80	46	50
5.....	96	108	178	88	36	107	190	208	124	90	46	48
6.....	106	100	227	82	35	108	170	378	1,010	89	50	48
7.....	98	103	209	82	33	98	162	616	495	88	58	35
8.....	111	99	186	80	30	109	197	350	296	78	66	35
9.....	70	76	234	79	32	97	186	259	200	75	66	35
10.....	83	96	178	80	34	100	164	3,040	172	69	64	35
11.....	70	100	144	56	35	82	197	1,750	146	62	65	45
12.....	71	94	132	74	35	82	438	671	146	77	46	40
13.....	78	90	130	72	35	90	239	649	122	247	48	40
14.....	83	93	100	74	35	116	165	419	186	108	57	40
15.....	81	117	126	62	36	680	158	1,110	125	102	52	35
16.....	80	90	105	51	40	3,570	138	1,030	118	121	60	35
17.....	86	101	123	45	45	2,840	132	393	126	98	47	40
18.....	79	109	106	40	45	638	102	286	124	74	46	40
19.....	73	107	101	45	50	3,010	134	203	140	102	46	35
20.....	78	104	107	50	50	2,500	96	179	98	80	44	40
21.....	76	110	78	*45	55	2,000	112	202	122	100	61	45
22.....	80	130	105	40	60	1,000	108	180	121	84	43	50
23.....	72	102	102	45	70	700	281	170	122	84	45	57
24.....	78	144	94	50	80	500	405	160	110	72	45	61
25.....	88	116	83	45	100	400	264	150	102	61	44	58
26.....	82	102	86	40	231	*500	200	150	94	82	44	44
27.....	112	98	92	36	1,650	704	260	150	84	72	44	39
28.....	262	93	70	34	5,760	550	364	180	61	69	50	45
29.....	208	94	83	33	913	478	229	110	136	66	37	50
30.....	152	81	87	32	.....	446	182	170	118	50	123	50
31.....	114	.....	80	33	.....	365	.....	150	.....	66	98	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 23-31, 1946, Jan. 1-17, Jan. 30 to Feb. 10, 1947, Jan. 17 to Feb. 25, 1948. No gage-height record June 17-24, 1947, Mar. 20-26, May 22 to June 3, Sept. 3, 4, 8-22, 28-30, 1948; discharge computed on basis of records for hydro-electric plant at Manchester.

Maquoketa River near Manchester, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	50	48	57	41	72	286	550	80	52	103	47	40
2.....	60	47	56	43	71	215	360	120	66	369	48	40
3.....	45	52	58	47	70	*194	228	90	88	218	46	44
4.....	48	54	60	519	70	1,880	222	45	83	153	46	46
5.....	45	51	52	792	70	4,930	180	50	52	93	43	42
6.....	35	63	64	246	70	2,130	75	90	68	88	54	60
7.....	60	53	58	174	70	847	162	90	52	308	48	46
8.....	55	48	56	228	70	660	146	50	44	182	43	50
9.....	90	54	56	166	70	534	130	90	42	168	42	45
10.....	35	56	53	194	70	338	116	45	34	80	44	60
11.....	45	46	106	101	*70	218	80	45	51	96	106	55
12.....	40	45	46	88	70	202	94	45	40	86	94	55
13.....	40	56	56	84	70	169	93	45	60	58	66	50
14.....	45	47	53	83	70	164	124	90	66	205	60	45
15.....	50	51	58	182	71	134	164	50	54	152	76	46
16.....	45	56	53	732	72	130	150	90	58	115	46	42
17.....	40	68	54	416	78	124	230	40	57	76	42	50
18.....	40	62	50	289	82	116	469	45	63	94	43	52
19.....	40	76	46	176	80	120	352	45	53	79	46	46
20.....	45	80	42	120	78	94	240	45	46	76	53	42
21.....	42	68	40	105	78	162	194	90	48	138	51	41
22.....	54	61	39	100	81	607	166	80	46	98	44	40
23.....	60	60	38	95	90	417	156	110	79	90	42	41
24.....	45	66	37	90	100	196	100	90	145	62	42	40
25.....	50	58	38	86	300	246	110	87	1,290	72	41	38
26.....	50	59	39	82	792	242	110	74	539	56	42	40
27.....	54	67	43	80	605	350	100	51	232	56	40	40
28.....	50	56	45	78	257	382	90	66	141	70	40	38
29.....	50	52	45	76	.....	232	90	48	116	75	40	40
30.....	57	54	44	74	.....	222	90	52	108	58	40	38
31.....	53	.....	43	73	.....	528	.....	50	.....	46	40	.....
1949-50												
1.....	36	43	41	48	40	38	90	198	117	108	115	46
2.....	25	44	39	47	40	41	50	164	606	128	87	48
3.....	36	40	43	47	40	38	76	134	880	169	97	46
4.....	37	42	37	34	39	54	84	186	378	82	71	42
5.....	32	54	42	35	37	600	70	284	267	126	94	42
6.....	35	41	46	38	40	4,780	64	223	200	74	50	46
7.....	47	46	39	38	45	6,860	64	133	129	108	73	48
8.....	61	45	40	37	50	1,880	68	134	120	112	59	45
9.....	51	45	49	40	80	600	40	342	120	73	61	43
10.....	39	45	52	31	90	250	49	616	117	73	66	46
11.....	45	45	45	34	41	160	105	282	101	57	90	48
12.....	40	70	49	37	38	120	77	202	105	119	65	59
13.....	42	41	53	110	35	100	70	211	502	103	58	46
14.....	41	50	49	130	56	9	60	92	732	63	55	46
15.....	48	47	49	70	45	82	68	126	400	71	72	45
16.....	41	44	43	58	38	80	52	109	270	84	66	44
17.....	45	45	51	52	34	78	84	121	201	90	51	42
18.....	43	37	39	45	30	76	58	118	1,040	89	53	47
19.....	47	45	47	45	31	73	57	116	1,430	65	80	50
20.....	42	37	55	*45	26	97	25	155	511	81	55	49
21.....	49	45	55	42	29	171	48	78	303	84	48	3,310
22.....	52	41	40	38	32	394	52	124	267	73	52	1,330
23.....	41	43	40	40	29	1,030	67	77	222	71	61	310
24.....	44	44	40	38	*30	2,020	367	88	455	94	55	120
25.....	31	41	50	37	37	908	726	548	594	65	49	160
26.....	31	50	42	39	42	1,450	556	583	334	60	53	110
27.....	30	32	42	40	46	2,240	266	264	196	57	50	100
28.....	42	47	42	39	41	404	212	192	157	61	57	125
29.....	60	41	42	37	.....	170	142	116	162	61	53	170
30.....	38	43	45	35	.....	80	116	143	105	52	45	180
31.....	45	.....	52	38	.....	90	.....	118	.....	201	55	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 20-31, 1948, Jan. 1, 2, Jan. 21 to Feb. 25, 1949, Jan. 5 to Feb. 19, Feb. 21 to Mar. 5, 1950. No gage-height record Oct. 1-3, 7-20, 23-26, 1948, Apr. 24 to May 24, Aug. 29 to Sept. 12, Dec. 22-30, 1949, Mar. 9-16, Mar. 30 to Apr. 16, Sept. 23-30, 1950; discharge computed on basis of records for hydroelectric plant at Manchester.

Maquoketa River near Manchester, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1942	6,008	630	104	194	0.634	0.73
November	9,963	1,200	172	332	1.08	1.21
December	6,024	363	132	194	.634	.73
Calendar year 1942	107,714	4,060	78	295	.964	13.08
January 1943	5,402	259	118	174	.569	.66
February	12,562	2,760	126	449	1.47	1.53
March	13,785	3,970	70	445	1.45	1.67
April	8,183	520	170	273	.892	.99
May	8,321	1,080	152	268	.876	1.01
June	10,685	1,560	132	356	1.16	1.30
July	3,872	262	85	125	.408	.47
August	3,287	190	78	106	.346	.40
September	2,884	160	40	96.1	.314	.35
Water year 1942-43	90,976	3,970	40	249	.814	11.05
October 1943	2,144	89	55	69.2	.226	.26
November	2,401	154	42	80.0	.261	.29
December	1,490	106	18	48.1	.157	.18
Calendar year 1943	75,016	3,970	18	206	.673	9.11
January 1944	1,705	247	32	55.0	.180	.21
February	5,167	815	40	178	.582	.63
March	10,363	2,830	42	334	1.09	1.26
April	6,336	492	125	211	.690	.77
May	13,632	1,990	121	440	1.44	1.66
June	16,349	4,780	108	545	1.78	1.99
July	3,871	262	77	125	.408	.47
August	3,326	282	72	107	.350	.40
September	2,981	206	66	99.4	.325	.36
Water year 1943-44	69,765	4,780	18	191	.624	8.48
October 1944	2,231	95	58	72.0	.235	.27
November	2,137	86	61	71.2	.233	.26
December	1,709	78	32	55.1	.180	.21
Calendar year 1944	69,807	4,780	32	191	.624	8.49
January 1945	1,294	58	34	41.7	.136	.16
February	1,571	130	40	56.1	.183	.19
March	15,996	2,000	171	516	1.69	1.94
April	14,076	2,240	157	469	1.53	1.71
May	11,064	1,470	126	357	1.17	1.34
June	10,243	852	138	341	1.11	1.24
July	4,361	281	103	141	.461	.53
August	7,518	2,160	74	243	.794	.91
September	3,047	221	73	102	.333	.37
Water year 1944-45	75,247	2,240	32	206	.673	9.13
October 1945	2,924	185	70	94.3	.308	.36
November	3,009	243	55	120	.392	.44
December	3,709	508	45	120	.392	.45
Calendar year 1945	79,412	2,240	34	218	.712	9.64
January 1946	14,608	7,110	50	471	1.54	1.78
February	4,588	1,100	60	164	.536	.56
March	22,421	3,200	86	723	2.35	2.72
April	4,063	204	96	135	.441	.49
May	2,909	134	76	93.8	.307	.35
June	4,934	717	68	164	.536	.60
July	3,545	612	59	114	.373	.43
August	1,938	84	53	62.5	.204	.24
September	4,947	746	40	165	.539	.60
Water year 1945-46	74,195	7,110	40	203	.663	9.02

Maquoketa River near Manchester, Iowa—Continued
 Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1946.....	4,547	461	80	147	0.480	0.55
November.....	6,555	533	129	218	.712	.80
December.....	2,986	146	55	96.3	.315	.36
Calendar year 1946.....	78,041	7,110	40	214	.699	9.48
January 1947.....	2,690	160	50	86.8	.284	.33
February.....	6,434	1,390	40	230	.752	.78
March.....	6,106	645	72	197	.644	.74
April.....	22,506	3,240	184	750	2.45	2.74
May.....	10,851	1,980	160	350	1.14	1.32
June.....	59,285	16,000	289	1,976	6.46	7.21
July.....	20,262	3,320	180	654	2.14	2.46
August.....	3,710	172	68	120	.392	.45
September.....	2,937	125	78	97.9	.320	.36
Water year 1946-47.....	148,869	16,000	40	408	1.33	18.10
October 1947.....	3,036	262	67	97.9	.320	.37
November.....	3,098	144	76	103	.337	.38
December.....	3,754	234	70	121	.395	.46
Calendar year 1947.....	144,669	16,000	40	396	1.29	17.60
January 1948.....	1,854	110	32	59.8	.195	.23
February.....	9,667	5,760	30	333	1.09	1.17
March.....	22,596	3,570	82	729	2.38	2.75
April.....	6,061	438	96	202	.660	.74
May.....	14,212	3,040	110	458	1.50	1.73
June.....	5,268	1,010	84	176	.575	.64
July.....	2,703	247	50	87.2	.285	.33
August.....	1,726	123	37	55.7	.182	.21
September.....	1,403	98	35	46.8	.153	.17
Water year 1947-48.....	75,378	5,760	30	206	.673	9.18
October 1948.....	1,518	90	35	49.0	.160	.18
November.....	1,714	80	45	57.1	.187	.21
December.....	1,585	106	37	51.1	.167	.19
Calendar year 1948.....	70,307	5,760	30	192	.627	8.55
January 1949.....	5,660	792	41	183	.598	.69
February.....	3,747	792	70	134	.438	.46
March.....	17,069	4,930	94	551	1.80	2.07
April.....	5,371	550	75	179	.585	.65
May.....	2,088	120	40	67.4	.220	.25
June.....	3,873	1,290	34	129	.422	.47
July.....	3,620	369	46	117	.382	.44
August.....	1,555	106	40	50.2	.164	.19
September.....	1,352	60	38	45.1	.147	.16
Water year 1948-49.....	49,152	4,930	34	135	.441	5.96
October 1949.....	1,296	61	25	41.8	.137	.16
November.....	1,333	70	32	44.4	.145	.16
December.....	1,398	55	37	45.1	.147	.17
Calendar year 1949.....	48,362	4,930	25	132	.431	5.87
January 1950.....	1,444	130	31	46.6	.152	.18
February.....	1,161	90	26	41.5	.136	.14
March.....	25,054	6,860	38	808	2.64	3.04
April.....	3,903	726	25	130	.425	.47
May.....	6,277	616	77	202	.660	.76
June.....	11,021	1,430	101	367	1.20	1.34
July.....	2,754	201	52	88.8	.290	.33
August.....	1,996	115	45	64.4	.210	.24
September.....	6,843	3,310	42	228	.745	.83
Water year 1949-50.....	64,480	6,860	25	177	.578	7.82

Maquoketa River near Maquoketa, Iowa

LOCATION.—Lat. 42°05'10", long. 90°38'20", in SW¼ NE¼ 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.

RECORDS AVAILABLE.—September 1913 to September 1950.

GAGE.—Water-stage recorder. Datum of gage is 636.52 feet above mean sea level, adjustment of 1912. Sept. 1, 1913, to July 13, 1924, chain gage 20 feet downstream at same datum.

AVERAGE DISCHARGE.—37 years, 969 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Mar. 16	15,000	18.30	Jan. 20	400
1943-44...	June 27	48,000	24.70	Dec. 25	130
1944-45...	Aug. 15	12,600	15.92	Dec. 3	307
1945-46...	Jan. 6	37,100	22.17	Aug. 1	362
1946-47...	June 14	28,000	19.96	Jan. 4	300
1947-48...	Feb. 28	28,200	20.02	Aug. 29	289
1948-49...	Mar. 5	21,600	18.29	Sept. 4, 27-29	204
1949-50...	Mar. 7	21,000	18.14	Sept. 10	190

1913-50: Maximum discharge, 48,000 second-feet June 27, 1944 (gage height, 24.70 feet); minimum, 39 second-feet Sept. 15, 1931; minimum daily, about 105 second-feet Feb. 11-20, 1936.

REMARKS.—Records good except those for periods of ice effect or no gage-height record, which are poor. Diurnal fluctuation caused by power plant 4 miles above station.

COOPERATION.—Several discharge measurements and part of observers services furnished by Corps of Engineers and Union Electric Power Co.

Maquoketa River near Maquoketa, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1	844	1,480	906	1,150	*520	1,930	1,360	1,500	934	1,310	530	479
2	884	1,110	740	1,170	540	1,270	1,480	1,360	6,630	1,020	516	470
3	820	1,080	740	1,110	590	1,480	1,400	1,350	6,600	887	531	462
4	833	946	750	928	650	1,260	1,350	1,090	2,330	798	592	528
5	822	964	850	722	810	1,190	1,110	1,030	2,220	842	538	698
6	788	1,170	920	680	930	1,100	1,160	984	2,100	1,330	524	905
7	878	1,190	860	800	910	1,050	1,360	1,040	1,760	923	502	786
8	916	1,150	810	840	860	1,000	1,700	1,070	1,430	720	517	814
9	792	1,680	780	860	850	1,100	1,410	902	1,330	700	508	586
10	816	4,340	780	800	900	1,200	1,370	958	1,230	660	470	529
11	736	2,350	690	750	840	1,400	1,340	1,050	1,170	676	536	510
12	764	1,950	640	700	810	1,500	1,270	1,010	1,170	656	494	561
13	632	1,540	620	600	670	1,250	1,390	881	1,160	612	1,050	590
14	662	1,350	590	550	540	1,410	1,380	840	1,110	646	1,840	591
15	654	1,180	610	600	520	4,380	1,220	860	1,080	619	951	596
16	643	1,180	640	560	490	13,600	1,160	1,690	1,880	656	629	610
17	638	1,180	660	520	490	*10,700	1,050	2,210	1,900	774	603	570
18	581	1,260	*640	460	530	4,100	1,040	2,530	1,660	769	527	466
19	630	1,230	610	420	780	2,250	916	1,800	1,190	634	536	466
20	601	1,120	570	400	2,460	1,830	916	1,400	1,170	641	525	488
21	612	1,000	550	450	1,990	1,660	932	1,280	1,030	589	502	478
22	590	950	580	500	1,250	1,700	1,000	1,210	994	587	476	444
23	614	913	600	510	2,040	2,000	942	1,330	963	568	630	455
24	578	925	750	520	5,600	2,340	980	1,140	1,690	536	848	452
25	571	917	1,500	500	4,600	2,290	931	1,100	1,540	542	743	449
26	565	900	4,500	450	2,730	1,940	942	1,040	1,020	611	618	464
27	510	783	3,760	410	1,860	1,890	1,180	1,060	940	616	632	482
28	520	756	1,880	440	2,060	1,550	1,350	1,040	987	567	550	459
29	540	911	1,500	480	.....	1,410	1,280	954	1,010	570	337	432
30	812	*670	1,370	510	.....	1,390	1,560	910	1,390	606	542	476
31	1,550	.....	1,260	520	.....	1,490	.....	899	.....	572	540	.....
1943-44												
1	431	544	412	240	576	1,030	902	1,060	1,290	1,940	789	1,240
2	510	502	448	260	546	864	1,010	1,020	1,140	1,820	764	920
3	442	424	446	290	506	805	912	1,090	1,070	1,780	758	792
4	453	450	436	320	462	798	854	1,170	1,010	1,530	966	794
5	436	478	376	260	506	704	978	1,160	964	1,410	1,520	683
6	380	473	562	220	334	717	971	1,070	928	1,310	1,180	602
7	372	614	626	150	454	500	903	1,190	884	1,290	904	615
8	398	767	572	140	451	420	836	1,120	925	1,210	794	596
9	444	620	556	160	400	410	806	948	1,060	1,960	771	591
10	416	482	496	240	380	480	894	1,030	1,440	1,390	810	577
11	411	520	490	260	360	720	788	930	1,390	1,560	784	628
12	442	540	380	190	310	2,900	1,070	876	1,300	1,290	800	697
13	424	494	280	180	270	1,840	1,200	846	g4,460	1,220	732	666
14	490	513	210	200	320	3,470	1,140	899	h4,300	1,120	728	764
15	470	506	240	260	330	7,740	1,220	872	b2,200	1,050	692	764
16	446	490	290	210	330	5,280	1,260	1,110	h4,920	1,040	713	687
17	369	407	240	*310	320	2,860	1,140	1,730	h4,950	1,030	3,010	608
18	437	496	250	340	310	2,060	960	1,530	h4,730	978	1,760	642
19	416	513	170	300	300	1,580	912	1,360	g3,120	1,010	1,130	606
20	375	476	220	240	320	1,330	885	2,970	2,090	960	962	1,350
21	2,050	415	240	260	350	1,110	880	4,540	1,580	888	836	994
22	1,380	*470	170	290	700	*1,020	1,030	4,640	1,680	856	884	829
23	622	465	160	220	4,300	1,690	2,760	3,820	2,850	843	1,460	834
24	573	440	180	350	3,600	1,550	2,990	3,580	1,970	1,200	1,060	780
25	548	404	130	340	2,880	1,880	2,190	3,050	1,760	1,030	849	724
26	460	427	140	250	6,070	1,780	1,690	2,760	11,600	938	751	628
27	426	462	250	1,270	3,830	1,270	1,480	2,950	34,800	1,050	648	630
28	445	378	260	1,580	1,740	1,060	1,230	1,890	6,610	973	736	745
29	452	462	200	985	1,330	1,140	1,110	1,560	3,050	866	676	790
30	474	456	230	622	.....	983	1,090	1,380	2,240	798	716	734
31	496	.....	240	584	.....	942	.....	1,320	.....	810	1,320	.....

* Winter discharge measurement made on this day.

b Computed from wire-weight gage readings.

g Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 2-26, 1942, Jan. 6 to Feb. 22, Mar. 3-12, Dec. 12-31, 1943, Jan. 1-27, Feb. 10-24, Mar. 7-10, 1944.

Maquoketa River near Maquoketa, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	664	498	584	450	450	1,150	1,370	1,020	1,970	1,700	698	681
2.....	736	584	453	440	460	2,140	1,230	1,020	2,300	1,440	722	762
3.....	666	1,040	307	400	480	2,390	1,110	1,060	1,930	1,320	698	728
4.....	666	794	509	380	500	2,020	1,670	1,040	1,660	1,190	650	654
5.....	932	570	*601	380	520	2,350	4,270	1,020	1,510	1,140	616	599
6.....	920	600	656	380	520	3,250	2,960	944	1,490	1,130	650	650
7.....	844	527	626	390	500	2,150	2,110	950	1,390	1,000	634	654
8.....	622	551	602	400	520	1,640	1,600	950	1,180	942	629	799
9.....	605	594	644	400	540	1,430	1,400	983	1,120	923	630	1,120
10.....	592	544	614	400	600	1,420	1,220	930	3,700	924	613	756
11.....	550	546	530	400	640	1,500	1,320	933	3,120	820	624	668
12.....	542	475	493	420	660	1,410	1,270	888	2,030	837	602	605
13.....	508	548	467	440	680	1,400	1,330	905	1,640	832	588	634
14.....	534	564	475	460	720	1,350	1,230	3,960	1,500	836	8,440	748
15.....	459	602	449	460	730	1,380	1,230	4,780	1,610	781	7,260	1,020
16.....	522	644	481	460	*750	1,420	1,660	2,670	2,710	762	3,280	1,000
17.....	520	628	420	480	620	1,540	4,540	2,900	2,230	698	2,010	688
18.....	531	616	400	480	550	1,410	4,440	2,750	1,510	718	1,460	663
19.....	613	565	380	*500	580	1,330	2,520	2,200	1,350	724	1,260	601
20.....	523	559	400	500	600	1,310	1,920	1,930	1,300	697	1,040	621
21.....	532	552	400	550	650	1,290	1,800	1,700	1,300	715	945	609
22.....	440	539	420	550	750	1,110	1,690	1,580	1,170	1,140	1,060	656
23.....	510	433	420	530	730	980	1,410	1,470	1,120	1,100	1,020	691
24.....	512	578	400	530	750	928	1,350	1,300	1,000	834	930	1,100
25.....	524	568	420	520	1,200	1,280	1,000	1,460	1,850	784	841	1,240
26.....	547	541	440	500	2,000	*7,580	1,360	1,520	1,890	702	804	955
27.....	508	606	450	480	2,200	*6,050	1,170	1,520	1,800	724	798	911
28.....	502	556	450	460	1,380	3,470	1,100	2,740	2,720	800	759	1,480
29.....	399	549	440	460	.....	2,310	1,060	2,870	2,850	830	786	1,950
30.....	520	550	450	460	.....	1,920	1,040	2,640	2,000	788	822	1,620
31.....	534	.....	420	450	.....	1,690	.....	1,900	.....	680	737	.....
1945-46												
1.....	1,190	605	742	390	880	1,190	1,140	610	478	3,720	362	406
2.....	1,190	642	836	380	870	1,660	1,180	686	432	1,870	609	420
3.....	1,150	619	1,190	390	860	1,080	1,080	671	439	1,380	1,250	499
4.....	1,020	504	1,460	440	940	874	1,020	727	446	1,250	804	526
5.....	997	572	1,290	6,000	*1,000	819	940	738	459	1,070	608	498
6.....	920	586	1,160	*31,400	4,000	6,720	957	688	432	867	544	728
7.....	909	602	1,040	15,900	2,240	6,270	990	650	490	698	490	984
8.....	823	636	982	6,280	1,550	2,900	928	616	532	684	462	5,270
9.....	770	1,770	916	3,740	1,280	1,630	852	660	474	671	488	4,740
10.....	742	1,560	712	2,770	964	1,380	830	608	448	628	516	2,140
11.....	736	1,040	509	1,630	963	1,450	788	630	510	726	486	1,390
12.....	713	942	530	1,370	990	1,830	829	634	561	603	494	1,180
13.....	698	1,170	550	1,090	952	4,770	803	572	1,000	574	492	985
14.....	634	1,420	570	1,010	909	*3,490	817	543	720	534	408	898
15.....	647	1,060	590	1,110	705	3,350	792	552	862	576	407	796
16.....	638	951	610	1,050	663	3,180	772	578	962	577	490	750
17.....	621	968	590	943	799	3,980	758	599	779	577	1,450	665
18.....	621	868	570	1,030	834	4,140	742	646	1,020	564	1,820	656
19.....	562	774	550	1,080	837	3,090	724	584	1,410	568	1,280	634
20.....	634	750	*540	900	839	2,270	686	576	1,530	558	805	688
21.....	525	760	530	823	786	2,020	673	567	1,360	492	656	752
22.....	644	708	510	762	780	1,920	680	581	1,190	495	556	717
23.....	660	566	500	750	717	1,950	697	530	1,170	472	519	3,150
24.....	577	564	490	780	690	1,840	684	592	936	458	533	3,090
25.....	610	690	480	800	741	2,010	720	678	864	430	432	1,650
26.....	616	672	470	790	740	1,930	684	598	1,050	477	518	1,430
27.....	572	767	450	780	727	1,950	631	526	976	406	508	1,320
28.....	516	784	440	810	730	1,800	642	521	704	405	474	1,260
29.....	601	780	430	870	.....	1,730	595	474	778	424	424	1,090
30.....	571	803	420	900	.....	1,540	642	518	2,170	427	424	980
31.....	524	.....	410	890	.....	1,240	.....	529	.....	408	460	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 17-31, 1944, Jan. 1 to Feb. 27, Dec. 12-31, 1945, Jan. 1-5, Jan. 23 to Feb. 6, 1946.

Maquoketa River near Maquoketa, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	865	1,050	778	400	1,200	880	1,040	2,040	5,550	2,740	1,140	738
2.....	816	1,040	739	320	1,000	900	1,100	2,070	14,400	2,850	1,020	658
3.....	806	1,530	674	340	900	800	1,190	1,970	14,600	2,280	1,020	668
4.....	784	1,530	751	300	800	700	1,290	2,000	7,520	3,120	1,010	694
5.....	751	1,480	852	360	700	*700	5,270	1,630	8,340	4,140	1,010	709
6.....	715	1,340	790	380	740	800	8,390	1,490	11,300	10,200	1,050	746
7.....	706	1,280	786	400	780	1,200	5,600	1,400	9,060	5,650	946	644
8.....	679	1,280	762	440	820	1,800	3,050	1,510	6,740	2,850	874	598
9.....	651	1,420	780	460	880	1,740	2,440	1,260	4,640	2,290	900	572
10.....	695	1,260	782	500	960	1,700	4,060	1,250	3,510	1,980	830	588
11.....	728	1,260	766	600	1,200	1,800	7,800	1,170	3,050	1,850	848	617
12.....	726	1,250	790	700	1,400	1,900	6,790	1,170	2,700	1,770	846	656
13.....	706	1,120	784	900	1,800	3,000	3,350	1,170	12,500	2,940	878	656
14.....	640	1,190	708	1,800	2,640	5,000	2,590	1,190	26,100	5,740	1,020	658
15.....	646	1,120	612	5,760	6,000	2,500	2,280	1,130	20,000	4,590	836	646
16.....	620	1,030	742	4,160	8,120	2,800	2,190	1,110	5,770	2,650	685	582
17.....	610	1,040	684	3,000	6,570	1,910	2,430	1,110	5,540	2,160	653	583
18.....	1,040	1,190	400	2,000	4,800	1,210	2,330	1,150	7,330	2,660	740	579
19.....	1,276	1,090	350	1,700	3,690	1,110	2,220	1,250	5,070	2,450	726	490
20.....	1,060	996	350	1,400	3,000	1,000	3,430	1,240	3,550	1,980	733	620
21.....	924	1,010	500	*950	2,500	1,030	2,470	1,240	2,950	1,700	731	718
22.....	778	1,010	722	900	2,000	1,030	2,050	1,190	2,530	1,520	716	682
23.....	792	871	730	1,000	1,800	1,080	2,080	1,170	2,340	1,380	720	592
24.....	869	865	600	1,600	1,600	1,350	2,250	1,110	2,320	1,380	738	609
25.....	2,140	976	580	1,800	1,500	1,540	2,390	1,140	2,150	1,310	710	598
26.....	2,130	880	620	1,860	1,300	1,260	1,980	1,060	2,020	1,340	667	505
27.....	1,630	856	650	1,820	1,100	1,180	1,820	1,090	1,950	2,060	670	610
28.....	1,430	902	972	1,700	1,000	1,090	1,430	1,110	1,850	1,360	694	562
29.....	1,190	837	909	1,600	.....	994	1,410	3,850	2,360	1,200	854	622
30.....	1,150	821	672	1,500	.....	1,010	2,000	4,110	2,350	1,160	800	586
31.....	1,110	.....	540	1,400	.....	958	.....	2,860	.....	1,170	795	.....
1947-48												
1.....	594	646	511	510	430	3,730	1,320	910	663	670	464	739
2.....	544	514	560	363	420	1,800	1,130	924	720	630	452	680
3.....	532	716	677	413	430	1,310	1,080	1,120	589	586	415	588
4.....	583	606	768	472	450	1,040	1,030	1,290	778	538	410	479
5.....	583	598	908	543	480	1,010	910	1,130	688	637	404	399
6.....	600	586	899	556	*500	940	882	1,190	854	530	432	328
7.....	588	589	862	511	510	852	898	1,720	2,260	504	412	378
8.....	540	585	872	554	500	778	876	1,540	1,840	458	416	352
9.....	544	453	698	551	480	730	855	1,430	1,230	530	435	400
10.....	530	532	493	559	490	600	800	2,270	1,060	477	418	432
11.....	527	518	713	517	500	520	784	3,550	905	450	378	419
12.....	489	563	710	504	530	500	796	3,910	870	504	440	342
13.....	522	540	693	520	570	600	812	2,210	884	532	528	358
14.....	498	526	694	550	610	1,140	796	1,990	820	574	410	336
15.....	524	591	636	600	660	5,060	968	2,640	820	644	404	330
16.....	530	544	564	610	750	11,200	751	3,560	762	528	402	345
17.....	528	623	468	620	1,000	8,440	739	2,580	705	513	396	338
18.....	530	547	518	600	2,500	5,260	668	2,010	715	458	388	361
19.....	370	559	*596	*580	3,930	9,580	707	1,510	707	504	388	324
20.....	536	572	615	560	1,530	10,400	650	1,350	702	476	404	333
21.....	532	550	567	540	1,050	4,050	646	1,210	649	482	384	380
22.....	528	559	562	520	866	*2,250	666	1,120	620	614	382	372
23.....	549	546	584	500	782	1,900	644	992	666	548	408	350
24.....	506	565	520	490	1,050	1,560	786	973	647	481	392	345
25.....	500	558	452	480	1,990	1,220	868	894	608	450	337	362
26.....	444	532	512	470	1,340	1,250	828	906	628	501	348	310
27.....	581	566	522	460	5,180	1,290	954	806	694	476	336	314
28.....	570	542	520	460	24,700	1,780	990	806	651	412	358	323
29.....	714	406	538	460	11,400	1,770	884	782	690	474	289	322
30.....	714	344	504	450	.....	1,240	830	744	752	586	446	342
31.....	695	.....	515	440	.....	1,200	.....	682	.....	531	526	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 18-21, 24-27, 31, 1946, Jan. 1-14, Jan. 17 to Feb. 13, Feb. 20 to Mar. 16, 1947, Jan. 13 to Feb. 18, 1948.

Maquoketa River near Maquoketa, Iowa—Continued
Daily Discharge, in Second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	352	324	310	580	440	1,390	1,650	560	334	623	348	248
2.....	364	326	310	600	430	1,280	1,560	662	372	564	371	240
3.....	239	336	320	650	420	1,460	1,370	554	446	844	298	226
4.....	320	397	330	1,000	420	4,410	1,160	524	486	728	302	204
5.....	330	385	350	5,700	410	16,500	1,060	528	348	753	297	254
6.....	330	448	360	2,130	410	14,600	960	458	344	968	314	258
7.....	492	318	350	1,330	410	6,780	962	461	346	1,040	270	233
8.....	588	352	300	1,710	400	3,710	872	445	351	752	257	a220
9.....	556	363	290	1,540	*400	3,510	783	436	331	705	269	a250
10.....	388	342	340	1,040	400	2,120	754	485	330	594	288	a270
11.....	386	338	500	843	400	1,540	706	418	316	556	1,330	a310
12.....	392	338	450	721	400	1,200	627	483	303	466	612	a320
13.....	370	367	410	*682	400	1,090	638	469	390	450	444	a310
14.....	350	331	445	544	400	1,060	649	448	1,230	456	497	304
15.....	374	390	550	1,610	400	868	697	397	690	500	402	300
16.....	380	399	630	5,100	400	834	750	394	535	452	462	292
17.....	307	450	496	1,960	410	812	810	542	436	355	330	314
18.....	362	455	384	1,270	420	760	950	434	411	420	308	255
19.....	378	534	331	948	480	762	978	394	370	448	263	228
20.....	332	516	320	800	460	752	1,060	392	361	432	254	222
21.....	319	633	325	700	450	728	1,090	390	358	2,170	208	209
22.....	318	448	325	630	460	1,200	1,030	452	353	1,460	256	210
23.....	354	402	330	600	500	1,830	902	512	383	873	260	218
24.....	313	457	340	570	1,500	1,290	896	492	738	624	246	228
25.....	346	466	350	540	3,500	1,180	800	480	2,200	510	255	220
26.....	368	467	370	520	3,000	1,040	674	472	1,800	514	236	211
27.....	334	440	400	500	2,650	1,180	656	454	1,550	778	240	204
28.....	318	392	*450	480	1,840	1,930	654	438	1,130	563	216	204
29.....	312	*330	500	470	.....	1,290	640	388	935	525	225	204
30.....	370	320	530	460	.....	1,160	576	348	686	414	415	208
31.....	322	.....	560	450	.....	1,340	.....	355	.....	354	270	.....
1949-50												
1.....	224	246	216	1,160	1,100	1,000	945	804	514	808	1,040	375
2.....	226	236	244	656	950	1,200	852	644	3,590	627	932	343
3.....	230	235	238	538	820	1,150	782	690	3,100	777	703	318
4.....	240	247	243	348	700	1,100	791	773	2,260	678	543	307
5.....	238	254	243	340	600	4,500	733	720	1,560	627	484	290
6.....	255	240	246	470	580	16,000	720	857	1,270	581	439	268
7.....	402	252	251	460	750	19,600	627	694	1,060	510	411	279
8.....	370	276	236	380	1,000	16,600	623	694	901	489	399	250
9.....	274	252	222	380	760	6,430	514	725	742	427	355	215
10.....	270	228	229	390	600	1,860	661	941	848	403	480	190
11.....	258	221	346	390	620	1,330	764	1,110	652	371	431	304
12.....	250	249	524	400	520	1,050	694	1,160	602	526	383	318
13.....	256	250	276	1,300	430	916	623	996	2,330	1,510	347	351
14.....	264	236	424	2,080	360	843	669	755	2,710	615	351	367
15.....	277	264	580	749	b290	1,210	657	738	2,620	435	399	339
16.....	268	240	580	499	b300	1,140	598	585	3,800	407	359	347
17.....	276	231	540	450	b320	1,140	627	573	1,960	391	367	282
18.....	258	230	382	450	b290	896	535	602	5,130	371	351	300
19.....	258	222	370	850	b420	755	497	522	4,780	431	355	395
20.....	304	216	356	800	497	690	514	526	3,400	526	367	290
21.....	510	225	359	720	300	996	510	577	2,180	435	335	10,800
22.....	290	220	314	660	290	1,850	505	585	1,760	403	324	7,090
23.....	244	232	278	620	290	3,250	455	484	1,320	343	307	3,290
24.....	270	236	300	600	350	4,040	1,480	531	2,170	335	318	1,650
25.....	264	262	280	4,000	520	3,870	2,150	1,090	1,930	328	307	1,300
26.....	264	234	300	*3,000	570	2,910	1,690	1,730	1,680	310	355	1,000
27.....	282	212	320	754	560	5,170	1,530	1,180	1,550	314	411	777
28.....	263	230	310	638	640	4,080	1,350	1,090	1,110	351	738	707
29.....	264	260	290	840	.....	1,940	1,130	987	968	300	411	678
30.....	209	220	283	780	.....	1,330	843	678	909	279	403	598
31.....	241	.....	788	900	.....	1,060	.....	627	.....	1,020	399	.....

* Winter discharge measurement made on this day.

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

b Computed from wire-weight gage readings.

Note—Stage-discharge relation affected by ice Nov. 29 to Dec. 12, Dec. 15, 16, 20-31, 1948, Jan. 1-4, Jan. 20 to Feb. 26, Dec. 15-17, 24-29, 1949, Jan. 5-13, 17-26, Jan. 29 to Feb. 19, Feb. 21 to Mar. 5, 1950.

Maquoketa River near Maquoketa, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1942	22,396	1,550	510	722	0.466	0.54
November	38,175	4,340	670	1,272	.821	.92
December	32,656	4,500	550	1,053	.679	.78
Calendar year 1942	414,486	6,260	420	1,136	.733	9.95
January 1943	19,910	1,170	400	642	.414	.48
February	37,720	5,500	490	1,347	.869	.90
March	74,660	13,600	1,000	2,408	1.55	1.79
April	36,479	1,700	916	1,216	.785	.88
May	37,518	2,530	840	1,210	.781	.90
June	51,618	6,630	934	1,721	1.11	1.24
July	22,237	1,330	535	717	.463	.53
August	19,546	1,840	475	651	.407	.47
September	16,297	906	432	543	.350	.39
Water year 1942-43	409,212	13,600	400	1,121	.723	9.82
October 1943	16,488	2,050	369	532	.343	.40
November	14,688	767	378	490	.316	.35
December	9,900	626	130	319	.206	.24
Calendar year 1943	357,061	13,600	130	978	.631	8.57
January 1944	11,521	1,580	140	372	.240	.28
February	32,585	6,070	270	1,124	.725	.78
March	50,933	7,740	410	1,643	1.06	1.22
April	36,091	2,990	788	1,203	.776	.87
May	55,461	4,640	846	1,780	1.15	1.33
June	112,311	34,800	884	3,744	2.42	2.69
July	37,150	1,960	798	1,198	.773	.89
August	30,503	3,010	648	984	.635	.73
September	22,510	1,350	577	750	.484	.54
Water year 1943-44	430,141	34,800	130	1,175	.758	10.32
October 1944	18,077	932	399	583	.376	.43
November	17,521	1,040	433	584	.377	.42
December	14,801	656	307	477	.308	.36
Calendar year 1944	439,464	34,800	140	1,201	.775	10.54
January 1945	14,110	550	380	455	.294	.34
February	21,280	2,200	450	760	.490	.51
March	62,598	7,580	928	2,019	1.30	1.50
April	53,980	4,540	1,040	1,799	1.16	1.30
May	54,533	4,780	888	1,759	1.13	1.31
June	54,980	3,700	1,000	1,833	1.18	1.32
July	28,511	1,700	680	920	.594	.68
August	42,606	8,440	588	1,374	.886	1.02
September	25,863	1,950	599	862	.556	.62
Water year 1944-45	408,860	8,440	307	1,120	.723	9.81
October 1945	22,631	1,190	524	730	.471	.54
November	25,133	1,770	504	838	.541	.60
December	21,067	1,460	410	680	.439	.51
Calendar year 1945	427,292	8,440	380	1,171	.755	10.25
January 1946	87,858	31,400	380	2,834	1.83	2.11
February	28,986	4,000	663	1,035	.668	.70
March	76,003	6,720	819	2,452	1.58	1.82
April	24,276	1,180	595	809	.523	.58
May	18,682	738	474	603	.389	.45
June	25,182	2,170	432	839	.541	.60
July	23,589	3,720	405	761	.491	.57
August	19,769	1,820	362	638	.412	.47
September	40,322	5,270	406	1,344	.867	.97
Water year 1945-46	413,408	31,400	362	1,133	.731	9.92

Maquoketa River near Maquoketa, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946.....	29,657	2,140	610	957	0.617	0.71
November.....	33,524	1,530	821	1,117	.721	.80
December.....	21,375	972	350	690	.445	.51
Calendar year 1946.....	429,223	31,400	350	1,176	.759	10.29
January 1947.....	42,050	5,760	300	1,356	.875	1.01
February.....	60,800	8,120	700	2,171	1.40	1.46
March.....	45,972	5,000	700	1,483	.957	1.10
April.....	88,720	8,390	1,040	2,957	1.91	2.13
May.....	48,240	4,110	1,060	1,556	1.00	1.16
June.....	200,090	26,100	1,850	6,070	4.30	4.80
July.....	82,470	10,200	1,160	2,660	1.72	1.98
August.....	25,860	1,140	653	834	.538	.62
September.....	18,786	746	490	626	.404	.45
Water year 1946-47.....	697,544	26,100	300	1,911	1.23	16.73
October 1947.....	17,025	714	370	549	.354	.41
November.....	16,576	716	344	553	.357	.40
December.....	19,251	908	452	621	.461	.46
Calendar year 1947.....	665,840	26,100	300	1,824	1.18	15.98
January 1948.....	15,963	620	363	515	.332	.38
February.....	65,628	24,700	429	2,263	1.46	1.57
March.....	85,000	11,200	500	2,742	1.77	2.04
April.....	25,548	1,320	644	852	.550	.61
May.....	48,749	3,910	682	1,573	1.01	1.17
June.....	25,177	2,260	589	839	.541	.60
July.....	16,298	670	412	526	.339	.39
August.....	12,602	528	289	407	.263	.30
September.....	11,681	739	310	389	.251	.28
Water year 1947-48.....	359,498	24,700	289	982	.634	8.61
October 1948.....	11,264	588	239	363	.234	.27
November.....	12,094	633	318	402	.259	.29
December.....	12,256	630	290	395	.255	.29
Calendar year 1948.....	342,230	24,700	239	935	.603	8.19
January 1949.....	36,678	5,700	450	1,183	.763	.88
February.....	22,210	3,500	400	793	.512	.53
March.....	79,606	16,500	728	2,568	1.66	1.91
April.....	26,914	1,650	576	897	.579	.65
May.....	14,265	662	348	460	.297	.34
June.....	18,863	2,200	303	629	.406	.45
July.....	20,891	2,170	354	674	.435	.50
August.....	10,743	1,330	208	347	.224	.26
September.....	7,374	320	204	246	.159	.18
Water year 1948-49.....	273,128	16,500	204	748	.483	6.55
October 1949.....	8,559	510	224	276	.178	.21
November.....	7,156	276	212	239	.154	.17
December.....	10,568	788	216	341	.220	.25
Calendar year 1949.....	263,827	16,500	204	723	.466	6.33
January 1950.....	26,602	4,000	340	858	.554	.64
February.....	15,427	1,100	290	551	.355	.37
March.....	109,906	19,600	690	3,545	2.29	2.64
April.....	25,089	2,150	455	836	.539	.60
May.....	24,668	1,730	484	796	.513	.59
June.....	59,406	5,130	514	1,980	1.28	1.43
July.....	15,928	1,510	279	514	.332	.38
August.....	13,804	1,040	307	445	.287	.33
September.....	33,988	10,800	190	1,133	.731	.82
Water year 1949-50.....	351,081	19,600	190	962	.621	8.43

Wapsipinicon River at Independence, Iowa

LOCATION.—Lat. 42°27'50", long.91°53'50", in sec. 4, T. 88 N., R. 9 W., 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.

RECORDS AVAILABLE.—July 1933 to September 1950.

GAGE.—Water-stage recorder and concrete control. Datum of gage is 882.85 feet above mean sea level, datum of 1929. July 1, 1933, to May 23, 1941, staff gage in tail race of power plant 1,800 feet upstream.

AVERAGE DISCHARGE.—17 years, 514 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Mar. 16	4,090	8.59	Aug. 5	82
1943-44...	June 17	13,800	15.64	Dec. 25	9
1944-45...	Mar. 18	10,900	13.95	Dec. 3	9
1945-46...	Jan. 6	9,910	13.36	Dec. 23	14
1946-47...	June 14	21,500	18.74	Feb. 9	43
1947-48...	Mar. 20	1,100	13.33	Jan. 28	16
1948-49...	Mar. 6	7,420	10.78	Nov. 11 Sept. (many days)	13
1949-50...	Mar. 7	10,300	12.82	Nov. 11, Dec. 17	14

1933-50: Maximum discharge, 21,500 second-feet June 14, 1947 (gage height, 18.74 feet); minimum, about 7 second-feet many times in period 1933-34.

REMARKS.—Records good except those for period when stop logs were partially out of dam, or those for period of no gage-height record, which are fair. Diurnal fluctuation caused by power plant above station.

COOPERATION.—Records collected in cooperation with City of Independence; water-stage recorder inspected by employee of Interstate Power Co. to May 15, 1949. Several discharge measurements furnished by Corps of Engineers.

Wapsipinicon River at Independence, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	775	618	368	a500	182	1,890	3,070	761	401	886	159	732
2.....	673	618	226	a540	193	1,690	2,840	675	510	629	124	713
3.....	648	448	297	a500	186	1,510	2,430	597	908	365	264	629
4.....	748	414	326	318	156	1,290	2,130	394	782	319	222	444
5.....	1,950	633	328	426	206	1,030	1,790	284	684	264	82	575
6.....	3,300	956	298	404	181	880	1,420	708	656	283	184	424
7.....	2,670	1,020	299	300	204	739	1,140	1,270	629	255	170	334
8.....	2,350	910	296	332	210	656	940	1,010	458	256	116	388
9.....	2,020	910	304	318	216	550	761	792	373	270	174	388
10.....	1,840	1,420	252	317	220	395	684	675	407	279	128	498
11.....	1,460	1,170	258	312	213	379	732	620	419	230	120	503
12.....	980	900	326	295	219	286	884	494	291	134	394	475
13.....	739	775	259	302	210	376	1,060	410	372	266	180	278
14.....	642	673	298	292	175	542	1,010	385	194	225	343	270
15.....	643	618	252	272	224	1,280	875	609	398	198	293	308
16.....	633	610	269	275	181	3,700	761	2,070	268	229	497	333
17.....	432	610	245	228	168	3,130	656	1,890	296	419	629	284
18.....	434	562	208	277	157	2,250	638	1,680	392	263	604	230
19.....	444	474	289	250	174	2,390	520	1,330	344	438	1,070	210
20.....	372	422	206	276	170	2,720	434	1,010	336	414	1,460	263
21.....	394	454	224	311	400	a3,000	401	843	194	292	1,570	241
22.....	350	424	240	106	820	a2,700	446	703	1,090	238	973	282
23.....	338	396	229	196	2,090	a2,300	406	638	802	178	694	226
24.....	346	432	293	192	2,980	a2,150	467	594	366	208	656	146
25.....	326	408	202	196	2,360	2,300	473	446	314	244	751	216
26.....	320	401	a400	199	1,740	2,400	378	376	300	120	1,160	97
27.....	244	186	a550	186	1,540	2,340	479	398	250	209	1,090	128
28.....	318	411	a570	182	1,760	2,400	476	390	767	187	929	233
29.....	318	318	a570	177	.....	2,720	460	392	1,830	225	782	118
30.....	433	324	a510	186	.....	2,920	761	394	1,540	218	751	228
31.....	648	.....	a520	140	.....	3,100	.....	348	.....	196	742	.....
1943-44												
1.....	94	178	214	14	305	656	792	761	771	488	207	290
2.....	215	398	158	18	350	656	732	703	665	460	206	330
3.....	86	172	178	184	364	656	771	665	370	366	129	16
4.....	194	279	256	76	284	647	761	812	554	376	509	272
5.....	162	256	130	100	328	506	742	996	469	354	1,240	195
6.....	118	237	410	98	126	284	694	1,270	434	322	1,010	127
7.....	173	320	240	93	282	236	665	1,340	294	343	783	126
8.....	128	408	365	140	254	174	638	1,370	316	364	684	122
9.....	174	320	270	12	208	194	488	1,370	506	144	418	230
10.....	100	482	252	94	150	186	483	1,230	459	261	256	14
11.....	184	346	244	74	110	390	582	985	444	236	261	230
12.....	103	485	128	*81	188	458	1,060	833	656	327	327	125
13.....	178	345	214	62	26	703	1,020	723	1,690	150	20	226
14.....	155	348	106	48	230	985	973	656	2,680	250	190	194
15.....	153	322	169	82	164	*3,530	929	626	2,430	356	180	132
16.....	148	214	158	18	86	3,420	833	446	5,590	130	256	253
17.....	108	263	143	96	130	*2,940	802	454	12,800	242	486	19
18.....	186	291	203	70	112	2,400	823	455	6,780	231	729	214
19.....	148	254	18	77	195	2,070	782	635	3,660	226	554	292
20.....	148	256	156	58	24	1,810	751	1,680	2,290	230	274	466
21.....	284	260	104	82	126	1,329	833	3,130	1,710	236	249	422
22.....	178	224	114	84	263	996	951	4,480	3,130	225	392	114
23.....	310	196	112	19	665	1,990	1,030	4,110	3,100	134	269	458
24.....	128	199	186	134	919	1,780	1,230	4,280	2,450	144	229	264
25.....	200	200	9	100	875	1,820	1,410	3,640	1,570	177	115	354
26.....	148	200	14	128	886	1,760	1,450	2,790	864	576	367	344
27.....	204	204	166	197	875	1,490	1,380	2,150	665	792	122	242
28.....	174	205	94	290	732	1,450	1,280	1,570	466	545	244	245
29.....	168	308	97	240	656	1,320	1,120	1,380	490	372	233	122
30.....	174	110	72	288	.....	1,080	940	1,330	647	184	227	269
31.....	328	.....	96	284	.....	875	.....	1,070	.....	204	255	.....

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of rating for dam at Central City.

Note—Stop logs removed from dam Aug. 3 to Sept. 2, 1944.

Wapsipinicon River at Independence, Iowa—Continued
Daily Discharge, in Second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	180	84	80	23	63	a230	1,270	802	2,280	1,720	166	184
2.....	207	166	118	106	47	a320	812	694	2,910	1,040	172	70
3.....	280	134	9	84	65	a410	684	675	4,880	722	165	185
4.....	227	165	140	66	24	a460	1,080	947	4,740	612	218	138
5.....	340	12	124	47	86	638	1,750	480	3,810	572	18	138
6.....	252	204	134	60	64	713	1,750	506	3,350	360	228	146
7.....	324	142	81	22	64	684	1,480	478	2,780	396	198	144
8.....	197	138	*110	84	102	629	1,130	484	2,160	384	180	202
9.....	218	144	78	70	17	638	985	337	1,490	399	178	19
10.....	204	68	131	91	a60	1,130	812	433	1,040	470	204	139
11.....	194	192	136	50	a18	2,070	897	308	812	234	330	132
12.....	192	12	104	53	a90	2,550	973	488	713	264	414	114
13.....	171	140	100	66	82	3,170	1,060	217	694	212	164	118
14.....	170	142	98	25	90	3,400	1,190	811	675	274	1,620	118
15.....	74	144	112	96	70	3,180	1,200	1,400	647	194	1,880	117
16.....	190	138	126	*82	98	4,210	1,930	1,090	594	171	1,090	72
17.....	148	146	11	62	140	4,760	3,390	929	603	207	792	124
18.....	125	191	146	62	122	*9,830	3,060	742	647	199	620	124
19.....	125	14	106	62	150	8,090	2,610	638	629	221	612	94
20.....	147	220	78	60	150	5,540	2,290	603	456	225	522	94
21.....	144	148	70	20	118	4,170	2,030	350	440	226	338	93
22.....	78	140	74	90	154	2,980	1,620	501	466	216	339	132
23.....	184	68	76	78	150	2,250	1,270	650	524	212	339	72
24.....	124	136	11	62	128	1,620	1,010	776	337	188	270	240
25.....	134	218	14	90	a130	1,640	854	1,070	951	182	242	186
26.....	127	12	84	64	a155	2,410	919	1,320	1,200	151	132	138
27.....	84	156	98	66	a155	2,190	1,020	1,670	854	158	260	186
28.....	148	140	88	29	a154	1,900	1,140	2,720	1,160	264	274	266
29.....	12	146	82	98	.....	1,930	1,240	2,790	2,260	16	193	88
30.....	194	139	81	76	.....	2,120	1,150	2,530	2,100	206	190	154
31.....	184	.....	18	62	.....	1,760	.....	2,210	.....	174	194	.....
1945-46												
1.....	303	a101	304	34	172	340	723	156	190	1,040	93	16
2.....	136	a126	460	148	162	262	612	207	103	886	99	18
3.....	168	a130	596	110	97	424	566	209	147	656	102	70
4.....	172	a116	254	118	170	418	562	244	112	382	16	73
5.....	126	a142	230	1,090	385	473	418	185	104	208	120	75
6.....	173	140	364	8,480	1,080	2,880	450	191	125	222	94	108
7.....	72	132	246	*7,910	897	4,230	344	177	116	226	100	242
8.....	194	221	366	3,830	*761	2,730	466	185	154	172	92	205
9.....	88	150	75	4,010	792	2,220	334	174	18	168	92	232
10.....	97	142	162	3,830	761	2,670	408	166	114	436	92	429
11.....	92	149	168	2,880	771	2,600	297	177	116	321	71	638
12.....	114	216	180	2,260	833	2,530	464	98	145	149	116	1,090
13.....	114	312	158	1,610	802	4,400	376	174	188	228	104	1,680
14.....	136	256	120	1,320	672	5,080	359	174	134	92	100	1,670
15.....	92	198	148	996	565	4,560	316	156	148	160	105	1,330
16.....	95	210	74	742	485	4,800	283	149	188	140	100	792
17.....	111	207	184	612	426	4,590	256	158	212	152	102	575
18.....	119	77	111	473	279	3,920	278	161	874	135	19	334
19.....	157	228	97	514	396	3,230	262	124	771	164	117	339
20.....	147	184	124	388	286	2,650	266	203	620	150	94	283
21.....	16	167	113	316	314	2,070	176	178	470	81	70	338
22.....	179	106	117	266	296	1,720	253	136	314	234	184	359
23.....	96	16	14	265	294	1,480	235	186	328	170	104	919
24.....	96	104	92	234	164	1,460	227	222	263	138	54	782
25.....	95	146	21	242	267	1,450	231	246	274	122	19	585
26.....	98	187	115	251	288	1,610	196	130	180	116	109	382
27.....	a138	134	109	164	214	2,030	166	265	201	130	59	406
28.....	a16	134	105	188	225	1,580	155	178	188	23	72	302
29.....	a158	164	96	137	.....	1,220	206	204	305	209	63	266
30.....	a110	124	23	186	.....	996	191	152	1,250	98	47	270
31.....	a100	.....	132	142	.....	843	.....	188	.....	96	98	.....

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of hydroelectric plant records at Independence.

Wapsipicon River at Independence, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	281	655	240	142	126	216	875	665	4,450	4,160	232	174
2.....	256	1,020	180	115	115	104	771	665	6,030	3,310	272	144
3.....	210	884	210	104	140	246	703	665	4,430	3,850	220	146
4.....	223	690	228	131	110	148	854	620	3,460	3,530	220	140
5.....	232	a626	254	107	116	166	1,780	388	5,660	3,420	201	146
6.....	130	a638	289	136	124	180	2,520	511	2,950	2,950	200	114
7.....	204	a513	276	133	155	260	2,410	464	1,990	1,820	212	122
8.....	166	a634	198	88	102	394	2,160	436	2,400	1,220	147	118
9.....	154	a630	274	96	43	432	2,040	370	2,130	1,180	189	98
10.....	202	a590	252	95	157	482	3,750	399	1,570	1,200	152	97
11.....	210	a622	248	117	113	512	6,830	350	1,160	951	146	70
12.....	216	a618	271	97	90	558	5,760	354	1,450	742	146	426
13.....	143	a524	235	148	108	780	4,160	357	13,900	823	144	322
14.....	388	a488	178	143	134	1,150	4,020	342	17,100	1,160	142	174
15.....	204	a550	130	261	267	1,030	3,440	363	11,900	1,070	120	122
16.....	352	a472	214	146	488	940	3,090	403	8,520	1,130	145	120
17.....	366	570	135	196	583	951	2,850	476	7,090	1,580	102	111
18.....	a320	486	103	195	474	973	2,150	488	8,050	2,520	98	139
19.....	a295	442	161	160	451	929	1,640	468	6,340	2,080	120	134
20.....	187	472	159	180	528	886	1,520	360	4,500	1,450	124	118
21.....	335	425	200	144	518	812	1,280	524	3,280	1,030	108	135
22.....	202	324	98	188	426	675	1,030	360	2,800	742	98	82
23.....	230	322	170	192	364	665	864	576	2,470	429	115	94
24.....	406	344	146	*180	338	742	1,070	691	1,890	486	102	98
25.....	582	316	144	210	296	940	1,520	646	1,330	458	124	98
26.....	611	323	147	199	278	703	1,490	520	1,020	353	76	96
27.....	420	298	150	225	229	897	1,250	544	864	349	102	92
28.....	490	306	270	190	222	1,070	1,080	487	761	336	102	97
29.....	540	264	166	182	.....	1,150	875	1,220	1,090	264	228	97
30.....	626	318	144	181	.....	1,040	694	2,160	2,940	298	118	77
31.....	676	.....	154	100	.....	973	.....	2,080	.....	287	146	.....
1947-48												
1.....	85	304	158	138	23	2,860	1,070	629	193	557	23	284
2.....	85	141	170	107	59	3,030	854	629	156	279	98	355
3.....	98	256	168	89	17	3,650	684	487	a150	397	96	280
4.....	184	201	243	105	*58	3,300	603	549	a150	245	71	183
5.....	135	200	305	148	50	2,730	463	431	a200	250	71	133
6.....	126	171	545	121	17	2,170	449	594	a700	155	71	153
7.....	69	169	389	96	46	1,480	463	1,030	a1,400	229	73	170
8.....	156	183	370	108	23	1,130	620	962	a1,000	160	23	50
9.....	90	111	204	94	50	823	547	864	a500	96	69	144
10.....	89	168	429	101	23	568	506	1,620	a350	102	73	76
11.....	102	146	219	74	52	437	586	2,860	280	216	88	66
12.....	71	144	320	184	19	343	973	2,950	285	85	76	23
13.....	79	143	227	87	50	336	761	2,210	199	108	110	125
14.....	71	124	214	77	49	297	647	1,540	254	138	23	69
15.....	90	186	*226	78	19	384	384	2,020	245	165	23	71
16.....	81	163	143	84	a50	1,410	483	2,380	198	159	114	69
17.....	72	193	215	26	a50	4,680	331	2,020	227	120	48	73
18.....	100	180	194	31	29	6,330	381	1,440	153	127	62	50
19.....	19	184	193	61	103	*7,390	241	940	219	159	66	23
20.....	91	197	147	99	78	*10,600	337	751	146	159	48	74
21.....	93	209	141	74	68	8,270	296	638	250	161	24	75
22.....	78	240	178	82	54	4,880	330	401	-193	165	24	66
23.....	78	165	178	69	84	3,090	494	412	201	106	71	75
24.....	73	214	109	57	106	2,110	732	364	157	68	48	46
25.....	90	177	147	17	305	1,400	629	282	153	89	51	46
26.....	80	186	134	77	272	1,050	629	250	104	128	24	65
27.....	225	159	143	39	450	2,130	694	243	203	122	52	104
28.....	261	169	76	16	4,070	2,110	864	248	269	78	20	90
29.....	350	126	165	17	4,330	1,830	833	119	499	74	20	68
30.....	267	132	108	26	.....	1,400	708	286	612	92	231	69
31.....	268	.....	125	74	.....	1,280	.....	204	.....	69	233	.....

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of power plant gage readings and records for station near DeWitt.

Wapsipinicon River at Independence, Iowa—Continued
Daily Discharge, in Second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	57	124	72	26	a100	408	2,840	343	118	352	93	18
2.....	63	94	151	26	a100	355	2,540	354	199	935	58	18
3.....	23	96	84	128	a100	*b450	2,250	272	202	516	19	18
4.....	65	90	135	205	a100	b850	2,260	218	196	330	62	31
5.....	64	78	146	712	a95	5,090	2,160	238	50	310	19	48
6.....	65	81	156	540	a95	6,970	1,860	256	220	232	66	120
7.....	130	23	118	329	a95	4,660	1,370	250	108	186	19	19
8.....	186	166	108	368	a95	3,570	962	158	112	202	54	68
9.....	119	102	78	249	a95	3,700	771	292	112	203	19	18
10.....	140	132	76	*420	a95	3,000	629	243	106	133	50	18
11.....	188	18	177	196	94	2,610	646	222	88	232	106	29
12.....	165	210	91	233	50	2,210	542	212	26	164	262	124
13.....	103	82	187	258	106	2,000	496	182	220	114	224	64
14.....	87	21	131	208	124	1,680	485	194	440	118	26	62
15.....	94	176	158	206	80	1,020	494	74	652	118	180	64
16.....	116	148	116	583	86	802	426	246	284	118	21	18
17.....	69	106	124	656	89	600	545	218	264	26	69	80
18.....	114	58	126	472	88	529	771	196	208	180	67	19
19.....	96	166	26	420	90	455	929	178	57	86	56	92
20.....	78	204	117	a300	50	389	1,030	118	214	85	55	18
21.....	88	101	119	a220	126	504	1,080	176	156	70	21	18
22.....	74	203	80	a180	85	750	1,090	195	95	166	69	77
23.....	76	148	78	a150	95	1,070	973	320	123	71	21	18
24.....	21	160	78	a130	122	1,010	802	243	264	34	53	46
25.....	98	48	29	a120	172	996	696	145	1,140	140	21	19
26.....	103	373	78	a110	298	962	578	235	545	102	21	46
27.....	76	104	90	a110	464	1,270	484	194	432	83	65	18
28.....	39	119	80	a110	289	1,680	430	179	368	84	19	44
29.....	95	140	70	a100	.....	2,080	387	31	370	66	19	19
30.....	98	130	78	a100	.....	2,290	342	98	374	64	47	19
31.....	19	.....	83	a100	.....	2,700	.....	236	.....	23	19	.....
1949-50												
1.....	19	21	73	21	24	60	2,030	482	418	623	412	69
2.....	19	96	23	45	24	29	1,640	413	1,300	885	458	100
3.....	54	21	90	142	50	66	1,070	384	1,330	576	476	26
4.....	18	64	24	26	21	50	718	459	680	457	426	24
5.....	58	53	102	58	21	b19C	580	786	581	409	426	138
6.....	44	23	66	19	23	b3,000	485	775	498	349	416	59
7.....	19	100	66	75	23	8,970	441	571	412	311	408	64
8.....	57	45	24	23	23	6,610	372	770	338	280	323	60
9.....	27	47	23	73	48	a2,300	316	1,360	344	250	276	19
10.....	112	74	75	23	23	2,080	469	1,720	556	278	224	19
11.....	18	14	24	54	24	3,040	446	1,370	752	197	259	153
12.....	18	114	134	23	29	2,500	391	1,420	786	194	255	96
13.....	53	23	21	79	87	1,880	352	1,610	711	194	120	21
14.....	18	123	72	63	68	1,410	316	1,230	929	174	311	66
15.....	52	76	16	23	84	1,120	308	747	890	204	247	98
16.....	21	23	*91	83	62	837	256	570	696	228	191	68
17.....	71	71	14	90	57	*617	315	505	516	296	287	21
18.....	19	*23	18	31	82	480	278	458	1,440	220	204	60
19.....	72	*99	124	64	29	390	264	424	2,490	248	181	81
20.....	56	24	46	*31	76	398	240	410	1,650	486	82	93
21.....	60	98	16	82	46	354	227	361	1,600	918	214	3,660
22.....	75	26	80	26	24	436	190	408	1,290	1,760	130	633
23.....	19	77	16	26	73	866	195	356	925	2,170	130	268
24.....	80	26	19	63	24	2,080	624	250	4,740	1,900	40	210
25.....	56	103	26	58	58	2,150	1,090	518	2,560	1,490	126	223
26.....	56	62	34	29	23	2,540	810	658	2,220	1,040	109	147
27.....	54	16	130	26	53	3,860	645	554	2,290	718	34	108
28.....	21	122	18	53	26	3,130	582	671	2,740	547	166	122
29.....	90	60	18	23	.....	2,960	502	906	2,030	436	106	139
30.....	23	74	71	24	.....	3,120	457	688	958	348	102	132
31.....	94	.....	18	24	.....	2,560	.....	554	.....	474	100	.....

* Winter discharge measurement made on this day.

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

b Stage-discharge relation affected by ice.

Wapsipinicon River at Independence, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1942.....	27,788	3,300	244	896	0.845	0.97
November.....	18,515	1,420	186	617	.582	.65
December.....	9,912	570	202	320	.302	.35
Calendar year 1942.....	318,054	8,320	151	871	.822	11.15
January 1943.....	8,805	540	106	284	.268	.31
February.....	17,535	2,980	156	626	.591	.62
March.....	56,013	3,700	286	1,807	1.70	1.96
April.....	29,502	3,070	378	983	.927	1.03
May.....	23,186	2,070	284	748	.706	.81
June.....	16,571	1,830	194	552	.521	.58
July.....	8,937	886	120	288	.272	.31
August.....	17,401	1,570	82	561	.529	.61
September.....	10,194	732	97	340	.321	.36
Water year 1942-43.....	244,359	3,700	82	669	.631	8.56
October 1943.....	5,251	328	86	169	.159	.18
November.....	8,280	485	110	276	.260	.29
December.....	5,016	410	9	162	.153	.18
Calendar year 1943.....	206,691	3,700	9	566	.534	7.24
January 1944.....	3,341	290	12	108	.102	.12
February.....	9,913	919	24	342	.323	.35
March.....	37,882	3,530	174	1,222	1.15	1.33
April.....	26,945	1,450	483	898	.847	.95
May.....	47,940	4,480	446	1,546	1.46	1.68
June.....	58,950	12,800	294	1,965	1.85	2.07
July.....	9,446	792	130	305	.288	.33
August.....	11,421	1,240	20	368	.347	.40
September.....	6,707	466	14	224	.211	.24
Water year 1943-44.....	231,092	12,800	9	631	.595	8.12
October 1944.....	5,378	340	12	173	.163	.19
November.....	3,899	220	12	130	.123	.14
December.....	2,718	148	9	87.7	.083	.10
Calendar year 1944.....	224,540	12,800	9	613	.578	7.90
January 1944.....	2,006	106	20	64.7	.061	.07
February.....	2,746	155	17	98.1	.093	.10
March.....	77,622	9,830	230	2,504	2.36	2.72
April.....	42,606	3,390	684	1,420	1.34	1.49
May.....	29,349	2,790	217	947	.893	1.03
June.....	46,202	4,880	337	1,540	1.45	1.62
July.....	10,869	1,720	16	351	.331	.38
August.....	12,542	1,880	18	405	.382	.44
September.....	4,027	266	19	134	.126	.14
Water year 1944-45.....	239,964	9,830	9	657	.620	8.42
October 1945.....	3,808	303	16	123	.116	.13
November.....	4,719	312	15	157	.148	.17
December.....	5,358	596	14	173	.163	.19
Calendar year 1945.....	241,854	9,830	14	663	.625	8.48
January 1945.....	43,746	8,480	34	1,411	1.33	1.53
February.....	12,854	1,080	97	459	.433	.45
March.....	71,466	5,080	262	2,305	2.17	2.51
April.....	10,076	723	155	336	.317	.35
May.....	5,553	265	98	179	.169	.19
June.....	8,352	1,250	18	278	.262	.29
July.....	7,504	1,040	23	242	.228	.26
August.....	2,717	184	16	87.6	.083	.10
September.....	14,808	1,680	16	494	.466	.52
Water year 1945-46.....	190,961	8,480	14	523	.493	6.69

Wapsipinicon River at Independence, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946.....	9,857	676	130	318	0.300	0.35
November.....	15,364	1,020	264	512	.483	.54
December.....	6,024	289	98	194	.183	.21
Calendar year 1946.....	208,321	8,480	16	571	.539	7.30
January 1947.....	4,781	261	88	154	.145	.17
February.....	7,095	583	43	253	.239	.25
March.....	21,004	1,150	104	678	.640	.74
April.....	64,476	6,830	694	2,149	2.03	2.26
May.....	18,952	2,160	342	611	.576	.66
June.....	133,525	17,100	761	4,451	4.20	4.68
July.....	45,178	4,160	264	1,457	1.37	1.59
August.....	4,651	272	76	150	.142	.16
September.....	4,001	426	70	133	.125	.14
Water year 1946-47.....	334,908	17,100	43	918	.866	11.75
October 1947.....	3,753	350	19	121	.114	.13
November.....	5,341	304	111	178	.168	.19
December.....	6,583	545	76	212	.200	.23
Calendar year 1947.....	319,340	17,100	19	875	.825	11.20
January 1948.....	2,456	184	16	70.2	.075	.09
February.....	10,604	4,330	17	366	.345	.37
March.....	83,492	10,600	297	2,693	2.54	2.93
April.....	17,587	1,070	241	586	.553	.62
May.....	30,353	2,950	119	979	.924	1.06
June.....	9,646	1,400	104	322	.304	.34
July.....	5,058	557	68	163	.154	.18
August.....	2,136	233	23	68.9	.065	.07
September.....	3,175	353	23	106	.100	.11
Water year 1947-48.....	180,184	10,600	16	492	.464	6.32
October 1948.....	2,809	188	19	90.6	.085	.10
November.....	3,707	373	18	124	.117	.13
December.....	3,300	187	26	106	.100	.12
Calendar year 1948.....	174,323	10,600	16	476	.449	6.12
January 1949.....	7,965	712	26	257	.242	.28
February.....	3,478	464	50	124	.117	.12
March.....	56,660	6,970	355	1,828	1.72	1.99
April.....	30,868	2,840	342	1,029	.971	1.08
May.....	6,516	354	31	210	.198	.23
June.....	7,743	1,140	26	258	.243	.27
July.....	5,543	935	23	179	.169	.19
August.....	1,900	262	19	61.3	.058	.07
September.....	1,270	124	18	42.3	.040	.04
Water year 1948-49.....	131,759	6,970	18	361	.341	4.62
October 1949.....	1,453	112	18	46.9	.044	.05
November.....	1,798	123	14	59.9	.057	.06
December.....	1,572	134	14	50.7	.048	.06
Calendar year 1949.....	126,766	6,970	14	347	.327	4.44
January 1950.....	1,480	142	19	47.7	.045	.05
February.....	1,205	87	21	43.0	.041	.04
March.....	60,083	8,970	29	1,938	1.83	2.11
April.....	16,609	2,030	190	554	.523	.58
May.....	22,418	1,720	280	723	.682	.79
June.....	38,670	4,740	338	1,259	1.22	1.36
July.....	18,660	2,170	174	602	.568	.65
August.....	7,239	476	34	234	.221	.25
September.....	6,977	3,660	19	233	.220	.24
Water year 1949-50.....	178,164	8,970	14	488	.460	6.24

Wapsipinicon River near Dewitt, Iowa

LOCATION.—Lat. 41°46', long. 90°32', in sec. 31, T. 81 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.

RECORDS AVAILABLE.—June 1934 to September 1950.

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

AVERAGE DISCHARGE.—16 years, 1,373 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Mar. 19	6,610	(¹)	Sept. 30	428
1943-44...	June 27	26,000	12.07	Jan. 8, 13	180
1944-45...	Mar. 25	9,000	10.15	Jan. 9, 10, Feb. 1	200
1945-46...	Jan. 6	14,600	11.12	Sept. 4	276
1946-47...	June 19	21,600	11.76	Dec. 21	300
1947-48...	Mar. 20	17,200	11.1	Jan. 26-31	150
1948-49...	Mar. 10	8,240	(²)	Oct. 4	180
1949-50...	Mar. 13	9,700	10.10	Nov. 10, 23, 24, Dec. 3, 5, 7	205

(1) Maximum gage height 10.30 feet Mar. 3 (ice jam).

(2) Maximum gage height 10.54 feet Feb. 25 (ice jam).

1934-50: Maximum discharge, 26,000 second-feet June 27, 1944 (gage height, 12.07 feet); minimum daily, 70 second-feet Jan. 17-24, 1940; minimum gage height, 0.94 feet Oct. 3, 1937.

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

COOPERATION.—Services of observer and several discharge measurements furnished by Corps of Engineers.

Wapsipinicon River near Dewitt, Iowa—Continued
Daily Discharge, in Second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1	1,670	1,280	880	13,480	*580	3,760	3,550	2,870	1,560	1,190	477	1,210
2	1,610	1,200	*750	12,730	560	h3,000	3,610	2,410	2,240	1,590	488	1,110
3	1,550	1,280	720	12,440	630	2,500	3,770	2,280	2,760	1,220	518	1,040
4	1,500	1,200	780	2,110	1,150	2,500	3,940	2,090	3,520	1,780	643	1,010
5	1,430	1,210	850	2,300	2,040	3,000	4,040	1,940	3,350	1,520	630	1,120
6	1,340	1,270	920	2,500	2,800	3,000	3,920	1,820	2,760	1,300	550	1,380
7	1,320	1,230	950	2,600	2,660	2,400	3,870	1,690	2,820	1,180	492	1,260
8	1,490	1,370	920	2,500	1,830	2,200	4,000	1,610	2,440	1,040	480	1,310
9	1,910	1,530	900	2,450	1,510	2,200	3,830	1,610	2,240	941	461	1,050
10	2,410	2,340	870	2,400	2,660	2,500	3,300	1,890	2,090	871	454	900
11	2,650	2,760	810	2,350	2,950	2,800	2,840	2,000	1,920	826	443	773
12	2,560	2,480	750	1,950	1,900	3,000	2,620	1,870	1,890	929	443	832
13	2,350	2,430	700	1,650	1,760	3,200	2,430	1,720	1,780	783	1,150	994
14	2,140	2,270	650	1,600	910	3,600	2,290	1,600	1,700	722	1,630	906
15	1,870	1,980	670	1,450	750	3,360	2,250	1,600	1,570	689	1,080	848
16	1,600	1,790	690	1,300	700	4,960	2,230	3,190	1,640	684	883	778
17	1,410	1,700	690	1,250	700	*5,200	2,150	3,290	1,910	680	727	684
18	1,300	1,730	*680	1,080	700	5,980	2,050	3,450	2,000	670	652	634
19	1,220	1,640	670	870	1,150	6,590	1,910	4,110	1,840	718	626	608
20	1,110	1,570	640	800	3,030	6,330	1,800	4,370	1,660	666	661	600
21	1,020	1,500	610	790	3,700	5,240	1,710	4,410	1,830	708	742	574
22	994	1,410	640	830	4,300	4,110	1,630	3,610	1,740	661	816	546
23	941	1,310	670	910	5,120	4,160	1,660	3,010	1,530	693	1,060	518
24	889	1,300	700	890	4,150	4,840	1,730	2,700	1,470	693	1,290	511
25	848	1,250	680	810	3,200	4,800	1,630	2,500	1,720	666	1,930	496
26	794	1,200	1,200	780	3,550	4,830	1,590	2,300	1,860	643	1,690	499
27	773	1,120	2,500	680	*3,610	4,440	2,240	2,100	1,560	574	1,750	484
28	742	1,090	3,600	660	3,740	3,980	2,550	1,910	1,310	546	1,290	454
29	722	1,020	5,000	640	.....	3,700	2,340	1,760	1,190	546	1,290	439
30	757	988	4,770	630	.....	3,570	3,550	1,660	1,140	h542	1,350	428
31	838	.....	3,930	620	.....	3,550	.....	1,590	.....	496	1,310	.....
1943-44												
1	402	477	477	270	617	1,850	2,340	2,650	3,820	4,340	860	643
2	396	477	477	280	583	1,600	2,230	2,420	2,930	4,280	763	639
3	399	473	507	290	595	1,490	2,060	2,330	2,550	2,510	693	591
4	385	496	492	280	591	1,530	1,910	2,320	2,180	2,200	689	566
5	388	492	465	270	583	1,520	1,770	2,110	1,910	1,970	871	554
6	371	522	492	240	591	1,470	1,680	2,110	1,690	1,770	826	538
7	371	763	550	210	546	1,300	1,660	2,170	1,550	1,590	727	492
8	361	848	626	180	534	1,250	1,640	2,140	1,510	1,500	889	484
9	361	794	604	210	510	1,160	1,600	2,240	1,610	1,530	1,120	480
10	354	708	626	h220	490	1,280	1,640	2,230	1,900	1,330	1,090	450
11	347	693	595	h210	400	1,520	1,700	2,180	1,800	1,280	1,010	439
12	347	680	583	h190	350	1,820	1,800	2,160	1,800	1,340	918	435
13	388	652	435	h180	370	2,170	1,790	2,090	2,100	1,200	832	454
14	396	670	400	h190	380	2,870	1,910	1,960	2,260	1,130	713	458
15	368	670	280	h200	380	5,710	2,370	1,790	2,480	1,090	648	439
16	368	661	290	h200	380	6,280	2,530	1,920	3,840	1,020	634	450
17	354	626	330	*200	370	5,390	2,250	2,050	4,180	941	747	443
18	354	639	360	210	350	4,890	2,110	1,860	3,780	976	763	446
19	351	608	370	220	340	4,740	2,000	1,800	3,840	924	713	424
20	358	583	370	200	360	4,620	1,960	5,050	4,080	843	689	424
21	843	566	330	220	390	4,520	2,010	8,720	4,660	810	773	492
22	1,120	*562	310	230	550	*4,010	2,630	7,040	5,660	783	810	503
23	708	550	280	230	1,550	3,430	4,330	6,900	7,390	747	752	526
24	566	534	280	240	2,370	3,200	6,340	6,220	9,000	854	757	579
25	542	522	290	280	2,910	2,710	6,030	6,630	7,190	752	747	587
26	515	518	300	360	3,780	2,630	3,830	6,900	6,200	752	698	554
27	507	511	310	470	3,300	2,790	3,020	7,420	19,500	747	648	566
28	480	488	300	750	2,910	2,670	2,750	7,390	20,200	680	604	566
29	458	488	280	988	2,230	2,620	2,590	7,290	15,200	666	574	562
30	454	473	270	680	.....	2,470	2,510	6,810	9,710	900	579	550
31	450	.....	270	670	.....	2,370	.....	5,820	.....	964	595	.....

* Winter discharge measurement made on this day.

h Computed from once daily staff gage readings.

Note—Stago-discharge relation affected by ice Dec. 1-29, 1942, Jan. 5 to Feb. 22, Mar. 3-14, Dec. 14-31, 1943, Jan. 1-28, Feb. 9-24, Mar. 8-11, 1944.

Wapsipinicon River near Dewitt, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	538	361	406	220	200	1,710	h3,560	2,030	3,620	2,900	583	634
2.....	542	439	300	210	220	1,590	3,260	2,090	3,890	2,800	530	600
3.....	507	1,520	310	220	240	1,560	3,060	2,110	4,120	2,770	499	566
4.....	503	1,190	300	220	250	1,550	2,870	1,970	4,100	2,680	488	530
5.....	574	703	350	220	260	1,600	2,790	1,800	3,690	2,390	477	515
6.....	604	583	330	210	270	1,650	3,230	1,690	3,510	2,010	488	480
7.....	591	554	320	210	280	1,650	3,300	1,650	3,730	1,720	473	458
8.....	550	558	310	210	290	1,600	2,980	1,610	4,310	1,540	473	454
9.....	550	546	300	200	300	1,650	2,790	1,460	4,820	1,370	469	477
10.....	530	503	290	200	310	1,700	2,630	1,420	5,350	1,230	443	501
11.....	530	499	280	210	320	1,700	2,380	1,370	5,260	1,140	473	473
12.....	503	477	270	220	350	1,750	2,150	1,320	4,800	1,060	477	454
13.....	484	458	260	230	400	1,830	2,110	1,260	4,160	1,050	461	439
14.....	465	480	250	240	450	2,120	2,050	2,080	2,770	994	2,000	496
15.....	450	496	250	250	570	2,520	2,100	4,260	2,340	924	2,140	501
16.....	443	477	250	260	*680	2,870	2,520	4,580	2,260	816	2,460	542
17.....	432	458	240	260	800	3,150	3,170	4,690	2,320	747	2,670	515
18.....	417	454	230	*680	850	3,420	3,510	4,860	2,190	718	2,650	443
19.....	406	439	230	270	900	3,740	3,990	4,040	2,010	675	2,180	406
20.....	406	432	240	270	1,000	3,900	4,330	3,300	1,860	630	1,730	399
21.....	406	428	230	270	1,100	4,120	4,510	2,800	1,790	634	1,460	378
22.....	392	432	220	280	1,410	4,540	4,560	2,460	1,690	643	1,300	388
23.....	378	432	220	280	1,490	5,190	4,420	2,270	1,580	626	1,200	399
24.....	378	413	220	270	1,410	6,500	3,950	2,080	1,450	657	1,150	450
25.....	378	432	220	260	1,010	8,760	3,520	1,890	1,690	684	1,000	461
26.....	371	435	220	250	2,160	*8,490	3,010	1,900	1,760	617	912	499
27.....	375	458	220	240	2,370	h7,480	2,560	1,960	1,860	595	843	1,460
28.....	378	439	220	230	2,140	h6,860	2,280	2,090	2,200	657	783	1,020
29.....	371	454	230	220	.....	h6,520	2,110	2,510	2,440	661	713	1,440
30.....	368	439	240	220	.....	h5,490	2,050	2,860	4,200	612	666	1,160
31.....	361	.....	240	210	.....	h4,620	.....	3,120	.....	579	639	.....
1945-46												
1.....	1,050	378	718	300	930	1,100	2,700	675	566	2,440	388	307
2.....	1,060	361	810	330	870	1,770	2,380	648	526	2,710	396	296
3.....	912	361	h970	370	800	1,580	2,150	648	511	2,710	591	290
4.....	821	361	h1,090	420	770	1,410	1,900	799	477	2,600	469	276
5.....	778	361	h1,170	4,200	*820	1,580	1,720	810	461	2,080	402	1,240
6.....	718	354	h1,290	*13,000	1,150	2,950	1,590	794	458	1,720	375	4,020
7.....	643	351	h1,110	8,310	1,500	3,230	1,520	773	410	1,440	354	1,910
8.....	617	364	h1,010	6,970	1,850	3,360	1,440	752	396	1,200	354	2,580
9.....	587	382	h 935	9,180	1,700	3,360	1,340	708	375	988	330	2,640
10.....	554	454	h 428	10,200	1,600	3,670	1,260	689	351	877	324	1,890
11.....	530	752	400	9,130	1,700	3,800	1,200	675	354	794	317	2,250
12.....	511	689	420	8,380	1,600	4,180	1,160	643	420	718	317	1,650
13.....	496	768	480	8,350	1,600	*4,900	1,110	617	1,200	661	317	1,320
14.....	473	689	530	7,120	1,500	4,840	1,100	600	826	670	310	1,230
15.....	450	698	570	4,900	1,350	4,970	1,080	634	1,250	689	347	1,220
16.....	432	680	590	4,200	1,370	5,080	1,040	703	1,370	621	354	1,380
17.....	432	693	530	3,900	1,400	5,640	958	600	1,280	612	530	1,560
18.....	428	657	500	3,500	1,400	6,420	929	708	1,530	595	1,620	1,630
19.....	417	626	480	3,000	*1,350	7,220	906	713	2,900	562	1,050	1,520
20.....	402	595	*470	2,600	1,250	6,630	866	684	3,010	550	718	1,300
21.....	396	608	450	2,400	1,200	8,170	816	643	2,670	522	583	1,200
22.....	392	550	410	2,200	1,100	8,010	789	608	2,600	496	484	1,040
23.....	388	546	400	2,100	1,000	7,370	832	587	2,180	465	432	1,510
24.....	385	520	380	2,100	950	6,590	816	587	1,780	446	396	2,030
25.....	392	510	370	2,200	900	5,660	763	595	1,580	461	371	2,650
26.....	378	600	350	1,700	950	4,460	752	591	1,600	458	354	2,960
27.....	382	*700	340	1,200	1,000	3,940	747	574	1,640	450	334	2,620
28.....	375	773	330	1,150	1,050	3,730	742	562	1,350	420	324	1,940
29.....	368	752	320	1,100	.....	3,330	727	562	1,170	399	324	1,610
30.....	361	763	310	1,150	.....	3,300	698	550	1,350	392	313	1,390
31.....	358	.....	300	1,000	.....	3,060	.....	612	.....	388	293	.....

* Winter discharge measurement made on this day.

h Computed from tape gage readings.

Note—Stage-discharge relation affected by ice Dec. 2-31, 1944, Jan. 1 to Feb. 20, Mar. 3-11, Nov. 24-27, Dec. 11-31, 1945, Jan. 1-5, Jan. 16 to Feb. 28, 1946.

Wapsipinicon River near Dewitt, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1	1,260	1,220	1,010	400	1,600	620	2,080	3,960	4,250	4,570	1,370	435
2	1,130	1,260	953	380	1,400	630	2,170	3,600	5,860	3,760	1,270	439
3	1,040	2,230	912	360	1,160	640	2,160	3,470	6,220	3,650	1,210	439
4	953	2,480	889	340	880	660	2,320	3,000	6,680	4,390	1,150	420
5	900	2,250	854	340	840	670	5,320	2,760	9,630	5,350	1,070	435
6	832	2,180	866	360	820	*680	6,280	2,510	15,000	6,680	1,020	435
7	778	2,490	871	400	800	780	5,770	2,890	13,900	7,340	970	406
8	732	2,300	871	440	780	1,100	5,750	2,180	14,800	7,120	912	406
9	713	2,000	871	500	780	980	5,710	2,020	16,400	6,860	866	396
10	675	1,990	871	560	800	900	5,660	1,910	15,700	6,420	821	371
11	718	2,060	826	600	840	920	5,540	1,820	12,800	5,000	789	385
12	693	1,930	821	640	860	1,360	5,560	1,710	10,000	3,260	747	392
13	661	1,820	826	680	880	1,840	5,770	1,640	8,240	4,250	698	378
14	652	1,750	783	1,400	1,260	2,240	6,300	1,610	7,610	4,180	689	347
15	639	1,690	768	2,910	1,800	2,110	6,790	1,530	7,040	3,650	652	347
16	626	1,600	*752	2,750	3,500	2,020	7,530	1,500	7,940	3,260	639	385
17	626	1,570	666	2,250	2,700	1,970	8,530	1,500	17,200	3,080	612	488
18	906	1,550	560	1,890	2,000	1,980	8,680	1,580	20,300	2,710	604	443
19	1,290	1,530	360	1,490	1,800	2,040	7,910	1,520	21,300	2,660	583	399
20	1,320	1,500	320	1,260	1,680	2,000	8,640	1,610	19,600	2,810	566	371
21	1,190	1,450	300	900	1,560	1,960	9,260	1,620	16,600	3,150	558	918
22	1,050	1,380	360	840	1,400	2,000	8,110	1,580	13,900	3,250	542	843
23	964	1,320	420	820	1,280	2,170	6,760	1,520	11,800	2,990	526	503
24	883	1,290	600	*800	1,140	2,750	4,890	1,460	10,200	2,530	515	428
25	1,000	1,250	740	820	1,000	2,750	3,770	1,500	8,680	2,180	526	406
26	1,480	1,180	820	940	840	2,300	3,440	1,490	7,420	1,910	608	382
27	1,900	1,150	840	1,080	720	2,180	3,150	1,520	6,070	2,380	465	361
28	1,680	1,120	680	1,210	600	2,090	3,060	1,580	4,780	2,590	446	358
29	1,530	1,080	600	1,670	.....	2,000	3,060	2,900	4,390	1,830	503	358
30	1,380	1,060	480	2,190	.....	1,940	3,650	3,460	4,260	1,580	492	358
31	1,250	.....	440	1,840	.....	1,950	.....	3,520	.....	1,470	450	.....
1947-48												
1	344	515	364	480	160	6,000	3,610	1,520	670	617	378	180
2	344	554	488	450	160	5,000	3,090	1,560	621	574	327	324
3	341	546	666	440	160	4,500	2,660	1,710	612	634	307	364
4	337	*546	773	440	160	5,000	2,410	1,810	583	698	303	364
5	334	546	1,410	450	160	6,000	2,160	1,850	550	1,020	286	354
6	327	515	1,190	460	*160	6,800	1,970	1,800	546	1,380	276	399
7	330	484	1,080	450	160	7,500	1,890	2,010	821	737	269	375
8	364	488	1,140	440	160	8,000	1,760	2,010	1,700	621	266	382
9	420	484	866	*420	160	7,000	1,550	1,960	2,320	566	266	351
10	375	477	773	410	160	5,000	1,500	2,040	2,050	507	259	337
11	358	469	752	400	160	3,500	1,470	2,090	1,620	484	245	310
12	330	458	742	390	160	2,500	1,440	2,220	1,460	450	232	293
13	327	443	780	380	160	2,000	1,320	2,650	1,370	439	232	269
14	320	428	820	380	160	1,500	1,310	3,100	1,190	612	232	256
15	307	465	860	380	160	1,000	1,430	3,440	1,040	570	220	236
16	313	484	840	370	160	1,500	1,440	3,770	935	511	249	216
17	313	499	800	320	170	2,500	1,330	3,510	848	450	262	210
18	310	484	760	300	190	5,000	1,170	3,270	789	417	310	207
19	310	480	720	290	220	8,000	1,030	3,260	757	406	317	204
20	300	488	680	280	240	*14,800	976	2,930	708	388	262	204
21	293	507	640	260	220	10,300	883	2,530	684	388	229	266
22	283	515	630	230	200	10,500	860	2,090	648	399	226	276
23	293	511	600	200	300	10,800	866	1,750	666	392	204	262
24	293	484	590	170	400	10,800	912	1,510	639	410	198	236
25	283	488	580	160	600	11,000	1,000	1,340	608	439	186	213
26	310	488	570	150	1,000	10,600	1,290	1,140	583	558	174	204
27	334	515	560	150	2,000	8,110	1,450	1,070	582	465	180	201
28	347	511	550	150	3,000	5,540	1,430	964	550	450	174	195
29	334	410	540	150	5,000	4,160	1,370	871	587	382	169	195
30	371	317	530	150	.....	4,080	1,460	799	612	413	174	204
31	428	.....	510	150	.....	3,920	.....	742	.....	461	177	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 18-31, 1946, Jan. 1-14, 21-27, Jan. 31 to Mar. 12, Dec. 13-31, 1947, Jan. 1 to Mar. 19, 1948.

Wapsipinicon River near Dewitt, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	204	236	371	250	540	2,100	3,340	1,300	566	1,210	675	262
2.....	201	236	347	240	530	2,200	3,540	1,240	546	1,120	652	259
3.....	183	239	351	230	520	2,400	3,760	1,150	526	1,030	546	259
4.....	180	245	361	500	520	2,700	3,880	1,090	566	941	484	259
5.....	183	259	378	1,000	510	3,200	3,880	1,060	546	912	461	259
6.....	186	242	358	1,400	510	3,800	3,540	1,030	526	1,090	428	249
7.....	273	249	354	1,400	500	4,840	3,240	941	507	1,270	402	249
8.....	410	245	300	1,100	500	6,030	3,060	912	496	1,150	375	242
9.....	354	269	250	950	500	7,090	2,890	883	465	1,450	358	242
10.....	341	269	270	850	500	7,610	2,590	854	458	1,120	337	242
11.....	327	262	320	800	500	7,090	2,240	799	450	970	1,030	259
12.....	324	262	360	760	500	7,340	1,970	773	432	912	2,890	1,140
13.....	317	262	380	730	540	6,860	1,830	773	424	799	1,570	1,240
14.....	310	273	390	*720	580	5,840	1,700	773	1,080	722	695	675
15.....	307	276	400	900	560	4,840	1,700	747	1,270	722	546	492
16.....	303	279	390	1,500	540	3,880	1,630	722	747	722	507	424
17.....	296	317	380	2,000	520	3,150	1,700	698	608	652	484	396
18.....	273	337	360	2,100	500	2,590	1,760	698	630	608	450	368
19.....	252	334	340	1,500	1,000	2,240	1,830	652	722	587	484	334
20.....	242	420	330	1,200	1,500	2,040	1,900	675	652	546	435	313
21.....	242	443	315	1,000	1,300	1,900	1,970	698	608	3,980	378	293
22.....	242	413	300	800	1,000	1,900	1,970	747	566	5,320	354	276
23.....	236	402	290	730	1,100	2,310	1,970	698	526	3,940	330	266
24.....	236	402	280	680	1,500	2,170	1,900	652	675	1,760	303	266
25.....	232	396	265	640	2,000	2,170	1,900	652	1,420	1,180	293	259
26.....	229	388	255	610	2,500	2,240	1,830	630	1,970	941	283	239
27.....	226	385	250	590	2,200	2,520	1,700	675	1,510	826	388	232
28.....	223	382	240	570	2,000	2,660	1,570	652	1,630	799	410	229
29.....	223	368	250	560	.....	2,660	1,480	608	1,700	1,120	307	226
30.....	223	382	270	550	.....	2,590	1,390	587	1,390	1,570	296	216
31.....	223	.....	260	550	.....	2,890	.....	566	.....	1,300	290	.....
1949-50												
1.....	221	218	213	1,100	860	1,500	4,410	1,900	1,050	3,100	1,230	340
2.....	208	213	208	680	820	1,300	3,960	1,740	1,170	3,000	1,200	336
3.....	210	216	205	540	800	1,100	3,830	1,570	2,110	2,710	960	324
4.....	213	218	210	460	760	1,200	3,600	1,780	2,180	2,270	880	318
5.....	208	218	205	430	740	4,300	3,200	2,100	2,800	2,110	830	305
6.....	238	221	208	640	740	6,560	2,530	1,600	2,260	1,750	805	290
7.....	240	218	205	620	780	6,560	2,020	1,400	2,020	1,490	780	284
8.....	232	218	224	540	900	6,050	6,780	1,400	1,540	1,290	755	267
9.....	232	216	275	500	1,500	6,700	1,680	2,030	1,290	1,170	730	259
10.....	232	205	275	490	1,000	7,280	2,100	2,440	1,140	1,050	705	267
11.....	232	218	303	470	800	8,300	2,620	2,100	1,050	990	730	270
12.....	232	218	300	460	680	9,080	2,020	2,180	960	930	680	376
13.....	229	257	*260	700	600	9,280	1,680	2,350	1,280	905	635	343
14.....	216	263	300	1,100	520	*5,100	1,540	2,350	2,440	1,050	590	287
15.....	218	235	290	840	470	3,900	1,400	2,100	2,900	990	570	262
16.....	221	224	300	560	450	4,410	1,290	2,020	3,200	855	550	262
17.....	216	218	290	450	430	3,600	1,230	2,020	2,440	805	510	262
18.....	208	218	300	420	420	2,800	1,140	1,820	3,410	780	498	256
19.....	213	218	310	390	410	2,260	1,110	1,540	5,500	780	490	242
20.....	227	229	280	*370	400	1,940	1,020	1,360	5,090	755	470	248
21.....	316	227	270	360	390	1,820	990	1,260	3,740	755	443	284
22.....	312	210	270	350	380	1,900	960	1,230	3,520	680	443	418
23.....	312	205	270	350	380	2,620	1,020	1,200	3,410	658	418	635
24.....	266	205	300	350	380	2,260	2,790	1,140	2,900	730	407	1,560
25.....	249	224	290	900	380	2,100	7,140	1,050	2,800	900	386	2,620
26.....	240	208	280	3,000	380	2,440	6,360	1,020	2,620	1,290	386	1,670
27.....	243	208	270	2,000	380	3,710	3,000	990	3,000	1,600	376	1,050
28.....	246	210	260	1,500	580	3,960	2,800	990	3,520	1,630	393	830
29.....	227	208	260	1,100	.....	3,960	2,440	990	3,970	1,420	365	730
30.....	227	208	270	1,000	.....	4,100	2,100	1,050	3,850	1,230	362	658
31.....	224	.....	540	900	.....	4,580	.....	1,050	.....	1,140	359	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 9-31, 1948, Jan. 1 to Mar. 6, Dec. 13-31, 1949, Jan. 1 to Mar. 5, Mar. 14, 15, 1950.

Wapsipinicon River near Dewitt, Iowa—Continued
 Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1942.....	43,758	2,650	722	1,412	0.614	0.71
November.....	46,448	2,760	988	1,548	.673	.75
December.....	39,780	5,000	610	1,284	.558	.64
Calendar year 1942.....	666,266	7,940	534	1,825	.793	10.78
January 1943.....	48,050	3,480	620	1,550	.674	.78
February.....	62,340	5,120	560	2,226	.908	1.01
March.....	119,300	6,590	2,200	3,848	1.67	1.93
April.....	81,030	4,040	1,590	2,701	1.17	1.31
May.....	74,960	4,410	1,590	2,418	1.05	1.21
June.....	59,040	3,520	1,140	1,968	.856	.95
July.....	26,767	1,780	496	863	.375	.43
August.....	28,006	1,930	443	903	.393	.45
September.....	23,996	1,380	428	800	.348	.39
Water year 1942-43.....	653,485	6,590	428	1,790	.778	10.56
October 1943.....	14,062	1,120	347	454	.197	.23
November.....	17,744	848	473	591	.257	.29
December.....	12,549	626	270	405	.176	.20
Calendar year 1943.....	567,844	6,590	270	1,556	.677	9.18
January 1944.....	9,568	988	180	309	.134	.15
February.....	29,310	3,780	340	1,011	.440	.47
March.....	87,880	6,280	1,160	2,835	1.23	1.42
April.....	74,990	6,340	1,600	2,500	1.09	1.21
May.....	122,720	8,720	1,790	3,959	1.72	1.98
June.....	156,520	20,200	1,510	5,217	2.27	2.53
July.....	40,919	4,340	666	1,320	.574	.66
August.....	23,732	1,120	574	766	.333	.38
September.....	15,334	643	424	511	.222	.25
Water year 1943-44.....	605,328	20,200	180	1,654	.719	9.77
October 1944.....	14,181	604	361	457	.199	.23
November.....	15,989	1,520	361	533	.232	.26
December.....	8,196	406	220	284	.115	.13
Calendar year 1944.....	599,339	20,200	180	1,638	.712	9.67
January 1945.....	7,320	280	200	236	.103	.12
February.....	22,630	2,370	200	808	.351	.37
March.....	111,830	8,760	1,550	3,607	1.57	1.81
April.....	91,750	4,560	2,050	3,058	1.33	1.48
May.....	75,590	4,860	1,260	2,438	1.06	1.22
June.....	91,770	5,350	1,450	3,059	1.33	1.48
July.....	37,129	2,900	579	1,198	.521	.60
August.....	32,830	2,670	443	1,050	.460	.53
September.....	17,718	1,460	378	591	.257	.29
Water year 1944-45.....	526,933	8,760	200	1,444	.628	8.52
October 1945.....	16,486	1,060	358	532	.231	.27
November.....	16,896	773	351	563	.245	.27
December.....	18,461	1,290	300	596	.259	.30
Calendar year 1945.....	540,410	8,760	200	1,481	.644	8.74
January 1946.....	126,660	13,000	300	4,086	1.78	2.05
February.....	34,660	1,850	770	1,238	.538	.56
March.....	135,310	8,170	1,100	4,365	1.90	2.19
April.....	36,031	2,700	698	1,201	.522	.58
May.....	20,344	810	550	656	.285	.33
June.....	36,591	3,010	351	1,220	.530	.59
July.....	30,134	2,710	388	972	.423	.49
August.....	14,071	1,620	293	454	.197	.23
September.....	49,459	4,020	276	1,649	.717	.80
Water year 1945-46.....	535,103	13,000	276	1,466	.637	8.66

Wapsipinicon River near Dewitt, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1946.....	31,451	1,900	626	1,015	0.441	0.51
November.....	49,680	2,490	1,060	1,656	.720	.80
December.....	21,930	1,010	300	707	.307	.35
Calendar year 1946.....	586,321	13,000	276	1,606	.698	9.48
January 1947.....	33,090	2,910	340	1,067	.464	.54
February.....	35,720	3,500	600	1,276	.555	.58
March.....	50,230	2,750	620	1,620	.704	.81
April.....	163,620	9,260	2,080	5,454	2.37	2.65
May.....	65,970	3,960	1,460	2,128	.925	1.07
June.....	328,570	21,300	4,250	10,952	4.76	5.31
July.....	116,860	7,340	1,470	3,770	1.64	1.89
August.....	22,869	1,370	446	778	.321	.37
September.....	13,032	918	347	434	.189	.21
Water year 1946-47.....	933,022	21,300	300	2,556	1.11	15.09
October 1947.....	10,273	428	283	331	.144	.17
November.....	14,599	554	317	487	.212	.24
December.....	22,804	1,410	364	736	.320	.37
Calendar year 1947.....	877,637	21,300	283	2,404	1.05	14.21
January 1948.....	9,850	480	150	318	.138	.16
February.....	16,100	5,000	160	555	.241	.26
March.....	192,910	14,800	1,000	6,223	2.71	3.12
April.....	47,037	3,610	860	1,568	.682	.76
May.....	63,316	3,770	742	2,042	.888	1.02
June.....	27,329	2,320	546	911	.396	.44
July.....	16,838	1,380	382	543	.236	.27
August.....	7,589	378	169	245	.107	.12
September.....	8,087	399	180	270	.117	.13
Water year 1947-48.....	436,732	14,800	150	1,193	.519	7.06
October 1948.....	8,001	410	180	258	.112	.13
November.....	9,472	443	236	316	.137	.15
December.....	9,995	400	240	322	.140	.16
Calendar year 1948.....	416,524	14,800	150	1,138	.495	6.72
January 1949.....	27,410	2,100	230	884	.384	.44
February.....	25,470	2,500	500	910	.396	.41
March.....	113,850	7,610	1,900	3,673	1.60	1.84
April.....	69,660	3,880	1,390	2,322	1.01	1.13
May.....	24,935	1,300	566	804	.350	.40
June.....	24,212	1,970	424	807	.351	.39
July.....	41,269	5,320	546	1,331	.579	.67
August.....	17,444	2,890	283	563	.245	.28
September.....	10,665	1,240	216	356	.155	.17
Water year 1948-49.....	382,383	7,610	180	1,048	.456	6.17
October 1949.....	7,308	316	208	236	.103	.12
November.....	6,572	263	205	219	.095	.11
December.....	8,671	540	205	280	.122	.14
Calendar year 1949.....	377,466	7,610	205	1,034	.450	6.10
January 1950.....	23,370	3,000	350	754	.328	.38
February.....	17,330	1,500	380	619	.269	.28
March.....	126,670	9,280	1,100	4,086	1.78	2.05
April.....	73,760	7,140	960	2,459	1.07	1.19
May.....	49,770	2,440	990	1,605	.698	.80
June.....	79,160	5,500	960	2,639	1.15	1.28
July.....	40,873	3,100	658	1,318	.573	.66
August.....	18,936	1,230	359	611	.266	.31
September.....	16,253	2,620	242	542	.236	.26
Water year 1949-50.....	468,673	9,280	205	1,284	.558	7.58

West Fork Iowa River near Klemme, Iowa

LOCATION.—Lat. $42^{\circ}53'00''$, long. $93^{\circ}42'20''$, between secs. 8 and 17, T. 94 N., R. 24 W., on downstream handrail of county bridge 8 miles southwest of Klemme and 9 miles upstream from confluence with East Fork Iowa River.

DRAINAGE AREA.—110 square miles.

RECORDS AVAILABLE.—April 1948 to September 1950.

GAGE.—Wire-weight gage. Gage read once daily at low and medium stages, oftener at high stages. Datum of gage is 1,180.83 feet above mean sea level, datum of 1929.

AVERAGE DISCHARGE.—2 years (1949-50), 23.0 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1948-50 are contained in the following table:

Water Year	Maximum (Observed)			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1948 ⁽¹⁾ ...	May 15	110	6.16	Sept. 11, 12, 16	0.7
1948-49...	Mar. 27	538	(²)	Aug. 31, Sept 9	.6
1949-50...	Mar. 27	522	(³)	Jan. 28 to Feb. 10	.7

(1) April to September 1948.

(2) Maximum gage height 8.58 feet Mar. 3 (ice jam).

(3) Maximum gage height 8.25 feet Mar. 7 (ice jam).

1948-50: Maximum discharge observed, 538 second-feet Mar. 27, 1949; maximum gage height observed, 8.58 feet (ice jam) Mar. 3, 1949; minimum daily discharge, 0.6 second-feet Aug. 31 to Sept. 9, 1949.

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

COOPERATION.—Services of observer and several discharge measurements furnished by Corps of Engineers.

West Fork Iowa River near Klemme, Iowa—Continued
Daily Discharge, in Second-feet, for Water Years 1948 and 1949

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1947-48												
1							46	32	8.8	25	2.4	1.6
2							39	31	7.2	20	2.5	1.4
3							43	29	6.3	17	2.6	1.2
4							47	28	6.1	14	2.8	1.2
5							34	27	6.1	12	2.9	1.1
6							28	38	5.9	10	3.0	1.1
7							34	36	5.9	9	3.4	1.0
8							49	34	6.1	8	3.9	1.0
9							39	32	5.9	8	5.2	1.0
10							40	38	5.9	8	5.0	.9
11							43	36	5.9	9	5.0	.7
12							39	33	9.2	12	4.4	.7
13							33	30	8.5	25	4.9	.8
14							30	33	8.1	8.3	5.0	.8
15							29	86	5.7	6.8	4.8	.8
16							28	66	5.5	5.6	3.0	.7
17							27	45	4.2	4.9	2.4	.9
18							26	36	5.7	4.0	2.5	.8
19							25	31	5.5	3.8	2.6	1.2
20							22	28	5.5	4.2	2.4	2.2
21							19	25	5.3	3.9	2.3	3.5
22							20	23	5.3	3.8	2.1	2.9
23							25	21	5.0	3.3	2.0	2.4
24							34	18	5.0	2.9	1.9	2.2
25							36	17	6.0	3.1	1.9	2.1
26							37	16	10	3.3	1.9	2.0
27							44	14	15	3.1	2.0	2.1
28							41	13	30	3.0	5.2	2.3
29							34	11	35	2.8	3.3	2.0
30							30	11	30	2.5	2.7	2.2
31								10		2.4	2.4	
1948-49												
1	2.0	2.4	1.6	2.1	*1.0	35	293	20	5.8	10	2.4	.8
2	2.4	2.4	1.5	2.1	1.0	30	215	12	8.5	6.1	2.1	.8
3	2.5	2.3	1.5	2.1	1.0	45	156	8.9	9.5	5.6	1.9	1.4
4	2.7	2.3	1.6	7.0	1.0	200	118	16	7.7	5.2	1.9	1.6
5	3.5	4.9	1.8	14	1.0	400	92	14	7.0	4.8	1.8	1.6
6	4.0	2.7	2.0	12	1.0	300	73	11	6.1	4.4	1.7	1.8
7	4.6	2.4	1.9	11	1.0	200	60	9.3	5.8	4.3	1.6	1.4
8	3.1	2.1	1.8	11	1.0	140	46	8.9	4.8	4.2	1.5	.9
9	1.9	1.7	1.8	10	1.0	*84	44	8.7	4.6	4.0	1.4	.6
10	1.4	1.8	1.7	9.0	1.0	70	38	7.7	4.4	3.9	1.4	.9
11	1.0	1.9	1.7	8.0	1.0	62	33	7.3	4.6	3.6	3.9	1.8
12	1.1	2.0	1.6	7.8	1.0	57	30	7.3	4.8	3.5	2.6	3.9
13	1.2	2.0	1.6	7.9	1.0	53	29	6.6	4.8	3.8	1.6	25
14	1.0	2.1	1.6	7.8	1.0	50	27	7.5	4.6	4.2	1.5	1.8
15	1.2	2.1	1.6	8.0	1.0	46	28	7.3	4.4	4.4	1.4	1.2
16	1.2	2.1	1.6	9.0	1.0	42	38	7.3	4.3	4.0	1.4	1.2
17	1.0	2.2	*1.6	11	1.0	38	58	10	4.3	3.9	1.6	1.4
18	1.0	2.3	1.6	9.0	1.0	36	55	11	5.2	4.3	1.7	1.4
19	1.0	2.8	1.7	7.0	1.0	32	50	8.7	4.8	4.4	1.9	1.4
20	1.2	3.5	1.8	5.5	1.0	43	56	8.9	4.4	4.2	1.4	1.3
21	1.2	3.8	1.9	4.5	1.0	121	66	9.3	8.7	3.9	1.2	1.2
22	1.4	3.3	2.0	3.5	1.0	400	45	9.1	16	3.4	1.2	1.2
23	1.3	2.8	2.0	3.0	1.0	315	34	8.1	12	2.8	1.2	1.2
24	1.2	2.4	2.1	2.5	20	260	31	9.1	8.3	2.5	1.2	1.2
25	1.3	2.3	2.2	2.1	65	315	27	7.7	23	2.2	1.0	1.2
26	1.4	2.1	2.2	1.8	55	282	24	6.5	24	2.4	1.0	1.2
27	1.6	2.0	2.2	1.6	50	442	20	5.8	22	2.8	.9	1.2
28	1.6	1.9	2.2	1.4	40	374	17	5.5	32	5.8	.8	1.1
29	1.7	1.8	2.2	1.2		260	18	5.2	22	8.1	.7	1.0
30	1.9	1.7	2.1	1.1		225	17	6.5	15	12	.7	1.0
31	2.1		2.1	1.1		304		5.8		4.2	.6	

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 30 to Dec. 31, 1948, Jan. 1 to Mar. 18, 1949. Channel cleaned by dragline June 25 to July 12, 1948; discharge computed on basis of records for Iowa River at Rowan and East Fork Iowa River near Klemme.

West Fork Iowa River near Klemme, Iowa—Continued
Daily Discharge, in second-feet, for Water Year 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1949-50												
1.....	1.1	d1.5	d2.8	1.2	0.7	0.8	83	92	20	13	42	6.1
2.....	1.2	d1.5	d2.9	1.3	.7	.8	73	73	23	12	12	5.6
3.....	1.2	d1.5	d2.8	1.3	.7	.8	50	60	28	12	20	5.0
4.....	1.2	d1.6	d2.7	1.2	.7	2.0	43	49	26	11	17	4.4
5.....	1.2	d1.7	d2.6	1.2	.7	50	32	60	21	9.7	11	4.0
6.....	1.2	d1.9	d2.5	1.2	.7	220	31	54	22	9.1	11	4.2
7.....	1.2	d1.8	*2.7	1.1	.7	250	31	47	21	8.5	10	4.6
8.....	1.4	d1.7	2.3	1.1	.7	160	27	43	21	7.7	9.3	5.0
9.....	1.6	d2.1	2.3	1.1	.7	74	26	197	15	6.5	8.9	5.5
10.....	1.9	d2.0	2.5	1.0	.7	30	23	225	12	6.1	8.7	5.5
11.....	3.0	d2.4	2.8	1.0	.8	23	32	136	12	7.0	43	7.2
12.....	2.8	d2.7	2.9	*1.0	.8	20	28	92	12	8.3	28	25
13.....	2.6	d2.7	3.1	1.0	.8	18	26	70	13	8.9	20	14
14.....	2.2	d2.6	3.2	.9	.8	17	23	54	12	8.5	15	11
15.....	2.3	d2.5	1.7	.9	.8	18	19	40	13	8.1	11	10
16.....	2.3	d2.4	1.4	.9	.8	19	19	29	14	15	11	8.5
17.....	2.4	d2.3	1.5	.9	.8	20	18	44	15	21	10	7.5
18.....	2.5	d2.6	1.6	.9	.8	21	18	40	86	18	8.5	6.5
19.....	2.8	d2.9	1.7	.9	.8	16	15	43	104	23	7.9	6.0
20.....	2.5	d2.7	1.8	.8	.8	13	15	36	73	44	7.2	5.5
21.....	2.7	d2.5	1.6	.8	.8	12	15	32	58	44	6.6	20
22.....	2.4	d2.7	1.5	.8	.8	*10	15	30	48	40	6.3	7.5
23.....	2.2	d2.8	1.4	.8	.8	80	25	36	73	30	6.0	7.5
24.....	2.0	d2.9	1.3	.8	.8	105	147	38	61	21	5.8	7.3
25.....	2.1	d2.9	1.2	.8	.8	115	175	27	49	17	5.8	7.2
26.....	2.3	d3.0	1.1	.8	.8	250	132	26	36	16	5.6	7.0
27.....	2.5	d2.9	1.0	.8	.8	474	83	26	30	14	6.1	7.2
28.....	2.5	d2.8	1.0	.7	.8	271	68	25	20	12	6.5	7.0
29.....	2.4	d2.8	1.1	.7	.....	156	78	24	16	12	8.3	8.1
30.....	1.6	d2.8	1.2	.7	.....	132	104	25	14	11	7.9	8.7
31.....	d1.5	.....	1.2	.7	.....	101	.....	23	.....	16	6.3	.....

* Winter discharge measurement made on this day.

d Doubtful gage readings; discharge computed on basis of records for nearby stations.

Note—Stage-discharge relation affected by ice Dec. 7-9, 12-31, 1949, Jan. 1 to Mar. 26, 1950.

West Fork Iowa River near Klemme, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1948 to 1950

Month	Second-foot-days	Discharge in second-feet				Per square mile	Runoff in inches
		Maximum	Minimum	Mean			
April 1948.....	1,021	49	19	34.0	0.309	0.35	
May.....	928	86	10	29.9	.272	.31	
June.....	274.6	35	4.2	9.15	.083	.09	
July.....	248.7	25	2.4	8.02	.073	.08	
August.....	98.4	5.2	1.9	3.17	.029	.03	
September.....	44.8	3.5	.7	1.49	.014	.02	
October 1948.....	55.7	4.6	1.0	1.80	.016	.02	
November.....	72.1	4.9	1.7	2.40	.022	.02	
December.....	56.8	2.2	1.5	1.83	.017	.02	
January 1949.....	184.8	14	1.1	5.96	.054	.06	
February.....	253	65	1.0	9.04	.082	.09	
March.....	5,261	442	30	170	1.55	1.78	
April.....	1,838	293	17	61.3	.557	.62	
May.....	277	20	5.2	8.94	.081	.09	
June.....	293.4	32	4.3	9.78	.089	.10	
July.....	142.9	12	2.2	4.61	.042	.05	
August.....	47.2	3.9	.6	1.52	.014	.02	
September.....	63.7	25	.6	2.12	.019	.02	
Water year 1948-49.....	8,545.6	442	.6	23.4	.213	2.89	
October 1949.....	62.8	3.0	1.1	2.03	.018	.02	
November.....	71.2	3.0	1.5	2.37	.022	.02	
December.....	61.4	3.2	1.0	1.98	.018	.02	
Calendar year 1949.....	8,556.4	442	.6	23.4	.213	2.89	
January 1950.....	29.3	1.3	.7	.95	.0086	.01	
February.....	21.4	.8	.7	.76	.0069	.007	
March.....	2,679.4	474	.8	86.4	.785	.91	
April.....	1,474	175	15	49.1	.446	.50	
May.....	1,796	225	23	57.9	.526	.61	
June.....	968	104	12	32.3	.294	.33	
July.....	490.4	44	6.1	15.8	.144	.17	
August.....	382.7	43	5.6	12.3	.112	.13	
September.....	238.6	25	4.0	7.95	.072	.08	
Water year 1949-50.....	8,275.2	474	.7	22.7	.206	2.81	

Iowa River near Rowan, Iowa

LOCATION.—Lat. $42^{\circ}45'35''$, long. $93^{\circ}37'20''$, in NE $\frac{1}{4}$ sec. 25, T. 92 N., R. 24 W., on left bank 10 feet downstream from bridge on county road, $3\frac{1}{2}$ miles northwest of Rowan and $10\frac{1}{4}$ miles downstream from the confluence of East and West Branches.

DRAINAGE AREA.—396 square miles.

RECORDS AVAILABLE.—October 1940 to September 1950.

GAGE.—Water-stage recorder. Datum of gage is 1,143.35 feet above mean sea level, datum of 1929. Oct. 31, 1940, to Sept. 30, 1949, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—9 years, 186 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Mar. 27	1,230	8.75	Jan. 25, 26, 30	11
1943-44...	June 14	3,840	11.98	Jan. 12-16	19
1944-45...	Aug. 15	3,120	(¹)	Jan. 4-8	13
1945-46...	May 27	1,660	9.58	Nov. 22	12
1946-47...	July 7	2,240	10.60	Sept. 25, 26	15
1947-48...	Mar. 18	2,240	(²)	Aug. 26, 27	4.2
1948-49...	Mar. 28	1,580	(³)	Sept. 26	6.5
1949-50...	Mar. 28	1,800	(⁴)11.06	Feb. 4, 5	4.2

(1) Maximum gage height, 11.78 feet Mar. 13 (ice jam).

(2) Maximum gage height, 10.90 feet Feb. 29 (ice jam).

(3) Maximum gage height, 12.02 feet Mar. 7 (ice jam).

(4) Backwater from ice.

1940-50: Maximum discharge, 3,840 second-feet June 14, 1944; maximum gage height, 12.02 feet Mar. 7, 1949 (ice affected); minimum daily discharge, 4.2 second-feet Aug. 26, 27, 1948, Feb. 4, 5, 1950.

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

COOPERATION.—Services of observer and several discharge measurements furnished by Corps of Engineers.

Iowa River near Rowan, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	40	34	21	24	12	210	354	80	89	75	299	150
2.....	38	34	21	22	12	170	293	76	86	68	214	147
3.....	37	30	22	21	13	160	270	73	82	59	327	154
4.....	45	31	22	20	14	150	228	75	84	80	339	164
5.....	49	30	23	20	14	120	193	61	81	89	228	227
6.....	48	29	24	21	15	100	176	64	74	97	166	201
7.....	50	30	24	21	14	90	166	62	71	91	124	164
8.....	46	30	23	21	14	75	154	60	73	75	97	124
9.....	47	31	22	22	14	70	145	59	76	64	131	110
10.....	44	29	23	21	14	80	140	58	81	55	193	98
11.....	43	24	*24	20	13	100	134	58	85	54	259	85
12.....	42	24	24	19	13	150	141	57	79	45	220	90
13.....	39	25	24	18	13	155	151	54	94	39	432	98
14.....	39	26	24	19	12	200	140	51	100	39	406	98
15.....	38	25	24	18	12	290	131	57	102	38	301	89
16.....	37	44	25	17	12	750	123	120	97	40	158	80
17.....	36	31	26	16	12	600	116	184	93	41	168	71
18.....	35	32	27	15	13	400	111	282	98	35	140	65
19.....	35	35	26	15	19	320	98	227	81	43	119	61
20.....	34	30	24	15	28	270	94	188	74	70	95	69
21.....	34	29	24	15	45	230	91	154	68	112	86	60
22.....	34	29	24	14	150	190	86	137	65	79	79	58
23.....	43	32	24	13	250	470	82	119	54	60	70	57
24.....	39	26	25	12	390	700	81	112	48	46	65	50
25.....	34	27	26	11	370	1,070	98	111	46	40	168	50
26.....	41	19	26	11	300	1,200	93	114	45	36	250	49
27.....	28	24	26	12	270	1,230	88	112	42	32	217	47
28.....	37	24	26	*12	260	850	82	110	69	30	181	46
29.....	38	22	25	12	.....	454	84	97	62	57	154	45
30.....	38	21	24	11	.....	430	81	91	99	121	184	45
31.....	37	.....	24	12	.....	402	.....	86	.....	193	170	.....
1943-44												
1.....	48	52	79	23	65	*105	286	335	381	262	57	88
2.....	49	50	71	24	73	95	322	402	329	238	56	77
3.....	46	48	70	25	74	94	368	508	286	230	56	66
4.....	45	47	69	25	70	94	299	706	252	223	59	59
5.....	44	50	67	25	55	76	201	774	351	204	91	50
6.....	43	56	65	24	42	55	177	708	370	179	126	46
7.....	43	71	64	22	40	35	142	600	327	172	110	43
8.....	42	79	62	21	44	32	93	510	282	180	86	40
9.....	43	77	60	21	38	35	68	476	420	182	72	39
10.....	42	100	60	21	30	50	43	430	559	175	63	36
11.....	41	134	50	20	25	110	61	383	608	193	55	36
12.....	40	111	35	19	28	193	104	336	850	211	48	34
13.....	43	94	25	19	30	260	134	318	1,640	195	43	34
14.....	47	99	28	19	30	297	229	304	3,520	167	42	34
15.....	44	108	30	19	29	335	270	262	3,090	154	41	32
16.....	41	104	*29	19	29	408	258	233	2,510	148	51	32
17.....	41	98	28	20	28	331	246	214	2,230	138	51	31
18.....	41	91	28	20	27	286	238	220	2,050	128	51	30
19.....	42	88	29	*21	26	257	226	610	1,910	120	80	30
20.....	39	84	29	21	27	223	243	1,430	1,780	112	59	32
21.....	40	86	28	22	29	195	500	1,970	1,630	101	50	51
22.....	41	91	27	23	36	187	532	2,030	1,460	97	43	43
23.....	39	89	26	24	50	180	526	1,970	1,280	88	41	57
24.....	39	88	25	26	70	177	554	1,820	1,030	86	35	55
25.....	39	86	26	32	100	172	639	1,580	727	83	33	54
26.....	37	81	27	50	130	157	622	1,300	570	80	40	50
27.....	37	69	27	75	165	142	508	1,050	456	72	76	46
28.....	36	54	26	115	180	137	402	802	396	69	81	42
29.....	36	50	25	104	135	160	331	620	333	66	101	41
30.....	38	48	24	95	.....	220	309	526	290	64	97	52
31.....	46	.....	23	89	.....	243	.....	448	.....	60	93	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 26 to Dec. 31, 1942, Jan. 1 to Mar. 24, Dec. 10-31, 1943, Jan. 1-27, Feb. 4 to Mar. 11, 1944.

Iowa River near Rowan, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	47	27	30	15	17	64	295	406	1,130	364	63	138
2.....	43	27	34	15	17	75	297	349	1,580	300	61	128
3.....	43	26	33	14	17	100	260	318	1,610	253	57	118
4.....	46	26	32	13	17	120	220	299	1,390	221	56	107
5.....	46	25	33	13	17	130	338	282	1,190	228	64	102
6.....	48	25	35	13	17	105	510	272	898	263	65	97
7.....	46	25	36	13	17	95	688	265	682	233	81	91
8.....	42	26	35	13	18	85	797	255	564	201	88	86
9.....	40	26	35	14	19	80	962	248	491	188	72	80
10.....	37	28	34	14	20	200	1,030	241	627	196	69	77
11.....	35	31	33	14	20	800	1,120	234	868	156	94	80
12.....	36	33	31	15	23	1,500	1,220	231	892	149	412	74
13.....	34	34	29	15	25	2,100	1,290	225	808	134	1,310	69
14.....	33	35	28	16	27	2,200	1,350	300	598	126	2,160	70
15.....	34	36	27	16	40	2,140	1,270	396	444	118	2,990	69
16.....	32	37	*26	17	100	*1,980	1,120	430	400	107	2,680	65
17.....	33	39	25	18	90	1,850	1,180	378	368	114	2,170	64
18.....	33	37	24	18	105	1,400	1,180	299	329	116	1,700	59
19.....	33	36	22	18	95	1,130	956	284	295	110	1,240	59
20.....	32	36	21	19	85	832	714	335	265	98	800	63
21.....	31	35	20	19	80	577	600	489	243	93	580	65
22.....	30	35	18	18	65	493	580	669	209	86	430	59
23.....	30	34	18	19	55	454	997	883	195	80	351	56
24.....	32	34	17	19	50	515	1,430	780	191	77	315	55
25.....	32	33	17	*20	48	620	1,620	708	198	69	277	55
26.....	31	34	17	20	50	763	1,270	610	198	66	240	69
27.....	30	33	17	20	54	659	1,030	520	236	64	214	84
28.....	30	32	16	19	60	517	774	541	378	63	198	87
29.....	30	32	16	18	.....	432	610	462	472	61	182	84
30.....	28	26	16	18	.....	357	485	416	395	66	163	84
31.....	28	.....	15	17	.....	313	.....	500	.....	65	148	.....
1945-46												
1.....	77	42	50	22	30	380	333	48	481	263	65	31
2.....	73	41	60	22	27	460	305	69	405	230	55	28
3.....	72	40	60	23	26	570	424	93	403	189	52	25
4.....	68	39	53	25	26	580	238	118	285	154	50	26
5.....	68	35	47	122	360	585	228	123	232	128	51	25
6.....	64	38	52	750	480	1,100	221	109	204	122	44	44
7.....	61	42	50	410	300	* 950	209	93	167	117	44	62
8.....	57	46	53	300	120	605	200	98	157	93	45	90
9.....	57	50	21	235	132	530	234	96	128	90	42	79
10.....	56	46	14	193	122	460	217	93	136	86	39	329
11.....	54	47	16	174	110	380	196	100	117	83	36	343
12.....	52	48	21	144	100	653	191	97	136	78	38	225
13.....	51	47	27	125	83	916	180	94	136	75	36	166
14.....	51	46	21	105	67	1,330	176	98	185	73	36	118
15.....	50	47	28	87	53	1,190	154	103	236	58	36	93
16.....	50	50	24	70	51	980	140	125	508	61	36	86
17.....	48	46	18	63	57	825	110	136	779	64	36	75
18.....	48	46	16	58	74	743	120	162	685	67	42	63
19.....	48	42	16	53	170	658	112	225	510	71	41	52
20.....	47	39	15	47	258	556	103	341	627	74	35	58
21.....	46	23	17	42	278	582	94	265	794	78	34	52
22.....	47	12	18	40	302	609	91	275	747	69	34	50
23.....	46	26	18	38	275	389	80	221	583	70	33	63
24.....	46	35	19	*37	242	492	73	445	406	64	32	78
25.....	46	35	19	36	225	584	68	1,040	347	50	30	75
26.....	47	37	19	35	205	563	63	1,510	303	55	32	70
27.....	46	39	20	33	230	572	56	1,620	255	46	32	66
28.....	46	41	20	33	250	481	50	1,450	178	38	30	63
29.....	45	43	21	34	.....	410	64	1,200	184	45	29	62
30.....	43	45	22	34	.....	365	63	861	191	55	27	63
31.....	42	.....	22	30	.....	373	.....	611	.....	60	30	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 27 to Dec. 31, 1944, Jan. 1 to Mar. 14, Nov. 17 to Dec. 31, 1945, Jan. 1 to Mar. 11, 1946.

Iowa River near Rowan, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	60	193	117	40	a35	54	263	357	a255	1,400	a97	32
2.....	56	211	48	40	40	52	263	259	267	2,060	73	24
3.....	54	209	120	38	a48	52	244	a240	273	2,050	98	21
4.....	52	202	a140	36	a45	53	259	221	246	1,840	83	20
5.....	51	a185	162	35	a40	68	a321	206	265	1,840	83	16
6.....	51	173	a150	34	a35	100	500	189	259	1,900	68	16
7.....	54	a166	157	*36	a33	160	327	173	238	2,140	74	25
8.....	50	175	97	37	a30	240	462	162	225	2,080	a69	26
9.....	50	166	109	38	28	220	443	147	335	1,650	66	23
10.....	51	167	114	40	a28	210	681	147	331	1,520	59	20
11.....	89	209	*112	41	30	230	1,160	143	240	1,320	a58	18
12.....	114	a270	110	44	33	240	1,450	a137	279	1,080	56	32
13.....	138	320	40	52	40	450	1,500	152	831	850	54	34
14.....	125	292	a60	72	50	600	1,190	180	1,160	649	a52	32
15.....	109	275	88	200	70	500	898	180	1,160	521	49	29
16.....	97	a250	68	160	160	400	704	200	1,030	452	49	28
17.....	94	238	a45	120	230	280	629	221	959	383	47	28
18.....	112	236	58	90	220	a300	607	211	959	345	46	28
19.....	104	234	61	90	200	290	493	219	858	a299	45	25
20.....	a97	226	a91	70	160	280	420	191	740	253	44	21
21.....	91	223	60	65	125	275	379	180	872	240	44	21
22.....	66	154	60	58	105	270	347	198	1,270	209	42	a20
23.....	83	176	60	52	90	460	530	223	1,580	202	45	18
24.....	109	204	a59	65	80	640	750	157	1,800	175	45	16
25.....	281	208	59	80	a 70	807	a620	154	1,840	166	45	15
26.....	452	a190	58	115	a 65	875	514	180	1,840	162	43	15
27.....	401	208	56	110	62	789	504	171	1,660	152	44	a17
28.....	325	185	53	*81	* 60	704	487	a162	1,610	148	42	18
29.....	281	128	a50	a66	.....	611	329	171	1,390	133	a41	20
30.....	a250	128	47	a48	.....	504	339	240	1,540	130	a1	a22
31.....	a220	.....	44	35	.....	305	.....	247	.....	102	a37	.....
1947-48												
1.....	23	76	34	20	11	2,000	193	105	52	73	16	12
2.....	23	57	35	19	11	1,700	175	98	50	41	16	11
3.....	22	52	40	21	11	1,200	163	115	46	45	16	10
4.....	18	*49	46	22	11	900	160	105	48	44	15	8.0
5.....	18	50	52	24	11	600	151	107	46	42	15	10
6.....	17	a45	55	25	11	450	142	103	45	39	13	8.5
7.....	a17	a40	54	28	11	300	152	a114	42	43	17	9.5
8.....	17	34	52	30	12	200	178	a125	38	34	18	8.0
9.....	16	32	42	32	12	150	175	136	36	30	17	8.5
10.....	15	35	34	33	12	120	163	164	35	28	19	7.0
11.....	15	38	32	35	13	100	a153	186	36	28	25	6.0
12.....	17	42	32	33	13	90	a143	a166	44	28	19	6.0
13.....	16	43	35	26	13	85	133	145	42	27	22	6.5
14.....	15	44	35	23	13	80	130	139	43	30	19	5.5
15.....	16	40	34	21	13	*50	121	136	39	38	10	5.5
16.....	19	a40	32	19	14	500	103	450	39	32	16	5.5
17.....	18	39	30	17	20	1,000	97	244	41	28	16	6.0
18.....	19	35	31	16	500	2,110	96	195	45	25	a13	4.6
19.....	18	33	*33	16	600	1,960	a89	140	40	a26	10	4.6
20.....	19	36	33	16	200	1,610	82	124	37	27	10	13
21.....	18	44	32	16	160	845	71	130	38	24	10	16
22.....	18	58	32	15	130	638	72	104	35	22	9.5	14
23.....	19	63	32	*13	120	408	75	86	a39	22	7.0	14
24.....	20	60	32	13	110	*325	96	70	43	a22	6.0	12
25.....	a26	52	31	11	100	268	121	65	38	a22	5.0	a12
26.....	31	47	30	9	100	222	151	64	43	22	4.2	12
27.....	31	45	30	9	500	232	140	63	45	17	4.2	12
28.....	32	45	30	8	800	a252	a130	61	136	17	22	11
29.....	a31	41	30	9	1,800	272	121	58	187	19	14	a11
30.....	30	37	28	10	.....	234	105	57	112	17	16	11
31.....	55	.....	24	11	.....	175	.....	55	.....	17	14	.....

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on the basis of records for nearby stations.

Note—Stage-discharge relation affected by ice Dec. 13-31, 1946, Jan. 1 to Mar. 24, Nov. 9-14, Nov. 23 to Dec. 31, 1947, Jan. 1 to Mar. 17, 1948.

Iowa River near Rowan, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	11	16	17	20	*12	400	800	75	41	63	20	9.0
2.....	12	15	17	25	12	370	744	73	67	52	20	8.0
3.....	12	17	17	35	12	400	590	69	58	47	20	7.5
4.....	12	16	17	50	12	540	432	62	54	38	19	16
5.....	12	37	17	100	12	800	333	62	51	36	14	a21
6.....	12	40	17	170	12	1,000	268	57	42	a34	12	a25
7.....	21	32	16	140	12	1,100	225	55	38	31	12	17
8.....	23	a27	15	120	11	1,000	193	54	41	28	12	12
9.....	a22	22	14	110	11	900	174	51	38	27	12	12
10.....	20	19	14	100	11	800	156	a44	38	25	a12	12
11.....	17	19	13	90	11	700	144	38	36	a24	25	24
12.....	a16	20	13	85	11	600	133	50	35	24	20	27
13.....	a15	15	13	80	11	500	122	38	41	24	20	21
14.....	14	14	13	85	11	400	124	47	36	25	19	17
15.....	14	14	13	95	10	350	110	44	a32	25	14	16
16.....	12	14	13	120	10	310	121	42	29	a22	16	18
17.....	12	a14	*13	200	10	290	169	52	29	18	16	14
18.....	12	15	14	190	10	280	234	54	39	56	17	11
19.....	14	27	14	120	10	270	234	53	38	107	13	9.0
20.....	14	a29	14	80	10	260	217	48	49	55	13	12
21.....	a14	31	14	40	11	280	234	48	259	36	14	7.5
22.....	a13	20	14	30	12	500	209	53	193	30	13	7.5
23.....	12	20	14	23	15	1,100	170	55	110	a26	12	7.0
24.....	12	20	14	20	25	1,000	140	49	114	22	12	a6.8
25.....	13	20	14	18	60	1,050	112	a48	372	21	12	a6.6
26.....	13	17	14	16	400	1,160	111	46	304	20	12	6.5
27.....	13	16	15	15	460	1,440	103	46	201	24	a15	11
28.....	a14	16	15	14	440	1,530	93	a44	139	21	17	11
29.....	14	17	15	13	.....	1,400	86	41	108	27	16	10
30.....	17	18	16	13	.....	1,020	74	41	81	24	9.5	10
31.....	17	.....	17	12	.....	772	.....	40	.....	21	9.0	.....
1949-50												
1.....	h 9.7	h12	h14	14	4.5	6.2	506	154	141	h90	65	31
2.....	h 9.7	h12	h14	14	4.4	6.2	393	166	160	h89	104	30
3.....	a11	h12	h16	14	4.3	6.2	315	g152	226	h78	88	29
4.....	h12	h13	a17	13	4.2	7.4	256	g138	192	h69	69	29
5.....	h12	h13	h15	12	4.2	30	180	g134	156	h68	59	28
6.....	a13	h12	20	11	4.5	200	*145	g136	128	h62	52	27
7.....	a15	h13	*24	10	4.7	520	135	g142	108	h60	47	27
8.....	h20	h13	17	9.4	4.9	700	125	g144	98	h54	44	27
9.....	h12	h13	17	8.6	5.0	*550	118	g248	91	h53	42	27
10.....	a14	h16	17	8.0	5.2	450	113	482	82	h53	44	28
11.....	h15	h15	21	*7.6	5.2	380	123	425	75	h52	54	30
12.....	h11	h16	24	7.4	5.4	320	124	272	71	h53	82	31
13.....	h11	h17	20	7.0	5.6	290	*90	205	73	66	83	39
14.....	h17	h18	17	6.8	5.8	250	88	166	71	59	69	33
15.....	h13	h15	15	6.6	6.2	220	86	g140	90	53	58	31
16.....	h13	h15	16	6.2	*6.2	200	84	g126	143	52	51	29
17.....	h13	h15	17	6.0	6.2	180	g83	g118	137	53	46	h27
18.....	h12	h15	16	5.8	6.0	170	g80	g117	280	61	44	h28
19.....	h16	h15	16	5.6	5.8	150	g79	g117	590	76	40	h28
20.....	h17	h15	20	5.2	5.8	140	g78	g116	578	91	39	h32
21.....	h18	h18	18	5.0	6.0	130	g74	g115	460	112	36	h62
22.....	h20	h18	16	5.0	6.0	130	g68	112	288	108	36	h53
23.....	a17	h26	14	5.2	6.0	190	g63	103	241	94	34	h44
24.....	h15	h20	12	5.4	5.8	350	g68	104	306	82	34	h40
25.....	h15	a22	11	5.4	5.6	600	g248	130	256	74	32	h38
26.....	a14	h24	10	5.4	5.6	900	g297	136	192	68	32	h36
27.....	h13	h15	9.0	5.0	5.8	1,500	234	140	153	67	33	h34
28.....	h12	h15	10	4.7	6.2	1,700	172	126	124	64	35	h34
29.....	h15	h14	12	4.5	.....	1,300	g138	137	108	58	36	h37
30.....	h15	h14	13	4.5	.....	1,000	g130	226	95	53	36	h34
31.....	h12	.....	14	4.6	.....	750	.....	178	.....	53	34	.....

* Winter discharge measurement made on this day.

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

g Computed from graph based on gage readings.

h Computed from once daily wire-weight gage readings.

Note—Stage-discharge relation affected by ice Nov. 27 to Dec. 31, 1948, Jan. 1 to Mar. 25, Dec. 6-13, 1949, Jan. 1 to Mar. 31, Apr. 5-8, 13-16, 1950.

Iowa River near Rowan, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1942.....	1,225	50	28	39.5	0.100	0.12
November.....	857	44	19	28.6	.072	.08
December.....	747	27	21	24.1	.061	.07
Calendar year 1942.....	60,642	1,020	19	166	.419	5.71
January 1943.....	520	24	11	16.8	.042	.05
February.....	2,318	390	12	82.8	.209	.22
March.....	11,686	1,230	70	377	.952	1.10
April.....	4,224	354	81	141	.356	.40
May.....	3,189	282	51	103	.260	.30
June.....	2,298	102	42	76.6	.193	.22
July.....	2,003	193	30	64.6	.163	.19
August.....	6,040	432	65	195	.492	.57
September.....	2,852	227	45	95.1	.240	.27
Water year 1942-43.....	37,959	1,230	11	104	.263	3.59
October 1943.....	1,292	49	36	41.7	.105	.12
November.....	2,383	134	47	79.4	.201	.22
December.....	1,262	79	23	40.7	.103	.12
Calendar year 1943.....	40,067	1,230	11	110	.278	3.78
January 1944.....	1,083	115	19	34.9	.088	.10
February.....	1,705	180	25	58.8	.148	.16
March.....	5,341	408	32	172	.434	.50
April.....	8,931	639	43	298	.753	.84
May.....	23,875	2,030	214	770	1.94	2.24
June.....	31,917	3,520	252	1,064	2.69	3.00
July.....	4,477	262	60	144	.364	.42
August.....	1,987	126	33	64.1	.162	.19
September.....	1,360	88	30	45.3	.114	.13
Water year 1943-44.....	85,613	3,520	19	234	.591	8.04
October 1944.....	1,105	48	28	35.6	.090	.10
November.....	943	39	25	31.4	.079	.09
December.....	790	36	15	25.5	.064	.07
Calendar year 1944.....	83,514	3,520	15	228	.576	7.84
January 1945.....	510	20	13	16.5	.042	.05
February.....	1,248	105	17	44.6	.113	.12
March.....	22,686	2,200	64	732	1.85	2.13
April.....	26,193	1,620	220	873	2.20	2.46
May.....	12,625	883	225	407	1.03	1.19
June.....	18,144	1,610	191	605	1.53	1.70
July.....	4,465	364	61	144	.364	.42
August.....	19,330	2,990	56	624	1.58	1.82
September.....	2,394	138	55	79.8	.202	.22
Water year 1944-45.....	110,433	2,990	13	303	.765	10.37
October 1945.....	1,652	77	42	53.3	.135	.16
November.....	1,213	50	12	40.4	.102	.11
December.....	877	60	14	28.3	.071	.08
Calendar year 1945.....	111,337	2,990	12	305	.770	10.46
January 1946.....	3,420	750	22	110	.278	.32
February.....	4,653	480	26	166	.410	.44
March.....	19,841	1,330	365	640	1.62	1.88
April.....	4,793	424	50	160	.404	.45
May.....	11,949	1,620	48	385	.972	1.12
June.....	10,514	794	117	350	.884	.99
July.....	2,806	263	38	90.5	.229	.26
August.....	1,202	65	27	38.8	.098	.11
September.....	2,660	343	25	88.7	.224	.25
Water year 1945-46.....	65,580	1,620	12	180	.455	6.15

Iowa River near Rowan, Iowa—Continued
 Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946.....	4,167	452	50	134	0.338	0.39
November.....	6,201	320	128	207	.523	.58
December.....	2,523	162	40	81.4	.206	.24
Calendar year 1946.....	74,729	1,620	22	205	.518	7.01
January 1947.....	2,088	200	34	67.4	.170	.20
February.....	2,212	230	28	79.0	.199	.21
March.....	11,019	875	52	355	.896	1.03
April.....	17,613	1,500	244	587	1.48	1.65
May.....	6,018	357	137	194	.490	.57
June.....	26,312	1,840	225	877	2.21	2.47
July.....	26,451	2,140	102	853	2.15	2.48
August.....	1,739	98	37	56.1	.142	.16
September.....	680	34	15	22.7	.057	.06
Water year 1946-47.....	107,023	2,140	15	293	.740	10.04
October 1947.....	669	55	15	21.6	.055	.06
November.....	1,352	76	32	45.1	.114	.13
December.....	1,102	55	24	35.5	.090	.10
Calendar year 1947.....	97,255	2,140	15	266	.672	9.12
January 1948.....	600	35	8	19.4	.049	.06
February.....	5,332	1,800	11	184	.465	.50
March.....	19,106	2,110	80	616	1.56	1.79
April.....	3,881	193	71	129	.326	.36
May.....	3,910	450	55	126	.318	.37
June.....	1,560	187	35	52.0	.131	.15
July.....	929	73	17	30.0	.076	.09
August.....	442.9	25	4.2	14.3	.036	.04
September.....	280.7	16	4.6	9.36	.024	.03
Water year 1947-48.....	39,164.6	2,110	4.2	107	.270	3.68
October 1948.....	449	23	11	14.5	.037	.04
November.....	617	40	14	20.6	.052	.06
December.....	456	17	13	14.7	.037	.04
Calendar year 1948.....	37,563.6	2,110	4.2	103	.260	3.53
January 1949.....	2,229	200	12	71.9	.182	.21
February.....	1,644	460	10	58.7	.148	.15
March.....	22,522	1,530	260	727	1.84	2.12
April.....	6,855	800	74	228	.576	.64
May.....	1,579	75	38	50.9	.129	.15
June.....	2,713	372	29	90.4	.228	.25
July.....	1,033	107	18	33.3	.084	.10
August.....	467.5	25	9.0	15.1	.038	.04
September.....	392.4	27	6.5	13.1	.033	.04
Water year 1948-49.....	40,956.9	1,530	6.5	112	.283	3.84
October 1949.....	432.4	20	9.7	13.9	.035	.04
November.....	471	26	12	15.7	.040	.04
December.....	492.0	24	9.0	15.9	.040	.05
Calendar year 1949.....	40,830.3	1,530	6.5	112	.283	3.83
January 1950.....	232.9	14	4.5	7.51	.019	.02
February.....	151.1	6.2	4.2	5.40	.014	.01
March.....	13,326	1,700	6.2	430	1.09	1.25
April.....	4,693	506	63	156	.394	.44
May.....	5,205	482	103	168	.424	.49
June.....	5,713	590	71	190	.480	.54
July.....	2,125	112	52	68.5	.173	.20
August.....	1,558	104	32	50.3	.127	.15
September.....	1,003	62	27	33.4	.084	.09
Water year 1949-50.....	35,402.4	1,700	4.2	97.0	.245	3.32

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 Highway 14 bridge, 2 miles upstream from Linn Creek and at mile 189.

DRAINAGE AREA.—1,530 square miles, including that of Burnett Creek. Prior to Sept. 30, 1945, drainage area 1,500 square miles (excluding that of Burnett Creek).

RECORDS AVAILABLE.—May 1915 to September 1927, February 1933 to September 1950. February to August 1903 at old dam site 1 mile upstream (gage heights only).

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

AVERAGE DISCHARGE.—29 years, 706 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Feb. 27	4,960	12.11	Jan. 29, 30	140
1943-44...	May 20	18,900	15.94	Jan. 9-16	95
1944-45...	Mar. 16	8,340	14.06	Jan. 9	80
1945-46...	Jan. 6	14,300	15.58	Dec. 10	85
1946-47...	June 13	24,700	16.79	Sept. 25	81
1947-48...	Feb. 28	15,000	15.83	Sept. 19	33
1948-49...	Mar. 5	10,000	14.77	Sept. 1, 2	29
1949-50...	Mar. 7	14,800	15.85	Jan. 31 to Feb. 3	21

1915-27, 1933-50: Maximum discharge observed, 42,000 second-feet June 4, 1918 (gage height, 17.74 feet), from rating curve extended above 18,700 second-feet; minimum, about 2 second-feet (regulated) Nov. 24, 1917.

REMARKS.—Records good except those for periods of ice effect, which are poor. Discharge of Burnett Creek included in records after Oct. 1, 1943. Some diurnal fluctuations caused by power plant at Iowa Falls.

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

Iowa River at Marshalltown, Iowa—Continued

Daily Discharge, in Second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1	797	554	403	320	150	g1,920	1,410	1,060	858	878	2,130	484
2	747	539	g262	290	150	1,600	1,250	906	1,420	722	1,800	466
3	747	472	250	250	170	1,300	1,130	785	1,090	739	2,600	431
4	2,480	472	280	230	900	1,150	1,040	692	890	665	2,400	431
5	2,180	670	300	220	1,850	1,100	958	628	826	590	1,540	590
6	1,600	656	320	220	1,850	1,050	874	1,720	882	549	1,300	619
7	1,340	590	350	240	1,300	900	962	1,800	850	522	1,090	522
8	1,170	549	320	240	1,350	850	970	1,280	810	484	918	500
9	1,050	595	*300	230	2,000	850	902	1,050	802	454	1,040	454
10	958	619	310	240	1,800	850	946	958	802	414	890	398
11	882	585	320	240	1,000	800	902	914	d820	382	776	361
12	834	575	320	220	800	800	1,040	826	d900	343	1,180	678
13	772	554	310	210	700	800	1,150	789	d840	327	1,110	747
14	743	512	290	210	620	850	998	739	d820	534	906	564
15	700	517	270	220	550	1,100	898	1,190	d850	342	1,150	472
16	678	517	290	230	470	g3,220	814	2,930	1,770	764	1,210	g425
17	656	472	280	210	420	g2,800	755	2,680	3,110	1,840	930	g398
18	624	466	270	170	400	g2,010	696	2,180	1,660	918	760	361
19	609	449	260	160	800	g2,110	660	1,850	1,170	1,150	656	342
20	590	449	240	160	2,350	g2,710	609	1,680	966	922	590	376
21	554	443	240	180	g3,190	1,840	585	1,480	822	2,160	554	366
22	564	420	250	180	g3,280	*1,520	539	1,260	1,920	3,440	478	342
23	554	425	270	170	4,060	1,620	570	1,130	1,660	1,040	437	309
24	539	414	280	170	3,580	2,440	559	1,060	1,110	1,200	398	287
25	512	420	290	170	g2,950	2,180	554	1,020	886	1,000	495	278
26	506	281	290	*170	g3,330	1,990	544	958	760	822	460	266
27	478	236	300	160	g4,370	1,900	559	890	665	692	539	243
28	484	393	320	150	g2,380	1,820	549	838	717	739	575	255
29	484	300	320	140	.....	1,850	926	793	990	1,020	604	243
30	559	376	330	140	.....	1,970	1,390	785	1,050	700	647	229
31	585	.....	330	150	.....	1,760	.....	822	.....	850	549	.....
1943-44												
1	243	274	229	105	437	544	918	1,630	2,930	1,380	472	559
2	247	232	251	105	490	570	914	1,920	2,450	1,990	431	495
3	251	251	268	105	443	570	914	4,550	2,100	3,160	409	437
4	266	247	278	105	409	534	946	5,030	1,810	2,310	692	403
5	232	243	251	105	420	490	990	3,840	1,660	1,970	1,450	351
6	232	243	460	105	229	420	958	3,290	1,440	1,580	866	337
7	225	300	472	100	403	145	862	3,000	1,300	1,400	687	304
8	215	332	425	100	361	135	802	2,890	1,460	1,310	656	278
9	219	366	387	95	300	209	768	2,910	2,540	1,150	600	270
10	215	420	342	*95	219	220	747	2,560	2,500	1,140	517	278
11	208	398	313	95	140	960	838	2,280	2,820	1,280	437	266
12	196	393	250	95	155	2,270	1,700	2,060	4,920	1,960	366	262
13	219	403	175	95	165	1,290	1,880	1,860	6,240	1,170	346	258
14	222	387	140	95	170	1,270	1,780	1,660	5,030	1,060	304	262
15	208	376	170	95	175	3,070	1,800	1,590	4,350	978	296	243
16	215	296	*175	95	170	2,920	1,790	1,450	4,410	886	291	239
17	190	371	180	100	165	2,180	1,660	1,330	5,900	814	522	232
18	208	332	180	100	170	1,650	1,390	1,250	5,030	751	322	210
19	199	356	165	100	155	1,290	1,470	6,550	4,270	768	296	247
20	205	*322	150	110	160	1,120	1,440	16,500	3,730	656	266	274
21	212	318	140	110	*165	1,070	1,790	11,500	3,350	585	262	266
22	202	296	130	115	455	1,020	1,950	8,050	3,190	528	258	232
23	205	270	120	120	1,090	2,000	1,920	8,290	2,950	478	255	243
24	196	266	105	135	934	1,640	2,350	6,340	2,620	443	232	274
25	202	282	105	165	1,040	1,400	2,520	6,050	2,370	448	225	278
26	199	304	110	245	842	1,190	2,300	6,290	2,160	1,990	351	251
27	193	274	115	1,110	838	1,160	2,060	5,720	1,850	1,340	1,050	255
28	187	255	115	2,890	642	1,130	1,940	5,000	1,590	850	1,020	258
29	190	287	115	902	554	990	1,740	5,020	1,850	696	722	239
30	196	251	110	660	.....	874	1,630	3,950	1,680	595	660	239
31	247	.....	105	595	.....	850	.....	3,380	.....	517	624	.....

* Winter discharge measurement made on this day.

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

g Computed from graph based on gage readings.

Note—Stage-discharge relation affected by ice Dec. 3-31, 1942, Jan. 1 to Feb. 20, Mar. 2-15, Dec. 12-31, 1943, Jan. 1-26, Feb. 11-23, Mar. 7-11, 1944.

Iowa River at Marshalltown, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	244	174	100	102	94	620	1,510	1,780	3,760	1,760	292	426
2.....	244	188	120	100	96	1,200	1,310	1,660	6,240	1,320	289	390
3.....	251	194	140	98	98	1,300	1,280	1,530	6,680	1,200	312	359
4.....	263	182	156	96	100	1,250	2,640	1,420	5,270	1,100	308	352
5.....	266	180	171	94	102	1,600	2,430	1,370	4,730	1,030	325	325
6.....	279	188	185	92	100	1,300	1,970	1,330	4,250	948	328	302
7.....	295	202	180	90	98	1,000	1,900	1,250	3,840	840	285	282
8.....	276	205	160	86	98	1,050	2,060	1,150	3,350	812	269	269
9.....	273	205	150	* 80	100	1,500	2,120	1,020	2,850	774	241	269
10.....	254	196	120	82	105	1,780	2,170	1,040	2,580	713	254	325
11.....	244	194	110	86	115	2,000	2,210	984	2,690	648	273	269
12.....	238	194	120	90	130	3,780	2,460	952	2,410	614	285	244
13.....	235	196	125	92	160	*3,490	2,880	920	2,270	576	269	229
14.....	232	196	125	95	300	4,030	3,040	2,680	2,190	539	2,860	226
15.....	223	194	130	94	900	5,570	3,030	3,520	2,130	495	3,530	217
16.....	220	196	130	90	1,000	7,850	4,110	2,690	2,710	476	2,090	211
17.....	211	202	150	94	750	7,360	5,050	2,200	2,360	502	2,260	191
18.....	217	199	120	100	720	6,020	4,430	1,930	1,900	562	2,820	202
19.....	214	196	120	100	760	4,830	3,830	1,730	1,640	495	3,100	196
20.....	208	199	120	102	720	3,970	3,240	1,590	1,920	473	2,790	199
21.....	211	199	115	104	700	3,230	2,860	1,600	1,760	455	3,050	194
22.....	205	194	*110	106	600	2,660	2,510	2,490	1,470	437	2,250	199
23.....	208	194	110	108	550	2,210	2,260	3,230	1,290	380	1,520	220
24.....	199	196	100	*110	580	2,000	2,180	3,380	1,180	380	1,150	401
25.....	238	185	100	112	600	3,690	2,430	3,310	1,580	355	952	248
26.....	229	196	95	115	500	3,690	2,700	3,170	1,250	338	793	220
27.....	208	199	95	115	520	2,970	2,850	2,970	1,100	318	713	266
28.....	194	188	96	100	520	2,540	2,890	3,170	1,150	315	622	369
29.....	185	182	100	105	.....	2,270	2,550	3,140	1,250	312	576	342
30.....	174	125	102	100	.....	2,040	2,120	2,950	1,280	305	517	312
31.....	174	.....	105	96	.....	1,760	.....	2,540	.....	295	480	.....
1945-46												
1.....	324	162	211	130	200	780	1,110	258	1,540	1,160	589	158
2.....	313	162	284	135	190	850	990	326	1,300	934	494	150
3.....	292	164	281	140	210	890	918	670	1,030	841	446	142
4.....	276	144	200	160	190	1,100	825	1,440	848	757	403	139
5.....	268	160	226	1,500	.....	*1,170	749	1,130	753	670	380	139
6.....	253	154	248	6,600	3,500	*3,370	730	974	647	611	351	337
7.....	243	156	256	6,400	4,200	4,260	677	848	607	558	343	359
8.....	219	168	*250	3,160	2,200	3,150	640	749	647	558	326	848
9.....	209	179	230	2,020	1,530	2,170	611	662	504	636	300	1,450
10.....	211	162	85	1,510	1,370	1,820	593	614	452	575	279	1,800
11.....	207	160	110	1,280	1,290	1,620	600	575	430	481	268	1,840
12.....	204	173	130	1,150	1,050	2,420	611	537	436	427	228	1,200
13.....	191	175	140	868	840	5,960	589	520	412	394	226	1,020
14.....	191	168	155	740	710	5,160	575	513	397	365	226	844
15.....	191	164	165	620	510	4,050	540	513	433	348	228	689
16.....	186	168	160	520	515	3,690	510	500	593	345	219	572
17.....	188	168	145	450	527	3,560	468	517	596	351	354	497
18.....	182	168	140	450	*487	3,230	458	561	1,190	343	391	443
19.....	175	158	135	440	474	2,700	409	603	3,080	494	302	403
20.....	164	160	130	430	510	2,270	397	662	3,080	611	231	409
21.....	175	150	125	390	500	1,960	374	711	2,390	487	211	388
22.....	171	100	120	350	625	1,740	371	727	1,830	461	202	371
23.....	164	95	115	320	711	1,580	371	776	1,630	382	202	455
24.....	173	120	110	290	734	1,580	351	1,460	1,530	334	403	520
25.....	171	140	105	*270	799	1,530	332	1,120	1,470	324	324	436
26.....	168	144	105	260	899	1,770	318	978	1,230	307	287	406
27.....	166	145	105	240	810	1,690	302	1,110	1,050	481	223	350
28.....	158	150	110	200	825	1,560	274	1,360	930	1,770	202	362
29.....	168	170	110	190	.....	1,460	279	1,620	994	1,070	191	348
30.....	158	186	115	195	.....	1,350	284	1,790	1,900	907	175	326
31.....	158	.....	120	210	.....	1,210	.....	1,780	.....	868	177	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 30 to Dec. 3, Dec. 7-31, 1944, Jan. 1 to Mar. 9, Mar. 11, Nov. 21-29, Dec. 9-31, 1945, Jan. 1-6, Jan. 14 to Feb. 7, Feb. 12-16, 20, 21, Mar. 1-3, 1946.

Iowa River at Marshalltown, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	310	814	433	115	240	310	910	1,350	3,300	7,990	456	176
2.....	205	822	305	120	270	290	814	1,270	11,900	5,700	427	151
3.....	292	795	281	120	280	270	799	1,170	8,200	4,970	395	145
4.....	268	753	415	120	280	260	918	1,080	7,060	4,610	388	144
5.....	271	715	474	120	270	320	1,210	1,000	9,620	4,490	348	136
6.....	250	681	446	120	270	400	1,820	922	6,550	4,380	329	133
7.....	240	677	427	120	260	g480	1,710	872	4,740	4,050	315	127
8.....	240	692	421	*125	260	g560	1,600	825	3,880	3,750	297	122
9.....	248	640	403	130	250	g650	1,600	768	3,170	3,680	288	115
10.....	266	658	377	140	240	740	2,710	704	2,710	3,590	268	110
11.....	365	681	*368	170	240	840	4,430	685	2,290	3,580	275	112
12.....	440	666	371	220	240	1,030	3,850	670	3,580	3,320	239	163
13.....	455	681	337	260	260	g1,690	3,270	723	20,200	2,970	244	182
14.....	461	711	300	300	400	g2,240	2,990	814	15,400	2,620	235	145
15.....	455	734	220	360	640	g1,650	2,940	868	8,310	2,220	244	128
16.....	443	761	140	340	1,400	g1,260	3,090	1,030	6,440	1,930	232	116
17.....	424	704	90	340	1,320	g1,310	2,990	1,110	7,090	1,680	213	122
18.....	443	625	140	340	1,060	g1,210	2,500	1,310	9,900	1,520	221	104
19.....	443	629	200	360	920	1,080	2,130	1,220	8,400	1,330	198	102
20.....	424	603	260	390	860	1,010	2,170	1,110	6,780	1,180	197	136
21.....	406	559	320	320	760	958	1,930	1,010	6,270	1,070	187	120
22.....	394	535	300	240	690	1,150	1,710	962	10,600	988	184	88
23.....	350	500	280	180	600	1,160	1,590	946	9,590	876	180	84
24.....	455	568	270	300	520	1,750	2,140	868	8,310	845	170	84
25.....	1,320	510	260	340	440	1,630	1,820	844	7,600	754	187	81
26.....	1,240	468	260	330	*370	1,390	1,810	868	6,940	702	172	83
27.....	1,020	477	290	300	340	1,330	1,790	822	6,130	642	166	87
28.....	1,010	449	270	280	310	1,280	1,660	985	5,430	587	156	96
29.....	1,010	461	220	*270	.....	1,200	1,520	2,040	5,200	569	176	98
30.....	950	471	90	250	.....	1,070	1,430	2,340	5,520	500	184	94
31.....	875	.....	100	240	.....	982	.....	2,040	.....	462	184	.....
1947-48												
1.....	96	490	180	135	62	2,390	1,580	1,310	280	422	124	102
2.....	103	406	210	125	*62	1,700	1,300	1,460	279	411	116	90
3.....	104	334	240	135	62	1,600	1,120	1,230	273	338	115	83
4.....	115	331	250	145	60	1,500	964	1,080	266	288	115	80
5.....	110	307	371	160	60	1,300	906	1,050	264	252	112	76
6.....	103	285	424	165	58	1,000	810	1,640	282	229	106	74
7.....	93	265	433	170	58	850	968	1,820	275	208	104	73
8.....	84	250	280	165	58	700	1,230	1,610	249	187	108	73
9.....	81	242	210	160	56	600	994	1,380	246	178	106	69
10.....	90	239	250	155	56	500	880	1,190	242	168	100	66
11.....	87	213	270	155	56	420	867	1,100	230	152	96	66
12.....	83	226	290	150	55	410	1,090	1,170	247	151	93	g 62
13.....	83	174	280	135	55	420	854	1,090	258	208	93	g 55
14.....	81	227	260	120	54	430	706	999	259	1,360	90	g 45
15.....	86	222	245	105	54	500	634	955	261	1,120	88	g 39
16.....	84	252	220	90	54	2,630	595	898	256	698	87	37
17.....	83	235	230	95	54	8,590	503	845	251	480	85	35
18.....	83	227	235	100	90	5,620	477	876	244	348	83	34
19.....	80	232	230	105	150	7,950	453	924	240	288	80	33
20.....	77	g237	210	105	135	8,460	416	770	235	327	76	51
21.....	76	g244	205	105	125	5,230	388	622	247	822	73	55
22.....	73	g258	200	100	115	4,200	419	533	282	362	70	53
23.....	76	g252	195	90	150	3,220	1,680	490	286	259	70	52
24.....	87	g271	190	80	g200	2,440	1,400	441	273	213	67	49
25.....	94	224	185	75	g250	1,900	1,140	400	251	202	66	48
26.....	116	*242	180	70	g300	1,610	1,030	378	240	210	65	48
27.....	123	230	185	68	900	4,370	1,030	342	288	176	66	48
28.....	297	175	175	68	10,700	5,440	1,030	338	2,410	157	227	40
29.....	256	140	*170	60	*5,160	3,120	902	313	933	146	214	46
30.....	211	160	170	64	.....	2,410	827	307	516	166	156	46
31.....	286	.....	150	64	.....	1,920	.....	299	.....	136	122	.....

* Winter discharge measurement made on this day.

g Computed from graph based on gage readings.

Note—Stage-discharge relation affected by ice Dec. 15-31, 1946, Jan. 1 to Mar. 11, Nov. 27 to Dec. 4, Dec. 8-31, 1947, Jan. 1 to Feb. 27, Mar. 4-15, 1948.

Iowa River at Marshalltown, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	47	f 68	f*50	70	120	1,350	2,600	372	200	348	76	29
2.....	46	* 70	58	92	115	1,300	2,020	384	447	324	70	29
3.....	45	66	64	120	110	1,850	g1,650	348	312	620	70	40
4.....	43	66	88	700	105	4,600	f1,500	324	245	460	66	88
5.....	43	f 79	92	2,400	100	*8,760	f1,350	310	228	336	59	114
6.....	f46	f109	78	*1,550	100	7,460	g1,130	284	221	295	58	72
7.....	f76	132	62	808	100	4,800	g940	279	183	293	56	58
8.....	f86	f123	55	640	100	4,330	g808	279	173	236	55	56
9.....	84	98	50	670	100	3,830	f719	263	167	195	52	50
10.....	77	98	45	580	100	3,380	662	239	160	171	52	48
11.....	68	83	54	500	100	2,810	620	236	154	148	56	62
12.....	65	90	62	480	100	2,260	579	234	141	130	65	90
13.....	63	76	68	470	100	1,900	566	232	158	123	61	98
14.....	62	72	76	490	100	1,600	525	247	177	119	56	94
15.....	59	75	80	520	100	1,130	538	322	200	112	56	89
16.....	56	79	84	1,200	100	940	538	348	156	109	52	77
17.....	55	79	84	900	102	808	676	324	134	98	50	70
18.....	52	70	80	700	103	748	778	291	123	106	50	65
19.....	52	f106	72	560	104	748	778	272	114	132	81	58
20.....	52	181	74	540	106	690	748	261	109	145	63	52
21.....	51	195	66	520	108	905	748	263	160	111	48	48
22.....	51	f163	60	470	112	2,200	748	282	179	169	45	41
23.....	51	f123	58	400	120	1,700	704	307	189	150	42	41
24.....	51	125	56	300	230	1,700	634	282	656	106	40	41
25.....	51	118	56	250	1,050	2,320	552	302	690	98	48	40
26.....	52	119	55	220	1,600	2,810	525	300	940	92	51	35
27.....	52	100	55	190	1,650	3,300	486	275	719	86	38	38
28.....	f55	95	55	170	1,500	3,300	447	252	648	82	41	35
29.....	f59	80	56	150	.....	*3,020	422	230	538	75	42	37
30.....	f62	105	58	135	.....	2,670	397	208	422	77	35	35
31.....	65	.....	62	*125	.....	2,600	.....	187	.....	72	30	.....
1949-50												
1.....	36	50	54	40	* 21	*48	2,260	460	870	606	183	70
2.....	32	46	51	39	21	52	2,020	434	838	566	167	70
3.....	34	52	52	36	21	56	1,600	410	870	512	137	62
4.....	35	56	54	34	22	90	1,210	566	778	460	136	61
5.....	34	46	47	32	24	700	940	2,240	748	460	169	61
6.....	34	51	47	30	30	5,000	778	2,380	690	410	179	70
7.....	46	50	43	28	45	13,600	648	1,170	592	384	158	79
8.....	38	54	42	27	250	10,000	566	999	525	348	137	86
9.....	36	52	41	* 26	900	4,150	512	3,050	2,810	322	119	88
10.....	37	51	43	27	1,000	2,600	566	4,600	4,430	310	121	80
11.....	40	50	54	29	700	1,800	552	3,300	1,460	291	119	86
12.....	41	63	52	29	250	1,600	499	2,390	1,010	275	132	134
13.....	43	62	66	120	240	1,500	447	1,750	838	275	123	116
14.....	38	63	62	180	150	1,400	410	1,350	745	261	123	134
15.....	38	63	56	100	100	1,350	372	1,010	3,240	254	141	127
16.....	40	61	52	50	82	1,300	317	838	2,080	239	173	89
17.....	41	59	49	40	70	1,300	317	748	1,350	241	148	69
18.....	43	56	49	* 35	64	1,250	298	662	4,800	219	121	72
19.....	55	55	49	33	60	1,200	279	606	9,690	212	104	70
20.....	62	54	49	31	56	1,200	266	945	5,460	225	101	75
21.....	77	52	55	29	54	1,200	247	3,030	3,910	217	92	2,320
22.....	54	38	58	27	52	1,560	234	905	3,020	217	89	3,510
23.....	73	65	58	26	52	3,020	232	748	2,390	252	83	1,120
24.....	63	62	48	25	50	2,460	284	648	3,660	256	77	690
25.....	63	59	44	24	50	2,080	434	2,670	3,090	252	73	525
26.....	58	76	44	24	48	2,390	579	1,150	1,500	234	72	422
27.....	59	56	44	23	48	2,740	566	808	1,170	212	80	360
28.....	54	55	43	23	47	2,460	592	748	940	212	88	314
29.....	51	51	42	22	.....	1,960	538	676	808	135	80	261
30.....	50	51	42	22	.....	1,700	486	620	704	169	83	208
31.....	51	.....	41	21	.....	1,960	.....	690	.....	191	76	.....

* Winter discharge measurement made on this day.

f Computed on basis of partly estimated gage-height record.

g Computed from graph based on gage readings.

Note—Stage-discharge relation affected by ice Nov. 29 to Dec. 31, 1948, Jan. 1-5, Jan. 8 to Mar. 4, Mar. 13, 14, Dec. 6-31, 1949, Jan. 1 to Mar. 6, Mar. 11-21, 1950.

Iowa River at Marshalltown, Iowa—Continued
 Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1942	26,026	2,480	478	840	0.560	0.65
November	14,520	670	281	484	.323	.36
December	9,165	403	240	296	.197	.23
Calendar year 1942	418,205	13,600	240	1,146	.764	10.36
January 1943	6,320	320	140	204	.136	.16
February	46,770	4,370	150	1,670	1.11	1.16
March	49,660	3,220	800	1,602	1.07	1.23
April	25,739	1,410	539	858	.572	.64
May	37,693	2,930	628	1,216	.811	.93
June	32,726	3,110	665	1,091	.727	.81
July	27,801	3,440	327	897	.598	.69
August	30,712	2,600	398	991	.661	.76
September	12,437	747	229	415	.277	.31
Water year 1942-43	319,569	4,370	140	876	.584	7.93
October 1943	6,644	266	187	214	.143	.16
November	9,345	420	232	312	.208	.23
December	6,521	472	105	210	.140	.16
Calendar year 1943	292,368	4,370	105	801	.534	7.24
January 1944	9,047	2,890	95	292	.195	.22
February	11,896	1,090	140	410	.273	.29
March	35,172	3,070	135	1,135	.757	.87
April	44,767	2,520	747	1,492	.995	1.11
May	137,740	16,500	1,250	4,443	2.96	3.42
June	90,500	6,240	1,300	3,017	2.01	2.24
July	36,178	3,160	443	1,167	.778	.90
August	15,885	1,450	225	512	.341	.39
September	8,749	559	219	292	.195	.22
Water year 1943-44	412,444	16,500	95	1,127	.751	10.21
October 1944	7,112	295	174	229	.150	.17
November	5,738	203	125	191	.125	.14
December	3,840	185	95	124	.081	.09
Calendar year 1944	406,624	16,500	95	1,111	.741	10.06
January 1945	3,034	115	80	97.9	.064	.07
February	11,116	1,000	94	397	.259	.27
March	90,560	7,850	620	2,921	1.91	2.20
April	79,020	5,050	1,280	2,634	1.72	1.92
May	64,696	3,520	920	2,087	1.36	1.57
June	79,080	6,680	1,100	2,636	1.72	1.92
July	19,767	1,760	295	638	.417	.48
August	35,803	3,530	241	1,155	.755	.87
September	8,254	426	194	275	.180	.20
Water year 1944-45	468,020	7,850	80	1,118	.731	9.90
October 1945	6,317	324	158	204	.133	.15
November	4,673	186	95	156	.102	.11
December	4,921	284	85	159	.104	.12
Calendar year 1945	407,241	7,850	80	1,116	.729	9.88
January 1946	34,618	9,600	130	1,117	.730	.84
February	27,406	4,200	190	979	.640	.67
March	71,650	5,960	780	2,311	1.51	1.74
April	16,256	1,110	274	542	.354	.40
May	26,604	1,790	258	858	.561	.65
June	33,829	3,080	397	1,128	.737	.82
July	18,850	1,770	307	608	.397	.46
August	9,181	589	175	296	.193	.22
September	17,431	1,840	139	581	.380	.42
Water year 1945-46	271,736	9,600	85	744	.486	6.60

Iowa River at Marshalltown, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946	16,103	1,320	240	519	0.339	0.39
November	19,050	822	449	635	.415	.46
December	9,068	474	90	293	.192	.22
Calendar year 1946	300,046	9,600	90	822	.537	7.29
January 1947	7,360	390	115	237	.155	.18
February	13,990	1,400	240	500	.327	.34
March	31,500	2,240	260	1,016	.654	.77
April	61,921	4,430	799	2,064	1.35	1.51
May	33,227	2,340	670	1,072	.701	.81
June	221,110	20,200	2,290	7,370	4.82	5.37
July	77,553	7,900	462	2,502	1.64	1.88
August	7,755	456	156	250	.163	.19
September	3,584	182	81	119	.078	.09
Water year 1946-47	502,221	20,200	81	1,376	.899	12.21
October 1947	3,541	267	73	114	.075	.09
November	7,590	490	140	253	.165	.18
December	7,323	433	150	236	.154	.18
Calendar year 1947	476,454	20,200	73	1,302	.851	11.59
January 1948	3,525	170	64	114	.075	.09
February	19,249	10,700	54	664	.434	.47
March	83,490	8,590	410	2,693	1.76	2.03
April	27,193	1,680	388	906	.592	.66
May	27,850	1,820	299	898	.587	.68
June	10,863	2,410	230	362	.237	.26
July	10,662	1,360	136	344	.225	.26
August	3,174	227	65	102	.067	.08
September	1,734	102	33	57.8	.038	.04
Water year 1947-48	206,194	10,700	33	563	.368	5.02
October 1948	1,777	86	43	57.3	.037	.04
November	3,043	195	66	101	.066	.07
December	2,013	92	45	64.9	.042	.05
Calendar year 1948	194,573	10,700	33	532	.348	4.73
January 1949	16,920	2,400	70	546	.357	.41
February	8,435	1,650	100	301	.197	.21
March	81,819	8,760	690	2,639	1.72	1.99
April	25,388	2,600	397	846	.553	.62
May	8,737	384	187	282	.184	.21
June	8,943	940	109	298	.195	.22
July	5,618	620	72	181	.118	.14
August	1,664	81	30	53.7	.035	.04
September	1,734	114	29	57.7	.038	.04
Water year 1948-49	166,087	8,760	29	455	.297	4.04
October 1949	1,456	77	32	47.0	.031	.04
November	1,659	76	38	55.3	.036	.04
December	1,531	66	41	49.4	.032	.04
Calendar year 1949	163,800	8,760	29	449	.293	4.00
January 1950	1,232	180	21	39.7	.026	.03
February	4,507	1,000	21	161	.105	.11
March	73,726	13,600	48	2,378	1.55	1.79
April	19,049	2,260	232	635	.415	.46
May	42,601	4,600	410	1,374	.898	1.04
June	65,066	9,690	525	2,169	1.42	1.58
July	9,267	606	169	299	.195	.22
August	3,684	183	72	119	.078	.09
September	11,429	3,510	61	381	.249	.28
Water year 1949-50	235,207	13,600	21	644	.421	5.72

Iowa River near Belle Plaine, Iowa

LOCATION.—Lat. 41°51'20", long. 92°14'20", in NW ¼ 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.

RECORDS AVAILABLE.—September 1939 to September 1950.

GAGE.—Water-stage recorder. Datum of gage is 749.82 feet above mean sea level, datum of 1929. Sept. 18, 1939, to Mar. 12, 1950, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—11 years, 1,319 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Mar. 16	6,890	13.68	Jan. 28 to Feb. 2	350
1943-44...	May 21	31,800	16.86	Jan. 13-18	190
1944-45...	Mar. 19	8,770	14.11	Jan. 8, 9	175
1945-46...	Jan. 6	25,000	(¹)16.30	Dec. 26	160
1946-47...	June 14	34,000	17.07	Sept. 30	180
1947-48...	Mar. 19	18,100	15.48	Sept. 21	76
1948-49...	Mar. 8	14,000	(²)	†Sept. 30	58
1949-50...	Mar. 7	18,300	(¹)15.83	Jan. 9-12, Feb. 5	54

(1) Affected by ice.

(2) Maximum gage height 15.59 feet Mar. 7 (ice jam).

1939-50: Maximum discharge, 34,000 second-feet June 14, 1947 (gage height, 17.07 feet); minimum daily, 19 second-feet Jan. 5, 1940; minimum gage height, 3.48 feet July 25, 26, 1940.

A discharge of 38,600 second-feet was measured on 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.

Iowa River near Belle Plaine, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	1,110	873	500	640	350	g2,820	2,380	2,540	1,920	1,530	1,520	954
2.....	1,060	829	450	630	350	2,500	2,000	2,030	4,090	1,420	2,580	864
3.....	1,020	777	400	610	400	2,200	1,880	1,760	4,500	1,280	4,260	811
4.....	1,040	740	430	580	1,600	1,900	1,730	1,560	3,490	1,220	4,990	1,200
5.....	1,700	777	500	540	2,500	1,800	1,610	1,400	2,450	1,200	3,890	1,750
6.....	2,260	900	530	530	3,000	1,600	1,510	1,560	2,640	1,110	3,600	1,560
7.....	1,880	995	550	540	2,600	1,400	1,800	1,900	2,390	1,040	2,350	1,310
8.....	1,620	922	550	540	2,600	1,250	1,970	2,320	2,170	981	1,940	1,080
9.....	1,450	1,110	550	560	2,900	1,250	1,800	1,970	2,060	909	1,920	954
10.....	1,320	1,400	550	570	3,100	1,200	1,740	1,750	2,010	868	1,910	873
11.....	1,210	1,150	540	570	2,800	1,200	1,700	1,620	2,230	829	1,660	815
12.....	1,140	1,060	530	570	2,500	1,200	1,910	1,530	2,950	765	1,570	1,280
13.....	1,090	990	610	530	1,600	1,250	1,870	1,420	2,380	716	2,220	2,260
14.....	1,040	945	*480	500	1,300	1,350	1,840	1,330	1,990	1,220	2,000	2,220
15.....	990	904	460	540	1,100	g1,730	1,700	1,930	1,900	1,170	1,980	1,390
16.....	950	882	470	530	1,000	g4,620	1,590	5,250	2,280	1,210	2,400	1,130
17.....	914	886	460	470	1,000	g4,360	1,450	4,660	3,800	1,210	2,040	990
18.....	882	837	470	400	1,000	g3,440	1,360	4,250	3,810	1,970	1,650	896
19.....	842	803	470	400	1,250	g3,010	1,270	4,150	3,700	2,460	1,400	833
20.....	833	*782	460	380	2,700	*2,150	1,220	3,420	2,500	1,910	1,260	807
21.....	807	769	460	380	4,300	2,180	1,150	2,920	2,030	1,720	1,160	794
22.....	790	753	460	380	*4,100	2,260	1,100	2,580	1,780	2,160	1,080	777
23.....	769	736	460	390	g4,580	2,620	1,090	2,290	2,120	2,740	1,080	724
24.....	765	728	480	400	g5,460	g3,710	1,080	2,110	2,460	2,770	1,000	688
25.....	732	724	500	*400	g4,580	g3,630	1,060	1,990	1,910	2,090	936	653
26.....	716	692	540	380	g4,560	3,290	1,020	1,880	1,640	1,780	958	634
27.....	700	649	720	360	g3,570	2,820	1,230	1,770	1,470	1,440	1,030	611
28.....	688	589	800	350	g3,110	2,600	1,180	1,660	1,470	1,750	940	585
29.....	692	500	710	350	.....	2,460	g1,840	1,560	1,430	2,280	995	567
30.....	945	500	680	350	.....	2,440	g2,870	1,610	1,430	1,640	1,050	552
31.....	927	.....	640	350	.....	2,530	.....	1,850	.....	1,400	1,020	.....
1943-44												
1.....	530	520	429	205	909	918	1,650	2,660	6,980	2,510	1,040	960
2.....	523	499	*435	205	803	868	1,640	2,570	6,120	2,310	986	897
3.....	512	471	413	205	782	868	1,590	2,820	5,250	2,770	928	828
4.....	509	448	422	205	744	914	1,540	3,490	4,110	3,330	1,520	769
5.....	492	448	442	205	712	878	1,520	3,800	3,060	3,820	1,710	719
6.....	488	482	581	205	653	860	1,530	4,720	2,630	3,440	1,820	673
7.....	471	665	684	200	600	778	1,540	5,880	2,370	2,440	1,400	637
8.....	458	611	720	200	585	410	1,530	5,580	2,370	2,160	1,180	605
9.....	448	592	672	200	540	430	1,470	4,950	3,430	2,029	1,070	577
10.....	442	578	626	*200	490	460	1,650	4,270	3,710	1,850	996	561
11.....	432	581	574	200	320	829	1,720	3,950	4,550	1,850	924	561
12.....	425	600	450	200	300	2,030	2,540	3,540	6,790	2,040	841	561
13.....	425	596	330	190	320	2,890	2,830	3,050	9,240	2,410	782	581
14.....	435	589	270	190	350	2,400	3,070	2,730	11,100	1,940	732	565
15.....	438	589	300	190	340	3,310	3,580	2,490	8,980	1,690	686	546
16.....	425	570	340	190	320	4,330	3,590	2,320	16,400	1,580	669	526
17.....	415	530	*340	190	320	3,890	3,220	2,180	17,500	1,480	748	515
18.....	415	506	320	190	310	3,860	2,950	2,090	8,650	1,400	901	495
19.....	406	526	300	200	310	2,930	2,870	4,950	7,820	1,320	748	669
20.....	409	541	275	200	310	2,300	2,740	11,800	7,420	1,260	653	669
21.....	422	534	255	210	*330	2,050	2,680	24,500	6,840	1,200	625	561
22.....	455	506	235	230	800	1,920	2,940	25,800	6,790	1,120	601	534
23.....	416	485	230	240	2,200	2,070	3,160	17,400	6,860	1,080	589	526
24.....	400	455	225	250	2,130	2,720	3,190	13,600	5,340	1,090	577	522
25.....	391	442	215	280	1,750	2,680	3,190	13,400	4,780	1,030	558	526
26.....	382	452	215	400	1,530	2,250	3,300	12,300	4,150	1,040	577	530
27.....	385	478	215	780	1,360	2,000	3,350	10,400	3,760	1,810	744	518
28.....	382	461	215	1,160	1,180	1,910	3,070	9,980	3,840	1,990	1,180	507
29.....	379	445	215	2,350	1,040	1,840	2,820	9,020	2,850	1,430	1,320	522
30.....	382	429	215	1,560	.....	1,680	2,680	8,250	2,630	1,220	1,100	499
31.....	552	.....	210	1,080	.....	1,600	.....	7,860	.....	1,110	1,050	.....

* Winter discharge measurement made on this day.

g Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Nov. 29 to Dec. 31, 1942, Jan. 1 to Feb. 22, Mar. 2-14, Dec. 12-31, 1943, Jan. 1-27, Feb. 10-23, Mar. 7-10, 1944.

Iowa River near Belle Plaine, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1	484	368	200	210	190	1,250	2,770	3,180	f4,020	1,810	g501	g672
2	495	364	190	205	195	2,000	2,430	2,820	f3,810	2,150	g486	g646
3	511	395	230	200	200	3,000	2,210	2,600	f3,790	f1,900	g471	g592
4	511	f406	280	195	205	2,650	3,040	2,370	f4,200	f1,750	g477	g559
5	511	f374	340	190	205	2,400	3,280	2,200	5,180	f1,620	g501	g631
6	511	374	360	185	195	2,250	3,620	2,100	6,470	f1,530	g498	g510
7	503	399	360	180	185	2,100	3,410	2,050	6,200	f1,440	g480	g483
8	495	406	340	175	185	1,900	2,900	1,920	5,690	f1,340	g468	g463
9	495	395	320	175	190	1,800	2,830	1,780	5,210	1,270	457	g451
10	480	381	270	180	195	2,100	2,850	1,730	6,980	f1,200	439	g448
11	472	378	220	185	210	2,870	2,890	1,700	5,790	f1,120	f590	g474
12	461	371	235	185	230	3,200	3,010	1,650	4,430	1,060	g599	g460
13	450	371	245	185	300	3,320	3,350	1,580	3,730	1,000	g507	g436
14	446	368	255	190	500	3,630	3,430	12,770	3,280	955	f803	g416
15	439	410	200	185	860	4,070	3,580	g4,400	3,140	905	g2,030	g405
16	428	413	260	180	1,500	4,680	5,160	g4,380	3,350	f847	g2,590	g397
17	420	381	250	185	1,850	5,420	5,870	g4,950	3,390	811	g2,350	g386
18	417	371	240	185	1,600	7,890	5,560	g4,860	3,440	f784	g2,270	g377
19	413	371	230	190	1,450	8,690	6,200	f3,860	2,930	f793	g2,480	g368
20	410	374	235	195	1,300	7,920	6,200	3,150	2,520	f797	f2,710	g358
21	406	368	220	200	1,200	6,860	5,680	f2,900	2,660	f749	f2,880	g356
22	395	368	215	205	1,150	5,890	5,100	f2,780	2,650	f720	f3,220	g358
23	388	368	*210	205	1,100	5,060	4,420	f3,010	2,240	f695	g3,200	g356
24	388	364	205	*205	1,050	4,080	3,770	f3,400	2,010	f661	g2,330	g350
25	385	361	200	210	1,150	3,800	3,340	f3,960	2,230	f628	g1,640	g400
26	374	378	200	210	1,500	4,300	3,230	4,290	2,380	g572	g1,340	g489
27	395	385	195	205	1,400	4,680	3,310	f4,270	2,110	g552	f1,140	g504
28	388	378	190	200	1,200	5,300	3,430	f4,320	1,950	g559	g1,000	g820
29	378	374	190	195	.....	4,790	3,510	f4,210	2,050	g519	g940	g838
30	371	325	200	190	.....	3,790	3,510	f4,050	f1,880	g519	g824	g672
31	371	.....	205	190	.....	3,170	.....	f4,040	.....	g510	g733	.....
1945-46												
1	g610	h317	442	200	630	1,300	2,000	579	g2,110	3,170	1,120	340
2	h586	h314	680	210	640	1,400	1,840	628	g2,010	2,480	990	332
3	g562	h309	599	220	600	1,460	1,700	1,270	1,810	1,770	838	317
4	g522	h307	531	240	640	1,530	1,550	3,060	1,560	1,530	737	307
5	g489	h309	489	2,400	2,200	1,590	1,440	3,070	1,350	1,380	692	292
6	g468	a314	460	*18,000	4,800	3,740	1,340	2,470	1,200	1,250	650	307
7	g451	a316	451	12,300	4,500	*4,040	1,290	2,070	1,110	1,190	613	348
8	g434	a369	454	14,700	4,200	3,800	1,230	1,840	1,040	1,180	596	894
9	h411	a405	436	14,400	4,300	3,920	1,170	1,660	955	1,080	572	2,030
10	h400	g380	250	9,380	4,600	3,790	1,130	1,530	890	1,250	537	1,880
11	h391	h358	190	5,470	2,600	2,870	1,100	1,430	843	1,440	510	1,860
12	h386	g350	210	3,280	2,100	3,100	1,110	1,350	900	1,040	486	2,000
13	h380	g454	230	g1,800	1,700	5,030	1,100	1,250	890	900	480	1,460
14	h374	g445	240	g1,550	1,550	4,900	1,100	1,180	805	824	454	1,200
15	h369	*391	250	g1,450	1,380	5,610	1,040	1,150	843	766	439	1,060
16	g356	372	240	g1,300	1,260	7,210	985	1,140	915	733	434	910
17	g353	366	220	g1,150	1,160	7,040	940	g1,100	945	720	754	775
18	g353	358	210	g1,000	*1,070	6,100	900	g1,130	1,880	728	661	g688
19	g350	350	200	g900	1,040	5,370	h852	g1,240	2,890	696	550	g617
20	h343	345	190	g820	1,030	4,850	g834	g1,280	4,110	688	531	650
21	g335	335	190	g820	1,020	4,070	g806	g1,220	3,860	820	471	628
22	h327	220	180	g830	1,030	3,280	g766	g1,220	3,790	802	428	1,730
23	h327	210	180	g840	1,050	2,890	g771	g1,320	2,960	733	414	6,540
24	h327	210	170	g840	1,100	2,890	g766	h1,710	2,410	688	442	3,380
25	h330	240	165	g750	1,260	2,820	g728	g1,980	2,420	653	510	1,480
26	h327	280	160	620	1,240	3,780	g688	g1,820	2,430	624	537	1,180
27	g324	280	165	560	1,220	3,130	650	g1,580	2,050	620	471	1,040
28	h317	290	170	*540	1,220	2,930	635	h1,570	1,770	688	431	1,080
29	h319	320	175	540	.....	2,570	613	g1,650	1,600	1,640	408	910
30	g319	361	180	570	.....	2,350	592	g1,830	2,240	1,450	380	834
31	h319	.....	190	600	.....	2,160	.....	h2,030	.....	1,200	356	.....

* Winter discharge measurement made on this day.

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

f Computed from partly estimated gage-height record.

g Computed from graph based on gage readings.

h Computed from wire-weight gage readings.

Note—Stage-discharge relation affected by ice Nov. 30 to Dec. 31, 1944, Jan. 1 to Mar. 10, Nov. 22-29, Dec. 10-31, 1945, Jan. 1-6, Jan. 13 to Mar. 2, 1946.

Iowa River near Belle Plaine, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	771	1,850	930	250	340	620	1,720	2,730	7,320	9,240	g930	314
2.....	720	2,400	847	260	350	600	1,630	2,520	22,000	8,350	g905	309
3.....	650	2,060	762	280	370	590	1,540	2,310	13,600	9,380	g860	293
4.....	642	1,790	728	310	380	590	2,270	2,120	15,000	8,210	g815	278
5.....	610	1,620	780	340	*390	570	3,560	1,930	26,700	7,210	g765	266
6.....	582	1,510	890	350	410	640	3,790	1,850	23,400	7,160	g712	258
7.....	562	1,480	900	360	420	790	3,460	1,770	18,500	6,380	g672	250
8.....	553	1,440	881	360	420	950	3,290	1,660	13,100	5,860	g629	243
9.....	540	1,380	857	*360	400	1,080	3,060	1,570	9,530	5,530	g600	243
10.....	556	1,490	834	370	380	1,250	5,090	1,490	7,700	5,100	568	238
11.....	646	1,460	788	370	360	1,520	7,290	1,410	6,380	4,680	534	228
12.....	696	1,390	*775	380	360	1,760	5,820	1,360	5,770	4,440	505	221
13.....	720	1,350	745	460	400	1,900	5,580	1,340	21,100	4,330	484	228
14.....	762	1,330	696	720	640	2,480	5,790	1,350	31,300	4,000	457	243
15.....	811	1,340	640	860	1,240	3,010	5,500	1,410	29,800	3,450	441	253
16.....	806	1,370	520	830	1,800	3,030	5,350	1,500	20,800	2,930	438	233
17.....	780	1,360	320	800	2,600	2,700	5,160	1,730	14,200	2,590	431	224
18.....	1,260	1,300	240	700	2,260	2,460	4,730	1,890	12,500	2,450	413	212
19.....	1,150	1,250	300	620	1,960	2,160	4,740	1,950	12,500	2,320	389	200
20.....	1,000	1,210	340	580	1,760	2,130	5,820	1,860	13,600	2,040	378	205
21.....	920	1,190	520	570	1,580	2,120	4,750	1,750	13,200	1,870	357	209
22.....	866	1,120	600	540	1,400	2,120	4,080	1,650	15,100	1,710	347	219
23.....	815	1,050	630	560	1,220	2,270	3,460	1,590	14,300	1,620	330	216
24.....	1,850	1,080	600	600	1,040	2,890	3,060	1,560	17,300	1,520	317	166
25.....	2,860	1,090	560	620	* 890	2,900	3,160	1,480	14,100	1,430	314	187
26.....	2,050	1,040	580	640	790	2,600	3,000	1,420	11,900	1,370	341	184
27.....	2,070	970	610	670	720	2,330	2,830	1,400	10,500	1,300	341	182
28.....	1,790	965	560	580	660	2,150	2,730	1,630	8,980	1,200	314	182
29.....	1,650	945	440	480	.....	2,050	2,610	4,610	9,240	1,130	309	182
30.....	1,640	925	240	400	.....	1,910	2,640	4,680	9,070	1,080	336	180
31.....	1,560	.....	250	360	.....	1,800	.....	3,990	.....	1,010	328	.....
1947-48												
1.....	184	491	230	280	118	10,000	2,830	1,170	593	744	224	154
2.....	187	580	g300	200	115	9,290	2,290	1,510	573	597	207	143
3.....	189	588	g380	190	114	5,100	1,970	1,850	550	546	196	135
4.....	240	508	g450	230	112	2,300	1,750	1,970	534	507	188	123
5.....	263	463	g950	260	110	2,000	1,600	1,440	526	450	182	114
6.....	219	463	g760	280	108	1,800	1,490	2,280	550	406	180	110
7.....	202	460	720	290	107	g 1,600	1,410	2,440	546	371	176	104
8.....	191	438	*700	310	105	g 1,450	1,390	2,410	522	338	172	105
9.....	182	401	470	310	103	g 1,300	1,640	2,160	491	310	163	102
10.....	176	381	350	300	102	g 1,200	1,460	1,890	469	284	159	102
11.....	171	372	400	290	100	g 1,050	1,350	1,710	450	272	158	102
12.....	171	347	440	290	100	g 900	1,260	1,570	451	275	151	93
13.....	169	322	480	280	100	g 800	1,360	1,520	488	259	149	91
14.....	169	322	500	250	100	850	1,280	1,490	469	251	146	88
15.....	167	328	520	230	100	1,250	1,120	1,420	472	522	144	87
16.....	165	361	480	160	120	5,400	1,010	1,340	450	955	140	86
17.....	163	366	450	170	200	9,670	946	1,260	435	740	135	a 82
18.....	163	375	400	180	300	7,450	875	1,200	417	559	134	a 81
19.....	158	369	390	180	290	14,100	805	1,160	402	484	128	a 79
20.....	156	363	380	180	270	12,300	765	1,180	385	417	126	a 77
21.....	156	375	380	180	260	11,300	708	1,120	381	569	118	76
22.....	154	392	370	180	270	9,240	681	1,020	388	669	116	97
23.....	152	386	370	170	260	7,110	760	932	395	641	111	101
24.....	156	395	360	150	270	5,960	1,460	863	399	431	108	91
25.....	173	384	360	140	320	4,570	1,690	811	381	431	105	84
26.....	205	370	350	*125	370	3,060	1,470	762	371	428	102	a 82
27.....	216	350	350	125	1,400	3,620	1,380	727	368	344	102	a 81
28.....	304	300	340	125	9,000	3,200	1,310	698	371	313	102	a 80
29.....	407	250	330	125	8,000	3,930	1,260	657	1,020	272	104	a 79
30.....	389	210	320	120	.....	5,470	1,190	633	1,100	248	151	a 78
31.....	378	.....	320	120	.....	4,810	.....	609	.....	226	178	.....

* Winter discharge measurement made on this day.

g No gage-height record; discharge computed on basis of records for nearby stations.

g Computed from graph based on gage readings.

Note—Stage-discharge relation affected by ice Dec. 15-31, 1946, Jan. 1 to Mar. 14, Nov. 25 to Dec. 31, 1947, Jan. 1, to Mar. 1, Mar. 4-16, 1948.

Iowa River near Belle Plaine, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1	71	90	110	160	290	2,500	3,630	665	421	665	139	68
2	71	100	115	170	270	2,400	3,370	640	805	1,160	135	67
3	69	104	125	180	*260	2,400	2,870	594	905	905	129	71
4	71	105	133	500	255	2,700	2,410	574	665	690	127	147
5	69	114	145	1,500	250	4,600	2,200	554	466	715	125	131
6	69	116	156	1,200	250	4,400	2,090	519	397	640	121	95
7	112	118	129	1,000	245	8,000	1,860	502	362	640	116	102
8	125	127	115	980	240	10,000	1,610	484	347	454	109	102
9	116	141	105	950	240	*9,620	1,460	466	314	432	105	90
10	111	141	90	880	235	7,160	1,340	466	299	375	104	81
11	107	137	80	780	235	5,660	1,220	449	285	329	100	67
12	102	131	90	650	230	4,460	1,130	416	273	299	100	312
13	97	123	105	560	230	3,460	1,070	413	276	276	98	390
14	95	123	125	600	230	2,950	1,020	413	287	257	97	212
15	95	121	170	600	225	2,480	1,020	403	403	241	97	149
16	92	123	160	1,700	225	2,060	988	413	397	228	93	125
17	84	125	140	2,100	225	1,670	1,130	466	326	217	93	r111
18	84	123	125	1,900	225	1,520	1,250	466	282	328	92	100
19	82	186	130	1,600	235	1,400	1,310	432	262	356	90	93
20	81	233	135	1,350	245	1,310	1,280	413	243	260	87	87
21	82	202	*135	1,100	260	1,460	1,250	403	241	225	86	83
22	82	200	125	850	290	3,280	1,280	432	241	220	118	78
23	81	205	120	660	350	3,990	1,220	432	262	202	97	73
24	81	188	115	590	650	3,250	1,130	410	384	260	87	69
25	82	175	105	540	1,400	2,640	1,020	416	1,990	207	84	64
26	84	175	100	500	2,800	2,870	632	400	1,670	217	81	68
27	86	170	100	450	2,800	3,540	878	397	1,280	289	78	67
28	86	162	105	420	2,550	3,630	822	378	1,160	198	76	64
29	84	153	110	380	.....	3,720	740	359	960	181	76	60
30	84	120	120	350	.....	3,630	715	350	822	162	74	58
31	87	.....	140	320	.....	3,810	.....	329	.....	145	72	.....
1949-50												
1	61	86	78	74	56	500	2,270	690	878	1,370	293	133
2	61	82	81	70	56	*460	2,480	665	1,070	1,220	279	125
3	62	81	78	66	56	440	2,410	617	1,160	1,070	271	119
4	62	78	76	64	56	600	2,060	640	1,190	960	254	114
5	64	75	74	62	54	2,400	1,740	900	1,070	878	246	109
6	67	76	76	60	80	*10,000	1,460	2,180	988	822	238	107
7	g 96	76	72	58	150	16,000	1,280	2,640	905	768	241	107
8	285	78	67	56	300	13,000	1,100	1,860	795	690	249	105
9	181	81	64	*54	700	*11,000	1,040	3,200	715	617	273	104
10	123	82	70	54	1,700	8,500	1,070	4,270	1,420	574	235	102
11	97	87	g 90	54	2,200	6,000	1,130	4,080	2,870	536	220	102
12	86	90	100	54	1,600	3,500	1,020	4,270	2,380	502	207	102
13	81	93	110	200	900	2,300	905	4,180	1,550	484	200	100
14	76	100	100	700	600	2,000	822	2,870	1,280	466	198	104
15	74	97	90	400	400	1,900	740	2,200	g1,460	449	200	109
16	75	88	82	250	300	1,800	690	1,800	g2,540	432	198	110
17	74	87	80	150	260	1,700	617	1,520	g2,520	406	198	111
18	71	86	80	110	230	1,600	594	1,340	4,000	397	202	112
19	72	87	80	*100	210	1,600	554	1,190	g5,710	381	190	109
20	g111	88	86	92	200	1,500	536	1,100	4,760	378	184	100
21	133	81	94	84	180	*1,500	502	1,070	6,200	365	168	111
22	129	86	100	80	170	1,800	484	2,610	8,350	353	162	470
23	127	84	93	74	165	2,550	466	1,860	6,910	344	158	2,140
24	116	84	85	72	160	3,720	466	1,310	9,040	338	149	1,440
25	105	81	76	68	160	3,990	657	1,400	8,400	350	145	905
26	100	76	76	66	150	3,120	665	2,100	4,980	356	143	640
27	95	87	76	64	150	3,030	690	2,110	4,140	347	147	519
28	92	86	76	62	220	3,120	715	1,400	2,410	335	135	449
29	90	84	76	60	.....	2,870	740	1,190	1,930	323	137	400
30	90	82	76	58	.....	2,480	740	1,070	1,610	308	135	359
31	88	.....	76	58	.....	2,200	.....	960	.....	296	133	.....

* Winter discharge measurement made on this day.

g Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Nov. 30 to Dec. 3, Dec. 8-31, 1948, Jan. 1 to Mar. 8, Dec. 6-31, 1949, Jan. 1 to Mar. 22, 1950. Discharge computed from wire-weight gage readings Oct. 1-6, Oct. 17 to Nov. 1, 1948, Aug. 15 to Sept. 4, Sept. 10, 11, 18-20, Sept. 24 to Oct. 6, Oct. 14-19, Oct. 27 to Dec. 3, Dec. 5, 1949, Aug. 27 to Sept. 2, Sept. 5-15, 18-21, 1950.

Iowa River near Belle Plaine, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1942.....	32,882	2,260	688	1,061	0.438	0.51
November.....	25,202	1,400	500	840	.347	.39
December.....	16,310	800	400	526	.217	.25
Calendar year 1942.....	583,564	9,020	400	1,599	.661	8.97
January 1943.....	14,720	640	350	475	.196	.23
February.....	69,910	5,460	350	2,497	1.03	1.07
March.....	72,770	4,620	1,200	2,347	.970	1.12
April.....	47,990	2,870	1,020	1,600	.661	.74
May.....	70,570	5,250	1,330	2,276	.940	1.08
June.....	73,000	4,500	1,430	2,433	1.01	1.12
July.....	46,788	2,770	716	1,509	.624	.72
August.....	58,389	4,990	936	1,884	.779	.90
September.....	30,562	2,260	552	1,019	.421	.57
Water year 1942-43.....	559,093	5,460	350	1,532	.633	8.60
October 1943.....	13,644	552	379	440	.182	.21
November.....	15,629	665	429	521	.215	.24
December.....	11,368	720	210	367	.152	.17
Calendar year 1943.....	525,340	5,460	210	1,439	.595	8.07
January 1944.....	12,510	2,350	190	404	.167	.19
February.....	22,338	2,200	300	770	.318	.34
March.....	58,873	4,330	410	1,899	.785	.90
April.....	75,150	3,590	1,470	2,505	1.04	1.15
May.....	232,350	25,800	2,090	7,495	3.10	3.57
June.....	186,320	17,500	2,370	6,211	2.57	2.86
July.....	57,740	3,820	1,030	1,863	.770	.89
August.....	29,255	1,820	558	944	.390	.45
September.....	18,159	960	495	605	.250	.28
Water year 1943-44.....	733,336	25,800	190	2,004	.828	11.25
October 1944.....	13,591	511	371	438	.181	.21
November.....	11,339	413	325	378	.156	.17
December.....	7,550	360	190	244	.101	.12
Calendar year 1944.....	725,175	25,800	190	1,981	.819	11.13
January 1945.....	5,975	210	175	193	.080	.09
February.....	21,495	1,850	185	768	.317	.33
March.....	124,890	8,690	1,250	4,029	1.66	1.92
April.....	113,890	6,200	2,210	3,796	1.57	1.75
May.....	97,260	4,950	1,580	3,137	1.30	1.49
June.....	109,710	6,980	1,880	3,657	1.51	1.69
July.....	31,774	2,150	510	1,025	.424	.49
August.....	40,954	3,220	439	1,321	.546	.63
September.....	14,573	838	350	486	.201	.22
Water year 1944-45.....	593,001	8,690	175	1,625	.671	9.11
October 1945.....	12,159	610	317	392	.162	.19
November.....	9,875	454	210	329	.136	.15
December.....	8,897	680	160	287	.119	.14
Calendar year 1945.....	595,452	8,690	160	1,631	.674	9.09
January 1946.....	98,280	18,000	200	3,170	1.31	1.51
February.....	51,140	4,800	600	1,826	.755	.79
March.....	111,820	7,210	1,300	3,597	1.49	1.71
April.....	31,666	2,000	592	1,056	.436	.49
May.....	48,367	3,070	579	1,560	.645	.74
June.....	54,587	4,110	805	1,820	.752	.84
July.....	34,733	3,170	629	1,120	.463	.53
August.....	17,492	1,120	356	564	.233	.27
September.....	37,069	6,540	292	1,236	.511	.57
Water year 1945-46.....	515,785	18,000	160	1,413	.584	7.93

Iowa River near Belle Plaine, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946	32,948	2,860	540	1,063	0.439	0.51
November	40,785	2,400	925	1,360	.562	.63
December	19,363	930	240	625	.258	.30
Calendar year 1946	577,950	18,000	200	1,583	.654	8.89
January 1947	15,580	860	250	503	.208	.24
February	25,600	2,600	340	914	.378	.39
March	55,980	3,030	570	1,806	.746	.86
April	117,510	7,290	1,540	3,917	1.62	1.81
May	61,510	4,680	1,340	1,984	.820	.95
June	448,590	31,300	5,770	14,950	6.18	6.89
July	120,920	9,380	1,010	3,901	1.61	1.86
August	15,566	930	309	502	.207	.24
September	6,885	314	180	230	.095	.11
Water year 1946-47	961,231	31,300	180	2,634	1.09	14.79
October 1947	6,375	407	152	206	.085	.10
November	11,710	588	210	390	.161	.18
December	13,280	760	230	428	.177	.20
Calendar year 1947	899,500	31,300	152	2,464	1.02	13.83
January 1948	6,420	310	120	207	.086	.10
February	22,924	9,000	100	790	.326	.35
March	152,080	14,100	800	4,905	2.03	2.34
April	40,516	2,830	681	1,350	.558	.62
May	41,802	2,440	609	1,348	.557	.64
June	14,957	1,100	368	499	.206	.23
July	13,889	955	226	448	.185	.21
August	4,555	224	102	147	.061	.07
September	2,907	154	76	96.9	.040	.04
Water year 1947-48	331,409	14,100	76	905	.374	5.10
October 1948	2,722	125	69	87.8	.036	.04
November	4,331	233	90	144	.060	.07
December	3,758	170	80	121	.050	.06
Calendar year 1948	310,855	14,100	69	849	.351	4.77
January 1949	25,580	2,100	160	825	.341	.39
February	15,940	2,800	225	569	.235	.24
March	116,570	10,000	1,310	3,760	1.55	1.79
April	44,215	3,630	715	1,474	.609	.68
May	14,054	665	329	453	.187	.22
June	17,025	1,990	241	568	.235	.26
July	11,803	1,160	145	381	.157	.18
August	3,086	139	72	99.5	.041	.05
September	3,314	390	58	110	.045	.05
Water year 1948-49	262,398	10,000	58	719	.297	4.03
October 1949	3,044	285	61	98.2	.041	.05
November	2,529	100	75	84.3	.035	.04
December	2,538	110	64	81.9	.034	.04
Calendar year 1949	259,698	10,000	58	712	.294	3.99
January 1950	3,474	700	54	112	.046	.05
February	11,463	2,200	54	409	.169	.18
March	117,190	16,000	440	3,780	1.56	1.80
April	30,643	2,480	466	1,021	.422	.47
May	59,292	4,270	617	1,913	.790	.91
June	93,241	9,040	715	3,108	1.28	1.43
July	17,115	1,370	296	552	.228	.26
August	6,188	293	133	200	.083	.10
September	9,617	2,140	100	321	.133	.15
Water year 1949-50	356,334	16,000	54	976	.403	5.48

Iowa River at Iowa City, Iowa

LOCATION.—Lat. 41°39'30", long. 91°32'20", in SE¼ sec. 9, T. 79 N., R. 6 W., in Iowa City on right bank, 25 feet downstream from University of Iowa hydraulics laboratory, 175 feet downstream from dam of University, 1.5 miles upstream from Ralston Creek, 3.3 miles downstream from Clear Creek, and at mile 74.2.

DRAINAGE AREA.—3,230 square miles.

RECORDS AVAILABLE.—June 1903 to July 1906, October 1913 to September 1950. June 1903 to December 1932, in report of Iowa State Planning Board "Stream Flow Records of Iowa, 1873-1932."

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. Oct. 30, 1913, to Nov. 18, 1921, chain gage at Benton Street Bridge, 2,600 feet downstream at datum 0.2 foot higher. Nov. 19, 1921, to Nov. 27, 1921, water-stage recorder at datum 0.9 foot higher. Nov. 28, 1921, to Sept. 30, 1922, water-stage recorder at datum 1.0 foot higher.

AVERAGE DISCHARGE.—47 years, 1,534 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	June 2	10,600	11.08	Dec. 3	384
1943-44...	May 24	31,100	18.02	Jan. 18	234
1944-45...	Mar. 26	9,560	10.30	Jan. 16	223
1945-46...	Jan. 9	14,800	13.33	Dec. 11	200
1946-47...	June 17	33,800	18.59	Sept. 29	218
1947-48...	Mar. 19	18,000	14.50	Sept. 19	137
1948-49...	Mar. 10	14,100	13.01	Sept. 20	82
1949-50...	Mar. 11	13,700	12.77	Dec. 24	85

1903-50: Maximum discharge, 36,200 second-feet June 7, 1918 (gage height, 19.45 feet, site and datum then in use); minimum daily, about 10 second-feet Dec. 26, 1916; practically no flow Sept. 3, 1925, caused by regulation.

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 poor. Low flow regulated by power plants above station.

COOPERATION.—Station operated through facilities of Iowa Institute of Hydraulic Research which furnishes services of research students.

Iowa River at Iowa City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1	1,310	1,540	846	1,150	590	5,520	3,120	4,560	3,070	1,830	2,010	1,320
2	1,280	1,240	641	1,100	480	4,730	3,060	4,640	8,730	1,870	1,940	1,260
3	1,240	1,140	384	1,050	700	3,470	2,850	3,760	5,980	1,870	3,170	1,190
4	1,200	1,050	413	1,000	*1,700	2,810	2,580	2,860	4,920	1,870	4,750	2,430
5	1,170	1,150	526	950	2,750	2,730	2,300	2,490	5,150	1,900	5,080	2,310
6	1,250	1,070	689	900	3,500	2,280	2,290	2,380	5,930	1,790	5,590	2,590
7	1,900	1,100	749	850	3,350	1,920	2,410	2,370	5,500	1,630	6,900	2,190
8	2,100	1,190	768	800	3,250	1,700	2,570	2,450	4,250	1,500	6,460	1,890
9	1,850	1,600	794	780	3,500	1,700	2,720	2,740	3,500	1,340	4,750	1,590
10	1,640	2,120	800	760	4,050	1,640	2,500	2,770	3,160	1,260	2,840	1,360
11	1,520	2,360	794	750	*4,050	1,600	2,410	2,510	3,320	1,240	2,610	1,250
12	1,420	1,930	755	750	3,700	1,670	2,440	2,320	4,500	1,210	2,410	1,810
13	1,320	1,670	737	750	3,300	1,830	2,560	2,140	4,440	1,150	3,810	3,040
14	1,270	1,520	707	750	3,000	2,070	2,530	2,000	4,250	1,670	3,840	3,490
15	1,220	1,410	701	750	2,600	3,350	2,430	2,160	3,700	2,000	3,100	3,000
16	1,160	1,380	683	720	2,300	6,050	2,330	4,450	3,900	1,870	3,100	2,300
17	1,110	1,600	*671	650	2,050	4,900	2,160	4,830	3,700	1,870	3,290	1,790
18	1,050	1,440	653	600	1,800	4,840	1,990	5,540	3,910	1,950	2,810	1,540
19	1,040	1,320	641	550	*1,800	5,030	1,870	6,080	4,140	2,030	2,360	1,390
20	1,050	1,250	641	550	3,150	5,170	1,750	6,530	4,660	2,190	2,030	1,320
21	1,030	1,190	641	580	3,600	4,460	1,690	6,320	5,150	2,700	1,820	1,240
22	1,010	1,140	635	*500	3,860	3,370	1,630	5,820	3,620	2,240	1,650	1,180
23	955	1,120	602	590	3,740	3,720	1,600	5,310	2,730	2,290	1,610	1,120
24	950	1,110	613	560	3,590	4,450	1,480	4,200	2,560	2,770	1,540	1,050
25	930	1,100	586	560	4,020	4,320	1,490	3,420	2,920	3,590	1,460	1,020
26	898	1,060	833	630	5,110	4,440	1,450	3,050	2,700	3,040	1,390	971
27	872	992	2,500	560	*5,480	4,510	3,890	2,840	2,290	2,400	1,510	924
28	866	964	*1,950	*540	5,480	4,320	3,590	2,620	2,110	1,990	1,400	892
29	846	872	1,700	510	.....	3,650	3,490	2,440	1,990	2,270	1,350	859
30	964	768	1,450	490	.....	3,300	4,790	2,360	1,930	2,970	1,420	807
31	1,380	.....	1,300	460	.....	3,130	.....	2,480	.....	2,290	1,390	.....
1943-44												
1	807	788	641	391	1,690	1,790	2,450	3,920	10,700	3,900	1,480	1,380
2	774	866	653	380	1,420	1,600	2,420	3,780	9,740	3,610	1,360	1,330
3	749	713	613	402	1,320	1,460	2,350	3,780	9,050	3,320	1,300	1,190
4	743	707	618	356	1,180	1,600	2,260	3,840	8,070	3,320	1,310	1,090
5	707	683	565	346	1,040	1,710	2,160	3,960	7,230	3,630	1,570	984
6	689	701	731	352	957	1,670	2,090	4,270	6,500	3,850	2,650	926
7	707	1,360	985	380	906	1,340	2,100	4,460	5,640	4,060	2,100	876
8	695	1,290	1,030	*335	846	781	2,130	4,620	4,250	4,000	2,030	774
9	683	1,150	1,030	341	768	719	2,150	4,870	4,270	3,270	1,680	762
10	641	992	1,030	317	635	781	2,260	5,150	4,540	2,860	1,450	714
11	695	866	892	337	380	1,360	2,440	5,580	3,760	2,660	1,310	687
12	560	892	930	*297	336	2,630	2,710	5,990	5,190	2,700	1,230	774
13	665	846	431	245	320	2,920	3,100	5,820	5,380	2,750	1,120	750
14	635	852	*374	269	481	*4,040	3,590	5,300	6,010	2,790	1,010	834
15	618	866	335	332	485	*4,640	4,330	4,260	9,810	2,890	965	698
16	596	872	360	287	530	4,450	4,480	3,410	14,200	2,380	906	704
17	591	840	352	263	560	4,440	4,520	3,060	15,800	2,130	1,090	687
18	580	788	490	234	560	4,510	4,640	2,780	18,700	1,970	965	670
19	641	794	550	282	516	4,610	4,520	3,090	22,200	2,290	1,000	600
20	586	725	565	298	508	4,720	4,450	10,500	15,400	1,960	1,030	687
21	624	768	*555	296	473	*4,340	4,260	11,800	10,700	1,650	882	858
22	635	768	521	284	950	3,280	4,890	20,700	9,950	1,510	792	792
23	613	737	485	284	*2,020	3,280	6,160	27,700	9,900	1,490	804	670
24	635	707	449	311	2,080	3,330	5,960	30,100	8,330	1,540	732	670
25	570	683	417	329	*3,220	3,340	5,360	25,400	8,000	1,440	704	638
26	570	653	405	404	4,690	3,590	5,000	20,800	8,030	1,380	704	648
27	575	653	413	1,670	3,130	3,410	4,760	19,100	6,700	1,330	756	632
28	516	641	384	1,660	2,320	2,990	4,540	18,200	5,710	1,500	698	654
29	535	641	402	1,510	1,850	2,780	4,430	14,500	5,090	2,380	1,040	605
30	555	591	388	1,630	.....	2,660	4,200	12,800	4,570	2,060	1,490	610
31	695	.....	352	2,270	.....	2,560	.....	12,000	.....	1,680	1,560	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 27-31, 1942, Jan. 1 to Feb. 21, 1943, Feb. 22-24, 1944.

Iowa River at Iowa City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	620	439	261	332	276	2,110	5,260	3,810	5,270	2,660	685	967
2.....	674	473	245	294	276	2,110	4,130	3,840	5,070	2,350	707	885
3.....	696	564	295	237	276	2,300	3,220	3,610	4,920	2,340	680	819
4.....	768	550	354	305	273	2,730	3,640	3,260	4,800	2,460	660	784
5.....	862	447	452	235	243	2,920	4,350	2,980	4,490	2,250	670	746
6.....	702	517	435	265	246	3,150	4,210	2,740	4,440	2,060	712	702
7.....	669	545	490	257	257	*3,450	4,000	2,550	4,560	1,950	675	654
8.....	642	508	435	266	224	3,800	4,020	2,480	4,790	1,840	654	649
9.....	579	536	408	226	251	3,670	3,820	2,360	5,190	1,780	565	552
10.....	584	473	452	251	254	3,550	3,400	2,150	8,360	1,630	587	639
11.....	589	494	264	251	277	3,450	3,310	2,200	8,240	1,500	583	550
12.....	579	504	320	243	310	3,360	3,360	2,120	7,460	1,620	583	543
13.....	540	452	304	240	390	3,450	3,450	2,070	8,210	1,860	1,120	631
14.....	550	464	334	241	1,300	3,580	3,960	3,060	7,750	1,310	825	525
15.....	536	481	331	*242	*2,150	3,750	4,200	4,740	6,720	1,230	712	610
16.....	504	452	361	223	2,200	4,000	4,890	4,870	5,430	1,160	1,010	539
17.....	508	473	351	290	2,160	4,180	5,510	5,750	4,400	1,120	2,090	432
18.....	522	499	*348	229	2,250	4,390	5,420	5,950	4,220	1,060	2,450	479
19.....	490	464	334	250	2,310	4,570	5,970	5,870	4,110	1,060	2,280	436
20.....	486	439	344	244	1,920	4,800	6,510	6,000	3,970	1,010	2,350	443
21.....	490	468	338	257	1,600	5,420	6,510	6,140	3,460	1,030	2,550	408
22.....	481	435	307	256	1,610	7,440	6,660	5,570	3,120	1,000	2,690	457
23.....	473	435	313	259	1,490	*8,470	6,470	4,350	3,200	1,200	2,880	429
24.....	464	435	301	253	1,370	7,760	6,610	3,820	2,950	843	3,110	543
25.....	468	427	298	265	1,710	8,230	6,240	3,900	2,790	873	2,890	436
26.....	460	452	295	277	*2,820	9,270	5,600	4,190	2,660	813	2,140	468
27.....	456	504	257	274	2,710	7,280	4,540	4,500	2,920	756	1,730	571
28.....	416	456	302	302	2,380	5,710	3,910	4,880	2,920	751	1,460	1,090
29.....	443	494	289	247	.....	5,160	3,780	4,980	2,640	734	1,260	941
30.....	447	456	*292	301	.....	5,070	3,780	5,020	3,910	724	1,120	1,050
31.....	452	.....	273	245	.....	5,200	.....	5,070	.....	707	1,050	.....
1945-46												
1.....	1,220	374	547	295	930	2,050	3,260	867	2,140	3,490	1,420	502
2.....	1,110	399	819	327	*940	1,980	2,930	922	2,270	3,920	1,940	482
3.....	922	374	1,460	316	900	1,840	2,690	1,070	2,260	3,380	1,310	479
4.....	837	377	1,190	410	900	1,860	2,460	2,470	2,130	2,540	1,130	399
5.....	778	381	1,000	5,000	1,450	1,940	2,280	4,040	1,930	2,080	1,000	410
6.....	702	374	861	*8,000	2,300	3,160	2,130	4,260	1,720	1,870	948	410
7.....	654	377	825	4,800	3,000	*4,310	2,000	4,000	1,540	1,710	740	471
8.....	610	392	837	10,600	3,350	4,520	1,900	3,250	1,420	1,600	807	1,000
9.....	569	596	707	*14,500	3,500	4,530	1,840	2,820	1,310	1,560	790	1,170
10.....	531	1,350	380	12,800	3,800	4,330	1,730	2,510	1,210	1,460	734	2,010
11.....	543	746	*200	11,900	*3,900	4,320	1,660	2,360	1,170	1,340	690	2,210
12.....	494	629	300	11,900	4,300	4,590	1,590	2,180	1,630	1,640	639	2,080
13.....	502	629	400	8,800	4,500	4,570	1,630	2,020	1,710	1,520	547	2,150
14.....	463	649	425	6,300	4,700	4,750	1,620	1,880	1,690	1,280	625	1,960
15.....	463	675	460	4,700	3,900	5,080	1,560	1,780	1,380	1,150	724	1,610
16.....	463	629	440	2,750	2,250	5,470	1,490	1,700	1,350	1,080	592	1,420
17.....	459	556	410	*2,300	1,750	6,410	1,420	1,660	1,900	1,100	1,530	1,280
18.....	459	543	359	2,050	1,650	6,830	1,290	1,660	3,190	1,060	1,110	1,140
19.....	433	506	399	1,800	1,550	7,990	1,280	1,670	3,750	980	1,120	1,020
20.....	425	506	377	1,750	1,470	8,870	1,240	1,700	4,830	934	903	1,030
21.....	425	518	338	1,250	*1,460	7,920	1,200	1,770	4,560	903	729	954
22.....	406	359	316	1,000	1,480	7,030	1,170	1,680	4,590	790	639	1,060
23.....	392	*284	239	1,050	1,520	6,310	1,160	1,650	4,530	950	601	2,200
24.....	418	271	370	1,020	1,560	5,560	1,120	1,790	4,210	909	556	3,720
25.....	384	338	265	1,060	1,670	4,570	1,120	2,390	3,920	873	535	4,070
26.....	374	392	285	960	1,820	4,780	1,060	2,310	3,330	861	634	3,780
27.....	395	535	236	880	1,810	5,410	1,000	2,330	3,140	825	634	2,230
28.....	377	510	*320	870	1,810	5,510	941	2,120	2,740	795	670	1,920
29.....	392	522	316	850	.....	5,690	928	1,920	2,500	807	596	1,760
30.....	392	502	288	860	.....	4,590	885	1,900	3,000	903	543	1,550
31.....	384	.....	281	920	.....	3,660	.....	2,000	.....	1,580	518	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Feb. 13-15, Mar. 6-8, 10-12, Dec. 10-16, 25, 26, 1945, Jan. 5-7, Jan. 13 to Feb. 23, 1946.

Iowa River at Iowa City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1	1,320	2,040	1,270	340	535	1,130	2,460	4,270	5,480	13,600	1,240	404
2	1,200	2,210	1,200	400	482	1,050	2,370	4,100	6,610	15,200	1,200	421
3	1,120	3,280	1,140	460	482	1,000	2,200	3,870	7,070	12,700	1,150	424
4	1,040	3,140	1,080	480	527	1,010	2,670	3,490	12,900	10,500	1,090	398
5	967	2,660	*1,120	480	*539	870	6,000	3,140	17,700	9,850	1,060	387
6	903	2,370	1,080	490	580	891	7,580	2,850	17,000	12,000	1,000	404
7	861	2,230	1,140	500	600	954	6,420	2,700	24,200	10,200	946	376
8	825	2,130	1,190	510	600	1,140	6,010	2,520	27,400	8,650	898	342
9	795	2,040	1,190	530	570	1,360	5,860	2,370	23,000	7,880	830	340
10	778	2,100	1,170	*530	600	1,620	5,750	2,270	17,700	7,250	781	331
11	801	2,130	1,130	530	530	1,760	6,220	2,140	13,200	6,600	742	354
12	807	2,140	*1,160	530	550	1,850	5,960	2,020	10,800	6,680	694	359
13	825	2,000	993	580	592	2,210	6,340	1,940	11,100	7,630	673	340
14	915	1,940	1,010	1,310	980	2,970	7,170	1,910	10,900	6,580	657	323
15	922	1,880	960	1,350	1,680	3,180	7,580	1,900	15,700	5,370	594	334
16	960	1,880	948	1,220	2,700	3,300	7,430	1,900	29,500	4,910	559	300
17	986	1,920	*2,200	1,030	2,940	3,250	7,360	1,960	32,600	4,330	555	248
18	2,350	1,950	320	960	2,900	3,240	7,220	2,170	27,900	3,640	527	309
19	2,270	1,840	*380	897	3,120	3,500	7,250	2,400	20,700	3,170	486	289
20	2,050	1,780	460	873	*2,900	3,430	9,330	2,360	15,400	3,010	483	282
21	1,600	1,720	718	784	2,520	3,480	8,720	2,340	13,800	2,700	480	309
22	1,410	1,650	807	750	2,220	3,630	7,710	2,260	14,200	2,340	465	255
23	1,310	1,580	954	760	2,160	3,020	7,760	2,190	16,300	2,160	459	247
24	1,460	1,540	825	760	2,210	3,630	7,250	2,090	17,200	2,050	453	254
25	2,840	1,480	773	702	1,780	4,050	6,350	2,080	15,800	1,930	444	276
26	3,800	1,490	790	795	1,460	3,900	5,180	2,040	16,500	1,810	410	245
27	3,090	1,410	795	873	1,300	3,550	4,450	1,930	15,900	1,730	401	250
28	2,710	1,370	915	915	1,210	3,160	4,060	2,200	13,600	1,620	421	298
29	2,440	1,320	762	922	.....	2,860	3,810	4,740	12,100	1,540	441	218
30	2,210	1,310	506	680	.....	2,650	4,890	4,710	12,700	1,410	407	221
31	2,100	.....	340	587	.....	2,520	.....	4,870	.....	1,340	401	.....
7-48												
1	231	522	250	380	171	6,400	4,750	1,470	684	938	670	201
2	211	568	390	260	169	8,600	5,070	1,690	746	1,080	547	326
3	225	652	531	250	167	7,500	3,960	2,020	648	875	469	312
4	250	674	670	320	167	7,400	2,800	2,520	670	692	421	183
5	227	697	860	350	165	8,500	2,400	2,320	688	815	398	160
6	357	652	775	370	154	7,500	2,180	2,320	738	652	375	183
7	277	594	890	394	160	4,040	2,020	3,120	850	652	357	227
8	290	577	948	433	151	3,130	1,900	3,490	738	621	329	214
9	280	505	461	437	150	2,500	1,800	3,280	692	543	316	206
10	256	543	465	417	155	2,100	1,770	3,070	674	518	329	196
11	236	526	469	402	149	1,700	1,850	2,760	634	461	309	188
12	241	514	518	417	151	1,350	1,700	2,540	661	461	283	179
13	241	489	539	394	155	1,150	1,550	2,340	666	581	283	167
14	222	*481	670	340	145	1,300	1,470	2,170	666	830	274	162
15	216	457	805	325	150	2,850	1,570	2,120	670	607	265	158
16	233	465	630	310	150	6,260	1,460	2,010	670	473	247	145
17	241	477	539	220	670	8,730	1,210	1,870	666	453	225	143
18	211	489	625	225	1,990	10,600	1,140	1,720	670	738	241	141
19	203	489	599	230	*2,190	15,200	1,180	1,580	674	855	233	137
20	206	505	599	*256	1,020	14,600	1,070	1,470	688	679	219	165
21	256	522	573	256	600	14,800	998	1,410	692	2,580	211	256
22	209	505	568	253	420	16,500	965	1,390	674	2,170	211	236
23	201	501	564	236	440	*13,300	998	1,290	625	1,450	209	216
24	196	518	518	203	610	12,500	1,030	1,180	510	976	188	209
25	176	518	510	200	810	10,200	1,060	1,080	473	1,090	183	196
26	271	485	510	190	620	8,280	1,680	1,010	489	1,610	181	188
27	191	539	505	180	2,070	6,990	1,810	954	733	1,180	165	171
28	253	409	497	180	6,640	5,520	1,700	900	g1,240	905	156	160
29	f329	330	465	183	3,980	4,570	1,570	870	f885	746	143	151
30	g372	280	481	*179	.....	4,230	1,490	840	742	1,456	165	139
31	f522	.....	461	171	.....	4,440	.....	810	.....	921	201	.....

* Winter discharge measurement made on this day.

f Fragmentary gage-height record; discharge computed from partly estimated gage heights.

g Computed from graph based on tape gage readings.

Note—Stage-discharge relation affected by ice Dec. 17-20, 31, 1946, Jan. 1-13, 22-24, Feb. 6-12, Feb. 17 to Mar. 5, Nov. 29 to Dec. 1, 1947, Jan. 1-6, 14-18, 25-28, Feb. 13 to Mar. 5, Mar. 9-15, 1948.

Iowa River at Iowa City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	123	133	225	256	550	3,800	5,500	1,050	715	1,080	316	141
2.....	118	184	198	413	540	3,900	5,390	992	738	992	296	101
3.....	119	188	186	417	520	4,300	4,980	965	992	938	262	h137
4.....	123	158	216	1,110	540	5,400	4,380	910	1,210	1,140	247	h230
5.....	119	156	233	*2,370	520	6,200	3,580	860	1,020	965	219	h193
6.....	127	162	259	2,100	520	5,800	3,100	810	910	910	201	h174
7.....	479	171	244	1,810	510	7,000	2,740	785	738	910	219	h253
8.....	552	176	203	2,150	510	12,200	2,470	760	648	885	203	198
9.....	275	181	158	2,150	500	13,200	2,230	760	603	860	186	206
10.....	203	170	131	2,070	250	*13,700	1,990	738	560	760	219	174
11.....	234	147	116	1,590	518	13,300	1,830	715	531	670	368	216
12.....	199	142	154	1,210	526	11,400	1,710	692	518	580	409	1,040
13.....	184	131	188	*1,020	497	9,630	1,590	670	344	469	259	882
14.....	193	167	219	965	489	7,960	1,430	670	692	514	183	581
15.....	188	171	423	1,440	233	5,940	1,550	625	539	473	203	557
16.....	179	253	648	2,500	413	3,980	1,550	625	603	433	186	506
17.....	171	296	421	2,070	277	3,100	1,670	625	539	409	191	261
18.....	209	322	176	2,150	340	2,560	1,750	603	603	409	188	287
19.....	201	287	216	3,380	343	2,230	1,750	648	481	406	198	278
20.....	105	518	268	2,800	560	1,990	1,750	648	514	469	193	82
21.....	135	514	456	2,400	648	1,910	1,710	648	489	535	186	181
22.....	137	522	390	1,600	625	2,390	1,750	760	477	473	178	165
23.....	123	368	127	1,000	740	3,680	1,710	760	389	409	147	152
24.....	123	375	112	900	4,000	4,680	1,630	715	1,720	482	175	139
25.....	123	343	290	800	*4,800	4,780	1,510	670	2,650	433	170	131
26.....	123	375	271	750	4,000	4,180	1,430	648	1,790	421	169	134
27.....	135	268	129	700	3,600	4,480	1,320	625	2,150	810	141	126
28.....	149	290	116	650	3,700	4,580	1,210	603	1,870	596	141	122
29.....	141	265	474	610	.....	4,580	1,140	581	1,470	603	147	105
30.....	133	*253	522	560	.....	4,580	1,110	560	1,240	429	160	105
31.....	129	.....	143	*540	.....	5,390	.....	526	.....	326	149	.....
1949-50												
1.....	94	168	165	610	131	1,620	2,660	1,220	1,380	3,290	848	287
2.....	101	165	156	313	127	1,940	2,500	1,140	1,260	7,770	537	191
3.....	114	148	158	280	116	1,700	2,660	1,060	1,220	2,500	289	132
4.....	114	164	151	162	116	1,340	2,820	1,620	1,300	2,020	484	156
5.....	105	142	138	138	115	4,980	2,660	1,260	1,380	1,740	408	262
6.....	123	151	144	153	236	6,880	2,340	1,100	1,340	1,540	366	112
7.....	121	157	144	149	1,020	5,720	2,020	1,300	1,220	1,250	366	280
8.....	123	154	96	129	678	8,980	1,780	2,420	1,140	1,220	355	105
9.....	125	158	94	121	906	11,400	1,660	2,980	1,060	1,140	374	193
10.....	177	161	94	127	1,460	12,800	1,780	2,980	990	1,060	532	100
11.....	272	153	140	123	1,940	13,300	1,860	4,030	920	955	390	232
12.....	231	177	181	117	2,340	12,800	1,700	4,210	2,020	1,110	413	132
13.....	199	203	92	1,020	2,580	11,400	1,540	4,210	3,140	1,290	378	147
14.....	182	191	101	1,140	2,260	9,760	1,420	4,210	2,340	857	246	139
15.....	155	211	117	381	1,260	7,240	1,300	3,850	2,660	649	408	167
16.....	165	213	134	387	708	3,940	1,180	2,980	2,020	690	247	166
17.....	155	198	149	385	524	3,310	1,100	2,420	2,100	829	295	153
18.....	150	172	169	344	470	3,140	1,025	2,100	4,120	666	246	115
19.....	158	174	174	275	405	2,820	955	1,860	4,780	969	344	227
20.....	189	167	198	248	408	2,660	892	1,620	4,980	787	218	158
21.....	1,340	156	181	235	389	2,420	822	1,740	5,610	640	289	218
22.....	802	144	105	203	355	2,260	720	1,700	6,520	610	436	143
23.....	575	162	90	196	333	2,420	864	2,020	6,280	565	146	158
24.....	169	162	85	192	275	2,900	1,100	2,660	6,050	466	344	223
25.....	274	156	125	656	278	3,400	1,820	1,980	6,280	436	197	1,420
26.....	231	156	129	634	258	4,390	1,260	1,700	7,720	470	249	1,14
27.....	210	158	126	201	266	4,300	1,180	1,780	10,300	497	159	85
28.....	162	158	113	186	537	3,580	1,100	2,420	10,200	520	386	68 1/2
29.....	177	156	103	282	.....	3,490	1,100	2,020	8,330	510	281	60 1/2
30.....	181	158	111	193	.....	3,310	1,140	1,660	4,640	668	234	52 1/2
31.....	165	.....	630	149	.....	3,060	.....	1,500	.....	2,370	172	.....

* Winter discharge measurement made on this day.

h Computed from once daily tape gage readings.

Note—Stage-discharge relation affected by ice Jan. 5-7, 16, Jan. 20 to Feb. 9, Feb. 23 to Mar. 7, 1949.

Iowa River at Iowa City, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1942.....	37,831	2,100	846	1,220	0.378	0.44
November.....	39,296	2,360	768	1,310	.406	.45
December.....	26,403	2,500	384	852	.264	.30
Calendar year 1942.....	702,201	7,590	384	1,924	.596	8.07
January 1943.....	22,140	1,150	460	714	.221	.25
February.....	86,500	5,480	480	3,089	.956	1.00
March.....	108,680	6,050	1,600	3,506	1.09	1.25
April.....	73,970	4,790	1,450	2,466	.763	.85
May.....	110,450	6,530	2,000	3,563	1.10	1.27
June.....	118,710	8,730	1,930	3,957	1.23	1.37
July.....	62,630	3,590	1,150	2,017	.624	.72
August.....	89,390	6,900	1,350	2,884	.893	1.03
September.....	49,123	3,490	807	1,637	.507	.57
Water year 1942-43.....	825,023	8,730	384	2,260	.700	9.50
October 1943.....	19,885	807	516	641	.198	.23
November.....	24,433	1,360	591	814	.252	.28
December.....	17,946	1,030	335	579	.179	.21
Calendar year 1943.....	783,757	8,730	335	2,147	.665	9.03
January 1944.....	17,032	2,270	234	549	.170	.20
February.....	36,171	4,690	320	1,247	.386	.42
March.....	87,331	4,720	719	2,817	.872	1.01
April.....	110,710	6,160	2,090	3,690	1.14	1.27
May.....	305,540	30,100	2,780	9,856	3.05	3.52
June.....	264,450	22,260	4,270	8,815	2.73	3.04
July.....	78,300	4,060	1,330	2,526	.782	.90
August.....	37,718	2,650	698	1,217	.377	.43
September.....	23,894	1,380	600	796	.246	.28
Water year 1943-44.....	1,023,410	30,100	234	2,796	.866	11.79
October 1944.....	17,090	862	416	551	.171	.20
November.....	14,336	564	427	478	.148	.17
December.....	10,383	490	245	335	.104	.12
Calendar year 1944.....	1,002,955	30,100	234	2,740	.848	11.56
January 1945.....	8,057	332	223	260	.080	.09
February.....	33,533	2,820	224	1,198	.371	.39
March.....	144,320	9,270	2,110	4,656	1.44	1.66
April.....	140,730	6,670	3,220	4,691	1.45	1.62
May.....	124,860	6,140	2,070	4,028	1.25	1.44
June.....	142,970	8,360	2,640	4,766	1.48	1.65
July.....	43,422	2,660	707	1,401	.434	.50
August.....	43,478	3,110	565	1,403	.434	.50
September.....	18,878	1,090	408	629	.195	.22
Water year 1944-45.....	742,067	9,270	223	2,033	.629	8.56
October 1945.....	16,976	1,220	374	548	.170	.20
November.....	15,293	1,350	271	510	.158	.18
December.....	15,650	1,460	200	505	.156	.18
Calendar year 1945.....	748,177	9,270	200	2,050	.635	8.63
January 1946.....	122,018	14,500	295	3,936	1.22	1.40
February.....	64,170	4,700	900	2,292	.710	.74
March.....	150,430	8,870	1,840	4,853	1.50	1.73
April.....	48,584	3,260	885	1,619	.501	.56
May.....	66,679	4,260	867	2,151	.666	.77
June.....	77,050	4,830	1,170	2,568	.795	.89
July.....	45,900	3,920	790	1,481	.459	.53
August.....	25,954	1,940	518	837	.259	.30
September.....	46,477	4,070	399	1,549	.480	.54
Water year 1945-46.....	695,181	14,500	200	1,905	.590	8.02

Iowa River at Iowa City, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1946.....	47,665	3,800	778	1,538	0.476	0.55
November.....	58,530	3,280	1,310	1,951	.904	.67
December.....	27,646	1,270	320	892	.276	.32
Calendar year 1946.....	781,103	14,500	200	2,140	.663	9.00
January 1947.....	22,588	1,350	340	729	.226	.26
February.....	39,267	3,120	482	1,402	.434	.45
March.....	76,165	4,050	870	2,457	.761	.88
April.....	179,360	9,330	2,200	5,979	1.85	2.07
May.....	83,730	4,870	1,900	2,701	.836	.96
June.....	494,960	32,600	5,480	16,500	5.11	5.70
July.....	180,380	15,200	1,340	5,819	1.80	2.08
August.....	20,947	1,240	401	676	.209	.24
September.....	9,538	424	218	318	.098	.11
Water year 1946-47.....	1,240,776	32,600	218	3,399	1.05	14.29
October 1947.....	7,770	522	176	251	.078	.09
November.....	15,483	697	280	516	.160	.18
December.....	17,885	948	250	577	.179	.21
Calendar year 1947.....	1,148,073	32,600	176	3,145	.974	13.23
January 1948.....	8,961	437	171	289	.089	.10
February.....	24,569	6,640	145	847	.262	.28
March.....	222,740	16,500	1,150	7,185	2.22	2.56
April.....	56,151	5,070	965	1,872	.580	.65
May.....	57,614	3,490	810	1,859	.576	.66
June.....	20,856	1,240	473	695	.215	.24
July.....	28,602	2,580	453	923	.286	.33
August.....	8,803	670	143	284	.088	.10
September.....	5,715	326	137	190	.059	.07
Water year 1947-48.....	475,149	16,500	137	1,298	.402	5.47
October 1948.....	5,553	552	106	179	.055	.06
November.....	7,686	522	131	256	.079	.09
December.....	7,912	648	112	255	.079	.09
Calendar year 1948.....	455,162	16,500	106	1,244	.385	5.23
January 1949.....	44,481	3,380	256	1,435	.444	.51
February.....	31,269	4,800	233	1,117	.346	.36
March.....	182,820	13,700	1,910	5,897	1.83	2.10
April.....	67,460	5,500	1,110	2,249	.696	.78
May.....	22,247	1,050	526	718	.222	.26
June.....	27,743	2,650	389	925	.286	.32
July.....	19,769	1,140	326	638	.198	.23
August.....	6,509	409	141	210	.065	.07
September.....	7,857	1,040	82	262	.081	.09
Water year 1948-49.....	431,306	13,700	82	1,182	.366	4.96
October 1949.....	7,402	1,340	94	239	.074	.09
November.....	4,993	213	142	166	.051	.06
December.....	4,593	630	85	148	.046	.05
Calendar year 1949.....	427,143	13,700	82	1,170	.362	4.92
January 1950.....	9,729	1,140	117	314	.097	.11
February.....	20,491	2,580	115	732	.227	.24
March.....	163,260	13,300	1,340	5,266	1.63	1.88
April.....	46,958	2,820	720	1,565	.485	.54
May.....	69,750	4,210	1,060	2,250	.697	.80
June.....	113,300	10,300	920	3,777	1.17	1.30
July.....	40,084	7,770	436	1,293	.400	.46
August.....	10,637	537	146	343	.106	.12
September.....	9,426	1,420	100	314	.097	.11
Water year 1949-50.....	500,623	13,300	85	1,372	.425	5.76

Iowa River at Wapello, Iowa

LOCATION.—Lat. 41° 11', long. 91° 11', in 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.

RECORDS AVAILABLE.—February 1915 to September 1950.

GAGE.—Water-stage recorder. Datum of gage is 548.98 feet above mean sea level, adjustment of 1912. Feb. 26, 1915, to Apr. 16, 1934, chain gage at same site and datum.

AVERAGE DISCHARGE.—35 years, 6,135 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Aug. 4	24,400	8.68	Dec. 4	2,000
1943-44...	May 25	54,100	14.72	Dec. 15	960
1944-45...	Mar. 22	56,400	14.82	Feb. 8	1,220
1945-46...	Jan. 8	51,400	13.98	Dec. 13	1,400
1946-47...	June 18	94,000	(¹)	Sept. 27-29	1,960
1947-48...	Mar. 21	60,000	14.68	Sept. 30	1,020
1948-49...	Mar. 11	44,300	12.71	Dec. 11	760
1949-50...	Mar. 14	44,800	12.79	Dec. 15	605

(1) Maximum gage-height 16.85 feet June 17.

1915-50: Maximum discharge, 94,000 second-feet 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 discharge, about 400 second-feet Dec. 15-17, 1916.

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

COOPERATION.—Services of observer furnished by U. S. Weather Bureau. Several discharge measurements furnished by Corps of Engineers.

Iowa River at Wapello, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	5,940	4,890	3,500	8,800	2,500	h21,740	17,300	15,900	7,690	6,600	5,920	6,320
2.....	5,770	5,550	2,750	7,560	2,500	h21,740	19,100	15,200	8,830	6,600	5,300	6,140
3.....	5,510	5,180	2,100	6,740	3,000	h13,420	20,400	12,300	15,200	6,800	17,500	5,550
4.....	5,340	4,790	2,000	6,050	4,000	h12,300	18,000	10,200	16,600	6,900	19,100	5,240
5.....	5,180	4,610	2,200	5,260	5,500	h10,810	14,700	8,590	14,600	6,580	13,000	6,210
6.....	5,110	4,530	2,400	4,950	9,500	h10,700	13,200	7,780	14,000	6,470	15,600	7,460
7.....	5,770	4,550	2,600	4,790	10,500	h 8,140	12,400	7,440	15,300	5,920	17,800	7,900
8.....	7,670	4,790	2,900	4,410	11,500	7,000	12,100	7,370	13,200	5,450	15,400	8,000
9.....	9,190	5,130	3,200	4,100	10,000	6,500	13,100	7,400	10,700	5,340	12,000	6,300
10.....	9,160	5,860	3,400	4,060	10,000	6,000	13,100	7,670	12,400	5,530	8,980	5,510
11.....	7,950	8,070	3,500	3,800	10,500	7,000	11,200	7,850	9,080	6,080	6,690	5,240
12.....	7,110	8,520	3,500	3,600	10,000	7,000	10,500	7,510	10,200	6,270	6,190	5,080
13.....	6,600	7,460	3,400	3,300	9,500	7,500	10,100	7,000	9,000	5,810	6,080	6,590
14.....	6,190	6,520	3,300	3,000	8,000	7,000	9,890	6,520	11,800	5,490	9,920	9,000
15.....	5,920	5,920	3,200	3,000	7,000	7,500	9,540	6,910	10,400	5,920	12,200	8,950
16.....	5,660	5,580	3,100	3,000	6,500	11,000	9,190	12,200	9,860	6,670	9,810	7,810
17.....	5,410	5,410	3,000	2,900	6,000	*19,200	8,930	16,360	11,400	6,540	9,350	6,520
18.....	5,110	5,600	2,900	2,800	5,500	22,300	8,290	20,000	12,900	6,490	9,030	5,410
19.....	4,850	5,620	* 2,800	2,600	5,500	22,000	7,740	20,900	13,400	6,230	8,930	4,870
20.....	4,670	5,220	2,800	* 2,600	6,000	19,400	7,310	20,900	13,500	6,410	9,110	4,510
21.....	4,550	5,030	2,800	2,700	9,000	18,400	6,960	20,000	13,200	7,370	8,800	4,280
22.....	4,450	4,810	2,800	2,700	12,000	18,500	6,670	18,600	16,800	6,650	7,260	4,060
23.....	4,300	4,670	2,800	2,700	13,000	19,200	6,470	15,800	12,300	5,940	6,600	3,880
24.....	4,190	4,550	2,900	2,600	14,000	21,500	6,360	13,600	10,500	5,900	6,210	3,700
25.....	4,120	4,490	3,000	2,600	14,660	22,100	6,230	11,700	10,300	6,270	5,880	3,530
26.....	4,030	4,370	3,500	2,600	14,250	18,400	6,160	10,300	9,620	7,580	5,490	3,400
27.....	3,950	4,240	11,000	2,600	15,580	16,300	8,420	9,400	8,590	7,400	5,470	3,270
28.....	3,850	4,040	17,000	2,550	19,080	16,000	14,100	8,640	7,690	6,490	5,430	3,170
29.....	3,810	3,850	17,700	2,550	.....	15,800	13,300	8,070	7,130	6,140	5,260	3,090
30.....	3,770	3,690	13,000	2,550	.....	15,200	14,200	7,620	6,710	6,530	5,240	3,000
31.....	3,860	.....	10,700	2,550	.....	16,000	.....	7,420	.....	6,630	5,770	.....
1943-44												
1.....	2,920	2,570	2,630	1,640	4,890	* 6,930	9,060	15,300	32,500	13,800	5,720	3,940
2.....	2,820	2,880	2,620	1,600	4,750	6,580	8,770	14,200	29,400	12,300	5,200	3,830
3.....	2,750	2,980	2,640	1,570	4,150	6,820	8,540	13,300	25,700	11,700	4,830	3,740
4.....	2,780	2,930	2,560	1,530	3,810	7,310	8,190	12,900	22,000	10,900	4,630	3,550
5.....	2,680	2,760	2,520	1,450	3,720	7,130	7,740	12,900	19,400	10,400	4,810	3,410
6.....	2,600	2,700	2,620	1,420	3,690	6,980	7,510	13,000	18,100	10,900	4,990	3,220
7.....	2,540	2,920	2,740	1,370	3,410	6,100	7,530	13,900	15,300	11,400	6,080	3,040
8.....	2,480	3,850	3,270	1,350	3,120	5,350	7,670	15,200	13,800	12,900	6,010	2,980
9.....	2,450	4,340	3,570	1,350	3,000	4,200	7,600	16,600	13,200	13,500	5,720	2,860
10.....	2,440	3,970	3,580	* 1,340	2,840	3,750	7,560	15,000	14,800	12,700	5,200	2,800
11.....	2,380	3,550	3,400	1,340	1,870	3,800	8,520	19,100	15,100	10,100	4,850	2,690
12.....	2,380	3,250	3,250	1,330	1,070	5,180	9,590	20,000	14,600	9,620	4,470	2,690
13.....	2,480	3,220	2,850	1,310	1,330	8,320	9,890	19,500	15,300	9,030	4,170	2,750
14.....	2,370	3,320	1,470	1,300	1,600	9,780	10,600	17,200	17,100	8,640	3,880	2,760
15.....	2,380	3,250	960	1,300	1,640	15,100	12,800	15,200	19,400	8,440	3,670	2,700
16.....	2,300	3,220	1,000	1,310	1,880	19,200	12,100	13,400	22,100	8,360	3,460	2,690
17.....	2,240	3,190	1,600	1,320	1,820	20,600	16,000	12,600	27,200	7,760	3,330	2,810
18.....	2,270	3,160	1,800	1,330	2,070	19,600	16,200	11,900	34,600	7,350	3,670	2,660
19.....	2,240	3,120	1,930	1,340	2,230	19,000	14,700	11,000	39,800	7,810	4,260	2,570
20.....	2,280	3,030	2,060	1,410	2,260	18,300	14,300	13,200	48,200	7,720	4,460	2,540
21.....	2,680	2,930	2,100	1,430	2,270	17,200	14,000	21,400	50,700	8,260	3,900	2,600
22.....	2,820	2,920	2,140	1,450	2,790	13,800	17,200	29,900	45,300	7,370	3,650	2,860
23.....	2,700	2,880	2,040	1,540	5,150	11,300	23,100	38,600	38,000	6,740	3,410	2,880
24.....	2,540	2,880	1,970	1,530	9,000	11,200	27,100	47,800	33,000	6,580	3,250	2,750
25.....	2,540	2,840	1,810	1,600	10,100	11,200	28,400	53,400	31,400	6,210	3,370	2,820
26.....	2,450	2,800	1,750	1,570	11,000	11,000	24,400	52,600	32,200	5,880	3,220	2,900
27.....	2,440	2,720	1,670	2,050	11,600	11,200	19,700	50,400	32,900	5,550	3,250	3,040
28.....	2,390	2,750	1,660	4,850	*10,100	11,100	16,700	49,600	42,800	5,360	3,140	3,000
29.....	2,380	2,720	1,660	6,250	8,520	11,200	15,700	47,500	30,000	5,990	3,170	2,880
30.....	2,340	2,690	1,700	6,590	.....	10,700	15,400	42,400	16,500	7,040	3,330	2,750
31.....	2,440	.....	1,700	4,190	.....	9,730	.....	36,600	.....	6,540	3,760	.....

* Winter discharge measurement made on this day.

h Computed from once daily wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 2-28, 1942, Jan. 11 to Feb. 24, Mar. 8-15, Dec. 13-31, 1943, Jan. 1-27, Feb. 12-24, Mar. 7-11, 1944.

Iowa River at Wapello, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	2,740	1,890	2,100	1,530	1,300	8,140	20,400	16,700	24,400	13,700	3,170	4,440
2.....	2,750	2,020	1,670	1,510	1,290	7,680	18,400	16,400	27,600	11,800	3,220	4,230
3.....	2,760	3,880	1,520	1,440	1,270	6,860	14,700	13,900	29,900	10,400	3,300	3,990
4.....	2,760	4,280	1,560	1,460	1,250	7,300	12,700	12,500	28,400	9,810	3,300	3,790
5.....	2,900	2,930	1,640	1,446	1,250	8,300	13,700	11,200	23,600	9,060	3,420	3,610
6.....	3,110	2,820	1,900	1,410	1,250	8,820	16,200	10,400	20,400	8,460	3,510	3,460
7.....	2,870	3,110	2,100	1,390	1,240	9,000	14,700	10,200	21,400	7,850	3,540	3,300
8.....	2,720	2,740	2,100	1,340	1,220	9,200	13,600	9,980	24,900	7,560	3,510	3,250
9.....	2,690	2,580	2,200	1,360	1,240	9,670	13,300	9,310	27,000	7,780	3,440	3,300
10.....	2,630	2,500	1,830	1,340	1,250	8,870	12,200	8,930	25,800	7,160	3,740	3,360
11.....	2,600	2,420	1,580	1,340	1,260	8,720	11,400	8,330	24,800	6,610	5,400	3,140
12.....	2,540	2,310	1,570	1,310	1,310	8,850	11,600	8,000	25,400	6,740	7,230	3,050
13.....	2,520	2,280	1,670	1,340	1,400	9,670	12,300	7,750	26,300	6,560	8,480	2,950
14.....	2,390	2,300	1,600	1,360	1,640	9,470	12,800	9,220	23,500	6,470	8,330	3,190
15.....	2,380	2,250	1,520	1,360	2,600	10,500	14,600	16,300	20,600	5,630	8,08	3,150
16.....	2,350	2,240	1,480	1,340	5,050	12,000	15,600	19,900	21,300	5,230	8,100	3,120
17.....	2,280	2,230	1,520	1,360	6,000	13,900	17,600	23,200	20,400	4,920	8,560	2,960
18.....	2,230	2,170	1,540	1,370	6,120	15,700	20,300	23,800	18,800	4,720	10,100	2,770
19.....	2,200	2,180	1,550	1,390	6,120	18,300	23,100	22,700	17,000	4,500	11,700	2,620
20.....	2,160	2,200	1,600	1,410	5,680	24,900	23,500	21,300	15,200	4,330	12,600	2,560
21.....	2,090	2,180	1,600	1,420	5,470	39,300	23,100	17,600	14,200	4,210	13,600	2,540
22.....	2,070	2,180	1,580	1,400	5,260	53,700	22,700	15,700	12,700	4,200	14,300	2,450
23.....	2,090	2,180	1,580	1,380	4,770	53,500	22,400	14,600	11,500	4,200	13,200	2,480
24.....	2,030	2,160	1,570	1,360	4,650	43,200	21,800	12,500	11,000	4,060	11,200	2,770
25.....	2,000	2,140	1,540	1,360	4,550	35,100	20,000	11,500	10,400	3,870	10,200	3,170
26.....	1,990	2,170	1,520	1,360	4,650	30,700	17,400	12,400	10,600	3,690	8,870	2,830
27.....	1,960	2,210	1,500	1,360	5,510	30,300	15,500	14,300	10,600	3,560	7,420	3,610
28.....	1,910	2,270	1,480	1,360	7,000	30,800	14,800	15,900	9,810	3,420	6,470	5,420
29.....	1,900	2,240	1,460	1,340	.....	25,300	15,000	18,000	9,720	3,390	5,790	6,610
30.....	1,910	2,200	1,450	1,330	.....	20,700	15,800	20,100	10,400	3,360	5,270	5,500
31.....	1,870	.....	1,480	1,320	.....	20,500	.....	22,300	.....	3,200	4,780	.....
1945-46												
1.....	4,700	1,980	2,510	1,620	3,750	7,000	13,800	3,990	7,110	11,600	3,200	1,940
2.....	5,000	1,950	2,800	1,650	3,950	7,370	12,800	3,970	6,680	15,100	4,100	1,890
3.....	5,000	1,910	3,960	1,680	4,100	8,430	11,600	4,100	6,380	16,000	4,210	1,940
4.....	4,250	1,920	5,020	1,700	3,800	7,560	10,700	5,830	6,010	15,000	4,120	1,880
5.....	3,810	1,920	4,660	4,000	4,000	8,400	10,000	8,610	5,630	10,800	3,650	1,810
6.....	3,510	1,940	4,120	23,000	5,200	9,580	9,280	10,800	5,270	8,610	3,240	1,800
7.....	3,320	1,960	3,610	42,000	8,200	13,600	8,790	10,600	4,940	7,340	2,950	1,880
8.....	3,150	1,960	3,360	50,600	9,800	16,900	8,460	8,610	4,640	6,680	2,830	2,220
9.....	3,000	2,020	3,200	48,600	9,900	16,600	8,120	7,460	4,370	6,150	2,700	3,920
10.....	2,850	2,340	2,400	45,400	10,000	16,700	7,750	6,700	4,100	5,870	2,590	4,540
11.....	2,720	3,580	1,800	45,800	10,500	17,500	7,370	6,310	3,880	5,460	2,530	5,590
12.....	2,640	3,080	1,600	43,600	11,500	20,900	7,110	5,990	4,760	4,980	2,420	7,250
13.....	2,540	2,900	1,400	37,800	13,000	25,800	6,980	5,630	7,390	4,800	2,310	8,870
14.....	2,530	2,960	1,900	30,100	14,500	28,400	6,950	5,400	8,250	4,660	2,280	10,200
15.....	2,480	2,910	2,200	19,900	12,500	25,000	6,810	5,120	6,880	4,290	2,950	9,840
16.....	2,400	2,830	2,150	12,500	10,000	21,800	6,520	5,060	6,190	4,050	3,020	8,150
17.....	2,380	2,670	2,050	9,400	7,200	24,500	6,170	5,040	7,160	3,960	2,720	6,740
18.....	2,320	2,590	1,950	7,600	5,900	28,100	5,900	5,020	12,200	3,880	3,740	5,810
19.....	2,260	2,530	1,850	6,900	5,400	34,200	5,590	5,100	18,900	4,030	3,760	5,080
20.....	2,200	2,450	1,800	6,500	5,300	37,200	5,420	5,000	22,200	3,830	2,980	4,780
21.....	2,160	2,400	1,750	5,000	4,950	34,000	5,230	4,860	22,200	3,540	2,660	4,520
22.....	2,160	2,200	1,730	5,200	4,950	30,200	5,020	4,800	21,200	3,410	2,400	4,420
23.....	2,160	1,700	1,700	4,400	5,200	26,200	4,920	4,640	17,300	3,250	2,280	4,780
24.....	2,120	1,550	1,650	4,000	5,600	23,800	4,920	4,560	14,200	3,200	2,250	7,660
25.....	2,100	1,450	1,700	4,050	6,000	21,600	4,780	4,840	12,700	3,220	2,280	14,000
26.....	2,080	1,700	1,650	4,100	6,700	19,300	4,660	5,630	12,100	3,170	2,250	16,400
27.....	2,080	1,950	1,650	4,150	6,740	18,100	4,460	5,570	11,600	3,050	2,310	12,700
28.....	2,020	2,250	1,600	4,000	6,680	19,300	4,270	5,520	9,810	3,030	2,250	7,820
29.....	2,040	2,350	1,700	3,650	.....	18,300	4,160	5,790	8,530	2,960	2,190	6,560
30.....	2,040	2,460	1,660	3,350	.....	17,000	4,050	6,660	9,440	2,960	2,130	6,080
31.....	2,010	.....	1,600	3,500	.....	15,200	.....	7,040	.....	2,900	2,020	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 30, to Dec. 31, 1944, Jan. 1, to Mar. 8, Nov. 22-29, Dec. 9-31, 1945, Jan. 1-6, Jan. 16 to Feb. 25, 1946.

Iowa River at Wapello, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1	5,370	6,980	4,560	2,050	2,500	5,300	10,400	17,100	18,900	38,300	5,330	2,370
2	4,800	6,680	4,480	2,050	2,400	5,000	9,950	15,700	19,200	39,200	5,120	2,380
3	4,440	8,850	4,200	2,100	2,350	4,600	9,390	14,900	22,100	38,200	4,900	2,430
4	4,180	10,600	3,990	2,000	2,300	4,200	9,420	13,700	27,100	36,400	4,760	2,540
5	3,990	10,400	3,850	2,100	2,400	3,700	15,100	12,400	40,400	32,400	4,600	2,590
6	3,810	8,980	3,850	2,400	2,500	3,560	20,400	11,400	57,100	30,700	4,460	2,530
7	3,650	8,050	3,920	2,700	2,500	3,300	25,100	10,600	63,700	32,900	4,310	2,450
8	3,510	7,560	3,920	2,750	2,400	3,400	30,400	10,100	66,500	36,600	4,100	2,340
9	3,370	7,320	4,030	2,800	2,300	3,800	26,800	9,640	68,200	33,800	3,990	2,260
10	3,300	7,270	4,030	2,950	2,250	4,600	21,100	9,140	57,800	28,900	3,870	2,190
11	3,290	h7,390	*3,970	3,000	*2,200	5,100	20,600	8,610	47,300	24,100	3,720	2,160
12	3,240	h7,510	3,920	3,050	2,250	5,600	23,100	8,180	39,400	22,100	3,580	2,160
13	3,240	h7,140	3,920	3,050	2,400	6,300	27,100	7,880	35,800	22,700	3,480	2,120
14	3,290	h6,910	3,790	3,200	4,200	7,100	29,000	7,610	31,300	22,200	3,370	2,080
15	3,320	h6,650	3,670	3,750	6,000	7,600	28,100	7,490	32,400	18,600	3,340	2,120
16	3,460	h6,630	3,560	5,400	8,000	8,100	26,800	7,440	40,600	14,300	3,200	2,140
17	3,720	h6,720	3,460	5,000	9,000	9,300	27,200	7,420	64,200	12,900	3,100	2,020
18	4,100	h7,000	3,300	4,500	10,000	10,000	29,200	7,460	92,400	11,900	3,020	2,010
19	5,990	h7,070	3,150	4,300	9,000	11,000	31,400	8,000	83,900	11,400	2,960	2,000
20	7,800	h6,720	3,250	4,100	8,500	13,100	34,800	8,460	65,700	11,100	2,880	2,070
21	6,420	6,400	3,450	4,050	8,000	11,900	34,200	8,300	53,400	11,000	2,800	3,240
22	5,420	6,170	3,650	3,900	7,600	11,000	35,100	8,120	46,800	9,670	2,690	2,700
23	4,960	5,960	4,400	3,800	7,200	10,600	34,000	8,020	43,500	8,790	2,620	2,380
24	4,640	5,700	4,250	3,700	7,000	10,600	28,100	7,730	44,800	8,120	2,560	2,120
25	4,580	5,570	4,100	3,750	6,900	12,700	22,700	7,610	46,200	7,580	2,560	2,100
26	9,040	5,400	4,290	3,800	6,500	12,300	19,600	7,610	43,400	7,160	2,540	2,040
27	11,500	5,080	4,060	3,850	6,000	11,300	17,100	7,420	39,900	7,090	2,500	1,960
28	8,930	4,960	3,420	3,800	5,600	11,000	15,900	7,370	38,500	6,810	2,380	1,960
29	7,850	4,760	3,390	3,700	5,000	11,100	15,100	11,500	37,500	6,280	2,370	1,960
30	7,540	4,640	2,200	3,300	4,000	11,400	15,600	17,100	36,300	5,940	2,400	2,000
31	7,270	.....	2,100	2,700	.....	11,400	.....	19,200	.....	5,610	2,320	.....
1947-48												
1	1,910	2,770	1,200	1,850	1,050	35,600	13,600	5,700	3,420	3,630	4,500	1,130
2	1,850	2,830	1,600	1,600	1,060	30,900	12,900	5,740	3,270	3,370	3,070	1,440
3	1,880	*2,770	2,150	1,400	*1,070	26,600	12,300	6,910	3,190	3,940	2,400	1,660
4	1,910	2,740	2,610	1,300	1,060	27,500	10,500	8,020	3,000	3,140	2,100	1,550
5	1,920	2,770	3,670	1,600	1,050	30,700	9,060	8,400	2,850	5,020	1,870	1,340
6	1,950	2,820	3,970	1,800	1,050	37,700	8,300	8,080	2,850	5,040	1,750	1,250
7	2,000	2,770	3,850	1,850	1,040	39,300	7,850	8,790	2,950	5,080	1,680	1,190
8	2,160	2,620	3,600	1,900	1,040	24,400	7,390	10,200	4,500	3,610	1,660	1,210
9	2,250	2,540	2,900	1,900	1,030	11,000	6,980	10,100	5,140	3,070	1,620	1,230
10	2,060	2,510	2,100	1,900	1,030	9,000	6,580	9,610	4,350	2,740	1,570	1,180
11	1,980	2,450	1,750	1,850	1,050	7,400	6,400	9,200	3,700	2,560	1,540	1,190
12	1,870	2,430	2,100	1,800	1,050	6,400	6,490	9,010	3,340	2,430	1,540	1,170
13	1,890	2,370	2,500	1,700	1,050	5,600	6,280	8,820	3,220	2,530	1,540	1,160
14	1,870	2,360	2,600	*1,600	1,060	5,800	6,030	8,820	3,200	2,930	1,500	1,100
15	1,820	2,380	2,900	1,350	1,080	11,000	5,900	8,480	3,080	3,340	1,450	1,030
16	1,780	2,430	2,700	1,260	1,170	*10,400	5,830	8,380	2,960	3,240	1,440	1,050
17	1,800	2,430	2,000	1,300	2,000	26,900	5,590	8,120	2,860	2,740	1,450	1,050
18	1,800	2,430	1,700	1,250	3,500	30,900	5,210	7,850	2,820	2,430	1,510	1,070
19	1,750	2,420	*2,200	1,200	6,000	38,100	4,900	7,850	2,690	3,370	1,570	1,100
20	1,750	2,450	2,500	1,200	8,000	48,100	4,740	7,230	2,660	2,770	1,580	1,100
21	1,730	2,460	2,550	1,200	6,200	58,500	4,560	6,010	2,610	7,390	1,530	1,370
22	1,740	2,460	2,760	1,200	5,200	54,400	4,380	6,680	2,530	12,500	1,480	1,780
23	1,740	2,460	2,400	1,250	4,300	55,200	4,370	5,610	2,540	10,200	1,460	1,620
24	1,770	2,500	2,200	1,200	4,000	52,600	4,370	5,210	2,530	7,370	1,440	1,420
25	1,820	2,460	2,050	1,160	4,500	44,600	4,500	4,880	2,500	4,720	1,310	1,250
26	1,820	2,400	2,100	1,150	6,800	36,100	4,940	4,560	2,400	6,170	1,150	1,160
27	1,810	2,300	2,050	1,140	8,600	26,400	5,700	4,310	2,420	8,400	1,140	1,160
28	1,880	2,200	2,000	1,120	17,000	18,700	5,940	4,080	2,960	7,090	1,150	1,100
29	1,960	1,850	2,050	1,100	29,400	16,500	5,870	3,870	3,940	4,780	1,210	1,070
30	h2,080	1,400	2,000	1,080	.....	14,700	5,900	3,700	4,440	3,900	1,190	1,020
31	h2,280	.....	2,050	1,060	.....	14,000	.....	3,540	.....	4,880	1,090	.....

* Winter discharge measurement made on this day.

h Computed from once daily tape gage readings.

Note—Stage-discharge relation affected by ice Dec. 18-24, 31, 1946, Jan. 1 to Mar. 18, Nov. 26 to Dec. 3, Dec. 7-31, 1947, Jan. 1 to Feb. 28, Mar. 9-14, 1948.

Iowa River at Wapello, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1	1,040	1,050	1,500	1,500	2,370	12,500	23,000	5,460	2,580	6,760	2,100	1,030
2	1,070	1,040	1,390	1,400	2,330	11,000	24,600	5,220	2,660	5,700	1,840	95
3	980	1,060	1,390	1,300	2,300	9,600	25,400	4,990	4,230	4,880	1,720	950
4	1,010	1,380	1,340	1,600	2,290	9,600	25,000	4,760	4,540	4,540	1,660	930
5	990	1,120	1,340	2,350	2,290	13,000	21,000	4,540	4,330	4,440	1,660	990
6	980	1,090	1,330	9,000	2,290	17,000	18,000*	4,320	4,030	4,440	1,550	1,040
7	1,150	1,090	1,390	8,000	2,290	21,000	17,700	4,120	3,640	4,650	1,500	1,100
8	1,786	1,130	1,310	7,320	2,270	27,000	16,500	3,920	3,540	4,540	1,440	1,110
9	1,960	1,180	1,240	7,320	2,230	31,800	13,800	3,820	3,280	5,100	1,390	1,080
10	1,900	1,240	800	6,210	2,180	36,800	12,100	3,730	3,110	3,930	1,310	1,030
11	1,550	1,240	760	5,100	2,130	43,800	11,000	3,640	2,880	4,030	1,440	1,090
12	1,440	1,250	900	4,540	1,900	42,300	10,100	3,540	2,730	3,360	2,570	1,440
13	1,340	1,230	1,100	4,200	2,100	40,300	9,280	3,450	2,660	2,880	3,280	1,660
14	1,320	1,160	1,250	3,470	2,050	36,300	8,720	3,280	2,880	2,580	2,300	2,960
15	1,280	1,160	1,200	3,500	2,020	28,600	8,720	3,110	2,960	2,440	1,720	2,230
16	1,270	1,230	1,350	6,000	2,000	17,700	8,440	3,110	2,880	2,300	1,440	1,840
17	1,190	1,260	2,300	9,000	1,700	13,800	8,440	3,110	2,730	2,230	1,390	1,60
18	1,160	1,390	2,000	6,500	1,800	11,800	9,000	3,110	2,510	2,100	1,330	1,500
19	1,110	1,600	1,400	5,400	2,000	10,700	9,000	3,110	2,510	2,030	1,390	1,390
20	1,110	1,660	1,200	5,000	2,400	9,560	8,720	3,030	2,370	2,030	1,550	1,290
21	1,160	2,160	1,400	6,500	2,250	9,000	8,440	3,030	2,300	2,100	1,440	1,320
22	1,070	2,230	1,250	8,600	2,150	9,280	8,440	3,730	2,230	2,100	1,340	1,260
23	1,110	1,960	1,050	7,400	2,200	11,500	8,440	4,440	2,370	2,370	1,220	1,170
24	1,90	1,720	940	5,000	4,000	12,900	8,440	4,330	2,960	2,880	1,170	1,140
25	1,130	1,600	860	3,900	8,000	13,200	7,880	3,540	9,280	2,800	1,110	1,100
26	1,150	1,660	780	3,500	14,000	13,500	7,600	3,280	12,600	2,660	1,080	1,060
27	1,150	1,660	900	3,600	15,000	15,300	7,040	3,110	9,840	2,230	1,140	1,045
28	1,140	1,550	1,050	2,800	14,000	17,700	6,620	2,960	7,600	2,370	1,190	1,030
29	1,110	1,550	1,200	2,650	.....	18,000	6,210	2,800	7,320	3,110	1,280	1,000
30	1,050	1,550	1,400	2,450	.....	18,000	5,820	2,730	7,600	3,110	1,180	980
31	1,060	.....	1,600	2,550	.....	19,800	.....	2,660	.....	2,660	1,110	.....
1949-50												
1	986	1,070	1,050	2,700	2,600	4,500	15,900	6,760	6,080	11,500	5,580	1,440
2	978	1,040	1,090	3,930	2,300	6,800	17,400	6,210	5,460	11,000	4,510	1,340
3	963	1,030	1,180	2,570	2,000	6,600	20,600	5,700	5,340	18,600	3,360	1,440
4	963	1,040	1,100	1,660	1,800	6,000	23,000	5,460	6,760	13,200	2,960	1,320
5	963	1,030	1,040	1,120	1,600	9,000	14,400	7,880	7,040	8,720	2,800	1,220
6	970	1,030	1,150	1,700	1,500	15,000	11,500	6,620	7,040	7,320	3,360	1,220
7	1,000	1,020	1,030	1,600	1,800	27,000	9,840	5,700	6,080	6,210	3,450	1,260
8	1,000	1,010	980	1,800	4,000	31,300	8,440	5,340	5,580	5,460	3,280	1,170
9	1,010	1,020	920	1,400	6,000	32,300	7,600	8,160	5,100	4,990	2,960	1,270
10	1,030	1,010	900	1,200	7,000	30,800	7,320	12,400	4,650	4,540	2,800	1,110
11	1,050	1,020	1,000	1,100	7,600	32,300	7,320	12,600	4,330	4,230	2,800	1,160
12	1,060	1,030	1,000	1,100	7,600	35,800	7,320	12,600	4,130	4,030	2,880	1,120
13	1,070	1,120	800	1,700	6,000	40,300	6,620	13,200	5,100	5,100	2,370	1,240
14	1,040	1,100	670	4,500	4,500	44,300	5,950	14,100	9,840	6,340	2,300	1,180
15	1,030	1,130	605	5,000	3,800	39,800	5,700	14,100	9,560	4,030	2,100	1,190
16	1,010	1,090	760	3,110	3,300	22,600	5,460	12,400	9,280	3,450	2,100	1,120
17	978	1,090	930	1,720	2,800	14,100	5,220	9,840	9,280	3,640	2,160	1,120
18	994	1,070	990	2,000	2,400	12,400	4,880	8,440	13,200	3,540	2,030	1,170
19	1,000	1,080	1,100	2,200	2,200	11,200	4,540	7,600	22,200	3,360	1,960	1,110
20	1,000	1,070	1,320	2,300	2,000	10,100	4,330	6,620	23,800	3,450	1,780	1,070
21	1,060	1,060	1,100	2,200	1,900	9,280	4,030	6,210	24,600	3,540	1,840	1,220
22	1,340	1,040	1,000	2,100	1,800	8,720	3,730	6,080	23,400	3,930	1,720	1,180
23	2,100	1,030	920	2,100	1,700	8,720	3,730	7,040	18,300	4,540	1,780	1,500
24	1,600	1,040	860	2,100	1,600	9,280	5,180	6,620	17,700	4,030	1,720	4,330
25	1,340	1,040	840	2,100	1,700	9,840	12,100	7,320	17,100	3,730	1,550	4,760
26	1,280	1,060	900	2,800	1,900	11,200	13,200	7,320	19,000	3,640	1,550	4,130
27	1,220	1,050	1,000	7,600	1,700	14,100	10,100	6,620	21,000	3,450	1,500	3,930
28	1,140	1,070	1,000	4,700	1,700	14,700	8,720	6,620	23,000	3,360	1,500	3,110
29	1,130	1,070	940	3,300	.....	14,400	8,160	7,600	19,000	3,280	1,500	2,730
30	1,120	1,070	980	3,500	.....	14,400	7,320	8,440	15,600	3,030	1,600	2,440
31	1,100	.....	1,200	3,100	.....	15,000	.....	7,320	.....	2,960	1,550	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 9-31, 1948, Jan. 1-7, Jan. 13 to Mar. 8, Dec. 8-13, 16-18, 21-31, 1949, Jan. 1, 6-15, 18-26, Jan. 30 to Feb. 10, Feb. 13 to Mar. 7, 1950.

Iowa River at Wapello, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1942	168,990	9,190	3,770	5,451	0.437	0.50
November	157,540	8,520	3,690	5,251	.421	.47
December	145,750	17,700	2,000	4,702	.377	.43
Calendar year 1942	2,941,970	35,800	2,000	8,060	.646	8.76
January 1943	116,020	8,800	2,550	3,743	.300	.35
February	255,070	19,080	2,500	9,110	.730	.76
March	445,650	22,300	6,000	14,380	1.15	1.33
April	334,960	20,400	6,160	11,170	.895	1.00
May	357,090	20,900	6,520	11,520	.923	1.06
June	342,900	16,800	6,710	11,430	.916	1.02
July	196,360	7,580	5,340	6,334	.508	.59
August	285,320	19,100	5,240	9,204	.738	.85
September	164,260	9,000	3,000	5,475	.439	.49
Water year 1942-43	2,969,910	22,300	2,000	8,137	.652	8.85
October 1943	77,560	2,920	2,240	2,502	.200	.23
November	92,320	4,340	2,570	3,077	.247	.28
December	69,270	3,580	960	2,235	.179	.21
Calendar year 1943	2,736,780	22,300	960	7,499	.601	8.17
January 1944	58,990	6,250	1,300	1,903	.152	.18
February	125,680	11,600	1,070	4,334	.347	.37
March	329,660	20,600	3,750	10,630	.852	.98
April	406,570	28,400	7,510	13,550	1.09	1.21
May	768,600	53,400	11,000	24,790	1.99	2.29
June	810,400	50,700	13,200	27,010	2.16	2.41
July	276,250	13,800	5,360	8,911	.714	.82
August	130,560	6,080	3,140	4,212	.338	.39
September	88,710	3,940	2,540	2,957	.237	.26
Water year 1943-44	3,234,570	53,400	960	8,838	.708	9.63
October 1944	73,400	3,110	1,870	2,368	.190	.22
November	73,260	4,280	1,890	2,442	.196	.22
December	51,010	2,200	1,450	1,645	.132	.15
Calendar year 1944	3,193,090	53,400	1,070	8,724	.699	9.50
January 1945	42,790	1,530	1,310	1,380	.111	.13
February	91,600	7,000	1,220	3,271	.262	.27
March	598,950	53,700	6,860	19,320	1.55	1.78
April	501,200	23,500	11,400	16,710	1.34	1.49
May	454,920	23,800	7,750	14,670	1.18	1.36
June	577,530	29,900	9,720	19,250	1.54	1.72
July	190,450	13,700	3,200	6,144	.492	.57
August	223,830	14,300	3,170	7,220	.579	.67
September	103,260	6,610	2,450	3,442	.276	.31
Water year 1944-45	2,982,200	53,700	1,220	8,170	.655	8.89
October 1945	86,030	5,000	2,010	2,775	.222	.26
November	68,410	3,580	1,450	2,280	.183	.20
December	72,730	5,020	1,400	2,346	.188	.22
Calendar year 1945	3,071,700	53,700	1,220	8,251	.661	8.97
January 1946	485,750	50,600	1,620	15,670	1.26	1.45
February	205,320	14,500	3,750	7,333	.588	.61
March	618,540	37,200	7,000	19,950	1.60	1.84
April	212,590	13,800	4,050	7,085	.568	.63
May	184,150	10,800	3,970	5,940	.476	.55
June	292,020	22,200	3,880	9,734	.780	.87
July	181,780	16,000	2,900	5,864	.470	.54
August	87,320	4,210	2,020	2,817	.226	.26
September	181,070	16,400	1,800	6,036	.484	.54
Water year 1945-46	2,675,710	50,600	1,400	7,331	.587	7.97

Iowa River at Wapello, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946.....	160,020	11,500	3,240	5,162	0.414	0.48
November.....	207,070	10,600	4,640	6,902	.553	.62
December.....	116,110	4,560	2,100	3,745	.300	.35
Calendar year 1946.....	2,931,740	50,600	1,620	8,032	.644	8.74
January 1947.....	103,600	5,400	2,000	3,342	.268	.31
February.....	140,250	10,000	2,200	5,009	.401	.42
March.....	249,900	13,100	3,300	8,061	.646	.74
April.....	692,760	35,100	9,390	23,090	1.85	2.06
May.....	313,210	19,200	7,370	10,100	.809	.93
June.....	1,404,300	92,400	18,900	46,810	3.75	4.18
July.....	102,750	39,200	5,610	19,440	1.56	1.80
August.....	105,830	5,330	2,320	3,414	.274	.32
September.....	67,420	3,240	1,960	2,247	.180	.20
Water year 1946-47.....	4,163,220	92,400	1,960	11,410	.914	12.41
October 1947.....	58,830	2,280	1,730	1,898	.152	.18
November.....	73,760	2,830	1,400	2,459	.197	.22
December.....	74,650	3,970	1,200	2,408	.193	.22
Calendar year 1947.....	3,887,260	92,400	1,200	10,650	.853	11.58
January 1948.....	44,270	1,900	1,060	1,428	.114	.13
February.....	122,440	29,400	1,030	4,222	.338	.36
March.....	864,000	58,500	5,600	27,870	2.23	2.57
April.....	203,360	13,600	4,370	6,779	.543	.61
May.....	217,760	10,200	3,540	7,025	.563	.65
June.....	94,950	5,140	2,400	3,165	.254	.28
July.....	144,380	12,500	2,430	4,657	.373	.43
August.....	51,490	4,500	1,090	1,661	.133	.15
September.....	37,150	1,780	1,020	1,238	.099	.11
Water year 1947-48.....	1,987,040	58,500	1,020	5,429	.435	5.91
October 1948.....	37,850	1,960	980	1,221	.098	.11
November.....	41,900	2,230	1,040	1,397	.112	.12
December.....	38,920	2,300	760	1,255	.101	.12
Calendar year 1948.....	1,889,900	58,500	760	5,164	.414	5.61
January 1949.....	146,790	9,000	1,300	4,735	.379	.44
February.....	104,540	15,000	1,700	3,734	.299	.31
March.....	602,340	43,800	9,000	19,430	1.56	1.79
April.....	363,450	25,400	5,820	12,120	.971	1.08
May.....	114,120	5,460	2,660	3,681	.295	.34
June.....	127,150	12,600	2,230	4,238	.340	.38
July.....	103,350	6,760	2,030	3,334	.267	.31
August.....	47,840	3,280	1,080	1,543	.124	.14
September.....	38,310	2,960	930	1,277	.102	.11
Water year 1948-49.....	1,766,560	43,800	760	4,840	.388	5.25
October 1949.....	34,525	2,100	963	1,114	.089	.10
November.....	31,630	1,130	1,010	1,054	.084	.09
December.....	30,355	1,320	605	979	.078	.09
Calendar year 1949.....	1,744,400	43,800	605	4,779	.383	5.18
January 1950.....	79,670	7,600	1,100	2,570	.206	.24
February.....	86,800	7,600	1,500	3,100	.248	.26
March.....	561,840	44,300	4,500	18,120	1.45	1.67
April.....	269,610	23,000	3,730	8,987	.720	.80
May.....	258,920	14,100	5,340	8,352	.669	.77
June.....	368,550	24,600	4,130	12,280	.984	1.10
July.....	172,200	18,600	2,960	5,555	.445	.51
August.....	75,380	5,580	1,500	2,432	.195	.22
September.....	53,580	4,760	1,070	1,786	.143	.16
Water year 1949-50.....	2,023,060	44,300	605	5,543	.444	6.01

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 handrail of county bridge 1½ miles northwest of Klemme and 12½ miles upstream from confluence with West Fork Iowa River.

DRAINAGE AREA.—120 square miles.

RECORDS AVAILABLE.—April 1948 to September 1950.

GAGE.—Wire-weight gage; gage read once daily. Datum of gage is 1,180.13 feet above mean sea level, datum of 1929.

AVERAGE DISCHARGE.—2 years, 29.0 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1948-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1948 ⁽¹⁾ ...	May 15	238	4.68	Sept. 16	0.8
1948-49...	Mar. 27	685	(²)	Sept. 24	1.1
1949-50...	Mar. 26	500	(³)	Feb. 2-7	1.0

(1) Period April to September 1948.

(2) Maximum gage height, 8.36 feet Mar. 5 (ice effected).

(3) Maximum gage height, 7.21 feet Mar. 7 (ice effected).

1948-50: Maximum discharge observed, 685 second-feet Mar. 27, 1949; maximum gage-height observed, 8.36 feet Mar. 5, 1949 (ice jam); minimum daily, 0.8 second-feet 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, which are poor.

COOPERATION.—Services of observer and several discharge measurements furnished by Corps of Engineers.

East Fork Iowa River near Klemme, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1948 and 1949

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1947-48												
1							32	20	10	22	1.6	1.2
2							26	20	3.9	18	1.9	1.1
3							27	20	3.9	17	3.6	1.0
4							21	19	8.3	12	2.3	1.0
5							20	21	8.3	11	1.8	1.0
6							31	34	7.5	7.1	2.5	1.0
7							33	28	4.2	3.2	2.5	1.0
8							26	24	4.2	2.1	2.8	1.1
9							26	31	5.3	4.6	3.6	1.3
10							26	42	5.0	4.6	2.7	1.2
11							25	38	4.6	4.6	1.6	1.0
12							24	33	8.3	5.0	1.0	1.0
13							21	28	5.0	4.6	1.9	1.0
14							18	24	4.6	5.6	1.6	1.0
15							17	193	2.8	5.6	1.3	.9
16							15	87	3.9	5.3	1.6	.8
17							20	41	8.3	4.2	1.8	.9
18							18	33	3.2	3.9	1.2	1.0
19							15	28	6.4	3.2	1.4	1.0
20							13	26	5.3	5.0	1.6	2.5
21							14	21	6.4	3.6	1.4	2.5
22							14	20	7.9	3.2	1.4	2.3
23							22	19	6.0	3.2	1.1	1.9
24							25	15	4.6	2.8	1.1	1.6
25							26	15	10	2.8	1.0	1.4
26							26	15	28	2.7	1.0	1.8
27							28	13	42	2.3	1.2	1.9
28							25	12	82	2.1	2.8	2.3
29							22	14	43	2.7	2.8	2.1
30							21	13	28	2.5	2.7	2.1
31							12			2.1	2.7	
1948-49												
1	2.1	2.5	3.6	3.4	* 2.2	56	246	12	26	19	10	3.0
2	2.1	2.7	3.6	3.4	2.2	60	218	10	22	17	8.8	3.2
3	1.9	3.0	3.2	3.4	2.2	70	180	9.2	13	12	9.2	3.9
4	1.9	3.6	3.2	3.5	2.1	180	163	8.3	14	5.6	8.3	5.3
5	1.8	4.2	3.6	10	2.1	450	107	15	14	7.5	3.9	6.8
6	2.3	4.6	3.9	20	2.1	370	82	17	13	6.7	3.0	6.7
7	2.8	4.6	3.7	21	2.1	300	152	15	13	7.5	2.7	7.1
8	3.2	5.3	3.5	22	2.1	300	127	12	12	6.7	2.5	6.4
9	2.8	5.6	3.2	21	2.1	230	95	11	13	7.1	2.8	5.6
10	2.5	5.6	3.0	19	2.1	170	63	10	12	6.8	4.2	5.3
11	2.1	6.4	2.9	18	2.1	130	41	12	13	6.8	9.6	5.0
12	1.9	6.4	2.9	17	2.1	100	29	17	12	5.8	5.0	4.0
13	1.9	6.7	2.9	17	2.1	80	26	16	13	6.8	9.2	4.2
14	1.8	7.1	2.9	17	2.1	70	20	11	12	7.1	4.6	3.9
15	1.8	7.1	2.9	17	2.1	62	28	12	12	6.7	3.9	3.2
16	1.8	7.1	2.9	18	2.1	64	37	11	12	7.5	3.2	3.6
17	1.8	7.1	3.0	18	2.1	85	48	14	13	7.9	4.2	3.6
18	1.9	6.7	3.1	17	2.1	121	57	18	12	9.2	5.0	3.0
19	1.9	6.4	3.2	15	2.1	137	61	16	13	8.3	5.6	2.8
20	1.8	5.6	3.3	13	2.1	163	66	14	14	8.8	5.3	2.3
21	1.8	5.6	3.4	10	2.1	218	79	12	26	8.3	4.6	1.8
22	1.6	5.3	3.4	8.0	2.2	391	57	11	26	7.5	4.2	1.4
23	1.9	5.0	3.4	6.0	2.7	377	48	10	27	7.1	3.9	1.2
24	1.8	5.0	3.4	5.0	15	320	33	10	26	7.9	3.2	1.1
25	1.8	4.6	3.4	4.5	90	369	26	16	31	7.1	2.8	1.6
26	1.9	4.2	3.4	3.9	70	395	23	14	29	18	2.7	2.3
27	2.7	4.2	3.5	3.5	62	563	20	15	18	15	2.8	2.7
28	2.1	3.6	3.5	3.1	62	449	12	17	21	15	2.7	2.8
29	2.1	3.6	3.5	2.8		356	16	20	20	13	2.5	2.5
30	2.3	3.6	3.5	2.5		308	9.2	24	20	12	2.5	2.7
31	2.3		3.4	2.3		273		28		10	2.7	

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 7-31, 1948, Jan. 1 to Mar. 15, 1949.

East Fork Iowa River near Klemme, Iowa—Continued

Daily Discharge, in second-feet, for Water Year 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1949-50												
1.....	2.7	9.2	3.6	1.8	1.1	1.3	110	41	26	14	61	8.2
2.....	3.2	7.1	3.9	1.8	1.0	1.3	96	37	26	13	38	8.2
3.....	3.6	7.9	5.3	1.8	1.0	1.3	85	32	25	12	25	8.0
4.....	3.6	6.7	4.6	1.7	1.0	3.0	58	31	25	11	19	7.8
5.....	3.6	6.4	3.9	1.6	1.0	55	45	30	24	9.9	17	8.0
6.....	3.2	6.0	4.2	1.6	1.0	200	37	30	23	9.6	13	8.2
7.....	3.6	4.6	*3.9	*1.5	1.0	370	35	31	21	9.4	11	8.2
8.....	4.2	5.0	3.6	1.5	1.1	200	35	32	18	9.1	11	8.2
9.....	4.2	5.6	3.4	1.5	1.1	*145	35	177	14	8.6	9.9	8.0
10.....	5.0	6.7	3.7	1.5	1.2	50	36	111	13	8.6	34	8.2
11.....	5.0	7.9	4.0	1.5	1.2	30	39	64	14	8.6	29.	11
12.....	5.6	11	4.4	1.5	1.2	25	27	51	14	10	25	9.6
13.....	3.6	6.7	5.1	1.5	1.3	22	29	37	14	9.1	23	8.4
14.....	3.6	6.4	5.6	1.5	1.3	20	22	31	15	8.4	19	8.2
15.....	4.2	5.0	4.4	1.4	1.3	20	19	25	57	8.6	18	8.6
16.....	4.6	4.6	4.0	1.4	1.3	20	17	29	66	10	17	8.6
17.....	5.3	4.2	3.5	1.4	1.3	20	17	26	41	14	13	8.4
18.....	5.6	4.6	3.2	1.4	1.3	19	17	29	176	15	13	8.4
19.....	5.3	4.6	2.9	1.3	1.3	18	15	26	284	34	11	8.6
20.....	4.6	4.2	2.7	1.3	1.3	17	14	26	189	40	9.9	9.1
21.....	5.0	4.6	2.6	1.3	1.3	15	13	26	113	30	9.6	14
22.....	4.6	4.2	2.5	1.3	1.3	21	15	38	90	25	9.1	9.4
23.....	5.0	4.6	2.4	1.3	1.3	45	16	34	100	22	8.4	8.9
24.....	4.6	4.6	2.3	1.2	1.3	180	48	45	84	19	8.0	8.2
25.....	4.2	4.6	2.2	1.2	1.3	250	113	45	51	17	7.8	8.4
26.....	3.9	5.6	2.1	1.2	1.3	450	61	44	34	16	7.8	8.2
27.....	3.6	5.3	2.1	1.2	1.3	430	46	39	19	14	8.6	8.6
28.....	3.2	5.0	2.1	1.1	1.3	290	38	38	20	13	7.6	8.4
29.....	3.0	4.6	2.0	1.1	.....	200	46	38	18	14	9.1	8.2
30.....	2.8	3.9	1.9	1.1	.....	160	50	32	15	14	8.2	9.6
31.....	2.8	.....	1.9	1.1	.....	140	.....	28	.....	43	8.0	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 8-31, 1949, Jan. 1 to Apr. 10, 1950.

East Fork Iowa River near Klemme, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1948 to 1950

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
April 1948.....	677	33	13	22.6	0.188	0.21
May.....	969	193	12	31.3	.261	.30
June.....	370.9	82	2.8	12.4	.103	.11
July.....	178.0	22	2.1	5.76	.048	.06
August.....	59.5	3.6	1.0	1.92	.016	.02
September.....	41.9	2.5	.8	1.40	.012	.01
October 1948.....	64.4	3.2	1.6	2.08	.017	.02
November.....	153.0	7.1	2.5	5.10	.042	.05
December.....	102.3	3.9	2.9	3.30	.028	.03
January 1949.....	345.3	22	2.3	11.1	.092	.11
February.....	348.3	90	2.1	12.4	.103	.11
March.....	7,217	563	56	233	1.94	2.24
April.....	2,169.2	246	9.2	72.3	.602	.67
May.....	437.5	28	8.3	14.1	.118	.14
June.....	522	31	12	17.4	.145	.16
July.....	292.7	19	5.6	9.44	.079	.09
August.....	145.6	10	2.5	4.70	.039	.05
September.....	109.2	7.1	1.1	3.64	.030	.03
Water year 1948-49.....	11,906.5	563	1.1	32.6	.272	3.70
October 1949.....	127.0	5.6	2.7	4.10	.034	.04
November.....	171.4	11	3.9	5.71	.048	.05
December.....	104.0	5.6	1.9	3.35	.028	.03
Calendar year 1949.....	11,989.2	563	1.1	32.8	.273	3.72
January 1950.....	43.6	1.8	1.1	1.41	.012	.01
February.....	33.7	1.3	1.0	1.20	.010	.01
March.....	3,418.9	450	1.3	110	.917	1.06
April.....	1,234	113	13	41.1	.342	.38
May.....	1,303	177	25	42.0	.350	.40
June.....	1,629	284	13	54.3	.452	.50
July.....	489.9	43	8.4	15.8	.132	.15
August.....	509.0	61	7.6	16.4	.137	.16
September.....	261.8	14	7.8	8.73	.073	.08
Water year 1949-50.....	9,325.3	450	1.0	25.5	.212	2.87

Salt Creek near Elberon, Iowa

LOCATION.—Lat. 41°58', long. 92°19', in SW¼ sec. 25, T. 83 N., R. 13 W., fastened to center downstream pier 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.

RECORDS AVAILABLE.—October 1945 to September 1950.

GAGE.—Water-stage recorder. Datum of gage is 781.58 feet above mean sea level (Iowa Highway Commission bench marks). Oct. 1-14, 1945, June 14, 1947, to Feb. 10, 1949, wire-weight gage on upstream side of bridge. Oct. 15, 1945, to June 13, 1947, water-stage recorder on left bank at upstream side of bridge (destroyed by flood). All gages at same site and datum.

AVERAGE DISCHARGE.—5 years, 126 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1946-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1945-46...	Jan. 6	7,150	15.84	Nov. 22	13
1946-47...	June 13	(¹)	17.6	Dec. 17	15
1947-48...	Mar. 19	5,820	(²)	Sept. 19, 20	3.1
1948-49...	Mar. 5	3,500	(³)14.85	Oct. 2	3.1
1949-50...	Mar. 7	10,500	15.50	Sept. 30	4.4

(1) Discharge not determined.

(2) Maximum gage height, 14.91 feet Feb. 28 (ice jam).

(3) Ice jam.

1945-50: Maximum discharge, not determined, occurred June 13, 1947 (gage height, 17.6 feet); minimum daily discharge 3.1 second-feet Sept. 19, 20, Oct. 2, 1948.

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

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

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

Salt Creek near Elberon, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1946 and 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1945-46												
1	66	16	81	15	60	45	98	55	49	295	29	18
2	54	16	263	15	57	52	93	67	51	137	32	18
3	41	16	121	15	54	53	88	96	50	100	27	18
4	37	14	76	15	72	56	76	470	40	82	26	18
5	31	14	82	1,700	1,200	98	73	286	32	74	27	17
6	27	14	77	*4,790	*1,500	1,200	78	138	30	68	27	83
7	26	16	60	*998	257	346	89	118	34	70	25	38
8	24	116	58	89	174	82	82	107	35	77	28	623
9	24	58	27	84	120	49	75	98	29	64	24	455
10	24	30	26	78	70	76	75	96	20	73	21	205
11	24	27	24	73	67	114	74	89	21	68	20	101
12	23	58	22	67	58	485	75	82	37	50	21	69
13	22	105	20	62	40	1,120	70	78	49	47	20	55
14	22	52	19	57	30	439	68	74	47	46	21	50
15	22	42	18	52	25	416	63	74	44	45	22	43
16	22	39	17	50	33	394	58	74	49	46	23	38
17	22	35	17	48	40	650	56	76	59	47	445	36
18	22	31	17	46	*48	398	54	77	428	43	94	30
19	22	29	17	45	52	300	52	75	277	40	45	32
20	20	27	17	44	53	259	51	69	371	38	34	60
21	19	25	16	42	54	236	52	66	183	35	29	42
22	20	13	16	41	54	212	66	67	121	33	28	1,010
23	20	16	16	40	53	196	72	70	97	32	25	3,190
24	19	17	16	39	52	209	59	82	107	34	27	496
25	19	24	16	*38	49	209	47	86	121	34	25	255
26	20	25	16	37	42	350	43	77	119	31	26	194
27	19	24	16	37	32	171	43	70	69	30	21	156
28	19	26	16	40	32	155	44	64	65	51	20	146
29	18	26	15	46	.....	140	41	58	76	36	20	119
30	18	26	15	55	.....	116	43	53	498	31	20	100
31	17	.....	15	63	.....	106	.....	51	.....	30	18	.....
1946-47												
1	91	243	89	30	40	65	119	219	5,420	733	87	28
2	84	452	72	34	43	66	119	219	4,720	382	92	24
3	75	313	93	40	48	68	118	194	a700	344	83	24
4	69	241	93	42	53	69	403	174	a609	325	76	23
5	65	201	93	44	*57	70	604	158	6,220	576	70	22
6	60	187	94	46	56	84	555	150	a3,500	1,020	65	22
7	56	185	92	50	55	130	324	151	a1,500	344	60	21
8	56	169	91	*53	54	150	302	140	759	308	56	20
9	55	155	91	56	53	165	273	133	473	281	54	20
10	64	214	92	60	55	170	1,300	130	a86c	259	51	20
11	86	189	92	70	60	146	1,230	126	a740	252	48	20
12	67	162	*91	72	70	192	494	124	a3,000	230	43	20
13	65	151	76	76	95	758	380	124	a13,000	270	40	25
14	74	142	78	201	350	551	335	126	a2,000	214	39	20
15	76	133	72	116	560	192	302	123	a700	198	37	18
16	68	151	45	73	400	161	466	123	a600	191	37	18
17	64	126	15	82	260	146	460	a195	a580	184	39	17
18	223	119	37	84	135	130	340	164	a650	265	35	17
19	146	123	70	82	120	116	416	a140	705	207	32	17
20	101	121	73	81	108	128	644	a130	556	184	31	17
21	88	113	73	50	100	126	378	a126	532	167	30	20
22	82	81	75	68	90	169	318	a122	2,490	158	29	20
23	78	101	*74	65	84	185	290	a120	700	155	29	17
24	814	123	60	70	76	236	261	a118	536	144	28	17
25	570	104	59	80	*68	183	239	116	454	139	28	17
26	282	96	61	80	65	126	219	a112	433	137	32	16
27	209	89	61	76	64	138	200	a111	388	130	28	17
28	176	91	64	67	64	123	191	a1,000	424	122	28	20
29	158	96	38	40	.....	114	187	a2,300	792	117	26	18
30	142	96	28	38	.....	107	216	a600	733	103	32	17
31	119	.....	17	38	.....	112	.....	a500	.....	95	29	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Dec. 11-31, 1945, Jan. 1-5, Jan. 9 to Feb. 6, Feb. 9-24, Dec. 15-19, Dec. 30, 31, 1946, Jan. 1-11, Jan. 30 to Mar. 11, 1947. Gage heights obtained from wire-weight gage readings Oct. 1-17, 22-30, Nov. 5-21, Nov. 27 to Dec. 31, 1945, Jan. 1-7, 14, 21, Feb. 7-15, 18-21, Mar. 14-16, Sept. 23, 1946, May 16, 18, 25, June 8, 9, 19, 1947.

Salt Creek near Elberon, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1948 and 1949

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1947-48												
1.....	18	119	26	13	8	125	87	117	33	18	8.3	10
2.....	18	63	31	12	8	80	76	266	31	20	8.6	9.2
3.....	18	47	40	12	8	70	71	216	30	18	8.6	7.4
4.....	37	39	35	13	8	65	58	164	29	17	8.9	5.5
5.....	26	40	295	14	8	65	66	144	28	18	8.9	5.0
6.....	18	36	88	13	8	60	61	355	50	17	8.3	4.8
7.....	16	32	86	13	8	60	61	260	69	16	8.6	4.8
8.....	16	31	49	13	8	50	67	204	45	15	9.8	4.8
9.....	15	29	50	13	8	50	52	180	33	15	9.2	5.0
10.....	16	35	55	12	8	40	49	161	33	14	8.3	5.0
11.....	16	26	50	12	8	40	54	150	29	14	7.7	5.0
12.....	15	32	50	11	7	35	46	145	38	14	7.4	4.5
13.....	16	18	49	11	7	30	41	135	45	14	6.9	4.0
14.....	16	31	44	10	7	35	35	127	34	15	6.9	3.3
15.....	15	28	40	9	8	288	39	121	37	34	6.6	3.8
16.....	15	46	35	9	9	1,510	36	116	31	18	6.3	3.8
17.....	15	35	25	8	12	2,520	28	92	29	15	6.6	3.3
18.....	15	32	30	8	18	544	30	82	29	13	6.6	3.8
19.....	15	35	30	8	30	*2,400	31	72	26	13	5.5	3.1
20.....	14	35	25	8	35	428	27	69	25	12	5.2	3.1
21.....	14	33	25	8	25	218	26	62	28	15	5.2	24
22.....	14	43	25	8	17	189	33	53	29	21	5.5	10
23.....	14	29	20	7	17	162	90	50	26	15	5.2	7.2
24.....	15	30	18	8	17	139	110	45	24	12	5.0	5.5
25.....	20	25	17	8	20	117	90	44	22	11	4.2	5.0
26.....	29	25	17	8	25	166	126	41	22	18	4.2	4.5
27.....	38	30	18	8	528	456	99	41	21	17	4.2	4.2
28.....	97	25	18	8	814	169	84	38	24	12	4.8	4.5
29.....	42	22	17	8	216	133	68	35	23	11	5.0	4.8
30.....	30	26	18	8	.....	103	67	34	21	11	6.6	3.8
31.....	44	.....	15	7	.....	108	.....	34	.....	10	.....	.....
1948-49												
1.....	3.3	5.0	* 3.5	28	24	430	220	43	27	67	7.3	3.8
2.....	3.1	6.0	5.8	20	24	290	162	42	65	292	7.1	3.6
3.....	3.3	6.6	4.8	17	23	600	132	39	53	68	7.1	13
4.....	3.3	6.3	9.5	110	23	1,300	113	37	29	37	6.6	23
5.....	4.5	6.6	8.9	800	23	2,700	101	36	23	26	6.4	7.5
6.....	4.2	9.8	8.6	200	23	800	92	32	19	52	6.4	4.9
7.....	16	8.0	4.8	65	23	240	81	31	16	38	6.4	4.6
8.....	21	6.9	8.0	190	23	290	72	29	14	23	6.2	4.4
9.....	12	6.3	6.9	86	22	210	66	30	15	18	5.9	3.8
10.....	8.0	6.3	6.6	40	22	130	61	27	14	14	5.7	3.6
11.....	6.0	5.8	5.8	21	21	85	60	26	13	13	6.8	6.4
12.....	5.8	5.2	6.6	23	21	75	58	26	13	12	7.1	158
13.....	5.8	5.5	8.0	25	21	65	57	24	13	11	6.6	28
14.....	5.0	5.5	8.6	19	21	58	55	23	18	10	6.4	11
15.....	5.0	5.8	15	16	21	52	54	24	20	10	5.9	6.2
16.....	4.5	6.6	18	700	20	45	69	24	16	9.8	5.7	4.8
17.....	4.2	7.7	9.8	180	20	42	153	26	13	9.2	5.7	4.4
18.....	4.8	7.4	9.5	54	* 20	40	146	24	11	117	5.7	4.2
19.....	5.2	14	10	43	26	38	101	21	11	58	5.7	3.6
20.....	5.2	32	11	37	35	62	94	20	10	17	5.5	3.3
21.....	5.2	16	* 9.8	34	46	184	86	22	14	13	5.3	3.2
22.....	5.2	12	5.2	33	41	1,090	90	45	13	10	5.1	3.2
23.....	5.0	7.7	5.7	32	40	250	72	35	11	11	4.9	3.2
24.....	6.0	9.2	5.0	30	300	171	59	25	232	16	4.6	3.2
25.....	5.8	9.8	4.5	29	1,300	167	57	24	463	9.8	4.4	3.3
26.....	5.5	10	4.0	29	1,000	173	57	22	69	11	4.2	3.3
27.....	5.8	9.2	4.5	28	750	242	50	19	41	11	4.2	3.3
28.....	6.0	8.0	5.5	28	550	167	46	17	32	9.8	4.0	3.5
29.....	6.0	4.2	26	27	.....	139	45	16	25	8.3	4.2	3.5
30.....	5.8	7.2	95	26	.....	143	44	15	19	7.5	4.2	4.0
31.....	5.8	.....	41	25	.....	320	.....	31	.....	7.3	4.0	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 24-28, Dec. 9-12, 15-31, 1947, Jan. 1 to Mar. 16, Dec. 23-28, 1948, Jan. 1 to Mar. 20, 1949.

Salt Creek near Elberon, Iowa—Continued
Daily Discharge, in second-feet, for Water Year 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1949-50												
1.....	5.1	7.1	7.5	10	* 5.3	200	42	43	28	48	11	6.4
2.....	5.3	7.1	7.1	10	5.0	180	42	37	36	45	11	6.4
3.....	5.7	7.1	7.3	8.0	4.8	160	42	32	49	39	10	6.4
4.....	6.8	7.5	7.5	6.5	4.7	180	41	88	34	36	10	6.2
5.....	7.8	7.3	6.6	5.0	4.7	1,500	35	64	30	36	10	6.2
6.....	7.5	7.3	7.0	4.2	4.7	5,860	33	44	25	31	10	6.2
7.....	133	7.5	6.4	4.1	4.7	4,840	32	32	22	25	10	5.9
8.....	31	7.5	5.8	4.0	30	556	28	46	20	22	11	5.9
9.....	10	7.3	5.6	* 4.0	170	130	34	1,090	20	20	25	5.9
10.....	8.0	7.3	6.0	4.0	250	70	80	288	19	18	9.8	5.7
11.....	7.8	7.8	25	4.0	280	60	74	170	16	18	9.5	5.7
12.....	6.4	9.5	16	4.0	120	54	39	132	16	17	9.2	5.7
13.....	5.5	17	10	100	70	54	29	145	19	17	9.2	5.5
14.....	5.7	10	7.0	120	50	70	29	114	29	16	8.9	5.5
15.....	5.7	8.0	6.0	52	35	250	25	85	313	14	8.9	5.5
16.....	5.7	7.5	6.0	30	32	212	23	73	86	13	8.9	5.3
17.....	5.9	7.5	6.2	23	28	114	22	74	36	14	8.9	5.3
18.....	5.9	7.1	7.0	18	25	83	21	62	890	13	8.3	5.3
19.....	7.5	7.1	7.6	15	23	68	20	56	336	15	8.3	5.1
20.....	9.8	7.1	9.0	13	21	58	19	57	139	16	8.3	5.1
21.....	11	7.1	10	12	19	60	17	56	93	14	7.8	5.1
22.....	10	6.4	7.0	10	18	167	17	61	67	13	7.5	4.9
23.....	8.6	7.5	6.4	9.5	17	191	17	52	59	13	7.1	4.9
24.....	7.5	7.8	5.6	8.8	16	141	68	47	3,320	12	7.1	4.9
25.....	7.1	7.3	5.4	8.4	16	75	242	171	859	12	7.1	4.8
26.....	7.1	7.3	5.2	8.6	16	96	111	73	177	11	6.6	4.8
27.....	7.5	8.0	5.2	9.0	16	110	64	50	117	11	6.4	4.8
28.....	7.5	7.5	5.2	10	70	54	48	46	90	11	6.4	4.6
29.....	7.5	7.8	5.0	8.5	.....	39	42	41	70	11	6.4	4.6
30.....	7.5	7.5	5.2	7.5	.....	42	44	37	58	11	6.4	4.4
31.....	7.3	.....	7.0	6.0	.....	42	.....	35	.....	12	6.4	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 6-31, 1949, Jan. 1 to Mar. 5, Mar. 9-15, 1950.

Monthly Discharge for Water Year 1946

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1945.....	783	66	17	25.3	0.126	0.15
November.....	977	116	13	32.6	.163	.18
December.....	1,232	263	15	39.7	.198	.23
January 1946.....	8,821	4,790	15	285	1.42	1.64
February.....	4,378	1,500	25	156	.780	.81
March.....	8,732	1,200	45	282	1.41	1.62
April.....	1,958	98	41	65.3	.326	.36
May.....	3,043	470	51	98.2	.491	.57
June.....	3,208	498	20	107	.535	.60
July.....	1,887	295	30	60.9	.304	.35
August.....	1,270	445	18	41.0	.205	.24
September.....	7,712	3,190	17	257	1.28	1.43
Water year 1945-46.....	44,001	4,790	13	121	.605	8.18

Salt Creek near Elberon, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946.....	4,363	814	55	141	.705	.81
November.....	4,767	452	81	159	.795	.89
December.....	2,159	94	15	69.6	.348	.40
Calendar year 1946.....	52,298	4,790	15	143	.715	9.72
January 1947.....	2,064	201	30	66.6	.333	.38
February.....	3,283	560	40	117	.585	.61
March.....	5,179	758	65	167	.835	.96
April.....	11,683	1,300	118	389	1.94	2.17
May.....	8,274	2,300	111	267	1.34	1.54
June.....	54,765	13,000	388	1,825	9.12	10.18
July.....	8,234	1,020	95	266	1.33	1.53
August.....	1,397	92	26	45.1	.226	.26
September.....	792	28	16	19.7	.098	.11
Water year 1946-47.....	106,760	13,000	15	292	1.46	19.84
October 1947.....	707	97	14	22.8	.114	.13
November.....	1,077	119	18	35.9	.180	.20
December.....	1,341	295	15	43.3	.216	.25
Calendar year 1947.....	98,596	13,000	14	270	1.35	18.32
January 1948.....	308	14	7	9.94	.050	.06
February.....	1,900	814	7	65.5	.330	.35
March.....	10,515	2,520	30	339	1.70	1.96
April.....	1,808	126	26	60.3	.302	.34
May.....	3,653	355	34	118	.590	.68
June.....	944	69	21	31.5	.158	.18
July.....	483	34	10	15.6	.078	.09
August.....	214.1	10	4.2	6.91	.034	.04
September.....	172.7	24	3.1	5.76	.029	.03
Water year 1947-48.....	23,122.8	2,520	3.1	63.2	.316	4.31
October 1948.....	192.3	21	3.1	6.20	.031	.04
November.....	256.6	32	4.2	8.55	.043	.05
December.....	375.9	95	3.5	12.1	.060	.07
Calendar year 1948.....	20,822.6	2,520	3.1	56.9	.284	3.89
January 1949.....	2,995	800	16	96.6	.483	.56
February.....	4,483	1,300	20	160	.800	.83
March.....	10,598	2,700	38	342	1.71	1.97
April.....	2,553	220	44	85.1	.426	.47
May.....	855	45	15	27.6	.138	.16
June.....	1,332	463	10	44.4	.222	.25
July.....	1,016.7	292	7.3	32.8	.164	.19
August.....	175.3	7.3	4.0	5.65	.028	.03
September.....	335.8	158	3.2	11.2	.056	.06
Water year 1948-49.....	25,168.6	2,700	3.1	69.0	.345	4.68
October 1949.....	374.7	133	5.1	12.1	.060	.07
November.....	235.8	17	6.4	7.86	.039	.04
December.....	233.8	25	5.0	7.54	.038	.04
Calendar year 1949.....	25,188.1	2,700	3.2	69.0	.345	4.67
January 1950.....	537.1	120	4.0	17.3	.086	.10
February.....	1,355.9	280	4.7	48.4	.242	.25
March.....	15,716	5,860	39	507	2.54	2.92
April.....	1,380	242	17	46.0	.230	.26
May.....	3,401	1,090	32	110	.550	.63
June.....	7,073	3,320	16	236	1.18	1.32
July.....	604	48	11	19.5	.098	.11
August.....	281.4	25	6.4	9.08	.045	.05
September.....	183.0	6.4	4.4	5.43	.027	.03
Water year 1949-50.....	31,355.7	5,860	4.0	85.9	.430	5.82

Bear Creek at Ladora, Iowa

LOCATION.—Lat. $41^{\circ}45'$, long. $92^{\circ}11'$, in SW $\frac{1}{4}$ sec. 7, T. 80 N., R. 11 W., on right bank 10 feet downstream from bridge on county road G, $\frac{1}{4}$ mile south of Ladora and $2\frac{1}{2}$ miles upstream from Little Bear Creek.

DRAINAGE AREA.—185 square miles.

RECORDS AVAILABLE.—October 1945 to September 1950.

GAGE.—Water-stage recorder. Prior to June 25, 1946, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—5 years, 131 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1946-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1945-46...	Jan. 5	9,050	13.10	Nov. 3-6	8
1946-47...	June 5	8,580	10.89	Sept. 20	3
1947-48...	Feb. 28	7,220	11.48	Jan. 27-31	1
1948-49...	Mar. 4	3,930	8.74	Oct. 2, 3, Sept. 25	2.7
1949-50...	June 18	7,320	11.64	Jan. 10-12	2.0

1949-50: Maximum discharge observed, 9,050 second-feet Jan. 5, 1946 (gage height, 13.10 feet); minimum daily, 1 second-foot Jan. 27-31, 1948.

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

COOPERATION.—Services of observer and several discharge measurements furnished by Corps of Engineers.

Bear Creek at Ladora, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1946 and 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1945-46													
1	38	d10	438	30	51	36	180	49	121	157	g34	28	
2	22	49	318	30	48	36	143	325	80	125	g42	25	
3	20	d8	151	30	45	38	145	2,030	78	116	38	24	
4	17	d8	100	155	42	41	147	908	78	106	33	24	
5	d16	d8	70	2,500	200	69	143	490	76	100	37	23	
6	d15	d8	75	*7,780	150	1,300	141	416	75	92	38	26	
7	d15	49	75	*688	95	189	159	363	70	87	33	40	
8	d14	451	70	85	50	81	d159	247	78	101	37	585	
9	d14	178	70	78	40	75	d130	249	84	92	30	445	
10	d13	22	62	73	32	d104	d100	267	54	96	24	213	
11	d13	22	55	67	23	106	93	247	54	g107	22	120	
12	d13	d204	49	62	20	400	75	228	310	176	22	87	
13	d13	13	d304	41	57	20	670	100	200	313	164	24	75
14	d13	21	35	52	23	222	68	189	204	g57	25	68	
15	d13	18	35	46	27	351	d66	189	226	g56	28	60	
16	d13	18	34	40	30	601	64	182	360	h57	23	54	
17	d13	22	34	39	32	661	64	204	472	h59	177	50	
18	13	23	34	38	33	404	60	208	876	g60	53	46	
19	d12	16	33	37	41	308	50	256	1,820	g54	34	47	
20	d12	15	33	37	41	277	47	204	1,020	g46	29	82	
21	d11	17	33	37	38	249	46	226	655	h42	26	64	
22	d11	11	32	36	41	195	50	256	414	g40	28	607	
23	d11	13	32	36	41	390	53	256	267	h36	32	g976	
24	d11	17	32	35	41	515	63	270	195	g34	135	g306	
25	d11	21	32	34	23	339	52	233	397	g49	66	g206	
26	d10	27	32	34	*47	1,360	41	182	421	g42	41	h195	
27	d10	33	31	33	29	631	54	167	g222	g40	36	208	
28	d10	40	31	*33	28	310	53	167	161	d62	36	342	
29	p10	34	31	34	.....	277	50	161	136	d50	33	h163
30	d10	*25	30	43	.....	274	53	157	149	g43	31	g104
31	d10	.....	30	55	.....	267	.....	130	.....	g40	30	.....
1946-47													
1	d88	334	112	24	62	76	113	267	2,550	1,240	54	15	
2	d80	480	108	30	60	75	110	235	1,550	530	53	13	
3	d74	346	136	32	58	74	11	215	661	430	49	12	
4	d66	277	117	35	56	74	574	197	553	372	42	11	
5	d60	238	109	38	*55	75	1,430	180	5,860	417	38	10	
6	d54	219	105	40	53	80	664	176	1,110	350	36	10	
7	d49	208	103	42	52	130	419	173	706	278	33	10	
8	d44	200	100	45	51	150	388	159	g655	246	32	9	
9	d49	180	94	*48	50	163	338	g139	g494	223	30	8	
10	d54	272	88	55	50	169	1,490	h134	g414	206	28	10	
11	d66	226	88	70	50	136	836	h132	h348	188	26	10	
12	d52	200	*89	85	60	182	503	g132	956	173	26	10	
13	d50	189	83	110	80	1,040	405	g113	4,100	163	25	10	
14	d48	178	84	200	250	427	360	g98	1,020	143	25	8	
15	d47	169	82	135	500	169	330	g122	655	134	24	7	
16	g46	186	70	115	400	157	595	134	541	124	h24	h5	
17	d46	180	15	102	293	149	589	215	553	115	h24	h4	
18	g512	165	63	100	182	134	400	167	583	113	h22	h4	
19	g452	161	76	92	150	126	632	139	565	105	22	h4	
20	h366	147	80	80	130	165	1,270	132	454	100	20	h3	
21	g286	143	78	70	120	153	583	130	1,320	93	h17	10	
22	g215	130	75	70	110	165	462	124	1,380	88	h17	7	
23	d402	136	*70	90	95	195	400	130	685	85	h15	6	
24	g1,020	137	68	105	*88	358	338	122	516	80	h14	6	
25	g813	134	63	110	83	230	305	121	435	75	h15	h5	
26	g532	128	70	98	81	155	276	115	382	74	h14	h5	
27	g318	122	78	82	80	155	253	112	335	69	h15	6	
28	g215	119	70	78	78	132	237	297	305	64	h14	7	
29	g184	121	60	70	.....	122	239	1,020	888	60	h5	h5
30	167	119	40	69	.....	110	293	508	3,500	57	h5	h5
31	155	.....	18	65	.....	113	.....	378	.....	56	16	.....

*Winter discharge measurement made on this day.

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

(g) Computed from graph based on gage readings.

(h) Computed from wire-weight gage readings.

Note—Stage-discharge relation affected by ice Nov. 22-27, Dec. 5-31, 1945, Jan. 1-5, Jan. 7 to Feb. 18, Dec. 14-31, 1946, Jan. 1 to Feb. 16, Feb. 19 to Mar. 8, 1947.

Bear Creek at Ladora, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1948 and 1949

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1947-48												
1.....	8	69	18	13	2	90	70	37	43	31	21	13
2.....	9	40	21	12	2	85	60	338	g34	28	19	8
3.....	9	28	31	10	2	80	53	267	g31	23	18	6
4.....	26	25	52	10	2	80	49	264	g29	21	19	4
5.....	25	24	121	10	2	75	74	136	33	22	18	4
6.....	14	24	77	11	*2	75	53	764	45	21	15	4
7.....	10	20	42	12	2	70	66	392	40	19	16	3
8.....	8	19	*28	12	2	70	53	276	38	17	15	6
9.....	7	20	28	12	2	70	40	226	36	d17	14	6
10.....	7	18	30	12	2	60	40	201	33	d14	12	5
11.....	7	22	33	11	2	55	40	186	32	d13	10	4
12.....	7	19	30	10	2	40	34	176	32	g9	9	4
13.....	6	21	26	10	2	35	31	155	33	32	8	4
14.....	6	20	25	8	2	30	30	141	32	d14	7	4
15.....	6	29	25	6	2	300	29	151	32	d12	7	3
16.....	6	32	20	6	4	1,130	29	128	30	g9	7	3
17.....	6	28	19	5	17	1,510	28	101	29	7	8	3
18.....	6	24	19	4	45	724	25	93	26	5	7	3
19.....	6	23	20	4	g80	*2,010	23	83	25	6	6	3
20.....	6	23	21	3	150	495	22	77	23	4	6	4
21.....	6	24	20	3	120	295	g19	72	22	1,310	6	59
22.....	6	24	19	2	105	199	22	66	22	406	6	21
23.....	7	22	19	2	95	163	60	63	20	g70	5	10
24.....	10	23	19	2	90	139	43	57	19	g32	5	6
25.....	14	21	18	2	100	122	36	56	17	g428	5	4
26.....	28	2	17	*2	125	179	49	50	17	517	6	3
27.....	28	19	17	1	*1,160	286	52	49	g26	110	7	3
28.....	56	17	17	1	1,700	112	41	46	63	46	8	3
29.....	40	16	16	1	125	101	33	45	45	g45	6	3
30.....	22	15	15	1	.....	83	31	43	38	g30	14	3
31.....	43	.....	15	1	.....	83	.....	42	.....	g22	34	.....
1948-49												
1.....	2.9	4.7	7.0	110	29	850	242	50	g124	45	8.9	3.1
2.....	2.7	5.0	6.6	70	28	1,200	182	48	478	58	7.8	2.9
3.....	2.7	5.0	7.0	75	*27	1,640	150	44	121	45	6.8	4.2
4.....	2.9	5.0	7.4	800	26	2,160	132	41	63	36	5.6	18
5.....	3.1	15	10	300	26	1,330	119	38	48	35	5.3	11
6.....	3.9	8.9	20	220	25	524	108	36	42	34	4.7	7.3
7.....	20	6.0	13	190	25	218	95	37	37	41	4.2	5.0
8.....	18	5.3	12	180	25	278	85	35	35	31	3.9	4.4
9.....	10	5.1	11	160	24	233	82	41	35	30	4.2	3.9
10.....	7.3	4.7	10	120	24	110	76	37	31	26	4.2	3.9
11.....	6.0	4.4	10	100	24	75	73	36	30	25	4.7	6.4
12.....	5.3	4.4	9.6	85	24	64	67	35	28	25	5.0	65
13.....	5.0	4.7	9.2	75	24	60	66	34	155	22	5.6	103
14.....	4.7	4.4	14	68	24	57	67	32	206	22	4.7	18
15.....	4.4	4.4	130	420	24	42	78	33	108	23	4.2	8.4
16.....	4.4	6.0	60	500	24	39	104	34	59	22	3.9	6.0
17.....	4.4	7.3	50	60	25	37	182	38	50	20	3.9	5.0
18.....	4.7	6.0	45	120	25	36	161	36	43	26	3.9	4.7
19.....	3.9	117	35	130	27	35	112	36	42	22	5.6	4.2
20.....	3.9	61	28	90	34	45	104	35	38	20	5.3	3.9
21.....	4.4	21	*24	80	50	91	93	37	43	22	4.2	3.6
22.....	4.7	14	23	74	47	1,160	100	58	35	18	3.6	3.4
23.....	4.4	12	22	65	43	278	82	41	31	16	3.4	3.4
24.....	5.0	12	22	58	1,500	185	67	35	83	18	3.1	2.9
25.....	4.7	12	21	52	750	155	64	35	578	14	2.9	2.7
26.....	4.4	12	21	48	500	173	61	32	108	15	2.9	2.9
27.....	4.4	9.4	21	42	550	269	58	g 28	156	116	3.4	2.9
28.....	4.4	8.5	28	38	650	167	55	g 27	112	29	3.6	3.1
29.....	4.4	7.8	150	36	.....	132	52	g 26	69	15	3.1	2.9
30.....	4.7	7.4	170	33	.....	158	52	g 24	49	14	3.9	2.9
31.....	4.4	.....	150	31	.....	338	.....	g 21	.....	11	3.4	.....

*Winter discharge measurement made on this day.

d Doubtful gage-height record; discharge computed on basis of records for nearby stations.
g Computed from graph based on gage readings.

Note—Stage-discharge relation affected by ice Nov. 25 to Dec. 3, Dec. 7-31, 1947, Jan. 1 to Mar. 16, Nov. 28 to Dec. 31, 1948, Jan. 1 to Mar. 2, Mar. 11-19, 1949 (no gage-height record Feb. 17, 18, 20-26, 1948).

Bear Creek at Ladora, Iowa—Continued

Daily Discharge, in second-feet, for Water Year 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1949-50												
1.....	2.7	5.3	6.4	2.6	6.0	400	24	30	23	110	15	5.3
2.....	2.9	5.3	6.4	2.5	5.0	520	22	26	28	98	14.	5.0
3.....	2.7	5.3	6.0	2.4	4.5	450	21	24	31	89	11.	4.4
4.....	2.9	5.3	5.8	2.3	4.5	1,200	23	33	25	80	11.	4.2
5.....	2.9	5.0	6.7	2.2	5.0	4,000	22	33	22	73	11.	3.9
6.....	3.6	5.3	6.0	2.2	5.0	*2,400	15	22	19	66	10.	3.9
7.....	3.4	5.3	5.6	2.1	240	1,150	14	18	18	55	8.9	4.2
8.....	4.7	5.3	6.4	*2.1	170	655	14	24	18	50	8.4	4.2
9.....	4.7	5.3	7.2	*2.1	300	266	21	f555	19	46	8.9	4.2
10.....	3.9	5.3	8.0	2.0	330	120	71	233	19	43	15	4.4
11.....	3.1	5.3	9.0	2.0	240	70	59	123	16	41	15	5.3
12.....	2.9	19	20	2.0	140	50	41	93	22	39	12	4.4
13.....	2.9	28	12	100	80	40	34	82	50	41	11	4.7
14.....	2.7	14	8.0	70	50	a35	32	73	27	38	8.9	4.7
15.....	2.7	10	6.6	52	32	a40	29	59	133	35	9.4	4.4
16.....	2.7	8.9	6.8	38	28	a45	25	53	39	34	8.4	4.4
17.....	2.7	7.8	7.0	28	25	a43	22	51	28	37	6.8	4.2
18.....	2.9	7.3	7.2	21	23	a35	f18	47	4,640	35	6.0	4.2
19.....	5.3	7.3	7.4	17	20	a28	f15	42	1,490	37	6.0	6.8
20.....	53.0	6.8	7.0	14	19	a24	f14	44	374	35	5.3	8.4
21.....	48.	6.8	6.2	11	18	45	12	48	206	29	5.3	6.0
22.....	21.	6.8	5.6	10	17	a100	14	41	130	27	5.3	6.4
23.....	13.	7.3	5.0	9.6	16	227	16	35	102	25	6.0	6.0
24.....	10.	7.8	4.5	9.6	15	73	32	30	3,300	22	5.3	5.0
25.....	8.9	7.8	4.0	12	14	48	44	35	1,040	21	4.7	5.0
26.....	7.8	7.3	3.6	11	14	46	38	32	382	20	5.3	4.7
27.....	6.8	8.4	3.4	10	14	45	29	30	245	18	19	5.0
28.....	6.4	7.3	3.2	10	60	34	27	35	194	17	17	6.0
29.....	6.0	7.3	3.0	11	.....	27	29	33	155	18	8.4	7.3
30.....	5.6	6.0	2.8	9.0	.....	26	35	29	128	16	6.8	6.4
31.....	5.3	.....	2.7	7.0	.....	25	.....	28	.....	15	6.0	.....

*Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of records of nearby stations.

f Computed from partly estimated gage-height record.

Note—Stage-discharge relation affected by ice Dec. 4-31, 1949, Jan. 1 to Mar. 6, Mar. 10-13, 1950. Discharge computed from once daily wire-weight gage readings Jan. 20 to Feb. 5, Mar. 21, 1950.

Monthly Discharge for Water Year 1946

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1945.....	427	38	10	13.8	0.075	0.09
November.....	1,338	451	8	44.6	.241	.27
December.....	2,158	438	30	69.6	.376	.43
January 1946.....	12,334	7,780	30	398	2.15	2.48
February.....	1,331	200	20	47.5	.257	.27
March.....	10,896	1,360	36	351	1.90	2.19
April.....	2,649	180	41	88.3	.477	.53
May.....	9,676	2,030	49	312	1.69	1.95
June.....	9,502	1,820	54	317	1.71	1.91
July.....	2,186	157	34	70.5	.381	.44
August.....	1,277	177	22	41.2	.223	.26
September.....	5,293	976	23	177	.957	1.06
Water year 1945-46.....	59,067	7,780	8	162	.876	11.88

Bear Creek at Ladora, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946	6,610	1,020	44	213	1.15	1.33
November	5,844	480	119	195	1.05	1.17
December	2,489	136	15	80.3	.434	.50
Calendar year 1946	70,087	7,780	15	192	1.04	14.09
January 1947	2,385	200	24	76.9	.416	.48
February	3,377	500	50	121	.654	.68
March	5,639	1,040	74	182	.984	1.13
April	14,942	1,490	110	498	2.69	3.01
May	6,316	1,020	98	204	1.10	1.27
June	34,074	5,800	305	1,136	6.14	6.85
July	6,451	1,240	56	208	1.12	1.30
August	803	54	14	25.9	.140	.16
September	235	15	3	7.8	.042	.05
Water year 1946-47	89,165	5,800	3	244	1.32	17.93
October 1947	445	56	6	14.4	.078	.09
November	729	69	15	24.3	.131	.15
December	878	121	15	28.3	.153	.18
Calendar year 1947	76,274	5,800	3	209	1.13	15.35
January 1948	199	13	1	6.4	.035	.04
February	4,006	1,760	2	138	.746	.81
March	8,846	2,010	30	285	1.54	1.78
April	1,235	74	19	41.2	.223	.25
May	4,781	764	37	154	.832	.96
June	945	63	17	31.5	.170	.19
July	3,340	1,310	4	108	.584	.67
August	344	34	5	11.1	.060	.07
September	209	59	3	7.0	.038	.04
Water year 1947-48	25,957	2,010	1	70.9	.383	5.23
October 1948	170.1	20	2.7	5.49	.030	.03
November	400.3	117	4.4	13.3	.072	.08
December	1,146.8	170	6.6	37.0	.200	.23
Calendar year 1948	25,622.2	2,010	1	70.0	.378	5.15
January 1949	4,430	800	31	143	.773	.89
February	4,604	1,500	24	164	.886	.93
March	12,139	2,160	35	392	2.12	2.44
April	2,969	242	52	99.0	.535	.60
May	1,119	58	21	36.1	.195	.22
June	3,037	578	28	101	.546	.61
July	896	116	11	28.9	.156	.18
August	139.9	8.9	2.9	4.51	.024	.03
September	319.0	103	2.7	10.6	.057	.06
Water year 1948-49	31,370.1	2,160	2.7	85.9	.464	6.30
October 1949	254.1	53	2.7	8.20	.044	.05
November	239.9	28	5.0	8.00	.043	.05
December	109.5	20	2.7	6.44	.035	.04
Calendar year 1949	30,346.4	2,160	2.7	83.1	.449	6.10
January 1950	476.7	100	2.0	15.4	.083	.10
February	1,940	330	4.5	69.3	.375	.39
March	12,267	4,000	24	396	2.14	2.47
April	812	71	12	27.1	.146	.16
May	2,041	555	18	65.8	.356	.41
June	12,923	4,640	16	431	2.33	2.60
July	1,310	110	15	42.3	.229	.26
August	291.1	19	4.7	9.39	.051	.06
September	153.0	8.4	3.9	5.10	.028	.03
Water year 1949-50	32,907.3	4,040	2.0	90.2	.488	6.62

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 1950.

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

AVERAGE DISCHARGE.—12 years, 13.3 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	June 1	2,520	11.48	Oct. 26, 27	0.87
1943-44...	May 20	3,530	12.66	Sept. 10, 21	.07
1944-45...	June 1	398	7.66	many days	no flow
1945-46...	Jan. 5	2,530	(¹)11.24	Dec. 18, 19	.05
1946-47...	June 30	1,390	10.72	Sept. 10, 18-20	no flow
1947-48...	July 21	2,180	11.17	many days	no flow
1948-49...	Feb. 24	1,200	(¹)11.10	many days	no flow
1949-50...	July 1	2,780	12.45	Oct. 3-7	.01

(1) Affected by ice.

1938-50: Maximum discharge, 3,530 secondfeet May 20, 1944 (gage height, 12.66 feet, from high-water mark in gage well); no flow at times in 1940, 1941, 1945, 1947, 1948, 1949.

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

COOPERATION.—Station operated through facilities of Iowa Institute of Hydraulic Research which furnishes services of research students.

Rapid Creek near Iowa City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	1.8	2.0	5.2	a26	2.3	6.4	12	49	197	9.7	4.5	1.3
2.....	1.5	2.0	5.0	a24	2.4	5.7	9.7	41	138	8.9	3.3	1.1
3.....	1.3	1.6	4.5	a23	109	5.2	8.9	31	42	8.6	4.2	1.1
4.....	1.8	1.4	4.3	a15	219	4.7	8.7	26	30	13	21	104
5.....	1.7	12	4.5	a11	151	4.3	7.5	22	41	11	7.2	15
6.....	1.3	5.3	4.3	a12	107	4.7	7.5	35	110	8.4	5.5	31
7.....	1.2	4.3	3.7	a11	98	4.5	33	21	52	7.5	4.7	7.5
8.....	1.1	3.7	3.7	a11	101	3.6	17	19	44	6.6	4.2	5.0
9.....	1.1	106	3.8	a12	181	5.0	16	17	40	6.1	4.0	4.0
10.....	1.1	27	3.7	11	158	5.4	14	18	36	5.7	3.4	3.4
11.....	1.1	13	3.4	9.6	32	5.7	14	18	56	5.5	3.2	2.9
12.....	1.1	10	3.2	7.2	25	*11	16	15	47	5.2	5.3	50
13.....	1.1	8.1	3.1	6.8	12	13	12	13	29	4.7	31	12
14.....	1.1	6.6	3.4	6.5	8.5	11	11	12	24	43	5.4	8.2
15.....	1.1	6.4	3.5	8.1	7.4	229	10	87	73	7.5	8.0	6.1
16.....	1.1	10	3.1	7.4	6.5	110	10	95	49	20	4.3	5.0
17.....	1.1	31	3.4	7.0	5.5	21	8.4	50	47	7.7	3.4	4.2
18.....	1.0	11	3.2	5.5	7.4	15	8.2	115	30	5.7	3.0	3.7
19.....	1.0	9.4	2.5	3.8	132	13	7.9	70	25	8.1	2.7	3.6
20.....	1.0	8.3	2.7	3.5	*109	14	7.5	76	70	5.4	2.6	3.4
21.....	a1.0	7.6	3.0	4.3	58	14	6.8	54	33	5.2	2.5	3.0
22.....	a1.1	6.6	3.2	5.2	29	62	6.6	44	24	4.5	2.3	2.9
23.....	a1.2	7.6	3.4	6.3	20	65	10	39	20	a 4.4	4.2	2.4
24.....	a1.0	8.1	3.2	5.2	13	36	7.2	43	18	4.3	2.6	2.3
25.....	.92	7.4	3.4	4.3	10	22	7.5	35	16	3.9	2.2	2.2
26.....	.87	6.1	*154	3.8	8.9	19	7.2	29	14	3.7	6.1	2.2
27.....	.87	6.3	175	3.5	11	15	293	25	13	3.4	3.2	2.0
28.....	1.0	5.9	* 56	3.1	13	13	59	21	14	3.7	2.5	1.9
29.....	1.1	5.7	a 40	2.4	.....	13	250	20	11	3.7	2.6	1.7
30.....	5.8	5.5	a 32	2.8	.....	14	70	24	10	3.0	2.0	1.7
31.....	3.7	.....	a 28	2.5	.....	13	.....	21	.....	3.4	1.7	.....
1943-44												
1.....	1.9	2.4	1.8	.92	5.2	9.7	f 22	37	34	8.2	1.1	.75
2.....	1.7	1.8	2.0	1.1	5.9	9.5	16	31	25	23	1.1	.47
3.....	1.5	1.8	1.4	1.2	5.4	9.7	16	d 37	22	7.7	.83	.34
4.....	1.5	1.7	1.9	1.3	4.8	16	14	d 31	20	6.6	1.6	.25
5.....	1.4	1.8	1.7	1.3	4.8	16	13	d 27	a 19	6.1	2.0	.17
6.....	1.4	10	5.5	1.2	3.2	13	13	32	a 18	5.5	1.1	.12
7.....	1.4	14	3.0	1.0	4.7	6.6	16	27	a 17	5.2	.79	.09
8.....	1.3	5.5	3.2	.56	3.3	10	13	27	a 25	5.2	.66	.09
9.....	1.3	3.9	2.4	.50	2.2	12	19	24	56	5.2	.56	.08
10.....	1.3	3.2	1.9	.90	1.1	f 13	28	20	27	6.0	.45	.07
11.....	1.3	2.6	1.8	.70	1.7	f 49	40	19	22	6.4	.43	.13
12.....	1.3	2.7	1.6	.60	2.4	f100	40	d 17	19	5.4	.51	.23
13.....	3.0	2.7	.80	.45	2.8	f 36	34	d 15	17	4.3	.37	.49
14.....	1.9	2.6	.70	.30	3.2	f116	36	14	14	4.0	.27	.45
15.....	1.5	2.6	.50	.25	3.0	*f109	64	13	13	3.6	.88	.34
16.....	1.5	1.9	.50	.35	3.2	66	f 44	15	183	3.4	2.6	.27
17.....	1.4	2.5	.47	.49	3.0	49	f 35	13	49	3.6	4.2	.20
18.....	1.4	2.6	.45	.63	2.4	40	34	11	35	3.6	.66	.14
19.....	1.6	2.4	.56	.75	2.2	a 36	33	118	28	3.4	.39	.12
20.....	1.5	2.0	.92	.87	2.4	a 29	38	f903	22	2.7	.30	.09
21.....	7.8	2.2	1.1	1.0	2.5	a 22	50	f285	20	2.6	.32	.07
22.....	2.6	1.5	1.0	1.1	372	a 31	107	f113	18	2.4	.34	.08
23.....	2.0	1.6	.64	1.1	f199	a 44	263	88	14	2.4	.27	.14
24.....	1.9	1.7	.34	1.3	f164	a 36	d109	154	12	2.6	.27	.19
25.....	1.8	1.8	.38	3.0	f 69	25	d 90	168	11	2.0	.19	.20
26.....	1.6	2.3	.60	4.5	f 64	22	d 77	f124	36	2.5	.51	.18
27.....	1.6	1.5	.80	*252	20	21	d 66	f 93	14	2.5	1.6	.17
28.....	1.7	1.7	.95	16	15	19	d 54	66	9.7	1.8	.97	.17
29.....	1.8	1.7	1.0	9.0	12	19	d 43	54	8.7	1.4	.56	.14
30.....	1.9	1.5	1.0	9.5	.....	16	43	47	7.7	1.2	2.0	.13
31.....	5.0	.....	.87	7.0	.....	22	.....	40	.....	1.1	3.6	.....

* Winter discharge measurement made on this day.

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

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

f Fragmentary gage-height record; discharge computed from partly estimated gage heights.

Note—Stage-discharge relation affected by ice Nov. 27 to Dec. 25, 1942, Jan. 12 to Feb. 3, Feb. 10-20, Mar. 2-9, Dec. 12-17, 19-31, 1943, Jan. 6-16, 28, 29, Feb. 9-18, 20-22, 1944.

Rapid Creek near Iowa City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1	0.24	0.58	0.53	0.6	0.4	55	11	6.0	74	12	3.2	0
2	1.9	1.0	.39	.5	.4	45	10	7.2	30	8.0	1.6	0
3	1.4	12	.49	.4	.4	35	9.4	6.0	17	6.6	1.0	0
4	1.4	2.2	.75	.35	.4	22	19	5.3	15	6.4	.68	0
5	14	1.2	1.2	.3	.45	*14	11	4.9	13	5.5	2.0	0
6	1.5	3.9	2.0	.35	.6	11	9.7	4.7	12	4.7	c1.3	0
7	.68	2.5	2.0	.3	.7	11	8.5	5.4	11	4.3	c.78	0
8	c.47	1.7	1.4	.25	.7	11	8.0	4.4	10	4.1	.68	0
9	c.49	1.2	1.2	.2	.8	11	7.7	4.1	9.7	3.8	.57	0
10	c.53	1.1	.97	.2	1.0	9.8	7.2	5.5	72	3.0	.52	.02
11	.49	1.0	.79	.25	2.4	* 9.7	7.4	4.3	14	2.6	c.63	.01
12	.45	.97	1.3	.3	6.5	8.0	7.4	4.4	12	23	.74	0
13	.43	.97	1.7	.3	13	7.0	c 8.0	4.1	10	11	.55	0
14	.47	1.0	1.4	.4	60	7.4	c 6.0	76	9.1	3.3	1.2	3.0
15	.45	.92	1.1	.4	*100	8.0	6.2	58	13	2.8	.52	2.4
16	.43	.92	1.1	.4	22	7.7	33	44	14	2.4	.28	.36
17	.45	.83	1.1	.5	14	7.2	20	82	9.1	2.3	.28	.13
18	.45	.79	.7	.7	12	6.0	15	47	7.7	2.0	.30	.07
19	c.45	.87	.8	.8	10	6.2	13	36	7.2	1.8	.20	.04
20	c.45	.87	.7	.9	10	5.7	12	31	7.2	1.6	.13	.03
21	c.45	.87	.5	1.0	25	5.3	10	59	6.9	1.6	.10	.02
22	c.45	.83	.4	1.0	45	5.1	8.2	31	6.2	1.6	.06	.11
23	c.41	.87	.45	1.1	15	4.9	8.0	26	5.5	1.2	.05	.73
24	c.47	.83	.45	1.1	45	5.3	11	24	5.3	1.1	.03	6.2
25	.47	.87	.4	1.2	*90	*57	9.4	21	5.3	.94	.02	.59
26	.43	3.2	.4	1.3	90	55	7.7	19	4.3	.82	.01	4.1
27	.43	2.0	.4	*1.2	22	29	6.9	18	7.7	.74	0	19
28	.43	1.3	.45	1.1	25	21	6.6	17	9.3	1.7	0	41
29	.47	1.2	.45	.8	.....	18	6.6	15	7.6	1.0	0	6.5
30	.47	.83	.6	.6	.....	15	6.0	14	79	.94	0	3.2
31	.53	.....	.9	.49	.....	13	.....	21	.....	1.0	0	.....
1945-46												
1	3.0	.50	11	.2	3.0	56	8.0	2.9	2.0	8.8	.57	.30
2	2.0	.55	15	.2	2.5	36	7.0	5.5	2.0	7.7	30	.41
3	1.3	.60	9.7	.2	1.5	13	7.0	19	1.6	7.2	2.0	.30
4	1.2	.43	6	95	10	8.8	6.0	17	1.5	6.2	.80	.22
5	.99	c.52	5	*1,600	*83	14	6.0	9.7	1.3	6.0	.89	.20
6	.89	.85	4.8	47	15	46	7.0	7.4	1.2	5.5	.89	.19
7	.74	1.1	4.5	12	7.0	10	8.0	6.6	.99	5.3	.63	53
8	.68	3.0	2.5	7.4	3.0	6.7	8.0	5.7	.85	4.9	.55	25
9	.68	2.0	2.0	*102	2.4	6.5	7.0	5.3	.66	4.0	.63	4.0
10	.57	.74	1.0	14	1.9	6.3	6.0	5.5	57	3.3	.37	2.9
11	.60	.63	1.0	8.8	2.1	15	6.0	5.1	20	2.6	.28	1.8
12	.57	18	.8	11	1.9	58	5.5	4.4	41	2.4	.27	1.1
13	.50	7.2	.6	6.4	1.5	36	5.0	4.0	26	2.4	.30	.85
14	.55	2.3	.5	4.8	1.2	26	4.8	3.8	9.1	2.2	24	.78
15	.52	1.4	.4	3.3	.9	24	4.6	5.1	16	2.0	11	.68
16	.50	1.5	.2	3.1	1.4	26	4.4	3.8	11	2.3	2.0	.57
17	c.55	1.2	.1	3.2	2.0	52	4.2	6.6	32	4.9	55	.48
18	.57	1.0	.05	3.4	2.3	37	4.0	8.0	187	2.4	7.4	.39
19	.45	1.1	.05	2.8	2.0	30	3.8	5.5	141	1.8	3.5	.33
20	.41	.99	.1	1.7	2.0	25	3.6	4.4	53	1.8	2.2	4.4
21	.43	1.4	.2	1.3	2.0	22	3.3	4.1	35	1.3	1.6	1.0
22	.39	.74	.2	.9	1.9	20	3.6	3.3	26	1.2	1.4	25
23	.39	.82	.2	.9	1.9	22	6.0	3.3	20	1.0	1.2	23
24	.43	1.2	.2	.9	1.9	24	4.0	4.9	17	.94	1.0	5.1
25	.45	1.3	.2	.9	2.0	30	3.3	3.5	54	1.3	.85	2.9
26	.43	1.3	.2	.8	2.0	25	3.0	3.3	18	1.0	.78	2.3
27	.45	3.6	.2	.8	1.7	20	3.0	2.6	13	1.2	.68	1.9
28	.45	3.8	.2	.8	2.2	16	3.2	2.4	11	1.5	.66	2.4
29	.45	4.1	.2	.8	.....	14	3.0	2.0	11	.94	.63	1.6
30	.45	3.6	.2	5.0	.....	12	2.6	2.2	13	.71	.57	1.2
31	.48	.....	.2	20	.....	10	.....	3.3	.....	.63	.45	.....

* Winter discharge measurement made on this day.

c Stage-discharge relation affected by debris on the control.

Note—Stage-discharge relation affected by ice Dec. 14-31, 1944, Jan. 1 to Mar. 16, Dec. 4-31, 1945, Jan. 1 to Feb. 28, 1946. No gage-height record Jan. 11-17, 1945, Mar. 24 to Apr. 20, Sept. 3, 4, 1946; discharge computed on basis of records for nearby stations.

Rapid Creek near Iowa City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	1.1	4.2	3.2	0.35	0.96	2.3	17	30	85	44	3.6	0.05
2.....	1.0	4.8	2.6	.34	.92	2.3	16	28	70	30	4.0	.03
3.....	.63	12	3.6	.33	.90	2.3	14	25	43	a24	3.4	a.03
4.....	.60	a7.6	3.6	.33	.90	2.3	58	21	36	a19	2.6	a.02
5.....	.63	a5.2	3.8	.34	.90	2.3	182	a20	103	104	2.3	a.02
6.....	.52	a4.6	3.6	.35	.90	2.3	71	a21	88	185	2.0	a.02
7.....	.41	a6.3	3.6	.38	.91	2.3	48	a18	97	29	1.8	.02
8.....	.60	a4.6	3.5	.42	.93	2.4	40	a15	67	22	1.8	.02
9.....	.63	6.2	3.5	.45	.97	2.4	35	14	43	18	1.6	.01
10.....	1.0	17	3.0	.52	1.0	2.4	56	a13	34	16	1.3	0
11.....	1.8	11	2.9	.60	1.1	2.5	43	a12	27	14	.99	.12
12.....	1.0	9.6	3.6	.65	1.2	2.6	32	13	42	174	.85	.14
13.....	.94	8.5	2.9	4.0	4.3	20	29	12	71	33	a2.5	.37
14.....	.89	7.8	2.4	40	*53	7.0	25	12	37	a14	a2.2	.16
15.....	.85	7.4	2.0	10	41	4.3	23	11	30	a11	a1.2	.08
16.....	.71	7.6	1.8	4.9	10	4.0	39	12	26	a13	a1.1	.03
17.....	.85	6.4	1.7	4.6	4.8	4.0	36	11	71	a14	a.88	.02
18.....	35	6.2	1.6	4.3	4.2	4.2	29	11	59	a11	a.56	0
19.....	7.5	6.2	1.5	4.0	3.6	4.4	60	9.9	a34	9.1	a.40	0
20.....	4.8	6.0	1.5	3.7	3.0	7.6	193	9.9	a16	8.3	a.30	0
21.....	3.6	5.8	1.4	2.3	2.5	15	70	a8.0	a18	7.4	a.22	.33
22.....	3.2	4.4	1.4	3.3	2.4	13	54	a8.2	a17	7.1	a.17	.50
23.....	2.5	5.1	1.4	3.7	2.4	42	a45	a8.5	a19	6.7	a.11	.20
24.....	11	5.7	1.4	4.1	2.3	56	a38	a8.6	a15	6.2	.17	.11
25.....	9.6	4.8	1.5	4.6	2.3	29	a32	9.1	a14	6.0	.17	.07
26.....	6.4	4.2	1.5	3.9	2.3	20	a27	7.4	a18	5.8	.18	.06
27.....	5.1	4.4	1.6	3.4	2.3	19	24	7.8	a15	5.5	.19	.06
28.....	4.4	4.4	1.7	2.7	2.3	16	22	48	a13	5.1	.14	.06
29.....	4.2	4.0	1.3	2.1	.....	14	22	107	19	4.9	.11	.03
30.....	3.6	4.0	1.0	1.3	.....	11	25	40	280	4.4	.06	.03
31.....	3.4	.....	.65	1.1	.....	13	.....	30	.....	3.8	c.05	.....
1947-48												
1.....	.11	c.99	.27	.45	0	a3.5	5.3	3.5	1.8	3.4	2.3	.08
2.....	.11	c.45	.43	.55	0	a2.0	4.8	29	1.6	2.4	1.8	.06
3.....	.10	c.30	1.84	.70	0	a1.9	4.4	17	1.4	1.6	1.6	.05
4.....	.23	c.27	11	.80	0	a1.8	4.4	13	1.2	1.5	1.6	.04
5.....	.17	c.43	10	.90	0	a1.7	5.8	10	1.2	3.5	1.2	.04
6.....	.13	c.35	4.9	1.0	0	a1.6	4.8	21	3.0	1.5	.94	.03
7.....	.09	c.30	4.0	1.0	0	a1.5	6.2	18	2.2	.85	.99	.02
8.....	.07	c.24	3.1	.90	0	a1.4	4.6	14	1.1	c.63	1.0	.07
9.....	.09	.23	2.6	.85	0	a1.0	3.8	13	94	c.57	.89	.07
10.....	.07	.28	2.3	.80	0	h.8	3.6	12	82	c.50	.71	.05
11.....	.06	.35	2.4	.75	0	a.7	3.8	11	68	c.45	.66	.02
12.....	.04	.35	2.2	.70	0	a.5	3.2	12	11	55	.60	.02
13.....	.03	a.26	a2.0	.50	0	a.4	2.9	11	3.2	12	.48	.01
14.....	.03	a.32	a1.8	.35	0	25	2.8	10	2.4	49	.39	0
15.....	.03	a1.1	a1.4	.25	a2	400	2.6	12	c1.8	5.5	.39	0
16.....	.02	a 1.0	a.85	.15	.80	288	2.4	9.1	c1.3	3.6	.33	0
17.....	.02	.71	1.0	.10	g*150	42	1.9	7.8	1.0	2.3	.32	0
18.....	.03	.69	.90	.10	g50	23	2.0	7.4	1.0	1.6	.27	0
19.....	.02	a.63	.85	.09	a35	414	1.9	6.4	.99	1.3	.23	0
20.....	.02	a.60	.80	.09	a30	33	1.8	6.2	.89	1.1	.20	.05
21.....	.02	a.55	.75	.08	v7	22	1.6	5.7	1.0	280	.16	.48
22.....	.02	a.55	.70	.07	a5	16	2.2	4.6	1.2	9.3	.14	.12
23.....	.02	a.57	.60	.07	a7	13	5.3	4.2	3.6	5.5	.11	.02
24.....	.06	a.63	.50	.06	.75	10	6.0	3.6	1.0	3.8	a.09	.01
25.....	.09	a.60	.60	.06	a30	9.3	3.8	3.5	.63	96	a.08	0
26.....	c.35	a.55	.65	.05	*12	11	3.6	3.4	10	20	a.06	0
27.....	c.45	a.50	.75	.04	*600	9.1	5.8	3.0	16	11	a.05	0
28.....	c.94	a.45	.65	.04	.80	7.4	3.6	2.8	65	4.9	.04	0
29.....	c.66	a.41	.60	.03	a13	7.6	3.0	2.3	16	3.5	.03	0
30.....	c.33	a.39	.65	.02	.....	6.2	3.0	2.0	5.5	14	.06	0
31.....	c.55	.....	.70	.01	.....	6.9	.....	2.3	.....	3.5	.05	.....

* Winter discharge measurement made on this day.

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

c Backwater from debris on control.

g Computed from graph based on gage readings.

Note—Stage-discharge relation affected by ice Dec. 15-31, 1946, Jan. 1 to Mar. 19, Dec. 7-9, 144-31, 1947, Jan. 1 to Mar. 15, 1948.

Rapid Creek near Iowa City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July	Aug.	Sept.
1948-49												
1.....	0	0.22	0.20	1.5	2.4	23	30	6.4	1.3	4.9	0.14	0.05
2.....	0	.18	.25	1.8	2.2	60	23	6.2	4.8	4.4	.08	.05
3.....	0	.18	.35	2.3	2.0	150	18	4.9	2.3	3.6	.06	.05
4.....	0	.22	.45	100	1.9	200	16	4.6	1.5	2.9	.05	.05
5.....	0	.33	1.2	25	1.8	68	14	4.4	1.1	2.6	.05	.05
6.....	0	.33	.90	7.0	1.7	48	13	3.8	.89	2.3	.05	.05
7.....	13	.26	.45	22	1.7	35	11	3.5	.78	2.0	.04	.05
8.....	1.9	.22	.30	18	1.6	33	9.3	3.4	.63	1.9	.04	.05
9.....	.52	.20	.24	8.0	1.6	41	8.5	4.2	.55	1.8	.04	.05
10.....	.24	.20	.19	3.3	1.6	29	8.3	4.2	.52	1.3	.04	.05
11.....	.17	.19	.22	3.5	1.7	20	8.3	4.0	.48	1.0	2.4	.05
12.....	.13	.19	.32	3.2	1.8	15	7.6	3.6	.50	.99	6.4	.88
13.....	.11	.19	.45	2.9	1.8	12	7.1	3.2	7.5	.89	.78	.47
14.....	.10	.18	.68	2.7	1.7	9.4	7.6	2.6	15	.78	.27	3.2
15.....	.08	.17	23	130	1.7	9.0	13	2.0	4.9	71	.12	1.2
16.....	.09	1.2	3.4	75	1.6	8.0	13	2.9	2.8	.60	.07	.68
17.....	.06	3.4	1.8	30	1.7	6.6	20	3.6	2.0	.48	.16	.45
18.....	.06	1.0	1.2	20	5.0	5.6	16	2.9	1.6	.71	0	.32
19.....	.06	4.8	1.0	7.0	130	5.2	13	2.5	1.2	.68	0	.18
20.....	.06	3.8	.80	5.6	60	4.6	11	2.4	.94	.52	0	.11
21.....	.06	1.3	.55	5.0	32	12	10	4.0	3.4	.74	0	.08
22.....	.06	.85	.40	2.5	40	20	13	8.3	1.0	.52	0	.06
23.....	.05	.66	.28	5.0	150	18	10	4.4	4.3	.33	0	.03
24.....	.05	.55	.23	30	*500	14	9.1	3.0	161	.30	0	.03
25.....	.06	.66	.17	15	170	14	8.3	3.5	81	.28	0	.03
26.....	.06	.74	.13	6.8	70	28	8.0	2.6	16	.26	0	.04
27.....	.08	.60	.11	4.5	27	33	7.4	2.3	11	.57	0	.02
28.....	.09	.45	.80	4.0	10	22	6.7	1.9	10	.50	0	0
29.....	.10	.35	20	3.5	.....	19	6.7	1.6	7.6	.27	.06	0
30.....	.19	.27	8.0	3.0	.....	41	6.7	1.4	6.0	.18	.06	0
31.....	.23	.....	4.0	2.6	.....	59	.....	1.3	.....	.19	.06	.....
1949-50												
1.....	.02	.19	.24	a20	a1.1	a100	2.9	13	3.4	322	55	a.78
2.....	.02	.18	.23	a4.0	1.0	a25	2.8	11	4.9	55	11	a.62
3.....	.01	.18	.26	1.5	1.0	a10	3.5	10	4.1	30	7.8	a.54
4.....	.01	.19	.33	.90	1.1	300	5.7	74	3.2	16	6.9	a.43
5.....	.01	.18	.33	.60	9.0	610	6.0	23	2.6	12	6.7	a.42
6.....	.01	.19	.39	.50	*250	310	5.7	17	2.3	9.3	5.8	.41
7.....	.01	.19	.35	.45	80	178	5.7	13	1.9	7.8	5.1	.39
8.....	.03	.20	.27	.45	190	12	4.6	10	1.8	6.9	4.6	.45
9.....	.05	.22	.23	.65	220	6.2	8.0	50	1.8	5.8	4.2	.37
10.....	.06	.23	.28	1.3	180	6.2	18	24	1.6	5.3	10	.35
11.....	.02	.23	1.8	.60	150	5.1	13	18	1.2	4.9	5.5	.39
12.....	.02	.44	1.4	.70	20	3.8	8.8	15	4.3	238	3.5	.45
13.....	.03	.89	.41	243	6.0	3.4	6.9	13	115	47	3.0	.50
14.....	.03	.63	.17	24	2.8	a16	6.2	12	40	17	2.8	.45
15.....	.03	.41	10	10	2.1	12	5.7	9.6	46	13	2.5	.37
16.....	.04	.30	.11	3.0	1.9	4.6	4.9	8.3	13	12	1.9	.30
17.....	.06	.28	.16	1.0	1.7	4.4	4.8	8.3	8.5	16	1.6	.23
18.....	.07	.26	.30	.65	1.6	4.8	4.6	7.4	155	9.6	1.3	.20
19.....	.12	.26	.57	.50	1.5	4.4	4.2	6.9	50	75	1.2	.19
20.....	.22	.24	.66	.43	1.4	2.8	3.6	6.9	26	d50	1.2	.22
21.....	6.4	.23	.57	.49	1.3	5.1	2.9	83	19	d35	30	1.6
22.....	1.5	.22	.41	.60	1.3	8.0	3.2	20	14	d24	a5.0	1.0
23.....	.57	.22	.23	1.0	1.2	6.2	5.7	12	12	d16	a1.4	.57
24.....	.37	.28	.18	23	1.2	4.9	21	9.3	21	d11	a1.0	.39
25.....	.28	.35	.20	60	1.2	4.0	64	7.6	12	d5.5	a.88	.33
26.....	.24	.35	.22	a8.0	1.4	38	28	6.9	8.8	d7.6	a.78	.27
27.....	.24	.30	.20	a2.7	2.5	12	20	6.0	7.4	d6.9	a1.0	.22
28.....	.24	.30	.19	4.5	300	6.4	16	5.8	6.9	d6.2	a1.2	.24
29.....	.23	.30	.18	a8.0	.....	4.0	15	5.1	5.8	d5.6	a1.4	.24
30.....	.22	.27	.22	a3.0	.....	3.5	16	4.9	5.1	d140	a1.1	.26
31.....	.19	.....	*163	a1.5	.....	3.5	.....	4.4	.....	d42	a.96	.....

* Winter discharge measurement made on this day.

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

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

Note—Stage-discharge relation affected by ice Nov. 30 to Dec. 2, Dec. 6-9, 18-26, 28-31, 1948, Jan. 1 to Mar. 4, Mar. 11-20, Dec. 27-29, 1949, Jan. 3-12, 15-23, 28, Feb. 2-27, Mar. 4, 6, 1950.

Rapid Creek near Iowa City, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1942	43.16	5.8	0.87	1.39	0.057	0.07
November	345.9	106	1.4	11.5	.469	.53
December	575.4	175	2.5	18.6	.759	.87
Calendar year 1942	4,312.84	348	.15	11.8	.482	6.56
January 1943	264.8	26	2.4	8.54	.349	.40
February	1,606.9	219	2.3	57.4	2.34	2.44
March	778.2	229	3.6	25.1	1.02	1.18
April	956.6	203	6.6	31.9	1.30	1.45
May	1,185.0	115	12	38.2	1.56	1.80
June	1,353.0	197	10	45.1	1.84	2.05
July	241.5	43	3.0	7.79	.318	.37
August	200.6	42	1.7	6.47	.264	.30
September	294.8	104	1.1	9.83	.401	.45
Water year 1942-43	7,845.86	293	.87	21.5	.878	11.91
October 1943	60.8	7.8	1.3	1.96	.080	.09
November	88.2	14	1.5	2.94	.120	.13
December	41.78	5.5	.34	1.35	.055	.06
Calendar year 1943	7,072.18	293	.34	19.4	.792	10.72
January 1944	320.87	252	.25	10.4	.424	.49
February	994.4	372	1.1	33.3	1.36	1.46
March	1,022.5	116	6.6	33.0	1.35	1.55
April	1,470	263	13	49.0	2.00	2.23
May	2,663	903	7.7	85.9	3.51	4.04
June	819.1	183	7.7	27.3	1.11	1.24
July	140.6	23	1.1	4.54	.185	.21
August	31.43	4.2	.19	1.01	.041	.05
September	6.36	.75	.07	.212	.0087	.01
Water year 1943-44	7,629.04	903	.07	20.8	.849	11.56
October 1944	32.14	14	.24	1.04	.042	.05
November	49.32	12	.58	1.64	.067	.07
December	26.92	2.0	.39	.868	.035	.04
Calendar year 1944	7,546.64	903	.07	20.6	.841	11.44
January 1945	19.25	1.3	.2	.621	.025	.03
February	612.75	100	.4	21.9	.894	.93
March	526.3	57	4.9	17.0	.694	.80
April	309.9	33	6.0	10.3	.420	.47
May	705.3	76	4.1	22.8	.931	1.07
June	504.1	79	4.3	16.8	.686	.77
July	123.84	23	.74	3.99	.163	.19
August	17.43	3.2	0	.562	.023	.03
September	87.51	41	0	2.92	.119	.13
Water year 1944-45	3,014.76	100	0	8.26	.337	4.58
October 1945	22.07	3.0	.39	.712	.029	.03
November	67.37	18	.43	2.25	.092	.10
December	68.10	15	.05	2.20	.090	.10
Calendar year 1945	3,063.92	100	0	8.39	.342	4.65
January 1946	1,959.6	1,600	.2	63.2	2.58	2.97
February	162.2	83	.9	37.9	2.36	2.46
March	747.3	58	6.3	24.1	.984	1.13
April	150.9	8	2.6	5.03	.205	.23
May	170.2	19	2.0	5.49	.224	.26
June	766.77	187	.57	25.6	1.04	1.16
July	95.42	8.8	.63	3.08	.126	.14
August	153.49	55	.27	4.95	.202	.23
September	164.30	53	.19	5.48	.224	.25
Water year 1945-46	4,527.72	1,600	.05	12.4	.506	9.06

Rapid Creek near Iowa City, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1946	118.46	35	0.41	3.82	0.156	0.18
November	196.0	17	4.0	6.53	.267	.30
December	70.75	3.8	.65	2.28	.093	.11
Calendar year 1946	4,755.39	1,600	.19	13.0	.531	9.42
January 1947	113.96	40	.33	3.68	.150	.17
February	154.29	53	.90	5.51	.225	.23
March	331.9	56	2.3	10.7	.437	.50
April	1,405	193	14	46.8	1.91	2.13
May	601.4	107	7.4	19.4	.792	.91
June	1,507	280	13	50.2	2.05	2.29
July	855.3	185	3.8	27.6	1.13	1.30
August	36.95	4.0	.05	1.19	.049	.06
September	2.59	.50	0	.086	.0035	.004
Water year 1946-47	5,393.60	280	0	14.8	.604	8.184
October 1947	4.96	.94	.02	.160	.0065	.008
November	15.02	1.1	.23	.501	.020	.02
December	61.79	11	.27	1.99	.081	.09
Calendar year 1947	5,090.16	280	0	13.9	.567	7.71
January 1948	11.56	1.0	.01	.373	.015	.02
February	1,176	600	0	40.6	1.66	1.79
March	1,362.3	414	.4	43.9	1.79	2.07
April	110.9	6.2	1.6	3.70	.151	.17
May	280.8	29	2.0	9.06	.370	.43
June	159.45	65	.63	5.32	.217	.24
July	599.8	280	.45	19.3	.788	.91
August	17.77	2.3	.03	.573	.023	.03
September	1.24	.48	0	.041	.0017	.002
Water year 1947-48	3,801.59	600	0	10.4	.424	5.78
October 1948	17.61	13	0	.568	.023	.03
November	23.89	4.8	.17	.796	.032	.04
December	72.07	23	.11	2.32	.095	.11
Calendar year 1948	3,833.39	600	0	10.5	.429	5.84
January 1949	550.7	130	1.5	17.8	.727	.84
February	1,224.5	500	1.6	43.7	1.78	1.86
March	1,062.4	200	4.6	34.3	1.40	1.61
April	353.6	30	6.7	11.8	.482	.54
May	109.6	8.3	1.3	3.54	.144	.17
June	391.29	161	.48	13.0	.521	.59
July	39.20	4.9	.18	1.26	.051	.06
August	10.97	6.4	0	.354	.014	.02
September	141.98	88	0	4.73	.193	.22
Water year 1948-49	3,997.81	500	0	11.0	.449	6.09
October 1949	11.35	6.4	.01	.366	.015	.02
November	8.71	.89	.18	.290	.012	.01
December	174.19	163	.10	5.62	.229	.26
Calendar year 1949	4,078.49	500	0	11.2	.457	6.20
January 1950	427.02	243	.43	13.8	.563	.65
February	1,522.3	390	1.0	54.4	2.22	2.31
March	1,715.3	610	2.8	55.3	2.26	2.60
April	317.4	64	2.8	10.6	.433	.48
May	515.4	83	4.4	16.6	.678	.78
June	598.6	155	1.2	20.0	.816	.91
July	1,255.4	322	4.9	40.5	1.65	1.91
August	187.32	55	.78	6.04	.247	.28
September	13.18	1.6	.19	.439	.018	.02
Water year 1949-50	6,746.17	610	.01	18.5	.755	10.23

Ralston Creek at Iowa City, Iowa

LOCATION.—Lat. $41^{\circ}40'10''$, long. $91^{\circ}30'40''$, in SE $\frac{1}{4}$ NW $\frac{1}{4}$ 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 1950 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 bench mark).

AVERAGE DISCHARGE.—18 years (1932-50), 1.48 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	June 1	1,090	7.72	Oct. 1, 2, 9-12	0.02
1943-44...	Jan. 27	554	6.48	many days	.01
1944-45...	June 10	155	4.00	at times during Aug. and Sept.	no flow
1945-46 ..	Aug. 2	547	6.46	July 31	no flow
1946-47...	June 30	465	6.61	Sept. 2-20, 25-27	no flow
1947-48...	July 21	791	6.73	many days	no flow
1948-49...	June 23	125	3.37	many days	no flow
1949-50...	July 1	1,510	8.32	Oct. 1-19, Dec. 9, 13-17	no flow

1924-50: Maximum discharge, 1,510 second-feet 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, backwater from debris on control, and those below 0.5 second-feet, all of which are poor.

COOPERATION.—Station operated through facilities of Iowa Institute of Hydraulic Research which furnished services of research students.

Ralston Creek at Iowa City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	0.02	0.08	0.34	1.6	0.13	0.35	1.3	3.6	77	0.55	0.34	0.12
2.....	.02	.05	.18	1.5	.11	.21	1.0	2.8	13	.45	.72	.15
3.....	.03	.09	.15	1.4	10	.23	.93	1.8	6.7	.45	11	.32
4.....	.06	.06	.16	8.0	12	.32	.88	1.7	4.2	.76	1.2	8.8
5.....	.05	.63	.18	.66	11	.23	.76	1.6	5.2	.63	.63	.93
6.....	.05	.20	.20	.84	5.2	.24	.76	4.0	7.4	.52	.66	3.6
7.....	.06	.13	.19	.76	2.8	.19	7.2	1.8	4.0	.43	.60	.76
8.....	.04	.12	.16	.72	7.8	.20	2.5	1.8	3.2	.34	.31	.52
9.....	.02	9.3	.20	.84	9.0	.21	2.3	1.4	3.0	a.29	.26	.48
10.....	.02	1.17	.23	.84	7.0	.21	1.7	1.9	2.5	.24	.20	.36
11.....	.02	.52	.20	.72	1.9	.31	2.0	1.7	7.7	.24	.18	.23
12.....	.02	e.41	.14	.55	2.1	.69	2.3	1.2	3.8	.27	2.1	6.6
13.....	.04	e.31	.11	.43	a1.0	.60	1.5	1.2	2.2	.20	5.6	.66
14.....	.07	e.24	.12	.60	a.80	.98	1.2	1.5	1.8	5.0	.52	.48
15.....	.03	.26	.15	.56	a.80	*36	1.3	23	8.4	.43	2.90	.34
16.....	.03	1.4	.14	.52	a.70	6.4	1.1	10	8.3	2.0	.55	.26
17.....	.03	2.6	.20	.50	a.70	1.7	.80	5.5	4.5	.41	.29	.21
18.....	.04	.63	.16	.44	a.90	1.1	.80	14	2.6	.29	.27	.20
19.....	.04	.52	.08	.36	a10	1.4	.80	8.1	1.8	.59	.57	.21
20.....	.04	.63	.08	.38	6.7	1.2	.72	12	5.8	.31	.18	.18
21.....	.04	.75	.11	.43	2.2	1.6	.60	5.5	2.0	.31	.14	.18
22.....	.05	.36	.20	.43	2.5	7.9	.72	4.0	1.6	a.32	.14	.16
23.....	.06	.55	.27	.34	1.9	13	1.4	3.4	1.3	a.31	.78	.14
24.....	.04	.57	.31	.32	1.2	4.0	.72	4.8	1.2	.32	.18	.15
25.....	.04	.52	.26	.26	.57	2.6	1.1	3.4	.93	.31	.15	.15
26.....	.05	.32	*36	.20	.50	2.2	1.2	2.8	.80	.20	1.8	.15
27.....	.05	.26	9.2	.19	.69	1.8	42	2.5	.69	.34	.29	.13
28.....	.05	.34	3.8	.20	.48	1.5	5.2	2.0	.84	.18	.20	.13
29.....	.05	.31	2.5	.20	.....	1.6	23	1.7	.57	.38	.23	.12
30.....	.36	.34	1.9	.24	.....	1.8	5.5	2.8	.57	.52	.16	.13
31.....	.15	.....	1.7	.18	.....	1.8	.....	1.9	.....	.20	.13	.....
1943-44												
1.....	.15	.21	.16	.09	.41	.84	2.0	e2.8	1.8	.48	.05	.09
2.....	.13	.18	.19	.08	.57	.98	1.3	e2.5	1.4	.60	.05	.05
3.....	.11	.16	.15	.09	.48	1.2	1.3	e3.4	1.2	.50	.02	.04
4.....	.11	.18	e.18	.10	.44	1.6	1.2	e2.8	1.0	.36	.33	.03
5.....	.11	.16	e.24	.10	.48	1.2	1.1	e2.5	1.0	.31	.11	.03
6.....	.11	2.9	1.5	.08	.21	.93	e1.2	e3.2	.88	.27	.05	.02
7.....	.11	1.1	.36	.06	.30	.63	e1.5	2.3	.84	.26	.04	.01
8.....	.11	.45	.48	.05	.20	.98	1.2	e3.0	2.1	.27	.02	.01
9.....	.12	.31	.34	.04	.17	.88	2.3	e2.3	4.1	.24	.02	.01
10.....	.15	.27	.29	.05	.10	2.1	2.2	1.9	1.6	.31	.01	.01
11.....	.18	.21	.16	.04	.12	7.7	4.2	1.7	e1.6	.48	.01	.05
12.....	.23	.21	.15	.03	.13	8.0	3.6	1.5	e1.5	.32	.02	.06
13.....	.46	.20	.13	.02	.18	4.2	2.8	1.5	e1.2	.24	.01	.10
14.....	.13	.21	.09	.01	.16	19	4.2	1.3	e.98	.21	.01	.06
15.....	.10	.24	.04	.01	.24	10	7.8	1.3	e1.2	.15	f.03	.05
16.....	.10	.16	.02	.02	.28	5.8	4.0	3.4	14	.14	f.06	.05
17.....	.10	.20	.02	.03	.31	4.2	3.2	2.6	3.4	.16	f1.2	.03
18.....	.11	.23	.02	.10	.28	3.2	3.4	2.5	1.6	.16	.05	.02
19.....	.11	.21	.02	.16	.26	3.0	2.6	7.9	1.4	.16	.02	.02
20.....	.17	e.20	.01	.21	.31	2.4	3.2	22	1.2	e.11	.02	.02
21.....	.74	e.19	.01	.26	.32	1.9	5.4	18	1.1	e.14	.03	.02
22.....	.16	e.20	.01	.29	25	2.6	15	7.7	1.1	e.14	.03	.01
23.....	.15	e.19	.02	.27	8.3	4.0	34	5.8	e.84	.11	.03	.05
24.....	e.15	e.19	.02	.45	4.0	3.0	10	6.6	e.76	.11	.02	e.07
25.....	e.16	e.20	.02	1.8	2.8	2.2	6.1	11	.76	.09	.01	e.05
26.....	e.18	e.18	.04	2.0	6.0	2.6	5.5	8.9	1.4	.14	.12	.03
27.....	e.19	e.16	.05	*34	1.5	2.6	4.2	8.1	.69	.12	.21	.02
28.....	e.18	.15	.06	1.2	1.2	2.2	3.2	4.0	.52	.08	.10	.02
29.....	e.15	.15	.05	.62	1.0	2.3	3.8	3.0	.48	.05	.05	.02
30.....	e.26	.14	.05	.81	.....	1.9	e4.5	2.5	.45	.05	e.16	.02
31.....	1.1	.....	.06	.60	.....	3.5	.....	2.0	.....	.04	e.36	.....

* Winter discharge measurement made on this day.

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

c Backwater from debris on control.

f Fragmentary gage-height record; discharge computed on basis of partly estimated gage-height record.

Note—Stage-discharge relation affected by ice Dec. 26, 1942, Jan. 4-9, 14, 15, Jan. 17 to Feb. 12, Feb. 25 to Mar. 13, Dec. 11-13, 18-24, 27-31, 1943, Jan. 6-18, Feb. 7-18, 22, 1944.

Ralston Creek at Iowa City, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	0.06	0.06	0.04	0.09	0.08	2.9	0.88	0.48	8.7	0.98	0.05	0
2.....	.76	.19	.02	.08	.08	2.5	.72	.76	2.9	.69	.50	0
3.....	.34	1.5	.05	.08	.09	1.9	.76	.55	1.8	.60	.11	0
4.....	c.42	.18	.10	.07	.09	1.2	2.5	.43	1.5	.57	.06	0
5.....	1.4	.13	.15	.07	.11	1.1	.93	.36	1.2	.50	.29	0
6.....	.16	.66	.29	.07	.11	.78	.84	.36	1.2	.43	.10	0
7.....	.10	.26	.36	.07	.13	.66	.72	.61	1.1	.41	.06	0
8.....	.08	.20	.26	.08	.13	.67	.66	.36	.90	.36	.05	0
9.....	.08	.15	.20	.07	.14	.70	.57	.34	.82	.31	.05	0
10.....	.07	.14	.18	.09	.21	.64	.52	.55	14	.21	.05	0
11.....	.07	.12	.18	.09	.34	.88	.55	.36	1.6	.19	.08	0
12.....	.06	.12	.23	.10	.70	.76	.55	.36	1.2	7.1	.08	0
13.....	.06	.12	.21	.11	1.8	.72	.72	.36	.98	1.7	.06	0
14.....	.08	.12	.18	.14	5.9	.76	.50	14	.79	.41	.76	.53
15.....	.09	.11	.18	.16	*8.8	.98	.60	7.9	1.8	.29	.07	.22
16.....	.07	.11	.15	.16	1.7	.80	5.9	6.0	1.4	.24	.07	.03
17.....	.07	.11	.11	.16	.80	.57	1.8	9.6	.93	.20	.09	.01
18.....	.08	.10	.08	.18	.60	.60	1.2	4.5	.71	.19	.05	.01
19.....	.06	.10	.08	.20	.48	1.0	3.4	.60	.16	.02	0	0
20.....	.08	.10	.09	.20	.52	c.45	.98	2.6	.66	.15	.01	0
21.....	.09	.10	.08	.20	4.3	.38	.76	6.8	.57	.16	.01	0
22.....	.07	.10	.07	.20	1.9	.36	.66	2.5	.48	.15	.01	.04
23.....	.06	.10	.08	.21	.84	.36	.66	2.2	.43	.12	0	.22
24.....	.06	.10	.09	.21	4.0	.36	1.4	1.8	.38	.10	.01	1.7
25.....	.05	.11	.09	.21	12	10	.93	1.6	.36	.09	.01	.09
26.....	.05	.43	.00	.24	2.2	6.6	.69	e1.4	.32	.07	0	1.6
27.....	.05	.19	.11	.24	1.0	2.6	.57	1.3	1.9	.06	0	5.6
28.....	c.08	.14	.11	.20	1.4	1.7	.55	1.2	.78	.14	0	6.8
29.....	.10	.14	.11	.16	.....	1.5	.50	1.0	3.4	.10	0	.72
30.....	.07	.07	.12	.12	.....	1.2	.43	.88	7.4	.09	0	.61
31.....	.06	.....	.12	.09	.....	1.0	.....	4.6	.....	.08	0	.....
1945-46												
1.....	.60	.08	3.2	.03	.17	6.0	1.1	.31	.18	.43	.01	.03
2.....	.38	.08	1.9	.03	.10	2.5	.84	.66	.16	.34	45	.02
3.....	.27	.06	.98	.03	.12	.70	.76	3.7	.13	.29	.45	.02
4.....	.23	.07	.76	4.2	3.0	1.0	.60	1.9	.12	.24	.23	.03
5.....	.20	.11	.65	*155	*7.5	2.0	.60	.98	.12	.23	.23	.05
6.....	.18	.13	.60	6.0	.50	3.0	.66	.76	.11	.20	c.20	.02
7.....	.15	.13	.53	1.8	.30	.88	.80	.66	.11	.20	c.21	17
8.....	.20	.57	.40	.80	.27	.49	.93	.55	.09	.20	.36	1.2
9.....	.16	.18	.21	7.0	.20	.40	.66	.45	.06	.16	.24	.29
10.....	.18	.11	.08	1.0	.17	.45	.57	.50	.05	.16	.16	.24
11.....	.16	.13	.07	.80	.17	1.1	.66	.48	2.1	.18	.14	.15
12.....	.13	3.9	.06	.40	.22	6.4	.60	.38	8.0	.18	.18	.12
13.....	.09	.60	.06	.27	.19	3.8	.55	.34	1.3	.16	.24	.10
14.....	.10	.29	.05	.17	.15	2.6	.52	.32	.76	.07	7.5	.09
15.....	.09	.20	.05	.16	.16	2.5	.45	.36	1.5	.07	1.1	.09
16.....	.09	.21	.04	.15	.26	5.0	.38	.32	.60	.09	.41	.07
17.....	.10	.19	.04	.18	.26	6.4	.36	.86	6.1	.38	5.1	.05
18.....	.10	.16	.02	.26	.18	a7.2	.34	.72	25	.12	.69	.05
19.....	c.08	.18	.02	.28	.30	a6.0	.34	.50	15	.07	.36	.05
20.....	c.05	.16	.03	.20	.25	a5.0	.31	.41	5.2	.05	.26	.53
21.....	c.09	.15	.03	.08	.24	a3.6	.27	.34	2.8	.03	.20	.12
22.....	.08	.09	.03	.07	.23	a2.2	.36	.27	1.6	.02	.18	3.3
23.....	.07	.11	.03	.07	.23	a3.0	.84	.32	1.2	.02	.18	1.6
24.....	.06	.16	.03	.08	.21	a4.0	.41	.45	.98	.01	.15	.43
25.....	.07	.18	.03	.10	.32	a3.4	.31	.31	2.0	.05	.14	.26
26.....	.07	.20	.03	.16	.25	a2.8	.27	.31	.93	.03	.14	.20
27.....	.07	.76	.03	.14	.19	2.3	.26	.23	.80	.06	.18	.19
28.....	.07	.60	.03	.08	.30	2.0	.29	.19	c.76	.06	c.18	.20
29.....	.07	.52	.03	.08	.....	1.7	.27	.16	c.72	.02	c.10	c.14
30.....	.08	.45	.03	1.7	.....	1.3	.23	.21	c.57	.01	.07	c.13
31.....	.08	.....	.03	.22	.....	1.2	.....	.27	.....	0	.05	.....

* Winter discharge measurement made on this day.

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

c Backwater from debris on control.

Note—Stage-discharge relation affected by ice Dec. 14-26, 29, 31, 1944, Jan. 1-6, 12, 16-18, Jan. 28 to Feb. 3, Feb. 12-18, 21, 24, 25, Nov. 21-25, Dec. 3-31, 1945, Jan. 1 to Mar. 3, Mar. 8-11, 1946.

Ralston Creek at Iowa City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	0.10	0.53	d0.27	0.08	0.17	0.32	2.0	3.8	9.4	4.2	c0.20	0.01
2.....	.09	.50	d.16	.08	.16	.32	1.9	3.2	5.8	2.6	c.22	0
3.....	.08	2.2	d.23	.07	.16	.32	1.9	2.6	3.6	1.9	c.18	0
4.....	.07	.80	d.26	.07	.16	.33	11	2.0	3.0	1.6	c.15	0
5.....	.05	.63	d.30	.07	.16	.35	25	1.5	9.7	2.6	c.13	0
6.....	.06	.57	d.31	.10	.17	.38	7.4	1.7	17	4.5	c.10	0
7.....	.07	.84	.32	.12	.17	.42	5.0	1.5	11	c1.8	c.09	0
8.....	.08	.57	.32	.16	.18	.47	4.2	1.2	6.7	c1.4	c.07	0
9.....	.08	.81	.32	.20	.19	.53	3.2	1.2	4.5	c1.2	c.06	0
10.....	.16	2.3	.29	.25	.20	.55	5.8	1.1	3.2	c1.1	.05	0
11.....	.26	1.2	.29	.30	.22	.62	3.8	.98	2.3	c1.0	.04	0
12.....	.23	.88	.43	.40	.30	.75	2.4	1.0	4.2	26	.04	0
13.....	.26	.76	.31	3.0	.45	3.0	2.3	1.0	6.9	d2.4	.23	0
14.....	.20	.72	.24	4.5	*18	1.0	1.9	.93	3.4	d1.1	.20	0
15.....	.12	.69	.24	1.2	4.5	.80	2.0	1.4	2.3	d.72	.06	0
16.....	.12	.88	.27	.75	2.4	.65	4.5	.98	1.9	d.88	.05	0
17.....	.23	.55	.18	.60	1.2	.62	3.6	1.2	7.4	d.93	.05	0
18.....	4.7	.52	.12	.50	.95	.68	2.6	.98	5.2	d.88	.03	0
19.....	.50	.55	.14	.45	.70	.75	13	.88	3.8	d.63	.02	0
20.....	.31	.52	.19	.35	.65	.80	19	.76	2.6	.55	.02	0
21.....	.27	.50	.20	.25	.55	2.1	5.8	.69	3.0	.45	.01	.02
22.....	.23	.34	.21	.35	.50	1.3	4.7	.76	2.8	.41	.01	.04
23.....	.20	.34	.24	.50	.48	5.1	3.8	.84	3.2	.38	.01	.02
24.....	c2.1	d.45	.19	.75	.45	6.7	2.8	.84	2.0	c.36	.01	.01
25.....	1.0	d.37	.18	.95	.43	3.0	2.3	c1.0	1.7	c.32	.03	0
26.....	c.76	d.33	.18	.55	.40	1.8	2.0	.72	c2.6	c.29	.02	0
27.....	c.58	d.38	.28	.40	.36	1.8	1.7	.76	1.2	c.27	.01	0
28.....	.36	d.34	.29	.25	.33	1.6	1.6	15	1.3	.26	.01	.02
29.....	.34	d.32	.16	.18	.....	1.4	1.9	8.3	3.5	.24	.01	.02
30.....	.29	d.31	.10	.18	.....	1.1	2.6	3.8	44	.21	.01	.02
31.....	.26	.....	.08	.17	.....	1.7	.....	2.8	.....	.19	.01	.....
1947-48												
1.....	.02	.34	.06	.10	0	.40	.76	.48	.15	c.16	.14	0
2.....	.02	.18	.16	.11	0	.35	.63	c10	.12	c.16	.10	0
3.....	.02	c.13	.57	.12	0	.25	.50	2.6	.11	c.16	.09	0
4.....	.05	c.11	1.9	.13	0	.20	.52	1.9	c.10	c.32	.12	0
5.....	.04	.24	1.1	.13	0	.20	1.2	1.5	c.12	c.80	.07	0
6.....	.01	c.16	.36	.14	0	.18	.80	3.4	c.20	.14	.05	0
7.....	.01	c.09	.60	.14	0	.16	1.5	1.9	c.14	.10	c.05	0
8.....	0	c.05	.26	.13	0	.14	.69	1.6	.10	.05	.07	0
9.....	0	.05	.23	.12	0	.12	.43	1.4	.09	.02	.05	0
10.....	0	c.05	.27	.12	0	.10	c.45	1.6	.08	.01	.03	0
11.....	0	.06	.26	.11	0	.08	.48	1.4	.07	.01	.02	0
12.....	0	.05	.24	.10	0	.06	c.41	1.8	3.5	.01	.03	0
13.....	0	.03	.23	.09	0	.04	c.36	1.5	.36	.01	.02	0
14.....	0	.06	.23	.08	0	3	c.32	1.3	.27	.79	.01	0
15.....	0	c.27	.16	.06	.5	n50	c.31	1.2	.20	.09	.01	0
16.....	0	c.45	.14	.05	15	22	c.26	.80	.14	.05	0	0
17.....	0	c.27	.14	.04	*24	5.4	.23	.69	.12	.01	0	0
18.....	0	.14	.15	.04	10	3.6	.21	.60	.11	.01	0	0
19.....	0	.13	.15	.03	4	48	.21	.52	.08	0	0	0
20.....	0	.12	.14	.02	3.5	4.5	c.20	.50	.08	0	0	1.4
21.....	0	.13	.13	.02	1.5	3.6	.20	.43	.10	.63	0	.12
22.....	0	.21	.11	.02	1.0	2.0	.45	.41	.17	a1.8	0	0
23.....	0	.16	.11	.02	.9	1.6	1.0	.36	.54	a0.8	0	0
24.....	0	.26	.06	.01	10	1.4	1.2	.32	.11	a0.5	0	0
25.....	0	.23	.08	.01	3	1.2	.50	.29	.07	13	c	0
26.....	c.02	.18	.09	.01	1.5	1.6	.48	.27	.18	.88	0	0
27.....	c.08	.14	.11	0	*50	1.2	1.2	.23	.28	2.7	0	0
28.....	.31	.11	.10	0	10	.98	.45	.20	4.9	.43	0	0
29.....	.07	.08	.09	0	1.2	.98	.34	.16	.55	.32	0	0
30.....	.06	.05	.11	0	.....	.93	.36	.14	c.23	1.1	0	0
31.....	.34	.....	.12	0	.....	1.04	.....	.18	.....	.20	0	.....

* Winter discharge measurement made on this day.

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

c Backwater from debris on control.

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

Note—Stage-discharge relation affected by ice Dec. 30, 31, 1946, Jan. 1 to Mar. 19, Nov. 26, 27, 30, Dec. 4-9, 14, 15, 22, 24-30, 1947, Jan. 1 to Mar. 15, 1948.

Ralston Creek at Iowa City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	0	0	0.02	0.16	0.27	2.2	3.6	0.48	0.50	0.23	0	0
2.....	0	0	.03	.22	.23	4.5	2.3	.36	.76	.19	0	0
3.....	0	0	.05	.26	.21	11	1.8	.31	.21	.16	0	0
4.....	0	0	.07	*20	.18	24	1.5	.31	.15	.15	0	0
5.....	0	.09	.38	5.0	.25	11	1.9	.26	.12	.12	0	0
6.....	0	.01	.13	.80	.19	3.8	3.0	.24	.12	.12	0	0
7.....	1.9	0	.07	2.3	.21	2.6	1.7	.32	.09	.14	0	0
8.....	.05	0	.04	1.8	.19	4.2	1.4	.88	.07	.10	0	0
9.....	.01	0	.03	.80	.18	4.2	1.2	.31	.13	.09	0	0
10.....	0	0	.02	.31	.17	1.7	.93	.21	.15	.05	0	0
11.....	0	0	.04	.33	.17	1.2	.98	.21	.07	.05	.71	0
12.....	0	0	.07	.33	.18	1.0	.88	.21	.08	.05	.06	7.5
13.....	0	0	.10	.32	.18	.80	.98	.21	.12	.04	0	5.5
14.....	0	0	.16	.29	.17	.58	2.0	.20	.32	.03	0	.06
15.....	0	0	2.5	16	.17	.47	3.8	.18	.14	.02	0	.01
16.....	0	.53	.31	4.0	.17	.50	2.2	.31	.07	.02	0	0
17.....	0	.16	.18	.76	.20	.51	2.2	.34	.05	.01	.02	0
18.....	0	.07	.14	.52	.70	.45	1.2	.26	.04	.03	.01	0
19.....	0	1.3	1.0	.45	10	.41	1.1	.26	.02	.03	.04	0
20.....	0	.23	.08	.88	6.0	.72	.93	.20	.02	.03	.01	0
21.....	0	.12	.06	.72	3.2	2.3	.98	4.5	.69	.03	0	0
22.....	0	.07	.04	.29	4.3	3.0	1.5	2.3	.05	.02	0	0
23.....	0	.05	.03	.69	8.0	1.6	.88	1.0	11	.01	0	0
24.....	0	.05	.02	2.4	*50	1.6	.66	.76	24	.08	0	0
25.....	0	.07	.01	.98	13	1.4	.63	.88	5.6	.02	0	0
26.....	0	.08	0	.50	10	4.4	.60	.72	1.1	.01	0	0
27.....	0	.05	0	.45	2.5	3.6	.52	.69	.69	.01	0	0
28.....	0	.05	.30	.42	1.3	2.0	.45	.60	.60	.01	0	0
29.....	0	.03	3.5	.37	.....	1.7	.45	.52	.41	0	0	0
30.....	0	.03	.70	.33	.....	11	.43	.50	.29	0	0	0
31.....	0	.....	.30	.30	.....	7.4	.....	.48	.....	0	0	.....
1949-50												
1.....	0	.03	.03	.93	.11	17	34	1.04	.50	120	.55	.09
2.....	0	.03	.02	.63	.09	11	.38	.88	e.55	9.9	.36	.05
3.....	0	.02	.07	.30	.08	23	.55	.84	.63	3.20	.31	.05
4.....	0	.01	.05	a.10	.08	53	1.10	7.4	e.43	1.92	.32	.03
5.....	0	.01	.03	a.04	1.4	68	.88	1.59	.26	1.49	.29	.03
6.....	0	.02	.05	a.02	*20	16	.60	.88	.21	.98	.23	.03
7.....	0	.02	.05	a.01	5.0	5.8	.55	.66	.18	.72	.20	.02
8.....	0	.02	.01	.01	.18	.49	.55	.69	.16	.60	.19	.02
9.....	0	.02	0	.07	.17	.27	1.59	8.3	.16	.45	.16	.03
10.....	0	.02	.01	.11	.15	.31	3.00	2.17	.12	.41	7.7	.02
11.....	0	.02	.47	.05	3.2	.31	1.42	1.59	.09	.38	.45	2.0
12.....	0	.19	.09	*.05	.58	.21	.88	1.24	.86	35	.27	.16
13.....	0	.14	0	.27	.21	.23	.63	1.17	4.6	3.7	.23	.10
14.....	0	.09	0	.50	.26	1.9	.52	.88	11	1.49	.20	.06
15.....	0	.05	0	.20	.20	.70	.48	e.66	3.2	1.10	.19	.05
16.....	0	.04	0	.10	.18	.31	.43	e.57	.88	.93	.14	.03
17.....	0	.04	0	.06	.17	.50	.43	e.57	.55	2.0	.12	.04
18.....	0	.02	.01	.05	.16	.29	.45	.55	28	.88	.10	.04
19.....	0	.03	.02	.04	.16	.20	.41	.60	5.0	9.9	.09	.05
20.....	.06	.03	.05	.03	.15	.23	.29	.60	2.42	1.69	.09	.09
21.....	.74	.02	a.04	.05	.15	1.0	.23	21	1.50	1.17	4.3	.87
22.....	.24	.02	a.03	.08	.14	.66	e.24	3.80	1.17	.88	.68	e.14
23.....	.05	.03	a.02	.12	.14	.63	e.56	1.92	.93	.72	.18	e.07
24.....	.04	.06	a.02	9.0	.13	.55	6.0	1.32	2.8	.57	.12	.03
25.....	.05	.06	a.02	30	.13	.48	9.3	.98	1.10	.52	.11	.04
26.....	.05	.06	a.02	1.0	.12	9.2	2.42	.80	.69	.50	.07	.02
27.....	.03	.04	a.02	.40	.31	1.42	1.49	.66	.55	.43	e.10	.02
28.....	.04	.04	a.02	.60	.65	.63	1.32	.63	.50	.43	e.13	.02
29.....	.03	.04	a.02	1.0	.....	.32	1.42	.52	.41	.32	e.16	.03
30.....	.02	.03	a.02	.30	.....	.32	1.42	.52	.32	18	.13	.03
31.....	.02	.....	a.15	.13	.....	.43	.....	.50	.....	1.6	.11	.....

* Winter discharge measurement made on this day.

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

c Backwater from debris on control.

Note—Stage-discharge relation affected by ice Dec. 18-25, 28-31, 1948, Jan. 1, 2, 9-12, Jan. 27 to Mar. 3, Mar. 13-19, 1949, Jan. 3, 10-12, 14-19, 21, 22, 26-31, Feb. 5-10, 17-25, 1950.

Ralston Creek at Iowa City, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1942.....	1.67	0.36	0.02	0.054	0.018	0.02
November.....	23.70	9.3	.06	.790	.262	.29
December.....	59.62	36	.08	1.92	.638	.74
Calendar year 1942.....	426.11	89	0	1.17	.389	5.27
January 1943.....	18.01	1.6	.18	.551	.193	.22
February.....	100.68	12	.11	3.60	1.20	1.24
March.....	92.58	36	.19	2.99	.903	1.14
April.....	112.29	42	.60	3.74	1.24	1.39
May.....	135.40	23	1.2	4.37	1.45	1.67
June.....	183.60	77	.57	6.12	2.03	2.27
July.....	17.79	5.0	.18	.574	.191	.22
August.....	33.28	11	.13	1.07	.355	.41
September.....	26.85	8.8	.12	.895	.297	.33
Water year 1942-43.....	805.47	77	.02	2.21	.734	9.94
October 1943.....	6.32	1.1	.10	.204	.088	.08
November.....	9.74	2.9	.14	.325	.108	.12
December.....	4.94	1.5	.01	.159	.053	.06
Calendar year 1943.....	741.48	77	.01	2.03	.674	9.15
January 1944.....	43.67	34	.01	1.41	.468	.54
February.....	55.75	25	.10	1.92	.638	.69
March.....	107.64	19	.63	3.47	1.15	1.33
April.....	146.0	34	1.1	4.87	1.62	1.80
May.....	150.0	22	1.3	4.84	1.61	1.85
June.....	52.10	14	.45	1.74	.578	.64
July.....	6.80	.60	.04	.219	.073	.08
August.....	3.25	1.2	.01	.105	.035	.04
September.....	1.07	.10	.01	.036	.012	.01
Water year 1943-44.....	587.28	34	.01	1.60	.532	7.24
October 1944.....	4.93	1.4	.05	.159	.053	.06
November.....	6.06	1.5	.06	.202	.067	.07
December.....	4.21	.36	.02	.136	.045	.05
Calendar year 1944.....	581.48	34	.01	1.59	.528	7.16
January 1945.....	4.35	.24	.07	.140	.047	.05
February.....	50.45	12	.08	1.80	.598	.62
March.....	46.11	10	.36	1.49	.495	.57
April.....	30.05	5.9	.43	1.00	.332	.37
May.....	79.16	14	.34	2.55	.847	.98
June.....	60.81	14	.32	2.03	.674	.75
July.....	16.85	7.1	.06	.544	.181	.21
August.....	2.65	.76	0	.085	.028	.03
September.....	18.18	6.8	0	.606	.201	.22
Water year 1944-45.....	323.81	14	0	.887	.295	3.98
October 1945.....	4.35	.60	.05	.140	.047	.05
November.....	10.76	3.9	.06	.359	.119	.13
December.....	10.08	3.2	.02	.325	.108	.12
Calendar year 1945.....	333.80	14	0	.915	.304	4.10
January 1946.....	181.54	155	.03	5.86	1.95	2.24
February.....	16.44	7.5	.10	.587	.195	.20
March.....	90.92	7.2	.40	2.93	.973	1.12
April.....	15.54	1.1	.23	.518	.172	.19
May.....	18.22	3.7	.16	.588	.195	.23
June.....	79.05	25	.05	2.64	.877	.98
July.....	4.13	.43	0	.133	.044	.05
August.....	64.64	45	.01	2.09	.694	.80
September.....	26.77	17	.02	.892	.296	.33
Water year 1945-46.....	522.44	155	0	1.43	.475	6.44

Ralston Creek at Iowa City, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946.....	14.16	4.7	0.05	0.457	0.152	0.17
November.....	20.70	2.3	.31	.690	.229	.26
December.....	7.30	.43	.08	.235	.078	.09
Calendar year 1946.....	539.41	155	0	1.48	.492	6.66
January 1947.....	17.78	4.5	.07	.574	.191	.22
February.....	34.59	18	.16	1.24	.412	.43
March.....	41.26	6.7	.32	1.33	.442	.51
April.....	151.70	25	1.6	5.06	1.68	1.87
May.....	65.42	15	.69	2.11	.701	.81
June.....	179.20	44	1.2	5.97	1.98	2.21
July.....	61.37	26	.10	1.98	.658	.76
August.....	2.13	.23	.01	.069	.023	.03
September.....	.16	.04	0	.005	.0017	.002
Water year 1946-47.....	595.77	44	0	1.63	.542	7.362
October 1947.....	1.05	.34	0	.034	.011	.01
November.....	4.53	.45	.03	.151	.050	.06
December.....	8.49	1.9	.06	.274	.091	.10
Calendar year 1947.....	567.68	44	0	1.56	.518	7.01
January 1948.....	1.95	.14	0	.063	.021	.02
February.....	136.1	50	0	4.69	1.56	1.68
March.....	155.31	50	.04	5.01	1.66	1.92
April.....	16.65	1.5	.20	.555	.184	.21
May.....	39.68	10	.14	1.28	.425	.49
June.....	13.27	4.9	.07	.442	.147	.16
July.....	87.63	63	0	2.83	.940	1.08
August.....	.86	.14	0	.028	.009	.01
September.....	1.52	1.4	0	.051	.017	.02
Water year 1947-48.....	467.04	63	0	1.28	.425	5.76
October 1948.....	1.96	1.9	0	.063	.021	.02
November.....	2.99	1.3	0	.100	.033	.04
December.....	9.48	3.5	0	.306	.102	.12
Calendar year 1948.....	467.40	63	0	1.28	.425	5.77
January 1949.....	62.98	20	.16	2.03	.674	.78
February.....	112.32	50	.17	4.01	1.33	1.39
March.....	115.84	24	.41	3.74	1.24	1.43
April.....	42.70	3.8	.43	1.42	.472	.53
May.....	18.51	4.5	.18	.597	.198	.23
June.....	47.66	24	.02	1.59	.528	.59
July.....	1.85	.23	0	.060	.020	.02
August.....	.85	.71	0	.027	.0090	.01
September.....	13.07	7.5	0	.436	.145	.16
Water year 1948-49.....	430.21	50	0	1.18	.392	5.32
October 1949.....	1.37	.74	0	.044	.015	.02
November.....	1.25	.19	.01	.042	.014	.02
December.....	16.19	15.	0	.522	.173	.20
Calendar year 1949.....	434.59	50	0	1.19	.395	5.38
January 1950.....	72.98	30	.01	2.35	.781	.90
February.....	148.15	.65	.08	5.29	1.76	1.83
March.....	192.62	68	.20	6.21	2.06	2.38
April.....	39.88	9.3	.23	1.33	.442	.49
May.....	65.53	21	.50	2.11	.701	.81
June.....	69.86	28	.09	2.33	.774	.86
July.....	221.88	120	.32	7.16	2.38	2.74
August.....	18.28	7.7	.07	.590	.196	.23
September.....	4.26	2.0	.02	.142	.047	.05
Water year 1949-50.....	852.25	120	0	2.33	.774	10.53

English River at Kalona, Iowa

LOCATION.—Lat. $41^{\circ}28'10''$, long $91^{\circ}42'40''$, in SE $\frac{1}{4}$ 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.

RECORDS AVAILABLE.—September 1939 to September 1950.

GAGE.—Water-stage recorder. Datum of gage is 633.45 feet above mean sea level, datum of 1929 (levels by Corps of Engineers). Sept. 13, 1939, to Dec. 27, 1939, wire-weight gage on upstream side of bridge at same site and datum.

AVERAGE DISCHARGE.—11 years, 337 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Aug. 5	10,700	18.11	Oct. 14-19	9
1943-44...	May 22	6,810	15.91	Sept. 10	22
1944-45...	May 16	4,300	12.81	Feb. 5, 6	21
1945-46...	Jan. 7	16,400	19.74	Nov. 5, 6	34
1946-47...	Apr. 6	7,900	16.60	Sept. 19, 20	8
1947-48...	Feb. 29	6,680	15.68	Jan. 24 to Feb. 1 Feb. 8-11	4
1948-49...	Mar. 6	5,770	(¹)	Aug. 26	2.8
1949-50...	June 19	9,450	17.33	Dec. 9	4.7

(1) Maximum gage height 15.72 feet Feb. 26 (ice affected).

1939-50: Maximum discharge, 16,400 second-feet Jan. 7, 1946 (gage height, 19.74 feet); minimum daily, 2 second-feet Jan. 25-29, 1940.

Flood of June 1930 reached a stage of 19.9 feet, from floodmark, by local residents.

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

COOPERATION.—Services of observer and several discharge measurements furnished by Corps of Engineers.

English River at Kalona, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	12	133	40	260	70	160	270	1,950	476	128	305	298
2.....	11	64	38	250	70	130	222	825	467	117	881	203
3.....	13	47	32	240	450	125	190	552	416	113	3,120	165
4.....	14	35	28	215	2,100	120	176	438	347	458	7,520	160
5.....	17	32	25	195	*3,200	115	162	386	309	542	9,460	193
6.....	20	33	27	185	3,500	90	150	418	882	353	4,940	525
7.....	21	48	29	170	2,600	80	165	473	888	190	1,510	555
8.....	14	40	31	160	1,990	75	203	383	555	142	759	290
9.....	12	93	33	155	1,850	80	184	290	465	115	615	168
10.....	10	286	35	150	1,850	65	184	262	717	111	545	140
11.....	9.5	282	32	130	1,450	90	190	290	846	97	467	128
12.....	9.5	157	29	125	680	90	236	270	1,970	88	508	899
13.....	9.5	105	27	120	500	115	286	219	1,810	81	1,310	2,060
14.....	9.0	81	28	115	450	165	212	187	864	258	1,890	774
15.....	9.0	66	29	115	450	334	173	452	836	592	1,250	420
16.....	9.0	63	30	115	400	1,890	165	2,780	1,410	478	1,920	309
17.....	9.0	113	30	100	370	*836	150	3,720	1,470	711	853	236
18.....	9.0	103	*29	85	350	353	130	2,350	902	372	520	196
19.....	9.0	79	29	70	350	160	124	2,200	600	666	446	170
20.....	9.5	67	28	65	800	216	119	2,210	480	577	396	157
21.....	9.5	60	28	65	1,050	251	115	1,790	418	251	353	150
22.....	12	53	30	*65	720	282	109	1,720	369	184	312	135
23.....	12	51	33	62	485	810	109	846	302	150	282	126
24.....	12	53	34	60	374	1,720	113	738	266	135	294	113
25.....	12	58	35	60	229	940	115	675	229	666	278	105
26.....	13	58	100	60	160	532	128	550	196	222	654	97
27.....	12	37	1,300	63	180	424	1,400	476	176	128	555	93
28.....	12	47	1,350	65	150	350	2,070	420	165	258	476	93
29.....	13	46	700	65	.....	302	1,380	372	162	1,040	377	88
30.....	20	40	500	65	.....	294	2,510	353	142	406	525	82
31.....	119	.....	380	70	.....	298	.....	567	.....	157	480	.....
1943-44												
1.....	79	193	66	45	147	219	456	923	723	168	34	66
2.....	77	122	74	43	119	209	452	777	624	160	34	51
3.....	72	88	66	41	142	212	388	916	538	157	42	43
4.....	71	72	55	40	126	316	344	1,210	473	162	40	36
5.....	67	67	60	39	115	454	305	920	440	137	236	31
6.....	63	72	90	37	105	448	278	856	420	122	162	28
7.....	61	473	222	36	86	270	298	804	377	113	75	26
8.....	63	462	184	*35	105	160	366	804	469	105	51	24
9.....	61	274	147	33	92	300	350	1,030	1,910	103	42	23
10.....	60	162	*124	32	70	350	502	786	2,110	101	36	22
11.....	60	124	102	32	54	944	1,000	630	1,450	97	34	24
12.....	57	*105	85	33	65	1,750	1,260	542	1,930	107	53	55
13.....	61	103	66	34	70	1,090	982	498	1,940	103	39	55
14.....	67	99	54	34	66	810	768	446	1,920	88	33	54
15.....	69	97	60	34	68	2,030	2,820	411	1,000	79	29	42
16.....	63	90	56	34	70	2,000	3,460	380	2,300	71	28	36
17.....	60	72	50	34	74	1,480	2,210	347	4,070	66	40	31
18.....	57	90	50	34	74	1,010	1,640	312	2,600	64	115	27
19.....	55	90	50	33	72	759	1,980	1,390	1,100	84	93	26
20.....	58	84	54	33	68	618	1,710	3,640	798	60	46	25
21.....	91	77	58	36	70	535	1,570	5,380	648	53	32	25
22.....	72	72	60	35	250	505	3,650	6,350	561	48	28	24
23.....	63	66	52	38	900	853	5,430	4,290	510	48	26	26
24.....	57	58	44	43	1,170	895	5,060	3,850	438	57	25	30
25.....	55	54	43	50	561	648	3,140	4,080	386	48	24	51
26.....	53	66	43	65	627	498	1,770	3,670	337	48	28	48
27.....	50	74	42	*800	579	452	1,430	4,530	298	48	51	36
28.....	50	61	44	1,200	*363	428	1,200	2,780	251	40	179	32
29.....	48	55	46	467	274	408	954	1,440	203	42	137	30
30.....	53	58	47	236	.....	374	860	1,020	182	39	75	28
31.....	107	.....	47	179	.....	386	.....	839	.....	36	58	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 30 to Dec. 31, 1942, Jan. 1 to Feb. 21, Feb. 26 to Mar. 13, Dec. 1, 4, 11-31, 1943, Jan. 1-27, Feb. 9-23, Mar. 7-10, 1944.

English River at Kalona, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	27	27	23	30	25	650	311	265	3,150	f1,510	58	28
2.....	30	29	25	29	24	860	288	302	2,820	1829	54	27
3.....	77	48	25	27	23	760	222	321	1,590	1447	63	26
4.....	122	69	25	25	22	510	f796	265	920	f298	90	24
5.....	111	61	27	24	21	420	f1,230	236	611	f242	66	24
6.....	82	53	35	24	21	340	575	213	538	f194	87	24
7.....	72	63	61	25	23	260	433	209	564	f175	74	23
8.....	60	69	63	27	23	255	373	219	528	f944	57	23
9.....	48	61	58	29	24	300	318	194	467	f605	49	34
10.....	43	48	45	31	26	340	275	206	1,620	f236	46	72
11.....	41	42	35	31	28	302	256	249	3,340	f167	43	44
12.....	39	40	33	31	32	340	331	219	2,960	f147	572	43
13.....	37	39	35	30	95	337	f398	194	1,210	f167	400	38
14.....	36	37	37	29	1,200	292	f947	f1,290	693	h127	384	40
15.....	35	43	45	29	1,600	292	f589	f3,600	600	h111	161	48
16.....	33	50	46	31	1,500	396	f1,520	3,560	1,030	h102	96	47
17.....	31	47	45	31	1,150	463	f3,120	3,120	887	h90	81	42
18.....	31	40	*42	33	700	343	2,350	3,480	583	h94	78	35
19.....	30	36	41	36	560	285	1,280	2,140	521	h87	78	30
20.....	30	36	35	39	550	285	753	1,300	500	h79	64	28
21.....	30	36	33	39	440	259	637	1,050	487	h76	56	25
22.....	29	35	33	37	450	*222	545	1,180	431	h74	49	26
23.....	29	34	32	36	450	200	489	778	358	a72	44	35
24.....	28	34	30	36	460	187	476	f672	311	h69	41	187
25.....	27	34	30	34	500	1,460	507	f645	668	h67	39	58
26.....	27	37	28	32	*1,400	f2,170	458	900	408	h58	38	169
27.....	26	48	27	31	1,250	985	398	666	411	56	35	373
28.....	26	60	27	30	970	685	355	958	403	51	34	771
29.....	25	54	28	28	.....	465	331	756	282	63	34	569
30.....	25	42	29	26	.....	405	295	551	1,170	60	31	337
31.....	26	.....	30	*26	.....	364	.....	712	.....	54	30	.....
1945-46												
1.....	835	36	127	48	230	158	602	h121	313	1,490	h94	62
2.....	518	37	1,430	48	225	300	542	g140	237	530	g236	57
3.....	256	37	988	48	215	271	463	1,020	206	342	352	a50
4.....	164	35	548	205	210	237	419	2,620	185	281	g189	a40
5.....	134	34	355	*4,500	500	264	369	g4,050	a170	243	a127	g37
6.....	115	34	280	*11,500	840	1,370	355	1,940	a160	218	g115	a40
7.....	100	35	220	13,500	780	1,450	350	1,010	g151	202	a107	g48
8.....	89	36	170	5,280	*500	694	380	790	g140	h183	f105	200
9.....	83	431	170	1,670	450	405	380	650	g121	a177	212	959
10.....	74	340	165	1,080	400	358	326	566	a112	a161	144	308
11.....	67	158	160	851	340	422	310	524	g107	h146	91	196
12.....	67	115	150	713	290	1,010	355	460	841	a136	77	a144
13.....	61	178	130	640	230	2,020	369	400	g1,700	a128	73	a107
14.....	57	232	105	560	170	2,130	321	363	928	h118	87	a86
15.....	56	144	84	490	185	1,490	288	344	554	a111	177	a72
16.....	53	111	70	420	200	1,380	252	428	f1,830	h104	112	h65
17.....	53	107	60	350	210	2,590	226	361	1,490	g154	179	h65
18.....	54	98	56	270	220	2,920	214	402	g4,090	515	310	a55
19.....	49	92	55	*200	220	1,820	200	457	g5,260	342	167	a60
20.....	47	89	54	190	215	1,160	187	397	g5,920	g161	94	a8
21.....	44	89	54	185	200	928	172	342	g4,570	g126	75	a93
22.....	42	71	54	180	190	822	161	300	2,170	a100	70	g104
23.....	41	46	53	170	180	765	208	283	1,010	a93	138	723
24.....	41	65	52	165	165	1,890	220	563	739	101	127	838
25.....	40	76	51	160	150	2,190	181	697	739	a115	309	313
26.....	41	81	50	150	160	1,840	h149	448	787	g128	210	192
27.....	40	87	50	145	160	2,300	g136	366	539	a136	115	143
28.....	38	100	50	140	*151	1,430	g143	308	439	g190	91	237
29.....	38	102	49	130	.....	983	a140	269	397	222	81	237
30.....	38	102	49	130	.....	813	a130	250	402	a128	74	144
31.....	36	.....	49	180	.....	675	.....	386	.....	a102	68	.....

* Winter discharge measurement made on this day.

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

f Computed on basis of partly estimated gage-height record.

g Computed from graph based on wire-weight gage readings.

h Computed from wire-weight gage readings.

Note—Stage-discharge relation affected by Ice Dec. 1-31, 1944, Jan. 1 to Mar. 9, Nov. 23-26, Dec. 6-31, 1945, Jan. 1-5, Jan. 13 to Feb. 27, 1946.

English River at Kalona, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	118	257	212	35	120	240	386	688	1,360	5,220	72	16
2.....	107	457	179	55	113	210	377	659	3,140	4,380	68	14
3.....	98	986	*165	60	*108	180	344	557	4,520	1,150	65	14
4.....	89	955	194	60	105	150	1,240	474	2,710	854	61	14
5.....	83	563	218	65	100	150	3,660	411	3,340	745	52	12
6.....	76	445	208	65	99	*170	6,840	366	4,640	787	47	12
7.....	73	416	189	70	95	190	4,820	352	5,070	605	40	12
8.....	68	400	185	70	95	210	2,020	323	3,100	509	38	12
9.....	69	344	181	*75	95	240	1,210	293	1,460	445	34	11
10.....	70	617	177	85	80	270	1,670	278	1,030	394	32	11
11.....	83	697	170	100	75	600	3,340	262	813	355	29	14
12.....	97	492	168	120	80	900	2,690	250	761	323	29	16
13.....	87	402	176	180	110	1,680	1,380	248	2,480	854	26	14
14.....	76	374	156	230	300	2,500	996	237	4,240	500	33	14
15.....	74	350	140	300	500	1,080	845	241	3,830	293	31	12
16.....	72	347	161	280	650	512	1,060	262	1,460	243	26	10
17.....	72	509	150	250	700	480	1,800	250	952	214	23	g ⁹
18.....	639	428	25	220	660	457	1,270	380	1,180	194	23	g ⁹
19.....	1,440	361	50	190	590	416	1,230	321	1,250	179	21	g ⁸
20.....	623	339	85	170	520	503	4,400	250	986	170	21	g ⁸
21.....	310	318	120	160	440	503	5,220	233	835	158	20	g ¹⁴
22.....	243	296	140	160	400	445	2,880	233	2,250	144	19	g ¹⁴
23.....	208	252	135	155	380	596	1,510	228	3,450	134	18	g ¹²
24.....	291	274	130	170	360	1,570	1,050	235	1,870	127	17	g ¹⁰
25.....	1,950	281	118	180	340	1,380	864	252	1,000	118	18	g ¹⁰
26.....	1,290	246	118	190	320	768	755	288	838	112	19	g ⁹
27.....	602	228	120	190	300	584	653	262	707	108	18	g ⁹
28.....	422	220	113	170	270	512	572	404	608	100	17	g ⁹
29.....	355	214	110	150	.....	460	530	2,790	1,810	92	17	g ¹⁰
30.....	321	212	70	140	.....	391	575	3,020	3,910	84	16	g ¹⁰
31.....	283	.....	30	130	.....	361	.....	1,640	.....	80	16	.....
1947-48												
1.....	10	61	14	14	4	1,300	168	94	72	146	252	134
2.....	10	72	15	12	5	363	153	243	66	107	168	90
3.....	10	55	16	11	5	252	138	1,240	62	79	139	36
4.....	12	42	48	10	5	220	131	790	56	66	127	26
5.....	12	34	196	11	5	220	132	454	55	1,910	113	24
6.....	14	*22	160	11	*5	195	134	754	58	1,380	102	24
7.....	14	19	105	10	5	170	138	1,440	77	306	94	25
8.....	15	17	110	10	4	145	138	787	69	172	89	27
9.....	12	16	105	10	4	120	121	554	55	156	83	29
10.....	12	16	100	10	4	105	104	593	43	158	77	32
11.....	13	15	80	11	4	90	102	739	41	132	72	30
12.....	10	15	58	12	5	75	101	596	40	219	65	25
13.....	9.2	14	50	10	5	55	89	509	40	439	59	22
14.....	8.8	13	42	10	5	60	84	419	43	560	56	20
15.....	9.2	17	36	10	6	820	82	369	43	388	52	21
16.....	9.2	19	31	9	22	*4,070	79	334	43	208	47	18
17.....	9.6	28	*28	9	850	6,360	73	271	39	174	42	16
18.....	9.6	30	26	8	1,360	4,770	66	220	32	179	42	13
19.....	14	29	22	8	830	4,010	65	196	29	176	33	11
20.....	14	28	21	7	220	4,490	61	177	26	156	30	58
21.....	14	25	20	5	190	1,760	56	163	26	3,350	26	182
22.....	14	23	19	5	155	835	56	149	26	4,220	24	92
23.....	14	22	18	5	170	551	88	138	31	1,720	23	69
24.....	14	21	18	4	260	422	154	124	29	451	22	39
25.....	16	18	17	4	340	342	131	116	24	559	18	26
26.....	19	16	16	4	290	306	104	108	25	1,830	20	21
27.....	22	10	15	4	950	274	112	102	575	1,540	24	19
28.....	27	12	14	4	4,340	248	123	95	575	656	17	17
29.....	40	12	15	4	5,180	208	102	90	1,010	296	16	16
30.....	52	13	14	4	.....	192	82	79	276	1,160	22	16
31.....	48	.....	14	4	.....	177	.....	76	.....	665	165	.....

* Winter discharge measurement made on this day.

g Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 17-31, 1946, Jan. 1 to Mar. 13, Nov. 25 to Dec. 1, Dec. 6-31, 1947, Jan. 1 to Feb. 28, Mar. 4-15, 1948.

English River at Kalona, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	16	19	42	210	105	2,200	1,910	180	84	189	49	23
2.....	15	19	41	190	100	1,800	1,100	173	357	157	40	19
3.....	14	19	46	180	95	2,100	820	152	925	155	31	19
4.....	13	20	48	500	92	3,000	675	138	438	134	23	20
5.....	12	26	57	2,000	90	4,800	585	125	266	106	21	23
6.....	18	66	77	2,220	88	5,100	525	121	206	182	18	23
7.....	401	63	70	1,200	87	2,870	465	112	164	409	16	19
8.....	127	41	63	900	86	1,360	410	108	134	215	15	17
9.....	81	33	56	700	86	1,800	369	114	114	302	12	17
10.....	58	26	50	550	85	*1,060	330	119	106	103	14	18
11.....	41	20	47	470	84	690	310	105	100	79	37	22
12.....	31	17	45	440	84	510	298	98	92	70	70	45
13.....	26	14	46	430	84	495	283	95	89	65	39	61
14.....	22	13	50	450	84	466	278	92	91	61	22	45
15.....	20	11	320	700	*84	369	382	89	162	55	19	31
16.....	19	26	645	2,000	84	316	495	89	155	52	16	22
17.....	17	66	250	2,750	85	280	705	95	97	49	11	16
18.....	15	81	150	1,840	90	260	675	94	84	53	10	12
19.....	14	197	110	1,100	115	250	480	89	78	54	52	10
20.....	15	735	90	800	150	244	382	91	73	89	94	6.5
21.....	16	316	80	600	200	316	356	86	88	70	31	7.2
22.....	16	*129	72	450	170	1,280	382	1,460	110	54	18	5.8
23.....	16	85	68	300	180	1,700	382	1,080	95	45	13	4.2
24.....	16	69	66	220	500	838	318	330	1,700	45	7.2	5.8
25.....	15	66	74	190	1,500	690	270	215	1,800	40	5.8	5.8
26.....	14	66	80	170	3,500	880	256	175	815	34	2.8	5.0
27.....	16	63	72	150	3,000	2,040	234	143	410	33	38	5.0
28.....	16	57	66	135	2,500	1,310	208	123	343	53	77	4.2
29.....	15	51	120	125	.....	820	189	105	296	332	48	5.0
30.....	17	45	250	115	.....	786	182	95	244	179	45	5.0
31.....	17	.....	*235	110	.....	2,500	.....	88	.....	72	30	.....
1949-50												
1.....	5.2	9.6	8.9	170	17	600	70	173	62	193	31	10
2.....	5.2	8.9	8.9	70	15	700	69	149	59	173	28	8.9
3.....	5.6	8.3	7.1	50	14	450	70	120	64	193	26	7.1
4.....	5.2	7.7	7.1	30	14	1,140	81	111	55	167	23	6.0
5.....	5.6	7.1	11	20	15	4,210	96	102	47	159	22	6.0
6.....	7.1	7.1	7.1	15	350	7,650	90	82	41	141	20	5.6
7.....	7.1	7.7	6.0	12	*1,500	7,500	81	68	36	116	19	5.6
8.....	7.7	8.3	6.0	10	1,600	3,410	70	58	32	100	18	5.6
9.....	8.2	7.7	4.7	0.5	1,300	520	66	433	31	80	18	5.6
10.....	7.7	8.9	5.2	9.0	1,500	275	90	977	30	81	17	5.6
11.....	6.5	8.9	7.0	*9.0	1,800	180	153	475	28	72	17	7.1
12.....	6.5	11	9.0	10	800	140	130	258	28	91	19	6.5
13.....	6.5	16	11	250	250	120	91	195	66	109	18	8.3
14.....	6.5	18	11	300	110	110	74	155	65	72	16	12
15.....	6.5	23	13	150	90	111	66	143	233	62	15	13
16.....	6.5	18	11	140	75	133	62	115	296	58	15	9.6
17.....	6.5	14	10	69	65	128	62	102	94	64	14	7.1
18.....	7.1	13	9.5	45	58	106	59	93	3,850	66	14	6.5
19.....	10	12	9.0	38	54	85	59	77	7,790	70	12	6.5
20.....	12	11	10	*35	50	71	55	82	7,140	66	11	6.5
21.....	47	9.6	9.0	31	47	72	51	120	2,580	93	10	7.7
22.....	139	9.6	11	28	45	102	44	793	859	72	9.6	7.7
23.....	52	7.7	9.0	26	43	199	46	315	520	54	8.9	7.7
24.....	35	8.3	8.0	26	42	133	54	173	1,700	40	8.9	7.1
25.....	28	8.9	8.5	38	41	104	630	122	2,590	41	10	6.5
26.....	21	8.3	8.0	40	41	104	340	99	976	38	8.3	6.0
27.....	16	9.6	8.0	32	41	131	191	86	505	36	7.7	7.1
28.....	13	10	8.0	28	140	116	137	80	352	58	8.9	7.7
29.....	12	10	8.0	36	.....	93	135	78	278	38	11	8.3
30.....	12	8.9	9.0	25	.....	75	151	77	224	36	23	8.9
31.....	11	.....	150	20	.....	69	.....	78	.....	85	13	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 30 to Dec. 2, Dec. 7-15, 17-31, 1948, Jan. 1-5, 8-16, Jan. 19 to Mar. 4, Mar. 17-19, Dec. 10-31, 1949, Jan. 1 to Mar. 3, Mar. 11-14, 1950.

English River at Kalona, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1942.....	482.5	119	9.0	15.6	0.027	0.03
November.....	2,430	286	32	81.0	.140	.16
December.....	5,099	1,350	25	164	.283	.33
Calendar year 1942.....	67,697.5	2,260	9.0	185	.319	4.35
January 1943.....	3,720	260	60	120	.207	.24
February.....	26,828	3,500	70	958	1.65	1.72
March.....	11,492	1,890	65	371	.640	.74
April.....	11,740	2,510	109	391	.674	.75
May.....	28,572	3,720	187	922	1.59	1.83
June.....	19,135	1,970	142	638	1.10	1.23
July.....	9,786	1,040	81	316	.545	.63
August.....	43,801	9,460	278	1,413	2.44	2.81
September.....	9,128	2,060	82	304	.524	.59
Water year 1942-43.....	172,213.5	9,460	9.0	472	.814	11.06
October 1943.....	1,980	107	48	63.9	.110	.13
November.....	3,580	473	54	119	.205	.23
December.....	2,241	222	42	72.3	.125	.14
Calendar year 1943.....	172,003	9,460	42	471	.812	11.04
January 1944.....	3,865	1,200	32	125	.216	.25
February.....	6,582	1,170	54	227	.391	.42
March.....	21,411	2,030	160	691	1.19	1.37
April.....	46,633	5,430	278	1,554	2.68	2.99
May.....	55,851	6,350	312	1,802	3.11	3.58
June.....	31,006	4,070	182	1,034	1.78	1.99
July.....	2,660	168	36	85.8	.148	.17
August.....	1,925	236	24	62.1	.107	.12
September.....	1,055	66	22	35.2	.061	.07
Water year 1943-44.....	178,789	6,350	22	488	.841	11.46
October 1944.....	1,313	122	25	42.4	.073	.08
November.....	1,352	69	27	45.1	.078	.09
December.....	1,108	63	23	35.7	.062	.07
Calendar year 1944.....	174,761	6,350	22	477	.822	11.20
January 1945.....	946	39	24	30.5	.053	.06
February.....	13,567	1,600	21	485	.836	.87
March.....	15,363	2,170	187	496	.855	.99
April.....	20,856	3,120	222	695	1.20	1.34
May.....	30,450	3,600	194	982	1.69	1.95
June.....	30,061	3,340	282	1,002	1.73	1.93
July.....	7,351	1,510	51	237	.409	.47
August.....	3,032	572	30	97.8	.169	.19
September.....	3,250	771	23	108	.186	.21
Water year 1944-45.....	128,649	3,600	21	352	.607	8.25
October 1945.....	3,371	835	36	109	.188	.22
November.....	3,198	431	34	107	.184	.21
December.....	5,938	1,430	49	192	.331	.38
Calendar year 1945.....	137,383	3,600	21	376	.648	8.82
January 1946.....	44,298	13,500	48	1,429	2.46	2.84
February.....	7,986	840	150	285	.491	.51
March.....	37,085	2,920	158	1,196	2.06	2.38
April.....	8,548	602	130	285	.491	.55
May.....	21,255	4,050	121	686	1.18	1.36
June.....	36,307	5,920	107	1,210	2.09	2.33
July.....	7,183	1,490	93	232	.400	.46
August.....	4,406	352	68	142	.245	.28
September.....	5,755	959	37	192	.331	.37
Water year 1945-46.....	185,330	13,500	34	508	.876	11.89

English River at Kalona, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1946.....	10,389	1,950	68	335	0.578	0.67
November.....	12,280	986	212	409	.705	.79
December.....	4,393	218	25	142	.245	.28
Calendar year 1946.....	199,885	13,500	25	548	.945	12.82
January 1947.....	4,475	300	35	144	.248	.29
February.....	8,005	700	75	286	.493	.51
March.....	18,708	2,500	150	603	1.04	1.20
April.....	56,187	6,840	344	1,873	3.23	3.60
May.....	16,687	3,020	228	538	.928	1.07
June.....	65,600	5,070	608	2,187	3.77	4.21
July.....	19,671	5,220	80	634	1.09	1.26
August.....	966	72	16	31.2	.054	.06
September.....	349	16	8	11.6	.020	.02
Water year 1946-47.....	217,710	6,840	8	596	1.03	13.96
October 1947.....	507.6	52	8.8	16.4	.028	.03
November.....	734	72	10	24.5	.042	.05
December.....	1,443	196	14	46.5	.080	.09
Calendar year 1947.....	193,332.6	6,840	8	530	.914	12.39
January 1948.....	250	14	4	8.06	.014	.02
February.....	15,228	5,180	4	525	.905	.98
March.....	33,205	6,360	55	1,071	1.85	2.13
April.....	8,167	168	56	106	.183	.20
May.....	12,019	1,440	76	388	.669	.77
June.....	3,586	1,010	24	120	.207	.23
July.....	23,558	4,220	66	760	1.31	1.51
August.....	2,119	252	16	68.4	.118	.14
September.....	1,178	182	11	39.3	.068	.08
Water year 1947-48.....	96,994.6	6,360	4	265	.457	6.23
October 1948.....	1,149	401	12	37.1	.064	.07
November.....	2,459	735	11	82.0	.141	.16
December.....	3,486	645	41	112	.193	.22
Calendar year 1948.....	101,404	6,360	4	277	.478	6.51
January 1949.....	22,225	2,750	110	717	1.24	1.42
February.....	13,408	3,500	84	479	.826	.86
March.....	43,190	5,100	244	1,393	2.40	2.77
April.....	14,255	1,910	182	475	.819	.91
May.....	6,179	1,460	86	199	.343	.40
June.....	9,716	1,800	73	324	.559	.62
July.....	3,536	409	33	114	.197	.23
August.....	924.8	94	2.8	29.8	.051	.06
September.....	521.5	61	4.2	17.4	.030	.03
Water year 1948-49.....	121,049.3	5,100	2.8	332	.572	7.75
October 1949.....	525.3	139	5.2	16.9	.029	.03
November.....	317.1	23	7.1	10.6	.018	.02
December.....	409.0	150	4.7	13.2	.023	.03
Calendar year 1949.....	115,206.7	5,100	2.8	316	.545	7.38
January 1950.....	1,742.5	300	9.0	56.2	.097	.11
February.....	10,117	1,800	14	361	.622	.65
March.....	28,837	7,650	69	930	1.60	1.85
April.....	3,373	630	44	112	.193	.22
May.....	5,989	977	58	193	.333	.38
June.....	30,631	7,790	28	1,021	1.76	1.96
July.....	2,736	193	36	88.3	.152	.18
August.....	492.3	31	7.7	15.9	.027	.03
September.....	223.8	13	5.6	7.46	.013	.01
Water year 1949-50.....	85,393.0	7,790	4.7	234	.403	5.47

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 county highway bridge at Janesville, 3 miles upstream from Shell Rock River.

DRAINAGE AREA.—1,660 square miles.

RECORDS AVAILABLE.—April 1905 to September 1906, May 1915 to September 1927, November 1932 to September 1942, April 1946 to September 1950.

GAGE.—Water-stage recorder. Apr. 26, 1905, to Sept. 30, 1906 and May 28, 1915, to July 25, 1919, chain gage at Illinois Central Railroad bridge 1,000 feet downstream at same datum. July 26, 1919, to Sept. 30, 1927 and Nov. 14, 1932, to Sept. 30, 1942, chain gage at county highway bridge 300 feet upstream at same datum. Apr. 26, 1946, to Nov. 10, 1949, wire-weight gage at county highway bridge 300 feet upstream at same datum.

AVERAGE DISCHARGE.—25 years (1915-27, 1933-42, 1946-50), 675 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1946-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1946 ⁽¹⁾ ...	Sept. 9	14,700	11.3	Aug. 17	166
1946-47...	June 13	12,200	10.14	Jan. 5-7	195
1947-48...	Mar. 1	25,100	14.0	Sept. 19	118
1948-49...	Mar. 7	14,000	⁽²⁾ 11.4	Sept. 27	78
1949-50...	Mar. 28	20,200	12.74	Feb. 25	77

(1) Period April to September 1946.

(2) Affected by ice.

1905-6, 1915-27, 1932-42, 1946-50: Maximum discharge observed, 30,400 second-feet Apr. 1, 1933 (gage height, 15.43 feet); minimum observed, 28 second-feet Oct. 21, 1922.

Flood of Mar. 17, 1945 reached a stage of 16.2 feet, from floodmark at wire-weight gage site (discharge, 34,300 second-feet).

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

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

Cedar River at Janesville, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1946 and 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1945-46												
1								317	522	577	210	200
2								344	563	476	182	205
3								374	535	362	195	182
4								339	509	464	178	182
5								339	535	262	210	178
6								317	339	328	210	230
7								410	306	240	256	262
8								306	284	225	235	6,670
9								362	362	317	230	11,500
10								410	312	328	496	5,250
11								328	328	386	195	3,670
12								306	350	306	174	3,060
13								386	410	284	235	2,140
14								410	339	240	235	1,650
15								300	328	182	225	1,350
16								256	416	256	215	1,130
17								328	483	295	166	961
18								328	535	273	200	874
19								317	605	306	240	824
20								290	440	273	273	744
21								273	422	220	230	42
22								328	1,020	220	251	650
23								362	1,090	240	251	591
24								422	1,000	246	215	620
25								386	874	210	290	528
26								1,040	808	200	182	591
27								374	1,350	744	256	483
28								278	840	712	230	215
29								509	760	620	186	200
30								416	728	744	251	200
31								556		220	200	
1946-47												
1	704	900	620	220	230	370	997	1,030	1,100	3,730	509	509
2	598	840	584	210	230	355	961	1,080	1,530	4,220	680	642
3	549	792	591	200	235	350	925	997	979	3,920	605	605
4	496	840	563	200	240	350	943	1,150	736	2,670	502	458
5	476	916	549	195	245	400	1,110	1,250	943	2,170	452	434
6	542	635	549	*195	250	460	2,330	1,210	1,270	1,960	446	416
7	328	760	496	195	250	520	4,800	1,030	744	2,120	446	251
8	317	665	522	200	255	630	7,020	925	857	2,190	434	251
9	428	628	*356	200	260	730	4,050	874	1,250	1,630	434	368
10	416	736	470	205	265	820	3,080	857	1,290	1,210	410	350
11	470	760	470	210	265	908	4,550	848	1,070	1,110	410	312
12	434	736	458	215	270	943	7,630	792	1,040	1,040	440	374
13	961	776	420	230	280	1,210	9,020	784	7,760	987	422	295
14	1,250	712	380	260	300	2,090	4,750	728	8,310	1,410	428	328
15	1,070	1,010	340	310	400	3,550	2,690	840	4,280	2,370	434	386
16	874	961	320	350	540	4,040	2,460	908	3,700	2,790	410	470
17	792	874	290	370	640	2,530	2,360	908	4,790	1,610	380	434
18	824	824	290	370	760	1,510	2,300	943	5,600	1,240	362	410
19	808	808	310	360	800	1,010	2,150	1,140	3,750	1,050	362	434
20	704	776	340	290	800	970	1,970	1,040	3,110	1,210	380	328
21	535	816	350	250	760	*891	1,690	925	2,310	1,150	398	362
22	549	744	360	250	690	857	1,490	874	1,950	997	410	339
23	584	736	350	270	630	943	1,510	857	1,590	925	350	300
24	642	680	350	330	580	1,070	1,700	892	1,370	874	306	350
25	549	665	350	360	*520	1,840	1,650	857	1,330	832	306	328
26	760	650	380	350	460	3,690	1,870	744	1,250	696	362	328
27	1,030	665	450	*280	410	3,550	1,750	736	1,150	680	278	317
28	1,290	635	440	250	385	2,110	1,490	712	1,050	563	317	322
29	1,270	612	380	240		1,700	1,210	900	1,830	509	490	317
30	961	591	300	230		1,290	1,110	997	3,870	563	464	295
31	1,020		235	225		1,070		808		509	509	

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 13-31, 1946, Jan. 1 to Mar. 10, 1947.

Cedar River at Janesville, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1948 and 1949

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1947-48												
1	273	464	210	180	175	21,200	943	605	392	1,190	166	150
2	190	509	190	190	175	10,400	891	650	328	997	215	174
3	273	483	220	210	*170	5,230	808	591	306	688	210	170
4	295	404	392	230	170	3,630	736	535	284	386	158	205
5	446	374	398	240	170	2,500	784	628	374	458	166	322
6	230	334	420	260	170	1,700	728	642	509	374	150	246
7	284	262	370	260	170	1,300	776	744	398	350	200	210
8	398	273	300	260	165	1,100	808	943	380	295	220	150
9	362	174	260	250	165	1,000	824	1,250	295	306	190	154
10	328	328	240	240	160	900	808	1,470	362	300	200	154
11	328	306	260	230	160	830	866	1,020	410	410	200	146
12	295	268	290	220	165	780	776	1,150	386	317	200	143
13	256	356	350	210	165	740	744	808	225	317	190	146
14	317	362	330	200	165	700	784	925	284	344	186	143
15	295	398	310	190	170	680	776	712	273	220	158	129
16	190	268	*290	180	180	*2,000	776	556	410	312	205	140
17	290	273	250	180	200	5,840	776	563	356	300	210	143
18	256	256	270	180	300	*7,080	760	591	344	350	220	132
19	273	240	300	170	500	8,420	628	591	362	262	190	118
20	240	*356	284	170	700	6,200	620	563	328	295	200	178
21	182	386	250	170	1,000	5,060	591	577	312	273	178	446
22	174	386	240	170	1,300	4,000	605	577	306	273	146	306
23	235	143	230	170	1,200	2,670	642	392	290	240	136	166
24	235	220	230	170	1,000	2,000	635	428	284	262	143	150
25	268	195	230	170	950	1,530	792	434	317	240	136	154
26	416	240	240	175	850	1,330	728	458	306	182	140	170
27	496	284	240	175	1,500	1,540	792	374	350	246	132	150
28	470	250	240	175	6,720	1,380	650	476	350	230	132	174
29	317	230	230	175	16,000	1,450	665	410	650	240	132	158
30	306	210	220	180	.....	1,190	556	344	1,380	174	136	170
31	374	.....	200	180	.....	1,200	.....	306	.....	182	126	.....
1948-49												
1	158	136	158	130	230	450	3,800	720	256	997	344	205
2	154	143	*190	140	220	440	6,890	300	317	522	284	195
3	150	129	162	160	210	600	6,080	440	470	322	246	205
4	158	129	182	190	200	1,500	3,110	490	952	200	205	240
5	166	210	186	250	200	3,500	2,460	490	776	317	220	200
6	190	422	225	400	200	6,000	2,010	490	680	328	170	158
7	251	317	200	410	200	8,000	1,660	502	410	317	195	143
8	215	230	140	380	200	*10,500	1,460	658	398	295	195	182
9	200	210	120	340	200	7,230	1,310	428	368	290	178	182
10	195	170	120	310	200	4,740	1,070	334	284	410	178	200
11	195	170	130	*310	200	3,220	908	386	306	205	220	225
12	210	182	140	350	190	2,110	900	328	398	251	182	174
13	240	182	150	370	180	1,760	891	334	317	262	182	205
14	174	190	200	350	180	1,560	848	374	339	190	240	210
15	200	230	210	370	180	1,510	866	446	322	178	166	140
16	190	268	170	340	170	943	816	328	251	262	174	205
17	186	200	160	360	170	925	744	306	210	410	220	158
18	182	262	170	400	170	776	752	312	220	240	182	88
19	182	200	178	450	170	840	866	328	278	273	158	109
20	317	434	200	410	170	874	961	344	344	317	200	136
21	386	584	200	390	170	760	1,110	362	215	306	146	182
22	374	317	170	370	170	848	1,130	563	246	220	195	109
23	368	240	160	350	180	1,510	1,010	374	483	256	150	97
24	235	246	160	330	200	3,220	908	339	605	210	162	97
25	162	200	170	310	300	3,440	900	334	776	235	146	136
26	146	210	170	290	400	5,320	752	306	925	195	112	122
27	146	220	150	280	450	7,230	620	268	1,710	220	129	78
28	129	256	140	270	450	7,060	496	230	1,460	166	140	97
29	129	251	120	260	.....	8,290	570	251	961	220	118	118
30	129	186	110	250	.....	5,300	577	200	1,080	306	136	410
31	115	.....	120	240	.....	2,910	.....	210	.....	535	170	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 28 to Dec. 2, Dec. 6-19, 21-31, 1947, Jan. 1 to Feb. 27, Mar. 5-16, Dec. 8-18, 20-31, 1948, Jan. 1 to Mar. 8, 1949.

Cedar River at Janesville, Iowa—Continued

Daily Discharge, in second-feet, for Water Year 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1949-50												
1.....	109	205	205	133	105	89	2,100	323	386	272	605	210
2.....	126	178	205	150	98	79	1,660	475	414	205	1,780	215
3.....	170	235	126	170	98	79	1,340	515	443	205	1,440	278
4.....	100	225	225	110	133	78	1,250	524	421	182	1,100	230
5.....	150	154	215	123	108	350	1,110	542	272	191	940	160
6.....	136	133	160	125	112	1,500	980	740	341	195	767	182
7.....	132	178	139	125	115	7,400	900	578	329	195	435	191
8.....	118	268	115	130	119	*9,000	804	323	323	240	400	195
9.....	166	186	*90	140	220	*11,000	758	1,020	459	200	451	220
10.....	129	140	97	123	245	5,500	704	1,250	483	200	347	155
11.....	112	182	118	110	210	*2,400	650	970	515	173	347	164
12.....	146	195	148	115	175	1,500	704	842	305	160	372	245
13.....	150	187	106	143	105	1,100	785	713	414	225	533	278
14.....	143	250	120	*180	*110	980	832	641	379	220	347	200
15.....	140	168	92	200	115	880	695	347	359	200	379	151
16.....	154	210	110	250	110	810	499	475	317	215	428	151
17.....	154	178	113	250	112	730	305	421	311	548	379	200
18.....	178	173	102	170	112	670	400	421	668	2,460	365	187
19.....	170	155	140	150	105	600	400	421	804	2,400	379	160
20.....	178	200	132	160	108	540	379	451	569	1,270	305	240
21.....	200	215	100	150	103	490	379	428	491	1,210	215	294
22.....	205	182	112	160	98	1,080	414	294	359	1,090	210	220
23.....	186	168	123	180	98	1,660	435	475	341	960	220	147
24.....	190	143	141	130	90	2,110	365	379	435	852	235	225
25.....	195	173	160	135	77	2,520	533	451	443	713	210	182
26.....	162	173	172	129	84	3,760	605	767	294	560	225	215
27.....	154	195	130	126	90	5,210	551	668	195	414	250	178
28.....	154	178	141	122	82	14,100	515	533	205	459	283	210
29.....	146	160	120	118	.....	15,700	483	300	235	421	215	122
30.....	146	205	130	112	.....	6,440	542	347	200	379	187	187
31.....	215	.....	140	108	.....	3,040	.....	300	.....	379	.....	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 8-31, 1949, Jan. 1 to Mar. 21, 1950. Once daily wire-weight gage readings used Oct. 1 to Nov. 10, 1949, Jan. 31 to Feb. 23, Mar. 11-24, 1950.

Monthly Discharge for Water Year 1947

Month	Second-foot-days	Discharge in second-feet			Runoff in inches	
		Maximum	Minimum	Mean		
May 1946.....	13,812	1,350	256	446	0.269	0.31
June.....	16,535	1,090	284	551	.332	.37
July.....	8,859	577	182	286	.172	.20
August.....	6,972	496	166	225	.136	.16
September.....	47,213	11,500	178	1,574	.948	1.06
October.....	22,231	1,290	317	717	.432	.50
November.....	22,743	1,010	591	758	.457	.51
December.....	12,883	620	235	415	.250	.29
January 1947.....	8,020	370	195	259	.156	.18
February.....	11,950	800	230	427	.257	.27
March.....	42,757	4,040	350	1,379	.831	.96
April.....	81,566	9,020	925	2,719	1.64	1.83
May.....	28,636	1,250	712	924	.557	.64
June.....	71,809	8,310	736	2,394	1.44	1.61
July.....	48,935	4,220	509	1,579	.951	1.10
August.....	13,136	680	278	424	.255	.29
September.....	11,313	642	251	377	.227	.25
Water year 1946-47.....	375,959	9,020	195	1,030	.620	8.43

Cedar River at Janesville, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1948 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1947.....	9,292	496	174	300	0.181	0.21
November.....	9,232	509	143	308	.186	.21
December.....	8,484	420	190	274	.165	.19
Calendar year 1947.....	345,130	9,020	143	946	.570	7.74
January 1948.....	6,160	260	170	199	.120	.14
February.....	34,915	16,000	160	1,204	.725	.78
March.....	105,670	21,200	650	3,409	2.05	2.37
April.....	22,268	943	556	742	.447	.50
May.....	20,313	1,470	306	655	.395	.46
June.....	11,551	1,380	225	385	.232	.26
July.....	11,013	1,190	174	355	.214	.25
August.....	5,371	220	126	173	.104	.12
September.....	5,397	446	118	180	.108	.12
Water year 1947-48.....	249,666	21,200	118	682	.411	5.61
October 1948.....	6,232	386	115	201	.121	.14
November.....	7,124	584	129	237	.142	.16
December.....	5,061	225	110	163	.098	.11
Calendar year 1948.....	241,035	21,200	110	659	.397	5.41
January 1949.....	9,790	450	130	316	.190	.22
February.....	6,160	450	170	220	.132	.14
March.....	103,366	10,500	440	3,334	2.01	2.32
April.....	46,475	6,890	496	1,549	.933	1.04
May.....	11,775	720	200	380	.229	.26
June.....	16,357	1,710	210	545	.328	.37
July.....	9,455	997	166	305	.184	.21
August.....	5,743	344	112	185	.111	.13
September.....	5,066	410	78	167	.101	.11
Water year 1948-49.....	232,544	10,500	78	637	.384	5.21
October 1949.....	4,814	215	100	155	.093	.11
November.....	5,562	268	103	185	.111	.12
December.....	4,227	225	90	136	.082	.09
Calendar year 1949.....	228,730	10,500	78	627	.378	5.12
January 1950.....	4,527	250	108	146	.088	.10
February.....	3,307	245	77	118	.071	.07
March.....	101,395	15,700	78	3,271	1.97	2.27
April.....	22,077	2,100	305	736	.443	.49
May.....	16,934	1,250	294	546	.329	.38
June.....	11,710	1,804	195	390	.235	.26
July.....	17,393	2,460	160	561	.338	.39
August.....	14,536	1,780	187	469	.283	.33
September.....	5,992	294	122	200	.120	.13
Water year 1949-50.....	212,474	15,700	77	582	.351	4.74

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 in Waterloo, 0.3 mile upstream from Eleventh Avenue Bridge and 1 mile downstream from Blackhawk Creek.

DRAINAGE AREA.—5,190 square miles.

RECORDS AVAILABLE.—February 1941 to September 1950.

GAGE.—Water-stage recorder. Datum of gage is 824.09 feet above mean sea level, datum of 1929.

AVERAGE DISCHARGE.—9 years, 2,856 second-feet.

EXTREMES.—Maximum and minimum discharges for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Mar. 28	17,700	10.75	Jan. 26	960
1943-44...	June 17	26,400	13.25	Dec. 14, Jan. 18	540
1944-45...	Mar. 17	53,300	18.38	Dec. 19	430
1945-46...	Jan. 6	25,200	12.95	Dec. 11	500
1946-47...	June 13	55,600	18.70	Dec. 18	540
1947-48...	Mar. 1	38,200	15.85	Sept. 19	298
1948-49...	Mar. 8	23,100	12.21	Dec. 10	340
1949-50...	Mar. 8	38,400	15.90	Feb. 2	230

1941-50: Maximum discharge, 55,600 second-feet June 13, 1947 (gage-height, 18.70 feet); minimum, 165 second-feet Dec. 11, 1948; minimum daily, 230 second-feet 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 periods of ice effect, which are poor. Regulation at low flow by power plants above station.

COOPERATION.—Gage-height record collected in collaboration with the U. S. Weather Bureau and the city of Waterloo. Several discharge measurements furnished by Corps of Engineers.

Cedar River at Waterloo, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1	2,730	2,080	1,300	1,390	1,060	4,530	8,470	2,540	1,990	2,350	1,790	2,960
2	2,630	1,940	1,150	1,370	1,000	3,490	8,290	2,280	2,280	2,140	1,700	2,780
3	2,760	1,750	1,050	1,290	1,070	3,100	7,550	2,210	2,610	1,940	1,520	2,630
4	5,420	1,750	1,250	1,240	1,150	3,200	6,360	1,920	2,440	1,810	1,660	2,510
5	7,620	2,050	1,330	1,010	1,260	2,800	5,260	2,050	2,100	2,120	1,600	2,470
6	7,140	2,420	1,310	1,140	1,310	2,500	4,770	2,610	1,960	2,710	1,520	2,610
7	4,920	2,240	1,330	1,250	1,370	2,250	4,440	2,980	1,940	3,670	1,480	3,060
8	4,100	2,140	1,180	1,230	1,400	2,100	4,390	2,630	1,700	4,440	1,260	2,760
9	3,720	2,140	1,280	1,230	1,290	1,980	4,100	2,240	1,920	3,780	1,310	2,710
10	3,410	2,080	1,280	1,250	1,390	1,900	3,830	2,140	1,920	3,310	1,330	2,730
11	3,200	2,190	1,280	1,220	1,400	1,870	3,700	1,960	1,880	2,660	1,730	2,590
12	2,980	2,080	1,200	1,160	1,250	1,900	3,800	2,010	1,750	2,800	1,810	2,440
13	2,830	1,990	1,250	1,100	1,200	2,120	4,190	1,940	1,600	2,590	2,050	2,330
14	2,590	1,900	*1,300	1,100	1,180	2,590	3,990	1,850	3,390	2,470	2,610	2,210
15	2,440	1,790	1,100	1,190	1,150	3,700	3,490	2,010	6,160	2,420	5,080	2,140
16	2,350	1,850	1,150	1,150	1,120	7,990	3,260	2,930	6,940	2,400	7,240	1,990
17	2,240	*1,750	1,200	1,120	1,100	11,800	2,930	3,620	5,590	2,510	6,190	1,850
18	2,170	1,770	1,150	1,080	1,080	14,400	2,880	3,490	5,080	2,350	4,080	1,660
19	2,050	1,730	1,130	1,050	1,060	13,000	2,710	3,360	4,440	2,330	3,570	1,550
20	1,940	1,730	1,100	1,080	1,400	9,860	2,510	3,080	4,100	2,380	3,130	1,560
21	1,890	1,730	1,120	1,120	2,500	7,820	2,440	2,860	3,670	2,680	2,730	1,390
22	1,960	1,700	1,150	1,070	7,720	6,460	2,240	2,630	3,260	2,470	2,420	1,330
23	1,900	1,600	1,260	1,050	10,300	5,820	2,280	2,420	3,130	2,260	2,310	1,310
24	1,850	1,520	1,220	1,020	9,930	*6,840	2,330	2,350	2,900	2,170	2,260	1,290
25	1,770	1,730	1,180	980	7,860	8,540	2,170	2,050	2,710	2,190	2,210	1,240
26	1,750	1,480	1,260	960	6,020	10,200	2,210	2,170	2,380	2,050	2,540	1,280
27	1,620	1,120	1,240	*1,090	4,950	13,300	2,190	2,100	2,050	1,660	3,460	1,250
28	1,730	1,460	1,330	1,030	5,200	16,600	2,210	2,050	2,860	1,730	4,360	1,120
29	1,680	1,330	1,290	1,050	.....	15,900	2,240	2,030	2,760	1,770	4,340	1,220
30	1,830	1,290	1,370	1,030	.....	11,100	2,510	1,900	2,490	1,940	3,570	1,200
31	2,010	.....	1,390	1,050	.....	9,080	.....	2,010	.....	1,940	3,280	.....
1943-44												
1	1,180	1,040	1,060	640	1,130	4,470	2,490	3,830	5,330	3,180	1,400	1,520
2	1,080	997	1,060	668	1,480	3,260	2,490	4,020	4,830	3,260	1,480	1,420
3	1,060	1,120	1,150	614	1,280	2,710	2,780	4,680	4,300	3,830	1,400	1,280
4	997	1,150	1,170	600	1,130	2,310	3,080	7,750	3,830	6,330	1,660	1,290
5	949	1,100	1,130	640	1,280	2,190	3,000	10,590	3,520	9,010	2,170	1,150
6	1,040	1,120	1,170	627	810	2,030	2,730	12,400	3,280	8,740	2,380	1,200
7	965	1,150	1,130	627	949	1,180	2,540	12,200	3,130	4,500	2,260	1,150
8	917	1,220	1,200	600	1,100	885	2,420	9,730	3,060	3,460	2,030	1,160
9	885	1,330	1,180	614	1,040	917	2,380	8,160	3,080	3,080	1,770	1,150
10	885	1,500	1,170	640	694	1,120	2,330	7,110	3,620	2,960	1,580	1,120
11	870	1,480	1,010	600	681	1,560	2,540	6,500	4,360	2,830	1,440	1,030
12	825	1,480	965	*588	640	2,560	2,980	5,780	4,770	2,900	1,330	981
13	933	1,400	650	588	735	3,800	3,540	5,260	7,070	3,080	1,180	1,120
14	917	1,440	*640	552	750	4,680	3,330	5,780	13,300	2,830	1,170	1,120
15	949	1,480	640	576	765	7,350	3,130	5,520	18,400	2,630	1,100	1,060
16	949	1,170	720	576	810	8,370	3,310	4,500	17,700	2,490	1,200	1,060
17	949	1,260	770	576	765	7,450	3,650	4,240	23,460	3,800	1,460	1,010
18	933	1,220	810	540	795	5,360	3,540	4,100	14,900	4,300	1,730	1,010
19	870	1,280	810	576	708	3,990	3,360	4,190	13,500	3,230	1,480	949
20	1,010	1,350	750	588	708	3,160	3,230	1,700	13,000	2,780	1,330	1,220
21	1,040	1,310	735	600	722	2,880	3,230	13,300	11,300	2,490	1,280	1,440
22	1,010	1,350	730	600	997	2,730	3,700	15,600	8,430	2,260	1,150	1,590
23	1,010	1,200	722	627	1,620	3,030	4,130	15,400	6,870	2,010	1,310	1,680
24	981	1,260	694	627	2,100	3,880	4,920	13,900	5,620	1,960	1,130	1,580
25	981	1,220	694	627	2,830	5,330	5,680	12,600	4,680	1,850	1,130	1,480
26	901	1,220	708	780	2,930	5,520	6,360	11,600	4,420	2,470	1,220	1,310
27	1,010	1,170	627	1,030	3,000	4,650	6,770	10,500	4,100	2,490	1,330	1,330
28	981	1,200	600	1,770	3,700	3,780	5,950	8,740	3,830	2,190	1,330	1,260
29	981	1,130	640	2,240	4,590	3,180	4,740	8,060	3,590	1,850	1,260	1,220
30	981	965	640	1,620	.....	2,900	4,100	7,070	3,520	1,620	1,440	1,180
31	1,010	.....	640	1,560	.....	2,610	.....	6,260	.....	1,620	1,520	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 1-21, 1942, Jan. 6 to Feb. 4, Feb. 11-21, Mar. 3-11, Dec. 13-17, 22, 1943.

Cedar River at Waterloo, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1	1,170	862	509	530	450	961	4,610	5,110	10,200	4,670	2,010	1,700
2	1,120	852	500	520	450	1,130	4,080	4,760	20,800	4,100	2,090	1,550
3	1,090	894	640	510	450	1,360	3,910	4,610	21,800	3,740	2,010	1,490
4	1,220	830	740	470	460	1,600	4,640	4,610	18,400	3,390	1,880	1,450
5	1,190	830	705	490	470	1,800	5,590	4,520	14,600	3,260	1,880	1,430
6	1,220	845	830	480	450	1,840	5,110	4,340	11,400	3,950	2,010	1,420
7	1,220	735	910	480	450	1,780	4,430	4,020	9,110	2,800	4,550	1,370
8	1,260	830	862	480	480	1,740	4,920	3,580	7,830	3,370	8,250	1,360
9	1,210	830	878	490	500	1,840	6,140	3,310	6,820	4,020	10,100	1,300
10	1,010	782	830	460	516	2,560	6,990	3,142	6,340	3,142	5,970	1,370
11	1,060	776	705	469	558	3,850	7,660	3,040	7,720	2,820	4,050	1,170
12	1,010	792	588	502	*586	6,850	7,380	2,890	11,200	2,560	3,630	1,260
13	1,010	705	600	488	558	11,300	7,300	2,440	10,900	2,360	3,690	1,229
14	1,010	750	570	488	600	19,500	8,000	3,470	9,890	2,200	6,340	1,210
15	961	862	570	488	735	*26,700	9,000	4,460	8,430	2,030	10,000	1,170
16	995	830	580	474	843	39,500	9,960	4,860	7,240	1,880	13,100	1,170
17	862	878	560	460	961	50,700	11,400	4,250	7,160	1,900	13,700	1,130
18	910	878	540	488	1,130	45,200	12,100	3,800	6,070	2,010	10,700	1,030
19	961	894	*430	474	1,490	27,400	10,800	3,390	5,270	2,010	8,320	1,190
20	927	894	569	488	1,390	16,800	9,680	3,110	4,730	1,940	6,310	1,130
21	927	782	540	497	1,360	11,600	7,800	2,980	4,950	1,840	5,080	1,120
22	894	894	520	544	1,100	9,110	6,440	3,580	4,490	1,720	4,110	1,170
23	927	846	510	481	1,030	7,520	5,830	7,690	4,050	1,800	3,500	1,170
24	782	894	500	490	1,050	6,440	6,960	12,700	3,740	1,640	3,080	1,300
25	878	766	540	480	995	6,990	10,400	18,300	3,600	1,620	2,700	1,190
26	862	910	500	490	995	11,000	12,900	15,700	3,820	1,510	2,560	1,240
27	862	878	490	480	1,030	11,800	11,700	15,100	3,440	1,450	2,290	1,240
28	862	814	502	480	961	9,720	8,640	19,900	3,990	1,510	2,140	1,280
29	846	894	516	470	.....	7,970	6,780	18,590	5,210	1,600	2,030	1,390
30	878	700	502	490	.....	6,270	5,760	14,300	5,110	1,840	1,940	1,470
31	766	.....	540	450	.....	5,400	.....	10,700	.....	1,800	1,840	.....
1945-46												
1	1,410	878	1,050	680	920	2,600	4,670	1,220	2,510	3,470	1,600	630
2	1,340	995	1,150	670	1,000	3,010	4,250	1,280	2,290	3,340	1,300	645
3	1,360	978	1,170	650	1,120	3,420	3,910	1,360	2,160	2,490	1,210	615
4	1,360	978	1,030	700	960	3,990	3,630	1,390	2,030	1,900	1,080	645
5	1,320	1,010	995	2,000	2,160	4,920	3,390	1,450	1,900	1,780	1,050	630
6	1,260	869	1,190	17,200	4,670	10,300	3,210	1,390	1,700	1,530	927	862
7	1,240	995	1,130	22,600	6,680	20,100	3,910	1,360	1,550	1,510	1,030	1,450
8	1,190	1,050	1,150	16,800	7,380	21,600	2,820	1,360	1,360	1,360	944	4,700
9	1,060	1,050	760	11,100	5,830	14,800	2,720	1,300	1,260	1,120	961	10,400
10	1,190	1,050	680	6,920	5,050	9,750	2,740	1,280	1,220	1,280	1,080	11,300
11	1,150	1,030	500	4,830	4,020	7,130	2,790	1,240	1,130	1,220	1,280	8,000
12	1,100	1,080	600	3,600	3,180	6,780	2,650	1,190	1,510	1,120	995	6,850
13	1,120	944	790	2,560	2,700	13,100	2,490	1,260	1,540	1,050	910	4,950
14	1,060	1,120	750	2,100	2,270	21,300	2,380	1,280	1,390	1,010	927	3,850
15	995	1,080	760	1,900	1,990	18,900	2,230	1,320	1,470	1,080	846	3,210
16	961	1,080	740	1,700	1,780	15,300	2,070	1,170	1,490	910	846	2,790
17	1,030	1,050	760	1,600	1,760	12,200	1,970	1,220	2,030	1,080	810	2,450
18	1,060	1,080	780	1,550	1,640	10,600	1,900	1,260	3,660	1,030	814	2,200
19	995	995	730	*4,550	1,530	10,100	1,760	1,300	3,340	1,060	830	2,030
20	978	894	700	1,500	1,680	9,360	1,680	1,300	4,800	1,060	978	1,920
21	978	800	700	1,530	1,820	7,860	1,510	1,300	5,210	1,100	927	1,760
22	1,050	660	680	1,450	2,180	6,550	1,600	1,490	4,220	1,130	878	1,740
23	910	600	660	*1,300	2,450	6,000	1,600	1,600	3,800	878	814	1,740
24	978	782	670	1,200	2,600	5,900	1,510	1,740	3,420	944	782	1,760
25	961	862	670	1,100	2,720	6,340	1,450	2,310	3,080	894	750	1,800
26	944	878	680	1,100	2,720	6,340	1,390	4,110	2,740	878	766	1,700
27	894	798	640	1,080	2,490	6,270	1,320	5,020	2,490	862	600	1,600
28	894	995	700	1,070	2,200	6,410	1,300	4,250	2,290	978	720	1,600
29	862	944	650	1,040	.....	6,140	1,260	3,710	2,200	1,540	675	1,470
30	814	961	680	950	.....	5,460	1,220	3,260	2,840	1,390	645	1,510
31	910	.....	660	920	.....	4,920	.....	2,840	.....	1,580	586	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 30 to Dec. 4, Dec. 13-27, 31, 1944, Jan. 1-10, Jan. 24 to Feb. 9, Nov. 21, Dec. 9-31, 1945, Jan. 1-5, Jan. 14 to Feb. 4, 1946.

Cedar River at Waterloo, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1	1,470	2,400	1,560	720	670	1,150	3,920	3,840	7,100	14,800	1,910	1,670
2	1,450	2,380	1,050	700	700	1,100	3,670	3,700	21,200	17,100	1,860	1,610
3	1,340	2,310	910	680	740	1,080	3,530	3,560	12,700	17,500	1,800	1,450
4	1,280	2,290	1,360	680	780	1,030	3,530	3,470	8,090	14,200	1,800	1,300
5	1,170	2,270	1,540	690	840	1,170	3,860	3,390	8,600	11,500	1,650	1,280
6	1,190	1,990	1,540	*700	900	1,240	5,310	3,440	8,120	10,900	1,620	1,240
7	1,150	1,990	1,450	700	950	1,410	8,490	3,110	6,420	10,800	1,490	1,180
8	1,080	1,940	1,450	720	970	1,700	10,700	2,880	5,860	11,700	1,430	1,040
9	1,210	1,880	*1,340	740	970	2,000	10,600	2,720	6,690	11,000	1,430	1,070
10	1,260	2,010	1,340	766	920	2,340	8,460	2,600	6,250	9,550	1,410	1,090
11	1,360	2,120	1,410	750	810	2,440	10,700	2,470	5,340	7,540	1,390	1,090
12	1,580	2,450	1,450	735	780	2,580	15,500	2,760	5,470	6,110	1,330	1,160
13	2,030	2,670	1,370	830	810	3,330	17,900	2,420	33,200	5,380	1,310	1,070
14	2,380	2,840	978	894	927	5,030	15,800	2,390	46,200	5,030	1,300	1,130
15	2,400	2,840	995	1,050	1,080	5,630	11,000	2,770	29,700	5,090	1,300	1,240
16	2,160	2,720	990	1,190	1,430	5,660	8,800	3,020	20,200	5,630	1,220	1,220
17	1,990	2,560	680	1,340	1,920	5,440	8,290	3,220	14,500	5,860	1,220	1,180
18	2,050	2,450	540	1,410	2,250	4,640	7,710	3,250	16,300	5,540	1,200	1,160
19	2,070	2,380	840	1,450	2,400	3,700	6,990	3,330	20,300	4,880	1,160	1,090
20	1,940	2,270	1,020	1,240	2,450	3,470	6,530	3,360	17,600	4,490	1,200	1,070
21	1,720	2,230	1,080	840	2,340	3,250	5,980	3,050	13,200	4,130	1,160	1,000
22	1,540	2,070	1,060	940	2,090	3,020	5,340	2,860	11,400	3,750	1,090	1,000
23	1,300	1,760	1,020	1,040	1,970	3,280	5,030	2,830	13,900	3,440	1,110	918
24	1,600	1,900	927	1,150	1,820	4,010	5,700	2,860	12,500	3,160	1,090	918
25	1,780	1,720	1,010	1,240	1,530	5,570	6,300	2,830	11,600	2,880	1,060	935
26	2,650	1,600	1,050	1,210	1,410	6,820	6,080	2,630	10,400	2,520	1,020	935
27	3,240	1,680	895	*1,240	1,920	7,850	5,890	2,390	9,210	2,440	1,040	935
28	3,210	1,680	1,060	1,150	1,190	6,300	5,120	2,440	7,920	2,260	1,040	952
29	2,940	1,620	846	995	.....	5,470	4,520	3,080	7,370	2,120	1,220	918
30	2,650	1,580	720	705	.....	4,940	4,040	4,280	10,800	2,000	1,370	867
31	2,510	.....	700	660	.....	4,250	.....	4,370	.....	1,980	1,610	.....
1947-48												
1	d867	1,190	630	560	460	*37,400	3,720	2,310	1,270	2,690	562	d562
2	d905	1,310	830	580	460	24,800	3,330	2,440	1,350	2,190	630	d562
3	d867	1,350	1,000	600	*460	12,600	3,050	2,540	1,310	1,820	579	d545
4	d981	1,210	1,170	630	430	7,640	2,860	2,190	1,060	1,530	545	d562
5	d943	1,170	1,370	680	430	5,600	2,690	2,120	1,370	d1,310	596	d528
6	d943	1,170	1,430	740	430	4,250	2,740	2,740	1,570	d1,110	579	d528
7	d867	1,150	1,410	810	415	2,650	2,420	3,500	1,490	d1,110	562	d477
8	d829	1,080	1,190	810	415	2,590	2,770	3,000	1,390	d1,020	579	d460
9	d905	1,060	700	790	430	2,350	2,940	2,720	1,330	d943	579	d460
10	d867	1,060	670	770	440	2,000	2,470	3,360	1,150	d924	579	d415
11	d810	d962	810	760	440	1,800	2,880	3,840	1,080	d867	596	d400
12	d756	d981	940	720	430	1,750	2,970	4,070	1,080	d905	579	d400
13	d774	d1,000	1,060	600	440	1,700	2,890	4,070	1,100	d848	562	d415
14	d756	d962	1,100	530	440	1,800	2,490	3,560	1,130	d1,020	545	d385
15	d720	d1,020	900	560	460	1,950	2,360	3,890	1,020	d1,210	596	d400
16	d738	d1,080	*580	580	480	3,650	2,210	4,550	1,080	d1,110	630	d400
17	792	d1,080	540	580	490	14,000	2,070	3,640	1,040	d1,040	511	d355
18	810	d1,020	650	550	540	25,000	1,950	3,190	1,020	d905	596	d340
19	810	d1,040	790	560	810	26,800	1,840	2,630	962	886	579	d298
20	810	d1,060	940	530	1,200	28,200	1,820	2,340	962	867	528	d355
21	738	d962	1,000	510	2,150	17,000	1,670	2,160	1,100	924	545	d400
22	738	d1,130	1,000	510	2,600	11,700	1,530	1,950	981	867	511	d702
23	738	d1,110	850	510	2,040	8,290	1,930	1,800	1,020	756	477	d494
24	810	d1,170	850	490	1,820	6,250	2,340	1,700	1,000	774	415	430
25	848	d1,150	810	490	1,720	5,060	2,420	1,570	962	810	445	511
26	924	d1,040	810	510	1,650	4,580	2,550	1,490	1,000	848	445	579
27	1,130	1,090	790	511	2,690	5,660	2,720	1,450	1,350	702	445	562
28	1,370	850	850	460	16,700	6,420	2,550	1,430	1,780	829	400	460
29	1,470	630	810	460	29,600	5,820	2,620	1,410	2,600	666	494	494
30	1,310	560	790	490	.....	5,150	2,260	1,390	2,970	648	562	477
31	1,160	.....	670	480	.....	4,430	.....	1,350	.....	562	511	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Dec. 16-23, 30, 31, 1946, Jan. 1-9, 21-23, Feb. 1-13, Feb. 27 to Mar. 3, Nov. 27 to Dec. 3, Dec. 8-31, 1947, Jan. 1-26, 30, 31, Feb. 2, 5-21, Mar. 7-16, 1948.

Cedar River at Waterloo, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1	476	423	560	390	760	2,400	9,480	1,700	971	2,230	1,040	522
2	441	437	*550	420	744	2,200	11,560	1,630	1,240	2,180	953	524
3	437	471	566	453	596	2,100	12,500	1,420	1,500	2,580	858	606
4	451	498	724	714	622	3,000	9,820	1,500	1,760	1,880	788	564
5	428	663	886	971	596	10,000	7,440	1,510	1,780	1,350	768	546
6	495	564	832	1,040	620	17,000	6,080	1,470	1,700	1,380	718	571
7	684	761	590	1,360	660	20,400	5,450	1,490	1,270	1,210	648	548
8	659	820	421	1,476	612	22,700	4,820	1,410	1,120	1,150	657	590
9	752	604	370	1,450	579	18,300	4,360	1,420	1,090	1,040	603	653
10	731	708	340	1,290	626	12,900	3,960	1,230	1,020	942	666	646
11	772	652	360	*1,180	638	8,800	3,700	1,130	890	1,000	718	628
12	548	740	410	1,250	590	6,080	3,340	1,340	905	816	630	708
13	601	576	500	1,130	592	5,280	3,060	1,380	1,000	863	674	654
14	566	974	643	1,140	594	4,520	2,870	1,400	993	829	682	768
15	588	584	682	1,250	578	3,620	2,830	1,410	1,020	779	680	670
16	540	632	612	1,820	525	3,350	2,570	1,440	905	747	595	704
17	572	651	485	2,130	548	3,030	2,590	1,280	846	775	618	690
18	565	686	551	2,110	*548	2,780	2,810	1,310	824	853	614	641
19	509	693	578	1,740	590	2,560	3,290	1,220	784	1,030	598	621
20	690	710	706	1,380	616	2,460	3,390	1,170	870	1,010	570	572
21	745	878	586	1,260	580	2,490	3,360	1,100	818	1,780	576	577
22	720	896	506	1,150	556	3,160	3,290	1,090	906	1,320	586	574
23	644	807	489	1,070	636	4,820	2,970	1,290	1,080	1,120	532	538
24	558	828	516	1,180	750	7,610	2,680	1,110	1,710	1,060	545	534
25	526	839	524	940	900	8,460	2,370	1,140	2,640	988	601	471
26	413	984	520	908	1,200	11,200	2,290	1,080	4,520	876	539	574
27	466	712	480	840	1,600	13,200	2,040	1,010	5,120	847	404	542
28	475	754	420	820	2,100	15,600	1,866	952	3,780	506	490	482
29	454	824	380	893	.....	16,600	1,820	962	2,790	803	513	498
30	444	596	350	780	.....	15,300	1,780	1,010	2,470	946	482	507
31	452	.....	380	800	.....	10,500	.....	897	.....	1,060	481	.....
1949-50												
1	604	634	508	436	250	280	6,760	1,870	2,010	1,320	1,340	568
2	538	616	488	484	230	340	6,080	1,890	2,400	1,330	2,320	592
3	004	576	509	445	240	320	5,060	2,000	2,740	1,140	2,490	603
4	592	518	496	330	240	340	4,410	2,170	2,730	1,090	1,970	592
5	576	460	471	300	250	1,100	3,830	2,580	2,420	1,070	1,620	485
6	618	491	472	280	290	8,000	3,380	3,830	1,980	1,030	1,380	496
7	606	404	467	270	300	23,000	3,030	3,950	1,800	1,050	1,210	571
8	582	426	310	290	340	36,900	2,710	2,540	1,590	876	904	514
9	614	479	*260	310	488	30,700	2,550	3,380	2,060	976	918	484
10	645	452	300	310	944	19,900	2,460	7,780	3,200	854	958	528
11	602	442	474	290	1,100	9,950	2,480	8,460	4,410	882	780	482
12	570	487	438	300	804	4,890	2,740	6,420	2,540	846	1,230	481
13	578	476	324	340	490	3,590	2,630	4,250	2,100	796	1,170	622
14	588	518	310	*380	364	3,100	2,410	3,220	2,350	923	1,120	594
15	561	506	380	370	370	2,900	2,120	2,770	2,580	836	906	486
16	538	484	434	520	380	2,590	1,940	2,360	3,100	850	948	503
17	614	520	450	500	340	2,850	1,650	2,240	2,680	873	930	400
18	591	439	458	480	320	2,780	1,480	2,130	3,770	2,130	794	516
19	548	469	465	400	310	2,920	1,550	2,030	6,420	3,620	862	454
20	568	459	503	380	320	2,740	1,480	1,960	7,780	2,520	798	593
21	818	500	417	360	300	2,760	1,470	2,100	5,570	2,160	716	2,520
22	616	442	250	350	300	2,850	1,400	3,080	4,100	2,260	686	2,360
23	494	462	280	370	310	4,730	1,500	2,650	3,220	2,000	635	1,890
24	671	464	350	370	300	7,270	1,860	2,410	3,280	1,840	658	1,150
25	638	464	370	330	270	8,630	3,210	2,650	3,010	1,710	634	1,010
26	672	402	390	330	250	9,310	3,270	4,410	2,330	1,450	583	814
27	629	495	370	330	290	11,500	2,830	4,250	2,130	1,290	658	766
28	618	482	351	300	310	17,100	2,430	2,730	1,750	1,150	668	772
29	614	461	386	300	.....	26,000	2,140	2,270	1,550	1,160	660	690
30	612	468	376	290	.....	20,000	2,020	1,950	1,490	1,040	598	645
31	636	.....	383	280	.....	9,650	.....	1,840	.....	1,100	558	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 1, 2, 9-13, 26-31, 1948, Jan. 1, 2, Feb. 24 to Mar. 6, Dec. 8-10, 14, 15, 22-27, 1949, Jan. 4 to Feb. 8, Feb. 15 to Mar. 7, 1950.

Cedar River at Waterloo, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1942.....	89,330	7,620	1,620	2,882	0.555	0.64
November.....	54,330	2,420	1,120	1,811	.349	.39
December.....	38,130	1,390	1,050	1,230	.237	.27
Calendar year 1942.....	1,381,780	21,600	1,000	3,786	.729	9.90
January 1943.....	35,020	1,390	960	1,130	.218	.25
February.....	78,720	10,300	1,090	2,811	.542	.56
March.....	208,740	16,600	1,870	6,734	1.30	1.50
April.....	113,680	8,470	2,170	3,789	.730	.81
May.....	74,470	3,620	1,850	2,402	.463	.53
June.....	90,000	6,940	1,600	3,000	.578	.64
July.....	76,340	4,440	1,660	2,463	.475	.55
August.....	86,160	7,240	1,260	2,779	.635	.62
September.....	60,240	3,060	1,130	2,008	.387	.43
Water year 1942-43.....	1,005,160	16,600	960	2,754	.531	7.19
October 1943.....	30,049	1,180	825	969	.187	.22
November.....	37,372	1,560	965	1,246	.240	.27
December.....	26,515	1,200	540	855	.165	.19
Calendar year 1943.....	917,306	16,800	540	2,513	.484	6.57
January 1944.....	24,111	2,240	540	778	.150	.17
February.....	40,739	4,500	640	1,405	.271	.29
March.....	109,842	8,370	885	3,543	.683	.79
April.....	108,430	6,770	2,330	3,614	.696	.78
May.....	255,980	15,600	3,830	8,257	1.59	1.83
June.....	224,740	23,400	3,060	7,491	1.44	1.61
July.....	102,030	9,010	1,620	3,291	.634	.73
August.....	45,650	2,380	1,100	1,473	.284	.33
September.....	37,030	1,650	949	1,234	.238	.27
Water year 1943-44.....	1,042,488	23,400	540	2,848	.549	7.48
October 1944.....	30,870	1,260	765	996	.192	.22
November.....	24,938	910	700	831	.160	.18
December.....	18,756	910	430	605	.117	.13
Calendar year 1944.....	1,023,116	23,400	430	2,795	.539	7.33
January 1945.....	15,051	544	450	486	.094	.11
February.....	22,048	1,490	450	787	.152	.16
March.....	358,231	50,700	961	11,560	2.23	2.57
April.....	226,910	12,900	3,910	7,594	1.46	1.63
May.....	217,590	18,300	2,840	7,018	1.35	1.56
June.....	248,280	21,800	3,440	8,276	1.59	1.78
July.....	75,880	4,670	1,450	2,448	.472	.54
August.....	152,010	13,700	1,840	4,904	.945	1.09
September.....	38,730	1,700	1,030	1,291	.249	.28
Water year 1944-45.....	1,429,264	50,700	430	3,916	.755	10.25
October 1945.....	33,374	1,410	814	1,077	.208	.24
November.....	28,486	1,120	600	950	.183	.20
December.....	24,755	1,190	500	799	.154	.18
Calendar year 1945.....	1,441,315	50,700	450	3,949	.761	10.34
January 1946.....	114,930	22,600	650	3,707	.714	.82
February.....	77,590	7,380	920	2,771	.534	.56
March.....	287,450	21,600	2,600	9,373	1.79	2.06
April.....	70,430	4,670	1,220	2,348	.452	.50
May.....	57,500	5,020	1,170	1,855	.357	.41
June.....	72,700	5,210	1,130	2,423	.467	.52
July.....	42,574	3,470	892	1,373	.265	.31
August.....	28,565	1,600	586	921	.177	.20
September.....	86,807	11,300	615	2,894	.558	.62
Water year 1945-46.....	925,161	22,600	500	2,535	.488	6.62

Cedar River at Waterloo, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946.....	57,700	3,240	1,080	1,861	0.359	0.41
November.....	64,600	2,840	1,580	2,153	.415	.46
December.....	34,281	1,560	540	1,106	.213	.25
Calendar year 1946.....	995,127	22,600	540	2,726	.525	7.12
January 1947.....	29,155	1,450	660	940	.181	.21
February.....	36,947	2,450	670	1,320	.254	.26
March.....	110,900	7,850	1,030	3,577	.689	.79
April.....	225,290	17,900	3,530	7,510	1.45	1.61
May.....	94,920	4,370	2,360	3,062	.590	.68
June.....	408,140	46,200	5,340	13,600	2.62	2.92
July.....	215,370	17,500	1,980	6,947	1.34	1.54
August.....	41,850	1,910	1,020	1,350	.260	.30
September.....	33,718	1,670	867	1,124	.217	.24
Water year 1946-47.....	1,352,871	46,200	540	3,706	.714	9.67
October 1947.....	28,016	1,470	720	904	.174	.20
November.....	31,557	1,350	560	1,052	.203	.23
December.....	28,010	1,430	540	904	.174	.20
Calendar year 1947.....	1,283,873	46,200	540	3,517	.678	9.18
January 1948.....	18,391	810	460	593	.114	.13
February.....	71,070	29,600	415	2,451	.472	.51
March.....	288,800	37,400	1,700	9,316	1.79	2.07
April.....	74,930	3,720	1,530	2,498	.481	.54
May.....	80,000	4,550	1,350	2,581	.497	.57
June.....	38,527	2,970	962	1,284	.247	.28
July.....	32,691	2,690	562	1,054	.203	.23
August.....	16,822	630	415	543	.105	.12
September.....	13,956	702	298	465	.090	.10
Water year 1947-48.....	722,770	37,400	298	1,975	.381	5.18
October 1948.....	17,402	772	413	561	.108	.12
November.....	20,665	984	423	689	.133	.15
December.....	16,517	886	340	533	.103	.12
Calendar year 1948.....	689,771	37,400	298	1,885	.363	4.94
January 1949.....	35,329	2,130	390	1,140	.220	.25
February.....	29,586	2,100	525	735	.142	.15
March.....	262,430	22,700	2,100	8,465	1.63	1.88
April.....	130,330	12,500	1,780	4,344	.837	.93
May.....	39,501	1,700	897	1,274	.245	.28
June.....	48,322	5,120	784	1,611	.310	.35
July.....	37,093	2,580	747	1,197	.231	.27
August.....	19,827	1,040	404	640	.123	.14
September.....	17,723	768	471	591	.114	.13
Water year 1948-49.....	665,725	22,700	340	1,824	.351	4.77
October 1949.....	18,755	818	494	605	.117	.13
November.....	14,496	634	402	483	.093	.10
December.....	12,440	509	250	401	.077	.09
Calendar year 1949.....	656,832	22,700	250	1,800	.347	4.70
January 1950.....	11,025	520	270	356	.069	.08
February.....	10,700	1,100	230	382	.074	.08
March.....	278,990	36,900	280	9,000	1.73	2.00
April.....	82,880	6,760	1,400	2,763	.532	.59
May.....	98,170	8,460	1,840	3,167	.610	.70
June.....	89,150	7,780	1,490	2,973	.573	.64
July.....	42,152	3,620	796	1,360	.262	.30
August.....	31,702	2,490	558	1,023	.197	.23
September.....	23,271	2,520	454	776	.150	.17
Water year 1949-50.....	713,761	36,900	230	1,956	.377	5.11

Cedar River at Cedar Rapids, Iowa

LOCATION.—Lat. $41^{\circ}58'15''$, long. $91^{\circ}40'05''$, 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.

RECORDS AVAILABLE.—February 1903 to September 1950.

GAGE.—Water-stage recorder. Datum of gage is 700.33 feet above mean sea level, datum of 1929. Feb. 14, 1903, to Aug. 19, 1920, inclined staff gage; same site and datum. Prior to Aug. 20, 1920 staff gage at same site and datum.

AVERAGE DISCHARGE.—47 years, 3,093 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table;

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Mar. 31	15,800	7.91	Dec. 4	1,140
1943-44...	June 18	29,100	11.43	Dec. 14	550
1944-45...	Mar. 19	52,300	17.09	Dec. 3	611
1945-46...	Jan. 9	27,100	10.80	Dec. 12	600
1946-47...	June 16	56,200	18.23	Dec. 19	620
1947-48...	Mar. 3	34,500	12.82	Sept. 12	565
1948-49...	Mar. 7	30,800	11.75	Dec. 10	429
1949-50...	Mar. 11	33,000	12.45	Dec. 10	212

1903-50: Maximum discharge, 72,000 second-feet Mar. 19, 1929 (gage-height, 20.1 feet); minimum, 53 second-feet Jan. 6, 1950 regulated by construction upstream; minimum daily, 212 second-feet Dec. 10, 1949.

Flood of June 1851 reached a stage of about 20 feet.

REMARKS.—Records good except those for periods of ice effect or no gage-height record, which are poor. Diurnal fluctuation of low stages caused by power plant half a mile above station.

COOPERATION.—Gage-height record collected in collaboration with U. S. Weather Bureau. Several discharge measurements furnished by Corps of Engineers.

Cedar River at Cedar Rapids, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	3,730	3,120	1,840	2,200	1,500	7,410	13,000	3,700	3,010	3,280	2,360	3,650
2.....	3,530	2,960	1,650	2,000	1,500	5,890	10,300	3,590	5,990	3,090	2,290	3,390
3.....	3,340	2,800	1,300	1,950	1,600	4,990	9,230	3,310	5,930	2,880	2,230	3,120
4.....	3,390	2,550	1,140	1,850	1,700	4,380	8,800	3,010	4,560	2,830	2,480	3,090
5.....	4,320	2,650	1,270	1,600	2,000	4,290	8,040	2,750	4,170	2,680	2,230	4,350
6.....	5,990	3,060	1,500	1,650	2,300	3,600	6,980	2,830	3,880	2,550	2,200	4,680
7.....	7,250	3,310	1,650	1,680	2,300	3,200	7,080	3,170	3,560	2,850	2,050	3,390
8.....	7,210	3,280	1,800	1,750	2,300	3,000	6,980	3,500	3,310	3,340	1,880	3,230
9.....	5,670	3,560	1,900	1,800	2,400	2,800	6,150	3,530	3,170	4,320	1,970	3,250
10.....	4,800	4,630	1,950	1,770	2,700	2,700	5,770	3,200	3,010	4,500	1,920	3,040
11.....	4,440	4,170	1,900	1,700	3,200	2,700	5,480	2,980	3,090	4,020	1,760	2,980
12.....	4,110	3,680	1,900	1,600	2,600	2,980	5,200	2,780	3,390	3,680	1,820	3,090
13.....	3,910	3,390	1,800	1,550	2,300	*3,230	5,110	2,650	3,120	3,420	3,500	2,980
14.....	3,650	3,120	1,800	1,600	2,100	3,500	5,110	2,550	2,800	3,280	3,120	2,750
15.....	3,480	2,980	1,800	1,700	2,000	6,440	5,050	2,980	3,040	3,140	2,830	2,680
16.....	3,280	2,880	1,750	1,650	1,950	11,600	4,740	6,370	5,360	3,140	3,500	2,500
17.....	3,090	3,040	1,700	1,580	1,900	10,800	4,320	6,280	7,250	3,200	5,110	2,360
18.....	2,960	2,880	1,700	1,550	1,900	9,630	4,000	5,670	7,480	3,060	6,150	2,270
19.....	2,830	2,680	1,650	1,550	1,900	10,300	3,760	5,420	6,600	3,040	5,550	2,140
20.....	2,720	2,620	1,650	1,550	3,500	11,700	3,680	5,050	6,210	2,980	4,320	2,010
21.....	2,580	2,550	1,600	1,550	5,400	13,000	3,360	4,740	6,250	2,850	3,760	1,900
22.....	2,550	2,520	1,650	1,600	6,200	11,400	3,230	4,320	5,420	2,980	3,360	1,880
23.....	2,500	2,500	1,650	1,500	7,000	9,260	3,120	4,000	6,150	2,910	3,090	1,690
24.....	2,500	2,450	1,750	1,450	8,070	8,240	3,120	3,760	5,360	3,060	2,910	1,630
25.....	2,450	2,380	2,050	1,450	10,400	8,270	3,040	3,530	4,470	3,280	2,680	1,610
26.....	2,320	2,320	1,750	*1,450	11,700	8,570	2,960	3,250	4,020	2,800	2,580	1,600
27.....	2,270	1,990	2,350	1,500	10,300	9,060	3,360	3,090	3,620	2,600	2,580	1,540
28.....	2,230	1,940	2,950	1,550	8,500	9,800	3,200	3,010	3,360	2,410	2,980	1,470
29.....	2,230	1,610	2,800	1,600	.....	11,200	3,480	2,910	3,390	2,270	3,700	1,490
30.....	2,720	1,820	*2,600	1,600	.....	13,800	3,970	2,850	3,700	2,270	4,350	1,440
31.....	3,060	.....	2,400	1,600	.....	15,400	.....	3,010	.....	2,360	4,110	.....
1943-44												
1.....	1,450	1,420	1,370	724	2,070	4,080	4,020	5,670	8,630	4,800	2,430	2,120
2.....	1,440	1,350	1,220	735	1,670	4,710	3,910	5,170	7,310	4,650	2,270	2,010
3.....	1,380	1,320	1,320	735	1,840	4,260	3,620	5,050	6,370	4,470	2,120	1,990
4.....	1,250	1,240	1,280	735	2,070	3,560	3,560	5,450	5,670	4,650	2,340	1,800
5.....	1,280	1,280	1,330	730	1,730	3,060	3,730	6,150	5,080	5,520	2,270	1,710
6.....	1,250	1,380	1,670	730	1,420	2,780	3,820	7,580	4,710	6,820	3,480	1,650
7.....	1,190	1,540	1,780	730	1,470	2,090	3,620	8,930	4,380	8,070	3,230	1,560
8.....	1,220	1,730	1,820	710	1,270	1,220	3,480	10,400	4,380	8,140	3,040	1,510
9.....	1,130	1,600	1,600	720	1,190	1,160	3,420	11,400	4,770	5,420	2,830	1,420
10.....	1,110	1,520	1,670	740	1,190	1,040	3,420	10,800	5,060	4,380	2,550	1,490
11.....	1,110	1,630	1,450	*740	760	1,450	3,450	9,060	5,270	4,200	2,340	1,520
12.....	1,050	1,730	1,280	720	700	3,060	4,260	7,940	6,440	4,020	2,120	1,450
13.....	1,140	1,690	1,100	720	700	4,260	5,020	7,250	7,480	3,970	1,970	1,420
14.....	1,050	1,690	620	700	700	4,600	5,110	6,530	8,530	4,000	1,780	1,370
15.....	1,110	1,650	600	700	800	7,600	5,300	6,180	8,930	3,820	1,610	1,440
16.....	1,080	1,610	550	720	900	8,670	4,990	6,340	12,500	3,850	1,650	1,400
17.....	1,130	1,630	*650	740	950	*9,160	4,680	5,990	25,000	3,390	2,720	1,380
18.....	1,140	1,450	940	760	1,000	9,230	4,770	5,270	28,400	3,620	3,040	1,370
19.....	1,110	1,520	1,000	712	*950	8,570	4,770	5,420	26,700	5,050	2,410	1,490
20.....	1,110	1,470	1,000	678	1,000	6,370	4,680	7,350	20,200	4,560	2,230	1,730
21.....	1,160	1,510	920	611	920	4,770	4,560	9,230	15,700	3,820	1,970	1,600
22.....	1,240	1,520	880	*644	1,250	4,290	4,560	10,800	15,700	3,390	1,840	1,670
23.....	1,320	1,510	840	659	3,650	4,230	4,990	13,200	19,100	3,120	1,990	1,820
24.....	1,240	1,490	840	667	2,600	4,620	5,480	16,600	17,100	3,010	1,800	1,990
25.....	1,200	1,400	840	747	2,380	5,080	5,770	17,800	11,600	2,720	1,730	2,180
26.....	1,190	1,470	847	873	4,200	5,390	6,090	17,300	8,070	2,650	1,610	2,030
27.....	1,160	1,440	809	1,140	4,400	6,050	6,470	15,400	6,630	3,650	1,650	1,860
28.....	1,100	1,400	847	1,520	3,500	5,990	6,820	13,700	6,020	4,380	1,820	1,800
29.....	1,110	1,370	822	1,710	3,560	5,300	6,980	12,600	5,480	3,700	1,860	1,740
30.....	1,170	1,330	747	2,140	.....	4,500	6,410	11,100	4,990	3,090	1,940	1,670
31.....	1,300	.....	822	2,500	.....	4,080	.....	9,970	.....	2,700	2,030	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 6-31, 1942, Jan. 1 to Feb. 23, Mar. 6-11, Dec. 13-25, 1943, Jan. 5-17, Feb. 12-22, 27, Mar. 14, 16, 1944.

Cedar River at Cedar Rapids, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1	1,630	1,140	740	760	620	1,940	7,940	8,080	17,200	6,300	2,130	2,490
2	1,610	1,130	655	740	620	2,720	6,890	7,240	14,000	5,980	2,130	2,330
3	1,600	1,200	611	720	640	3,550	6,120	6,640	11,800	5,560	2,330	2,190
4	1,580	1,220	655	700	640	3,750	8,080	6,220	14,400	5,080	2,530	2,070
5	1,560	1,190	913	680	640	3,940	7,840	5,980	20,500	4,700	2,280	1,960
6	1,600	1,190	1,170	680	640	4,800	7,380	5,880	19,700	4,280	2,280	1,860
7	1,610	1,220	1,250	680	640	4,710	7,480	5,660	16,600	4,050	2,220	1,900
8	1,580	1,240	1,110	660	640	4,110	6,780	5,350	13,500	3,930	2,790	2,090
9	1,560	1,170	1,320	640	640	3,600	6,300	4,840	10,900	3,830	5,110	1,880
10	1,580	1,110	1,220	640	660	3,800	6,780	4,570	11,500	4,440	7,140	1,860
11	1,520	1,160	1,020	650	680	4,800	7,380	4,370	10,200	4,240	8,290	1,760
12	1,380	1,140	800	650	*710	4,830	8,120	4,210	8,600	3,710	6,220	1,620
13	1,400	1,140	800	650	760	5,800	8,960	4,050	9,020	3,410	4,740	1,670
14	1,370	1,140	740	650	1,200	7,250	8,740	6,050	10,500	3,160	6,330	1,720
15	1,330	1,130	750	*650	1,900	8,960	8,640	8,540	11,300	2,940	7,450	1,670
16	1,250	1,100	780	640	*2,100	12,500	11,000	8,120	11,100	2,780	8,180	1,610
17	1,270	1,130	760	650	1,800	22,300	12,500	8,120	10,000	2,610	9,340	1,430
18	1,280	1,170	740	660	1,600	35,900	13,000	8,010	8,740	2,510	10,800	1,570
19	1,170	1,220	*740	660	1,500	*49,600	12,900	6,640	8,040	2,490	12,200	1,500
20	1,250	1,200	740	660	1,650	46,900	13,200	5,840	7,200	2,590	12,000	1,380
21	1,240	1,200	720	660	1,700	32,000	12,600	5,420	6,500	2,590	9,760	1,480
22	1,200	1,190	700	660	1,900	20,600	11,300	5,110	6,120	2,560	7,730	1,480
23	1,200	1,140	700	660	1,850	14,800	9,680	4,770	6,050	2,370	6,680	1,500
24	1,190	1,130	700	680	1,750	11,500	8,320	6,020	5,560	2,260	5,660	1,470
25	1,130	1,140	700	700	2,300	12,000	7,590	8,180	6,470	2,190	4,700	1,540
26	1,100	1,220	680	700	3,200	11,300	8,360	10,400	5,280	2,110	4,080	1,650
27	1,190	1,200	680	680	2,350	10,200	9,900	13,600	5,080	2,020	3,710	1,700
28	1,110	1,220	700	660	1,820	11,300	11,500	17,100	5,380	2,070	3,350	2,170
29	1,130	1,220	*720	640	.....	12,500	12,100	16,600	5,490	1,880	2,970	2,090
30	1,130	940	740	620	.....	11,400	10,200	17,700	6,080	1,960	2,840	2,070
31	1,140	.....	750	620	.....	9,550	.....	19,300	.....	2,020	2,660	.....
1945-46												
1	2,200	1,170	1,570	1,000	1,850	3,560	6,500	1,740	3,650	10,500	1,760	1,030
2	2,170	1,200	2,490	980	2,000	3,650	6,050	1,820	3,270	9,520	2,090	1,050
3	1,980	1,220	2,610	920	2,090	4,540	5,660	2,070	2,970	6,190	1,960	1,000
4	1,900	1,250	2,280	*890	1,450	4,340	5,180	2,330	2,760	4,840	1,700	961
5	1,860	1,280	1,920	3,700	2,800	4,540	4,810	2,370	2,640	3,740	1,430	935
6	1,800	1,280	1,763	16,000	4,900	8,920	4,570	2,330	2,490	3,270	1,470	1,280
7	1,720	1,280	1,800	19,100	5,280	9,690	4,280	2,300	2,350	2,860	1,400	1,180
8	1,670	1,680	1,840	23,500	5,980	11,200	4,080	2,150	2,110	2,760	1,330	2,090
9	1,630	2,350	1,480	26,000	6,640	14,300	3,830	2,070	1,900	2,590	1,300	4,080
10	1,500	1,700	1,200	21,800	7,620	19,500	3,620	2,000	1,740	2,280	1,260	5,800
11	1,470	1,560	720	15,600	8,040	18,000	3,560	1,940	1,650	2,070	1,100	7,940
12	1,520	1,590	600	9,940	6,920	13,300	3,620	1,900	2,000	2,020	1,330	9,440
13	1,500	1,720	740	5,350	5,630	11,100	3,560	1,740	2,940	1,940	1,500	8,640
14	1,450	1,720	*1,020	3,500	4,280	11,800	3,380	1,760	2,800	1,780	1,200	7,140
15	1,450	1,590	1,100	3,000	*3,530	14,900	3,210	1,800	2,510	1,700	1,200	5,490
16	1,380	1,610	1,120	2,500	2,940	21,800	2,970	1,840	2,540	1,670	1,230	4,440
17	1,330	1,570	1,100	2,450	2,840	23,200	2,840	1,840	2,490	1,680	1,400	3,710
18	1,310	1,540	1,070	2,500	2,780	19,300	2,740	1,780	4,980	1,590	1,420	3,350
19	1,280	1,470	1,040	2,480	2,640	15,600	2,610	1,840	6,820	1,630	1,160	3,020
20	1,380	1,470	990	2,450	2,610	12,900	2,490	1,860	7,700	1,590	1,230	3,020
21	1,310	1,450	960	2,430	2,420	11,700	2,350	1,820	6,470	1,560	1,110	2,810
22	1,280	1,010	930	2,400	2,440	10,800	2,260	1,780	6,680	1,540	1,250	2,910
23	1,260	*899	940	2,100	2,640	9,520	2,330	1,860	6,120	1,540	1,160	12,700
24	1,300	769	950	1,900	2,940	8,600	2,330	2,110	5,250	1,480	1,080	14,200
25	1,260	839	960	*2,000	3,190	7,800	2,190	2,240	5,460	1,360	1,100	5,020
26	1,250	1,050	940	2,050	3,590	8,150	2,020	2,420	4,640	1,350	1,100	3,710
27	1,260	1,280	920	2,100	3,620	8,220	1,960	3,160	4,050	1,330	1,030	3,330
28	1,250	1,470	920	1,850	3,560	8,010	1,900	4,700	3,650	1,380	1,010	3,050
29	1,220	1,590	940	1,720	.....	7,800	1,860	5,010	4,370	1,330	961	2,810
30	1,180	1,500	920	1,600	.....	7,590	1,800	4,500	7,200	1,420	961	2,640
31	1,160	.....	910	1,670	.....	7,140	.....	4,080	.....	1,800	961	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 30, Dec. 1, 12-31, 1944, Jan. 1 to Feb. 27, Mar. 8, 4, 6, 9-11, Dec. 10-31, 1945, Jan. 1-6, Jan. 14 to Feb. 6, 1946.

Cedar River at Cedar Rapids, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	2,420	3,860	2,370	950	850	1,730	5,520	6,050	10,900	11,400	2,640	1,700
2.....	2,330	4,770	2,090	1,020	870	1,660	5,080	5,840	26,100	13,000	2,640	a1,820
3.....	2,220	5,110	1,940	1,080	960	1,580	4,770	5,490	35,400	15,400	2,560	1,940
4.....	2,110	4,670	1,920	1,100	1,080	1,550	5,150	5,080	32,900	17,300	2,470	1,880
5.....	2,020	4,050	2,110	1,120	1,180	1,520	7,760	4,600	32,500	18,800	2,390	1,740
6.....	1,900	3,770	2,110	1,140	1,280	1,570	8,600	4,540	35,400	17,800	2,300	1,610
7.....	1,820	3,650	2,220	1,150	1,330	1,780	7,340	4,500	25,500	15,600	2,240	1,540
8.....	1,740	3,590	2,260	1,160	1,350	2,020	7,660	4,340	19,700	12,800	2,130	1,450
9.....	1,680	3,500	2,150	*1,160	1,340	2,300	8,920	4,020	13,300	12,000	2,020	1,400
10.....	1,700	3,440	2,150	1,170	1,310	2,680	12,800	3,770	10,600	12,300	1,880	1,330
11.....	1,780	3,470	2,040	1,180	1,270	3,020	16,200	3,590	9,520	11,600	1,920	1,330
12.....	1,860	3,470	2,040	1,230	1,280	3,350	14,500	3,470	8,960	9,900	1,840	1,380
13.....	1,880	3,440	2,020	1,300	1,310	3,770	12,500	3,350	17,800	8,360	1,840	1,540
14.....	2,240	3,710	1,880	1,360	1,480	4,810	13,600	3,350	43,800	7,000	1,780	1,500
15.....	2,560	3,830	1,820	1,440	2,640	5,660	16,300	3,350	53,300	6,540	1,720	1,430
16.....	2,840	4,050	1,450	1,520	3,410	5,420	17,800	3,410	51,800	6,360	1,700	1,330
17.....	2,860	4,050	1,280	1,600	3,470	5,910	15,300	3,900	38,700	6,640	1,680	1,430
18.....	3,160	3,830	900	1,700	3,470	6,400	11,700	3,470	30,100	6,960	1,630	1,470
19.....	3,190	3,500	620	1,860	3,650	6,920	10,400	4,410	24,100	7,480	1,610	1,420
20.....	3,000	3,500	987	1,940	3,650	6,400	10,690	4,340	20,700	6,440	1,430	1,470
21.....	2,860	3,380	1,330	2,070	*3,560	5,840	9,160	4,280	21,900	5,770	1,450	1,400
22.....	2,660	3,190	1,570	1,800	3,420	5,150	8,500	4,120	22,100	5,210	1,480	1,220
23.....	2,370	3,100	1,760	1,280	2,980	4,340	7,730	3,830	19,200	4,740	a1,450	1,350
24.....	3,600	2,940	1,840	*1,430	2,500	4,540	a7,400	3,800	16,600	4,410	1,420	1,200
25.....	6,400	2,780	1,720	1,650	2,030	5,010	7,050	3,740	15,700	4,150	1,380	1,180
26.....	4,410	2,760	*1,520	1,800	1,950	5,600	7,310	3,770	15,500	3,900	1,380	1,230
27.....	3,800	*2,610	1,560	1,940	1,890	6,440	7,380	3,620	14,300	3,530	1,400	1,090
28.....	4,240	2,490	1,740	1,980	1,820	7,310	7,140	3,650	12,700	3,380	1,350	1,140
29.....	4,410	2,470	1,650	1,880	.....	7,730	6,780	8,360	11,900	3,240	1,360	1,040
30.....	4,310	2,490	1,350	1,420	.....	6,720	6,400	8,180	11,500	3,020	1,520	1,100
31.....	4,020	.....	950	1,060	.....	6,050	.....	6,920	.....	2,890	1,610	.....
1947-48												
1.....	1,110	1,820	640	1,050	590	17,800	6,260	3,500	1,700	2,780	834	967
2.....	1,080	1,760	935	850	*600	25,100	5,420	3,800	1,470	2,970	834	795
3.....	1,110	1,740	1,430	780	600	*31,800	4,770	4,700	1,050	2,740	834	860
4.....	1,220	1,780	1,700	860	590	29,400	4,370	4,120	1,570	2,370	834	860
5.....	1,280	1,780	2,040	970	580	18,500	4,020	3,710	1,590	2,110	834	821
6.....	1,250	1,630	2,190	1,080	580	9,830	3,800	4,470	3,330	1,880	821	747
7.....	1,180	1,590	2,300	*1,140	580	5,980	3,620	4,640	4,210	1,670	808	699
8.....	1,280	1,560	1,900	1,060	570	5,210	3,380	3,810	3,270	1,420	808	711
9.....	1,100	1,500	1,300	1,060	570	4,640	3,380	4,700	2,420	1,350	771	711
10.....	1,140	1,470	900	1,080	580	4,180	3,560	4,470	2,190	1,350	834	711
11.....	1,120	1,360	880	1,060	590	4,050	3,620	4,640	1,940	1,250	783	653
12.....	1,100	1,420	1,100	1,050	590	3,560	3,500	5,150	1,920	1,050	759	565
13.....	1,010	1,310	1,400	1,010	580	3,130	3,500	5,110	1,860	1,170	783	664
14.....	1,030	1,310	1,450	880	590	3,410	3,470	5,250	1,780	1,420	795	631
15.....	1,080	1,330	1,500	670	600	4,280	3,270	5,150	1,720	1,250	771	631
16.....	987	1,420	1,350	720	650	8,320	3,050	5,110	1,700	1,430	723	631
17.....	987	1,360	800	740	700	13,300	2,890	5,520	1,560	1,500	711	620
18.....	1,010	*1,430	680	740	800	18,200	2,710	4,940	1,590	1,420	808	620
19.....	987	1,470	920	730	1,100	22,600	2,610	4,310	1,560	1,060	783	587
20.....	1,000	1,420	1,150	720	1,400	32,500	2,470	3,500	1,420	1,300	808	620
21.....	1,000	1,420	1,300	700	1,700	32,500	2,370	a3,500	1,480	1,250	795	711
22.....	987	1,430	1,350	700	a2,000	30,200	2,300	a3,160	1,420	1,310	699	687
23.....	974	1,430	1,300	710	a2,400	21,600	2,420	2,840	1,560	1,250	687	631
24.....	961	1,470	1,150	f710	a2,300	14,600	3,130	2,560	1,470	1,140	699	f699
25.....	1,030	1,520	1,100	f700	a2,200	9,970	3,470	2,420	1,350	886	687	700
26.....	1,220	1,450	1,150	680	a2,100	7,800	3,470	2,240	1,400	1,300	687	720
27.....	1,140	1,380	1,100	660	a2,000	8,680	3,680	2,110	1,360	1,180	642	740
28.....	1,500	1,170	1,100	660	6,400	7,980	3,930	2,020	1,430	1,080	651	f631
29.....	1,650	990	1,150	640	10,600	8,010	3,740	1,880	1,860	967	631	740
30.....	1,780	750	1,100	620	.....	7,840	3,500	1,840	2,190	1,080	899	631
31.....	1,860	.....	1,150	600	.....	7,060	.....	1,780	.....	899	1,170	.....

* Winter discharge measurement made on this day.

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

f Computed from partly estimated gage-height record.

Note—Stage-discharge relation affected by ice Dec. 17-19, 30, 31, 1946, Jan. 1-17, Feb. 1-12, Feb. 22 to Mar. 6, Nov. 27-30, Dec. 7-31, 1947, Jan. 1 to Feb. 21, Mar. 6-13, 1948 (no gage-height record Feb. 1-21, 1948).

Cedar River at Cedar Rapids, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	687	565	847	600	1,020	3,400	16,900	2,470	2,640	3,080	1,040	465
2.....	664	642	808	580	*970	3,350	14,100	2,390	1,740	2,860	1,100	475
3.....	609	642	821	560	840	4,000	11,000	2,240	1,980	2,710	1,140	505
4.....	555	631	1,000	1,200	860	5,000	11,300	2,130	1,880	2,860	1,050	620
5.....	609	653	1,200	2,400	920	8,000	12,400	2,020	1,960	2,860	1,010	735
6.....	642	664	1,100	2,200	960	11,000	11,000	1,980	2,110	2,190	939	545
7.....	1,060	759	1,020	2,000	920	23,700	8,500	1,940	2,040	2,370	795	587
8.....	1,100	771	783	1,800	850	28,500	7,100	1,880	1,940	1,940	834	576
9.....	981	873	648	1,950	800	26,200	6,400	1,840	1,570	2,970	711	576
10.....	771	886	*429	1,800	840	24,100	5,700	1,780	1,420	1,900	711	565
11.....	939	860	485	1,600	830	*21,600	5,180	1,650	1,380	1,610	779	620
12.....	834	711	465	1,430	810	15,800	4,670	1,570	1,310	1,330	923	847
13.....	886	834	582	1,450	790	11,000	4,340	1,500	1,050	1,330	847	912
14.....	771	808	953	1,550	790	7,800	4,020	1,520	1,230	1,250	735	834
15.....	772	698	950	1,700	810	6,580	4,020	1,570	1,310	1,170	711	675
16.....	664	899	810	2,400	750	5,350	3,900	1,570	1,310	1,110	687	735
17.....	687	808	730	2,800	730	4,670	4,180	1,560	1,420	1,040	699	699
18.....	747	747	700	2,700	750	4,340	5,340	1,560	1,160	1,040	653	687
19.....	664	912	670	2,200	840	3,900	4,020	1,480	1,050	1,020	687	862
20.....	735	1,180	642	1,850	820	3,560	4,180	1,420	1,050	1,050	620	555
21.....	687	1,100	711	1,650	770	3,440	4,340	1,450	1,310	1,360	609	565
22.....	747	873	860	1,600	740	4,340	4,340	1,610	1,310	1,920	565	565
23.....	834	1,020	653	1,400	1,000	5,010	4,340	1,610	1,180	1,800	555	505
24.....	834	1,100	631	1,500	1,500	5,700	4,020	1,420	2,640	1,590	576	515
25.....	808	1,080	650	1,800	3,600	6,750	3,710	1,670	3,990	1,310	565	505
26.....	759	899	720	1,200	3,300	8,320	3,380	1,380	3,410	1,250	495	475
27.....	642	1,040	*550	1,100	3,100	9,550	3,190	1,560	3,680	1,170	642	505
28.....	664	1,010	490	1,140	3,400	11,000	2,970	1,310	5,010	1,100	565	495
29.....	665	900	600	1,180	.....	12,400	2,740	1,330	4,840	1,020	475	495
30.....	664	912	580	1,020	.....	14,100	2,540	1,280	3,770	995	456	465
31.....	653	.....	550	1,070	.....	16,900	.....	1,430	.....	912	505	.....
1949-50												
1.....	480	550	614	420	350	778	21,500	2,950	2,560	2,880	1,590	814
2.....	470	580	543	580	320	754	13,000	2,720	3,280	6,660	1,480	754
3.....	480	570	928	497	310	694	8,150	2,490	4,650	3,190	1,700	754
4.....	490	560	595	680	310	634	7,100	2,840	4,650	2,510	2,510	754
5.....	490	520	740	450	310	2,600	6,050	2,840	3,870	2,240	2,540	742
6.....	510	540	434	230	310	7,800	5,350	2,840	3,410	2,040	2,200	718
7.....	540	550	554	346	310	11,600	4,550	3,630	2,950	1,840	1,840	634
8.....	610	570	321	320	400	23,600	4,110	4,820	2,540	1,800	1,700	646
9.....	550	520	270	323	530	25,600	3,830	5,880	2,340	1,630	1,540	718
10.....	520	520	212	312	1,020	30,200	3,830	5,880	2,180	1,600	1,380	658
11.....	520	540	380	246	1,590	32,400	3,630	6,750	2,750	1,480	1,290	634
12.....	520	646	677	329	1,380	24,400	3,280	8,500	4,310	1,380	1,240	754
13.....	510	590	559	400	1,200	14,000	3,250	8,680	4,820	1,380	1,150	706
14.....	460	646	217	760	950	6,840	3,370	6,920	3,340	1,450	1,370	646
15.....	460	580	280	700	700	5,180	3,190	5,180	4,870	1,140	1,400	778
16.....	480	646	315	600	520	5,700	2,860	4,190	4,480	1,380	1,330	754
17.....	470	670	754	540	470	5,000	2,650	3,630	4,440	1,300	1,150	658
18.....	440	590	686	540	430	4,310	2,410	3,220	7,060	1,270	1,160	670
19.....	520	658	670	600	420	4,240	2,150	2,950	8,150	1,370	1,110	610
20.....	560	550	896	600	450	4,070	2,020	2,810	7,800	2,720	1,080	658
21.....	580	550	536	470	420	3,870	1,980	2,720	8,320	3,470	1,110	1,300
22.....	550	530	499	480	400	4,140	1,920	2,780	8,850	2,750	876	7,100
23.....	838	580	329	490	410	4,650	1,940	3,130	7,010	2,590	954	5,440
24.....	706	590	280	470	420	5,880	3,100	4,040	7,930	2,560	889	3,500
25.....	540	560	256	490	370	7,280	4,310	3,800	13,600	2,340	863	2,540
26.....	646	560	392	540	360	8,500	5,180	3,770	13,500	2,180	826	1,880
27.....	646	530	500	500	370	9,550	5,000	4,140	5,990	2,000	876	1,630
28.....	682	520	*540	400	500	9,900	4,320	5,700	4,480	1,800	863	1,430
29.....	634	540	329	390	.....	11,000	3,700	4,650	3,660	1,540	876	1,380
30.....	580	910	418	380	.....	13,300	3,310	3,470	3,060	1,670	814	1,300
31.....	540	.....	392	370	.....	20,000	.....	2,950	.....	1,940	928	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 15-19, 25-31, 1948, Jan. 1 to Mar. 6, Dec. 9, 15, 27, 28, 1949, Jan. 4, 5, Jan. 13 to Feb. 8, Feb. 13-28, Mar. 5-7, 1950.

Cedar River at Cedar Rapids, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1942.....	111,110	7,250	2,230	3,584	0.540	0.62
November.....	85,340	4,530	1,610	2,845	.428	.48
December.....	57,200	2,950	1,140	1,845	.278	.32
Calendar year 1942.....	1,706,680	32,900	1,140	4,676	.704	9.56
January 1943.....	51,130	2,200	1,450	1,649	.248	.29
February.....	111,220	11,700	1,500	3,972	.598	.62
March.....	233,140	15,400	2,700	7,521	1.13	1.31
April.....	161,620	13,000	2,960	5,387	.811	.91
May.....	113,790	6,370	2,550	3,671	.553	.64
June.....	134,670	7,480	2,800	4,489	.676	.75
July.....	95,070	4,500	2,270	3,067	.462	.53
August.....	95,370	6,150	1,760	3,076	.463	.53
September.....	77,200	4,680	1,470	2,573	.388	.43
Water year 1942-43.....	1,326,860	15,400	1,140	3,635	.547	7.43
October 1943.....	36,920	1,450	1,050	1,191	.179	.21
November.....	44,890	1,730	1,240	1,496	.225	.25
December.....	33,464	1,820	550	1,079	.162	.19
Calendar year 1943.....	1,188,484	15,400	550	3,256	.490	6.66
January 1944.....	27,720	2,500	611	894	.135	.16
February.....	50,870	4,400	700	1,754	.264	.28
March.....	145,230	9,230	1,040	4,685	.706	.81
April.....	141,760	6,980	3,420	4,725	.712	.79
May.....	291,630	17,800	5,050	9,407	1.42	1.63
June.....	316,220	28,400	4,380	10,540	1.59	1.77
July.....	133,660	8,140	2,650	4,312	.640	.75
August.....	69,120	3,480	1,610	2,230	.336	.39
September.....	50,190	2,180	1,370	1,673	.252	.28
Water year 1943-44.....	1,341,674	28,400	550	3,666	.552	7.51
October 1944.....	41,890	1,630	1,100	1,351	.203	.23
November.....	34,940	1,240	940	1,165	.175	.20
December.....	25,304	1,320	611	816	.123	.14
Calendar year 1944.....	1,328,534	28,400	611	3,630	.547	7.43
January 1945.....	20,700	760	620	668	.101	.12
February.....	37,150	3,200	620	1,327	.200	.21
March.....	392,910	49,600	1,940	12,670	1.91	2.20
April.....	277,560	13,200	6,120	9,252	1.39	1.55
May.....	248,610	19,360	4,050	8,020	1.21	1.39
June.....	302,810	20,500	5,080	10,090	1.52	1.70
July.....	102,620	6,300	1,850	3,310	.498	.57
August.....	170,430	12,200	2,130	5,468	.828	.95
September.....	53,850	2,490	1,380	1,795	.270	.30
Water year 1944-45.....	1,708,774	49,600	611	4,682	.705	9.56
October 1945.....	46,290	2,260	1,160	1,493	.225	.26
November.....	42,017	2,350	769	1,401	.211	.24
December.....	38,740	2,610	600	1,250	.188	.22
Calendar year 1945.....	1,733,687	49,600	600	4,750	.715	9.71
January 1946.....	185,480	26,000	800	5,983	.901	1.04
February.....	107,160	8,040	1,450	3,827	.576	.60
March.....	341,500	23,200	3,560	11,020	1.66	1.91
April.....	109,560	6,500	1,800	3,352	.505	.56
May.....	73,160	5,010	1,740	2,360	.355	.41
June.....	116,290	7,700	1,650	3,876	.584	.65
July.....	82,310	10,500	1,330	2,655	.400	.46
August.....	40,193	2,090	961	1,297	.195	.24
September.....	128,776	14,200	935	4,293	.647	.72
Water year 1945-46.....	1,302,476	26,000	600	3,568	.537	7.31

Cedar River at Cedar Rapids, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1946.....	88,390	6,400	1,680	2,851	0.429	0.50
November.....	105,560	5,110	2,470	3,519	.530	.59
December.....	53,347	2,370	620	1,721	.259	.30
Calendar year 1946.....	1,422,726	26,000	620	3,898	.587	7.98
January 1947.....	44,400	2,070	950	1,435	.216	.25
February.....	57,330	3,650	850	2,048	.308	.32
March.....	134,780	7,730	1,520	4,348	.655	.75
April.....	287,360	17,800	4,770	9,579	1.44	1.61
May.....	140,040	8,366	3,350	4,517	.680	.78
June.....	702,480	53,300	8,960	23,420	3.53	3.93
July.....	267,920	18,800	2,890	8,643	1.30	1.50
August.....	56,220	2,640	1,350	1,814	.273	.31
September.....	42,690	1,940	1,040	1,422	.214	.24
Water year 1946-47.....	1,980,577	53,300	620	5,426	.817	11.08
October 1947.....	36,163	1,860	961	1,167	.176	.20
November.....	43,470	1,820	750	1,449	.218	.24
December.....	39,515	2,300	640	1,275	.192	.22
Calendar year 1947.....	1,852,428	53,300	640	5,075	.764	10.35
January 1948.....	25,630	1,140	600	827	.125	.14
February.....	45,140	10,600	570	1,557	.234	.25
March.....	422,130	32,500	3,130	13,620	2.05	2.36
April.....	105,680	6,290	2,300	3,523	.531	.59
May.....	118,250	5,520	1,780	3,815	.575	.66
June.....	55,970	4,210	1,350	1,868	.281	.31
July.....	45,882	2,970	886	1,478	.223	.26
August.....	24,163	1,170	631	779	.117	.14
September.....	20,994	967	565	700	.105	.12
Water year 1947-48.....	982,937	32,500	565	2,688	.405	5.49
October 1948.....	23,334	1,100	555	753	.113	.13
November.....	25,477	1,180	565	849	.128	.14
December.....	22,668	1,200	429	731	.10	.13
Calendar year 1948.....	935,268	32,500	429	2,555	.385	5.23
January 1949.....	48,830	2,800	560	1,575	.237	.27
February.....	34,310	3,600	730	1,225	.184	.19
March.....	319,460	28,500	3,350	10,310	1.55	1.79
April.....	182,820	16,900	2,540	6,064	.918	1.02
May.....	52,120	2,470	1,280	1,684	.254	.29
June.....	62,690	5,010	1,050	2,090	.315	.35
July.....	52,117	3,080	912	1,681	.253	.29
August.....	22,679	1,140	456	732	.110	.13
September.....	18,165	912	465	606	.091	.10
Water year 1948-49.....	864,670	28,500	429	2,369	.357	4.83
October 1949.....	17,022	838	440	549	.083	.10
November.....	17,466	910	520	582	.088	.10
December.....	15,116	928	212	488	.073	.08
Calendar year 1949.....	842,795	28,500	212	2,309	.348	4.71
January 1950.....	14,453	760	230	466	.070	.08
February.....	15,530	1,590	310	555	.084	.09
March.....	309,340	32,400	634	9,979	1.50	1.73
April.....	141,040	21,500	1,920	4,701	.708	.79
May.....	130,770	8,680	2,490	4,218	.635	.73
June.....	160,550	13,600	2,180	5,352	.806	.90
July.....	66,100	6,660	1,140	2,132	.321	.37
August.....	40,635	2,540	814	1,311	.197	.23
September.....	41,560	7,100	610	1,385	.209	.23
Water year 1949-50.....	969,582	32,400	212	2,656	.400	5.43

Cedar River near Conesville, Iowa

LOCATION.—Lat. 41°24'30", long. 91°17'25", in SW ¼ sec. 2, T. 76 N., R. 4 W., on left bank 15 feet downstream from Muscatine County road C, 3½ miles northeast of Conesville, 5 miles downstream from Wapsinoc Creek, and at mile 9.5.

DRAINAGE AREA.—7,840 square miles.

RECORDS AVAILABLE.—September 1939 to September 1950.

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 Nov. 14, 1939, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—11 years, 4,259 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Apr. 2	17,400	11.45	Dec. 4	1,430
1943-44...	June 27	44,500	13.93	Dec. 15	750
1944-45...	Mar. 21	50,900	14.49	Feb. 3, 4	940
1945-46...	Jan. 10	32,000	(¹)	Dec. 13	840
1946-47...	June 18	60,000	15.35	Dec. 19	1,060
1947-48...	Mar. 5	42,600	14.00	Sept. 30	750
1948-49...	Mar. 11	28,700	13.69	Dec. 12	540
1949-50...	Mar. 13	34,100	14.10	Dec. 15	450

(1) Maximum gage height 14.62 feet Jan. 13 (ice jam).

1939-50: Maximum discharge, 60,000 second-feet June 18, 1947 (gage height, 15.35 feet); minimum daily, 323 second-feet 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 doubtful gage-height record, which are fair, and those for periods of ice effect, which are poor.

COOPERATION.—Services of observer and several discharge measurements furnished by Corps of Engineers.

Cedar River near Conesville, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1	4,500	3,760	2,310	d5,100	1,950	g16,000	14,900	6,810	3,990	4,350	2,840	4,630
2	4,290	3,740	1,720	d4,600	1,950	g13,200	17,100	5,990	5,480	4,240	2,780	4,210
3	4,080	3,500	1,480	d4,200	2,200	g8,290	15,500	5,460	8,360	3,920	2,880	3,870
4	3,900	3,280	1,430	d3,700	3,000	g7,110	12,400	4,970	8,780	3,880	2,980	3,580
5	3,810	3,210	1,600	d3,500	4,000	g5,840	10,900	4,510	7,910	3,700	3,240	4,480
6	4,030	3,210	1,700	d3,000	4,200	g5,480	10,200	4,320	6,770	3,430	3,160	4,680
7	5,480	3,380	1,900	d2,800	4,000	g5,330	9,490	4,170	6,650	3,170	3,010	5,550
8	6,990	3,670	2,050	d2,700	3,700	g3,810	9,450	4,210	5,580	3,160	2,730	4,530
9	7,690	3,780	2,250	d2,600	3,700	g3,900	9,660	4,480	5,080	3,500	2,490	3,870
10	6,930	4,870	2,400	d2,600	4,000	3,580	8,710	4,590	4,740	4,060	2,350	3,780
11	5,780	6,240	2,500	d2,500	4,500	4,510	7,800	4,440	4,530	4,760	2,390	3,630
12	5,220	5,970	2,500	2,460	3,700	4,440	7,370	4,140	5,140	4,530	2,340	3,630
13	4,840	*5,010	2,400	2,300	3,300	5,160	7,030	3,880	4,870	4,150	2,560	3,970
14	4,550	4,420	2,300	2,250	3,000	4,410	6,730	3,620	4,610	3,900	6,870	3,720
15	4,300	4,060	2,300	2,250	2,800	4,550	6,530	3,720	4,300	3,810	6,410	3,500
16	4,080	3,790	2,200	2,250	2,650	8,630	6,450	6,070	4,440	3,660	4,240	3,260
17	3,850	3,740	2,100	2,200	2,500	13,600	6,160	8,500	5,690	3,670	4,210	3,060
18	3,630	3,940	2,050	2,100	*2,450	16,200	5,610	9,360	7,650	3,670	5,180	2,880
19	3,460	3,780	2,000	2,000	2,500	14,600	5,270	9,510	8,500	3,600	6,300	2,760
20	3,340	3,500	2,000	*2,000	3,500	12,300	4,950	8,520	8,210	3,510	6,610	2,640
21	3,210	3,400	2,000	2,050	6,000	12,300	4,780	8,170	7,850	3,450	5,460	2,520
22	3,120	3,240	2,000	2,050	7,000	13,600	4,510	7,230	8,460	3,400	4,740	2,400
23	3,030	3,190	*2,000	2,050	8,000	15,500	4,440	6,450	7,310	3,290	g4,280	2,310
24	2,950	3,120	2,050	1,900	8,500	14,900	4,350	5,980	7,310	3,310	g3,970	2,230
25	g2,900	3,080	2,100	1,900	9,170	*12,500	4,240	5,670	6,910	3,280	g3,700	2,140
26	g2,870	3,040	2,500	1,900	10,500	10,900	4,170	5,250	5,920	3,940	3,460	2,060
27	g2,800	2,880	h6,430	1,950	12,100	10,600	6,490	4,870	5,250	3,900	3,330	2,010
28	g2,740	2,700	h7,370	2,000	15,400	10,760	6,690	4,440	4,760	3,520	3,110	1,970
29	g2,670	2,560	h7,850	2,000	.....	11,000	6,410	4,210	4,370	3,080	3,160	1,930
30	2,610	2,490	d7,000	2,000	.....	11,700	8,160	4,950	4,150	2,820	3,670	1,890
31	2,980	.....	d6,000	1,950	.....	12,900	.....	3,960	.....	2,850	4,370	.....
1943-44												
1	1,850	1,660	1,760	1,050	2,520	4,350	5,630	8,560	13,800	7,590	3,480	2,380
2	1,800	1,740	1,740	1,000	2,470	4,550	5,480	7,710	12,090	7,170	3,160	2,350
3	1,800	1,780	1,710	980	2,180	4,920	5,350	7,290	10,200	6,910	2,960	2,340
4	1,770	1,740	1,640	*980	2,070	5,370	5,040	7,070	8,710	6,470	2,800	2,250
5	1,700	1,680	1,680	980	2,180	4,720	4,780	6,990	7,770	6,320	2,950	2,130
6	1,670	1,650	1,710	1,000	2,220	4,290	4,800	7,510	7,070	6,600	3,120	2,020
7	1,650	1,800	1,970	1,000	1,860	3,400	4,930	8,500	6,450	7,730	3,670	1,950
8	1,630	2,170	2,160	970	1,800	2,900	4,870	9,660	6,160	8,710	3,690	1,880
9	1,600	2,160	2,220	940	1,700	2,350	4,660	10,800	6,320	9,570	3,530	1,820
10	1,570	2,160	2,130	940	1,550	2,100	g4,660	11,700	6,790	7,950	3,340	1,750
11	1,540	2,020	2,060	970	1,050	2,000	g4,720	12,500	6,810	6,290	3,110	1,750
12	1,550	1,950	1,990	970	900	2,500	g4,930	12,200	6,770	5,980	2,880	1,810
13	1,580	2,070	1,550	960	850	4,030	g5,080	10,600	7,770	5,610	2,640	1,810
14	1,590	2,070	970	960	880	5,520	g6,150	9,320	8,650	5,310	2,430	1,790
15	1,560	2,060	750	960	1,080	8,780	g6,730	8,420	9,700	5,160	2,310	1,710
16	1,520	*2,050	800	980	1,050	11,000	g7,090	7,890	10,900	5,020	2,180	1,700
17	1,550	2,020	900	1,100	1,150	11,200	6,830	8,110	13,400	4,740	2,220	1,800
18	1,520	2,090	1,100	1,000	1,350	*11,200	6,390	7,630	15,100	4,590	2,850	1,720
19	1,530	1,970	1,200	1,000	1,330	11,000	6,160	7,110	23,800	4,300	3,340	1,680
20	1,550	1,880	1,250	1,050	1,400	11,000	6,200	9,300	29,100	5,400	3,010	1,710
21	1,780	1,890	1,300	1,030	1,350	9,430	6,200	15,100	28,600	5,710	2,630	1,930
22	1,910	1,860	1,300	1,030	1,410	7,290	7,020	15,300	24,800	4,930	2,430	1,950
23	1,680	1,870	1,260	1,100	2,700	6,490	9,170	15,500	20,500	4,420	2,260	1,890
24	1,660	1,870	1,290	1,110	4,600	6,370	11,300	15,300	19,300	4,240	2,220	1,990
25	1,670	1,860	1,150	1,140	5,440	6,390	9,240	17,400	21,600	3,920	2,210	2,080
26	1,630	1,820	1,100	*1,150	6,630	6,610	8,290	20,600	22,400	3,670	2,130	2,220
27	1,600	1,820	1,100	1,250	6,090	6,730	8,170	23,200	24,900	3,500	2,060	2,300
28	1,590	1,820	1,100	2,720	*6,010	7,210	8,230	22,400	23,500	3,690	2,010	2,230
29	1,570	1,800	1,150	2,520	5,230	7,410	8,380	20,300	10,400	4,740	2,060	2,070
30	1,540	1,790	1,150	2,080	.....	6,890	8,610	18,100	8,420	4,530	2,160	2,030
31	1,560	.....	1,110	2,220	.....	6,130	.....	15,600	.....	3,990	2,320	.....

* Winter discharge measurement made on this day.

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

g Computed from graph based on wire-weight gage readings.

h Computed from wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 5-26, 1942, Jan. 12 to Feb. 24, Dec. 13-31, 1943, Jan. 1-27, Feb. 8-24, Mar. 7-11, 1944.

Cedar River near Conesville, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	2,020	1,440	1,300	1,140	960	2,970	12,700	12,200	19,800	7,730	2,270	3,150
2.....	2,020	1,540	1,100	1,100	950	2,700	10,500	10,400	22,000	6,850	2,360	2,970
3.....	1,990	2,380	1,000	1,690	940	3,100	8,940	8,690	21,400	6,770	2,330	2,800
4.....	1,960	2,310	1,000	1,070	940	4,300	8,070	7,910	17,400	6,340	2,380	2,640
5.....	2,050	1,760	1,100	1,050	950	5,200	9,280	7,350	13,900	6,070	2,510	2,530
6.....	2,090	1,710	1,250	1,050	955	5,300	10,100	6,970	14,900	5,610	2,500	2,410
7.....	1,990	1,720	1,420	1,030	960	5,250	9,050	6,850	20,200	5,180	2,450	2,320
8.....	1,930	1,670	1,560	1,020	965	5,400	8,780	6,790	22,700	4,870	2,370	2,360
9.....	1,890	1,650	1,530	1,000	970	4,800	8,250	6,340	20,400	4,640	2,410	2,530
10.....	1,870	1,630	1,420	1,000	975	4,320	7,550	5,980	16,600	4,460	3,580	2,360
11.....	1,850	1,550	1,300	1,000	985	4,370	7,590	5,580	14,700	4,570	5,750	2,250
12.....	1,850	1,500	1,250	1,000	995	5,310	8,070	5,330	13,500	4,870	7,310	2,140
13.....	1,760	1,510	1,150	1,000	1,000	5,520	8,670	5,080	11,600	4,410	6,990	2,090
14.....	1,700	1,510	1,100	1,000	1,060	6,780	9,340	5,730	10,300	4,060	6,010	2,170
15.....	1,690	1,530	1,050	1,000	1,300	7,010	9,890	9,130	10,700	3,760	6,050	2,230
16.....	1,650	1,510	1,100	1,000	1,900	8,520	10,000	10,800	11,800	3,520	7,310	2,190
17.....	1,610	1,460	1,100	1,000	2,500	10,100	11,100	11,200	12,300	3,310	7,650	2,060
18.....	1,580	1,470	*1,100	1,000	2,400	12,200	13,300	11,000	11,800	3,150	8,440	1,900
19.....	1,580	1,460	1,140	1,000	2,150	18,700	14,500	10,600	10,500	3,010	9,510	1,780
20.....	1,550	1,500	1,130	1,000	2,050	31,600	14,600	9,340	9,490	2,900	10,090	1,830
21.....	1,510	1,500	1,140	980	1,900	46,000	14,300	8,070	8,710	2,890	11,400	1,740
22.....	1,540	1,500	1,140	980	2,100	48,000	14,300	7,450	7,870	2,910	11,200	1,700
23.....	1,510	1,500	1,140	980	2,140	35,100	13,700	6,870	7,250	2,930	9,070	1,800
24.....	1,500	1,490	1,140	1,000	2,020	24,900	12,300	6,390	7,010	2,800	7,450	1,980
25.....	1,500	1,460	1,130	1,020	1,990	19,500	10,500	6,630	6,670	2,650	6,410	1,970
26.....	1,480	1,500	1,100	1,020	2,840	17,900	9,240	8,150	7,450	2,580	5,540	1,850
27.....	1,440	1,540	1,100	1,020	3,440	18,100	9,050	9,760	6,770	2,430	4,780	3,190
28.....	1,430	1,540	1,100	1,000	3,220	15,100	9,850	11,300	6,110	2,410	4,320	2,770
29.....	1,470	1,530	1,120	980	.....	12,900	10,900	13,300	6,790	2,470	3,940	3,500
30.....	1,430	1,500	1,140	960	.....	13,300	12,000	16,400	7,490	2,300	3,620	2,980
31.....	1,430	.....	1,150	*960	.....	13,900	.....	18,500	.....	2,230	3,320	.....
1945-46												
1.....	2,590	1,500	1,820	1,130	2,500	4,200	8,420	2,180	4,150	8,730	1,740	1,130
2.....	2,770	1,480	1,970	1,150	2,630	4,500	7,830	2,180	3,760	10,700	2,140	1,230
3.....	2,710	1,480	2,360	1,150	2,750	5,200	7,210	2,150	3,440	12,000	2,270	1,220
4.....	2,510	1,480	2,890	1,180	2,500	5,040	6,770	2,710	3,260	9,450	2,350	1,190
5.....	2,300	1,470	2,760	3,000	2,100	5,730	6,300	2,900	3,180	6,770	2,130	1,150
6.....	2,190	1,500	2,480	12,000	3,000	6,770	5,900	3,120	3,070	5,500	1,880	1,360
7.....	2,130	1,520	2,230	*22,200	4,500	9,640	5,600	3,020	2,910	4,740	1,680	1,200
8.....	2,090	1,540	2,140	25,000	*5,400	10,700	5,350	2,850	2,730	4,240	1,670	2,330
9.....	1,990	1,600	1,900	26,000	6,200	11,000	5,080	2,720	2,650	3,820	1,610	2,470
10.....	1,920	2,210	1,650	29,000	7,000	11,700	4,760	2,540	2,390	3,660	1,510	3,240
11.....	1,890	2,230	1,250	24,000	7,600	13,600	4,500	2,510	2,200	3,300	1,470	4,410
12.....	1,810	1,960	1,000	22,000	8,200	18,500	4,350	2,390	2,560	2,970	1,420	6,070
13.....	1,770	2,000	840	17,000	9,000	21,100	4,370	2,370	5,370	2,760	1,360	7,730
14.....	1,770	2,030	1,200	13,000	7,800	16,800	4,320	2,290	4,370	2,680	1,600	8,150
15.....	1,750	2,000	1,400	9,000	6,400	13,400	4,150	2,200	4,320	2,550	2,030	7,410
16.....	1,730	1,940	1,400	6,500	5,200	13,500	3,940	2,480	3,870	2,390	1,700	6,030
17.....	1,710	1,840	1,350	5,000	4,300	16,200	3,740	2,290	3,730	2,380	1,680	4,820
18.....	1,680	1,830	1,300	4,500	3,600	21,400	3,580	2,480	4,970	2,350	3,300	4,100
19.....	1,630	1,790	1,260	*4,200	3,300	25,500	3,420	2,580	8,170	2,230	1,980	3,630
20.....	1,600	1,740	1,230	4,000	3,300	23,200	3,260	2,370	10,200	2,130	1,690	3,420
21.....	1,600	1,750	1,170	3,800	3,100	*19,200	3,040	2,380	10,200	2,110	1,440	3,220
22.....	1,920	1,500	1,160	3,600	3,100	15,300	2,980	2,290	8,690	2,030	1,440	3,110
23.....	1,580	1,250	1,150	3,000	3,300	13,400	2,940	2,330	7,970	1,960	1,370	3,840
24.....	1,570	1,100	1,160	2,600	3,600	12,300	2,850	2,270	7,570	1,880	1,440	7,330
25.....	1,580	960	1,170	2,700	3,900	10,900	2,810	2,490	6,730	1,960	1,360	11,700
26.....	1,580	1,250	1,170	2,750	4,200	9,910	2,740	2,630	7,270	1,810	1,280	11,300
27.....	1,550	1,420	1,160	2,800	4,300	10,100	2,500	2,710	6,490	1,780	1,260	6,150
28.....	1,550	1,520	1,150	2,600	4,200	10,100	2,470	3,010	5,480	1,730	1,250	4,610
29.....	1,550	1,660	1,150	2,400	.....	9,700	2,350	4,030	4,840	1,650	1,220	4,010
30.....	1,540	1,770	1,130	2,200	.....	9,170	2,260	4,970	6,030	1,650	1,190	3,570
31.....	1,510	.....	1,100	2,350	.....	8,800	.....	4,970	.....	1,630	1,150	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 30 to Dec. 5, Dec. 12-31, 1944, Jan. 1 to Mar. 8, Nov. 22-26, Dec. 9-31, 1945, Jan. 1 to Mar. 3, 1946. Discharge computed from graph based on wire-weight gage readings May 28 to June 4, July 1-21, July 23 to Aug. 11, Sept. 8-30, 1946. Discharge computed from wire-weight gage readings Sept. 30 to Oct. 4, 1945, Apr. 21 to May 27, June 5-11, 1946.

Cedar River near Conesville, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1	3,190	4,530	2,820	1,200	1,600	3,450	7,090	9,400	10,100	16,400	3,790	1,800
2	2,930	4,320	2,720	1,300	1,400	3,250	6,690	8,690	12,600	14,400	3,600	1,840
3	2,770	5,540	2,550	1,400	1,300	3,000	6,260	8,480	15,000	13,900	3,420	1,920
4	2,630	6,320	2,440	1,450	1,350	2,700	6,180	7,930	24,500	14,600	3,320	2,060
5	2,500	5,920	2,430	1,500	1,400	2,500	8,750	7,170	34,200	16,000	3,160	2,050
6	2,380	5,140	2,470	1,550	1,500	2,300	12,100	6,570	34,700	17,700	3,040	1,990
7	2,270	4,780	2,490	1,600	1,550	2,300	13,400	6,260	34,500	20,000	2,910	1,890
8	2,150	4,720	2,530	1,650	1,550	2,500	12,000	6,070	36,100	19,700	2,740	1,790
9	2,070	4,550	2,580	1,650	1,550	2,700	10,300	5,860	30,500	17,400	2,630	1,750
10	2,040	4,410	2,600	1,650	1,500	3,000	10,600	5,480	24,900	15,000	2,490	1,710
11	2,020	4,390	2,530	1,700	1,500	3,400	12,200	5,120	19,200	13,800	2,430	1,680
12	2,040	4,240	2,450	1,700	1,450	3,700	14,900	4,870	14,800	13,800	2,330	1,650
13	2,010	4,170	2,410	1,750	1,450	4,200	18,200	4,700	14,700	13,600	2,310	1,640
14	2,070	4,100	2,380	2,200	3,000	4,600	17,800	4,550	15,800	12,000	2,240	1,640
15	2,140	4,150	2,310	3,500	5,500	5,100	15,700	4,480	21,300	9,720	2,210	1,780
16	2,470	4,280	2,200	3,200	6,400	5,600	15,400	4,440	42,000	8,710	2,120	1,610
17	2,740	4,440	1,950	3,050	6,200	6,000	17,000	4,440	54,300	8,190	2,030	1,590
18	3,110	4,530	1,160	2,900	6,000	6,530	18,800	4,760	55,500	8,110	2,000	1,580
19	4,140	4,460	1,060	2,700	5,700	6,870	19,000	5,220	40,800	8,310	1,950	1,600
20	3,840	4,190	1,390	2,600	5,400	7,570	17,400	5,370	31,000	8,560	1,920	1,620
21	3,430	3,980	1,430	2,200	5,250	7,470	17,500	5,270	26,000	8,170	1,890	2,050
22	3,220	3,920	1,500	2,150	5,150	6,950	15,700	5,160	23,000	7,310	1,780	1,940
23	3,040	3,740	1,920	2,100	5,000	6,340	13,100	5,080	22,900	6,770	1,760	1,650
24	2,840	3,620	2,120	2,050	4,700	6,340	11,300	4,910	22,900	6,300	1,750	1,540
25	3,150	3,550	2,050	2,050	4,400	*6,240	9,990	4,740	21,600	5,880	1,760	1,540
26	4,740	3,320	1,980	2,100	4,150	6,110	9,430	4,640	19,700	5,540	1,750	1,430
27	3,980	3,190	2,120	2,150	3,850	6,300	9,220	4,610	18,200	5,520	1,750	1,410
28	3,280	3,120	2,190	2,200	3,650	6,870	9,090	4,640	17,400	5,200	1,630	1,440
29	4,760	2,940	1,700	2,350	.....	7,590	8,960	6,510	16,600	4,640	1,680	1,410
30	4,870	2,880	1,250	2,100	.....	8,230	9,220	9,320	16,300	4,370	1,660	1,390
31	4,780	.....	1,150	1,650	.....	7,870	.....	10,700	.....	4,060	1,680	.....
1947-48												
1	1,300	2,100	780	1,250	780	12,000	8,880	4,210	2,230	2,210	1,520	1,090
2	1,340	2,130	1,150	1,050	780	15,000	8,030	4,190	2,160	2,480	1,300	1,340
3	1,340	*2,020	1,510	880	*790	20,200	7,210	4,640	2,060	2,970	1,210	1,170
4	1,360	1,990	1,780	940	780	27,000	6,410	5,210	1,910	2,990	1,180	1,020
5	1,380	2,010	2,430	1,200	780	39,200	5,790	5,200	1,980	2,890	1,150	1,030
6	1,460	2,010	2,650	1,260	780	35,000	5,410	4,830	1,910	2,530	1,120	1,020
7	1,480	1,940	2,710	1,350	780	20,000	5,090	5,200	2,730	2,270	1,110	975
8	1,540	1,840	2,500	1,350	770	9,000	4,880	5,890	4,530	2,020	1,110	928
9	1,440	1,790	1,600	1,300	770	6,400	4,600	5,850	4,090	1,820	1,100	898
10	1,490	1,750	1,100	1,300	770	5,200	4,370	5,690	3,230	1,620	1,090	898
11	1,280	1,740	1,050	1,280	800	4,700	4,370	5,350	2,730	1,580	1,080	892
12	1,340	1,670	1,350	1,280	800	4,000	4,550	5,320	2,540	1,570	1,100	880
13	1,320	1,620	1,690	1,250	800	3,700	4,440	5,670	2,480	1,740	1,040	864
14	1,290	1,580	1,860	1,100	810	3,700	4,420	5,850	2,430	1,610	1,020	880
15	1,220	1,600	1,900	800	820	7,000	4,370	5,850	2,320	1,890	1,010	803
16	1,240	1,630	1,700	*830	880	*15,100	4,250	5,810	2,180	1,760	1,020	792
17	1,290	1,640	1,100	880	1,050	17,400	3,960	5,710	2,100	1,560	1,180	788
18	1,210	1,660	940	880	1,400	16,500	3,770	5,850	2,000	1,640	1,160	770
19	1,170	1,640	1,100	860	1,800	21,200	3,590	5,670	1,910	1,650	1,150	765
20	1,180	1,680	*1,350	860	2,400	32,100	3,470	4,980	1,890	1,520	1,080	786
21	1,180	1,680	1,560	840	3,000	32,100	3,320	4,530	1,840	3,560	1,020	1,080
22	1,190	1,680	1,640	840	3,300	35,900	3,190	4,090	1,770	3,220	995	1,030
23	1,180	1,700	1,500	850	2,920	36,200	3,210	3,740	1,810	2,060	975	928
24	1,220	1,730	1,350	860	2,870	32,700	3,230	3,490	1,810	1,770	910	864
25	1,230	1,720	1,300	840	3,200	25,300	3,530	3,270	1,790	1,730	885	825
26	1,240	1,680	1,350	840	4,000	17,200	4,080	2,890	1,710	2,710	869	847
27	1,280	1,600	1,300	830	5,160	11,500	4,280	2,680	1,690	2,450	852	832
28	1,450	1,440	1,300	820	9,000	10,300	4,190	2,620	1,770	2,320	836	825
29	1,540	1,200	1,350	810	11,000	10,300	4,290	2,600	1,760	1,710	820	755
30	1,750	880	1,300	800	.....	9,820	4,330	2,460	1,950	1,840	814	750
31	1,920	.....	1,350	800	.....	9,550	.....	2,340	.....	1,910	880	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 29-31, 1946, Jan. 1 to Mar. 17, Nov. 26 to Dec. 2, Dec. 8-12, 15-20, 23-31, 1947, Jan. 1 to Feb. 22, Feb. 24, 25, Feb. 28 to Mar. 2, Mar. 6-15, 1948. Discharge computed from graph based on wire-weight gage readings Nov. 4 to Dec. 5, 1946, May 29 to June 20, Oct. 19-25, 1947, Mar. 3-5, Apr. 5 to May 7, May 12-14, 17, 18, 21, 26-28, June 23, July 5, Aug. 23-30, Sept. 2-4, 8-13, 1948.

Cedar River near Conesville, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	852	825	1,060	780	1,380	*4,500	14,500	3,270	1,590	4,510	1,270	700
2.....	825	825	1,030	780	1,350	4,300	16,600	3,270	2,260	3,790	1,160	700
3.....	745	825	1,010	860	1,350	5,000	17,700	3,150	3,030	3,400	1,200	700
4.....	825	825	1,000	1,000	1,330	6,600	15,300	3,030	2,420	3,150	1,240	700
5.....	745	852	1,010	2,500	1,320	8,600	11,800	2,910	2,520	3,030	1,240	700
6.....	720	852	1,030	3,500	1,310	10,500	12,100	2,740	2,310	3,270	1,160	762
7.....	825	880	1,050	5,000	*1,300	13,500	12,100	2,640	2,310	3,150	1,130	830
8.....	1,160	1,010	1,100	4,000	1,280	*17,100	9,500	2,580	2,360	2,740	1,060	762
9.....	1,360	1,010	900	3,500	1,270	24,000	7,340	2,320	2,260	2,740	1,040	740
10.....	1,280	1,010	700	3,000	1,250	28,700	7,150	2,310	2,260	2,690	1,030	740
11.....	1,200	975	560	2,600	1,240	26,600	6,430	2,260	1,960	2,970	1,100	762
12.....	1,010	1,040	540	2,400	1,230	25,700	5,910	2,160	1,770	2,260	3,030	858
13.....	880	1,040	750	2,300	1,200	23,200	5,200	2,160	1,720	2,010	2,360	1,860
14.....	1,010	975	1,000	2,700	1,200	18,300	5,260	2,110	1,820	1,770	1,590	1,770
15.....	1,040	975	920	3,300	1,180	9,900	5,110	2,010	2,160	1,680	1,200	1,270
16.....	940	975	1,150	4,500	1,130	8,300	5,110	2,060	1,860	1,590	1,000	1,060
17.....	940	1,010	1,370	3,600	1,100	6,790	4,960	2,110	1,680	1,460	970	940
18.....	852	1,120	1,100	3,000	1,300	6,080	5,110	2,110	1,640	1,460	1,000	940
19.....	852	1,120	920	2,600	1,700	5,420	5,110	2,060	1,540	1,380	1,160	885
20.....	880	1,280	780	2,400	1,450	5,110	5,110	2,010	1,460	1,380	1,060	858
21.....	852	*1,320	980	2,200	1,300	4,810	4,960	1,960	1,380	1,300	940	970
22.....	852	1,360	900	2,100	1,200	5,260	4,960	1,960	1,420	1,420	912	808
23.....	852	1,410	760	2,000	1,800	5,580	5,110	2,060	1,590	1,820	912	785
24.....	880	1,200	780	1,900	3,500	5,910	4,960	2,110	2,360	2,060	830	762
25.....	940	1,240	700	1,800	8,200	6,430	4,660	2,110	4,360	2,010	785	720
26.....	975	1,320	640	1,700	7,200	6,610	4,510	1,860	6,250	1,820	785	720
27.....	910	1,240	580	1,600	6,000	9,100	4,210	2,060	4,810	1,590	785	720
28.....	940	1,160	*570	1,550	5,000	9,900	3,930	1,770	4,070	1,720	785	682
29.....	825	1,120	570	1,500	.....	10,600	3,790	1,860	4,660	1,680	808	682
30.....	852	1,100	620	1,450	.....	11,800	3,530	1,680	4,960	1,590	808	682
31.....	852	.....	800	1,400	.....	12,900	.....	1,680	.....	1,540	762	.....
1949-50												
1.....	648	740	720	2,580	1,900	2,500	12,600	4,510	3,660	4,810	3,150	1,160
2.....	648	720	830	1,680	1,600	3,000	16,600	4,070	3,530	6,400	2,640	1,200
3.....	648	720	785	1,340	1,400	2,400	16,500	3,660	4,070	9,750	2,260	1,130
4.....	648	720	740	820	1,300	2,100	13,500	4,070	4,660	6,020	2,160	1,000
5.....	682	720	785	760	1,100	3,500	8,300	4,960	5,260	4,360	2,470	940
6.....	700	740	720	1,000	1,000	6,000	6,970	4,360	4,510	3,790	2,910	912
7.....	700	720	680	1,200	*1,050	12,000	6,080	3,930	4,070	3,660	2,800	885
8.....	700	720	660	1,000	1,900	15,000	5,580	4,070	3,660	3,150	2,580	885
9.....	720	720	630	900	3,000	18,300	5,110	5,420	3,400	2,910	2,310	858
10.....	762	720	630	*780	2,500	22,400	5,110	7,340	3,030	2,860	2,210	885
11.....	740	720	720	760	2,300	24,800	5,110	6,970	2,860	2,690	2,160	885
12.....	720	720	760	740	2,600	28,700	4,810	6,970	2,910	2,690	1,960	885
13.....	700	762	600	1,100	2,800	31,200	4,360	7,910	4,510	2,910	1,770	885
14.....	700	785	500	3,000	2,700	26,600	4,360	8,700	6,430	3,030	1,720	912
15.....	700	785	450	2,800	2,400	14,200	4,070	7,910	5,580	2,470	1,680	912
16.....	682	762	540	2,210	2,100	7,720	4,070	6,080	5,420	2,420	1,770	912
17.....	682	740	620	1,500	1,800	6,790	4,070	5,260	6,080	2,360	1,770	912
18.....	682	740	680	1,600	1,600	5,910	3,530	4,660	7,530	2,310	1,680	885
19.....	682	762	720	1,700	1,500	5,260	3,530	4,210	9,500	2,310	1,590	885
20.....	700	740	760	1,600	1,400	5,110	3,150	3,930	10,100	2,520	1,540	858
21.....	762	740	760	1,500	1,300	4,960	2,910	3,790	9,100	2,360	1,500	858
22.....	970	720	660	1,500	1,250	4,810	2,800	3,660	8,700	2,910	1,420	940
23.....	858	720	600	1,500	1,200	4,960	2,800	3,660	9,100	3,530	1,460	2,900
24.....	762	720	560	1,500	1,100	5,260	3,530	3,790	8,700	3,150	1,340	5,420
25.....	830	740	600	1,600	1,200	5,580	7,690	4,070	8,500	3,030	1,300	4,070
26.....	808	740	640	4,500	1,300	6,970	7,910	4,360	10,500	2,970	1,270	3,400
27.....	762	740	720	3,300	1,200	8,500	6,250	4,210	12,900	2,860	1,240	2,860
28.....	740	720	680	2,300	1,200	9,300	5,580	4,210	12,600	2,690	1,200	2,470
29.....	762	720	660	2,400	.....	9,700	5,420	4,960	6,610	2,580	1,270	2,260
30.....	762	720	680	2,500	.....	9,900	4,960	5,260	5,260	2,360	1,240	2,060
31.....	762	.....	900	2,200	.....	11,100	.....	4,360	.....	2,360	1,240	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 29 to Dec. 31, 1948, Jan. 1 to Mar. 7, Dec. 6-8, 12-31, 1949, Jan. 4-14, Jan. 17 to Mar. 8, 1950 (no gage-height record Jan. 23, Feb. 11, 12, 1949.)

Cedar River near Conesville, Iowa—Continued
 Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1942	126,600	7,690	2,610	4,084	0.521	0.60
November	110,250	6,240	2,490	3,675	.469	.52
December	88,490	7,850	1,430	2,855	.364	.42
Calendar year 1942	2,001,670	30,600	1,430	5,484	.699	9.50
January 1943	78,800	5,100	1,900	2,542	.324	.37
February	140,270	15,400	1,950	5,010	.639	.67
March	297,540	16,200	3,580	9,598	1.22	1.41
April	236,530	17,100	4,170	7,884	1.01	1.12
May	171,550	9,510	3,620	5,534	.706	.81
June	183,570	8,780	3,990	6,119	.780	.87
July	113,550	4,760	2,820	3,663	.467	.54
August	118,820	6,870	2,340	3,833	.489	.56
September	97,900	5,650	1,890	3,263	.416	.46
Water year 1942-43	1,763,870	17,100	1,430	4,833	.616	8.35
October 1943	50,690	1,910	1,520	1,635	.209	.24
November	57,000	2,170	1,650	1,900	.242	.27
December	44,140	2,220	750	1,424	.182	.21
Calendar year 1943	1,590,360	17,100	750	4,357	.556	7.53
January 1944	37,050	2,720	940	1,195	.152	.18
February	71,100	6,630	850	2,452	.313	.34
March	194,090	11,200	2,000	6,261	.799	.92
April	195,130	11,300	4,660	6,504	.830	.93
May	378,170	23,200	6,990	12,200	1.56	1.79
June	430,670	34,900	6,160	14,360	1.83	2.04
July	174,950	9,570	3,500	5,644	.720	.83
August	84,160	3,680	2,010	2,715	.346	.40
September	59,040	2,380	1,680	1,968	.251	.28
Water year 1943-44	1,776,190	34,900	750	4,853	.619	8.43
October 1944	52,870	2,090	1,430	1,705	.217	.25
November	47,870	2,380	1,440	1,596	.204	.23
December	36,500	1,560	1,000	1,177	.150	.17
Calendar year 1944	1,761,600	34,900	850	4,813	.614	8.36
January 1945	31,450	1,140	960	1,015	.129	.15
February	45,555	3,440	940	1,627	.208	.22
March	417,150	48,000	2,700	13,460	1.72	1.98
April	316,420	14,600	7,550	10,550	1.35	1.50
May	276,230	18,500	5,080	8,911	1.14	1.31
June	378,090	22,700	6,110	12,600	1.61	1.79
July	124,680	7,730	2,230	4,022	.513	.59
August	171,830	11,400	2,270	5,543	.707	.82
September	70,130	3,500	1,700	2,338	.298	.33
Water year 1944-45	1,968,775	48,000	940	5,394	.688	9.34
October 1945	57,740	2,770	1,510	1,863	.238	.27
November	49,320	2,230	960	1,644	.210	.23
December	47,120	2,890	840	1,520	.194	.22
Calendar year 1945	1,985,715	48,000	840	5,440	.694	9.41
January 1946	261,810	29,000	1,130	8,445	1.08	1.24
February	127,000	9,000	2,100	4,536	.579	.60
March	386,560	25,500	4,200	12,470	1.59	1.83
April	129,830	8,420	2,200	4,328	.552	.62
May	84,410	4,970	2,150	2,723	.347	.40
June	152,570	10,200	2,200	5,086	.649	.72
July	115,540	12,000	1,630	3,727	.475	.55
August	51,610	3,300	1,150	1,665	.212	.24
September	131,130	11,700	1,130	4,371	.558	.62
Water year 1945-46	1,594,640	29,000	840	4,369	.557	7.54

Cedar River near Conesville, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946	93,630	4,870	2,020	3,020	0.385	0.44
November	127,440	6,320	2,880	4,248	.542	.60
December	64,880	2,820	1,060	2,093	.267	.31
Calendar year 1946	1,726,410	29,000	1,060	4,730	.603	8.17
January 1947	63,350	3,500	1,200	2,044	.261	.30
February	93,450	6,400	1,300	3,338	.426	.44
March	157,580	8,230	2,300	5,083	.648	.75
April	373,280	19,000	6,180	12,440	1.59	1.77
May	185,440	10,700	4,440	5,982	.763	.88
June	770,500	55,500	10,100	25,680	3.28	3.65
July	333,660	20,000	4,060	10,760	1.37	1.58
August	71,700	3,790	1,630	2,313	.295	.34
September	51,030	2,060	1,390	1,701	.217	.24
Water year 1946-47	2,385,940	55,500	1,060	6,537	.834	11.30
October 1947	41,850	1,920	1,170	1,350	.172	.20
November	51,350	2,130	880	1,712	.218	.24
December	47,350	2,710	780	1,527	.195	.22
Calendar year 1947	2,240,540	55,500	780	6,138	.783	10.61
January 1948	31,030	1,350	800	1,001	.128	.15
February	63,790	11,000	770	2,200	.281	.30
March	545,270	36,200	3,700	17,590	2.24	2.58
April	139,520	8,880	3,190	4,651	.593	.66
May	141,680	5,890	2,340	4,570	.583	.67
June	67,340	4,530	1,690	2,245	.286	.32
July	65,540	3,500	1,520	2,114	.270	.31
August	32,588	1,520	814	1,051	.134	.15
September	27,343	1,340	750	911	.116	.13
Water year 1947-48	1,284,651	36,200	750	3,428	.437	5.93
October 1948	28,671	1,360	720	925	.118	.14
November	31,894	1,410	825	1,063	.136	.15
December	26,880	1,370	540	867	.111	.13
Calendar year 1948	1,201,546	36,200	540	3,283	.419	5.69
January 1949	73,520	5,000	780	2,372	.303	.35
February	60,070	8,200	1,100	2,168	.277	.28
March	347,100	28,700	4,300	11,200	1.43	1.65
April	222,080	17,700	3,530	7,403	.944	1.05
May	70,580	3,270	1,680	2,277	.290	.33
June	76,790	6,250	1,380	2,560	.327	.36
July	68,980	4,510	1,300	2,225	.284	.33
August	35,112	3,030	762	1,133	.145	.17
September	26,068	1,860	682	869	.111	.12
Water year 1948-49	1,067,045	28,700	540	2,923	.373	5.06
October 1949	22,622	970	648	730	.093	.11
November	22,036	785	720	735	.094	.10
December	20,990	900	450	677	.086	.10
Calendar year 1949	1,045,948	28,700	450	2,866	.366	4.95
January 1950	53,930	4,500	740	1,740	.222	.26
February	47,700	3,000	1,000	1,704	.217	.23
March	324,530	31,200	2,100	10,470	1.34	1.54
April	187,260	16,600	2,800	6,242	.796	.89
May	155,320	8,700	3,660	5,010	.639	.74
June	192,840	12,900	2,860	6,428	.820	.91
July	104,220	9,750	2,310	3,362	.429	.49
August	57,610	3,150	1,200	1,858	.237	.27
September	46,024	5,420	858	1,534	.196	.22
Water year 1949-50	1,235,082	31,200	450	3,384	.432	5.86

Shell Rock River near Northwood, Iowa

LOCATION.—Lat. 43°25', long. 93°13', between secs. 4 and 9, T. 99 N., R. 20 W., on downstream truss of bridge on county road, 1 mile south of Northwood and about 85 miles upstream from Cedar River.

DRAINAGE AREA.—380 square miles.

RECORDS AVAILABLE.—April 1948 to September 1950.

GAGE.—Wire-weight gage; gage read twice daily during high stages and once daily for other periods. Datum of gage is 1,176.48 feet above mean sea level, datum of 1929.

AVERAGE DISCHARGE.—2 years, 104 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1948-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
April to Sept. 1948	June 28	443	5.61	Aug. 5	17
1948-49...	Mar. 31	1,30	(¹)	Aug. 31	12
1949-50...	Mar. 28	1,800	9.72	Jan. 29 to Feb. 5	11

(1) Maximum gage-height observed, 8.40 feet Mar. 8.

1948-50: Maximum discharge observed, about 1,800 second-feet Mar. 28, 1950 (gage height, 9.72 feet, from flood mark, backwater from ice); minimum daily, 11 second-feet Jan. 29 to Feb. 5, 1950.

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

COOPERATION.—Services of observer and several discharge measurements furnished by Corps of Engineers.

Shell Rock River near Northwood, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1948 and 1949

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1947-48												
1.....							309	132	46	172	19	35
2.....							271	134	43	126	19	38
3.....							256	128	37	105	20	38
4.....							207	151	36	84	20	36
5.....							197	153	55	68	17	34
6.....							197	149	47	58	18	28
7.....							200	138	42	54	19	36
8.....							235	122	46	51	20	34
9.....							235	184	37	61	50	29
10.....							184	349	34	82	97	26
11.....							179	332	29	63	80	25
12.....							202	299	45	52	69	26
13.....							167	274	35	47	56	26
14.....							158	256	34	55	52	26
15.....							153	224	35	48	52	20
16.....							140	210	36	45	46	22
17.....							138	200	36	40	48	21
18.....							113	162	32	37	46	20
19.....							111	134	32	36	46	20
20.....							116	122	33	32	42	63
21.....							107	114	34	29	36	41
22.....							92	104	37	29	35	38
23.....							111	94	34	29	30	36
24.....							160	81	31	28	26	34
25.....							151	75	34	26	26	34
26.....							156	68	42	24	26	31
27.....							172	61	178	24	36	31
28.....							179	58	439	22	46	29
29.....							151	55	335	21	38	29
30.....							138	50	241	20	37	27
31.....							48			20	36	
1948-49												
1.....	28	26	*35	17	25	25	1,190	150	61	28	32	14
2.....	27	28	33	17	25	26	1,190	138	90	27	32	16
3.....	25	30	32	17	24	26	1,150	130	78	23	30	21
4.....	26	35	30	17	24	60	1,070	120	66	23	29	22
5.....	26	48	30	20	23	200	1,010	105	55	20	27	24
6.....	37	58	33	40	23	270	934	109	45	18	24	24
7.....	48	59	34	50	23	400	874	113	44	20	24	21
8.....	46	47	33	57	23	450	794	97	41	17	24	20
9.....	41	41	32	59	23	470	734	94	34	17	22	22
10.....	41	37	31	59	23	470	634	84	29	16	19	24
11.....	31	43	30	57	23	460	574	80	29	14	25	29
12.....	35	43	29	*54	23	450	495	78	34	15	24	29
13.....	29	43	28	52	23	450	427	76	38	15	25	26
14.....	27	41	27	50	23	430	413	86	34	50	24	29
15.....	34	41	26	50	23	410	388	78	29	33	23	27
16.....	26	36	25	64	23	390	380	74	27	27	21	26
17.....	26	40	25	64	*23	370	370	70	20	15	19	22
18.....	37	45	24	63	23	360	388	74	27	39	21	24
19.....	34	58	23	58	23	360	325	78	29	36	22	25
20.....	34	72	22	52	23	370	293	78	47	33	17	26
21.....	31	43	22	46	23	390	277	76	40	29	19	24
22.....	27	40	21	42	23	410	284	63	49	27	19	22
23.....	29	42	21	38	23	460	277	61	76	25	17	20
24.....	30	46	20	35	24	550	268	56	97	24	16	22
25.....	32	47	20	32	24	700	210	55	118	23	13	22
26.....	34	46	19	31	24	874	207	48	102	36	13	20
27.....	28	44	19	30	24	1,190	207	44	70	49	14	18
28.....	25	41	18	29	25	1,150	184	44	50	51	13	18
29.....	23	38	18	28		1,110	167	43	45	43	13	19
30.....	28	36	17	27		1,110	160	39	38	44	13	21
31.....	26		17	26		1,230		35		39	12	

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 22 to Dec. 31, 1948, Jan. 1 to Mar. 25, 1949.

Shell Rock River near Northwood, Iowa—Continued
Daily Discharge, in second-feet, for Water Year 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1949-50												
1.....	26	29	24	26	11	19	985	164	76	15	31	21
2.....	17	29	22	26	11	19	910	160	72	14	28	20
3.....	18	32	23	26	11	19	830	152	66	14	28	18
4.....	19	27	24	25	11	19	750	146	59	13	27	17
5.....	26	26	25	24	11	19	590	158	51	14	25	17
6.....	19	25	26	23	12	420	495	178	50	14	25	16
7.....	19	24	27	23	12	500	465	182	48	14	24	16
8.....	23	24	*28	22	13	400	390	144	40	14	21	14
9.....	24	24	26	22	13	300	333	202	37	13	19	14
10.....	25	25	26	22	14	*240	366	245	37	13	17	16
11.....	23	25	30	22	14	170	372	230	42	12	31	16
12.....	23	28	28	*22	15	160	295	205	41	16	29	17
13.....	24	29	27	23	16	150	275	196	35	16	26	18
14.....	23	31	27	24	17	140	250	174	34	14	24	19
15.....	22	33	27	24	*18	125	218	166	35	19	24	19
16.....	21	33	29	22	18	110	187	154	33	20	22	19
17.....	22	31	28	20	18	94	178	152	31	18	21	18
18.....	23	22	28	19	19	82	182	142	40	17	21	17
19.....	28	32	29	18	19	76	193	111	43	72	20	17
20.....	31	29	32	16	19	72	185	130	43	63	21	17
21.....	37	31	29	15	19	68	164	126	40	56	21	30
22.....	38	32	26	14	19	90	138	120	40	53	19	26
23.....	36	34	24	14	19	*120	122	111	40	45	17	26
24.....	33	36	22	13	19	220	128	102	34	41	16	25
25.....	33	39	20	13	19	390	156	114	29	37	14	24
26.....	33	35	19	12	19	1,100	198	109	24	34	16	23
27.....	31	33	18	12	19	1,400	172	98	20	31	16	22
28.....	29	32	18	12	19	1,700	150	87	17	29	17	22
29.....	29	30	18	11	.....	1,600	134	76	17	26	25	22
30.....	29	27	21	11	.....	1,360	166	87	16	24	25	22
31.....	29	.....	26	11	.....	1,080	.....	82	.....	32	24	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 22 to Dec. 31, 1949, Jan. 1 to Mar. 29, 1950.

Shell Rock River near Northwood, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1949 and 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
April 1948.....	5,185	309	92	173	0.455	0.51
May.....	4,861	349	48	150	.395	.46
June.....	2,175	439	31	72.5	.191	.21
July.....	1,588	172	20	51.2	.135	.16
August.....	1,208	97	17	39.0	.103	.12
September.....	933	63	20	31.1	.082	.09
October.....	971	48	23	31.3	.082	.10
November.....	1,294	72	26	43.1	.113	.13
December.....	794	35	17	25.6	.057	.08
January 1949.....	1,281	64	17	41.3	.109	.13
February.....	656	25	23	23.4	.062	.06
March.....	15,621	1,230	25	504	1.33	1.53
April.....	15,874	1,190	160	529	1.39	1.55
May.....	2,479	150	35	80.0	.211	.24
June.....	1,548	118	20	51.6	.136	.15
July.....	876	51	14	28.3	.074	.09
August.....	646	32	12	20.8	.055	.06
September.....	677	29	14	22.6	.059	.07
Water year 1948-49.....	42,717	1,230	12	117	.308	4.19
October 1949.....	813	38	17	26.2	.069	.08
November.....	887	39	22	29.6	.078	.09
December.....	777	32	18	25.1	.066	.08
Calendar year 1949.....	42,135	1,230	12	115	.303	4.13
January 1950.....	587	26	11	18.9	.050	.06
February.....	444	19	11	15.9	.042	.04
March.....	12,262	1,700	19	396	1.04	1.20
April.....	9,977	985	122	333	.876	.98
May.....	4,503	245	76	145	.382	.44
June.....	1,190	76	16	39.7	.104	.12
July.....	813	72	12	26.2	.069	.08
August.....	694	31	14	22.4	.059	.07
September.....	588	30	14	19.6	.052	.06
Water year 1949-50.....	33,535	1,700	11	91.9	.242	3.30

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 bank 20 feet above 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.

RECORDS AVAILABLE.—July 1933 to September 1950. Published as "at Greene" July 1933 to September 1942.

GAGE.—Staff gage on wingwall of dam. Datum of gage is 961.17 feet above mean sea level, datum of 1929. July 1, 1933, to Sept. 30, 1942, staff gage below dam at Greene, 6 miles downstream. Sept. 1, 1942, to Mar. 12, 1945, water-stage recorder at same site and datum. Mar. 13, 1945, to June 5, 1946, staff gage at same site and datum. June 6, 1946, to June 19, 1950, water-stage recorder at same site and datum.

AVERAGE DISCHARGE.—17 years, 579 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the follownig table:

Water Year	Maximum			Minimum Daily	
	Date	Dis charge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-4 . . .	Mar. 16	9,340	5.97	Feb. 14-17	100
1943-44 . . .	June 12	15,900	8.28	Jan. 13-15, 17	76
1944-45 . . .	Mar. 15	14,400	7.78	Jan. 8	61
1945-4 . . .	Mar. 6	5,730	4.39	Dec. 10	75
1946-47 . . .	June 17	1,300	6.36	Feb. 11	130
1947-48 . . .	Feb. 29	(1)6,000	(2)	Sept. 19	47
1948-49 . . .	Mar.	8,190	5.46	Sept. 1	53
1949-50 . . .	Mar. 7	1,430	7.75	Jan. 27, Feb. 3, 4	38

(1) Daily

(2) Maximum gage-height 8.56 feet Feb. 28.

1943-50: Maximum discharge, 15,900 second-feet June 12, 1944; maximum gage-height, 8.56 feet, Feb. 28, 1948, from floodmark; minimum daily discharge, 38 second-feet Sept. 19, 1948, Jan. 27, Feb. 3, 4, 1950.

REMARKS.—Records good except those for periods of partly estimated gage-height record, ice effect, and those computed from daily staff or tape readings, all of which are fair, and those for periods of no gage-height, which are poor.

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

Shell Rock River at Marble Rock, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	390	232	169	a175	a105	a1,200	2,510	368	537	684	600	1,350
2.....	368	238	164	h169	a110	a900	2,200	a320	453	609	546	1,260
3.....	390	244	a120	a165	a115	a700	1,920	263	430	554	609	1,130
4.....	554	238	a145	a150	a115	a600	1,680	250	461	1,170	554	1,050
5.....	581	232	h153	a150	a115	494	1,520	257	383	1,310	563	1,100
6.....	563	226	a150	a160	h105	430	1,350	263	332	1,430	494	1,290
7.....	520	226	a135	a165	a105	375	1,220	257	304	1,350	414	1,310
8.....	478	220	a145	a165	a110	361	1,110	257	297	1,380	361	1,340
9.....	437	238	a150	h169	a120	346	1,020	250	297	1,410	a650	1,300
10.....	398	226	a150	a165	a120	346	*961	244	290	1,380	a950	1,230
11.....	375	238	a160	a160	a110	339	897	244	284	1,350	a850	1,130
12.....	354	250	h164	a155	a110	332	929	244	572	1,260	a750	1,040
13.....	339	232	a140	a155	h105	339	908	244	1,410	1,180	a2,000	950
14.....	324	f220	a110	a165	a100	594	773	250	1,540	1,260	2,500	897
15.....	310	f196	*h137	a155	a100	3,110	703	250	1,560	1,130	1,990	834
16.....	297	202	a145	h148	a100	7,840	655	a600	1,600	1,050	2,200	752
17.....	290	196	a140	a140	a100	f2,930	618	855	1,680	939	1,930	674
18.....	277	196	a135	a135	a105	f1,550	554	803	1,680	886	1,670	590
19.....	277	202	a128	a130	a105	f1,590	503	694	1,550	1,180	1,420	546
20.....	270	202	a110	a125	h109	f1,280	486	600	1,410	1,350	f1,220	520
21.....	257	196	a130	a125	a150	1,100	546	537	1,250	1,200	f1,070	486
22.....	250	a200	a160	a130	a300	950	437	486	1,190	1,060	929	437
23.....	250	a205	a155	a130	a1,800	*994	437	453	1,060	939	939	414
24.....	244	208	a155	a130	a2,000	2,180	469	414	929	865	752	390
25.....	238	208	a155	a110	a1,200	3,960	461	414	803	793	1,110	375
26.....	214	119	h164	a115	a900	4,220	430	430	684	703	2,000	a355
27.....	202	137	a165	*h119	h908	3,250	414	469	609	627	1,790	a335
28.....	238	128	a165	109	a1,100	2,840	406	486	655	645	1,720	317
29.....	238	153	a170	114	.....	2,860	398	461	723	897	1,690	304
30.....	238	169	a180	h105	.....	3,160	390	422	803	918	1,580	297
31.....	238	.....	a185	a110	.....	2,740	.....	422	.....	752	1,420	.....
1943-44												
1.....	317	232	244	109	263	a640	664	1,680	1,320	664	270	332
2.....	310	263	304	109	263	a620	1,200	1,970	1,200	742	250	324
3.....	284	257	250	109	270	a660	1,220	5,070	1,080	844	238	310
4.....	263	244	232	114	255	645	994	4,550	994	803	406	290
5.....	257	232	a250	114	244	572	803	3,610	1,050	713	664	270
6.....	244	238	a270	114	175	478	742	3,300	1,170	627	627	263
7.....	232	a280	a280	105	190	158	664	2,960	1,070	590	186	257
8.....	226	a430	a290	105	225	153	684	2,750	961	645	390	259
9.....	208	a440	a290	90	180	232	674	2,720	1,250	636	336	238
10.....	208	a430	a200	85	120	339	664	2,380	1,550	618	297	232
11.....	202	a440	a100	83	110	664	694	2,120	1,420	783	257	226
12.....	202	a440	a110	80	165	918	694	2,030	8,440	908	238	220
13.....	214	h437	a120	*76	185	674	627	1,930	11,900	855	220	214
14.....	214	445	a170	76	175	915	636	1,700	7,980	752	202	214
15.....	214	a400	*215	76	150	1,400	918	1,680	5,070	752	220	202
16.....	208	250	250	80	150	*1,160	1,180	1,740	4,400	939	324	196
17.....	196	304	245	76	125	908	1,060	1,740	4,410	950	554	185
18.....	f196	a370	170	83	115	664	972	1,600	5,370	855	390	185
19.....	f214	a350	158	91	110	537	886	2,260	3,450	752	354	263
20.....	f214	h346	158	96	105	520	908	3,980	2,890	664	297	496
21.....	f214	a340	158	100	115	636	1,420	3,430	2,380	600	250	520
22.....	f238	a330	140	109	175	694	1,460	4,750	2,030	546	232	375
23.....	f238	317	130	109	265	763	1,620	4,130	1,760	486	214	332
24.....	a230	297	110	109	340	1,900	2,070	3,770	1,510	437	214	317
25.....	a215	310	105	128	430	1,370	2,300	3,410	1,320	414	196	310
26.....	a205	310	109	174	1,140	983	1,960	2,890	1,160	414	202	284
27.....	a190	263	114	263	a1,000	783	1,720	2,480	1,040	398	232	263
28.....	a180	244	110	361	a820	732	1,540	2,140	929	354	310	257
29.....	a175	214	114	390	a700	694	1,380	1,920	813	324	332	250
30.....	164	196	114	346	.....	546	1,320	1,780	732	310	332	238
31.....	196	.....	109	310	.....	430	.....	1,500	.....	284	346	.....

* Winter discharge measurement made on this day.

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

f Computed from partly estimated gage-height record.

h Computed from staff gage readings.

Note—Stage-discharge relation affected by ice Mar. 15, 25, 26, Dec. 15-18, 22-25, 1943, Jan. 7-10, Feb. 4, 6-24, 26, 1944.

Shell Rock River at Marble Rock, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	220	137	119	87	91	185	1,200	1,550	5,970	1,450	684	310
2.....	214	148	142	91	87	196	1,060	1,580	5,920	1,180	554	304
3.....	214	148	158	83	83	232	1,000	1,600	4,090	1,030	486	297
4.....	214	132	153	76	80	297	950	1,520	3,370	929	437	270
5.....	226	132	158	72	83	304	783	1,360	2,980	983	1,300	257
6.....	263	132	179	64	91	290	865	1,230	2,590	897	2,610	250
7.....	232	128	190	64	80	277	1,500	1,080	2,310	773	2,040	238
8.....	214	132	185	61	80	263	2,580	950	2,130	694	1,740	232
9.....	208	132	185	68	83	250	2,790	908	1,930	627	1,550	214
10.....	202	137	169	76	83	332	2,300	865	6,890	627	1,350	202
11.....	196	142	137	64	87	2,830	1,960	834	5,480	563	1,550	226
12.....	185	137	123	72	*96	9,610	2,690	803	3,590	520	1,500	220
13.....	179	142	148	76	100	9,920	3,360	813	2,940	486	1,370	214
14.....	179	169	132	76	105	9,500	3,480	950	2,460	437	4,170	202
15.....	169	179	132	80	208	*9,150	2,800	1,080	2,240	422	3,880	190
16.....	164	185	119	80	430	9,630	3,010	1,020	2,140	390	2,690	185
17.....	164	208	119	83	390	5,410	3,720	886	1,970	520	2,180	202
18.....	164	202	*91	83	383	4,340	2,990	783	1,820	618	1,680	185
19.....	158	190	91	83	361	3,610	2,480	703	1,590	563	1,350	214
20.....	158	185	100	83	310	3,040	2,160	645	2,040	478	1,080	226
21.....	153	185	91	87	270	2,640	1,880	886	1,590	430	908	238
22.....	158	185	91	91	196	2,300	1,850	3,710	1,300	390	783	226
23.....	148	190	87	91	190	2,040	4,230	3,810	1,070	361	703	214
24.....	153	190	87	91	174	1,880	5,030	3,130	972	346	627	220
25.....	148	185	87	96	158	2,200	3,630	4,920	1,180	324	572	208
26.....	148	190	87	96	153	2,840	3,040	5,070	994	317	503	220
27.....	142	179	80	96	164	2,450	2,530	4,110	1,760	290	445	257
28.....	142	153	72	100	190	2,040	2,200	4,260	2,360	572	414	310
29.....	137	153	76	91	.....	1,720	1,930	3,680	1,990	512	383	332
30.....	142	105	80	83	.....	1,520	1,750	3,130	1,680	486	361	324
31.....	137	.....	83	91	.....	1,340	.....	2,960	.....	855	339	.....
1945-46												
1.....	317	179	174	105	137	1,100	1,650	238	1,030	563	232	132
2.....	310	179	202	100	128	1,200	1,780	244	939	503	196	128
3.....	304	185	214	100	123	1,780	1,540	270	824	430	185	123
4.....	290	174	208	123	158	1,820	1,290	310	703	368	185	119
5.....	270	164	202	361	310	1,650	1,180	332	572	332	174	123
6.....	260	202	190	2,700	1,390	4,530	1,040	310	554	310	148	1,570
7.....	238	185	196	1,760	844	3,200	1,070	284	494	290	148	1,430
8.....	226	202	202	950	453	2,180	1,160	263	445	277	158	1,080
9.....	232	174	190	572	406	1,690	1,060	250	390	277	637	1,510
10.....	226	153	75	453	414	1,590	972	263	383	263	437	1,580
11.....	214	169	169	406	437	1,600	908	297	375	232	263	1,170
12.....	208	226	153	383	368	2,070	834	310	383	214	202	908
13.....	196	214	137	346	320	4,490	664	317	414	208	174	732
14.....	190	202	123	324	270	3,630	703	324	398	202	164	618
15.....	185	208	114	304	214	2,740	636	332	503	190	148	546
16.....	190	196	109	277	190	2,770	600	375	1,450	208	153	486
17.....	190	190	105	250	244	3,060	563	414	1,350	196	169	430
18.....	190	185	100	226	270	2,920	520	461	1,240	185	346	375
19.....	185	190	98	226	324	2,560	461	528	1,160	214	398	354
20.....	179	179	96	220	1,000	2,300	437	590	1,420	185	277	368
21.....	179	164	87	220	961	2,090	406	554	1,630	164	208	383
22.....	174	80	83	208	939	1,860	361	528	1,470	153	179	390
23.....	179	132	87	*169	865	2,070	346	503	1,240	153	158	503
24.....	190	128	87	174	834	2,400	332	1,640	1,020	153	148	520
25.....	185	137	90	180	703	2,370	317	3,080	876	153	132	453
26.....	179	142	91	185	660	2,220	290	2,280	783	153	128	414
27.....	179	148	96	190	636	2,140	277	1,950	684	268	128	414
28.....	174	158	100	153	645	1,990	263	1,960	590	361	128	398
29.....	169	153	105	153	.....	1,920	250	1,710	537	232	123	398
30.....	169	158	109	150	.....	1,860	244	1,400	537	572	123	383
31.....	164	.....	109	148	.....	1,780	.....	1,200	.....	340	128	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 11-31, 1944, Jan. 1-16, Jan. 25 to Feb. 2, Dec. 10-23, 1945, Jan. 13 to Feb. 5, 1946.

Shell Rock River at Marble Rock, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	361	694	383	245	180	220	1,380	1,000	600	7,380	354	324
2.....	317	703	202	235	200	210	1,350	1,040	609	4,400	354	257
3.....	290	674	284	230	220	210	1,230	1,040	563	3,300	354	220
4.....	277	618	445	220	240	220	1,230	930	528	2,860	332	214
5.....	270	590	469	170	250	250	1,890	834	581	3,520	310	208
6.....	310	546	414	160	240	332	2,660	773	537	4,340	290	196
7.....	310	546	445	*170	220	460	2,090	742	877	3,860	310	185
8.....	310	600	437	185	200	684	1,760	723	1,990	3,060	284	164
9.....	304	713	461	185	160	742	1,860	664	1,640	2,530	277	158
10.....	383	813	*478	185	135	664	4,210	627	1,420	2,180	244	153
11.....	1,100	1,110	469	202	130	655	5,690	590	1,250	1,900	226	142
12.....	950	1,230	461	208	135	908	3,960	581	1,660	1,720	226	214
13.....	752	1,110	304	202	160	2,130	3,300	713	5,620	1,550	214	297
14.....	618	994	208	601	280	1,620	2,890	886	3,540	1,360	226	317
15.....	537	897	284	664	420	1,140	2,620	972	2,030	1,240	208	263
16.....	554	865	339	453	630	1,110	2,530	1,070	1,850	1,120	190	244
17.....	773	865	150	375	860	1,100	2,310	961	a5,460	1,070	196	214
18.....	655	783	290	354	900	1,040	2,060	950	g0,350	1,500	185	202
19.....	546	723	270	317	618	1,020	1,860	918	g3,850	1,130	179	185
20.....	486	694	260	260	581	972	1,680	813	g2,950	950	169	185
21.....	445	674	255	220	445	803	1,500	713	g2,740	813	185	174
22.....	414	512	255	220	383	773	1,400	742	g2,750	713	169	169
23.....	390	368	250	263	339	1,560	1,690	855	g3,590	645	169	164
24.....	494	600	250	297	310	2,400	1,920	773	3,450	590	164	179
25.....	1,920	512	250	346	290	2,560	1,670	684	3,230	546	164	164
26.....	1,550	486	245	390	260	1,900	1,480	618	2,990	520	164	164
27.....	1,140	537	245	398	240	g1,670	1,340	572	2,560	486	158	174
28.....	918	453	245	*383	230	g1,960	1,180	554	2,370	445	130	164
29.....	844	453	250	290	.....	g2,090	1,080	627	7,010	422	360	174
30.....	824	469	255	190	.....	g1,450	1,050	694	6,040	406	694	169
31.....	742	.....	255	170	.....	1,430	.....	645	.....	383	430	.....
1947-48												
1.....	174	214	226	120	60	a5,000	a900	453	185	430	72	100
2.....	185	226	220	115	60	a3,500	a800	437	174	334	68	96
3.....	185	214	214	110	60	a2,500	a700	445	164	270	72	96
4.....	202	214	214	110	*60	a2,000	b572	430	148	220	72	96
5.....	196	208	214	115	60	a1,600	b537	430	158	185	72	87
6.....	179	202	202	123	60	a1,300	b520	520	174	169	80	87
7.....	190	196	208	128	60	a1,000	b537	494	164	148	72	87
8.....	185	190	185	132	65	a800	b627	437	153	137	80	83
9.....	179	153	158	132	65	a700	b824	414	148	128	80	83
10.....	185	174	185	128	65	a650	b732	664	142	123	72	80
11.....	179	174	196	132	65	a630	a700	929	137	148	83	80
12.....	174	158	208	132	70	a610	a750	865	137	148	137	72
13.....	153	148	214	123	70	a600	a700	803	158	137	128	72
14.....	164	174	214	115	b72	a690	a600	732	158	132	119	64
15.....	164	202	208	105	72	a900	a550	684	148	164	123	61
16.....	153	190	190	100	100	a1,100	a500	609	142	153	114	53
17.....	158	185	*190	90	310	a1,500	a475	546	142	137	109	53
18.....	137	202	190	85	1,080	a2,000	a450	486	142	132	109	53
19.....	132	*226	190	80	1,820	a2,500	a425	430	137	132	100	47
20.....	132	214	190	75	961	b2,960	a400	375	132	128	91	96
21.....	128	232	185	70	b855	a3,500	a375	339	142	132	87	96
22.....	123	332	179	70	b865	a2,500	a350	317	148	123	83	100
23.....	119	304	174	70	a600	a2,000	a400	284	153	109	80	91
24.....	132	244	164	70	494	a1,560	a500	263	148	100	72	87
25.....	142	250	158	65	453	h*1,320	b590	255	137	105	68	90
26.....	169	208	153	65	406	a1,200	b618	232	164	96	68	87
27.....	214	270	145	60	1,380	a1,400	b609	220	174	91	72	83
28.....	238	185	140	60	g5,000	a1,500	b581	202	284	87	96	83
29.....	214	164	135	60	a6,000	a1,400	b528	190	703	91	91	80
30.....	196	196	130	60	.....	a1,200	478	190	554	87	109	76
31.....	196	.....	125	60	.....	a1,000	.....	190	.....	80	100	.....

* Winter discharge measurement made on this day.

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

g Computed from graph based on gage readings.

h Computed from once daily staff gage reading.

Note—Stage-discharge relation affected by ice Dec 17-31, 1946, Jan. 1-7, 20-22, Jan. 31 to Feb. 18, Feb. 24 to Mar. 4, Dec. 17-19, 27-31, 1947, Jan. 1-5, Jan. 14 to Feb. 13, Feb. 28, 1948.

Shell Rock River near Marble Rock, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	72	80	76	72	100	260	3,590	406	179	317	196	53
2.....	64	76	*109	76	96	230	3,320	383	414	263	169	57
3.....	61	76	128	83	91	250	2,890	368	478	226	148	57
4.....	61	80	153	137	87	2,100	2,560	354	346	202	137	72
5.....	57	96	169	226	96	6,610	2,320	332	270	179	123	83
6.....	61	123	128	250	87	4,240	2,030	317	220	169	114	96
7.....	87	132	91	346	87	3,500	1,890	317	190	164	96	87
8.....	119	142	114	346	87	3,680	1,690	310	169	153	100	91
9.....	119	128	153	304	96	2,980	1,510	284	153	142	91	83
10.....	109	119	114	263	96	a2,600	1,370	270	148	128	91	80
11.....	100	114	109	*250	96	a2,300	1,240	263	137	123	123	100
12.....	100	114	105	238	83	a2,000	1,120	250	137	114	158	137
13.....	100	109	105	220	83	a1,700	1,060	238	137	109	123	128
14.....	100	109	100	190	91	a1,500	908	238	132	114	105	119
15.....	91	105	100	244	87	a1,200	855	232	132	132	100	105
16.....	91	195	98	581	83	a1,000	783	226	123	137	100	100
17.....	80	100	94	437	*87	a820	972	226	119	119	100	91
18.....	87	100	92	375	83	a700	1,120	232	109	481	100	83
19.....	87	148	90	317	80	a580	1,050	232	109	783	91	76
20.....	83	214	90	310	80	a760	972	232	114	390	91	76
21.....	80	226	88	284	76	a1,200	897	238	g169	277	87	72
22.....	83	208	86	214	80	3,070	813	244	g290	214	87	72
23.....	83	164	88	190	83	3,500	742	250	g445	179	87	68
24.....	80	164	90	153	436	2,960	694	238	g1,310	158	80	72
25.....	80	190	88	132	445	4,830	609	220	g4,730	137	76	64
26.....	80	174	82	119	383	3,320	563	208	g1,890	132	76	68
27.....	80	164	78	109	375	6,170	537	196	g865	220	83	68
28.....	76	142	74	100	310	4,150	593	185	855	368	72	64
29.....	68	114	72	105	.....	3,410	469	169	618	390	64	64
30.....	76	96	68	119	.....	3,230	430	164	398	364	64	64
31.....	76	.....	64	109	.....	3,680	.....	148	.....	232	57	.....
1949-50												
1.....	57	80	100	80	44	a48	2,560	732	478	153	304	100
2.....	57	72	114	91	41	a49	2,030	684	469	142	226	96
3.....	57	80	105	80	38	949	1,710	609	581	137	196	91
4.....	57	76	91	70	38	a49	1,476	554	469	127	179	87
5.....	57	76	83	64	41	346	1,250	554	375	128	169	83
6.....	57	76	87	57	44	5,330	1,080	528	317	119	158	80
7.....	57	76	76	47	a46	9,920	939	528	284	114	142	83
8.....	64	76	*61	47	a48	2,980	824	528	257	119	128	80
9.....	61	76	68	47	a52	a1,300	732	1,240	290	109	114	80
10.....	64	80	72	47	a58	a1,050	803	1,500	250	100	983	83
11.....	72	*76	96	47	a56	929	1,310	1,160	232	105	445	100
12.....	72	87	68	50	a54	a880	950	897	226	132	290	137
13.....	68	87	96	*242	a50	a840	703	752	270	158	238	114
14.....	72	87	96	a250	*a50	a800	590	645	346	142	208	109
15.....	72	87	83	a190	a48	a760	546	563	339	123	190	105
16.....	68	87	76	148	a47	a720	494	520	270	185	196	100
17.....	64	87	72	105	a47	a680	469	520	257	732	179	100
18.....	64	87	72	68	a47	627	445	512	664	664	153	96
19.....	68	87	76	61	a46	a600	478	478	793	422	128	100
20.....	72	80	83	53	a45	a590	486	453	a640	453	119	100
21.....	91	80	76	50	a46	a580	445	469	a500	636	114	179
22.....	123	64	68	47	a46	a620	406	445	383	554	119	196
23.....	109	76	68	47	a46	a1,250	375	414	406	437	119	174
24.....	109	80	68	47	a46	*1,640	1,270	398	390	368	114	148
25.....	105	72	57	41	a43	1,430	1,180	478	324	310	105	132
26.....	91	72	53	39	a42	3,060	1,020	503	244	297	100	128
27.....	87	91	53	38	a45	6,170	783	478	214	270	96	123
28.....	91	96	53	40	a48	3,960	627	430	202	244	91	123
29.....	83	105	57	44	.....	2,980	537	375	179	226	96	137
30.....	80	96	57	47	.....	2,720	563	537	169	214	105	158
31.....	80	.....	64	47	.....	2,640	.....	674	.....	1,380	109	.....

* Winter discharge measurement made on this day.

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

g Computed from graph based on gage readings.

Note—Stage-discharge relation affected by ice Dec. 12-28, 1948, Mar. 1-3, 1949, Jan. 4, 26-28, 1950.

Shell Rock River near Marble Rock, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1942	10,399	581	202	335	0.252	0.29
November	6,177	250	119	206	.155	.17
December	4,634	185	110	149	.112	.13
Calendar year 1942						
January 1943	4,398	175	105	142	.107	.12
February	10,522	2,000	100	376	.283	.29
March	53,820	7,840	332	1,736	1.31	1.50
April	26,905	2,510	390	897	.674	.75
May	12,507	855	244	403	.303	.35
June	25,776	1,680	284	859	.646	.72
July	32,261	1,430	554	1,041	.783	.90
August	37,271	2,500	361	1,202	.904	1.04
September	24,003	1,350	297	800	.602	.67
Water year 1942-43	248,673	7,840	100	681	.512	6.93
October 1943	6,868	317	164	222	.167	.19
November	9,649	445	196	322	.242	.27
December	5,628	304	100	182	.137	.16
Calendar year 1943	249,608	7,840	100	684	.514	6.96
January 1944	4,270	390	76	138	.104	.12
February	8,560	1,140	105	295	.222	.24
March	22,388	1,900	153	722	.543	.63
April	33,704	2,300	627	1,123	.844	.94
May	84,060	5,070	1,500	2,712	2.04	2.35
June	80,649	11,900	732	2,688	2.02	2.26
July	19,659	950	284	634	.477	.55
August	9,883	664	196	319	.240	.28
September	8,313	520	185	277	.208	.23
Water year 1943-44	293,631	11,900	76	802	.603	8.22
October 1944	5,531	263	137	178	.134	.15
November	4,812	208	105	160	.120	.13
December	3,751	190	72	121	.091	.10
Calendar year 1944	285,580	11,900	72	780	.586	7.98
January 1945	2,535	100	61	81.8	.062	.07
February	4,806	430	80	172	.129	.13
March	92,636	9,920	185	2,988	2.25	2.59
April	71,748	5,030	783	2,392	1.80	2.01
May	60,826	5,070	645	1,962	1.48	1.70
June	79,346	6,890	972	2,645	1.99	2.22
July	19,070	1,450	290	615	.462	.53
August	40,239	4,170	339	1,298	.976	1.13
September	7,187	332	185	240	.180	.20
Water year 1944-45	392,487	9,920	61	1,075	.808	10.96
October 1945	6,531	317	164	211	.159	.18
November	5,156	226	80	172	.129	.14
December	4,101	214	75	132	.099	.11
Calendar year 1945	394,181	9,920	61	1,080	.812	11.01
January 1946	12,116	2,700	100	391	.294	.34
February	14,243	1,390	123	509	.383	.40
March	71,580	4,530	1,100	2,309	1.74	2.00
April	22,154	1,780	244	738	.555	.62
May	23,517	3,080	238	759	.571	.66
June	24,394	1,630	375	813	.611	.68
July	8,355	572	153	270	.203	.23
August	6,377	637	123	206	.155	.18
September	18,028	1,580	119	601	.452	.50
Water year 1945-46	216,552	4,530	75	593	.446	6.04

Shell Rock River near Marble Rock, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Midimum	Mean	Per square mile	
October 1946.....	19,784	1,920	270	638	0.480	0.55
November.....	20,832	1,230	368	694	.522	.58
December.....	9,808	478	150	316	.238	.27
Calendar year 1946.....	251,188	4,530	100	688	.517	7.01
January 1947.....	8,788	664	160	283	.213	.25
February.....	9,256	900	130	331	.249	.26
March.....	34,292	2,560	210	1,106	.832	.96
April.....	62,840	5,690	1,050	2,095	1.58	1.76
May.....	24,313	1,070	554	784	.589	.68
June.....	80,995	7,010	528	2,700	2.03	2.26
July.....	56,739	7,380	383	1,830	1.38	1.59
August.....	7,963	694	158	257	.193	.22
September.....	6,037	324	142	201	.151	.17
Water year 1946-47.....	341,647	7,380	130	936	.704	9.55
October 1947.....	5,277	238	119	170	.128	.15
November.....	6,249	332	148	208	.156	.17
December.....	5,704	226	125	184	.138	.16
Calendar year 1947.....	308,453	7,380	119	845	.635	8.63
January 1948.....	2,960	132	60	95.5	.072	.08
February.....	21,288	6,000	60	734	.552	.60
March.....	51,070	5,000	600	1,647	1.24	1.43
April.....	17,328	900	350	578	.435	.48
May.....	13,848	929	190	447	.336	.39
June.....	59,650	703	132	188	.141	.16
July.....	4,676	430	80	151	.114	.13
August.....	2,779	157	68	89.6	.067	.08
September.....	2,419	100	47	80.6	.061	.07
Water year 1947-48.....	130,248	6,000	47	380	.286	3.90
October 1948.....	2,591	119	57	83.6	.063	.07
November.....	3,912	226	76	130	.098	.11
December.....	3,096	169	64	99.9	.075	.09
Calendar year 1948.....	131,617	6,000	47	360	.271	3.69
January 1949.....	6,899	581	72	223	.168	.19
February.....	3,964	445	76	142	.107	.11
March.....	78,630	6,610	230	2,536	1.91	2.20
April.....	39,417	3,590	430	1,314	.988	1.10
May.....	7,970	406	148	257	.193	.22
June.....	15,386	4,730	109	513	.386	.43
July.....	7,056	783	109	228	.171	.20
August.....	3,189	196	57	103	.077	.09
September.....	2,450	137	53	81.7	.061	.07
Water year 1948-49.....	174,560	6,610	53	478	.359	4.88
October 1949.....	2,329	123	57	75.1	.056	.07
November.....	2,452	105	64	81.7	.061	.07
December.....	2,358	114	53	76.1	.057	.07
Calendar year 1949.....	172,100	6,610	53	472	.355	4.82
January 1950.....	2,331	250	38	75.2	.057	.07
February.....	1,302	58	38	46.5	.035	.04
March.....	55,597	9,920	48	1,793	1.35	1.55
April.....	27,075	2,560	375	902	.678	.76
May.....	19,158	1,500	375	618	.465	.54
June.....	10,818	793	169	361	.271	.30
July.....	9,296	1,380	100	300	.226	.26
August.....	5,913	983	91	191	.144	.17
September.....	3,422	196	80	114	.080	.10
Water year 1949-50.....	142,051	9,920	38	389	.292	4.00

Lime Creek at Mason City, Iowa

LOCATION.—Lat 43°10', long. 93°11', in sec. 3, T. 97 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 1950.

GAGE.—Water-stage recorder and concrete control. Datum of gage is 1,069.59 feet above mean sea level, datum of 1929. Dec. 6, 1932, to Oct. 15, 1934, wire-weight gage at same site at datum 6.47 feet lower. Oct. 16, 1934, to Mar. 21, 1935, staff gage at same site at datum 6.47 feet lower.

AVERAGE DISCHARGE.—17 years, 209 second-feet.

EXTREMES.—Maximum and minimum discharges for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Mar. 16	3,460	7.53	Nov. 26	21
1943-4 ...	Jun. 12	7,020	12.17	Jan. 13	25
1944-45...	June 10	4,160	(1)	Jan. 6	15
1945-46...	Mar. 14	2,970	6.91	Nov. 22	13
1946-47...	June 30	4,360	8.76	Feb. 9, 10	41
1947-48...	Feb. 29	1,690	(2)	Sept. 19, 30	9
1948-49...	Mar. 4	3,310	7.40	Oct. 1-3, 5	9
1949-50...	Mar. 7	3,310	(3)	Feb. 4	6.5

(1) Maximum gage-height 10.22 feet Mar. 11 (ice jam).

(2) Maximum gage-height 11.22 feet Feb. 28 (ice jam).

(3) Maximum gage-height 8.48 feet Mar. 6 (ice jam).

1932-50: Maximum discharge, about 9,400 second-feet Mar. 30, 1933 (gage height, 15.70 feet, present datum); minimum, practically no flow Aug. 30 to Sept. 1, 1933.

REMARKS.—Records good except those for days of ice effect, which are fair. Some water diverted above gage for industrial use with resultant sewage and some additional water returned to stream above gage.

COOPERATION.—Water-stage recorder inspected by employee of Jacob E. Decker & Sons.

Lime Creek at Mason City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1	100	a70	49	a46	27 3	495	1,000	100	151	296	248	880
2	93	a75	40	47	31	351	915	106	141	242	224	812
3	100	a70	33	47	32	264	824	91	165	279	274	772
4	162	66	40	41	33	224	713	h82	148	559	279	699
5	162	71	42	41	33	173	612	h69	114	219	248	778
6	151	68	38	44	36	148	527	h95	111	465	201	720
7	138	64	36	45	33	119	465	h82	108	372	165	692
8	128	64	41	45	33	108	406	h82	106	320	138	h664
9	114	69	42	47	38	93	358	a80	108	296	627	h650
10	100	68	42	45	38	86	314	h77	100	279	699	h620
11	93	64	48	44	31	82	285	h73	100	274	620	h605
12	88	64	41	42	32	80	320	h73	111	274	442	a550
13	82	73	37	41	33	80	290	h77	219	285	1,100	h495
14	77	60	30	45	32	82	248	h69	327	314	1,140	h465
15	73	62	39	41	31	g1,250	228	h95	358	308	1,120	h420
16	71	66	42	42	31	g3,080	228	a400	503	290	1,250	h351
17	69	62	41	38	33	g1,020	196	h420	657	264	1,080	h290
18	68	57	38	34	33	h559	181	h420	671	248	954	h279
19	66	*59	44	34	38	h420	165	h351	598	519	834	a250
20	64	54	34	33	48	h351	158	h269	519	511	726	h228
21	60	54	40	33	71	a310	151	h237	458	435	628	h210
22	62	48	47	34	258	h264	144	h192	399	365	527	h201
23	59	55	44	34	818	*290	154	a180	327	339	442	188
24	60	52	45	30	598	h920	148	h173	264	333	386	181
25	64	54	42	25 5	435	h1,560	144	177	206	290	881	173
26	41	21	47	26 4	351	h1,360	132	188	169	248	1,020	162
27	55	37	48	26 4	333	h1,240	132	214	148	208	944	154
28	59	42	47	*26 4	527	a1,140	122	210	358	260	972	141
29	60	37	51	29 1	.....	993	117	192	465	458	972	132
30	68	45	52	28 2	.....	1,060	117	173	399	442	930	134
31	64	.....	52	30	.....	1,050	.....	158	.....	302	890	.....
1943-44												
1	144	119	151	b36	98	274	302	728	462	248	82	128
2	132	122	151	39	108	264	674	887	406	274	80	122
3	122	117	132	40	119	290	581	1,660	345	279	75	114
4	119	114	132	41	103	279	4 3	1,400	320	258	206	103
5	114	*08	138	b39	108	192	314	1,080	420	228	308	91
6	108	117	148	b40	68	144	274	1,020	420	206	237	91
7	103	154	151	b37	86	41	258	920	345	232	181	82
8	100	214	158	b31	98	b55	248	925	320	248	144	77
9	98	201	154	b29	73	95	242	900	56	228	119	73
10	91	201	97	29	60	106	248	773	626	258	103	71
11	88	210	86	29	49	248	248	692	562	379	91	68
12	84	206	84	26	b57	296	237	650	5,630	386	82	68
13	98	216	b44	*25	54	242	219	594	5,580	339	73	66
14	98	206	b60	26	55	237	253	555	3,380	290	69	64
15	100	206	*b91	26	52	434	420	522	2,280	308	91	62
16	100	117	91	26	52	420	455	529	1,890	327	111	60
17	95	153	b69	29	51	333	420	516	2,520	202	159	54
18	93	206	66	29	45	248	372	476	1,970	264	188	55
19	88	192	68	32	41	201	339	826	1,590	228	144	130
20	86	196	66	33	39	210	420	1,100	1,320	206	114	237
21	100	196	b62	36	41	248	632	1,940	1,100	184	95	162
22	93	192	b55	37	52	269	644	2,180	954	165	84	125
23	88	181	b45	37	68	294	722	1,870	812	148	88	117
24	88	158	b40	38	80	762	982	1,660	662	132	75	125
25	86	162	39	51	164	581	925	1,410	562	119	68	117
26	82	154	40	73	536	420	778	1,160	483	125	60	103
27	80	154	44	114	441	302	692	1,600	413	117	100	91
28	80	138	b39	214	345	279	626	855	351	106	132	88
29	77	117	42	138	290	237	562	751	302	100	132	84
30	82	119	42	138	.....	168	581	650	274	88	132	77
31	111	.....	b38	132	.....	156	.....	548	.....	86	135	.....

* Winter discharge measurement made on this day.

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

b Stage-discharge relation affected by ice.

g Computed from graph based on gage readings.

h Computed from tape gage readings.

Lime Creek at Mason City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
044-45												
1.....	73	46	g55	22	h25	80	434	574	2,380	594	248	103
2.....	73	60	50	21	h26	124	365	614	1,890	496	196	91
3.....	77	46	45	22	h24	169	333	620	1,380	413	162	86
4.....	h77	46	50	20	24	184	279	562	1,160	351	141	88
5.....	h82	34	56	20	h25	192	223	503	1,050	399	682	80
6.....	h82	42	61	15	h24	151	296	455	968	345	662	71
7.....	77	43	59	19	h25	128	686	399	875	296	455	70
8.....	70	48	58	21	h24	111	1,090	339	795	258	345	66
9.....	68	50	h45	21	h26	106	1,100	308	857	258	279	66
10.....	68	48	47	22	h28	316	915	308	3,410	228	242	77
11.....	61	46	h49	h21	30	1,600	885	290	1,790	201	308	70
12.....	63	46	h49	h23	h31	2,700	1,220	290	1,180	184	448	69
13.....	62	46	h48	h22	*34	3,000	1,690	285	968	169	462	80
14.....	58	56	44	22	40	2,820	1,309	365	855	158	1,960	56
15.....	58	68	46	h23	86	3,000	1,076	462	828	151	1,410	63
16.....	58	73	*40	h26	154	*2,770	1,260	413	828	148	1,110	61
17.....	56	70	36	h26	132	2,030	1,460	351	756	236	910	61
18.....	56	68	33	h26	158	1,630	1,130	296	668	302	722	64
19.....	55	68	33	h26	148	1,340	945	258	734	232	581	73
20.....	58	64	h38	h25	132	1,120	834	237	920	192	469	82
21.....	55	66	h36	25	98	964	734	399	632	169	365	66
22.....	52	68	h21	h25	93	834	734	1,520	503	151	308	64
23.....	55	68	h31	h32	61	728	2,050	1,200	406	138	269	64
24.....	52	68	27	h29	56	656	1,770	990	379	132	226	64
25.....	53	68	24	h31	57	945	1,360	2,060	469	128	196	59
26.....	50	71	23	h31	59	1,090	1,140	1,600	339	114	169	61
27.....	50	59	23	h30	68	890	990	1,440	1,180	130	158	73
28.....	50	55	23	28	73	734	870	1,490	1,220	302	141	84
29.....	47	62	21	h26	.....	632	756	1,220	982	162	128	93
30.....	48	g38	24	h32	.....	555	650	1,060	722	246	117	82
31.....	52	.....	23	h28	.....	496	.....	1,160	.....	327	111	.....
1945-46												
1.....	88	52	55	25	33	448	555	h77	386	219	66	48
2.....	85	52	71	25	32	542	529	h66	345	184	59	43
3.....	77	49	71	27	29	656	529	h106	290	154	61	43
4.....	70	44	58	28	30	674	510	h128	248	135	56	43
5.....	64	50	53	172	418	600	448	120	214	119	53	59
6.....	63	49	61	895	546	1,380	392	h111	184	111	52	197
7.....	58	50	59	522	135	1,010	365	h100	162	100	50	192
8.....	55	58	61	372	148	710	448	h95	144	95	64	242
9.....	53	52	27	274	158	600	420	h82	128	93	154	650
10.....	56	41	15	201	148	542	372	100	135	88	106	516
11.....	64	55	18	188	132	490	339	111	128	77	71	302
12.....	49	59	23	151	117	816	314	122	138	71	61	219
13.....	60	63	32	132	98	1,270	279	132	162	68	56	173
14.....	50	56	24	122	77	1,390	258	117	144	64	52	154
15.....	52	55	32	98	61	1,050	228	132	415	84	52	135
16.....	52	59	30	77	56	1,030	210	125	773	68	56	122
17.....	52	56	21	68	61	1,080	196	117	668	50	168	100
18.....	53	55	23	63	93	1,000	177	135	626	61	274	91
19.....	50	53	19	58	210	890	165	184	607	64	162	88
20.....	46	52	18	55	302	790	148	219	855	59	108	98
21.....	49	42	19	49	290	722	135	210	855	52	86	106
22.....	49	13	21	43	386	656	128	184	734	50	71	131
23.....	49	33	21	42	320	784	119	184	594	48	66	181
24.....	49	39	21	*41	274	839	111	1,630	469	46	56	162
25.....	50	38	23	40	264	756	106	1,600	386	49	53	138
26.....	45	40	22	36	308	982	98	1,250	320	47	50	128
27.....	48	41	24	36	264	875	93	1,000	274	59	50	110
28.....	48	43	25	35	258	734	91	817	228	73	55	114
29.....	48	46	25	36	.....	656	88	668	206	100	56	114
30.....	48	48	25	39	.....	740	84	555	228	125	53	114
31.....	45	.....	25	33	.....	607	.....	460	.....	77	49	.....

* Winter discharge measurement made on this day.

g Computed from graph based on gage readings.

h Computed from tape gage readings.

Note—Stage-discharge relation affected by ice Dec. 12-29, 1944, Jan. 2-10, Feb. 25-27, Mar. 11-14, Dec. 9-31, 1945, Jan. 1-4, 1946.

Lime Creek at Mason City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	100	248	114	61	53	70	620	379	177	3,110	117	93
2.....	100	258	73	59	61	66	568	365	181	2,080	114	77
3.....	84	232	135	55	70	66	510	333	169	1,590	108	64
4.....	84	219	144	50	61	68	510	327	165	1,280	103	59
5.....	117	201	141	46	56	84	656	274	173	2,310	91	63
6.....	135	188	138	49	55	122	890	248	158	2,630	106	56
7.....	138	206	144	*50	53	206	722	237	473	2,090	83	56
8.....	135	253	151	58	46	296	668	219	692	1,600	97	49
9.....	135	285	169	59	41	285	722	206	607	1,320	77	50
10.....	193	345	*173	59	41	248	1,910	184	588	1,150	68	48
11.....	320	476	173	64	42	258	1,990	173	568	1,010	73	55
12.....	269	490	169	64	48	490	1,540	165	644	905	66	84
13.....	214	434	84	75	58	778	1,320	219	1,440	773	68	108
14.....	181	379	98	237	93	600	1,180	327	1,170	626	55	88
15.....	165	351	132	188	135	516	1,100	379	817	510	55	86
16.....	279	351	117	158	228	392	1,020	372	686	427	64	68
17.....	327	333	66	132	279	314	905	327	2,780	427	56	66
18.....	242	296	88	108	253	339	795	345	2,170	510	61	58
19.....	196	274	93	95	248	320	710	308	1,430	399	52	58
20.....	177	264	82	98	201	314	632	264	1,180	339	61	52
21.....	158	264	82	82	162	296	574	237	1,120	279	49	49
22.....	148	154	82	80	138	351	542	285	1,190	253	50	49
23.....	138	174	84	84	114	905	594	290	1,670	228	49	48
24.....	600	237	82	106	103	1,220	650	248	1,790	206	46	45
25.....	935	169	80	*138	95	935	581	214	1,760	188	46	45
26.....	638	173	86	151	86	668	542	196	1,540	181	49	46
27.....	455	181	84	162	80	632	476	177	1,300	165	49	46
28.....	365	165	95	*138	76	710	420	181	1,300	158	50	49
29.....	333	151	70	106	.....	756	406	232	2,980	141	370	49
30.....	308	162	70	66	.....	680	379	232	3,350	135	165	48
31.....	264	.....	70	52	.....	638	.....	201	.....	125	111	.....
1947-48												
1.....	48	74	72	41	13	1,440	279	168	69	89	17	23
2.....	48	68	74	43	14	1,030	242	168	64	78	14	20
3.....	50	68	76	40	14	800	205	156	60	66	17	18
4.....	50	66	71	40	*14	700	188	149	57	58	28	19
5.....	48	66	78	41	14	500	176	164	63	52	26	16
6.....	48	63	74	41	14	400	168	184	61	50	19	14
7.....	47	64	78	43	14	325	219	168	64	45	16	15
8.....	44	58	63	44	14	319	290	140	64	43	20	19
9.....	43	33	63	45	15	279	268	164	61	41	18	16
10.....	40	64	72	44	15	225	242	319	61	35	16	15
11.....	38	41	80	44	15	220	268	319	55	36	21	18
12.....	36	63	87	43	15	210	268	313	69	35	20	15
13.....	38	41	87	41	15	196	237	290	66	39	35	14
14.....	43	68	89	33	15	196	210	258	64	47	41	12
15.....	39	55	89	31	15	350	184	237	60	52	36	13
16.....	43	64	80	28	20	600	172	205	63	47	35	14
17.....	38	69	*80	24	80	700	149	172	60	43	36	13
18.....	38	68	78	20	600	800	139	149	60	38	31	11
19.....	36	*69	74	20	800	900	132	136	58	35	30	9
20.....	33	71	74	20	223	1,000	122	119	55	44	26	16
21.....	36	95	71	20	219	900	114	108	58	44	25	18
22.....	36	142	69	19	215	839	108	100	61	32	24	19
23.....	38	98	66	17	210	728	146	89	64	30	18	27
24.....	41	103	63	16	210	600	219	84	58	30	22	22
25.....	52	84	60	15	156	*503	219	84	52	26	16	15
26.....	58	91	57	15	129	529	228	82	61	24	14	16
27.....	66	106	55	14	800	574	237	78	69	27	15	16
28.....	63	68	54	14	1,506	456	219	71	122	25	20	16
29.....	58	74	51	13	1,600	355	188	69	111	21	25	11
30.....	54	71	51	14	.....	307	168	71	100	24	21	9
31.....	61	.....	47	13	.....	307	.....	72	.....	21	22	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 20-24, 29-31, 1946, Jan. 1-8, 19-22, Jan. 29 to Feb. 11, Feb. 23 to Mar. 3, 1947, Jan. 12-16, 20-23, Feb. 17-19, 22, 27, 28, Mar. 3-6, 10-12, 15-21, 1948.

Lime Creek at Mason City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	9	22	40	19	26	75	1,300	117	48	75	56	14
2.....	9	24	46	21	25	73	1,260	114	97	64	50	15
3.....	9	23	50	25	24	111	1,080	103	93	55	46	15
4.....	12	23	50	45	24	1,400	950	100	71	48	36	20
5.....	9	35	66	107	22	2,250	822	98	58	43	28	22
6.....	13	38	31	108	25	1,620	728	95	52	42	28	21
7.....	29	31	42	117	24	1,500	644	91	43	41	31	28
8.....	32	31	49	103	26	*1,670	574	86	42	38	26	22
9.....	30	38	49	91	23	1,160	503	86	41	38	26	23
10.....	24	36	43	84	23	995	434	82	40	32	20	19
11.....	24	*31	40	*73	22	875	392	75	36	30	46	36
12.....	25	30	40	68	23	692	339	73	35	31	28	40
13.....	21	32	39	61	22	626	290	70	39	31	28	38
14.....	20	33	39	56	24	462	258	66	39	42	32	33
15.....	19	28	40	76	23	358	224	64	38	41	26	29
16.....	20	32	39	181	23	320	237	63	34	28	31	26
17.....	21	33	36	162	23	290	339	68	31	30	26	24
18.....	14	35	34	125	24	248	351	71	30	214	22	24
19.....	14	73	33	86	24	248	308	71	31	148	21	19
20.....	17	86	33	68	23	274	308	71	40	93	21	22
21.....	19	71	35	61	24	710	279	73	70	70	24	17
22.....	19	73	33	50	24	1,490	258	80	59	56	17	16
23.....	20	61	33	46	38	1,360	224	77	93	48	17	15
24.....	17	68	31	45	89	1,210	192	73	374	40	21	16
25.....	17	64	27	38	66	1,460	177	68	1,250	34	17	14
26.....	18	68	23	36	80	1,210	169	63	365	53	16	13
27.....	19	56	24	34	86	2,440	151	59	224	103	15	14
28.....	17	43	27	33	80	1,560	144	53	224	162	17	16
29.....	19	38	24	30	.....	1,300	135	49	135	122	15	16
30.....	24	38	20	27	.....	1,260	125	48	93	86	14	16
31.....	20	.....	22	26	.....	1,400	.....	46	.....	64	15	.....
1949-50												
1.....	14	24	30	21	7.5	10	825	325	150	39	32	28
2.....	16	24	22	22	7.3	10	678	277	187	38	43	26
3.....	15	19	28	22	7.5	10	585	240	191	39	41	22
4.....	13	22	26	19	6.5	14	478	215	158	37	39	21
5.....	14	22	19	18	6.7	464	381	215	130	35	37	21
6.....	17	21	28	17	7.7	1,600	313	215	108	34	32	22
7.....	16	21	22	16	7.9	2,100	277	203	89	32	30	21
8.....	15	24	*17	14	8.7	778	240	207	79	30	30	20
9.....	21	22	18	14	8.4	367	235	656	73	28	30	20
10.....	18	24	19	15	8.4	367	389	651	68	38	34	19
11.....	20	24	30	14	8.9	230	474	472	57	28	46	28
12.....	21	21	34	13	8.1	230	295	353	59	32	45	30
13.....	22	26	30	18	9.6	225	215	289	62	38	37	30
14.....	17	28	24	18	9.9	203	175	255	60	34	37	30
15.....	19	30	21	13	11	183	164	225	72	41	32	26
16.....	18	26	21	12	9.6	164	158	203	72	127	80	24
17.....	16	21	24	11	9.9	130	147	211	66	127	97	22
18.....	19	21	22	11	9.9	114	168	203	140	97	75	22
19.....	24	26	22	9.6	8.9	108	172	187	175	161	64	22
20.....	26	20	28	9.2	9.6	103	164	183	158	235	52	22
21.....	39	19	24	8.7	10	94	147	179	137	233	49	46
22.....	37	18	22	7.9	9.9	155	137	175	121	168	45	48
23.....	32	21	19	8.9	9.6	444	344	164	103	137	41	42
24.....	26	21	18	9.6	9.6	524	722	168	86	114	34	32
25.....	30	22	17	10	9.6	546	574	187	75	118	32	37
26.....	26	22	14	8.7	8.4	1,580	416	195	66	94	30	28
27.....	26	24	12	8.7	9.2	2,120	289	191	57	84	30	26
28.....	24	21	13	8.1	10	1,500	235	172	54	68	37	24
29.....	22	28	15	7.1	.....	1,090	207	164	45	59	43	28
30.....	24	22	17	7.7	.....	1,040	295	265	42	51	35	24
31.....	19	.....	22	7.7	.....	1,040	.....	195	.....	43	30	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 8, 9, 1949, Mar. 6, 7, 1950.

Lime Creek at Mason City, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1942.....	2,651	162	41	85.5	0.160	0.18
November.....	1,751	75	21	58.4	.109	.12
December.....	1,312	52	30	42.3	.079	.09
Calendar year 1942.....	80,577	1,180	21	221	.413	5.61
January 1943.....	1,165	47	25.5	37.6	.070	.08
February.....	4,067.3	818	27.3	145	.271	.28
March.....	19,252	3,080	80	621	1.16	1.34
April.....	9,794	1,000	117	326	.609	.68
May.....	5,205	420	69	168	.314	.36
June.....	8,508	671	100	254	.531	.59
July.....	10,292	559	206	332	.621	.72
August.....	20,861	1,250	138	673	1.26	1.45
September.....	12,896	880	132	450	.804	.90
Water year 1942-43.....	97,754.3	3,080	21	268	.501	6.79
October 1943.....	3,028	144	77	97.7	.183	.21
November.....	4,946	216	108	165	.308	.34
December.....	2,623	158	38	84.6	.158	.18
Calendar year 1943.....	102,637.3	3,080	25.5	281	.525	7.13
January 1944.....	1,650	214	25	53.2	.099	.11
February.....	3,433	536	39	118	.221	.24
March.....	8,325	762	41	269	.503	.58
April.....	14,081	982	219	469	.877	.98
May.....	30,787	2,180	476	993	1.86	2.14
June.....	36,871	5,630	274	1,229	2.30	2.56
July.....	6,858	386	56	221	.413	.48
August.....	3,758	308	60	121	.226	.26
September.....	2,905	237	54	96.8	.181	.20
Water year 1943-44.....	119,265	5,630	25	326	.609	8.28
October 1944.....	1,896	82	47	61.2	.114	.13
November.....	1,691	75	34	56.4	.105	.12
December.....	1,218	61	21	39.3	.073	.08
Calendar Year 1944.....	113,473	5,630	21	310	.579	7.88
January, 1945.....	760	32	15	24.5	.046	.05
February.....	1,761	158	24	62.9	.118	.12
March.....	32,095	3,000	80	1,035	1.93	2.23
April.....	28,569	2,050	223	952	1.78	1.99
May.....	22,068	2,060	237	712	1.33	1.53
June.....	31,124	3,410	339	1,037	1.94	2.16
July.....	7,610	594	114	245	.458	.53
August.....	13,980	1,960	111	451	.843	.97
September.....	2,187	103	56	72.9	.136	.15
Water year 1944-45.....	144,959	3,410	15	397	.742	10.06
October 1945.....	1,715	88	45	55.3	.103	.12
November.....	1,443	63	13	48.1	.090	.10
December.....	1,022	71	15	33.0	.062	.07
Calendar year 1945.....	144,334	3,410	13	395	.738	10.02
January 1946.....	3,983	895	25	128	.239	.28
February.....	5,248	546	29	187	.350	.36
March.....	25,319	1,390	448	817	1.53	1.76
April.....	7,935	555	84	264	.493	.55
May.....	10,997	1,660	66	355	.664	.76
June.....	11,046	855	128	368	.688	.77
July.....	2,600	219	46	86.8	.162	.19
August.....	2,426	274	49	78.3	.146	.17
September.....	4,822	650	43	161	.301	.34
Water year 1945-46.....	78,646	1,660	13	215	.402	5.47

Lime Creek at Mason City, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946.....	7,933	935	84	256	0.479	0.55
November.....	7,913	490	151	264	.493	.55
December.....	3,369	173	66	109	.204	.23
Calendar year 1946.....	53,681	1,660	25	257	.480	6.51
January 1947.....	2,930	237	46	94.5	.177	.20
February.....	2,976	279	41	106	.198	.21
March.....	13,623	1,220	66	439	.821	.95
April.....	24,132	1,990	379	804	1.50	1.68
May.....	8,144	379	165	263	.492	.57
June.....	34,298	3,350	158	1,142	2.13	2.38
July.....	27,145	3,110	125	876	1.64	1.89
August.....	2,609	370	46	84.2	.157	.18
September.....	1,812	108	45	60.4	.113	.13
Water year 1946-47.....	136,854	3,350	41	375	.701	9.52
October 1947.....	1,411	66	33	45.5	.085	.10
November.....	2,165	142	33	72.2	.135	.15
December.....	2,183	89	47	70.4	.132	.15
Calendar year 1947.....	123,398	3,350	33	338	.632	8.59
January 1948.....	896	45	13	28.9	.054	.06
February.....	6,988	1,600	13	241	.450	.49
March.....	17,288	1,440	196	558	1.04	1.20
April.....	6,004	290	108	200	.374	.42
May.....	4,892	319	69	158	.295	.34
June.....	1,900	122	52	66.3	.124	.14
July.....	1,277	89	21	41.2	.077	.09
August.....	724	41	14	23.4	.044	.05
September.....	479	27	9	16.0	.030	.03
Water year 1947-48.....	46,297	1,600	9	126	.236	3.22
October 1948.....	580	32	9	18.7	.035	.04
November.....	1,294	86	22	43.1	.081	.09
December.....	1,138	66	20	36.7	.069	.08
Calendar year 1948.....	43,550	1,600	9.	119	.222	3.03
January 1949.....	2,102	181	19	67.8	.127	.15
February.....	960	89	22	34.3	.064	.07
March.....	30,647	2,440	73	989	1.85	2.13
April.....	13,195	1,300	125	440	.822	.92
May.....	2,353	117	46	75.9	.142	.16
June.....	3,825	1,250	30	128	.239	.27
July.....	2,002	214	28	64.6	.121	.14
August.....	825	56	14	26.6	.050	.06
September.....	643	40	13	21.4	.040	.04
Water year 1948-49.....	59,564	2,440	9	163	.305	4.15
October 1949.....	666	39	13	21.5	.040	.05
November.....	684	30	18	22.8	.043	.05
December.....	678	34	12	21.9	.041	.05
Calendar year 1949.....	58,560	2,440	12	160	.299	4.09
January 1950.....	399.9	22	7.1	12.9	.024	.03
February.....	248.3	11	6.5	8.87	.017	.02
March.....	17,543	2,120	10	566	1.06	1.22
April.....	9,899	823	137	330	.617	.69
May.....	7,840	656	164	253	.473	.54
June.....	2,940	191	42	98.0	.183	.20
July.....	2,399	235	28	77.4	.145	.17
August.....	1,319	97	30	42.5	.079	.09
September.....	811	48	19	27.0	.050	.06
Water year 1949-50.....	45,427.2	2,120	* 6.5	124	.232	3.17

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 downstream side of bridge on county highway K. in Finchford, and 2.5 miles upstream from mouth.

DRAINAGE AREA.—860 square miles.

RECORDS AVAILABLE.—October 1945 to September 1950.

GAGE.—Wire-weight gage read once daily, more often at higher stages.

AVERAGE DISCHARGE.—5 years, 363 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1946-50 contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1945-46...	Mar. 8	4,660	11.51	Dec. 9	50
1946-47...	June 13	13,900	13.7	Jan. 6, 7	65
1947-48...	Mar. 19	9,580	12.87	Sept. 1)	24
1948-49...	Mar 7	6,330	12.25	Oct. 5	2)
1949-50...	Mar. 8	11,000	(¹)14.80	Feb. 7, 8	16

(1) Affected by ice.

1945-50: Maximum discharge observed, 13,900 second-feet June 13, 1947, from rating curve extended above 10,000 second-feet (gage-height, 13.7 feet, from graph based on gage readings) maximum gage-height, 14.80 feet Mar. 8, 1950 (ice jam); minimum discharge observed, 16 second-feet Feb. 7, 8, 1950.

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, which are poor.

COOPERATION.—Services of observer and several discharge measurements furnished by Corps of Engineers.

West Fork Shell Rock River at Finchford, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1946 and 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1945-46												
1	200	131	125	80	130	540	553	157	212	606	423	87
2	199	148	140	85	120	600	508	178	204	482	296	81
3	193	138	155	90	115	680	455	181	200	359	254	83
4	185	134	150	95	110	850	428	197	194	296	214	80
5	176	131	145	260	220	1,180	422	199	187	259	208	79
6	170	129	135	2,200	1,100	*2,370	377	203	179	233	200	111
7	163	131	135	1,630	720	2,910	408	199	170	214	187	160
8	159	*136	110	740	350	4,290	383	187	158	198	173	252
9	154	148	50	490	340	3,000	334	181	149	192	162	341
10	148	154	80	450	340	1,850	342	180	146	185	151	631
11	148	147	115	420	350	1,080	329	180	139	166	146	685
12	145	148	105	390	280	1,050	322	181	179	158	142	586
13	141	152	98	360	230	2,350	324	183	198	147	137	423
14	141	152	90	340	180	3,570	316	185	214	140	132	367
15	139	156	85	320	120	3,550	302	187	228	140	125	351
16	138	148	75	290	110	2,690	282	180	243	210	119	318
17	138	148	68	260	140	2,070	261	197	306	132	120	286
18	138	145	66	250	180	1,800	250	201	403	128	114	257
19	138	141	65	240	230	1,610	243	216	364	155	112	231
20	138	138	60	230	300	1,360	228	226	386	173	108	212
21	138	139	60	230	350	1,150	224	241	482	194	103	208
22	134	60	55	220	410	1,010	211	261	530	170	94	202
23	129	100	55	*210	510	918	203	270	461	155	96	208
24	134	95	60	200	610	934	195	270	389	140	93	212
25	132	100	65	190	720	1,020	191	289	354	130	91	208
26	131	102	65	180	740	1,030	181	296	316	127	88	196
27	132	108	70	170	610	937	176	310	301	132	87	188
28	131	115	70	160	540	888	168	284	272	222	87	181
29	129	115	75	150	.....	802	163	237	263	389	86	171
30	127	120	75	140	.....	709	159	218	430	431	86	168
31	127	.....	80	130	.....	608	.....	214	.....	510	81	.....
1946-47												
1	160	262	193	95	130	165	483	508	754	3,070	266	173
2	156	252	90	90	115	155	461	466	1,290	4,320	254	145
3	151	262	140	85	100	155	443	440	1,210	4,080	247	134
4	144	259	220	80	95	150	437	407	1,110	2,850	236	126
5	142	252	235	70	90	145	480	379	1,090	2,440	219	127
6	137	230	217	*65	85	150	691	360	1,100	2,740	215	132
7	134	230	207	65	85	160	1,020	345	1,160	3,970	207	126
8	132	239	199	70	80	210	1,200	321	1,250	3,790	196	118
9	130	245	*195	75	80	270	1,040	314	1,030	2,970	189	111
10	128	254	193	80	75	400	1,120	307	950	1,850	180	106
11	160	268	191	90	75	540	1,430	293	810	1,400	175	104
12	208	302	189	100	80	765	1,810	283	1,160	1,130	167	117
13	291	324	170	110	100	813	2,230	305	9,880	1,000	164	109
14	284	329	120	120	115	1,020	2,090	350	6,950	957	162	111
15	272	312	190	130	130	1,110	1,550	500	7,820	859	157	113
16	246	302	140	135	155	1,340	1,180	451	6,320	789	152	106
17	233	289	90	140	180	1,520	1,060	492	4,430	702	146	104
18	222	280	130	155	210	1,240	954	503	3,480	681	144	101
19	210	268	145	160	220	960	828	508	2,690	611	139	96
20	202	262	160	150	240	780	722	482	3,070	554	134	93
21	194	254	145	135	270	672	656	446	3,180	505	130	92
22	185	266	135	125	245	604	508	412	2,810	469	126	90
23	177	161	130	130	230	684	596	407	2,540	438	121	87
24	198	203	125	135	215	791	730	422	3,320	407	118	87
25	210	250	125	140	*205	1,000	820	409	3,410	381	117	86
26	254	205	120	150	190	1,140	1,010	391	2,850	362	113	86
27	272	207	115	*155	180	1,000	960	372	2,150	350	110	86
28	291	215	110	165	170	720	736	404	1,650	333	107	85
29	287	205	105	165	.....	661	614	443	1,480	317	126	85
30	277	199	100	155	.....	591	596	674	1,730	300	144	85
31	273	.....	100	140	.....	527	.....	708	.....	281	178	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 22 to Dec. 31, 1945, Jan. 1 to Mar. 4, Dec. 2-5, 13-31, 1946, Jan. 1 to Mar. 11, 1947.

West Fork Shell Rock River at Finchford, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1948 and 1949

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1947-48												
1	84	145	135	70	36	*6,200	798	356	196	120	54	42
2	85	160	140	68	36	4,000	683	354	189	110	52	38
3	86	178	135	68	*36	2,360	601	358	181	104	52	35
4	89	165	130	70	36	1,140	532	348	176	100	51	34
5	87	157	125	74	36	862	492	350	196	94	50	32
6	84	150	120	78	36	719	460	435	192	88	49	30
7	81	148	110	80	40	593	455	460	189	84	49	30
8	81	142	100	80	40	511	541	512	176	82	50	29
9	78	139	110	80	40	417	634	482	162	80	49	29
10	78	132	120	80	40	396	550	508	156	77	49	29
11	80	124	125	80	43	409	553	868	147	74	50	29
12	78	120	130	78	43	399	467	1,240	150	73	51	28
13	77	114	130	70	44	384	471	893	139	72	49	28
14	78	116	130	65	44	293	432	711	144	82	47	27
15	77	136	125	60	44	240	399	718	139	79	45	26
16	76	134	*120	56	50	293	371	935	136	84	44	26
17	75	133	120	52	60	*1,710	350	1,110	131	85	44	25
18	75	133	120	49	80	4,640	331	820	132	81	42	25
19	74	130	120	46	100	8,470	308	637	132	76	40	24
20	74	*132	115	45	400	4,960	296	512	128	74	40	28
21	74	134	110	44	600	2,970	280	444	131	78	40	29
22	73	139	105	43	450	1,710	264	393	134	77	38	30
23	73	146	100	42	400	1,360	312	358	137	72	36	32
24	77	154	96	41	350	1,120	384	323	134	68	34	34
25	77	140	92	40	320	956	417	294	129	66	32	33
26	89	130	88	38	310	844	417	280	123	67	31	31
27	95	120	85	37	300	974	397	256	123	64	30	30
28	136	110	82	36	2,000	1,130	399	239	194	62	37	29
29	146	115	79	36	3,000	1,240	385	223	144	60	34	28
30	160	120	76	36	.....	1,120	354	210	131	57	45	28
31	144	.....	73	36	.....	949	.....	201	.....	56	38	.....
1948-49												
1	27	45	52	41	62	350	1,090	227	119	215	109	36
2	27	46	*53	42	59	450	1,010	224	119	384	102	36
3	27	48	56	43	56	450	865	217	113	332	94	40
4	27	48	58	44	54	700	760	208	115	220	90	51
5	26	52	60	45	52	1,100	672	198	108	187	86	68
6	28	57	70	55	51	2,500	565	189	102	166	82	70
7	48	60	75	75	50	*5,580	498	179	96	150	78	63
8	44	71	65	150	48	4,020	450	174	92	136	73	60
9	44	67	60	190	47	2,550	406	166	89	142	69	55
10	46	60	56	*210	46	1,860	373	160	86	128	67	51
11	45	55	54	200	45	1,050	352	154	84	116	69	60
12	44	55	53	180	45	725	332	150	81	109	67	60
13	41	54	52	170	45	640	313	146	86	103	78	62
14	39	52	51	160	44	535	304	142	89	100	70	63
15	38	51	50	150	44	362	294	146	84	94	63	62
16	37	53	49	160	44	406	284	136	80	90	61	58
17	36	51	48	180	44	362	294	134	76	86	57	54
18	37	50	47	250	*44	352	362	130	73	91	54	49
19	37	54	46	300	43	322	462	129	70	108	55	47
20	38	63	45	250	43	294	462	126	69	424	52	44
21	39	71	45	200	43	266	428	122	87	522	50	54
22	39	82	45	180	43	362	417	128	79	322	49	54
23	38	72	46	150	43	535	395	138	78	238	46	40
24	38	70	47	130	44	970	352	134	194	197	44	39
25	39	72	48	110	45	1,290	313	130	462	170	43	38
26	40	70	47	100	55	1,450	294	125	708	150	43	37
27	41	67	46	90	80	1,860	275	120	742	136	42	37
28	43	64	45	80	250	1,760	266	115	439	125	41	36
29	41	56	43	75	.....	2,320	247	108	313	120	40	36
30	47	54	42	70	.....	1,810	238	103	266	132	39	35
31	44	.....	41	65	.....	1,250	.....	100	.....	120	37	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 25 to Dec. 31, 1947, Jan. 1 to Mar. 2, Nov. 29 to Dec. 31, 1948, Jan. 1 to Mar. 6, 1949.

West Fork Shell Rock River at Finchford, Iowa—Continued

Daily Discharge, in second-feet, for Water Year 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1949-50												
1.....	36	43	47	28	19	19	900	352	462	322	162	79
2.....	35	42	41	28	19	19	830	342	522	294	210	75
3.....	36	41	42	28	18	19	778	332	474	294	256	73
4.....	35	40	41	28	18	19	690	322	522	256	205	69
5.....	34	42	24	29	17	19	580	384	580	236	181	64
6.....	36	43	46	30	17	500	498	550	474	218	170	62
7.....	38	43	39	30	16	2,000	428	655	406	203	158	63
8.....	38	43	24	29	16	7,500	395	428	362	192	148	61
9.....	39	44	*25	29	19	*5,000	362	672	439	181	142	61
10.....	42	43	30	28	50	3,000	352	1,980	439	174	136	55
11.....	38	43	35	27	42	1,700	406	3,230	395	168	132	56
12.....	37	47	34	26	32	1,010	439	1,760	352	165	130	57
13.....	37	46	33	*25	*28	778	384	1,050	395	166	160	60
14.....	39	44	36	25	25	655	332	778	450	173	166	64
15.....	39	47	33	24	22	535	304	610	672	177	154	61
16.....	38	50	33	23	21	417	294	485	918	170	138	57
17.....	37	49	33	23	20	373	275	439	1,250	164	130	54
18.....	38	47	33	22	20	462	266	428	1,580	159	123	51
19.....	39	46	33	22	19	672	256	406	1,620	166	120	52
20.....	42	44	33	22	19	865	247	373	1,980	171	112	56
21.....	48	43	33	21	19	742	247	395	1,660	174	108	80
22.....	50	39	32	21	19	595	234	474	1,580	185	104	113
23.....	52	39	33	20	19	918	229	462	1,090	193	100	130
24.....	55	42	34	20	19	1,170	247	417	778	193	94	142
25.....	56	42	33	20	19	1,750	428	417	672	195	90	126
26.....	*50	39	32	20	19	2,600	610	672	742	193	87	119
27.....	47	40	31	19	19	3,010	522	555	655	184	87	112
28.....	47	44	30	19	19	3,120	430	498	498	181	86	108
29.....	46	46	29	19	.....	2,720	384	428	466	170	87	108
30.....	43	44	29	19	.....	1,620	352	373	362	160	87	112
31.....	41	.....	28	19	.....	1,050	.....	352	.....	185	84	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 9-31, 1949, Jan. 1 to Mar. 11, 1950.

Monthly Discharge for Calendar and Water Years 1946 and 1947

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1945.....	4,604	209	127	149	0.173	0.20
November.....	3,909	156	60	130	.151	.17
December.....	2,782	155	50	89.7	.104	.12
January 1946.....	11,200	2,200	80	361	.420	.48
February.....	10,155	1,100	110	363	.422	.44
March.....	49,406	4,290	540	1,504	1.85	2.14
April.....	8,938	553	159	298	.347	.39
May.....	6,688	310	157	216	.251	.29
June.....	8,267	530	139	275	.320	.36
July.....	7,173	606	127	231	.269	.31
August.....	4,515	423	81	146	.170	.20
September.....	7,563	685	79	252	.293	.33
Water year 1945-46.....	125,190	4,290	50	343	.399	5.43
October 1946.....	6,360	291	128	205	.238	.28
November.....	7,595	329	161	253	.294	.33
December.....	4,724	235	90	152	.177	.20
Calendar year 1946.....	132,574	4,290	79	363	.422	5.75
January 1947.....	3,660	165	65	118	.137	.16
February.....	4,145	270	75	148	.172	.18
March.....	20,438	1,520	145	659	.766	.88
April.....	28,455	2,230	437	950	1.10	1.23
May.....	13,102	708	283	423	.492	.57
June.....	82,674	9,880	754	2,756	3.20	3.58
July.....	44,906	4,320	281	1,449	1.68	1.94
August.....	5,139	266	107	166	.193	.22
September.....	3,221	173	85	107	.124	.14
Water year 1946-47.....	224,419	9,880	65	615	.715	9.71

West Fork Shell Rock River at Finchford, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1948 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1947.....	2,741	160	73	88.4	0.103	0.12
November.....	4,096	178	110	137	.159	.18
December.....	3,446	140	73	111	.129	.15
Calendar year 1947.....	216,023	9,880	65	592	.688	9.35
January 1948.....	1,778	80	36	57.4	.067	.08
February.....	9,014	3,000	36	311	.362	.39
March.....	53,369	8,470	240	1,722	2.00	2.31
April.....	13,333	798	264	444	.516	.58
May.....	15,828	1,240	201	511	.594	.68
June.....	4,571	196	123	152	.177	.20
July.....	2,446	120	56	78.9	.092	.11
August.....	1,352	54	30	43.6	.051	.06
September.....	898	42	24	29.9	.035	.04
Water year 1947-48.....	112,872	8,470	24	308	.358	4.90
October 1948.....	1,185	48	26	38.2	.044	.05
November.....	1,770	82	45	59.0	.069	.08
December.....	1,595	75	41	51.5	.060	.07
Calendar year 1948.....	107,139	8,470	24	293	.341	4.65
January 1949.....	4,145	300	41	134	.155	.18
February.....	1,569	250	43	56.0	.065	.07
March.....	38,481	5,580	266	1,241	1.44	1.66
April.....	13,373	1,090	238	446	.519	.58
May.....	4,658	227	100	150	.174	.20
June.....	5,199	742	69	173	.201	.22
July.....	5,613	522	86	181	.210	.24
August.....	1,950	109	37	62.9	.073	.08
September.....	1,495	70	35	49.8	.058	.06
Water year 1948-49.....	81,033	5,580	26	222	.258	3.49
October 1949.....	1,288	56	34	41.5	.048	.06
November.....	1,305	50	39	43.5	.051	.06
December.....	1,039	47	24	33.5	.039	.04
Calendar year 1949.....	80,115	5,580	24	219	.255	3.45
January 1950.....	743	30	19	24.0	.028	.03
February.....	609	50	16	21.8	.025	.03
March.....	44,857	7,500	19	1,447	1.68	1.94
April.....	12,708	900	229	424	.493	.55
May.....	20,599	3,230	322	664	.772	.89
June.....	22,735	1,980	352	758	.881	.98
July.....	6,062	322	159	196	.228	.26
August.....	4,147	256	84	134	.156	.18
September.....	2,380	142	51	79.3	.092	.10
Water year 1949-50.....	118,472	7,500	16	325	.378	5.12

Beaver Creek at New Hartford, Iowa

LOCATION.—Lat. 42°35', long. 92°37' in SE¼ sec. 28, T. 90 N., R. 15 W., at bridge on county road J, a quarter of a mile north of New Hartford and 8 miles upstream from mouth.

DRAINAGE AREA.—350 square miles.

RECORDS AVAILABLE.—April 1948 to September 1950.

GAGE.—Wire-weight gage; gage read once daily.

AVERAGE DISCHARGE.—2 years, 126 second-feet.

EXTREMES.—Maximum and minimum discharges for the water years 1948-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
April to Sept. 1948	June 28	1,400	7.43	Aug. 26	9.5
1948-49...	Mar. 6	(¹)1,600	(²)	Oct. 4-6, Sept. 1, 2, 25-30	11
1949-50...	Mar. 7	5,000	(³)11.52	Feb. 14, 15	6.2

(1) Daily.

(2) Maximum gage-height 10.18 feet Mar. 5 (ice jam).

(3) Ice affected.

1948-50: Maximum discharge, about 5,000 second-feet Mar. 7, 1950 (gage-height 11.52 feet, ice affected); minimum daily, 6.2 second-feet Feb. 14, 15, 1950.

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

COOPERATION.—Services of observer and several discharge measurements furnished by Corps of Engineers.

Beaver Creek at New Hartford, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1948 and 1949

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1947-48												
1							435	274	58	221	28	19
2							334	369	58	163	27	18
3							301	276	55	114	26	17
4							260	218	52	100	26	16
5							231	229	51	83	25	15
6							205	415	62	70	24	13
7							262	514	59	61	24	13
8							454	378	56	59	26	13
9							297	309	52	50	25	13
10							232	326	45	49	24	12
11							433	307	44	47	24	12
12							573	270	56	47	21	12
13							332	234	48	45	20	12
14							248	248	45	50	20	12
15							209	280	45	195	20	12
16							177	314	45	168	20	12
17							158	210	42	74	20	11
18							156	169	43	60	20	11
19							151	139	43	54	18	11
20							115	120	41	47	17	11
21							101	113	44	64	16	15
22							99	98	56	51	16	15
23							214	92	58	45	16	14
24							369	84	55	41	15	14
25							297	84	48	41	13	13
26							232	77	50	38	9.5	13
27							210	70	55	37	12	13
28							195	70	1,060	36	18	12
29							168	66	840	33	21	12
30							147	62	330	32	22	12
31								59		30	19	
1948-49												
1	12	16	14	15	21	280	345	91	55	58	26	11
2	12	17	*13	15	20	260	292	78	158	667	24	11
3	12	17	16	15	20	300	234	68	113	643	23	12
4	11	17	15	25	20	500	212	66	69	223	24	27
5	11	18	16	80	20	900	200	60	59	113	23	20
6	11	26	21	120	20	1,600	182	59	48	106	21	22
7	20	30	20	130	20	1,300	175	54	44	82	20	20
8	27	29	20	120	19	790	154	54	44	79	20	18
9	24	23	18	100	19	514	143	53	42	62	19	18
10	23	22	17	*90	19	314	135	52	39	54	18	17
11	22	20	17	80	19	262	121	49	38	48	19	19
12	16	19	16	78	18	236	114	52	36	44	20	24
13	15	19	16	72	18	202	109	50	36	44	23	22
14	15	19	16	70	18	191	105	49	46	41	21	22
15	15	18	15	72	18	163	85	49	39	37	19	20
16	15	18	15	85	18	182	95	63	36	35	18	18
17	14	18	15	100	*18	227	151	79	35	32	17	16
18	14	18	15	110	18	121	292	58	32	62	16	16
19	14	20	15	100	18	121	252	54	29	400	16	15
20	15	35	15	80	18	121	195	50	28	198	15	13
21	15	35	15	65	18	154	175	48	46	102	15	12
22	15	36	15	55	19	216	172	56	39	78	15	12
23	15	30	16	45	20	234	160	66	38	63	14	12
24	15	29	16	39	21	202	140	61	150	59	14	12
25	15	29	16	36	25	*303	109	55	116	53	13	11
26	16	29	16	32	35	456	105	50	114	46	13	11
27	16	28	16	29	100	433	101	48	93	41	13	11
28	15	24	15	27	300	433	95	45	66	39	12	11
29	15	20	15	25		303	91	44	52	33	12	11
30	15	16	15	23		314	84	42	45	29	12	11
31	15		15	22		334		39		28	12	

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 29 to Dec. 31, 1948, Jan. 1 to Mar. 7, 1949.

Beaver Creek at New Hartford, Iowa—Continued
Daily Discharge, in second-feet, for Water Year 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1949-50												
1	11	16	14	10	7.4	6.5	184	149	166	123	54	23
2	11	16	15	11	7.4	6.5	172	144	235	123	44	22
3	11	16	16	10	7.4	6.5	166	144	466	117	40	20
4	11	16	17	9.0	7.4	6.5	144	154	325	108	40	19
5	11	15	18	8.6	7.4	70	117	757	242	101	38	18
6	11	15	15	8.2	7.4	700	108	1,700	190	95	35	18
7	11	14	12	8.0	10	3,500	104	444	149	86	34	18
8	11	16	9.0	7.8	17	2,000	99	293	127	78	33	17
9	11	16	*7.3	7.6	19	1,100	81	1,400	989	75	32	17
10	11	16	8.0	7.6	17	700	104	3,330	2,780	73	32	17
11	16	15	9.0	7.6	13	540	154	1,220	1,120	71	32	18
12	12	16	10	7.8	9.0	400	138	472	422	71	32	21
13	12	17	11	*8.2	6.6	300	104	360	270	71	32	22
14	12	18	10	14	*6.2	230	95	293	235	70	34	20
15	11	18	9.0	11	6.2	200	86	209	499	62	34	20
16	11	20	8.8	10	6.4	210	86	222	488	57	32	20
17	12	17	8.6	9.6	6.4	250	79	209	256	57	30	20
18	12	17	8.4	9.0	6.4	280	76	196	1,030	55	30	17
19	16	16	8.2	8.6	6.4	230	71	184	2,340	54	35	16
20	17	16	8.2	8.4	6.4	210	71	172	1,610	62	38	16
21	18	13	8.2	8.2	6.4	210	71	749	546	58	32	893
22	22	16	8.2	8.0	6.4	250	68	869	360	54	27	920
23	21	12	8.2	8.0	6.4	370	63	351	309	51	27	360
24	18	16	8.2	7.8	6.4	500	104	278	278	50	26	172
25	18	16	8.2	7.8	6.4	700	365	505	228	48	24	127
26	18	17	8.2	7.6	6.4	1,200	286	1,080	202	48	23	108
27	17	17	8.4	7.6	6.4	1,800	228	400	172	48	22	73
28	17	18	8.4	7.4	6.4	510	154	278	144	46	23	70
29	17	16	8.6	7.4	.....	216	131	242	138	43	26	73
30	16	16	9.0	7.4	.....	209	127	216	127	41	27	70
31	16	.....	9.8	7.4	.....	202	.....	184	.....	99	25	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 5-31, 1949, Jan. 1 to Mar. 26, 1950.

Beaver Creek at New Hartford, Iowa—Continued
 Monthly Discharge for Calendar and Water Years 1948 to 1950

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
April 1948.....	7,595	573	99	253	0.723	0.81
May.....	6,474	514	59	209	.597	.69
June.....	3,596	1,060	41	120	.343	.38
July.....	2,205	221	30	71.1	.203	.23
August.....	632.5	28	9.5	20.4	.058	.07
September.....	398	19	11	13.3	.038	.04
October.....	485	27	11	15.6	.045	.05
November.....	695	36	16	23.2	.066	.07
December.....	405	21	13	16.0	.046	.05
January 1949.....	1,955	130	15	63.1	.180	.20
February.....	917	300	18	32.8	.094	.10
March.....	11,966	1,600	121	386	1.10	1.27
April.....	4,823	345	84	161	.460	.51
May.....	1,742	91	39	56.2	.161	.19
June.....	1,785	158	28	59.5	.170	.19
July.....	3,599	667	28	116	.331	.38
August.....	547	26	12	17.6	.050	.06
September.....	484	29	11	16.1	.046	.05
Water year 1948-49.....	29,493	1,600	11	80.8	.231	3.12
October 1949.....	439	22	11	14.2	.041	.05
November.....	483	20	12	16.1	.046	.05
December.....	315.9	18	7.3	10.2	.029	.03
Calendar year 1949.....	29,055.9	1,600	7.3	79.6	.227	3.08
January 1950.....	266.6	14	7.4	8.60	.025	.03
February.....	231.6	19	6.2	8.27	.024	.02
March.....	17,113.0	3,500	6.5	552	1.58	1.82
April.....	3,836	365	63	128	.366	.41
May.....	17,204	3,330	144	555	1.59	1.83
June.....	16,443	2,780	127	548	1.57	1.75
July.....	2,195	123	41	70.8	.202	.23
August.....	994	54	22	32.1	.092	.11
September.....	3,245	920	16	108	.309	.34
Water year 1949-50.....	62,766.1	3,500	6.2	172	.491	6.67

Lakes in Iowa River Basin

Upper Pine Lake at Eldora, Iowa

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

RECORDS AVAILABLE.—June 1936 to September 1950.

GAGE.—Staff gage on concrete pier set in bed of lake read once daily. Datum of gage is 1.0 feet below crest of dam forming lake. June 16, 1936, to Oct. 12, 1950, staff gage bolted to oak stump at same site and datum.

EXTREMES.—Maximum and minimum gage heights for the water years 1943-50 are contained in the following table:

Water Year	Maximum observed		Minimum observed	
	Date	Gage-height (feet)	Date	Gage-height (feet)
1942-43. . .	June 16	2.02	Nov. 19	0.15
1943-44. . .	Jan. 27	2.56	Jan. 14-21	.88
1944-45. . .	June 1	2.16	Dec. 22 to Feb. 8	.94
1945-46. . .	Feb. 5	3.30	Sept. 14	(¹)—3.31
1946-47. . .	Oct. 24	—2.21	Jan 8	(¹)—3.79
1947-48. . .	Mar. 19	2.28	(²)	(²)
1948-49. . .	Feb. 24	2.82	Sept. 29, 30	— .70
1949-50. . .	Sept. 21	(³) 4.60	Oct. 17, 18, 20	— .84

(1) Lake level lowered for spillway repairs.

(2) Not determined, water level below staff gage many days.

(3) From Floodmark.

1936-50: Maximum gage-height, 8.06 feet June 2, 1942, from floodmark; minimum, below staff gage several times since 1947 when lake has been drained.

COOPERATION.—Services of observer furnished by Iowa State Conservation Commission.

Upper Pine Lake at Eldora, Iowa—Continued
Daily Gage height, in Feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1	1.16	1.12	1.10	1.18	1.20	1.48	1.42	1.12	1.12	1.12	1.24	1.12
2	1.16	1.10	1.10	1.18	1.20	1.48	1.44	1.12	1.20	1.12	1.18	1.12
3	1.24	1.10	1.10	1.18	1.20	1.40	1.42	1.12	1.20	1.12	1.22	1.12
4	1.38	1.08	1.12	1.18	1.30	1.32	1.42	1.12	1.20	1.14	1.14	1.12
5	1.26		1.12	1.20	1.40	1.32	1.42	1.12	1.18	1.14	1.12	1.16
6	1.22		1.12	1.20	1.50	1.32	1.42	1.36	1.12	1.14	1.12	1.12
7	1.18		1.12	1.20	1.46	1.32	1.52	1.32	1.12	1.12	1.12	1.12
8	1.18		1.12	1.20	1.46	1.32	1.44	1.20	1.12	1.12	1.12	1.08
9	1.16		1.12	1.20	1.46	1.30	1.42	1.20	1.12	1.12	1.14	1.06
10	1.14		1.12	1.20	1.46	1.20	1.38	1.12	1.12	1.12	1.28	1.04
11	1.14		1.12	1.20	1.46	1.20	1.38	1.12	1.12	1.12	1.22	1.04
12	1.14		1.12	1.20	1.40	1.20	1.36	1.12	1.12	1.08	1.62	1.16
13	1.14		1.12	1.20	1.40	1.22	1.36	1.12	1.12	1.08	1.42	1.14
14	1.14		1.12	1.20	1.40	1.24	1.36	1.16	1.12	1.12	1.32	1.06
15	1.14		1.12	1.20	1.40	1.28	1.32	1.36	1.12	1.12	1.26	1.04
16	1.12		1.12	1.20	1.40	1.28	1.28	1.34	2.02	1.30	1.34	1.04
17	1.12		1.12	1.20	1.40	1.26	1.26	1.34	1.42	1.56	1.28	1.04
18	1.12		1.12	1.20	1.38	1.24	1.22	1.32	1.22	1.40	1.24	1.04
19	1.12	15	1.12	1.20	1.44	1.24	1.22	1.30	1.22	1.38	1.20	
20	1.12	20	1.12	1.18	1.48	1.38	1.22	1.34	1.22	1.40	1.12	
21	1.12	22	1.12	1.18	1.66	1.38	1.12	1.32	1.18	1.32	1.12	
22	1.12	22	1.12	1.20	1.78	1.40	1.12	1.32	1.28	1.18	1.12	1.06
23	1.12	32	1.12	1.20	1.80	1.48	1.20	1.30	1.20	1.14	1.12	
24	1.10	42	1.12	1.20	1.62	1.48	1.20	1.30	1.14	1.14	1.12	
25	1.10	.64	1.14	1.20	1.56	1.46	1.12	1.27	1.12	1.14	1.12	
26	1.10	.76	1.16	1.20	1.56	1.44	1.10	1.24	1.12	1.12	1.08	
27	1.10	1.00	1.18	1.20	1.58	1.44	1.10	1.18	1.12	1.12	1.04	
28	1.08	1.04	1.18	1.20	1.48	1.42	1.10	1.12	1.30	1.66	1.04	
29	1.08	1.06	1.18	1.20		1.42	1.18	1.12	1.18	1.30	1.10	
30	1.12	1.08	1.18	1.20		1.46	1.12	1.12	1.12	1.30	1.12	1.06
31	1.12		1.18	1.20		1.42		1.12		1.24	1.12	
1943-44												
1	1.04	1.06	1.02	.94	1.02	1.06	1.16	1.26	1.20	1.00	1.10	1.02
2	1.04	1.06	1.02	.92	1.02	1.04	1.16	1.66	1.16	1.08	1.04	1.02
3	1.04	1.06	1.02	.92	1.02	1.04	1.16	1.60	1.12	1.08	1.00	1.02
4	1.04	1.04	1.02	.92	1.02	1.06	1.14	1.40	1.08	1.04	1.32	1.02
5	1.04	1.04	1.02	.92	1.00	1.02	1.12	1.30	1.10	1.10	1.20	1.00
6	1.04	1.10	1.18	.92	1.00	1.02	1.12	1.30	1.08	1.10	1.10	1.00
7	1.04	1.14	1.18	.92	1.00	1.00	1.10	1.30	1.08	1.08	1.04	.98
8	1.04	1.18	1.10	.92	1.00	1.00	1.10	1.30	1.28	1.08	1.00	.98
9	1.04	1.12	1.08	.90	1.00	.98	1.10	1.30	1.24	1.06	1.00	.98
10	1.04	1.10	1.04	.90	.98	1.88		1.24	1.20	1.06	1.00	1.04
11	1.04	1.10	1.04	.90	.98	1.52		1.20	1.30	1.06	1.00	1.04
12	1.06	1.10	1.02	.90	.98	1.48		1.20	1.60	1.06	1.00	1.02
13	1.06	1.06	1.02	.90	.98	1.40		1.20	1.60	1.06	1.00	1.02
14	1.06	1.04	1.02	.88	.98	1.34	1.16	1.20	1.40	1.06	1.00	1.02
15	1.06	1.04	1.02	.88	.98	1.42	1.18	1.10	1.30	1.08	1.00	1.02
16	1.06	1.04	.99	.88	.98	1.38	1.22	1.10	1.50	1.04	1.10	1.02
17	1.06	1.04	.98	.88	.98	1.36	1.20	1.10	1.50	1.00	1.04	1.02
18	1.06	1.04	.98	.88	.98	1.30	1.18	1.10	1.20	.98	1.00	1.02
19	1.06	1.04	.98	.88	.98	1.30	1.18	2.10	1.10	.98	.96	1.12
20	1.08	1.04	.98	.88	.98	1.32	1.18	2.40	1.10	.98	.96	1.10
21	1.08	1.04	.98	.88	1.00	1.32	1.20	2.32	1.10	.98	.96	1.04
22	1.08	1.04	.98	.90	1.62	1.34	1.24	1.84	1.10	.98	.94	1.04
23	1.08	1.02	.96	.90	1.50	1.86	1.28	1.44	1.10	1.00	.94	1.04
24	1.08	1.02	.96	.90	1.22	1.64	1.34	1.10	1.10	1.00	.94	1.04
25	1.08	1.02	.96	.92	1.14	1.24	1.30	1.20	1.10	1.00	.94	1.00
26	1.06	1.02	.96	.98	1.08	1.20	1.28	1.30	1.10	1.42	1.08	1.00
27	1.06	1.02	.96	2.56	1.08	1.24	1.28	1.30	1.10	1.20	1.24	1.00
28	1.06	1.02	.96	1.40	1.08	1.28	1.28	1.28	1.06	1.16	1.12	1.00
29	1.04	1.02	.96	1.22	1.06	1.24	1.26	1.20	1.00	1.16	1.10	1.00
30	1.04	1.02	.96	1.10		1.20	1.26	1.20	1.00	1.14	1.10	1.00
31	1.04		.96	1.06		1.16		1.20		1.12	1.00	

Upper Pine Lake at Eldora, Iowa—Continued

Daily gage height, in Feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1	1.00	1.02	1.00	0.94			1.12	1.18	2.16	1.20	1.04	1.00
2	1.14	1.02	.98	.94			1.12	1.18	2.09	1.16	1.04	1.00
3	1.08	1.02	.96	.94	0.94			1.20	1.20	1.10	1.04	.98
4	1.04	1.02	.96	.94	.94			1.18	1.20	1.10	1.04	.98
5	1.04	1.02		.94	.94		1.35	1.18	1.20	1.20	1.04	.98
6	1.04	1.02		.94			1.34	1.18	1.20	1.18	1.06	.98
7	1.04	1.02		.94	.94	1.30	1.30	1.16	1.16	1.18	1.04	.98
8	1.04	1.02		.94	.94	1.40	1.28	1.14	1.12	1.16	1.04	.98
9	1.04	1.02	.98	.94	.98	1.40	1.30	1.12	1.12	1.16	1.02	1.00
10	1.04		.98	.94	.98	1.48	1.28	1.12	1.10	1.14	1.02	1.00
11	1.04		.98	.94	1.00	1.48	1.30	1.10	1.10	1.12	1.02	1.00
12	1.04		.98	.94	1.00	1.22	1.28	1.10	1.16	1.06	1.02	.98
13	1.04		.98	.94	1.10	1.20	1.30	1.10	1.14	1.06	1.02	.98
14		1.06	.96	.94	1.24		1.30	1.40	1.12	1.06	1.02	.98
15	1.02	1.06	.96	.94	1.26		1.40	1.30	1.20	1.04	1.80	.98
16	1.02	1.06	.96	.94	1.28	1.54	1.40	1.24	1.20		1.12	.98
17	1.02	1.06	.96	.94	1.28	1.58	1.70	1.16	1.14	1.22	1.10	.98
18	1.02	1.06	.96	.94	1.18	1.40	1.32	1.16	1.14	1.10	1.08	.98
19	1.02	1.06	.96	.94		1.38	1.30	1.16	1.14	1.08	1.08	.96
20	1.02	1.06		.94		1.14	1.30	1.16	1.16	1.08	1.06	.96
21	1.02	1.06	.96	.94			1.20	1.28	1.16	1.08	1.06	.96
22	1.02	1.06	.94	.94	1.16		1.20	1.30	1.16	1.08	1.04	.96
23	1.02	1.06	.94	.94	1.16	1.10	1.28	1.20		1.08	1.02	.96
24	1.02	1.06	.94	.94	1.16	1.10	1.26	1.20	1.14	1.08	1.02	.96
25	1.02	1.06	.94	.94	1.10	1.50	1.26	1.30	1.14	1.08	1.02	.96
26	1.02	1.06	.94	.94			1.24	1.30	1.14	1.08	1.02	.96
27	1.02	1.06	.94	.94		1.50	1.22	1.30	1.14	1.08	1.00	.98
28	1.02	1.06	.94	.94			1.20	1.30	1.24	1.08	1.00	.98
29	1.02	1.06	.94	.94			1.16	1.28	1.24	1.08	1.00	.98
30	1.02	1.04	.94	.94			1.16	1.20	2.00	1.04	1.00	.98
31	1.02		.94			1.50		1.30		1.04	1.00	
1945-46												
1	.98	1.04	1.02	.94	1.00	1.00	1.08	.96	.94	1.10	1.16	
2	.98	1.04	1.01	.94	1.00	1.03	1.08	.98	.94	1.05	1.05	
3	.98	1.02	1.04	.94	1.02	1.00	1.06	1.00	.94	1.02	1.06	
4	.98	1.02	1.04	.98	1.02	1.00	1.06	1.14	.94	1.00	1.04	-2.66
5	.98	1.02	1.04	2.50	3.30	1.02	1.06	1.14	.94	1.00	1.04	-2.65
6	.98	1.02	1.04	3.00	2.60	1.38	1.06	1.14	.94	1.00	1.04	-2.94
7	.98	1.02	1.04	2.40	1.30	1.20	1.06	1.06	.94	1.10	1.02	-2.36
8	.98	1.10	1.02	2.00	1.24	1.18	1.04	1.06	.94	1.10	1.02	-1.81
9	.98	1.10	1.02	1.50	1.16	1.16	1.02	1.06	.94	1.06	1.02	-1.46
10	.98	1.10	1.00	1.40	1.08	1.16	1.16	1.00	1.08	.94	1.06	1.02
11	.98	1.10	1.00	1.30	1.04	1.10	1.00	1.08	.92	1.06	1.02	-1.31
12	.98	1.10	1.08	1.20	1.04	2.10	1.00	1.04	.94	1.04	1.02	-2.03
13	.98	1.10	1.08	1.10	1.02	1.30	1.00	1.02	.94	1.04	1.02	-2.75
14	.98	1.10	1.08	1.06	1.02	1.18	1.00	1.00	.94	1.04	1.00	-3.31
15	.98	1.10	1.08	1.04	1.02	1.12	.98	1.00	.96	1.02	1.00	-3.15
16	1.00	1.10	.98	1.04	1.02	1.12	.98	.98	.96	1.02	.98	-3.11
17	1.00	1.10	.96	1.04	1.02	1.12	.96	.96	.96	1.00		-3.12
18	1.00	1.10	.96	1.04	1.02	1.12	.96	.96	2.44	1.00		-3.11
19	1.00	1.10	.96	1.04	1.02	1.12	.94	1.00	1.46	1.10		-3.03
20	1.00	1.10	.94	1.04	1.02	1.12	.94	1.02	1.20	1.10		-2.90
21	1.00	1.10	.94	1.02	1.02	1.12	.94	1.00	1.12	1.08		-2.86
22	1.00	1.10	.92	1.02	1.02	1.12	.96	.98	1.06	1.06		-2.89
23	1.00	1.10	.92	1.02	1.02	1.10	.98	1.80	1.04	1.06		-2.67
24	1.02	1.08	.92	1.02	1.02	1.10	.98	1.60	1.02	1.04		-2.60
25	1.04	1.06	.92	1.02	1.02	1.10	.98	1.18	1.00	1.04		-2.55
26	1.04	1.04	.92	1.02	1.02	1.10	.98	1.70	1.00	1.04		-2.51
27	1.04	1.04	.92	1.02	1.02	1.10	.98	1.30	1.00	2.84		-2.54
28	1.04	1.04	.92	1.02	1.02	1.10	.96	1.00	1.00	2.60		-2.91
29	1.04	1.02	.92	1.00		1.10	.96	.96	1.02	1.20		-2.90
30	1.04	1.02	.94	1.00		1.10	.98	1.20	2.42	1.40		-2.91
31	1.04		.94	1.00		1.10		.96		1.20		

Upper Pine Lake at Eldora, Iowa—Continued
 Daily Gage height, in Feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1	-2.90	-2.99	-3.28									
2	-2.93	-2.86	-3.22									
3	-2.93	-3.11	-3.17									
4	-2.93	-3.10	-3.11									
5	-2.91	-3.09	-3.08									
6	-3.11	-3.06	-2.99									
7	-3.42	-2.79	-3.51									
8	-3.40	-3.50	-3.49	-3.79								
9	-3.37	-3.45	-3.46									
10	-2.96	-3.29	-3.39									
11	-2.95	-3.13	-3.29									
12	-2.96	-3.00	-3.21									
13	-3.03	-2.91	-3.11									
14	-3.09	-2.70	-3.07									
15	-3.05	-3.26	-3.02									
16	-2.93	-3.21	-2.97									
17	-2.87	-3.09	-2.96									
18	-3.07	-2.93	-2.92									
19	-3.11	-2.87	-2.91									
20	-3.05	-2.69	-2.91									
21	-2.97	-2.56	-2.91									
22	-2.91	-3.21	-2.85									
23	-2.85	-3.13	-2.80									
24	-2.26	-3.01	-2.75									
25	-2.63	-2.89	-2.69									
26	-3.11	-2.85	-2.63									
27	-2.99	-2.83	-2.57									
28	-2.79	-3.42	-2.51									
29	-2.66	-3.35	-2.46									
30	-3.03	-3.31	-2.51									
31	-3.10		-2.79									
1947-48												
1							1.02			1.06	0.92	
2							1.00			1.04	.92	
3							1.00	1.04		1.00	.90	
4							1.00			1.00	.90	
5							1.00			1.00	.90	
6							1.00	1.12		1.00	.90	
7							1.04	1.12		.98	.88	
8							1.02	1.03		.96	.86	
9							1.00	1.06		.94	.84	
10							.98	1.04		.92	.84	
11							1.08	1.04		.92	.82	
12							1.06	1.04		.90	.80	
13							1.02	1.04		1.70	.76	
14							1.00	1.02		1.50	.74	
15							.98	1.02		1.40		
16								1.02		1.08		
17								1.02		1.06		
18						1.26	.94	1.02		1.06		
19						2.28	.94	1.02		1.10		
20						1.14		1.00		1.08		
21						1.08		1.00		1.08		
22						1.02		.98		1.06		
23						1.00		.96	.98	1.04		
24						1.00		.92	1.00	1.00		
25						1.00		.90	.98	1.04		
26						1.00	1.02	.90	.96	1.02		
27						2.12		.80	1.60	1.00		
28						1.60		.80	1.34	1.00		
29						1.30			1.26	1.00		
30						1.14			1.06	.96		
31						1.14				.94		

Upper Pine Lake at Eldora, Iowa—Continued
Daily Gage height, in Feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1								1.02	0.98	0.94	0.30	-0.64
2								1.02	1.08	.96	.26	-.68
3						1.56		1.00	1.04	.95	.22	-.64
4				2.08		2.62		1.00	1.02	.94	.18	-.64
5				1.58		1.36		1.00	1.00	.92	.16	-.62
6				1.34		1.10		.98	1.00	.90	.12	-.60
7				1.18				.98	.98	.88	.08	-.60
8				1.14				.98	.96	.86	.04	-.62
9				1.14				.98	.94	.84	.00	-.62
10				1.12				.98	.92	.80	-.06	-.64
11				1.12				.98	.90	.76	-.10	-.60
12				1.10				1.10	.98	.72	-.12	-.58
13				1.10				1.06	.94	.68	-.14	-.56
14				1.08				1.04	.92	.64	-.18	-.52
15				1.84				1.02	.90	.60	-.22	-.52
16				1.27				1.02	.87	.58	-.20	-.48
17				1.06				1.00	.84	.54	-.24	-.46
18								1.00	.81	.64	-.26	-.48
19							1.10	.98	.80	.66	-.30	-.52
20							1.06	1.00	.78	.66	-.34	-.54
21							1.06	1.02	.84	.64	-.38	-.56
22						1.30	1.04	1.02	.80	.64	-.40	-.58
23						1.08	1.04	1.02	.78	.62	-.42	-.60
24					2.82	1.00	1.04	1.00	1.03	.60	-.44	-.62
25					1.28		1.04	1.00	1.00	.56	-.48	-.64
26					1.10		1.02	.98	1.00	.52	-.50	-.66
27							1.02	.98	.98	.48	-.52	-.66
28							1.02	.96	.96	.44	-.54	-.68
29							1.02	.96	.94	.42	-.54	-.70
30							1.02	.94	.92	.38	-.58	-.70
31								.94	.....	.34	-.60	.....
1949-50												
1	-0.72	-0.76	-0.74					1.00	1.04	1.00	.82	.40
2	-.72	-.76	-.74					1.00	1.32	.98	.80	.38
3	-.74	-.78	-.74					.98	1.18	.98	.78	.36
4	-.76	-.78	-.74					1.17	1.10	.98	.76	.34
5	-.76	-.80	-.72					1.48	1.04	1.00	.74	.....
6	-.78	-.80	-.72			3.26		1.04	1.00	1.00	.74	.....
7	-.76	-.82	-.72					1.00	1.00	.98	.72	.....
8	-.74	-.82	-.72					1.14	.98	.98	.70	.....
9	-.74	-.82						1.66	2.11	.96	.68	.....
10	-.76	-.82					1.00	1.12	1.28	.94	.68	.....
11	-.78	-.80					.96	1.04	1.24	.94	.66	.....
12	-.78	-.74					.94	1.02	1.16	.98	.66	.....
13	-.80	-.80					.94	1.00	1.10	.96	.64	.....
14	-.80	-.80					.92	1.00	1.26	.94	.64	.....
15	-.82	-.78					.92	1.00	1.38	.92	.66	.....
16	-.82	-.78					.92	1.00	1.10	.90	.66	.....
17	-.84	-.76					.92	.98	1.08	.94	.64	.....
18	-.84	-.76					.94	.98	2.16	.92	.62	.....
19	-.80	-.74					.94	.98	1.20	.94	.58	.....
20	-.84	-.74					.94	.96	1.20	.92	.55	.....
21	-.70	-.74					.94	1.20	1.14	.92	.53	4.60
22	-.70	-.74					.94	1.06	1.20	.90	.51	.....
23	-.70	-.74					.94	1.06	1.16	.90	.50	.....
24	-.72						1.12	1.00	1.18	.90	.48	.....
25	-.72	-.74					1.04	1.32	1.10	.88	.46	.....
26	-.72	-.74					1.00	1.24	1.06	.88	.46	.....
27	-.72	-.74					.98	1.20	1.04	.88	.44	.....
28	-.72	-.74					.98	1.14	1.04	.86	.44	.....
29	-.72	-.74					.98	1.10	1.02	.84	.42	.....
30	-.74	-.74					1.00	1.08	1.00	.84	.40	.....
31	-.74						1.00	1.06	.....	.84	.40	.....

Lakes in Iowa River Basin

Lower Pine Lake at Eldora, Iowa

LOCATION.—Lat. 42°22', long. 93°05', in NW ¼ sec. 9, T. 87 N., R. 19 W., at Pine Lake State Park at Eldora.

DRAINAGE AREA.—15.0 square miles above outlet.

RECORDS AVAILABLE.—June 1936 to September 1950.

GAGE.—Staff gage on concrete abutment of highway bridge at spillway read once daily. Datum of gage is 2.0 feet below crest of spillway of dam forming lake.

EXTREMES.—Maximum and minimum gage heights for the water years 1943-50 are contained in the following table:

Water Year	Maximum observed		Minimum observed	
	Date	Gage-height (feet)	Date	Gage-height (feet)
1942-43...	June 16	3.18	Sept. 11	2.02
1943-44...	May 20	4.62	Jan. 17-22	1.80
1944-45...	May 14, June 1	3.50	Sept. 19-26	2.06
1945-46...	Jan. 6	4.50	May 29	2.06
1946-47...	June 13	5.08	Aug. 22	1.91
1947-48...	June 27	4.04	July 12 Aug. 7-10, 21	1.88
1948-49...	Mar. 4	3.70	Aug. 21-24, Aug. 29 to Sept. 2	1.84
1949-50...	Mar. 6	7.20	Aug. 26	1.80

1936-50: Maximum gage-height, 7.59 feet June 2, 1942 (from high-water mark); minimum observed, 1.54 feet Sept. 25, 1939.

COOPERATION.—Services of observer furnished by Iowa State Conservation Commission.

Lower Pine Lake at Eldora, Iowa—Continued

Daily Gage height, in Feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	2.10	2.22	2.24	2.28	2.22	2.18	2.18	2.30	2.20	2.10	2.30	2.10
2.....	2.10	2.20	2.26	2.28	2.22	2.18	2.14	2.30	2.30	2.10	2.18	2.10
3.....	2.14	2.20	2.26	2.28	2.12	2.16	2.14	2.30	2.28	2.10	2.24	2.10
4.....	2.44	2.22	2.26	2.28	2.16	2.14	2.12	2.30	2.28	2.12	2.20	2.10
5.....	2.30	.....	2.26	2.28	2.20	2.14	2.12	2.30	2.28	2.16	2.20	2.12
6.....	2.24	.....	2.28	2.28	2.36	2.14	2.12	2.54	2.12	2.14	2.18	2.10
7.....	2.16	.....	2.28	2.28	2.30	2.14	2.50	2.48	2.10	2.10	2.12	2.10
8.....	2.16	.....	2.28	2.28	2.30	2.14	2.50	2.40	2.10	2.10	2.10	2.08
9.....	2.14	.....	2.28	2.28	2.30	2.12	2.48	2.38	2.10	2.10	2.30	2.06
10.....	2.12	.....	2.28	2.28	2.30	2.10	2.38	2.38	2.10	2.10	2.28	2.04
11.....	2.12	.....	2.28	2.28	2.30	2.10	2.38	2.40	2.10	2.08	2.22	2.02
12.....	2.10	.....	2.28	2.28	2.18	2.10	2.34	2.40	2.10	2.08	2.54	2.16
13.....	2.10	.....	2.28	2.28	2.18	2.12	2.38	2.36	2.10	2.08	2.48	2.14
14.....	2.12	.....	2.28	2.28	2.18	2.12	2.40	2.30	2.10	2.18	2.32	2.14
15.....	2.12	.....	2.28	2.28	2.18	2.18	2.30	2.50	2.10	2.18	2.30	2.12
16.....	2.14	.....	2.28	2.28	2.18	2.16	2.20	2.42	3.18	2.30	2.40	2.10
17.....	2.14	.....	2.28	2.28	2.18	2.14	2.28	2.40	2.40	2.50	2.30	2.10
18.....	2.14	.....	2.28	2.28	2.16	2.12	2.22	2.40	2.20	2.32	2.22	2.10
19.....	2.16	2.28	2.28	2.28	2.18	2.12	2.18	2.38	2.20	2.32	2.16	2.14
20.....	2.18	2.20	2.28	2.26	2.24	2.14	2.18	2.40	2.20	2.34	2.10	2.14
21.....	2.16	2.20	2.28	2.26	2.36	2.14	2.20	2.38	2.12	2.30	2.10	2.16
22.....	2.18	2.22	2.28	2.22	2.44	2.17	2.20	2.38	2.30	2.16	2.10	2.17
23.....	2.20	2.20	2.28	2.22	2.46	2.32	2.28	2.38	2.20	2.14	2.10	2.18
24.....	2.22	2.18	2.28	2.22	2.30	2.30	2.28	2.38	2.12	2.12	2.10	2.18
25.....	2.22	2.14	2.28	2.22	2.28	2.30	2.28	2.34	2.10	2.12	2.10	2.16
26.....	2.20	2.12	2.28	2.22	2.28	2.28	2.28	2.30	2.10	2.10	2.08	2.16
27.....	2.20	2.12	2.28	2.22	2.30	2.28	2.28	2.22	2.10	2.14	2.08	2.16
28.....	2.24	2.12	2.28	2.22	2.18	2.12	2.28	2.20	2.30	2.78	2.08	2.16
29.....	2.24	2.12	2.28	2.22	.....	2.12	2.30	2.20	2.20	2.30	2.08	2.16
30.....	2.32	2.20	2.28	2.22	.....	2.20	2.30	2.20	2.10	2.30	2.10	2.24
31.....	2.34	.....	2.28	2.22	.....	2.18	.....	2.20	.....	2.30	2.10	.....
1943-44												
1.....	2.22	2.38	2.16	1.86	2.14	2.20	2.54	2.46	2.20	2.00	2.12	2.20
2.....	2.22	2.38	2.16	1.86	2.10	2.18	2.52	3.08	2.18	2.20	2.10	2.20
3.....	2.22	2.18	2.16	1.86	2.10	2.18	2.52	3.00	2.16	2.18	2.10	2.20
4.....	2.26	2.12	2.16	1.86	2.10	2.20	2.52	2.90	2.18	2.14	2.42	2.20
5.....	2.26	2.10	2.16	1.86	2.08	2.20	2.50	2.80	2.20	2.04	2.30	2.20
6.....	2.26	2.18	2.30	1.86	2.08	2.18	2.50	2.80	2.10	2.00	2.24	2.12
7.....	2.28	2.26	2.36	1.86	2.08	2.16	2.50	2.74	2.10	2.00	2.20	2.10
8.....	2.28	2.38	2.32	1.86	2.06	2.14	2.50	2.70	2.28	2.00	2.20	2.00
9.....	2.28	2.38	2.30	1.84	2.06	2.10	2.50	2.70	2.28	2.00	2.18	2.00
10.....	2.30	2.40	2.26	1.84	2.08	2.72	.....	2.70	2.38	2.00	2.18	2.12
11.....	2.30	2.40	2.26	1.84	2.08	2.68	.....	2.30	2.88	2.00	2.00	2.12
12.....	2.30	2.40	2.24	1.84	2.08	2.64	.....	2.30	3.00	2.02	2.00	2.12
13.....	2.38	2.40	2.24	1.82	2.10	2.48	.....	2.30	3.00	2.02	2.00	2.12
14.....	2.38	2.40	2.24	1.82	2.10	2.42	2.76	2.30	2.60	2.02	2.00	2.12
15.....	2.38	2.28	2.20	1.82	2.12	2.62	2.76	2.30	2.46	2.04	2.10	2.12
16.....	2.38	2.28	2.16	1.82	2.12	2.58	2.70	2.30	2.80	2.02	2.20	2.12
17.....	2.38	2.28	2.16	1.80	2.12	2.46	2.54	2.30	2.80	1.98	2.10	2.12
18.....	2.38	2.28	2.16	1.80	2.12	2.32	2.40	2.30	2.40	1.94	2.10	2.12
19.....	2.38	2.26	2.16	1.80	2.12	2.32	2.40	4.20	2.30	1.94	2.10	2.22
20.....	2.40	2.26	2.16	1.80	2.10	2.34	2.40	4.62	2.30	1.94	2.10	2.20
21.....	2.40	2.26	2.14	1.80	2.12	2.34	2.42	2.84	2.20	1.94	2.10	2.20
22.....	2.40	2.22	2.14	1.80	2.48	2.36	2.50	2.60	2.30	1.94	2.04	2.20
23.....	2.40	2.18	2.10	1.82	2.56	2.84	2.50	2.50	2.30	1.92	2.00	2.24
24.....	2.40	2.18	2.06	1.82	2.46	2.64	2.60	2.40	2.20	1.92	2.00	2.26
25.....	2.40	2.16	2.04	1.84	2.36	2.48	2.54	2.30	2.20	1.98	2.00	2.20
26.....	2.30	2.16	2.02	1.90	2.28	2.40	2.52	2.40	2.20	2.60	2.14	2.16
27.....	2.30	2.16	2.02	3.36	2.26	2.42	2.50	2.36	2.18	2.30	2.30	2.10
28.....	2.30	2.16	1.88	2.60	2.24	2.48	2.50	2.38	2.12	2.20	2.20	2.10
29.....	2.34	2.16	1.88	2.40	2.22	2.46	2.48	2.34	2.00	2.20	2.20	2.10
30.....	2.34	2.16	1.88	2.22	.....	2.52	2.46	2.34	2.00	2.16	2.20	2.10
31.....	2.34	.....	1.86	2.16	.....	2.54	.....	2.34	.....	2.16	2.10	.....

Lower Pine Lake at Eldora, Iowa—Continued
Daily Gage height, in Feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1	2.10	2.30	2.20	2.20	.....	2.40	2.30	2.58	3.50	2.54	2.22	2.16
2	2.22	2.30	2.20	2.20	.....	2.50	2.30	2.60	2.70	2.44	2.22	2.16
3	2.30	2.30	2.20	2.20	2.18	2.42	.....	2.68	2.60	2.30	2.22	2.10
4	2.30	2.30	.....	2.20	2.18	2.42	.....	2.60	2.60	2.30	2.22	2.10
5	2.30	2.30	.....	2.18	2.18	2.40	2.80	2.60	2.60	2.30	2.28	2.10
6	2.28	2.30	.....	2.18	.....	2.40	2.70	2.60	2.50	2.30	2.22	2.10
7	2.28	2.30	.....	2.18	2.18	2.40	2.60	2.58	2.50	2.30	2.22	2.10
8	2.28	2.30	.....	2.18	2.18	2.48	2.56	2.40	2.46	2.28	2.22	2.10
9	2.28	2.30	2.20	2.18	2.20	2.62	2.60	2.30	2.46	2.24	2.22	2.10
10	2.28	.....	2.20	2.18	2.20	2.80	2.58	2.40	2.90	2.20	2.22	2.10
11	2.28	.....	2.20	2.18	2.20	2.80	2.60	2.40	2.40	2.18	2.18	2.10
12	2.28	.....	2.20	2.18	2.20	2.50	2.58	2.40	2.44	2.16	2.18	2.08
13	2.28	.....	2.20	2.18	2.26	2.42	2.60	2.40	2.40	2.16	2.18	2.08
14	2.28	2.34	2.20	2.18	2.34	.....	2.60	3.50	2.40	2.16	2.70	2.08
15	2.28	2.34	2.20	2.18	2.40	.....	2.70	2.60	2.50	.....	2.60	2.08
16	2.28	2.34	2.20	2.18	2.50	2.54	3.06	2.60	2.50	.....	2.46	2.08
17	2.28	2.24	2.20	2.18	2.50	2.58	2.90	2.50	2.40	2.46	2.46	2.08
18	2.28	2.22	2.20	2.18	2.42	2.52	2.80	2.50	2.40	2.26	2.40	2.08
19	2.28	2.20	2.20	2.18	.....	2.52	2.70	2.50	2.40	2.18	2.38	2.06
20	2.30	2.20	.....	2.18	.....	2.52	2.70	2.50	2.40	2.18	2.38	2.06
21	2.30	2.20	2.20	2.18	.....	.....	2.68	3.00	2.36	2.18	2.22	2.06
22	2.32	2.20	2.20	2.18	2.34	.....	2.68	3.10	2.36	2.18	2.22	2.06
23	2.32	2.20	2.20	2.18	2.34	2.40	2.70	2.60	.....	2.18	2.20	2.06
24	2.32	2.20	2.20	2.18	2.34	2.40	2.68	2.50	2.36	2.18	2.18	2.06
25	2.32	2.20	2.20	2.18	2.28	2.52	2.68	2.60	2.36	2.18	2.18	2.06
26	2.32	2.20	2.20	2.18	2.30	.....	2.60	2.60	2.36	2.18	2.18	2.06
27	2.32	2.20	2.20	2.18	2.30	2.52	2.60	2.70	2.36	2.18	2.18	2.08
28	2.32	2.20	2.20	2.18	2.30	.....	2.60	2.80	2.44	2.18	2.16	2.08
29	2.32	2.20	2.20	2.18	.....	.....	2.50	2.60	2.44	2.18	2.16	2.08
30	2.30	2.20	2.20	2.18	.....	.....	2.50	2.50	3.40	2.22	2.16	2.08
31	2.30	.....	2.20	.....	.....	2.50	.....	2.60	.....	2.22	2.16	.....
1945-46												
1	2.08	2.18	2.44	2.34	2.32	2.36	3.18	2.16	2.34	2.50	2.42	2.14
2	2.08	2.20	2.46	2.34	2.32	2.36	3.18	2.18	2.34	2.40	2.40	2.10
3	2.08	2.20	2.46	2.34	2.34	2.36	3.16	2.20	2.29	2.36	2.38	2.08
4	2.08	2.20	2.46	2.38	2.34	2.36	3.16	2.34	2.24	2.34	2.38	2.08
5	2.08	2.20	2.46	3.50	4.20	2.38	3.16	2.34	2.34	2.20	2.34	2.08
6	2.08	2.20	2.48	4.50	3.30	3.20	3.16	2.34	2.34	2.20	2.34	2.10
7	2.08	2.22	2.48	3.40	2.60	3.02	3.00	2.30	2.30	2.20	2.30	2.10
8	2.08	2.48	2.48	2.60	2.50	2.72	2.80	2.30	2.28	2.20	2.28	2.40
9	2.08	2.48	2.48	2.50	2.44	2.70	2.60	2.30	2.26	2.20	2.28	2.56
10	2.08	2.48	2.48	2.50	2.36	2.70	2.58	2.30	2.24	2.20	2.28	2.58
11	2.08	2.48	2.48	2.40	2.34	2.60	2.58	2.32	2.20	2.20	2.28	2.60
12	2.08	2.48	2.48	2.40	2.34	3.60	2.58	2.28	2.24	2.18	2.28	2.76
13	2.08	2.48	2.48	2.34	2.34	3.48	2.58	2.26	2.24	2.18	2.26	2.76
14	2.08	2.48	2.46	2.34	2.34	3.38	2.54	2.24	2.22	2.18	2.26	2.76
15	2.08	2.48	2.46	2.34	2.34	3.34	2.50	2.20	2.24	2.16	2.26	2.76
16	2.10	2.48	2.44	2.34	2.34	3.30	2.46	2.18	2.24	2.16	2.26	2.40
17	2.10	2.48	2.44	2.34	2.34	3.30	2.40	2.16	2.24	2.14	2.28	2.16
18	2.10	2.48	2.40	2.34	2.34	3.30	2.36	2.16	3.70	2.14	2.30	2.14
19	2.10	2.48	2.40	2.34	2.34	3.30	2.30	2.20	2.68	2.28	2.30	2.12
20	2.10	2.48	2.38	2.34	2.34	3.30	2.26	2.22	2.60	2.28	2.30	2.12
21	2.10	2.48	2.36	2.34	2.34	3.30	2.24	2.20	2.50	2.26	2.30	2.12
22	2.10	2.48	2.34	2.34	2.34	3.30	2.20	2.18	2.28	2.24	2.38	2.14
23	2.10	2.48	2.34	2.34	2.34	3.28	2.18	2.80	2.24	2.24	2.60	2.16
24	2.12	2.46	2.34	2.34	2.34	3.28	2.18	2.60	2.22	2.24	2.60	2.14
25	2.14	2.46	2.34	2.34	2.34	3.26	2.18	2.80	2.20	2.24	2.60	2.12
26	2.14	2.44	2.34	2.34	2.34	3.26	2.16	2.70	2.18	2.24	2.40	2.10
27	2.14	2.44	2.34	2.34	2.34	3.26	2.16	2.40	2.18	3.80	2.22	2.10
28	2.14	2.44	2.34	2.34	2.36	.....	3.24	2.16	2.10	2.18	2.66	2.22
29	2.16	2.44	2.34	2.32	.....	.....	3.20	2.16	2.06	2.20	2.60	2.20
30	2.16	2.44	2.36	2.32	.....	.....	3.20	2.16	2.20	3.68	2.60	2.18
31	2.16	.....	2.36	2.32	.....	.....	3.20	.....	2.38	.....	2.42	2.18

Lower Pine Lake at Eldora, Iowa—Continued

Daily Gage height, in Feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1	2.08	2.26	2.18	2.22	2.04	2.22	2.20	3.00	5.02	2.90	2.12	2.02
2	2.06	2.26	2.18	2.22	2.04	2.22	2.20	3.00	3.94	2.50	2.12	2.00
3	2.06	2.26	2.18	2.20	2.04	2.22	2.20	3.00	3.04	2.20	2.12	2.00
4	2.06	2.26	2.18	2.00	2.04	2.22	2.22	3.00	2.60	2.10	2.12	2.00
5	2.06	2.20	2.20	2.00	2.04	2.22	2.24	2.60	2.30	2.10	2.12	2.00
6	2.06	2.20	2.22	2.00	2.04	2.30	2.50	2.52	2.30	2.10	2.12	2.00
7	2.06	2.20	2.22	2.18	2.04	2.32	2.48	2.32	2.30	2.10	2.08	2.00
8	2.06	2.24	2.22	2.00	2.04	2.34	2.48	2.20	2.00	2.80	2.10	2.00
9	2.06	2.26	2.22	2.16	2.04	2.34	2.46	2.20	3.02	2.80	2.10	2.00
10	2.06	2.24	2.22	2.16	2.04	2.68	3.31	2.18	2.50	2.74	2.10	2.00
11	2.12	2.20	2.08	2.16	2.06	2.74	3.38	2.18	2.40	2.70	2.10	2.00
12	2.12	2.18	2.22	2.12	2.12	2.40	3.36	2.10	2.90	2.40	2.08	2.02
13	2.12	2.18	2.22	2.10	2.18	2.80	3.50	2.10	5.08	2.10	2.08	2.02
14	2.12	2.18	2.22	2.08	2.22	2.40	3.48	2.08	2.40	2.10	2.08	2.02
15	2.10	2.22	2.22	2.06	2.26	2.36	3.20	2.20	3.80	2.10	2.06	2.02
16	2.10	2.24	2.20	2.04	2.46	2.40	3.10	2.08	2.40	2.10	2.06	2.02
17	2.10	2.22	2.20	2.02	2.66	2.40	3.00	2.18	2.70	2.10	2.06	2.02
18	2.10	2.20	2.18	2.00	2.66	2.40	2.60	2.18	2.70	2.10	2.06	2.00
19	2.10	2.18	2.18	1.98	2.66	2.40	2.60	2.24	2.70	2.10	2.06	2.00
20	2.08	2.18	2.18	1.96	2.60	2.40	3.48	2.90	2.30	2.10	2.06	2.00
21	2.10	2.20	2.18	1.96	2.56	2.42	2.58	2.44	2.60	2.10	2.06	2.00
22	2.10	2.20	2.18	1.96	2.50	2.44	2.54	2.38	2.30	2.12	1.91	2.00
23	2.10	2.20	2.18	1.98	2.46	2.44	2.54	2.40	2.30	2.14	2.04	2.00
24	2.20	2.20	2.18	1.98	2.40	2.30	3.00	2.46	2.18	2.14	2.04	2.00
25	2.30	2.20	2.18	2.00	2.36	2.26	3.00	2.70	2.40	2.14	2.04	2.00
26	2.30	2.18	2.18	2.00	2.28	2.20	3.00	2.20	2.20	2.14	2.00	2.00
27	2.46	2.18	2.18	2.02	2.22	2.20	3.00	2.20	2.20	2.14	2.00	2.00
28	2.46	2.18	2.18	2.02	2.22	2.20	3.00	2.34	2.10	2.12	2.00	2.00
29	2.46	2.18	2.18	2.02	2.22	2.20	3.00	2.80	2.10	2.12	2.04	2.00
30	2.46	2.18	2.22	2.04	2.22	2.20	3.00	2.94	2.40	2.12	2.04	2.00
31	2.30	2.22	2.22	2.04	2.22	2.20	2.94	2.94	2.12	2.12	2.04	2.00
1947-48												
1			2.16	2.16	2.30	2.80	2.60	2.24	2.12	2.20	2.08	2.02
2			2.16	2.16	2.30	2.38	2.66	2.22	2.12	2.08	2.04	2.00
3			2.18	2.16	2.32	2.38	2.66	2.24	2.12	2.04	2.00	2.00
4			2.22	2.18	2.32	2.38	2.66	2.26	2.12	2.04	1.98	2.00
5			2.24	2.18	2.34	2.38	2.66	2.26	2.10	2.02	1.94	2.02
6			2.24	2.18	2.34	2.38	2.66	2.34	2.08	2.00	1.92	2.01
7			2.24	2.18	2.34	2.34	2.66	2.32	2.06	2.00	1.88	2.01
8			2.24	2.18	2.32	2.30	2.84	2.26	2.04	1.98	1.88	2.01
9			2.22	2.18	2.32	2.28	2.80	2.26	2.00	1.96	1.88	2.01
10			2.20	2.18	2.32	2.26	2.80	2.24	1.98	1.94	1.88	2.01
11			2.20	2.18	2.32	2.24	2.86	2.22	1.98	1.90	1.90	2.00
12		2.05	2.18	2.20	2.34	2.24	2.86	2.22	1.98	1.88	1.92	2.02
13		2.04	2.18	2.20	2.34	2.24	2.86	2.22	1.98	3.10	1.92	2.02
14		2.04	2.18	2.22	2.34	2.24	2.86	2.22	1.98	2.00	1.90	2.06
15		2.10	2.18	2.22	2.34	2.24	2.46	2.22	2.00	2.40	1.90	2.06
16		2.10	2.18	2.24	2.34	3.26	2.24	2.22	2.00	2.20	1.92	2.08
17		2.10	2.16	2.24	2.36	2.14	2.24	2.20	2.00	2.20	1.98	2.09
18		2.10	2.16	2.26	2.36	2.88	2.24	2.22	1.98	2.18	1.94	2.09
19		2.10	2.16	2.26	2.38	3.20	2.24	2.20	1.98	2.24	1.92	2.09
20		2.10	2.16	2.28	2.38	2.68	2.22	2.20	2.00	2.22	1.90	2.16
21		2.12	2.16	2.28	2.38	2.52	2.22	2.20	2.00	2.22	1.88	2.16
22		2.12	2.16	2.28	2.38	2.46	2.42	2.20	2.02	2.20	1.90	2.14
23		2.12	2.14	2.28	2.38	2.44	2.44	2.18	2.02	2.18	1.90	2.14
24		2.14	2.14	2.28	2.38	2.46	2.40	2.16	2.04	2.16	1.90	2.12
25		2.16	2.14	2.30	2.38	2.50	2.32	2.14	2.02	2.20	1.90	2.10
26		2.16	2.14	2.30	2.38	2.46	2.34	2.14	2.04	2.20	1.90	2.10
27		2.16	2.14	2.30	3.78	3.50	2.30	2.12	4.04	2.16	1.98	2.10
28		2.16	2.16	2.30	3.76	3.00	2.22	2.12	2.80	2.14	2.02	2.10
29		2.16	2.16	2.30	3.76	2.90	2.20	2.12	2.38	2.14	2.00	2.10
30		2.16	2.16	2.30	3.76	2.70	2.24	2.12	2.28	2.16	2.04	2.10
31			2.16	2.30	3.76	2.60		2.12		2.12	2.04	2.00

Lower Pine Lake at Eldora, Iowa—Continued
Daily Gage height, in Feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June.	July	Aug.	Sept.
1948-49												
1	2.10	2.20	2.15	2.16	2.16	2.30	2.48	2.38	2.10	1.98	1.92	1.84
2	2.10	2.20	2.15	2.16	2.14	2.30	2.38	2.38	2.24	2.00	1.90	1.83
3	2.10	2.20	2.14	2.20	2.14	2.76	2.44	2.30	2.20	2.00	1.90	1.88
4	2.10	2.26	2.14	3.10	2.14	3.48	2.48	2.18	2.16	1.98	1.90	1.88
5	2.10	2.34	2.16	2.42	2.14	3.02	2.50	2.20	2.14	1.96	1.90	1.88
6	2.12	2.34	2.17	2.35	2.14	2.52	2.56	2.16	2.11	1.96	1.88	1.90
7	2.20	2.34	2.20	2.29	2.14	2.38	2.36	2.12	2.08	1.96	1.88	1.90
8	2.18	2.32	2.20	2.28	2.12	2.44	2.46	2.10	2.08	1.94	1.86	1.90
9	2.16	2.32	2.20	2.28	2.12	2.38	2.38	2.08	2.07	1.94	1.86	1.88
10	2.14	2.30	2.20	2.28	2.12	2.30	2.32	2.06	2.07	1.94	1.86	1.88
11	2.14	2.30	2.20	2.26	2.14	2.28	2.28	2.06	2.06	1.92	1.86	1.92
12	2.14	2.30	2.18	2.22	2.14	2.26	2.28	2.17	2.10	1.90	1.86	1.92
13	2.14	2.30	2.18	2.18	2.14	2.26	2.30	2.14	2.08	1.90	1.86	1.94
14	2.14	2.30	2.18	2.18	2.12	2.26	2.30	2.19	2.06	1.90	1.86	1.96
15	2.14	2.30	2.20	2.72	2.12	2.24	2.28	2.18	2.06	1.90	1.86	1.98
16	2.14	2.30	2.20	2.69	2.12	2.24	2.26	2.18	2.04	1.90	1.86	1.98
17	2.14	2.30	2.18	2.32	2.14	2.22	2.28	2.16	2.04	1.90	1.86	1.98
18	2.14	2.30	2.18	2.26	2.16	2.22	2.30	2.16	2.02	1.99	1.86	2.00
19	2.14	2.36	2.18	2.24	2.16	2.20	2.34	2.16	2.02	2.00	1.86	2.00
20	2.14	2.30	2.18	2.24	2.16	2.20	2.38	2.18	2.00	2.00	1.86	2.00
21	2.14	2.26	2.18	2.22	2.16	2.26	2.40	2.18	2.06	1.98	1.84	2.00
22	2.14	2.24	2.18	2.20	2.16	2.60	2.40	2.18	2.04	1.98	1.84	2.00
23	2.14	2.20	2.18	2.20	2.16	2.34	2.38	2.18	1.98	1.98	1.84	2.00
24	2.14	2.18	2.18	2.20	2.86	2.26	2.38	2.18	2.12	1.98	1.84	2.00
25	2.15	2.18	2.18	2.18	2.48	2.38	2.40	2.18	2.10	1.98	1.84	2.00
26	2.15	2.18	2.17	2.18	2.58	2.34	2.40	2.16	2.07	1.96	1.84	2.00
27	2.15	2.16	2.17	2.18	2.48	2.46	2.43	2.16	2.05	1.96	1.84	2.00
28	2.16	2.16	2.17	2.18	2.36	2.32	2.42	2.14	2.02	1.96	1.84	2.00
29	2.16	2.16	2.16	2.16	.....	2.36	2.40	2.14	2.00	1.96	1.84	2.00
30	2.17	2.16	2.16	2.16	.....	2.38	2.40	2.12	1.97	1.94	1.84	2.00
31	2.18	.....	2.16	2.16	.....	2.48	.....	2.10	.....	1.92	1.84	.....
1949-50												
1	2.00	2.12	2.12	2.06	2.08	2.14	2.40	2.24	2.24	2.12	1.92	1.84
2	2.00	2.10	2.12	2.06	2.08	2.12	2.38	2.22	2.44	2.10	1.90	1.84
3	2.02	2.10	2.12	2.06	2.10	2.12	2.36	2.20	2.40	2.10	1.90	1.84
4	2.02	2.10	2.12	2.06	2.10	2.14	2.34	2.50	2.34	2.05	1.88	1.84
5	2.04	2.10	2.12	2.06	2.10	3.04	2.30	2.96	2.20	2.10	1.88	.....
6	2.06	2.10	2.12	2.06	2.10	5.21	2.28	2.56	2.14	2.10	1.86	.....
7	2.08	2.10	2.12	2.06	2.10	5.20	2.24	2.32	2.12	2.08	1.84	.....
8	2.10	2.10	2.12	2.06	2.24	3.44	2.22	2.44	2.10	2.06	1.84	.....
9	2.10	2.12	2.14	2.06	2.36	2.88	2.26	3.36	3.91	2.04	1.84	.....
10	2.12	2.12	2.14	2.06	2.36	.....	2.24	2.66	2.48	2.04	1.84	.....
11	2.12	2.12	2.20	2.06	2.30	.....	2.22	2.50	2.36	2.02	1.84	.....
12	2.12	2.16	2.20	2.06	2.26	2.24	2.20	2.46	2.30	2.02	1.84	.....
13	2.12	2.16	.....	2.06	2.22	2.22	2.16	2.44	2.24	2.02	1.86	.....
14	2.12	2.16	2.18	2.08	2.20	2.26	2.12	2.40	2.36	2.00	1.86	.....
15	2.10	2.16	2.18	2.08	2.18	2.34	2.10	2.34	2.85	2.00	1.88	.....
16	2.10	2.16	2.18	2.08	2.16	2.84	2.10	2.26	2.52	2.00	1.88	.....
17	2.10	2.14	2.18	2.08	2.14	2.96	2.10	2.24	2.36	2.02	1.86	.....
18	2.10	2.14	2.16	2.08	2.12	2.98	2.10	2.20	4.28	2.00	1.86	.....
19	2.16	2.14	2.16	2.08	2.12	2.96	2.10	2.18	2.72	2.02	1.84	.....
20	2.20	2.14	2.14	2.08	2.12	.....	2.10	2.18	2.44	2.02	1.84	.....
21	2.24	2.14	2.12	2.08	2.12	.....	2.10	2.66	2.36	2.00	1.84	6.04
22	2.20	2.14	2.10	2.08	2.10	3.20	2.10	2.44	2.40	2.00	1.84	.....
23	2.18	2.14	2.10	2.08	2.10	3.22	2.10	2.40	2.32	1.98	1.82	.....
24	2.18	.....	2.08	2.08	2.10	3.02	2.34	2.30	2.38	1.98	1.82	.....
25	2.16	2.14	2.08	2.08	2.10	2.84	2.48	2.88	2.30	1.98	1.82	.....
26	2.16	2.14	2.06	2.08	2.10	3.04	2.38	2.48	2.20	1.96	1.80	.....
27	2.14	2.14	2.06	2.08	2.10	3.00	2.34	2.40	2.20	1.96	1.84	.....
28	2.14	2.12	2.06	2.08	2.14	2.76	2.30	2.36	2.16	1.94	1.84	.....
29	2.14	2.12	2.04	2.08	.....	.....	2.28	2.32	2.14	1.94	1.84	.....
30	2.12	2.12	2.04	2.08	.....	.....	2.26	2.28	2.12	1.94	1.84	.....
31	2.12	.....	2.06	2.08	.....	.....	.....	2.26	.....	1.92	1.84	.....

Lakes in Iowa River Basin

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 1950.

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. Oct. 2, 1936, to Mar. 30, 1949, tape and float gage in same well at same datum.

EXTREMES.—Maximum and minimum gage heights for the water years 1943-50 are contained in the following table:

Water Year	Maximum observed		Minimum observed	
	Date	Gage-height (feet)	Date	Gage-height (feet)
1942-43. . .	Sept. 4	11.31	Sept. 3	8.08
1943-44. . .	May 20	13.64	Jan. 8-12, 22-24, 26	8.04
1944-45. . .	June 10	9.34	Sept. 1, 3	7.90
1945-46. . .	Jan. 5	11.62	Aug. 13	8.00
1946-47. . .	June 5	8.74	Aug. 25	8.01
1947-48. . .	July 21, 30	8.30	Aug 26	7.75
1948-49. . .	June 28	8.60	Sept. 3	7.75
1949-50. . .	July 2	10.52	Oct. 18	7.84

1936-50: Maximum gage-height observed, 13.64 feet on May 20, 1944; minimum observed -0.50 feet Dec. 5, 1936 (gate in dam open).

COOPERATION.—Services of observer furnished by Iowa State Conservation Commission.

Lake Macbride near Solon, Iowa—Continued

Daily Gage height, in Feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1	8.12	8.15	8.14	8.21	8.12	8.14	8.21	8.26	8.26	8.18	8.21	8.10
2	8.12		8.14	8.21	8.12		8.21	8.22	8.61		8.16	8.09
3	8.12		8.14	8.21	8.25	8.14	8.20		8.42	8.18	8.62	8.08
4	8.12		8.14	8.21	8.75	8.13	8.17	8.20	8.38	8.19	8.24	10.20
5	8.12		8.14	8.19	8.60	8.13	8.15	8.18	8.36	8.17	8.21	8.46
6	8.11		8.14		8.40	8.12	8.15	8.24	8.42	8.15	8.18	8.38
7	8.11		8.12		8.40	8.11	8.19	8.20	8.38	8.15	8.16	8.28
8	8.11	8.15	8.12	8.18	8.28	8.11	8.19	8.20	8.36	8.14	8.14	8.28
9	8.11	8.47	8.12	8.18	8.22	8.11	8.17	8.20	8.28	8.14	8.13	8.24
10	8.11	8.31	8.12	8.17	8.20	8.11	8.17	8.20	8.28	8.13	8.12	8.20
11	8.11		8.12	8.16	8.20	8.11	8.27	8.20	8.75	8.12	8.12	8.18
12	8.11			8.16	8.18	8.11	8.29	8.18	8.34	8.11	8.12	8.29
13			8.12	8.15	8.18	8.11	8.22	8.18	8.32	8.11	8.38	8.25
14			8.12	8.15	8.17	8.10	8.19	8.18	8.24	8.28	8.26	8.23
15			8.12	8.15	8.16	8.49	8.19	8.33	8.28	8.18	8.26	
16		8.16	8.12	8.15	8.14	8.56	8.18	8.76		8.28	8.16	8.21
17		8.22	8.12	8.14	8.14		8.18	8.70	8.24	8.16		8.20
18		8.18	8.12	8.14	8.14	8.41	8.17	8.65	8.24	8.14		8.18
19		8.17	8.12	8.14	8.38		8.17	8.62	8.24	8.13	8.12	8.18
20	8.15	8.16	8.12	8.14	8.45			8.46	8.91	8.13	8.12	8.18
21	8.15	8.16	8.12	8.14	8.23				8.38	8.12	8.12	8.18
22	8.15	8.16	8.13	8.14	8.28			8.24	8.24	8.11	8.10	8.16
23	8.14		8.13	8.13	8.23	8.38	8.21	8.26	8.22			8.16
24	8.14			8.13			8.18		8.20	8.11	8.10	8.16
25		8.17	8.12	8.13		8.32	8.17		8.19	8.11	8.14	8.16
26			8.19	8.13	8.16	8.24	8.18			8.09	8.24	
27			8.93	8.13	8.16	8.22	8.33		8.18	8.10	8.16	8.16
28			8.39	8.13	8.14		8.24	8.28	8.18	8.10	8.12	8.16
29		8.15	8.28	8.12		8.21	8.86	8.26	8.18		8.11	8.16
30	8.40	8.14	8.24	8.12		8.20	8.32	8.24		8.09	8.11	8.16
31	8.21		8.21	8.12		8.19		8.24			8.10	
1943-44												
1			8.12	8.07	8.12	8.18	8.20	8.25	8.45	8.22	8.11	8.16
2			8.12	8.07		8.18	8.20		8.41		8.11	8.14
3	8.16		8.12	8.06	8.12	8.18	8.20		8.39	8.33	8.10	
4	8.16		8.12	8.06		8.18	8.20		8.35		8.46	
5		8.16	8.12	8.06	8.12		8.20	8.25	8.35	8.25	8.28	8.09
6			8.12	8.05			8.20	8.28	8.33	8.22		8.08
7	8.16		8.12	8.05	8.12			8.27	8.32	8.19	8.18	8.07
8	8.16	8.16	8.12	8.04						8.32	8.15	
9		8.16		8.04	8.12				8.60		8.13	8.07
10	8.16	8.16	8.12	8.04	8.12				8.71	8.26	8.11	
11	8.16	8.15	8.12	8.04	8.12	8.16		8.24		8.24	8.10	8.17
12	8.16	8.15	8.10	8.04	8.12	8.32		8.24	8.64	8.25	8.10	8.14
13	8.16	8.15	8.10	8.05	8.11	8.27		8.23				8.12
14	8.16	8.15	8.10	8.05		8.36				8.19	8.06	8.11
15		8.15	8.09	8.05	8.11	8.36				8.19	8.06	8.10
16	8.16	8.15	8.09	8.05		8.32	8.30		9.64		8.09	8.10
17	8.15	8.15	8.08	8.06		8.32	8.30			8.14	8.28	
18	8.16		8.08	8.06		8.28	8.30	8.24	8.62	8.14	8.22	8.09
19	8.16		8.08	8.05		8.28	8.30	8.26	8.49	8.16	8.16	8.10
20		8.15	8.08	8.05	8.10	8.26		11.24	8.35	8.14		8.10
21	8.16			8.05	8.10	8.26			8.31	8.12	8.11	8.11
22	8.16		8.08	8.04	8.52	8.32		8.86	8.69	8.12	8.10	8.09
23	8.16		8.08	8.04	8.24		9.20		8.53	8.14	8.09	8.09
24	8.16		8.08	8.04	8.24		8.41		8.39	8.14	8.09	
25	8.16		8.08	8.05	8.24	8.24				8.13	8.08	8.09
26			8.08	8.04	8.24			8.92	8.66	8.13		
27			8.08	8.79	8.22	8.22			8.66			8.09
28			8.08	8.21	8.20	8.21	8.20		8.57			8.10
29				8.16	8.20	8.21	8.20	8.75	8.34		8.14	8.09
30		8.12		8.16		8.21		8.54	8.25		8.12	8.09
31				8.14						8.12	8.18	

Lake Macbride near Solon, Iowa—Continued
Daily Gage height, in Feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1		8 09					8 23	8 24	8 36		8 08	7 90
2		8 09					8 21	8 28	8 40	8 20	8 08	
3	8 33	8 28					8 44	8 28		8 18	8 08	7 90
4	8 18	8 24					8 43	8 27	8 34		8 08	
5	8 33						8 35		8 28	8 16		
6	8 27	8 29					8 31		8 25	8 15	8 15	
7	8 20	8 23				8 22	8 28	8 27	8 25	8 14		
8		8 21						8 24	8 25		8 09	8 12
9	8 14	8 19					8 25	8 24	8 25	8 13	8 08	
10	8 13	8 17					8 23	8 25	9 34	8 12	8 08	8 10
11	8 12	8 15					8 22	8 25	8 33	8 11	8 07	8 10
12	8 10						8 26	8 25	8 30	8 11		
13	8 09						8 26		8 21	8 30	8 70	
14	8 09						8 24		8 19	8 30	8 70	
15									8 22			8 19
16	8 09	8 13					8 59	8 66	8 30	8 12	8 10	
17	8 09	8 13					8 64	9 18		8 12	8 10	8 09
18	8 09	8 13					8 45	8 75	8 19	8 12	8 10	
19	8 09					8 22	8 39	8 58	8 17	8 12		
20	8 09	8 13				8 22	8 34		8 17	8 12	8 70	
21	8 09	8 13				8 21	8 31	8 43	8 17	8 12		8 04
22		8 13				8 21	8 28	8 40	8 17			8 04
23	8 09	8 13				8 21	8 24	8 34	8 17	8 11	8 20	
24	8 09	8 13				8 21	8 29	8 32			8 20	
25	8 09	8 13				8 88	8 33	8 31	8 15			
26	8 09					8 98	8 32	8 33	8 14			
27	8 09	8 13				8 64	8 29		8 14	8 08	8 95	
28	8 09	8 13				8 46		8 41	8 14	8 08		
29		8 13				8 38		8 38	8 56			
30	8 09	8 13				8 33	8 26	8 34	8 68	8 08		
31	8 09					8 30		8 35		8 08		
1945-46												
1	8 22					8 11	8 17	8 12		8 18		
2						8 23	8 17					8 06
3	8 21			8 08			8 15		8 07		8 13	
4	8 20			8 08		8 16	8 15	8 25	8 07			
5			8 14	11 27		8 14	8 15		8 06	8 12	8 07	8 04
6		8 13				8 43	8 15	8 16	8 05		8 07	8 03
7		8 13		8 24		8 20	8 16	8 16	8 05			8 03
8			8 14	8 22		8 17		8 15	8 05	8 12	8 07	
9		8 19		8 18		8 13	8 15	8 14			8 07	8 15
10							8 15				8 07	8 14
11				8 16		8 12	8 14	8 15		8 09		8 13
12		8 12	8 14	8 16		8 27	8 14			8 08	8 01	8 10
13						8 37	8 14	8 13		8 08	8 00	8 09
14				8 13		8 27	8 13	8 13	8 20		8 02	8 08
15	8 11			8 12			8 14	8 13	8 20		8 06	
16		8 11		8 11		8 23	8 14	8 12			8 07	8 07
17		8 11		8 11			8 14	8 11	8 41		9 00	8 07
18				8 11		8 31	8 14	8 17	8 84	8 12		8 06
19				8 11		8 28	8 14		8 36	8 11	8 14	8 07
20						8 23	8 14	8 16	8 34			8 16
21				8 10		8 21		8 14	8 28			8 16
22				8 10		8 20		8 13	8 21		8 10	
23				8 08		8 17	8 17			8 06	8 09	8 53
24				8 08			8 17	8 16	8 17	8 06	8 08	
25						8 22	8 16	8 15	8 42	8 06		
26						8 35	8 15				8 07	
27		8 14			8 11	8 30	8 15	8 12		8 06		
28					8 10	8 24		8 11				8 15
29						8 21	8 13					
30						8 19	8 14			8 08		8 11
31								8 08			8 06	

Lake Macbride near Solon, Iowa—Continued
Daily Gage height, in Feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1										8 31		
2									8 42	8 22	8 10	
3									8 29	8 20		
4	8 09								8 25	8 19	8 10	
5	8 09								8 74		8 09	
6										8 46		
7									8 33	8 25	8 07	
8	8 10								8 49	8 21		
9									8 33	8 20	8 05	
10	8 12								8 30	8 20		
11	8 18								8 29		8 04	
12										8 19	8 03	
13											8 03	
14								8 22	8 41	8 22		
15										8 20		
16									8 27	8 20	8 10	
17									8 27			
18									8 29		8 09	
19									8 29	8 18	8 08	
20											8 06	
21									8 27	8 16	8 06	
22						8 17					8 05	
23									8 27		8 04	
24									8 23			
25											8 01	
26			8 09									
27		8 14	8 11									
28			8 11						8 19			
29			8 11									
30			8 11						8 19			
31												
1947-48												
1							8 12	8 12	8 03	8 09	8 12	
2							8 11	8 14	8 02	8 07	8 09	
3							8 11	8 17	8 01	8 08	8 06	
4							8 11	8 20	8 07	8 03	8 06	
5							8 10	8 22	8 00	8 06	8 04	
6							8 11	8 24	8 00	8 05	8 03	
7							8 11	8 22	8 03	8 02	8 02	
8							8 10	8 19	8 08	8 00	8 02	
9							8 10	8 17	8 11	8 00	8 01	
10							8 11	8 16	8 09	7 97	8 00	
11							8 10	8 17	8 08	7 93	7 99	
12							8 10	8 18	8 06	7 92	7 98	
13							8 09	8 18		7 95	7 97	
14							8 09	8 19			7 97	
15							8 08	8 19			7 96	
16							8 09	8 17			7 95	
17							8 08	8 15			7 93	
18							8 09	8 15			7 91	
19							8 08	8 14		8 00	7 88	
20							8 07	8 13	8 01	7 99	7 85	
21							8 07	8 13	8 02	8 30	7 83	
22							8 08	8 11	8 00	8 17	7 81	
23							8 08	8 10	8 02	8 09	7 80	
24							8 07	8 08	8 01	8 05	7 78	
25						8 15	8 08	8 07	8 01	8 08	7 76	
26						8 15	8 08	8 05	8 01	8 28	7 75	
27						8 16	8 15	8 04	8 07	8 19	7 80	
28						8 16	8 12	8 04	8 11	8 10	7 99	
29						8 15	8 10	8 04	8 14	8 07		
30						8 14	8 09	8 04	8 12	8 30		
31						8 13		8 03				

Lake Macbride near Solon, Iowa—Continued

Daily Gage height, in Feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1							8.29	8.15	8.07	8.15	8.02	7.81
2							8.23	8.15	8.11	8.23	8.00	7.78
3							8.20	8.13	8.10	8.18	7.98	7.80
4							8.19	8.13	8.09	8.16	7.97	7.87
5							8.18	8.13	8.07	8.15	7.95	7.86
6							8.17	8.12	8.06	8.14	7.94	7.85
7							8.16	8.11	8.03	8.13	7.92	7.85
8							8.15	8.11	8.01	8.13	7.89	7.84
9							8.15	8.12	7.98	8.19	7.87	7.83
10							8.15	8.11	7.98	8.15	7.86	7.81
11							8.15	8.10	7.97	8.12	7.94	7.83
12							8.15	8.11	7.96	8.11	8.16	8.36
13							8.15	8.11	8.04	8.10	8.10	8.25
14							8.16	8.11	8.25	8.09	8.07	8.15
15							8.22	8.10	8.12	8.08	8.05	8.11
16							8.22	8.12	8.09	8.07	8.04	8.09
17							8.24	8.13	8.07	8.06	8.04	8.08
18							8.23	8.13	8.06	8.07	8.04	8.08
19							8.20	8.13	8.05	8.09	8.03	8.07
20							8.18	8.11	8.04	8.08	8.02	8.06
21							8.19	8.12	8.10	8.10	8.00	8.05
22							8.21	8.21	8.10	8.10	7.98	8.04
23							8.20	8.17	8.07	7.96	8.02	8.02
24							8.17	8.14	8.07	7.94	8.01	8.01
25							8.17	8.13	8.06	7.92	7.99	8.01
26							8.17	8.13	8.19	8.11	7.90	7.98
27							8.16	8.12	8.17	8.21	7.88	8.01
28							8.15	8.10	8.44	8.11	7.87	8.01
29							8.15	8.08	8.21	8.08	7.85	8.01
30							8.15	8.07	8.16	8.05	7.86	8.01
31						8.46	8.07	8.04	8.04	7.84	8.01	8.01
1949-50												
1	7.94	8.06	8.07	8.23	8.12	8.35	8.11	8.22	8.14	8.42	8.37	8.03
2	7.93	8.06	8.07	8.16	8.10	8.22	8.11	8.20	8.16	9.06	8.17	8.02
3	7.92	8.05	8.07	8.15	8.09	8.16	8.12	8.18	8.16	8.27	8.13	8.01
4	7.91	8.05	8.07	8.12	8.08	8.34	8.14	8.49	8.14	8.20	8.12	7.99
5	7.91	8.05	8.06	8.10	8.08	9.10	8.14	8.28	8.13	8.18	8.12	7.97
6	7.91	8.05	8.06	8.08	8.28	8.60	8.14	8.21	8.12	8.16	8.11	7.96
7	7.91	8.05	8.07	8.07	8.36	8.36	8.14	8.17	8.10	8.15	8.10	7.95
8	7.91	8.05	8.06	8.07	8.22	8.17	8.12	8.15	8.09	8.14	8.10	7.94
9	7.91	8.06	8.05	8.07	8.33	8.13	8.14	8.41	8.09	8.12	8.09	7.94
10	7.92	8.07	8.05	8.07	8.38	8.11	8.27	8.27	8.08	8.12	8.21	7.93
11	7.91	8.07	8.09	8.07	8.30	8.11	8.26	8.22	8.06	8.13	8.16	7.94
12	7.90	8.09	8.11	8.07	8.17	8.10	8.18	8.20	8.07	8.15	8.12	7.96
13	7.89	8.13	8.09	8.48	8.13	8.09	8.15	8.20	8.33	8.21	8.11	7.96
14	7.88	8.12	8.08	8.23	8.11	8.10	8.14	8.18	8.23	8.14	8.10	7.96
15	7.87	8.11	8.06	8.15	8.10	8.13	8.14	8.17	8.36	8.12	8.09	7.95
16	7.86	8.10	8.05	8.13	8.10	8.13	8.13	8.15	8.18	8.12	8.08	7.94
17	7.85	8.09	8.04	8.10	8.09	8.11	8.13	8.15	8.12	8.14	8.07	7.93
18	7.84	8.08	8.04	8.09	8.08	8.10	8.13	8.15	8.48	8.13	8.06	7.92
19	7.86	8.08	8.05	8.08	8.08	8.09	8.13	8.14	8.28	8.15	8.05	7.91
20	7.89	8.08	8.07	8.08	8.08	8.09	8.13	8.15	8.22	8.15	8.03	7.91
21	8.45	8.07	8.08	8.07	8.07	8.10	8.12	8.20	8.19	8.13	8.03	7.94
22	8.19	8.07	8.09	8.07	8.07	8.13	8.12	8.28	8.17	8.12	8.04	7.96
23	8.13	8.07	8.08	8.07	8.07	8.12	8.29	8.20	8.17	8.11	8.04	7.95
24	8.11	8.08	8.07	8.08	8.08	8.12	8.40	8.18	8.28	8.10	8.04	7.94
25	8.10	8.08	8.05	8.21	8.08	8.11	8.64	8.17	8.19	8.10	8.03	7.93
26	8.09	8.08	8.05	8.31	8.08	8.42	8.31	8.16	8.15	8.10	8.02	7.92
27	8.08	8.08	8.05	8.16	8.07	8.25	8.24	8.15	8.13	8.09	8.02	7.91
28	8.08	8.08	8.04	8.14	8.16	8.16	8.21	8.16	8.12	8.08	8.02	7.90
29	8.08	8.08	8.04	8.25	8.16	8.13	8.21	8.15	8.11	8.08	8.03	7.90
30	8.08	8.07	8.04	8.15	8.15	8.11	8.23	8.15	8.10	8.21	8.04	7.90
31	8.07	8.28	8.13	8.13	8.13	8.11	8.15	8.15	8.55	8.04	8.04	8.04

Lakes in Iowa River Basin

Clear Lake at Clear Lake, Iowa

LOCATION.—Lat. 43°08', long. 93°25', in sec. 14, T. 96 N., R. 22 W., ¼ mile west of State fish hatchery in town of Clear Lake.

RECORDS AVAILABLE.—May 1933 to September 1950 (no winter records).

GAGE.—Staff gage read once daily at present site since Apr. 21, 1944. Datum of gage is 1222.24 feet above mean sea level, datum of 1929, and 4.5 feet below crest of spillway of dam at outlet. May 19, 1933, to July 13, 1936, staff gage in wooden well at State fish hatchery at same datum. July 14, 1936, to Apr. 20, 1944, staff gage on post at Clear Lake State Park at same datum.

EXTREMES.—Maximum and minimum gage heights for the water years 1943-50 are contained in the following table:

Water Year	Maximum observed		Minimum observed	
	Date	Gage-height (feet)	Date	Gage-height (feet)
1942-43...	Apr. 12-14, 16	5.00	Nov 8	4.18
1943-44...	June 14-16	5.78	Nov. 5	4.26
1944-45...	June 11, 12	5.38	Nov. 1, 13	4.22
1945-46...	June 20-25	5.16	Nov. 4-7, 11, 12	4.30
1946-47...	July 5	5.51	Sept. 30	4.08
1947-48...	May 8-10, 15	4.72	Sept. 30	3.40
1948-49...	Apr. 26	4.39	Oct. 31, Nov. 1	3.24
1949-50...	Aug. 11, 12	4.48	Oct. 8	3.34

1933-50: Maximum gage-height observed, 5.78 feet June 14-16, 1944; minimum observed, 1.44 feet Aug. 12, 1936.

REMARKS.—Some discharge from lake at times during period 1942-48. Discharges from lake of 2.89 and 112 second-feet were measured on Apr. 20 and June 15, 1944 respectively.

COOPERATION.—Services of observer furnished by Iowa State Conservation Commission.

Clear Lake at Clear Lake, Iowa—Continued
Daily Gage height, in Feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1	4.42	4.22						4.74	4.76	4.64	4.74	4.74
2	4.40	4.22						4.78	4.86	4.62	4.72	4.72
3	4.40	4.20						4.76	4.90	4.68	4.72	4.73
4	4.40	4.20						4.72	4.92	4.70	4.70	4.72
5	4.44	4.22						4.70	4.82	4.72	4.70	4.80
6	4.44	4.20						4.74	4.90	4.68	4.68	4.82
7	4.44	4.20						4.74	4.86	4.66	4.68	4.84
8	4.44	4.18						4.72	4.88	4.66	4.66	4.82
9	4.42	4.24					4.93	4.66	4.78	4.65	4.80	4.80
10	4.42	4.24					4.90	4.66	4.76	4.64	4.78	4.80
11	4.40	4.24					4.94	4.64	4.74	4.62	4.84	4.68
12	4.40	4.24					5.00	4.68	4.74	4.60	4.76	4.60
13	4.38	4.24					4.66	4.66	4.78	4.58	4.76	4.64
14	4.38	4.24					5.00	4.65	4.82	4.60	4.76	4.60
15	4.38	4.20					4.90	4.64	4.82	4.58	4.80	4.58
16	4.38	4.20					5.00	4.70	4.82	4.58	4.80	4.60
17	4.36	4.22					4.88	4.76	4.82	4.60	4.78	4.60
18	4.36	4.20					4.94	4.78	4.80	4.58	4.72	4.50
19	4.36	4.22					4.92	4.78	4.80	4.68	4.70	4.60
20	4.36	4.22					4.86	4.76	4.76	4.66	4.70	4.60
21	4.36	4.22					4.84	4.76	4.74	4.68	4.68	4.56
22	4.36	4.20					4.80	4.76	4.76	4.62	4.66	4.56
23	4.36	4.20					4.84	4.74	4.76	4.60	4.66	4.56
24	4.36	4.20					4.82	4.76	4.74	4.60	4.66	4.56
25	4.36	4.20					4.84	4.78	4.74	4.60	4.74	4.54
26	4.34	4.20					4.78	4.78	4.72	4.60	4.72	4.52
27	4.34	4.20					4.82	4.76	4.74	4.58	4.74	4.50
28	4.34						4.80	4.74	4.74	4.66	4.68	4.50
29	4.24						4.76	4.74	4.74	4.70	4.72	4.50
30	4.24						4.86	4.74	4.68	4.66	4.70	4.50
31	4.24						4.78	4.78	4.74	4.70	4.70	4.50
1943-44												
1		4.30						4.90	5.25	5.22	4.70	4.70
2		4.30						4.93	5.25	5.16	4.68	4.68
3	4.52	4.28						5.10	5.24	5.20	4.68	4.66
4	4.52	4.28						5.06	5.24	5.16	4.68	4.65
5	4.50	4.26						5.04	5.24	5.12	4.86	4.66
6	4.50	4.30						5.05	5.20	5.08	4.86	4.64
7	4.50	4.32						5.06	5.18	5.10	4.82	4.62
8	4.48	4.34						5.06	5.16	5.12	4.78	4.60
9	4.48	4.34						5.06	5.14	5.05	4.76	4.60
10	4.46	4.34						5.08	5.14	5.02	4.72	4.60
11	4.44	4.52						5.08	5.18	5.08	4.72	4.60
12	4.46	4.56						5.08	5.60	5.06	4.72	4.58
13	4.48							5.06	5.74	5.00	4.72	4.58
14	4.48							5.06	5.78	4.98	4.72	4.56
15	4.46							5.06	5.78	4.98	4.68	4.56
16	4.46							5.06	5.78	4.98	4.70	4.55
17	4.42							5.05	5.74	4.96	4.76	4.55
18	4.40							5.04	5.72	4.96	4.74	4.55
19	4.40							5.05	5.70	4.94	4.72	4.54
20	4.38						4.78	5.12	5.70	4.94	4.70	4.58
21	4.38						4.70	5.26	5.68	4.92	4.67	4.58
22	4.42						4.80	5.30	5.66	4.90	4.66	4.58
23	4.40						4.80	5.30	5.62	4.86	4.62	4.60
24	4.40						4.85	5.32	5.58	4.85	4.60	4.58
25	4.38						4.86	5.34	5.50	4.84	4.58	4.56
26	4.38						4.86	5.32	5.44	4.84	4.58	4.56
27	4.38						4.86	5.30	5.40	4.82	4.62	4.56
28	4.36						4.87	5.28	5.34	4.80	4.68	4.55
29	4.38						4.87	5.28	5.25	4.76	4.68	4.54
30	4.32						4.90	5.27	5.24	4.74	4.70	4.54
31	4.32							5.26	5.24	4.72	4.70	4.50

Clear Lake at Clear Lake, Iowa—Continued

Daily Gage height, in Feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1	4.50	4.22	4.28					5.14	5.20	5.30	4.94	4.78
2	4.48	4.24	4.28					5.12	5.35	5.30	4.94	4.76
3	4.48	4.24						5.10	5.32	5.28	4.92	4.76
4	4.46	4.24						5.10	5.32	5.28	4.92	4.72
5	4.46	4.24						5.06	5.30	5.30	4.96	4.70
6	4.50	4.24						5.04	5.28	5.30	4.96	4.68
7	4.52	4.26						5.00	5.28	5.28	4.94	4.68
8	4.46	4.26						4.96	5.28	5.26	4.94	4.66
9	4.46	4.26						4.94	5.26	5.24	4.94	4.66
10	4.46	4.25						4.92	5.36	5.18	4.94	4.66
11	4.45	4.25						4.92	5.38	5.16	4.94	4.62
12	4.44	4.24						4.90	5.38	5.12	4.94	4.58
13	4.44	4.22						4.88	5.36	5.10	4.94	4.56
14	4.42	4.24						4.86	5.34	5.08	5.06	4.54
15	4.40	4.24						4.85	5.34	5.06	5.04	4.54
16	4.38	4.26						4.85	5.35	5.04	5.02	4.52
17	4.36	4.26						4.85	5.32	5.08	5.02	4.50
18	4.36	4.26						5.10	4.84	5.32	5.08	4.48
19	4.36	4.28						5.10	4.84	5.32	5.06	4.48
20	4.36	4.26						5.10	4.82	5.34	5.04	4.46
21	4.35	4.24						5.10	4.82	5.30	5.02	4.46
22	4.34	4.24						5.14	5.04	5.28	5.00	4.44
23	4.32	4.24						5.24	5.04	5.26	4.96	4.42
24	4.30	4.24						5.25	5.04	5.25	4.96	4.40
25	4.30	4.24						5.20	5.06	5.26	5.00	4.40
26	4.28	4.24						5.20	5.08	5.22	5.00	4.40
27	4.28	4.26						5.20	5.10	5.24	4.98	4.40
28	4.26	4.28						5.18	5.12	5.32	4.96	4.40
29	4.25	4.28						5.18	5.12	5.34	4.94	4.40
30	4.24	4.28						5.14	5.12	5.34	4.94	4.40
31	4.24							5.12		4.94	4.80	
1945-46												
1	4.56	4.32						4.86	5.02	5.12	4.80	4.46
2	4.58	4.32						4.86	4.98	5.10	4.78	4.44
3	4.58	4.32						4.88	4.98	5.10	4.78	4.42
4	4.56	4.30						4.90	4.96	5.08	4.76	4.40
5	4.56	4.30						4.90	4.96	5.06	4.78	4.40
6	4.56	4.30						4.90	4.94	5.04	4.76	4.58
7	4.54	4.30						4.88	4.94	5.00	4.74	4.60
8	4.56	4.32						4.86	4.94	4.96	4.74	4.68
9	4.56	4.32						4.86	4.94	4.94	4.80	4.82
10	4.54	4.32						4.86	4.94	4.92	4.80	4.86
11	4.48	4.30						4.88	4.92	4.92	4.78	4.84
12	4.48	4.30						4.88	4.92	4.90	4.78	4.86
13	4.46	4.35						4.90	4.90	4.88	4.76	4.84
14	4.46	4.34						4.90	4.90	4.86	4.76	4.82
15	4.40	4.34						4.86	4.90	4.84	4.76	4.78
16	4.44	4.34						4.86	5.10	4.84	4.74	4.76
17	4.44	4.32						4.88	5.12	4.82	4.74	4.74
18	4.44	4.32						4.92	5.12	4.80	4.70	4.72
19	4.42	4.32						4.96	5.14	4.80	4.70	4.72
20	4.42	4.32					5.12	4.96	5.16	4.80	4.68	4.72
21	4.40	4.32						4.96	5.16	4.78	4.64	4.70
22	4.40	4.34						4.96	5.16	4.74	4.62	4.70
23	4.40	4.34						4.94	5.16	4.72	4.60	4.76
24	4.38	4.34					5.02	5.06	5.16	4.70	4.60	4.76
25	4.38	4.34						5.04	5.16	4.70	4.58	4.74
26	4.36	4.34						5.06	5.14	4.68	4.56	4.74
27	4.36							4.90	5.05	5.14	4.68	4.74
28	4.36							4.90	5.04	5.14	4.76	4.76
29	4.34							4.92	5.04	5.12	4.74	4.76
30	4.34							4.90	5.04	5.12	4.80	4.52
31	4.32							5.02		4.80	4.50	

Clear Lake at Clear Lake, Iowa—Continued
Daily Gage height, in Feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1	4.76	4.88							4.81	5.37		4.48
2	4.74	4.88							4.83	5.37		4.46
3	4.74	4.88							4.83	4.95		4.44
4	4.76	4.88							4.83	4.95		4.44
5	4.76	4.86							4.85	5.51		4.42
6	4.72	4.86							4.83	5.49	4.77	4.40
7	4.72	4.88							4.83	5.49		4.40
8	4.72	4.88							4.85	5.47		4.38
9	4.70	4.88							4.85	5.45		4.38
10	4.72	4.94							4.85	5.43		4.36
11	4.86	4.94							4.85	5.41		4.36
12	4.88	4.94							4.87	5.41		4.38
13	4.80	4.92							5.09	5.39		4.38
14	4.78	4.92							5.11	5.37		4.38
15	4.78	4.92						4.83	5.09	4.95		4.38
16	4.76	4.92						4.83	5.07			4.36
17	4.76	4.96						4.83	5.09			4.36
18	4.74	4.96						4.87	5.11			4.36
19	4.74	4.96						4.85	5.21			4.34
20	4.76	4.94						4.83	5.21			4.30
21	4.76	4.94						4.81	5.21		4.53	4.22
22	4.76	5.00						4.81	5.27		4.56	4.20
23	4.76	5.00						4.79	5.29		4.54	4.18
24	4.78	5.00						4.79	5.30		4.50	4.16
25	4.80							4.79	5.31		4.48	4.16
26	4.84							4.79	5.31		4.46	4.14
27	4.84							4.81	5.29		4.44	4.12
28	4.84							4.83	5.27		4.42	4.12
29	4.86							4.83	5.27		4.50	4.10
30	4.90							4.83	5.41		4.50	4.08
31	4.90							4.83			4.48	
1947-48												
1	4.08	3.96						4.70	4.48	4.50	4.14	3.74
2	4.06	4.02						4.66	4.46	4.50	4.12	3.74
3	4.04	4.04						4.68	4.46	4.48	4.12	3.72
4	4.04	4.04						4.68	4.44	4.46	4.10	3.72
5	4.02	4.04						4.70	4.44	4.44	4.06	3.70
6	4.02	4.04						4.70	4.46	4.44	4.02	3.68
7	4.02	4.06						4.70	4.46	4.42	4.00	3.68
8	4.00	4.06						4.72	4.44	4.42	4.00	3.66
9	4.00	4.00						4.72	4.44	4.40	4.02	3.66
10	4.00	4.00						4.72	4.42	4.40	4.02	3.64
11	3.98	4.00						4.70	4.42	4.36	4.00	3.60
12	4.02	3.98						4.70	4.42	4.36	4.00	3.58
13	4.00	3.98						4.70	4.40	4.34	3.98	3.56
14	4.00	3.96						4.70	4.40	4.36	3.98	3.56
15	4.00	3.96						4.72	4.40	4.36	3.96	3.54
16	3.98	4.06						4.68	4.40	4.34	3.96	3.52
17	3.98	4.06						4.68	4.38	4.34	3.98	3.52
18	3.98	4.06						4.62	4.66	4.38	4.32	3.96
19	3.96	4.06						4.62	4.66	4.38	4.30	3.96
20	3.94	4.06						4.62	4.64	4.36	4.30	3.96
21	3.94	4.06						4.60	4.64	4.36	4.28	3.94
22	3.94	4.06						4.60	4.62	4.36	4.26	3.92
23	3.92	4.06						4.60	4.60	4.38	4.26	3.90
24	3.92	4.06						4.62	4.60	4.38	4.24	3.88
25	3.92	4.06						4.62	4.58	4.36	4.22	3.86
26	3.96	4.06						4.68	4.56	4.42	4.20	3.84
27	3.96							4.70	4.56	4.44	4.18	3.82
28	3.98							4.66	4.54	4.52	4.18	3.80
29	3.96							4.68	4.54	4.52	4.16	3.78
30	3.96							4.68	4.50	4.52	4.16	3.76
31	3.96								4.48		4.14	3.74

Clear Lake at Clear Lake, Iowa—Continued
Daily Gage height, in Feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1	3.40	3.24						4.36	4.12	4.26	4.06	3.54
2	3.38							4.35	4.14	4.24	4.04	3.54
3	3.36							4.34	4.18	4.24	4.00	3.52
4	3.36							4.32	4.18	4.20	4.00	3.62
5	3.34							4.32	4.16	4.16	3.98	3.62
6	3.34							4.34	4.16	4.12	3.96	3.64
7	3.34							4.36	4.14	4.10	3.94	3.60
8	3.46							4.32	4.14	4.08	3.92	3.58
9	3.48							4.30	4.12	4.06	3.90	3.56
10	3.40							4.28	4.12	4.04	3.89	3.56
11	3.38							4.28	4.10	4.02	3.90	3.62
12	3.36							4.26	4.08	4.00	3.88	3.66
13	3.36							4.26	4.02	3.98	3.86	3.64
14	3.34							4.26	4.00	3.99	3.86	3.64
15	3.34							4.24	3.98	3.98	3.84	3.62
16	3.32							4.24	3.96	3.98	3.84	3.60
17	3.32							4.22	3.94	3.96	3.84	3.60
18	3.32							4.24	3.92	3.96	3.82	3.58
19	3.30							4.26	4.00	4.12	3.82	3.58
20	3.30							4.26	4.00	4.14	3.80	3.56
21	3.30							4.24	4.06	4.14	3.76	3.54
22	3.30							4.26	4.08	4.12	3.74	3.52
23	3.28							4.26	4.10	4.08	3.72	3.50
24	3.28							4.24	4.12	4.04	3.72	3.48
25	3.28							4.24	4.24	4.00	3.70	3.46
26	3.28							4.38	4.20	4.24	4.04	3.70
27	3.26							4.38	4.18	4.24	4.12	3.70
28	3.26							4.38	4.16	4.26	4.14	3.64
29	3.26							4.36	4.14	4.28	4.12	3.62
30	3.26							4.36	4.14	4.26	4.10	3.60
31	3.24							4.36	4.12		4.08	3.56
1949-50												
1	3.40							3.92	4.20	4.32	4.42	4.16
2	3.40							3.90	4.22	4.32	4.40	4.14
3	3.40							3.89	4.24	4.32	4.40	4.16
4	3.38							3.88	4.24	4.32	4.40	4.16
5	3.38							3.90	4.24	4.34	4.38	4.16
6	3.36							3.94	4.22	4.26	4.38	4.16
7	3.36							3.90	4.22	4.22	4.38	4.16
8	3.34							3.90	4.20	4.20	4.34	4.14
9	3.40							4.04	4.18	4.20	4.32	4.14
10	3.40							4.04	4.18	4.20	4.26	4.14
11	3.44							4.04	4.20	4.18	4.48	4.16
12	3.44							4.00	4.20	4.14	4.48	4.18
13	3.40							4.00	4.18	4.26	4.46	4.20
14	3.38							3.98	4.18	4.26	4.44	4.20
15	3.38							3.98	4.20	4.24	4.42	4.16
16	3.36							3.98	4.18	4.30	4.40	4.14
17								4.00	4.18	4.30	4.40	4.12
18								4.02	4.30	4.28	4.36	4.10
19								4.02	4.30	4.30	4.34	4.08
20								4.02	4.30	4.40	4.32	4.08
21								4.04	4.32	4.38	4.30	4.08
22								4.04	4.32	4.36	4.28	4.10
23								4.06	4.36	4.36	4.26	4.10
24								3.90	4.04	4.36	4.40	4.26
25								3.88	4.06	4.36	4.40	4.24
26								3.88	4.10	4.36	4.44	4.10
27								3.88	4.10	4.34	4.44	4.10
28								3.88	4.10	4.34	4.42	4.10
29								3.88	4.10	4.32	4.42	4.12
30								3.92	4.20	4.32	4.42	4.18
31								4.20		4.42	4.16	

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.—320 square miles.

RECORDS AVAILABLE.—July 1920 to August 1927, March 1933 to September 1950 in reports of U. S. Geological Survey. July 1920 to August 1927 in report of Iowa State Planning Board entitled "Stream Flow Records of Iowa, 1873-1932."

GAGE.—Water-stage recorder and concrete control. Datum of gage is 893.6 feet above mean sea level, datum of 1929 (Iowa Highway Commission bench mark). July 28, 1920, to Aug. 24, 1921, inclined staff gage at same site and datum.

AVERAGE DISCHARGE.—23 years (1920-26, 1933-50), 130 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	July 31	4,500	10.33	Jan. 26	22
1943-44...	May 20	8,060	13.90	Jan. 13-15	14
1944-45...	June 2	4,010	9.71	Sept. 17, 18	7.5
1945-46...	Feb. 5	2,270	7.13	Dec. 21	2.0
1946-47...	June 13	5,900	11.95	Sept. 22, 23	1.6
1947-48...	Mar. 19	2,400	7.35	Sept. 19	.48
1948-49...	Mar. 4	2,700	(¹)10.52	Oct. 1-5, 14-17, Aug. 23 to Sept. 2 Sept. 26-30	.3
1949-50...	Mar. 7	3,420	8.86	Oct. 1-18, Jan. 29 to Feb. 6	.4

(1) Affected by ice.

1920-27, 1933-50: Maximum discharge, 8,060 second-feet May 20, 1944 (gage height, 13.90 feet); no flow at times in June, July, August 1934, and on Jan. 25, 1937.

REMARKS.—Records good except those for periods of ice effect, no gage-height record, and those for discharge below 10 second-feet, which are poor.

COOPERATION.—Gage-height record collected in cooperation with Department of Civil Engineering of Iowa State College. Assistance with several discharge measurements furnished by Corps of Engineers.

Skunk River near Ames, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	224	111	60	56	23	191	133	342	220	174	3,180	114
2.....	202	108	45	54	28	98	118	263	375	148	1,280	95
3.....	209	98	65	50	100	90	105	206	314	130	1,080	79
4.....	351	98	66	37	400	84	100	171	228	124	1,000	84
5.....	389	105	70	40	500	78	88	168	188	121	661	149
6.....	332	100	67	44	300	73	84	778	236	116	461	104
7.....	288	98	65	44	250	67	84	643	247	111	350	88
8.....	263	98	64	40	300	71	88	423	224	95	282	75
9.....	236	105	59	40	350	71	91	319	216	86	239	67
10.....	213	105	*58	42	300	62	95	a270	213	80	207	62
11.....	206	100	54	42	200	58	116	a250	105	71	178	54
12.....	191	100	46	37	150	64	191	a220	184	65	444	679
13.....	f188	98	45	35	130	75	206	a200	151	58	286	502
14.....	f174	91	46	38	100	105	161	a180	191	64	207	304
15.....	f164	93	48	39	90	258	142	a220	181	50	210	224
16.....	f154	98	50	38	80	800	127	1,380	986	248	204	178
17.....	f145	88	52	35	75	*596	108	a1,000	1,240	188	158	149
18.....	139	82	45	33	70	259	100	a700	591	161	133	127
19.....	f133	82	41	31	150	151	93	a500	365	324	114	122
20.....	f127	84	40	30	250	154	88	a400	243	255	102	158
21.....	f124	77	40	35	400	171	84	356	177	324	95	149
22.....	f118	75	42	37	500	181	80	314	342	380	86	130
23.....	f116	75	45	30	450	232	91	280	423	209	79	112
24.....	f113	77	47	25	400	418	98	280	276	136	71	102
25.....	f108	80	46	23	301	409	93	272	220	105	75	95
26.....	105	38	48	*22	209	293	84	251	184	82	75	88
27.....	108	60	54	27	232	209	86	220	161	65	71	84
28.....	108	65	54	24	267	154	82	202	220	50	67	75
29.....	105	58	55	27	.....	130	267	184	293	51	196	71
30.....	113	64	56	27	.....	127	529	188	213	58	242	112
31.....	113	.....	54	26	.....	136	.....	195	.....	2,490	138	.....
1943-44												
1.....	161	104	75	22	100	88	204	432	514	217	117	175
2.....	144	93	69	23	110	86	210	607	432	487	104	146
3.....	125	86	64	24	95	90	191	1,210	369	1,320	93	125
4.....	110	82	64	27	84	100	172	1,200	335	1,020	514	110
5.....	102	79	67	25	84	93	155	912	312	631	707	93
6.....	93	79	197	21	62	71	144	756	274	421	359	82
7.....	86	122	200	17	97	24	146	655	250	406	246	73
8.....	82	184	172	16	84	43	158	690	309	854	197	66
9.....	79	175	149	20	62	53	164	793	902	902	158	60
10.....	77	155	136	22	28	77	152	643	834	569	133	62
11.....	71	141	125	*19	28	262	224	526	1,360	520	110	56
12.....	69	133	107	16	64	438	762	473	2,480	411	90	56
13.....	75	125	46	14	86	258	637	406	2,090	321	79	54
14.....	71	117	77	14	88	295	502	359	1,520	274	71	54
15.....	66	112	90	14	84	*854	563	326	1,000	258	66	50
16.....	62	97	95	16	82	724	556	299	751	228	67	43
17.....	60	114	95	15	64	484	455	278	600	207	62	40
18.....	62	104	100	21	27	340	416	422	490	188	58	36
19.....	60	95	88	19	28	258	411	5,080	411	169	51	36
20.....	60	*88	75	17	34	258	526	5,650	354	155	45	39
21.....	69	88	62	20	*45	239	808	3,180	321	141	43	35
22.....	66	79	48	20	136	232	690	2,330	299	127	42	34
23.....	64	77	34	19	250	335	637	1,840	266	120	39	43
24.....	62	75	34	23	181	384	1,080	1,520	239	107	35	45
25.....	56	77	36	37	138	330	1,100	1,240	221	110	34	43
26.....	53	79	43	53	161	258	819	1,140	200	667	96	40
27.....	53	75	36	461	164	214	637	975	181	340	461	39
28.....	53	71	27	569	127	204	520	873	270	232	421	46
29.....	53	67	26	221	95	210	444	854	350	178	290	45
30.....	54	64	26	181	.....	181	416	713	266	146	235	42
31.....	86	.....	23	141	.....	172	.....	594	.....	125	210	.....

* Winter discharge measurement made on this day.

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

f Computed on basis of partly estimated gage-height record.

Note—Stage-discharge relation affected by ice Nov. 30 to Dec. 31, 1942, Jan. 1-24, Feb. 3-24, Mar. 3-5, Dec. 12-31, 1943, Jan. 1-25, Feb. 7-21, Mar. 8-10, 1944.

Skunk River near Ames, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	39	27	13	11	11	100	274	254	2,130	210	43	16
2.....	39	27	14	11	12	250	239	278	3,070	184	114	15
3.....	40	26	15	11	12	400	235	274	1,740	166	73	14
4.....	42	25	16	11	13	350	421	258	1,260	158	96	14
5.....	73	24	17	11	13	300	449	239	897	144	88	13
6.....	107	27	18	10	14	250	613	228	719	133	77	11
7.....	86	26	19	9	14	240	854	214	631	125	62	10
8.....	73	27	19	9	14	235	778	191	532	114	50	10
9.....	66	26	19	10	14	300	588	181	484	102	45	10
10.....	62	25	18	10	14	500	461	197	562	88	43	12
11.....	58	24	18	10	14	600	449	194	563	82	79	10
12.....	53	24	18	10	17	700	868	194	438	77	200	10
13.....	51	24	18	10	30	600	878	188	384	73	129	10
14.....	48	26	18	10	200	*563	814	951	335	66	853	9.0
15.....	45	26	*19	11	400	1,030	607	1,100	416	60	317	8.0
16.....	42	26	19	11	350	1,720	912	778	814	64	197	8.0
17.....	40	24	17	11	304	1,230	1,310	582	600	79	146	7.5
18.....	40	24	14	11	278	793	970	461	449	86	112	7.5
19.....	39	24	14	11	228	594	673	400	369	79	88	8.0
20.....	39	23	14	11	210	478	532	374	444	73	73	9.0
21.....	37	24	13	11	125	406	449	715	406	67	69	8.5
22.....	36	23	12	12	73	354	406	2,030	326	62	54	8.5
23.....	35	23	11	12	71	321	411	2,020	282	60	48	9.0
24.....	35	23	11	13	67	317	467	1,370	254	58	43	9.0
25.....	34	23	11	*14	71	821	421	951	242	53	36	8.5
26.....	30	26	11	14	75	902	369	756	621	46	31	8.0
27.....	30	25	11	14	79	673	326	643	207	48	27	10
28.....	28	22	11	14	90	490	299	724	200	60	24	17
29.....	28	20	11	14	.....	395	282	673	184	64	22	18
30.....	28	14	11	13	.....	330	258	544	197	60	20	16
31.....	28	.....	11	12	.....	299	.....	514	.....	50	17	.....
1945-46												
1.....	16	9.0	17	4.0	24	152	136	26	86	379	a70	7.0
2.....	14	9.0	23	4.6	22	172	120	36	79	217	a60	7.0
3.....	13	8.5	17	4.6	19	207	107	100	71	144	a50	7.0
4.....	11	7.5	12	4.3	30	232	93	384	67	102	a55	7.5
5.....	10	8.0	16	150	1,120	*221	84	295	62	75	53	7.0
6.....	9.6	8.5	16	1,070	1,440	1,290	82	197	58	58	50	11
7.....	8.0	9.0	10	756	359	990	79	146	54	60	42	48
8.....	7.0	13	7	266	207	416	77	114	51	117	40	155
9.....	7.0	13	5	135	207	224	71	93	45	100	35	77
10.....	7.0	10	5	85	184	210	67	82	37	79	28	188
11.....	7.0	9.6	4	70	146	200	71	75	37	54	24	194
12.....	7.5	11	4	45	107	374	71	69	48	39	22	73
13.....	7.0	13	4	45	79	1,460	69	64	37	28	20	35
14.....	7.0	11	4	*60	60	1,040	67	56	35	24	18	21
15.....	7.0	10	4	50	66	741	64	53	86	22	20	14
16.....	7.0	10	4	45	62	588	56	a52	114	21	22	9.6
17.....	8.0	10	3.7	45	54	563	53	a53	104	22	86	7.5
18.....	9.0	10	3	42	62	444	51	a60	395	18	30	5.4
19.....	7.5	10	2.9	42	95	354	51	a70	1,040	16	19	4.8
20.....	7.0	9.6	2.3	39	88	299	46	a90	1,050	24	16	5.1
21.....	7.0	7.5	2.0	30	127	254	43	a100	724	a40	20	4.8
22.....	7.0	5.9	2.2	23	155	228	43	88	449	67	16	4.3
23.....	7.0	5.9	2.3	22	166	221	47	79	304	62	15	8.0
24.....	7.5	5.9	2.6	19	149	317	39	88	214	53	16	a10
25.....	7.5	7.0	2.6	17	152	295	37	102	221	56	14	a12
26.....	7.5	7.5	2.6	14	166	278	34	a130	194	48	14	a15
27.....	7.5	8.0	2.6	13	138	274	34	a150	149	a100	11	a18
28.....	8.0	8.0	2.6	12	122	221	35	a125	138	a300	1	a22
29.....	8.5	9.0	2.9	11	.....	191	32	104	286	224	9.6	a24
30.....	8.5	*9.0	2.9	36	.....	166	30	100	379	125	9.0	27
31.....	8.5	.....	3.2	26	.....	146	.....	97	.....	82	8.5	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Nov. 28, 29, Dec. 1-10, 12-15, 19-23, 26, 27, 31, 1944, Jan. 1-5, Jan. 17 to Feb. 16, Feb. 23-25, Feb. 27 to Mar. 7, Mar. 9-13, Dec. 7-16, 18, 1945, Jan. 5, 6, 9-17, 21-24, 26, 27, Feb. 1-5, 1946.

Skunk River near Ames, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	27	90	54	16	23	16	93	538	2,060	1,530	46	8.5
2.....	24	112	24	15	24	14	102	484	2,890	002	45	5.4
3.....	22	110	62	15	26	14	100	359	2,340	667	43	4.8
4.....	22	88	67	15	27	12	136	286	2,340	526	37	4.6
5.....	20	77	69	15	26	11	221	228	1,770	461	34	4.3
6.....	19	67	66	16	25	11	374	200	1,350	421	30	3.4
7.....	21	66	64	17	24	11	312	175	975	369	27	3.2
8.....	22	64	64	18	23	14	278	161	783	321	23	2.6
9.....	21	54	62	19	22	15	270	144	637	282	20	2.3
10.....	50	58	58	22	22	19	750	130	532	258	17	2.3
11.....	100	77	54	23	30	21	1,180	122	427	235	16	3.4
12.....	102	97	56	25	35	31	803	117	1,440	221	15	5.4
13.....	88	*120	37	28	75	330	563	146	5,450	200	16	5.4
14.....	79	122	31	*45	295	411	449	239	3,430	178	14	4.6
15.....	71	117	51	43	312	266	379	235	2,270	164	14	3.7
16.....	66	114	*46	42	286	278	395	406	1,760	146	13	2.6
17.....	64	97	22	40	221	178	384	364	1,730	141	12	2.4
18.....	82	95	39	37	130	125	330	438	1,640	133	11	3.2
19.....	75	97	37	34	100	102	299	345	1,240	117	10	3.4
20.....	67	97	39	32	102	93	350	270	907	112	9.0	3.2
21.....	62	90	39	32	82	84	326	228	1,720	102	8.5	2.0
22.....	58	62	39	32	62	90	282	200	2,670	93	7.5	1.6
23.....	54	79	40	34	48	210	379	188	4,350	90	6.4	1.6
24.....	260	95	36	37	*40	286	532	172	a3,300	84	6.4	1.7
25.....	478	75	37	42	35	282	369	184	a2,700	79	7.5	1.7
26.....	290	64	40	45	26	138	295	172	a1,900	75	7.5	2.4
27.....	181	77	40	46	22	138	250	144	1,300	60	7.0	4.3
28.....	138	73	35	45	19	102	217	210	874	64	5.9	3.7
29.....	120	69	23	34	.....	112	194	649	819	58	5.4	3.2
30.....	110	66	20	23	.....	102	364	788	1,410	54	5.1	4.3
31.....	93	.....	17	22	.....	97	.....	600	.....	50	6.4	.....
1947-48												
1.....	5.4	a46	19	9	-2.2	242	415	360	46	95	-2.7	11
2.....	5.4	a42	22	10	2.1	174	322	415	42	73	-3.0	6.1
3.....	6.4	39	21	10	2.1	100	270	290	36	65	-3.3	4.6
4.....	6.4	31	31	11	2.0	93	238	262	33	54	-3.3	3.7
5.....	5.4	31	66	12	2.0	85	206	282	29	47	-2.4	3.2
6.....	4.8	28	71	13	*1.9	78	170	360	29	40	2.5	3.0
7.....	4.6	25	69	14	1.8	70	278	475	31	34	2.8	3.1
8.....	4.8	22	48	15	1.8	63	370	330	28	28	2.2	3.0
9.....	5.1	19	44	17	1.7	52	242	258	23	23	2.3	2.8
10.....	5.1	19	42	19	1.6	42	186	206	a21	17	2.4	2.7
11.....	4.6	15	40	19	1.6	32	178	170	a18	15	2.5	2.5
12.....	4.3	14	39	18	1.6	23	258	154	a26	12	2.2	2.2
13.....	4.6	13	39	14	1.5	17	178	138	a27	11	2.2	1.9
14.....	3.7	15	42	12	1.5	12	138	133	a30	23	2.2	1.5
15.....	3.2	17	35	11	1.4	117	122	130	a38	30	1.2	1.2
16.....	3.2	22	26	9	1.7	968	110	130	a37	34	1.9	.91
17.....	3.2	20	30	8	2.5	1,620	97	112	a36	24	1.8	.98
18.....	2.9	20	28	7.0	2.8	1,560	91	102	a38	22	1.8	.87
19.....	2.0	22	25	6.4	3.4	2,180	87	93	a33	22	1.8	.48
20.....	1.7	22	*26	6.4	3.4	1,420	82	86	a32	15	1.8	1.8
21.....	1.8	26	25	6.4	3.0	950	73	80	a36	21	1.8	2.6
22.....	2.0	28	25	5.9	2.8	710	99	73	45	17	1.1	2.4
23.....	4.0	22	23	4.8	2.5	490	340	69	52	9.0	2.0	2.0
24.....	9.6	28	22	4.3	2.4	340	294	67	48	5.9	1.4	1.5
25.....	16	22	22	4.0	2.4	270	254	62	43	8.1	2.2	1.2
26.....	12	27	21	4	2.5	488	214	62	40	8.4	2.0	1.1
27.....	14	23	21	4	335	1,800	230	59	88	5.3	2.9	.87
28.....	24	17	19	3.6	572	955	222	57	385	4.0	4.6	.80
29.....	17	15	18	3.0	865	793	182	53	174	4.6	8.4	.69
30.....	14	19	15	2.6	.....	565	160	49	125	6.4	87	.72
31.....	42	.....	12	2.4	.....	470	.....	48	.....	4.0	45	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Dec. 30, 31, 1946, Jan. 1-5, 18-23, Feb. 1-9, Dec. 9-12, 30, 31, 1947, Jan. 1-3, 14-17, Mar. 3-11, 1948.

Skunk River near Ames, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	a0.3	2.0	4.6	3.7	9	625	321	48	13	42	1.8	a0.3
2.....	a.3	1.6	4.8	3.8	8	613	235	46	22	126	1.4	a.3
3.....	a.3	1.4	4.6	4.3	8	1,200	175	40	17	120	1.3	3.3
4.....	a.3	1.8	6.4	400	7	1,700	146	36	15	66	1.4	1.9
5.....	a.3	4.8	7.5	326	7	1,400	127	34	12	42	.9	.8
6.....	a1.0	13	9.0	102	7	1,200	110	34	9.6	28	.9	a.8
7.....	1.8	8.0	11	102	6	834	93	30	8.0	22	1.0	a.7
8.....	1.2	5.4	8.0	107	6	*730	75	27	5.9	18	.9	a.7
9.....	.9	4.3	6.4	100	6	438	66	27	5.4	14	1.1	a.7
10.....	.6	3.4	5.4	66	6	295	56	26	4.8	11	1.0	a.7
11.....	.5	2.9	4.6	79	5	235	51	23	4.0	8.5	1.0	2.4
12.....	.4	2.6	4.8	62	5	228	48	23	3.2	7.4	1.4	3.8
13.....	a.4	2.6	*5.4	40	4.8	214	45	24	3.7	6.7	1.0	1.5
14.....	a.3	2.4	5.4	31	4.6	175	48	27	5.9	6.3	.8	.9
15.....	a.3	2.4	5.9	102	4.6	127	45	58	6.4	5.9	.9	a.8
16.....	.3	2.4	4.6	702	4.0	149	69	37	6.4	5.4	.9	a.8
17.....	.3	2.3	5.1	295	4.6	127	136	34	3.7	4.7	a.8	a.8
18.....	.4	2.3	4.6	133	5.9	112	197	30	2.6	5.1	a.8	a.7
19.....	.5	14	4.3	144	5.4	100	155	27	2.0	4.4	a.7	a.7
20.....	1.0	35	4.6	204	4.3	86	152	24	4.8	4.9	a.7	a.6
21.....	1.6	22	4.8	155	4.8	141	158	24	16	4.8	a.6	a.5
22.....	.9	16	4.6	69	5.4	340	144	25	24	4.0	a.4	a.5
23.....	.8	11	4.3	32	8.8	520	114	36	16	3.3	a.3	a.4
24.....	.8	15	4.0	23	532	282	90	40	210	2.8	a.3	a.4
25.....	1.1	12	4.6	21	673	588	79	31	563	2.6	a.3	a.4
26.....	1.4	8.5	4.0	18	980	406	71	25	304	4.5	a.3	a.3
27.....	.8	6.4	2.6	16	1,260	834	64	22	172	3.4	a.3	a.3
28.....	.8	5.9	2.9	15	956	834	56	20	107	2.5	a.3	a.3
29.....	.9	4.8	3.2	14	.....	449	51	16	73	2.4	a.3	a.3
30.....	2.9	4.6	4.3	12	.....	274	48	14	54	1.3	a.3	a.3
31.....	3.4	.....	4.0	*11	.....	295	.....	14	.....	1.9	a.3	a.3
1949-50												
1.....	a0.4	h0.8	0.6	3.2	0.4	4.0	234	32	98	a70	a15	4.6
2.....	a.4	h.8	1.4	4.0	.4	3.4	202	30	116	a60	a17	4.0
3.....	a.4	h.8	1.6	2.9	a.4	3.4	164	30	195	a50	a20	2.4
4.....	a.4	h.8	1.6	2.6	a.4	4.3	125	103	157	a43	a25	1.8
5.....	a.4	h.8	1.6	2.2	a.4	354	93	1,250	127	a37	a16	1.2
6.....	a.4	h.8	a1.5	1.9	a.4	1,260	72	664	103	a32	h7.5	1.0
7.....	a.4	h.8	a1.4	1.6	a1.2	3,000	59	254	81	a28	5.9	.9
8.....	a.4	.8	a1.3	1.4	a3.5	a1,700	52	223	75	a25	5.9	.8
9.....	a.4	.8	a1.1	*1.2	7.0	a800	48	1,790	920	a22	5.4	.9
10.....	a.4	.8	a1.2	.9	30	a400	54	1,540	332	a20	23	2.1
11.....	h.4	.9	a1.3	.8	11	a250	59	783	188	a18	21	10
12.....	a.4	1.4	a2.3	.8	5.1	a150	52	410	142	a16	18	5.4
13.....	a.4	1.8	a1.9	1.0	4.6	a140	42	258	122	a14	15	4.8
14.....	h.4	2.3	1.6	1.0	4.6	a200	40	195	114	a13	12	4.6
15.....	h.4	2.4	1.1	1.0	4.6	326	37	148	710	a12	10	4.0
16.....	h.4	1.8	1.1	.7	4.6	332	34	119	440	a10	8.5	3.2
17.....	h.4	1.6	1.6	.5	4.6	336	32	103	206	a9.6	7.0	2.3
18.....	h.4	1.2	1.7	.5	4.3	289	30	86	1,680	a9.2	5.9	2.6
19.....	h.6	1.2	2.2	.5	4.3	170	28	75	1,630	h9.0	5.1	2.4
20.....	h.8	1.2	2.4	.6	4.3	103	25	64	932	a15	5.1	3.4
21.....	a1.5	1.2	1.7	.6	4.0	86	25	111	628	a50	4.8	220
22.....	a1.3	h1.0	1.6	.6	4.0	150	23	133	460	a70	4.6	305
23.....	h1.2	h1.0	1.4	.6	4.0	390	22	114	328	a50	4.6	133
24.....	h1.2	h1.2	1.4	.6	3.7	568	22	93	632	a44	4.0	64
25.....	h1.0	h1.8	1.8	.6	3.4	530	25	198	1,090	a36	4.3	42
26.....	h.9	1.8	1.6	.5	3.4	500	30	198	495	h30	4.3	30
27.....	h.9	2.2	1.6	.5	3.2	535	30	145	265	a27	4.8	24
28.....	h.9	2.2	1.7	.5	3.4	314	26	125	181	a24	5.4	20
29.....	h.8	2.2	2.0	.4	.....	174	25	111	127	a21	5.4	18
30.....	h.8	2.0	2.2	.4	.....	164	32	106	91	a19	5.1	16
31.....	h.8	.....	2.4	.4	.....	237	.....	130	.....	a16	4.8	.....

* Winter discharge measurement made on this day.

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

b Computed from gage-height obtained from temporary reference point.

Note—Stage-discharge relation affected by ice Jan. 25 to Feb. 12, Mar. 3-6, 1949, Jan. 6-10, 1950.

Skunk River near Ames, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1942.....	5,559	389	105	179	0.559	0.65
November.....	2,611	111	38	87	.272	.30
December.....	1,627	70	40	52.5	1.64	.19
Calendar year 1942.....	79,833	1,850	20	219	.684	9.28
January 1943.....	1,108	56	22	35.7	.112	.13
February.....	6,905	500	23	236	.738	.77
March.....	5,865	800	58	189	.591	.68
April.....	3,812	529	80	127	.397	.44
May.....	11,375	1,380	168	367	1.15	1.32
June.....	9,297	1,240	151	310	.969	1.08
July.....	6,619	2,490	50	214	.669	.77
August.....	11,971	3,180	67	368	1.21	1.39
September.....	4,432	679	54	148	.462	.52
Water year 1942-43.....	70,881	3,180	22	194	.606	8.24
October 1943.....	2,384	161	53	76.9	.240	.28
November.....	3,037	184	64	101	.316	.35
December.....	2,486	200	23	80.2	.251	.29
Calendar year 1943.....	68,991	3,180	22	189	.591	8.02....
January 1944.....	2,127	569	14	68.6	.214	.25
February.....	2,688	250	27	92.7	.290	.31
March.....	7,655	854	24	247	.772	.89
April.....	13,899	1,100	144	463	1.45	1.62
May.....	36,976	5,650	278	1,193	3.73	4.30
June.....	18,260	2,480	181	609	1.90	2.12
July.....	11,851	1,320	107	382	1.19	1.38
August.....	5,233	707	34	169	.528	.61
September.....	1,868	175	34	62.3	.195	.22
Water year 1943-44.....	108,464	5,650	14	296	.925	12.62
October 1944.....	1,431	107	28	46.2	.144	.17
November.....	728	27	14	24.3	.076	.08
December.....	461	19	11	14.9	.047	.05
Calendar year 1944.....	103,177	5,650	11	282	.881	12.00
January 1945.....	352	14	9	11.4	.036	.04
February.....	2,813	400	11	100	.312	.33
March.....	16,541	1,720	100	534	1.67	1.92
April.....	16,613	1,310	235	554	1.73	1.93
May.....	18,482	2,030	181	596	1.86	2.15
June.....	19,356	3,070	184	645	2.02	2.25
July.....	2,791	210	46	90.0	.281	.32
August.....	3,276	853	17	106	.331	.38
September.....	324.5	18	7.5	10.8	.034	.04
Water year 1944-45.....	83,168.5	3,070	7.5	228	.712	9.66
October 1945.....	261.1	16	7.0	8.42	.026	.03
November.....	273.4	13	5.9	9.11	.028	.03
December.....	192.4	23	2.0	6.21	.019	.02
Calendar year 1945.....	81,275.4	3,070	2.0	223	.697	9.44
January 1946.....	3,185.5	1,070	4.0	103	.322	.37
February.....	5,605	1,440	19	200	.625	.65
March.....	12,768	1,460	146	412	1.29	1.48
April.....	1,884	136	30	62.8	.196	.22
May.....	3,278	384	26	106	.331	.38
June.....	6,614	1,050	35	220	.688	.77
July.....	2,756	379	16	88.9	.278	.32
August.....	904.1	86	8.5	29.2	.091	.11
September.....	1,029	194	4.3	34.3	.107	.12
Water year 1945-46.....	38,751.5	1,460	2.0	106	.331	4.50

Skunk River near Ames, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1946	2,886	478	19	93.1	0.291	0.34
November	2,569	122	54	85.6	.268	.30
December	1,368	69	17	44.1	.138	.16
Calendar year 1946	44,847.6	1,460	4.0	123	.384	5.22
January 1947	909	46	15	29.3	.092	.11
February	2,162	312	19	77.2	.241	.25
March	3,613	411	11	117	.366	.42
April	10,976	1,180	93	366	1.14	1.28
May	8,922	788	117	288	.900	1.04
June	57,014	5,450	427	1,900	5.94	6.63
July	8,202	1,530	50	265	.828	.95
August	525.6	46	5.1	17.0	.053	.06
September	104.3	8.5	1.6	3.48	.011	.01
Water year 1946-47	99,250.9	5,450	1.6	272	.850	11.55
October 1947	243.2	42	1.7	7.85	.025	.03
November	709	46	13	23.6	.074	.08
December	986	71	12	31.8	.099	.11
Calendar year 1947	94,366.1	5,450	1.6	259	.809	10.97
January 1948	285.8	19	2.4	9.22	.029	.03
February	1,828.2	865	1.4	63.0	.197	.21
March	16,779	2,180	12	541	1.69	1.95
April	6,106	415	73	204	.638	.71
May	5,165	475	48	167	.522	.60
June	1,669	385	18	55.6	.174	.19
July	777.7	95	4.0	25.1	.078	.09
August	204.7	87	1.1	6.60	.021	.02
September	71.42	11	.48	2.38	.007	.01
Water year 1947-48	34,825.02	2,180	.48	95.2	.298	4.03
October 1948	26.8	3.4	.3	.86	.0027	.003
November	220.8	35	1.4	7.36	.023	.03
December	160.3	11	2.6	5.17	.016	.02
Calendar year 1948	33,294.72	2,180	.3	91.0	.284	3.86
January 1949	3,392.7	702	3.7	109	.341	.39
February	4,538.2	1,260	4.0	162	.506	.53
March	15,551	1,700	86	502	1.57	1.81
April	3,225	321	45	108	.338	.37
May	922	58	14	29.7	.093	.11
June	1,694.4	563	2.0	56.5	.177	.20
July	580.8	125	1.3	18.7	.058	.07
August	24.4	1.8	.3	.79	.0025	.003
September	26.9	3.8	.3	.90	.0028	.003
Water year 1948-49	30,363.3	1,700	.3	83.2	.260	3.54
October 1949	20.0	1.5	.4	.645	.0020	.002
November	40.4	2.4	.8	1.35	.0042	.005
December	49.9	2.4	.6	1.61	.0050	.006
Calendar year 1949	30,065.6	1,700	.3	82.4	.258	3.50
January 1950	35.0	4.0	.4	1.13	.0035	.004
February	125.2	30	.4	4.47	.014	.01
March	13,473.1	3,000	3.4	435	1.36	1.57
April	1,742	234	22	58.1	.182	.20
May	9,621	1,790	30	310	.969	1.12
June	12,665	1,680	75	422	1.32	1.47
July	899.8	70	9	29.0	.091	.10
August	300.4	25	4.0	9.69	.030	.03
September	934.4	305	.8	31.1	.097	.11
Water year 1949-50	39,906.1	3,000	.4	109	.341	4.63

Skunk River near Oskaloosa, Iowa

LOCATION.—Lat. $41^{\circ}21'10''$, long. $92^{\circ}39'20''$, in SW $\frac{1}{4}$ sec. 25, T. 76 N., R. 16 W., on right bank 300 feet upstream from bridge on U. S. Highway 63, 4 miles north of Oskaloosa, Mahaska County.

DRAINAGE AREA.—1,640 square miles.

RECORDS AVAILABLE.—October 1948 to September 1950.

GAGE.—Water-stage recorder. Auxiliary wire-weight gage at highway bridge 300 feet downstream at same datum.

AVERAGE DISCHARGE.—2 years, 592 second-feet.

EXTREMES.—Maximum and minimum discharge for water years 1949-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1948-49...	Mar. 9	10,800	18.27	Nov. 14, 15	29
1949-50...	Mar. 8	9,320	18.09	Jan. 28-30	28

1948-50: Maximum discharge, 10,800 second-feet Mar. 9, 1949 (gage-height, 18.27 feet); minimum daily, 28 second-feet Jan. 28-30, 1950.

Flood of May 1944 reached a stage of 25.8 feet (discharge not determined). Flood of June 15, 1947 reached a stage of 21.26 feet (discharge, 20,000 second-feet).

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

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

Skunk River near Oskaloosa, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	36	31	84	195	220	3,600	1,840	512	1,050	1,100	114	d39
2.....	35	31	90	180	210	3,400	1,980	484	1,860	982	105	d38
3.....	34	32	74	170	200	3,300	1,790	464	1,160	700	98	d38
4.....	33	34	62	230	190	3,500	1,520	424	540	464	95	d39
5.....	32	37	64	1,000	180	3,800	1,400	412	432	460	88	d40
6.....	39	35	58	1,000	170	4,300	1,270	396	360	448	84	46
7.....	55	32	52	*900	165	6,550	1,140	376	300	420	81	66
8.....	53	30	46	800	160	8,650	1,050	360	270	339	79	91
9.....	52	31	41	700	155	*10,600	944	364	245	297	77	78
10.....	54	33	40	580	150	7,210	850	368	231	269	74	70
11.....	50	32	60	450	150	2,920	780	336	217	241	71	63
12.....	46	32	90	320	145	2,020	740	308	207	227	74	77
13.....	43	30	120	290	145	1,700	700	292	202	217	71	130
14.....	40	29	140	310	145	1,610	660	252	728	194	70	180
15.....	36	29	160	400	140	1,400	660	259	436	184	69	70
16.....	33	42	150	520	140	1,180	700	245	300	177	67	65
17.....	32	62	135	500	140	1,120	760	320	237	165	59	63
18.....	32	72	120	480	*135	1,030	800	308	241	204	59	59
19.....	33	63	110	460	700	944	901	296	184	364	99	56
20.....	33	280	100	*430	800	880	944	250	176	231	356	48
21.....	33	151	90	410	730	922	880	295	214	262	187	46
22.....	32	147	82	390	680	2,380	880	376	242	184	108	48
23.....	31	123	78	370	1,100	2,630	860	273	171	157	85	39
24.....	31	116	75	350	3,100	2,160	780	237	368	139	67	35
25.....	32	113	74	330	4,000	1,790	680	220	3,210	131	64	41
26.....	33	112	72	300	4,500	1,980	660	228	2,310	119	58	38
27.....	34	104	72	280	4,400	2,250	640	210	1,590	350	50	35
28.....	34	98	80	270	4,000	2,350	600	200	1,360	202	d47	34
29.....	33	93	130	260	.....	2,630	560	190	1,160	157	d44	34
30.....	32	84	190	240	.....	2,020	520	170	960	133	d41	33
31.....	31	.....	200	230	.....	1,980	.....	165	.....	121	d40	.....
1949-50												
1.....	36	49	54	300	30	4,200	680	205	512	860	140	57
2.....	43	47	54	580	31	4,000	640	189	484	820	137	54
3.....	46	46	54	350	33	2,500	620	170	520	760	112	52
4.....	47	45	58	200	34	2,200	600	165	680	740	106	48
5.....	47	44	58	120	35	4,000	540	506	660	700	107	45
6.....	46	44	54	100	270	5,800	468	1,970	540	700	101	43
7.....	50	45	46	110	900	7,000	416	1,640	455	680	101	42
8.....	132	45	40	100	1,500	8,910	376	1,320	392	620	98	42
9.....	194	47	45	82	2,000	8,150	364	2,730	352	580	96	41
10.....	95	50	50	72	1,500	3,670	452	3,810	1,750	580	237	40
11.....	87	50	90	70	1,100	1,880	436	4,030	2,040	540	102	40
12.....	77	58	*48	90	900	1,500	352	2,650	1,360	504	98	42
13.....	70	d62	36	200	600	1,400	308	1,840	1,080	440	98	40
14.....	65	d62	30	350	400	1,300	284	1,440	1,240	388	89	40
15.....	64	d61	42	240	300	1,200	260	1,200	760	352	86	39
16.....	60	d60	35	180	320	1,200	237	1,000	1,000	316	84	38
17.....	60	d58	38	130	330	1,300	219	880	1,240	304	86	36
18.....	60	d57	45	100	340	1,200	207	800	2,860	280	78	34
19.....	58	d56	52	80	310	1,100	197	720	4,350	280	74	34
20.....	57	d54	100	70	290	960	187	660	4,710	244	72	34
21.....	55	d53	150	75	360	860	172	740	5,200	228	70	34
22.....	62	d52	50	80	310	1,080	165	740	4,510	202	68	34
23.....	70	d51	38	54	280	2,210	439	800	2,600	187	66	35
24.....	80	d50	37	41	260	1,840	1,160	740	2,450	187	64	124
25.....	75	d49	36	34	250	1,720	580	660	2,700	174	59	135
26.....	70	d49	36	31	270	1,520	284	780	3,060	158	57	106
27.....	66	d49	35	29	350	1,320	225	860	2,160	158	59	85
28.....	60	d52	35	28	1,000	1,280	197	780	1,720	150	70	73
29.....	66	54	34	*28	.....	1,120	205	680	1,480	144	64	67
30.....	52	58	34	28	.....	840	225	620	1,160	138	64	65
31.....	50	.....	50	29	.....	720	.....	540	.....	213	62	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Dec. 1-31, 1948, Jan. 1 to Mar. 5, Dec. 10-12, 1949, Jan. 13-21, Jan. 29 to Mar. 7, Mar. 12-19, 1950. No gage-height record Oct. 1 to Nov. 16, Nov. 18, 1948, Oct. 22 to Nov. 5, Dec. 1-3, 6-9, 13-31, 1949, Jan. 1-12, 22-28, 1950, discharge computed on basis of records for nearby stations. Discharge computed from wire-weight gage readings Nov. 17, 19-30, 1948, Apr. 22 to May 5, June 18-20, 23, June 25 to July 13, July 24-26, July 30 to Aug. 19, Aug. 22-27, Sept. 6-12, Sept. 15 to Oct. 7, Oct. 10-21, Nov. 6-12, 29, 30, Dec. 4, 6, 1949, June 30 to Aug. 17, 1950.

Skunk River near Oskaloosa, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1949 and 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1948.....	1,157	55	31	37.3	0.023	0.03
November.....	2,168	280	29	72.3	.044	.05
December.....	2,939	200	40	94.8	.058	.07
January 1949.....	13,345	1,000	170	430	.262	.30
February.....	26,950	4,500	135	962	.587	.61
March.....	92,806	10,600	880	2,994	1.83	2.10
April.....	28,499	1,980	520	950	.579	.65
May.....	9,620	512	165	310	.189	.22
June.....	20,961	3,210	171	699	.426	.48
July.....	9,638	1,100	119	311	.190	.22
August.....	2,681	356	40	86.5	.053	.06
September.....	1,739	180	33	58.0	.035	.04
Water year 1949.....	212,503	10,600	29	582	.355	4.83
October 1949.....	2,090	194	36	67.4	.041	.05
November.....	1,557	62	44	51.9	.032	.04
December.....	1,564	150	30	50.5	.031	.04
Calendar year 1949.....	211,450	10,600	30	579	.353	4.81
January 1950.....	3,981	580	28	128	.078	.09
February.....	14,303	2,000	30	511	.312	.32
March.....	77,980	8,910	720	2,515	1.53	1.77
April.....	11,495	1,160	165	383	.234	.26
May.....	35,865	4,030	165	1,157	.705	.81
June.....	54,026	5,200	352	1,801	1.10	1.23
July.....	12,627	860	138	407	.248	.29
August.....	2,805	237	57	90.5	.055	.06
September.....	1,599	135	34	53.3	.032	.04
Water year 1949-50.....	219,892	8,910	28	602	.367	5.00

Skunk River at Coppock, Iowa

LOCATION.—Lat. $41^{\circ}09'26''$, long. $91^{\circ}43'05''$, in sec. 1, T. 73 N., R. 8 W., on downstream side of bridge on State Highway 78, half a mile west of Coppock and three-quarters of a mile upstream from Crooked Creek.

DRAINAGE AREA.—2,890 square miles.

RECORDS AVAILABLE.—October 1913 to September 1944 (discontinued).

GAGE.—Wire-weight gage. Gage read once daily during low and medium stages, more often during high stages. Prior to Sept. 29, 1937 chain gage $\frac{1}{4}$ mile upstream.

AVERAGE DISCHARGE.—30 years (1914-44) 1,382 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-44 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Aug. 4	37,400	21.57	Dec. 3	170
1943-44...	May 24	41,500	22.27	Jan. 17, 21-23	180

1913-44: Maximum discharge observed, 41,500 second-feet May 24, 1944 (gage-height, 22.27 feet); minimum daily, 8 second-feet Jan. 27, 28, 1940 (occurred during period of ice effect).

REMARKS.—Records fair above and poor below 3,000 second-feet.

COOPERATION.—Services of observer, some discharge measurements, and assistance in computation of records furnished by Union Electric Power Co. Several discharge measurements furnished by Corps of Engineers.

Skunk River at Coppock, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	696	740	350	1,060	470	1,200	1,490	4,070	2,360	1,540	2,980	2,410
2.....	652	898	240	981	540	1,000	1,430	3,580	2,460	1,490	4,860	1,600
3.....	628	642	170	898	1,800	900	1,340	3,020	2,150	1,340	20,200	1,320
4.....	614	513	180	780	4,500	920	1,260	2,180	2,630	1,620	34,800	1,170
5.....	600	530	200	600	5,500	850	1,170	1,840	2,940	1,940	24,400	1,030
6.....	715	476	240	580	5,770	860	1,080	1,690	4,150	2,190	16,500	1,490
7.....	1,080	551	260	500	5,870	820	1,060	1,680	5,290	1,660	12,200	2,910
8.....	1,160	582	300	470	5,200	800	997	1,970	4,150	1,340	10,600	2,040
9.....	1,010	745	310	450	5,620	820	1,010	2,460	3,300	1,180	10,400	1,500
10.....	898	841	320	450	5,600	840	1,140	2,240	3,860	1,040	10,200	1,170
11.....	810	1,060	320	440	5,600	880	1,170	2,010	4,030	950	8,710	1,040
12.....	760	1,330	300	400	5,200	950	1,230	1,860	5,420	893	7,810	1,230
13.....	705	986	260	440	4,200	981	1,220	1,750	5,770	835	7,320	1,420
14.....	666	775	270	480	3,300	971	1,550	1,590	5,290	780	6,700	1,940
15.....	642	750	280	520	2,500	1,160	1,550	2,000	5,240	730	5,920	2,990
16.....	610	720	290	540	2,000	2,460	1,400	6,880	5,820	1,200	5,770	3,160
17.....	578	681	290	540	1,610	3,530	1,260	7,130	6,080	1,510	5,060	2,550
18.....	560	730	290	520	1,450	3,570	1,170	7,810	5,110	1,620	4,030	1,600
19.....	538	671	280	490	1,420	3,050	1,090	7,530	4,270	1,710	2,630	1,270
20.....	517	623	270	480	1,570	1,710	992	8,740	3,780	2,150	2,150	1,180
21.....	500	652	270	500	1,890	1,400	934	10,700	4,070	2,130	1,880	1,080
22.....	500	538	280	520	2,180	1,580	877	9,920	6,190	1,890	1,690	1,010
23.....	484	582	290	520	2,840	2,180	867	6,880	3,020	1,690	1,570	981
24.....	451	542	290	500	2,930	3,110	830	4,310	2,350	1,940	1,460	955
25.....	451	517	290	480	2,760	3,380	841	3,330	2,140	2,320	1,420	898
26.....	447	496	340	470	2,400	3,400	920	2,940	2,120	2,490	1,380	867
27.....	447	476	2,800	470	2,000	2,740	2,100	2,640	1,800	1,870	1,260	785
28.....	436	455	3,580	490	1,700	2,200	4,070	2,430	1,660	1,200	1,700	745
29.....	424	432	3,020	500	.....	2,200	4,070	2,160	1,550	1,170	1,450	720
30.....	492	336	1,870	510	.....	1,890	4,190	2,030	1,480	1,920	1,380	681
31.....	573	.....	1,260	520	.....	1,580	.....	1,940	.....	2,420	2,490	.....
1943-44												
1.....	657	538	398	250	1,490	1,260	1,870	4,960	14,500	2,220	1,120	2,000
2.....	633	578	428	260	1,220	1,090	1,940	4,450	11,800	2,180	1,100	1,780
3.....	600	628	412	270	981	992	1,880	4,290	9,780	2,040	1,020	1,590
4.....	628	538	409	260	934	1,110	1,740	4,330	8,320	2,240	1,120	1,400
5.....	652	496	405	250	898	1,360	1,620	4,610	6,740	3,250	1,760	1,180
6.....	633	488	471	235	835	1,490	1,550	4,800	5,000	3,440	1,950	1,060
7.....	605	633	496	220	755	1,200	1,490	5,830	4,050	2,940	2,780	1,010
8.....	587	960	560	210	691	750	1,520	6,330	3,890	2,520	2,550	894
9.....	590	1,120	725	210	662	650	1,610	6,690	6,460	2,130	1,980	845
10.....	538	887	775	210	560	650	1,660	7,100	7,189	2,030	1,620	776
11.....	517	750	720	200	350	1,170	3,190	6,830	8,530	1,930	1,430	714
12.....	509	725	587	195	370	2,040	4,530	6,370	8,420	2,550	1,250	748
13.....	496	666	350	190	350	2,620	3,860	5,200	8,230	2,040	1,060	831
14.....	488	642	250	190	370	3,110	4,020	4,430	8,980	2,010	992	755
15.....	509	633	270	190	400	4,800	6,320	3,900	11,200	1,870	894	748
16.....	517	610	250	185	430	5,180	7,080	3,460	15,600	1,720	824	741
17.....	496	596	280	180	450	5,090	7,320	3,080	16,000	1,540	1,300	655
18.....	480	560	280	185	420	4,250	7,530	2,760	14,500	1,450	2,220	604
19.....	432	513	320	190	400	3,580	7,700	2,570	12,800	1,470	1,340	567
20.....	412	500	350	185	390	3,080	7,220	3,550	10,600	1,150	936	543
21.....	488	504	330	180	420	2,700	6,190	4,690	8,980	1,220	782	538
22.....	467	517	300	180	560	2,430	8,660	5,990	6,700	1,150	636	466
23.....	476	513	280	180	1,300	2,500	12,200	14,500	4,470	1,060	636	549
24.....	488	471	280	190	2,100	2,740	17,200	38,700	3,500	1,450	555	796
25.....	471	476	300	230	2,300	2,700	13,800	36,800	3,020	1,480	880	748
26.....	436	447	300	260	2,640	2,690	10,300	29,400	2,800	1,310	1,150	661
27.....	410	424	290	350	2,780	2,550	8,110	24,200	2,620	1,040	1,310	661
28.....	401	428	280	800	1,800	2,340	6,480	19,700	2,800	908	1,940	573
29.....	394	455	260	1,630	1,490	2,140	5,770	19,000	2,650	1,430	2,100	555
30.....	390	432	250	1,840	.....	1,990	5,340	18,300	2,210	1,540	2,690	538
31.....	398	.....	250	1,820	.....	1,900	.....	16,600	.....	1,350	2,350	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 1-27, 1942, Jan. 4 to Feb. 5, Feb. 9-16, Feb. 26 to Mar. 11, Dec. 18-31, 1943, Jan. 1-28, Feb. 10-24, Mar. 7-10, 1944.

Skunk River at Coppock, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 and 1944

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1942.....	19,644	1,160	424	634	0.219	0.25
November.....	19,870	1,330	336	662	.229	.26
December.....	19,710	3,580	170	636	.220	.25
Calendar year 1942.....	543,171	6,000	170	1,488	.515	6.99
January 1943.....	17,099	1,060	400	552	.191	.22
February.....	88,420	5,870	470	3,158	1.09	1.14
March.....	53,412	3,570	800	1,723	.596	.69
April.....	44,317	4,190	830	1,477	.511	.57
May.....	121,340	10,700	1,590	3,914	1.35	1.56
June.....	110,480	6,190	1,480	3,683	1.27	1.42
July.....	48,858	2,460	730	1,576	.545	.63
August.....	220,920	34,800	1,260	7,126	2.47	2.84
September.....	43,742	3,160	681	1,458	.504	.56
Water year 1942-43.....	807,812	34,800	170	2,213	.766	10.39
October 1943.....	15,774	657	390	509	.176	.20
November.....	17,728	1,120	424	591	.204	.23
December.....	11,856	775	250	382	.132	.15
Calendar year 1943.....	793,945	34,800	250	2,175	.753	10.21
January 1944.....	11,925	1,840	180	385	.133	.15
February.....	28,436	2,780	350	981	.339	.37
March.....	72,152	5,180	650	2,327	.805	.93
April.....	169,700	17,200	1,490	5,657	1.96	2.18
May.....	323,450	38,700	2,570	10,430	3.61	4.16
June.....	232,330	16,000	2,210	7,744	2.68	2.99
July.....	56,658	3,440	908	1,828	.633	.73
August.....	44,815	2,780	555	1,446	.500	.58
September.....	25,526	2,000	466	851	.294	.33
Water year 1943-44.....	1,010,350	38,700	180	2,761	.955	13.00

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 feet upstream from bridge on State Highway 16 at Augusta, 2 miles upstream from Long Creek, and at mile 12.2.

DRAINAGE AREA.—4,290 square miles.

RECORDS AVAILABLE.—September to November 1913, May 1915 to September 1950.

GAGE.—Water-stage recorder. Datum of gage is 521.69 feet above mean sea level, adjustment of 1912. Sept. 30 to Nov. 15, 1913, staff gage at old highway bridge 400 feet upstream from present gage, datum about 0.7 foot higher. May 27, 1915, to Jan. 14, 1935, chain gage on old highway bridge 400 feet upstream and at same datum as present gage.

AVERAGE DISCHARGE.—35 years (1915-50), 2,202 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Aug. 6	29,800	20.48	Dec. 3	236
1943-44...	May 26	44,800	23.04	Jan. 22	205
1944-45...	May 18	20,200	(¹)	Sept. 21	283
1945-46...	June 22	30,900	20.09	Nov. 22	238
1946-47...	June 9	29,000	19.62	Sept. 29	118
1947-48...	Mar. 20	25,800	18.68	Feb. 9	80
1948-49...	Mar. 4	² 16,000	(³)	Oct. 23	64
1949-50...	June 19	30,100	(⁴)	Dec. 8	38

(1) Maximum gage-height 19.33 feet Feb. 16 (ice jam).

(2) About

(3) Maximum gage-height 16.32 feet Feb. 26 (ice jam).

(4) Maximum gage-height 20.43 feet Feb. 9 (ice jam).

1913, 1915-50: Maximum discharge recorded, 44,800 second-feet May 26, 1944 (gage height, 23.04 feet); minimum observed, 7 second-feet Aug. 27 to Sept. 1, 1934.

REMARKS.—Records good except those for periods of ice effect, which are poor. Slight diurnal fluctuation at low flow caused by power plant 25 miles above station.

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

Skunk River at Augusta, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	729	656	433	2,690	629	a2,300	2,020	7,010	2,590	1,780	3,740	2,750
2.....	748	832	256	2,110	611	1,330	1,860	5,860	2,760	1,800	4,500	2,540
3.....	720	1,000	236	1,900	1,080	1,600	1,740	4,730	2,980	1,740	8,740	1,530
4.....	702	776	240	1,780	4,500	1,500	1,610	3,820	2,770	1,720	24,400	1,300
5.....	665	711	260	1,500	8,000	1,400	1,470	2,900	3,040	2,110	28,700	1,070
6.....	638	594	270	1,700	9,000	1,300	1,340	2,480	4,070	a2,500	20,200	1,140
7.....	785	558	280	1,900	9,500	1,200	1,300	2,300	5,880	3,080	24,400	1,280
8.....	1,120	585	300	1,400	9,200	1,050	1,240	2,630	7,040	2,200	16,800	3,150
9.....	1,200	930	320	1,000	8,600	1,100	1,220	2,940	6,700	1,610	12,200	2,240
10.....	1,060	1,030	330	910	8,000	1,100	1,460	3,240	5,120	1,180	11,400	1,410
11.....	970	1,050	340	820	7,500	1,200	1,570	3,210	5,580	a1,100	10,100	1,200
12.....	881	1,320	330	760	6,500	1,150	1,760	2,650	6,290	2,300	10,200	988
13.....	822	1,630	310	740	5,500	1,150	1,820	2,230	6,780	1,040	11,700	1,230
14.....	738	1,210	320	720	4,500	1,100	1,880	2,250	7,180	1,040	11,000	1,460
15.....	748	980	340	760	3,700	1,160	2,080	2,880	7,380	959	10,200	2,080
16.....	711	891	361	790	2,900	2,890	2,060	15,100	7,330	883	7,990	3,510
17.....	684	970	368	800	2,300	3,640	1,840	17,700	8,060	2,410	7,040	3,400
18.....	647	960	*374	810	2,200	*4,270	1,640	17,700	8,580	2,070	6,120	2,820
19.....	629	990	361	800	2,200	4,390	1,500	18,400	7,520	1,860	4,820	2,220
20.....	602	930	335	800	2,400	3,350	1,400	18,800	5,720	1,960	3,420	1,440
21.....	576	1,160	325	*820	2,800	2,340	1,280	16,600	4,880	2,280	2,570	1,280
22.....	567	1,190	325	840	3,500	2,360	1,210	14,200	5,600	2,300	a2,250	1,130
23.....	558	1,160	330	840	4,400	2,610	1,140	13,000	6,340	1,960	1,930	1,030
24.....	532	950	350	830	5,200	3,270	1,060	10,200	4,270	1,800	1,780	1,020
25.....	498	842	400	780	5,600	4,280	1,090	6,770	3,080	2,070	1,600	968
26.....	456	738	1,400	740	5,200	4,680	1,340	5,010	2,800	3,190	1,660	1,020
27.....	472	674	3,200	720	4,800	4,500	5,110	4,250	2,590	2,960	1,300	968
28.....	498	620	4,500	700	3,360	3,550	7,340	3,710	2,300	1,940	1,350	950
29.....	498	594	5,200	690	.....	2,910	7,230	3,350	2,040	1,200	1,410	950
30.....	498	558	5,200	693	.....	2,510	8,080	3,000	1,850	1,620	1,560	854
31.....	490	.....	4,260	665	.....	2,260	.....	2,770	.....	3,160	1,550	.....
1943-44												
1.....	g764	605	566	310	2,180	1,880	2,530	7,340	17,600	3,260	1,280	2,510
2.....	g754	699	551	320	1,560	1,560	2,550	6,690	15,000	3,070	1,120	2,060
3.....	g659	744	551	330	1,460	1,370	2,550	6,780	12,100	2,830	1,080	1,810
4.....	g580	771	551	320	1,190	1,380	2,410	6,490	9,880	2,570	1,130	1,600
5.....	g631	656	543	*307	1,040	1,800	2,190	6,460	8,460	2,990	3,680	1,410
6.....	717	622	558	286	987	2,130	2,050	6,470	7,140	3,780	2,380	1,250
7.....	699	735	558	270	896	1,800	2,010	7,010	5,520	3,670	g1,900	1,120
8.....	690	856	582	270	838	1,500	1,950	7,720	4,630	3,110	g2,840	1,020
9.....	673	1,220	647	260	780	1,200	2,000	8,140	5,880	2,610	g2,510	936
10.....	656	1,330	828	260	680	1,100	2,170	8,440	9,580	2,270	g1,940	856
11.....	622	1,070	886	250	500	1,340	7,300	8,410	10,900	2,150	g1,580	828
12.....	605	906	847	230	440	1,710	10,800	8,150	11,700	2,430	g1,340	780
13.....	647	856	700	240	480	2,480	8,600	7,310	9,770	2,500	1,180	828
14.....	647	790	400	230	460	4,420	6,740	6,280	9,120	2,070	1,080	866
15.....	605	762	320	225	480	13,900	8,390	5,500	10,700	2,020	976	838
16.....	597	735	340	223	520	*13,100	12,200	4,910	11,600	1,840	3,730	886
17.....	597	780	380	a230	500	9,210	12,200	4,440	13,700	1,620	1,840	876
18.....	605	673	390	251	540	7,510	11,600	4,090	15,800	1,500	1,660	733
19.....	597	664	430	228	560	6,060	11,400	3,680	16,500	1,430	2,550	681
20.....	589	631	460	237	540	5,050	10,700	3,550	15,800	1,430	1,570	809
21.....	639	622	440	223	540	4,280	9,740	7,370	12,200	1,290	1,030	1,140
22.....	647	647	420	205	600	3,750	16,300	9,990	9,880	1,190	866	966
23.....	622	647	390	a210	1,400	3,610	26,400	11,700	7,630	1,500	762	1,190
24.....	605	605	380	214	3,800	3,840	28,900	16,500	5,460	3,190	809	1,470
25.....	614	597	380	232	3,460	3,930	27,200	31,000	4,540	1,900	656	1,490
26.....	614	582	370	246	3,420	3,720	26,100	43,800	4,040	1,480	1,330	1,130
27.....	597	566	360	350	*3,540	3,540	18,000	38,200	3,720	1,330	2,760	896
28.....	574	558	350	398	3,380	3,300	11,100	30,600	3,510	1,080	2,550	818
29.....	574	558	330	800	2,370	3,050	8,720	24,700	3,830	987	2,590	762
30.....	574	589	320	2,000	.....	2,800	7,870	20,800	3,660	1,420	3,010	690
31.....	589	.....	310	2,480	.....	2,620	.....	19,400	.....	1,500	2,970	.....

* Winter discharge measurement made on this day.

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

g Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 3-15, 21-30, 1942, Jan. 5-29, Feb. 3-27, Mar. 3-14, Dec. 13-31, 1943, Jan. 1-4, 7-15, 29, 30, Feb. 10-24, Mar. 7-10, 1944. Discharge computed on basis of daily tape gage readings Feb. 28, Mar. 2, 15-17, 1943; and on basis of daily wire-weight gage readings July 7-16, Aug. 10 to Sept. 30, 1943, Jan. 5, 6, 16-22, 24-28, 1944.

Skunk River at Augusta, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1944-45													
1		762	464	600	450	h360	4,900	6,160	3,210	6,169	3,090	578	f504
2		2,330	471	400	420	h360	4,800	5,080	3,050	6,440	3,640	586	f385
3		3,210	2,670	390	400	h360	4,700	4,340	2,920	7,030	3,500	593	367
4		2,560	6,410	450	360	370	5,400	4,120	2,820	7,530	2,490	618	344
5		4,760	3,320	500	360	370	6,110	4,680	2,810	5,040	2,170	626	344
6		3,560	2,030	880	350	380	6,300	6,020	2,690	7,430	1,950	1,060	327
7		2,160	3,050	1,200	360	*370	5,900	5,680	3,260	6,500	1,770	1,310	300
8		1,420	2,580	1,200	360	370	4,970	5,290	3,920	6,260	2,050	1,390	391
9		1,110	1,710	1,020	340	380	4,560	5,240	3,160	6,570	2,550	1,320	g344
10		987	1,280	960	340	390	4,040	5,060	2,950	6,280	3,160	1,070	g373
11		946	1,070	920	340	420	4,070	4,680	2,730	5,150	2,400	1,180	g442
12		866	936	880	340	540	4,270	4,490	2,590	5,110	1,720	1,100	g455
13		790	866	840	340	1,000	4,760	4,450	2,470	5,700	1,440	1,660	g379
14		762	1,130	820	350	3,200	4,610	4,010	5,450	6,500	1,430	1,460	f747
15		708	*987	840	360	5,000	4,610	4,260	18,900	7,760	1,640	1,070	1,310
16		681	847	820	360	5,600	4,690	7,750	10,000	13,300	1,510	900	880
17		656	780	780	360	5,500	4,980	11,200	10,600	11,600	1,170	803	f667
18		639	780	760	350	5,300	5,100	10,200	10,800	8,090	1,050	1,270	540
19		605	780	*750	360	5,100	5,490	8,990	17,200	5,930	970	1,580	g410
20		589	717	720	360	4,900	5,990	8,470	15,100	5,330	940	1,340	g302
21		566	681	680	f360	4,700	6,200	8,680	h3,400	5,630	900	1,340	g283
22		543	656	640	h360	4,400	6,530	9,170	h1,500	5,780	890	1,010	g310
23		543	639	f590	h360	4,200	*6,830	9,080	h8,710	5,400	841	832	g310
24		535	622	f570	h360	4,100	6,880	8,530	h6,330	4,960	784	720	511
25		506	622	f540	h366	4,000	9,100	7,140	5,510	3,980	756	711	900
26		535	876	f510	h360	4,600	15,700	6,480	5,290	3,980	756	747	1,140
27		478	1,300	f460	h370	5,400	13,100	5,220	5,510	4,700	720	667	980
28		478	1,220	f420	f380	5,100	8,950	4,400	6,060	3,600	693	f601	4,270
29		485	790	f390	f380	.....	7,740	3,880	6,420	3,480	659	571	8,120
30		478	720	f400	f360	.....	7,680	3,510	6,440	3,620	626	563	5,540
31		471	.....	430	f360	.....	7,200	.....	6,430	.....	609	525	.....
1945-46													
1		5,040	344	404	800	2,140	1,800	6,540	1,110	4,600	5,150	3,130	483
2		6,070	321	1,000	*720	2,190	1,660	4,850	1,460	3,640	5,240	3,530	483
3		4,590	321	3,390	630	2,500	1,540	4,120	3,820	2,200	5,100	4,690	469
4		2,460	327	4,020	770	2,710	*1,620	3,610	12,600	1,760	5,240	2,830	423
5		1,590	362	2,360	13,000	2,740	2,140	3,190	9,950	1,580	4,840	1,740	455
6		1,300	391	1,540	26,400	2,690	4,890	2,900	7,280	1,450	3,730	1,280	391
7		1,080	379	1,260	25,600	3,000	5,410	2,610	5,950	1,360	2,940	1,270	397
8		910	367	1,080	24,900	5,500	5,460	2,550	5,730	1,300	2,540	1,900	404
9		803	356	1,010	26,500	7,700	5,850	2,850	4,920	1,210	2,290	1,820	429
10		720	356	756	*23,700	8,000	5,370	2,440	3,780	1,120	2,180	1,840	417
11		659	356	711	20,300	8,500	5,030	2,320	3,320	1,050	2,080	1,580	720
12		609	920	429	18,000	9,000	6,360	2,680	2,950	2,830	1,960	1,240	1,730
13		563	851	397	14,500	9,200	7,510	3,170	2,700	8,380	1,740	1,040	1,800
14		586	684	340	10,000	8,200	7,510	2,660	2,400	8,260	1,630	832	1,560
15		563	601	360	5,000	6,800	7,380	2,400	2,310	7,710	1,510	812	1,220
16		540	642	380	3,800	6,200	8,090	2,180	2,210	6,980	1,390	1,040	970
17		525	651	400	3,000	5,800	15,400	1,950	2,210	7,790	1,580	1,150	803
18		511	571	g370	*2,600	5,500	14,000	1,780	2,260	19,800	4,380	1,180	693
19		476	504	330	2,500	5,200	13,000	1,630	2,400	22,100	5,810	1,710	626
20		497	578	340	2,350	5,000	11,800	1,520	2,430	24,800	3,800	2,140	626
21		h449	442	g360	2,250	4,800	10,600	1,450	2,240	27,700	2,110	1,600	609
22		h490	238	g340	2,200	4,900	9,320	1,380	2,150	30,500	1,590	1,150	555
23		h436	300	g330	2,100	4,900	7,440	1,330	2,100	25,700	1,330	1,190	2,220
24		h410	248	g344	1,900	4,500	11,000	1,360	2,080	15,600	1,220	1,000	3,030
25		h429	332	g340	1,750	3,800	11,600	1,310	2,990	12,700	1,160	1,160	1,970
26		h391	305	g340	1,900	2,440	10,500	1,330	3,560	12,200	1,160	1,000	2,150
27		h391	533	g360	2,250	1,880	9,250	1,280	2,970	11,200	1,070	910	1,450
28		h362	490	g380	2,780	1,810	9,040	1,190	2,930	9,040	1,100	832	950
29		h373	289	g430	2,970	.....	8,260	1,140	2,110	7,620	1,140	747	803
30		332	391	600	2,850	.....	7,590	1,080	1,930	6,620	2,830	609	684
31		344	.....	800	2,480	.....	7,570	.....	4,500	.....	3,790	540	.....

* Winter discharge measurement made on this day.
 f Fragmentary gage-height record; discharge computed on basis of partly estimated gage-heights.
 g Computed from graph based on gage readings.
 h Computed from wire-weight gage readings.
 Note—Stage-discharge relation affected by ice Nov. 30 to Dec. 31, 1944, Jan. 1 to Mar. 4, Dec. 14-23, 25-31, 1945, Jan. 1-5, 14-27, Feb. 7-25, 1946.

Skunk River at Augusta, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	910	1,630	1,040	416	910	4,240	2,060	6,610	9,470	25,700	950	284
2.....	1,010	1,560	1,000	416	743	4,100	1,960	6,320	9,670	23,300	920	300
3.....	762	2,750	980	410	640	4,070	1,890	6,130	11,800	17,500	850	253
4.....	628	3,720	920	400	460	4,080	3,190	5,480	12,300	13,900	800	258
5.....	573	4,200	890	380	480	4,240	18,900	4,880	16,100	11,700	781	258
6.....	550	2,810	810	420	520	4,050	18,800	4,200	20,900	13,300	743	258
7.....	501	2,150	870	460	560	3,880	15,400	3,680	24,800	10,100	688	248
8.....	448	1,860	970	*470	550	3,720	15,400	3,270	28,000	8,560	671	248
9.....	429	1,730	1,030	460	540	3,830	14,400	2,990	28,700	6,630	628	188
10.....	404	1,960	1,010	430	520	4,020	12,600	2,730	27,100	5,220	597	238
11.....	404	2,830	970	435	530	4,420	11,500	2,510	23,900	4,380	566	233
12.....	416	2,600	*1,210	467	*540	5,120	9,980	2,340	20,800	3,750	550	h233
13.....	416	2,190	1,420	573	540	5,600	8,770	2,210	22,000	3,380	536	h248
14.....	573	1,930	1,290	860	580	7,590	8,160	2,110	24,600	3,140	515	f274
15.....	840	1,710	1,110	1,480	2,000	6,460	8,550	2,090	22,000	2,950	480	164
16.....	724	1,640	1,010	2,090	4,500	5,120	10,700	2,270	19,900	2,610	448	198
17.....	697	1,580	910	2,090	9,000	4,630	12,500	3,000	14,500	2,420	480	228
18.....	950	1,540	515	10,000	5,260	11,500	2,580	16,800	2,290	429	188	
19.....	1,230	1,590	339	1,410	9,000	3,500	9,500	2,430	22,700	1,690	410	208
20.....	1,890	1,530	435	1,190	8,900	2,980	17,500	2,680	27,000	1,890	416	198
21.....	3,160	1,400	480	1,010	8,410	2,970	17,800	2,730	25,100	1,850	404	2,070
22.....	2,220	1,360	589	830	6,940	2,640	16,000	2,620	21,700	1,720	404	1,960
23.....	1,530	1,310	697	810	5,470	2,650	15,200	2,500	19,700	1,560	368	810
24.....	1,310	1,270	733	780	4,580	3,000	13,000	2,300	19,900	1,490	356	550
25.....	1,380	1,220	612	790	4,770	5,170	11,200	2,270	19,700	1,380	368	311
26.....	1,950	1,160	680	810	4,900	5,200	8,660	2,320	16,500	1,310	380	248
27.....	3,190	1,160	820	920	4,880	3,910	5,940	2,530	15,900	1,340	345	188
28.....	3,240	1,150	860	930	4,660	3,190	5,010	2,700	15,100	1,240	328	f160
29.....	2,680	1,090	772	920	.....	2,730	4,760	6,780	17,000	1,140	322	g118
30.....	2,090	1,060	398	1,140	.....	2,420	5,580	11,400	20,400	1,100	300	g160
31.....	1,760	.....	429	1,070	.....	2,200	.....	11,100	.....	1,020	311	.....
1947-48												
1.....	g176	605	350	f416	110	13,800	4,440	1,550	671	f416	f1,030	h208
2.....	g167	791	*398	350	104	8,410	3,860	1,450	637	f461	890	h194
3.....	g154	671	515	340	180	8,380	3,140	1,660	620	f522	662	1,420
4.....	g163	654	1,890	330	*154	f9,630	2,690	2,850	573	536	558	1,050
5.....	158	830	4,460	340	136	f8,660	2,430	3,130	550	1,300	f522	654
6.....	158	762	3,360	370	118	f4,410	2,180	2,910	550	4,360	f429	515
7.....	198	605	2,460	390	96	3,160	2,240	3,090	515	3,300	f398	g448
8.....	167	522	2,100	450	85	2,440	2,180	3,020	f448	2,090	f416	1,000
9.....	143	529	1,680	500	80	1,960	2,020	3,760	f508	1,010	h350	461
10.....	203	454	1,250	536	105	1,410	1,800	3,600	f442	697	h362	h311
11.....	172	487	1,060	522	120	1,160	1,730	3,120	f442	688	h362	h279
12.....	223	467	1,100	490	120	1,010	1,740	2,970	f454	529	h223	h258
13.....	147	442	910	450	90	910	1,630	2,910	f435	442	h284	h248
14.....	132	392	781	416	90	2,700	1,460	2,630	g435	f1,060	h253	h233
15.....	110	536	710	*404	125	f11,300	1,400	2,400	f386	1,010	h274	h253
16.....	136	558	660	374	220	12,600	1,340	2,140	398	1,530	h223	f223
17.....	132	620	630	350	2,730	*12,200	1,260	1,920	h422	g2,100	h233	147
18.....	129	543	570	300	10,200	10,100	1,170	1,810	h386	1,590	h253	147
19.....	122	508	*540	220	11,700	f17,200	1,110	1,690	h398	1,000	h208	147
20.....	101	487	530	210	12,300	25,000	1,070	1,480	h356	680	h223	96
21.....	115	480	520	200	9,500	23,500	1,000	1,350	h392	589	h218	688
22.....	115	515	500	203	7,300	23,300	960	1,260	h386	2,730	h200	637
23.....	129	515	480	203	6,800	f18,500	1,040	1,180	1,320	3,840	h240	566
24.....	136	508	470	203	6,700	g14,900	1,060	1,080	566	3,600	h274	306
25.....	167	508	480	194	7,300	g13,500	1,200	1,000	f550	3,170	h253	536
26.....	g154	508	520	147	8,900	g11,200	1,310	950	f328	3,730	h228	536
27.....	g150	480	540	130	9,600	g9,290	1,680	900	404	3,960	g194	386
28.....	g233	450	540	125	19,800	g5,840	2,050	840	581	3,940	g218	258
29.....	150	410	543	125	f17,000	4,130	1,890	772	404	3,240	g204	194
30.....	150	370	508	125	.....	4,020	1,670	743	380	1,960	g180	167
31.....	208	.....	480	130	.....	4,340	.....	705	.....	1,400	h253	.....

* Winter discharge measurement made on this day.

f Fragmentary gage-height record; discharge computed from partly estimated gage heights.

g Computed from graph based on gage readings.

h Computed from once daily wire-weight gage readings.

Note—Stage-discharge relation affected by ice Jan. 4-10, 23-25, Feb. 3-20, Nov. 28, 30, Dec. 1, 8-10, 15-28, 1947, Jan. 2-9, 12, 13, 17-21, Jan. 27 to Feb. 1, Feb. 8-27, Mar. 9-14, 1948.

Skunk River at Augusta, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	143	71	274	454	700	11,000	10,500	1,280	620	2,840	820	125
2.....	140	93	189	435	670	10,000	8,240	1,230	1,010	2,240	487	115
3.....	132	80	180	400	640	10,000	5,960	1,180	1,520	1,740	362	110
4.....	73	122	150	380	620	12,500	4,880	1,140	4,400	1,680	306	112
5.....	194	327	140	600	590	13,500	4,050	1,080	3,610	1,460	290	107
6.....	73	147	160	1,200	570	14,000	3,500	1,030	2,120	1,360	269	311
7.....	486	118	170	2,200	550	13,500	3,060	970	1,410	1,460	243	96
8.....	1,000	78	150	3,500	*530	11,200	2,730	900	1,160	1,410	110	98
9.....	515	290	120	2,300	510	12,200	2,460	880	970	1,200	300	98
10.....	356	223	85	1,700	500	*11,900	2,180	880	860	1,460	228	98
11.....	185	180	100	1,300	500	11,500	1,900	850	772	1,460	264	163
12.....	154	125	120	1,000	520	11,300	1,850	840	705	950	1,030	540
13.....	154	163	150	700	520	10,900	1,800	781	772	772	980	2,120
14.....	140	118	180	800	500	9,500	1,740	781	1,580	1,040	550	1,580
15.....	136	158	213	1,000	490	5,120	2,070	714	2,240	1,690	573	781
16.....	132	136	218	1,200	480	3,500	3,170	705	2,460	800	374	416
17.....	150	167	208	1,300	520	2,840	3,280	680	1,630	558	136	279
18.....	73	176	118	1,400	2,900	2,510	3,060	671	1,260	474	300	322
19.....	83	223	187	1,300	2,900	2,180	2,840	688	990	448	351	290
20.....	93	484	422	1,200	2,700	2,020	2,560	705	772	467	705	300
21.....	88	1,030	429	1,200	2,500	1,900	2,400	724	772	566	461	300
22.....	172	1,010	368	1,150	2,200	2,120	2,340	1,070	820	637	322	163
23.....	64	900	243	1,100	3,000	2,950	2,290	3,280	1,150	724	322	213
24.....	71	637	158	1,050	5,600	4,640	2,120	3,720	3,200	543	356	85
25.....	71	501	140	1,000	11,000	5,600	1,960	2,020	12,300	573	362	96
26.....	132	362	140	950	12,500	6,320	1,740	1,360	11,700	480	311	85
27.....	110	359	170	900	12,500	8,940	1,630	1,050	8,380	398	339	93
28.....	73	274	223	850	12,000	9,360	1,520	860	8,520	334	558	98
29.....	88	264	*322	800	.....	6,680	1,410	772	7,320	823	662	90
30.....	71	176	380	760	.....	5,480	1,360	697	3,940	662	129	83
31.....	163	.....	416	730	.....	6,800	.....	645	.....	1,740	238	.....
1949-50												
1.....	101	123	101	800	270	8,500	1,630	1,960	1,220	2,730	467	149
2.....	85	93	90	1,500	240	7,000	1,360	1,850	1,160	2,240	347	141
3.....	80	109	98	1,100	220	5,600	1,360	1,630	1,360	1,960	288	141
4.....	85	90	109	700	200	4,760	1,900	1,520	1,460	1,800	266	141
5.....	80	109	98	450	180	6,320	2,240	1,360	1,280	1,800	277	130
6.....	80	98	90	300	170	8,240	1,960	1,210	1,000	1,580	329	141
7.....	69	98	76	350	200	9,640	1,580	1,030	1,010	1,310	271	141
8.....	65	98	38	400	1,000	9,500	1,310	1,520	990	1,210	312	62
9.....	83	83	90	300	6,800	7,060	1,150	7,610	890	1,080	318	76
10.....	90	98	71	250	5,300	7,190	1,290	10,600	800	1,000	312	73
11.....	73	98	46	200	3,900	8,100	1,360	10,200	733	920	341	78
12.....	93	109	384	250	2,800	9,220	1,360	7,060	714	850	283	78
13.....	277	123	215	1,100	2,150	9,500	1,200	5,720	2,290	781	260	173
14.....	199	106	54	3,000	1,600	6,080	1,080	5,240	2,950	850	237	120
15.....	167	137	100	1,500	1,100	3,280	970	4,640	2,950	800	237	106
16.....	134	120	80	1,000	840	2,340	840	3,280	3,940	733	353	96
17.....	98	145	90	700	780	2,020	840	2,510	5,000	860	248	85
18.....	112	141	145	580	700	1,900	772	2,070	6,190	1,120	237	78
19.....	112	103	145	*520	620	2,020	714	1,800	27,900	1,310	243	78
20.....	127	157	221	450	620	2,240	714	1,680	26,400	1,010	188	134
21.....	127	101	442	400	1,000	2,180	671	1,580	20,300	743	188	137
22.....	134	114	130	360	2,000	2,180	597	3,590	18,300	628	178	294
23.....	117	106	100	350	1,400	1,850	597	5,330	11,600	573	178	791
24.....	127	98	110	1,900	920	1,850	11,500	2,840	9,780	566	178	461
25.....	120	106	100	3,500	600	2,950	23,700	2,020	10,900	543	162	157
26.....	237	101	110	1,800	600	3,500	18,360	1,680	12,200	429	149	167
27.....	215	98	90	1,000	800	3,060	7,970	1,460	10,500	772	145	88
29.....	199	96	100	700	3,500	2,720	g3,830	1,310	6,080	410	145	112
30.....	173	112	80	500	.....	2,290	g2,680	1,310	4,880	372	145	114
29.....	145	96	80	400	.....	2,020	g2,240	1,410	3,610	378	167	130
31.....	130	.....	130	320	.....	1,850	.....	1,310	.....	384	157	.....

* Winter discharge measurement made on this day.

g Computed from graph based on gage readings.

Note—Stage-discharge relation affected by ice Dec. 3-14, 25-27, 30, 1948, Jan. 2 to Mar. 5, Dec. 15, 22-31, 1949, Jan. 1 to Mar. 3, 1950. Discharge computed from daily wire-weight gage readings Oct. 4, 5, Oct. 18 to Nov. 3, 1948, Aug. 5-11, Aug. 17 to Sept. 11, Sept. 19 to Oct. 13, Dec. 4-14, 16-21, 1949, Aug. 10 to Sept. 12, 1950.

Skunk River at Augusta, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1942	21,442	1,200	456	692	0.161	0.19
November	27,989	1,630	558	903	.210	.23
December	31,854	5,200	236	1,028	.240	.28
Calendar year 1942	742,881	11,000	236	2,035	.474	6.44
January 1943	33,008	2,690	665	1,065	.248	.29
February	133,680	9,500	611	4,774	1.11	1.16
March	73,450	4,650	1,050	2,369	.552	.64
April	67,690	8,080	1,060	2,256	.526	.59
May	221,690	18,800	2,230	7,151	1.67	1.92
June	149,120	8,580	1,850	4,971	1.16	1.29
July	58,572	3,190	883	1,889	.440	.51
August	265,720	29,200	1,350	8,572	2.00	2.30
September	48,828	3,510	854	1,628	.379	.42
Water year 1942-43	1,132,143	29,200	236	3,102	.723	9.82
October 1943	19,583	764	574	632	.147	.17
November	22,076	1,330	558	736	.172	.19
December	15,138	886	310	488	.114	.13
Calendar year 1943	1,108,555	29,200	310	3,037	.708	9.61
January 1944	12,635	2,480	205	408	.095	.11
February	39,141	3,800	440	1,350	.315	.34
March	118,940	13,900	1,100	3,837	.894	1.03
April	303,270	28,900	1,050	10,110	2.36	2.63
May	381,890	43,800	3,560	12,320	2.87	3.31
June	279,850	17,600	3,510	9,328	2.17	2.43
July	66,017	3,780	987	2,130	.497	.57
August	56,699	3,730	656	1,829	.426	.49
September	33,269	2,510	681	1,109	.259	.29
Water year 1943-44	1,348,508	43,800	205	3,684	.859	11.69
October 1944	35,719	4,760	471	1,152	.269	.31
November	41,004	6,410	464	1,367	.319	.36
December	21,360	1,200	390	689	.161	.19
Calendar year 1944	1,389,794	43,800	205	3,797	.885	12.06
January 1945	11,270	450	340	364	.085	.10
February	76,770	5,600	360	2,742	.639	.67
March	196,160	15,700	4,040	6,328	1.48	1.70
April	186,260	11,200	3,510	6,209	1.45	1.61
May	235,230	19,800	2,470	7,588	1.77	2.04
June	187,840	13,300	3,480	6,261	1.46	1.63
July	48,874	3,640	609	1,577	.368	.42
August	29,801	1,660	525	961	.224	.26
September	32,235	8,120	283	1,074	.250	.28
Water year 1944-45	1,102,523	19,800	283	3,021	.704	9.57
October 1945	34,499	6,070	332	1,113	.259	.30
November	13,450	920	238	448	.104	.12
December	25,501	4,020	330	823	.192	.22
Calendar year 1945	1,077,890	19,800	238	2,953	.688	9.35
January 1946	250,800	26,800	630	8,090	1.89	2.17
February	137,600	9,200	1,810	4,914	1.15	1.19
March	233,990	15,400	1,540	7,548	1.76	2.03
April	70,800	6,540	1,080	2,360	.550	.61
May	109,940	12,000	1,110	3,546	.827	.95
June	288,200	30,500	1,050	9,607	2.24	2.50
July	83,630	5,810	1,070	2,698	.629	.72
August	47,492	4,690	540	1,532	.357	.41
September	29,520	3,030	391	984	.229	.26
Water year 1945-46	1,325,422	30,500	238	3,631	.846	11.48

Skunk River at Augusta, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946.....	38,865	3,240	404	1,254	0.292	0.34
November.....	55,690	4,200	1,060	1,856	.433	.48
December.....	25,799	1,420	339	832	.194	.22
Calendar year 1946.....	1,372,326	30,500	339	3,760	.876	11.88
January 1947.....	26,467	2,090	380	855	.199	.23
February.....	96,123	10,000	460	3,433	.800	.83
March.....	126,990	7,590	2,200	4,096	.955	1.10
April.....	316,410	18,900	1,890	10,547	2.46	2.74
May.....	119,770	11,400	2,090	3,864	.901	1.04
June.....	594,040	28,700	9,470	19,800	4.62	5.15
July.....	179,860	25,700	1,020	5,802	1.35	1.56
August.....	16,354	960	300	528	.123	.14
September.....	11,280	2,070	118	376	.088	.10
Water year 1946-47.....	1,607,678	28,700	118	4,405	1.03	13.93
October 1947.....	4,798	233	101	155	.036	.04
November.....	16,207	830	370	540	.126	.14
December.....	31,535	4,460	350	1,017	.237	.27
Calendar year 1947.....	1,539,864	28,700	101	4,219	.983	13.34
January 1948.....	9,543	536	125	308	.072	.08
February.....	131,763	19,800	80	4,544	1.06	1.14
March.....	288,960	25,000	910	9,321	2.17	2.50
April.....	54,750	4,440	960	1,825	.425	.47
May.....	60,870	3,760	705	1,964	.458	.53
June.....	14,937	1,320	328	498	.116	.13
July.....	57,480	4,360	416	1,854	.432	.50
August.....	10,675	1,030	180	344	.080	.09
September.....	12,566	1,420	96	419	.098	.11
Water year 1947-48.....	694,084	25,000	80	1,896	.442	6.00
October 1948.....	5,515	1,000	64	178	.041	.05
November.....	8,972	1,030	71	299	.070	.08
December.....	6,523	429	85	210	.049	.06
Calendar year 1948.....	662,554	25,000	64	1,810	.422	5.74
January 1949.....	34,859	3,500	380	1,124	.262	.30
February.....	79,210	12,500	480	2,829	.659	.69
March.....	241,960	14,000	1,900	7,805	1.82	2.10
April.....	90,600	10,500	1,360	3,020	.704	.79
May.....	34,183	3,720	645	1,103	.257	.30
June.....	88,963	12,300	620	2,065	.691	.77
July.....	32,989	2,840	334	1,064	.248	.29
August.....	12,738	1,030	110	411	.096	.11
September.....	9,367	2,120	83	312	.073	.08
Water year 1949-49.....	645,879	14,000	64	1,770	.413	5.62
October 1949.....	3,934	277	65	127	.030	.03
November.....	3,266	157	83	109	.025	.03
December.....	3,813	442	38	123	.029	.03
Calendar year 1949.....	635,882	14,000	38	1,742	.406	5.52
January 1950.....	26,680	3,500	200	861	.201	.23
February.....	40,510	6,800	170	1,447	.337	.35
March.....	146,970	9,640	1,850	4,741	1.11	1.27
April.....	97,715	23,700	597	3,257	.759	.85
May.....	98,330	10,600	1,030	3,172	.739	.85
June.....	198,387	27,900	714	6,613	1.54	1.72
July.....	31,742	2,730	372	1,024	.239	.28
August.....	7,606	467	145	245	.057	.07
September.....	4,672	791	62	156	.036	.04
Water year 1949-50.....	663,625	27,900	38	1,818	.424	5.75

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, 11 miles upstream from mouth.

DRAINAGE AREA.—750 square miles.

RECORDS AVAILABLE.—October 1945 to September 1950.

GAGE.—Wire-weight gage; gage read once daily.

AVERAGE DISCHARGE.—5 years, 487 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1946-50 are contained in the following table:

Water Year	Maximum Observed			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1945-46...	Jan. 7	13,900	22.57	Nov. 7	44
1946-47...	June 15	10,800	21.3	Sept. 1'-20	24
1947-48...	Mar. 19	7,660	19.5	Feb. 9, 10	4
1948-49...	Mar. 8	6,920	19.65	Sept. 16, 29, 30	7.3
1949-50...	Mar. 8	5,810	18.84	Sept. 30	6.0

1945-50: Maximum discharge observed, 13,900 second-feet Jan. 7, 1946 (gage-height, 22.57 feet); minimum daily, 4 second-feet Feb. 9, 10, 1948.

Flood of May 1944 reached a stage of 22.8 feet, from floodmark.

REMARKS.—Records fair, except those for periods of ice effect, days of no gage-height record, or rapidly changing discharge, which are poor.

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

North Skunk River near Sigourney, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1946 and 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1945-46													
1	537	52	167	85	180	206	a800	200	478	680	400	a85	
2	383	52	1,940	85	190	228	a700	a300	a390	1,470	318	a84	
3	273	50	431	75	200	a244	a600	1,360	303	780	253	a84	
4	194	49	547	100	250	260	a550	2,360	289	a640	a232	a83	
5	154	49	323	*3,200	300	376	a500	a2,300	262	499	211	a82	
6	136	50	235	6,350	400	826	a490	2,250	246	448	181	a81	
7	114	44	180	*13,500	800	1,710	a490	2,410	232	a418	177	a80	
8	104	53	150	12,200	1,300	1,460	484	1,100	220	387	276	a200	
9	97	287	130	*6,260	*1,500	626	471	860	a198	461	362	935	
10	88	446	110	4,000	1,000	465	436	756	175	414	278	1,130	
11	83	167	90	*2,600	700	448	408	606	150	343	a252	836	
12	78	116	80	850	500	878	484	a597	2,440	316	225	539	
13	74	143	75	650	350	1,940	488	588	2,650	296	a212	267	
14	76	235	70	450	270	2,020	a450	558	2,160	a286	200	244	
15	71	173	66	410	250	2,280	412	511	878	276	143	a203	
16	69	116	62	380	230	2,620	368	501	a1,430	247	148	162	
17	70	101	62	340	210	3,500	327	478	1,990	2,450	149	145	
18	70	92	62	300	220	2,750	300	602	4,240	1,140	a160	128	
19	67	84	60	280	230	2,950	283	a578	5,670	446	620	116	
20	62	83	56	300	240	*2,100	269	554	5,070	323	253	113	
21	61	78	55	310	230	1,140	a254	606	4,980	a288	143	110	
22	57	66	56	310	235	945	239	478	5,020	253	126	a266	
23	53	60	58	270	240	856	237	433	a3,920	213	124	423	
24	54	68	60	230	250	a1,200	278	1,080	2,810	208	143	1,300	
25	56	66	62	200	255	2,600	309	1,360	1,000	194	a164	702	
26	54	*67	64	210	262	3,070	239	a968	1,130	258	185	467	
27	54	90	66	180	247	2,390	210	576	1,670	225	153	223	
28	a56	94	66	160	*234	2,140	a209	495	922	a300	126	208	
29	57	107	68	150	.....	2,400	208	429	710	1,260	87	a256
30	56	110	72	160	.....	1,460	206	a410	a695	950	87	305
31	52	.....	80	170	.....	a1,000	.....	391	.....	400	85	.....
1946-47													
1	239	503	a246	120	130	350	564	824	3,100	2,060	a150	a48	
2	194	501	237	105	120	330	580	920	4,580	2,000	a140	45	
3	175	a704	230	95	115	310	712	826	4,200	2,240	a130	44	
4	146	908	228	85	110	310	1,240	a706	4,160	a1,760	a120	39	
5	131	908	222	85	105	310	3,630	586	5,500	1,290	a110	34	
6	a128	766	208	90	105	320	a5,000	552	5,580	a1,120	a100	36
7	125	576	244	95	105	350	4,420	537	9,800	948	a95	32
8	122	476	a248	105	110	370	4,110	524	a7,110	822	a90	a31
9	119	446	251	*115	110	400	1,440	511	4,430	a750	88	30
10	119	a568	237	120	115	500	1,380	501	3,510	a680	a82	30
11	119	690	234	135	120	600	1,380	a456	1,520	602	77	28
12	119	670	223	150	130	1,000	2,530	412	1,310	594	77	26
13	a118	a564	*220	160	*140	1,200	4,440	402	3,100	a566	76	26
14	118	*457	196	170	800	1,300	3,940	393	2,920	539	73	24
15	162	a440	a182	190	1,400	1,200	1,580	a400	10,600	497	73	a24
16	162	423	169	240	1,800	900	1,670	406	6,900	463	70	a24
17	118	a426	169	270	*1,600	818	1,850	431	4,520	395	a70	a24
18	349	429	165	300	1,000	784	1,790	a700	3,380	378	70	24
19	1,120	440	175	310	800	778	1,780	580	2,110	351	70	a24
20	a819	389	*162	305	750	760	a2,000	436	1,960	a338	67	a24
21	518	385	206	295	700	736	3,580	370	1,840	325	66	a250
22	372	366	a200	280	650	720	3,900	359	a2,000	298	64	a300
23	327	368	193	265	600	a1,050	3,490	345	4,120	274	60	a200
24	327	a360	191	250	550	1,380	1,990	340	7,230	255	a55	a100
25	1,480	351	a186	240	500	*1,230	1,340	a393	5,380	244	50	a70
26	1,460	362	180	220	450	746	866	446	3,920	235	49	a45
27	a1,000	303	177	*210	400	622	a821	560	3,010	a222	50	a35
28	537	a290	172	190	370	608	776	558	2,270	208	54	a25
29	522	276	160	170	600	768	3,280	a2,190	200	57	a30
30	516	256	150	150	a590	760	a2,000	2,110	188	53	a35
31	435	135	140	580	3,210	165	a50

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Nov. 21-25, Dec. 7-31, 1945, Jan. 1-5, Jan. 10 to Feb. 24, Dec. 29-31, 1946, Jan. 1 to Mar. 16, 1947.

North Skunk River near Sigourney, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1948 and 1949

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1947-48												
1.....	19	a100	56	53	16	g6,250	276	g122	98	44	99	511
2.....	a17	a150	55	54	16	g2,980	252	g126	96	43	a80	183
3.....	19	a130	59	54	16	g680	216	g266	94	41	a69	85
4.....	a21	a110	122	56	15	g310	a208	g346	87	39	59	48
5.....	a21	a94	240	57	14	250	202	g496	82	a292	a68	36
6.....	a22	a80	286	59	*12	210	215	g572	78	135	a88	26
7.....	a27	a70	520	60	8	170	228	g712	76	88	113	28
8.....	a33	59	300	62	5	140	213	g912	73	53	56	18
9.....	a28	55	194	64	4	99	209	g1,030	71	41	54	18
10.....	a25	67	115	66	4	92	172	a1,000	65	31	52	24
11.....	a22	a58	97	69	6	88	166	a894	60	g25	52	28
12.....	a25	50	96	70	8	85	153	a760	55	g21	44	16
13.....	a22	36	96	69	9	81	120	g600	54	g620	44	14
14.....	a20	50	95	67	8	g236	134	g472	56	g1,510	65	13
15.....	a18	a42	94	64	7	g1,080	132	g416	71	g1,340	40	13
16.....	a19	36	92	62	5	g2,780	132	416	69	g1,210	37	9.8
17.....	a19	59	*89	60	1,300	g3,140	130	410	67	g726	25	9.5
18.....	a20	38	78	58	g1,640	*g5,990	130	360	59	g364	23	13
19.....	a17	82	68	56	g1,560	g6,730	105	290	53	g124	26	a11
20.....	a18	71	69	51	g740	g4,700	98	252	50	g336	a22	9.5
21.....	a19	76	69	47	510	g4,660	119	207	45	g925	17	11
22.....	a21	60	69	42	480	*g3,620	112	185	42	g1,470	16	389
23.....	a22	43	69	37	460	g1,720	117	175	45	g892	14	191
24.....	a24	45	68	33	450	g1,200	199	159	50	a270	14	80
25.....	a26	47	67	30	450	g630	197	146	48	g760	a15	38
26.....	a27	44	64	27	g660	g428	119	135	45	g1,500	16	31
27.....	a28	38	62	24	g1,870	452	120	130	44	g1,550	14	22
28.....	a44	44	60	22	g3,440	504	123	122	67	g760	16	20
29.....	a70	54	58	19	g5,400	448	126	113	47	g250	17	18
30.....	a64	54	56	18	.....	228	132	106	45	g158	a17	14
31.....	a58	.....	54	17	.....	300	.....	101	.....	g129	a120	.....
1948-49												
1.....	14	13	28	88	105	1,700	1,400	149	1,050	218	81	14
2.....	12	13	22	85	105	1,600	925	148	1,400	205	67	13
3.....	13	16	19	80	100	1,500	a760	148	1,200	186	40	13
4.....	12	16	20	125	95	1,600	a600	146	1,200	170	34	12
5.....	13	20	20	190	90	2,000	465	148	600	167	31	a11
6.....	a20	18	20	290	85	3,000	1,100	146	223	162	31	81
7.....	32	17	19	420	82	4,070	740	149	d200	159	24	216
8.....	26	15	19	480	80	6,220	389	148	d180	157	21	134
9.....	28	16	18	490	78	2,170	427	148	d160	149	19	119
10.....	31	17	18	360	76	1,020	418	210	d150	a145	a16	74
11.....	25	16	25	230	74	660	418	154	d140	140	26	70
12.....	24	16	35	115	72	522	278	107	d140	136	342	53
13.....	24	a15	50	90	70	a500	d250	106	189	78	220	42
14.....	16	a14	72	80	70	456	d230	104	225	a72	21	a20
15.....	13	a13	100	110	68	398	d230	a105	d300	71	20	9.8
16.....	13	18	140	250	68	342	d235	104	d240	66	18	7.3
17.....	13	43	92	340	68	314	a240	104	125	58	d16	8.1
18.....	14	38	65	330	*78	296	d260	100	110	145	d16	8.9
19.....	14	278	56	320	250	296	d275	97	100	95	18	8.9
20.....	12	a560	50	*300	380	a350	d290	242	94	110	165	8.9
21.....	13	332	45	250	360	522	314	223	95	110	104	8.9
22.....	13	159	40	220	360	1,000	351	191	541	107	50	8.6
23.....	13	143	37	200	500	1,730	370	169	1,150	88	44	8.6
24.....	12	124	35	180	1,400	5,380	380	159	1,670	64	38	a9.6
25.....	13	76	32	165	1,800	1,960	360	137	1,280	56	24	8.9
26.....	14	61	31	155	2,000	1,000	a320	122	1,400	a50	22	8.4
27.....	14	a50	30	150	2,100	3,010	234	104	a1,200	43	20	8.1
28.....	14	40	30	140	1,800	1,400	167	91	1,050	580	20	8.4
29.....	13	38	30	130	.....	820	151	84	700	177	19	7.3
30.....	12	35	29	120	.....	780	149	73	436	91	18	7.3
31.....	12	.....	29	110	.....	1,420	.....	a70	.....	64	a16	.....

* Winter discharge measurement made on this day.

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

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

g Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Nov. 24 to Dec. 1, Dec. 10-31, 1947, Jan. 1 to Feb. 17, Feb. 21-25, Mar. 5-13, Nov. 29 to Dec. 31, 1948, Jan. 1 to Mar. 6, 1949.

North Skunk River near Sigourney, Iowa—Continued

Daily Discharge, in second-feet, for Water Year 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1949-50												
1.....	7.5	10	11	d200	22	2,000	105	148	115	214	193	15
2.....	7.2	11	13	d90	21	1,700	104	150	115	194	76	12
3.....	7.2	a11	13	d60	20	1,800	a100	a120	116	191	51	12
4.....	d7.0	11	12	d40	20	4,000	94	105	99	147	43	12
5.....	a10	12	12	d25	100	3,400	93	a190	84	126	36	9.5
6.....	188	12	11	a18	250	3,040	93	354	73	121	33	8.5
7.....	158	a11	11	d15	700	4,140	d88	758	67	118	32	8.5
8.....	119	10	10	d13	2,000	4,910	d82	474	60	101	31	8.5
9.....	43	10	9.4	d13	1,800	3,590	d80	1,060	52	93	30	6.9
10.....	a16	10	9.0	d13	2,000	d1,600	d140	1,530	48	a86	29	8.0
11.....	18	d13	9.0	a13	2,200	d600	d140	1,040	a46	a84	27	15
12.....	23	d16	*9.6	d14	1,000	d450	d120	804	114	a100	26	18
13.....	56	d20	11	300	350	d350	d105	394	827	a130	23	35
14.....	12	40	a13	200	a150	d320	d95	268	557	a110	a21	32
15.....	11	60	d15	a130	130	a300	d90	248	666	d90	22	10
16.....	a10	50	d14	90	120	d310	d86	219	643	82	23	9.0
17.....	10	40	d13	70	110	d310	85	217	414	d84	25	7.5
18.....	10	d34	d13	50	100	d300	85	184	1,680	d88	22	10
19.....	10	29	12	45	a96	d280	87	155	2,820	a94	20	12
20.....	32	d25	12	40	a92	d260	88	142	2,910	d110	19	17
21.....	87	d22	a12	37	92	d230	105	d190	2,690	130	16	20
22.....	d170	d19	11	35	100	d500	147	d390	1,500	82	15	d12
23.....	53	d17	11	33	110	d900	a230	d250	1,270	55	12	d10
24.....	32	15	11	a34	100	d1,200	344	161	1,320	45	14	d9.0
25.....	15	12	11	50	94	d640	306	136	1,320	44	20	d8.2
26.....	12	10	11	52	200	334	286	114	1,190	44	16	d7.7
27.....	10	10	11	58	500	101	277	114	712	42	15	7.2
28.....	10	11	11	45	1,200	101	136	114	364	41	15	6.6
29.....	a10	10	11	47	.....	100	134	116	286	41	a17	6.3
30.....	10	11	11	a34	.....	103	131	115	277	a40	15	6.0
31.....	10	.....	a50	25	.....	105	.....	114	.....	38	13	.....

* Winter discharge measurement made on this day.
a No gage-height record; discharge computed on basis of records for nearby stations.
d Doubtful gage-height record; discharge computed on basis of records for nearby stations.
Note—Stage-discharge relation affected by ice Dec. 6-13, 22-30, 1949, Jan. 13, 14, 16-23, 25-29, Jan. 31 to Feb. 4, Feb. 6-13, 15-18, Feb. 21 to Mar. 5, 1950.

Monthly Discharge for Calendar and Water Years 1945 and 1946

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1945.....	3,410	537	52	110	0.147	0.17
November.....	3,248	446	44	108	.144	.16
December.....	5,603	1,940	55	181	.241	.28
January 1946.....	54,765	13,500	75	1,767	2.36	2.72
February.....	11,273	1,500	180	403	.537	.56
March.....	47,088	3,500	206	1,519	2.03	2.33
April.....	11,699	800	206	390	.520	.58
May.....	26,695	2,360	200	861	1.15	1.32
June.....	52,337	5,670	159	1,745	2.33	2.60
July.....	16,869	2,450	194	544	.725	.84
August.....	6,473	620	85	209	.279	.32
September.....	9,857	1,300	80	329	.439	.49
Water year 1945-46.....	249,317	13,500	44	683	.911	12.37

North Skunk River near Sigourney, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1946 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946	12,196	1,480	118	393	0.524	0.60
November	14,601	908	256	487	.649	.72
December	6,196	251	135	200	.267	.31
Calendar year 1946	270,049	13,500	75	740	.987	13.39
January 1947	5,655	310	85	182	.243	.28
February	13,885	1,800	105	496	.661	.69
March	21,752	1,380	310	702	.936	1.08
April	64,327	5,000	564	2,144	2.86	3.19
May	25,964	5,000	340	838	1.12	1.29
June	124,360	10,600	1,310	4,145	5.53	6.17
July	21,007	2,240	165	678	.904	1.04
August	2,436	150	49	78.6	.105	.12
September	1,707	309	24	56.9	.076	.08
Water year 1946-47	314,086	10,600	24	861	1.15	15.57
October 1947	835	70	17	26.9	.036	.04
November	1,942	150	36	64.7	.086	.10
December	3,517	520	54	113	.151	.17
Calendar year 1947	287,387	10,600	17	787	1.05	14.25
January 1948	1,527	70	17	49.3	.066	.08
February	20,113	5,400	4	694	.925	1.00
March	50,281	6,730	81	1,622	2.16	2.49
April	4,855	276	98	162	.216	.24
May	12,031	1,030	101	388	.517	.60
June	1,892	98	42	63.1	.084	.09
July	15,747	1,550	21	508	.677	.78
August	1,392	120	14	44.9	.060	.07
September	1,927.8	511	9.5	64.3	.086	.10
Water year 1947-48	116,059.8	6,730	4	317	.423	5.76
October 1948	512	32	12	16.5	.022	.03
November	2,230	560	13	74.3	.099	.11
December	1,256	140	18	40.5	.054	.06
Calendar year 1948	113,763.8	6,730	4	311	.415	5.65
January 1949	6,593	490	80	213	.284	.33
February	12,414	2,100	68	443	.591	.62
March	48,036	6,220	296	1,550	2.07	2.38
April	12,726	1,400	149	424	.565	.63
May	4,186	242	70	135	.180	.21
June	17,548	1,670	94	585	.780	.87
July	4,119	580	43	133	.177	.20
August	1,601	342	16	51.6	.059	.08
September	1,008.0	216	7.3	33.6	.045	.05
Water year 1948-49	112,229.0	6,220	7.3	307	.409	5.57
October 1949	1,173.9	188	7.0	37.9	.051	.06
November	572	60	10	19.1	.025	.03
December	394.0	50	9.0	12.7	.017	.02
Calendar year 1949	110,370.9	6,220	7.0	302	.403	5.48
January 1950	1,889	300	13	60.9	.081	.09
February	13,577	2,200	20	485	.647	.67
March	37,974	4,910	100	1,225	1.63	1.88
April	4,056	344	80	135	.180	.20
May	10,374	1,530	105	335	.447	.51
June	22,435	2,910	46	748	.997	1.11
July	2,965	214	38	95.6	.127	.15
August	950	193	12	30.6	.041	.05
September	359.4	35	6.0	12.0	.016	.02
Water year 1949-50	96,719.3	4,910	6.0	265	.353	4.79

Lakes in Skunk River Basin

Lake Keomah near Oskaloosa, Iowa

LOCATION.—Lat. $41^{\circ}17'20''$, long. $92^{\circ}32'20''$, 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 1950.

GAGE.—Staff gage read once daily. Datum of gage is 6.12 feet below spillway of dam forming lake. June 9, 1936, to Aug. 29, 1943, staff gage at various locations in the immediate vicinity at same datum.

EXTREMES.—Maximum and minimum gage-heights for the water years 1943-50 are contained in the following table:

Water Year	Maximum observed		Minimum observed	
	Date	Gage-height (feet)	Date	Gage-height (feet)
1942-43...	May 16	7.20	Jan. 30	4.75
1943-44...	May 21	7.30	July 22	5.66
1944-45...	May 31	7.05	Sept. 7, 8	5.44
1945-46...	July 17	6.66	June 10, 11	5.44
1946-47...	April 5	7.25	Sept. 30	4.83
1947-48...	Mar. 15	6.86	Oct. 23	4.68
1948-49...	June 21	7.08	Oct. 26 to Nov. 4	5.30
1949-50...	Feb. 27	6.96	Dec. 7-9	5.20

1936-50: Maximum gage-height observed, 7.30 feet May 21, 1944, minimum observed, 3.50 feet Nov. 24 to Dec. 3, 1936.

COOPERATION.—Services of observer furnished by Iowa State Conservation Commission.

Lake Keomah near Oskaloosa, Iowa—Continued

Daily Gage height, in Feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1	5.04	4.82	4.92					6.28	6.23	6.10	6.19	6.03
2	5.04	4.80		4.98				6.25	6.23	6.07	6.19	6.01
3	5.02	4.82	4.92	4.98			6.37	6.24	6.22	6.06	6.27	6.00
4	5.02	4.82					6.27	6.20	6.20	6.05	6.24	5.99
5	5.00	4.82	4.92					6.17	6.41	6.20	6.19	5.99
6	4.98	4.86	4.92	4.98				6.26	6.33	6.19	6.17	6.13
7	4.98	4.84				6.20	6.25		6.29	6.17	6.14	6.09
8	4.96	4.82					6.09	6.23	6.26	6.16	6.13	6.06
9	4.94	4.82	4.92	4.98				6.21	6.23	6.13	6.12	6.03
10	4.92	4.84		4.95			6.19	6.23	6.25	6.12	6.09	6.00
11	4.92	4.86					6.19	6.25	6.53	6.11	6.07	5.99
12	4.92	4.89	4.92			6.20		6.23	6.43	6.09	6.86	6.09
13	4.90	4.90	4.92					6.24	6.33	6.07	6.35	6.09
14	4.90	4.90		4.88		6.30	6.17	6.19	6.27	6.09	6.25	6.07
15	4.90	4.90						6.29	6.54	6.05	6.20	6.09
16	4.88	4.90	4.92	4.85				6.90	6.51	6.17	6.19	6.07
17	4.88	4.90		4.85		6.37	6.17	6.35	6.39	6.17	6.14	6.05
18	4.88	4.90					6.17	6.39	6.31	6.15	6.11	6.03
19	4.88	4.90	4.92				6.17	6.45	6.37	6.37	6.09	
20	4.86	4.90		4.85		6.43	6.17	6.39	6.25	6.27	6.07	6.00
21	4.86	4.92	4.94		6.20	6.43	6.14	6.33	6.23	6.21	6.06	5.99
22	4.86	4.92					6.13	6.27		6.19	6.05	5.99
23	4.84	4.92		4.80			6.16	6.28	6.21	6.15	6.07	5.98
24	4.84	4.90	4.94	4.80		6.43	6.15	6.27	6.21	6.19	6.05	5.97
25	4.84	4.90					6.23	6.25	6.20	6.20	6.07	
26	4.84	4.90	4.94		6.20		6.21	6.25	6.19	6.15	6.06	
27	4.84	4.90	4.94	4.80		6.43	6.83	6.23	6.17	6.14	6.05	5.93
28	4.82	4.90				6.37	6.40	6.21	6.19	6.13	6.02	5.92
29	4.82	4.92					6.38	6.21	6.15	6.21	6.09	5.92
30	4.80		4.96	4.75			6.35	6.25	6.11	6.18	6.07	5.92
31	4.80					6.37		6.23		6.15	6.05	
1943-44												
1	5.93	5.81	5.86					6.34	6.30	6.14	5.94	6.22
2	5.92	5.80	5.86					6.38	6.28	6.22	5.90	6.20
3	5.91	5.79	5.86					6.42	6.26	6.18	5.86	6.18
4	5.89	5.79	5.86		6.17			6.40	6.22	6.16	6.08	6.18
5	5.88	5.79	5.86		6.17	6.32		6.42	6.20	6.14	6.14	6.16
6	5.87	5.78	5.94		6.17	6.34		6.44	6.18	6.10	6.14	6.14
7	5.87	5.91	5.94		6.17	6.28		6.46	6.18	6.10	6.10	6.12
8	5.87	5.91	5.95		6.17			6.52	7.00	6.08	6.08	6.10
9	5.85	5.92	5.95		6.17			6.50	6.54	6.06	6.06	6.10
10	5.84	5.90	5.95		6.17			6.48	6.38	6.04	6.04	6.16
11	5.83	5.89	5.94		6.17	6.26		6.46	6.34	6.02	6.04	6.26
12	5.83	5.89	5.94			6.32		6.42	6.44	6.00	6.00	6.24
13	5.85	5.89	5.94			6.30		6.40	6.40	5.98	6.00	6.24
14	5.83	5.87				6.32		6.42	6.38	5.96	6.00	6.24
15	5.83	5.88				6.44		6.40	6.32	5.92	5.98	6.22
16	5.83	5.88				6.40		6.44	6.32	5.88	5.96	6.20
17	5.80	5.87				6.36		6.42	6.30	5.84	6.36	6.20
18	5.79	5.87				6.32		6.40	6.40	5.80	6.10	6.18
19	5.79	5.87				6.30		6.46	6.34	5.76	6.00	
20	5.77	5.87				6.30		6.50	6.32	5.74	6.20	
21	5.81	5.86				6.30		7.30	6.28	5.72	6.18	
22	5.79	5.86				6.30		6.52	6.28	5.66	6.16	
23	5.79	5.85				6.34		6.46	6.28	5.80	6.14	
24	5.78	5.85				6.32		6.38	6.26	6.00	6.12	
25	5.78	5.85				6.32		6.36	6.26	6.08	6.12	6.26
26	5.77	5.86						6.32	6.24	6.10	6.32	6.26
27	5.75	5.86		6.12			6.36	6.42	6.22	6.08	6.40	6.24
28	5.75	5.86		6.14			6.32	6.38	6.20	6.04	6.30	6.22
29	5.75	5.86		6.14			6.32	6.34	6.18	6.00	6.26	6.20
30	5.74	5.86					6.38	6.32	6.16	5.98	6.26	6.20
31	5.81							6.30		5.96	6.24	

Lake Keomah near Oskaloosa, Iowa—Continued
 Daily Gage height, in Feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1	6.22	6.16	6.24	6.28	6.28	6.42	6.40	6.28	6.52	6.32	6.04	5.60
2	6.24	6.16	6.24	6.28	6.28	6.40	6.38	6.28	6.56	6.30	6.04	5.56
3	6.34	6.26	6.24	6.28	6.28	6.40	6.36	6.30	6.40	6.30	6.04	5.52
4	6.34	6.32	6.28	6.28	6.28	6.38	6.34	6.28	6.32	6.30	6.04	5.50
5	6.30	6.34	6.30	6.28	6.28	6.36	6.32	6.28	6.30	6.28	6.08	5.48
6	6.28	6.34	6.30	6.28	6.28	6.36	6.30	6.28	6.38	6.28	6.12	5.46
7	6.26	6.32	6.32	6.28	6.30	6.36	6.30	6.28	6.38	6.28	6.08	5.44
8	6.26	6.30	6.34	6.28	6.30	6.34	6.28	6.30	6.36	6.30	6.04	5.44
8	6.26	6.26	6.34	6.28	.....	6.32	6.26	6.28	6.36	6.28	6.04	5.46
10	6.24	6.24	6.32	6.28	.....	6.30	6.28	6.28	6.34	6.26	6.02	5.52
11	6.24	6.24	6.30	6.28	.....	6.30	6.32	6.28	6.32	6.24	6.02	5.54
12	6.22	6.22	6.28	6.28	.....	6.32	6.34	6.28	6.32	6.24	6.00	5.56
13	6.20	6.22	6.28	6.28	6.34	6.32	6.38	6.30	6.30	6.24	5.98	5.54
14	6.20	6.22	6.28	6.28	6.36	6.32	6.40	6.82	6.30	6.22	5.96	5.54
15	6.18	6.22	6.28	6.28	6.38	6.32	6.42	6.70	6.32	6.22	5.94	5.54
16	6.18	6.22	6.28	6.28	6.38	6.30	7.00	6.58	6.34	6.22	5.92	5.52
17	6.18	6.20	6.28	6.28	6.38	6.30	6.62	6.52	6.34	6.20	5.90	5.52
18	6.18	6.20	6.28	6.28	6.38	6.30	6.40	6.48	6.34	6.18	5.88	5.52
19	6.16	6.20	6.28	6.28	6.38	6.30	6.32	6.48	6.34	6.14	5.86	5.54
20	6.16	6.22	6.28	6.28	6.38	6.30	6.30	6.44	6.32	6.12	5.94	5.56
21	6.16	6.22	6.28	6.28	6.40	6.30	6.30	6.40	6.32	6.10	5.92	5.56
22	6.16	6.22	6.28	6.28	6.42	6.30	6.28	6.40	6.30	6.08	5.90	5.58
23	6.16	6.22	6.28	6.28	6.44	6.30	6.28	6.38	6.30	6.06	5.88	5.62
24	6.16	6.22	6.28	6.28	6.44	6.30	6.30	6.36	6.30	6.04	5.86	5.66
25	6.16	6.26	6.28	6.28	6.46	6.40	6.28	6.34	6.32	6.04	5.84	5.68
26	6.16	6.28	6.28	6.28	6.46	6.42	6.28	6.32	6.30	6.04	5.82	5.70
27	6.16	6.28	6.28	6.28	6.44	6.42	6.28	6.32	6.32	6.02	5.78	6.00
28	6.16	6.28	6.28	6.28	6.44	6.42	6.28	6.32	6.34	6.02	5.76	6.16
29	6.16	6.26	6.28	6.28	.....	6.40	6.28	6.30	6.34	6.02	5.74	6.20
30	6.16	6.26	6.28	6.28	.....	6.40	6.28	6.30	6.32	6.00	5.70	6.26
31	6.16	.....	6.28	6.28	.....	6.40	.....	7.05	.....	6.02	5.66	.....
1945-46												
1	6.30	6.10	6.22	6.21	.....	.....	6.28	6.22	5.52	6.17	6.17	6.05
2	6.32	6.08	6.24	6.21	.....	.....	6.26	6.28	5.50	6.15	6.17	6.03
3	6.30	6.08	6.26	6.21	.....	.....	6.24	6.44	5.52	6.15	6.16	6.01
4	6.30	6.06	6.30	6.29	.....	.....	6.20	6.38	5.52	6.11	6.15	6.00
5	6.28	6.06	6.32	6.44	.....	.....	6.22	6.38	5.50	6.11	6.15	5.99
6	6.26	6.06	6.34	6.49	.....	.....	6.22	6.38	5.50	6.09	6.13	5.99
7	6.24	6.06	6.34	6.49	.....	.....	6.26	6.26	5.48	6.09	6.13	5.99
8	6.22	6.04	6.34	6.39	.....	.....	6.28	6.07	5.48	6.09	6.13	6.01
9	6.22	6.04	6.32	6.37	.....	.....	6.26	5.92	5.46	6.07	6.13	6.00
10	6.20	6.12	6.30	6.33	.....	.....	6.24	5.78	5.44	6.07	6.11	6.01
11	6.20	6.18	6.28	6.29	.....	.....	6.26	5.64	5.44	6.03	6.09	5.99
12	6.18	6.20	6.24	6.29	.....	.....	6.26	5.64	5.48	6.01	6.07	5.97
13	6.18	6.22	6.22	6.29	.....	.....	6.26	5.66	5.47	5.97	6.07	5.95
14	6.16	6.24	6.22	6.29	.....	.....	6.26	5.68	5.46	5.97	6.09	5.93
15	6.16	6.24	6.22	6.29	.....	.....	6.26	5.72	5.78	6.03	6.09	5.93
16	6.16	6.22	6.22	6.29	.....	.....	6.26	5.72	5.82	6.07	.....	5.91
17	6.16	6.22	6.22	6.29	.....	.....	6.24	6.00	5.84	6.66	6.17	5.91
18	6.16	6.22	6.22	6.29	.....	.....	6.24	5.94	6.48	6.33	6.17	5.89
19	6.14	6.22	6.22	6.29	.....	.....	6.22	5.92	6.58	6.29	6.15	5.87
20	6.14	6.22	6.22	6.29	.....	.....	6.22	5.88	6.36	6.26	6.13	5.87
21	6.14	6.22	6.22	6.29	.....	.....	6.22	5.84	6.32	6.21	6.13	5.93
22	6.14	6.22	6.22	6.29	.....	.....	6.20	5.72	6.28	6.21	6.15	6.03
23	6.14	6.22	6.22	6.29	.....	.....	6.20	5.90	6.26	6.19	6.15	6.09
24	6.14	6.22	6.22	6.31	.....	.....	6.20	6.00	6.24	6.17	6.17	6.07
25	6.12	6.22	6.22	6.31	.....	.....	6.20	5.96	6.24	6.21	6.15	6.05
26	6.12	6.22	6.22	6.31	.....	.....	6.20	5.88	6.22	6.19	6.13	6.05
27	6.12	6.22	6.22	.....	.....	.....	6.20	5.82	6.22	6.23	6.13	6.05
28	6.12	6.22	6.22	.....	.....	.....	6.20	5.74	6.22	6.23	6.13	6.05
29	6.12	6.22	6.22	.....	.....	.....	6.20	5.64	6.20	6.21	6.12	6.05
30	6.12	6.22	6.22	.....	.....	.....	6.20	5.58	6.20	6.19	6.09	6.03
31	6.10	.....	6.22	.....	.....	.....	.....	5.60	.....	6.18	6.07	.....

Lake Keomah near Oskaloosa, Iowa—Continued

Daily Gage height, in Feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1	6.02		6.23				6.27	6.33	7.03	6.29	5.89	5.32
2	6.01		6.23				6.27	6.30	6.45	6.27	5.87	5.29
3	5.99	6.31	6.23				6.27	6.29	6.39	6.27	5.85	5.27
4	5.97	6.29	6.23				6.46	6.29	6.39	6.27	5.83	5.26
5	5.97	6.27	6.23				6.99	6.27	6.57	6.29	5.79	5.23
6	5.97	6.27	6.23				6.49	6.27	6.63	6.29	5.77	5.21
7	5.95	6.26	6.23				6.37	6.25	6.45	6.27	5.75	5.17
8	5.95	6.25	6.23				6.35	6.25	6.37	6.25	5.72	5.15
9	5.95	6.25	6.23				6.33	6.25	6.33	6.25	5.69	5.15
10	6.01	6.25	6.23				6.48	6.25	6.31	6.23	5.67	5.13
11	5.99	6.25	6.23	6.27			6.41	6.25	6.29	6.23	5.65	5.16
12	5.97	6.25	6.23	6.29			6.35	6.25	6.41	6.21	5.63	5.15
13	5.95	6.25	6.23	6.33			6.33	6.25	6.56	6.21	5.62	5.13
14	5.95	6.26	6.23	6.31			6.33	6.25	6.39	6.20	5.61	5.11
15	5.95	6.26	6.23	6.31	6.41		6.31	6.29	6.35	6.19	5.59	5.07
16	5.95	6.26	6.23		6.33		6.41	6.27	6.31	6.17	5.59	5.03
17	5.94	6.26	6.23				6.37	6.36	6.33	6.23	5.57	5.01
18	6.22	6.26					6.35	6.29	6.33	6.21	5.55	4.99
19	6.21	6.26					6.43	6.27	6.31	6.19	5.53	4.97
20	6.21	6.25					6.57	6.25	6.31	6.17	5.51	4.97
21	6.19	6.25					6.43	6.25	6.69	6.13	5.49	5.03
22	6.19	6.25					6.35	6.25	6.45	6.11	5.47	4.99
23	6.18	6.25					6.33	6.25	6.43	6.09	5.43	4.97
24	6.47	6.25				6.41	6.31	6.29	6.35	6.07	5.41	4.97
25		6.25				6.41	6.31	6.29	6.33	6.07	5.45	4.93
26		6.25				6.31	6.29	6.33	6.31	6.05	5.43	4.91
27		6.25	6.23			6.29	6.27	6.31	6.29	6.03		4.89
28		6.25				6.27	6.25	6.29	6.29	6.01		4.87
29		6.25				6.25	6.29	6.56	6.38	5.97		4.85
30	6.21	6.24				6.25	6.29	6.39	6.33	5.95	5.35	4.83
31						6.25		6.35		5.91	5.33	
1947-48												
1	4.83	4.97					6.25	6.26	6.10	5.90	6.18	
2	4.83	4.97					6.24	6.43	6.08	5.88	6.16	
3	4.81	4.97	5.00				6.24	6.38	6.08	5.88	6.16	5.74
4	4.85	4.95	5.16				6.24	6.40	6.06	5.86	6.14	5.72
5	4.83	4.95	5.22				6.24	6.38	6.06	5.86	6.12	5.70
6	4.83	4.94	5.22				6.24	6.36	6.04	5.84	6.10	5.70
7	4.81	4.93					6.26	6.32	6.02	5.82	6.10	5.68
8	4.87	4.93					6.24	6.32	6.00	5.80	6.08	5.70
9	4.85	4.93					6.24	6.30	5.98	5.80	6.06	5.70
10	4.83	4.91					6.22	6.35	5.94	5.78	6.04	5.70
11	4.81	4.89					6.22	6.34	5.92	5.76	6.04	5.68
12	4.81	4.87					6.22	6.32	5.90	5.74	6.02	5.68
13	4.79	4.87					6.20	6.32	5.88	5.74	6.04	5.64
14	4.79	4.95				6.32	6.20	6.30	5.90	5.90	6.02	5.62
15	4.78	4.93				6.86	6.20	6.30	5.90	5.92	6.00	5.60
16	4.77	4.91			5.90	6.58	6.18	6.28	5.88	5.90	5.98	5.58
17	4.76	4.91			6.14	6.38	6.18	6.28	5.88	5.88	5.96	5.56
18	4.75	4.91			6.24	6.36	6.16	6.26	5.86	5.86	5.94	5.54
19	4.73	4.91				6.52	6.14	6.26	5.84	5.84	5.92	5.52
20	4.71	4.91				6.38	6.14	6.24	5.82	5.82	5.90	5.58
21	4.69	4.91				6.36	6.14	6.24	5.82	5.84	5.88	5.60
22	4.69	4.95				6.34	6.20	6.22	5.82	5.94	5.86	5.60
23	4.68				6.30	6.32	6.30	6.20	5.82	5.90	5.84	5.58
24	4.73				6.30	6.30	6.32		5.80	5.88	5.82	5.56
25	4.75				6.30	6.30	6.32		5.80	6.32		5.54
26	4.81				6.30	6.28	6.30		5.78	6.36		5.52
27	4.81				6.82	6.28	6.30		5.84	6.32		5.50
28	4.89				6.46	6.28	6.28	6.16	5.84	6.28		5.50
29	4.89					6.26	6.28	6.14	5.84	6.26		5.48
30	4.87	4.96				6.26	6.26	6.12	5.92	6.24	5.82	5.48
31	4.95					6.26		6.10		6.22		

Lake Keomah near Oskaloosa, Iowa—Continued
 Daily Gage height, in Feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1	5.46	5.30	5.76				6.36	6.24	6.44	6.44	6.00	
2	5.42	5.30	5.76				6.34	6.24	6.70	6.38	5.98	
3	5.42	5.30	5.76				6.34	6.22	6.44	6.32	5.96	5.52
4	5.40	5.30	5.76	6.42			6.32	6.22	6.34	6.30	5.92	5.52
5	5.38	5.46	5.76	6.40			6.32	6.20	6.32	6.28	5.90	5.50
6	5.44	5.46	5.76				6.32	6.20	6.30	6.26	5.88	5.50
7	5.48	5.45				6.36	6.30	6.20	6.28	6.24	5.86	5.48
8	5.48	5.44		6.34		6.36	6.30	6.24	6.26	6.22	5.84	5.46
9	5.46	5.43					6.30	6.22	6.26	6.22	5.82	5.46
10	5.44	5.42					6.30	6.22	6.24	6.20	5.80	5.46
11	5.44	5.42					6.28	6.20	6.24	6.18	5.79	5.60
12	5.43	5.42					6.28	6.20	6.24	6.16	5.78	5.64
13	5.42	5.40					6.28	6.20	6.24	6.14	5.78	5.64
14	5.41	5.40	5.80				6.38	6.20	6.34	6.12	5.76	5.62
15	5.40	5.40	5.90	6.60			6.38	6.20	6.32	6.12	5.74	5.60
16	5.40	5.46	5.92	6.42			6.38	6.20	6.28	6.10	5.73	5.60
17	5.38	5.46	5.92				6.36	6.24	6.26	6.10	5.70	5.58
18	5.38	5.66	5.92				6.34	6.24	6.24	6.10	5.69	5.56
19	5.36	5.70	5.92				6.34	6.22	6.24	6.10	5.80	5.56
20	5.36	5.74	5.93				6.32	6.20	6.24	6.18	5.78	5.54
21	5.34	5.74	5.94			6.28	6.30	6.44	6.36	6.18	5.76	5.52
22	5.34	5.74	5.94			6.44	6.30	6.38	6.30	6.16	5.74	5.50
23	5.32	5.74				6.36	6.28	6.34	6.26	6.16	5.72	5.50
24	5.32	5.74			6.86	6.32	6.28	6.32	6.83	6.14		5.48
25	5.32	5.76				6.32	6.28	6.30	6.52	6.12		5.46
26	5.30	5.76				6.46	6.28	6.30	6.48	6.12		
27	5.30	5.76				6.36	6.26	6.28	6.38	6.10		
28	5.30	5.76	6.14			6.36	6.26	6.26	6.42	6.08		
29	5.30	5.76	6.16			6.36	6.26	6.24	6.32	6.06	5.62	
30	5.30	5.76				6.46	6.26	6.24	6.30	6.04		
31	5.30					6.50		6.24		6.02		
1949-50												
1		5.30	5.22	5.60		6.82	6.24	6.27	6.24	6.18	6.08	5.68
2		5.28	5.22	5.63			6.24	6.26	6.24	6.26	6.06	5.68
3		5.28	5.22				6.32	6.25	6.22	6.24	6.04	5.66
4		5.26	5.22			6.48	6.32	6.24	6.22	6.28	6.04	5.64
5		5.26	5.21			6.46	6.34	6.23	6.20	6.30	6.03	5.62
6		5.24	5.21		6.40	6.42	6.28	6.22	6.18	6.28	6.02	5.60
7	5.36	5.24	5.20		6.52		6.28	6.22	6.16	6.25	6.00	5.58
8	5.36	5.24	5.20		6.54		6.27	6.26	6.16	6.22	6.00	5.58
9	5.36	5.23	5.20		6.44		6.39	6.29	6.14	6.20	5.98	5.52
10	5.36	5.23	5.22		6.50		6.35	6.40	6.14	6.18	6.00	5.54
11	5.34	5.22	5.28		6.40		6.32	6.36	6.12	6.16	6.00	5.53
12	5.34	5.32					6.32	6.34	6.16	6.15	5.98	5.52
13	5.32	5.31		5.96			6.30	6.32	6.16	6.14	5.96	5.52
14	5.30	5.31					6.28	6.30	6.16	6.10	5.96	5.50
15	5.30	5.30					6.26	6.29	6.44	6.08	5.96	5.48
16	5.28	5.30					6.26	6.28	6.36	6.10	5.94	5.46
17	5.26	5.30					6.26	6.28	6.30	6.20	5.92	5.44
18	5.25	5.29					6.27	6.27	6.85	6.20	5.90	5.42
19	5.30	5.28					6.26	6.27	6.50	6.20	5.90	5.46
20	5.38	5.28					6.26	6.28	6.38	6.18	5.86	5.46
21	5.44	5.26				6.28	6.24	6.30	6.36	6.16	5.84	5.46
22	5.42	5.26				6.28	6.24	6.30	6.34	6.14	5.84	5.44
23	5.40	5.26				6.27	6.44	6.28	6.34	6.12	5.80	5.42
24	5.37	5.26				6.27	6.42	6.26	6.36	6.10	5.78	5.40
25	5.36	5.24				6.26	6.38	6.26	6.32	6.10	5.78	5.38
26	5.34	5.24				6.26	6.36	6.24	6.30	6.20	5.76	5.36
27	5.33	5.24			6.96	6.26	6.32	6.30	6.28	6.12	5.76	5.36
28	5.32	5.24			6.90	6.25	6.32	6.29	6.25	6.14	5.74	5.38
29	5.32	5.22				6.25	6.30	6.28	6.22	6.14	5.74	5.38
30	5.30	5.22				6.24	6.28	6.28	6.20	6.12	5.72	5.36
31	5.30		5.58			6.24		6.26		6.10	5.70	

Des Moines River at Fort Dodge, Iowa

LOCATION.—Lat. 42°30'30", long. 94°12'00", in SW $\frac{1}{4}$ sec. 19, T. 89 N., R. 28 W., on right bank 400 feet upstream from Soldier Creek, 1,800 feet downstream from Illinois Central Railroad bridge and 2,000 feet downstream from Lizard Creek in northwest part of city of Fort Dodge.

DRAINAGE AREA.—4,210 square miles.

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 1950 in reports of U. S. Geological Survey. April 1905 to July 1906 (no winter records), October 1913 to September 1927 (published as "at Kalo") in report of Iowa State Planning Board entitled "Stream Flow Records of Iowa, 1873-1932."

GAGE.—Water-stage recorder at present site since Dec. 7, 1949. Datum of gage is 969.38 feet above mean sea level, datum of 1929 (city of Fort Dodge bench mark). April 23, 1905, to July 19, 1906, chain gage at "Suede town" bridge about 3,000 feet downstream from present site and at different datum. October 18, 1913, to October 20, 1921, chain gage, October 21, 1921, to June 19, 1927, water-stage recorder, June 20, 1927, to September 30, 1927, chain gage, at Kalo, 7 miles downstream from Fort Dodge, at different datum.

AVERAGE DISCHARGE.—13 years (1914-27) 1,451 second-feet.

EXTREMES.—Maximum discharge during period of December 1949 to September 1950, about 6,850 second-feet, Mar. 8 (gage height, 6.70 feet, backwater from ice); minimum daily, 30 second-feet Jan. 23, 31, and Feb. 4.

1905-06, 1913-27, 1949-50: Maximum discharge 19,700 second-feet (revised) May 30, 1915 (gage height, 14.0 feet), site and datum then in use; minimum daily, 26 second feet Dec. 24, 1923.

Maximum stage known, 19.7 feet June 23, 1947, from floodmark (discharge, 34,000 second-feet).

REMARKS.—Records good except those for periods of ice effect, which are poor. Diurnal fluctuation at low flow caused by power plant above station. Services of observer furnished by city of Fort Dodge. One discharge measurement furnished by Corps of Engineers.

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 feet upstream from Boone Water Department dam, 2 miles northwest of Boone and 2.2 miles upstream from Bluff Creek.

DRAINAGE AREA.—5,490 square miles.

RECORDS AVAILABLE.—April 1920 to September 1927, October 1933 to September 1950. December 1904 to April 1920 (spring and early summer months, gage heights only), in reports of United States Weather Bureau.

GAGE.—Water-stage recorder and concrete control. Datum of gage is 871.52 feet above mean sea level, adjustment of 1912. Dec. 16, 1904, to Apr. 30, 1920, chain gage on Chicago & Northwestern Railroad bridge 2.5 miles downstream at datum 7.87 feet lower. Apr. 9, 1920, to Sept. 13, 1924, chain gage on Centerville highway bridge 1.3 miles upstream at datum 1.65 feet lower. Oct. 9, 1924, to Sept. 30, 1927, chain gage at highway bridge 0.3 mile upstream at datum 6.69 feet lower. Jan. 11, 1933, to Sept. 30, 1934, staff gage attached to sheet piling or dam abutment at same site and at datum 0.41 foot lower. Oct. 1, 1934, to Feb. 6, 1935, staff gage attached to dam abutment and tree at same site and datum.

AVERAGE DISCHARGE.—24 years (1920-27, 1933-50), 1,603 second-feet.

EXTREMES.—Maximum and minimum discharges for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Feb. 25	8,710	(1)	Jan. 22, 23	145
1943-44...	May 22	30,000	17.30	Feb. 10, 11	250
1944-45...	June 2	16,500	11.20	Feb. 7	145
1945-46...	May 27	16,800	11.36	Dec. 24-29	80
1946-47...	June 24	37,100	19.85	Sept. 26, 27, 30	100
1947-48...	Mar. 20	13,500	9.39	Jan. 30	44
1948-49...	Mar. 7	14,500	9.54	Oct. 7, 8	87
1949-50...	Mar. 7	9,800	7.46	Jan. 23, 25	37

(1) Maximum gage height 6.50 feet Feb. 22 (ice affected).

1920-27, 1933-50: Maximum discharge, 37,100 second-feet June 24, 1947 (gage height, 19.85 feet); no flow for a short time on Jan. 9, 25, 1938, caused by manipulation of gates in control dam; minimum daily, 17 second-feet 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.—Services of observer furnished by City of Boone. Several discharge measurements furnished by Corps of Engineers.

Des Moines River near Boone, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1	2,580	920	349	320	245	5,800	5,240	1,910	2,240	7,730	3,350	2,960
2	2,540	899	300	320	250	4,200	4,840	1,680	2,290	7,530	4,260	2,960
3	2,460	840	320	320	728	3,350	4,420	1,460	2,490	6,990	4,360	2,830
4	2,580	840	400	315	1,020	3,000	4,030	1,360	2,560	6,780	4,390	2,700
5	2,560	840	420	300	1,110	2,920	3,430	1,310	2,490	6,640	4,770	2,610
6	2,510	859	430	280	1,180	2,560	3,080	1,630	2,440	6,750	4,610	2,410
7	2,460	840	420	260	1,090	2,160	2,870	1,480	2,340	7,090	4,000	2,190
8	2,440	803	430	235	1,160	1,000	2,740	1,310	2,240	7,160	3,260	2,010
9	2,360	878	440	225	1,410	1,750	2,650	1,200	2,290	6,950	2,920	1,910
10	2,260	709	*420	230	1,600	1,650	2,560	1,130	2,190	6,430	2,630	1,860
11	2,190	784	390	240	1,180	1,550	2,440	1,070	2,240	5,780	2,560	1,800
12	2,110	746	370	250	800	1,500	2,410	1,050	2,260	5,110	3,390	1,800
13	2,030	709	350	260	700	1,580	2,440	1,000	2,320	4,510	3,100	1,660
14	1,960	690	340	265	640	1,730	2,410	962	2,850	3,850	2,870	1,530
15	1,880	690	330	270	620	2,520	2,290	1,430	3,590	3,240	3,060	1,600
16	1,780	673	340	260	610	3,520	2,160	2,770	5,220	3,160	2,850	1,680
17	1,700	690	340	230	600	4,530	2,060	3,900	5,760	3,160	2,770	1,580
18	1,630	673	330	200	623	3,350	1,910	5,910	5,210	2,960	2,810	1,510
19	1,560	673	320	180	709	3,000	1,680	6,510	5,040	3,440	2,720	1,460
20	1,460	673	310	160	1,800	2,610	1,600	5,740	5,000	3,650	2,580	1,430
21	1,310	673	305	150	4,000	2,560	1,510	4,760	4,930	3,800	2,460	1,360
22	1,270	640	300	145	6,000	*2,490	1,430	3,930	5,030	3,870	2,340	1,340
23	1,250	640	295	145	7,000	2,360	1,410	3,240	5,360	3,870	2,240	1,270
24	1,180	606	290	150	8,000	2,790	1,410	2,940	5,110	3,530	2,060	1,200
25	1,160	606	290	165	*8,360	4,180	1,410	2,740	4,510	2,980	1,880	1,110
26	1,070	490	290	*180	7,130	6,060	1,410	2,680	4,460	2,630	1,800	1,020
27	1,050	362	295	200	6,370	6,900	1,390	2,580	4,140	2,560	2,680	982
28	982	286	300	220	6,340	6,920	1,310	2,460	4,900	2,540	3,440	982
29	1,000	286	305	230	.....	5,950	1,410	2,320	6,570	2,360	3,640	920
30	1,000	323	310	240	.....	5,600	2,010	2,260	7,280	2,260	3,200	899
31	920	.....	315	245	.....	5,420	.....	2,260	.....	2,850	2,920	.....
1943-44												
1	931	552	952	430	1,100	2,080	1,840	4,920	7,600	3,110	1,540	2,260
2	829	586	1,040	410	1,120	2,460	1,710	5,010	6,760	2,730	1,430	2,260
3	789	586	1,150	370	1,100	2,830	2,030	6,160	6,060	3,410	1,310	2,230
4	769	586	1,060	350	1,220	2,460	2,280	7,070	5,510	3,110	1,190	2,010
5	749	604	1,040	350	1,190	2,130	2,330	7,070	5,620	2,580	1,240	1,760
6	709	656	1,060	350	950	1,360	2,180	6,910	5,840	2,180	1,380	1,590
7	674	729	1,120	350	530	620	2,010	6,640	5,220	2,200	1,960	1,450
8	656	809	1,120	360	660	569	1,910	6,520	5,140	2,580	1,930	1,290
9	639	809	830	400	470	674	1,840	6,490	5,780	2,360	1,660	1,190
10	622	829	620	350	250	1,290	1,840	6,390	7,010	2,280	1,500	1,120
11	604	829	520	360	250	2,130	2,080	6,270	7,540	3,000	1,240	1,040
12	569	709	430	*350	320	2,280	3,000	6,040	11,100	3,800	1,060	952
13	569	674	400	320	350	1,660	3,200	5,920	14,300	3,910	869	952
14	552	769	300	330	400	1,520	2,950	6,000	18,200	4,210	809	889
15	569	849	280	300	470	2,160	2,880	6,280	24,600	4,300	829	869
16	504	789	270	300	570	2,400	3,420	6,480	25,100	3,970	1,040	849
17	534	829	320	330	660	2,300	3,490	6,610	19,600	3,990	1,120	809
18	552	729	400	310	750	2,080	3,300	6,720	15,800	4,350	1,100	789
19	519	952	500	322	870	1,810	3,150	10,500	13,200	4,360	1,060	769
20	534	1,120	530	347	890	1,640	3,320	20,100	11,100	4,130	1,290	692
21	569	1,040	570	347	660	1,660	4,720	27,500	9,830	3,780	1,290	749
22	534	974	600	347	*640	1,640	5,220	29,300	8,990	3,440	1,310	869
23	569	952	600	347	729	1,660	5,260	25,300	7,860	3,150	1,150	952
24	604	995	620	384	749	1,880	5,600	23,400	6,850	2,880	974	952
25	504	1,040	590	372	952	2,480	6,160	20,800	6,030	2,700	889	952
26	552	1,080	530	504	1,240	2,900	6,270	17,700	5,400	2,660	889	909
27	552	1,120	500	500	829	2,900	6,090	14,800	4,910	2,380	1,220	974
28	519	1,080	490	890	1,880	2,630	5,730	12,400	4,400	2,180	1,740	1,040
29	474	1,150	470	850	1,980	2,360	5,420	10,900	3,970	2,030	1,790	1,020
30	519	995	470	790	.....	1,980	5,150	9,790	3,510	1,860	2,080	952
31	569	.....	460	900	.....	1,690	.....	8,760	.....	1,640	2,280	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 2-31, 1942, Jan. 1 to Feb. 2, Feb. 12-17, 21-24, Mar. 8-12, Dec. 9-31, 1943, Jan. 1-17, Jan. 28 to Feb. 22, Mar. 6, 7, 1944.

Des Moines River near Boone, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	909	444	220	220	190	1,380	3,760	6,040	11,500	5,150	1,470	1,430
2.....	869	444	240	240	180	1,600	3,300	5,640	16,200	4,930	1,930	1,220
3.....	829	429	272	230	170	2,500	3,110	5,390	15,800	4,550	2,460	1,240
4.....	809	429	320	200	160	3,000	2,970	5,250	14,100	4,340	2,500	1,120
5.....	829	429	360	180	150	2,600	2,630	5,010	12,100	4,060	2,130	849
6.....	809	444	360	180	150	2,200	2,560	4,690	10,300	3,640	1,980	829
7.....	749	384	360	180	145	2,000	3,810	4,430	8,870	3,440	1,910	789
8.....	769	414	430	180	160	1,930	5,120	4,040	7,960	3,510	1,760	692
9.....	769	399	399	170	170	1,860	6,190	3,570	7,250	3,330	1,640	656
10.....	709	414	347	180	190	3,320	6,580	3,200	7,930	2,970	1,590	639
11.....	709	414	359	180	190	6,280	6,380	3,070	9,010	2,630	1,540	639
12.....	674	399	359	180	190	11,000	6,850	2,900	8,830	2,400	1,660	622
13.....	656	414	310	180	230	13,600	7,990	2,780	8,870	2,200	2,010	586
14.....	656	429	*295	190	360	*13,100	9,440	3,950	9,050	2,300	2,860	534
15.....	622	489	310	190	1,500	12,300	9,250	4,680	9,220	2,030	3,940	474
16.....	586	534	320	180	3,400	13,300	9,150	4,780	9,460	1,980	7,500	444
17.....	586	504	320	190	3,800	12,900	10,300	4,860	9,080	1,930	12,000	459
18.....	569	504	320	190	3,200	11,200	10,100	4,580	8,450	1,930	13,300	444
19.....	534	489	320	180	2,600	9,970	8,870	4,210	7,860	1,960	9,950	399
20.....	552	504	295	170	2,200	9,040	7,640	3,770	7,540	2,060	7,370	444
21.....	534	459	260	180	1,800	8,190	6,570	4,390	7,560	2,010	5,910	429
22.....	504	474	250	180	1,500	7,340	5,890	4,300	6,980	1,860	5,100	399
23.....	519	474	240	180	1,450	6,520	6,480	12,400	6,400	1,740	4,430	399
24.....	504	474	250	180	1,400	6,060	12,000	13,100	5,980	1,740	3,710	414
25.....	504	475	250	200	850	6,030	14,900	12,200	5,780	1,740	2,970	399
26.....	474	415	250	200	750	6,080	13,800	11,000	5,390	1,090	2,380	384
27.....	459	360	250	*190	749	5,790	11,700	9,430	5,080	1,610	2,010	459
28.....	459	335	250	100	995	5,340	9,370	9,460	5,070	1,590	1,860	809
29.....	459	310	250	180	.....	4,930	7,800	9,850	5,230	1,570	1,690	849
30.....	459	260	250	180	.....	4,550	6,810	8,710	5,360	1,500	1,520	639
31.....	444	.....	250	190	.....	4,180	.....	7,920	.....	1,430	1,450	.....
1945-46												
1.....	622	240	260	105	270	2,950	6,140	1,040	5,800	4,220	769	210
2.....	552	240	250	95	250	3,680	5,900	1,100	5,130	4,210	709	230
3.....	489	260	240	120	310	3,760	5,420	1,310	4,520	3,910	656	170
4.....	504	260	230	145	260	4,570	5,020	1,500	3,950	3,440	622	170
5.....	604	250	210	692	550	4,640	4,520	1,590	3,390	3,070	622	220
6.....	552	240	200	1,760	4,050	*6,070	3,990	1,710	3,020	2,760	586	220
7.....	444	250	200	2,700	5,000	6,260	3,490	1,810	2,730	2,500	519	220
8.....	504	310	180	2,700	3,800	5,840	3,200	1,880	2,530	2,360	519	372
9.....	359	297	140	1,960	3,100	4,910	3,050	1,710	2,280	2,160	489	372
10.....	384	285	120	1,300	2,900	4,410	2,950	1,640	2,130	2,080	414	489
11.....	372	240	160	890	2,400	4,440	2,900	1,710	1,960	2,030	399	414
12.....	334	240	170	605	2,300	5,180	2,800	1,810	1,860	1,880	372	552
13.....	347	240	200	475	1,980	7,660	2,680	2,080	1,790	1,610	359	789
14.....	334	260	180	415	1,450	9,850	2,660	2,160	1,760	1,450	372	749
15.....	322	272	200	*360	1,240	9,620	2,560	2,100	2,230	1,400	359	639
16.....	322	250	230	320	1,120	7,790	2,400	2,160	2,730	1,330	347	586
17.....	347	250	250	310	1,020	6,790	2,280	2,080	3,680	1,310	347	504
18.....	347	240	230	300	909	6,390	2,130	2,100	5,640	1,290	310	444
19.....	334	240	180	270	809	6,370	1,930	2,230	6,740	1,290	322	444
20.....	322	240	105	240	829	6,160	1,840	2,500	7,800	1,330	322	519
21.....	310	160	90	250	1,150	5,640	1,710	3,050	7,440	1,260	359	444
22.....	285	120	90	260	1,610	5,250	1,610	3,200	6,920	1,120	334	474
23.....	250	120	90	300	2,010	5,090	1,470	3,000	6,370	1,040	359	444
24.....	285	170	80	310	3,200	5,180	1,400	4,040	5,730	952	334	459
25.....	310	160	80	310	3,180	5,590	1,330	9,330	5,430	889	285	459
26.....	285	200	80	310	3,090	5,980	1,260	15,000	5,060	849	285	444
27.....	272	230	80	310	3,090	6,030	1,240	16,500	4,700	829	240	429
28.....	297	210	80	249	3,020	5,960	1,220	13,700	4,450	952	220	459
29.....	250	230	80	270	.....	5,830	1,150	10,100	4,410	1,150	230	444
30.....	260	220	90	285	.....	5,860	1,060	7,940	4,340	974	220	444
31.....	250	.....	105	270	.....	5,960	.....	6,730	.....	849	200	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 25-30, Dec. 4-8, 13-30, 1944, Jan. 2-12, Jan. 28 to Feb. 9, Feb. 14-26, Mar. 2-7, Nov. 21, 22, Dec. 3, 4, 6-31, 1945, Jan. 1-4, Jan. 8 to Feb. 12, Feb. 22-24, 1946. Discharge computed from graph based on once daily outside staff readings Aug. 26 to Nov. 29, 1945, Apr. 23 to May 12, July 8 to Aug. 6, Sept. 14-20, 1946.

Des Moines River near Boone, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	384	1,080	1,290	420	510	850	2,660	4,810	4,070	17,700	1,160	226
2.....	384	1,100	849	550	480	830	2,490	5,440	7,190	18,500	1,050	200
3.....	399	1,040	622	650	500	810	2,330	5,570	6,310	17,700	966	375
4.....	334	995	552	750	550	770	2,250	5,480	5,870	16,100	924	226
5.....	322	974	869	680	600	750	2,350	5,130	7,320	13,300	840	200
6.....	347	974	1,120	600	620	565	2,490	4,540	6,940	11,600	802	190
7.....	399	889	1,290	500	650	633	2,700	4,130	5,710	10,100	745	190
8.....	334	889	1,240	380	670	861	3,120	3,790	4,790	9,060	688	189
9.....	489	829	1,220	400	660	1,320	3,520	3,470	4,100	8,710	616	160
10.....	656	869	1,260	410	600	1,690	4,510	3,160	3,690	8,390	616	120
11.....	769	869	1,100	420	550	2,180	6,420	2,920	3,360	7,760	582	150
12.....	789	909	1,080	430	500	2,370	7,730	2,780	4,900	7,010	565	160
13.....	749	*1,100	995	459	710	2,760	8,140	2,870	9,410	6,420	497	200
14.....	869	1,170	729	*384	952	3,260	7,930	3,090	11,700	5,710	514	226
15.....	1,080	1,290	552	474	1,120	3,470	7,450	3,450	11,300	5,200	480	213
16.....	1,150	1,360	*586	504	1,260	3,490	7,030	3,980	9,410	4,710	480	252
17.....	1,170	1,470	459	504	1,430	3,400	6,730	4,210	8,110	4,250	450	160
18.....	1,120	1,470	250	569	1,380	3,070	6,390	4,590	10,100	3,610	465	150
19.....	1,100	1,740	372	586	1,500	2,780	6,020	4,360	11,100	3,070	330	170
20.....	1,100	1,710	489	569	1,660	*2,610	5,780	3,930	11,000	2,690	345	180
21.....	1,020	1,740	552	474	1,690	2,540	5,450	3,490	9,610	2,490	291	180
22.....	1,020	1,640	674	519	1,500	2,490	5,250	3,120	10,300	2,450	330	130
23.....	952	1,500	749	519	1,200	3,500	5,180	3,010	13,000	2,250	435	110
24.....	1,060	1,380	709	489	1,000	3,810	5,440	2,890	30,400	2,040	330	130
25.....	1,120	1,400	620	489	*970	4,980	5,820	2,920	34,000	1,920	226	120
26.....	1,080	1,150	550	519	950	4,650	5,520	2,710	28,600	1,720	330	100
27.....	1,080	1,040	450	489	900	3,940	5,130	2,610	22,600	1,670	226	100
28.....	1,240	1,020	350	569	870	3,610	4,850	2,590	17,600	1,450	213	120
29.....	1,240	1,150	300	590	.....	3,430	4,610	2,710	14,400	1,320	200	120
30.....	1,220	1,290	320	570	.....	3,140	4,660	2,820	13,300	1,290	200	100
31.....	1,170	.....	400	530	.....	2,800	.....	2,870	.....	1,230	200	.....
1947-48												
1.....	140	330	265	150	55	9,670	4,510	2,680	909	1,310	474	285
2.....	180	390	345	150	55	7,760	4,570	2,600	829	1,220	429	250
3.....	130	330	405	160	45	5,940	4,020	2,630	809	1,120	399	210
4.....	140	265	405	190	65	5,950	3,330	2,630	749	952	399	160
5.....	160	278	450	200	*55	5,130	3,150	2,460	749	809	372	144
6.....	130	278	480	150	90	3,770	2,900	2,680	709	749	360	144
7.....	120	265	480	*160	80	2,640	2,850	2,780	674	622	360	112
8.....	130	278	350	170	85	2,300	3,150	2,780	656	586	334	120
9.....	110	291	240	170	60	2,230	3,300	2,680	586	534	347	128
10.....	100	252	190	170	65	1,820	2,970	2,480	552	429	310	120
11.....	100	239	265	165	65	1,620	2,950	2,330	552	459	322	112
12.....	100	213	345	140	60	1,090	2,830	2,260	552	444	489	96
13.....	86	200	330	140	55	1,030	2,680	2,280	552	384	552	104
14.....	72	226	317	150	51	1,290	2,460	2,360	552	414	569	104
15.....	130	226	304	155	65	1,670	2,280	2,400	552	534	519	96
16.....	110	265	278	160	65	2,690	2,160	2,700	552	709	474	96
17.....	93	265	304	160	65	5,510	2,080	2,560	534	931	474	80
18.....	93	252	265	g160	79	9,010	1,840	2,700	519	869	519	80
19.....	86	278	239	g150	100	12,200	1,570	2,630	534	889	444	80
20.....	79	278	265	130	g375	12,700	1,570	2,460	569	849	372	80
21.....	65	278	226	93	1,180	10,200	1,470	2,200	569	849	310	74
22.....	79	278	226	93	1,010	8,840	1,380	1,830	586	1,020	285	112
23.....	93	291	239	95	966	9,290	1,380	1,740	656	889	260	88
24.....	93	291	200	90	1,140	7,450	1,420	1,570	674	769	220	128
25.....	100	190	200	90	1,160	5,820	1,590	1,450	809	709	210	112
26.....	120	190	265	90	1,160	5,270	1,940	1,310	869	692	200	96
27.....	190	304	226	85	1,760	5,200	2,430	1,240	1,060	639	210	112
28.....	190	291	226	70	6,320	5,020	2,700	1,170	1,020	622	260	112
29.....	252	291	252	51	10,300	4,900	2,580	1,100	1,020	569	322	80
30.....	239	170	200	44	.....	4,780	2,430	1,040	1,190	534	504	74
31.....	265	.....	180	58	.....	4,660	.....	974	.....	519	310	.....

* Winter discharge measurement made on this day.

g Computed from graph based on staff gage readings.

Note—Stage-discharge relation affected by ice Dec. 25-31, 1946, Jan. 1-12, Jan. 29 to Feb. 13, Feb. 22 to Mar. 5, Dec. 7-9, 31, 1947, Jan. 10-17, Feb. 1-13, 1948. Discharge computed from once daily staff gage readings Nov. 10-12, 1946, Aug. 13 to Sept. 8, 1947, Jan. 29-31, Feb. 14-19, Sept. 3-21, 1948.

Des Moines River near Boone, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	g101	151	151	125	135	1,010	9,080	g2,480	1,100	g1,300	1,590	125
2.....	g101	169	178	120	*125	1,060	9,640	g2,280	1,010	1,260	1,330	117
3.....	g108	160	178	115	120	2,260	9,360	g2,130	1,210	1,190	1,100	160
4.....	g133	151	178	190	120	6,420	8,800	g2,000	1,520	909	889	g160
5.....	g133	218	260	294	120	9,960	8,240	g1,960	1,930	789	691	g160
6.....	g94	238	188	472	125	12,900	7,680	1,810	g1,540	619	584	g142
7.....	g87	318	150	442	125	14,000	6,980	1,710	g1,350	584	518	g178
8.....	g87	318	120	472	125	12,900	6,420	1,710	g1,240	534	442	g160
9.....	117	178	130	457	125	11,000	5,900	1,660	g1,080	487	370	g133
10.....	133	160	140	430	120	9,080	5,380	1,570	993	427	344	125
11.....	142	169	145	410	120	6,980	5,120	1,470	889	427	306	188
12.....	125	178	150	410	120	6,030	4,990	1,250	809	398	318	260
13.....	108	169	*155	420	120	5,510	4,730	1,260	809	357	282	294
14.....	117	208	165	450	125	4,860	4,600	1,120	749	318	249	260
15.....	133	178	165	518	130	3,620	4,600	1,240	650	306	228	260
16.....	125	160	155	567	125	g3,180	4,600	1,170	534	294	228	260
17.....	h117	151	150	729	120	g2,950	4,860	1,120	550	282	208	238
18.....	h117	151	169	673	120	g2,700	5,380	1,100	550	294	228	208
19.....	h142	260	178	637	120	g2,460	5,640	1,190	502	249	282	198
20.....	h101	318	169	619	120	2,300	5,640	1,470	550	228	306	151
21.....	h108	384	169	584	130	2,630	5,380	1,570	729	228	318	178
22.....	h108	357	160	550	g151	5,350	5,120	1,520	909	228	282	133
23.....	117	318	145	470	g228	8,660	4,730	1,540	1,660	198	249	125
24.....	94	282	135	410	g457	8,240	4,300	1,900	g1,730	228	218	108
25.....	125	238	120	350	g282	8,380	3,910	1,960	g1,520	228	198	108
26.....	142	249	115	300	g584	g9,220	3,460	1,960	g1,400	228	169	94
27.....	101	208	115	260	g789	9,920	3,180	1,780	g2,230	208	151	94
28.....	108	260	117	220	1,100	11,800	2,970	1,590	g2,030	427	151	94
29.....	117	238	117	200	.....	10,800	g2,760	1,420	g1,730	2,080	151	101
30.....	151	208	125	170	.....	9,500	g2,580	1,300	g1,540	2,360	151	101
31.....	151	.....	133	150	.....	8,800	.....	1,170	.....	2,030	133	.....
1949-50												
1.....	87	160	116	73	40	66	2,990	980	1,800	2,010	1,160	282
2.....	80	169	116	188	40	73	2,960	1,000	1,800	1,850	1,120	282
3.....	87	142	116	60	40	73	2,560	1,100	1,680	1,680	1,330	238
4.....	87	142	116	64	40	169	1,900	1,290	1,750	1,530	1,330	238
5.....	87	151	116	66	41	500	1,800	1,200	1,900	1,370	1,220	238
6.....	101	142	116	56	*45	1,600	1,770	1,620	1,800	1,120	960	198
7.....	101	124	101	50	50	8,000	1,730	1,620	1,640	880	880	160
8.....	101	133	60	48	49	6,980	1,620	1,900	1,550	780	760	160
9.....	108	133	60	48	47	2,670	1,530	4,730	1,330	760	720	160
10.....	133	142	80	54	47	1,850	1,440	6,030	1,180	760	684	160
11.....	116	151	101	58	46	1,250	1,370	5,510	1,080	740	720	160
12.....	108	151	60	58	46	1,100	1,250	4,470	1,000	960	666	142
13.....	160	116	73	60	42	980	1,160	3,660	940	2,140	648	160
14.....	108	151	101	60	66	920	1,100	2,900	860	2,680	540	160
15.....	101	151	94	60	66	1,250	980	2,410	1,100	2,700	684	142
16.....	108	151	101	58	73	1,480	920	2,010	2,850	2,310	524	142
17.....	178	151	87	54	66	1,770	860	1,850	2,240	2,010	509	169
18.....	151	124	116	48	48	1,960	800	1,680	3,020	2,210	509	160
19.....	87	108	116	66	47	1,850	780	1,640	8,100	2,240	478	160
20.....	87	124	151	54	46	1,700	860	1,620	9,220	2,350	446	160
21.....	198	124	87	48	45	1,530	800	1,800	8,800	3,260	415	198
22.....	169	124	60	42	45	1,350	800	2,590	6,290	4,070	400	344
23.....	169	124	116	37	45	1,510	720	3,050	5,120	4,730	370	1,700
24.....	178	133	87	48	46	1,880	720	3,030	4,700	3,660	357	2,730
25.....	151	101	60	37	52	2,500	800	2,900	8,660	3,070	344	2,140
26.....	142	116	60	43	80	2,850	1,140	2,730	6,290	2,560	318	1,660
27.....	133	116	60	43	73	3,390	1,220	2,530	4,330	2,310	271	1,330
28.....	133	116	60	42	66	3,360	1,100	2,280	3,160	1,820	282	1,160
29.....	142	116	60	41	.....	3,160	1,020	2,110	2,500	1,730	282	1,040
30.....	151	116	60	41	.....	3,050	1,000	1,990	2,070	1,460	282	1,140
31.....	142	.....	73	40	.....	2,940	.....	2,040	.....	1,330	282	.....

* Winter discharge measurement made on this day.

g Computed from graph based on staff gage readings.

Note—Stage-discharge relation affected by ice Dec. 7-17, 23-27, 1948, Jan. 2-4, 10-14, Jan. 23 to Feb. 21, 1949, Jan. 4-7, 10-16, Jan. 26 to Feb. 12, Feb. 19-26, Mar. 5-7, 1950. Discharge computed on basis of once daily staff gage readings Oct. 17-22, 1948, Nov. 10 to Dec. 31, 1949, Jan. 1-9, July 24 to Sept. 21, 1950.

Des Moines River near Boone, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1942	55,242	2,580	920	1,782	0.325	0.37
November	20,341	920	286	678	.123	.14
December	10,644	440	290	343	.062	.07
Calendar year 1942	857,892	8,880	286	2,350	.428	5.82
January 1943	7,190	320	145	232	.042	.05
February	71,275	8,360	245	2,546	.464	.48
March	106,410	6,920	1,500	3,433	.625	.72
April	71,960	5,240	1,310	2,399	.437	.49
May	76,982	6,510	962	2,483	.452	.52
June	115,350	7,280	2,190	3,845	.700	.78
July	142,170	7,730	2,260	4,586	.835	.96
August	95,920	4,770	1,800	3,094	.564	.65
September	51,573	2,960	899	1,719	.313	.35
Water year 1942-43	825,057	8,360	145	2,260	.412	5.58
October 1943	18,838	931	474	608	.111	.13
November	25,421	1,150	552	847	.154	.17
December	19,842	1,150	270	640	.117	.13
Calendar year 1943	802,931	8,360	145	2,200	.401	5.43
January 1944	13,549	900	300	437	.080	.09
February	24,740	1,980	250	853	.155	.17
March	60,233	2,900	569	1,943	.354	.41
April	106,380	6,270	1,710	3,546	.646	.72
May	345,050	29,300	4,920	11,130	2.03	2.34
June	282,740	25,100	3,510	9,425	1.72	1.92
July	95,260	4,360	1,640	3,073	.560	.65
August	41,169	2,280	809	1,328	.242	.28
September	35,139	2,260	692	1,171	.213	.24
Water year 1943-44	1,068,361	29,300	250	2,919	.532	7.25
October 1944	19,513	909	444	629	.115	.13
November	12,946	504	260	432	.079	.09
December	9,266	430	220	299	.054	.06
Calendar year 1944	1,045,985	29,300	220	2,858	.521	7.10
January 1945	5,840	240	170	188	.034	.04
February	28,829	3,800	145	1,030	.188	.20
March	200,090	13,600	1,380	6,455	1.18	1.36
April	221,410	14,900	2,560	7,380	1.34	1.50
May	193,800	13,100	2,780	6,252	1.14	1.31
June	258,210	16,200	5,070	8,607	1.57	1.75
July	79,650	5,150	1,430	2,569	.468	.54
August	114,470	13,300	1,450	3,693	.673	.78
September	19,689	1,430	384	656	.119	.13
Water year 1944-45	1,163,713	16,200	145	3,188	.581	7.89
October 1945	11,449	622	250	369	.067	.08
November	6,924	310	120	231	.042	.05
December	4,880	260	80	157	.029	.03
Calendar year 1945	1,145,241	16,200	80	3,138	.572	7.77
January 1946	18,877	2,700	95	609	.111	.13
February	54,897	5,000	250	1,961	.357	.37
March	179,620	9,850	2,950	5,794	1.06	1.22
April	81,310	6,140	1,060	2,710	.494	.55
May	128,810	16,500	1,040	4,155	.757	.87
June	126,520	7,800	1,760	4,217	.768	.86
July	56,494	4,220	829	1,822	.332	.38
August	12,480	769	200	403	.073	.08
September	12,813	789	170	427	.078	.09
Water year 1945-46	695,074	16,500	80	1,904	.347	4.71

Des Moines River near Boone, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946	26,146	1,240	322	843	0.154	0.18
November	36,037	1,740	829	1,201	.219	.24
December	22,598	1,290	250	729	.133	.15
Calendar year 1946	756,602	16,500	95	2,073	.378	5.12
January 1947	15,996	750	380	516	.094	.11
February	25,982	1,690	480	928	.169	.18
March	77,359	4,980	565	2,495	.454	.52
April	150,010	8,140	2,250	5,000	.911	1.02
May	113,440	5,570	2,590	3,659	.666	.77
June	340,190	34,000	3,360	11,340	2.07	2.30
July	201,420	18,500	1,230	6,497	1.18	1.36
August	16,096	1,160	200	519	.095	.11
September	5,138	375	100	171	.031	.03
Water year 1946-47	1,030,412	34,000	100	2,832	.514	6.97
October 1947	3,975	265	65	128	.023	.03
November	7,973	390	170	266	.048	.05
December	8,962	480	180	289	.053	.06
Calendar year 1947	966,541	34,000	65	2,648	.482	6.54
January 1948	4,039	200	44	130	.024	.03
February	26,661	10,300	45	919	.167	.18
March	167,350	12,700	1,030	5,398	.983	1.13
April	76,490	4,570	1,380	2,550	.464	.52
May	66,704	2,780	974	2,152	.392	.45
June	21,143	1,190	519	705	.128	.14
July	22,624	1,310	384	730	.133	.15
August	11,559	569	200	373	.068	.08
September	3,589	285	74	120	.022	.02
Water year 1947-48	421,069	12,700	44	1,150	.209	2.84
October 1948	3,643	151	87	118	.022	.02
November	6,745	384	151	225	.041	.05
December	4,725	260	115	152	.028	.03
Calendar year 1948	415,272	12,700	44	1,135	.207	2.80
January 1949	12,214	729	115	394	.072	.08
February	6,181	1,100	120	221	.040	.04
March	214,480	14,000	1,010	6,919	1.26	1.45
April	166,060	9,640	2,580	5,535	1.01	1.12
May	49,530	2,480	1,100	1,598	.291	.34
June	35,043	2,230	502	1,168	.213	.24
July	19,695	2,360	198	635	.116	.13
August	12,664	1,590	133	409	.074	.09
September	4,913	294	94	164	.030	.03
Water year 1948-49	535,893	14,000	87	1,468	.267	3.62
October 1949	3,884	198	80	125	.023	.03
November	4,002	169	101	133	.024	.03
December	2,780	151	60	80.7	.016	.02
Calendar year 1949	531,446	14,000	60	1,466	.265	3.60
January 1950	1,745	188	37	56.3	.010	.01
February	1,437	80	40	51.3	.0093	.01
March	63,761	8,000	66	2,057	.375	.43
April	39,700	2,990	720	1,323	.241	.27
May	76,270	6,030	980	2,460	.448	.52
June	98,760	9,220	860	3,292	.600	.67
July	63,080	4,730	740	2,035	.371	.43
August	19,491	1,330	271	629	.115	.13
September	17,113	2,730	142	570	.104	.12
Water year 1949-50	392,023	9,220	37	1,074	.196	2.67

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., 5 feet 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 square miles.

RECORDS AVAILABLE.—October 1902 to August 1903, May 1905 to July 1906, October 1914 to February 1915 (gage heights only), March 1915 to September 1927, and October 1932 to September 1950 in reports of U. S. Geological Survey. 1893, 1894, 1897-1927 in report of Iowa State Planning Board entitled "Stream Flow Records of Iowa, 1873-1932."

GAGE.—Water-stage recorder and concrete multiple-arch control dam. Datum of gage is 773.84 feet 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 the present site and at various datums.

AVERAGE DISCHARGE.—30 years (1915-27, 1932-50), 2,066 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Feb. 24	12,200	19.02	Jan. 22	225
1943-44...	May 23	34,000	24.4	Feb. 11, 12	260
1944-45...	June 4	18,700	20.46	Jan. 9, 10	180
1945-46...	May 29	16,900	19.78	Nov. 23, Dec. 25-30	90
1946-47...	June 26	39,500	26.5	Sept. 25, 29	147
1947-48...	Mar. 19	20,300	21.21	Feb. 10, 11	97
1948-49...	Mar. 8	15,300	19.43	Oct. 26, Sept. 29	97
1949-50...	Mar. 9 June 22	10,600	(¹)	Feb. 2-4	32

(1) Maximum gage height 17.73 feet Mar. 9.

1915-27, 1932-50: Maximum discharge, 39,500 second-feet June 26, 1947 (gage height, 26.5 feet), but may have been greater June 7, 1918; maximum gage height, 16.5 feet June 7, 1918, site and datum then in use; minimum unregulated discharge, 24 second-feet Jan. 29, 30, 1940; operation of sluice gates in control dam at times has caused brief periods of no flow.

Maximum stage known, about 27.3 feet May 31, 1903, present site and datum, from flood profile by office of City Engineer (probably back-water from Raccoon River).

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

COOPERATION.—Gage-height record collected in cooperation with U. S. Weather Bureau. Several discharge measurements furnished by Corps of Engineers.

Des Moines River at Des Moines, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1	3,210	1,180	443	455	308	6,000	5,820	2,340	3,040	7,220	4,620	3,510
2	3,080	1,080	380	450	308	5,000	5,590	2,230	3,150	7,640	4,200	3,530
3	3,130	1,060	380	445	1,000	4,000	5,290	2,000	3,090	7,690	5,880	3,470
4	3,190	1,050	520	440	1,500	3,500	4,890	1,770	3,190	7,220	5,690	3,350
5	3,190	1,080	576	425	2,000	3,400	4,600	1,650	3,370	7,050	5,340	3,210
6	3,150	1,020	596	410	1,600	3,000	4,220	2,450	3,430	6,830	5,500	3,090
7	3,080	994	587	390	1,500	2,500	3,930	2,560	3,390	6,980	5,230	2,830
8	2,980	980	587	370	1,700	2,200	3,670	2,320	3,270	7,180	4,520	2,540
9	2,880	1,010	621	360	2,000	2,000	3,490	1,980	3,150	7,180	3,950	2,270
10	2,790	1,040	610	350	2,300	1,900	3,390	1,780	3,550	7,050	3,510	2,140
11	2,660	898	596	350	2,400	1,950	3,290	1,650	3,290	6,480	3,150	2,100
12	2,600	*911	587	355	1,800	2,070	3,250	1,590	3,350	5,730	5,480	2,230
13	2,490	886	500	360	1,200	2,190	3,150	1,430	3,290	5,120	6,430	2,180
14	2,370	886	520	370	900	2,410	3,130	1,380	3,130	4,580	5,000	2,120
15	2,300	886	470	370	840	3,330	3,080	1,680	3,790	4,010	5,730	1,920
16	2,230	886	460	360	800	4,870	2,880	3,100	4,790	3,910	5,340	1,910
17	2,230	848	470	330	780	4,350	2,660	4,590	5,780	4,030	4,260	1,960
18	2,160	822	440	300	800	4,430	2,500	5,570	6,260	4,030	3,770	1,870
19	1,910	835	425	270	850	3,770	2,320	6,890	5,710	3,990	3,630	1,750
20	1,780	797	420	240	980	3,570	2,090	7,310	5,440	4,220	3,450	1,700
21	1,670	772	418	230	1,850	3,590	2,000	6,630	5,290	4,470	3,250	1,650
22	1,530	772	*416	225	3,910	3,830	1,870	5,250	5,250	4,520	3,110	1,580
23	1,500	772	415	230	4,680	3,970	1,780	4,870	5,190	4,580	2,870	1,500
24	1,430	772	410	240	7,500	4,500	1,750	4,370	5,690	4,870	2,700	1,430
25	1,360	737	410	250	8,020	5,170	1,700	3,990	5,500	4,240	2,500	1,360
26	1,330	690	420	270	f*7,800	5,270	1,700	3,690	5,040	3,570	2,270	1,280
27	1,250	498	430	280	f7,620	6,300	1,720	3,590	4,960	3,150	2,210	1,180
28	1,200	564	440	290	8,150	6,940	1,650	3,330	4,890	3,060	3,080	1,120
29	1,180	454	445	298	.....	7,180	1,700	3,090	5,480	3,000	2,810	1,120
30	1,200	390	450	298	.....	6,450	1,920	2,940	6,540	2,730	3,970	1,120
31	1,180	.....	455	308	.....	6,010	.....	2,880	.....	3,090	3,730	.....
1943-44												
1	1,080	672	1,120	470	960	2,070	2,120	6,140	11,300	3,640	2,080	2,930
2	1,050	685	1,100	440	1,160	2,100	2,100	6,180	9,850	3,300	2,050	2,880
3	1,010	685	1,130	420	1,130	2,510	2,000	7,540	8,010	3,030	1,810	2,800
4	942	698	1,210	380	1,120	2,900	2,220	8,760	6,920	3,440	1,940	2,670
5	928	710	1,200	360	1,260	2,550	2,510	9,490	6,120	3,140	2,660	2,390
6	889	722	1,210	360	1,200	2,180	2,600	9,460	6,050	2,730	2,240	2,150
7	863	798	1,210	360	1,020	1,380	2,490	8,980	6,030	2,460	2,290	1,950
8	837	876	1,230	370	550	660	2,300	8,760	6,290	2,440	2,420	1,810
9	824	969	1,240	390	670	700	2,130	8,640	7,590	2,730	2,240	1,640
10	798	982	850	410	500	710	2,050	8,520	7,890	2,690	1,970	1,640
11	785	1,020	640	390	260	2,490	2,220	8,330	9,880	2,900	1,730	1,480
12	785	996	540	370	260	2,990	2,840	8,060	12,200	3,600	1,500	1,380
13	735	969	440	370	340	2,970	3,900	7,660	13,000	4,130	1,310	1,300
14	710	863	420	360	400	2,370	4,190	7,340	15,600	4,230	1,050	1,240
15	685	902	310	*370	450	2,340	3,790	7,310	19,400	4,520	1,060	1,140
16	672	942	300	360	500	2,880	3,600	7,610	24,800	4,550	1,050	1,100
17	660	*956	300	340	600	*3,240	4,170	7,750	28,100	4,340	1,200	1,050
18	648	996	350	360	700	3,080	4,270	7,800	24,000	4,360	1,320	995
19	672	956	450	340	800	2,760	4,130	10,700	18,700	4,610	1,300	1,020
20	698	1,020	540	350	900	2,390	4,230	15,100	15,100	4,550	1,210	1,010
21	622	1,170	560	350	928	2,220	4,650	20,700	12,500	4,360	1,400	956
22	672	1,160	600	360	982	2,220	5,610	28,700	10,600	4,060	1,470	956
23	648	1,100	620	360	1,090	2,240	6,230	33,100	9,540	3,810	1,980	1,100
24	648	1,080	640	370	1,100	2,300	6,670	33,100	8,370	3,680	1,580	1,140
25	698	1,120	640	410	1,100	2,460	6,960	30,900	7,220	3,320	1,320	1,160
26	598	1,170	600	550	1,650	3,030	7,610	31,300	6,270	4,080	1,760	1,140
27	610	1,210	550	850	1,700	3,460	7,820	26,900	5,570	3,540	2,640	1,120
28	660	1,230	520	1,000	2,270	3,420	7,520	29,900	5,060	3,030	2,840	1,200
29	635	1,140	500	1,000	2,000	3,140	7,060	17,000	4,570	2,690	2,930	1,260
30	622	1,160	480	1,100	.....	2,780	6,410	14,300	4,080	2,390	2,710	1,270
31	648	.....	480	850	.....	2,410	.....	12,300	.....	2,170	2,800	.....

* Winter discharge measurement made on this day.

f Fragmentary gage-height record; discharge computed on basis of partly estimated gage heights.

g Computed from graph based on gage readings.

Note—Stage-discharge relation affected by ice Dec. 13-31, 1942, Jan. 1-28, Feb. 3-19, 24, Mar. 1-11, Nov. 30, Dec. 10-31, 1943, Jan. 1 to Feb. 20, Feb. 23 to Mar. 11, 1944. Gates in control dam open July 10 to Sept. 18, 1944.

Des Moines River at Des Moines, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1	1,170	560	260	270	240	1,870	4,800	7,770	10,100	5,720	1,590	1,560
2	1,140	585	220	270	230	2,820	4,320	6,940	11,800	5,480	1,740	1,440
3	1,120	548	300	260	220	3,340	4,210	6,420	16,200	5,150	2,080	1,370
4	1,080	548	385	250	210	4,270	5,390	6,050	18,500	4,740	2,730	1,350
5	1,090	523	425	210	210	5,020	4,950	5,810	17,100	4,500	3,070	1,230
6	1,120	560	485	190	210	4,550	4,630	5,500	15,000	4,230	2,580	1,060
7	1,120	560	585	200	200	3,900	4,550	5,100	12,800	3,850	2,360	982
8	982	523	550	190	200	3,820	5,540	4,780	10,800	3,750	2,170	915
9	996	511	598	180	210	4,000	6,620	4,460	9,460	3,770	1,940	837
10	982	511	511	180	230	4,400	7,430	4,210	8,960	3,560	1,790	811
11	928	511	384	190	250	5,390	7,770	3,920	9,360	3,260	1,710	772
12	915	523	362	190	373	7,360	8,130	3,770	10,100	3,030	1,760	748
13	876	511	362	200	722	9,820	8,810	3,600	9,950	2,780	2,000	660
14	850	511	330	210	1,280	11,800	9,460	4,930	9,850	2,550	2,370	598
15	837	523	330	200	1,820	14,300	10,300	6,360	9,980	2,370	2,950	572
16	811	511	370	210	2,550	14,900	11,700	6,600	10,400	2,290	4,170	560
17	785	585	380	220	4,400	15,100	12,100	6,470	10,700	2,270	6,810	499
18	748	610	360	220	5,280	15,300	12,100	6,140	10,400	2,220	8,960	499
19	735	610	360	210	4,360	13,700	12,300	5,630	9,690	2,200	11,200	487
20	685	572	350	220	3,580	12,000	11,200	5,170	8,880	2,200	11,700	451
21	660	598	330	220	3,320	10,700	9,620	4,990	8,400	2,250	8,810	463
22	672	560	*320	230	2,490	9,640	8,060	7,270	8,180	2,200	6,360	487
23	635	548	300	240	2,300	8,540	7,180	9,950	g7,520	2,170	5,150	487
24	648	560	250	240	2,180	7,610	7,610	13,100	g8,830	2,050	4,340	511
25	610	585	280	240	2,150	8,490	10,500	15,600	6,290	1,980	3,640	499
26	610	598	250	250	1,700	8,450	14,100	14,800	6,010	1,940	3,120	487
27	610	610	260	*250	1,540	7,920	15,200	13,500	5,570	1,870	2,670	572
28	585	540	270	260	1,640	7,060	13,600	12,100	5,280	1,780	2,360	660
29	585	540	280	250	.....	6,250	11,400	11,100	5,240	1,760	2,130	798
30	585	360	280	250	.....	5,650	9,210	11,300	5,520	1,810	1,950	915
31	585	.....	290	*240	.....	5,240	.....	11,000	.....	1,700	1,760	.....
1945-46												
1	811	270	240	120	415	3,810	6,900	1,430	7,430	5,850	1,020	300
2	785	260	270	120	362	3,280	6,810	1,430	6,140	5,430	928	280
3	710	260	270	100	352	3,750	6,470	1,540	5,260	4,950	837	290
4	698	260	250	130	352	3,900	5,830	1,710	4,570	4,440	798	300
5	622	260	240	928	1,650	4,400	5,390	1,920	4,020	3,940	760	270
6	635	270	230	3,440	3,640	5,540	4,860	2,030	3,560	3,250	748	280
7	572	290	220	3,830	3,440	6,690	4,440	2,050	3,240	3,280	710	290
8	475	280	270	3,340	*5,260	6,740	3,960	2,150	2,900	3,010	722	1,350
9	548	290	220	3,050	g4,000	g6,070	3,730	2,130	2,690	2,730	660	1,730
10	439	300	110	2,200	g3,400	g4,970	3,540	2,020	2,460	2,530	622	1,760
11	451	320	150	1,500	3,100	g4,630	3,480	2,000	2,200	2,390	548	1,320
12	439	331	210	1,000	2,640	5,040	3,480	2,020	2,240	2,240	523	996
13	415	280	230	750	2,510	6,490	3,420	2,130	2,050	2,030	511	889
14	394	260	220	600	2,180	8,230	3,320	2,320	1,940	1,860	499	996
15	384	270	210	550	1,860	10,000	3,160	2,340	2,690	1,760	475	1,040
16	384	300	230	440	1,760	10,800	3,030	2,320	3,160	1,650	511	889
17	373	270	270	415	1,580	9,690	2,880	2,370	3,260	1,600	902	785
18	373	260	280	405	1,470	8,040	2,660	2,340	5,680	1,540	523	710
19	352	260	260	395	1,430	7,220	2,480	2,440	8,450	1,500	451	660
20	362	260	210	360	1,260	6,940	2,290	2,530	10,400	1,500	427	660
21	320	270	120	330	1,280	6,510	2,180	2,900	10,900	1,520	475	672
22	320	110	110	320	1,430	5,850	2,080	3,380	10,500	1,470	585	722
23	310	90	100	340	1,840	5,630	2,030	3,420	9,380	1,320	585	824
24	310	180	100	360	2,250	5,830	1,950	3,400	7,970	1,230	648	748
25	290	200	90	415	3,710	5,960	1,820	4,480	8,230	1,170	622	648
26	300	190	90	394	*3,600	6,650	1,710	7,870	7,820	1,140	548	622
27	290	200	90	427	3,660	7,150	1,650	11,200	6,880	1,200	487	660
28	300	240	90	352	3,730	6,900	1,600	15,600	5,940	1,120	427	598
29	290	240	90	280	.....	6,510	1,560	16,200	6,050	1,160	384	560
30	290	230	90	431	.....	6,940	1,460	13,200	6,690	1,310	362	572
31	300	.....	100	475	.....	6,920	.....	9,750	.....	1,170	373	.....

* Winter discharge measurement made on this day.
g Computed from graph based on gage readings.

Note—Stage-discharge relation affected by ice Nov. 28 to Dec. 8, Dec. 14-28, 1944, Jan. 1-11, Jan. 28 to Feb. 4, Feb. 16, 17, Mar. 9, 10, Dec. 1-9, 15-19, 1945, Jan. 9-24, Feb. 6-12, Feb. 22 to Mar. 3, 1946.

Des Moines River at Des Moines, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	537	1,640	1,400	420	540	960	3,290	6,230	5,610	16,600	1,410	321
2.....	498	1,890	1,300	440	530	920	3,070	6,080	8,980	16,000	1,330	352
3.....	472	1,500	1,000	600	500	900	2,920	6,410	10,700	21,000	1,230	321
4.....	459	1,470	800	700	550	870	3,130	6,360	10,500	20,600	1,170	310
5.....	446	1,420	700	770	600	840	3,290	6,140	11,000	19,400	1,100	310
6.....	387	1,410	1,000	720	620	840	3,410	5,610	11,500	16,900	1,010	290
7.....	398	1,390	1,310	660	650	855	3,450	5,080	11,100	14,000	930	260
8.....	433	1,310	1,470	520	680	915	3,690	4,700	8,880	11,900	870	250
9.....	400	1,280	1,470	400	700	1,050	4,010	4,300	6,820	10,300	810	250
10.....	564	1,290	1,450	*430	700	1,440	5,570	4,280	5,660	9,580	750	250
11.....	840	1,330	1,500	440	640	1,930	6,430	4,030	4,970	9,150	735	240
12.....	900	1,330	1,360	450	580	2,390	7,770	3,810	7,530	8,460	662	290
13.....	975	1,390	1,200	460	485	3,250	8,880	3,690	16,200	7,550	648	290
14.....	1,040	1,490	1,000	537	700	3,890	9,200	3,710	16,000	6,730	620	250
15.....	1,050	1,560	800	564	1,180	4,170	9,000	4,030	17,100	5,970	578	250
16.....	1,210	1,640	600	550	1,330	4,320	8,660	4,360	16,900	5,220	537	260
17.....	1,370	1,710	500	600	1,450	4,800	8,180	4,820	14,900	4,850	537	260
18.....	1,910	1,760	343	600	1,550	4,660	7,770	5,040	12,700	4,510	498	280
19.....	1,590	1,780	*459	705	1,750	4,470	7,460	5,180	13,300	3,890	446	220
20.....	1,280	1,980	524	700	1,800	4,220	7,770	4,930	14,300	3,490	420	210
21.....	1,410	2,020	690	650	1,950	4,220	7,260	4,590	14,000	3,130	398	201
22.....	1,410	1,960	735	600	2,000	4,470	6,630	4,320	15,400	2,880	376	192
23.....	1,370	1,910	840	650	1,800	3,150	6,230	4,150	18,300	2,620	365	201
24.....	1,710	1,810	880	676	1,550	3,770	6,080	3,990	20,500	2,360	365	165
25.....	2,500	1,710	800	705	1,250	4,260	6,300	3,870	28,400	2,200	420	147
26.....	2,270	1,640	700	720	1,200	4,950	6,560	3,870	39,200	2,070	376	165
27.....	1,930	1,450	900	750	1,050	4,550	6,100	3,570	35,500	1,960	343	165
28.....	1,720	1,370	480	*720	*1,000	4,200	5,660	4,110	30,700	1,900	354	165
29.....	1,790	1,290	350	620	.....	3,950	5,550	5,500	25,400	1,640	354	147
30.....	1,760	1,370	320	620	.....	3,790	6,560	5,240	19,500	1,590	321	174
31.....	1,690	.....	350	578	.....	3,590	.....	5,140	.....	1,490	332	.....
1947-48												
1.....	208	550	308	199	113	7,600	4,930	2,520	1,010	1,260	840	378
2.....	199	466	375	173	113	8,500	4,890	2,710	975	1,330	662	290
3.....	217	478	502	290	122	9,000	4,820	2,650	915	1,230	592	271
4.....	234	466	514	290	*122	6,300	4,240	2,650	870	1,120	526	243
5.....	199	442	620	308	105	6,000	3,710	2,690	795	960	490	217
6.....	199	409	592	*308	105	5,300	3,530	2,670	765	840	456	199
7.....	199	399	634	318	105	4,600	3,290	2,880	720	765	454	173
8.....	190	368	389	318	122	3,500	3,230	3,070	690	662	430	182
9.....	173	368	271	318	122	2,700	3,510	3,010	648	592	409	173
10.....	190	348	299	308	97	2,200	3,610	2,820	634	550	368	164
11.....	182	358	399	299	97	1,750	3,270	2,580	564	478	348	156
12.....	164	318	409	280	105	1,500	3,210	2,430	550	466	348	156
13.....	164	308	368	182	105	1,200	2,980	2,300	564	478	430	139
14.....	164	318	502	182	105	1,400	2,730	2,360	564	578	538	130
15.....	164	337	478	208	113	g1,910	2,540	2,390	564	676	578	147
16.....	147	348	378	217	122	g2,800	2,340	2,410	564	502	538	139
17.....	173	348	420	225	147	g6,470	2,290	2,670	550	578	514	130
18.....	173	368	430	217	173	8,750	2,160	2,640	538	780	466	130
19.....	147	368	399	225	199	18,200	1,960	2,670	514	825	514	122
20.....	147	358	430	217	190	18,200	1,670	2,580	514	810	442	147
21.....	147	378	389	225	208	17,100	1,640	2,380	578	930	368	164
22.....	139	368	409	208	271	14,200	1,610	2,120	578	825	327	147
23.....	147	358	368	173	885	11,300	1,780	1,900	578	915	308	122
24.....	190	368	337	147	1,150	10,600	1,780	1,740	606	885	290	130
25.....	190	358	358	139	1,100	8,610	1,760	1,690	690	1,040	271	122
26.....	190	348	348	130	1,280	6,560	1,860	1,450	690	1,720	234	139
27.....	217	348	337	130	1,930	6,120	2,110	1,360	765	1,180	225	130
28.....	253	327	337	130	3,550	5,830	2,650	1,260	1,330	825	234	122
29.....	280	327	337	122	4,400	5,590	2,820	1,180	1,250	780	225	156
30.....	299	225	348	113	.....	5,420	2,670	1,130	1,210	900	271	139
31.....	490	.....	253	113	.....	5,180	.....	1,090	.....	1,090	399	.....

* Winter discharge measurement made on this day.

g Computed from graph based on gage readings.

Note—Stage-discharge relation affected by ice Dec. 1-6, 13-17, 24-31, 1946, Jan. 1-13, 17, 18, 20-23, Feb. 1-12, Feb. 17 to Mar. 5, 1947, Feb. 28 to Mar. 14, 1948. Discharge for periods of backwater from Raccoon River, June 13-15, 25-28, 1947, computed on basis of stage-fall-discharge relation determined by using the fall between gages at 2nd Ave. and Scott St. as a factor.

Des Moines River at Des Moines, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	113	147	208	139	195	2,030	9,800	2,800	1,250	1,560	1,610	156
2.....	122	147	217	147	185	2,110	9,550	2,620	1,290	1,420	1,280	156
3.....	122	147	208	164	180	3,000	10,000	2,430	1,150	1,310	1,090	164
4.....	122	156	208	399	*175	4,510	9,800	2,270	1,230	1,250	960	190
5.....	130	217	253	702	170	8,080	9,050	2,110	1,440	1,040	810	271
6.....	190	234	253	780	170	12,400	8,320	2,000	1,810	915	605	208
7.....	190	253	217	720	170	14,700	7,840	1,950	1,590	720	514	173
8.....	147	234	130	780	170	15,300	6,910	1,810	1,370	648	466	164
9.....	122	280	140	720	170	14,700	6,230	1,760	1,250	606	409	190
10.....	105	271	155	578	170	13,000	5,790	1,670	1,120	538	368	173
11.....	122	199	182	502	173	10,300	5,240	1,590	1,010	490	420	217
12.....	147	173	208	490	182	7,600	5,040	1,340	930	442	358	262
13.....	139	182	234	*400	190	a6,000	4,930	1,410	870	430	327	358
14.....	147	173	253	514	147	a5,400	4,720	1,370	870	378	308	299
15.....	130	182	262	620	150	a4,800	4,620	1,370	795	358	280	318
16.....	113	199	253	1,260	160	a4,000	4,720	1,410	780	327	262	318
17.....	113	182	217	1,290	182	3,590	4,720	1,360	765	308	262	308
18.....	122	164	225	1,070	234	3,290	5,460	1,280	578	337	234	290
19.....	113	318	217	1,040	348	3,000	5,790	1,250	592	327	478	262
20.....	122	368	208	855	327	2,800	5,790	1,250	606	337	358	243
21.....	130	348	217	780	299	2,520	5,790	1,450	606	299	368	217
22.....	105	348	199	705	308	3,390	5,570	1,610	634	280	358	199
23.....	105	378	190	648	1,950	6,230	5,350	1,520	720	280	318	182
24.....	105	348	173	502	1,760	8,560	4,820	1,490	1,390	262	280	164
25.....	105	327	160	442	1,860	8,800	4,400	1,740	1,570	253	253	147
26.....	97	299	150	399	2,000	8,800	3,990	1,840	1,500	271	234	122
27.....	105	262	164	358	2,180	9,550	3,690	1,830	1,410	280	217	113
28.....	122	262	173	290	2,050	10,300	3,390	1,720	1,910	253	208	105
29.....	113	234	164	253	.....	11,900	3,190	1,560	1,860	234	208	97
30.....	147	280	130	234	.....	12,400	3,000	1,390	1,670	1,240	208	122
31.....	147	.....	147	210	.....	10,800	.....	1,290	.....	1,930	182	.....
1949-50												
1.....	130	156	156	71	40	253	3,190	960	2,320	2,710	1,520	308
2.....	130	139	173	71	32	a454	3,190	960	2,230	2,070	1,390	308
3.....	130	147	190	71	32	a662	3,090	945	2,520	2,070	1,360	308
4.....	113	147	173	71	32	a1,070	2,620	1,010	2,430	1,790	1,560	280
5.....	122	139	173	71	40	a2,520	2,090	1,760	2,340	1,610	1,520	271
6.....	130	139	147	71	40	4,300	1,980	2,430	2,250	1,470	1,390	262
7.....	430	139	122	71	40	5,400	1,910	2,020	2,070	1,340	1,230	243
8.....	271	122	139	75	56	7,920	1,830	2,000	1,840	1,210	1,100	234
9.....	208	97	130	75	208	10,500	1,760	3,450	2,200	1,090	1,010	217
10.....	199	97	122	75	442	a8,080	1,640	6,010	1,810	990	900	208
11.....	139	89	139	75	502	a3,090	1,470	6,910	1,470	930	885	199
12.....	147	113	156	75	502	2,480	1,410	6,230	1,390	960	870	182
13.....	147	130	147	75	430	1,600	1,330	5,040	1,470	1,450	840	182
14.....	113	122	139	75	337	1,500	1,230	4,200	1,810	2,210	780	182
15.....	156	113	139	75	280	1,600	1,180	3,290	1,200	2,620	705	173
16.....	130	122	139	75	243	2,000	1,070	2,710	1,290	2,710	634	173
17.....	113	122	139	75	208	2,800	1,010	2,430	2,620	2,340	606	164
18.....	105	139	139	71	190	3,100	945	2,140	3,990	2,129	550	182
19.....	182	139	139	71	182	2,900	855	1,980	5,570	2,340	514	190
20.....	190	139	139	63	164	2,560	795	1,950	8,320	2,320	490	173
21.....	234	130	147	56	156	2,270	825	2,520	10,000	2,430	466	164
22.....	243	139	130	48	147	*2,100	825	2,800	10,300	3,190	442	164
23.....	253	139	130	48	139	2,400	825	3,290	8,800	3,890	420	208
24.....	234	147	122	48	130	3,000	780	3,590	6,910	3,990	389	990
25.....	217	147	122	48	122	4,000	765	3,490	6,880	3,590	368	2,160
26.....	217	147	113	48	122	3,390	765	3,390	9,050	3,190	368	1,950
27.....	199	130	113	48	122	3,590	960	3,290	6,910	2,710	368	1,590
28.....	173	147	113	48	156	3,890	1,150	3,000	4,850	2,430	358	1,330
29.....	164	173	105	48	.....	3,690	1,130	2,710	3,790	2,110	318	1,130
30.....	147	173	105	48	.....	3,390	1,040	2,520	3,090	1,910	308	990
31.....	147	.....	105	48	.....	3,290	.....	2,340	.....	1,670	290	.....

* Winter discharge measurement made on this day.

a No or doubtful gage-height record; discharge computed on basis of records for nearby stations.

Note—Stage-discharge relation affected by ice Dec. 8, 9, 25, 26, 1948, Jan. 12, 13, 31, Feb. 1-10, 15, 16, 1949, Jan. 8-17, Mar. 12-25, 1950.

Des Moines River at Des Moines, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1942	68,240	3,210	1,180	2,201	0.356	0.41
November	25,570	1,180	390	852	.138	.15
December	14,963	621	350	483	.078	.09
Calendar year 1942	1,089,303	8,940	380	2,984	.483	6.56
January 1943	10,319	455	225	333	.054	.06
February	75,096	8,150	308	2,682	.434	.45
March	125,650	7,180	1,900	4,053	.656	.76
April	91,030	5,820	1,650	3,034	.491	.55
May	101,090	7,310	1,350	3,261	.528	.61
June	131,290	6,540	3,040	4,376	.708	.79
July	159,420	7,690	2,730	5,143	.832	.96
August	128,180	6,430	2,210	4,135	.669	.77
September	63,020	3,530	1,120	2,101	.340	.38
Water year 1942-43	993,868	8,150	225	2,723	.441	5.98
October 1943	23,332	1,080	598	753	.122	.14
November	28,957	1,230	672	965	.156	.17
December	21,980	1,240	300	709	.115	.13
Calendar year 1943	959,364	8,150	225	2,628	.425	5.77
January 1944	14,770	1,100	340	476	.077	.09
February	27,510	2,270	260	949	.154	.17
March	74,950	3,460	660	2,419	.391	.45
April	126,400	7,820	2,000	4,213	.682	.76
May	439,330	33,100	6,140	14,170	2.29	2.64
June	330,610	28,100	4,050	11,020	1.78	1.99
July	108,520	4,610	2,170	3,501	.567	.65
August	57,860	2,930	1,050	1,866	.302	.35
September	45,877	2,930	956	1,529	.247	.28
Water year 1943-44	1,300,096	33,100	260	3,552	.575	7.82
October 1944	25,755	1,170	585	831	.134	.15
November	16,395	610	360	546	.088	.10
December	11,047	598	220	356	.058	.07
Calendar year 1944	1,279,024	33,100	220	3,495	.566	7.70
January 1945	6,940	270	180	224	.036	.04
February	44,115	5,280	190	1,576	.255	.27
March	243,220	15,300	1,870	7,846	1.27	1.46
April	262,790	15,200	4,210	8,760	1.42	1.58
May	234,340	15,600	3,600	7,559	1.22	1.41
June	294,870	18,500	5,240	9,829	1.59	1.77
July	91,430	5,720	1,700	2,949	.477	.55
August	117,970	11,700	1,590	3,805	.616	.71
September	23,280	1,560	451	776	.126	.14
Water year 1944-45	1,372,152	18,500	180	3,759	.608	8.25
October 1945	13,542	811	290	437	.071	.08
November	7,501	331	90	250	.040	.05
December	5,660	280	90	183	.030	.03
Calendar year 1945	1,345,658	18,500	90	3,687	.597	8.09
January 1946	27,847	3,830	100	898	.145	.17
February	64,161	5,260	352	2,291	.371	.39
March	197,080	10,800	3,280	6,357	1.03	1.19
April	100,170	6,900	1,460	3,339	.540	.60
May	132,620	16,200	1,430	4,278	.692	.80
June	164,700	10,900	1,940	5,490	.888	.99
July	71,600	5,850	1,120	2,310	.374	.43
August	18,671	1,020	362	602	.097	.11
September	22,421	1,760	270	747	.121	.13
Water year 1945-46	825,973	16,200	90	2,263	.366	4.97

Des Moines River at Des Moines, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946	36,328	2,500	387	1,172	0.190	0.22
November	46,800	2,020	1,280	1,560	.252	.28
December	26,931	1,500	320	869	.141	.16
Calendar year 1946	909,329	16,200	100	2,491	.403	5.47
January 1947	18,555	770	400	599	.097	.11
February	29,490	2,000	485	1,053	.170	.18
March	92,590	4,950	840	2,987	.483	.56
April	179,880	9,200	2,920	5,996	.970	1.08
May	147,270	6,410	3,570	4,751	.769	.89
June	472,450	39,200	4,970	15,750	2.55	2.84
July	239,940	21,000	1,490	7,740	1.25	1.44
August	20,295	1,410	321	655	.106	.12
September	7,166	332	147	239	.039	.04
Water year 1946-47	1,317,695	39,200	147	3,610	.584	7.92
October 1947	6,175	490	139	199	.032	.04
November	11,128	550	225	371	.060	.07
December	12,538	634	253	404	.065	.08
Calendar year 1947	1,237,477	39,200	139	3,390	.549	7.45
January 1948	6,712	318	113	217	.035	.04
February	17,256	4,400	67	595	.096	.10
March	214,390	18,200	1,200	6,916	1.12	1.29
April	85,590	4,930	1,610	2,853	.462	.52
May	69,800	3,070	1,090	2,251	.364	.43
June	21,783	1,330	514	726	.117	.13
July	26,570	1,720	466	857	.139	.16
August	13,105	840	225	423	.068	.08
September	5,057	378	122	168	.027	.03
Water year 1947-48	490,104	18,200	97	1,339	.217	2.96
October 1948	3,912	190	97	126	.020	.02
November	7,312	378	147	244	.039	.04
December	6,115	262	130	197	.032	.04
Calendar year 1948	477,602	18,200	97	1,305	.211	2.87
January 1949	18,081	1,290	139	583	.094	.11
February	16,255	2,180	147	581	.094	.10
March	233,860	15,300	2,030	7,544	1.22	1.41
April	177,510	10,000	3,060	5,917	.957	1.07
May	52,490	2,800	1,250	1,693	.274	.32
June	34,566	1,910	578	1,152	.186	.21
July	19,323	1,930	234	623	.101	.12
August	14,234	1,610	182	459	.074	.09
September	6,188	358	97	206	.033	.04
Water year 1948-49	589,846	15,300	97	1,616	.261	3.57
October 1949	5,513	430	105	178	.029	.03
November	4,022	173	89	134	.022	.02
December	4,245	190	105	137	.022	.03
Calendar year 1949	586,287	15,300	89	1,606	.260	3.55
January 1950	1,988	75	48	64	.010	.01
February	5,094	502	32	182	.029	.03
March	99,799	10,500	253	3,219	.521	.60
April	43,660	3,190	765	1,455	.235	.26
May	91,365	6,910	960	2,947	.477	.55
June	121,520	10,300	1,200	4,051	.656	.73
July	67,660	3,990	930	2,183	.353	.41
August	23,958	1,560	299	773	.125	.14
September	15,115	2,160	164	504	.082	.09
Water year 1949-50	483,939	10,500	32	1,326	.215	2.90

Des Moines River below Raccoon River at Des Moines, Iowa

LOCATION.—Lat. 41°34'53", long. 93°36'45", 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 feet upstream from Scott Street dam, 100 feet downstream from Raccoon River, 1 mile downstream from dam of Iowa Power and Light Co., and at mile 200.1.

DRAINAGE AREA.—9,770 square miles.

RECORDS AVAILABLE.—April 1940 to September 1950.

GAGE.—Water-stage recorder. Datum of gage is 773.84 feet above mean sea level, datum of 1929 and at city datum.

AVERAGE DISCHARGE.—10 years (1941-50), 4,216 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Feb. 24	15,600	8.22	Jan. 23, 24	390
1943-44...	May 24	53,200	17.6	Feb. 11	460
1944-45...	June 4	28,900	12.77	Dec. 2	355
1945-46...	May 29	22,800	10.82	Dec. 26, 27	268
1946-47...	June 26	77,000	20.8	Sept. 27-29	314
1947-48...	Mar. 20	44,400	15.69	Feb. 11	144
1948-49...	Mar. 7	28,100	12.58	Oct. 23	150
1949-50...	June 21	24,800	11.56	Feb. 2-5	80

1940-50: Maximum discharge, 77,000 second-feet June 26, 1947 (gage height, 20.8 feet in gage well, 21.6 feet from outside floodmark); minimum daily, 80 second-feet (estimated) July 27, 1940, Feb. 2-5, 1950; minimum gage height, 3.39 feet Feb. 1, 11, 1948.

Maximum stage known, 21.6 feet outside floodmark, June 26, 1947. River reached stage of about 20.9 feet, present site and datum, May 31, 1903, from flood profile by Office of City Engineer.

REMARKS.—Records good except those for periods of ice effect, which are fair. Water for municipal supply of Des Moines is taken from infiltration galleries on Raccoon River, about 2.5 miles above station. These galleries are 150 to 300 feet from the river and generally about 30 feet below grade. At times water is pumped directly from Raccoon River into recharge basins above galleries. Effluent from city sewage treatment plant, which includes storm-water runoff from portion of city, enters Des Moines River about 3 miles below station, and corresponds roughly to pumpage except following heavy local rains. Net effect of pumpage, storm water, and other diversions is not known. Low flow can be regulated by pumpage into or release from reservoir of Des Moines Water Works (capacity, 4,800 acre-feet) on Raccoon River.

COOPERATION.—Average monthly pumpage from galleries, and at sewage plant in second-feet, computed from records furnished by Des Moines Water Works and by City of Des Moines. Water-stage recorder inspected by employee of Des Moines Water Works. Several discharge measurements furnished by Corps of Engineers.

Des Moines River below Raccoon River at Des Moines, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1	3,960	1,700	717	808	550	8,770	7,570	3,110	4,170	11,000	6,230	4,520
2	3,840	1,670	591	784	550	6,710	7,200	3,080	4,810	11,000	5,880	4,570
3	3,960	1,590	532	760	3,560	4,950	6,650	2,900	4,480	10,900	10,900	4,430
4	4,420	1,580	880	730	8,120	4,430	5,990	2,580	4,480	10,100	10,300	4,170
5	4,130	1,730	928	690	*6,760	4,390	5,530	2,480	5,760	9,850	9,430	4,040
6	4,080	1,640	880	650	6,300	4,300	4,900	4,680	6,470	9,010	8,770	3,960
7	4,000	1,580	832	620	6,300	3,600	4,620	5,000	5,820	8,890	8,350	3,680
8	3,880	1,550	832	600	5,090	3,180	4,340	4,170	5,210	8,950	7,690	3,330
9	3,760	1,610	904	590	4,860	2,970	4,130	3,450	5,110	9,250	5,990	3,040
10	3,560	1,640	856	580	4,290	2,900	4,090	3,080	5,480	9,130	5,480	2,860
11	3,410	1,490	832	580	4,080	2,860	4,000	2,900	5,060	8,410	4,710	2,790
12	3,260	1,460	880	580	3,450	2,900	4,040	2,650	5,650	7,570	9,010	3,000
13	3,180	1,430	832	590	2,700	3,000	4,060	2,480	5,110	6,530	11,100	3,490
14	3,040	1,380	808	620	2,310	3,150	3,920	2,370	5,110	5,820	10,800	2,560
15	2,900	1,350	760	650	1,900	4,120	3,800	3,090	5,590	5,160	13,400	3,450
16	2,760	1,380	717	670	1,700	7,080	3,640	8,920	10,800	4,900	14,600	3,330
17	2,650	1,350	738	670	1,650	5,160	3,450	9,250	10,400	4,850	14,900	3,220
18	2,540	1,320	695	630	1,700	4,850	3,260	9,960	9,850	5,260	13,300	2,930
19	2,480	1,320	652	560	1,900	4,090	3,040	11,000	9,430	5,650	7,260	2,760
20	2,340	1,290	674	480	2,270	3,920	2,790	11,200	8,950	5,650	6,170	2,620
21	2,240	1,260	652	430	2,720	4,040	2,620	10,500	8,050	5,930	5,530	2,480
22	2,110	1,230	674	400	4,480	4,480	2,480	8,950	7,570	6,900	5,160	2,370
23	2,040	1,230	*674	390	5,420	4,710	2,410	7,500	7,870	7,870	5,000	2,270
24	1,950	1,180	652	390	9,260	6,710	2,340	6,650	8,890	9,490	4,570	2,140
25	1,880	1,180	738	400	10,700	7,750	2,340	5,990	8,350	8,290	7,340	2,010
26	1,820	1,100	760	420	*10,800	7,810	2,310	5,420	7,630	6,230	7,810	1,880
27	1,760	632	1,000	440	10,500	8,950	2,680	5,060	8,110	5,160	4,900	1,790
28	1,730	808	1,100	470	10,100	9,670	2,410	4,710	8,650	4,710	5,210	1,670
29	1,670	632	928	500	.....	9,610	2,370	4,430	9,310	4,620	5,560	1,640
30	1,730	591	880	520	.....	8,530	2,720	4,170	10,400	4,220	5,530	1,670
31	1,910	.....	808	540	.....	7,930	.....	4,040	.....	5,120	5,000	.....
1943-44												
1	1,600	1,010	1,700	670	1,770	3,880	3,880	9,810	17,500	5,760	3,360	4,520
2	1,570	1,030	1,700	670	1,770	3,660	3,790	10,200	15,600	5,230	4,800	4,240
3	1,540	1,010	1,660	670	1,730	3,830	3,570	14,300	12,500	4,850	4,010	4,010
4	1,450	1,010	1,800	650	1,700	4,150	3,700	16,300	10,400	5,040	3,750	3,790
5	1,360	1,060	1,770	630	1,800	3,660	4,100	16,200	9,580	4,750	4,660	3,440
6	1,360	1,080	1,830	610	1,730	3,230	4,100	16,000	9,060	4,240	3,610	3,140
7	1,300	1,160	1,800	610	1,510	2,340	4,010	15,100	9,350	3,970	3,700	2,850
8	1,270	1,300	1,870	590	770	1,010	3,790	14,600	12,700	4,100	4,150	2,610
9	1,220	1,480	1,870	590	960	911	3,660	13,700	17,900	4,520	3,700	2,420
10	1,140	1,480	1,300	590	790	1,140	2,530	13,000	17,500	4,990	3,310	2,420
11	1,140	1,510	1,010	580	460	3,440	4,060	12,600	21,700	5,810	2,980	2,190
12	1,110	1,510	860	560	470	4,610	5,420	12,000	25,500	6,890	2,610	2,040
13	1,080	1,540	630	590	510	4,850	6,940	11,300	24,500	6,730	2,380	1,940
14	1,030	1,480	610	*610	580	4,240	7,790	10,900	28,100	6,940	2,080	1,870
15	1,010	1,540	480	576	670	4,330	7,630	10,800	33,800	7,260	1,870	1,770
16	983	*1,600	490	559	750	5,180	7,050	11,200	41,200	7,360	1,870	1,700
17	935	1,450	500	542	820	5,710	7,200	11,400	44,900	7,050	2,080	1,630
18	959	1,540	550	542	940	5,570	7,360	11,200	39,100	7,260	2,300	1,420
19	959	1,510	650	542	1,060	5,040	7,420	16,400	31,900	7,420	2,120	1,480
20	983	1,600	800	525	1,160	4,470	7,690	22,500	26,600	7,050	2,010	1,450
21	935	1,800	820	525	1,190	4,100	8,560	34,600	20,900	6,680	2,120	1,390
22	983	1,800	840	559	1,270	4,060	10,300	46,800	17,300	6,160	2,160	1,360
23	935	1,770	840	576	*1,700	4,150	11,100	47,900	14,800	5,660	2,610	1,540
24	935	1,730	830	576	2,040	4,290	13,800	51,500	12,400	5,320	2,190	1,660
25	983	1,730	810	692	2,080	4,660	13,900	48,900	10,600	4,890	1,940	1,630
26	887	1,830	790	911	3,360	5,620	13,800	47,900	9,290	6,370	2,610	1,630
27	863	1,870	770	1,420	3,100	6,370	13,500	44,200	8,120	6,160	4,470	1,600
28	911	1,830	760	2,080	3,920	6,320	12,800	34,000	7,520	4,940	4,610	1,770
29	911	1,730	730	1,830	3,880	5,620	11,800	27,800	7,050	4,420	4,520	2,230
30	887	1,730	670	2,040	.....	4,940	11,300	22,900	6,520	3,880	4,420	2,380
31	959	.....	670	1,730	.....	4,330	.....	19,200	.....	3,530	4,470	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Jan. 4-31, Feb. 15-19, Dec. 10-31, 1943, Jan. 1-13, Jan. 27 to Feb. 24, 1944. Fragmentary gage-height record Jan. 28 to Feb. 24, 1944.

Des Moines River below Raccoon River at Des Moines, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1	2,120	935	400	490	475	2,890	7,050	13,400	23,100	9,010	3,270	2,230
2	1,900	935	355	455	510	4,290	6,420	12,000	22,200	8,670	3,480	2,040
3	1,800	935	491	440	540	5,230	6,270	11,300	25,200	8,010	3,700	1,870
4	1,730	911	630	440	560	6,060	9,630	10,900	28,400	7,200	4,610	1,830
5	1,700	863	672	425	560	6,990	8,500	10,500	28,300	6,840	5,710	1,700
6	1,800	887	754	400	575	6,730	7,850	9,870	27,100	6,370	6,630	1,540
7	1,730	887	863	400	595	5,620	8,060	9,180	26,600	5,910	5,710	1,480
8	1,600	911	839	400	610	4,990	9,400	8,400	23,300	5,710	5,470	1,390
9	1,570	887	911	400	610	5,320	11,000	7,790	17,900	5,710	5,520	1,300
10	1,510	887	774	400	630	6,650	11,800	7,690	17,200	5,370	5,710	1,300
11	1,480	863	595	425	630	10,000	12,100	7,150	17,000	4,990	4,990	1,220
12	1,420	863	*560	440	630	15,500	14,000	6,780	19,100	4,660	4,290	1,190
13	1,390	863	630	457	1,000	19,200	14,300	6,630	20,900	4,380	4,190	1,110
14	1,360	863	650	457	1,900	20,600	15,000	10,600	19,200	4,060	4,610	1,060
15	1,300	887	795	440	3,500	24,200	16,300	16,300	17,500	3,830	5,180	1,010
16	1,240	839	865	425	5,230	25,500	19,700	15,400	17,800	3,660	6,320	959
17	1,220	935	840	440	7,520	26,200	21,300	14,100	17,500	3,750	9,180	935
18	1,190	935	755	457	8,340	24,000	19,900	12,300	16,700	4,240	10,900	911
19	1,160	935	755	474	7,260	21,300	19,400	11,200	15,600	4,500	12,900	887
20	1,140	911	775	474	5,470	18,400	18,200	10,300	15,100	4,560	13,500	839
21	1,110	911	595	491	4,850	15,700	16,100	10,400	13,700	4,560	10,200	839
22	1,110	887	*560	525	3,610	14,000	13,200	16,000	12,400	4,470	7,420	863
22	1,080	863	575	525	3,060	12,100	11,800	22,100	11,600	4,190	6,160	863
24	1,080	839	510	542	2,980	11,200	13,900	26,100	10,700	3,970	5,320	911
25	1,060	839	510	540	2,980	14,000	18,600	28,000	10,300	3,830	4,660	863
26	1,030	887	425	540	2,300	12,700	22,200	27,200	9,630	3,790	4,010	911
27	1,060	935	440	525	2,340	11,600	23,500	25,000	9,060	3,790	3,530	1,140
28	1,030	887	455	525	2,460	10,500	23,500	23,400	8,400	3,700	3,180	1,540
29	983	863	475	525	.....	9,460	20,900	20,900	8,340	3,570	2,850	1,510
30	983	630	490	510	.....	8,450	16,700	19,600	8,780	3,480	2,690	1,570
31	1,010	.....	510	*490	.....	7,740	.....	20,800	.....	3,400	2,460	.....
1945-46												
1	1,450	610	712	320	1,940	6,060	10,600	2,610	14,000	18,730	1,600	1,160
2	1,390	630	983	340	1,270	5,620	11,000	2,610	9,630	18,230	1,450	1,010
3	1,300	610	730	342	1,190	5,760	10,300	2,850	8,060	17,900	1,300	935
4	1,240	610	630	380	1,450	5,910	9,060	3,600	7,200	7,200	1,300	935
5	1,140	593	559	8,000	4,660	6,420	8,340	4,300	6,520	6,470	1,270	863
6	1,160	610	692	12,000	8,900	8,560	7,360	4,100	5,810	5,910	1,270	839
7	1,030	630	490	8,400	8,010	10,900	6,680	4,000	5,370	5,520	1,270	983
8	935	651	560	7,580	8,560	11,100	6,270	3,850	4,850	15,040	1,270	7,850
9	983	692	490	6,580	8,400	9,060	5,860	3,700	4,520	4,400	1,480	13,600
10	839	672	440	14,560	6,580	7,520	5,690	3,500	4,100	4,050	1,140	10,100
11	815	672	*384	3,000	5,760	6,780	5,520	3,400	3,700	3,600	935	4,940
12	839	672	370	2,400	5,180	7,470	5,520	3,400	3,610	3,500	863	3,750
13	794	672	370	2,000	4,700	10,800	5,420	3,500	3,360	3,300	815	3,100
14	794	651	370	1,600	3,920	15,600	5,280	3,600	3,180	3,000	794	2,810
15	794	630	360	*1,190	3,310	18,300	5,080	3,700	4,190	2,900	774	2,570
16	774	651	360	1,080	3,100	18,900	4,890	3,900	5,280	2,700	794	2,190
17	774	651	370	1,140	3,020	18,400	4,660	4,100	5,180	2,600	1,510	1,870
18	754	630	370	1,220	2,850	16,400	4,380	4,100	7,630	12,690	1,240	1,630
19	733	630	370	1,190	*2,730	13,500	4,060	4,200	12,700	12,570	935	1,480
20	712	610	370	1,140	2,730	11,300	3,790	4,700	16,900	2,400	774	1,570
21	692	540	370	1,110	2,650	10,300	3,400	6,010	17,200	2,500	839	1,570
22	672	350	328	1,080	3,140	*9,230	3,230	6,220	16,600	2,600	4,890	1,570
23	672	280	314	1,190	3,660	8,900	3,100	6,220	15,700	2,450	2,890	2,610
24	651	425	314	1,160	4,520	9,290	2,980	6,220	14,200	2,200	3,270	2,120
25	630	525	290	1,140	5,620	10,300	2,770	7,150	12,000	11,940	9,520	1,660
26	630	542	268	815	5,810	13,000	2,650	12,000	13,000	11,900	7,790	1,480
27	630	593	268	733	5,420	14,100	2,540	16,100	11,600	1,850	3,230	1,480
28	630	630	279	692	6,160	13,600	2,460	20,600	9,350	1,800	2,340	1,480
29	630	651	279	692	.....	11,200	2,460	22,600	8,730	1,800	1,800	2,120
30	610	630	300	1,270	.....	11,000	2,500	20,500	9,400	1,900	1,510	1,480
31	630	.....	300	2,500	.....	10,500	.....	17,000	.....	1,750	1,320	.....

* Winter discharge measurement made on this day.

f Fragmentary gage-height record; discharge computed from partly estimated gage heights.

Note—Stage-discharge relation affected by ice Nov. 30 to Dec. 2, Dec. 11-31, 1944, Jan. 1-12, 15-17, Jan. 25 to Feb. 9, Feb. 16-18, Feb. 22 to Mar. 10, Nov. 21-25, Dec. 3, 4, 7-9, 12-20, 1945. No gage-height record Feb. 13-15, Mar. 11, 12, 16, 1945, Jan. 1, 2, 4, 5, 11-14, May 4-20, July 9-17, 20-24, July 27 to Aug. 8; discharge computed on basis of weather records and records for nearby stations.

Des Moines River below Raccoon River at Des Moines, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	1,480	2,980	2,340	550	900	1,950	4,990	a10,000	10,700	23,600	a2,400	a600
2.....	1,220	2,890	1,900	600	880	1,900	4,610	a9,900	17,000	23,100	a2,300	a600
3.....	1,140	2,850	1,660	800	850	1,850	4,420	h9,810	22,600	25,900	a2,200	a570
4.....	1,080	2,770	1,600	1,000	880	1,850	5,420	a9,200	26,300	25,600	a2,100	a550
5.....	1,010	2,610	1,900	1,150	900	1,850	6,520	a8,500	31,200	25,000	a2,000	a540
6.....	935	2,500	2,080	1,150	950	1,870	a6,600	a7,600	35,200	24,600	a1,900	a520
7.....	911	2,500	2,160	1,000	1,000	1,900	a6,800	a7,000	27,300	20,500	a1,800	a480
8.....	1,030	2,460	2,300	900	1,000	1,940	a7,200	a6,500	20,800	18,200	a1,700	a460
9.....	983	2,380	2,300	700	1,110	2,040	a8,000	a6,500	16,900	17,100	a1,600	a450
10.....	1,240	2,420	2,270	*790	a1,300	2,460	a11,000	b6,420	14,200	16,000	a1,500	h457
11.....	1,630	2,690	2,230	850	a1,400	3,140	a14,000	a5,800	10,400	14,200	a1,400	a550
12.....	1,830	*2,690	2,000	1,000	a1,500	3,920	16,700	a5,600	18,800	12,400	a1,350	630
13.....	2,080	2,650	1,700	1,160	a1,600	6,940	17,000	a6,500	54,100	9,750	a1,250	712
14.....	2,120	2,690	1,400	1,190	a1,800	7,200	16,700	a5,600	45,400	8,400	1,190	559
15.....	2,040	2,730	1,000	1,240	a2,250	7,050	15,600	a6,000	37,700	7,690	1,050	508
16.....	2,080	2,810	800	1,150	a2,500	6,890	14,500	a6,500	34,000	7,050	1,030	598
17.....	2,190	2,810	700	*1,080	a2,750	6,890	13,400	a7,400	29,600	6,520	983	h491
18.....	5,390	2,810	525	1,100	a3,100	6,580	12,100	a7,700	25,500	6,420	911	h426
19.....	5,280	2,850	*692	1,200	*3,480	6,110	11,700	a8,200	25,000	a6,000	887	h457
20.....	3,920	3,060	983	1,200	3,530	5,620	14,300	a7,900	20,300	a5,400	863	h370
21.....	3,360	3,180	1,200	1,150	3,600	5,620	12,400	a7,300	27,000	a4,900	794	h384
22.....	2,980	3,060	1,250	1,200	3,500	5,910	11,000	a6,700	29,000	a4,600	754	h412
23.....	2,770	2,940	1,300	1,240	3,300	5,710	10,200	a6,600	34,000	a4,400	h794	h356
24.....	4,210	2,810	1,400	1,240	3,000	6,470	9,870	a6,500	33,200	a4,200	a800	342
25.....	6,320	2,730	1,350	1,240	2,700	6,940	9,870	a6,400	46,300	a4,100	a850	328
26.....	4,800	2,610	1,000	1,420	2,400	7,470	10,000	6,580	74,000	h4,060	a900	328
27.....	4,010	2,340	700	1,400	2,200	*7,050	9,870	6,470	61,100	a3,600	a850	314
28.....	3,440	2,230	600	*1,270	2,000	6,420	9,400	8,730	48,300	a3,100	a750	314
29.....	3,360	2,190	500	1,150	.....	6,060	9,010	14,100	38,600	a2,900	a700	314
30.....	3,230	2,270	450	1,050	.....	5,660	11,400	12,000	29,300	a2,700	a640	328
31.....	3,100	.....	500	1,000	.....	5,320	.....	10,700	.....	h2,500	a620	.....
1947-48												
1.....	321	1,300	520	297	154	11,800	8,070	4,510	1,600	2,260	1,030	529
2.....	294	1,020	710	300	160	13,000	8,350	4,560	1,540	2,360	1,360	472
3.....	350	870	870	440	174	12,900	8,420	4,410	1,420	2,200	1,120	555
4.....	366	810	1,020	520	*190	9,760	7,330	4,560	1,360	1,960	1,010	503
5.....	334	770	1,240	540	166	8,560	6,360	4,760	1,300	1,750	885	436
6.....	334	790	1,320	*480	152	7,200	5,860	4,760	1,210	1,510	810	384
7.....	338	790	1,240	565	178	5,470	5,420	4,760	1,120	1,390	810	306
8.....	324	710	870	550	172	4,360	5,140	4,810	1,120	1,180	753	368
9.....	312	690	450	580	176	3,320	5,140	4,810	1,040	1,040	677	328
10.....	309	690	520	610	152	2,750	5,140	4,660	960	960	639	320
11.....	300	690	710	595	144	2,360	4,860	4,310	910	910	658	320
12.....	297	610	810	565	150	1,960	4,710	3,960	885	1,180	706	285
13.....	288	610	770	330	164	1,780	4,410	3,810	885	1,120	639	250
14.....	288	565	920	327	154	1,930	3,960	3,630	935	1,300	910	226
15.....	268	690	920	385	156	2,470	3,680	3,630	960	1,540	860	232
16.....	242	730	640	368	200	4,510	3,450	3,580	935	1,330	835	226
17.....	262	710	770	400	262	11,500	3,200	3,810	935	1,450	935	214
18.....	279	710	790	395	294	16,400	3,080	3,680	985	1,480	1,010	208
19.....	258	730	750	370	342	30,800	2,820	3,760	985	1,510	835	180
20.....	245	710	790	354	370	42,200	2,540	3,630	985	1,480	705	214
21.....	245	710	670	354	410	35,100	2,470	3,320	1,090	2,050	620	271
22.....	232	730	710	334	440	27,100	2,440	3,000	1,060	1,630	568	271
23.....	260	710	690	324	1,320	22,600	2,780	2,750	1,060	1,540	529	214
24.....	312	710	580	315	1,540	18,300	2,890	2,580	1,090	1,390	454	202
25.....	309	625	610	300	1,520	14,500	2,890	2,360	1,270	1,600	418	208
26.....	330	625	610	288	1,690	10,300	3,100	2,170	1,360	2,500	376	214
27.....	366	610	610	265	2,680	8,570	4,210	2,050	1,600	2,860	344	214
28.....	405	640	610	240	8,350	8,640	5,140	1,930	2,300	2,440	392	196
29.....	430	595	565	214	8,420	8,780	5,470	1,840	2,170	1,810	360	220
30.....	440	395	610	194	.....	8,210	4,920	1,750	2,360	2,110	409	196
31.....	830	.....	385	176	.....	8,210	.....	1,660	.....	2,170	516	.....

* Winter discharge measurement made on this day.

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

h Computed from once daily wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 12-17, 21-31, 1946, Jan. 1-12, 16-22, Jan. 27 to Feb. 8, Feb. 21 to Mar. 5, 1947.

Des Moines River below Raccoon River at Des Moines, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	169	269	380	260	430	5,300	13,400	3,850	1,980	2,160	1,840	282
2.....	163	237	370	262	400	4,900	12,000	3,610	2,260	2,380	1,510	242
3.....	163	225	360	276	375	6,500	13,000	3,330	2,380	2,450	1,360	218
4.....	157	225	360	722	*360	10,500	12,000	3,100	2,160	2,260	1,210	218
5.....	157	314	469	1,210	350	18,000	10,700	2,920	2,340	1,740	950	338
6.....	192	596	495	1,360	340	23,500	9,800	2,800	2,600	1,510	782	887
7.....	237	614	380	1,390	330	27,000	9,200	2,680	2,260	1,210	668	824
8.....	200	469	225	1,360	330	26,700	8,600	2,490	2,020	1,080	614	614
9.....	188	482	210	1,330	330	24,800	7,860	2,450	1,810	g1,050	560	500
10.....	178	443	220	976	330	22,000	7,230	2,340	1,640	g1,000	485	410
11.....	181	330	298	908	340	18,300	6,600	2,190	1,510	g1,000	618	455
12.....	192	290	380	840	350	10,700	6,300	2,050	1,360	g887	515	530
13.....	192	283	410	*780	360	9,200	6,120	2,080	1,300	g782	485	668
14.....	188	269	443	908	360	8,300	5,880	1,940	1,330	g686	470	1,180
15.....	175	276	495	1,080	335	7,300	5,820	1,880	1,390	g650	410	1,030
16.....	175	290	443	2,410	*320	5,820	5,880	1,910	1,300	g578	410	803
17.....	169	255	400	3,050	320	5,200	6,060	2,760	1,130	g545	386	704
18.....	166	262	430	2,230	400	4,900	6,740	2,600	1,000	g596	314	668
19.....	163	614	380	1,900	1,360	4,500	7,510	2,120	976	g560	816	545
20.....	163	1,360	380	1,500	2,230	4,200	7,720	2,020	976	g614	2,080	470
21.....	172	950	390	1,300	1,810	4,050	7,580	2,410	1,000	g596	866	425
22.....	163	740	330	1,200	1,390	5,520	7,370	3,280	1,240	g560	686	374
23.....	150	668	300	1,100	1,510	9,200	6,880	3,190	1,270	g578	650	350
24.....	152	614	270	900	6,880	13,400	6,360	2,840	1,980	g500	578	282
25.....	154	560	230	800	8,900	13,800	5,760	3,140	4,300	g470	485	266
26.....	154	495	210	700	6,950	13,000	5,300	3,760	3,050	g455	410	234
27.....	152	521	255	600	6,240	14,200	4,950	3,470	2,490	g440	374	218
28.....	169	495	298	560	6,000	16,300	4,800	3,100	2,720	g485	338	202
29.....	172	443	270	540	.....	16,900	4,500	2,720	2,600	440	314	183
30.....	215	482	230	500	.....	16,300	4,100	2,380	2,400	1,330	338	189
31.....	243	.....	250	460	.....	14,200	.....	2,120	.....	2,190	302	.....
1949-50												
1.....	177	274	290	140	84	8,300	4,500	1,610	4,150	4,900	2,120	495
2.....	202	274	274	140	80	3,520	4,400	1,510	3,800	4,300	1,840	482
3.....	202	250	250	140	80	1,980	4,400	1,580	4,750	3,900	1,680	482
4.....	177	266	258	140	80	4,960	3,900	1,680	7,860	3,330	1,880	430
5.....	172	242	250	145	80	11,000	3,100	5,240	5,100	3,010	1,910	370
6.....	189	226	242	140	90	11,200	2,880	6,180	4,400	2,680	1,740	400
7.....	500	234	234	130	200	14,600	2,760	4,500	3,610	2,380	1,510	360
8.....	614	258	127	130	500	15,400	2,640	4,050	2,960	2,120	1,360	350
9.....	515	226	183	130	5,500	12,500	2,490	6,950	3,800	1,980	1,240	330
10.....	362	242	163	134	5,460	7,580	2,340	13,200	3,190	1,810	1,130	290
11.....	338	242	220	137	4,850	4,450	2,190	15,700	2,450	1,680	1,080	290
12.....	326	290	180	137	3,470	3,010	2,050	12,200	2,190	1,640	1,720	306
13.....	374	338	142	135	2,020	2,410	1,940	9,500	6,740	2,160	1,360	290
14.....	290	338	167	135	740	2,300	1,810	7,020	5,460	3,190	1,330	269
15.....	290	258	177	135	500	2,490	1,710	5,520	4,390	3,900	1,160	269
16.....	266	242	189	130	*362	3,050	1,540	4,400	5,000	4,150	1,000	269
17.....	234	242	195	125	320	4,200	1,510	3,660	6,240	4,000	939	237
18.....	242	250	210	120	300	4,700	1,360	3,010	11,800	3,470	845	262
19.....	338	250	220	120	280	4,450	1,330	2,640	18,200	3,520	782	306
20.....	326	242	225	110	270	3,800	1,240	2,680	22,000	3,470	761	269
21.....	500	242	145	100	260	3,520	1,240	3,106	23,900	3,500	722	290
22.....	740	242	127	100	250	3,610	1,240	4,100	20,500	4,450	668	269
23.....	668	226	140	100	240	4,400	1,270	4,850	17,700	5,250	614	350
24.....	560	210	145	100	230	5,150	1,270	5,250	18,900	5,400	560	1,030
25.....	470	226	150	100	230	7,120	1,240	5,200	17,400	4,850	534	2,560
26.....	386	234	145	*98	240	6,000	1,240	6,540	17,500	4,150	521	2,340
27.....	374	258	140	97	250	6,060	1,510	8,600	12,000	3,610	547	1,940
28.....	374	266	140	96	3,500	6,240	1,710	6,480	8,900	3,140	596	1,740
29.....	350	258	140	96	.....	5,940	1,680	5,300	7,020	2,760	534	1,480
30.....	266	250	140	94	.....	5,250	1,640	4,550	5,820	2,450	495	1,800
31.....	266	.....	140	92	.....	4,800	.....	4,500	.....	2,260	495	.....

* Winter discharge measurement made on this day.

g Computed from graph based on gage readings.

Note—Stage-discharge relation affected by ice Dec. 9, 10, 23-26, 29-31, 1948, Jan. 1, 12, 13, Jan. 19 to Feb. 18, Mar. 3, 4, Dec. 11, 12, 19, 20, 23-31, 1949, Jan. 1-7, Jan. 13 to Feb. 9, Feb. 17-28, 1950.

Des Moines River below Raccoon River at Des Moines, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Run-off in inches	Pumpage (sec.-ft.)	
		Maximum	Minimum	Mean	Per sq. mile		Water Plant	Sewage ^a Plant
October 1942.....	88,990	4,420	1,670	2,871	0.294	0.34	24.2	17.9
November.....	39,903	1,730	591	1,330	.136	.15	23.5	18.7
December.....	24,406	1,100	532	787	.081	.09	23.5	18.8
Calendar year 1942.....	1,684,825	16,400	532	4,616	.472	6.42	23.9	22.1
January 1943.....	17,742	808	390	572	.059	.07	23.4	21.3
February.....	134,020	10,800	550	4,786	.490	.51	24.0	26.2
March.....	167,520	9,670	2,860	5,404	.553	.64	24.2	22.8
April.....	115,730	7,570	2,310	3,858	.395	.44	24.4	22.6
May.....	165,870	11,200	2,370	5,351	.548	.63	25.1	27.3
June.....	212,570	10,800	4,170	7,086	.725	.81	29.0	34.8
July.....	226,420	11,000	4,220	7,304	.748	.86	31.5	29.0
August.....	245,910	14,900	4,570	7,933	.812	.94	30.9	29.7
September.....	89,670	4,570	1,640	2,989	.306	.34	27.5	23.4
Water year 1942-43.....	1,528,751	14,900	390	4,188	.429	5.82	26.0	24.5
October 1943.....	34,188	1,600	863	1,103	.113	.13	26.0	17.7
November.....	44,720	1,870	1,010	1,491	.153	.17	25.0	18.7
December.....	32,410	1,870	480	1,045	.107	.12	24.1	20.8
Calendar year 1943.....	1,486,770	14,900	390	4,073	.417	5.66	26.3	24.6
January 1944.....	24,845	2,080	525	601	.082	.09	24.5	20.1
February.....	44,490	3,920	460	1,534	.157	.17	24.3	17.6
March.....	129,711	6,370	911	4,184	.428	.49	24.4	23.1
April.....	227,550	13,900	3,530	7,585	.776	.87	24.6	28.3
May.....	695,210	51,500	9,810	22,430	2.30	2.65	25.5	27.5
June.....	563,890	44,900	6,520	18,800	1.92	2.15	29.1	28.8
July.....	175,230	7,420	3,530	5,653	.579	.67	30.4	25.6
August.....	97,560	4,800	1,870	3,147	.322	.37	30.6	24.3
September.....	68,120	4,520	1,360	2,271	.232	.26	27.0	22.3
Water year 1943-44.....	2,137,924	51,500	460	5,841	.598	8.14	26.3	23.0
October 1944.....	41,896	2,120	983	1,351	.138	.16	25.2	21.7
November.....	26,473	935	630	882	.090	.10	24.4	20.5
December.....	19,454	911	355	628	.064	.07	24.6	20.5
Calendar year 1944.....	2,114,429	51,500	355	5,777	.591	8.05	26.2	23.4
January 1945.....	14,477	542	400	467	.048	.06	25.5	19.4
February.....	71,725	8,340	475	2,562	.262	.27	25.2	23.4
March.....	387,150	26,200	2,890	12,490	1.28	1.47	25.4	23.4
April.....	436,580	23,500	6,270	14,550	1.49	1.66	25.4	26.9
May.....	451,290	28,000	6,630	14,560	1.49	1.72	26.5	24.7
June.....	518,610	28,400	8,340	17,290	1.77	1.97	28.0	21.6
July.....	154,480	9,010	3,400	4,983	.510	.59	29.5	22.8
August.....	178,350	13,500	2,460	5,753	.589	.68	28.9	21.7
September.....	37,811	2,230	839	1,260	.129	.14	27.5	15.2
Water year 1944-45.....	2,338,296	28,400	355	6,406	.656	8.89	26.4	21.8
October 1945.....	26,327	1,450	610	849	.087	.10	25.4	14.8
November.....	17,923	692	280	597	.061	.07	25.6	15.4
December.....	13,290	983	268	429	.044	.05	26.0	21.1
Calendar year 1945.....	2,308,013	28,400	268	6,323	.647	8.78	26.6	20.9
January 1946.....	76,844	12,000	320	2,479	.254	.29	25.3	23.4
February.....	125,240	8,900	1,190	4,473	.458	.48	25.7	24.3
March.....	355,750	18,900	5,620	10,850	1.11	1.28	25.0	22.2
April.....	157,820	11,000	2,460	5,261	.538	.60	25.7	25.7
May.....	214,340	22,660	2,610	6,914	.708	.82	25.9	24.6
June.....	263,570	17,260	3,180	8,786	.899	1.00	29.8	22.9
July.....	115,400	8,730	1,750	3,723	.381	.44	33.0	25.5
August.....	62,183	9,520	774	2,006	.205	.24	32.3	24.0
September.....	81,755	13,660	839	2,725	.279	.31	28.1	22.4
Water year 1945-46.....	1,490,472	22,600	268	4,083	.418	5.68	27.3	22.2

Des Moines River below Raccoon River at Des Moines, Iowa—Continued
 Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches	Pumpage (sec.-ft.)	
		Maximum	Minimum	Mean	Per sq. mile		Water Plant	Sewage Plant
October 1946	81,169	6,320	911	2,618	0.268	0.31	28.0	26.7
November	80,510	3,180	2,190	2,684	.275	.31	27.7	28.6
December	42,790	2,340	450	1,380	.141	.16	26.8	26.4
Calendar year 1946	1,637,401	22,600	320	4,486	.459	6.24	27.8	24.7
January 1947	33,170	1,420	550	1,070	.110	.13	27.3	27.2
February	56,380	3,600	850	2,014	.206	.21	27.7	30.6
March	148,580	7,470	1,850	4,793	.491	.57	27.5	28.9
April	314,580	17,000	4,420	10,490	1.07	1.20	27.9	31.4
May	239,810	14,100	5,500	7,736	.792	.91	28.6	32.1
June	949,800	74,000	10,400	31,660	3.24	3.62	30.7	20.2
July	344,490	25,900	2,500	11,110	1.14	1.31	37.0	26.3
August	38,896	2,400	620	1,255	.128	.15	44.2	29.3
September	13,858	712	314	462	.047	.05	36.8	28.0
Water year 1946-47	2,344,033	74,000	314	6,422	.657	8.93	30.9	28.0
October 1947	10,168	830	232	328	.034	.04	32.6	
November	21,545	1,300	395	718	.074	.08	30.4	
December	23,280	1,320	385	751	.077	.09	29.8	
Calendar year 1947	2,194,557	74,000	232	6,012	.615	8.36	31.7	
January 1948	11,975	610	176	386	.040	.05	29.0	
February	30,280	8,420	144	1,044	.107	.12	29.0	
March	365,580	42,200	1,780	11,790	1.21	1.39	28.2	
April	138,250	8,420	2,440	4,608	.472	.53	28.1	
May	109,810	4,810	1,660	3,542	.363	.42	30.1	
June	37,430	2,360	885	1,248	.128	.14	35.9	
July	52,010	2,860	910	1,678	.172	.20	37.6	
August	22,974	1,930	344	741	.076	.09	37.7	
September	8,762	555	180	292	.030	.03	35.1	
Water year 1947-48	832,064	42,200	144	2,273	.233	3.18	32.0	
October 1948	5,464	243	150	176	.018	.02	30.3	
November	14,071	1,360	225	469	.048	.05	29.3	
December	10,561	495	210	341	.033	.04	28.8	
Calendar year 1948	807,167	42,200	144	2,205	.226	3.08	31.6	
January 1949	33,412	3,050	260	1,078	.110	.13	28.6	
February	49,630	8,900	320	1,772	.181	.19	28.9	
March	384,890	27,000	4,050	12,420	1.27	1.47	29.0	
April	226,020	13,400	4,100	7,534	.771	.86	29.0	
May	83,530	3,850	1,880	2,695	.276	.32	31.5	
June	56,862	4,300	976	1,895	.194	.22	34.8	
July	31,782	2,450	440	1,025	.105	.12	37.3	
August	21,824	2,080	302	704	.072	.08	38.4	
September	14,309	1,180	183	477	.049	.05	31.9	
Water year 1948-49	932,355	27,000	150	2,554	.261	3.55	31.5	
October 1949	11,088	740	172	358	.037	.04	31.1	
November	7,596	338	210	253	.026	.03	29.8	
December	5,748	290	127	185	.019	.02	28.8	
Calendar year 1949	926,691	27,000	127	2,539	.260	3.53	31.6	
January 1950	3,726	145	92	120	.012	.01	28.4	
February	30,466	5,500	80	1,088	.111	.12	30.6	
March	183,990	15,400	1,980	5,935	.607	.70	30.2	
April	64,130	4,500	1,240	2,138	.219	.24	29.3	
May	171,300	15,700	1,510	5,526	.566	.65	30.8	
June	277,730	23,900	2,190	9,258	.948	1.06	34.0	
July	103,470	5,400	1,640	3,338	.342	.39	33.6	
August	33,213	2,120	495	1,071	.110	.13	35.9	
September	20,055	2,560	237	668	.068	.08	34.0	
Water year 1949-50	912,512	23,900	80	2,500	.256	3.47	31.4	

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., on downstream side of old Bellefontaine highway bridge, a third of a mile downstream from bridge on State Highway 92, 1 mile east of Tracy, 3 miles upstream from Cedar Creek, and 6 miles downstream from English Creek.

DRAINAGE AREA.—12,400 square miles.

RECORDS AVAILABLE.—March 1920 to September 1927 (winter records fragmentary), March 1933 to December 1935, February 1940 to September 1950 in reports of U. S. Geological Survey. March 1920 to September 1927 in report of Iowa State Planning Board entitled "Stream Flow Records in Iowa, 1873-1932."

GAGE.—Water-stage recorder. Datum of gage is 671.78 feet above mean sea level, adjustment of 1912. Mar. 1, 1920, to Sept. 30, 1927, chain gage at present site and datum. Mar. 1, 1933, to Dec. 31, 1935, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—19 years (1920-27, 1933-35, 1940-50), 4,515 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	May 17	28,000	(¹)	Dec. 3	600
1943-44...	May 23	75,000	21.6	Feb. 13	520
1944-45...	Apr. 18	41,400	18.80	Dec. 3	540
1945-46...	Jan. 6	40,700	18.75	Dec. 11	340
1946-47...	June 14	155,000	26.5	Jan. 1	430
1947-48...	Mar. 22	59,700	20.13	Feb. 11	260
1948-49...	Mar. 9	29,300	(²)	Oct. 26-29	239
1949-50...	Mar. 1	31,700	16.0	Dec. 22, Feb. 5	150

(1) Maximum gage height 18.90 feet Feb. 27 (ice jam).

(2) Maximum gage height 19.60 feet Mar. 5 (ice jam).

1920-27, 1933-35, 1940-50: Maximum discharge, 155,000 second-feet June 14, 1947 (gage height, 26.5 feet); minimum, 95 second-feet Feb. 28, 1940 (during period of ice effect).

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

COOPERATION.—Several discharge measurements furnished by Corps of Engineers. Gage-height record collected in cooperation with U. S. Weather Bureau.

Des Moines River near Tracy, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	4,250	2,590	800	2,100	820	10,000	7,850	3,650	5,180	11,100	12,600	5,650
2.....	4,170	2,400	f700	1,880	840	f8,060	7,460	3,710	5,160	11,800	8,040	5,200
3.....	4,080	2,170	f600	1,830	3,000	f6,470	6,920	3,720	5,650	11,900	7,740	5,200
4.....	4,360	2,040	620	1,500	8,000	f5,330	6,500	3,250	5,460	11,800	13,000	5,510
5.....	5,860	2,110	700	1,000	12,000	f4,960	6,000	3,270	5,750	11,400	11,900	6,640
6.....	5,100	2,260	900	900	14,000	5,240	5,560	3,420	9,700	11,200	9,980	5,830
7.....	4,460	f2,140	1,100	840	12,500	4,360	5,260	4,720	11,600	9,960	10,300	5,140
8.....	4,240	f2,000	1,050	800	11,000	3,800	5,020	5,730	9,240	9,400	12,700	4,420
9.....	4,070	*2,080	1,000	780	9,500	3,640	4,780	4,600	7,590	9,280	9,640	3,920
10.....	3,930	2,780	1,040	760	8,000	3,420	4,740	4,010	12,100	9,580	6,810	3,590
11.....	3,830	2,830	f1,030	770	6,000	3,150	4,790	3,710	17,000	9,440	5,770	3,370
12.....	3,700	2,340	1,020	780	4,500	3,150	5,350	3,520	20,000	8,630	12,300	3,370
13.....	3,570	2,040	960	800	f4,000	3,320	5,400	3,260	19,200	7,790	15,000	3,500
14.....	3,490	1,870	930	820	3,000	3,500	4,970	3,050	12,800	7,050	14,300	3,940
15.....	3,380	1,760	900	860	2,500	4,920	4,630	5,830	8,800	6,280	13,300	4,540
16.....	3,290	1,710	860	900	2,300	7,610	4,430	24,700	10,400	6,060	13,800	4,250
17.....	3,190	1,690	f820	940	2,250	9,300	4,220	25,600	15,700	6,300	14,500	3,900
18.....	3,020	1,630	f860	980	2,300	6,340	4,010	16,500	16,000	5,720	14,800	3,670
19.....	2,920	f1,600	f900	1,000	2,600	f5,020	3,790	14,100	13,400	6,030	13,400	3,380
20.....	2,830	f1,530	f740	1,000	3,000	f4,570	3,620	15,900	13,100	6,320	8,210	3,180
21.....	2,690	f1,490	f710	f980	3,500	4,400	3,400	15,400	11,500	6,010	6,900	3,030
22.....	2,630	1,460	730	940	4,000	4,610	3,240	13,000	9,420	6,270	6,300	2,900
23.....	2,500	1,430	760	880	5,000	5,720	3,120	10,800	8,650	6,850	6,000	2,740
24.....	2,370	1,420	800	800	6,000	7,570	3,020	9,120	8,800	8,310	6,680	2,590
25.....	2,260	1,410	1,000	730	8,000	9,560	3,060	8,340	9,600	10,000	7,570	2,430
26.....	2,160	1,380	1,500	700	11,000	9,880	3,230	7,550	9,060	9,640	10,700	a2,300
27.....	2,100	1,330	6,000	700	*15,000	8,880	5,400	6,850	8,360	7,300	10,600	a2,200
28.....	2,040	1,220	7,460	710	11,200	9,300	5,540	6,340	8,940	6,080	6,780	a2,100
29.....	1,990	1,110	4,330	730	.....	9,780	4,470	5,940	9,580	5,650	6,270	a1,900
30.....	2,340	1,000	3,070	760	.....	9,320	4,170	5,770	10,000	5,670	6,200	a2,000
31.....	2,560	.....	2,550	800	.....	8,320	.....	5,430	.....	6,260	6,110	.....
1943-44												
1.....	a1,850	1,140	1,840	940	2,400	4,520	5,440	13,100	27,700	7,080	4,070	5,410
2.....	a1,800	1,140	1,820	910	2,020	4,400	4,850	14,600	22,400	7,480	4,160	5,250
3.....	a1,750	1,150	1,790	880	2,090	4,340	4,630	25,500	18,900	6,990	5,480	4,950
4.....	a1,700	1,180	1,780	870	2,210	4,500	4,440	32,200	15,300	6,580	6,430	4,630
5.....	a1,620	1,230	1,820	860	2,200	5,110	4,370	29,400	14,000	6,580	7,100	4,360
6.....	a1,600	1,280	1,960	830	2,300	4,980	4,610	23,200	13,600	5,440	6,530	4,040
7.....	a1,550	1,590	2,050	*800	2,030	4,240	4,820	21,300	12,400	5,660	5,630	3,640
8.....	a1,530	1,590	2,030	770	1,980	3,220	4,850	19,900	16,000	5,410	4,820	3,360
9.....	1,470	1,550	1,980	700	1,840	2,440	4,760	19,000	28,500	5,780	4,920	3,090
10.....	1,430	1,600	2,030	700	900	2,120	5,460	17,400	35,700	5,990	4,480	2,960
11.....	1,390	1,670	1,960	760	1,060	2,730	7,940	16,000	32,600	6,410	3,940	2,980
12.....	1,370	1,700	1,470	900	900	4,820	16,500	14,800	31,800	7,260	3,520	2,800
13.....	1,380	1,690	1,100	780	520	6,580	12,000	13,900	36,100	8,490	3,260	2,800
14.....	1,340	1,730	950	720	600	6,630	10,700	13,000	33,300	7,840	2,960	2,580
15.....	1,280	*1,670	770	700	620	6,960	12,400	12,500	30,600	7,580	2,730	2,430
16.....	1,210	1,660	670	690	750	8,640	12,300	13,800	32,000	7,870	2,640	2,360
17.....	1,180	1,700	530	680	950	8,360	10,700	14,600	36,000	7,870	2,780	2,210
18.....	1,170	1,700	610	620	1,100	7,760	12,100	13,700	43,300	7,600	2,550	2,120
19.....	1,120	1,740	780	660	1,140	7,240	16,300	16,000	44,600	7,730	2,730	1,990
20.....	1,150	1,750	980	700	1,200	6,620	14,200	21,200	39,300	7,840	2,580	1,920
21.....	1,180	1,730	960	610	1,300	6,020	15,600	26,800	33,100	7,490	2,310	1,860
22.....	1,140	1,860	960	650	*1,300	5,680	20,300	44,500	27,800	7,060	2,260	2,200
23.....	1,110	1,930	1,020	750	2,050	6,140	27,100	65,900	22,500	6,800	2,760	2,460
24.....	1,110	1,890	1,010	730	3,150	6,460	28,800	70,400	17,600	6,980	3,100	2,280
25.....	1,090	1,860	990	950	3,200	6,240	25,300	61,800	14,700	5,990	2,540	2,560
26.....	1,080	1,880	980	1,500	*3,210	6,110	19,500	62,300	12,900	5,700	3,700	2,370
27.....	1,100	1,930	960	2,550	3,780	6,680	19,100	58,900	11,500	6,120	10,900	2,190
28.....	1,040	1,960	960	2,440	4,040	7,280	18,600	55,400	10,200	7,060	10,700	2,070
29.....	1,040	1,980	960	3,150	4,470	7,130	16,000	47,800	8,560	5,820	7,640	2,130
30.....	1,080	1,920	950	2,960	.....	6,510	14,400	40,100	7,510	5,010	6,240	2,430
31.....	1,160	.....	950	2,380	.....	5,990	.....	35,300	.....	4,440	5,630	.....

* Winter discharge measurement made on this day.

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

f Computed on basis of partly estimated gage-height record.

Note—Stage-discharge relation affected by ice Nov. 30 to Dec. 27, 1942, Jan. 4 to Feb. 27, Dec. 12-31, 1943, Jan. 1-26, Jan. 30 to Feb. 2, Feb. 5, 7, 10-23, 1944. (No gage-height record Feb. 11, 14-19, 1943.) Discharge for periods Mar. 6-11, Mar. 30 to Apr. 7, Aug. 1-12, 1943, June 28 to Aug. 12, 1944 computed from graph based on daily wire-weight gage readings.

Des Moines River near Tracy, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1	2,970	1,210	a700	645	*650	5,060	9,920	10,900	23,500	11,800	4,200	2,900
2	2,910	1,200	h608	650	645	8,490	9,190	15,400	24,300	10,200	4,080	2,640
3	2,620	1,210	h540	670	635	10,800	8,620	13,600	25,200	9,270	4,900	2,440
4	2,540	1,210	h600	670	650	10,500	11,700	12,700	24,800	8,600	4,930	2,280
5	2,440	1,180	h760	660	670	10,500	19,900	11,900	26,300	7,950	6,510	2,170
6	2,310	1,180	h1,050	650	690	10,700	15,100	11,300	28,700	7,690	6,210	2,070
7	2,280	1,180	h1,340	610	705	9,440	12,800	10,700	30,300	7,210	6,700	1,910
8	2,280	1,170	h1,750	590	735	7,950	11,800	10,400	30,100	7,030	6,110	1,780
9	2,100	1,170	h1,330	590	750	7,640	12,000	9,740	29,500	6,480	5,750	1,740
10	1,960	1,110	h1,210	600	850	8,510	13,000	9,460	30,100	6,480	5,880	1,630
11	1,850	1,100	h965	625	1,500	10,600	14,000	9,380	24,600	6,090	6,040	1,600
12	1,810	1,080	h860	705	2,490	16,500	15,400	9,210	19,700	5,630	5,600	1,500
13	1,740	1,070	h780	735	5,480	18,700	18,200	8,490	20,000	5,270	4,820	1,430
14	1,680	1,070	h790	705	8,510	19,800	18,500	14,700	21,000	4,980	4,660	1,360
15	1,640	1,100	h790	695	11,400	22,100	18,500	29,000	21,100	4,660	4,800	1,290
16	1,600	1,050	h820	680	11,300	30,000	26,100	31,800	21,300	4,390	5,280	1,230
17	1,550	a1,040	h820	670	8,640	37,700	35,600	30,400	21,900	4,260	6,170	1,180
18	1,510	h1,030	h1,100	660	8,470	*36,100	38,900	26,000	20,300	4,280	8,260	1,120
19	1,460	a1,100	h1,110	690	9,060	33,100	32,300	18,100	18,100	5,610	9,840	1,090
20	1,440	a1,110	h1,150	735	a8,000	30,600	26,900	14,200	19,300	5,240	11,600	1,070
21	1,410	a1,120	*1,200	770	a7,000	25,900	23,800	12,800	22,300	5,010	11,900	1,040
22	1,370	a1,100	1,050	870	a5,500	20,700	20,400	13,300	16,200	4,870	9,740	1,260
23	1,360	a1,100	860	870	4,500	17,300	16,600	18,000	13,900	4,840	7,710	1,150
24	1,340	a1,050	840	850	4,180	15,200	14,600	21,200	12,500	4,710	6,620	1,120
25	1,340	h1,010	780	870	4,320	22,600	16,200	25,000	12,200	4,480	5,770	1,080
26	1,330	a1,100	755	880	5,280	29,000	19,600	32,600	11,000	4,260	5,110	1,260
27	1,300	a1,200	703	890	5,170	23,000	22,100	33,900	10,400	4,200	4,480	1,160
28	1,280	a1,150	690	880	4,660	16,200	23,700	31,200	9,550	4,080	4,000	2,000
29	1,230	a1,050	690	880	.....	13,400	24,700	28,700	9,060	4,040	3,540	2,440
30	1,220	a900	670	790	.....	11,800	24,100	26,000	10,400	3,920	3,300	2,240
31	1,210	.....	650	650	.....	10,800	.....	23,200	.....	3,910	3,140	.....
1945-46												
1	3,040	791	1,050	490	3,200	6,090	12,300	3,120	18,400	11,000	2,200	2,440
2	2,840	762	2,460	500	3,200	6,650	12,000	3,080	13,800	9,980	2,020	2,140
3	2,160	744	2,130	500	2,300	6,670	12,200	3,560	10,900	9,230	1,850	1,910
4	1,730	744	1,550	*600	3,700	6,670	11,300	6,990	9,080	8,740	1,700	1,740
5	1,540	734	1,220	7,500	7,500	7,240	9,960	8,580	7,960	7,870	1,620	1,630
6	1,430	744	998	36,400	10,200	10,500	9,120	6,310	7,170	7,100	1,590	1,600
7	1,320	744	943	39,400	10,400	14,100	8,470	5,360	6,480	6,510	1,580	1,640
8	1,220	998	940	31,900	10,600	14,000	8,620	4,980	5,920	6,070	1,520	1,810
9	1,150	1,150	500	14,000	*10,800	12,800	8,360	4,850	5,400	5,580	1,670	6,060
10	1,090	987	600	11,100	10,400	10,900	7,150	4,660	4,950	5,090	1,710	13,700
11	1,090	820	340	7,460	8,110	9,420	6,920	4,370	4,520	4,630	1,840	11,700
12	1,010	820	520	5,380	6,870	12,800	8,790	4,150	4,130	4,290	1,500	6,480
13	987	921	500	4,310	6,140	15,200	8,360	3,970	4,000	3,970	1,290	4,950
14	976	850	510	3,000	4,800	16,300	7,060	3,960	3,810	3,670	1,220	3,810
15	965	791	500	2,800	4,100	19,600	6,620	4,120	7,210	3,510	1,150	3,300
16	943	762	500	2,100	4,500	21,400	6,240	4,210	13,700	3,320	1,090	3,090
17	943	753	490	2,500	3,830	25,800	5,870	4,320	9,550	6,620	1,140	2,800
18	943	753	490	2,800	3,640	24,300	5,530	4,740	19,800	6,140	1,880	2,540
19	910	744	490	2,800	3,500	19,300	5,160	5,160	32,600	3,090	1,620	2,340
20	900	734	490	2,700	3,440	15,400	4,800	5,010	35,200	2,970	1,390	2,200
21	890	734	490	2,000	3,360	13,500	4,470	4,800	35,000	2,900	1,180	2,170
22	870	734	500	1,500	3,420	12,100	4,230	5,430	27,700	2,880	1,540	2,240
23	850	679	510	1,500	3,700	12,400	4,800	6,290	19,100	3,090	6,110	2,480
24	850	652	500	1,700	4,160	17,700	5,220	6,400	16,800	2,850	4,630	2,840
25	850	715	530	2,200	4,840	14,900	4,390	6,280	15,000	2,610	12,700	3,140
26	820	715	510	1,800	5,770	17,600	3,860	6,970	14,000	2,480	19,600	2,660
27	820	*706	470	1,400	6,380	22,900	3,500	10,900	13,700	2,380	13,300	2,200
28	810	697	450	1,500	5,850	18,600	3,390	14,100	12,700	3,320	8,720	2,190
29	810	706	480	1,800	.....	16,200	3,340	14,500	10,700	2,610	6,940	2,620
30	800	734	520	2,200	.....	13,800	3,240	19,300	10,900	2,300	5,220	3,080
31	800	.....	500	3,000	.....	13,500	.....	26,800	.....	2,310	3,030	.....

* Winter discharge measurement made on this day.

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

h Computed on basis of once daily wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 3-5, 8-31, 1944, Jan. 1 to Feb. 14, Dec. 8-31, 1945, Jan. 1-5, Jan. 14 to Feb. 7, Feb. 14-16, 1946.

Des Moines River near Tracy, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	2,800	4,290	2,830	430	1,150	2,200	6,500	12,600	18,800	42,700	3,180	930
2.....	2,080	4,590	2,770	500	1,100	2,100	6,380	12,100	23,000	33,600	3,020	910
3.....	1,750	4,780	2,520	550	1,000	2,200	6,030	10,900	24,200	27,900	2,860	860
4.....	1,590	4,290	2,180	650	980	2,350	12,500	10,500	24,200	28,500	2,710	850
5.....	1,480	3,920	2,100	850	950	2,450	28,500	10,000	39,400	30,200	2,520	832
6.....	1,410	3,660	2,360	1,100	980	2,500	32,000	9,560	107,000	32,000	2,430	832
7.....	1,320	3,500	2,600	1,150	1,000	2,600	17,000	8,940	91,100	33,100	2,270	814
8.....	1,250	3,460	2,680	1,200	1,050	2,700	11,300	8,260	54,700	27,900	2,190	760
9.....	1,260	3,460	2,740	*1,250	1,100	2,850	9,650	7,790	39,600	21,600	2,050	733
10.....	1,340	3,900	2,760	1,400	1,150	2,900	15,300	7,330	28,400	18,800	1,960	715
11.....	1,850	3,660	2,710	1,500	1,400	3,100	29,500	7,010	17,900	17,100	1,820	724
12.....	2,360	3,820	2,660	1,600	2,000	5,970	31,800	6,680	16,200	15,100	1,760	688
13.....	2,560	3,790	2,580	1,800	4,300	11,500	28,400	6,410	33,200	13,700	1,710	670
14.....	2,720	*3,620	2,360	2,150	5,600	18,600	23,000	6,330	135,900	12,100	1,590	760
15.....	2,740	3,610	2,220	2,500	6,100	12,600	19,800	6,240	95,100	10,900	1,530	860
16.....	2,740	3,670	1,700	2,200	5,800	9,430	18,300	6,650	58,500	9,910	1,480	787
17.....	2,760	3,730	1,300	2,000	4,600	8,660	17,400	7,570	49,600	9,090	1,450	733
18.....	5,390	3,890	1,000	1,850	4,200	8,130	15,800	9,140	43,700	8,480	1,370	679
19.....	11,800	3,740	1,000	1,700	3,800	7,720	15,100	8,910	39,100	8,060	1,350	654
20.....	9,730	3,670	1,050	1,600	3,700	7,430	25,400	8,980	36,500	7,350	1,290	646
21.....	6,800	3,700	1,280	1,400	3,500	7,070	28,400	8,530	39,400	6,680	1,250	646
22.....	6,160	3,840	1,440	1,300	3,300	7,240	18,800	7,920	51,400	6,080	1,230	590
23.....	5,230	3,790	1,440	1,600	3,100	7,970	14,200	7,530	63,100	5,600	1,160	574
24.....	4,350	3,640	1,510	1,900	2,900	8,840	12,400	7,550	56,600	5,200	1,120	565
25.....	5,770	3,540	1,590	2,000	2,800	9,390	11,500	7,500	58,300	4,840	1,120	558
26.....	8,800	3,380	1,600	2,100	2,600	*9,370	11,100	7,410	51,200	4,530	1,150	542
27.....	7,380	3,280	1,500	2,300	2,450	9,120	10,900	7,480	71,800	4,320	1,270	518
28.....	6,080	3,060	1,100	2,150	2,300	8,420	10,400	8,130	66,800	4,060	1,360	510
29.....	4,940	2,880	800	1,500	.....	7,480	9,790	25,000	58,500	3,920	1,140	496
30.....	4,640	2,780	550	1,400	.....	7,060	9,640	32,000	53,400	3,620	1,030	489
31.....	4,410	.....	450	1,250	.....	6,670	.....	25,300	.....	3,350	970	.....
1947-48												
1.....	503	1,300	670	400	340	10,400	9,650	5,690	1,940	2,320	2,390	750
2.....	510	1,850	688	350	320	10,500	9,220	5,800	1,850	2,320	2,290	700
3.....	526	1,720	760	400	*310	11,200	9,160	6,230	1,780	2,360	1,840	660
4.....	558	1,460	960	600	310	11,000	9,140	6,010	1,710	2,360	1,500	820
5.....	590	1,290	1,610	*860	310	9,000	8,280	5,540	1,640	2,260	1,310	650
6.....	550	1,220	2,600	850	320	8,000	7,420	6,590	1,560	2,000	1,180	600
7.....	503	1,090	2,320	800	330	7,100	6,950	8,120	1,510	1,760	1,110	560
8.....	475	1,040	1,890	770	330	5,200	6,500	7,160	1,440	1,610	1,060	580
9.....	475	980	1,300	750	330	4,000	6,100	6,440	1,390	1,500	1,010	530
10.....	461	930	880	750	300	3,100	6,010	6,230	1,350	1,350	960	560
11.....	433	890	950	760	260	2,500	6,030	6,030	1,320	1,260	910	520
12.....	433	850	1,100	800	270	2,600	5,690	5,490	1,250	1,300	900	500
13.....	412	832	1,150	720	280	2,900	5,440	5,040	1,210	1,320	840	455
14.....	405	787	1,150	500	290	3,800	5,180	4,750	1,220	1,570	800	428
15.....	405	805	1,120	520	310	4,500	4,750	4,570	1,240	1,650	910	419
16.....	405	823	920	670	340	*18,300	4,390	4,500	1,250	1,710	990	402
17.....	391	900	960	640	360	19,000	4,100	4,320	1,210	1,660	930	386
18.....	370	920	1,000	620	400	16,900	3,880	4,460	1,200	1,570	970	362
19.....	363	930	1,000	600	800	23,600	3,690	4,270	1,200	1,550	1,040	362
20.....	370	920	940	570	760	31,500	3,480	4,270	1,210	1,550	1,020	410
21.....	356	930	990	560	740	43,500	3,220	4,170	1,210	2,430	910	800
22.....	356	920	950	560	720	55,400	3,130	3,970	1,310	5,000	850	910
23.....	363	910	920	530	720	42,700	3,430	3,620	1,320	5,130	760	600
24.....	391	890	940	500	800	30,800	4,590	3,240	1,300	3,690	710	482
25.....	461	860	830	470	1,600	20,100	4,230	2,950	1,300	3,430	680	402
26.....	526	841	800	450	2,500	14,600	3,800	2,730	1,340	3,800	640	378
27.....	526	787	780	430	7,100	11,900	3,850	2,520	1,450	3,290	620	354
28.....	598	814	740	410	23,100	10,700	4,590	2,330	1,710	4,430	590	346
29.....	679	787	780	400	15,800	10,300	5,620	2,200	2,160	3,700	570	346
30.....	697	660	700	370	.....	10,300	6,120	2,080	2,350	2,430	880	338
31.....	769	.....	750	350	.....	9,770	.....	2,010	.....	2,090	920	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 16-20, 27-31, 1946, Jan. 1 to Mar. 11, Nov. 30, Dec. 1, Dec. 8-31, 1947, Jan. 1 to Feb. 27, Mar. 2-15, 1948. Discharge computed on basis of graph based on gage readings Oct. 1-3, 1946, Mar. 15, May 1-28, 1947.

Des Moines River near Tracy, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1	330	338	500	440	760	7,600	15,100	4,950	2,670	3,590	1,950	455
2	323	316	510	480	770	7,200	14,200	4,590	2,950	4,410	1,890	455
3	323	354	491	580	780	7,000	13,600	4,410	2,880	3,350	1,600	455
4	316	346	473	900	770	12,000	13,300	4,150	3,110	3,110	1,480	464
5	309	362	491	1,500	750	18,000	12,900	3,830	3,030	2,880	1,360	1,030
6	323	370	500	1,400	740	22,000	11,700	3,510	2,810	2,530	1,230	670
7	323	346	500	1,400	730	24,000	10,900	3,350	2,950	2,190	1,070	630
8	330	660	450	1,600	700	26,100	10,200	3,190	2,810	1,950	940	940
9	346	720	400	1,900	680	28,900	9,450	3,030	2,530	1,650	840	840
10	316	660	450	1,600	700	28,500	8,730	2,950	2,250	1,540	810	730
11	295	630	510	1,300	650	25,000	8,190	2,880	2,130	1,410	750	720
12	288	560	560	1,200	640	18,600	7,650	2,740	1,950	1,310	830	680
13	281	500	550	1,200	650	12,500	7,290	2,530	1,890	1,230	1,310	700
14	288	428	520	1,300	*720	10,900	7,110	2,460	2,810	1,140	1,320	720
15	281	419	540	1,600	610	9,810	7,110	2,390	2,950	1,050	900	900
16	267	428	650	4,500	610	8,910	7,290	2,390	3,190	1,010	730	1,130
17	260	410	640	4,000	630	7,470	7,650	2,460	2,190	950	660	1,020
18	260	410	680	2,500	1,800	6,750	8,010	2,740	1,830	1,200	620	910
19	253	600	580	2,100	3,500	6,210	8,370	3,350	1,600	1,030	670	820
20	246	1,310	510	*1,700	3,800	5,850	8,730	2,740	1,480	1,070	820	760
21	253	1,320	450	1,500	4,000	5,670	8,730	2,600	1,540	820	1,770	650
22	246	1,430	400	1,400	3,800	7,110	8,550	2,880	1,890	2,670	1,600	560
23	253	1,160	350	1,400	5,000	9,630	8,370	3,990	3,270	1,600	1,060	530
24	267	870	320	1,400	12,000	12,100	8,010	4,320	2,810	1,260	890	491
25	260	740	330	1,450	18,000	14,200	7,290	3,750	18,200	1,030	790	482
26	239	690	350	1,400	14,000	14,400	6,930	3,510	18,300	860	690	473
27	239	600	360	1,300	11,000	15,600	6,390	3,990	9,090	810	600	455
28	239	570	360	1,200	9,000	16,400	5,850	3,910	5,850	750	560	419
29	239	560	350	940	.....	16,400	5,670	3,510	4,590	740	540	410
30	253	530	350	840	.....	16,700	5,310	3,190	4,150	820	540	394
31	274	.....	380	760	.....	16,900	.....	2,950	.....	1,310	482	.....
1949-50												
1	394	426	h346	240	170	g25,600	4,910	1,760	5,590	6,280	2,500	720
2	402	402	h283	230	165	g12,000	4,570	1,700	5,250	5,760	2,360	710
3	402	402	h322	220	160	g7,760	4,570	1,700	4,740	5,080	2,220	690
4	402	402	h322	250	155	g5,420	4,400	1,700	5,080	4,570	2,020	660
5	394	386	h330	230	150	g13,400	4,230	1,700	7,570	4,060	2,150	630
6	394	394	h330	250	500	g17,200	3,580	3,370	6,100	3,660	2,220	610
7	386	378	h314	260	3,000	g15,900	3,260	6,640	5,250	3,340	2,080	565
8	402	378	h283	220	g7,000	g16,400	3,100	5,420	4,570	3,020	1,950	565
9	570	378	230	250	g10,500	g14,900	3,100	12,200	4,120	2,780	1,950	547
10	594	394	350	220	g9,100	g11,900	2,940	28,700	4,300	2,430	2,020	538
11	554	386	330	210	g6,820	g8,710	2,780	21,800	4,400	2,290	1,820	520
12	474	410	*310	210	g4,570	g7,000	2,640	15,600	3,580	2,150	1,640	480
13	442	394	330	280	g2,940	g5,760	2,360	13,100	4,230	2,020	2,710	480
14	434	434	360	320	g2,080	g3,820	2,220	10,700	9,300	2,150	2,500	480
15	482	442	450	280	h1,470	g3,020	2,080	8,710	12,600	2,940	1,880	480
16	418	450	450	260	h952	g3,100	1,950	7,190	9,500	3,660	1,760	464
17	418	402	410	240	h772	g3,500	1,820	6,100	8,140	4,060	1,520	456
18	426	386	400	230	700	g4,400	1,700	5,250	9,790	4,120	1,340	456
19	434	h322	400	220	750	g4,910	1,640	4,740	23,300	3,950	1,180	432
20	450	h330	350	210	850	g4,740	1,580	4,400	26,500	3,820	1,090	432
21	655	h314	230	205	h997	g4,230	1,460	4,570	24,400	3,740	1,020	440
22	546	h322	h150	200	h1,430	h4,120	1,440	7,760	24,700	3,660	1,150	416
23	594	h370	280	195	h1,540	g5,590	2,110	6,640	24,400	4,060	1,280	400
24	691	h330	250	190	h1,250	g5,760	1,820	6,100	18,300	4,910	965	376
25	637	h330	300	190	1,050	5,930	1,820	6,280	17,700	5,250	860	424
26	586	h322	290	180	900	7,190	1,580	6,100	16,100	4,910	810	1,320
27	530	h298	275	170	900	6,460	1,460	7,090	15,400	4,300	790	1,850
28	506	h322	260	*180	9,000	5,930	1,460	8,900	11,900	3,900	790	1,700
29	474	h314	250	190	.....	6,100	1,760	7,380	9,100	3,420	790	1,580
30	474	h338	250	185	.....	5,930	1,820	6,280	7,570	3,100	760	1,440
31	450	.....	240	180	.....	5,420	.....	5,590	.....	2,780	740	.....

* Winter discharge measurement made on this day.

g Computed from graph based on gage readings.

h Computed from once daily wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 8-10, 21-31, 1948, Jan. 1 to Mar. 6, Dec. 9-21, 23-31, 1949, Jan. 1 to Feb. 7, Feb. 18-20, 25-28, 1950.

Des Moines River near Tracy, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1942	103,390	5,860	1,990	3,335	0.269	0.31
November	54,820	2,830	1,000	1,827	.147	.16
December	46,440	7,460	600	1,498	.121	.14
Calendar year 1942	2,195,280	23,400	600	6,014	.485	6.58
January 1943	29,970	2,100	700	967	.078	.09
February	175,810	15,000	820	6,279	.506	.53
March	193,500	10,000	3,150	6,242	.503	.58
April	143,950	7,850	3,020	4,798	.387	.43
May	251,090	25,600	3,050	8,100	.653	.75
June	317,740	20,000	5,160	10,590	.854	.95
July	255,080	11,900	5,650	8,228	.664	.77
August	308,150	15,000	5,770	9,940	.802	.92
September	112,400	6,640	1,900	3,747	.302	.34
Water year 1942-43	1,902,340	25,600	600	5,458	.440	5.97
October 1943	41,020	1,850	1,040	1,323	.107	.12
November	49,420	1,980	1,140	1,647	.133	.15
December	39,620	2,050	530	1,278	.103	.12
Calendar year 1943	1,917,750	25,600	530	5,254	.424	5.75
January 1944	34,160	3,150	610	1,102	.089	.10
February	55,400	4,470	520	1,910	.154	.17
March	176,450	8,640	2,120	5,692	.459	.53
April	378,070	28,800	4,370	12,600	1.02	1.13
May	934,400	70,400	12,500	30,140	2.43	2.80
June	730,470	44,600	7,510	24,350	1.96	2.19
July	208,450	8,490	4,440	6,724	.542	.63
August	141,100	10,900	2,260	4,552	.367	.42
September	88,430	5,410	1,860	2,948	.238	.27
Water year 1943-44	2,876,990	70,400	520	7,861	.634	8.63
October 1944	55,120	2,970	1,210	1,778	.143	.17
November	33,350	1,210	900	1,112	.090	.10
December	27,973	1,750	540	902	.073	.08
Calendar year 1944	2,863,373	70,400	520	7,823	.631	8.59
January 1945	22,435	890	590	724	.058	.07
February	122,440	11,400	635	4,373	.353	.37
March	550,700	37,700	5,060	17,760	1.43	1.65
April	574,230	38,900	8,620	19,140	1.54	1.72
May	582,280	33,900	8,490	18,780	1.51	1.75
June	607,650	30,300	9,060	20,260	1.63	1.82
July	180,470	11,800	3,910	5,822	.470	.54
August	187,750	11,000	3,140	6,056	.488	.56
September	49,180	2,900	1,040	1,639	.132	.15
Water year 1944-45	2,993,578	38,900	540	8,202	.661	8.98
October 1945	36,357	3,040	800	1,173	.095	.11
November	23,418	1,150	652	781	.063	.07
December	22,681	2,460	340	732	.059	.07
Calendar year 1945	2,959,591	38,900	340	8,108	.654	8.88
January 1946	198,840	39,400	490	6,414	.517	.60
February	158,710	10,800	2,300	5,668	.457	.48
March	448,340	25,800	6,090	14,460	1.17	1.34
April	205,270	12,300	3,240	6,842	.552	.62
May	217,270	26,800	3,050	7,009	.565	.65
June	400,180	35,200	3,810	13,340	1.08	1.20
July	149,110	11,000	2,300	4,810	.388	.45
August	114,550	19,600	1,090	3,695	.298	.34
September	103,500	13,700	1,600	3,450	.278	.31
Water year 1945-46	2,078,226	39,400	340	5,694	.459	6.24

Des Moines River near Tracy, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946	125,520	11,800	1,250	4,049	0.327	0.38
November	110,440	4,780	2,780	3,681	.297	.33
December	57,380	2,830	450	1,851	.149	.17
Calendar year 1946	2,289,110	39,400	450	6,272	.506	6.87
January 1947	46,880	2,500	430	1,512	.122	.14
February	74,910	6,100	950	2,675	.216	.22
March	206,620	18,600	2,100	6,665	.538	.62
April	506,790	32,000	6,030	16,890	1.36	1.52
May	316,250	32,000	6,240	10,200	.823	.95
June	1,546,500	135,900	16,200	51,550	4.16	4.64
July	460,290	42,700	3,350	14,850	1.20	1.38
August	53,340	3,180	970	1,721	.139	.16
September	20,926	930	489	698	.056	.06
Water year 1946-47	3,525,846	135,900	430	9,660	.779	10.57
October 1947	14,860	769	356	479	.039	.04
November	29,936	1,850	660	998	.080	.09
December	33,148	2,600	670	1,069	.086	.10
Calendar year 1947	3,310,450	135,900	356	9,070	.731	9.90
January 1948	17,960	860	350	579	.047	.05
February	60,350	23,100	260	2,081	.168	.18
March	465,170	55,400	2,500	15,010	1.21	1.40
April	167,640	9,650	3,130	5,588	.451	.50
May	143,330	8,120	2,010	4,624	.373	.43
June	43,960	2,350	1,200	1,465	.118	.13
July	74,400	5,130	1,260	2,400	.194	.22
August	32,090	2,390	570	1,035	.084	.10
September	15,410	910	338	514	.042	.05
Water year 1947-48	1,098,254	55,400	260	3,001	.242	3.29
October 1948	8,720	346	239	281	.023	.03
November	18,637	1,430	316	621	.050	.06
December	14,505	680	320	468	.038	.04
Calendar year 1948	1,062,172	55,400	239	2,902	.234	3.19
January 1949	46,790	4,560	440	1,509	.122	.14
February	97,790	18,000	610	3,492	.282	.29
March	438,410	28,900	5,670	14,140	1.14	1.31
April	268,580	15,100	5,310	8,953	.722	.81
May	103,240	4,950	2,390	3,330	.269	.31
June	119,700	18,300	1,480	3,990	.322	.36
July	51,270	4,410	740	1,654	.133	.15
August	31,302	1,950	482	1,010	.081	.09
September	19,893	1,130	394	663	.053	.06
Water year 1948-49	1,218,837	28,900	239	3,339	.269	3.65
October 1949	15,015	655	386	484	.039	.05
November	11,156	450	298	372	.030	.03
December	9,675	450	150	312	.025	.03
Calendar year 1949	1,212,821	28,900	150	3,323	.268	3.63
January 1950	6,875	320	170	222	.018	.02
February	69,971	10,500	150	2,499	.202	.21
March	252,100	25,600	3,020	8,132	.656	.76
April	76,160	4,910	1,440	2,539	.205	.23
May	235,080	28,700	1,700	7,583	.612	.71
June	333,480	26,500	3,580	11,120	.897	1.00
July	116,200	6,280	2,020	3,748	.302	.35
August	48,845	2,710	740	1,576	.127	.15
September	20,891	1,880	376	696	.056	.06
Water year 1949-50	1,195,448	28,700	150	3,275	.264	3.60

Des Moines River at Ottumwa, Iowa

LOCATION.—Lat. 41°00', long. 92°24', in NE¼ sec. 25, T. 72 N., R. 14 W., on right bank 10 feet downstream from Vine Street Bridge in Ottumwa, 5.5 miles upstream from Village Creek, and 10 miles downstream from South Avery Creek, and at mile 93.9.

DRAINAGE AREA.—13,200 square miles.

RECORDS AVAILABLE.—March 1917 to September 1927 and January 1929 to September 1950 (published as "At Eldon" October 1930 to March 1935) in reports of U. S. Geological Survey. March 1917 to December 1932 (published as "at Eldon" October 1930 to December 1932) in report of Iowa State Planning Board entitled "Stream Flow of Iowa, 1873-1932."

GAGE.—Water-stage recorder. Datum of gage is 622.77 feet above mean sea level, datum of 1929. Mar. 28 to Aug. 1, 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 foot higher. Oct. 1, 1930, to Mar. 19, 1935, chain gage at Eldon, 15 miles downstream, at different datum.

AVERAGE DISCHARGE.—33 years (1917-50), 4,578 second-feet.

EXTREMES.—Maximum and minimum discharges for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43..	May 17	32,100	10.7	Dec. 3	414
1943-44..	May 24	73,200	17.5	Feb. 14	523
1944-45..	Apr. 18	42,500	13.44	Dec. 3	649
1945-46..	Jan. 8	46,600	14.34	Dec. 12	355
1946-47..	June 7	135,000	20.2	Jan. 1	381
1947-48..	Mar. 23	52,900	11.74	Sept. 29	209
1948-49..	Mar. 10	31,300	10.84	Dec. 10	145
1949-50..	May 11	34,600	11.68	Oct. 16	104

1917-50: Maximum discharge, 135,000 second-feet June 7, 1947 (gage height, 20.2 feet); minimum daily, 30 second-feet Jan. 27-29, 31, Feb. 2, 3, 5-7, 1940.

Flood of May 31, 1903, reached a discharge of about 100,000 second-feet.

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

COOPERATION.—Gage-height record collected in cooperation with U. S. Weather Bureau. Station operated under provisions of Federal Power Commission Project No. 925 (City of Ottumwa). Several discharge measurements furnished by Corps of Engineers.

Des Moines River at Ottumwa, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1	4,410	2,940	1,120	2,740	980	11,300	8,440	4,410	5,700	10,800	12,600	g6,090
2	4,280	2,500	833	2,410	1,000	9,640	7,870	3,840	5,480	11,700	11,000	g5,530
3	4,230	2,260	414	2,360	4,880	g8,590	7,430	4,020	5,530	12,100	7,550	g5,160
4	4,100	2,130	449	2,560	7,810	g6,600	7,030	3,940	5,840	12,400	10,200	g5,240
5	5,070	2,130	612	1,220	9,670	g6,180	6,480	3,600	6,940	13,600	13,800	g6,400
6	5,980	2,150	875	737	13,100	g4,880	6,040	3,570	11,800	12,000	10,800	g7,550
7	4,750	2,320	1,140	846	13,200	3,470	5,640	4,000	15,000	10,800	9,880	g5,950
8	4,490	2,090	1,340	860	12,600	3,720	5,020	5,920	12,900	9,880	10,500	g5,020
9	4,230	2,220	1,050	850	11,100	3,350	4,940	5,670	8,830	9,490	12,200	g4,440
10	3,970	2,470	1,090	840	9,910	3,640	5,240	4,590	11,700	9,580	9,130	g3,840
11	4,000	3,330	1,120	840	8,000	3,900	5,020	4,130	19,400	9,700	7,750	g3,520
12	3,840	2,780	1,100	850	5,200	3,600	5,210	3,820	23,400	9,130	14,700	g3,330
13	3,700	2,220	1,050	870	4,500	5,330	5,920	3,540	24,500	8,230	18,400	g3,520
14	3,520	2,070	1,000	900	3,500	3,840	5,450	3,160	17,900	7,490	15,700	g3,470
15	3,450	1,950	900	920	2,900	4,620	5,020	8,000	13,800	6,650	14,000	g4,050
16	3,330	1,830	1,000	950	2,450	9,340	4,570	g25,000	14,300	9,250	13,200	g4,860
17	3,230	1,890	1,050	1,000	2,320	10,300	4,260	g30,100	16,700	8,500	13,800	g4,200
18	3,040	1,910	950	1,050	2,320	8,380	4,070	28,000	18,000	6,370	14,300	g3,500
19	2,990	1,890	1,000	1,060	2,410	5,900	3,940	18,000	15,500	6,180	14,600	g3,600
20	2,830	1,730	*1,050	1,070	2,810	*4,800	3,720	18,600	13,400	6,710	11,100	g3,230
21	2,760	1,770	950	1,060	3,470	4,700	3,600	17,900	13,200	6,230	8,020	g3,110
22	2,650	1,690	800	*1,050	4,000	4,880	3,300	15,600	11,300	6,180	7,090	g2,990
23	2,560	1,730	900	1,000	4,460	5,560	3,180	12,400	9,550	6,370	6,650	g2,760
24	2,360	1,670	950	940	5,450	7,870	3,010	10,300	9,010	8,170	6,460	g2,560
25	2,390	1,750	1,060	860	6,970	9,550	3,280	9,160	9,670	9,670	g7,780	g2,430
26	2,220	1,600	2,090	820	8,020	10,600	3,900	8,350	10,000	10,400	g9,580	g2,320
27	2,240	1,600	5,450	800	11,600	9,730	10,200	7,490	9,190	8,500	g12,000	g2,320
28	2,130	1,520	6,180	820	17,900	9,190	10,700	6,510	9,190	6,650	g8,440	g2,740
29	2,090	1,320	7,090	850	.....	9,760	6,650	6,230	9,850	6,450	g6,340	g1,770
30	2,520	935	5,340	900	.....	10,090	6,460	5,870	10,200	6,340	g6,820	g2,150
31	2,610	.....	3,670	950	.....	9,250	.....	5,920	.....	7,070	g6,320	.....
1943-44												
1	g1,890	1,280	1,970	1,050	2,410	4,540	6,240	15,000	36,000	8,890	4,540	5,340
2	g1,870	1,250	1,850	990	2,430	4,570	5,640	13,800	29,200	8,200	4,220	5,640
3	g1,830	1,240	1,870	976	2,050	4,510	4,970	22,400	22,900	7,870	4,190	5,360
4	g1,770	1,160	1,870	920	2,150	4,950	4,420	28,600	18,100	7,140	7,340	5,000
5	g1,730	1,190	1,810	920	2,390	5,480	4,780	32,300	15,400	6,670	6,440	4,700
6	g1,630	1,320	2,050	890	2,220	6,260	4,730	29,900	14,960	6,760	5,700	4,270
7	1,670	2,050	2,090	*550	2,320	5,080	5,080	24,200	13,700	6,210	6,380	3,830
8	1,650	1,850	2,030	820	2,050	4,090	5,360	21,900	20,300	5,360	5,780	3,600
9	1,630	1,600	1,930	790	2,010	2,500	5,280	20,700	31,000	5,450	4,950	3,360
10	1,520	1,610	*2,090	710	1,870	3,260	6,040	19,100	35,300	5,950	5,250	3,120
11	1,520	1,650	2,150	710	930	3,000	11,500	17,390	38,800	6,090	4,810	3,000
12	1,580	1,600	2,050	800	1,110	4,300	16,500	16,100	35,400	6,900	3,920	3,140
13	1,320	1,670	1,520	930	920	6,530	17,200	15,100	34,000	8,110	3,480	3,050
14	1,410	1,690	1,120	799	523	7,400	12,700	14,200	36,700	8,560	3,290	2,700
15	1,370	1,770	960	735	660	9,490	20,500	13,300	34,700	8,080	3,020	2,560
16	1,340	1,750	568	735	670	10,500	17,200	13,800	32,100	7,840	2,860	2,480
17	1,280	1,670	761	722	850	10,200	12,500	15,500	32,900	7,930	3,290	2,360
18	1,280	1,770	568	710	1,160	8,890	12,600	15,400	36,700	7,990	2,770	2,240
19	1,220	1,750	729	637	1,350	8,170	17,400	15,600	44,000	7,810	2,680	2,320
20	1,170	1,750	980	674	1,280	7,480	17,500	22,400	44,800	7,810	2,860	2,280
21	1,300	1,830	1,080	722	1,340	6,730	15,900	25,000	40,000	7,960	2,760	1,870
22	1,240	1,790	1,060	625	1,870	6,320	25,700	30,700	34,300	7,720	2,590	2,090
23	1,240	1,970	1,060	662	2,050	6,670	g30,400	46,800	28,900	7,220	2,500	2,950
24	1,170	1,990	1,080	774	2,150	7,160	g32,500	66,400	21,900	7,050	3,290	2,790
25	1,270	1,930	1,060	761	3,630	6,840	g50,700	69,400	17,100	7,050	3,140	2,700
26	1,120	1,970	1,060	962	*4,030	6,500	27,000	64,500	14,700	6,210	4,700	2,680
27	1,170	1,910	1,050	1,650	3,630	6,560	21,400	64,500	12,900	5,730	10,000	2,390
28	1,160	2,010	1,040	2,610	3,980	7,220	20,700	59,500	11,500	7,370	13,400	2,320
29	1,140	2,030	1,050	3,410	4,190	7,570	18,400	55,400	10,500	7,020	9,840	2,110
30	1,120	2,030	1,050	3,310	.....	7,160	16,300	47,100	9,710	5,870	7,220	2,240
31	1,200	.....	1,040	3,020	.....	6,640	.....	40,500	.....	5,060	6,040	.....

* Winter discharge measurement made on this day.

g Computed from graph based on gage readings.

Note—Stage-discharge relation affected by ice Dec. 12-24, 1942, Jan. 8 to Feb. 2, Feb. 11-14, Mar. 20, Dec. 15, 19-31, 1943, Jan. 1, 6-9, 11-13, 30, 31, Feb. 11, 15-19, 1944.

Des Moines River at Ottumwa, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	2,740	1,300	851	800	800	5,700	10,700	22,800	26,900	14,000	3,980	3,090
2.....	3,600	1,320	722	850	775	7,190	9,846	17,400	25,700	12,200	4,300	3,000
3.....	3,730	1,930	649	*880	735	10,000	9,100	14,500	25,500	10,400	4,780	2,630
4.....	3,240	1,440	907	860	720	12,000	11,700	13,500	26,000	9,710	5,340	2,570
5.....	3,020	1,460	2,480	800	775	11,500	17,500	12,600	25,900	8,920	7,420	2,370
6.....	2,570	1,770	3,000	750	*810	11,200	17,500	12,000	27,400	8,410	6,670	2,240
7.....	2,460	1,440	3,260	750	840	10,100	13,000	11,600	30,400	7,990	6,580	2,150
8.....	2,390	1,430	2,880	700	865	8,920	12,700	11,400	31,600	7,810	6,820	1,950
9.....	2,320	1,370	2,410	685	895	7,720	11,900	10,700	31,400	7,340	5,950	1,990
10.....	2,150	1,280	1,630	710	920	8,080	12,500	10,200	31,000	7,140	5,950	1,870
11.....	2,010	1,240	1,270	720	1,120	9,490	13,700	10,200	31,100	6,760	6,090	1,850
12.....	2,010	1,190	1,040	720	2,150	g14,800	14,500	10,100	24,200	6,440	6,180	1,690
13.....	1,830	1,190	960	760	4,350	g18,900	16,900	9,490	20,800	6,760	5,110	1,670
14.....	1,870	1,200	880	775	9,430	g19,700	18,200	16,100	21,600	5,480	5,000	1,810
15.....	1,790	1,270	935	800	9,930	g21,000	18,000	29,600	22,600	4,840	4,810	1,410
16.....	1,730	1,200	1,600	775	g15,800	g24,000	25,600	33,400	25,000	4,620	5,000	1,430
17.....	1,670	1,170	1,600	775	g12,200	g32,100	31,500	39,500	24,600	4,570	5,730	1,350
18.....	1,630	1,170	1,170	800	8,830	g37,900	39,600	35,300	23,300	4,460	7,840	1,300
19.....	1,610	1,170	1,270	800	9,070	g37,700	41,100	26,800	20,200	4,430	9,740	1,050
20.....	1,580	1,250	1,110	800	8,620	g33,700	33,100	17,300	20,800	5,250	11,400	1,170
21.....	1,560	1,270	*1,320	850	7,960	g30,100	27,000	15,100	24,300	5,530	12,700	1,240
22.....	1,540	1,200	1,240	905	6,930	g24,100	22,700	14,000	20,400	5,200	11,400	2,110
23.....	1,460	1,190	1,100	905	5,900	g18,500	18,600	17,000	15,400	5,110	9,160	1,770
24.....	1,410	1,200	1,050	895	5,530	g16,500	15,800	20,600	14,500	5,000	7,510	1,790
25.....	1,410	1,160	920	895	5,620	g20,600	15,700	23,600	15,900	4,890	6,320	1,580
26.....	1,410	1,370	850	895	6,840	g27,000	18,300	27,400	13,000	4,350	5,950	2,200
27.....	1,340	1,340	865	905	6,260	g28,600	20,700	34,000	11,900	4,240	5,340	4,860
28.....	1,320	1,340	800	975	5,200	g20,100	22,400	36,100	10,900	4,190	4,540	5,920
29.....	1,280	1,300	720	960	.....	g15,300	24,000	32,600	10,100	4,090	3,880	5,080
30.....	1,300	1,100	760	975	.....	g13,100	24,600	29,900	10,700	4,090	3,660	4,700
31.....	1,300	.....	775	800	.....	11,600	.....	26,800	.....	3,830	3,310	.....
1945-46												
1.....	5,950	*865	2,370	600	3,170	5,900	13,900	3,290	21,400	12,200	2,370	2,840
2.....	4,490	920	5,530	590	3,380	6,410	13,100	3,660	16,300	11,500	2,220	2,410
3.....	2,970	948	*4,410	*600	3,260	6,820	13,000	5,640	12,900	10,200	2,050	1,890
4.....	2,320	865	2,350	960	2,460	6,640	12,700	8,320	10,500	9,620	1,870	1,850
5.....	1,790	879	1,610	12,500	3,860	7,570	11,500	9,930	8,860	8,860	1,790	1,810
6.....	1,850	838	1,590	33,400	7,690	11,300	10,300	g8,380	7,930	7,810	1,750	1,710
7.....	1,580	920	1,350	43,700	10,600	14,200	9,650	g6,350	7,080	7,050	1,750	1,810
8.....	1,560	1,000	1,320	43,600	10,100	14,900	10,200	g5,700	6,440	6,470	2,010	1,870
9.....	1,440	2,280	1,200	32,600	*11,000	14,300	10,000	g5,480	5,870	6,060	2,010	2,610
10.....	1,370	1,730	568	14,100	10,800	12,900	8,380	g5,280	5,310	5,530	1,810	11,200
11.....	1,350	1,060	625	10,500	10,500	11,700	7,750	g5,220	4,920	5,000	1,830	14,400
12.....	1,280	1,200	355	6,990	9,010	14,900	9,960	g5,030	4,320	4,650	1,890	8,740
13.....	1,080	1,390	580	5,250	6,710	18,500	10,800	4,240	4,060	4,240	1,540	5,870
14.....	1,120	1,340	580	4,220	5,200	16,700	8,470	4,240	4,140	4,010	1,410	4,240
15.....	1,200	1,060	580	3,140	4,110	18,600	7,310	4,140	9,160	3,860	1,340	3,780
16.....	1,110	1,080	580	2,900	4,010	22,600	6,820	4,240	16,900	4,620	1,020	3,460
17.....	1,080	1,120	570	2,200	4,240	29,000	6,380	4,490	g13,400	28,800	1,910	3,210
18.....	1,110	948	570	3,700	4,010	29,600	6,040	5,360	g26,700	19,800	1,690	2,700
19.....	1,120	920	570	2,900	3,800	25,100	5,560	5,390	g34,100	7,190	2,410	2,540
20.....	990	907	560	2,500	3,760	*18,300	5,250	5,420	43,300	3,760	1,590	2,570
21.....	1,020	962	560	2,150	3,530	15,300	4,890	5,060	41,800	3,430	1,480	2,390
22.....	1,000	774	560	1,440	3,480	14,000	4,620	5,060	38,100	3,210	1,250	2,930
23.....	962	430	570	1,14	3,700	15,700	4,600	7,370	27,500	3,260	3,500	4,700
24.....	934	662	580	1,690	4,300	21,800	5,420	8,500	18,700	3,260	6,120	4,380
25.....	962	748	510	1,830	4,810	19,800	4,540	6,990	16,500	2,970	9,130	3,500
26.....	976	934	570	2,350	5,200	16,900	4,270	6,580	15,000	2,740	18,700	3,330
27.....	838	990	550	1,690	6,000	22,900	3,730	8,950	14,400	2,630	17,100	2,740
28.....	1,020	879	500	1,280	6,180	22,400	3,630	12,600	13,800	3,070	10,900	2,410
29.....	838	851	510	1,750	.....	18,200	3,430	14,900	12,300	3,360	7,960	2,500
30.....	907	812	580	1,870	.....	15,700	3,410	17,800	11,800	2,520	6,380	3,210
31.....	962	.....	620	2,300	.....	14,300	.....	24,400	.....	2,370	4,380	.....

* Winter discharge measurement made on this day.

g Computed from graph based on gage readings.

Note—Stage-discharge relation affected by ice Nov. 28, 29, Dec. 11-31, 1944, Jan. 1 to Feb. 11, Dec. 14-31, 1945, Jan. 1-6, 19-22, Feb. 5-15, Feb. 17 to Mar. 3, 1946.

Des Moines River at Ottumwa, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1	3,430	4,540	2,970	381	1,290	2,350	6,600	14,100	28,900	50,300	3,490	1,010
2	2,500	4,700	2,880	440	1,200	2,250	6,600	14,700	29,600	40,400	3,290	1,010
3	2,070	5,390	2,950	525	1,100	2,200	6,340	12,500	28,500	33,000	3,090	1,020
4	1,930	4,950	2,680	600	1,050	2,250	11,600	11,400	27,000	28,600	3,030	900
5	1,790	4,490	2,240	725	1,000	2,420	35,200	10,600	40,900	29,300	2,720	945
6	1,670	3,730	2,390	920	980	2,510	38,100	10,000	64,400	30,800	2,910	990
7	1,650	3,730	2,700	1,200	1,000	2,590	35,700	9,370	126,000	32,500	2,400	960
8	1,480	3,630	2,860	*1,250	1,050	2,640	16,100	8,510	89,500	32,300	2,400	975
9	1,500	3,630	2,840	1,400	1,100	2,800	12,400	7,810	60,900	27,000	2,340	728
10	1,520	4,090	2,880	1,450	1,150	2,950	15,000	7,210	43,000	21,700	2,230	798
11	1,710	4,030	2,930	1,500	1,200	2,990	25,700	6,830	29,400	19,500	2,090	975
12	2,460	4,090	3,000	1,600	1,500	3,290	32,100	6,420	19,900	17,400	1,950	840
13	2,650	4,110	*3,650	1,700	*2,070	9,660	32,900	6,080	31,000	15,700	1,910	770
14	2,810	3,930	2,860	1,900	4,850	19,300	29,100	5,980	55,100	14,000	1,840	784
15	2,970	3,680	2,680	2,250	6,080	17,100	23,300	5,880	119,000	12,700	1,800	798
16	2,950	3,830	2,350	2,550	6,550	g10,800	21,500	6,030	76,500	11,300	1,650	1,020
17	3,000	4,060	1,730	2,270	5,630	g8,620	21,100	6,810	57,300	10,300	1,680	930
18	4,730	4,110	1,300	2,130	4,950	g8,340	18,700	8,090	49,400	9,540	1,650	756
19	10,300	4,110	1,050	1,950	4,57c	8,150	17,200	8,820	44,000	8,910	1,430	784
20	11,900	3,880	1,020	1,800	4,020	7,670	27,900	8,990	39,000	8,200	1,530	798
21	8,170	3,880	1,060	1,700	3,890	7,450	31,900	8,730	39,900	7,320	1,290	812
22	6,470	3,880	1,480	*1,450	3,550	7,240	29,600	7,980	44,300	6,550	1,450	798
23	5,980	3,980	1,480	1,280	3,400	8,000	17,000	7,430	57,500	6,060	1,280	648
24	6,610	3,960	1,890	1,700	3,200	10,700	14,700	7,350	62,100	5,700	1,310	572
25	6,820	3,800	1,910	2,050	2,910	10,900	13,200	7,450	56,800	5,210	1,310	714
26	8,290	3,630	2,050	2,200	2,900	10,700	12,500	7,510	54,500	4,830	1,310	518
27	8,260	3,330	2,240	2,270	2,700	*9,800	12,200	7,400	51,600	4,600	1,280	622
28	6,900	3,330	2,100	2,420	2,500	9,540	11,400	8,590	68,500	4,370	1,510	532
29	5,560	3,070	1,140	2,230	2,500	8,170	11,300	23,400	67,200	3,870	1,510	544
30	4,860	2,930	850	1,560	2,500	7,450	11,900	29,700	58,800	3,840	1,260	564
31	4,680	.....	600	1,510	.....	6,940	.....	33,200	.....	3,700	1,150	.....
1947-48												
1	525	990	820	381	d400	12,700	10,400	5,930	2,140	2,250	2,380	1,000
2	523	1,860	880	421	d376	10,700	9,980	7,000	2,090	2,490	2,720	840
3	561	2,230	840	246	d350	11,800	9,490	8,650	1,930	2,490	2,510	646
4	626	1,860	1,530	582	d340	12,000	9,570	6,910	1,680	2,460	1,960	798
5	742	1,680	1,820	812	*d330	10,300	9,080	5,980	1,820	2,420	1,700	682
6	633	1,450	3,090	990	330	9,000	7,840	6,130	1,680	2,200	1,430	659
7	742	1,400	3,130	1,090	350	8,000	7,130	8,450	1,580	1,890	1,360	638
8	564	1,250	2,630	1,010	390	7,000	6,650	8,200	1,530	1,790	1,180	590
9	625	1,050	1,910	975	370	5,200	6,180	6,940	1,460	1,650	1,250	600
10	564	1,280	1,360	990	350	4,200	5,930	6,390	1,380	1,400	1,070	585
11	586	1,120	1,120	990	330	2,900	5,980	6,310	1,430	1,280	1,070	514
12	536	742	975	1,070	230	2,500	5,860	5,900	1,260	1,280	1,020	594
13	519	1,029	1,210	1,400	310	g2,856	5,560	5,380	1,170	1,560	960	478
14	524	915	1,410	1,010	320	4,930	5,400	4,620	1,280	1,630	975	476
15	520	1,010	1,650	540	310	8,940	5,110	4,640	1,210	1,770	840	411
16	404	990	958	800	800	19,200	4,760	4,530	1,330	1,870	1,200	381
17	539	1,020	1,020	640	2,000	24,700	4,460	4,390	1,280	1,840	1,180	384
18	527	942	1,430	d810	2,800	19,100	3,970	4,260	1,250	1,770	756	390
19	468	1,120	1,400	d830	2,800	24,600	4,040	4,210	1,310	1,750	1,180	215
20	328	1,040	1,500	d800	2,590	29,100	3,820	3,970	1,210	1,680	1,180	598
21	497	1,120	1,200	d660	2,090	33,700	3,660	4,040	1,280	1,870	1,460	1,700
22	513	1,120	1,120	650	1,750	43,700	3,510	3,910	1,290	3,870	674	1,790
23	386	1,120	1,360	d640	1,140	51,000	4,150	3,840	1,430	4,950	975	990
24	510	1,090	930	d610	999	41,100	5,230	3,370	1,360	4,920	855	600
25	470	1,120	1,029	d570	1,260	30,300	4,970	3,170	1,310	4,130	674	366
26	517	990	1,040	d550	1,960	19,800	4,210	2,890	1,360	5,930	714	367
27	635	840	990	d520	5,470	15,000	4,170	2,870	1,510	4,800	630	403
28	900	930	1,010	d490	27,200	12,500	4,280	2,610	1,750	5,400	728	282
29	590	915	915	d470	25,800	11,400	5,040	2,490	2,020	4,740	687	209
30	798	742	1,010	d440	.....	11,400	5,860	2,230	2,550	3,250	596	419
31	960	.....	960	d420	.....	10,700	.....	2,160	.....	2,320	1,510	.....

* Winter discharge measurement made on this day.

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

g Computed from graph based on gage readings.

Note—Stage-discharge relation affected by ice Dec. 28-31, 1946, Jan. 2-15, 19-22, Feb. 2-11, 22-24, Feb. 26 to Mar. 4, Dec. 1, 2, 11, 12, 30, 1947, Jan. 13-17, 22, Feb. 6-19, Mar. 2-12, 1948.

Des Moines River at Ottumwa, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	275	290	664	596	820	g11,800	20,000	5,200	4,120	4,120	1,960	484
2.....	294	f311	659	542	840	9,820	17,300	5,080	7,610	4,720	2,340	530
3.....	296	269	604	513	840	*9,010	15,900	4,720	5,080	5,200	2,120	472
4.....	334	f341	577	710	840	9,820	15,300	4,360	3,270	3,400	1,760	523
5.....	291	f358	596	g2,000	820	15,800	14,900	3,640	3,380	3,400	1,720	545
6.....	304	f389	604	g2,000	809	24,000	14,000	3,880	3,210	2,900	1,400	1,220
7.....	308	f324	*610	*1,700	760	24,400	12,700	3,640	2,680	2,660	1,310	760
8.....	290	537	536	1,860	700	26,200	11,800	3,520	2,990	2,280	1,200	604
9.....	328	760	401	2,540	730	28,100	10,900	3,380	2,680	2,160	1,090	1,050
10.....	403	847	145	2,320	750	29,500	9,820	3,210	2,480	1,700	948	1,010
11.....	326	642	333	1,510	709	28,900	9,070	3,110	2,340	1,580	1,140	862
12.....	f348	685	412	1,150	669	24,400	8,470	2,900	2,040	1,500	1,250	1,800
13.....	315	622	569	1,080	709	16,600	7,960	2,920	2,060	1,480	1,340	589
14.....	345	465	f537	1,180	750	13,000	7,720	2,700	2,280	1,700	1,680	862
15.....	313	489	610	1,560	640	g11,200	8,200	2,540	3,300	1,340	1,420	847
16.....	312	f814	f876	4,000	650	g10,100	8,470	2,600	3,350	1,050	948	1,110
17.....	318	a860	f653	5,200	*680	g8,470	8,470	2,560	2,870	1,120	774	1,250
18.....	297	a900	f555	3,330	800	g7,240	8,470	2,560	2,080	1,370	760	1,080
19.....	296	a1,600	524	2,700	4,300	g6,760	8,740	3,350	1,780	1,660	959	992
20.....	299	a2,500	710	2,300	5,000	6,040	9,010	3,210	1,630	1,900	760	760
21.....	260	f2,000	710	1,900	5,400	6,040	9,280	4,000	1,510	2,870	1,170	760
22.....	224	1,920	622	1,700	4,800	8,740	9,280	4,480	1,800	3,320	2,200	760
23.....	295	1,960	599	1,560	e6,400	11,200	9,010	3,640	2,700	2,730	1,540	582
24.....	262	1,210	401	1,500	g14,300	12,100	8,740	4,480	12,100	1,820	1,210	526
25.....	303	1,120	360	1,600	g16,600	15,300	7,960	4,240	14,400	1,270	992	529
26.....	290	963	264	1,600	20,700	17,900	7,240	3,520	24,000	1,150	789	536
27.....	287	905	444	1,500	19,300	19,700	6,760	3,760	14,600	1,020	804	482
28.....	307	789	f516	1,400	13,600	19,700	6,280	4,120	9,550	818	572	438
29.....	299	760	f598	1,200	.....	18,600	5,920	3,760	6,520	862	748	390
30.....	275	760	534	1,000	.....	20,400	5,680	3,320	4,960	892	589	393
31.....	170	.....	459	900	.....	22,200	.....	3,090	.....	967	602	.....
1949-50												
1.....	448	492	380	866	149	25,400	g5,170	2,070	5,410	6,730	2,770	766
2.....	246	448	440	528	190	f18,500	g4,690	2,040	5,230	6,250	2,290	826
3.....	516	406	424	410	200	8,950	g4,576	1,910	5,050	6,280	2,230	785
4.....	318	430	276	360	180	7,450	g4,570	1,960	4,690	4,690	2,150	740
5.....	341	440	452	340	210	12,100	g4,570	1,860	6,220	4,220	1,980	748
6.....	402	407	385	340	600	19,200	4,240	1,910	6,970	3,540	2,170	742
7.....	356	447	408	310	2,000	17,800	3,180	5,870	5,410	3,420	2,150	632
8.....	486	360	218	330	5,000	17,400	3,220	5,890	4,600	2,970	2,190	594
9.....	263	408	200	250	13,000	f16,400	3,140	17,800	4,030	2,760	2,290	639
10.....	664	444	190	290	11,300	f14,000	3,310	28,300	3,720	2,560	2,190	586
11.....	740	408	568	230	9,450	10,400	3,180	32,000	4,480	2,370	2,250	704
12.....	507	458	632	260	f6,490	g6,730	2,780	19,800	3,820	2,140	1,850	520
13.....	519	490	380	1,000	3,990	g4,570	2,470	15,200	3,280	2,050	2,440	613
14.....	606	496	255	900	1,930	g3,650	2,390	12,200	8,360	2,040	3,030	466
15.....	1,180	437	222	1,000	1,520	3,150	2,130	9,450	12,800	2,460	1,930	505
16.....	104	496	424	700	1,360	2,970	2,100	7,700	12,500	3,190	1,870	530
17.....	111	430	f522	500	629	3,040	1,930	6,490	8,700	3,760	1,810	369
18.....	274	472	f524	420	910	3,700	1,900	5,530	12,300	4,100	1,550	596
19.....	510	425	495	368	1,000	4,790	1,830	4,410	23,800	4,020	1,250	440
20.....	520	402	513	339	1,130	4,850	1,660	4,230	28,600	3,730	1,320	404
21.....	558	428	400	374	2,750	4,480	1,650	4,140	27,400	3,810	1,170	591
22.....	768	410	138	214	3,430	4,240	1,410	5,710	25,000	3,510	1,180	538
23.....	716	308	154	300	4,170	5,650	1,960	7,450	25,800	3,530	1,560	456
24.....	640	384	260	230	2,120	6,490	2,770	5,890	g23,400	4,300	1,240	393
25.....	768	417	320	260	804	6,250	3,050	5,770	g18,800	4,820	1,060	500
26.....	921	352	260	260	576	6,490	2,480	5,890	g18,200	4,790	930	509
27.....	486	351	290	200	635	g7,450	1,700	5,890	g16,400	4,350	855	1,810
28.....	606	469	250	146	11,800	g6,250	1,700	8,200	14,300	3,980	866	2,010
29.....	602	347	280	200	.....	g6,010	1,800	8,200	10,200	3,530	890	1,800
30.....	468	424	260	190	.....	g6,010	2,050	6,730	8,200	3,050	875	1,760
31.....	534	.....	500	200	.....	g5,650	.....	5,890	.....	2,780	868	.....

* Winter discharge measurement made on this day.

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

f Computed on basis of partly estimated gage-height record.

g Computed from graph based on gage readings.

Note—Stage-discharge relation affected by ice Jan. 5, 6, 13, Jan. 19 to Feb. 23, Mar. 6, Dec. 9, 10, 24-31, 1949, Jan. 3-18, 23-27, 28-31, Feb. 2-9, 1950.

Des Moines River at Ottumwa, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1942.....	105,970	5,980	2,090	3,418	0.259	0.30
November.....	60,395	3,330	935	2,013	.152	.17
December.....	53,633	7,090	414	1,730	.131	.15
Calendar year 1942.....	2,290,828	22,700	414	6,276	.475	6.44
January 1943.....	34,983	2,740	737	1,128	.085	.10
February.....	182,530	17,900	980	6,519	.494	.51
March.....	212,470	11,300	3,350	6,854	.519	.60
April.....	165,590	10,700	3,010	5,520	.418	.47
May.....	291,640	30,100	3,160	9,408	.713	.82
June.....	367,780	24,500	5,480	12,260	.929	1.04
July.....	272,740	13,600	6,180	8,798	.667	.77
August.....	330,740	18,400	6,320	10,670	.808	.93
September.....	117,650	7,550	1,770	3,922	.297	.33
Water year 1942-43.....	2,196,121	30,100	414	6,017	.456	6.19
October 1943.....	43,810	1,890	1,120	1,413	.107	.12
November.....	51,260	2,050	1,160	1,709	.129	.14
December.....	42,587	2,150	568	1,374	.104	.12
Calendar year 1943.....	2,113,780	30,100	568	5,791	.439	5.95
January 1944.....	34,874	3,410	625	1,125	.085	.10
February.....	58,223	4,190	523	2,008	.152	.16
March.....	196,570	10,500	2,560	6,341	.480	.55
April.....	447,640	32,500	4,730	14,920	1.13	1.26
May.....	937,300	69,400	13,300	30,880	2.34	2.70
June.....	808,410	44,800	9,710	26,950	2.04	2.28
July.....	219,880	8,890	5,060	7,093	.537	.62
August.....	153,200	13,400	2,500	4,942	.374	.43
September.....	94,550	5,640	1,870	3,152	.239	.27
Water year 1943-44.....	3,108,304	69,400	523	8,493	.643	8.75
October 1944.....	61,280	3,730	1,280	1,977	.150	.17
November.....	39,260	1,930	1,100	1,309	.099	.11
December.....	39,824	3,260	649	1,285	.097	.11
Calendar year 1944.....	3,111,011	69,400	523	8,500	.644	8.76
January 1945.....	25,520	975	685	823	.062	.07
February.....	139,875	15,800	720	4,966	.378	.39
March.....	567,200	37,900	5,700	18,300	1.39	1.60
April.....	589,040	41,100	9,100	19,630	1.49	1.66
May.....	641,590	39,500	9,490	20,790	1.57	1.81
June.....	663,400	31,600	10,100	22,110	1.67	1.87
July.....	198,050	14,000	3,830	6,389	.484	.56
August.....	198,460	12,700	3,310	6,402	.485	.56
September.....	69,840	5,920	1,050	2,328	.176	.20
Water year 1944-45.....	3,233,339	41,100	649	8,858	.671	9.11
October 1945.....	47,179	5,950	838	1,522	.115	.13
November.....	30,312	2,280	430	1,010	.077	.09
December.....	33,978	5,530	355	1,096	.083	.10
Calendar year 1945.....	3,204,444	41,100	355	8,779	.665	9.04
January 1946.....	245,470	43,700	590	7,018	.600	.69
February.....	158,950	11,000	2,460	5,677	.430	.45
March.....	502,940	29,600	5,900	16,220	1.23	1.42
April.....	229,610	13,500	3,410	7,654	.580	.65
May.....	228,010	24,400	3,290	7,355	.557	.64
June.....	473,490	43,300	4,060	15,780	1.20	1.33
July.....	204,050	28,800	2,370	6,582	.499	.57
August.....	123,190	18,700	1,020	3,974	.301	.35
September.....	113,670	14,400	1,710	3,789	.287	.32
Water year 1945-46.....	2,390,849	43,700	355	6,550	.496	6.74

Des Moines River at Ottumwa, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946.....	137,620	11,900	1,480	4,439	0.336	0.39
November.....	118,500	5,390	2,930	3,950	.299	.33
December.....	66,350	3,050	600	2,140	.162	.19
Calendar year 1946.....	2,601,850	43,700	590	7,128	.540	7.33
January 1947.....	48,911	2,550	381	1,578	.120	.14
February.....	77,450	6,550	980	2,766	.210	.22
March.....	217,860	19,300	2,200	7,028	.532	.61
April.....	600,040	38,100	6,340	20,000	1.52	1.69
May.....	324,870	33,200	5,800	10,480	.794	.92
June.....	1,620,500	126,000	19,900	54,020	4.09	4.57
July.....	509,500	50,300	3,770	16,440	1.25	1.44
August.....	60,140	3,490	1,150	1,940	.147	.17
September.....	24,115	1,020	518	804	.061	.07
Water year 1946-47.....	3,805,856	126,000	381	10,430	.790	10.74
October 1947.....	17,832	960	328	575	.044	.05
November.....	34,956	2,230	742	1,165	.088	.10
December.....	42,238	3,130	820	1,363	.103	.12
Calendar year 1947.....	3,578,412	126,000	328	9,804	.743	10.10
January 1948.....	22,407	1,400	246	723	.055	.06
February.....	83,839	27,200	230	2,891	.219	.24
March.....	510,320	51,000	2,500	16,460	1.25	1.44
April.....	176,290	10,400	3,510	5,876	.445	.50
May.....	152,370	8,650	2,160	4,915	.372	.43
June.....	45,880	2,550	1,170	1,529	.116	.13
July.....	83,530	5,930	1,280	2,695	.204	.24
August.....	37,424	2,720	596	1,207	.091	.11
September.....	18,605	1,790	209	620	.047	.05
Water year 1947-48.....	1,225,691	51,000	209	3,349	.254	3.47
October 1948.....	9,294	403	170	300	.023	.03
November.....	26,390	2,500	269	880	.067	.07
December.....	16,682	876	145	538	.041	.05
Calendar year 1948.....	1,183,031	51,000	145	3,232	.245	3.35
January 1949.....	54,991	5,200	513	1,774	.134	.15
February.....	123,880	20,700	640	4,424	.335	.35
March.....	492,840	29,300	6,040	15,900	1.20	1.39
April.....	303,290	20,000	5,680	10,110	.766	.85
May.....	111,690	5,200	2,540	3,603	.273	.31
June.....	153,130	24,000	1,510	5,104	.387	.43
July.....	64,665	5,200	818	2,086	.158	.18
August.....	38,185	2,340	572	1,232	.093	.11
September.....	22,776	1,800	390	759	.058	.06
Water year 1948-49.....	1,417,813	29,300	145	3,884	.294	3.98
October 1949.....	16,178	1,180	104	522	.040	.05
November.....	12,686	496	308	423	.032	.04
December.....	11,020	632	138	355	.027	.03
Calendar year 1949.....	1,405,331	29,300	104	3,850	.292	3.95
January 1950.....	12,315	1,000	146	397	.030	.03
February.....	87,523	13,000	149	3,126	.237	.25
March.....	270,020	25,400	2,970	8,710	.660	.76
April.....	83,630	5,170	1,410	2,788	.211	.24
May.....	256,380	32,000	1,860	8,270	.627	.72
June.....	357,670	28,600	3,280	11,920	.903	1.01
July.....	115,760	6,730	2,040	3,734	.283	.33
August.....	53,234	3,030	855	1,717	.130	.15
September.....	22,572	2,010	369	752	.057	.06
Water year 1949-50.....	1,298,988	32,000	104	3,559	.270	3.67

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 feet upstream from bridge on State Highway 1 at Keosauqua, 4 miles downstream from Chequest Creek, and at mile 50.6.

DRAINAGE AREA.—13,900 square miles.

RECORDS AVAILABLE.—May 1903 to July 1906, April 1910 to September 1950.

GAGE.—Water-stage recorder. Datum of gage is 558.10 feet above mean sea level, datum of 1912 (by levels of Corps of Engineers). Prior to Dec. 24, 1933, chain gage at same site and datum.

AVERAGE DISCHARGE.—41 years (1903-5, 1911-50), 5,155 second-feet.

EXTREMES.—Maximum and minimum discharges for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	May 17	35,300	11.71	Dec. 4	500
1943-44...	May 25	72,300	18.3	Feb. 15	550
1944-45...	May 17	49,500	13.88	Jan. 10	765
1945-46...	June 18	78,300	19.50	Dec. 13	500
1946-47...	June 16	124,000	25.14	Jan. 2	500
1947-48...	Mar. 23	52,800	14.38	Jan. 3	280
1948-49...	Mar. 31	31,700	(1)	Nov. 2	230
1949-50...	June 19	38,100	11.40	Oct. 19	123

(1) Maximum gage height 10.57 feet Feb. 24 (ice jam).

1903-6, 1910-50: Maximum discharge, about 135,000 second-feet June 1, 1903 (gage height, 27.85 feet, from floodmark); minimum daily, 40 second-feet Jan. 30, 1940 (during period of ice effect).

Flood of June 1, 1851, reached a stage of 24 feet (discharge not known).

REMARKS.—Records good except those for periods of ice effect, which are poor. Some diurnal fluctuation at medium and low stages caused by power plant at Ottumwa.

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

Des Moines River at Keosauqua, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1	4,640	2,860	1,130	3,770	1,050	13,100	9,610	6,410	6,380	10,600	10,300	6,460
2	4,580	3,010	860	3,150	1,100	10,700	8,880	4,560	6,060	11,200	13,400	6,090
3	4,460	2,580	600	2,890	3,000	9,160	8,310	4,280	5,860	11,700	9,910	5,540
4	4,460	2,260	500	2,370	7,000	7,610	7,840	4,310	6,080	12,400	8,310	5,240
5	4,340	2,260	600	2,300	9,160	6,410	7,360	3,940	6,480	14,500	13,000	5,510
6	6,110	2,190	800	1,500	13,200	6,140	6,860	3,870	11,400	13,100	12,400	7,360
7	5,940	2,260	1,000	1,000	13,400	4,880	6,440	3,920	16,900	11,500	10,500	6,840
8	4,810	2,370	1,200	940	13,800	3,610	6,040	5,040	15,000	10,400	10,700	5,640
9	4,680	2,210	1,300	1,100	12,200	3,200	5,410	6,910	11,100	9,840	12,600	4,840
10	4,410	2,560	1,200	1,050	*12,500	3,490	5,460	5,750	10,400	9,680	11,700	4,310
11	4,180	2,810	1,220	1,000	9,160	3,920	5,780	4,840	19,300	9,860	8,940	3,680
12	4,090	3,410	1,250	980	7,710	3,970	5,580	4,380	28,000	9,760	10,600	3,440
13	3,890	2,810	1,200	980	5,740	4,160	6,060	4,040	28,500	9,040	21,900	3,580
14	3,750	2,250	1,100	990	4,610	6,110	6,340	3,650	22,400	8,380	16,700	3,630
15	3,650	2,120	1,000	1,020	4,440	4,340	5,680	3,240	14,900	7,610	14,100	4,010
16	3,560	1,990	950	1,080	2,860	7,210	5,340	30,900	16,000	7,440	13,000	5,140
17	3,460	2,120	1,000	1,110	2,670	10,100	4,760	34,500	17,900	10,800	13,400	4,860
18	3,320	1,970	*1,100	1,130	2,320	9,960	4,610	33,900	18,100	8,140	13,900	4,260
19	3,150	1,990	1,050	1,120	2,370	7,660	4,310	27,100	16,600	6,480	14,100	3,630
20	3,050	1,950	1,050	1,110	2,840	5,780	4,090	26,100	14,100	6,740	13,100	3,610
21	2,910	2,230	1,100	*1,100	3,270	5,440	3,850	21,500	13,500	7,040	9,040	3,270
22	2,860	2,190	1,050	1,080	3,920	5,540	3,630	17,100	12,400	6,460	7,480	3,100
23	2,770	1,950	1,000	1,060	4,360	5,960	3,390	14,200	10,500	6,540	6,860	2,960
24	2,650	1,860	1,100	1,020	5,210	7,340	3,150	12,200	9,540	7,580	6,760	2,840
25	2,490	1,780	1,200	950	5,960	9,280	3,220	10,800	9,480	9,460	6,760	2,650
26	2,460	1,840	3,000	900	7,110	10,600	4,040	9,760	10,100	10,300	7,940	2,490
27	2,350	1,700	8,000	880	8,680	11,100	8,740	8,860	9,610	9,860	10,500	2,440
28	2,300	1,540	9,280	900	18,500	9,960	12,600	7,980	9,040	7,840	10,900	2,280
29	2,190	1,630	7,880	940	.....	9,980	9,840	7,010	9,380	7,240	7,580	2,340
30	2,210	1,410	7,540	1,000	.....	10,400	8,160	6,780	9,960	6,980	6,860	1,930
31	2,790	.....	5,210	1,050	.....	10,600	.....	6,540	.....	7,210	6,660	.....
1943-44												
1	2,020	1,220	2,060	1,090	3,120	4,260	6,690	17,600	41,500	9,810	5,130	6,280
2	1,920	1,420	1,980	1,110	2,520	4,630	6,250	15,900	34,800	8,920	4,880	5,680
3	1,900	1,380	1,880	1,040	2,520	4,600	5,660	20,000	25,900	8,760	4,410	5,860
4	1,880	*1,350	1,880	1,030	2,200	4,900	5,030	29,100	20,400	8,000	6,150	5,530
5	1,840	1,270	1,880	*1,020	2,290	5,660	5,080	33,900	16,800	7,210	7,600	5,180
6	1,790	1,330	2,020	970	2,460	6,280	4,880	34,800	15,500	7,060	6,300	4,800
7	1,700	1,500	2,060	920	2,350	6,620	5,080	28,900	15,000	6,850	6,750	4,310
8	1,700	2,080	2,160	870	2,410	5,230	5,460	24,200	15,300	6,300	6,670	4,050
9	1,660	1,920	2,200	850	2,160	4,000	5,560	22,800	35,100	5,560	5,530	3,640
10	1,640	1,700	2,160	810	2,040	2,650	5,840	21,200	39,900	6,150	5,130	3,420
11	1,500	1,640	2,100	*750	1,900	3,310	13,300	19,200	40,300	6,490	5,330	3,260
12	1,550	1,700	2,140	720	970	3,470	18,600	17,600	40,000	6,930	4,860	3,060
13	1,680	1,750	2,140	850	1,200	5,000	20,600	16,400	34,900	8,160	4,000	3,400
14	1,420	1,680	1,550	960	950	7,760	15,400	15,300	37,200	9,060	3,590	3,150
15	1,470	1,730	1,140	820	550	13,700	24,700	14,300	37,800	8,600	3,380	2,780
16	1,420	1,790	980	780	700	13,200	23,800	13,900	34,200	8,250	3,290	2,710
17	1,400	1,770	590	770	720	*11,800	17,000	15,400	33,000	8,300	3,330	2,540
18	1,370	1,700	810	770	900	10,200	13,800	15,800	35,100	8,460	3,610	2,410
19	1,370	1,810	630	750	1,200	9,110	18,400	15,000	43,900	8,330	2,990	2,290
20	1,350	1,770	870	670	1,400	8,350	20,900	19,100	49,300	8,160	2,740	2,480
21	1,280	1,810	1,030	700	1,420	7,680	18,000	25,400	46,100	8,410	2,870	3,330
22	1,330	1,860	1,140	740	1,590	6,980	31,600	28,000	40,100	8,160	2,850	2,350
23	1,300	1,900	1,120	670	2,180	6,950	50,600	44,900	33,100	7,730	2,830	2,600
24	1,320	2,040	1,110	700	2,500	7,580	43,200	59,200	25,900	7,420	2,850	3,880
25	1,270	2,080	1,140	810	*2,850	7,600	37,300	70,900	19,500	7,550	3,310	3,010
26	1,330	2,040	1,120	810	4,800	7,080	33,000	68,400	16,600	6,720	4,310	2,830
27	1,170	2,020	1,110	1,000	*4,120	6,750	26,100	66,000	14,700	6,280	7,580	2,690
28	1,200	1,980	1,090	1,810	4,020	7,030	23,600	64,600	13,200	6,040	13,600	2,460
29	1,200	2,080	1,110	2,740	4,190	7,730	21,800	61,300	11,800	7,810	12,600	2,390
30	1,170	2,060	1,110	3,590	.....	7,710	18,800	56,400	10,700	6,620	9,430	2,180
31	1,250	.....	1,090	3,400	.....	7,110	.....	48,000	.....	5,760	7,470	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 3-27, 1942, Jan. 7 to Feb. 4, Dec. 14-31, 1943, Jan. 1-28, Feb. 10-24, 1944.

Des Moines River at Keosauqua, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1	2,240	1,300	1,320	840	900	5,760	12,400	25,900	27,600	13,500	4,170	3,380
2	3,930	1,350	985	865	900	7,030	11,300	21,400	28,100	14,300	4,430	3,120
3	7,340	4,260	824	910	850	11,200	10,400	17,100	26,700	11,700	4,730	2,940
4	4,800	3,420	910	940	825	14,000	12,400	15,200	27,000	10,600	5,500	2,500
5	5,000	1,830	2,460	925	810	14,000	16,400	14,100	27,100	9,840	6,430	2,390
6	3,640	1,750	5,180	865	865	11,700	20,800	13,300	27,700	9,110	7,630	2,220
7	2,760	2,120	4,330	840	*925	11,000	16,300	12,600	31,200	8,730	6,930	2,200
8	2,520	1,700	3,470	840	955	9,760	14,300	12,600	34,100	8,190	7,190	2,140
9	2,430	1,590	2,670	780	1,000	8,850	13,200	11,800	35,100	7,980	7,030	1,920
10	2,330	1,520	2,140	765	1,040	8,250	13,200	11,200	34,400	7,320	6,330	2,140
11	2,160	1,400	1,660	895	1,220	9,000	14,500	10,900	33,300	7,210	6,410	1,840
12	2,040	1,350	1,400	895	1,900	12,100	15,600	10,600	30,600	6,850	6,590	1,840
13	1,980	1,270	1,160	910	5,380	17,300	17,200	10,300	22,700	8,250	6,410	1,700
14	1,840	1,430	1,030	955	12,700	18,400	19,800	15,300	21,900	6,410	5,260	2,290
15	1,840	1,330	1,000	1,040	15,900	19,500	19,900	11,900	23,200	5,600	5,230	2,140
16	1,770	1,350	1,000	1,020	18,900	23,300	29,300	42,400	31,000	4,860	5,080	1,590
17	1,700	1,280	1,090	925	14,100	26,600	37,600	47,200	29,900	4,800	5,600	1,480
18	1,680	1,240	1,200	925	9,810	34,300	40,600	45,400	25,700	4,660	6,490	1,430
19	1,610	1,250	1,700	940	8,790	39,400	46,500	35,300	22,600	4,580	9,080	1,370
20	1,590	1,270	*2,080	955	8,920	38,900	41,900	22,000	22,400	4,760	11,000	1,140
21	1,590	1,350	1,900	970	8,810	34,500	31,600	17,300	26,200	5,660	12,900	1,320
22	1,570	1,320	1,700	955	8,570	29,400	26,200	15,800	25,400	5,660	13,400	3,060
23	1,540	1,270	1,480	1,080	6,770	22,300	21,700	16,000	18,500	5,360	11,400	2,580
24	1,450	1,250	1,320	1,030	6,150	18,500	18,100	20,200	15,800	5,330	9,080	2,900
25	1,450	1,300	1,200	1,060	6,250	23,700	16,500	22,900	17,200	5,180	7,710	2,540
26	1,430	1,590	1,080	1,040	7,030	30,100	18,500	26,700	15,500	5,030	6,410	1,900
27	1,430	1,700	1,000	1,080	6,980	31,300	21,300	32,300	13,200	4,480	5,990	3,420
28	1,380	1,520	940	1,060	6,200	27,400	23,400	38,700	12,400	4,530	5,260	11,300
29	1,380	1,450	865	1,060	.....	18,200	24,900	37,400	11,300	4,460	4,530	8,490
30	1,320	1,400	810	1,090	.....	15,400	26,100	33,600	10,700	4,430	4,050	6,150
31	1,350	.....	840	1,080	.....	13,500	.....	30,100	.....	4,310	3,710	.....
1945-46												
1	10,300	1,040	1,190	840	2,500	5,890	14,600	3,610	22,800	11,900	2,480	4,070
2	7,110	955	6,230	820	3,500	5,990	13,500	4,730	18,400	11,600	3,260	2,870
3	4,660	970	5,910	*810	3,800	6,620	13,000	65,530	14,300	10,500	2,600	2,460
4	3,170	1,000	4,260	960	3,500	6,930	13,000	10,400	11,600	9,620	2,060	2,000
5	2,580	970	2,410	6,000	2,800	7,500	12,100	7,660	9,700	8,920	1,920	1,900
6	2,090	955	1,810	25,000	3,500	10,600	10,800	10,100	8,490	8,080	1,840	1,840
7	2,000	925	1,770	45,300	7,800	14,000	9,950	7,950	7,550	7,210	1,770	1,730
8	1,770	1,060	1,550	49,100	10,800	15,500	10,400	6,460	6,800	6,590	1,830	1,770
9	1,660	1,120	1,480	*46,300	10,200	15,800	10,600	5,780	6,150	6,070	2,080	1,790
10	1,570	2,330	910	20,000	10,700	14,500	9,460	5,500	5,580	5,630	1,980	4,660
11	1,500	1,840	810	12,900	11,000	12,900	8,250	5,000	5,130	5,180	1,840	13,200
12	1,485	1,110	640	9,110	*10,100	16,600	9,650	5,000	4,730	4,680	1,860	12,000
13	1,420	1,320	500	6,250	8,300	19,100	11,600	4,730	4,190	4,380	1,880	7,110
14	1,240	1,430	610	4,980	6,670	18,300	10,100	4,460	4,170	4,070	1,620	5,530
15	1,250	1,430	610	4,310	5,330	18,000	8,520	4,530	6,670	3,900	1,480	3,880
16	1,330	1,160	610	3,080	4,240	23,400	7,420	4,500	19,000	4,000	1,420	3,780
17	1,240	1,190	600	2,960	4,070	35,800	6,820	4,630	16,900	21,400	1,240	3,450
18	1,200	1,140	600	2,390	4,290	*32,800	6,410	5,250	60,000	39,000	1,960	3,150
19	1,240	1,030	600	2,740	4,190	29,700	6,020	6,020	62,300	13,000	1,790	2,650
20	1,250	955	600	3,010	4,020	20,900	5,600	5,730	44,100	5,600	2,160	2,600
21	1,160	1,020	600	2,580	3,970	16,600	5,260	5,600	44,500	3,970	1,620	2,460
22	1,120	1,000	600	2,240	3,660	14,700	4,930	5,230	39,900	3,590	1,550	2,480
23	1,120	882	600	1,520	3,780	17,000	4,760	5,530	33,200	3,350	1,880	6,820
24	1,080	838	610	1,240	4,070	26,500	4,800	10,400	20,300	3,420	4,960	5,000
25	1,040	809	640	1,750	5,000	23,600	5,580	8,950	17,200	3,360	5,910	4,170
26	1,060	809	700	1,940	5,530	18,100	4,480	7,190	15,500	3,030	14,800	3,540
27	1,080	1,080	670	2,410	5,660	20,700	4,240	7,210	14,500	2,800	18,500	3,150
28	940	1,090	680	1,900	6,330	24,700	3,850	11,200	14,100	2,670	13,200	2,520
29	1,110	1,030	710	1,500	.....	19,600	3,780	14,600	13,000	3,360	9,270	2,330
30	955	910	780	1,900	.....	17,200	3,850	17,200	11,500	3,260	7,430	2,480
31	1,000	.....	870	2,100	.....	15,100	.....	22,000	.....	2,540	5,990	.....

* Winter discharge measurement made on this day.

g Computed from graph based on gage readings.

Note—Stage-discharge relation affected by ice Nov. 29, 30, Dec. 8-31, 1944, Jan. 1 to Feb. 15, Dec. 11-31, 1945, Jan. 1-6, Jan. 26 to Feb. 7, 1946.

Des Moines River at Keosauqua, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1	3,240	4,630	2,960	700	1,550	2,550	7,080	14,000	30,200	66,800	a3,900	1,160
2	3,220	4,580	2,960	500	1,400	2,450	6,930	15,800	28,700	51,200	a3,700	1,010
3	2,460	5,230	2,870	550	1,300	2,350	6,850	14,000	28,600	37,500	a3,500	1,030
4	2,080	5,630	2,850	600	1,200	2,300	9,270	12,300	26,200	29,200	a3,300	1,040
5	1,940	4,900	2,350	700	1,100	*2,250	33,700	11,500	45,600	28,100	h3,230	978
6	1,860	4,360	2,290	800	1,050	2,330	46,300	10,900	57,600	30,000	3,070	930
7	1,790	3,690	2,370	1,000	1,000	2,430	38,100	10,300	87,200	31,700	2,860	994
8	1,750	3,830	2,690	*1,300	1,050	2,500	22,200	9,570	115,000	32,700	2,410	930
9	1,610	3,710	2,850	1,400	1,100	2,650	13,600	8,810	81,900	29,200	2,350	994
10	1,620	4,410	2,870	1,500	1,150	2,830	12,500	8,190	54,100	22,500	2,260	790
11	1,700	4,660	2,920	1,600	1,200	3,030	22,700	7,690	34,300	19,300	2,150	914
12	1,810	4,310	*3,150	1,650	*1,200	3,190	28,700	7,210	21,900	17,50	2,090	994
13	2,460	4,190	3,590	1,700	1,950	5,660	31,700	6,800	38,000	15,600	1,860	850
14	2,710	4,170	3,240	1,800	3,000	18,900	31,300	6,590	39,400	14,100	1,860	775
15	2,850	3,950	3,030	2,200	6,700	19,100	25,000	6,640	81,500	12,700	1,810	790
16	2,990	3,850	2,670	2,400	6,800	12,700	21,900	7,060	114,000	11,400	1,730	775
17	3,010	4,000	2,390	2,600	6,930	9,970	21,700	7,060	82,000	10,400	1,630	962
18	3,640	4,120	1,800	2,350	5,860	9,140	19,600	7,870	67,700	9,630	1,650	946
19	6,560	4,140	1,400	2,200	5,130	8,730	16,100	9,000	57,100	8,850	1,610	805
20	12,000	4,090	1,150	2,000	4,880	8,440	27,900	9,350	46,700	8,410	1,400	898
21	10,400	3,930	1,100	1,850	4,210	8,440	31,800	9,410	44,000	h7,790	1,530	3,490
22	7,400	3,900	1,150	1,800	4,000	7,810	32,100	8,920	54,300	h7,030	1,290	1,030
23	6,460	3,950	1,550	1,700	3,600	7,980	21,600	8,330	55,700	h6,300	1,400	805
24	5,860	3,950	1,750	1,600	3,500	10,400	15,700	7,950	68,900	h5,990	1,270	760
25	8,030	3,950	2,000	1,900	3,300	12,100	13,800	8,080	66,200	h5,780	1,320	588
26	7,470	3,760	2,000	2,100	3,100	*11,200	12,800	8,270	63,000	h5,260	1,310	745
27	9,300	3,570	2,180	2,300	3,000	10,400	12,300	8,220	57,200	h4,880	1,310	560
28	7,980	3,380	2,350	2,300	2,800	9,920	11,900	8,700	63,800	h4,760	1,230	672
29	6,540	3,310	2,200	2,450	2,800	9,160	11,500	19,900	78,200	h4,480	1,460	574
30	5,330	3,030	1,200	2,250	2,800	8,060	14,900	27,300	77,500	h4,040	1,470	560
31	4,860	.....	900	1,600	.....	7,530	.....	31,000	.....	h4,020	1,250	.....
1947-48												
1	658	1,150	866	800	470	18,200	10,500	6,170	2,210	2,570	2,390	1,470
2	560	1,100	1,040	470	450	11,000	10,200	6,680	2,110	2,210	2,480	898
3	560	1,830	1,150	280	430	11,500	9,630	9,860	2,040	2,390	2,770	790
4	686	2,170	3,000	650	*410	12,400	9,460	8,380	1,900	2,350	2,540	672
5	730	*1,810	3,780	600	390	12,400	9,510	6,950	1,670	3,400	1,880	760
6	805	1,650	2,520	950	380	9,600	8,630	g6,520	1,830	2,610	1,630	616
7	630	1,420	3,660	1,150	390	8,500	7,930	g9,400	1,690	2,190	1,420	672
8	790	1,400	3,610	1,200	430	7,600	7,460	g7,140	1,590	1,900	1,400	978
9	560	1,290	2,840	1,150	430	6,000	6,700	g9,400	1,530	1,710	1,220	700
10	644	1,150	2,020	1,050	420	4,600	6,170	7,220	1,440	1,550	1,220	672
11	574	1,270	1,350	1,050	400	3,300	6,070	7,030	1,420	1,360	1,100	616
12	630	1,110	1,150	1,100	380	2,750	6,140	6,760	1,380	1,290	1,030	547
13	508	930	1,050	1,350	360	2,630	5,940	6,220	1,320	1,400	1,030	560
14	547	994	1,400	1,050	340	4,210	5,650	5,700	1,320	2,660	962	534
15	521	1,220	1,570	*1,000	400	11,800	5,420	5,140	1,460	1,750	994	508
16	547	1,220	1,490	850	850	15,300	5,080	5,040	1,380	1,830	866	430
17	495	1,110	1,030	700	2,300	*24,900	4,710	4,910	1,340	1,790	1,110	409
18	521	1,060	*1,100	850	3,200	21,900	4,410	4,740	1,360	1,710	1,200	419
19	547	1,040	1,460	900	3,300	35,000	3,920	4,640	1,290	1,670	730	430
20	534	1,150	1,460	850	3,500	36,300	3,920	4,560	1,360	1,630	1,110	630
21	443	1,150	1,490	720	2,600	33,400	3,730	4,310	1,310	1,940	1,130	1,690
22	430	1,200	1,290	700	2,000	39,000	3,660	4,410	1,360	2,410	1,100	2,210
23	534	1,180	1,160	700	1,700	50,100	3,680	4,240	1,670	4,740	730	1,790
24	547	1,200	1,150	670	1,500	48,500	4,740	4,040	1,470	6,140	866	1,100
25	560	1,180	1,010	630	1,250	36,300	5,520	3,520	1,320	5,470	835	745
26	588	1,160	1,100	600	1,150	23,100	4,980	3,320	1,310	7,110	644	430
27	588	1,080	1,150	580	6,000	16,800	4,440	3,020	1,420	6,220	1,030	482
28	760	978	1,050	570	24,200	13,400	4,410	2,910	1,470	5,990	644	430
29	946	978	880	540	28,500	11,800	4,710	2,630	1,730	5,940	715	388
30	672	946	1,050	510	.....	11,200	5,470	2,480	2,020	4,810	715	324
31	898	.....	1,150	490	.....	11,100	.....	2,240	.....	3,050	644	.....

* Winter discharge measurement made on this day.

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

g Computed from graph based on gage readings.

h Computed from wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 18-24, 30, 31, 1946, Jan. 1 to Feb. 1, Feb. 3-16, Feb. 22 to Mar. 5, Dec. 11-13, 26-31, 1947, Jan. 1-16, 19, Jan. 21 to Feb. 27, Mar. 6-12, 1948.

Des Moines River at Keosauqua, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1	283	299	715	640	1,100	13,000	22,600	5,650	3,300	5,260	1,100	730
2	430	230	588	620	1,120	*10,800	18,600	5,260	6,300	4,380	1,960	574
3	316	356	574	800	1,150	9,920	16,900	5,010	9,920	5,780	2,240	658
4	335	398	560	1,080	1,150	10,500	15,900	4,760	4,760	4,880	2,040	574
5	324	356	547	1,650	1,150	13,900	15,600	4,380	3,540	3,900	1,710	658
6	377	644	588	2,840	1,130	23,000	14,600	3,780	3,540	3,900	1,650	588
7	630	482	574	2,840	1,080	25,000	13,600	4,020	3,180	3,070	1,510	1,360
8	469	419	560	1,810	1,040	26,200	12,300	3,780	2,840	2,960	1,320	978
9	388	508	490	1,900	*1,000	30,000	11,400	3,780	3,070	2,520	1,200	658
10	356	760	400	2,170	980	31,300	10,500	3,540	2,700	2,370	1,150	1,150
11	366	820	380	1,900	950	30,800	9,630	3,300	2,480	1,860	1,160	1,250
12	419	745	360	1,230	940	27,400	8,770	3,180	2,300	1,750	2,540	2,040
13	345	644	430	994	1,050	20,400	8,210	2,960	2,110	1,650	1,830	2,660
14	335	700	616	1,100	960	13,900	8,210	2,960	2,960	1,550	1,460	898
15	335	482	745	1,900	900	11,700	10,200	2,750	7,110	1,460	1,670	962
16	356	508	630	4,000	850	10,500	9,920	2,630	3,780	1,460	1,470	978
17	324	*672	790	4,640	950	9,340	9,340	2,660	3,780	1,150	1,040	1,110
18	308	547	660	4,260	1,600	7,650	8,770	2,700	2,960	1,220	866	1,340
19	324	898	560	2,040	4,500	6,840	8,770	2,700	2,110	1,670	898	1,130
20	308	1,670	490	3,400	6,200	6,440	9,050	3,600	1,770	1,710	1,130	1,060
21	308	2,590	658	2,900	6,000	6,170	9,340	3,780	1,770	2,730	946	882
22	308	1,960	672	2,200	7,000	7,650	9,630	6,170	1,730	3,540	1,180	850
23	299	1,810	630	1,850	7,800	11,100	9,340	4,380	1,690	3,300	2,040	850
24	242	1,830	590	1,900	14,000	11,700	9,050	4,020	13,300	2,770	1,530	700
25	299	1,290	290	1,950	17,000	13,900	8,490	4,510	19,700	2,060	1,220	686
26	267	1,010	276	1,800	20,000	19,300	7,930	4,260	22,600	1,470	1,040	616
27	299	930	400	1,800	23,000	26,200	7,380	3,540	21,500	1,220	1,110	644
28	299	850	480	1,750	16,200	21,500	6,700	3,900	14,600	1,110	946	574
29	283	760	650	1,650	.....	19,700	6,170	4,140	10,500	1,630	700	560
30	299	715	600	1,550	.....	20,400	5,910	3,780	6,570	2,790	835	495
31	308	.....	*660	1,300	.....	29,100	.....	3,540	.....	1,290	658	.....
1949-50												
1	427	486	326	1,100	240	24,600	5,780	2,590	5,910	7,930	2,840	962
2	445	492	370	1,000	250	25,000	5,260	2,390	5,520	6,700	2,700	850
3	445	436	340	600	230	g12,600	5,010	2,210	5,910	6,840	2,280	866
4	402	408	395	520	210	g6,840	5,260	2,060	5,260	5,780	2,240	866
5	454	382	386	450	240	g6,570	5,650	2,020	5,010	4,880	2,130	820
6	404	410	264	500	400	g18,300	5,260	1,900	7,110	4,380	1,960	835
7	440	380	400	360	2,000	20,000	4,640	2,260	6,570	3,780	2,130	820
8	362	398	240	370	7,000	18,300	3,540	6,570	5,390	3,540	2,350	730
9	394	386	210	320	16,900	18,300	3,540	13,000	4,760	3,180	2,300	700
10	398	334	201	350	13,600	15,900	3,900	26,600	4,140	3,070	2,460	783
11	483	394	530	370	11,400	13,300	4,020	33,100	3,900	2,610	2,190	772
12	715	424	364	400	8,210	9,050	3,540	26,200	4,640	2,430	2,260	773
13	514	536	846	900	5,650	6,040	3,070	17,600	4,140	2,350	1,860	670
14	510	581	276	1,500	3,660	4,380	2,660	14,600	5,860	2,060	2,630	705
15	526	502	274	1,100	2,060	3,780	2,520	11,700	16,700	2,020	3,070	599
16	1,310	430	335	1,100	1,670	3,420	2,240	9,050	17,200	2,610	2,040	618
17	278	472	372	700	1,550	3,180	2,170	7,650	11,400	3,900	1,860	600
18	132	420	578	450	1,250	3,180	1,980	6,440	10,800	4,260	1,710	527
19	123	417	544	470	1,320	3,780	1,940	5,650	37,000	4,380	1,490	570
20	436	415	524	*500	1,290	4,880	1,830	4,640	34,200	4,140	1,250	601
21	568	388	543	440	2,480	4,880	1,710	4,880	30,400	3,900	1,270	626
22	540	354	294	380	3,660	4,640	1,650	5,910	27,000	3,900	1,130	840
23	745	397	286	450	3,900	4,640	1,470	7,380	26,600	3,540	1,150	692
24	715	378	230	490	3,900	6,440	5,020	7,110	26,600	3,780	1,530	536
25	574	298	261	350	2,020	6,700	10,200	6,040	21,200	4,510	1,220	504
26	760	350	306	300	978	6,570	4,760	6,170	19,700	5,010	1,110	514
27	896	376	330	310	1,570	7,380	3,070	6,170	17,900	4,760	994	564
28	464	324	310	330	7,380	7,380	2,040	6,700	16,900	4,380	930	1,740
29	561	344	330	270	.....	6,440	2,060	9,050	13,000	3,900	914	1,920
30	568	385	310	290	.....	6,300	2,390	7,650	9,630	3,540	962	1,670
31	442	.....	500	230	.....	6,170	.....	6,700	.....	3,070	930	.....

* Winter discharge measurement made on this day.

g Computed from graph based on gage readings.

Note—Stage-discharge relation affected by ice Dec. 8-12, 18-20, 24-31, 1948, Jan. 1-3, 15, 16, Jan. 20 to Feb. 25, Dec. 8, 9, 24, 27-31, 1949, Jan. 1 to Feb. 8, 1950.

Des Moines River at Keosauqua, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1942.....	112,510	6,110	2,190	3,629	0.261	0.30
November.....	66,140	3,410	1,410	2,205	.159	.18
December.....	66,470	9,280	500	2,144	.154	.18
Calendar year 1942.....	2,438,290	23,300	500	6,680	.481	6.54
January 1943.....	41,500	3,770	880	1,339	.096	.11
February.....	188,170	18,500	1,080	6,720	.483	.50
March.....	227,710	13,100	3,200	7,345	.528	.61
April.....	185,380	12,600	3,150	6,179	.445	.50
May.....	347,370	34,500	3,650	11,210	.806	.93
June.....	394,970	28,500	5,860	13,170	.947	1.06
July.....	285,680	14,500	6,460	9,215	.663	.76
August.....	339,900	21,900	6,660	10,960	.788	.91
September.....	123,940	7,360	1,930	4,131	.297	.33
Water year 1942-43.....	2,379,740	34,500	500	6,520	.469	6.37
October 1943.....	46,450	2,020	1,170	1,498	.108	.12
November.....	52,380	2,080	1,220	1,746	.126	.14
December.....	45,400	2,200	590	1,465	.105	.12
Calendar year 1943.....	2,278,850	34,500	590	6,243	.449	6.09
January 1944.....	34,520	3,590	670	1,114	.080	.09
February.....	62,230	4,800	550	2,146	.154	.17
March.....	214,930	13,700	2,650	6,933	.499	.58
April.....	546,030	50,600	4,880	18,200	1.31	1.46
May.....	1,003,500	70,900	13,900	32,370	2.33	2.68
June.....	877,600	49,300	10,700	29,250	2.10	2.35
July.....	234,460	9,810	5,560	7,563	.544	.63
August.....	165,370	13,600	2,740	5,335	.384	.44
September.....	104,450	6,280	2,180	3,482	.251	.28
Water year 1943-44.....	3,387,320	70,900	550	9,255	.666	9.06
October 1944.....	71,090	7,340	1,320	2,293	.165	.19
November.....	48,160	4,260	1,240	1,605	.115	.13
December.....	50,844	5,180	810	1,640	.118	.14
Calendar year 1944.....	3,413,184	70,900	550	9,326	.671	9.14
January 1945.....	29,535	1,090	765	953	.069	.08
February.....	163,480	18,900	810	5,839	.420	.44
March.....	604,690	39,400	5,760	19,510	1.40	1.62
April.....	652,000	46,600	10,400	21,730	1.56	1.74
May.....	727,800	47,200	10,300	23,480	1.69	1.95
June.....	728,500	35,100	10,700	24,280	1.75	1.95
July.....	213,680	14,300	4,310	6,893	.496	.57
August.....	121,960	13,400	3,710	6,837	.492	.57
September.....	85,430	11,300	1,140	2,848	.205	.23
Water year 1944-45.....	3,587,169	47,200	765	9,828	.707	9.61
October 1945.....	61,635	10,300	940	1,988	.143	.16
November.....	33,338	2,330	809	1,111	.080	.09
December.....	41,190	6,230	500	1,329	.096	.11
Calendar year 1945.....	3,553,238	47,200	500	9,735	.700	9.51
January 1946.....	267,940	49,100	810	8,643	.622	.72
February.....	161,210	11,000	2,800	5,758	.414	.43
March.....	544,630	35,800	5,890	17,570	1.26	1.46
April.....	243,330	14,600	3,780	8,111	.584	.65
May.....	232,710	22,000	3,610	7,507	.540	.62
June.....	562,260	62,300	4,170	18,740	1.35	1.50
July.....	226,660	39,000	2,540	7,312	.526	.61
August.....	123,670	18,500	1,380	3,989	.287	.33
September.....	117,390	13,200	1,730	3,913	.282	.31
Water year 1945-46.....	2,615,693	62,300	500	7,166	.516	6.99

Des Moines River at Keosauqua, Iowa—Continued
 Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1946.....	140,930	12,000	1,610	4,546	0.327	0.38
November.....	123,180	5,630	3,030	4,106	.295	.33
December.....	70,780	3,590	900	2,283	.164	.19
Calendar year 1946.....	2,814,690	62,300	810	7,711	.555	7.53
January 1947.....	51,400	2,600	500	1,658	.119	.14
February.....	83,060	6,930	1,000	2,966	.213	.22
March.....	226,500	19,100	2,250	7,306	.526	.61
April.....	621,530	46,300	6,850	20,720	1.49	1.66
May.....	336,710	31,000	6,590	10,860	.781	.90
June.....	1,766,600	115,000	21,900	58,890	4.24	4.73
July.....	547,120	66,800	4,020	17,650	1.27	1.46
August.....	63,120	3,900	1,230	2,036	.146	.17
September.....	28,349	3,490	560	945	.068	.08
Water year 1946-47.....	4,059,279	115,000	500	11,120	.800	10.87
October 1947.....	19,013	945	430	613	.044	.05
November.....	37,126	2,170	930	1,238	.089	.10
December.....	50,026	3,780	866	1,614	.116	.13
Calendar year 1947.....	3,830,554	115,000	430	10,490	.755	10.25
January 1948.....	24,710	1,350	280	797	.057	.07
February.....	88,130	28,500	340	3,039	.219	.24
March.....	554,590	50,100	2,630	17,890	1.29	1.48
April.....	182,790	10,500	3,660	6,093	.438	.49
May.....	169,580	9,860	2,240	5,470	.394	.45
June.....	46,720	2,210	1,290	1,557	.112	.12
July.....	92,790	7,110	1,290	2,993	.215	.25
August.....	38,435	2,770	644	1,240	.089	.10
September.....	22,900	2,210	324	763	.055	.06
Water year 1947-48.....	1,326,810	50,100	280	3,625	.261	3.54
October 1948.....	10,539	630	242	340	.024	.03
November.....	25,883	2,590	230	863	.062	.07
December.....	17,157	790	270	553	.040	.05
Calendar year 1948.....	1,274,224	50,100	230	3,481	.250	3.41
January 1949.....	62,464	4,640	620	2,015	.145	.17
February.....	140,800	23,000	850	5,029	.362	.38
March.....	525,310	31,300	6,170	16,950	1.22	1.41
April.....	322,810	22,600	5,910	10,760	.774	.86
May.....	119,570	6,170	2,630	3,857	.277	.32
June.....	188,470	22,600	1,690	6,282	.452	.50
July.....	78,410	5,780	1,110	2,529	.182	.21
August.....	42,149	2,540	658	1,369	.098	.11
September.....	28,213	2,660	495	940	.068	.08
Water year 1948-49.....	1,561,775	31,300	230	4,279	.308	4.19
October 1949.....	16,031	1,310	123	517	.037	.04
November.....	12,297	581	298	410	.029	.03
December.....	11,475	846	201	370	.027	.03
Calendar year 1949.....	1,547,999	31,300	123	4,241	.305	4.14
January 1950.....	16,900	1,500	230	545	.039	.05
February.....	105,018	16,900	210	3,751	.270	.28
March.....	288,940	25,000	3,180	9,321	.671	.77
April.....	108,180	10,200	1,470	3,606	.259	.29
May.....	271,980	33,100	1,900	8,774	.631	.73
June.....	410,350	37,000	3,900	13,680	.984	1.10
July.....	125,130	7,930	2,020	4,036	.290	.33
August.....	55,890	3,070	914	1,803	.130	.15
September.....	24,273	1,920	504	809	.058	.06
Water year 1949-50.....	1,446,474	37,000	123	3,963	.285	3.86

East Fork Des Moines River near Hardy, Iowa

LOCATION.—Lat. 42°48'10", long. 94°08'00", in NW ¼ NE ¼ sec. 10, T. 92 N., R. 28 W., 4½ miles west of Hardy, 6 miles northeast of Dakota City, 7½ miles downstream from Lotts Creek, and 12 miles upstream from mouth.

DRAINAGE AREA.—1,230 square miles.

RECORDS AVAILABLE.—March 1940 to September 1950.

GAGE.—Wire-weight gage; gage read once daily.

AVERAGE DISCHARGE.—10 years, 528 second-feet.

EXTREMES.—Maximum and minimum discharges for the water years 1943-50 are contained in the following table:

Water Year	Maximum Observed			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	July 7	2,360	(1)9.72	Jan. 20	20
1943-44...	June 14	6,650	(1)14.50	Jan. 12	45
1944-45...	Aug. 15	5,530	(1)13.48	Jan. 3	26
1945-46...	May 24	5,410	(1)13.36	Dec. 22, Jan. 26, Aug. 30	31
1946-47...	June 23	13,000	(2)15.4	Sept. 24	16
1947-48...	Feb. 28	3,860	(3)12.60	Sept. 23	5.0
1948-49...	Apr. 1	3,290	11.1	Sept. 30	6.3
1949-50...	July 19	2,300	9.6	Oct. 1	6.3

(1) Observed.

(2) Floodmark.

(3) Backwater from ice.

1940-50: Maximum discharge, 13,000 second-feet June 23, 1947 (gage-height, 15.4 feet); minimum observed, 5.0 second-feet Sept. 23, 1948.

Maximum stage known, about 17.4 feet in September 1938, from information by local residents.

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

COOPERATION.—Services of observer and several discharge measurements furnished by Corps of Engineers.

East Fork Des Moines River near Hardy, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1	172	92	50	40	35	1,300	1,620	198	401	1,820	906	1,550
2	172	92	45	40	60	1,050	1,380	189	377	2,000	946	1,500
3	174	90	45	43	100	900	1,080	179	357	2,200	1,020	1,350
4	176	98	48	42	200	800	751	174	319	2,300	1,080	1,230
5	179	104	50	40	250	720	618	164	296	2,280	975	1,110
6	168	84	51	40	300	650	568	160	285	2,300	906	990
7	214	82	52	40	250	600	550	153	283	2,350	877	865
8	253	82	52	41	280	560	524	145	285	2,240	842	768
9	279	84	51	42	350	540	485	140	287	2,080	807	729
10	265	82	50	42	300	530	438	138	293	1,870	929	684
11	145	80	*48	42	250	530	422	135	293	1,660	975	602
12	149	80	45	40	220	540	424	131	285	1,380	1,030	492
13	149	78	44	37	200	600	420	126	850	1,080	1,090	504
14	157	74	45	37	190	650	397	117	946	874	1,140	514
15	160	75	47	40	175	700	390	145	935	731	1,210	480
16	150	75	48	37	170	800	383	609	935	667	1,250	456
17	135	74	48	35	180	860	361	1,110	946	643	1,250	429
18	120	73	47	30	200	840	335	1,200	975	684	1,210	431
19	115	73	45	22	250	*818	306	1,110	993	768	1,170	377
20	110	73	40	20	450	750	296	1,020	1,010	785	1,110	357
21	105	72	42	22	650	700	277	885	1,030	833	1,070	329
22	104	72	43	25	850	720	271	740	1,200	888	987	314
23	100	73	45	27	1,100	816	273	610	1,100	804	793	285
24	97	74	47	25	1,300	1,220	267	591	981	673	651	265
25	92	70	48	22	1,400	1,580	261	570	908	581	684	265
26	90	65	47	23	1,470	1,670	251	539	853	514	1,030	255
27	92	65	45	24	1,500	1,300	241	509	804	475	1,210	243
28	88	62	44	*24	1,450	1,300	227	492	1,310	415	1,280	231
29	94	60	43	25	.....	1,530	225	478	1,740	544	1,360	221
30	100	55	42	26	.....	1,840	210	461	1,830	665	1,430	210
31	97	.....	40	28	.....	1,830	.....	433	.....	826	1,490	.....
1943-44												
1	204	138	312	75	225	780	415	1,150	1,690	961	271	856
2	198	145	323	75	265	822	618	1,050	1,500	842	257	827
3	191	149	275	80	233	581	675	1,140	1,330	729	237	754
4	189	149	273	80	172	394	651	1,260	1,120	650	329	692
5	179	149	310	80	160	377	542	1,350	1,020	581	591	621
6	174	153	298	70	140	330	420	1,420	906	532	816	507
7	168	170	321	50	140	260	368	1,440	822	544	740	461
8	164	195	335	55	130	240	350	1,460	801	534	678	413
9	157	170	250	55	90	230	355	1,460	891	522	461	372
10	153	128	210	55	85	260	397	1,430	1,000	597	314	342
11	147	176	130	55	70	330	445	1,380	1,170	675	261	312
12	142	225	120	45	55	401	452	1,320	2,520	813	219	298
13	142	269	100	50	60	422	429	1,320	5,900	926	198	281
14	142	338	80	50	60	485	424	1,300	6,470	964	196	271
15	140	259	70	50	65	406	468	1,290	5,920	987	208	259
16	138	243	90	50	65	361	532	1,300	5,330	1,040	404	243
17	135	225	100	50	65	359	568	1,260	4,690	1,180	348	231
18	133	319	110	50	55	388	597	1,320	4,130	1,250	352	227
19	133	319	110	*50	60	383	573	2,510	3,660	1,250	576	239
20	133	304	120	50	65	359	643	3,780	3,470	1,150	684	255
21	131	308	120	55	70	350	824	4,190	3,260	1,010	565	273
22	131	323	100	60	75	370	993	3,990	2,950	874	461	283
23	131	323	80	65	95	433	1,090	4,510	2,660	726	323	316
24	128	370	80	65	110	819	1,260	4,430	2,360	624	279	293
25	124	340	80	80	140	859	1,410	3,920	2,140	555	200	312
26	121	327	70	110	470	888	1,440	3,370	1,920	504	216	342
27	117	321	70	160	640	782	1,440	2,960	1,740	461	255	366
28	116	314	70	220	710	568	1,400	2,650	1,540	404	344	348
29	114	293	70	270	*740	445	1,370	2,410	1,330	361	621	331
30	112	251	70	300	.....	333	1,300	2,180	1,140	327	836	308
31	124	.....	70	304	.....	296	.....	1,920	.....	306	894	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relations affected by ice Nov. 25 to Dec. 31, 1942, Jan. 1 to Mar. 22, Dec. 9-31, 1943, Jan. 1-29, Feb. 5 to Mar. 1, Mar. 6-11, 1944 (no gage-height record Jan. 10-27, Jan. 29 to Mar. 18, 1943.) No gage-height record Oct. 16 to Nov. 14, 1942, Sept. 5, 1943, July 4, 1944; discharge computed on basis of records for nearby stations.

East Fork Des Moines River near Hardy, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1	301	114	90	28	29	650	880	1,690	2,560	1,450	448	513
2	275	115	83	27	29	770	832	1,560	2,700	1,480	479	399
3	261	106	80	26	29	740	736	1,430	2,520	1,430	479	343
4	255	102	80	27	29	680	625	1,320	2,380	1,340	414	321
5	259	98	80	27	29	650	546	1,270	2,310	1,240	380	311
6	261	94	78	28	29	720	603	1,190	2,260	1,230	319	275
7	263	96	77	29	29	796	754	1,130	2,200	1,240	341	237
8	249	*98	76	30	29	944	916	986	2,080	1,160	357	223
9	235	98	75	30	29	1,130	1,220	865	1,900	1,070	337	198
10	221	96	86	30	29	1,880	1,310	802	1,830	904	355	186
11	215	96	84	31	34	2,340	1,450	772	2,080	793	479	169
12	209	95	80	32	50	2,430	1,760	748	2,250	712	805	158
13	202	94	75	32	140	1,760	2,100	721	2,310	617	1,030	144
14	194	153	72	31	305	1,950	2,160	802	2,380	581	2,020	137
15	186	134	69	31	450	*2,730	2,060	1,000	2,640	526	5,530	130
16	177	116	*65	30	420	3,090	2,160	1,130	2,910	503	4,890	126
17	166	114	62	30	395	3,070	2,260	1,130	2,860	518	4,610	120
18	164	110	59	30	370	2,850	2,180	1,070	2,620	562	4,120	118
19	156	108	55	30	340	2,620	1,960	961	2,400	614	3,550	118
20	153	108	53	30	320	2,240	1,870	901	2,260	628	3,040	115
21	151	106	50	30	290	1,990	1,780	968	2,140	592	2,530	105
22	149	105	47	30	260	1,780	1,620	2,700	2,040	520	2,210	102
23	145	103	45	30	230	1,660	2,410	2,780	1,920	448	1,640	99
24	140	102	42	30	210	1,390	2,360	2,470	1,780	414	1,140	95
25	137	102	40	29	220	1,360	2,220	2,430	1,680	384	904	88
26	132	98	37	*28	310	1,190	2,130	2,510	1,570	355	853	94
27	127	94	35	28	430	1,110	2,200	2,580	1,580	369	766	96
28	122	96	33	29	530	1,090	2,210	2,540	1,510	374	700	103
29	129	86	31	29	.....	1,080	2,120	2,460	1,440	393	583	106
30	116	85	30	29	.....	1,010	1,830	2,260	1,400	446	533	112
31	114	.....	29	29	.....	954	.....	2,240	.....	459	498	.....
1945-46												
1	110	58	60	30	43	1,390	1,680	213	1,530	1,510	129	35
2	109	59	81	41	41	1,500	1,520	192	1,240	1,400	109	35
3	105	58	*88	42	40	1,520	1,450	213	1,070	910	102	34
4	103	58	82	44	46	1,560	1,280	253	931	989	99	34
5	98	58	76	80	800	1,560	989	329	841	829	98	33
6	94	58	70	175	1,090	1,820	802	399	764	688	94	37
7	92	58	66	185	700	*1,470	706	393	685	628	81	51
8	88	57	62	175	600	1,400	700	382	606	600	77	85
9	83	56	60	145	550	1,370	712	349	562	700	75	202
10	82	55	49	130	500	1,280	715	361	508	614	67	259
11	81	55	56	130	500	1,290	694	418	452	506	63	219
12	80	57	51	100	480	1,780	659	476	510	446	71	183
13	80	57	50	68	460	1,980	631	508	556	382	71	149
14	81	58	44	*53	450	1,910	608	477	541	347	63	126
15	77	58	38	54	420	1,720	554	463	868	309	59	109
16	75	59	33	54	400	1,640	489	436	1,310	289	63	96
17	70	59	33	66	370	1,670	422	410	1,370	271	66	87
18	68	57	35	61	395	1,720	408	435	1,420	257	63	83
19	64	55	34	56	400	1,670	386	450	1,630	239	58	94
20	63	53	32	45	500	1,560	368	617	1,920	225	90	98
21	62	46	33	38	600	1,400	347	691	2,080	209	102	96
22	61	40	31	32	1,090	1,200	327	757	2,080	192	77	105
23	61	32	33	35	1,100	1,040	307	760	2,060	175	49	116
24	61	34	33	36	1,150	1,080	283	5,280	2,120	160	47	129
25	60	38	33	34	1,100	1,180	259	3,730	2,100	149	44	138
26	59	40	33	31	1,200	1,310	247	2,880	2,000	132	40	132
27	59	42	33	32	1,300	1,400	235	2,820	1,850	235	40	126
28	58	49	35	34	1,280	1,430	227	2,280	1,630	196	38	124
29	59	55	37	41	.....	1,430	209	2,120	1,290	168	34	108
30	59	56	38	45	.....	1,540	243	2,000	1,280	132	31	103
31	58	.....	39	44	.....	1,790	.....	1,790	.....	162	35	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 29 to Dec. 31, 1944, Jan. 1 to Mar. 6, Nov. 21 to Dec. 31, 1945, Jan. 1 to Mar. 1, Mar. 6-11, 1946 (no gage-height record Jan. 23-25, Jan. 27 to Feb. 4, Nov. 21, Dec. 4-8, 26, 28, 1945).

East Fork Des Moines River near Hardy, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1	103	343	350	75	180	170	847	1,130	594	6,250	177	85
2	98	327	330	70	170	160	670	1,160	769	4,570	130	62
3	95	307	300	75	160	150	538	1,150	829	4,350	115	32
4	98	289	290	80	150	160	645	1,140	978	4,150	149	30
5	95	287	300	100	140	170	581	1,130	982	3,650	153	39
6	103	275	310	120	125	180	703	972	84	3,410	156	35
7	130	275	295	140	120	200	823	832	742	3,210	146	27
8	140	277	313	150	115	300	913	1,000	676	3,610	140	29
9	145	293	273	150	115	400	978	862	802	2,580	85	25
10	181	321	271	130	120	500	1,290	799	916	2,860	73	22
11	241	380	275	120	130	600	1,780	733	883	2,520	62	45
12	249	420	283	130	150	700	2,500	700	1,050	2,250	66	49
13	335	486	211	140	170	800	1,950	790	1,240	2,050	60	53
14	435	*562	170	150	190	900	2,060	739	1,260	1,830	62	62
15	351	594	130	*160	210	1,100	2,200	850	1,150	1,670	69	45
16	337	600	100	170	230	1,150	2,380	868	1,260	1,820	75	32
17	349	606	*80	180	260	1,100	2,220	2,160	1,240	1,540	73	27
18	353	694	70	190	280	1,000	2,060	1,800	1,880	1,180	71	23
19	353	730	80	200	300	900	1,840	1,450	1,820	850	69	19
20	347	659	90	200	320	850	1,540	910	1,620	790	57	27
21	327	572	100	200	340	800	1,360	859	1,740	760	45	45
22	303	528	120	205	330	800	1,400	614	1,900	508	55	53
23	293	486	150	205	310	1,000	1,330	871	8,290	484	58	27
24	307	479	180	205	280	1,410	1,300	832	10,300	418	45	16
25	305	475	190	210	240	1,310	1,140	781	8,520	397	34	20
26	380	468	180	210	*200	1,260	1,060	700	6,520	376	50	24
27	459	459	150	220	190	1,210	982	639	5,280	352	45	21
28	433	437	120	220	180	1,160	944	631	4,480	339	41	20
29	410	420	100	220	.....	1,210	832	617	4,250	319	34	23
30	389	380	90	220	.....	1,160	877	608	5,050	235	45	23
31	366	.....	80	210	.....	1,120	.....	589	.....	195	62	.....
1947-48												
1	21	32	48	25	15	3,300	832	475	115	287	79	21
2	21	27	49	26	15	2,900	718	431	101	207	72	17
3	21	25	51	26	15	2,400	575	410	88	121	62	20
4	22	44	54	27	15	1,800	484	363	98	106	54	24
5	24	45	54	28	16	1,200	508	410	93	93	38	25
6	25	101	53	29	16	600	533	431	90	84	62	27
7	21	105	50	30	16	400	562	363	88	75	73	31
8	18	112	48	31	16	300	659	368	84	62	62	23
9	17	37	47	32	16	210	589	347	73	60	74	18
10	19	38	46	33	16	180	523	327	66	58	86	14
11	15	39	46	32	16	170	475	307	69	69	99	11
12	19	30	46	31	16	160	470	267	80	93	141	11
13	24	34	46	29	16	150	466	227	78	51	99	12
14	23	40	46	27	16	140	457	247	75	98	161	12
15	21	38	46	26	16	130	443	363	73	105	230	11
16	20	36	46	24	17	1,350	351	368	85	121	259	8.8
17	19	37	46	22	400	2,200	327	410	98	137	83	7.6
18	18	36	46	21	700	2,760	307	718	101	172	75	7.2
19	18	39	*46	20	800	2,500	267	659	104	229	118	8.8
20	17	42	46	19	650	2,560	259	523	101	349	170	11
21	15	44	46	19	480	2,620	247	389	95	182	44	12
22	18	46	45	18	400	2,790	243	327	93	138	47	6.4
23	24	50	45	*18	300	2,440	247	267	80	109	39	5.0
24	27	56	44	18	220	2,130	279	219	78	132	34	6.0
25	23	52	43	17	190	1,880	337	184	93	156	32	7.6
26	26	50	42	16	180	1,680	431	153	121	163	29	5.8
27	25	48	40	16	1,150	1,320	475	137	153	127	26	7.2
28	30	47	38	16	*3,200	1,140	523	121	197	122	21	9.2
29	36	47	35	15	3,550	961	491	114	267	114	26	8.4
30	53	47	32	15	.....	844	498	106	347	111	31	8.0
31	45	.....	29	15	.....	838	.....	130	.....	84	25	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 29 to Dec. 6, Dec. 14-31, 1946, Jan. 1 to Mar. 23, Nov. 10 to Dec. 31, 1947, Jan. 1 to Mar. 17, 1948.

East Fork Des Moines River near Hardy, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	8.4	26	28	21	*28	90	3,210	295	140	140	251	17
2.....	9.2	27	27	21	27	100	2,860	265	143	137	156	18
3.....	10	28	26	21	27	350	2,790	285	143	133	104	19
4.....	12	20	27	35	27	700	2,650	215	153	130	80	21
5.....	13	15	29	50	27	1,300	2,460	177	181	105	69	24
6.....	14	25	31	70	27	2,800	2,150	140	295	83	66	25
7.....	12	31	32	74	27	2,700	1,860	127	255	78	53	26
8.....	10	35	30	74	27	2,500	1,620	124	215	80	45	27
9.....	11	36	26	74	27	*2,200	1,460	121	177	98	39	30
10.....	10	32	24	74	27	2,000	1,120	118	143	45	32	34
11.....	9.5	29	22	72	27	1,700	1,040	133	127	39	39	36
12.....	9.0	26	21	70	26	1,500	910	195	112	45	27	39
13.....	9.0	24	20	70	26	1,300	850	215	98	53	23	38
14.....	9.5	27	20	72	27	1,100	745	177	85	62	19	31
15.....	11	31	20	80	27	1,000	685	156	73	53	16	19
16.....	10	25	*21	82	27	900	656	124	62	45	13	16
17.....	10	21	22	82	27	700	715	109	53	85	19	13
18.....	10	25	22	82	27	660	760	124	62	39	32	10
19.....	12	45	22	82	27	600	790	163	112	31	27	11
20.....	17	39	22	80	27	640	850	177	98	23	23	12
21.....	16	34	21	82	27	850	820	195	143	42	19	13
22.....	15	30	22	82	28	1,740	760	235	345	65	13	11
23.....	16	26	21	70	29	1,580	586	275	355	53	12	10
24.....	17	34	20	63	40	1,620	533	355	376	45	16	9.0
25.....	18	48	20	56	42	1,950	484	345	572	32	26	10
26.....	19	47	20	49	42	2,300	439	305	295	98	41	9.0
27.....	21	45	21	43	45	2,930	376	243	275	730	32	8.0
28.....	23	45	22	39	60	3,070	355	239	255	1,220	26	7.0
29.....	33	35	21	35	.....	2,860	335	235	177	910	21	6.6
30.....	30	30	21	32	.....	2,930	325	157	143	600	19	6.3
31.....	28	.....	21	29	.....	3,140	.....	143	.....	366	16	.....
1949-50												
1.....	6.3	18	19	14	14	50	850	180	318	174	252	39
2.....	7.0	18	19	14	14	45	607	216	318	163	256	37
3.....	7.8	21	21	14	14	44	470	256	318	139	256	36
4.....	10	25	21	14	14	80	371	297	308	136	256	34
5.....	10	30	22	14	15	500	276	256	297	126	212	33
6.....	13	35	*21	15	15	800	182	216	297	111	149	33
7.....	16	21	19	16	15	1,200	216	492	276	97	129	22
8.....	17	18	18	18	*15	1,000	252	730	256	84	123	21
9.....	17	20	17	19	16	870	266	1,430	216	126	117	21
10.....	17	20	24	17	16	760	276	1,580	180	180	126	20
11.....	17	20	35	*16	16	670	244	1,220	159	297	149	21
12.....	18	21	43	16	16	570	201	910	156	371	126	23
13.....	18	18	33	15	16	510	159	705	142	448	105	25
14.....	19	21	34	15	16	450	156	526	170	318	94	26
15.....	19	17	35	15	15	410	152	393	234	276	89	25
16.....	23	16	28	14	15	420	149	360	481	318	82	26
17.....	27	27	21	14	15	440	145	350	760	382	77	27
18.....	17	38	15	14	15	420	142	339	1,430	393	45	30
19.....	19	53	18	14	15	380	132	339	1,580	1,900	73	33
20.....	25	38	19	14	15	360	123	328	1,860	1,500	74	40
21.....	25	32	10	14	15	360	120	426	1,700	1,150	77	145
22.....	24	23	10	14	15	370	117	680	760	1,040	74	276
23.....	19	21	11	14	15	380	140	820	730	910	72	191
24.....	17	25	12	14	15	410	350	730	655	760	61	156
25.....	16	20	14	14	17	500	308	655	607	630	51	123
26.....	15	19	14	14	19	640	216	561	526	526	43	105
27.....	15	19	14	14	23	800	157	492	437	393	59	92
28.....	15	18	14	14	80	1,000	142	393	286	382	61	82
29.....	16	19	15	14	.....	950	149	382	248	318	65	72
30.....	17	19	14	14	.....	880	163	350	180	256	68	68
31.....	17	.....	14	14	.....	880	.....	318	.....	248	40	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 29 to Dec. 31, 1948, Jan. 1 to Mar. 20, Dec. 6-20, 22-31, 1949, Jan. 1 to Mar. 29, 1950. Backwater from Beaver dam Oct. 1 to Nov. 28, 1948, Sept. 19 to Oct. 13, 1949; discharge computed on basis of records for nearby stations.

East Fork Des Moines River near Hardy, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1942.....	4,501	279	88	145	0.118	0.14
November.....	2,313	104	55	77.1	.063	.07
December.....	1,437	52	40	46.4	.038	.04
Calendar year 1942.....	149,001	1,450	40	408	.332	4.51
January 1943.....	1,021	43	20	32.9	.027	.03
February.....	14,130	1,500	35	505	.411	.43
March.....	29,244	1,840	530	943	.767	.88
April.....	14,251	1,620	210	475	.386	.43
May.....	13,651	1,200	117	440	.358	.41
June.....	23,107	1,830	283	770	.626	.70
July.....	37,970	2,350	415	1,225	.996	1.15
August.....	32,708	1,490	651	1,055	.858	.89
September.....	18,036	1,550	210	601	.489	.55
Water year 1942-43.....	192,369	2,350	20	527	.428	5.82
October 1943.....	4,511	204	112	146	.119	.14
November.....	7,393	370	138	246	.200	.22
December.....	4,817	335	70	155	.126	.15
Calendar year 1943.....	200,839	2,350	20	550	.447	6.08
January 1944.....	2,864	304	45	92.4	.075	.09
February.....	5,310	740	55	183	.149	.16
March.....	14,311	888	230	462	.376	.43
April.....	22,449	1,440	350	748	.608	.68
May.....	66,470	4,510	1,050	2,144	1.74	2.01
June.....	75,380	6,470	801	2,513	2.04	2.28
July.....	22,879	1,250	306	738	.600	.69
August.....	13,134	894	196	424	.345	.40
September.....	11,633	856	227	388	.315	.35
Water year 1943-44.....	251,151	6,470	45	686	.558	7.60
October 1944.....	5,855	301	114	189	.154	.18
November.....	3,122	153	85	104	.085	.09
December.....	1,898	90	29	61.2	.050	.06
Calendar year 1944.....	245,305	6,470	29	670	.545	7.42
January 1945.....	910	32	26	29.4	.024	.03
February.....	5,594	530	29	200	.163	.17
March.....	48,654	3,090	650	1,569	1.28	1.47
April.....	49,262	2,410	546	1,642	1.33	1.49
May.....	47,386	2,780	721	1,529	1.24	1.43
June.....	64,540	2,910	1,400	2,151	1.75	1.95
July.....	23,349	1,480	355	753	.612	.71
August.....	46,300	5,530	319	1,494	1.21	1.40
September.....	5,341	513	88	145	.118	.16
Water year 1944-45.....	302,211	5,530	26	828	.673	9.14
October 1945.....	2,361	110	58	76.2	.062	.07
November.....	1,575	59	32	52.5	.043	.05
December.....	1,478	88	31	47.7	.039	.04
Calendar year 1945.....	296,750	5,530	26	813	.661	8.97
January 1946.....	2,145	185	31	69.2	.056	.06
February.....	17,425	1,300	40	622	.506	.53
March.....	46,610	1,980	1,040	1,504	1.22	1.41
April.....	18,457	1,680	209	615	.500	.56
May.....	32,588	5,280	192	1,051	.854	.99
June.....	37,794	2,120	452	1,260	1.02	1.14
July.....	14,069	1,510	132	454	.369	.43
August.....	2,135	129	31	68.9	.056	.06
September.....	3,229	259	33	108	.088	.10
Water year 1945-46.....	179,866	5,280	31	493	.401	5.44

East Fork Des Moines River near Hardy, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946	8,510	459	95	275	0.224	0.26
November	13,429	730	275	448	.364	.41
December	5,981	350	70	193	.157	.18
Calendar year 1946	202,372	5,280	31	554	.450	6.13
January 1947	5,055	220	70	163	.133	.15
February	5,705	340	115	204	.166	.17
March	23,930	1,410	150	772	.628	.72
April	39,743	2,500	538	1,325	1.08	1.20
May	28,916	2,160	589	933	.759	.87
June	77,962	10,300	594	2,599	2.11	2.36
July	59,526	6,250	195	1,920	1.56	1.80
August	2,503	177	34	80.7	.066	.08
September	1,040	85	16	34.7	.028	.03
Water year 1946-47	272,300	10,300	16	746	.607	8.23
October 1947	725	53	15	23.4	.019	.02
November	1,424	112	25	47.5	.039	.04
December	1,399	54	29	45.1	.037	.04
Calendar year 1947	247,928	10,300	15	679	.552	7.48
January 1948	721	33	15	23.3	.019	.02
February	12,473	3,550	15	430	.350	.38
March	44,053	3,300	130	1,421	1.16	1.33
April	13,576	832	243	452	.367	.41
May	10,161	718	106	328	.267	.31
June	3,284	347	66	109	.089	.10
July	4,015	349	51	130	.106	.12
August	2,460	259	21	79.4	.065	.07
September	396.0	31	5.0	13.2	.011	.01
Water year 1947-48	94,687.0	3,550	5.0	259	.211	2.85
October 1948	452.6	33	8.4	14.6	.012	.01
November	941	48	15	31.4	.026	.03
December	722	32	20	23.3	.019	.02
Calendar year 1948	93,254.6	3,550	5.0	255	.207	2.81
January 1949	1,866	82	21	60.2	.049	.06
February	852	60	26	30.4	.025	.03
March	49,870	3,140	90	1,609	1.31	1.51
April	35,194	3,210	325	1,173	.954	1.06
May	6,167	355	118	199	.162	.19
June	5,663	572	53	189	.154	.17
July	5,665	1,220	23	183	.149	.17
August	1,374	251	12	44.3	.036	.04
September	555.9	39	6.3	18.5	.015	.02
Water year 1948-49	109,322.5	3,210	6.3	300	.244	3.31
October 1949	519.1	27	6.3	16.7	.014	.02
November	710	53	16	23.7	.019	.02
December	624	43	10	20.1	.016	.02
Calendar year 1949	109,060.0	3,210	6.3	299	.243	3.31
January 1950	456	19	14	14.7	.012	.01
February	501	80	14	17.9	.015	.02
March	17,149	1,200	44	553	.459	.52
April	7,231	850	117	241	.196	.22
May	16,930	1,580	180	546	.444	.51
June	15,885	1,860	112	530	.431	.48
July	14,152	1,900	84	457	.372	.43
August	3,471	266	40	112	.091	.10
September	1,882	276	20	62.7	.051	.06
Water year 1949-50	79,510.1	1,900	6.3	218	.177	2.41

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., on downstream truss of bridge on county road 3 miles south of Clare, 8 miles upstream from confluence with South Lizard Creek, and 8 miles northeast of Fort Dodge.

DRAINAGE AREA.—257 square miles.

RECORDS AVAILABLE.—March 1940 to September 1950.

GAGE.—Wire-weight gage, read once daily at low and medium stages, more often at high stages.

AVERAGE DISCHARGE.—10 years, 94.9 second-feet.

EXTREMES.—Maximum and minimum discharges for the water years 1943-50 are contained in the following table:

Water Year	Maximum Observed			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Feb. 22	1,440	(¹)	Sept. 30	0
1943-44...	May 22	4,410	11.11	Oct. 3, Jan. 12, 13, Feb. 14-18	.1
1944-45...	May 22	3,310	6.73	Feb. 12	2
1945-46...	May 25	2,650	9.08	Dec. 17-27	1
1946-47...	June 23	10,000	(²)16.0	Feb. 7	.4
1947-48...	Mar. 18	1,550	7.52	Sept. 26-29	.3
1948-49...	Mar. 5	1,700	(³)10.00	July 20	.2
1949-50...	June 21	870	5.69	Jan. 26 to Feb. 25	.3

(1) Maximum gage height 8.16 feet Feb. 21 (ice jam).

(2) From floodmark.

(3) Backwater from ice.

1940-50: Maximum discharge observed, 10,000 second-feet June 23, 1947 (gage height, 16.0 feet, from floodmark), from rating curve extended above 3,500 second-feet; no flow Sept. 30, 1943.

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

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

North Lizard Creek near Clare, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	50	18	8	16	5	230	131	78	104	251	19	5.0
2.....	45	19	8	17	20	190	124	64	101	238	19	5.6
3.....	48	18	9	15	55	160	118	53	93	219	21	3.8
4.....	45	17	10	12	90	120	98	50	88	206	23	4.4
5.....	48	17	12	10	130	100	86	53	82	189	22	5.3
6.....	50	18	15	10	171	95	74	48	76	173	22	5.0
7.....	48	16	18	10	157	90	68	42	70	177	21	4.7
8.....	45	18	18	10	150	85	63	35	66	144	19	3.5
9.....	42	18	17	10	140	85	64	40	74	111	18	3.0
10.....	32	18	17	10	130	90	64	41	82	95	16	2.3
11.....	24	18	15	10	120	100	70	40	92	74	15	1.3
12.....	28	16	*12	10	105	121	82	42	95	70	14	2.5
13.....	31	16	10	10	90	169	92	53	139	62	12	2.1
14.....	30	15	9	10	65	189	75	42	200	53	5.9	1.8
15.....	28	14	10	10	60	209	64	101	181	60	6.5	1.6
16.....	26	15	12	10	55	200	64	425	211	52	9.6	1.2
17.....	25	16	15	10	55	160	62	676	150	53	9.2	1.1
18.....	23	15	15	8	60	*141	59	614	130	40	8.3	.8
19.....	23	15	12	5	100	145	50	566	95	44	7.4	.8
20.....	22	15	8	2	300	160	46	376	86	42	6.5	1.2
21.....	22	16	10	5	900	190	48	280	74	87	6.2	.8
22.....	22	14	12	8	1,380	220	50	200	181	106	6.2	.8
23.....	19	14	15	10	1,080	250	56	80	118	72	5.9	.8
24.....	18	15	17	8	799	290	50	124	92	50	5.9	.7
25.....	16	14	19	5	445	310	44	154	111	42	5.9	.7
26.....	21	14	20	4	417	317	37	135	98	30	5.6	.4
27.....	23	14	19	4	332	324	39	121	88	23	5.0	.3
28.....	22	14	17	*4	263	247	42	118	251	21	4.4	.2
29.....	19	12	15	4	.....	152	68	112	320	25	7.0	.1
30.....	22	10	15	5	.....	159	86	106	261	23	5.9	0.
31.....	18	.....	15	5	.....	142	.....	106	.....	21	5.0	.....
1943-44												
1.....	.7	6.0	4.3	.4	3.4	25	47	107	208	69	40	59
2.....	.4	4.6	3.6	.3	3.4	28	48	110	187	65	40	52
3.....	.1	3.4	4.3	.4	3.4	31	48	185	166	62	36	46
4.....	.7	3.4	*3.6	.4	3.0	31	48	192	148	56	69	42
5.....	.7	2.8	4.3	.4	2.5	26	40	196	139	53	84	39
6.....	.7	2.8	4.3	.3	1.7	24	29	183	138	53	96	37
7.....	.8	4.3	4.3	.2	1.5	19	29	148	150	141	68	34
8.....	1.1	a5	4.3	.2	1.3	18	28	143	138	120	56	30
9.....	1.2	6.3	3.6	.2	.9	17	31	141	179	114	48	28
10.....	1.4	6.3	3.4	.2	.4	19	31	141	254	192	43	27
11.....	1.4	5.6	2.8	.2	.2	22	34	141	447	322	31	26
12.....	1.4	4.3	2.3	.1	.2	24	82	144	874	354	23	23
13.....	1.7	2.8	1.7	.1	.2	24	93	138	2,170	298	a20	23
14.....	2.3	2.8	1.3	.2	.1	25	76	127	1,920	278	a40	23
15.....	1.9	3.4	.8	.3	.1	29	84	119	1,220	257	a80	22
16.....	1.7	2.8	.6	.4	.1	31	84	157	861	218	a50	21
17.....	1.5	2.8	.6	.5	.1	34	86	144	615	185	a35	21
18.....	1.4	3.4	.6	.6	.1	37	90	220	416	170	29	26
19.....	1.1	3.4	.6	.6	.2	38	93	2,130	298	141	23	26
20.....	2.3	4.3	.5	*.6	.3	42	126	3,320	245	127	23	27
21.....	2.3	5.3	.4	.7	.7	43	160	2,910	204	117	21	27
22.....	1.9	5.3	.2	.9	2.5	43	160	2,030	177	104	17	28
23.....	2.3	6.7	.2	1.2	7.0	43	166	1,530	165	94	16	28
24.....	1.7	6.0	.2	1.7	16	40	170	995	141	80	16	26
25.....	1.7	6.7	.2	2.6	31	40	170	776	129	76	16	25
26.....	1.5	5.6	.2	5.6	42	42	174	580	117	69	31	22
27.....	1.4	5.3	.2	6.0	32	43	157	478	98	65	40	20
28.....	1.1	5.3	.3	6.3	28	43	126	387	92	59	49	18
29.....	1.4	5.6	.3	5.6	*24	43	115	338	78	51	76	18
30.....	2.3	5.3	.3	4.6	.....	44	109	273	74	46	72	21
31.....	5.6	.....	.4	3.6	.....	46	.....	237	.....	43	63	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Nov. 29 to Dec. 31, 1942, Jan. 1 to Feb. 5, Feb. 9-21, Mar. 1-11, 16-24, Dec. 13-31, 1943, Jan. 1-25, Jan. 30 to Mar. 11, 1944.

North Lizard Creek near Clare, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	20	14	13	5	3	140	60	308	1,290	132	93	17
2.....	20	15	13	5	3	154	46	280	1,210	122	220	12
3.....	20	16	13	5	3	165	28	273	986	112	160	15
4.....	20	16	12	5	3	175	16	268	724	106	78	15
5.....	19	16	12	5	3	155	13	248	555	96	76	13
6.....	18	16	12	5	3	132	38	228	431	88	62	12
7.....	18	*16	11	5	3	110	122	212	402	81	53	10
8.....	18	16	11	5	3	95	112	202	352	75	48	8.5
9.....	18	16	10	5	3	105	210	191	346	70	42	8.5
10.....	18	16	10	5	3	183	283	168	422	68	49	7.5
11.....	17	15	10	5	3	745	239	151	399	a64	58	6.7
12.....	16	13	9	5	2	1,060	325	143	357	a60	62	6.0
13.....	16	13	8	5	80	776	466	141	315	a55	60	6.0
14.....	16	15	7	5	250	756	633	148	276	51	59	6.0
15.....	16	16	*7	5	717	*580	674	202	243	51	63	5.6
16.....	16	16	6	5	431	518	648	216	250	56	80	5.6
17.....	16	16	6	5	237	413	612	210	278	60	86	5.3
18.....	16	15	6	5	160	310	295	102	248	72	70	6.0
19.....	16	16	6	5	90	283	318	175	218	85	58	6.0
20.....	16	16	6	5	80	250	310	160	191	99	51	5.6
21.....	16	16	6	5	75	218	280	629	172	112	48	4.6
22.....	16	16	6	4	67	191	266	1,280	159	132	40	3.9
23.....	17	16	6	4	60	168	922	1,200	143	151	37	3.6
24.....	17	16	6	4	55	153	1,230	896	134	138	34	3.4
25.....	17	16	6	4	50	150	1,010	674	124	151	30	3.2
26.....	17	16	6	*4	72	143	805	576	112	174	28	3.0
27.....	16	15	5	4	95	139	545	453	124	136	25	6.0
28.....	16	14	5	4	118	120	425	447	150	120	25	11
29.....	16	14	5	4	.....	88	396	418	187	99	24	13
30.....	16	14	5	3	.....	76	349	371	168	84	23	13
31.....	15	.....	5	3	.....	68	.....	916	.....	87	19	.....
1945-46												
1.....	10	10	11	2	16	271	164	29	330	222	15	2.8
2.....	9.5	10	10	2	12	261	124	31	280	175	13	2.5
3.....	8.5	10	*9.0	2	16	292	117	36	232	136	10	2.5
4.....	8.5	10	8.0	3	24	261	106	42	212	114	7.5	2.5
5.....	7.5	10	7.0	12	320	239	98	44	189	94	13	2.5
6.....	7.5	10	6.7	65	400	212	88	40	160	81	13	3.0
7.....	7.5	10	5.6	80	300	*192	80	38	139	82	12	9.5
8.....	7.0	10	5.6	70	250	a170	84	36	120	70	9.5	42
9.....	6.7	10	5.3	40	212	a140	80	34	106	63	9.0	23
10.....	6.7	10	5.0	30	245	119	78	40	94	56	8.5	10
11.....	6.7	11	4	18	271	139	78	58	87	49	7.0	5.6
12.....	6.7	11	3	10	254	164	76	76	93	44	6.3	3.2
13.....	6.7	11	3	7	243	504	76	78	92	39	5.6	2.5
14.....	7.0	12	3	*5	218	555	74	68	92	34	5.6	13
15.....	8.0	12	2	4	185	325	70	75	144	32	5.3	7.5
16.....	7.5	12	2	3	162	235	65	74	170	31	5.0	4.6
17.....	7.0	11	1	3	148	172	59	90	170	31	4.3	3.2
18.....	7.5	10	1	2	150	172	56	92	175	28	3.6	2.5
19.....	9.0	a10	1	2	204	164	53	102	206	30	3.6	2.8
20.....	9.0	a10	1	2	447	150	51	143	384	28	3.4	4.3
21.....	9.0	a10	1	3	482	131	47	153	345	34	3.6	4.6
22.....	10	a10	1	3	450	114	46	136	268	28	3.6	4.6
23.....	10	a10	1	3	437	150	43	138	210	25	3.4	5.0
24.....	10	a10	1	3	418	226	40	1,440	168	24	3.4	3.6
25.....	11	a10	1	4	384	235	38	2,420	160	24	3.4	3.6
26.....	11	a11	1	5	373	226	36	1,610	144	22	3.4	3.4
27.....	10	a12	1	12	362	212	35	1,140	126	19	3.6	3.4
28.....	10	a11	2	19	332	175	34	888	112	18	3.6	3.4
29.....	10	a11	2	20	.....	132	34	678	153	17	3.6	3.9
30.....	10	a11	3	18	.....	153	30	555	280	17	3.4	4.3
31.....	10	.....	3	17	.....	183	.....	434	.....	17	3.2	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Nov. 27 to Dec. 31, 1944, Jan. 1 to Feb. 14, Feb. 18 to Mar. 9, Dec. 11-31, 1945, Jan. 1 to Feb. 8, 1946.

North Lizard Creek near Clare, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	3.9	9.5	8	0.8	6	40	92	155	276	1,010	37	6.0
2.....	3.4	9.5	6	1	3	40	88	175	390	865	34	3.6
3.....	3.0	9.0	6	1	2	40	87	132	346	633	30	2.8
4.....	2.5	8.5	8	.8	1	50	88	110	305	508	27	2.8
5.....	2.1	8.5	10	.7	.8	80	114	98	566	416	19	2.5
6.....	2.1	8.5	12	.7	.6	120	132	88	a500	357	17	2.3
7.....	1.9	8.0	13	.8	.4	200	136	86	a400	305	16	1.9
8.....	1.9	9.0	14	1	.5	250	136	81	a350	278	14	1.6
9.....	1.9	9.0	14	2	.6	300	132	78	a360	257	12	1.4
10.....	3.2	9.5	13	4	.8	350	192	76	a370	239	9.5	.9
11.....	8.5	12	13	10	1	400	475	76	a380	220	4.6	1.2
12.....	9.5	13	12	12	2	500	580	75	a400	202	8.0	3.9
13.....	9.5	14	10	10	30	590	396	72	a380	185	8.0	4.6
14.....	8.5	14	10	8	100	594	310	120	a360	162	8.5	5.3
15.....	7.5	*14	9.0	*7	150	594	264	136	447	150	9.5	7.0
16.....	7.0	14	9.5	6	200	572	196	160	325	146	11	3.9
17.....	7.0	17	*9.5	4	230	518	110	164	597	136	9.5	2.5
18.....	7.0	24	9.5	3	270	475	22	143	856	119	8.0	2.3
19.....	6.7	21	9.0	2	300	428	6.3	120	748	107	8.0	1.9
20.....	6.7	21	9.0	1	250	379	1.5	106	511	101	6.7	1.9
21.....	6.7	18	9.5	.8	200	320	.8	94	376	93	5.3	1.5
22.....	6.3	14	9.5	.8	150	278	a20	92	338	86	4.6	1.5
23.....	6.3	10	9.5	.8	100	257	a80	88	5,500	78	4.6	1.4
24.....	8.0	9	8	1	80	268	312	87	2,760	68	3.6	1.4
25.....	11	8	7	2	60	266	257	86	1,610	62	3.6	1.1
26.....	10	9	6	5	*56	239	202	82	1,100	56	3.6	.9
27.....	10	10	4	9	50	204	164	82	874	48	3.6	.9
28.....	9.5	11	3	12	40	175	146	86	724	48	3.2	2.5
29.....	9.5	10	2	12	.....	143	136	134	590	44	3.2	1.6
30.....	10	10	1	11	.....	110	134	132	1,320	40	2.8	1.5
31.....	9.5	.....	.8	9	.....	93	.....	126	.....	37	8.0	.....
1947-48												
1.....	1.4	14	12	4	3	650	363	177	39	74	22	3.0
2.....	1.4	13	13	4	3	350	129	212	37	65	20	3.2
3.....	3.2	12	14	5	3	180	127	194	35	51	18	2.3
4.....	2.6	8.5	16	6	3	90	127	164	32	46	16	1.6
5.....	2.6	8.0	18	7	3	86	120	150	32	32	15	1.5
6.....	2.5	a11	18	8	3	81	122	168	30	27	13	1.5
7.....	2.6	a14	18	8	3	78	155	187	27	21	13	1.3
8.....	2.6	9.0	18	8	3	75	172	179	26	18	12	1.2
9.....	2.6	9.5	17	8	3	72	170	172	24	18	12	1.1
10.....	2.6	9.0	16	8	3	69	155	166	23	16	10	.9
11.....	2.6	7	16	7	3	66	138	160	22	14	9.5	.8
12.....	2.6	5	15	7	3	64	126	160	28	13	8.0	.8
13.....	2.8	6	14	6	3	62	112	159	28	27	7.5	.6
14.....	3.0	7.5	14	6	3	60	109	157	31	58	6.7	.6
15.....	2.8	12	13	5	3	80	102	268	28	35	6.3	.6
16.....	2.8	11	12	5	4	119	93	185	31	34	5.3	.6
17.....	2.6	10	12	5	5	331	87	144	35	34	5.3	.5
18.....	2.6	10	11	4	8	1,180	81	129	36	53	3.4	.4
19.....	2.8	10	*11	4	50	1,140	78	109	39	86	3.0	.4
20.....	2.8	11	11	4	48	701	69	98	47	96	2.6	.4
21.....	2.8	11	10	3	43	552	66	90	48	104	2.5	.6
22.....	2.6	11	10	3	38	437	62	84	49	112	1.9	.5
23.....	2.6	12	10	*3	34	344	75	78	58	110	1.5	.4
24.....	3.9	13	10	3	29	261	70	70	68	98	1.5	.4
25.....	5.6	14	9	3	25	216	136	66	82	78	1.5	.4
26.....	5.6	15	9	3	20	172	285	59	84	59	1.3	.3
27.....	7.0	15	9	3	400	143	224	55	82	51	1.3	.3
28.....	10	13	8	3	1,160	122	162	52	84	31	69	.3
29.....	12	12	7	3	*1,200	112	146	49	82	30	81	.3
30.....	13	12	6	3	.....	183	155	47	81	29	18	.4
31.....	a14	.....	5	3	.....	280	.....	44	.....	25	12	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Nov. 22-27, Dec. 1-6, 24-31, 1946, Jan. 1 to Mar. 12, Nov. 11-13, Nov. 16 to Dec. 31, 1947, Jan. 1 to Feb. 27, Mar. 1-14, 1948 (no gage-height record Jan. 18-20, Jan. 27 to Feb. 6, Feb. 22-25, 27, 1947).

North Lizard Creek near Clare, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	0.4	1.3	5.2	3.6	3.5	30	510	39	48	7.6	116	5.9
2.....	.3	1.4	5.4	3.6	*3.2	30	486	40	46	8.7	112	5.3
3.....	.3	1.6	5.4	3.9	3.1	35	406	39	44	10	86	5.3
4.....	.4	5.0	5.0	6.0	3.0	150	362	39	42	9.0	56	11
5.....	.5	13	4.7	12	3.0	500	266	38	39	9.0	42	15
6.....	.4	11	4.6	14	3.0	640	126	36	36	7.6	25	14
7.....	.4	9.5	4.5	14	3.0	620	110	34	36	6.5	16	14
8.....	.4	7.6	4.4	14	3.0	530	106	33	32	5.9	8.0	14
9.....	.5	5.3	4.3	14	3.0	*430	95	30	29	4.7	5.6	14
10.....	.4	3.7	4.3	13	3.0	240	82	30	28	3.6	5.3	14
11.....	.4	2.8	4.2	13	3.0	150	65	28	26	2.4	4.7	15
12.....	.4	1.4	4.2	13	3.0	104	56	28	26	1.5	4.1	14
13.....	.4	1.2	4.1	13	3.0	94	49	28	25	1.0	3.8	14
14.....	.4	1.1	4.1	15	3.0	90	50	31	22	.7	3.6	14
15.....	.4	.8	4.1	16	3.0	86	54	34	22	.5	3.3	11
16.....	.5	.7	4.1	16	3.0	84	56	38	20	.4	19	9.5
17.....	.5	.7	4.2	16	3.0	80	57	56	19	.4	36	8.0
18.....	.6	.7	4.2	16	3.0	78	58	92	19	.3	38	7.3
19.....	.7	12	4.2	16	3.0	78	57	122	18	.3	39	6.5
20.....	.7	28	4.2	15	3.0	140	56	152	18	.2	39	5.3
21.....	.8	23	4.1	14	3.0	238	56	294	18	.3	40	4.4
22.....	.8	19	4.0	12	3.0	590	54	358	18	.3	40	3.6
23.....	1.1	15	4.0	11	3.0	830	52	358	16	.7	40	3.3
24.....	1.1	10	3.9	10	4.0	830	48	137	16	1.4	40	3.0
25.....	1.1	8.6	3.8	8.5	10	810	46	95	15	3.6	39	2.7
26.....	1.1	7.6	3.7	7.5	30	730	44	83	14	3.6	39	2.5
27.....	1.0	6.7	3.6	6.5	30	690	43	75	12	7.6	22	2.4
28.....	1.1	5.8	3.6	5.7	30	650	40	69	12	80	13	2.2
29.....	1.1	5.2	3.6	5.0	.....	530	40	65	10	152	8.3	2.0
30.....	1.2	4.8	3.6	4.4	.....	550	39	51	9.0	142	6.5	1.8
31.....	1.2	.....	3.6	3.9	.....	494	.....	48	.....	128	5.9	.....
1949-50												
1.....	1.8	1.6	2.1	1.0	.3	.5	70	9.0	86	60	85	11
2.....	2.0	1.6	2.1	1.2	.3	.8	64	8.7	95	53	78	10
3.....	2.1	1.6	2.2	1.0	.3	4.5	57	8.3	88	48	63	9.5
4.....	2.0	2.0	2.2	.9	.3	25	46	8.3	81	43	55	9.0
5.....	2.0	2.2	2.3	.8	.3	200	39	12	75	41	48	9.0
6.....	1.7	3.0	2.4	.7	.3	250	33	26	65	41	40	8.7
7.....	1.6	3.0	*2.4	.7	*.3	190	28	21	56	38	34	8.3
8.....	1.7	3.3	2.4	.6	.3	140	24	74	49	37	29	8.3
9.....	1.5	3.6	2.4	.6	.3	90	21	330	43	41	25	7.3
10.....	1.5	3.3	2.4	.5	.3	73	19	290	37	55	35	7.3
11.....	1.8	3.0	2.9	*.5	.3	65	17	200	33	242	30	7.0
12.....	2.1	2.8	3.5	.5	.3	60	16	160	30	230	27	6.5
13.....	3.3	2.7	2.9	.5	.3	55	15	140	27	222	25	6.5
14.....	2.8	2.2	2.6	.5	.3	52	14	130	31	214	23	6.5
15.....	2.4	2.2	2.4	.4	.3	48	13	115	62	210	22	6.2
16.....	2.2	2.0	2.3	.4	.3	46	12	105	190	187	21	5.3
17.....	2.4	2.0	2.3	.4	.3	45	12	95	164	187	21	4.4
18.....	2.2	1.8	2.4	.4	.3	49	11	85	140	210	20	3.6
19.....	2.5	1.7	2.3	.4	.3	45	10	85	258	260	18	3.0
20.....	2.4	1.7	1.9	.4	.3	40	9.6	87	710	310	17	2.8
21.....	2.5	1.9	1.6	.4	.3	*36	9.2	116	850	360	16	2.8
22.....	2.4	2.0	1.4	.4	.3	36	8.8	258	630	320	15	12
23.....	2.1	2.3	1.2	.4	.3	40	8.7	147	750	280	15	226
24.....	2.1	2.6	1.1	.4	.3	50	9.0	101	770	250	14	210
25.....	1.8	2.5	1.0	.4	.3	60	12	126	550	220	14	104
26.....	1.8	2.4	1.0	.3	.4	71	12	154	242	190	14	80
27.....	1.8	2.4	1.0	.3	.4	86	10	122	218	170	12	62
28.....	1.6	2.3	1.0	.3	.4	96	10	109	177	150	14	58
29.....	1.6	2.2	1.0	.3	.....	107	10	106	101	125	12	55
30.....	1.6	2.2	1.0	.3	.....	83	9.5	102	69	105	12	53
31.....	1.6	.....	1.1	.3	.....	76	.....	98	.....	95	12	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 29 to Dec. 31, 1948, Jan. 1 to Mar. 10, Mar. 13-19, 1949, Jan. 2 to Feb. 4, Feb. 13, Feb. 15 to Mar. 28, 1950. Doubtful gage-height record Nov. 19 to Dec. 30, 1949, Feb. 5-12, 14, Apr. 1-11, 13-23, May 9-20, June 1-13, July 19 to Aug. 1, Aug. 6-13, 1950; discharge computed on basis of discharge measurements and records for nearby stations.

North Lizard Creek near Clare, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1942.....	935	50	16	30.2	0.118	0.14
November.....	469	19	10	15.6	.061	.07
December.....	424	20	8	13.7	.053	.06
Calendar year 1942.....	35,647.5	1,200	7.4	97.7	.380	5.17
January 1943.....	267	17	2	8.6	.033	.04
February.....	7,674	1,380	5	274	1.07	1.11
March.....	5,440	324	85	175	.681	.79
April.....	2,074	131	37	69.1	.269	.30
May.....	4,975	676	35	160	.623	.72
June.....	3,809	320	66	127	.494	.55
July.....	2,853	251	21	92.0	.358	.41
August.....	357.4	23	4.4	11.5	.045	.05
September.....	61.8	5.6	0	2.06	.008	.01
Water year 1942-43.....	29,339.2	1,380	0	80.4	.313	4.25
October 1943.....	47.7	5.6	.1	1.54	.006	.01
November.....	137.6	6.7	2.8	4.59	.018	.02
December.....	54.7	4.3	.2	1.76	.007	.01
Calendar year 1943.....	27,751.2	1,380	0	76.2	.296	4.02
January 1944.....	45.4	6.3	.1	1.46	.006	.01
February.....	206.3	42	1	7.11	.028	.03
March.....	1,014	46	17	32.7	.127	.15
April.....	2,734	174	28	91.1	.354	.40
May.....	18,720	3,320	107	604	2.35	2.71
June.....	12,038	2,170	74	401	1.56	1.74
July.....	4,079	354	43	132	.514	.59
August.....	1,360	96	16	43.9	.171	.20
September.....	865	59	18	28.3	.110	.13
Water year 1943-44.....	41,301.7	3,320	.1	113	.440	6.00
October 1944.....	529	20	15	17.1	.067	.08
November.....	461	16	13	15.4	.060	.07
December.....	249	13	5	8.03	.031	.04
Calendar year 1944.....	42,300.7	3,320	.1	116	.451	6.15
January 1945.....	143	5	3	4.61	.018	.02
February.....	2,672	717	2	95.4	.371	.39
March.....	8,619	1,060	68	278.7	1.08	1.25
April.....	11,676	1,230	13	389	1.51	1.69
May.....	11,976	1,280	141	386	1.50	1.73
June.....	10,966	1,290	112	366	1.42	1.59
July.....	2,990	174	51	96.5	.375	.43
August.....	1,861	220	19	60.0	.233	.27
September.....	242.0	17	3.0	8.07	.031	.04
Water year 1944-45.....	52,384.0	1,290	2	144	.560	7.60
October 1945.....	265.5	11	6.7	8.56	.033	.04
November.....	316	12	10	10.5	.041	.05
December.....	111.2	11	1	3.59	.014	.02
Calendar year 1945.....	51,837.7	1,290	1	142	.553	7.52
January 1946.....	469	80	2	15.1	.059	.07
February.....	7,315	400	12	261	1.02	1.06
March.....	6,674	555	114	215	.837	.97
April.....	2,060	164	30	68.7	.267	.30
May.....	10,818	2,420	29	349	1.36	1.57
June.....	5,441	384	87	181	.704	.79
July.....	1,684	222	17	54.3	.211	.24
August.....	198.4	13	3.2	6.40	.025	.03
September.....	189.3	42	2.5	6.31	.025	.03
Water year 1945-46.....	35,541.4	2,420	1	97.4	.379	5.17

North Lizard Creek near Clare, Iowa—Continued
 Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1946	200.6	11	1.9	6.47	0.025	0.03
November	365.0	24	8.0	12.2	.047	.05
December	264.8	14	.8	8.54	.033	.04
Calendar year 1946	35,679.1	2,420	.8	97.8	.381	5.18
January 1947	139.2	12	.7	4.49	.017	.02
February	2,284.7	300	.4	81.6	.318	.33
March	8,573	594	40	286	1.11	1.28
April	5,009.6	580	.8	167	.650	.72
May	3,340	175	72	108	.420	.48
June	24,059	5,500	276	802	3.12	3.48
July	7,056	1,010	37	228	.887	1.02
August	343.4	37	2.8	11.1	.043	.05
September	74.6	7.0	.9	2.49	.010	.01
Water year 1946-47	52,009.9	5,500	.4	142	.553	7.51
October 1947	130.6	14	1.4	4.21	.016	.02
November	325.5	15	5	10.8	.042	.05
December	382	18	5	12.3	.048	.06
Calendar year 1947	52,017.6	5,500	.4	143	.556	7.52
January 1948	152	8	3	4.90	.019	.02
February	3,109	1,200	3	107	.416	.45
March	8,356	1,180	60	270	1.05	1.21
April	4,016	363	62	134	.521	.58
May	4,032	268	44	130	.506	.58
June	1,348	84	22	44.9	.175	.20
July	1,545	112	13	40.8	.194	.22
August	490.1	81	1.3	12.9	.050	.06
September	29.3	5	.3	.97	.0038	.004
Water year 1947-48	23,825.5	1,200	.3	65.1	.253	3.454
October 1948	20.6	1.2	.3	.66	.0026	.003
November	214.5	28	.7	7.15	.028	.03
December	130.9	5.4	3.6	4.22	.016	.02
Calendar year 1948	23,353.4	1,200	.3	63.8	.248	3.377
January 1949	335.6	16	3.6	10.8	.042	.05
February	173.8	39	3.0	6.21	.021	.03
March	11,231	830	30	362	1.41	1.63
April	3,569	510	39	119	.463	.52
May	2,600	358	28	83.9	.326	.38
June	735.0	48	9.0	24.5	.095	.11
July	599.8	152	2	19.3	.075	.09
August	956.1	116	3.3	30.8	.120	.14
September	245.0	15	1.8	8.17	.032	.04
Water year 1948-49	20,811.3	830	.2	57.0	.222	3.043
October 1949	62.9	3.3	1.5	2.03	.0079	.009
November	70.1	3.6	1.6	2.34	.0091	.01
December	60.8	3.5	1.0	1.96	.0076	.009
Calendar year 1949	20,639.1	820	.2	56.5	.220	3.02
January 1950	16.2	1.2	.3	.52	.0020	.002
February	8.7	.4	.3	.31	.0012	.001
March	2,219.8	250	.5	71.6	.279	.32
April	629.8	70	8.7	21.0	.082	.09
May	3,428.3	330	8.3	111	.432	.50
June	6,687	850	27	223	.868	.97
July	4,994	360	37	161	.626	.72
August	866	85	12	27.9	.109	.13
September	1,003	226	2.8	33.4	.130	.15
Water year 1949-50	20,046.6	850	.3	54.9	.214	2.91

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 feet 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 square miles.

RECORDS AVAILABLE.—March 1940 to September 1950.

GAGE.—Water-stage recorder. Mar. 9 to June 25, 1940, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—10 years, 371 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Mar. 16	2,410	(¹)	Jan. 20	16
1943-44...	June 14	10,200	13.7	Jan. 19	17
1944-45...	Aug. 16	7,200	11.51	Feb. 1	12
1945-46...	May 26	6,700	10.67	Sept. 2	12
1946-47...	June 25	9,340	12.75	Sept. 26, 27	10
1947-48...	Mar. 19	4,160	8.40	Sept. 23	4.5
1948-49...	Mar. 7	3,980	(²)	Sept. 1, 2, 28, 29	2.7
1949-50...	Mar. 7	5,000	(³)9.25	Oct. 1-3	2.8

(1) Maximum gage height 7.54 feet Feb. 22 (ice affected).

(2) Maximum gage height 9.17 feet Mar. 4 (ice jam).

(3) From floodmark.

1940-50: Maximum discharge, 10,200 second-feet June 14, 1944 (gage height, 13.7 feet in gage well, 13.9 feet observed on outside gage); minimum, 2.4 second-feet July 25, 1940.

Maximum stage known since 1896, 19.1 feet 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.

Boone River near Webster City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1	136	82	40	35	30	600	547	278	421	571	900	138
2	127	81	38	35	50	450	475	243	448	456	539	218
3	134	74	37	32	80	400	421	207	440	428	409	258
4	198	82	40	30	120	370	390	182	394	409	712	258
5	218	94	42	28	170	300	353	184	338	379	591	288
6	215	71	44	28	200	250	320	275	316	390	398	236
7	215	70	46	29	230	230	320	227	288	356	295	192
8	210	70	46	30	250	200	299	198	281	299	236	161
9	187	71	45	31	260	180	288	173	323	252	204	134
10	171	74	42	32	250	190	278	168	345	215	224	115
11	163	68	*40	30	230	200	262	158	375	198	338	191
12	144	68	38	28	210	168	292	154	398	184	378	97
13	138	67	35	28	190	187	327	151	471	146	272	102
14	125	63	38	30	170	327	299	142	640	127	587	121
15	121	65	42	32	160	793	278	382	587	114	387	121
16	115	68	44	30	150	2,070	258	900	626	115	262	106
17	104	65	45	25	160	1,010	240	1,140	563	119	192	94
18	101	63	42	21	200	936	204	1,150	543	104	151	84
19	97	63	38	18	300	658	176	1,030	467	142	125	79
20	96	63	34	16	750	618	168	870	387	179	106	77
21	92	61	35	20	2,000	591	163	726	313	192	94	73
22	99	58	37	24	2,160	503	158	618	338	176	85	70
23	96	58	40	20	2,280	535	166	543	735	158	82	65
24	87	60	44	18	2,130	980	168	593	555	129	74	61
25	85	61	44	17	1,940	1,400	176	479	436	110	88	56
26	76	51	42	19	1,480	1,440	176	463	353	92	425	53
27	84	52	40	*22	1,250	1,560	182	428	316	84	285	52
28	76	51	39	24	1,000	1,300	166	390	759	76	227	51
29	79	50	38	25	.....	780	339	360	883	74	218	49
30	94	45	36	26	.....	613	349	353	703	101	166	51
31	89	.....	34	28	.....	583	.....	375	.....	301	146	.....
1943-44												
1	55	58	114	30	140	*262	259	840	948	320	103	218
2	47	61	161	30	125	228	309	936	805	861	97	190
3	45	63	*116	35	72	210	339	1,430	686	1,320	89	168
4	44	61	99	50	61	188	311	1,720	617	900	123	143
5	43	60	118	45	50	110	259	1,690	822	592	143	125
6	42	70	118	35	45	60	231	1,560	1,030	453	175	110
7	39	101	89	25	45	110	220	1,400	822	545	215	97
8	39	138	99	20	40	140	218	1,300	747	494	168	87
9	38	180	75	25	35	130	226	1,250	1,270	476	134	77
10	38	198	55	30	30	80	228	1,150	1,580	638	114	73
11	37	183	30	30	25	161	323	1,020	2,450	942	95	72
12	36	208	40	25	20	205	653	900	3,800	793	81	66
13	36	215	65	20	20	178	680	816	3,900	633	68	65
14	38	200	70	20	30	284	612	758	7,963	518	61	61
15	38	188	60	20	35	514	870	718	7,790	457	148	58
16	38	140	50	20	30	540	1,150	664	4,560	388	188	55
17	39	136	45	20	25	457	996	588	3,080	360	114	51
18	38	185	45	18	25	345	834	741	2,330	339	81	45
19	36	188	50	*17	30	284	702	3,180	1,820	311	70	44
20	38	152	50	18	40	270	775	5,970	1,460	284	60	44
21	42	140	50	18	50	262	1,300	5,650	1,220	254	55	43
22	43	138	50	18	95	289	1,490	5,760	1,040	231	51	42
23	40	138	45	18	198	328	1,430	6,300	894	210	47	51
24	40	125	40	18	265	407	1,650	4,900	747	185	44	54
25	36	150	45	40	300	568	1,790	3,520	633	171	42	58
26	34	154	50	70	334	461	1,610	2,710	550	185	90	57
27	33	136	50	170	295	325	1,380	2,140	480	166	357	50
28	32	118	45	188	320	284	1,160	1,740	469	145	369	60
29	32	95	40	168	309	241	978	1,490	385	129	295	50
30	33	79	40	134	.....	175	882	1,280	345	116	267	48
31	50	.....	35	140	.....	200	.....	1,090	.....	108	241	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 29 to Dec. 31, 1942, Jan. 1 to Feb. 21, Feb. 28 to Mar. 11, Dec. 9-31, 1943, Jan. 1-27, 31, Feb. 1, 5-22, Mar. 5-10, 1944.

Boone River near Webster City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	47	31	21	19	12	h391	476	1,060	4,432	664	112	190
2.....	50	31	23	19	13	h559	418	1,030	4,640	540	118	168
3.....	57	30	25	19	13	h536	385	1,070	4,130	465	116	150
4.....	57	29	27	19	14	h680	331	1,030	3,380	421	103	136
5.....	60	29	29	18	15	h1,230	281	942	2,590	397	101	125
6.....	60	31	31	17	16	h1,030	414	840	1,980	354	101	116
7.....	54	31	32	16	16	h942	1,090	747	1,620	424	97	101
8.....	50	31	33	15	16	h799	1,820	643	1,360	397	97	95
9.....	48	31	32	16	17	h900	2,020	563	1,240	351	91	89
10.....	45	30	31	16	17	h2,080	1,840	536	2,400	314	93	99
11.....	43	31	30	16	18	h2,470	1,720	514	2,590	289	110	97
12.....	40	31	29	17	19	h3,930	2,170	505	1,960	262	257	79
13.....	40	32	28	18	150	h4,820	2,550	476	1,600	241	718	72
14.....	40	32	27	18	h369	h3,870	2,780	758	1,320	226	1,120	66
15.....	39	29	*26	18	h1,720	h3,670	2,510	966	1,090	210	2,330	61
16.....	37	44	25	14	h2,480	3,180	2,790	1,060	972	200	5,710	60
17.....	37	42	24	13	h2,300	2,450	3,070	1,020	882	220	6,120	57
18.....	33	50	23	16	h2,000	1,910	2,560	888	781	233	3,800	55
19.....	33	43	23	17	h1,870	1,420	2,100	747	680	220	2,490	57
20.....	33	40	22	16	h1,580	1,130	1,630	674	900	202	1,740	60
21.....	32	37	21	16	h1,060	906	1,310	930	822	190	1,280	61
22.....	29	37	20	16	h708	752	1,300	2,730	622	180	1,010	60
23.....	27	37	19	15	h633	659	2,730	3,130	522	159	805	61
24.....	29	34	19	16	h643	638	4,580	3,170	461	150	653	63
25.....	29	36	20	*14	h509	1,240	4,260	3,050	432	140	527	51
26.....	30	40	20	14	h453	1,360	3,620	2,290	385	131	435	50
27.....	31	39	19	14	h435	1,200	2,660	2,130	385	127	372	55
28.....	30	36	19	14	h410	1,010	1,920	2,430	568	129	323	73
29.....	32	33	19	14	.....	781	1,450	1,720	924	120	281	87
30.....	31	25	19	13	.....	622	1,210	1,410	718	114	246	85
31.....	29	.....	19	13	.....	536	.....	1,880	.....	120	215	.....
1945-46												
1.....	85	42	45	22	51	465	509	97	1,040	536	108	13
2.....	83	42	57	24	51	480	476	116	876	397	93	12
3.....	79	45	*58	31	60	607	421	188	741	337	77	13
4.....	72	38	60	43	95	680	366	309	627	284	61	14
5.....	66	37	58	337	2,200	900	339	394	540	254	63	13
6.....	63	38	57	1,920	3,000	*1,490	317	394	469	233	58	13
7.....	58	37	54	1,980	2,500	1,390	306	351	418	220	55	20
8.....	55	44	54	1,310	1,800	1,220	303	306	372	202	50	51
9.....	50	48	44	816	1,200	1,080	292	278	325	180	44	95
10.....	48	43	39	554	1,100	816	292	270	286	166	36	101
11.....	45	43	33	424	1,000	669	295	295	262	143	33	195
12.....	44	44	31	351	954	1,090	295	369	262	129	34	171
13.....	45	43	31	233	597	2,420	292	394	265	116	32	120
14.....	45	43	30	*166	465	2,750	281	372	320	106	30	95
15.....	45	43	28	145	375	2,100	262	375	476	99	29	73
16.....	44	43	28	116	284	1,520	244	378	793	95	28	63
17.....	44	40	27	101	205	1,290	226	407	936	95	27	55
18.....	45	37	23	85	180	1,120	208	435	1,100	91	24	45
19.....	43	37	24	70	200	1,030	190	550	1,320	152	23	43
20.....	42	37	25	55	300	900	175	810	1,630	202	22	44
21.....	51	32	26	52	400	752	163	864	1,560	156	21	42
22.....	40	27	26	54	500	648	152	718	1,410	131	20	42
23.....	40	24	26	51	670	612	150	602	1,250	101	19	42
24.....	42	30	26	48	816	787	140	936	972	87	18	44
25.....	42	27	24	45	781	984	131	2,590	781	85	17	45
26.....	40	25	22	36	669	1,030	125	6,130	686	73	17	47
27.....	42	25	21	47	627	1,020	116	4,530	583	254	19	48
28.....	42	28	22	48	522	954	112	2,840	484	381	20	48
29.....	43	30	22	55	.....	793	108	2,000	488	231	16	45
30.....	42	30	23	58	.....	633	106	1,550	781	175	14	44
31.....	40	.....	22	45	.....	531	.....	1,270	.....	136	13	.....

* Winter discharge measurement made on this day.

h Computed from daily wire-weight gage readings.

Note—Stage-discharge relation affected by ice Nov. 29 to Dec. 31, 1944, Jan. 1 to Feb. 13, Nov. 21, 22, Dec. 5-31, 1945, Jan. 1-5, Jan. 13 to Feb 11, Feb. 18-23, Mar. 2-4, 1946 (no gage-height record Jan. 27 to Feb. 10, 1945, Feb. 6-9, 1946).

Boone River near Webster City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	43	185	100	35	60	70	273	497	1,370	5,000	136	27
2.....	40	180	95	30	55	60	257	450	1,700	4,360	129	33
3.....	37	175	95	28	50	55	246	407	1,360	3,960	123	38
4.....	34	171	100	27	45	50	257	375	1,480	2,970	114	39
5.....	32	159	110	26	45	50	311	342	1,930	2,190	106	39
6.....	32	150	120	27	50	55	424	314	1,300	1,820	97	a35
7.....	33	145	134	28	50	70	497	300	1,040	1,720	89	a25
8.....	34	145	140	30	55	100	514	281	888	1,700	83	a22
9.....	33	143	127	35	60	200	505	262	747	1,370	73	a20
10.....	51	150	112	40	65	300	1,090	249	633	1,060	68	a18
11.....	61	147	106	50	70	400	2,100	233	518	858	58	a19
12.....	61	198	103	60	80	600	2,070	249	978	730	39	a25
13.....	70	241	68	70	100	1,100	1,950	360	3,320	627	38	a28
14.....	110	*270	70	*80	250	1,480	1,700	342	3,630	536	36	a26
15.....	108	267	70	85	400	1,360	1,330	438	2,970	465	33	a24
16.....	101	257	*70	85	650	1,180	1,090	527	2,290	407	36	a22
17.....	89	236	70	80	580	936	918	627	2,550	369	33	a20
18.....	89	218	70	75	500	708	693	627	3,400	339	30	a18
19.....	103	223	65	70	430	554	786	578	3,390	334	28	a17
20.....	101	220	65	70	350	457	602	514	2,700	323	26	a18
21.....	89	215	65	70	280	391	527	446	3,480	311	23	21
22.....	83	159	65	75	220	388	484	435	4,400	303	22	18
23.....	75	140	65	80	170	469	568	476	6,040	292	21	15
24.....	147	120	60	85	140	1,160	1,130	505	6,530	284	20	12
25.....	190	100	60	90	*120	1,170	1,240	472	8,930	276	18	11
26.....	231	95	60	90	100	888	1,010	457	6,590	262	18	10
27.....	252	90	60	85	90	686	828	432	4,210	249	18	10
28.....	220	90	60	80	80	514	664	394	2,990	213	18	12
29.....	198	95	55	75	.....	446	559	424	2,620	185	18	11
30.....	202	100	50	70	.....	360	514	592	4,320	166	20	12
31.....	190	.....	40	65	.....	*311	.....	674	.....	147	22	.....
1947-48												
1.....	h13	h59	27	11	7	2,000	294	264	63	121	16	34
2.....	h20	a51	27	13	7	1,000	261	255	60	96	13	28
3.....	h20	43	30	15	8	600	240	248	56	77	13	22
4.....	h20	44	34	17	8	260	212	250	49	60	15	16
5.....	h18	45	38	18	8	200	190	248	46	50	13	14
6.....	h16	40	41	19	8	170	170	403	46	43	12	11
7.....	h13	39	40	20	8	160	255	442	42	34	14	13
8.....	h11	34	32	22	8	140	366	403	38	30	13	8.9
9.....	h11	31	29	24	8	120	318	351	37	25	13	8.6
10.....	h9.7	27	27	25	8	100	273	333	34	25	107	8.6
11.....	h9.7	28	27	22	8	95	312	330	32	22	297	8.3
12.....	h8.3	28	27	20	8	90	242	306	39	22	300	8.0
13.....	h8.3	29	29	18	8	80	205	279	40	29	205	8.3
14.....	h8.3	30	30	16	8	80	178	252	43	44	133	8.0
15.....	h8.9	35	30	15	8	85	168	270	46	137	102	8.0
16.....	h8.9	35	29	14	40	800	149	248	46	192	104	7.2
17.....	h8.9	36	28	12	300	2,000	133	250	45	135	106	6.6
18.....	h8.6	34	28	12	600	3,300	129	245	46	94	86	6.6
19.....	h11	34	28	11	670	4,030	119	198	44	75	67	6.3
20.....	h9.7	36	*27	10	340	2,940	109	172	43	137	50	7.7
21.....	h8.6	42	27	10	280	1,840	106	151	47	153	43	a9.4
22.....	h8.6	43	27	9	240	1,560	94	137	53	113	35	a5.0
23.....	h8.6	49	27	*8	200	1,080	129	127	70	79	30	a4.5
24.....	h8.3	43	27	7	170	676	137	117	79	57	26	a5.2
25.....	h16	40	27	6	150	462	151	106	77	46	22	a6.0
26.....	h22	36	27	6	130	375	185	96	74	37	19	a5.4
27.....	h26	33	26	6	700	456	208	92	68	32	19	a6.2
28.....	h40	31	25	6	2,000	406	212	83	77	25	32	a7.6
29.....	h46	29	22	6	2,500	434	208	77	153	26	75	a7.7
30.....	h39	28	18	6	.....	389	220	74	155	25	70	a7.4
31.....	h63	.....	14	6	.....	342	.....	67	.....	21	40	.....

* Winter discharge measurement made on this day.

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

h Computed from wire-weight gage readings.

Note—Stage-discharge relation affected by ice Nov. 24 to Dec. 6, Dec. 14-31, 1946, Jan. 1 to Mar. 13, Nov. 10-13, Nov. 25 to Dec. 31, 1947, Jan. 1 to Mar. 18, 1948.

Boone River near Webster City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1	a8 0	18	17	18	19	160	1,400	225	83	264	h45	2 7
2	a8 0	15	17	17	18	169	1,400	212	135	200	h28	2 7
3	a8 8	11	17	17	18	500	1,190	185	170	149	23	5 7
4	a10	9 7	20	45	17	1,000	822	158	153	a124	19	6 3
5	a10	20	29	62	17	2,000	610	153	131	g109	16	11
6	a8 0	28	25	62	17	3,000	508	145	109	g79	15	8 9
7	a7 2	26	22	68	17	3,800	438	141	92	g67	11	7 7
8	a7 2	25	25	68	17	3,440	375	131	77	f56	8 9	h8 3
9	a9 0	27	24	66	17	2,260	339	127	67	e50	8 0	h7 7
10	a10	23	22	62	17	1,610	312	119	60	g43	8 0	h6 9
11	a11	19	21	60	17	1,123	285	123	53	g39	11	a14
12	a10	17	21	58	17	790	273	170	49	g36	9 7	29
13	a9 0	16	21	58	17	706	264	139	54	e33	8 9	24
14	a9 8	16	21	58	17	538	255	131	49	a31	8 9	16
15	a11	14	21	76	17	434	250	125	44	g30	7 4	11
16	a10	15	21	90	17	396	230	111	39	33	7 2	8 6
17	a10	14	*22	105	17	399	406	127	35	33	8 6	8 9
18	a10	15	23	98	18	330	700	117	39	29	7 7	8 3
19	a11	36	23	90	18	285	712	155	43	24	8 6	7 7
20	a8 5	45	23	85	19	264	670	143	53	24	h6 3	4 2
21	a8 2	44	23	72	20	459	676	133	270	22	h4 8	5 1
22	a9 0	38	22	62	22	1,960	615	131	414	20	h3 9	3 9
23	a8 8	33	20	54	25	2,340	500	151	585	16	h3 0	2 8
24	a8 2	30	18	47	68	2,420	406	165	590	17	h2 9	3 3
25	a7 8	29	17	41	62	2,660	342	175	480	16	h2 9	4 5
26	7 7	27	17	36	100	2,180	318	160	1,020	14	h2 9	2 9
27	7 7	25	17	31	170	2,660	315	151	694	14	h4 8	2 8
28	8 0	23	17	27	160	2,550	306	131	456	16	h3 6	2 7
29	11	20	17	24	.....	2,180	270	111	414	21	h2 9	2 7
30	15	18	18	21	.....	1,640	242	96	324	h24	h2 8	2 8
31	18	.....	19	*20	.....	1,300	.....	88	.....	h27	h2 8	.....
1949-50												
1	2 8	8 3	13	a11	a3 8	a3 2	470	162	318	333	65	23
2	2 8	7 7	12	a13	a3 8	a3 2	431	210	306	303	70	26
3	2 8	7 4	12	a12	a3 8	a3 3	351	230	360	261	100	22
4	2 9	7 2	13	a11	a3 8	a4 0	282	205	466	248	106	19
5	3 0	8 0	15	a9 0	a3 8	a150	228	192	456	230	79	16
6	3 3	8 0	11	a7 5	a3 8	a2,000	178	185	372	208	63	13
7	3 3	11	*14	a6 6	*3 8	a4,000	151	192	315	200	53	11
8	3 0	8 0	11	a5 8	a3 9	b1,580	129	312	258	192	49	12
9	3 0	7 7	9 0	a5 2	a4 0	a800	121	1,640	228	158	43	11
10	6 3	8 0	10	*4 8	a4 0	a400	117	1,400	198	129	54	16
11	6 3	11	10	a4 9	a3 9	a280	107	1,220	168	125	57	30
12	4 5	11	21	a5 1	a3 8	a250	104	1,050	149	127	52	16
13	4 8	18	10	a5 2	a3 7	a230	100	664	137	135	52	15
14	5 7	17	12	a5 3	a3 7	a220	86	462	212	185	43	25
15	4 8	14	11	a5 3	a3 6	a290	75	363	1,820	180	50	54
16	4 8	13	11	a5 2	a3 6	410	74	312	822	149	35	39
17	5 7	14	11	a5 1	a3 5	590	65	276	417	137	32	30
18	7 4	12	11	a4 9	a3 5	642	63	258	2,860	135	31	25
19	11	11	11	a4 7	a3 5	504	60	255	2,990	190	29	21
20	9 7	11	12	a4 6	a3 4	372	56	245	2,340	228	24	23
21	16	9 7	11	a4 4	a3 4	288	52	321	2,180	240	25	52
22	11	12	10	a4 3	a3 3	250	47	312	1,820	300	23	123
23	12	9 7	9 5	a4 2	a3 3	473	43	321	1,330	255	22	225
24	11	11	9 2	a4 2	a3 3	855	68	321	2,100	215	19	149
25	9 7	11	9 0	a4 1	a3 2	952	102	375	2,580	180	19	102
26	8 0	12	9 0	a4 1	a3 2	1,020	282	400	1,540	151	19	75
27	7 7	11	a9 0	a4 1	a3 2	1,120	270	378	1,020	131	21	56
28	7 7	13	a9 0	a4 0	a3 2	1,190	218	363	964	113	22	49
29	8 6	14	a9 0	a4 0	.....	1,190	178	348	480	96	22	235
30	8 6	13	a9 2	a3 9	.....	712	168	520	389	83	26	145
31	8 3	.....	a9 5	a3 8	.....	542	.....	431	.....	75	20	.....

* Winter discharge measurement made on this day.

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

g Computed from graph based on gage readings.

h Computed from wire-weight gage readings.

Note—Stage-discharge relation affected by ice Nov. 29, Dec. 1, 2, 6-31, 1948, Jan. 1 to Mar. 6, Dec. 7-26, 1949, Jan. 10, Feb. 7, 1950.

Boone River near Webster City, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1942	3,972	218	76	128	0.152	0.18
November	1,969	94	45	65.6	.078	.09
December	1,245	46	34	40.2	.048	.05
Calendar year 1942	136,974	2,750	34	375	.445	6.05
January 1943	811	35	16	26.2	.031	.04
February	18,400	2,280	30	657	.780	.81
March	21,022	2,070	168	678	.805	.93
April	8,238	547	158	275	.327	.36
May	13,450	1,150	142	434	.515	.59
June	14,039	880	281	468	.556	.62
July	6,676	571	74	215	.255	.29
August	9,216	900	74	297	.353	.41
September	3,561	288	49	119	.141	.16
Water year 1942-43	102,599	2,280	16	281	.334	4.53
October 1943	1,219	55	32	39.3	.047	.05
November	4,058	215	58	135	.160	.18
December	2,039	161	30	65.8	.078	.09
Calendar year 1943	102,729	2,280	16	281	.334	4.53
January 1944	1,515	188	17	48.9	.058	.07
February	3,089	334	20	107	.127	.14
March	8,296	568	60	268	.318	.37
April	23,865	1,790	218	796	.945	1.05
May	65,211	6,300	588	2,104	2.50	2.88
June	55,240	7,960	345	1,841	2.19	2.44
July	13,514	1,320	108	436	.518	.60
August	4,185	369	42	135	.160	.18
September	2,362	218	42	78.7	.093	.10
Water year 1943-44	184,593	7,960	17	504	.599	8.15
October 1944	1,232	60	27	39.7	.047	.05
November	1,042	50	25	34.7	.041	.05
December	755	33	19	24.4	.029	.03
Calendar year 1944	180,306	7,960	17	493	.586	7.96
January 1945	496	19	13	16.0	.019	.02
February	17,506	2,480	12	625	.742	.77
March	47,701	4,820	391	1,539	1.83	2.11
April	57,995	4,580	281	1,933	2.30	2.56
May	40,939	3,170	476	1,321	1.57	1.81
June	46,384	4,640	385	1,546	1.84	2.05
July	8,190	664	114	264	.314	.36
August	31,571	6,120	91	1,018	1.21	1.39
September	2,579	190	50	86.0	.102	.11
Water year 1944-45	256,390	6,120	12	702	.834	11.31
October 1945	1,565	85	40	50.5	.060	.07
November	1,100	48	24	36.7	.044	.05
December	1,066	60	21	34.4	.041	.05
Calendar year 1945	257,092	6,120	12	704	.836	11.35
January 1946	9,325	1,980	22	301	.357	.41
February	21,602	3,000	51	772	.917	.95
March	32,761	2,750	465	1,057	1.26	1.45
April	7,392	509	106	246	.292	.33
May	31,118	6,130	97	1,004	1.19	1.37
June	22,053	1,630	262	735	.873	.97
July	5,847	536	73	189	.224	.26
August	1,121	108	13	36.2	.043	.05
September	1,696	195	12	56.5	.067	.07
Water year 1945-46	136,646	6,130	12	374	.444	6.03

Boone River near Webster City, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946	3,139	252	32	101	0.120	0.14
November	5,084	270	90	169	.201	.22
December	2,530	140	40	81.6	.097	.11
Calendar year 1946	143,668	6,130	12	394	.468	6.33
January 1947	1,896	90	26	61.2	.073	.08
February	5,145	650	45	184	.219	.23
March	16,568	1,480	50	534	.634	.73
April	25,137	2,100	246	838	.995	1.11
May	13,279	674	233	428	.508	.59
June	88,304	8,930	518	2,943	3.50	3.90
July	33,826	5,000	147	1,091	1.30	1.49
August	1,593	136	18	51.4	.061	.07
September	645	39	10	21.5	.026	.03
Water year 1946-47	197,146	8,930	10	540	.641	8.70
October 1947	528.4	63	8.3	17.0	.020	.02
November	1,112	59	27	37.1	.044	.05
December	875	41	14	28.2	.033	.04
Calendar year 1947	188,908.4	8,930	8.3	518	.615	8.34
January 1948	410	25	6	13.2	.016	.02
February	8,438	2,500	7	291	.346	.37
March	26,270	4,030	80	847	1.01	1.16
April	5,973	366	94	199	.236	.26
May	6,874	442	67	222	.264	.30
June	1,748	155	32	58.3	.069	.08
July	2,062	192	21	66.5	.079	.09
August	2,090	300	12	67.4	.080	.09
September	303.5	34	4.5	10.1	.012	.01
Water year 1947-48	56,683.9	4,030	4.5	155	.184	2.49
October 1948	296.9	18	7.2	9.58	.011	.01
November	696.7	45	9.7	23.2	.028	.03
December	640	29	17	20.6	.024	.03
Calendar year 1948	55,802.1	4,030	4.5	152	.181	2.45
January 1949	1,698	105	17	54.8	.065	.07
February	975	170	17	31.8	.041	.04
March	45,541	3,800	160	1,469	1.74	2.01
April	15,429	1,400	230	514	.610	.68
May	4,429	225	88	143	.170	.20
June	6,782	1,020	35	226	.268	.30
July	1,651	264	14	53.3	.063	.07
August	303.5	45	2.8	9.79	.012	.01
September	233.1	29	2.7	7.77	.0092	.01
Water year 1948-49	78,675.2	3,800	2.7	216	.257	3.46
October 1949	206.5	16	2.8	6.66	.0079	.009
November	329.7	18	7.2	11.0	.013	.01
December	343.4	21	9.0	11.1	.013	.02
Calendar year 1949	77,921.2	3,800	2.7	213	.253	3.43
January 1950	181.3	13	3.8	5.85	.0069	.008
February	100.8	4.0	3.2	3.60	.0043	.004
March	21,323.7	4,000	3.2	688	.817	.94
April	4,676	470	43	156	.185	.21
May	13,923	1,640	162	449	.533	.61
June	29,295	2,990	137	976	1.16	1.29
July	5,692	333	75	184	.219	.25
August	1,325	106	19	42.7	.051	.06
September	1,698	235	11	55.3	.066	.07
Water year 1949-50	79,054.4	4,000	2.8	217	.258	3.48

Raccoon River near Jefferson, Iowa

LOCATION.—Lat. $41^{\circ}59'20''$, long. $94^{\circ}22'30''$, in NW $\frac{1}{4}$ sec. 20, T. 83 N., R. 30 W., on right bank 50 feet downstream from bridge on State Highway 17, 2 miles south of Jefferson and $3\frac{1}{2}$ miles upstream from Hardin Creek.

DRAINAGE AREA.—1,630 square miles.

RECORDS AVAILABLE.—March 1940 to September 1950.

GAGE.—Water-stage recorder and wire-weight gage. Mar. 5, 1940, to Apr. 21, 1946, wire-weight gage 4 miles upstream at bridge on U. S. Highway 30. Apr. 22 to June 25, 1946, wire-weight gage at present site and datum.

AVERAGE DISCHARGE.—10 years, 677 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Aug. 13	9,480	15.45	Jan. 25	35
1943-44...	June 14	11,900	(¹)16.21	Jan. 9, 10, 13, Feb. 12	70
1944-45...	June 3	8,780	(¹)14.25	Jan. 7, 8	60
1945-46...	May 28	7,310	(¹)13.34	Dec. 25-30	40
1946-47...	June 23	29,100	22.3	Jan. 2-6	30
1947-48...	Mar. 20	8,630	13.78	Sept. 28	12
1948-49...	Mar. 7	10,100	14.8	Oct. 18, 20, 21	17
1949-50...	June 19	6,700	(²)	Jan 30 to Feb. 5	12

(1) Observed.

(2) Maximum gage-height 12.30 feet Mar. 5 (ice jam).

1940-50: Maximum discharge, 29,100 second-feet June 23, 1947 (gage height, 22.3 feet); minimum daily, 12 second-feet Sept. 28, 1948, Jan. 30 to Feb. 5, 1950.

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.

Raccoon River near Jefferson, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	207	161	135	107	54	900	599	263	714	3,380	1,040	299
2.....	281	161	127	98	56	700	500	317	693	2,780	900	310
3.....	281	161	118	90	1,140	550	508	306	923	1,680	864	292
4.....	289	157	110	83	2,630	460	536	268	977	1,500	741	274
5.....	286	153	102	77	1,610	420	395	248	928	1,330	609	289
6.....	281	149	95	73	1,600	400	376	278	801	1,250	572	284
7.....	270	149	90	70	1,100	390	355	258	730	1,830	737	269
8.....	258	145	84	69	900	380	328	233	689	1,880	986	264
9.....	245	145	80	68	820	380	317	217	797	1,500	846	245
10.....	235	149	*78	68	750	385	323	205	1,300	1,180	592	222
11.....	230	149	75	70	700	390	326	199	964	966	508	207
12.....	221	149	73	76	670	405	334	201	1,260	786	4,050	399
13.....	212	149	72	82	640	425	358	230	1,010	684	8,110	609
14.....	208	147	71	90	620	452	382	248	1,420	640	8,770	769
15.....	199	145	70	98	600	480	376	439	1,620	596	6,080	733
16.....	197	141	70	94	630	452	349	840	1,790	855	2,620	695
17.....	194	140	72	85	680	364	320	2,100	2,070	1,000	1,820	637
18.....	190	138	75	70	800	300	289	2,700	1,980	710	1,410	589
19.....	186	136	73	58	950	260	270	2,970	1,580	476	1,120	492
20.....	184	134	78	50	1,200	364	248	2,530	1,440	648	981	369
21.....	182	130	85	44	1,600	401	238	1,850	1,180	1,580	910	292
22.....	182	126	95	40	2,220	379	233	1,510	1,710	1,610	859	264
23.....	177	128	108	37	2,740	258	224	1,340	1,410	2,000	824	245
24.....	177	130	120	36	3,180	673	214	1,180	1,360	1,530	765	227
25.....	175	130	132	35	2,620	1,340	212	1,090	1,810	1,120	582	218
26.....	173	134	142	37	1,310	1,930	210	1,020	2,440	914	563	200
27.....	171	138	150	*40	941	1,960	201	968	3,010	695	514	192
28.....	163	141	145	46	914	1,210	192	905	3,580	596	473	185
29.....	157	141	137	49	.....	1,150	205	797	3,610	550	441	183
30.....	161	143	130	50	.....	797	224	734	3,260	508	388	181
31.....	165	.....	118	52	.....	637	.....	697	.....	467	374	.....
1943-44												
1.....	187	133	270	110	211	964	685	1,450	1,610	1,160	666	705
2.....	176	156	270	120	221	522	654	1,590	1,320	865	a700	662
3.....	172	174	265	130	226	518	670	1,780	a1,330	a800	713	646
4.....	172	172	262	120	233	491	616	1,860	1,340	a750	598	a560
5.....	168	166	265	120	190	372	598	1,940	1,560	a710	1,120	a450
6.....	164	187	275	110	120	250	590	1,640	2,380	a700	1,130	a420
7.....	162	202	268	100	110	110	575	1,260	a2,340	a900	1,120	390
8.....	160	211	265	90	100	190	572	1,430	2,300	a1,300	a1,000	360
9.....	156	207	260	70	95	230	565	1,430	2,400	1,900	a1,000	336
10.....	152	230	240	70	90	250	674	1,540	3,000	1,900	646	313
11.....	144	255	150	80	80	320	1,120	1,540	4,920	1,960	474	a300
12.....	141	262	140	80	70	370	1,340	1,600	6,360	a1,750	a400	a290
13.....	137	281	139	*70	85	500	1,600	1,620	7,740	a1,900	378	278
14.....	133	291	120	75	90	616	1,460	1,970	11,400	a2,100	400	268
15.....	133	299	110	80	90	733	1,320	1,420	11,200	2,210	a450	258
16.....	133	286	110	80	90	733	1,300	1,580	8,960	2,530	467	216
17.....	137	250	110	80	95	713	1,270	1,370	7,370	2,420	a460	230
18.....	137	270	120	75	95	701	1,650	1,370	6,160	2,300	a430	a235
19.....	141	313	120	75	95	616	1,170	1,380	4,850	1,660	409	240
20.....	141	345	120	80	95	616	1,520	2,250	3,670	1,300	363	240
21.....	141	366	110	85	100	616	1,760	6,880	2,810	1,230	a350	235
22.....	137	375	100	90	*120	631	2,630	9,650	2,070	1,150	357	235
23.....	133	384	90	95	150	631	2,610	8,180	2,040	1,040	409	238
24.....	129	372	90	100	200	579	2,280	6,960	1,640	872	a420	240
25.....	129	354	100	130	300	1,230	2,240	5,910	1,450	861	508	242
26.....	126	331	110	240	474	1,170	2,340	5,660	1,380	891	598	a250
27.....	124	325	110	319	1,140	1,100	2,320	3,920	1,270	815	733	a260
28.....	122	313	100	397	1,200	959	2,280	2,880	1,270	741	849	428
29.....	119	299	90	328	1,050	754	1,550	2,590	1,240	693	1,110	a350
30.....	119	283	95	270	.....	725	1,390	2,300	1,210	646	899	286
31.....	120	.....	100	250	.....	693	.....	2,130	.....	654	733	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Dec. 1-31, 1942, Jan. 1 to Feb. 2, Feb. 8-21, Mar. 1-13, Dec. 10-31, 1943, Jan. 1-26, Feb. 5-25, Mar. 6-13, 1944.

Raccoon River near Jefferson, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1	319	142	80	70	110	700	a500	2,230	4,900	1,210	536	a230
2	299	142	115	70	110	800	a500	2,080	6,940	1,080	543	230
3	a295	141	130	70	110	800	a500	2,020	8,770	985	a900	a230
4	294	a140	a135	70	110	930	a500	2,010	8,080	a000	1,220	a230
5	297	137	137	70	110	1,000	a500	1,820	6,780	857	2,050	a230
6	291	a137	a140	70	120	800	a500	1,550	5,290	823	2,180	226
7	268	a137	a140	60	120	700	a600	1,460	4,200	857	2,960	a200
8	252	137	145	*60	120	1,100	741	1,380	3,790	762	4,120	a200
9	240	135	120	70	120	a1,300	a900	1,200	3,440	709	2,540	a200
10	a235	a135	100	70	120	2,000	a1,600	a1,000	7,070	670	1,790	a170
11	233	135	100	70	120	3,690	1,830	933	6,340	631	a1,300	a170
12	214	135	100	70	200	6,680	2,900	a1,000	4,240	612	a1,200	a170
13	211	a140	100	70	600	6,030	a3,000	a1,200	4,030	508	1,180	a135
14	202	a150	*100	70	900	*5,750	3,270	1,480	a3,500	a500	a1,150	a135
15	200	160	100	70	1,300	4,580	3,530	2,740	2,820	a500	a1,100	a135
16	185	162	100	80	1,800	3,860	2,890	2,620	2,740	a500	1,080	137
17	185	a160	115	80	2,020	4,320	3,490	2,360	2,980	758	a900	a140
18	182	158	130	80	a1,500	4,050	4,040	1,790	a2,700	a1,000	a800	a140
19	a180	152	130	80	a1,100	3,130	3,980	a1,600	2,480	1,090	a700	a140
20	a175	152	130	80	*775	a2,300	2,760	1,440	1,970	a1,000	631	141
21	170	a150	120	90	500	1,840	a2,600	1,820	1,780	a900	583	a140
22	170	a150	110	90	450	a1,750	a2,500	3,670	1,530	a800	a550	a140
23	168	a150	110	90	420	1,690	2,470	5,580	a1,400	811	a500	a135
24	155	a150	100	90	300	a1,400	4,500	6,870	1,530	840	461	a135
25	a160	a150	90	90	250	1,240	7,320	6,620	a1,200	899	455	a130
26	150	152	80	*100	300	a1,000	7,740	5,510	a1,200	968	451	a130
27	150	131	80	100	350	a900	6,290	4,030	a1,200	a1,000	a350	129
28	150	a120	80	100	500	a800	4,900	4,260	a1,200	a900	268	a120
29	148	80	80	100	.....	a700	4,550	5,700	1,230	a750	a250	a120
30	a145	65	80	100	.....	a600	2,810	4,460	1,810	a750	238	a120
31	144	.....	70	100	.....	a500	.....	4,130	.....	a600	a235	.....
1945-46												
1	a120	a115	a100	a50	a600	a1,000	a2,400	406	2,770	2,140	208	66
2	a120	a115	a150	a60	a500	a1,000	a2,100	397	2,280	2,000	192	62
3	a120	a115	a200	a90	a400	a1,000	a1,800	454	1,970	1,490	186	48
4	a120	a115	a180	a500	a300	a1,200	a1,500	482	1,700	1,230	170	62
5	a120	a115	a160	a800	600	a2,000	a1,300	743	1,430	1,060	188	59
6	a120	a120	a160	a1,200	a1,000	*1,890	a1,150	723	1,270	950	182	59
7	a120	a120	a180	a1,400	1,500	a1,700	a1,050	691	1,130	856	176	68
8	a120	a120	*180	a1,200	a2,000	a1,300	a950	655	1,020	784	168	202
9	a120	a120	a110	a800	a1,500	1,000	a900	608	878	731	158	122
10	a120	a120	a100	a600	a1,300	a800	a860	548	771	679	138	172
11	a120	a120	90	a500	a1,000	a700	a840	566	707	612	130	150
12	a120	a120	80	a400	a700	1,120	a830	683	691	556	126	138
13	a120	a120	70	a300	a500	a2,000	a820	723	715	510	116	112
14	a120	a120	70	a270	a400	4,310	a820	775	675	451	116	99
15	a120	a115	65	a230	a400	4,920	a780	784	834	421	112	92
16	a120	a115	a60	a200	a400	4,920	a740	743	1,140	409	110	78
17	a120	a115	a60	a260	a400	2,770	a700	759	1,770	409	140	71
18	a120	a115	a60	a300	a400	2,430	662	824	2,780	394	112	66
19	a120	a115	a60	a350	a400	2,470	a920	1,100	2,380	580	92	51
20	a120	a115	a60	a320	a400	a2,100	a850	1,620	2,870	573	84	62
21	a115	a110	a60	a300	a500	a2,000	a540	1,560	3,430	424	136	60
22	a115	a110	a55	a270	a600	a1,800	510	1,400	3,580	370	272	68
23	a115	a105	a50	a240	a800	a2,000	489	1,160	2,640	331	208	68
24	a115	a100	a45	a200	a1,000	a2,400	482	1,560	1,920	301	136	62
25	a115	a95	a40	a180	a1,100	a3,000	463	3,180	2,320	290	112	64
26	a115	a95	a40	a160	a1,000	3,340	445	5,170	1,990	282	101	64
27	a115	a95	a40	a210	a1,000	2,750	424	7,040	1,610	280	93	64
28	a115	95	a40	a250	a1,000	a2,400	424	7,190	1,350	260	86	68
29	a115	*95	a40	a300	.....	a2,200	436	6,410	1,220	245	80	60
30	a115	a95	a40	a600	.....	a2,500	424	5,200	1,370	230	80	64
31	a115	.....	a45	a700	.....	2,900	.....	3,760	.....	216	78	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Nov. 29 to Dec. 1, Dec. 8-31, 1944, Jan. 1 to Feb. 16, Feb. 20 to Mar. 8, Nov. 29, Dec. 8, 1945, Feb. 5, 7, 1946 (no gage-height record Nov. 29, Dec. 11-13, 15, 17, 19, 21, 23-31, 1944, Jan. 1-7, 9-16, 18, 21-25, Jan. 27 to Feb. 10, Feb. 21 to Mar. 3, Mar. 5-7, 1945). Discharge computed from wire-weight gage readings July 14, 15, July 23 to Aug. 20, Aug. 27 to Sept. 30, 1946.

Raccoon River near Jefferson, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	b64	172	202	40	120	*300	559	856	1,250	5,020	328	b64
2.....	b71	178	210	30	120	300	520	885	3,240	5,000	h298	b61
3.....	b62	174	220	30	120	300	500	852	3,380	4,650	b288	b64
4.....	b60	168	220	30	120	300	500	806	3,390	3,720	b264	b62
5.....	b60	160	218	30	110	350	503	743	3,390	4,490	b236	b57
6.....	b62	156	225	30	100	400	538	687	3,130	4,330	h220	b56
7.....	b64	158	215	35	90	500	615	631	3,370	5,070	h202	b55
8.....	b64	160	216	40	85	600	798	598	2,570	4,960	h188	b55
9.....	b64	162	210	45	85	700	791	570	2,090	3,440	h177	b54
10.....	h90	174	202	50	90	800	1,470	538	1,760	2,750	h165	b53
11.....	150	188	190	60	90	1,200	2,750	517	1,530	2,360	h151	b51
12.....	174	192	180	70	100	2,000	3,370	506	2,140	2,080	h136	b61
13.....	178	198	160	85	140	1,800	3,380	559	4,740	1,860	h134	b57
14.....	178	200	130	100	300	1,600	2,590	604	5,630	1,650	h125	b57
15.....	178	204	120	105	400	1,400	2,060	691	5,420	1,470	h118	a56
16.....	170	214	100	*110	500	1,300	1,750	874	4,770	1,340	h117	b55
17.....	164	212	90	110	600	1,200	1,540	1,080	4,240	1,240	h112	b54
18.....	168	216	*80	115	650	1,100	1,380	1,200	4,230	1,120	h108	b54
19.....	178	268	80	120	700	1,000	1,240	1,170	3,780	1,020	h102	b50
20.....	178	301	80	120	700	1,100	1,120	1,030	3,180	930	h97	b48
21.....	176	292	85	120	650	1,200	1,000	910	2,670	852	h92	b45
22.....	168	265	90	120	600	1,360	932	820	2,360	767	h88	b45
23.....	160	240	95	130	580	1,220	901	743	16,700	700	a84	b42
24.....	166	238	100	130	530	1,510	883	687	23,200	643	h80	b42
25.....	168	218	100	140	500	1,610	1,060	651	13,900	583	h78	b42
26.....	168	216	100	140	*450	1,310	1,180	627	10,300	539	h73	b42
27.....	168	220	95	150	400	1,020	1,060	598	8,080	496	h71	a42
28.....	168	220	85	150	350	883	965	667	6,080	454	h70	b42
29.....	184	232	70	140	.....	780	978	834	4,850	421	h69	a45
30.....	180	225	60	130	.....	683	838	914	4,870	388	h68	b47
31.....	170	.....	50	120	.....	604	.....	965	.....	352	h65	.....
1947-48												
1.....	47	98	140	65	35	3,000	g2,420	1,020	222	713	158	g253
2.....	49	110	185	70	35	2,500	g2,380	1,120	207	565	138	177
3.....	a48	127	195	75	30	1,500	g1,680	1,390	198	465	134	155
4.....	47	127	190	70	30	900	g1,310	1,270	174	g381	122	108
5.....	45	124	165	70	*30	500	1,080	1,100	162	g320	114	90
6.....	49	125	140	70	25	450	1,040	g1,000	165	g274	106	88
7.....	48	124	115	65	25	400	930	g920	158	g232	104	84
8.....	a47	a130	90	*65	25	350	852	1,270	145	g201	102	70
9.....	45	136	155	65	25	300	857	1,190	136	g180	102	74
10.....	45	133	225	60	25	260	772	1,040	128	g236	96	72
11.....	44	124	245	60	25	240	821	916	122	288	110	70
12.....	44	117	250	55	25	235	704	830	120	g242	108	53
13.....	a44	106	245	55	25	230	668	767	134	g140	104	52
14.....	44	136	215	60	25	380	605	736	152	g260	102	50
15.....	44	127	160	60	25	450	561	700	174	401	108	46
16.....	44	125	145	65	30	1,000	521	659	195	337	g100	43
17.....	41	127	220	65	40	2,400	485	618	239	405	g124	42
18.....	41	129	225	65	50	g4,580	449	581	232	397	g108	37
19.....	40	133	185	65	60	7,040	409	533	204	334	g122	34
20.....	a39	133	160	60	70	8,420	385	485	207	274	88	34
21.....	39	136	105	60	80	g6,770	358	453	a216	232	70	38
22.....	39	140	120	55	150	g4,160	344	433	225	g204	62	34
23.....	a43	124	115	55	200	g3,340	348	409	281	256	55	29
24.....	48	110	110	55	205	g2,490	377	381	309	278	50	30
25.....	50	85	105	50	215	g1,800	614	351	565	600	48	22
26.....	62	130	100	50	365	h1,410	1,210	320	585	614	45	13
27.....	70	145	95	45	440	g1,220	1,810	298	497	320	40	13
28.....	78	140	85	45	1,700	g1,030	1,600	281	473	g225	38	12
29.....	77	55	70	40	3,200	g1,200	1,290	267	473	h210	38	18
30.....	81	90	55	40	.....	g1,340	1,080	253	668	g207	h118	24
31.....	92	.....	40	40	.....	g1,740	.....	236	.....	a182	g461	.....

* Winter discharge measurement made on this day.

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

g Computed from graph based on gage readings.

h Computed from daily wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 2, 3, 11-31, 1946, Jan. 1 to Mar. 21, Nov. 26 to Dec. 31, 1947, Jan. 1 to Mar. 17, 1948. Gage heights from recorder graph Mar. 19, Apr. 13 to May 6, May 8-29, June 23 to July 3, July 11, 14-21, 23-27, 1948, from wire-weight gage readings the balance of the 1947-48 water year.

Raccoon River near Jefferson, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	21	37	24	39	35	1,000	1,420	334	421	124	132	57
2.....	22	37	23	39	34	950	1,680	309	425	216	100	45
3.....	22	40	62	42	*34	1,800	1,310	298	545	174	84	43
4.....	21	45	90	180	34	3,200	1,170	284	481	278	70	433
5.....	21	58	78	180	33	5,700	995	278	545	213	60	381
6.....	18	57	70	170	33	8,200	875	281	441	189	57	210
7.....	36	57	74	100	33	g9,020	762	232	362	142	55	150
8.....	37	62	80	150	33	g7,500	672	210	320	124	43	116
9.....	34	64	80	140	33	g5,540	585	207	312	102	38	106
10.....	31	62	62	135	33	*2,700	493	186	270	92	37	92
11.....	37	58	54	135	33	1,740	445	177	246	92	34	102
12.....	31	57	52	130	33	1,500	417	162	228	86	52	246
13.....	26	53	*50	130	33	1,340	381	152	344	84	62	457
14.....	28	50	52	130	33	1,200	373	142	260	80	58	278
15.....	28	50	52	140	33	875	369	145	225	70	45	221
16.....	28	48	50	230	34	650	348	155	210	60	36	183
17.....	23	48	52	220	34	580	429	186	189	62	37	150
18.....	17	48	54	200	34	520	672	174	177	60	a53	128
19.....	18	48	58	180	35	490	670	545	160	60	88	112
20.....	17	55	58	160	36	481	945	1,120	150	57	88	100
21.....	17	96	54	140	40	505	830	945	177	58	180	90
22.....	23	102	50	120	47	995	762	762	165	52	126	80
23.....	27	64	47	100	80	3,080	672	945	195	50	88	68
24.....	26	64	43	84	250	3,000	585	1,620	270	48	72	66
25.....	26	96	38	72	660	2,140	513	1,340	a450	45	60	62
26.....	21	102	36	60	900	2,700	605	1,070	195	43	46	62
27.....	23	102	36	52	1,200	3,240	497	875	162	42	a43	58
28.....	28	96	38	46	1,100	2,630	437	740	150	40	57	57
29.....	30	58	40	43	.....	2,490	401	628	138	38	94	53
30.....	38	46	39	40	.....	2,000	362	525	130	32	76	53
31.....	36	.....	39	37	.....	1,420	.....	469	.....	174	62	.....
1949-50												
1.....	54	45	45	24	12	36	455	106	685	605	212	61
2.....	54	46	44	24	12	40	405	112	1,120	525	190	56
3.....	53	45	44	23	12	100	384	115	985	455	159	57
4.....	51	45	41	23	12	420	330	212	748	405	212	49
5.....	51	45	*36	22	12	2,800	288	285	665	378	170	51
6.....	50	44	33	22	*14	3,300	246	545	585	333	173	50
7.....	52	44	33	21	17	*3,100	218	545	508	315	167	49
8.....	51	44	35	20	20	1,100	198	525	455	201	a140	a47
9.....	51	44	38	20	110	600	a190	2,820	405	270	121	44
10.....	64	44	36	*19	450	490	184	3,730	372	246	360	45
11.....	a62	44	35	18	500	460	156	3,330	336	243	232	46
12.....	60	44	38	18	150	450	143	1,960	327	240	176	57
13.....	53	44	41	18	100	450	135	1,300	339	255	148	44
14.....	56	44	37	17	85	450	135	985	321	336	162	42
15.....	57	44	35	17	75	480	119	770	285	748	a150	42
16.....	53	44	36	16	67	472	119	645	279	665	a130	44
17.....	52	44	37	16	61	472	115	565	270	525	119	42
18.....	51	44	38	16	56	605	99	490	3,400	508	115	41
19.....	50	44	37	15	51	645	95	455	6,320	472	108	40
20.....	48	44	33	15	47	545	94	420	4,710	438	103	a42
21.....	57	45	30	15	44	490	88	438	3,280	438	94	44
22.....	55	45	31	14	41	605	84	472	3,880	605	85	44
23.....	51	a44	32	14	39	770	82	725	4,110	585	77	44
24.....	50	a44	31	14	39	885	77	815	3,380	508	a73	41
25.....	49	a49	30	13	38	1,060	94	1,180	2,100	455	70	218
26.....	49	a48	29	13	37	1,090	103	1,680	1,540	405	67	240
27.....	48	a46	28	13	37	935	95	1,420	1,210	351	70	215
28.....	47	a45	27	13	36	665	92	1,040	960	312	67	184
29.....	47	a44	26	13	.....	625	90	960	815	282	70	153
30.....	47	45	25	12	.....	525	103	885	705	258	70	151
31.....	46	.....	25	12	.....	472	.....	792	.....	243	63	.....

* Winter discharge measurement made on this day.

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

g Computed from graph based on gage readings.

Note—Stage-discharge relation affected by ice Dec. 5-31, 1948, Jan. 1 to Mar. 6, Mar. 17-19, Dec. 4-31, 1949, Jan. 1 to Mar. 15, 1950 (no gage-height record Jan. 27 to Feb. 3, 1950). Discharge computed from gage heights obtained from recorder graph Apr. 10 to May 3, May 19 to June 8, Sept. 4, 5, 12, 13, 1949, Feb. 7, 8, Mar. 4-7, May 5 to June 12, June 18 to July 4, July 25-28, 1950 and from daily wire-weight gage reading the balance of the time.

Raccoon River near Jefferson, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1942.....	6,627	297	157	214	0.133	0.15
November.....	4,299	161	126	143	.089	.10
December.....	3,110	150	70	100	.062	.72
Calendar year 1942.....	225,624	3,170	70	618	.384	5.86
January 1943.....	2,042	107	35	165.9	.041	.47
February.....	33,675	3,180	54	1,203	.747	.78
March.....	19,692	1,960	258	632	.393	.45
April.....	9,642	599	192	321	.199	.22
May.....	27,141	2,970	199	876	.544	.63
June.....	47,056	3,610	680	1,569	.975	1.09
July.....	37,241	3,380	467	1,201	.748	.86
August.....	50,039	8,770	374	1,614	1.00	1.16
September.....	10,434	769	181	348	.216	.24
Water year 1942-43.....	250,898	8,770	35	687	.427	6.87
October 1943.....	4,445	187	119	143	.089	.01
November.....	8,092	384	133	270	.168	.19
December.....	4,965	275	90	160	.099	.11
Calendar year 1943.....	254,364	8,770	35	697	.433	6.30
January 1944.....	4,119	397	70	133	.083	.10
February.....	7,215	1,200	70	249	.155	.17
March.....	18,903	1,230	110	610	.379	.44
April.....	41,349	2,630	565	1,378	.856	.98
May.....	89,080	9,650	1,260	2,874	1.79	2.06
June.....	108,590	11,400	1,210	3,620	2.25	2.51
July.....	40,808	2,530	646	1,316	.817	.94
August.....	19,640	1,130	350	634	.394	.45
September.....	10,161	705	216	339	.211	.23
Water year 1943-44.....	357,367	11,400	70	976	.606	8.26
October 1944.....	6,478	319	144	209	.130	.15
November.....	4,185	162	65	140	.087	.10
December.....	3,347	145	70	108	.067	.08
Calendar year 1944.....	353,875	11,400	65	967	.601	8.19
January 1945.....	2,480	100	60	80	.050	.06
February.....	14,535	2,020	110	519	.322	.34
March.....	66,770	6,690	500	2,154	1.34	1.54
April.....	84,211	7,740	500	2,807	1.74	1.95
May.....	86,563	6,870	933	2,792	1.73	2.00
June.....	107,140	8,770	1,200	3,571	2.22	2.47
July.....	25,170	1,210	500	812	.504	.58
August.....	33,221	4,120	235	1,072	.666	.77
September.....	4,888	230	120	163	.101	.11
Water year 1944-45.....	438,988	8,770	60	1,203	.747	10.15
October 1945.....	3,665	120	115	118	.073	.08
November.....	3,340	120	95	111	.069	.08
December.....	2,690	200	40	86.8	.054	.06
Calendar year 1945.....	434,673	8,770	40	1,191	.740	10.04
January 1946.....	13,240	1,400	50	427	.265	.31
February.....	21,700	2,000	300	775	.481	.50
March.....	67,920	4,920	700	2,191	1.36	1.57
April.....	26,039	2,400	424	868	.533	.59
May.....	57,914	7,190	397	1,868	1.15	1.32
June.....	61,211	3,580	675	1,707	1.05	1.17
July.....	20,064	2,140	216	647	.397	.46
August.....	4,286	272	78	138	.085	.10
September.....	2,481	202	48	82.7	.051	.06
Water year 1945-46.....	274,550	7,190	40	752	.461	6.30

Raccoon River near Jefferson, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946	4,253	184	60	137	0.084	0.10
November	6,221	301	156	207	.127	.14
December	4,278	225	50	138	.085	.10
Calendar year 1946	279,607	7,100	48	766	.470	6.42
January 1947	2,825	150	30	91	.056	.06
February	9,280	700	85	331	.203	.21
March	30,430	2,000	300	982	.602	.69
April	37,771	3,380	500	1,259	.772	.86
May	23,816	1,200	506	768	.471	.54
June	160,240	23,200	1,250	5,341	3.28	3.66
July	64,695	5,070	352	2,087	1.28	1.48
August	4,404	328	65	142	.087	.10
September	1,558	64	42	52	.032	.04
Water year 1946-47	349,771	23,200	30	958	.588	7.98
October 1947	1,574	92	39	50.8	.031	.04
November	3,046	145	55	122	.075	.08
December	4,650	250	40	150	.092	.10
Calendar year 1947	344,889	23,200	30	945	.580	7.86
January 1948	1,820	75	40	59	.036	.04
February	7,215	3,200	25	249	.153	.16
March	61,635	8,420	230	1,988	.122	1.41
April	27,960	2,420	344	932	.572	.64
May	21,827	1,300	236	704	.432	.50
June	7,766	668	120	259	.159	.18
July	9,973	713	140	322	.198	.23
August	3,275	461	38	106	.065	.07
September	1,858	253	12	61.9	.038	.04
Water year 1947-48	153,199	8,420	12	419	.257	3.49
October 1948	811	38	17	26.2	.016	.02
November	1,860	102	37	62.0	.038	.04
December	1,635	90	23	52.7	.032	.04
Calendar year 1948	147,635	8,420	12	403	.247	3.37
January 1949	3,684	230	37	119	.073	.08
February	4,950	1,200	33	177	.109	.11
March	79,186	9,020	481	2,554	1.57	1.81
April	20,975	1,680	348	699	.429	.48
May	15,496	1,620	142	500	.307	.35
June	8,343	545	130	278	.171	.19
July	2,987	278	32	96.4	.059	.07
August	2,133	180	34	68.8	.042	.05
September	4,259	457	43	142	.087	.10
Water year 1948-49	146,319	9,020	17	401	.246	3.34
October 1949	1,619	64	46	52.2	.032	.04
November	1,341	49	44	44.7	.027	.03
December	1,066	45	25	34.4	.021	.02
Calendar year 1949	146,039	9,020	25	400	.245	3.33
January 1950	530	24	12	17.1	.010	.01
February	2,174	500	12	77.6	.048	.05
March	25,137	3,300	36	811	.498	.57
April	5,016	455	77	167	.102	.11
May	30,322	3,730	106	978	.600	.69
June	45,095	6,320	270	1,503	.922	1.03
July	12,695	748	240	410	.252	.29
August	4,153	360	63	134	.082	.09
September	2,283	240	40	76.1	.047	.05
Water year 1949-50	131,431	6,320	12	360	.221	2.98

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 feet upstream from county highway N bridge, 0.3 mile northeast of Van Meter, 1 mile downstream from South Raccoon River, and 30 miles upstream from Des Moines River.

DRAINAGE AREA.—3,410 square miles.

RECORDS AVAILABLE.—April 1915 to November 1927 and October 1932 to September 1950 in reports of U. S. Geological Survey. April 1915 to December 1932 in report of Iowa State Planning Board entitled "Stream Flow Records of Iowa, 1873-1932."

GAGE.—Water-stage recorder. Datum of gage is 841.16 feet above mean sea level, datum of 1929. Apr. 25, 1915, to May 30, 1923, chain gage at same site and datum. May 31, 1923, to Nov. 4, 1927, water-stage recorder at same site and datum. Oct. 1, 1932, to Aug. 8, 1934, chain gage at same site and datum.

AVERAGE DISCHARGE.—34 years (1915-32, 1933-50), 1,155 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Aug. 16	12,500	14.69	Jan. 25	118
1943-44...	May 21	23,400	18.3	Jan. 14	130
1944-45...	June 6	15,100	16.12	Dec. 1	150
1945-46...	Sept. 9	15,100	16.11	Dec. 24-28	80
1946-47...	June 13	46,800	21.4	Sept. 26, 28	145
1947-48...	Mar. 19	26,700	18.96	Feb. 15	60
1948-49...	Mar. 6	13,900	(¹)	Oct. 5	58
1949-50...	June 20	17,600	16.14	Feb. 3-5	35

(1) Maximum gage-height 16.6 feet Mar. 4 (ice jam).

1915-50:: Maximum discharge, 46,800 second-feet June 13, 1947 (gage height, 21.4 feet in gage well, 21.6 feet from outside floodmark); minimum, 10 second-feet Jan. 22-31, 1940.

REMARKS.—Records good except those for periods of ice effect which are poor. Diurnal fluctuation during low flow caused by power plant at Adel, 10 miles above station.

COOPERATION.—Gage-height record collected in cooperation with U. S. Weather Bureau. Several discharge measurements furnished by Corps of Engineers.

Raccoon River at Van Meter, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1	748	447	300	350	141	1,690	1,160	539	1,500	4,560	1,040	1,090
2	715	427	218	330	*140	1,340	1,080	628	2,030	4,240	g1,990	1,050
3	936	388	205	300	1,000	976	982	602	1,540	3,990	4,750	850
4	880	392	200	280	5,180	793	862	607	1,980	2,960	3,720	782
5	799	402	205	270	4,390	710	839	559	3,050	2,810	3,640	782
6	827	376	210	260	4,470	670	759	2,540	2,680	2,240	2,340	799
7	822	365	220	255	3,660	640	748	1,410	2,470	1,910	3,430	715
8	782	377	225	250	3,050	610	726	1,160	2,150	2,110	1,950	655
9	732	383	230	248	2,590	600	704	901	2,190	2,380	1,890	617
10	688	393	225	245	2,000	607	743	816	2,030	2,080	1,500	559
11	633	389	220	245	1,500	612	737	748	f2,200	1,640	1,210	518
12	639	356	210	245	1,100	612	934	671	2,370	1,310	3,890	1,080
13	591	376	200	250	900	650	910	628	2,180	1,150	5,770	1,360
14	570	344	195	270	820	743	793	602	2,090	1,020	7,900	1,550
15	544	325	200	300	800	1,710	748	1,910	f2,110	1,040	10,100	1,480
16	549	384	210	320	800	1,840	754	f5,650	6,370	988	12,200	1,340
17	528	351	220	290	830	817	704	f4,130	3,490	1,190	10,700	1,130
18	513	330	220	250	870	596	660	f4,230	3,590	1,530	15,340	940
19	477	341	205	220	934	379	607	f4,270	3,640	1,290	g3,390	833
20	498	339	210	180	1,010	403	575	4,320	3,050	1,310	g2,530	782
21	472	326	*210	160	1,140	462	513	4,180	2,220	1,480	2,070	704
22	462	299	215	140	1,600	549	513	3,240	2,020	2,860	1,890	655
23	456	310	225	130	2,170	1,160	508	2,670	2,550	3,480	2,050	607
24	444	319	240	120	2,530	f2,710	457	2,510	3,130	4,380	1,550	565
25	429	328	280	118	3,200	2,590	492	2,230	2,550	3,120	7,470	533
26	422	250	360	120	3,650	2,330	511	1,990	2,530	2,150	3,160	503
27	395	201	500	125	2,860	2,490	705	1,830	3,260	1,620	2,280	472
28	431	230	450	135	1,890	2,350	492	1,740	3,840	1,290	1,690	452
29	416	237	410	140	.....	1,760	492	1,600	4,130	1,360	1,390	422
30	552	287	390	142	.....	1,510	528	1,470	4,440	1,070	1,210	442
31	528	.....	370	143	.....	1,310	.....	1,410	.....	970	1,080	.....
1943-44												
1	406	308	588	250	600	1,570	1,680	3,280	4,990	1,690	1,610	1,400
2	384	312	562	260	588	1,290	1,600	4,270	4,140	1,600	2,660	1,230
3	366	320	536	290	583	1,130	1,500	7,780	3,440	1,500	1,890	1,120
4	362	320	516	280	521	1,090	1,470	6,540	3,290	1,410	1,640	1,030
5	349	328	516	260	536	1,050	1,460	6,130	2,910	1,320	2,080	961
6	328	320	551	230	420	967	1,390	5,800	3,020	1,240	1,300	874
7	324	397	551	210	240	350	1,390	5,150	3,640	1,290	1,730	794
8	324	448	572	180	290	190	1,410	5,010	5,640	1,440	1,590	716
9	320	462	450	180	260	330	1,410	4,510	7,810	1,820	1,290	662
10	304	481	390	180	200	511	1,390	4,200	7,200	2,390	1,110	695
11	308	496	340	170	170	1,140	1,660	3,860	10,300	3,660	985	657
12	300	511	200	160	170	1,820	2,110	3,540	9,290	2,750	868	598
13	324	583	200	150	180	1,840	2,900	3,270	10,600	2,330	777	609
14	277	604	190	*130	210	1,770	3,490	3,240	13,900	2,580	678	588
15	296	598	190	140	230	1,970	3,420	3,340	16,400	2,710	678	551
16	296	567	190	170	230	2,210	2,990	3,620	17,400	2,610	733	526
17	273	541	190	190	230	2,330	2,770	3,350	15,000	2,590	845	496
18	266	598	200	180	240	2,270	3,010	2,820	12,000	2,810	891	472
19	285	604	240	180	260	2,080	3,050	5,080	11,200	2,630	700	457
20	285	614	240	180	270	1,900	3,450	11,000	8,010	2,280	662	443
21	273	646	210	190	280	1,810	4,100	18,100	6,620	2,050	625	448
22	273	651	190	190	*410	1,790	5,140	12,600	5,130	1,770	583	438
23	262	657	170	210	770	1,870	5,820	18,000	4,020	1,600	541	477
24	259	651	160	290	857	1,970	7,280	18,000	3,370	1,570	598	486
25	251	651	170	340	926	2,226	6,040	15,206	2,940	1,480	593	477
26	251	657	200	501	1,260	2,580	5,490	17,800	2,590	3,110	1,470	467
27	237	620	230	1,040	1,590	2,700	5,280	13,100	2,330	2,000	1,750	448
28	237	609	220	810	1,870	2,400	4,740	9,960	2,130	1,620	1,610	689
29	248	588	180	850	1,740	2,070	4,010	7,920	1,970	1,390	1,630	1,050
30	266	521	200	810	.....	1,840	3,580	6,320	1,820	1,220	1,690	920
31	328	.....	210	783	.....	1,690	.....	5,640	.....	1,100	1,600	.....

* Winter discharge measurement made on this day.

f Discharge computed on basis of partly estimated gage-height record.

g Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 3-31, 1942, Jan. 1 to Feb. 3, Feb. 10-18, Mar. 5-9, Dec. 9-31, 1943, Jan. 1-25, 27-30, Feb. 7-23, Mar. 7-9, 1944.

Raccoon River at Van Meter, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	722	332	150	200	250	1,100	1,860	4,980	9,960	2,410	1,370	572
2.....	620	341	210	190	280	1,700	1,690	4,500	9,070	2,290	1,320	526
3.....	588	328	270	190	300	1,800	1,820	4,430	9,150	2,090	1,330	453
4.....	562	320	290	190	320	2,000	3,060	4,230	10,200	1,890	1,660	501
5.....	598	312	310	190	320	2,200	2,580	3,890	11,200	1,860	2,800	453
6.....	593	324	310	190	350	1,740	2,870	3,520	12,200	1,740	3,880	443
7.....	546	345	310	190	400	1,220	2,910	3,200	12,600	1,650	3,000	425
8.....	521	345	320	190	400	1,160	3,460	2,930	8,300	1,660	3,410	388
9.....	491	332	280	190	390	1,950	4,040	2,750	7,070	1,590	3,750	388
10.....	462	328	240	230	350	3,700	4,130	2,940	6,700	1,440	3,970	388
11.....	448	328	230	250	260	6,000	4,710	2,760	7,180	1,370	2,840	362
12.....	434	324	260	260	250	8,300	5,250	2,620	9,630	1,320	2,250	353
13.....	415	328	*280	260	600	8,400	5,020	2,500	9,940	1,260	2,000	328
14.....	411	328	400	270	1,600	8,510	5,470	8,240	7,590	1,210	2,010	328
15.....	402	312	470	260	2,500	9,900	5,960	9,380	6,530	1,160	1,910	312
16.....	388	332	440	250	2,800	10,500	8,790	7,410	6,700	1,160	1,720	328
17.....	384	328	410	260	2,800	8,900	8,190	6,620	5,960	1,440	1,550	304
18.....	384	337	400	270	2,700	7,510	7,260	5,600	5,460	2,400	1,440	304
19.....	375	341	390	280	2,000	*7,190	6,850	4,650	5,030	2,380	1,340	273
20.....	371	345	350	290	1,500	5,970	6,760	4,120	4,840	2,000	1,270	308
21.....	366	324	250	300	1,150	4,540	6,010	5,940	3,950	2,050	1,190	312
22.....	362	324	240	300	760	3,810	4,690	11,200	3,500	1,860	1,160	316
23.....	362	324	230	300	700	3,380	4,440	12,500	3,090	1,670	1,030	308
24.....	362	320	220	310	750	3,730	7,530	11,300	2,860	1,600	973	312
25.....	362	337	200	290	650	4,800	8,730	11,300	3,150	1,620	897	357
26.....	345	362	180	280	600	3,620	8,240	10,600	2,720	1,570	840	324
27.....	337	357	180	270	700	3,080	9,720	10,100	2,430	1,680	789	632
28.....	337	345	190	260	800	2,740	10,100	10,000	2,290	1,600	678	689
29.....	341	300	210	*250	.....	2,410	8,460	7,800	2,290	1,430	706	593
30.....	332	170	230	240	.....	2,190	6,480	7,470	2,450	1,360	678	526
31.....	332	.....	230	240	.....	2,010	.....	11,000	.....	1,430	620	.....
1945-46												
1.....	572	241	375	110	850	1,750	3,820	857	5,370	2,840	486	526
2.....	536	237	375	110	800	1,840	4,200	834	3,690	3,060	443	453
3.....	467	234	328	120	1,000	1,960	3,580	1,500	2,990	2,890	425	415
4.....	438	224	292	500	2,000	1,980	2,850	2,060	2,620	2,360	402	411
5.....	402	230	234	3,650	4,900	2,270	2,440	1,800	2,340	2,050	388	397
6.....	375	237	259	4,500	*4,430	4,000	2,200	1,660	2,100	1,820	402	491
7.....	332	241	296	4,000	3,800	4,130	2,030	1,580	1,910	1,680	411	598
8.....	366	277	260	3,300	4,230	4,060	1,890	1,460	1,760	1,550	662	11,500
9.....	308	300	220	2,130	3,120	3,410	1,770	1,350	1,600	1,400	700	9,910
10.....	308	269	170	1,480	2,550	2,480	1,670	1,270	1,460	1,300	406	3,780
11.....	308	262	155	1,240	2,510	2,290	1,680	1,240	1,320	1,200	345	2,210
12.....	296	273	135	1,120	2,130	3,140	1,680	1,190	1,250	1,110	324	1,720
13.....	285	269	130	895	1,620	4,690	1,660	1,190	1,200	1,020	316	1,370
14.....	289	262	125	650	1,380	6,260	1,660	1,250	1,190	961	300	1,150
15.....	296	255	115	600	1,240	6,230	1,610	1,320	1,480	891	300	985
16.....	289	259	110	650	1,100	6,470	1,510	1,400	1,660	885	316	874
17.....	289	259	105	722	1,140	7,320	1,390	1,510	1,780	1,010	614	761
18.....	281	259	100	673	1,170	6,050	1,310	1,460	2,980	961	620	668
19.....	269	251	95	660	1,130	4,440	1,230	1,520	4,540	891	332	630
20.....	259	251	95	650	1,200	3,910	1,170	1,850	6,080	909	281	783
21.....	255	255	90	650	1,250	3,460	1,120	2,460	5,680	1,370	1,820	657
22.....	248	195	90	720	1,370	3,030	1,060	2,250	5,550	1,100	2,800	885
23.....	241	179	90	620	1,650	2,990	1,090	2,080	5,520	897	1,590	1,130
24.....	244	200	80	550	1,890	3,700	1,010	2,080	4,890	733	5,790	857
25.....	248	185	80	350	1,940	4,580	973	2,620	4,210	706	9,500	646
26.....	244	235	80	330	1,880	5,020	920	4,200	5,130	668	2,350	588
27.....	244	234	80	320	1,750	5,350	885	4,530	4,510	651	1,450	546
28.....	244	*234	80	400	1,700	4,860	897	5,300	3,350	620	1,040	1,080
29.....	244	234	90	750	.....	4,060	897	6,330	3,030	598	817	794
30.....	230	230	90	1,500	.....	3,570	885	6,800	3,030	562	695	577
31.....	230	.....	100	1,500	.....	3,340	.....	6,460	.....	516	598	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 29 to Dec. 31, 1944, Jan. 1 to Mar. 18, Nov. 24-26, Dec. 8-31, 1945, Jan. 1-9, 13-16, Jan. 19 to Feb. 6, 1946.

Raccoon River at Van Meter, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1	526	1,090	689	200	350	980	1,270	3,010	4,970	6,420	729	232
2	496	1,090	472	210	330	900	1,170	2,580	11,300	6,250	707	232
3	462	1,120	429	250	310	900	1,160	2,330	17,500	6,440	674	229
4	425	1,050	588	350	300	910	2,370	2,130	11,400	6,320	641	215
5	425	979	761	420	330	950	2,390	1,910	22,700	7,100	602	208
6	397	926	706	360	350	990	2,300	1,800	16,000	7,600	553	201
7	420	973	684	200	380	1,000	1,920	1,630	10,800	6,100	536	194
8	434	979	689	300	410	1,050	1,980	1,510	9,150	5,940	495	187
9	429	926	651	340	430	1,100	2,170	1,430	8,020	6,160	460	184
10	457	1,090	625	340	440	1,200	6,540	1,400	6,140	5,110	450	176
11	783	1,200	550	350	460	1,400	7,420	1,260	4,950	3,880	455	190
12	938	1,110	400	360	500	2,800	7,240	1,220	18,400	3,420	406	366
13	938	1,060	300	380	620	3,200	6,700	1,220	31,500	3,080	393	262
14	897	1,030	250	450	760	2,800	6,260	1,230	19,600	2,760	393	212
15	800	1,000	200	510	1,050	2,500	5,380	1,710	16,600	2,440	393	194
16	657	*985	180	*520	1,200	2,100	4,720	2,450	14,200	2,150	352	187
17	706	932	160	480	1,400	2,000	4,270	2,600	11,600	1,950	366	176
18	4,010	874	*220	480	1,600	1,900	3,730	2,980	10,100	2,020	357	180
19	2,220	874	280	520	1,700	1,800	3,790	2,940	10,300	1,760	344	173
20	1,690	880	340	500	1,600	1,800	5,360	2,710	9,640	1,540	352	173
21	1,390	932	400	520	1,500	1,820	3,890	2,380	10,500	1,490	310	162
22	1,240	891	440	530	1,400	1,760	3,300	2,370	8,980	1,260	286	156
23	1,120	805	470	530	1,350	2,170	2,980	2,450	11,700	1,170	274	152
24	2,830	834	450	550	1,250	2,350	2,770	2,050	14,300	1,130	266	152
25	2,510	840	320	590	1,150	2,490	2,600	1,790	33,000	1,100	462	152
26	1,700	711	250	620	1,100	2,350	2,540	1,760	24,300	1,030	406	145
27	1,430	711	220	560	*1,000	2,000	2,570	1,690	18,800	970	246	152
28	1,260	689	180	540	900	1,750	2,360	3,540	14,300	958	246	145
29	1,190	772	150	460	.....	1,570	2,380	6,300	10,700	892	240	152
30	1,160	700	160	430	.....	1,430	4,660	4,940	7,670	806	236	152
31	1,100	.....	180	380	.....	1,340	.....	4,540	.....	784	236	.....
1947-48												
1	156	542	258	145	95	4,450	3,200	1,780	458	968	785	130
2	166	402	344	155	95	3,900	3,640	1,630	400	1,030	446	270
3	166	322	337	165	95	3,400	3,400	1,700	385	834	355	222
4	166	322	348	240	*95	2,500	2,690	1,940	360	701	286	186
5	152	366	586	215	90	1,700	2,290	1,870	340	547	286	162
6	145	334	445	190	85	930	2,060	1,780	330	547	282	117
7	148	290	470	*185	80	790	1,880	1,630	310	416	234	144
8	138	258	195	270	75	700	1,690	1,630	302	380	226	151
9	142	254	220	260	70	575	1,540	1,740	290	325	222	120
10	138	278	270	250	70	500	1,480	1,700	270	298	202	134
11	138	215	350	200	65	485	1,500	1,530	246	589	186	117
12	134	266	425	150	65	485	1,440	1,430	262	526	202	102
13	138	204	415	150	65	550	1,360	1,330	258	452	360	99
14	117	246	445	165	65	620	1,260	1,250	270	687	258	93
15	114	286	275	170	60	800	1,160	1,170	298	757	226	90
16	107	314	330	185	100	2,210	1,070	1,100	310	778	350	87
17	128	294	372	190	120	4,870	1,010	1,030	335	673	603	87
18	128	286	365	190	150	*9,510	911	953	345	582	355	81
19	117	306	370	185	175	24,100	918	883	345	624	282	76
20	114	282	290	180	175	20,300	834	841	335	526	210	85
21	117	282	310	170	190	15,300	799	799	365	694	186	105
22	142	282	225	150	210	12,300	813	736	370	491	194	87
23	138	274	255	135	400	8,960	960	708	400	355	172	81
24	159	250	265	130	440	5,680	1,090	680	400	282	138	81
25	176	212	275	120	440	4,310	1,070	631	512	464	124	78
26	204	243	285	115	460	3,430	1,420	568	477	764	124	78
27	204	282	285	110	1,770	2,860	2,210	554	743	2,050	134	76
28	240	274	235	105	3,990	3,580	2,510	540	869	1,070	117	70
29	240	184	270	105	3,860	3,120	2,340	464	968	743	114	66
30	215	204	140	100	.....	3,200	2,020	464	1,050	932	99	66
31	510	.....	115	95	.....	3,230	.....	410	.....	1,030	105	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 11-31, 1946, Jan. 1 to Mar. 19, Nov. 29, Dec. 8-31, 1947, Jan. 1 to Feb. 26, Mar. 1-14, 1948.

Raccoon River at Van Meter, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	61	148	150	90	170	1,900	3,630	848	743	488	g138	134
2.....	64	141	140	90	150	1,700	3,150	820	1,200	1,020	g222	108
3.....	61	124	140	98	140	2,000	2,950	771	976	1,080	g238	96
4.....	67	127	160	250	130	3,500	2,550	687	911	736	g190	99
5.....	58	298	200	450	125	10,000	2,250	687	841	589	g144	526
6.....	76	533	200	480	125	13,700	1,920	687	792	512	117	792
7.....	105	278	170	490	125	13,100	1,700	645	750	410	108	526
8.....	124	230	140	460	125	11,800	1,520	631	610	340	105	345
9.....	111	186	120	430	120	10,500	1,360	631	596	294	87	278
10.....	90	148	120	400	115	9,140	1,240	603	526	290	81	226
11.....	90	144	125	360	115	5,550	1,120	540	458	282	81	266
12.....	93	148	130	*350	115	g3,510	1,040	617	428	250	81	290
13.....	87	114	140	330	115	g3,050	953	540	458	218	99	722
14.....	90	141	150	330	115	g2,850	992	440	540	214	108	911
15.....	84	127	160	350	115	2,400	1,020	484	666	198	144	617
16.....	78	120	170	800	120	1,880	1,080	617	540	186	130	458
17.....	78	127	160	1,000	130	1,610	1,320	2,850	422	180	102	446
18.....	76	117	150	900	250	1,520	1,560	1,740	355	176	90	334
19.....	78	645	145	750	800	1,440	1,740	1,580	416	158	1,350	284
20.....	76	869	140	620	750	1,320	1,790	1,480	428	100	666	247
21.....	76	422	130	540	650	1,480	1,740	1,240	631	377	258	222
22.....	73	310	120	470	560	2,400	1,610	1,790	596	434	254	190
23.....	78	270	110	410	600	4,110	1,480	1,440	428	214	254	172
24.....	78	230	100	360	3,500	4,830	1,280	1,320	1,110	172	198	166
25.....	81	166	95	300	4,000	4,710	1,120	1,790	2,030	155	155	134
26.....	81	238	92	260	3,100	4,110	1,080	1,740	1,360	g176	130	138
27.....	81	176	90	230	2,500	4,950	1,120	1,400	925	g176	111	141
28.....	87	198	90	210	2,000	5,310	1,050	1,240	694	180	102	138
29.....	90	202	90	200	.....	4,590	1,020	1,040	617	130	108	143
30.....	141	162	95	190	.....	3,870	911	883	505	124	134	93
31.....	183	.....	90	180	.....	3,270	.....	876	.....	120	160	.....
1949-50												
1.....	137	137	126	64	36	2,600	850	400	2,100	2,010	g440	203
2.....	126	123	85	62	36	1,200	766	385	1,830	1,740	g350	176
3.....	120	123	117	62	35	1,100	724	380	4,610	1,620	435	169
4.....	104	120	107	68	35	2,500	644	380	4,200	g1,310	455	134
5.....	140	110	100	63	35	4,500	568	4,180	2,700	g1,190	465	176
6.....	130	113	90	61	50	7,000	524	3,100	2,060	g1,030	455	154
7.....	281	130	80	60	200	10,700	480	1,880	1,650	g958	410	151
8.....	271	123	85	59	800	7,640	420	1,700	1,350	g836	375	137
9.....	173	110	90	58	1,700	4,090	410	5,040	1,650	g780	375	101
10.....	154	123	100	58	1,300	2,060	415	8,180	1,110	g717	360	130
11.....	199	126	105	57	700	1,310	380	7,120	920	g656	430	169
12.....	227	130	105	56	350	950	360	6,000	2,610	g662	590	137
13.....	188	173	100	55	270	836	315	4,090	5,400	g745	638	123
14.....	137	148	*100	54	240	808	320	3,100	2,900	g950	584	120
15.....	154	110	96	52	*220	995	290	2,450	2,300	g950	465	130
16.....	140	107	94	51	200	1,310	290	1,960	3,430	g1,390	415	97
17.....	148	123	91	49	180	1,880	290	1,700	2,060	g1,150	375	117
18.....	104	107	90	48	160	1,880	320	1,470	10,100	g958	325	140
19.....	144	107	90	46	140	1,650	266	1,390	15,100	g892	350	123
20.....	180	120	92	45	130	1,270	250	1,350	15,800	g899	320	130
21.....	403	123	96	44	120	1,310	262	1,390	12,400	g892	285	91
22.....	390	113	100	42	110	1,350	223	1,520	8,880	g857	280	134
23.....	258	80	100	41	100	2,090	276	1,780	10,400	g928	258	107
24.....	203	94	98	40	100	2,700	335	1,830	12,200	g855	235	101
25.....	140	97	90	40	100	2,700	310	1,960	9,020	g780	219	140
26.....	148	151	85	39	100	2,100	310	5,460	6,600	g704	223	180
27.....	148	137	80	*38	100	2,060	345	4,440	4,440	g686	253	290
28.....	180	123	75	38	1,500	1,920	320	3,210	3,430	g590	244	271
29.....	104	107	70	37	.....	1,650	315	2,500	2,800	g491	227	255
30.....	123	144	68	37	.....	1,230	385	2,500	2,400	g516	223	207
31.....	126	.....	66	36	.....	972	.....	2,600	.....	g680	207	.....

* Winter discharge measurement made on this day.

g Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 1-31, 1948, Jan. 1 to Mar. 5, Dec. 9-31, 1949, Jan. 1 to Mar. 6, 1950.

Raccoon River at Van Meter, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1942.....	18,478	936	395	596	0.175	0.20
November.....	10,272	447	201	342	.100	.11
December.....	7,978	500	195	257	.075	.09
Calendar year 1942.....	557,464	7,120	195	1,527	.448	6.08
January 1943.....	6,831	350	118	220	.065	.07
February.....	58,195	5,180	140	2,078	.609	.63
March.....	36,219	2,710	379	1,168	.343	.40
April.....	21,236	1,160	457	708	.208	.23
May.....	61,794	5,650	539	1,993	.584	.67
June.....	83,680	6,370	1,500	2,789	.818	.91
July.....	65,528	4,590	970	2,114	.620	.71
August.....	115,120	12,200	1,040	3,714	1.09	1.26
September.....	24,267	1,550	422	809	.237	.26
Water year 1942-43.....	509,598	12,200	118	1,396	.409	5.54
October 1943.....	9,262	406	237	299	.088	.10
November.....	15,663	657	308	522	.153	.17
December.....	9,552	588	160	308	.090	.10
Calendar year 1943.....	507,347	12,200	118	1,390	.408	5.51
January 1944.....	9,884	1,040	130	319	.094	.11
February.....	16,131	1,870	170	556	.163	.18
March.....	50,748	2,700	190	1,637	.480	.55
April.....	95,030	7,280	1,390	3,168	.929	1.04
May.....	238,410	18,100	2,820	7,691	2.26	2.60
June.....	293,100	17,400	1,820	6,770	1.99	2.22
July.....	61,560	3,660	1,100	1,986	.582	.67
August.....	37,407	2,660	541	1,207	.354	.41
September.....	20,779	1,400	438	693	.203	.23
Water year 1943-44.....	767,526	18,100	130	2,097	.615	8.38
October 1944.....	13,553	722	332	437	.128	.15
November.....	9,773	362	170	326	.096	.11
December.....	8,680	470	150	280	.082	.09
Calendar year 1944.....	765,055	18,100	130	2,090	.613	8.36
January 1945.....	7,630	310	190	246	.072	.08
February.....	29,480	2,800	250	946	.277	.29
March.....	136,060	10,500	1,100	4,389	1.29	1.48
April.....	167,080	10,100	1,690	5,569	1.63	1.82
May.....	200,480	12,500	2,500	6,467	1.90	2.19
June.....	194,040	12,600	2,290	6,468	1.90	2.12
July.....	52,190	2,410	1,160	1,684	.494	.57
August.....	54,381	3,970	620	1,754	.514	.59
September.....	12,106	689	273	404	.118	.13
Water year 1944-45.....	882,453	12,600	150	2,418	.709	9.62
October 1945.....	9,637	572	230	311	.091	.11
November.....	7,271	300	179	242	.071	.08
December.....	4,924	375	80	159	.047	.05
Calendar year 1945.....	872,279	12,600	80	2,390	.701	9.51
January 1946.....	35,450	4,500	110	1,144	.335	.39
February.....	55,730	4,900	800	1,990	.584	.61
March.....	122,640	7,320	1,750	3,956	1.16	1.34
April.....	51,087	4,200	885	1,703	.499	.56
May.....	73,421	6,800	834	2,368	.694	.80
June.....	94,220	6,080	1,190	3,141	.921	1.03
July.....	39,209	3,060	516	1,265	.371	.43
August.....	36,923	9,500	281	1,191	.349	.40
September.....	47,392	11,500	397	1,580	.463	.52
Water year 1945-46.....	577,904	11,500	80	1,583	.464	6.32

Raccoon River at Van Meter, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946.....	35,040	4,010	397	1,130	0.331	0.38
November.....	28,053	1,200	689	935	.274	.31
December.....	12,394	761	150	400	.117	.14
Calendar year 1946.....	631,559	11,500	150	1,730	.507	6.91
January 1947.....	13,330	620	200	430	.126	.15
February.....	24,260	1,700	300	866	.254	.26
March.....	53,310	3,200	900	1,720	.504	.58
April.....	108,190	7,420	1,160	3,606	1.06	1.18
May.....	73,860	6,300	1,220	2,383	.699	.81
June.....	419,120	33,000	4,950	13,970	4.10	4.57
July.....	100,190	7,600	784	3,232	.948	1.09
August.....	12,866	729	256	415	.122	.14
September.....	5,691	365	145	190	.056	.06
Water year 1946-47.....	886,304	33,000	145	2,428	.712	9.67
October 1947.....	5,097	510	107	164	.048	.06
November.....	8,554	542	184	285	.084	.09
December.....	9,790	586	115	316	.093	.11
Calendar year 1947.....	834,258	33,000	107	2,286	.670	9.10
January 1948.....	5,175	270	95	167	.049	.06
February.....	13,650	3,990	60	471	.138	.15
March.....	149,435	24,100	485	4,820	1.41	1.63
April.....	50,565	3,640	799	1,686	.494	.55
May.....	35,471	1,940	410	1,144	.335	.39
June.....	12,603	1,050	246	420	.123	.14
July.....	21,115	2,050	282	681	.200	.23
August.....	7,863	785	99	254	.074	.09
September.....	3,341	270	66	111	.033	.04
Water year 1947-48.....	322,659	24,100	60	882	.259	3.54
October 1948.....	2,696	183	58	87.0	.026	.03
November.....	7,139	869	114	238	.070	.08
December.....	4,112	200	90	133	.039	.04
Calendar year 1948.....	313,165	24,100	58	856	.251	3.43
January 1949.....	12,378	1,000	90	399	.117	.13
February.....	20,860	4,000	115	745	.218	.23
March.....	146,100	13,700	1,320	4,713	1.38	1.59
April.....	47,326	3,630	911	1,578	.463	.52
May.....	32,637	2,850	440	1,053	.309	.36
June.....	21,552	2,030	355	718	.211	.24
July.....	10,069	1,080	120	325	.095	.11
August.....	6,154	1,350	81	199	.058	.07
September.....	9,242	911	93	308	.090	.10
Water year 1948-49.....	320,265	13,700	58	877	.257	3.50
October 1949.....	5,480	403	104	177	.052	.06
November.....	3,632	173	80	121	.035	.04
December.....	2,871	126	66	92.6	.027	.03
Calendar year 1949.....	318,301	13,700	66	872	.256	3.48
January 1950.....	1,560	68	36	50.3	.015	.02
February.....	9,047	1,700	35	323	.095	.10
March.....	76,331	10,700	808	2,462	.722	.83
April.....	11,963	850	223	399	.117	.13
May.....	85,445	8,180	380	2,756	.808	.93
June.....	156,450	15,800	920	5,215	1.53	1.71
July.....	29,382	2,010	491	948	.278	.32
August.....	11,266	638	207	363	.106	.12
September.....	4,593	290	91	153	.045	.05
Water year 1949-50.....	398,020	15,800	35	1,090	.320	4.34

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 feet upstream from bridge on county road 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 square miles.

RECORDS AVAILABLE.—March 1940 to September 1950.

GAGE.—Water-stage recorder. Prior to Sept. 23, 1944, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—10 years, 437 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	Aug. 25	6,610	14.1	Jan. 25	25
1943-44...	May 20	20,000	(1)23.8	Dec. 23, 24, Jan. 14, 15	30
1944-45...	May 22	10,100	(1)17.2	Dec. 26	50
1945-46...	Sept. 8	15,200	21.4	Dec. 26-30	40
1946-47...	June 12	23,800	24.3	Sept. 23, 25	62
1947-48...	Mar. 19	17,600	21.25	Sept. 30	28
1948-49...	Mar. 6	7,530	(2)	Aug. 23	31
1949-50...	June 19	11,600	17.88	Jan. 28 to Feb. 4	25

(1) From floodmark.

(2) Maximum gage height 15.3 feet Feb. 24 (ice jam).

1940-50: Maximum discharge, 23,800 second-feet June 12, 1947 (gage height, 24.3 feet); minimum observed, 18 second-feet July 26, 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, about 15 miles upstream.

COOPERATION.—Services of observer and several discharge measurements furnished by Corps of Engineers.

South Raccoon River at Redfield, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1	158	111	104	100	47	70	186	102	630	172	586	350
2	153	107	80	87	*50	65	164	115	510	151	942	228
3	160	100	65	76	3,810	70	149	86	408	144	2,100	165
4	223	97	55	68	2,960	80	139	78	1,010	586	1,220	153
5	181	98	56	60	2,620	70	127	82	1,490	233	1,320	172
6	165	95	58	55	2,140	67	118	856	1,120	183	729	162
7	158	93	60	60	1,050	68	124	485	733	194	2,330	130
8	147	93	59	48	683	70	124	326	660	159	444	115
9	138	100	56	46	593	80	129	233	964	122	277	104
10	132	107	50	48	457	90	164	215	528	113	213	98
11	124	97	47	50	178	110	166	194	442	100	179	93
12	124	97	43	55	159	130	350	169	493	92	2,380	540
13	124	93	40	60	130	150	249	146	326	88	1,640	468
14	120	90	40	70	120	189	186	144	513	80	1,980	349
15	115	90	40	90	116	675	164	1,580	656	100	1,700	296
16	111	90	43	120	120	450	151	3,300	1,100	151	1,410	188
17	107	87	47	80	130	132	124	1,860	608	194	835	149
18	104	85	50	55	145	167	115	1,110	604	290	534	130
19	107	85	55	42	170	127	107	752	387	224	390	124
20	107	87	60	35	180	267	100	653	306	274	301	128
21	97	85	*64	30	185	249	98	542	261	498	255	113
22	106	83	73	28	180	212	94	457	560	588	459	109
23	102	87	84	27	150	564	96	394	528	535	414	100
24	102	87	109	26	110	1,250	96	482	488	1,480	218	97
25	102	87	120	25	*75	1,120	107	363	384	436	2,980	91
26	98	51	150	26	80	557	90	313	267	249	1,240	87
27	97	77	200	28	100	363	127	274	227	183	835	83
28	97	90	160	30	90	267	92	242	300	149	429	80
29	97	74	140	35	.....	233	115	215	224	274	321	80
30	255	122	125	40	.....	227	107	212	194	162	266	80
31	122	.....	115	43	.....	209	.....	224	.....	146	245	.....
1943-44												
1	81	99	163	65	148	260	423	870	791	382	1,060	265
2	81	103	119	70	170	249	394	1,880	680	333	1,440	227
3	85	105	109	75	170	260	363	3,900	607	318	836	155
4	78	81	107	70	170	249	342	2,040	784	306	1,200	185
5	76	88	109	65	150	206	318	1,560	607	286	765	163
6	76	92	121	55	110	185	300	1,220	762	263	271	413
7	74	132	119	50	70	50	336	1,040	923	420	260	99
8	72	146	128	40	65	40	357	1,120	1,630	508	286	56
9	74	115	119	45	60	60	376	1,090	3,280	470	243	58
10	67	128	107	55	55	130	354	920	2,620	382	216	134
11	67	119	90	50	50	702	747	840	4,060	2,700	198	211
12	71	139	40	40	40	699	787	754	2,350	2,020	165	126
13	76	155	35	*35	45	643	901	754	3,060	802	155	137
14	74	146	35	30	50	680	817	758	4,150	632	151	115
15	71	151	35	30	60	736	728	614	4,320	382	146	165
16	69	105	35	45	60	*765	632	578	2,840	351	188	107
17	74	143	35	55	60	795	564	532	1,800	348	193	182
18	74	155	40	50	60	743	769	614	1,230	348	224	111
19	74	*158	50	50	70	662	787	1,330	1,060	315	146	119
20	74	151	50	50	80	567	1,140	11,000	874	297	128	115
21	78	158	40	50	90	539	1,370	7,350	791	240	130	119
22	74	139	35	50	140	553	1,520	5,020	736	219	126	139
23	71	128	30	80	300	596	1,840	5,990	680	203	123	137
24	72	126	30	90	*443	717	1,920	2,590	614	463	119	130
25	74	141	35	110	449	893	1,400	2,070	564	502	141	128
26	71	137	40	170	470	639	1,210	4,090	511	2,160	1,130	132
27	67	128	50	500	460	536	1,010	2,500	466	699	1,090	123
28	74	107	45	391	360	522	916	1,580	440	440	691	417
29	74	107	35	342	303	470	802	1,140	440	318	490	309
30	78	113	45	271	.....	339	762	966	401	260	372	300
31	88	.....	50	185	.....	410	.....	1,090	.....	208	312	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 2-31, 1942, Jan. 1 to Feb. 2, Feb. 12 to Mar. 13, Dec. 11-31, 1943, Jan. 1-27, Feb. 6-23, 26-28, Mar. 7-10, 1944.

South Raccoon River at Redfield, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	277	99	70	90	80	348	357	710	3,150	514	404	113
2.....	206	99	95	80	85	694	333	747	2,570	480	345	107
3.....	182	99	105	75	85	986	321	950	2,780	473	413	97
4.....	170	99	115	65	90	1,130	665	966	2,560	459	345	92
5.....	238	99	115	65	90	897	639	780	1,520	436	1,200	90
6.....	172	103	120	65	95	600	844	724	3,360	397	1,110	90
7.....	158	111	140	60	100	508	912	695	3,720	363	1,060	90
8.....	143	105	130	65	115	571	927	585	1,480	327	592	90
9.....	132	103	120	65	140	798	927	401	1,230	357	420	90
10.....	123	103	120	80	170	2,570	754	732	1,580	321	315	92
11.....	119	103	120	90	180	3,070	1,170	699	1,940	297	354	92
12.....	119	103	115	100	200	3,580	1,400	650	2,130	286	321	86
13.....	113	103	*110	100	300	1,760	1,020	585	1,450	268	286	90
14.....	111	107	105	100	800	1,450	916	5,290	1,070	257	330	95
15.....	111	107	100	90	1,420	3,590	1,430	3,310	889	246	268	94
16.....	99	105	100	80	1,260	2,470	2,830	2,260	962	246	235	92
17.....	99	105	100	80	863	*1,600	1,900	1,460	1,460	522	219	88
18.....	103	105	90	95	413	1,160	1,400	1,070	1,150	1,130	208	90
19.....	107	105	80	105	335	912	1,060	970	885	1,010	198	97
20.....	105	105	80	120	245	688	943	863	836	585	182	92
21.....	107	103	80	125	190	636	828	3,890	754	497	172	95
22.....	103	103	75	130	185	585	717	8,840	673	440	238	94
23.....	101	103	70	130	198	528	2,040	5,500	625	522	224	99
24.....	101	101	65	140	271	669	3,990	4,320	610	574	172	95
25.....	101	109	60	140	291	1,400	2,980	2,810	542	494	148	90
26.....	99	128	50	130	297	943	1,620	1,740	688	404	143	185
27.....	97	115	55	125	260	578	1,200	1,600	628	473	139	342
28.....	99	113	65	110	303	497	978	2,820	589	336	139	382
29.....	97	80	80	*90	.....	440	844	1,700	560	297	139	430
30.....	97	60	85	85	.....	413	780	1,260	494	401	132	433
31.....	99	.....	95	80	.....	388	.....	5,100	.....	490	121	.....
1945-46												
1.....	420	95	88	44	260	280	459	180	312	713	240	388
2.....	268	95	90	46	500	283	449	185	274	483	235	345
3.....	182	94	92	52	1,200	283	407	1,440	249	407	213	321
4.....	126	94	95	70	1,700	294	385	947	219	357	193	324
5.....	113	94	97	1,000	4,500	385	366	832	216	312	180	312
6.....	117	95	97	4,000	2,250	1,920	342	592	208	286	175	433
7.....	109	105	97	2,530	*1,740	1,540	336	476	200	280	175	721
8.....	101	101	95	1,200	1,610	1,380	324	407	195	271	556	11,800
9.....	97	105	90	747	1,220	1,180	312	376	193	243	216	2,800
10.....	101	101	80	618	1,160	958	300	376	193	227	128	1,320
11.....	99	101	75	420	1,110	647	342	366	175	216	109	889
12.....	97	103	70	306	1,100	1,460	385	342	155	200	103	676
13.....	97	105	65	221	817	2,440	379	318	153	170	103	542
14.....	101	101	65	180	585	2,680	354	294	168	163	103	466
15.....	101	101	70	165	494	2,240	318	324	219	158	103	410
16.....	99	101	60	143	423	1,860	294	407	165	168	105	354
17.....	97	101	55	155	312	1,310	271	423	198	240	494	318
18.....	97	99	55	250	303	1,150	257	360	511	280	206	288
19.....	97	99	55	300	288	1,010	243	354	1,440	280	109	309
20.....	97	99	60	290	318	912	240	490	1,410	283	95	357
21.....	99	99	60	280	312	802	224	476	1,140	360	1,640	303
22.....	101	97	55	240	300	647	213	379	859	382	1,630	433
23.....	97	95	50	220	291	710	213	336	691	357	1,100	564
24.....	97	90	50	170	288	758	208	490	532	330	7,470	357
25.....	99	90	45	150	280	684	203	743	628	303	5,690	303
26.....	97	88	40	150	274	1,040	193	817	1,090	286	1,430	265
27.....	97	88	40	155	274	931	185	436	962	271	943	277
28.....	97	*86	40	170	274	885	180	342	654	260	699	825
29.....	95	85	40	175	.....	863	200	357	610	251	578	385
30.....	95	85	40	180	.....	908	198	330	758	249	487	309
31.....	95	.....	42	210	.....	632	.....	321	.....	243	436	.....

* Winter discharge measurement made on this day.

g Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Nov. 29 to Dec. 31, 1944, Jan. 1 to Feb. 14, Feb. 19-21, Nov. 22 to Dec. 4, Dec. 8-31, 1945, Jan. 1-6, Jan. 18 to Feb. 6, 1946.

South Raccoon River at Redfield, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	283	436	230	120	210	*210	348	992	2,580	1,050	h252	99
2.....	263	504	200	115	200	200	*336	773	11,200	972	h246	92
3.....	243	483	220	110	190	200	333	661	7,270	844	h240	92
4.....	224	423	240	105	180	190	982	605	5,610	1,060	h232	88
5.....	211	388	270	100	170	190	901	552	13,000	1,910	h225	82
6.....	208	385	300	100	160	190	885	546	5,000	1,820	h220	73
7.....	238	410	306	105	150	175	658	528	3,050	1,060	h198	73
8.....	235	426	306	110	150	220	758	500	2,520	856	h182	73
9.....	227	394	297	120	160	250	736	h493	2,220	738	h175	71
10.....	288	560	283	140	170	350	3,640	h490	1,920	682	h165	69
11.....	542	567	277	160	180	450	3,390	h490	1,700	h672	h160	97
12.....	625	500	277	180	200	700	2,640	h493	9,920	h661	h165	202
13.....	494	456	263	200	330	850	1,720	h493	14,900	a650	h168	92
14.....	410	436	235	230	600	800	1,300	h493	8,820	a640	h165	90
15.....	357	*426	190	220	700	700	1,100	759	5,500	a630	140	82
16.....	333	426	150	*200	800	600	1,180	936	3,550	a620	140	71
17.....	456	372	120	190	900	532	1,060	988	2,580	a610	140	71
18.....	2,820	357	*120	180	1,000	511	900	908	2,340	g605	132	71
19.....	1,100	357	115	170	800	456	1,140	786	2,960	h465	122	71
20.....	810	354	110	150	700	466	2,010	661	2,470	h409	108	66
21.....	636	351	100	140	650	518	1,220	602	2,660	h381	113	69
22.....	553	303	100	140	600	528	1,000	703	2,460	h351	99	64
23.....	500	297	110	170	500	632	900	759	3,420	h342	97	62
24.....	1,240	330	115	220	420	765	856	605	9,160	h336	97	67
25.....	908	318	120	270	350	673	776	556	6,940	h321	423	62
26.....	691	286	130	300	300	487	706	552	6,170	h318	145	64
27.....	574	277	140	315	*260	413	640	560	4,360	h318	120	64
28.....	511	270	150	300	230	404	594	1,570	3,060	h321	108	71
29.....	487	260	150	260	.....	382	916	2,640	1,830	h315	104	71
30.....	483	250	140	230	.....	354	1,690	1,910	1,250	h309	101	67
31.....	449	.....	130	220	.....	345	.....	1,620	.....	h300	101	.....
1947-48												
1.....	75	327	140	70	45	450	740	322	108	132	224	48
2.....	82	218	150	85	45	400	640	301	104	108	132	47
3.....	82	170	162	95	45	300	g490	276	100	96	117	48
4.....	79	150	215	105	45	280	g480	280	96	88	106	50
5.....	71	195	294	100	*45	250	g466	276	94	83	94	50
6.....	73	165	220	90	45	230	g427	276	92	77	86	50
7.....	69	155	175	*90	40	210	g368	266	92	75	86	46
8.....	64	138	85	95	35	190	g301	266	88	70	86	46
9.....	67	122	100	95	35	170	g284	242	84	65	86	51
10.....	69	120	130	90	30	160	g280	230	79	135	81	53
11.....	67	108	150	85	30	140	g273	221	79	132	77	47
12.....	66	113	155	75	30	130	g252	215	79	123	130	50
13.....	69	118	150	75	30	140	g239	209	86	102	176	46
14.....	67	125	145	80	30	170	239	200	94	336	104	44
15.....	71	152	100	85	30	250	230	194	102	322	173	40
16.....	67	160	120	80	50	g816	221	176	92	262	290	g38
17.....	69	145	130	80	70	g2,300	206	161	102	161	396	g36
18.....	64	145	120	80	90	g6,420	191	152	96	170	150	g33
19.....	69	140	130	75	100	15,400	185	148	88	119	104	g32
20.....	64	140	115	75	100	7,180	182	142	88	92	86	g40
21.....	66	145	130	70	110	3,070	170	142	106	108	77	47
22.....	66	152	125	60	130	1,190	182	142	110	132	70	44
23.....	77	130	120	60	150	g760	322	155	108	79	65	34
24.....	118	115	125	55	160	g592	332	138	152	62	57	46
25.....	104	100	120	55	175	g528	343	128	132	112	56	43
26.....	113	140	120	55	200	g550	679	119	108	307	53	39
27.....	140	135	115	50	1,000	g720	595	117	117	712	51	29
28.....	132	120	120	50	1,900	1,200	452	112	123	294	50	30
29.....	120	100	115	50	1,200	804	376	108	185	266	50	30
30.....	125	120	100	45	.....	884	340	104	176	458	48	28
31.....	398	.....	55	45	.....	808	.....	108	.....	494	47	.....

* Winter discharge measurement made on this day.

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

f Fragmentary gage-height record; discharge computed from partly estimated gage heights.

g Computed from graph based on gage readings.

h Computed from wire-weight gage readings.

Note—Stage-discharge relation affected by ice Nov. 28 to Dec. 6, Dec. 15-31, 1946, Jan. 1 to Mar. 15, Nov. 24 to Dec. 2, Dec. 7-31, 1947, Jan. 1 to Mar. 15, 1948.

South Raccoon River at Redfield, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	47	62	68	43	68	1,700	880	h193	138	238	43	50
2.....	38	59	60	42	66	1,400	880	h193	542	628	72	50
3.....	43	56	62	52	*66	1,400	754	h181	315	g592	59	50
4.....	44	54	66	110	66	3,000	556	f178	288	340	41	50
5.....	44	244	70	420	66	4,700	466	170	167	190	40	694
6.....	51	263	74	400	66	6,170	405	175	143	133	39	288
7.....	68	117	78	380	66	2,630	362	184	126	112	37	162
8.....	62	81	80	330	66	f1,390	322	172	109	102	41	114
9.....	53	70	72	250	66	f990	291	175	98	90	39	92
10.....	50	62	56	210	66	f646	261	164	100	79	39	79
11.....	51	59	45	180	66	h628	245	151	100	75	39	136
12.....	50	59	42	*170	66	h592	231	140	96	71	39	214
13.....	53	57	42	160	66	h574	225	138	134	67	54	700
14.....	47	57	44	160	66	g502	235	133	159	61	48	430
15.....	47	57	47	350	66	291	274	143	140	61	54	222
16.....	50	57	50	760	66	240	344	656	107	59	43	162
17.....	47	57	52	600	70	240	502	799	90	59	41	136
18.....	47	59	56	450	250	230	592	g441	93	54	39	114
19.....	47	463	58	320	1,200	241	538	g254	146	50	1,180	98
20.....	46	410	58	240	1,050	264	423	g205	98	92	245	85
21.....	47	191	52	190	900	556	h369	g256	313	429	162	79
22.....	47	145	48	160	750	1,030	h369	g574	208	180	130	69
23.....	48	104	44	130	1,500	1,270	h315	g376	136	90	81	63
24.....	46	92	41	120	3,500	736	h258	g254	727	69	61	61
25.....	48	94	40	110	3,600	772	h231	215	802	59	g45	59
26.....	48	92	39	100	3,000	790	h241	193	308	59	g37	57
27.....	49	86	39	92	2,500	844	h251	172	193	91	g35	57
28.....	48	81	40	86	2,100	898	h274	151	175	54	g31	55
29.....	48	75	45	80	.....	862	h231	140	310	50	54	52
30.....	86	70	44	76	.....	700	h212	130	153	45	69	52
31.....	79	.....	44	70	.....	646	.....	126	.....	43	63	.....
1949-50												
1.....	54	55	54	38	25	600	159	170	437	h419	121	75
2.....	54	55	50	38	25	400	148	156	520	h376	h159	79
3.....	54	55	54	37	25	400	143	146	1,990	h340	h143	98
4.....	54	54	52	37	25	1,600	136	162	1,030	h271	h123	94
5.....	54	54	48	36	35	3,200	123	3,160	700	h245	h128	92
6.....	55	52	45	36	120	4,440	112	1,430	502	h238	h123	85
7.....	156	55	43	35	230	3,790	107	754	390	h238	h128	81
8.....	116	54	42	34	800	1,260	107	803	318	h238	114	75
9.....	79	55	43	33	900	408	107	3,120	336	h231	136	69
10.....	94	59	46	33	800	280	116	3,550	251	h225	114	63
11.....	112	59	50	32	350	260	107	f1,580	212	f196	107	61
12.....	94	75	49	32	190	240	100	f1,070	1,570	205	248	55
13.....	75	71	48	31	90	230	94	844	2,600	281	351	55
14.....	65	59	*46	31	*70	230	94	f700	1,020	254	222	55
15.....	61	59	45	30	66	372	92	646	926	215	159	54
16.....	69	59	45	30	63	592	90	g664	1,430	291	136	55
17.....	55	57	47	29	60	700	94	g646	772	190	118	55
18.....	55	54	49	29	57	502	94	574	7,610	175	h116	54
19.....	61	52	49	28	55	311	90	g502	9,250	190	h107	55
20.....	105	54	50	28	52	241	85	g484	6,720	228	h102	50
21.....	322	52	48	27	50	245	83	g484	3,230	202	h98	54
22.....	138	50	47	27	49	367	85	g502	1,680	172	h96	55
23.....	100	55	45	27	47	700	123	g556	4,940	159	h98	h54
24.....	79	55	44	26	46	772	148	538	3,200	146	h96	h57
25.....	69	55	43	26	45	592	140	f919	1,630	143	h96	h54
26.....	63	63	42	26	45	408	162	2,580	1,070	136	h96	h45
27.....	59	59	42	*26	45	318	143	1,230	808	130	h100	h52
28.....	61	55	41	25	1,000	261	118	772	g592	130	h100	48
29.....	61	55	41	25	.....	215	133	646	g466	126	87	52
30.....	59	54	40	25	.....	167	181	826	g441	193	83	48
31.....	55	.....	39	25	.....	162	.....	574	.....	184	81	.....

* Winter discharge measurement made on this day.

f Fragmentary gage-height record; discharge computed from partly estimated gage heights.

g Computed from wire-weight gage readings.

h Computed from once-daily wire-weight gage readings.

Note—Stage-discharge relation affected by ice Nov. 30, Dec. 2-31, 1948, Jan. 1 to Mar. 5 Mar. 16-18, Dec. 6-31, 1949, Jan. 1 to Mar. 5, Mar. 10-14, 1950.

South Raccoon River at Redfield, Iowa—Continued
 Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1942.....	4,033	255	97	130	0.131	0.15
November.....	2,745	122	51	91.5	.092	.10
December.....	2,439	200	40	78.7	.079	.09
Calendar year 1942.....	138,605	3,840	40	380	.382	5.17
January 1943.....	1,633	120	25	52.7	.053	.06
February.....	16,849	3,810	47	602	.605	.63
March.....	8,378	1,250	65	270	.271	.31
April.....	4,161	350	90	139	.140	.16
May.....	16,204	3,300	78	523	.526	.61
June.....	16,621	1,490	194	554	.557	.62
July.....	8,258	1,480	80	266	.267	.31
August.....	29,172	2,980	179	941	.946	1.09
September.....	5,072	540	80	169	.170	.19
Water year 1942-43.....	115,565	3,810	25	317	.310	4.32
October 1943.....	2,309	88	67	74.5	.075	.09
November.....	3,795	158	81	126	.127	.14
December.....	2,081	163	30	67.1	.067	.08
Calendar year 1943.....	114,533	3,810	25	314	.316	4.29
January 1944.....	3,264	500	30	105	.106	.12
February.....	4,758	470	40	164	.165	.18
March.....	14,895	893	40	480	.482	.56
April.....	24,185	1,920	300	806	.810	.90
May.....	67,800	11,000	532	2,187	2.20	2.53
June.....	44,071	4,320	401	1,469	1.48	1.65
July.....	17,575	2,700	203	567	.570	.66
August.....	13,895	1,960	119	448	.450	.52
September.....	5,077	417	56	169	.170	.19
Water year 1943-44.....	203,705	11,000	30	557	.560	7.62
October 1944.....	3,988	277	97	129	.130	.15
November.....	3,083	128	60	103	.104	.12
December.....	2,910	140	50	93.9	.094	.11
Calendar year 1944.....	205,501	11,000	30	561	.564	7.69
January 1945.....	2,955	140	60	95.3	.096	.11
February.....	9,061	1,420	80	324	.326	.34
March.....	26,459	3,590	548	1,176	1.18	1.36
April.....	26,725	3,690	321	1,224	1.23	1.37
May.....	64,027	8,840	401	2,065	2.08	2.39
June.....	42,685	3,720	494	1,423	1.43	1.60
July.....	13,902	1,130	246	448	.450	.52
August.....	10,572	1,200	121	341	.343	.40
September.....	4,112	433	86	137	.138	.15
Water year 1944-45.....	230,479	8,840	50	631	.634	8.62
October 1945.....	3,685	420	95	119	.120	.14
November.....	2,892	105	85	96.4	.097	.11
December.....	2,053	97	40	66.2	.067	.08
Calendar year 1945.....	229,128	8,840	40	628	.631	8.57
January 1946.....	14,837	4,000	44	479	.481	.55
February.....	24,183	4,500	260	864	.868	.90
March.....	33,072	2,680	280	1,067	1.07	1.24
April.....	8,780	459	180	293	.294	.33
May.....	14,516	1,440	180	468	.470	.54
June.....	14,777	1,440	153	493	.495	.55
July.....	9,038	713	158	292	.293	.34
August.....	25,944	7,470	95	837	.841	.97
September.....	27,404	11,800	265	913	.918	1.02
Water year 1945-46.....	181,181	11,800	40	496	.498	6.77

South Raccoon River at Redfield, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946.....	17,399	2,820	208	561	0.564	0.65
November.....	11,602	567	250	387	.389	.43
December.....	5,894	306	100	190	.191	.22
Calendar year 1946.....	207,446	11,800	44	568	.571	7.74
January 1947.....	5,570	315	100	180	.181	.21
February.....	11,260	1,000	150	402	.404	.42
March.....	13,741	850	175	443	.445	.51
April.....	35,315	3,640	333	1,177	1.19	1.32
May.....	25,224	2,640	490	814	.818	.94
June.....	150,510	14,900	1,250	5,017	5.04	5.63
July.....	20,566	1,910	300	663	.666	.77
August.....	5,085	423	97	164	.165	.19
September.....	2,386	202	62	80	.080	.09
Water year 1946-47.....	304,552	14,900	62	834	.838	11.38
October 1947.....	2,683	398	64	86.5	.087	.10
November.....	4,363	327	108	145	.146	.16
December.....	4,231	294	55	136	.137	.16
Calendar year 1947.....	280,934	14,900	55	770	.774	10.50
January 1948.....	2,300	105	45	74	.074	.09
February.....	5,995	1,900	30	207	.208	.22
March.....	46,692	15,400	130	1,506	1.51	1.75
April.....	10,485	740	170	350	.352	.39
May.....	5,926	322	104	191	.192	.22
June.....	3,160	185	79	105	.106	.12
July.....	5,972	712	62	193	.194	.22
August.....	3,408	396	47	110	.111	.13
September.....	1,265	53	28	42.2	.042	.05
Water year 1947-48.....	96,480	15,400	28	264	.265	3.61
October 1948.....	1,579	86	38	50.9	.051	.06
November.....	3,433	463	54	114	.115	.13
December.....	1,656	80	39	53.4	.054	.06
Calendar year 1948.....	91,871	15,400	28	251	.252	3.44
January 1949.....	6,841	760	42	221	.222	.26
February.....	21,478	3,600	66	767	.771	.80
March.....	36,932	6,170	230	1,191	1.20	1.38
April.....	11,537	880	212	385	.387	.43
May.....	7,432	799	126	240	.241	.28
June.....	6,494	802	90	216	.217	.24
July.....	4,322	628	43	139	.140	.16
August.....	3,000	1,180	31	96.8	.097	.11
September.....	4,530	700	50	151	.152	.17
Water year 1948-49.....	109,234	6,170	31	299	.301	4.08
October 1949.....	2,588	322	54	83.5	.084	.10
November.....	1,700	75	50	56.7	.057	.06
December.....	1,427	54	39	46.0	.046	.05
Calendar year 1949.....	108,281	6,170	31	297	.298	4.04
January 1950.....	942	38	25	30.4	.031	.04
February.....	5,365	1,000	25	192	.193	.20
March.....	24,263	4,440	162	783	.787	.91
April.....	3,514	181	83	117	.118	.13
May.....	30,788	3,550	146	993	.998	1.15
June.....	56,641	9,250	212	1,888	1.90	2.12
July.....	6,767	419	126	218	.219	.25
August.....	3,986	351	81	129	.130	.15
September.....	1,879	98	45	62.6	.063	.07
Water year 1949-50.....	139,860	9,250	25	383	.385	5.23

North River near Norwalk, Iowa

LOCATION.—Lat. 41°27'25", long. 93°39'10", in SW ¼ sec. 20, T. 77 N., R. 24 W., on right bank 10 feet downstream from bridge on Warren County road S, 1¼ 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 square miles.

RECORDS AVAILABLE.—February 1940 to September 1950.

GAGE.—Water-stage recorder. Datum of gage is 788.45 feet 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, read once daily.

AVERAGE DISCHARGE.—10 years, 215 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	June 18	3,720	20.51	Sept. 29, 30	13
1943-44...	May 17	3,830	(¹)20.45	Jan. 12-17	2
1944-45...	Apr. 17	2,590	(¹)19.90	Sept. 20, 21	2.8
1945-46...	Aug. 26	10,200	21.87	Dec. 17-28	1
1946-47...	June 13	32,000	25.3	Sept. 27, 28	7.8
1947-48...	Mar. 19	7,200	21.36	Sept. 30	1.3
1948-49...	Mar. 5	1,860	(²)	Sept. 9, 30	0.1
1949-50...	Mar. 6	3,430	(³)	Oct. 1-18, 24-31	0.1

(1) Observed.

(2) Maximum gage height 20.36 feet Feb. 26 (ice jam).

(3) Maximum gage height 20.84 feet Mar. 2 (ice jam).

1940-50: Maximum discharge, 32,000 second-feet June 13, 1947 (gage height, 25.3 feet), from rating curve extended above 10,000 second-feet on basis of area-velocity studies; minimum, 0.1 second-foot Sept. 9, 30, Oct. 1-18, 24-31, 1949.

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

COOPERATION.—Services of observer and several discharge measurements furnished by Corps of Engineers.

North River near Norwalk, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1	76	74	25	100	22	30	99	108	110	89	238	52
2	75	75	20	85	25	30	91	76	125	84	50	41
3	121	52	18	70	100	28	79	67	118	77	186	33
4	890	46	18	55	800	26	60	60	96	73	450	50
5	530	56	18	45	*1,620	26	50	57	186	187	199	100
6	205	63	18	40	600	25	48	73	452	181	129	86
7	130	58	18	35	200	25	45	67	453	110	476	107
8	111	59	18	32	100	24	46	120	275	80	854	69
9	99	86	18	32	80	23	48	130	488	55	442	35
10	88	120	18	35	70	21	101	125	1,370	42	207	22
11	78	113	18	40	60	30	131	77	1,320	a35	57	20
12	76	75	18	50	50	33	186	58	974	28	1,010	26
13	73	61	18	80	45	49	183	54	985	25	1,300	48
14	70	52	17	100	42	73	133	52	492	21	451	70
15	65	49	17	90	40	123	85	394	375	18	153	97
16	61	48	18	80	40	508	75	1,260	935	22	89	56
17	62	46	18	60	40	621	62	1,300	2,240	33	53	25
18	61	44	18	45	42	150	56	503	3,340	24	33	18
19	56	42	20	30	45	85	50	333	1,550	25	27	a20
20	53	41	22	28	50	65	47	308	434	24	23	21
21	50	40	23	30	70	83	46	244	312	24	23	18
22	50	42	25	35	90	155	44	209	265	24	68	18
23	48	41	*31	30	150	315	42	186	236	23	223	17
24	48	42	45	25	100	735	44	211	217	216	407	17
25	43	44	60	20	60	805	48	223	198	328	978	15
26	39	46	80	22	*40	368	57	186	175	325	910	14
27	42	46	200	25	35	183	300	155	a174	197	380	14
28	38	38	600	30	32	124	439	125	173	78	143	14
29	38	35	500	30	.....	108	186	110	188	93	a48	13
30	50	30	200	28	.....	101	146	a112	123	54	35	13
31	64	.....	150	25	.....	90	.....	113	.....	217	53	.....
1943-44												
1	14	29	15	5	76	43	114	357	429	131	31	122
2	13	29	16	5	67	39	a110	753	353	124	50	79
3	13	26	14	5	50	43	106	1,500	306	118	200	a60
4	12	22	12	5	41	79	90	1,920	a304	107	87	48
5	11	20	13	5	37	128	86	2,010	585	100	276	44
6	11	21	22	5	a30	78	87	1,100	410	89	353	39
7	10	24	22	5	25	34	90	a630	295	87	157	36
8	10	27	22	4	28	32	92	732	779	88	90	35
9	10	29	21	4	22	33	a100	842	1,740	90	42	34
10	10	29	20	4	19	143	174	562	2,510	90	34	a40
11	11	28	18	3	12	206	638	450	2,660	200	29	145
12	12	27	a10	2	7	395	1,260	400	2,670	291	22	124
13	12	28	8	2	5	315	750	360	2,220	315	18	60
14	13	27	7	*2	4	266	407	313	978	138	16	48
15	13	27	5	2	4	369	369	342	520	95	14	41
16	12	*26	4	2	5	404	379	734	419	a85	13	37
17	12	23	3	2	6	363	393	938	371	76	13	36
18	14	21	3	3	4	319	479	385	a335	72	12	35
19	14	22	4	3	4	a270	657	860	311	69	12	34
20	16	22	5	4	5	224	840	1,910	277	61	a11	33
21	16	22	5	4	6	223	967	2,850	252	53	10	32
22	17	21	4	4	8	226	862	3,480	248	45	9.8	36
23	16	20	4	5	13	242	917	2,720	233	41	10	52
24	17	18	4	8	50	261	1,240	2,320	203	41	9.8	44
25	20	17	5	18	*175	266	1,450	1,260	184	39	9.3	39
26	22	17	5	39	200	259	916	1,110	167	46	288	38
27	23	16	5	100	181	226	845	2,380	150	43	1,280	34
28	24	16	4	220	105	181	672	2,710	153	41	861	35
29	26	17	4	200	79	135	488	1,490	153	39	269	39
30	28	12	4	120	.....	117	a415	592	136	36	169	44
31	28	.....	4	86	.....	114	.....	491	.....	33	155	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Nov. 29 to Dec. 31, 1942, Jan. 1 to Mar. 7, Nov. 14-16, Dec. 13-31, 1943, Jan. 1-24, 27-30, Feb. 11-26, Mar. 6-9, 1944.

North River near Norwalk, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	a50	24	31	18	21	315	248	238	1,090	180	53	4.9
2.....	62	24	29	17	22	830	218	250	1,110	219	169	4.4
3.....	74	44	30	19	24	1,400	320	302	438	133	344	4.2
4.....	79	39	30	17	26	1,500	1,440	280	302	117	252	3.9
5.....	71	36	32	13	27	895	2,290	236	301	111	158	3.9
6.....	54	37	34	15	29	560	1,530	a230	381	120	56	3.6
7.....	51	36	36	17	29	425	778	279	1,010	108	37	3.5
8.....	49	36	35	18	30	320	544	351	1,090	108	30	3.1
9.....	47	36	35	21	40	495	445	246	423	171	27	a3
10.....	44	36	36	24	60	655	337	481	626	122	24	4.0
11.....	43	36	37	26	90	875	410	462	570	73	23	4.6
12.....	42	35	*39	26	355	1,080	857	306	335	63	a24	4.2
13.....	41	35	35	30	1,100	674	657	a300	286	56	25	3.9
14.....	40	35	34	30	1,380	531	815	1,130	256	52	26	3.7
15.....	39	35	34	30	1,330	1,560	881	1,850	275	a50	21	3.5
16.....	36	35	34	28	960	2,170	1,620	2,320	679	48	20	a3.3
17.....	33	35	34	29	550	2,020	2,430	1,000	a450	71	20	3.2
18.....	30	35	32	31	400	706	2,020	545	339	84	18	2.9
19.....	31	a35	26	32	280	484	734	450	256	59	a16	2.9
20.....	32	35	20	33	260	409	520	a450	1,380	45	15	2.8
21.....	32	35	19	34	235	337	444	587	959	41	14	2.8
22.....	a32	36	17	36	220	304	359	710	299	38	12	3.1
23.....	32	35	17	43	230	290	374	617	242	42	11	3.2
24.....	31	36	16	48	250	287	368	383	216	50	9.5	3.5
25.....	29	39	15	52	260	1,180	357	950	226	45	8.9	3.7
26.....	29	44	14	54	280	1,400	311	1,080	224	41	8.2	3.8
27.....	29	52	14	48	280	543	289	620	195	34	8	83
28.....	27	51	14	40	260	387	267	785	166	32	7.4	79
29.....	26	43	14	36	.....	321	a250	510	155	29	6.9	82
30.....	25	36	16	*32	.....	280	242	375	163	30	6.5	86
31.....	25	.....	16	26	.....	263	.....	471	.....	39	5.9	.....
1945-46												
1.....	68	11	26	2	220	210	228	45	34	136	12	196
2.....	33	11	78	3	180	230	203	45	a32	96	12	169
3.....	23	11	59	6	150	240	188	178	30	66	10	144
4.....	18	11	45	80	300	250	178	764	27	53	9.8	136
5.....	15	12	38	500	600	300	155	461	23	47	10	144
6.....	11	12	33	1,000	700	500	132	212	23	41	11	174
7.....	a9	12	25	700	500	459	122	163	21	41	12	209
8.....	7.2	21	19	600	400	319	119	142	19	40	28	574
9.....	6.2	28	a16	500	300	218	113	124	17	37	48	1,230
10.....	6.0	25	13	400	200	124	111	120	17	33	121	699
11.....	5.8	22	8	300	150	299	130	119	19	29	47	690
12.....	5.5	21	4	250	80	502	168	a104	17	26	a32	399
13.....	5.3	18	4	220	55	578	149	89	13	23	a27	255
14.....	5.6	16	3	190	60	785	a135	80	12	21	12	217
15.....	6.0	15	2	150	60	627	127	75	79	19	11	198
16.....	6.3	14	2	140	60	582	107	72	504	20	11	177
17.....	7.2	13	1	120	60	640	90	73	150	26	21	157
18.....	9.1	12	1	105	65	390	77	77	425	37	44	144
19.....	7.6	11	1	100	65	266	71	a76	1,110	50	52	138
20.....	7.7	10	1	95	*65	214	64	75	1,540	30	25	170
21.....	a7	10	1	90	60	192	61	73	720	a25	40	220
22.....	7.2	10	1	85	65	*169	65	60	283	20	1,050	193
23.....	7.9	8.2	1	80	70	457	157	55	196	18	605	299
24.....	8.4	8.0	1	75	100	a400	91	52	152	16	519	534
25.....	9.1	8.0	1	70	160	344	74	55	140	16	1,500	220
26.....	8.7	8.6	1	65	190	1,000	59	81	129	16	6,550	160
27.....	8.7	8.9	1	65	200	1,880	55	53	111	17	3,690	143
28.....	8.4	*10	1	65	200	784	54	43	100	18	1,570	261
29.....	10	10	2	70	.....	347	50	37	85	18	412	336
30.....	11	11	2	150	.....	317	48	34	99	17	286	176
31.....	10	.....	2	260	.....	275	.....	36	.....	14	236	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Nov. 26 to Dec. 31, 1944, Jan. 1 to Mar. 12, Dec. 10-31, 1945, Jan. 1 to Mar. 6, 1946. Discharge computed from recorder trace June 15 to July 7, Aug. 9-11, Aug. 18 to Sept. 30, 1946.

North River near Norwalk, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	144	306	130	37	70	70	147	479	1,000	625	42	12
2.....	132	332	105	35	70	70	147	496	1,300	425	38	11
3.....	124	307	95	35	70	*70	172	340	1,090	362	36	11
4.....	116	266	110	35	65	70	1,200	270	913	328	32	10
5.....	108	236	140	36	60	70	2,020	237	17,700	772	31	9.6
6.....	100	228	135	38	60	75	2,440	216	g8,200	1,940	28	9.3
7.....	96	238	132	39	55	80	1,340	220	g3,380	836	25	9.0
8.....	94	270	129	40	55	90	626	196	1,980	395	23	8.8
9.....	101	254	127	45	55	100	580	179	818	323	22	8.8
10.....	120	281	119	*50	60	110	•1,790	166	596	291	21	8.6
11.....	274	402	110	60	65	125	g4,460	158	499	265	21	8.6
12.....	310	310	100	85	70	150	g2,570	150	4,230	250	20	9.8
13.....	191	*233	95	100	100	600	1,200	156	21,600	231	19	9.0
14.....	217	224	90	110	250	1,510	641	156	g6,240	205	18	7.8
15.....	401	220	85	120	500	1,090	550	156	2,680	183	17	2.8
16.....	235	221	80	120	400	494	585	193	1,540	166	17	1.9
17.....	189	216	75	110	300	370	629	246	758	154	17	1.3
18.....	1,190	192	75	105	200	333	674	268	844	147	16	1.2
19.....	1,710	184	*75	100	170	335	551	219	1,030	138	16	1.1
20.....	2,460	184	70	95	*160	332	1,190	161	954	120	17	10
21.....	1,220	181	70	90	140	398	990	134	1,440	76	17	9.8
22.....	504	172	65	85	120	458	601	136	g3,340	88	16	9.0
23.....	427	158	65	90	110	546	516	180	g4,590	90	16	8.5
24.....	514	150	65	100	100	442	477	254	g4,900	83	15	8.0
25.....	1,360	140	65	120	90	401	419	243	g2,420	78	26	8.0
26.....	1,400	135	65	160	85	284	375	296	1,020	74	128	8.0
27.....	626	130	65	150	80	*209	333	229	634	68	31	7.8
28.....	446	135	60	130	75	204	297	772	548	64	18	7.8
29.....	400	135	55	100	.....	185	282	2,190	808	62	17	8.0
30.....	363	135	45	80	.....	158	344	g4,060	741	60	16	8.0
31.....	330	.....	40	70	.....	153	.....	g2,540	.....	49	13	.....
1947-48												
1.....	7.7	131	28	16	a3	200	188	70	18	15	154	5.1
2.....	7.7	194	30	16	a3	90	153	66	18	12	57	4.5
3.....	7.5	120	35	16	a3	80	125	64	17	9.9	g37	3.8
4.....	7.5	56	89	17	*3	70	111	59	16	9.1	g30	3.2
5.....	7.3	41	185	17	3	58	103	57	15	8.7	g28	2.8
6.....	7.3	36	288	*18	3	50	96	241	14	7.9	g26	2.5
7.....	7.5	39	209	18	3	42	100	398	12	6.4	g24	1.8
8.....	7.3	42	125	20	a3	38	90	178	9.9	4.7	g22	a2.5
9.....	7.7	33	100	28	2	36	82	129	8.5	3.7	g20	3.5
10.....	8.7	27	92	30	2	35	76	107	7.9	3.3	g19	4.4
11.....	8.5	23	82	31	2	34	66	94	7.4	3.2	g17	4.0
12.....	8.3	22	66	28	2	34	65	86	6.6	3.7	16	3.7
13.....	8.1	20	56	19	2	36	63	80	6.2	a3.5	15	3.3
14.....	7.9	20	46	16	2	40	57	74	5.8	21	14	2.7
15.....	7.8	25	38	15	3	100	54	70	5.5	28	11	2.3
16.....	7.7	38	32	14	4	1,150	52	61	4.9	29	12	2.3
17.....	7.7	47	30	13	7	1,750	48	51	4.9	18	13	2.3
18.....	7.7	45	*9	11	11	2,080	46	44	4.4	a10	16	2.2
19.....	a7.6	45	28	10	26	3,100	41	36	4.4	a6.6	14	2.0
20.....	7.5	46	28	9	50	5,520	38	34	4.4	a5.4	14	2.3
21.....	7.6	44	28	8	30	1,920	35	34	4.5	753	a12	3.0
22.....	7.7	43	28	8	26	641	40	33	5.1	1,480	11	3.8
23.....	7.9	41	28	7	26	348	62	31	7.4	1,510	9.1	3.7
24.....	8.7	40	26	6	28	279	70	29	7.4	344	7.9	3.3
25.....	9.2	37	24	a6	32	241	84	27	6.8	184	6.0	3.3
26.....	a12	33	24	5	36	224	91	24	a6.6	417	5.6	3.0
27.....	15	31	24	4	200	212	91	23	11	718	6.0	2.7
28.....	20	28	24	4	700	203	153	22	16	470	a18	2.3
29.....	19	27	24	4	900	178	147	21	28	105	54	2.0
30.....	21	27	22	3	.....	202	90	20	22	50	20	1.3
31.....	84	.....	20	3	.....	217	.....	19	.....	218	a9.5	.....

* Winter discharge measurement made on this day.

g No gage-height record; discharge computed on basis of records for nearby stations.

a Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Nov. 24 to Dec. 5, Dec 12-31, 1946, Jan. 1 to Mar. 13, Nov. 23 to Dec. 1, Dec. 8-31, 1947, Jan. 1 to Mar. 16, 1948. Discharge computed from wire-weight gage readings Aug. 22, 23, Aug. 30 to Sept. 12, Sept. 17 to Oct. 18, Oct. 20-25, 1947, June 8-26, July 3-12, Aug. 15, 16, 20, 22-27, Sept. 1-7, 9-30, 1948.

North River near Norwalk, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	1.1	7.9	14	16	29	700	305	65	33	67	6.0	4.0
2.....	1.0	11	13	15	28	530	305	62	51	117	5.6	3.5
3.....	.8	8.1	14	20	27	600	247	60	161	60	5.5	308
4.....	.5	11	15	50	27	1,430	208	54	86	39	4.9	126
5.....	.5	13	16	180	27	1,740	182	49	51	49	4.4	10
6.....	.7	14	18	160	27	1,590	173	48	36	112	4.2	5.8
7.....	1.3	76	23	150	27	919	157	57	32	30	3.8	.9
8.....	1.1	125	33	120	27	463	141	56	28	26	3.5	.3
9.....	.8	42	27	100	27	400	125	57	25	24	3.3	.1
10.....	1.2	21	17	80	*27	283	117	80	24	21	3.3	.3
11.....	1.0	14	13	62	27	204	109	72	23	19	3.2	2.0
12.....	.8	12	12	58	27	173	109	57	22	17	2.5	16
13.....	.9	8.1	12	*56	27	157	97	44	22	16	2.5	7.4
14.....	1.1	7.6	14	50	27	141	97	41	45	15	3.0	4.2
15.....	1.2	6.6	16	70	27	125	133	36	33	14	3.2	3.0
16.....	1.2	6.6	19	120	*27	105	186	38	26	14	2.7	2.3
17.....	1.3	6.6	23	350	29	95	213	66	23	13	2.2	2.0
18.....	1.3	6.6	22	200	90	92	340	70	19	12	1.6	1.8
19.....	1.3	41	19	170	400	92	283	83	18	12	8.3	1.6
20.....	1.2	407	18	140	1,000	101	177	55	24	13	54	1.2
21.....	1.3	424	17	120	700	153	153	45	24	19	94	1.0
22.....	1.3	117	16	100	470	510	157	156	32	37	29	.7
23.....	.9	53	15	80	460	658	145	381	35	33	18	.5
24.....	1.2	33	14	68	650	364	125	161	92	23	12	.5
25.....	1.3	28	13	58	950	262	97	94	718	16	8.9	.5
26.....	1.2	25	13	50	1,300	340	90	68	1,270	12	8.1	.4
27.....	1.2	24	12	44	1,100	606	90	55	273	9.3	7.6	.3
28.....	1.3	22	12	39	850	515	83	48	133	8.1	7.2	.2
29.....	1.6	19	14	35	.....	316	80	41	101	7.2	6.4	.2
30.....	2.8	17	16	33	.....	252	70	37	74	6.6	5.8	.1
31.....	4.0	.....	18	31	.....	283	.....	34	.....	6.2	5.3	.....
1949-50												
1.....	.1	.2	.5	2.0	1.0	1,000	22	35	63	38	3.0	13
2.....	.1	.2	.6	2.0	.6	2,000	21	34	42	32	18	12
3.....	.1	.3	.8	1.9	1.0	1,000	21	33	32	30	40	9.8
4.....	.1	.5	1.1	1.9	1.2	700	24	36	35	28	20	5.1
5.....	.1	.6	5.3	1.8	2.0	1,900	25	138	33	25	13	4.0
6.....	.1	1.1	3.5	1.8	12	2,680	50	184	27	24	13	2.0
7.....	.1	1.1	2.2	1.8	40	1,320	54	285	22	23	8.8	1.6
8.....	.1	1.0	1.0	1.8	100	254	52	85	17	21	13	1.4
9.....	.1	.8	1.8	1.8	250	125	47	488	18	18	17	1.3
10.....	.1	.6	2.5	1.7	350	90	26	808	20	15	11	1.2
11.....	.1	.6	2.5	1.7	150	70	16	349	32	13	8.8	1.0
12.....	.1	1.8	2.5	1.7	50	54	14	141	78	15	14	1.0
13.....	.1	3.5	2.5	1.7	35	45	11	104	439	15	149	.9
14.....	.1	2.8	2.2	1.7	22	44	9.3	88	409	14	161	.9
15.....	.1	2.2	*1.9	1.7	*16	46	8.1	79	1,060	15	85	.9
16.....	.1	1.8	1.8	1.8	15	53	7.0	66	1,490	52	35	.7
17.....	.1	1.5	1.8	1.8	14	79	6.6	43	314	59	20	.6
18.....	.1	1.2	1.8	1.8	13	88	6.6	37	969	23	13	.5
19.....	.6	1.0	1.9	1.8	12	100	6.2	36	1,770	25	9.3	.4
20.....	1.8	2.2	2.0	1.9	12	65	6.0	37	2,120	29	5.4	.4
21.....	.8	3.5	2.0	1.9	12	48	5.4	125	1,280	23	4.3	.3
22.....	.3	3.2	2.0	1.9	11	59	40	165	249	17	4.9	.4
23.....	.2	2.7	1.9	1.9	11	82	173	82	169	13	3.2	.4
24.....	.1	2.2	1.9	*2.0	11	173	78	82	133	12	2.7	.4
25.....	.1	1.8	1.8	2.0	11	137	36	53	107	8.8	1.9	.4
26.....	.1	1.2	1.8	2.0	11	79	25	131	85	6.0	1.7	.2
27.....	.1	.8	1.9	2.0	11	57	25	145	68	4.6	1.9	.3
28.....	.1	.6	2.1	1.9	150	45	21	67	61	3.6	12	.3
29.....	.1	.5	2.1	1.8	.....	36	24	61	50	3.0	30	.3
30.....	.1	.3	2.1	1.7	.....	29	33	66	45	7.9	27	.4
31.....	.1	.....	2.1	1.6	.....	26	.....	61	.....	6.0	20	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 2, 10-31, 1948, Jan. 1 to Mar. 3, Mar. 17-19, Dec. 10-31, 1949, Jan. 1 to Feb. 1, Feb. 4 to Mar. 5, Mar. 10-13, 1950. Discharge computed from graph based on gage readings Oct. 1 to Nov. 4, Nov. 13-18, 1948, Mar. 4-14, July 11 to Aug. 20, Aug. 24 to Sept. 2, Sept. 5-30, 1949, Apr. 22, 28, June 10, July 30 Aug. 2, 1950. Discharge computed from wire-weight gage readings Oct. 1 to Dec. 9, 1949, Feb. 2, 3, Apr. 11-21, 28, June 8-10, July 1-11, July 26 to Aug. 2, Aug. 19 to Sept. 30, 1950.

North River near Norwalk, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1942.....	3,490	890	38	113	0.325	0.37
November.....	1,664	120	30	55.5	.159	.18
December.....	2,287	600	17	73.8	.212	.24
Calendar year 1942.....	107,998	4,100	17	296	.851	11.53
January 1943.....	1,432	100	20	46.2	.133	.15
February.....	4,648	1,620	22	166	.477	.50
March.....	5,071	805	21	164	.471	.54
April.....	3,027	439	42	101	.200	.32
May.....	7,096	1,300	52	229	.658	.76
June.....	18,379	3,340	96	613	1.76	1.96
July.....	2,812	328	18	90.7	.261	.30
August.....	9,695	1,300	23	313	.899	1.04
September.....	1,149	107	13	38.3	.110	.12
Water year 1942-43.....	60,750	3,340	13	166	.477	6.48
October 1943.....	480	28	10	15.5	.045	.05
November.....	683	29	12	22.8	.066	.07
December.....	292	22	3	9.4	.027	.03
Calendar year 1943.....	54,764	3,340	3	150	.431	5.84
January 1944.....	876	220	2	28.3	.081	.09
February.....	1,268	200	4	43.7	.126	.14
March.....	6,633	404	32	195	.560	.64
April.....	15,993	1,450	86	533	1.53	1.71
May.....	38,531	3,480	313	1,243	3.57	4.12
June.....	20,651	2,970	136	688	1.98	2.21
July.....	2,883	315	33	93.0	.267	.31
August.....	4,550.9	1,280	9.3	147	.422	.49
September.....	1,523	145	32	50.8	.146	.16
Water year 1943-44.....	93,763.9	3,480	2	256	.736	10.02
October 1944.....	1,265	79	25	40.8	.117	.14
November.....	1,106	52	24	36.9	.106	.12
December.....	825	39	14	26.6	.076	.09
Calendar year 1944.....	95,504.9	3,480	2	261	.750	10.22
January 1945.....	923	54	13	29.8	.086	.10
February.....	9,028	1,380	21	322	.925	.96
March.....	23,496	2,170	263	758	2.18	2.51
April.....	22,685	2,430	218	756	2.17	2.42
May.....	18,804	2,320	230	607	1.74	2.01
June.....	14,442	1,380	155	481	1.38	1.54
July.....	2,411	219	29	77.8	.224	.26
August.....	1,456.3	344	5.9	47.0	.135	.16
September.....	423.6	86	2.8	14.1	.041	.05
Water year 1944-45.....	96,864.9	2,430	2.8	265	.761	10.36
October 1945.....	358.9	68	5.3	11.6	.033	.04
November.....	398.7	28	8.0	13.3	.038	.04
December.....	393	78	1	12.7	.036	.04
Calendar year 1945.....	94,819.5	2,430	1	260	.747	10.13
January 1946.....	6,536	1,000	2	211	.606	.70
February.....	5,315	700	55	190	.546	.57
March.....	13,898	1,880	124	448	1.29	1.49
April.....	3,381	228	48	113	.325	.36
May.....	3,679	764	34	119	.342	.39
June.....	6,127	1,540	12	204	.586	.65
July.....	1,066	136	14	34.4	.099	.11
August.....	17,013.8	6,550	9.8	549	1.58	1.82
September.....	8,852	1,230	136	295	.848	.95
Water year 1945-46.....	67,018.4	6,550	1	184	.529	7.16

North River near Norwalk, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946.....	15,992	2,460	94	516	1.48	1.71
November.....	6,575	402	130	219	.629	.70
December.....	2,737	140	40	88.3	.254	.29
Calendar year 1946.....	91,171.8	6,550	2	250	.718	9.74
January 1947.....	2,570	160	35	82.9	.238	.27
February.....	3,635	500	55	130	.374	.39
March.....	9,582	1,510	70	309	.888	1.02
April.....	28,046	4,460	147	935	2.69	3.00
May.....	15,096	4,060	134	506	1.45	1.68
June.....	97,793	21,600	499	3,260	9.37	10.45
July.....	8,948	1,940	49	289	.830	.96
August.....	787	128	13	25.4	.073	.08
September.....	460.4	90	7.8	15.3	.044	.05
Water year 1946-47.....	192,821.4	21,600	7.8	528	1.52	20.60
October 1947.....	367.1	84	7.3	11.8	.034	.04
November.....	1,401	194	20	46.7	.134	.15
December.....	1,886	286	20	60.8	.175	.20
Calendar year 1947.....	171,171.5	21,600	7.3	469	1.35	18.29
January 1948.....	420	31	3	13.5	.039	.04
February.....	2,115	900	2	72.9	.209	.23
March.....	19,208	5,520	34	620	1.78	2.05
April.....	2,517	188	35	83.9	.241	.27
May.....	2,282	398	19	73.6	.211	.24
June.....	305.6	28	4.4	10.2	.029	.03
July.....	6,467.1	1,510	3.2	209	.601	.69
August.....	718.1	154	5.6	23.2	.067	.08
September.....	89.6	5.1	1.3	2.99	.009	.01
Water year 1947-48.....	37,776.5	5,520	1.3	103	.296	4.03
October 1948.....	38.4	4.0	.5	1.24	.0036	.004
November.....	1,607.1	424	6.6	53.6	.154	.17
December.....	518	33	12	16.7	.048	.06
Calendar year 1948.....	36,285.9	5,520	.5	99.1	.285	3.87
January 1949.....	2,825	350	15	91.1	.262	.30
February.....	8,434	1,300	27	301	.865	.90
March.....	14,199	1,740	92	458	1.32	1.52
April.....	4,794	340	70	160	.460	.51
May.....	2,270	381	34	73.2	.210	.24
June.....	3,534	1,270	18	118	.339	.38
July.....	867.4	117	6.2	28.0	.080	.09
August.....	330.0	94	1.6	10.6	.030	.04
September.....	604.8	308	.1	16.8	.048	.05
Water year 1948-49.....	39,921.7	1,740	.1	109	.313	4.26
October 1949.....	6.3	1.8	.1	.20	.00057	.0007
November.....	41.8	3.5	.2	1.39	.0040	.004
December.....	61.9	5.3	.5	2.00	.0057	.007
Calendar year 1949.....	37,868.2	1,740	.1	104	.299	4.04
January 1950.....	56.8	2.0	1.6	1.83	.0053	.006
February.....	1,324.8	350	.6	47.3	.136	.14
March.....	12,484	2,680	26	403	1.16	1.33
April.....	893.2	173	5.4	29.8	.086	.10
May.....	4,134	808	33	133	.382	.44
June.....	11,237	2,120	17	375	1.08	1.20
July.....	598.9	38	3.0	19.3	.055	.06
August.....	766.9	161	1.7	24.7	.071	.08
September.....	62.1	13	.2	2.07	.0059	.007
Water year 1949-50.....	31,667.7	2,680	.1	86.8	.249	3.37

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 10 feet 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 square miles.

RECORDS AVAILABLE.—March 1940 to September 1950.

GAGE.—Water-stage recorder. Datum of gage is 773.34 feet above mean sea level, datum of 1929 (levels by Corps of Engineers). Mar. 1, 1940, to June 10, 1946, wire-weight gage on upstream side of bridge at same site and datum. June 11, 1946, to June 8, 1947, water-stage recorder on right bank 10 feet upstream from bridge, present site and datum (destroyed by flood). June 9, 1947, to Nov. 23, 1948, wire-weight gage on upstream side of bridge, present site and datum.

AVERAGE DISCHARGE.—10 years, 301 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	May 16	4,150	15.54	Nov. 21	26
1943-44...	May 22	9,490	20.32	Feb. 13	3
1944-45...	Mar. 15	7,680	(¹)19.36	Sept. 20, 21, 23	7
1945-46...	Aug. 25	7,190	(²)	Nov. 5-7	2.0
1946-47...	June 13	34,000	26.40	Sept. 26-30	9.5
1947-48...	Mar. 19	5,840	(¹)17.4	Aug. 27	1.6
1948-49...	Feb. 24	5,740	17.28	Oct. 28, 29	2.6
1949-50...	June 19	5,600	(³)	Jan. 31 to Feb. 2	4.6

(1) Observed.

(2) Maximum gage height 20.12 feet Jan. 5 (ice affected).

(3) Maximum gage height 16.82 feet Feb. 28 (ice affected).

1940-50: Maximum discharge, 34,000 second-feet June 13, 1947 (gage height, 26.40 feet); minimum observed, 1.3 second-feet July 27, 1940.

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

COOPERATION.—Services of observer and several discharge measurements furnished by Corps of Engineers.

Middle River near Indianola, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	91	109	30	80	70	50	100	109	138	126	176	211
2.....	91	73	28	70	90	48	95	83	129	123	82	208
3.....	194	57	28	65	1,000	45	87	78	118	132	119	200
4.....	1,420	48	30	60	1,300	45	76	69	107	115	98	110
5.....	407	67	35	58	800	45	72	51	129	342	102	100
6.....	208	76	40	50	200	45	69	361	628	283	94	84
7.....	124	59	45	50	110	45	66	579	522	228	687	78
8.....	103	53	50	50	95	48	65	299	416	151	224	74
9.....	95	166	50	55	85	50	63	107	558	118	85	72
10.....	94	271	48	58	80	52	70	110	3,340	79	98	66
11.....	88	170	45	60	75	60	137	89	1,550	72	89	64
12.....	83	109	42	55	70	69	237	76	1,640	68	774	75
13.....	73	84	40	52	65	73	179	66	923	65	185	68
14.....	65	73	50	60	62	74	127	58	502	61	281	65
15.....	59	67	55	80	60	262	116	1,470	522	60	134	61
16.....	57	57	55	75	60	943	88	3,170	1,220	87	92	54
17.....	54	45	55	65	62	325	77	1,330	2,270	72	73	53
18.....	52	35	52	55	70	53	70	755	1,650	66	58	52
19.....	50	29	50	45	93	65	57	527	1,160	80	54	51
20.....	46	27	48	40	112	75	58	485	860	67	48	54
21.....	44	26	50	40	123	85	60	401	545	82	44	53
22.....	44	37	52	50	118	100	57	297	317	70	92	52
23.....	44	62	55	65	131	443	54	279	241	48	452	47
24.....	41	62	*67	55	124	1,110	52	289	231	77	1,610	45
25.....	40	65	75	50	118	914	72	210	210	809	1,200	44
26.....	39	62	200	55	*115	384	76	176	192	737	521	41
27.....	39	58	600	65	70	192	464	146	185	393	255	41
28.....	38	50	458	75	55	138	405	139	207	210	198	39
29.....	36	45	235	80	.....	124	177	127	163	168	142	38
30.....	63	35	176	80	.....	112	144	124	136	83	134	37
31.....	78	.....	98	75	.....	106	.....	126	.....	228	128	.....
1943-44												
1.....	35	27	21	15	56	87	85	551	633	144	67	211
2.....	35	42	17	19	52	60	87	2,270	592	136	1,470	177
3.....	22	50	22	22	42	56	84	3,990	587	129	804	153
4.....	22	46	23	22	40	98	75	2,520	585	115	262	132
5.....	22	43	27	25	35	80	73	1,200	777	108	542	118
6.....	20	42	30	23	42	64	68	1,040	846	100	1,250	108
7.....	19	48	34	18	27	36	126	832	728	167	303	102
8.....	19	90	32	11	31	20	155	1,120	2,310	148	169	100
9.....	18	96	30	11	24	34	182	888	3,770	141	131	97
10.....	22	102	27	11	22	51	230	726	1,920	131	110	94
11.....	22	98	26	12	13	213	1,710	616	2,080	124	92	91
12.....	25	96	12	12	4	491	1,720	587	1,420	252	78	112
13.....	27	92	13	9	3	315	794	546	952	207	70	97
14.....	25	92	10	8	4	320	494	489	762	149	64	90
15.....	22	82	8	*6	6	473	514	533	582	116	56	84
16.....	21	*46	6	8	9	446	413	1,260	475	100	52	78
17.....	22	81	8	12	12	371	353	1,420	411	90	61	74
18.....	23	74	10	12	6	326	846	786	391	82	47	68
19.....	23	63	12	15	6	260	1,070	750	505	78	43	64
20.....	22	48	15	15	7	230	1,920	3,230	413	75	40	70
21.....	22	42	15	14	9	192	1,290	4,220	284	70	46	75
22.....	24	37	12	15	12	188	1,830	7,970	262	67	43	84
23.....	24	37	8	15	15	260	2,170	4,480	232	63	41	74
24.....	23	37	8	35	18	307	2,040	2,580	205	178	42	220
25.....	22	39	12	56	*213	294	1,470	1,130	186	131	40	106
26.....	22	39	15	87	300	266	1,470	1,350	165	66	2,750	87
27.....	22	36	18	150	254	242	1,050	2,440	156	66	3,420	56
28.....	21	36	17	200	144	171	829	1,400	175	63	2,420	87
29.....	21	30	15	150	100	131	701	885	158	114	475	112
30.....	19	25	15	85	.....	108	640	759	149	82	322	240
31.....	26	.....	15	61	.....	84	.....	642	.....	70	256	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 27 to Dec. 27, 1942, Jan. 1 to Feb. 18, Feb. 28 to Mar. 9, Mar. 20, 21, Nov. 15-17, Dec. 12-31, 1943, Jan. 1-24, 27-29, Feb. 5-26, Mar. 5-10, 1944.

Middle River near Indianola, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	180	41	12	60	30	800	349	305	1,120	558	645	18
2.....	102	42	11	55	30	1,610	305	290	1,130	242	450	17
3.....	153	63	20	50	30	1,120	276	268	776	236	224	17
4.....	128	50	40	50	30	874	3,610	292	496	228	334	17
5.....	114	47	70	45	25	829	1,780	264	433	201	90	16
6.....	120	47	100	40	25	625	1,090	254	871	173	66	15
7.....	156	45	110	40	25	380	788	356	1,300	165	61	12
8.....	129	45	130	40	35	450	756	351	934	146	59	12
9.....	112	45	100	40	40	686	664	320	721	136	57	12
10.....	88	45	75	45	100	911	544	424	905	126	56	18
11.....	75	46	60	50	120	1,620	491	450	860	108	54	17
12.....	67	46	*60	50	435	1,540	1,320	349	528	98	54	15
13.....	59	45	17	65	1,580	1,040	1,050	311	475	92	51	13
14.....	56	50	50	70	1,630	647	788	3,880	439	88	51	12
15.....	54	46	80	75	1,230	5,190	718	4,620	406	85	43	12
16.....	51	43	105	85	720	4,620	5,100	1,470	1,090	84	41	10
17.....	51	41	120	80	340	*1,920	3,700	1,050	882	104	37	8
18.....	48	41	115	75	180	911	1,340	834	718	90	35	8
19.....	45	41	110	70	190	676	857	749	637	81	33	12
20.....	43	40	95	110	203	604	734	744	1,570	74	32	7
21.....	41	36	80	105	258	546	684	1,160	746	73	30	7
22.....	40	34	80	105	274	526	565	1,470	378	68	27	8
23.....	39	32	75	100	248	441	528	882	309	64	23	7
24.....	36	28	65	95	164	444	507	691	278	61	22	8
25.....	37	28	60	90	207	2,810	475	2,880	286	60	22	10
26.....	40	24	55	60	470	1,170	419	1,330	280	57	18	12
27.....	42	22	50	90	767	671	390	1,230	270	57	18	33
28.....	40	19	50	90	444	521	362	1,570	211	55	18	134
29.....	40	18	50	90	.....	444	338	1,270	250	55	18	66
30.....	40	15	55	*70	.....	413	320	1,110	375	66	18	74
31.....	40	.....	60	40	.....	373	.....	943	.....	694	18	.....
1945-46												
1.....	153	2.2	77	8	350	108	273	116	226	188	30	279
2.....	115	2.2	106	8	300	103	267	144	131	127	30	239
3.....	103	2.2	97	9	400	103	257	1,320	124	106	30	228
4.....	91	2.2	46	100	700	108	222	1,680	110	72	29	212
5.....	75	2.0	19	3,000	1,300	139	170	740	98	58	35	214
6.....	28	2.0	18	3,500	1,200	982	170	582	92	51	48	205
7.....	20	2.0	18	1,500	*650	536	163	445	83	47	35	g559
8.....	20	27	18	600	*200	363	160	301	75	47	44	g598
9.....	20	35	17	200	150	263	153	267	70	47	48	g764
10.....	18	19	15	171	130	165	149	229	66	44	359	g749
11.....	17	18	13	146	120	192	149	212	65	44	86	g625
12.....	15	17	10	115	110	483	146	195	62	42	62	g367
13.....	15	17	9	110	110	429	144	179	58	39	44	g277
14.....	10	17	9	100	110	779	144	174	56	38	39	g237
15.....	8.5	16	9	95	105	577	139	170	1,170	38	36	g218
16.....	8.5	16	8	90	94	545	139	161	854	33	33	199
17.....	7.5	16	8	90	94	932	139	214	321	50	39	185
18.....	7.5	16	8	85	96	713	127	190	4,070	46	38	176
19.....	6.5	16	8	80	108	416	119	194	4,510	44	48	163
20.....	6.0	16	7	75	112	267	110	188	2,620	42	51	188
21.....	4.0	18	6	70	120	241	102	201	848	40	403	188
22.....	4.0	18	6	70	116	207	99	132	420	39	815	190
23.....	3.8	18	6	70	123	474	645	124	255	35	167	309
24.....	3.8	18	6	65	126	668	476	124	181	33	2,720	452
25.....	3.4	18	6	60	118	430	245	119	146	36	4,710	293
26.....	3.4	18	6	60	112	2,050	148	116	129	33	3,520	192
27.....	3.0	*18	6	60	82	1,050	136	112	112	42	2,540	176
28.....	2.6	17	6	70	108	407	123	109	91	38	674	g668
29.....	2.4	17	6	100	.....	317	136	105	68	35	483	g474
30.....	2.4	15	7	150	.....	303	124	102	106	33	384	334
31.....	2.4	.....	8	300	.....	295	.....	239	.....	32	323	.....

* Winter discharge measurement made on this day.

g Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Nov. 25 to Dec. 31, 1944, Jan. 1 to Feb. 19, Dec. 9-31, 1945, Jan. 1-9, Jan. 13 to Feb. 15, 1946.

Middle River near Indianola, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	g205	303	135	45	85	75	279	922	1,100	511	71	31
2.....	g181	323	125	40	80	70	263	524	2,630	404	64	24
3.....	g165	297	120	38	75	*70	243	485	1,670	372	58	22
4.....	146	269	130	35	70	70	4,810	405	2,800	332	56	22
5.....	136	239	165	32	65	70	5,730	357	17,100	1,680	55	21
6.....	129	229	176	30	65	75	1,970	340	12,400	1,850	55	21
7.....	124	241	160	32	60	80	1,060	321	4,600	992	52	20
8.....	123	249	153	35	60	90	779	303	1,400	511	51	15
9.....	126	245	148	40	65	100	686	281	1,180	366	49	15
10.....	148	309	139	*45	75	120	5,530	263	1,150	320	46	14
11.....	233	344	130	50	90	150	7,500	229	1,150	239	44	a14
12.....	218	313	120	75	100	200	1,980	243	4,720	233	43	a15
13.....	212	*245	110	100	350	1,500	1,140	235	21,400	226	42	a80
14.....	177	228	105	130	1,000	1,250	908	229	11,000	214	39	a50
15.....	231	228	100	135	686	575	782	229	3,820	198	38	a35
16.....	176	245	95	135	628	307	800	245	2,030	193	37	29
17.....	172	283	90	130	437	271	812	372	1,060	187	37	25
18.....	3,460	231	90	120	305	303	740	342	888	178	35	23
19.....	2,380	208	*90	115	220	323	971	357	2,000	169	34	23
20.....	854	208	85	100	*190	332	2,890	267	2,070	157	34	19
21.....	545	205	80	95	165	505	1,350	231	4,960	143	33	a17
22.....	445	185	75	90	150	507	854	229	7,150	136	31	a15
23.....	390	168	75	100	135	764	701	257	5,650	128	31	a13
24.....	478	160	75	130	120	645	625	363	3,660	122	29	a11
25.....	1,360	150	75	180	105	554	547	355	1,270	114	35	a10
26.....	764	145	70	200	95	*357	476	376	810	109	135	9.5
27.....	447	140	70	210	85	289	424	307	628	104	76	9.5
28.....	380	140	65	150	80	263	378	2,230	567	98	58	9.5
29.....	346	140	60	130	.....	253	357	7,270	1,330	90	47	9.5
30.....	325	140	55	100	.....	226	418	3,180	640	82	39	9.5
31.....	301	.....	50	90	.....	228	.....	1,240	.....	78	35	.....
1947-48												
1.....	17	198	24	26	6	500	235	102	37	14	180	24
2.....	18	176	32	24	6	250	209	96	36	13	108	13
3.....	14	120	70	24	6	200	182	137	34	10	83	9.5
4.....	20	97	262	24	*6	150	164	123	33	9.0	80	8.4
5.....	15	64	387	26	6	110	151	149	33	30	75	6.9
6.....	14	69	214	*28	6	70	139	675	32	23	69	5.8
7.....	11	66	194	34	6	60	133	717	31	21	62	5.3
8.....	9.5	63	175	36	5	55	123	567	29	16	57	16
9.....	9.5	44	150	38	5	52	115	453	28	13	52	14
10.....	9.0	40	135	42	5	50	108	335	26	9.0	49	15
11.....	8.0	32	120	46	5	46	100	178	25	9.0	46	15
12.....	8.0	21	105	44	5	45	100	144	24	19	44	15
13.....	8.0	12	96	38	5	44	99	130	21	14	39	15
14.....	7.5	9.5	88	32	5	43	99	118	18	100	36	13
15.....	7.0	15	82	28	8	100	96	104	16	83	36	9.5
16.....	7.0	44	76	22	10	3,100	96	87	14	69	35	9.0
17.....	6.0	49	74	18	30	2,580	84	78	13	33	30	9.0
18.....	6.0	47	70	14	50	1,880	79	68	11	24	44	8.4
19.....	6.0	45	64	12	54	4,980	74	64	10	16	24	7.4
20.....	5.0	43	56	9	46	5,240	72	61	9.5	138	22	9.0
21.....	5.0	42	50	9	36	3,990	67	58	12	2,060	18	228
22.....	4.7	40	54	8	30	1,250	66	a56	19	2,150	15	90
23.....	4.4	32	60	8	30	699	100	53	17	579	13	48
24.....	47	27	52	7	30	531	113	50	16	312	10	27
25.....	14	24	48	7	40	465	137	48	14	225	5.8	17
26.....	11	22	46	7	50	429	128	43	12	387	3.7	15
27.....	16	22	46	6	250	444	170	39	11	805	1.6	13
28.....	21	20	46	6	1,200	352	130	39	33	255	70	11
29.....	15	20	44	6	750	298	120	38	26	186	78	10
30.....	22	22	42	6	.....	282	112	37	22	124	48	9.0
31.....	118	.....	34	6	.....	260	.....	37	.....	90	42	.....

* Winter discharge measurement made on this day.

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

g Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Nov. 24 to Dec. 4, Dec. 11-31, 1946, Jan. 1 to Feb. 14, Feb. 19 to Mar. 14, Nov. 27 to Dec. 1, Dec. 8-31, 1947, Jan. 1 to Mar. 16, 1948. (Water-stage recorder destroyed by flood June 8, 1947, wire-weight gage readings used June 9 to Dec. 31, 1947, Jan. 1 to Sept. 30, 1948.)

Middle River near Indianola, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	7.9	15	22	16	35	450	435	102	58	133	24	8.4
2.....	7.9	27	21	17	34	400	435	96	112	112	22	8.4
3.....	7.9	24	23	21	33	585	310	91	186	78	22	504
4.....	5.8	22	26	160	33	1,180	245	86	204	67	19	257
5.....	4.8	20	29	250	33	2,060	214	83	99	80	17	38
6.....	4.5	19	29	150	33	2,320	192	81	75	66	15	24
7.....	8.4	50	45	90	33	1,120	174	81	65	49	13	23
8.....	14	107	34	70	33	690	158	83	61	44	13	20
9.....	14	61	20	66	32	585	148	86	57	50	11	18
10.....	13	40	17	64	32	405	133	91	53	45	11	16
11.....	13	33	16	63	32	268	121	96	51	38	11	23
12.....	14	24	18	62	32	200	200	120	81	50	35	13
13.....	14	22	20	*60	32	150	113	74	54	32	329	33
14.....	11	21	22	60	32	110	118	70	687	30	67	33
15.....	9.0	20	23	80	*32	90	164	62	279	28	36	26
16.....	7.9	20	24	300	33	84	268	67	83	26	26	29
17.....	7.9	19	25	280	36	76	405	70	61	25	20	22
18.....	6.9	R33	26	250	150	74	465	153	49	24	17	18
19.....	5.3	R349	24	190	1,600	74	338	162	50	22	99	13
20.....	4.0	525	20	140	900	110	235	91	50	36	87	12
21.....	3.1	R350	18	110	500	162	200	90	324	465	68	9.0
22.....	3.1	180	16	80	350	818	211	173	258	162	37	8.3
23.....	3.1	R78	14	62	1,200	782	204	280	110	94	26	7.7
24.....	3.1	54	13	70	4,200	465	170	202	1,160	88	20	7.5
25.....	3.1	46	13	66	2,180	315	144	121	3,820	47	15	7.2
26.....	3.1	42	13	56	1,910	536	133	96	859	36	13	6.9
27.....	3.7	38	14	50	900	1,220	128	86	312	31	11	6.7
28.....	2.6	36	17	45	600	600	124	76	225	27	11	6.4
29.....	2.6	32	20	42	.....	420	120	69	180	26	11	6.2
30.....	19	32	18	40	.....	338	107	66	140	42	11	6.2
31.....	16	.....	17	37	.....	405	.....	61	.....	32	10	.....
1949-50												
1.....	5.7	9.2	8.3	11	4.6	1,500	46	36	136	89	26	29
2.....	5.7	8.9	8.0	11	4.6	800	43	39	86	80	53	22
3.....	5.7	8.9	8.6	11	4.7	580	46	41	70	73	37	18
4.....	6.2	8.9	8.0	11	5.0	1,300	51	44	63	69	34	15
5.....	6.4	8.6	7.7	10	6.0	R2,090	53	243	59	67	104	13
6.....	6.2	8.6	8.0	10	40	R1,110	51	413	54	67	36	12
7.....	6.2	8.6	8.2	9.6	250	R655	47	177	46	63	31	12
8.....	6.2	8.3	9.0	9.4	500	357	44	111	41	55	221	11
9.....	6.0	8.9	9.5	9.1	400	300	43	2,700	42	49	128	10
10.....	6.9	8.3	10	8.8	420	260	42	1,350	41	47	69	11
11.....	16	8.6	11	8.5	100	230	36	422	83	43	56	9.5
12.....	13	10	11	8.2	37	210	33	260	141	47	462	9.5
13.....	16	13	*11	8.0	25	190	29	199	427	74	418	9.2
14.....	14	12	11	7.7	22	170	28	163	789	62	131	9.2
15.....	14	17	10	7.4	20	155	26	140	817	61	116	8.9
16.....	14	16	10	7.2	18	145	24	131	557	76	77	8.3
17.....	11	13	10	7.0	*17	138	23	114	209	69	59	8.0
18.....	9.5	12	11	6.8	16	171	23	102	2,850	76	47	7.7
19.....	10	10	11	6.6	15	251	22	97	4,230	227	42	7.7
20.....	11	9.5	11	6.4	15	116	22	106	1,140	124	35	8.0
21.....	14	8.9	11	6.2	15	90	22	560	445	64	29	7.7
22.....	16	8.3	10	6.0	15	111	30	239	340	50	26	9.5
23.....	15	9.2	9.8	5.8	16	256	72	223	274	44	22	7.7
24.....	32	8.6	9.5	*5.7	17	274	28	153	227	39	21	6.9
25.....	23	7.7	9.5	5.5	25	205	26	112	193	34	20	6.7
26.....	17	8.3	9.5	5.4	26	140	47	136	163	32	19	6.7
27.....	15	8.9	9.6	5.2	500	109	35	163	136	30	18	6.4
28.....	13	8.3	10	5.0	2,500	92	34	121	121	30	18	6.9
29.....	13	8.0	10	4.9	.....	76	39	112	107	26	46	8.0
30.....	10	8.0	11	4.7	.....	62	39	102	97	29	55	7.7
31.....	9.2	.....	11	4.6	.....	51	.....	111	.....	31	49	.....

* Winter discharge measurement made on this day.

g Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 2, 9-31, 1948, Jan. 1 to Feb. 24, Feb. 27 to Mar. 2, Mar. 12-20, Dec. 6-31, 1949, Jan. 1 to Mar. 4, Mar. 9-15, 1950.

Middle River near Indianola, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1942.....	3,960	1,420	36	128	0.255	0.29
November.....	2,177	271	26	72.6	.145	.16
December.....	2,942	600	28	94.9	.189	.22
Calendar year 1942.....	133,376	5,040	26	365	.727	9.87
January 1943.....	1,873	80	40	60.4	.120	.14
February.....	5,413	1,300	55	193	.384	.40
March.....	6,180	1,110	45	199	.396	.46
April.....	3,470	464	52	116	.231	.26
May.....	12,186	3,170	51	393	.783	.90
June.....	20,809	3,340	107	694	1.38	1.54
July.....	5,300	809	48	171	.341	.39
August.....	8,329	1,610	44	269	.536	.62
September.....	2,237	211	37	74.6	.149	.17
Water year 1942-43.....	74,876	3,340	26	205	.408	5.55
October 1943.....	712	35	18	23.0	.046	.05
November.....	1,716	102	25	57.2	.114	.13
December.....	533	34	6	17.2	.034	.04
Calendar year 1943.....	68,758	3,340	6	188	.375	5.10
January 1944.....	1,154	200	6	37.2	.074	.09
February.....	1,506	300	3	51.9	.103	.11
March.....	6,274	473	20	202	.402	.46
April.....	24,489	2,170	68	816	1.63	1.81
May.....	53,210	7,970	489	1,716	3.42	3.94
June.....	22,711	3,770	149	757	1.51	1.68
July.....	3,562	252	63	115	.229	.26
August.....	15,566	3,420	40	502	1.00	1.15
September.....	3,261	240	56	109	.217	.24
Water year 1943-44.....	134,694	7,970	3	368	.733	9.96
October 1944.....	2,266	180	36	73.1	.146	.17
November.....	1,165	63	15	38.8	.077	.09
December.....	2,160	130	11	69.7	.139	.16
Calendar year 1944.....	137,324	7,970	3	375	.747	10.16
January 1945.....	2,160	110	40	69.7	.139	.16
February.....	9,830	1,630	25	351	.699	.73
March.....	35,412	5,190	373	1,142	2.27	2.62
April.....	30,848	5,100	276	1,028	2.05	2.29
May.....	32,097	4,620	254	1,035	2.06	2.38
June.....	19,674	1,570	211	656	1.31	1.46
July.....	4,725	994	55	152	.303	.35
August.....	2,705	645	18	87.3	.174	.20
September.....	627	134	7	20.9	.042	.05
Water year 1944-45.....	143,669	5,190	7	394	.785	10.66
October 1945.....	779.7	153	2.4	25.2	.050	.06
November.....	435.8	35	2.0	14.5	.029	.03
December.....	589	108	6	19.0	.038	.04
Calendar year 1945.....	139,882.5	5,190	2.0	383	.763	10.37
January 1946.....	11,157	3,500	8	360	.717	.83
February.....	7,344	1,300	82	262	.522	.54
March.....	15,145	2,050	103	489	.974	1.12
April.....	5,574	645	99	186	.371	.41
May.....	9,184	1,680	102	296	.590	.68
June.....	17,217	4,510	56	574	1.14	1.28
July.....	1,599	188	32	51.6	.103	.12
August.....	17,893	4,710	29	577	1.15	1.33
September.....	9,958	764	163	332	.661	.74
Water year 1945-46.....	96,875.5	4,710	2.0	265	.528	7.18

Middle River near Indianola, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946.....	15,377	3,460	123	496	0.988	1.14
November.....	6,810	344	140	227	.452	.50
December.....	3,216	176	50	104	.207	.24
Calendar year 1946.....	120,474	4,710	8	330	.657	8.93
January 1947.....	2,937	210	30	65	.189	.22
February.....	5,641	1,000	60	201	.400	.42
March.....	10,622	1,500	70	343	.683	.79
April.....	46,003	7,500	243	1,530	3.05	3.41
May.....	22,987	7,270	229	742	1.48	1.60
June.....	122,833	21,400	567	4,090	8.15	9.10
July.....	10,536	1,850	78	340	.677	.78
August.....	1,489	135	29	48	.096	.10
September.....	631.5	80	9.5	21	.042	.05
Water year 1946-47.....	249,082.5	21,400	9.5	682	1.36	18.35
October 1947.....	483.6	118	4.4	15.6	.031	.04
November.....	1,525.5	198	9.5	50.8	.101	.11
December.....	2,996	387	24	96.6	.192	.22
Calendar year 1947.....	228,684.6	21,400	4.4	627	1.25	16.84
January 1948.....	641	46	6	20.7	.041	.05
February.....	2,691	1,200	5	92.8	.185	.20
March.....	28,555	5,240	43	921	1.83	2.12
April.....	3,601	235	66	120	.239	.27
May.....	4,884	717	37	158	.315	.36
June.....	662.5	37	9.5	22.1	.044	.05
July.....	7,836	2,150	9.0	253	.504	.58
August.....	1,476.1	180	1.6	47.6	.095	.11
September.....	696.2	228	5.3	23.2	.046	.05
Water year 1947-48.....	56,047.9	5,240	1.6	153	.305	4.16
October 1948.....	243.7	19	2.6	7.86	.016	.02
November.....	2,339	525	15	78.0	.156	.17
December.....	657	45	13	21.2	.042	.05
Calendar year 1948.....	54,282.5	5,240	1.6	148	.295	4.03
January 1949.....	3,047	300	16	98.3	1.96	.23
February.....	15,050	4,200	32	538	1.07	1.11
March.....	17,092	2,320	74	551	1.10	1.27
April.....	6,335	465	107	211	.420	.47
May.....	3,135	280	61	101	.201	.23
June.....	9,772	3,820	49	326	.649	.72
July.....	2,079	465	22	67.1	.134	.15
August.....	1,105	329	10	35.6	.071	.08
September.....	1,247.9	504	6.2	41.6	.083	.09
Water year 1948-49.....	62,102.6	4,200	2.6	170	.339	4.59
October 1949.....	366.9	32	5.7	11.8	.024	.03
November.....	292.5	17	7.7	9.75	.019	.02
December.....	303.2	11	7.7	9.78	.019	.02
Calendar year 1949.....	59,825.5	4,200	5.7	164	.327	4.42
January 1950.....	233.7	11	4.6	7.51	.015	.02
February.....	5,033.9	2,500	4.6	180	.359	.37
March.....	12,194	2,090	51	393	.783	.90
April.....	1,104	72	22	36.8	.073	.08
May.....	8,920	2,700	36	288	.574	.66
June.....	13,984	4,230	41	466	.928	1.04
July.....	1,930	227	26	62.3	.124	.14
August.....	2,505	462	18	80.8	.161	.19
September.....	313.2	29	6.4	10.4	.021	.02
Water year 1949-50.....	47,180.4	4,230	4.6	129	.257	3.49

South River near Ackworth, Iowa

LOCATION.—Lat. $41^{\circ}22'20''$, long. $93^{\circ}25'40''$, in sec. 19, T. 76 N., R. 22 W., on right bank 30 feet 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 square miles.

RECORDS AVAILABLE.—February 1940 to September 1950.

GAGE.—Water-stage recorder and wire-weight gage read once daily. Datum of gage is 761.91 feet 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, read once daily.

AVERAGE DISCHARGE.—10 years, 254 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	May 15	6,130	15.10	Sept. 29	6.2
1943-44...	May 22	10,900	(¹)19.65	Dec. 17-19, 22-26, 31 Jan. 12-19	2
1944-45...	Apr. 16	10,900	(¹)19.6	Sept. 21	4
1945-46...	June 19	11,300	(²)	Dec. 20-28	4
1946-47...	June 5	34,000	24.60	Sept. 17	2.7
1947-48...	Mar. 15	8,900	(¹)16.0	Sept. 18	1.6
1948-49...	June 25	11,000	17.81	Nov. 29, Dec. 6	1.2
1949-50...	May 9	15,200	20.12	Oct. 1, 18, Dec. 5	1.8

(1) Observed.

(2) Maximum gage height 22.26 feet Jan. 6 (ice jam).

1940-50: Maximum discharge, 34,000 second-feet June 5, 1947 (gage height, 24.60 feet); minimum observed, 0.3 second-foot July 21-25, 1940.

REMARKS.—Records fair except those for periods of ice effect or no gage-height record, which are poor. Gage heights obtained from once daily wire-weight gage readings for low stages and from recorder graph for medium and high stages.

COOPERATION.—Services of observer and several discharge measurements furnished by Corps of Engineers.

South River near Ackworth, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	19	80	40	170	80	30	115	100	120	29	128	7.4
2.....	18	52	35	160	100	20	92	89	120	25	48	7.0
3.....	16	37	30	140	1,000	25	74	80	103	19	268	13
4.....	72	31	30	120	1,400	30	68	69	99	20	108	160
5.....	46	66	32	110	*561	30	63	71	780	302	48	241
6.....	40	56	35	110	250	25	61	286	1,100	92	18	160
7.....	26	62	38	100	167	30	59	214	849	34	1,000	66
8.....	23	57	40	100	167	35	58	169	614	25	626	30
9.....	20	121	42	100	150	44	58	100	973	19	104	14
10.....	20	400	42	100	110	48	99	90	1,730	18	110	8.3
11.....	18	218	42	95	90	52	287	85	2,880	16	25	7.8
12.....	16	118	40	85	75	58	423	78	3,860	13	148	12
13.....	18	81	32	75	65	77	205	71	2,010	12	120	76
14.....	17	68	35	90	60	93	150	66	422	12	66	57
15.....	17	67	38	100	60	230	131	2,800	681	11	25	48
16.....	16	59	38	95	65	296	100	2,420	768	160	14	30
17.....	18	58	40	85	70	220	87	1,030	563	120	12	17
18.....	18	57	40	70	75	174	81	727	292	81	8.6	12
19.....	18	54	38	55	100	82	65	866	156	30	7.4	8.9
20.....	16	52	35	50	150	50	60	1,490	104	17	7.0	8.6
21.....	17	50	38	50	190	40	58	1,020	83	12	7.0	7.8
22.....	16	58	40	55	170	68	55	727	74	8.0	34	7.0
23.....	16	72	45	70	100	326	53	495	68	196	185	7.8
24.....	16	77	*50	60	70	697	49	318	56	153	36	7.0
25.....	16	72	55	55	50	404	156	248	48	114	471	7.4
26.....	16	73	75	65	30	218	146	199	39	82	118	7.4
27.....	17	69	450	80	*22	163	576	169	34	51	65	7.0
28.....	16	65	400	90	30	128	277	140	52	18	31	6.6
29.....	20	58	300	95	.....	110	197	123	57	6.8	23	6.2
30.....	43	50	200	90	.....	126	128	123	38	36	13	7.0
31.....	96	.....	180	85	.....	136	.....	120	.....	242	8.6	.....
1943-44												
1.....	7.5	7.0	7.5	3	49	74	149	272	175	28	a9	48
2.....	7.5	6.0	7.0	3	34	63	134	4,390	124	24	a9	38
3.....	6.8	6.2	7.5	3	27	53	108	5,370	113	19	a9	29
4.....	6.2	6.5	7.2	3	26	76	78	1,350	93	13	a20	24
5.....	5.5	7.0	8.0	4	20	85	67	663	540	11	588	18
6.....	5.4	7.8	14	4	20	75	63	693	241	11	42	15
7.....	5.4	42	18	4	15	65	117	555	121	7.8	35	12
8.....	5.8	38	16	4	12	60	173	847	3,830	6.0	28	12
9.....	5.8	36	15	3	11	50	351	651	6,540	102	26	12
10.....	5.5	25	12	3	8	100	600	405	2,140	47	19	12
11.....	5.4	15	8	3	5	197	2,780	311	805	33	13	10
12.....	5.8	8.5	7	2	4	354	1,320	256	498	151	12	12
13.....	6.2	12	6	2	3	429	699	214	441	129	a11	11
14.....	6.0	9.5	5	2	3	453	474	173	334	40	a10	10
15.....	5.4	10	4	*2	3	1,410	2,140	697	234	25	a9	10
16.....	5.5	10	3	2	4	780	1,150	456	164	19	a8	9.0
17.....	5.4	10	2	2	4	426	324	199	141	16	a10	7.8
18.....	5.5	8.5	2	2	3	334	1,090	149	537	12	a8	7.2
19.....	6.2	9.5	2	2	3	258	1,210	444	1,100	10	a8	7.2
20.....	5.8	8.5	3	3	3	197	2,130	2,270	288	10	a8	7.8
21.....	5.5	7.8	3	3	5	199	2,080	6,210	144	9.0	9.0	207
22.....	5.4	8.5	2	3	20	282	4,220	5,010	113	9.0	7.5	269
23.....	5.2	7.5	2	4	95	303	4,180	2,310	108	9.0	7.0	90
24.....	5.4	7.8	2	4	140	313	2,460	702	90	100	7.0	321
25.....	5.5	9.5	2	4	*170	272	864	483	76	38	7.0	102
26.....	5.5	7.8	2	5	130	263	1,020	1,040	58	16	2,370	54
27.....	5.8	8.0	3	7	117	241	1,620	742	51	13	2,240	38
28.....	5.5	7.5	3	110	105	212	633	393	45	12	444	33
29.....	5.4	7.5	3	100	93	199	385	311	36	12	141	26
30.....	5.8	7.8	3	81	.....	183	311	318	32	a10	85	22
31.....	9.0	.....	2	56	.....	168	.....	237	.....	9.5	64	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Nov. 29 to Dec. 31, 1942, Jan. 1 to Feb. 4, Feb. 9 to Mar. 9, Dec. 11-31, 1943, Jan. 1-29, Feb. 5-25, Mar. 6-10, 1944.

South River near Ackworth, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	19	12	10	45	25	606	168	125	157	438	31	6
2.....	30	13	10	35	25	1,560	148	139	139	153	660	5
3.....	79	36	20	40	30	1,170	149	157	125	102	51	5
4.....	81	36	35	35	35	696	2,160	144	117	82	370	5
5.....	55	48	300	35	40	639	1,120	105	113	88	81	5
6.....	59	41	350	40	45	275	486	93	1,160	81	43	5
7.....	59	33	235	40	45	172	303	183	564	71	30	5
8.....	39	32	160	45	50	244	244	208	251	51	25	5
9.....	27	31	130	45	45	417	219	130	362	50	20	5
10.....	24	26	80	55	40	441	189	223	1,020	44	20	8
11.....	22	24	30	55	135	784	253	195	282	38	22	6
12.....	22	18	*50	60	805	1,190	1,030	141	183	32	20	6
13.....	20	18	70	60	1,270	492	474	124	162	32	19	6
14.....	19	17	55	65	1,560	343	450	7,970	146	31	27	5
15.....	18	17	45	65	1,510	5,840	268	5,410	208	29	14	5
16.....	17	17	45	70	770	4,740	8,590	1,010	1,470	29	12	5
17.....	16	17	70	80	195	1,450	4,290	2,660	564	29	11	5
18.....	15	17	55	95	185	723	934	1,280	260	27	10	5
19.....	13	15	55	150	170	1,620	480	504	199	20	8	5
20.....	13	17	50	155	185	794	468	379	2,770	18	8	5
21.....	13	20	45	155	172	411	390	462	570	15	8	4
22.....	13	20	40	145	168	303	280	303	273	14	7	8
23.....	13	22	50	130	185	258	248	195	185	25	7	8
24.....	13	19	50	120	212	230	234	164	153	45	7	7
25.....	12	24	40	110	489	4,590	225	4,300	256	15	7	7
26.....	12	40	40	100	639	2,190	195	1,680	148	14	7	8
27.....	12	60	35	80	567	645	162	564	117	11	6	12
28.....	12	45	40	65	579	334	157	438	119	10	6	43
29.....	11	20	45	55	.....	244	142	278	102	8	6	38
30.....	11	15	50	*45	.....	212	129	214	1,090	11	6	148
31.....	11	.....	60	35	.....	191	.....	179	.....	63	6	.....
1945-46												
1.....	175	5	63	6	280	111	244	65	216	179	67	68
2.....	111	5	212	6	200	119	195	170	108	116	67	58
3.....	51	5	168	7	150	122	166	726	69	60	65	49
4.....	29	5	60	22	300	151	137	2,210	68	44	65	50
5.....	19	5	24	500	1,000	164	122	359	55	41	67	67
6.....	12	5	30	5,000	*500	1,740	134	234	45	36	67	63
7.....	11	5	34	1,300	150	570	142	187	41	35	65	56
8.....	8	8	38	456	100	268	272	155	36	33	56	71
9.....	7	25	25	334	70	144	214	137	32	29	26	50
10.....	7	8	17	300	60	149	153	125	28	26	22	78
11.....	7	8	12	278	55	168	411	136	24	20	12	45
12.....	6	12	10	223	55	1,370	945	111	24	17	10	35
13.....	6	12	8	190	50	1,040	324	106	22	15	9	34
14.....	7	13	8	140	50	1,700	272	92	23	12	8	32
15.....	8	13	7	120	50	1,240	216	92	980	12	8	28
16.....	7	10	6	110	45	735	168	82	2,120	12	8	26
17.....	6	8	6	100	40	1,720	149	100	1,080	29	36	26
18.....	6	7	6	90	45	928	132	411	6,160	20	17	26
19.....	6	7	5	85	48	393	119	201	8,320	17	10	22
20.....	6	7	4	80	50	292	108	137	6,150	12	8	35
21.....	5	8	4	75	71	*251	99	100	819	9	116	39
22.....	5	8	4	70	74	225	83	93	393	8	914	93
23.....	5	7	4	65	90	1,260	356	83	260	8	272	63
24.....	6	7	4	60	98	1,540	270	83	187	8	2,700	53
25.....	6	7	4	55	98	579	130	98	168	12	6,320	47
26.....	5	8	4	55	35	4,670	99	68	141	12	1,260	28
27.....	5	*8	4	55	48	1,230	82	56	110	106	282	137
28.....	5	6	4	60	80	531	89	50	82	65	183	225
29.....	5	5	5	65	.....	379	82	45	71	67	134	270
30.....	5	8	6	150	.....	379	69	47	208	67	102	83
31.....	5	.....	6	250	.....	362	.....	1,270	.....	67	83	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 26 to Dec. 31, 1944, Jan. 1 to Feb. 19, Dec. 9-31, 1945, Jan. 1-6, Jan. 13 to Feb. 19, 1946.

South River near Ackworth, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	42	110	39	12	40	26	284	239	1,160	380	13	8.0
2.....	34	714	38	11	40	27	321	217	1,870	290	13	8.5
3.....	30	278	40	10	50	*27	258	180	660	230	12	7.5
4.....	28	145	45	6	45	28	8,650	161	3,250	206	11	6.5
5.....	26	103	60	5	40	30	7,220	142	26,800	g682	8.0	5.7
6.....	24	92	70	5	35	35	2,700	140	9,400	g842	10	5.7
7.....	24	99	68	6	30	40	766	137	2,450	g308	9.5	5.0
8.....	23	97	61	7	30	50	482	125	1,280	219	9.5	5.3
9.....	22	86	58	*10	30	65	380	118	914	158	8.5	5.0
10.....	114	208	54	11	35	80	4,210	112	714	132	8.5	5.0
11.....	175	258	45	24	40	100	4,690	110	558	116	9.5	6.5
12.....	94	118	40	45	65	238	814	107	5,660	116	8.5	9.0
13.....	51	*107	35	100	700	3,260	459	116	19,300	93	8.5	8.0
14.....	43	101	30	250	1,460	2,400	330	108	7,400	67	9.5	5.0
15.....	38	99	25	275	589	487	258	128	g1,270	65	8.0	4.7
16.....	37	118	30	145	424	273	327	136	g666	54	12	4.7
17.....	80	232	35	65	360	275	424	234	g622	49	9.5	2.7
18.....	1,950	145	32	45	110	313	278	208	1,920	47	8.5	3.4
19.....	712	140	*30	40	80	324	362	153	1,530	30	8.0	4.4
20.....	215	135	28	40	*60	324	1,700	120	3,170	33	8.0	4.4
21.....	132	107	26	45	50	512	1,390	116	9,020	24	9.5	5.7
22.....	99	92	25	55	45	369	508	114	12,800	25	8.0	6.0
23.....	83	75	24	75	40	567	407	122	6,160	22	7.0	5.3
24.....	386	70	24	95	35	g780	325	125	4,110	20	7.0	5.0
25.....	355	65	23	145	30	g702	280	170	g1,100	25	12	4.4
26.....	170	60	22	210	29	*333	253	236	g658	15	13	4.7
27.....	99	55	20	170	28	248	232	177	g477	19	9.0	4.0
28.....	74	50	17	116	27	232	220	2,690	g395	21	7.5	4.0
29.....	65	45	15	80	.....	215	219	6,550	3,170	18	7.0	4.0
30.....	64	40	14	60	.....	180	224	1,580	678	20	6.5	4.7
31.....	61	.....	13	50	.....	168	.....	627	.....	17	6.5	.....
1947-48												
1.....	5.3	g275	8	9	2	100	164	47	15	20	a154	5.0
2.....	9.0	102	9	10	3	90	132	g180	15	15	a78	3.4
3.....	5.3	38	19	11	*3	80	98	425	13	10	a45	3.0
4.....	20	24	295	11	3	70	88	197	11	11	a28	2.7
5.....	11	46	862	*12	3	65	98	g122	11	26	a19	2.5
6.....	6.0	18	312	13	3	60	130	1,050	10	14	a14	2.3
7.....	5.3	15	180	19	3	53	120	g494	9.5	9.0	a9.5	2.5
8.....	5.3	10	120	25	2	48	97	235	8.5	6.0	6.5	11
9.....	5.0	9.0	30	34	2	42	70	182	8.0	8.0	5.3	8.5
10.....	5.3	7.5	24	36	2	37	67	g282	8.0	5.7	4.4	5.3
11.....	4.4	5.7	20	50	2	32	74	184	10	4.4	5.0	4.0
12.....	4.0	5.3	16	46	2	30	71	146	8.0	7.0	4.7	2.6
13.....	4.7	4.0	14	40	2	32	57	122	8.0	5.3	4.0	2.0
14.....	4.7	4.0	18	30	2	60	57	108	7.5	g34	3.7	2.0
15.....	4.4	14	16	22	3	3,000	54	91	8.0	g34	3.4	1.9
16.....	4.7	50	14	13	14	g5,040	52	73	7.0	g38	4.0	1.9
17.....	4.4	42	14	8	40	g2,000	44	57	6.0	20	3.7	1.7
18.....	4.0	31	14	7	90	g930	40	44	6.0	12	3.7	1.6
19.....	4.0	28	15	7	100	g4,390	34	38	5.7	7.5	2.7	1.7
20.....	4.0	14	15	8	80	g2,720	30	34	5.3	6.0	2.7	g271
21.....	4.0	21	16	8	50	g746	30	39	7.0	g184	2.5	g321
22.....	4.7	17	15	6	36	g491	38	34	8.0	g84	2.4	29
23.....	5.3	9	15	3	30	356	g252	30	7.0	29	2.3	18
24.....	23	9	14	2	26	290	g320	26	6.0	18	2.3	9.5
25.....	24	7	13	2	35	252	g156	23	5.3	26	2.0	5.7
26.....	10	8	13	2	50	270	128	20	5.3	17	2.7	4.0
27.....	30	8	13	2	1,750	270	132	18	9.0	g236	9.0	3.4
28.....	42	9	14	2	2,800	197	100	17	g60	162	9.0	2.5
29.....	20	6	14	2	500	206	65	17	44	a135	5.3	2.0
30.....	g13	7	13	2	.....	173	57	15	33	89	9.0	2.3
31.....	g265	.....	10	2	.....	169	.....	16	.....	a104	13	.....

* Winter discharge measurement made on this day.

g Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Nov. 24 to Dec. 6, Dec. 11-31, 1946, Jan. 1-13, 16-22, Jan. 29 to Feb. 14, Feb. 19 to Mar. 11, Nov. 22 to Dec. 3, Dec. 8-31, 1947, Jan. 1 to Mar. 15, 1948.

South River near Ackworth, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	2.0	5.3	1.5	4.0	5.8	200	283	36	9.0	134	32	3.5
2.....	2.0	4.0	1.7	4.5	5.4	250	172	33	41	120	23	3.5
3.....	2.0	3.5	2.0	7.0	5.0	362	110	29	201	76	18	3.5
4.....	1.8	3.5	3.0	60	4.6	648	78	26	103	59	15	5.7
5.....	1.5	4.5	5.3	40	4.4	802	62	24	26	53	13	4.2
6.....	1.8	13	1.2	23	4.3	540	53	20	16	48	13	4.2
7.....	6.5	6.9	1.6	12	4.1	273	43	19	11	40	11	5.3
8.....	5.7	4.2	3.0	7.0	4.0	200	37	19	9.5	37	10	4.9
9.....	4.0	3.5	2.9	6.0	4.0	160	34	24	8.5	34	9.5	4.0
10.....	3.0	3.0	2.7	5.4	3.9	136	30	27	8.1	32	9.0	4.0
11.....	3.0	2.8	2.6	4.8	3.9	96	26	24	7.3	30	9.5	9.0
12.....	2.5	3.0	2.4	4.5	3.9	59	24	22	7.3	30	493	9.5
13.....	2.0	2.8	2.3	4.2	3.8	45	23	20	6.9	26	374	6.5
14.....	1.8	2.5	3.3	*4.0	3.7	31	20	22	403	26	43	5.3
15.....	1.5	2.5	3.0	100	*3.7	27	117	20	577	26	21	5.3
16.....	1.5	2.5	3.5	220	3.8	26	290	20	136	25	15	4.5
17.....	2.0	3.2	4.0	200	4.0	25	374	31	39	24	12	4.0
18.....	2.0	3.0	2.6	190	400	25	288	30	22	25	10	4.0
19.....	2.0	217	2.6	230	1,950	25	151	27	18	23	18	3.2
20.....	1.5	58	2.8	130	890	25	98	22	24	398	g174	2.5
21.....	2.0	13	3.1	90	512	79	81	26	392	761	31	2.2
22.....	2.2	8.1	3.3	60	398	614	141	326	743	213	15	2.0
23.....	2.0	6.5	2.3	45	960	458	129	213	g108	53	11	1.8
24.....	2.2	6.5	2.3	32	5,070	232	79	40	2,260	48	8.5	1.8
25.....	2.5	4.9	2.5	23	1,850	182	56	26	8,330	30	7.7	1.8
26.....	2.5	4.5	2.8	17	925	213	48	18	2,230	28	6.9	1.5
27.....	2.2	4.0	3.2	13	500	470	43	15	422	21	6.1	1.5
28.....	2.5	3.5	3.6	10	250	314	40	13	434	18	6.5	1.5
29.....	2.2	1.2	4.2	8.2	.....	156	38	12	422	20	6.1	2.0
30.....	6.9	1.5	5.0	7.0	.....	115	37	10	208	606	5.7	2.0
31.....	7.7	.....	4.5	6.2	.....	297	.....	9.5	.....	96	4.9	.....
1949-50												
1.....	1.8	3.0	3.3	6.6	4.0	2,490	21	16	68	29	8.9	4.4
2.....	2.0	2.0	2.8	6.4	4.0	800	20	16	49	27	8.0	3.8
3.....	2.0	2.3	3.0	6.2	4.0	740	19	14	55	31	8.4	4.2
4.....	3.0	2.3	3.0	6.0	4.0	1,200	19	14	53	30	9.4	3.6
5.....	3.0	2.3	1.8	5.9	4.2	1,460	42	40	43	27	9.4	3.6
6.....	3.3	2.6	2.2	5.7	150	625	50	65	38	32	49	2.8
7.....	3.3	2.8	2.4	5.6	600	315	54	25	32	28	22	2.6
8.....	3.0	2.8	2.1	5.5	2,000	102	42	22	28	25	74	3.6
9.....	2.6	3.0	1.9	5.4	2,280	53	g91	9,140	33	27	116	3.6
10.....	3.6	2.8	2.1	5.4	916	45	46	3,870	45	17	48	3.3
11.....	3.0	3.0	3.0	5.3	457	40	46	464	42	16	36	3.6
12.....	3.0	3.0	5.0	5.2	150	37	35	270	g743	14	33	4.2
13.....	2.6	5.8	*25	5.1	90	34	23	172	1,270	17	g135	3.6
14.....	2.6	4.8	14	5.0	50	32	21	129	3,070	20	56	3.3
15.....	2.6	3.8	10	5.0	27	31	17	120	2,790	13	33	2.8
16.....	2.1	3.3	8.0	4.9	*24	36	14	87	363	19	20	2.8
17.....	2.0	3.0	7.4	4.8	23	41	14	74	g177	22	16	2.8
18.....	1.8	3.0	7.0	4.7	22	33	14	74	4,120	98	12	3.0
19.....	2.6	3.3	7.0	4.7	22	12	14	65	4,900	70	9.4	3.3
20.....	4.2	3.3	7.0	4.6	22	45	12	66	725	52	8.4	3.3
21.....	14	3.0	7.2	4.6	600	31	10	1,440	g281	60	8.9	2.8
22.....	13	2.6	7.2	4.5	815	27	9.4	828	g172	29	6.2	2.8
23.....	10	3.0	6.6	4.5	270	g304	43	g235	129	19	5.2	2.8
24.....	6.2	3.6	6.4	*4.5	110	165	14	g134	103	16	5.5	2.3
25.....	5.5	3.6	6.0	4.4	100	101	16	109	83	12	3.8	2.1
26.....	4.8	2.8	6.0	4.4	100	63	14	88	63	11	3.8	2.1
27.....	4.2	3.6	6.0	4.3	100	56	12	86	49	9.4	3.3	2.1
28.....	3.8	3.6	6.0	4.3	6,250	56	11	95	41	94	5.8	2.1
29.....	3.8	3.3	6.0	4.2	.....	32	12	105	38	9.4	6.6	3.8
30.....	3.6	3.3	6.2	4.0	.....	22	19	126	32	10	4.4	4.4
31.....	3.0	.....	6.6	4.0	.....	20	.....	87	.....	94	5.5	.....

* Winter discharge measurement made on this day.

g Computed from graph based on gage readings.

Note—Stage-discharge relation affected by ice Dec. 2, 3, 7-31, 1948, Jan. 1 to Feb. 18, Feb. 27 to Mar. 2, Mar. 8, 9, 13-20, Dec. 6-31, 1949, Jan. 1 to Feb. 8, Feb. 12-21, 24-27, Mar. 2, 3, 10-13, 1950.

South River near Ackworth, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff in inches
		Maximum	Minimum	Mean		
October 1942.....	761	96	16	24.5	0.052	0.06
November.....	2,438	400	31	81.3	.171	.19
December.....	2,575	450	30	83.1	.175	.20
Calendar year 1942.....	75,407	4,390	9.0	207	.436	5.90
January 1943.....	2,805	170	50	90.5	.191	.22
February.....	5,467	1,400	22	195	.411	.43
March.....	4,065	697	20	131	.276	.32
April.....	4,031	576	49	134	.282	.32
May.....	14,583	2,800	66	470	.989	1.15
June.....	18,773	3,860	34	626	1.32	1.48
July.....	1,973.8	302	6.8	63.7	.134	.15
August.....	3,882.6	1,000	7.0	125	.263	.31
September.....	1,055.2	241	6.2	35.2	.074	.08
Water year 1942-43.....	62,409.6	3,860	6.2	171	.360	4.91
October 1943.....	182.6	9.0	5.2	5.89	.012	.01
November.....	362.7	42	6.0	12.1	.025	.03
December.....	181.2	18	2	5.85	.012	.01
Calendar year 1943.....	57,362.1	3,860	2	157	.331	4.51
January 1944.....	433	110	2	14.0	.029	.03
February.....	1,132	170	3	39.0	.082	.09
March.....	8,174	1,410	50	264	.556	.64
April.....	32,930	4,220	63	1,098	2.31	2.58
May.....	38,121	6,210	149	1,230	2.59	2.98
June.....	19,212	6,540	32	640	1.35	1.50
July.....	951.3	151	8.0	30.7	.065	.07
August.....	6,263.5	2,370	7.0	202	.425	.49
September.....	1,474.0	209	7.2	49.1	.103	.12
Water year 1943-44.....	109,417.3	6,540	2	299	.629	8.55
October 1944.....	780	81	11	25.2	.053	.06
November.....	770	60	12	25.7	.054	.06
December.....	2,350	350	10	75.8	.160	.18
Calendar year 1944.....	112,560.8	6,540	2	308	.648	8.80
January 1945.....	2,310	155	35	74.5	.157	.18
February.....	10,176	1,560	25	363	.764	.80
March.....	33,804	5,840	172	1,090	2.29	2.65
April.....	24,585	8,590	129	820	1.73	1.92
May.....	29,957	7,970	93	966	2.03	2.35
June.....	13,265	2,770	102	442	.931	1.04
July.....	1,676	438	8	54.1	.114	.13
August.....	1,555	660	6	50.2	.106	.12
September.....	390	148	4	13.0	.027	.03
Water year 1944-45.....	121,618	8,590	4	333	.701	9.52
October 1945.....	552	175	5	17.8	.037	.04
November.....	245	25	5	8.17	.017	.02
December.....	792	212	4	25.5	.054	.06
Calendar year 1945.....	119,307	8,590	4	327	.688	9.34
January 1946.....	10,307	5,000	6	332	.699	.81
February.....	3,892	1,000	35	139	.293	.30
March.....	24,530	4,670	111	791	1.67	1.92
April.....	5,982	945	69	199	.419	.47
May.....	7,829	2,210	45	253	.533	.61
June.....	28,040	8,320	22	935	1.97	2.20
July.....	1,194	179	8	38.5	.081	.09
August.....	13,059	6,320	8	421	.886	1.02
September.....	1,957	270	22	65.2	.137	.15
Water year 1945-46.....	98,379	8,320	4	270	.568	7.69

South River near Ackworth, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1946.....	5,350	1,950	22	173	0.364	0.42
November.....	4,046	714	40	135	.284	.32
December.....	1,086	70	13	35.0	.074	.08
Calendar year 1946.....	107,272	8,320	6	294	.619	8.39
January 1947.....	2,213	275	5	71.4	.150	.17
February.....	4,547	1,460	27	162	.341	.36
March.....	12,708	3,260	26	410	.863	.99
April.....	39,271	8,950	219	1,309	2.76	3.07
May.....	15,504	6,550	107	500	1.05	1.21
June.....	129,162	26,800	395	4,305	9.06	10.11
July.....	4,344	842	15	140	.295	.34
August.....	286.0	13	6.5	9.23	.019	.02
September.....	162.8	9.0	2.7	5.43	.011	.01
Water year 1946-47.....	218,679.8	26,800	2.7	599	1.26	17.10
October 1947.....	561.8	265	4.0	18.1	.038	.04
November.....	843.5	275	4.0	28.1	.059	.07
December.....	2,165	862	8	70.0	.147	.17
Calendar year 1947.....	211,768.1	26,800	2.7	580	1.22	16.56
January 1948.....	444	50	2	14.3	.030	.03
February.....	5,638	2,800	2	194	.408	.44
March.....	22,299	5,040	30	719	1.51	1.75
April.....	2,855	320	30	95.2	.200	.22
May.....	4,366	1,050	15	141	.297	.34
June.....	365.1	60	5.3	12.2	.026	.03
July.....	1,376.9	236	4.4	44.4	.093	.11
August.....	460.8	154	2.0	14.9	.031	.04
September.....	734.0	321	1.6	24.5	.051	.06
Water year 1947-48.....	42,109.1	5,040	1.6	115	.242	3.30
October 1948.....	85.0	7.7	1.5	2.74	.0058	.007
November.....	402.4	217	1.2	13.4	.028	.03
December.....	92.8	5.3	1.2	2.99	.0063	.007
Calendar year 1948.....	39,119.0	5,040	1.2	107	.225	3.06
January 1949.....	1,567.8	230	4.0	50.6	.107	.12
February.....	13,777.3	5,070	3.7	492	1.04	1.08
March.....	7,085	802	25	229	.482	.55
April.....	3,005	374	20	100	.211	.24
May.....	1,203.5	326	9.5	38.8	.082	.09
June.....	17,222.6	8,330	6.9	574	1.21	1.35
July.....	3,160	761	18	102	.215	.25
August.....	1,432.4	493	4.9	46.2	.097	.11
September.....	114.7	9.5	1.5	3.82	.0080	.009
Water year 1948-49.....	40,148.5	8,330	1.2	135	.284	3.84
October 1949.....	126.0	14	1.8	4.06	.0085	.01
November.....	94.6	5.8	2.0	3.15	.0066	.007
December.....	188.2	25	1.8	6.07	.013	.01
Calendar year 1949.....	48,977.1	8,330	1.8	134	.282	3.83
January 1950.....	155.7	6.6	4.0	5.02	.011	.01
February.....	15,198.2	6,250	4.0	543	1.14	1.19
March.....	9,048	2,460	12	292	.615	.71
April.....	774.4	91	9.4	25.8	.054	.06
May.....	18,076	9,140	14	583	1.23	1.42
June.....	19,635	4,900	28	654	1.38	1.54
July.....	977.8	98	9.4	31.5	.066	.08
August.....	770.9	135	3.3	24.9	.052	.06
September.....	95.5	4.4	2.1	3.18	.0067	.007
Water year 1949-50.....	65,140.3	9,140	1.8	178	.375	5.10

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 on downstream side of 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 square miles.

RECORDS AVAILABLE.—July 1945 to September 1950.

GAGE.—Water-stage recorder. Prior to Feb. 18, 1949, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—5 years, 215 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1945-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1944-45 ⁽¹⁾	Aug. 2	(²)300	4.20	Sept. 7-9	3.5
1945-46...	June 20	(³)8,000	(⁴)	Oct. 31	4.8
1946-47...	June 6	14,000	(³)19.6	Aug. 26	2.1
1947-48...	Mar. 16	2,730	(⁵)	Aug. 26, Sept. 19	1.0
1948-49...	June 25	6,580	16.38	Sept. 25, 26	1.0
1949-50...	May 10	9,100	17.95	Oct. 1, 2	1.0

(1) Period July to September, 1945.

(2) Daily.

(3) Observed.

(4) Maximum gage height 18.12 feet Jan. 6 (ice jam).

(5) Maximum gage height 16 feet Feb. 27 (ice jam).

1945-50: Maximum discharge, 14,000 second-feet June 6, 1947 (gage height, 19.6 feet); minimum, 0.8 second-foot Oct. 1, 1949.

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

COOPERATION.—Services of observer and several discharge measurements furnished by Corps of Engineers.

Whitebreast Creek near Knoxville, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....											18	6.3
2.....											300	5
3.....											30	4.5
4.....											150	4
5.....											50	3.8
6.....												
7.....											31	3.8
8.....											18	3.5
9.....											18	3.5
10.....											16	3.5
											14	6.7
11.....												
12.....											14	37
13.....											15	21
14.....											13	12
15.....											13	12
											13	12
16.....												
17.....											9.5	10
18.....											9.1	9.5
19.....											10	8.7
20.....											18	6.7
											9.1	5.5
21.....												
22.....											9.1	4.8
23.....											5.2	16
24.....											5.5	15
25.....											32	22
											41	44
26.....												
27.....										51	5	26
28.....										9.5	5	29
29.....										96	5	105
30.....										9.5	5	190
31.....										10	5	198
										35	7.1	
1945-46												
1.....	478	8.7	76	8	460	100	219	46	68	181	16	50
2.....	378	9.1	792	10	410	106	149	50	53	108	14	41
3.....	252	5.5	268	12	260	117	120	622	46	67	11	34
4.....	56	5.5	102	*19	250	144	92	517	39	47	10	30
5.....	42	5.2	53	1,000	1,400	1,660	77	508	35	38	28	35
6.....	37	10	62	4,000	*872	1,780	90	175	30	33	21	42
7.....	31	9.5	62	5,000	326	1,270	83	125	30	28	22	38
8.....	24	69	57	3,050	177	375	1,660	98	22	28	120	28
9.....	22	375	39	435	97	290	760	84	22	28	43	28
10.....	19	49	35	324	120	225	245	79	17	23	11	42
11.....	19	38	25	280	128	232	769	73	17	23	14	28
12.....	18	31	20	250	109	2,160	1,710	70	16	17	11	23
13.....	17	78	16	240	83	1,320	706	64	17	14	10	23
14.....	19	49	14	248	128	714	604	73	14	12	9.5	20
15.....	19	34	12	240	200	1,720	211	67	2,690	30	9.8	23
16.....	24	26	10	240	96	908	144	65	1,080	16	9.8	20
17.....	18	26	8	232	110	2,770	124	54	300	53	98	16
18.....	17	22	8	200	81	1,170	103	152	3,620	56	35	14
19.....	16	13	8	207	70	559	92	187	5,540	41	17	14
20.....	18	21	7	188	51	375	81	93	7,260	33	8.6	14
21.....	16	22	7	172	72	295	76	67	3,310	18	8.9	28
22.....	13	20	6	165	83	239	71	57	760	16	580	21
23.....	13	14	7	150	83	550	94	52	267	12	185	179
24.....	11	12	7	135	76	2,040	77	54	166	8.6	766	65
25.....	11	14	7	130	96	868	79	57	136	10	2,300	37
26.....	6.3	18	7	120	130	2,380	57	46	121	10	1,970	27
27.....	8.3	*20	7	110	*94	850	48	45	90	285	511	23
28.....	8.3	14	7	115	83	520	58	38	76	109	136	140
29.....	10	17	8	120		308	56	38	63	48	98	62
30.....	13	22	10	260		288	48	39	126	35	80	121
31.....	4.8		8	435		325		372		22	64	

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 21-28, Dec. 10-31, 1945, Jan. 1-7, Jan. 22 to Feb. 5, 1946.

Whitebreast Creek near Knoxville, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	44	94	32	6	80	24	208	222	791	425	8.8	4.2
2.....	31	183	33	4	60	24	236	232	2,080	232	7.8	4.0
3.....	26	155	35	3	45	25	169	182	1,260	182	7.4	3.8
4.....	21	115	40	3	40	28	3,950	133	1,130	147	7.0	3.8
5.....	18	81	45	3	35	30	4,940	102	10,200	144	7.0	3.8
6.....	16	66	50	3	30	35	4,280	99	8,920	515	5.6	4.2
7.....	13	67	50	4	30	50	1,140	90	4,960	178	5.8	3.4
8.....	13	65	47	5	30	80	539	80	1,400	113	5.8	3.4
9.....	13	57	47	*6	30	150	389	75	740	89	4.8	3.4
10.....	12	128	42	8	30	300	3,980	75	500	78	4.8	3.4
11.....	103	97	40	15	32	500	2,990	75	401	78	4.2	4.2
12.....	47	88	36	23	35	700	2,350	74	1,620	65	4.4	3.7
13.....	54	*70	32	45	60	1,600	590	74	5,140	61	4.4	3.7
14.....	33	63	28	70	1,000	1,000	380	78	3,500	49	4.4	3.6
15.....	27	63	27	100	500	600	282	72	3,440	44	4.2	3.4
16.....	22	66	26	90	300	200	440	86	1,070	35	4.8	3.4
17.....	20	98	25	80	80	139	644	82	590	32	4.8	3.2
18.....	1,590	69	22	70	70	124	377	107	980	35	4.2	3.3
19.....	268	88	18	60	60	124	1,020	84	881	35	4.2	3.3
20.....	224	68	*15	50	50	128	3,620	67	2,610	27	4.4	3.3
21.....	106	64	15	45	40	220	2,090	58	4,020	22	4.4	3.7
22.....	82	56	15	45	35	200	896	55	7,050	19	4.2	3.4
23.....	71	50	18	44	30	282	509	55	6,550	16	3.7	3.3
24.....	67	45	21	52	28	614	335	56	4,930	16	4.2	3.2
25.....	78	43	23	83	26	917	247	97	2,190	14	7.2	2.9
26.....	66	40	20	94	25	*383	202	121	740	14	2.1	2.9
27.....	59	38	17	*75	24	220	166	79	515	14	6.6	3.0
28.....	56	35	15	61	24	404	138	1,130	500	22	4.8	2.9
29.....	52	32	12	82	.....	144	133	4,940	1,440	21	4.2	2.9
30.....	49	32	10	100	.....	107	159	2,610	650	18	4.4	2.9
31.....	45	.....	7	120	.....	111	.....	1,800	.....	14	4.2	.....
1947-48												
1.....	3.9	77	5	5	2	220	64	61	9.5	23	4.5	18
2.....	3.9	34	6	5	2	100	58	374	9.5	15	3.3	9.0
3.....	4.2	54	7	6	*2	60	54	599	7.0	12	4.5	5.0
4.....	9.5	27	30	6	2	50	48	285	6.5	9.0	3.3	3.3
5.....	10	23	290	*6	3	40	49	140	6.5	6.5	2.8	2.4
6.....	8.0	16	530	6	3	35	60	374	6.5	5.5	3.0	2.0
7.....	8.5	13	150	7	3	32	56	272	6.0	4.2	3.0	1.8
8.....	7.5	10	84	8	3	30	56	68	6.0	18	2.6	12
9.....	6.0	8.0	58	10	3	29	38	105	5.5	9.5	2.2	6.0
10.....	5.0	7.5	34	13	3	28	38	164	5.5	5.0	2.0	7.5
11.....	3.9	7.0	24	24	3	27	41	98	5.0	4.2	2.4	3.9
12.....	3.9	7.0	18	28	3	26	41	88	4.5	4.5	2.0	3.0
13.....	3.6	7.0	16	22	3	28	36	77	4.5	6.5	2.0	2.4
14.....	3.3	6.0	14	18	3	37	36	68	7.0	22	2.0	2.0
15.....	3.0	10	13	10	3	1,500	34	62	5.0	68	2.2	1.6
16.....	3.0	13	12	6	20	2,600	36	53	4.2	101	2.0	1.6
17.....	3.0	12	11	5	70	1,520	22	37	4.5	34	1.8	1.6
18.....	2.8	14	10	4	100	752	22	36	4.5	27	1.8	1.2
19.....	2.8	11	9	3	150	1,830	18	30	4.2	18	2.2	1.0
20.....	3.0	9.5	9	3	110	1,720	18	25	3.9	10	2.2	11
21.....	3.0	14	9	2	90	1,010	18	25	4.2	50	2.0	198
22.....	3.0	13	10	2	50	638	694	42	4.5	62	1.8	20
23.....	3.0	12	10	2	50	247	716	26	4.5	30	1.6	8.5
24.....	8.5	8.0	10	2	60	181	239	19	3.9	9.5	1.4	4.5
25.....	10	7.0	9	2	70	147	140	16	4.2	24	1.2	3.0
26.....	9.5	6	9	2	90	134	146	14	3.9	120	1.0	2.6
27.....	8.0	6	9	2	1,200	115	122	14	4.2	505	3.0	2.0
28.....	15	5	9	2	2,500	99	94	12	7.0	42	2.2	1.4
29.....	9.0	5	8	2	1,100	87	69	12	53	13	1.8	1.4
30.....	8.5	5	7	2	.....	76	68	11	51	8.0	16	1.2
31.....	110	.....	6	2	.....	76	.....	10	.....	5.0	127	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 24 to Dec. 6, Dec. 12-31, 1946, Jan. 1-22, Jan. 30 to Mar. 6, Nov. 26 to Dec. 4, Dec. 10-31, 1947, Jan. 1 to Mar. 15, 1948.

Whitebreast Creek near Knoxville, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	1.4	4.2	2.4	3.7	7.2	192	398	36	9.6	162	28	2.3
2.....	1.6	4.2	2.2	3.5	6.8	*186	206	34	70	99	19	1.8
3.....	1.6	3.6	2.2	3.5	6.6	237	139	30	50	58	13	1.8
4.....	1.4	3.6	2.0	80	6.2	358	104	30	69	45	11	2.0
5.....	1.4	3.9	2.2	56	6.1	575	91	25	37	37	9.0	2.3
6.....	1.6	3.6	2.6	37	6.0	670	79	22	20	31	8.0	2.6
7.....	2.4	3.6	2.4	24	6.0	346	71	18	13	27	7.5	2.3
8.....	2.8	3.0	2.2	15	5.8	255	59	19	9.6	23	6.6	2.3
9.....	2.6	2.8	2.0	10	5.8	266	50	23	8.0	20	5.7	2.3
10.....	2.4	2.8	1.8	6.6	5.6	165	49	22	7.0	17	7.0	2.3
11.....	2.2	2.4	1.7	4.5	5.6	113	46	22	6.2	15	6.2	5.7
12.....	2.2	2.4	1.8	4.2	5.4	84	44	19	5.7	14	6.6	6.2
13.....	2.0	2.2	1.9	4.1	5.4	60	42	17	85	12	48	5.7
14.....	2.0	2.2	2.1	*4.1	5.4	44	46	15	510	12	25	9.6
15.....	2.0	1.8	4.2	50	*5.3	37	126	12	244	15	15	7.5
16.....	2.0	2.2	3.5	180	5.6	32	334	14	244	15	9.6	4.7
17.....	1.8	2.4	4.5	160	25	29	257	32	65	11	6.6	3.7
18.....	1.8	9.0	3.0	150	360	29	160	40	31	13	5.7	2.9
19.....	2.0	290	2.7	160	1,500	29	97	44	21	11	18	2.9
20.....	2.0	112	2.6	100	1,000	44	80	29	16	277	52	2.0
21.....	1.8	26	2.6	64	700	99	66	32	43	1,090	20	1.6
22.....	1.4	11	2.7	45	420	857	95	276	488	764	13	1.8
23.....	1.6	5.5	2.0	32	1,500	605	86	325	276	117	7.5	1.4
24.....	2.0	5.0	2.2	24	4,060	291	69	82	2,010	63	5.2	1.2
25.....	2.2	4.2	2.0	17	1,760	177	60	42	4,070	38	4.2	1.0
26.....	2.2	3.6	2.5	13	1,440	224	62	27	2,920	29	3.7	1.0
27.....	2.2	2.8	3.0	11	880	845	44	20	1,850	22	3.3	1.2
28.....	2.2	2.8	4.0	10	334	398	42	13	455	18	2.6	1.2
29.....	2.6	2.6	5.0	9.0	.....	188	36	11	371	17	2.6	1.2
30.....	5.5	2.4	4.6	8.4	.....	163	34	9.0	212	183	2.9	1.2
31.....	5.0	.....	4.2	7.8	.....	560	.....	8.0	.....	45	2.6	.....
1949-50												
1.....	1.0	2.3	3.7	3.8	4.2	1,540	32	41	66	40	8.2	11
2.....	1.0	2.3	3.3	3.9	4.2	985	30	41	68	218	7.5	8.8
3.....	1.4	2.3	3.7	4.0	4.2	255	32	37	68	56	7.0	8.2
4.....	1.4	2.0	3.3	4.2	4.8	350	46	35	78	44	9.3	7.5
5.....	1.4	2.0	3.3	4.1	6.0	600	68	34	60	56	9.3	8.2
6.....	1.6	2.0	3.3	4.0	100	400	75	27	52	54	30	4.2
7.....	1.6	2.3	2.9	3.8	700	300	76	26	40	43	39	3.2
8.....	1.8	2.3	2.7	3.6	1,290	120	66	31	37	38	33	3.2
9.....	1.6	2.3	2.9	3.4	1,580	*35	60	5,070	37	37	37	7.0
10.....	1.8	2.3	4.0	3.3	915	27	100	8,560	44	37	76	6.4
11.....	2.6	2.3	13	3.2	440	24	107	2,560	41	34	30	6.4
12.....	2.6	3.7	30	3.3	198	23	72	455	35	32	564	6.0
13.....	2.6	3.3	*22	15	109	22	50	229	894	28	209	7.0
14.....	1.8	3.3	17	55	50	21	37	159	1,060	26	37	5.5
15.....	2.0	2.9	13	50	25	20	33	130	1,890	23	26	5.5
16.....	2.0	2.9	11	36	*21	21	31	111	600	23	22	4.7
17.....	1.6	3.3	9.0	25	20	22	30	98	167	38	21	3.5
18.....	2.0	3.3	8.0	18	19	21	28	99	1,760	232	16	3.2
19.....	3.3	3.3	6.6	13	19	22	26	99	2,690	181	11	3.2
20.....	4.7	3.3	5.2	10	22	23	25	82	1,980	130	11	3.2
21.....	31	3.3	4.5	8.2	500	22	23	573	610	83	11	3.2
22.....	15	3.3	4.8	7.2	845	94	23	1,160	294	41	94	3.0
23.....	9.0	3.3	5.0	6.6	346	358	45	312	133	29	12	2.9
24.....	6.6	3.7	4.7	6.0	118	214	36	132	102	23	11	2.9
25.....	5.2	3.3	4.3	5.6	90	113	35	89	80	19	9.3	3.0
26.....	3.7	3.3	3.8	5.2	90	82	37	70	66	16	8.8	3.2
27.....	3.3	3.7	3.6	5.0	90	80	28	68	47	15	8.8	3.2
28.....	2.9	3.7	3.5	*4.8	4,200	68	24	102	40	13	12	3.3
29.....	2.9	3.7	3.5	4.5	.....	52	21	103	38	13	8.8	4.2
30.....	2.9	3.7	3.5	4.3	.....	38	34	95	35	9.3	8.8	3.5
31.....	2.6	.....	3.7	4.2	.....	34	.....	80	.....	8.8	14	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 8-31, 1948, Jan. 1 to Feb. 23, Mar. 13-19, Dec. 8, 10-31, 1949, Jan. 1 to Feb. 8, Feb. 13-21, 25-27, Mar. 4-21, 1950. Discharge computed from wire-weight gage readings Oct. 1 to Dec. 7, 1948, May 13-17, May 26 to June 12, Aug. 9-11, 14-21, Aug. 23 to Sept. 19, 1950.

Whitebreast Creek near Knoxville, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1945 to 1947

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
July 24-31, 1945.....	284	96	9.5	35.5	0.094	0.03
August.....	831.5	300	5.0	26.8	.071	.08
September.....	828.8	198	3.5	27.6	.073	.08
October.....	1,838.7	478	4.8	52.9	.139	.16
November.....	1,057.5	375	5.2	35.2	.093	.10
December.....	1,755	792	6	56.6	.149	.17
January 1946.....	18,095	5,000	8	584	1.54	1.77
February.....	6,145	1,400	51	219	.576	.60
March.....	26,856	2,770	100	860	2.26	2.61
April.....	8,703	1,710	48	290	.763	.85
May.....	4,066	622	38	131	.345	.40
June.....	26,031	7,260	14	868	2.28	2.55
July.....	1,449.6	285	8.6	46.8	.123	.14
August.....	7,217.6	2,300	8.6	233	.613	.71
September.....	1,266	179	14	42.2	.111	.12
Water year 1945-46.....	104,082.4	7,260	4.8	285	.750	10.18
October 1946.....	3,326	1,590	12	107	.282	.33
November.....	2,216	183	32	74	.195	.22
December.....	863	50	7	28	.074	.08
Calendar year 1946.....	106,036.2	7,260	7	290	.763	10.38
January 1947.....	1,449	120	3	47	.124	.14
February.....	2,829	1,000	24	101	.266	.28
March.....	9,463	1,600	24	305	.803	.93
April.....	37,399	4,940	133	1,247	3.28	3.65
May.....	13,090	4,940	55	422	1.11	1.28
June.....	80,798	10,200	401	2,693	7.09	7.81
July.....	2,754	515	14	89	.234	.27
August.....	158.8	8.8	2.1	5.1	.013	.02
September.....	703.6	4.2	2.9	3.5	.009	.01
Water year 1946-47.....	154,449.4	10,200	2.1	423	1.11	15.02
October 1947.....	286.3	110	2.8	9.24	.024	.03
November.....	447.0	77	5	14.9	.039	.04
December.....	1,426	530	5	46.0	.121	.14
Calendar year 1947.....	150,203.7	10,200	2.1	412	1.08	14.60
January 1948.....	217	28	2	7.0	.018	.02
February.....	5,701	2,500	2	197	.518	.56
March.....	13,474	2,600	26	435	1.14	1.32
April.....	3,131	716	18	104	.274	.31
May.....	3,217	599	10	104	.274	.31
June.....	256.2	53	3.9	8.54	.022	.03
July.....	1,271.4	505	4.2	41.0	.108	.12
August.....	210.8	127	1.0	6.80	.018	.02
September.....	338.9	198	1.0	11.3	.030	.03
Water year 1947-48.....	29,976.6	2,600	1.0	81.9	.216	2.93

Whitebreast Creek near Knoxville, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1948 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1948.....	68.9	6.0	1.4	2.22	0.0058	0.007
November.....	527.8	200	1.8	17.6	.046	.05
December.....	84.8	5.0	1.7	2.74	.0072	.008
Calendar year 1948.....	28,498.8	2,600	1.0	77.9	.205	2.785
January 1949.....	1,297.4	180	3.5	41.9	.110	.13
February.....	14,073.8	4,060	5.3	503	1.32	1.38
March.....	8,158	857	29	263	.692	.80
April.....	3,072	398	34	102	.268	.30
May.....	1,348.0	325	8.0	43.5	.114	.13
June.....	14,216.1	4,070	5.7	474	1.25	1.39
July.....	3,300	1,090	11	106	.279	.32
August.....	375.1	52	2.6	12.1	.032	.04
September.....	85.7	9.6	1.0	2.86	.0075	.008
Water year 1948-49.....	46,607.6	4,070	1.0	128	.337	4.563
October 1949.....	124.9	31	1.0	4.03	.011	.01
November.....	88.7	3.7	2.0	2.96	.0078	.009
December.....	212.8	30	2.7	6.86	.018	.02
Calendar year 1949.....	46,352.5	4,070	1.0	127	.334	4.54
January 1950.....	328.2	55	3.2	10.6	.028	.03
February.....	11,711.4	4,200	4.2	418	1.10	1.15
March.....	5,986	1,540	20	193	.508	.59
April.....	1,350	107	21	44.3	.116	.13
May.....	20,708	8,560	26	668	1.76	2.03
June.....	13,022	2,660	35	434	1.14	1.27
July.....	1,640.1	232	8.8	52.9	.139	.16
August.....	1,401.8	564	7.0	45.2	.119	.14
September.....	148.3	11	2.9	4.94	.013	.01
Water year 1949-50.....	56,702.2	8,560	1.0	155	.408	5.55

Cedar Creek near Bussey, Iowa

LOCATION.—Lat. $41^{\circ}13'08''$, long. $92^{\circ}54'24''$, 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, 8.5 miles upstream from mouth.

DRAINAGE AREA.—384 square miles.

RECORDS AVAILABLE.—October 1947 to September 1950.

GAGE.—Water-stage recorder. Prior to Feb. 21, 1949, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—3 years, 184 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1948-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1947-48...	Feb. 28	15,900	24.90	Sept. 16	0.30
1948-49...	Feb. 24	7,800	21.58	Nov. 15	.8
1949-50...	May 9	29,300	27.50	Oct. 13, 14 Sept. 28-30	2.6

1948-50: Maximum discharge, 29,300 second-feet May 9, 1950 (gage height, 27.50 feet); minimum, 0.30 second-foot Sept. 16, 1948.

Flood of June 1946 reached a stage of 28.45 feet on upstream side and 28.05 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.—Services of observer and several discharge measurements furnished by Corps of Engineers.

Cedar Creek near Bussey, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1948 and 1949

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1947-48												
1.....	1.8	18	2.6	4	1	g138	102	59	7.8	29	14	58
2.....	2.7	13	3.0	4	1	82	35	g1,130	11	21	11	45
3.....	4.0	8.4	3.7	4	1	54	52	g986	12	18	10	36
4.....	6.8	5.8	g86	4	1	42	58	g290	11	11	8.8	16
5.....	5.8	5.0	g495	4	1	37	53	g191	9.8	5.8	8.4	7.4
6.....	5.8	3.4	g229	5	1	34	48	g249	7.4	5.8	9.5	1.8
7.....	3.7	2.4	g63	5	1	31	52	g420	4.7	6.2	7.4	1.4
8.....	2.2	2.6	g43	6	1	29	63	g198	8.1	4.0	6.8	3.7
9.....	3.2	2.3	30	7	1	28	32	150	9.1	2.6	5.5	1.5
10.....	3.0	2.2	20	8	1	26	43	191	4.2	3.7	4.4	2.6
11.....	2.7	2.2	16	12	1	25	59	196	6.8	4.4	5.2	1.9
12.....	1.8	1.9	14	19	1	24	43	167	8.1	4.4	4.7	1.5
13.....	2.4	2.0	13	27	1	23	31	144	7.4	g5.0	5.0	1.3
14.....	2.7	2.0	12	30	2	g39	22	99	6.2	g16	4.4	7.7
15.....	2.7	2.6	11	23	2	g2,370	26	72	7.8	g30	5.0	.55
16.....	2.4	9.5	10	17	g50	g4,450	37	51	8.1	g33	4.4	.30
17.....	2.4	20	9	13	g1,450	g4,993	14	52	7.8	45	3.4	.45
18.....	2.4	12	9	10	g2,070	g489	18	49	6.8	g14	2.6	.60
19.....	2.2	6.5	8	7	1,220	g2,660	25	42	7.4	4.0	2.6	.55
20.....	2.3	6.2	8	5	g503	g2,900	29	33	7.1	2.0	2.7	g187
21.....	2.6	4.7	7	3	216	g705	23	43	7.8	g3.4	1.8	g987
22.....	2.4	4.2	7	2	99	592	g53	32	7.1	g85	1.8	g378
23.....	3.4	4.2	7	2	85	450	g1,060	29	8.1	g32	1.5	g47
24.....	3.4	4.2	6	1	g73	264	g1,110	25	21	18	1.4	18
25.....	4.7	3.7	6	1	g94	114	g280	24	7.8	g207	1.5	6.5
26.....	5.5	3.7	6	1	g216	111	196	20	8.1	g765	1.8	5.0
27.....	5.8	3.0	6	1	g2,900	123	154	23	7.4	g1,740	2.2	4.4
28.....	7.4	3.0	5	1	g9,240	49	80	18	18	g586	1.7	3.2
29.....	6.8	2.6	5	1	g1,380	62	61	20	29	g45	g13	2.3
30.....	6.8	2.4	5	1	.....	78	47	26	31	25	g81	1.9
31.....	18	.....	4	1	.....	68	.....	7.8	.....	17	g66	.....
1948-49												
1.....	2.2	3.2	4.7	8.4	33	1,110	685	69	363	165	20	6.2
2.....	1.8	4.0	3.2	7.4	33	916	398	57	1,100	810	16	5.6
3.....	2.0	4.4	3.7	7.2	33	727	291	48	522	165	14	5.6
4.....	2.3	4.2	5.0	300	33	1,190	229	42	119	89	12	5.6
5.....	4.4	5.5	7.4	220	33	2,160	194	47	67	67	11	5.6
6.....	5.5	23	8.8	160	33	1,250	169	44	48	57	9.8	5.6
7.....	12	18	11	120	32	538	147	40	37	54	9.4	5.6
8.....	14	8.8	6.5	80	32	458	126	40	28	45	9.0	5.6
9.....	7.4	7.4	4.9	60	32	660	113	50	26	39	8.2	5.4
10.....	5.0	5.8	4.4	43	32	320	103	53	23	35	8.6	5.4
11.....	3.0	8.1	4.1	36	32	220	96	42	21	30	8.6	9.8
12.....	2.6	6.2	4.0	34	32	134	94	35	20	28	154	49
13.....	3.0	4.2	4.0	33	32	110	92	33	31	35	93	88
14.....	2.7	1.7	7.0	*33	*32	90	106	30	31	35	25	26
15.....	2.3	.8	17	200	32	79	435	26	38	26	14	12
16.....	1.9	1.7	14	g2,000	34	72	510	29	28	22	12	7.9
17.....	1.9	g20	12	g673	45	66	360	43	17	20	9.8	6.6
18.....	2.2	g8.8	9.5	484	100	64	229	53	13	33	9.0	5.9
19.....	2.6	g665	7.5	280	2,500	62	152	28	11	33	12	5.6
20.....	2.7	g286	6.0	180	2,000	62	130	22	10	410	132	4.8
21.....	2.6	51	5.4	110	900	142	119	39	19	1,190	58	4.0
22.....	3.7	29	5.2	70	700	1,920	173	278	31	137	20	3.6
23.....	3.2	25	5.0	47	1,620	916	159	132	23	62	12	3.7
24.....	3.0	14	5.0	43	5,960	396	110	69	2,900	120	9.4	3.6
25.....	2.6	20	5.0	47	5,800	297	94	34	4,920	46	8.2	3.6
26.....	2.6	24	5.0	40	2,930	808	90	26	598	31	7.2	3.7
27.....	2.3	20	5.2	38	2,220	2,660	81	22	598	25	7.2	3.7
28.....	2.7	13	8.0	36	1,370	619	76	19	860	23	6.6	3.8
29.....	3.2	11	20	35	.....	320	70	17	560	23	6.2	3.7
30.....	3.0	5.5	16	34	.....	578	70	14	179	29	6.4	3.7
31.....	3.7	.....	12	34	.....	2,030	.....	14	.....	36	6.2	.....

* Winter discharge measurement made on this day.

g Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 8-31, 1947, Jan. 1 to Feb. 16, Feb. 22-25, Mar. 3-14, Dec. 9-31, 1948, Jan. 1-15, Jan. 19 to Feb. 22, Mar. 13, 14, 16-19, 1949. Discharge computed from wire-weight gage readings Oct. 1 to Dec. 31, 1948, Jan. 16-18, 1949.

Cedar Creek near Bussey, Iowa—Continued
Daily Discharge, in second-feet for Water Year 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1949-50												
1.....	3.6	4.0	5.9	25	6.8	2,980	58	g129	59	41	7.9	7.0
2.....	3.2	4.2	5.6	40	6.6	g302	57	g108	50	1,510	7.2	6.4
3.....	3.2	4.2	5.2	25	6.4	165	64	g89	277	205	6.6	5.6
4.....	3.1	4.4	5.2	16	6.4	291	104	g86	109	89	9.4	5.2
5.....	3.1	4.4	5.2	12	9.0	935	196	g78	60	83	12	4.8
6.....	3.1	4.0	5.2	10	600	660	175	g64	48	74	11	4.6
7.....	3.0	4.2	5.4	8.0	1,500	560	130	48	40	51	9.8	4.4
8.....	2.8	4.6	5.0	7.0	2,150	150	103	65	34	41	212	3.8
9.....	3.1	4.6	4.8	6.0	2,320	60	116	13,000	33	34	219	4.0
10.....	3.4	4.8	5.0	5.8	810	52	210	4,400	42	31	132	4.2
11.....	3.2	5.2	15	5.6	448	46	173	616	35	28	119	4.0
12.....	2.7	6.2	30	6.0	183	42	105	372	30	25	250	4.0
13.....	2.6	13	*20	100	*50	39	75	267	40	23	428	3.8
14.....	2.6	29	15	900	40	37	64	213	1,440	21	96	3.8
15.....	2.7	14	10	450	35	36	60	169	1,190	19	54	5.4
16.....	2.8	8.2	7.0	150	39	38	57	133	535	18	35	4.0
17.....	3.2	6.6	6.4	74	30	40	55	133	156	93	26	3.6
18.....	3.4	5.6	6.4	52	25	35	51	120	1,970	92	18	3.7
19.....	4.0	5.6	7.0	35	35	28	50	99	4,020	47	15	3.4
20.....	5.9	5.4	8.0	26	100	27	45	93	1,820	26	12	3.7
21.....	48	5.2	12	19	1,000	29	39	139	385	20	11	5.0
22.....	28	5.0	9.0	*14	g710	154	39	165	225	17	153	6.4
23.....	17	5.4	10	12	150	844	178	116	156	14	36	5.6
24.....	12	5.4	8.0	12	110	468	284	83	155	13	14	5.6
25.....	7.9	5.4	6.4	15	100	177	576	69	175	12	10	4.0
26.....	5.9	5.4	5.4	13	90	140	240	64	86	11	8.2	3.2
27.....	5.0	5.6	5.0	10	90	175	126	67	63	11	7.9	3.1
28.....	5.0	5.6	5.0	9.0	2,000	120	96	196	52	24	7.9	2.6
29.....	3.7	5.4	5.0	8.0	.....	77	87	138	48	9.8	7.6	2.6
30.....	3.8	5.6	5.0	7.4	.....	59	g100	96	42	9.0	7.2	2.6
31.....	4.0	.....	8.0	7.0	.....	56	.....	83	.....	8.2	7.2	.....

* Winter discharge measurement made on this day.
g Computed from graph based on gage readings.

Note—Stage-discharge relation affected by ice Dec. 11-31, 1949, Jan. 1 to Feb. 7, Feb. 13-21, 23-28, Mar. 8-18, 1950.

Cedar Creek near Bussey, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1948 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff in inches
		Maximum	Minimum	Mean	Per square mile	
October 1947.....	129.8	18	1.8	4.19	0.011	0.01
November.....	163.7	20	1.9	5.46	.014	.02
December.....	1,149.3	495	2.6	37.1	.097	.11
January 1948.....	229	30	1	7.4	.019	.02
February.....	19,703	9,240	1	679	1.77	1.91
March.....	17,090	4,450	23	551	1.43	1.66
April.....	3,906	1,110	14	130	.339	.38
May.....	5,036.8	1,130	7.8	192	.422	.49
June.....	303.9	31	4.2	10.1	.026	.03
July.....	3,832.3	1,740	2.0	124	.323	.37
August.....	299.5	81	1.4	9.66	.025	.03
September.....	1,821.62	987	.30	60.7	.158	.18
Water year 1947-48.....	53,664.92	9,240	.30	147	.383	5.21
October 1948.....	114.1	14	1.8	3.68	.0096	.01
November.....	1,299.3	665	.8	43.3	.113	.13
December.....	236.5	20	3.2	7.63	.020	.02
Calendar year 1948.....	53,872.0	9,240	.3	147	.383	5.23
January 1949.....	5,493.0	2,000	7.2	177	.461	.53
February.....	26,665	5,960	32	952	2.48	2.58
March.....	20,974	2,660	62	677	1.76	2.03
April.....	5,701	685	70	190	.495	.55
May.....	1,495	278	14	48.2	.126	.14
June.....	13,241	4,920	10	441	1.15	1.28
July.....	3,920	1,190	20	126	.328	.38
August.....	734.8	154	6.2	23.7	.062	.07
September.....	308.9	88	3.6	10.3	.027	.03
Water year 1948-49.....	80,182.6	5,960	.8	220	.573	7.75
October 1949.....	205.0	48	2.6	6.61	.017	.02
November.....	196.2	29	4.0	6.54	.017	.02
December.....	256.1	30	4.8	8.26	.022	.02
Calendar year 1949.....	79,190.0	5,950	2.6	217	.565	7.65
January 1950.....	2,079.8	900	5.6	67.1	.175	.20
February.....	12,650.2	2,320	6.4	452	1.18	1.23
March.....	8,822	2,980	27	285	.742	.85
April.....	3,713	576	39	124	.323	.36
May.....	21,588	13,000	48	696	1.81	2.09
June.....	13,375	4,020	30	446	1.16	1.30
July.....	2,700.0	1,510	8.2	87.1	.227	.26
August.....	1,949.9	428	6.6	62.9	.164	.19
September.....	130.1	7.0	2.6	4.34	.011	.01
Water year 1949-50.....	67,665.3	13,000	2.6	185	.482	6.55

Lakes in Des Moines River Basin

Springbrook Lake near Guthrie Center, Iowa

LOCATION.—Lat. 41°46', long. 94°28', in sec. 4, T. 80 N., R. 31 W., in Springbrook State Park, 7 miles northeast of Guthrie Center.

RECORDS AVAILABLE.—June 1936 to September 1950.

GAGE.—Staff gage read once daily. Datum of gage is 3.94 feet below crest of spillway of dam forming lake.

EXTREMES.—Maximum and minimum gage heights for the water years 1943-50 are contained in the following table:

Water Year	Maximum observed		Minimum observed	
	Date	Gage-height (feet)	Date	Gage-height (feet)
1942-43. . .	Aug. 11	5.00	July 13, 14	3.96
1943-44. . .	May 20	(¹)6.00	Oct. 1, 2	4.00
1944-45. . .	May 21	5.50	(²)	4.06
1945-46. . .	Jan. 5	5.50	(³)	4.06
1946-47. . .	June 1	7.00	Sept. 21-30	4.08
1947-48. . .	Mar. 19	4.80	(⁴)	4.08
1948-49. . .	Mar. 4, July 1	4.50	Oct. 5, 11-16, June 5-12	4.06
1949-50. . .	June 18	6.16	Oct. 1, 3-7, 9-11, Oct. 30 to Nov. 5	4.08

(1) From floodmark.

(2) Oct. 26-28, Nov. 17-25, Dec. 17-30, Apr. 1, 2.

(3) Oct. 22 to Nov. 3, June 11-17.

(4) 53 days scattered throughout the year.

1936-50: Maximum gage height observed, 7.00 feet July 25, 1942, June 1, 1947; minimum observed, 2.38 feet Aug. 31, 1936.

COOPERATION.—Services of observer furnished by Iowa State Conservation Commission.

Springbrook Lake near Guthrie Center, Iowa—Continued
Daily Gage height, in Feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	4.04	4.10	4.10	4.10	4.08	4.08	4.08	4.02	4.60	4.00	4.04	4.04
2.....	4.04	4.10	4.10	4.08	4.08	4.08	4.08	4.02	4.40	4.00	4.04	4.02
3.....	4.02	4.10	4.10	4.08	4.80	4.08	4.08	4.02	4.25	4.00	4.04	4.02
4.....	4.10	4.10	4.10	4.08	4.40	4.08	4.08	4.00	4.15	4.00	4.02	4.02
5.....	4.10	4.10	4.10	4.08	4.20	4.08	4.08	4.00	4.50	4.00	4.02	4.02
6.....	4.10	4.10	4.10	4.08	4.10	4.08	4.06	4.20	4.30	4.00	4.02	4.02
7.....	4.10	4.10	4.10	4.08	4.08	4.08	4.06	4.12	4.20	4.00	4.00	4.02
8.....	4.10	4.10	4.10	4.08	4.08	4.08	4.06	4.08	4.10	4.00	4.00	4.00
9.....	4.10	4.10	4.10	4.08	4.08	4.08	4.06	4.06	4.10	4.00	4.00	4.00
10.....	4.10	4.10	4.10	4.08	4.08	4.08	4.06	4.06	4.10	4.00	4.00	4.00
11.....	4.10	4.10	4.10	4.08	4.08	4.08	4.04	4.04	4.10	3.98	5.00	3.98
12.....	4.10	4.10	4.10	4.08	4.08	4.08	4.04	4.04	4.10	3.98	4.40	4.04
13.....	4.10	4.10	4.10	4.08	4.08	4.08	4.04	4.04	4.08	3.96	4.20	4.04
14.....	4.10	4.10	4.10	4.08	4.08	.....	4.04	4.04	4.08	3.96	4.10	4.04
15.....	4.10	4.10	4.10	4.08	4.08	.....	4.04	4.50	4.06	4.04	4.06	4.04
16.....	4.10	4.10	4.10	4.08	4.08	.....	4.04	4.90	4.06	4.04	4.04	4.04
17.....	4.10	4.08	4.10	4.08	4.08	.....	4.04	4.50	4.04	4.02	4.04	4.04
18.....	4.10	4.08	4.10	4.08	4.08	.....	4.04	4.30	4.04	4.00	4.02	4.04
19.....	4.10	4.08	4.10	4.08	4.08	.....	4.04	4.20	4.02	4.04	4.02	4.02
20.....	4.10	4.08	4.10	4.08	4.08	.....	4.04	4.15	4.02	4.04	4.04	4.02
21.....	4.10	4.08	4.10	4.08	4.08	4.20	4.04	4.10	4.02	4.04	4.04	4.02
22.....	4.10	4.08	4.10	4.08	4.08	4.20	4.04	4.08	4.02	4.04	4.08	4.02
23.....	4.10	4.08	4.10	4.08	4.08	4.20	4.04	4.08	4.02	4.04	4.06	4.00
24.....	4.10	4.08	4.10	4.08	4.08	4.20	4.04	4.08	4.02	4.04	4.06	4.00
25.....	4.10	4.08	4.10	4.08	4.08	4.20	4.04	4.08	4.02	4.02	4.20	4.00
26.....	4.10	4.08	4.10	4.08	4.08	4.20	4.04	4.08	4.02	4.02	4.10	4.00
27.....	4.10	4.08	4.10	4.08	4.08	4.18	4.02	4.08	4.02	4.02	4.08	4.00
28.....	4.10	4.08	4.10	4.08	4.08	4.16	4.02	4.06	4.02	4.30	4.06	4.00
29.....	4.10	4.10	4.10	4.08	.....	4.14	4.02	4.06	4.00	4.15	4.06	4.00
30.....	4.10	4.10	4.10	4.08	.....	4.12	4.02	4.06	4.00	4.06	4.04	4.00
31.....	4.10	.....	4.10	4.08	.....	4.10	.....	4.06	.....	4.04	4.04	.....
1943-44												
1.....	4.06	4.04	4.02	4.02	4.04	4.06	4.06	4.14	4.20	.....	.....	.....
2.....	4.00	4.04	4.02	4.02	4.04	4.06	4.06	4.20	4.10	.....	.....	.....
3.....	4.02	4.04	4.02	4.02	4.04	4.06	4.06	.....	4.10	.....	.....	.....
4.....	4.02	4.04	4.02	4.02	4.04	4.06	4.06	.....	4.40	.....	.....	.....
5.....	4.02	4.04	4.02	4.02	4.04	4.06	4.06	.....	4.30	.....	.....	.....
6.....	4.02	4.06	4.02	4.02	4.04	4.06	4.06	.....	4.30	.....	.....	.....
7.....	4.02	4.08	4.02	4.02	4.04	4.06	4.06	4.10	4.20	.....	.....	.....
8.....	4.02	4.08	4.02	4.02	4.04	4.06	4.06	4.08	4.20	.....	.....	.....
9.....	4.02	4.06	4.02	4.02	4.04	4.06	4.06	4.08	4.20	.....	.....	.....
10.....	4.02	4.06	4.02	4.02	4.04	4.08	4.06	4.08	4.10	.....	.....	.....
11.....	4.02	4.06	4.02	4.02	4.04	4.10	4.06	4.06	4.10	.....	.....	.....
12.....	4.02	4.06	4.02	4.02	4.04	4.08	4.06	4.06	4.10	.....	.....	.....
13.....	4.02	4.06	4.02	4.02	4.06	4.08	4.06	4.04	4.10	.....	.....	.....
14.....	4.02	4.04	4.02	4.02	4.06	4.08	4.06	4.04	4.08	.....	.....	.....
15.....	4.02	4.04	4.02	4.02	4.06	4.08	4.06	4.04	4.08	.....	.....	.....
16.....	4.02	4.04	4.02	4.02	4.06	4.08	4.06	4.06	4.08	.....	.....	.....
17.....	4.02	4.04	4.02	4.02	4.06	4.08	4.06	4.06	4.08	.....	.....	.....
18.....	4.02	4.04	4.02	4.02	4.06	4.08	4.08	4.60	.....	.....	.....	.....
19.....	4.02	4.04	4.02	4.02	4.06	4.08	4.12	4.50	.....	.....	.....	.....
20.....	4.02	4.04	4.02	4.02	4.06	4.08	4.16	6.20	.....	.....	.....	.....
21.....	4.02	4.02	4.02	4.02	4.08	4.08	4.18	5.60	.....	.....	.....	.....
22.....	4.02	4.02	4.02	4.02	4.12	4.08	4.14	5.40	.....	.....	.....	.....
23.....	4.02	4.02	4.02	4.04	4.08	4.08	4.12	5.20	.....	.....	.....	.....
24.....	4.02	4.02	4.02	4.04	4.08	4.08	4.10	5.00	.....	.....	.....	4.12
25.....	4.02	4.02	4.02	4.04	4.06	4.08	4.10	4.80	.....	.....	.....	.....
26.....	4.02	4.02	4.02	4.04	4.06	4.06	4.10	4.60	.....	.....	.....	.....
27.....	4.02	4.02	4.02	4.04	4.06	4.06	4.10	4.50	.....	.....	.....	.....
28.....	4.02	4.02	4.02	4.04	4.06	4.06	4.10	4.40	.....	.....	.....	.....
29.....	4.02	4.02	4.02	4.04	4.06	4.06	4.10	4.30	.....	.....	.....	.....
30.....	4.04	4.02	4.02	4.04	.....	4.06	4.10	4.20	.....	.....	.....	.....
31.....	4.04	.....	4.02	4.04	.....	4.06	.....	4.20	.....	.....	.....	.....

Springbrook Lake near Guthrie Center, Iowa—Continued
 Daily Gage height, in Feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1		4.10	4.08	4.08	4.08	4.10	4.06	4.14	4.42	4.10	4.08	4.08
2		4.08	4.08	4.08	4.08	4.20	4.06	4.14	4.18	4.10	4.32	4.08
3		4.08	4.08	4.08	4.08	4.18	4.08	4.12	4.18	4.10	4.20	4.08
4		4.08	4.08	4.08	4.08	4.16	4.10	4.12	4.16	4.08	4.12	4.08
5		4.08	4.08	4.08	4.08	4.12	4.12	4.12	4.16	4.08	4.10	4.08
6		4.08	4.08	4.08	4.08	4.08	4.14	4.10	4.16	4.08	4.10	4.08
7		4.08	4.08	4.08	4.08	4.12	4.16	4.10	4.14	4.08	4.10	4.08
8		4.08	4.08	4.08	4.08	4.18	4.12	4.10	4.14	4.08	4.10	4.08
9		4.08	4.08	4.08	4.08	4.36	4.12	4.10	4.14	4.08	4.08	4.10
10		4.08	4.08	4.08	4.08	4.18	4.12	4.12	4.16	4.08	4.10	4.10
11		4.08	4.08	4.08	4.12	4.20	4.18	4.12	4.14	4.08	4.10	4.10
12		4.08	4.08	4.08	4.16	4.12	4.16	4.10	4.14	4.08	4.10	4.10
13		4.08	4.08	4.08	4.16	4.12	4.16	4.16	4.14	4.08	4.10	4.10
14		4.08	4.08	4.08	4.14	4.14	4.14	4.76	4.12	4.08	4.10	4.10
15		4.08	4.08	4.08	4.12	4.32	4.10	4.36	4.12	4.08	4.12	4.10
16		4.08	4.08	4.08	4.10	4.18	4.10	4.26	4.14	4.08	4.12	4.10
17		4.06	4.06	4.08	4.10	4.16	4.14	4.26	4.14	4.12	4.10	4.10
18		4.06	4.06	4.08	4.12	4.10	4.12	4.26	4.14	4.12	4.10	4.10
19		4.06	4.06	4.08	4.12	4.10	4.10	4.24	4.14	4.12	4.10	4.10
20		4.06	4.06	4.08	4.12	4.08	4.10	4.24	4.14	4.10	4.10	4.10
21		4.06	4.06	4.08	4.10	4.08	4.10	5.50	4.12	4.10	4.10	4.10
22		4.06	4.06	4.08	4.10	4.08	4.16	4.44	4.14	4.10	4.10	4.10
23		4.06	4.06	4.08	4.12	4.10	4.26	4.34	4.14	4.10	4.10	4.08
24		4.06	4.06	4.08	4.12	4.10	4.18	4.34	4.16	4.10	4.10	4.10
25		4.06	4.06	4.08	4.12	4.10	4.14	4.24	4.14	4.10	4.10	4.10
26	4.06	4.10	4.06	4.08	4.12	4.10	4.12	4.22	4.12	4.08	4.10	4.10
27	4.06	4.08	4.06	4.08	4.12	4.08	4.12	4.32	4.10	4.08	4.10	4.14
28	4.06	4.08	4.06	4.08	4.10	4.08	4.14	4.20	4.10	4.08	4.08	4.10
29	4.08	4.08	4.06	4.08		4.08	4.14	4.18	4.12	4.08	4.08	4.10
30	4.08	4.08	4.06	4.08		4.08	4.14	4.32	4.12	4.10	4.08	4.08
31	4.10		4.08	4.08		4.08		4.30		4.08	4.08	
1945-46												
1	4.08	4.06	4.16	4.18	4.12	4.10	4.10	4.10	4.10	4.12	4.10	4.08
2	4.08	4.06	4.16	4.18	4.12	4.10	4.10	4.10	4.08	4.12	4.10	4.08
3	4.08	4.06	4.16	4.18	4.12	4.10	4.10	4.20	4.08	4.10	4.10	4.08
4	4.08	4.10	4.16	4.16	4.22	4.10	4.10	4.12	4.08	4.10	4.08	4.08
5	4.08	4.10	4.16	5.50	5.20	4.12	4.10	4.10	4.08	4.10	4.10	4.08
6	4.08	4.12	4.16	5.00	4.52	4.14	4.10	4.10	4.08	4.10	4.10	4.08
7	4.08	4.16	4.16	4.48	4.40	4.14	4.08	4.10	4.08	4.12	4.10	4.28
8	4.08	4.14	4.16	4.30	4.28	4.14	4.08	4.10	4.08	4.10	4.10	5.00
9	4.08	4.14	4.16	4.26	4.18	4.14	4.08	4.10	4.08	4.12	4.08	4.28
10	4.08	4.14	4.16	4.22	4.18	4.12	4.08	4.10	4.08	4.10	4.08	4.18
11	4.08	4.12	4.16	4.22	4.18	4.12	4.08	4.10	4.06	4.10	4.08	4.12
12	4.08	4.12	4.16	4.22	4.18	4.12	4.08	4.10	4.06	4.10	4.08	4.10
13	4.08	4.12	4.16	4.20	4.16	4.12	4.10	4.10	4.06	4.10	4.08	4.16
14	4.08	4.12	4.16	4.20	4.16	4.14	4.10	4.10	4.06	4.10	4.08	4.12
15	4.08	4.12	4.16	4.20	4.16	4.12	4.10	4.16	4.06	4.10	4.08	4.10
16	4.08	4.12	4.16	4.18	4.16	4.12	4.10	4.12	4.06	4.12	4.08	4.10
17	4.08	4.12	4.16	4.18	4.18	4.12	4.10	4.16	4.06	4.12	4.12	4.10
18	4.08	4.12	4.16	4.40	4.14	4.12	4.10	4.16	4.16	4.12	4.10	4.10
19	4.08	4.12	4.16	4.32	4.12	4.10	4.10	4.16	4.24	4.12	4.10	4.12
20	4.08	4.14	4.16	4.20	4.12	4.10	4.10	4.16	4.10	4.12	4.08	4.12
21	4.08	4.14	4.18	4.20	4.16	4.10	4.10	4.16	4.10	4.10	5.36	4.12
22	4.06	4.14	4.18	4.20	4.12	4.10	4.10	4.16	4.10	4.10	5.00	4.12
23	4.06	4.16	4.18	4.20	4.10	4.10	4.10	4.16	4.10	4.10	4.40	4.12
24	4.06	4.16	4.18	4.18	4.10	4.14	4.10	4.16	4.10	4.10	4.72	4.10
25	4.06	4.16	4.18	4.18	4.10	4.14	4.10	4.16	4.72	4.10	4.20	4.10
26	4.06	4.16	4.18	4.10	4.10	4.12	4.10	4.12	4.44	4.10	4.12	4.10
27	4.06	4.16	4.18	4.10	4.10	4.12	4.10	4.12	4.30	4.10	4.12	4.28
28	4.06	4.16	4.18	4.10	4.10	4.12	4.10	4.10	4.50	4.10	4.12	4.14
29	4.06	4.16	4.18	4.14		4.10	4.10	4.10	4.40	4.12	4.10	4.12
30	4.06	4.16	4.18	4.30		4.10	4.10	4.10	4.40	4.10	4.10	4.10
31	4.06		4.18	4.14		4.10		4.10		4.10	4.10	

Springbrook Lake near Guthrie Center, Iowa—Continued
 Daily Gage height, in Feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	4.10	4.14	4.12	4.10	4.10	4.10	4.10	4.16	7.00	4.14	4.10	4.10
2.....	4.10	4.14	4.12	4.10	4.10	4.12	4.10	4.16	5.50	4.12	4.10	4.10
3.....	4.10	4.12	4.12	4.10	.....	4.12	4.10	4.14	4.90	4.12	4.10	4.10
4.....	4.10	4.12	4.12	4.10	.....	4.12	4.16	4.12	4.60	4.64	4.10	4.10
5.....	4.10	4.12	4.12	4.10	.....	4.12	4.18	4.10	4.70	4.20	4.10	4.10
6.....	4.12	4.12	4.12	4.10	.....	4.12	4.14	4.10	4.38	4.16	4.10	4.10
7.....	4.12	4.12	4.12	4.12	.....	4.12	4.10	4.10	4.30	4.14	4.10	4.10
8.....	4.10	4.12	4.12	4.14	.....	4.12	4.18	4.10	4.30	4.12	4.10	4.10
9.....	4.10	4.12	4.12	4.14	.....	4.14	4.14	4.10	4.30	4.12	4.10	4.10
10.....	4.12	4.18	4.12	4.14	.....	4.14	4.36	4.10	4.28	4.12	4.10	4.10
11.....	4.14	4.14	4.12	4.14	.....	4.14	4.20	4.10	4.20	4.12	4.10	4.10
12.....	4.14	4.14	4.12	4.14	.....	4.16	4.14	4.10	5.50	4.10	4.10	4.10
13.....	4.12	4.12	4.12	4.14	4.18	4.22	4.14	4.12	4.50	4.12	4.10	4.12
14.....	4.10	4.12	4.12	4.14	4.18	4.18	4.14	4.12	4.30	4.12	4.10	4.10
15.....	4.10	4.12	4.12	4.14	4.18	4.14	4.14	4.20	4.28	4.12	4.10	4.10
16.....	4.10	4.12	4.12	4.14	4.16	4.12	4.14	4.16	4.26	4.14	4.10	4.10
17.....	4.10	4.12	4.10	4.14	4.16	4.12	4.14	4.24	4.20	4.14	4.10	4.10
18.....	4.30	4.12	4.10	4.14	4.16	4.12	4.14	4.16	4.90	4.14	4.10	4.10
19.....	4.20	4.12	4.10	4.14	4.16	4.14	4.16	4.14	4.20	4.14	4.10	4.10
20.....	4.18	4.12	4.10	4.14	4.14	4.14	4.18	4.14	4.18	4.12	4.10	4.10
21.....	4.14	4.12	4.10	4.12	4.14	4.14	4.16	4.14	4.20	4.12	4.10	4.08
22.....	4.12	4.12	4.10	4.14	4.14	4.12	4.16	4.16	4.18	4.12	4.10	4.08
23.....	4.12	4.12	4.10	4.14	4.10	4.12	4.16	4.16	4.16	4.12	4.10	4.08
24.....	4.22	4.12	4.10	4.14	4.10	4.12	4.14	4.14	4.16	4.12	4.10	4.08
25.....	4.18	4.12	4.10	4.14	4.10	4.12	4.14	4.14	4.16	4.10	4.10	4.08
26.....	4.14	4.12	4.10	4.12	4.10	4.10	4.14	4.16	4.16	4.10	4.10	4.08
27.....	4.12	4.12	4.12	4.12	4.10	4.10	4.14	4.18	4.14	4.10	4.10	4.08
28.....	4.12	4.12	4.10	4.12	4.10	4.10	4.14	4.30	4.14	4.10	4.10	4.08
29.....	4.12	4.12	4.10	4.12	.....	4.10	4.14	4.38	4.14	4.10	4.10	4.08
30.....	4.12	4.12	4.10	4.10	.....	4.10	4.16	4.38	4.14	4.10	4.12	4.08
31.....	4.12	.....	4.10	4.10	.....	4.10	.....	4.38	.....	4.10	4.10	.....
1947-48												
1.....	4.08	4.16	4.10	4.10	4.10	4.14	4.10	4.10	4.10	4.12	4.08	4.08
2.....	4.08	4.12	4.10	4.10	4.10	4.14	4.10	4.10	4.10	.....	4.10	4.08
3.....	4.08	4.12	4.12	4.10	4.10	4.12	4.10	4.10	4.10	4.10	4.08	4.08
4.....	4.10	4.12	4.13	4.10	4.10	4.12	4.10	4.10	4.10	4.10	4.08	4.08
5.....	4.10	4.12	4.13	4.10	4.10	4.12	4.10	4.10	4.10	4.10	4.08	4.08
6.....	4.10	4.12	4.12	4.10	4.10	4.12	4.10	4.10	4.10	4.10	.....	.....
7.....	4.10	4.12	4.12	4.12	4.10	4.12	4.10	4.10	4.08	4.10	4.08	.....
8.....	4.10	4.12	4.12	4.12	4.10	4.12	4.10	4.10	4.08	4.12	4.10	.....
9.....	4.10	4.12	4.12	4.12	4.10	4.12	4.10	4.10	4.08	.....	4.10	.....
10.....	4.10	4.12	4.10	4.12	4.10	4.12	4.10	4.10	4.08	4.28	4.10	.....
11.....	4.10	4.10	4.10	4.10	4.10	4.12	4.08	4.10	4.08	4.12	4.10	4.10
12.....	4.10	4.10	4.10	4.10	4.10	4.12	4.08	4.10	4.08	4.10	4.10	4.10
13.....	4.10	4.10	4.10	4.10	4.10	4.12	4.08	4.10	4.10	4.10	.....	4.10
14.....	4.10	4.12	4.10	4.10	4.10	4.20	4.08	4.10	4.10	4.10	4.10	4.10
15.....	4.10	4.12	4.10	4.10	4.14	4.40	4.08	4.10	4.10	4.10	4.16	4.10
16.....	4.10	4.12	4.10	4.10	4.10	4.70	4.08	4.10	4.10	.....	4.10	4.08
17.....	4.10	4.12	4.10	4.10	4.18	4.34	4.08	4.10	4.10	4.10	4.10	.....
18.....	4.10	4.12	4.10	4.10	4.18	4.70	4.08	4.10	.....	4.10	4.10	4.08
19.....	4.10	4.12	4.10	4.10	4.18	4.80	4.08	4.10	4.10	4.10	4.10	4.08
20.....	4.10	4.12	4.10	4.10	4.16	4.50	4.08	4.10	4.10	4.10	.....	4.08
21.....	4.10	4.12	4.10	4.10	4.10	4.30	4.08	4.10	4.10	4.10	4.08	4.08
22.....	4.10	4.12	4.10	4.10	4.14	4.16	4.08	4.10	4.10	4.10	4.08	4.08
23.....	4.10	4.10	4.10	4.10	4.14	4.12	4.10	4.10	4.10	.....	4.08	4.08
24.....	4.10	4.10	4.10	4.10	4.14	4.12	4.10	4.10	4.10	4.10	4.08	4.08
25.....	4.10	4.10	.....	4.10	4.14	4.12	4.12	4.10	.....	4.12	4.08	4.08
26.....	4.10	4.10	4.10	4.10	4.14	4.20	4.12	4.10	4.10	4.10	4.08	4.08
27.....	4.12	4.10	4.10	4.10	4.18	4.20	4.12	4.10	4.12	4.10	.....	4.08
28.....	4.12	4.10	4.10	4.10	4.18	4.10	4.10	4.10	4.14	4.10	4.08	4.08
29.....	4.14	4.10	4.10	4.10	4.16	4.10	4.10	4.10	4.12	4.12	4.10	4.08
30.....	4.14	4.10	4.10	4.10	.....	4.10	4.10	4.10	4.12	.....	4.10	4.08
31.....	4.16	.....	4.10	4.10	.....	4.10	.....	4.10	.....	4.10	4.08	.....

Springbrook Lake near Guthrie Center, Iowa—Continued
 Daily Gage height, in Feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....		4.10	4.10	4.10		4.18	4.16	4.08	4.08	4.50	4.08	4.08
2.....	4.08	4.08	4.10	4.10		4.18	4.12	4.08	4.10	4.20	4.08	4.08
3.....	4.08	4.08	4.12	4.10		4.18	4.10	4.08	4.10	4.10	4.08	4.08
4.....	4.08	4.10	4.12	4.10		4.50	4.10	4.08	4.10	4.10	4.08	4.08
5.....	4.06	4.12	4.12	4.10		4.48	4.10	4.08	4.06	4.08	4.08	4.08
6.....	4.08	4.12	4.12	4.10		4.18	4.10	4.10	4.06	4.08	4.08	4.12
7.....	4.08	4.10	4.10	4.10		4.16	4.10	4.10	4.06	4.08	4.08	4.12
8.....	4.08	4.10	4.10	4.10		4.16	4.10	4.10	4.06	4.08	4.08	4.10
9.....	4.08	4.10	4.10	4.10		4.12	4.10	4.10	4.06	4.08	4.08	4.10
10.....	4.08	4.10	4.10	4.10		4.12	4.10	4.10	4.06	4.08	4.08	4.10
11.....	4.06		4.10	4.10		4.12	4.10	4.10	4.06	4.08	4.08	4.10
12.....	4.06	4.10	4.10	4.10		4.12	4.10	4.10	4.06	4.08	4.08	4.14
13.....	4.06	4.10	4.10	4.10		4.10	4.10	4.10	4.10	4.08	4.08	4.10
14.....	4.06	4.10	4.10	4.10		4.10	4.10	4.10	4.10	4.08	4.08	4.08
15.....	4.06	4.10	4.10	4.14		4.10	4.10	4.10	4.10	4.08	4.08	4.08
16.....	4.06	4.10	4.10	4.16		4.10	4.10	4.10	4.10	4.08	4.08	4.08
17.....	4.08	4.10	4.10	4.10		4.10	4.10	4.10	4.08	4.08	4.08	4.08
18.....	4.08	4.10	4.10	4.10		4.10	4.10	4.10	4.08	4.08	4.08	4.08
19.....	4.08	4.16	4.10	4.10	4.28	4.10	4.10	4.10	4.08	4.08	4.20	4.08
20.....	4.08	4.16	4.10	4.10	4.20	4.12	4.10	4.10	4.08	4.16	4.12	4.08
21.....	4.08	4.16	4.10	4.10	4.20	4.12	4.10	4.10	4.10	4.10	4.10	4.08
22.....	4.08	4.16	4.10	4.10	4.16	4.20	4.10	4.16	4.10	4.10	4.10	4.08
23.....	4.08	4.16	4.10		4.16	4.18	4.10	4.10	4.10	4.10	4.08	4.08
24.....	4.08	4.12	4.10		4.30	4.14	4.10	4.10	4.10	4.10	4.08	4.08
25.....	4.08		4.10		4.30	4.14	4.08	4.10	4.10	4.10	4.08	4.08
26.....	4.08	4.10	4.10		4.30	4.14	4.08	4.10	4.10	4.10	4.08	4.08
27.....	4.08	4.10	4.10		4.30	4.18	4.08	4.10	4.10	4.10	4.08	4.08
28.....	4.08	4.10	4.10		4.20	4.18	4.08	4.10	4.12	4.10	4.08	4.08
29.....	4.08	4.10	4.10			4.18	4.08	4.08	4.10	4.10	4.08	4.08
30.....	4.08	4.10	4.10			4.18	4.08	4.08	4.10	4.10	4.08	4.08
31.....	4.08		4.10			4.30		4.08		4.08	4.08	
1949-50												
1.....	4.08	4.08			4.12	4.16	4.12	4.12	4.14	4.12	4.12	4.12
2.....	4.10	4.08		4.10	4.12	4.16	4.12	4.12	4.56	4.12	4.12	4.12
3.....	4.08	4.08		4.10	4.14	4.16	4.12	4.12	4.26	4.12	4.12	4.12
4.....	4.08	4.08		4.10	4.14	4.16	4.12	4.12	4.22	4.12	4.14	4.12
5.....	4.08	4.08		4.10	4.18		4.12	4.12	4.16	4.12	4.14	4.12
6.....	4.08			4.10	4.18		4.12	4.12	4.16	4.12	4.12	4.12
7.....	4.08			4.10	4.20	4.16	4.12	4.12	4.14	4.12	4.12	4.12
8.....	4.10			4.10		4.12	4.12	4.12	4.14	4.15	4.12	4.12
9.....	4.08			4.10		4.12	4.12	4.24	4.14	4.12	4.12	4.12
10.....	4.08			4.10		4.12	4.10	4.16	4.14	4.12	4.12	4.12
11.....	4.08			4.10		4.12	4.10	4.14	4.14	4.16	4.12	4.12
12.....	4.10			4.10		4.12	4.10	4.14	6.06	4.14	4.36	4.12
13.....	4.10			4.10		4.12	4.10	4.14	4.56	4.14	4.14	4.12
14.....	4.10			4.10		4.10	4.10	4.12	4.26	4.14	4.12	4.12
15.....	4.10			4.10		4.10	4.10	4.12	5.42	4.12	4.12	4.12
16.....	4.10		4.10	4.10		4.10	4.10	4.12	4.96	4.12	4.12	4.12
17.....	4.10		4.10	4.10		4.10	4.10	4.12	4.36	4.12	4.12	4.12
18.....	4.10		4.10	4.10		4.10	4.12	4.12	6.16	4.12	4.12	4.12
19.....	4.10		4.10	4.10		4.12	4.12	4.12	4.94	4.12	4.12	4.12
20.....	4.10		4.10	4.12		4.12	4.12	4.12	4.46	4.12	4.12	4.12
21.....	4.10		4.10	4.12		4.16	4.12	4.12	4.44	4.12	4.12	4.12
22.....	4.10		4.10	4.12		4.26	4.14	4.24	4.26	4.12	4.12	4.12
23.....	4.10		4.10	4.12		4.20	4.16	4.20	4.20	4.12	4.12	4.12
24.....	4.10		4.10	4.12		4.16	4.16	4.16	4.18	4.12	4.12	4.12
25.....	4.10			4.12		4.16	4.14	4.14	4.14	4.12	4.12	4.12
26.....	4.10		4.10	4.12		4.12	4.12	4.14	4.14	4.12	4.12	4.12
27.....	4.10		4.10	4.12	4.16	4.12	4.12	4.14	4.12	4.12	4.12	4.12
28.....	4.10		4.10	4.12	4.20	4.12	4.12	4.14	4.12	4.12	4.14	4.12
29.....	4.10		4.10	4.12	4.20	4.12	4.12	4.14	4.12	4.12	4.14	4.14
30.....	4.08		4.10	4.12		4.12	4.14	4.14	4.12	4.12	4.14	4.14
31.....	4.08		4.10	4.12		4.12		4.14		4.12	4.12	

Lakes in Des Moines River Basin

Lake Ahquabi near Indianola, Iowa

LOCATION.—Lat. $41^{\circ}17'20''$, long. $93^{\circ}35'25''$, in NW $\frac{1}{4}$ sec. 23, T. 75 N., R. 24 W., at Lake Ahquabi State Park, 5 miles southwest of Indianola.

RECORDS AVAILABLE.—June 1936 to September 1950.

GAGE.—Staff gage on concrete stilling well read once daily, at present site since June 17, 1936. Datum of gage is 5.0 feet below crest of spillway of dam forming the lake. Several staff gages in the vicinity and at the same datum have been used at various times.

EXTREMES.—Maximum and minimum gage heights for the water years 1943-50 are contained in the following table:

Water Year	Maximum observed		Minimum observed	
	Date	Gage-height (feet)	Date	Gage-height (feet)
1942-43...	May 15	6.75	July 28, Sept. 29	4.76
1943-44...	May 22	7.08	Jan. 17	4.28
1944-45...	Apr. 16	7.18	Sept. 21	4.58
1945-46...	Jan. 12	7.50	Nov. 7	4.70
1946-47...	June 5	9.95	Sept. 30	4.01
1947-48...	Mar. 15	6.22	Oct. 18-22	3.99
1948-49...	June 22	5.97	Oct. 29	4.12
1949-50...	June 18	5.40	Dec. 10	4.03

1936-50: Maximum gage height observed, 9.95 feet June 5, 1947; minimum observed, 3.50 feet Dec. 22-25, 1939.

COOPERATION.—Services of observer furnished by Iowa State Conservation Commission.

Lake Ahquabi near Indianola, Iowa—Continued

Daily Gage height, in Feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	5.04	5.05	5.26	5.32	5.16	5.16	5.24	5.57	5.35	4.99	4.95	4.90
2.....	5.03	5.05	5.26	5.30	5.16	5.15	5.23	5.56	5.34	4.97	4.95	4.87
3.....	5.11	5.04	5.25	5.28	6.10	5.13	5.22	5.55	5.31	4.96	5.03	4.96
4.....	5.11	5.04	5.24	5.24	5.82	5.12	5.20	5.54	5.27	4.98	5.01	4.88
5.....	5.10	5.08	5.23	5.20	5.68	5.12	5.18	5.53	5.62	4.97	5.00	4.99
6.....	5.09	5.08	5.22	5.18	5.90	5.11	5.17	5.68	5.43	4.96	4.98	4.98
7.....	5.09	5.08	5.18	5.16	5.47	5.10	5.18	5.67	5.28	4.94	5.55	4.95
8.....	5.08	5.08	5.15	5.14	5.29	5.09	5.18	5.64	5.21	4.93	5.35	4.93
9.....	5.07	5.27	5.13	5.14	5.38	5.08	5.21	5.63	5.72	4.92	5.25	4.91
10.....	5.06	5.30	5.12	5.13	5.36	5.08	5.29	5.64	5.58	4.91	5.18	4.89
11.....	5.05	5.26	5.11	5.12	5.30	5.08	5.64	5.63	5.85	4.89	5.13	4.87
12.....	5.05	5.24	5.10	5.11	5.28	5.09	5.56	5.61	5.58	4.87	5.21	4.89
13.....	5.04	5.22	5.10	5.10	5.25	5.09	5.45	5.59	5.49	4.86	5.15	4.89
14.....	5.03	5.22	5.09	5.10	5.21	5.10	5.40	5.56	5.52	4.84	5.10	4.88
15.....	5.02	5.22	5.09	5.15	5.20	5.20	5.37	6.75	5.55	4.82	5.06	4.90
16.....	5.02	5.22	5.08	5.17	5.17	5.28	5.39	6.02	5.58	4.92	5.02	4.88
17.....	5.01	5.22	5.09	5.14	5.15	5.26	5.37	5.62	5.55	4.90	4.99	4.87
18.....	5.00	5.22	5.10	5.10	5.13	5.21	5.36	5.60	5.51	4.87	4.97	4.85
19.....	5.00	5.23	5.10	5.10	5.15	5.16	5.34	5.54	5.47	4.89	4.95	4.85
20.....	5.00	5.24	5.10	5.04	5.17	5.11	5.32	5.62	5.42	4.87	4.94	4.84
21.....	4.98	5.24	5.10	4.96	5.19	5.10	5.30	5.53	5.38	4.86	4.93	4.83
22.....	4.97	5.24	5.11	5.05	5.18	5.13	5.29	5.49	5.32	4.84	5.01	4.82
23.....	4.95	5.25	5.12	5.17	5.22	5.16	5.30	5.46	5.28	4.82	4.99	4.82
24.....	4.93	5.27	5.15	5.18	5.20	5.28	5.29	5.49	5.23	4.83	4.19	4.81
25.....	4.92	5.27	5.14	5.12	5.21	5.24	5.43	5.44	5.17	4.81	5.22	4.80
26.....	4.90	5.27	5.16	5.10	5.18	5.26	5.46	5.41	5.13	4.80	5.14	4.79
27.....	4.89	5.26	5.78	5.08	5.17	5.22	5.66	5.39	5.07	4.78	5.10	4.78
28.....	4.88	5.26	5.58	5.12	5.18	5.20	5.58	5.36	5.10	4.76	5.07	4.77
29.....	4.88	5.26	5.48	5.15	.....	5.20	5.58	5.35	5.04	4.80	5.05	4.76
30.....	5.05	5.26	5.40	5.17	.....	5.23	5.58	5.36	5.62	4.79	5.33	4.80
31.....	5.05	.....	5.34	5.17	.....	5.25	.....	5.35	.....	4.97	5.00	.....
1943-44												
1.....	4.79	4.57	4.55	4.46	4.52	4.72	4.91	5.35	5.25	5.03	4.73	5.16
2.....	4.77	4.56	4.54	4.42	4.52	4.72	4.89	6.46	5.21	5.01	4.70	5.14
3.....	4.76	4.55	4.54	4.49	4.52	4.72	4.87	6.00	5.16	4.99	4.69	5.12
4.....	4.75	4.55	4.54	4.41	4.52	4.89	4.85	5.74	5.14	4.97	4.80	5.10
5.....	4.74	4.54	4.54	4.32	4.52	4.88	4.83	5.68	5.22	4.95	4.79	5.09
6.....	4.73	4.58	4.63	4.47	4.52	4.86	4.82	5.63	5.16	4.93	4.78	5.08
7.....	4.72	4.62	4.63	4.40	4.51	4.85	4.89	5.59	5.14	4.94	4.76	5.05
8.....	4.71	4.64	4.62	4.33	4.51	4.84	4.88	5.72	6.16	4.93	4.74	5.04
9.....	4.70	4.62	4.62	4.31	4.51	4.83	5.20	5.64	6.32	4.92	4.73	5.02
10.....	4.69	4.61	4.62	4.30	4.53	4.83	5.30	5.30	5.74	4.92	4.71	5.01
11.....	4.68	4.60	4.62	4.28	4.53	5.04	6.20	5.28	5.58	4.96	4.70	5.00
12.....	4.70	4.59	4.60	4.28	4.53	5.04	6.02	5.32	5.51	4.93	4.67	5.00
13.....	4.69	4.59	4.58	4.33	4.53	5.02	5.76	5.34	5.41	4.92	4.65	5.00
14.....	4.68	4.59	4.58	4.31	4.54	5.02	5.69	5.33	5.36	4.90	4.63	4.99
15.....	4.66	4.59	4.57	4.32	4.54	5.21	5.72	5.33	5.31	4.88	4.61	4.99
16.....	4.65	4.58	4.52	4.34	4.54	5.20	5.57	5.46	5.25	4.87	4.60	4.98
17.....	4.64	4.58	4.54	4.28	4.54	5.18	5.46	5.44	5.21	4.87	4.59	4.98
18.....	4.63	4.58	4.57	4.31	4.54	5.14	5.82	5.43	5.58	4.85	4.57	4.98
19.....	4.63	4.57	4.59	4.33	4.53	5.12	5.72	5.49	5.41	4.84	4.55	4.99
20.....	4.64	4.57	4.58	4.34	4.53	5.10	5.96	5.96	5.31	4.81	4.56	5.02
21.....	4.63	4.57	4.57	4.34	4.53	5.08	5.91	6.70	5.25	4.78	4.54	5.00
22.....	4.62	4.56	4.50	4.35	4.59	5.12	6.10	7.08	5.21	4.76	4.51	4.99
23.....	4.61	4.56	4.40	4.35	4.62	5.13	6.16	6.09	5.18	4.80	4.53	5.04
24.....	4.60	4.56	4.36	4.36	4.64	5.12	5.89	5.66	5.15	4.79	4.50	5.03
25.....	4.60	4.56	4.52	4.36	4.67	5.12	5.79	5.52	5.14	4.80	4.51	5.02
26.....	4.59	4.56	4.50	4.35	4.69	5.10	5.52	5.78	5.13	4.78	5.60	5.02
27.....	4.58	4.55	4.48	4.60	4.71	5.10	5.40	5.59	5.11	4.78	5.53	5.01
28.....	4.58	4.55	4.46	4.54	4.71	5.06	5.32	5.51	5.08	4.75	5.36	5.01
29.....	4.57	4.55	4.44	4.53	4.71	5.01	5.29	5.45	5.06	4.73	5.27	4.99
30.....	4.56	4.55	4.44	4.52	.....	4.96	5.31	5.39	5.05	4.71	5.22	4.98
31.....	4.58	.....	4.44	4.52	.....	4.93	.....	5.30	.....	4.69	5.19	.....

Lake Ahquabi near Indianola, Iowa—Continued

Daily Gage height, in Feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1	4.97	4.82	4.89	4.96	5.05	5.20	6.55	5.61	5.62	5.46	5.00	4.84
2	5.03	4.81	4.89	4.87	5.10	5.34	6.51	5.61	5.60	5.40	5.45	4.82
3	5.02	4.88	4.89	4.87	5.11	5.32	6.55	5.61	5.58	5.36	5.40	4.80
4	5.02	4.87	4.96	4.94	5.11	5.30	7.01	5.61	5.57	5.31	5.52	4.78
5	5.03	4.86	5.02	4.95	5.12	5.28	6.80	5.61	5.57	5.29	5.51	4.76
6	5.02	4.88	5.05	4.95	5.12	5.21	6.73	5.61	6.32	5.26	5.46	4.74
7	5.01	4.89	5.08	4.94	5.13	5.12	6.68	5.67	6.21	5.23	5.40	4.73
8	5.00	4.88	5.09	4.94	5.13	5.11	6.63	5.66	6.05	5.21	5.35	4.72
9	4.99	4.88	5.09	4.99	5.16	5.10	6.61	5.76	5.99	5.19	5.31	4.76
10	4.98	4.87	5.13	4.98	5.17	5.10	6.58	5.75	6.06	5.15	5.27	4.73
11	4.97	4.86	5.14	4.99	5.25	5.30	6.64	5.73	6.01	5.15	5.23	4.70
12	4.95	4.86	5.14	4.99	5.25	5.28	6.70	5.74	5.95	5.13	5.19	4.70
13	4.94	4.86	5.14	5.00	5.64	5.27	6.71	5.83	5.85	5.11	5.19	4.69
14	4.93	4.86	5.14	5.01	5.63	5.26	6.65	6.95	5.72	5.10	5.17	4.67
15	4.93	4.85	5.16	5.02	5.58	6.63	6.62	6.07	5.87	5.09	5.14	4.65
16	4.92	4.85	5.16	5.02	5.45	6.24	7.07	5.65	5.77	5.08	5.12	4.64
17	4.91	4.84	5.16	5.03	5.32	6.22	5.89	5.72	5.65	5.07	5.11	4.63
18	4.90	4.84	5.14	5.04	5.20	6.13	5.68	5.58	5.58	5.06	5.10	4.61
19	4.89	4.84	5.12	5.04	5.13	6.12	5.67	5.53	5.50	5.05	5.09	4.60
20	4.88	4.84	5.10	5.05	5.10	6.07	5.67	5.52	6.51	5.04	5.08	4.59
21	4.88	4.83	5.09	5.08	5.19	6.06	5.58	5.67	6.02	5.03	5.05	4.58
22	4.87	4.83	5.01	5.09	5.13	6.04	5.52	5.67	5.86	5.02	5.02	4.65
23	4.86	4.83	4.97	5.09	5.10	6.03	5.54	5.67	5.75	5.08	5.00	4.64
24	4.86	4.82	4.96	5.10	5.09	6.51	5.60	5.66	5.65	5.06	4.98	4.65
25	4.85	4.86	4.96	5.11	5.22	7.06	5.60	6.63	5.57	5.05	4.96	4.64
26	4.84	4.89	4.94	5.12	5.23	6.93	5.60	5.82	5.49	5.04	4.93	4.66
27	4.83	4.89	4.90	5.12	5.19	6.81	5.60	5.78	5.46	5.03	4.91	4.75
28	4.83	4.89	4.88	5.12	5.19	6.73	5.61	5.73	5.44	5.01	4.89	4.78
29	4.82	4.90	4.86	5.12	5.19	6.57	5.61	5.69	5.39	4.99	4.88	4.74
30	4.82	4.89	4.90	5.13	5.19	6.56	5.60	5.65	5.53	5.02	4.86	4.94
31	4.82	4.96	5.13	5.19	5.19	6.51	5.62	5.62	5.01	4.85	4.85	4.85
1945-46												
1	4.97	4.75	5.04	5.14	5.22	5.19	5.39	5.49	5.26	5.14	4.81	5.10
2	4.96	4.74	5.07	5.13	5.16	5.19	5.37	5.34	5.20	5.13	4.80	5.09
3	4.96	4.73	5.07	5.14	5.15	5.19	5.33	5.56	5.17	5.11	4.78	5.08
4	4.95	4.72	5.07	5.37	5.14	5.23	5.29	5.47	5.15	5.09	4.76	5.11
5	4.94	4.71	5.08	6.96	5.57	5.27	5.24	5.47	5.13	5.07	4.87	5.09
6	4.94	4.71	5.08	6.42	5.51	5.70	5.26	5.46	5.12	5.06	4.85	5.11
7	4.93	4.70	5.09	5.88	5.40	5.54	5.25	5.44	5.11	5.05	4.85	5.11
8	4.91	4.80	5.09	5.61	5.31	5.48	5.24	5.42	5.09	5.05	4.92	5.10
9	4.90	4.76	5.09	5.46	5.23	5.41	5.25	5.41	5.08	5.03	4.90	5.09
10	4.89	4.75	5.08	5.35	5.31	5.34	5.24	5.41	5.06	5.01	4.88	5.10
11	4.88	4.74	5.07	5.31	5.19	5.28	5.39	5.40	5.05	4.99	4.86	5.09
12	4.87	4.79	5.07	5.28	5.18	5.68	5.39	5.39	5.03	4.98	4.85	5.08
13	4.87	4.77	5.06	5.23	5.18	5.74	5.38	5.38	5.02	4.96	4.84	5.06
14	4.88	4.76	5.05	5.21	5.17	5.62	5.38	5.38	5.01	4.94	4.84	5.05
15	4.87	4.75	5.03	5.19	5.15	5.70	5.38	5.37	5.16	4.93	4.83	5.04
16	4.87	4.75	4.99	5.17	5.13	5.69	5.39	5.37	5.14	4.95	4.83	5.03
17	4.86	4.74	4.96	5.15	5.12	5.62	5.39	5.42	7.09	4.97	4.92	5.02
18	4.86	4.74	4.93	5.13	5.11	5.58	5.38	5.42	6.96	4.96	4.89	5.01
19	4.85	4.74	4.92	5.14	5.11	5.47	5.38	5.40	6.75	4.95	4.87	5.01
20	4.83	4.74	4.90	5.13	5.11	5.39	5.38	5.38	6.64	4.93	4.85	5.03
21	4.82	4.75	4.89	5.13	5.11	5.34	5.37	5.36	5.34	4.91	5.01	5.02
22	4.81	4.75	4.87	5.12	5.12	5.31	5.37	5.33	5.24	4.89	5.06	5.07
23	4.80	4.74	5.03	5.11	5.12	5.66	5.59	5.31	5.17	4.85	5.06	5.04
24	4.79	4.74	5.06	5.11	5.13	5.71	5.54	5.30	5.15	4.85	5.56	5.03
25	4.79	4.72	5.07	5.10	5.14	5.60	5.53	5.26	5.15	4.87	5.50	5.02
26	4.78	4.72	5.06	5.09	5.16	6.25	5.52	5.22	5.13	4.86	5.32	5.02
27	4.78	4.72	5.06	5.08	5.16	5.56	5.50	5.20	5.12	4.86	5.25	5.07
28	4.77	4.72	5.07	5.08	5.16	5.46	5.51	5.19	5.11	4.85	5.19	5.06
29	4.76	4.72	5.08	5.08	5.16	5.45	5.50	5.15	5.15	4.84	5.15	5.03
30	4.76	4.73	5.29	5.29	5.16	5.46	5.49	5.34	5.15	4.83	5.13	5.01
31	4.75	5.21	5.21	5.27	5.16	5.42	5.30	5.30	5.01	4.81	5.11	5.01

Lake Ahquabi near Indianola, Iowa—Continued

Daily Gage height, in Feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1	5.01	5.26	5.17	5.15	5.18	5.02	5.18	5.20	5.51	5.26	4.85	4.44
2	5.00	5.22	5.17	5.13	5.17	5.02	5.17	5.17	5.45	5.19	4.83	4.42
3	4.99	5.19	5.17	5.13	5.16	5.03	5.17	5.15	5.36	5.14	4.81	4.41
4	4.98	5.18	5.18	5.12	5.15	5.04	6.56	5.15	5.32	5.12	4.78	4.40
5	4.97	5.17	5.18	5.12	5.14	5.05	6.02	5.15	8.07	5.36	4.77	4.39
6	4.96	5.17	5.18	5.14	5.14	5.06	5.64	5.15	5.73	5.26	4.74	4.37
7	4.95	5.18	5.18	5.15	5.13	5.06	5.48	5.15	5.45	5.18	4.72	4.34
8	4.94	5.17	5.18	5.16	5.12	5.07	5.38	5.14	5.32	5.14	4.69	4.32
9	4.94	5.17	5.18	5.16	5.11	5.05	5.31	5.13	5.22	5.12	4.67	4.31
10	5.07	5.21	5.18	5.17	5.11	5.04	6.31	5.12	5.16	5.10	4.66	4.31
11	5.06	5.20	5.19	5.18	5.11	5.04	5.73	5.11	5.12	5.10	4.64	4.33
12	5.06	5.19	5.18	5.18	5.13	5.12	5.54	5.10	6.29	5.09	4.62	4.33
13	5.06	5.19	5.18	5.19	5.32	5.69	5.37	5.12	6.32	5.08	4.60	4.32
14	5.07	5.19	5.17	5.20	5.31	5.61	5.33	5.12	5.51	5.08	4.60	4.30
15	5.07	5.19	5.17	5.20	5.29	5.35	5.32	5.17	5.35	5.07	4.56	4.25
16	5.06	5.22	5.17	5.19	5.21	5.22	5.31	5.15	5.23	5.06	4.58	4.22
17	5.07	5.21	5.16	5.17	5.20	5.19	5.30	5.27	5.18	5.05	4.58	4.20
18	5.53	5.20	5.15	5.16	5.19	5.17	5.29	5.24	5.33	5.04	4.56	4.18
19	5.36	5.19	5.15	5.16	5.16	5.16	5.73	5.22	5.29	5.03	4.58	4.17
20	5.28	5.18	5.15	5.15	5.12	5.17	5.85	5.20	6.19	5.01	4.57	4.18
21	5.24	5.18	5.15	5.14	5.09	5.18	5.60	5.18	6.56	4.99	4.56	4.19
22	5.19	5.17	5.15	5.15	5.05	5.17	5.42	5.21	5.85	4.98	4.56	4.16
23	5.17	5.17	5.15	5.17	5.05	5.24	5.34	5.21	5.98	4.96	4.53	4.14
24	5.41	5.17	5.15	5.17	5.04	5.25	5.30	5.23	5.49	4.95	4.51	4.11
25	5.27	5.17	5.15	5.18	5.04	5.24	5.26	5.22	5.33	4.94	4.54	4.09
26	5.23	5.17	5.15	5.18	5.03	5.23	5.23	5.22	5.22	4.93	4.52	4.08
27	5.20	5.16	5.15	5.18	5.03	5.21	5.22	5.20	5.17	4.92	4.50	4.06
28	5.19	5.16	5.15	5.17	5.03	5.18	5.20	6.89	5.15	4.92	4.49	4.05
29	5.18	5.16	5.15	5.18	.....	5.16	5.20	6.06	6.03	4.91	4.47	4.03
30	5.17	5.16	5.15	5.20	.....	5.14	5.19	5.77	5.46	4.89	4.46	4.01
31	5.16	.....	5.15	5.19	.....	5.19	.....	5.49	.....	4.87	4.45	.....
1947-48												
1	4.07	4.65	4.85	5.13	5.14	5.12	5.16	5.15	4.96	4.70	4.51	4.23
2	4.06	4.67	4.85	5.13	5.14	5.07	5.14	5.25	4.95	4.68	4.50	4.22
3	4.06	4.67	4.90	5.13	5.14	5.01	5.14	5.24	4.94	4.65	4.52	4.20
4	4.15	4.72	5.30	5.13	5.14	4.96	5.14	5.23	4.94	4.66	4.50	4.19
5	4.14	4.70	5.29	5.13	5.14	4.94	5.14	5.24	4.93	4.66	4.48	4.18
6	4.13	4.76	5.27	5.13	5.14	4.95	5.14	5.72	4.90	4.64	4.46	4.16
7	4.12	4.75	5.24	5.14	5.14	4.95	5.13	5.45	4.88	4.63	4.45	4.14
8	4.11	4.74	5.21	5.15	5.14	4.94	5.13	5.29	4.86	4.62	4.45	4.20
9	4.10	4.73	5.18	5.15	5.14	4.93	5.12	5.24	4.84	4.62	4.44	4.18
10	4.09	4.72	5.17	5.15	5.14	4.92	5.12	5.22	4.83	4.60	4.43	4.21
11	4.08	4.72	5.16	5.14	5.14	4.92	5.11	5.20	4.82	4.59	4.42	4.20
12	4.07	4.71	5.15	5.14	5.14	4.92	5.11	5.19	4.80	4.57	4.41	4.18
13	4.07	4.70	5.14	5.14	5.14	4.92	5.11	5.18	4.79	4.56	4.40	4.15
14	4.05	4.70	5.14	5.14	5.14	5.52	5.11	5.18	4.78	4.59	4.39	4.13
15	4.04	4.77	5.13	5.13	5.14	6.22	5.10	5.17	4.76	4.57	4.38	4.12
16	4.02	4.80	5.13	5.10	5.14	5.77	5.10	5.16	4.74	4.55	4.37	4.10
17	4.01	4.81	5.13	5.08	5.14	5.52	5.10	5.15	4.73	4.53	4.35	4.09
18	3.99	4.81	5.13	5.05	5.14	5.39	5.09	5.14	4.72	4.53	4.32	4.08
19	3.99	4.82	5.13	5.03	5.14	6.21	5.08	5.13	4.69	4.53	4.30	4.07
20	3.99	4.82	5.13	5.02	5.14	5.66	5.07	5.12	4.68	4.52	4.29	4.45
21	3.99	4.84	5.14	5.02	5.14	5.45	5.06	5.13	4.68	4.60	4.28	4.52
22	3.99	4.85	5.14	4.98	5.14	5.36	5.11	5.12	4.67	4.57	4.26	4.50
23	4.13	4.85	5.14	4.94	4.95	5.28	5.20	5.11	4.66	4.55	4.23	4.48
24	4.17	4.85	5.13	4.88	4.94	5.23	5.20	5.10	4.65	4.53	4.21	4.46
25	4.17	4.85	5.13	4.84	4.94	5.18	5.21	5.09	4.64	4.54	4.19	4.44
26	4.23	4.86	5.13	5.14	4.94	5.18	5.20	5.08	4.63	4.52	4.17	4.42
27	4.22	4.86	5.13	5.14	5.01	5.17	5.20	5.06	4.71	4.56	4.24	4.41
28	4.31	4.86	5.13	5.14	5.50	5.15	5.19	5.04	4.73	4.55	4.24	4.40
29	4.31	4.86	5.13	5.14	5.24	5.14	5.17	5.02	4.73	4.57	4.23	4.39
30	4.30	4.85	5.13	5.14	.....	5.14	5.16	5.00	4.71	4.50	4.27	4.38
31	4.56	.....	5.13	5.14	.....	5.16	.....	4.98	.....	4.53	4.24	.....

Lake Ahquabi near Indianola, Iowa—Continued

Daily Gage height, in Feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1	4.36	4.17	4.43	4.49	.....	5.20	5.17	5.14	5.07	5.19	5.05	4.71
2	4.34	4.17	4.43	4.49	.....	5.23	5.17	5.13	5.14	5.17	5.03	4.68
3	4.33	4.17	4.43	4.50	.....	5.25	5.16	5.13	5.13	5.14	5.02	4.69
4	4.32	4.17	4.42	4.63	.....	5.22	5.15	5.12	5.12	5.13	5.00	4.68
5	4.31	4.23	4.45	4.62	.....	5.24	5.14	5.12	5.12	5.11	4.97	4.66
6	4.33	4.23	4.45	4.62	.....	5.21	5.13	5.11	5.11	5.09	4.95	4.67
7	4.32	4.22	4.44	4.62	.....	5.18	5.13	5.11	5.08	5.08	4.94	4.65
8	4.31	4.21	4.44	4.63	.....	5.16	5.12	5.10	5.05	5.06	4.93	4.64
9	4.30	4.20	4.44	4.62	.....	5.15	5.12	5.10	5.03	5.05	4.91	4.63
10	4.29	4.19	4.44	4.61	.....	5.14	5.11	5.10	5.02	5.02	4.92	4.62
11	4.28	4.18	4.44	4.61	.....	5.14	5.10	5.09	5.01	5.00	4.90	4.68
12	4.28	4.17	4.44	4.61	.....	5.13	5.10	5.08	5.00	4.98	4.97	4.67
13	4.27	4.16	4.43	4.62	.....	5.11	5.10	5.07	5.02	4.96	4.96	4.65
14	4.27	4.16	4.50	4.64	.....	5.10	5.20	5.06	5.29	4.94	4.94	4.64
15	4.26	4.15	4.50	4.76	.....	5.10	5.19	5.05	5.24	4.93	4.93	4.63
16	4.25	4.16	4.47	4.84	.....	5.10	5.18	5.10	5.19	4.91	4.92	4.63
17	4.23	4.16	4.46	4.79	.....	5.10	5.18	5.09	5.15	4.89	4.90	4.61
18	4.21	4.16	4.47	4.79	.....	5.10	5.17	5.08	5.14	4.88	4.88	4.60
19	4.20	4.42	4.47	4.82	.....	5.10	5.16	5.10	5.13	4.87	4.91	4.59
20	4.19	4.45	4.47	4.81	.....	5.11	5.15	5.10	5.12	5.30	4.89	4.57
21	4.18	4.45	4.47	4.82	.....	5.11	5.14	5.18	5.19	5.24	4.87	4.55
22	4.18	4.45	4.47	4.84	.....	5.26	5.17	5.19	5.16	5.19	4.85	4.53
23	4.17	4.45	4.47	4.89	.....	5.25	5.16	5.17	5.15	5.21	4.84	4.52
24	4.16	4.45	4.47	4.90	5.74	5.19	5.15	5.16	5.27	5.17	4.82	4.50
25	4.15	4.46	4.47	4.87	5.35	5.15	5.14	5.15	5.50	5.14	4.80	4.48
26	4.14	4.46	4.47	4.84	5.25	5.22	5.14	5.14	5.34	5.12	4.79	4.47
27	4.14	4.45	4.48	4.80	5.22	5.20	5.16	5.13	5.24	5.10	4.78	4.46
28	4.13	4.44	4.52	4.77	5.18	5.19	5.16	5.11	5.22	5.08	4.76	4.45
29	4.12	4.44	4.52	.....	.....	5.17	5.15	5.08	5.19	5.11	4.77	4.44
30	4.28	4.44	4.50	.....	.....	5.17	5.15	5.09	5.17	5.09	4.75	4.42
31	4.18	.....	4.49	.....	.....	5.17	.....	5.08	.....	5.07	4.73	.....
1949-50												
1	4.42	4.24	4.09	4.06	4.13	5.00	4.80	4.87	4.83	4.71	4.48	4.37
2	4.40	4.23	4.08	4.06	4.13	4.92	4.80	4.87	4.82	4.70	4.44	4.36
3	4.38	4.22	4.08	4.06	4.13	4.93	4.82	4.87	4.81	4.69	4.41	4.34
4	4.40	4.21	4.07	4.06	4.13	5.00	4.85	4.86	4.79	4.68	4.44	4.32
5	4.39	4.20	4.06	4.06	4.13	4.99	4.85	4.83	4.78	4.68	4.42	4.30
6	4.38	4.19	4.06	4.06	4.27	4.97	4.84	4.82	4.77	4.66	4.40	4.29
7	4.37	4.19	4.05	4.06	4.30	4.95	4.83	4.81	4.76	4.64	4.41	4.27
8	4.36	4.20	4.05	4.06	4.72	4.85	4.82	4.85	4.74	4.62	4.41	4.26
9	4.36	4.20	4.04	4.06	4.98	4.83	4.84	4.86	4.76	4.60	4.40	4.26
10	4.39	4.20	4.03	4.06	5.06	4.83	4.83	4.99	4.75	4.59	4.41	4.24
11	4.37	4.19	4.13	4.06	5.03	4.82	4.82	4.92	4.74	4.58	4.40	4.24
12	4.35	4.21	4.11	4.06	5.04	4.80	4.81	4.87	4.76	4.60	4.60	4.23
13	4.34	4.21	4.10	4.09	5.04	4.79	4.80	4.86	4.75	4.58	4.60	4.51
14	4.33	4.21	4.06	4.09	5.01	4.78	4.80	4.85	4.86	4.56	4.60	4.49
15	4.32	4.20	4.06	4.08	4.99	4.79	4.79	4.84	4.87	4.54	4.60	4.47
16	4.31	4.18	4.06	4.08	4.97	4.80	4.79	4.85	4.86	4.55	4.59	4.46
17	4.29	4.17	4.06	4.08	4.96	4.80	4.78	4.84	4.86	4.61	4.58	4.46
18	4.28	4.16	4.06	4.07	4.96	4.80	4.78	4.83	5.40	4.60	4.56	4.45
19	4.30	4.16	4.06	4.07	4.96	4.81	4.77	4.85	5.15	4.61	4.53	4.45
20	4.32	4.15	4.06	4.07	5.02	4.82	4.77	4.86	5.01	4.60	4.51	4.44
21	4.39	4.14	4.06	4.06	5.05	4.83	4.76	5.07	4.94	4.59	4.49	4.43
22	4.37	4.13	4.06	4.06	5.02	4.88	4.75	4.99	4.90	4.58	4.46	4.41
23	4.35	4.12	4.06	4.06	5.01	4.86	4.85	4.91	4.87	4.57	4.45	4.40
24	4.33	4.11	4.06	4.06	5.00	4.86	4.83	4.88	4.85	4.55	4.44	4.38
25	4.32	4.11	4.06	4.14	4.99	4.85	4.83	4.86	4.82	4.54	4.43	4.36
26	4.31	4.10	4.05	4.13	4.98	4.84	4.82	4.86	4.80	4.52	4.42	4.35
27	4.30	4.10	4.05	4.13	4.98	4.83	4.82	4.88	4.79	4.51	4.42	4.34
28	4.29	4.10	4.05	4.13	5.12	4.82	4.83	4.87	4.77	4.50	4.40	4.33
29	4.28	4.10	4.05	4.12	.....	4.81	4.85	4.86	4.74	4.49	4.40	4.38
30	4.27	4.09	4.05	4.12	.....	4.80	4.88	4.85	4.72	4.48	4.39	4.37
31	4.26	.....	4.06	4.13	.....	4.80	.....	4.84	.....	4.49	4.38	.....

Lakes in Des Moines River Basin

Lake Wapello near Drakesville, Iowa

LOCATION.—Lat. 40°49'15", long. 92°34'25", in SE¼ NW¼ 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 square miles above outlet.

RECORDS AVAILABLE.—June 1936 to September 1950.

GAGE.—Water-stage recorder. Datum of gage is 90.0 feet above datum assumed for this lake and 10.0 feet below crest of spillway of dam forming lake. June 9, 1936, to Nov. 25, 1941, staff gage read once daily about 0.5 mile southwest of present gage and at same datum. ..

EXTREMES.—Maximum and minimum gage heights for the water years 1943-50 are contained in the following table:

Water Year	Maximum		Minimum	
	Date	Gage-height (feet)	Date	Gage-height (feet)
1942-43...	May 15	(¹)11.42	Oct. 28-31	(¹)8.91
1943-44...	Apr. 24	10.73	Jan. 25, 26	8.83
1944-45...	May 14	11.64	Sept. 7-9	8.98
1945-46...	July 17	12.42	Oct. 1	9.43
1946-47...	June 6	(¹)11.11	Sept. 30	8.70
1947-48...	Mar. 20	10.44	Oct. 20	8.59
1948-49...	June 14	11.96	Nov. 13	8.44
1949-50...	June 19	11.08	Dec. 19-22	8.82

(1) Observed.

1936-50: Maximum gage height observed, 12.70 feet June 12, 1941; minimum observed, 7.81 feet Sept. 9-11, 1936.

REMARKS.—Water is diverted from lake for fish-rearing ponds below lake outlet.

COOPERATION.—Services of observer furnished by Iowa State Conservation Commission.

Lake Wapello near Drakesville, Iowa—Continued

Daily Gage height, in Feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	9.19	8.92	9.06	10.10	10.04	10.04	10.08	10.17	10.13	10.03	9.99	9.88
2.....	9.18	8.93	9.06	10.11	10.03	10.03	10.06	10.13	10.11	10.01	9.99	9.86
3.....	9.17	8.94	9.05	10.11	10.36	10.01	10.05	10.10	10.10	9.99	10.00	9.84
4.....	9.16	8.96	9.04	10.11	10.39	10.00	10.03	10.09	10.09	10.06	10.01	9.82
5.....	9.16	8.98	9.04	10.10	10.26	10.00	10.01	10.08	10.09	10.38	10.01	9.80
6.....	9.14	8.98	9.05	10.09	10.22	10.00	10.00	10.09	10.32	10.29	9.98	9.81
7.....	9.13	8.98	9.05	10.09	10.16	9.99	10.00	10.10	10.36	10.21	9.97	9.81
8.....	9.13	8.98	9.05	10.09	10.14	9.98	10.00	10.13	10.25	10.15	9.97	9.79
9.....	9.13	9.00	9.05	10.09	10.13	9.98	10.00	10.14	10.23	10.12	10.27	9.76
10.....	9.12	9.06	9.05	10.09	10.13	9.97	10.01	10.13	.....	10.09	10.34	9.73
11.....	9.12	9.05	9.05	10.07	10.12	9.99	10.02	10.13	.....	10.07	10.24	9.70
12.....	9.12	9.05	9.04	10.07	10.11	10.09	10.04	10.13	.....	10.04	10.23	9.70
13.....	9.10	9.03	9.04	10.07	10.10	10.00	10.05	10.12	10.48	10.02	10.24	9.69
14.....	9.09	9.02	9.04	10.06	10.09	10.01	10.04	10.11	10.38	10.02	10.18	9.67
15.....	9.08	9.03	9.04	10.06	10.08	10.04	10.03	10.10	10.50	10.03	10.12	9.65
16.....	9.08	9.03	9.04	10.06	10.07	10.09	10.02	11.09	10.68	10.02	10.09	9.64
17.....	9.07	9.03	9.04	10.06	10.07	10.08	10.03	10.52	10.67	10.02	10.04	9.62
18.....	9.06	9.03	9.04	10.06	10.06	10.05	10.02	10.35	10.44	10.01	10.02	9.61
19.....	9.05	9.02	9.03	10.06	10.05	10.09	10.00	10.51	10.30	9.98	10.00	9.59
20.....	9.05	9.02	9.03	10.06	10.05	10.10	9.99	10.59	10.24	9.98	9.98	9.55
21.....	9.04	9.06	9.04	10.06	10.05	10.09	9.99	10.40	10.18	9.95	9.96	9.53
22.....	9.02	9.07	9.04	10.07	10.05	10.10	10.00	10.30	10.17	9.92	9.94	9.52
23.....	9.00	9.07	9.01	10.07	10.05	10.12	9.99	10.23	10.17	9.90	9.94	9.51
24.....	8.99	9.06	9.06	10.07	10.05	10.12	9.99	10.21	10.16	9.88	9.95	9.49
25.....	8.98	9.05	9.06	10.06	10.05	10.13	10.03	10.20	10.15	9.88	9.96	9.48
26.....	8.96	9.06	9.38	10.06	10.05	10.12	10.10	10.18	10.13	9.88	9.96	9.44
27.....	8.94	9.06	10.03	10.05	10.05	10.12	10.21	10.17	10.12	9.86	9.95	9.42
28.....	8.92	9.06	10.09	10.05	10.04	10.12	10.20	10.16	10.10	9.84	9.93	9.40
29.....	8.91	9.06	10.10	10.05	.....	10.09	10.19	10.15	10.09	9.84	9.92	9.40
30.....	8.91	9.06	10.11	10.04	.....	10.09	10.19	10.14	10.05	9.83	9.91	9.40
31.....	8.91	.....	10.10	10.04	.....	10.10	.....	10.14	.....	9.88	9.90	.....
1943-44												
1.....	9.40	9.08	9.08	8.95	9.01	9.16	10.06	10.30	10.12	10.06	9.47	9.50
2.....	9.39	9.09	9.06	8.92	9.01	9.16	10.06	10.29	10.11	10.04	9.47	9.48
3.....	9.38	9.10	9.06	8.90	9.01	9.16	10.04	10.30	10.09	10.03	9.46	9.47
4.....	9.37	9.10	9.07	8.90	9.01	9.20	10.03	10.23	10.07	10.01	9.45	9.46
5.....	9.36	9.10	9.06	8.90	9.01	9.27	10.02	10.32	10.06	10.00	9.48	9.45
6.....	9.34	9.10	9.06	8.89	9.01	9.32	10.02	10.29	10.04	9.99	9.48	9.44
7.....	9.32	9.10	9.08	8.88	9.01	9.41	10.02	10.26	10.00	9.97	9.48	9.41
8.....	9.33	9.11	9.08	8.88	9.01	9.41	10.02	10.23	10.01	9.96	9.46	9.39
9.....	9.33	9.11	9.08	8.88	9.01	9.41	10.03	10.21	10.20	9.95	9.44	9.37
10.....	9.33	9.11	9.08	8.88	9.01	9.41	10.05	10.20	10.30	9.93	9.41	9.35
11.....	9.32	9.11	9.08	8.88	9.01	9.42	10.25	10.19	10.30	9.89	9.39	9.37
12.....	9.31	9.11	9.09	8.88	9.02	9.43	10.44	10.17	10.29	9.85	9.39	9.39
13.....	9.32	9.11	9.09	8.88	9.02	9.44	.....	10.16	10.27	9.81	9.39	9.46
14.....	9.33	9.10	9.09	8.88	9.01	9.47	.....	10.14	10.24	9.78	9.38	9.46
15.....	9.32	9.10	9.06	8.88	9.01	9.69	.....	10.12	10.22	9.75	9.36	9.46
16.....	9.30	9.10	9.09	.....	9.01	10.01	.....	10.10	10.19	9.73	9.36	9.45
17.....	9.29	9.09	9.09	8.86	9.01	10.12	10.42	10.09	10.17	9.71	9.38	9.44
18.....	9.02	9.07	9.08	8.85	9.02	10.15	10.40	10.08	10.16	9.69	9.38	9.43
19.....	.....	9.07	9.08	8.84	9.02	10.15	10.38	10.08	10.21	9.67	9.38	9.41
20.....	.....	9.06	9.07	8.85	9.02	10.13	10.35	10.07	10.24	9.63	9.36	9.40
21.....	.....	9.06	9.08	8.84	9.03	10.13	10.31	10.07	10.24	9.62	9.35	9.47
22.....	.....	9.06	9.08	8.84	9.04	10.12	10.42	10.06	10.24	9.62	9.34	9.48
23.....	.....	9.05	9.08	8.84	9.06	10.12	10.63	10.06	10.24	9.59	9.30	9.56
24.....	9.16	9.05	9.08	8.84	9.10	10.12	10.70	10.07	10.21	9.58	9.29	.....
25.....	.....	9.06	9.08	8.84	9.11	10.11	10.60	10.08	10.18	9.58	9.29	.....
26.....	.....	9.06	9.07	8.83	9.13	10.10	10.49	10.10	10.17	9.58	9.44	.....
27.....	.....	9.07	9.06	8.87	9.15	10.10	10.45	10.10	10.16	9.57	9.54	.....
28.....	.....	9.07	9.04	8.92	9.16	10.09	10.41	10.11	10.13	9.55	9.55	.....
29.....	.....	9.07	9.02	8.97	9.16	10.09	10.37	10.10	10.10	9.51	9.54	.....
30.....	.....	9.07	8.99	8.99	.....	10.08	10.34	10.11	10.08	9.49	9.53	.....
31.....	9.07	.....	8.97	9.00	.....	10.07	.....	10.12	.....	9.48	9.52	.....

Lake Wapello near Drakesville, Iowa—Continued
 Daily Gage height, in Feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1		9.96	10.03	10.05	10.06	10.14	10.12	10.10	10.13	10.20	9.68	9.10
2		9.96	10.03	10.05	10.05	10.14	10.10	10.10	10.11	10.15	9.68	9.10
3		10.09	10.03	10.04	10.05	10.14	10.09	10.10	10.07	10.13	9.64	9.08
4	10.43	10.21	10.06	10.03	10.05	10.14	10.42	10.10	10.05	10.10	9.62	9.05
5		10.20	10.21	10.03	10.04	10.13	10.31	10.10	10.05	10.09	9.60	9.02
6		10.20	10.34	10.03	10.03	10.13	10.22	10.09	10.06	10.07	9.60	9.01
7		10.20		10.03	10.04	10.13	10.16	10.09	10.23	10.06	9.58	8.98
8		10.19		10.03	10.04	10.12	10.13	10.11	10.32	10.05	9.54	8.98
9		10.16		10.02	10.04	10.12	10.13	10.12	10.34	10.03	9.52	8.98
10		10.16		10.02	10.04	10.12	10.11	10.12	10.31	10.00	9.50	9.01
11	10.08	10.14	10.23	10.02	10.04	10.12	10.10	10.12	10.26	9.97	9.49	9.01
12		10.13		10.03	10.08	10.12	10.10	10.12	10.20	9.96	9.48	9.02
13		10.12		10.03	10.13	10.12	10.10	10.11	10.17	9.95	9.47	9.01
14		10.12		10.03	10.22	10.12	10.10	10.78	10.14	9.95	9.46	9.02
15		10.09		10.04	10.32	10.13	10.10	11.20	10.18	9.94	9.43	9.04
16		10.07		10.06	10.35	10.17	10.51	10.72	10.65	9.92	9.40	9.05
17		10.06		10.07	10.35	10.19	10.55	10.83	10.64	9.91	9.39	9.05
18	10.02	10.04		10.09		10.19	10.36	10.50	10.46	9.89	9.38	9.05
19	10.02	10.03	10.09	10.09		10.19	10.25	10.32	10.30	9.88	9.37	9.05
20	10.02	10.02	10.10	10.09	10.19	10.19	10.21	10.25	10.48	9.86	9.35	9.04
21	10.02	10.02	10.09	10.09	10.17	10.19	10.16	10.22	10.71	9.83	9.32	9.03
22	10.02	10.02	10.09	10.09	10.18	10.19	10.14	10.17	10.55	9.82	9.30	9.03
23	10.02	10.02	10.08	10.09	10.17	10.18	10.13	10.15	10.42	9.81	9.28	9.08
24	10.01	10.02	10.08		10.16	10.17	10.13	10.13	10.37	9.80	9.24	9.16
25	10.01	10.02	10.07		10.16	10.24	10.12	10.15	10.63	9.79	9.20	9.22
26	10.00	10.02	10.07		10.16	10.34	10.13	10.16	10.56	9.78	9.18	9.24
27	9.99	10.02	10.06			10.29	10.13	10.16	10.45	9.74	9.16	9.26
28	9.98	10.02	10.04		10.14	10.19	10.12	10.15	10.35	9.72	9.12	9.28
29	9.98	10.02	10.04	10.07		10.14	10.11	10.14	10.28	9.70	9.10	9.29
30	9.97	10.03	10.04	10.07		10.13	10.10	10.13	10.23	9.68	9.10	9.37
31	9.96		10.04	10.07		10.13		10.12		9.68	9.10	
1945-46												
1	9.50	9.88		10.08	10.12	10.01	10.28		10.16	10.26	10.10	9.89
2	9.59	9.88		10.09	10.10	10.01	10.28	10.11	10.16	10.24	10.08	9.89
3	9.68	9.86		10.09	10.10	10.01	10.28	10.14	10.16	10.20	10.06	9.89
4	9.74	9.85		10.11	10.09	10.01	10.29	10.16	10.15	10.16	10.04	9.88
5	9.80	9.84	9.87	10.26	10.08	10.01	10.30		10.15	10.14	10.01	9.87
6	9.84	9.83	9.89	10.42	10.08	10.02	10.30		10.15	10.12	10.00	9.87
7	9.88	9.82	9.90	10.46	10.08	10.06	10.29		10.15	10.10	9.98	9.86
8	9.90	9.81	9.91	10.47	10.08	10.07	10.28		10.14	10.07	9.97	9.85
9	9.92	9.81	9.92	10.47	10.08	10.09	10.28		10.13	10.05	9.97	9.85
10	9.93	9.81	9.93	10.46	10.08	10.11	10.28		10.12	10.04	9.97	9.84
11	9.94	9.80	9.94	10.44	10.08	10.12	10.28	10.16	10.11	10.02	9.96	9.83
12	9.95	9.80	9.95	10.42	10.08	10.15	10.29	10.16	10.10	9.99	9.95	9.82
13	9.95	9.80	9.96	10.40	10.07	10.18	10.29	10.16	10.08	9.95	9.94	9.81
14	9.95	9.80	9.97	10.38	10.07	10.19	10.28	10.15	10.07	9.93	9.93	9.81
15	9.95	9.79	9.96	10.55	10.07	10.20	10.28	10.16	10.07	9.92	9.92	9.80
16	9.95	9.79	9.97	10.33	10.06	10.20	10.28	10.16	10.07	9.92	9.91	9.80
17	9.95	9.78	9.98	10.31	10.06	10.22	10.27	10.16	10.08	11.82	9.90	9.79
18	9.95	9.78	9.98	10.29	10.05	10.24	10.28	10.16	11.43	11.75	9.89	9.79
19	9.94	9.78	9.98	10.29	10.04	10.24	10.28	10.16	11.76	11.38	9.88	9.78
20	9.94	9.78	9.98	10.27	10.04	10.24	10.28	10.16	11.45	11.09	9.88	9.78
21	9.94	9.78	9.98	10.26	10.04	10.24	10.27	10.16	11.18	10.90	9.88	9.77
22	9.94	9.78	9.97	10.23	10.02	10.24	10.27	10.16	10.99	10.75	9.87	9.76
23	9.94	9.77	9.97	10.21	10.02	10.24	10.26	10.16	10.85	10.64	9.87	9.76
24	9.94	9.75	9.98	10.21	10.02	10.25	10.25	10.16	10.74	10.54	9.87	9.76
25	9.94	9.75	9.97	10.21	10.01	10.27	10.24	10.16	10.64	10.45	9.87	9.77
26	9.91	9.74	9.97	10.19	10.01	10.28	10.23	10.16	10.55	10.38	9.87	9.78
27	9.90		9.98	10.18	10.01	10.28	10.22	10.16	10.47	10.30	9.88	9.79
28	9.89		9.99	10.16	10.01	10.28	10.21	10.16	10.42	10.24	9.88	9.79
29	9.89		10.00	10.15		10.28		10.16	10.35	10.21	9.89	9.79
30	9.88		10.05	10.14		10.28		10.16	10.31	10.17	9.89	9.79
31	9.88		10.07	10.13		10.28		10.16		10.14	9.89	

Lake Wapello near Drakesville, Iowa—Continued

Daily Gage height, in Feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	9.78	9.74	9.95	9.99	10.03	9.99	10.13	10.24	.....	10.34	9.75	9.10
2.....	9.78	9.74	9.94	9.99	10.03	9.99	10.12	10.24	.....	10.30	9.73	9.09
3.....	9.77	9.74	9.94	9.99	10.03	9.99	10.12	10.24	.....	10.27	9.70	9.07
4.....	9.75	9.75	9.93	9.99	10.03	9.99	10.14	10.22	.....	10.23	9.69	9.04
5.....	9.76	9.75	9.92	9.99	10.03	9.99	10.38	10.19	.....	10.22	9.66	9.02
6.....	9.75	9.75	9.92	9.99	10.03	9.99	10.61	10.18	11.08	10.23	9.63	9.01
7.....	9.74	9.75	9.91	9.99	10.03	9.99	10.61	10.16	10.90	10.26	9.62	8.98
8.....	9.73	9.77	9.91	9.99	10.02	9.99	10.55	10.14	10.60	10.26	9.60	8.97
9.....	9.72	9.77	9.91	9.99	10.01	9.99	10.49	10.13	10.40	.....	9.57	8.94
10.....	9.72	9.77	9.91	9.99	10.00	9.99	10.44	10.12	10.29	.....	9.54	8.93
11.....	9.72	9.79	9.91	9.99	10.00	9.99	10.42	10.11	10.22	.....	9.51	8.93
12.....	9.71	9.81	9.91	9.99	10.00	9.99	10.40	10.10	10.22	.....	9.49	8.93
13.....	9.70	9.83	9.94	9.99	9.99	10.02	10.37	10.10	10.62	.....	9.47	8.93
14.....	9.69	9.84	9.96	10.00	9.97	10.09	10.34	10.08	10.66	.....	9.44	8.91
15.....	9.68	9.86	9.98	10.01	9.98	10.12	10.31	10.08	10.48	.....	9.42	8.87
16.....	9.67	9.88	9.99	10.02	9.98	10.13	10.29	10.10	10.32	.....	9.41	8.84
17.....	9.67	9.90	9.99	10.03	9.99	10.14	10.28	10.10	10.27	.....	9.40	8.80
18.....	9.66	9.90	10.00	10.03	9.99	10.14	10.29	10.10	10.27	.....	9.39	8.78
19.....	9.66	9.91	10.00	10.03	9.99	10.14	10.27	10.10	10.40	.....	9.38	8.75
20.....	9.66	9.92	10.00	10.03	9.99	10.14	10.27	.....	10.42	.....	9.35	8.74
21.....	9.66	9.93	10.00	10.03	9.99	10.13	10.30	.....	10.43	.....	9.33	8.76
22.....	9.66	9.93	10.00	10.03	9.99	10.13	10.30	.....	10.52	.....	9.32	8.78
23.....	9.66	9.93	10.00	10.03	9.99	10.14	10.30	.....	10.52	9.92	9.29	8.79
24.....	9.68	9.94	10.00	10.03	9.99	10.14	10.30	.....	10.48	.....	9.26	8.79
25.....	9.70	9.94	10.00	10.04	9.99	10.14	10.29	.....	10.35	.....	9.24	8.78
26.....	9.70	9.96	10.00	10.05	9.99	10.14	10.26	.....	10.29	.....	9.21	8.77
27.....	9.71	9.96	9.99	10.04	9.99	10.14	10.24	.....	10.23	.....	9.19	8.76
28.....	9.71	9.96	9.99	10.04	9.99	10.14	10.23	.....	10.21	.....	9.17	8.75
29.....	9.73	9.95	9.99	10.04	.....	10.14	10.21	.....	10.27	.....	9.15	8.74
30.....	9.73	9.96	9.99	10.04	.....	10.14	10.22	.....	10.38	.....	9.13	8.72
31.....	9.74	.....	9.99	10.04	.....	10.13	.....	.....	.....	9.76	9.12	.....
1947-48												
1.....	8.71	.....	8.60	9.24	9.28	10.29	10.05	10.12	.....	.....	9.40	9.01
2.....	8.71	.....	8.60	9.28	9.27	.....	10.05	10.12	.....	9.53	9.47	9.01
3.....	8.72	8.78	8.60	9.32	9.27	.....	10.06	10.13	.....	9.53	9.46	9.00
4.....	8.72	.....	8.68	9.35	9.27	.....	10.05	10.13	.....	9.53	9.45	9.00
5.....	8.72	.....	8.85	9.36	9.27	.....	10.05	10.13	9.80	9.53	9.43	8.99
6.....	8.73	8.77	8.98	9.36	9.27	.....	10.05	10.23	9.72	9.51	9.41	8.98
7.....	8.73	8.77	9.09	9.36	9.27	.....	10.06	10.35	9.70	9.49	9.39	8.97
8.....	8.73	8.74	9.19	9.37	9.26	.....	10.07	10.33	9.68	9.48	9.39	8.95
9.....	8.74	8.72	9.27	9.38	9.26	.....	10.08	10.26	9.67	9.47	9.40	8.95
10.....	8.73	8.70	9.29	9.39	9.25	.....	10.08	10.22	9.65	9.45	9.40	8.94
11.....	8.72	8.70	9.30	9.40	9.25	.....	10.08	10.20	9.63	9.44	9.38	8.93
12.....	8.72	8.70	9.32	9.40	.....	.....	10.09	10.18	9.62	9.41	9.36	8.93
13.....	8.70	8.70	9.33	9.40	.....	.....	10.09	10.17	9.61	9.39	9.34	8.92
14.....	8.69	8.69	.....	9.40	.....	.....	10.09	10.16	9.60	9.40	9.33	8.90
15.....	8.66	8.70	.....	9.40	.....	.....	10.09	.....	9.60	9.40	9.30	8.88
16.....	8.65	8.70	9.30	9.39	9.24	.....	10.08	.....	9.60	9.41	9.28	8.86
17.....	8.64	8.69	9.25	9.39	.....	10.29	10.07	.....	9.60	9.41	9.26	8.85
18.....	8.63	8.69	9.25	9.39	.....	10.28	10.05	.....	9.60	9.41	9.24	8.85
19.....	8.61	8.68	9.25	9.39	.....	10.34	10.05	.....	9.60	9.40	9.22	8.84
20.....	8.59	8.67	9.24	9.39	.....	10.44	10.05	.....	9.59	9.39	9.20	8.82
21.....	.....	8.67	9.24	9.38	.....	10.41	10.05	.....	.....	9.39	9.18	8.84
22.....	.....	8.66	9.25	9.38	.....	10.32	10.06	.....	.....	9.39	9.15	8.87
23.....	.....	8.65	9.25	9.38	.....	10.21	10.06	.....	.....	9.39	9.14	8.89
24.....	.....	8.65	9.24	9.36	.....	10.19	10.06	.....	.....	9.39	9.12	8.90
25.....	.....	8.64	9.24	9.36	.....	10.15	10.07	.....	.....	9.39	9.09	8.90
26.....	.....	8.63	9.24	9.36	.....	10.12	10.08	.....	.....	9.39	9.07	8.89
27.....	8.70	.....	9.24	9.35	.....	10.09	10.09	.....	.....	9.42	9.05	8.88
28.....	.....	8.62	9.23	9.33	.....	10.08	10.11	.....	.....	9.45	9.04	8.87
29.....	.....	8.61	9.23	9.32	.....	10.05	10.11	.....	.....	9.46	9.03	8.86
30.....	.....	8.61	9.23	9.30	.....	10.01	10.12	.....	.....	9.48	9.01	8.84
31.....	.....	.....	9.24	9.29	.....	10.05	.....	.....	.....	9.48	9.01	.....

Lake Wapello near Drakesville, Iowa—Continued

Daily Gage height, in Feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1	8.83		8.60	8.68	9.33	10.33	10.46	10.09	9.95	10.50	10.20	9.75
2	8.82		8.60	8.69	9.33	10.30	10.43	10.09	10.00	10.47	10.10	9.75
3	8.83		8.60	8.69	9.33	10.27	10.37	10.08	10.05	10.45	10.18	9.74
4	8.84		8.60	8.70	9.33	10.25	10.32	10.08	10.08	10.41	10.17	9.73
5	8.84		8.61	8.72	9.33	10.25	10.28	10.08	10.10	10.38	10.17	9.70
6	8.85	8.47	8.62	8.74	9.33	10.26	10.25	10.07	10.10	10.36	10.13	9.67
7	8.84	8.47	8.62	8.74	9.33	10.26	10.22	10.06	10.10	10.33	10.11	9.67
8	8.84	8.46	8.61	8.75	9.33	10.26	10.19	10.06	10.10	10.31	10.10	9.67
9	8.84	8.46	8.61	8.76	9.33	10.26	10.16	10.06	10.09	10.27	10.09	9.65
10	8.84	8.46	8.61	8.76	9.33	10.26	10.15	10.06	10.08	10.26	10.08	9.64
11	8.83	8.46	8.61	8.77	9.34	10.26	10.13	10.06	10.08	10.26	10.08	9.63
12	8.82	8.46	8.61	8.79	9.36	10.26	10.12	10.06	10.05	10.22	10.07	9.63
13	8.82	8.44	8.61	8.80	9.36	10.24	10.11	10.04	10.03	10.20	10.07	9.63
14	8.79	8.45	8.61	8.80	9.37	10.22	10.11	10.03	11.18	10.19	10.06	9.63
15	8.78	8.46	8.61	8.82	9.40	10.20	10.13	10.02	11.42	10.17	10.05	9.63
16	8.77	8.46	8.62	8.90	9.41	10.18	10.16	10.01	10.94	10.16	10.04	9.63
17	8.74	8.46	8.63	8.98	9.47	10.17	10.19	10.01	10.69	10.15	10.03	9.63
18	8.73	8.46	8.63	9.02	9.62	10.16	10.19	10.01	10.57	10.12	10.01	9.63
19	8.70	8.55	8.63	9.06	9.73	10.16	10.19	10.01	10.51	10.08	9.99	9.62
20	8.69	8.61	8.63	9.09	9.83	10.15	10.18	10.02	10.46	10.10	9.99	9.61
21	8.68	8.61	8.63	9.11	9.92	10.14	10.18	10.03	10.43	10.16	9.96	9.60
22	8.65	8.61	8.63	9.11	9.97	10.15	10.16	10.03	10.41	10.18	9.91	9.60
23	8.65	8.61	8.63	9.13	10.06	10.16	10.16	10.04	10.39	10.19	9.91	9.60
24	8.63	8.61	8.63	9.15	10.32	10.16	10.14	10.04	10.54	10.24	9.91	9.60
25	8.59	8.61	8.63	9.16	10.45	10.16	10.12	10.04	10.62	10.27	9.90	9.60
26	8.59	8.61	8.63	9.18	10.44	10.24	10.12	10.03	10.60	10.27	9.87	9.60
27	8.58	8.61	8.63	9.19	10.41	10.42	10.12	10.01	10.55	10.26	9.84	9.59
28	8.57	8.60	8.63	9.24	10.37	10.42	10.11	10.00	10.54	10.25	9.83	9.58
29	8.56	8.60	8.65	9.29		10.37	10.10	9.99	10.54	10.24	9.83	9.53
30	8.55	8.60	8.67	9.31		10.37	10.10	9.97	10.53	10.22	9.82	9.51
31	8.54		8.68	9.32		10.47		9.96		10.21	9.80	
1949-50												
1	9.51	9.20	8.93	8.86	9.45	10.18	10.09	10.21	10.11	10.01	9.56	9.27
2	9.50	9.18	8.92	8.88	9.46	10.18	10.09	10.19	10.11	10.00	9.52	9.25
3	9.46	9.17	8.92	8.90	9.46	10.18	10.09	10.18	10.16	9.98	9.50	9.23
4	9.45	9.16	8.91	8.91	9.46	10.18	10.09	10.18	10.15	9.97	9.48	9.21
5	9.45	9.15	8.90	8.92	9.48	10.17	10.11	10.18	10.12	9.96	9.48	9.19
6	9.44	9.14	8.90	8.92	9.51	10.17	10.13	10.14	10.11	9.94	9.47	9.17
7	9.44	9.13	8.89	8.93	9.55	10.17	10.14	10.10	10.09	9.92	9.44	9.16
8	9.44	9.12	8.88	8.93	9.66	10.17	10.14	10.09	10.07	9.90	9.49	9.14
9	9.43	9.11	8.88	8.94	9.83	10.16	10.14	10.27	10.07	9.88	9.52	9.12
10	9.41	9.10	8.87	8.95	9.93	10.15	10.14	10.27	10.08	9.86	9.52	9.11
11	9.37	9.09	8.87	8.96	9.99	10.14	10.14	10.22	10.06	9.84	9.52	9.11
12	9.37	9.08	8.86	8.97	10.02	10.13	10.14	10.20	10.05	9.83	9.52	9.10
13	9.37	9.07	8.85	8.99	10.05	10.12	10.14	10.17	10.04	9.83	9.53	9.09
14	9.36	9.06	8.85	9.07	10.06	10.11	10.14	10.15	10.15	9.81	9.54	9.07
15	9.35	9.06	8.84	9.13	10.07	10.11	10.13	10.13	10.36	9.79	9.54	9.06
16	9.35	9.06	8.83	9.18	10.07	10.10	10.12	10.12	10.28	9.78	9.54	9.04
17	9.33	9.05	8.83	9.22	10.07	10.09	10.10	10.12	10.20	9.78	9.52	9.02
18	9.31	9.05	8.83	9.23	10.08	10.09	10.10	10.11	10.35	9.78	9.51	9.01
19	9.30	9.05	8.82	9.25	10.08	10.08	10.10	10.11	10.95	9.78	9.50	9.00
20	9.30	9.04	8.82	9.27	10.08	10.08	10.10	10.10	10.54	9.77	9.46	9.00
21	9.30	9.03	8.82	9.29	10.09	10.07	10.10	10.11	10.35	9.74	9.43	9.00
22	9.29	9.02	8.82	9.30	10.10	10.07	10.11	10.11	10.25	9.73	9.41	9.00
23	9.29	9.01	8.83	9.30	10.10	10.07	10.21	10.11	10.18	9.72	9.39	8.98
24	9.29	9.00	8.83	9.32	10.10	10.07	10.45	10.10	10.16	9.68	9.37	8.97
25	9.28	8.99	8.84	9.33	10.10	10.07	10.74	10.09	10.16	9.67	9.36	8.96
26	9.28	8.98	8.84	9.37	10.10	10.08	10.49	10.08	10.14	9.65	9.33	8.92
27	9.27	8.97	8.85	9.38	10.10	10.08	10.32	10.08	10.10	9.63	9.32	8.90
28	9.26	8.96	8.85	9.40	10.13	10.09	10.23	10.09	10.08	9.62	9.32	8.89
29	9.24	8.95	8.85	9.42		10.09	10.21	10.10	10.05	9.61	9.31	8.90
30	9.23	8.94	8.85	9.43		10.09	10.21	10.11	10.03	9.59	9.30	8.90
31	9.22		8.85	9.44		10.09		10.12		9.58	9.29	

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 feet 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 1950.

GAGE.—Water-stage recorder. Datum of gage is 657.98 feet (revised) above mean sea level, datum of 1929. From Aug. 28, 1940, to Nov. 7, 1940, wire-weight gage on downstream handrail of bridge at same site and datum.

AVERAGE DISCHARGE.—10 years, 96.2 second feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43...	May 16	5,640	15.35	Dec. 13	0.4
1943-44...	Apr. 23	6,400	(¹)16.9	Jan. 12, 13	.2
1944-45...	May 15	5,780	15.92	Oct. 1	2.4
1945-46...	June 18	16,500	18.94	June 14	.1
1946-47...	June 15	5,880	(¹)16.0	Sept. 18	.8
1947-48...	Mar. 19	5,880	16.00	Feb. 8, 9	.5
1948-49...	June 24	3,270	(²)	Nov. 30, Dec. 1	2.4
1949-50...	June 15	10,000	17.40	Sept. 25-28	1.0

(1) Floodmark.

(2) Maximum gage height 14.0 feet Feb. 23 (ice jam).

1940-50: Maximum discharge, 16,500 second-feet June 18, 1946 (gage height, 18.94 feet; no flow Aug. 9-16, Aug. 31 to Sept. 3, 1941.

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

COOPERATION.—Services of observer and several discharge measurements furnished by Corps of Engineers.

Fox River at Cantril, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	0.8	1.5	8.8	66	9	26	36	40	31	6	231	3
2.....	.8	2.8	6	54	10	24	28	29	34	5	60	2.5
3.....	1.1	2.6	6	48	1,710	22	23	21	21	h6.2	23	2.5
4.....	1.7	2.4	7	40	528	20	20	16	16	70	38	h2.6
5.....	2.0	4.3	10	30	149	19	16	16	197	814	23	3
6.....	1.1	3.0	8	28	131	19	15	21	484	142	11	9
7.....	.9	2.6	4	30	78	19	19	31	325	70	8.2	11
8.....	.8	2.6	3	28	77	20	17	89	120	40	881	8
9.....	.8	7.6	4	24	94	26	18	61	132	25	313	4
10.....	.9	4.3	3	20	*388	37	36	47	583	16	184	3
11.....	.9	2.8	2	17	157	43	29	84	3,180	10	54	h2.6
12.....	.9	2.8	1	15	90	67	35	47	1,740	h8.2	160	4
13.....	.9	2.2	.4	13	70	64	32	32	338	7.5	148	3.5
14.....	.9	1.5	.5	11	55	56	26	23	109	25	75	3
15.....	.9	1.5	.5	9	60	53	19	1,210	498	22	27	2.5
16.....	.9	1.5	.5	7	80	131	16	3,760	1,360	40	14	3
17.....	.9	6.2	*.6	5	100	58	13	451	794	30	12	3
18.....	.9	6.2	.5	3	113	43	10	368	128	15	10	h2.2
19.....	.9	2.6	.5	2	100	36	9.5	1,270	71	h6.9	9	2
20.....	.8	2.2	.5	3	89	39	9.5	1,080	49	6	8	2
21.....	.9	46	.5	*3.6	66	58	8.8	355	30	5.5	h6.9	2
22.....	.9	35	.7	5	50	109	7.6	175	23	5	9	2
23.....	.9	26	1	7	44	106	8.8	114	29	8	13	2
24.....	1.1	16	2	6	40	93	7.6	90	29	h24	43	1.8
25.....	1.1	10	10	5	32	80	46	60	16	16	16	h1.7
26.....	1.1	6.0	874	5	30	75	105	40	h12	5.0	8	1.7
27.....	1.1	6.9	1,360	6	32	63	361	30	13	2.8	4	1.6
28.....	1.3	8.2	217	7	30	51	115	26	20	5.6	h2.2	1.5
29.....	1.3	9.5	110	8	.....	43	69	25	19	16	3	1
30.....	1.5	8.8	83	10	.....	41	60	27	8	6.2	5	1
31.....	1.5	.....	58	9	.....	40	.....	22	.....	234	4	.....
1943-44												
1.....	2	6.9	2.2	.6	19	15	39	70	26	5.0	2.0	2.8
2.....	2.2	3.6	1.7	.6	15	14	32	h81	22	5.0	10	2.0
3.....	2	2.6	1.3	.6	16	13	25	h667	20	5.6	9.5	2.0
4.....	2	*2.2	1.7	.6	15	24	20	250	19	3.6	19	1.7
5.....	2	1.7	1.5	.7	13	12	16	h144	20	3.6	121	1.7
6.....	2	2.4	1.7	*.6	9.5	59	15	h96	19	3.6	28	1.7
7.....	1.7	3.6	2.2	.4	8.8	62	21	h71	20	5.6	12	1.7
8.....	2.0	5.6	2.2	.3	7.6	16	30	h96	42	6.2	9.5	1.7
9.....	2.0	3.6	2.2	.3	5.0	32	23	70	2,100	6.2	8.2	1.7
10.....	2.0	2.6	2.4	.3	5	26	72	h54	487	6.2	5.6	1.5
11.....	2.0	1.7	2.6	.3	4	21	1,630	40	191	5.6	4.3	1.5
12.....	2.4	1.7	2.2	.2	3	18	622	h32	116	5.6	3.6	1.7
13.....	5.0	2.0	2.0	.2	3	17	224	h29	80	3.6	3.0	5.9
14.....	3.0	2.0	1.7	.3	4	163	133	h25	50	2.8	2.8	14
15.....	2.8	2.0	1.2	.3	5	1,750	1,900	h24	30	2.2	9.4	7.6
16.....	2.2	1.5	1.3	.4	4	545	600	22	20	2.2	11	3.0
17.....	2.0	1.5	1.4	.4	4	200	261	h21	17	2.2	22	2.2
18.....	2.0	1.5	1.5	.4	3	127	248	21	18	2.0	13	1.7
19.....	1.7	1.7	1.3	.4	4	105	401	20	38	2.0	3.0	1.7
20.....	1.7	1.5	1.2	.5	5	78	330	20	96	1.5	2.6	1.7
21.....	2.6	1.5	1.1	.5	8	67	341	36	21	.9	2.2	12
22.....	2.6	1.1	1.0	.6	20	67	2,960	191	13	.9	2.4	12
23.....	3.0	1.1	.9	1	80	106	4,680	601	8.8	.9	2.8	18
24.....	2.8	1.3	.8	2	106	83	2,000	156	8.2	.9	2.2	26
25.....	2.4	1.3	.7	3	62	52	1,000	71	17	1.1	2.0	14
26.....	2.2	1.7	.7	6	50	40	600	42	7.6	1.5	239	11
27.....	2.0	1.7	.8	10	*25	37	h459	37	6.9	1.5	103	7.6
28.....	2.0	1.7	.8	25	20	32	200	30	7.6	1.3	24	3.6
29.....	1.7	1.7	.7	44	16	34	h93	25	6.2	1.1	10	2.0
30.....	2.4	1.7	.7	29	.....	29	80	23	6.2	.9	6.9	1.7
31.....	7.6	.....	.7	25	.....	34	.....	21	.....	.9	6.2	.....

* Winter discharge measurement made on this day.

h Computed from once daily wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 2-25, 1942, Jan. 3 to Feb. 2, Feb. 12-17, Mar. 1-8, Dec. 15-31, 1943, Jan. 1-28, Feb. 10-23, 1944. No gage-height record May 24-28, 30, June 27 to July 2, July 7-11, 13-18, 20-23, 25, Aug. 16-20, 22, 23, 26, 27, Aug. 29 to Sept. 3, Sept. 5-10, 12-17, 19-24, Sept. 26 to Oct. 1, Oct. 3-6, 1943, Apr. 24-26, 28, Apr. 30 to May 1, May 4, 9, 11, 16, 1944, discharge computed on basis of records for nearby stations.

Fox River at Conrtil, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	2.4	3.1	13	11	9	75	65	29	26	29	5.9	5.1
2.....	592	6.2	9	9	10	120	49	32	24	25	4.8	4.0
3.....	842	702	10	9	11	h460	42	34	23	23	5.4	3.8
4.....	253	161	20	8	12	h152	336	32	20	18	5.7	3.5
5.....	328	47	540	9	14	h110	232	28	18	16	5.7	3.3
6.....	109	48	646	9	16	h87	77	26	18	16	5.7	3.1
7.....	33	57	288	10	*18	h76	55	31	469	15	4.8	4.6
8.....	20	40	160	10	18	h75	45	49	306	15	4.3	8.9
9.....	15	31	80	9	21	h111	40	48	1,250	15	4.0	6.2
10.....	12	26	58	7	35	h102	33	37	416	14	4.3	17
11.....	11	23	45	8	100	h81	33	40	102	14	4.6	8.9
12.....	9.6	21	30	10	345	h96	48	29	65	12	4.8	5.4
13.....	8.9	20	25	12	h1,080	h76	43	23	50	12	4.8	5.7
14.....	8.2	55	23	14	1,900	h58	42	1,740	41	8.2	4.6	17
15.....	7.6	*26	23	15	2,110	h55	41	3,910	87	5.9	3.8	20
16.....	7.2	19	25	14	544	h787	1,900	820	2,520	5.7	3.8	9.6
17.....	6.2	17	25	14	144	h151	627	2,410	744	5.7	4.0	6.5
18.....	5.7	16	25	16	95	h75	163	378	151	4.8	4.8	5.9
19.....	5.7	16	25	19	55	h60	109	146	83	4.8	3.8	5.4
20.....	5.4	17	*25	23	45	h87	87	89	545	4.8	3.3	5.7
21.....	5.1	18	25	30	45	h72	75	83	822	4.8	3.3	6.2
22.....	4.6	18	25	30	50	h72	58	63	121	4.8	3.3	13
23.....	4.3	19	20	30	50	h60	51	45	67	4.0	3.3	14
24.....	4.3	18	20	25	50	h54	61	35	54	4.0	3.1	45
25.....	4.0	20	19	25	55	1,570	67	32	932	4.0	3.1	36
26.....	3.8	84	17	25	55	498	87	44	138	4.6	3.1	23
27.....	3.5	50	17	20	60	h146	76	35	75	7.6	3.3	25
28.....	3.5	34	15	17	65	a120	51	31	72	7.2	3.3	223
29.....	3.3	24	15	14	.....	h*97	43	32	41	6.2	4.0	133
30.....	3.3	17	14	12	.....	97	35	29	32	5.7	5.1	136
31.....	3.3	.....	12	10	.....	75	.....	27	.....	6.5	5.7	.....
1945-46												
1.....	346	5.1	32	12	12	13	73	16	20	37	17	a3
2.....	79	4.6	141	19	10	14	47	311	11	16	11	a3
3.....	31	4.0	47	*35	12	15	34	1,230	7.9	11	11	a3
4.....	17	3.1	25	160	18	17	26	482	5.9	8.6	10	a3
5.....	13	3.5	15	3,600	60	110	22	158	5.1	6.9	14	a3
6.....	10	4.6	21	1,590	111	689	34	125	3.1	5.9	13	a3
7.....	9.6	4.0	17	306	90	230	36	180	2.2	5.7	10	h2.7
8.....	7.9	5.1	16	122	70	237	71	a80	1.4	5.4	14	a3
9.....	6.5	4.6	12	372	52	316	46	a60	.9	4.8	11	a3
10.....	5.9	4.6	6	*288	42	163	28	a50	.6	3.8	10	a3
11.....	6.2	5.7	4	113	33	613	72	h40	.2	3.1	7.9	a3
12.....	6.2	6.2	3	66	32	891	360	a30	.3	2.4	8.9	3.1
13.....	5.7	13	2	25	33	300	122	25	.2	2.2	7.6	3.1
14.....	5.9	14	2	23	39	262	71	23	.1	2.0	6.2	3.1
15.....	6.2	9.3	2	20	34	324	54	23	529	23	6.2	3.1
16.....	6.2	6.5	1	23	39	977	35	22	408	37	5.7	3.1
17.....	5.9	5.9	1	30	52	1,270	26	28	65	6,580	5.4	3.1
18.....	6.2	5.7	1	39	48	368	21	77	12,700	6,300	5.1	2.9
19.....	6.2	5.1	1	38	39	196	18	58	8,770	182	4.6	3.1
20.....	5.7	4.6	1	25	38	133	17	30	574	84	3.8	3.3
21.....	5.1	5.7	1	18	35	104	16	21	198	55	4.3	3.5
22.....	4.0	5.7	1	6	29	91	15	16	109	39	4.6	229
23.....	3.5	6.2	1	5	*23	1,200	14	17	69	29	4.8	543
24.....	3.5	6.5	1	4	17	1,340	14	213	47	24	7.6	32
25.....	4.0	6.2	1	3	17	304	13	208	40	26	30	5.1
26.....	3.5	7.9	1	2	18	546	12	47	31	29	36	3.1
27.....	3.5	9.6	1	4	17	348	10	24	24	23	15	4.3
28.....	3.1	9.6	1	6	12	122	10	23	19	20	a8	5.4
29.....	3.5	9.3	2	8	.....	84	10	11	18	18	a6	5.4
30.....	3.1	7.9	4	10	.....	220	9.6	10	53	15	a4	5.7
31.....	3.5	.....	6	13	.....	156	.....	23	.....	13	h3.5	.....

* Winter discharge measurement made on this day.

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

h Computed from once daily wire-weight gage readings.

Note—Stage-discharge relation affected by ice Nov. 29 to Dec. 5, Dec. 8, 9, 11-31, 1944, Jan. 1 to Feb. 12, Feb. 18 to Mar. 2, Dec. 10-31, 1945, Jan. 1-5, 13-17, Jan. 20 to Feb. 4, 1946.

Fox River at Cantril, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	a6	6.9	6.9	4	35	3	75	365	106	g272	h3.8	h2.6
2.....	a6	7.6	3.1	4	25	3	73	204	121	g73	h3.8	h2.2
3.....	a5	12	3.8	4	15	4	76	101	125	g54	h3.5	h1.6
4.....	a5	18	3.5	5	10	5	1,190	69	230	h44	h2.6	h1.6
5.....	a5	13	5.4	5	9	6	4,010	43	g4,590	h33	a2.6	h1.6
6.....	a5	10	7.9	5	8	7	664	32	g3,410	a38	h2.6	h1.4
7.....	a4	9.6	7.9	6	7	10	184	28	g1,300	h44	h2.6	h1.6
8.....	a4	8.2	8.6	*6	6	18	115	23	g274	h38	a2.6	h1.6
9.....	a4	9.6	10	7	5	25	99	21	h176	h33	h2.6	h2.0
10.....	a5	211	8.9	10	4	20	146	21	h104	h14	h2.6	1.1
11.....	a6	118	8.2	h15	4	12	571	20	h127	h14	h2.6	6.5
12.....	h7.2	38	*30	h38	*4	15	134	18	g2,240	h11	a3	3.8
13.....	a6	23	174	h81	6	280	96	16	g2,620	h8.6	h3.8	2.9
14.....	a5	17	62	188	15	300	89	16	h186	h8.6	h3.8	2.0
15.....	a4	16	30	262	70	200	90	37	h186	h3.8	h2.6	1.5
16.....	a4	17	20	95	50	100	186	32	a500	h3.8	h3.8	1.1
17.....	a4	32	10	50	35	70	180	24	g1,520	h2.6	h2.6	1.0
18.....	5.7	29	8	35	20	50	93	20	g1,740	h2.6	h2.6	.8
19.....	6.9	17	7	25	13	40	96	h16	g1,240	h2.6	h2.0	.9
20.....	3.1	16	6	20	8	50	1,730	h13	g274	h5.4	h1.6	4.8
21.....	a3	15	7	18	6	60	165	h21	g1,550	h3.8	a1.6	g472
22.....	a4	12	8	20	5	71	172	h13	g1,720	h3.8	a1.6	29
23.....	a5	10	h10	21	4	76	163	h11	g1,220	h5.4	h1.6	10
24.....	6.2	10	h8.2	h22	4	141	110	h11	g282	a5.4	h2.6	5.9
25.....	2.9	10	h7.2	41	3	192	83	h25	g87	a5.4	h1.6	4.0
26.....	4.8	8.9	h7.9	35	3	*84	69	42	h33	h5.4	h1.6	3.3
27.....	4.0	7.9	13	26	3	75	60	29	h28	h5.4	h1.6	3.3
28.....	a3	7.6	10	h28	3	72	57	204	h34	h5.4	h2.2	3.3
29.....	a4	7.2	7	h40	.....	73	67	1,160	g558	h5.1	h2.6	3.1
30.....	8.2	7.2	4	82	.....	72	385	286	g1,020	h4.8	h2.6	2.4
31.....	7.2	.....	4	46	.....	77	.....	125	.....	h4.6	h2.6	.....
1947-48												
1.....	2.7	51	4.3	8	1	75	63	20	h3.3	6.2	10	2.4
2.....	2.7	14	5.4	10	1	42	51	142	a3	4.0	8.2	3.8
3.....	2.6	7.2	18	12	.....	9	44	43	a3	2.7	7.2	3.5
4.....	4.0	5.7	1,060	14	*.8	38	40	70	h2.9	3.3	7.2	2.9
5.....	4.0	5.7	420	16	.7	34	37	44	h2.9	430	6.5	2.7
6.....	2.9	4.3	109	18	.6	43	33	196	a3	70	5.4	2.6
7.....	2.2	3.8	128	20	.6	42	82	h01	a3	23	4.3	2.6
8.....	1.6	3.3	131	24	.5	44	72	h85	a3	15	4.3	39
9.....	1.6	3.1	h108	52	.5	42	45	a88	a3	12	4.0	14
10.....	1.1	3.5	h102	60	.6	25	35	h90	a3	10	3.5	9.6
11.....	1.1	4.3	h95	56	.....	22	36	h79	a3	7.6	3.1	8.6
12.....	1.1	3.8	h77	63	1	26	36	a68	a3	9.3	2.9	7.2
13.....	1.0	3.3	44	60	1	65	46	a57	h3.1	34	2.4	6.2
14.....	1.1	4.0	34	40	2	500	34	a46	h2.9	32	2.2	5.4
15.....	1.0	97	28	30	8	781	30	h36	h3.3	23	2.0	4.6
16.....	1.0	26	22	24	400	346	27	h34	a3.6	26	1.8	4.0
17.....	.9	10	18	20	600	*125	23	h32	h4.0	20	1.5	3.5
18.....	.9	5.9	*15	14	522	94	21	a22	3.8	9.6	1.4	3.1
19.....	.9	4.0	14	10	354	3,180	20	h13	3.1	7.9	1.1	2.9
20.....	.9	3.3	14	10	110	715	17	h11	3.5	6.9	1.1	14
21.....	.8	3.5	13	10	52	268	16	h11	6.2	7.2	1.0	547
22.....	.8	10	12	8	50	186	26	h8.6	6.5	76	1.0	70
23.....	.9	6.5	12	6	75	139	47	h8.6	146	38	.9	17
24.....	2.4	5.7	11	6	82	113	37	h7.2	27	15	.9	12
25.....	4.3	4.8	10	5	86	99	29	h5.7	8.9	38	.6	11
26.....	4.6	5.1	10	5	89	96	25	a5.2	20	122	1.0	8.9
27.....	5.9	5.9	10	4	1,370	87	55	a4.7	17	28	12	7.9
28.....	6.5	6.9	9	3	814	73	60	h4.3	21	110	5.7	7.2
29.....	6.5	5.7	9	3	149	63	28	h4.3	7.2	26	3.3	5.9
30.....	4.3	5.4	9	2	.....	58	21	h4.3	6.5	15	2.4	5.4
31.....	35	.....	8	2	.....	63	.....	h4.3	.....	13	2.2	.....

* Winter discharge measurement made on this day.

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

g Computed from graph based on gage readings.

h Computed from wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 16-22, 28-31, 1946, Jan. 1-10, 18-23, Feb. 1 to Mar. 21, Dec. 14-31, 1947, Jan. 1-10, Jan. 14 to Feb. 17, Feb. 22-25, Mar. 11, 12, 1948.

Fox River at Cantril, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	5.1	2.9	2.4	11	12	200	287	21	420	57	10	2.9
2.....	5.1	3.1	2.6	10	12	400	167	21	470	52	8.3	2.7
3.....	4.8	3.1	2.9	11	11	200	121	20	438	42	7.0	2.7
4.....	4.6	3.1	3.8	60	11	250	88	17	95	35	6.5	3.1
5.....	4.6	3.5	5.1	30	11	400	72	17	52	34	5.8	3.3
6.....	5.7	5.4	5.1	16	11	375	60	14	39	42	5.3	3.3
7.....	27	4.6	3.8	14	11	158	52	13	32	40	4.8	3.7
8.....	11	3.5	2.7	12	10	174	48	14	29	36	4.4	3.5
9.....	6.5	4.0	2.8	11	10	350	43	19	28	47	4.2	3.3
10.....	4.8	4.0	3.3	10	*10	*144	39	19	26	40	4.6	3.1
11.....	4.3	4.0	3.1	9.0	11	80	36	15	25	39	6.8	6.0
12.....	4.0	3.8	3.8	8.5	20	54	34	14	25	35	30	228
13.....	3.8	3.5	4.6	7.6	40	45	43	14	30	28	8.9	24
14.....	3.8	3.5	5.1	7.4	30	39	63	12	691	22	6.0	10
15.....	3.3	3.5	9.3	100	20	33	171	13	530	92	5.1	7.0
16.....	3.3	4.3	8.0	140	15	30	178	13	104	32	4.4	5.5
17.....	2.9	11	5.2	64	16	28	133	14	47	24	3.9	4.8
18.....	2.7	8.6	4.7	50	70	26	78	15	32	28	3.7	4.4
19.....	2.7	78	4.4	43	500	25	54	16	26	71	8.3	3.5
20.....	2.6	101	4.1	38	400	32	45	18	23	635	13	3.3
21.....	2.6	19	3.7	33	320	43	40	83	47	647	5.8	3.1
22.....	2.7	8.6	3.5	29	500	314	47	97	137	348	4.4	3.1
23.....	2.9	5.9	3.4	27	800	178	48	30	92	74	3.7	2.7
24.....	2.9	4.8	4.1	34	1,000	95	45	16	1,030	65	3.9	2.7
25.....	2.9	5.1	4.8	28	450	76	30	16	865	31	3.3	2.7
26.....	2.9	4.6	3.8	24	300	1,010	27	13	271	19	3.1	2.7
27.....	2.9	3.5	3.3	21	230	720	26	11	75	14	8.9	2.9
28.....	2.7	3.8	6.0	17	150	250	24	11	874	13	5.3	2.5
29.....	2.7	2.7	20	15	.....	129	22	9.4	260	18	3.7	2.5
30.....	2.9	2.4	*17	14	.....	1,000	21	8.9	88	11	4.2	2.7
31.....	2.9	.....	14	12	.....	945	.....	8.3	.....	14	3.3	.....
1949-50												
1.....	2.5	3.1	4.8	56	7.8	347	35	41	17	14	4.9	3.0
2.....	2.7	3.1	2.5	15	6.7	93	34	32	19	13	4.7	2.6
3.....	2.9	3.1	2.9	11	6.0	114	35	28	g818	13	4.5	2.4
4.....	3.1	3.1	2.9	7.6	5.6	106	104	26	g400	12	4.7	1.9
5.....	3.3	2.9	2.5	6.0	6.6	106	149	24	g74	12	4.7	1.7
6.....	4.2	2.9	2.7	5.6	150	107	74	21	g30	12	4.5	1.5
7.....	3.9	2.9	2.7	5.6	700	106	49	17	g20	11	4.3	1.4
8.....	4.2	3.1	2.3	5.6	2,000	87	36	16	g16	11	9.7	1.4
9.....	3.5	3.1	2.7	5.6	438	70	31	611	g15	10	10	1.4
10.....	3.3	3.3	3.3	5.6	138	54	58	226	g13	9.7	18	1.5
11.....	3.5	3.3	7.0	14	80	46	72	44	g12	h8.4	7.5	3.2
12.....	3.3	5.1	9.4	11	50	41	45	27	g10	h7.2	6.4	2.6
13.....	3.1	13	4.5	500	33	44	28	21	11	h6.6	8.7	2.0
14.....	3.1	6.3	3.4	150	26	42	25	19	741	h6.1	8.0	1.7
15.....	3.1	4.6	2.5	25	29	49	24	16	4,470	h6.0	8.0	1.7
16.....	2.9	3.9	*2.0	30	25	46	22	15	298	g77	6.2	1.5
17.....	2.9	3.5	2.3	20	60	45	21	16	123	g57	5.4	1.5
18.....	3.1	3.1	2.6	13	*328	44	21	15	1,280	26	4.5	1.5
19.....	3.3	2.9	3.1	10	104	42	21	13	4,170	17	3.9	4.5
20.....	4.6	2.7	3.6	*7.7	113	41	19	13	500	14	3.3	3.5
21.....	9.7	2.7	3.9	7.4	208	43	17	128	147	12	3.0	2.6
22.....	7.6	2.3	4.1	7.7	81	51	17	70	81	12	2.8	2.6
23.....	4.6	2.7	4.3	8.2	40	136	48	40	53	10	2.2	2.0
24.....	3.9	3.1	4.1	22	34	74	532	22	38	9.7	2.2	1.5
25.....	3.5	2.7	3.9	13	40	72	1,220	16	31	8.9	2.2	1.0
26.....	3.1	2.7	3.8	10	38	68	249	15	25	8.0	2.2	1.0
27.....	3.1	2.9	3.7	9.0	45	g65	65	15	21	6.6	2.6	1.0
28.....	3.1	2.9	3.6	10	1,180	g57	43	15	17	6.0	3.2	1.0
29.....	3.1	2.9	3.6	11	.....	g46	38	17	16	5.4	3.2	1.4
30.....	3.3	2.9	3.6	11	.....	g40	49	18	15	5.2	3.7	1.5
31.....	3.1	.....	76	9.0	.....	36	.....	19	.....	4.9	3.3	.....

* Winter discharge measurement made on this day.

g Computed from graph based on wire-weight gage readings.

h Computed from once daily wire-weight gage readings.

Note—Stage-discharge relation affected by ice Nov. 30 to Dec. 2, Dec. 7-9, 16-31, 1948, Jan. 1 to Mar. 5, Mar. 11-19, Dec. 13-30, 1949, Jan. 2 to Feb. 8, Feb. 11-17, 23-27, Mar. 9-14, 1950.

Fox River at Cantril, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acre feet
October 1942.....	32.5	2.0	0.8	1.05	0.0065	0.008	64
November.....	236.5	46	1.5	7.88	.049	.05	469
December.....	2,783.0	1,360	.4	89.8	.558	.64	5,520
Calendar year 1942.....	20,290.3	1,720	.4	55.6	.345	4.67	40,250
January 1943.....	524.6	66	2	16.9	.105	.12	1,040
February.....	4,412	1,710	9	158	.981	1.02	8,750
March.....	1,581	131	19	51.0	3.17	.37	3,140
April.....	1,215.8	361	7.6	40.5	.252	.28	2,410
May.....	9,670	3,760	16	312	1.94	2.23	19,180
June.....	10,409	3,180	8	347	2.16	2.40	20,650
July.....	1,692.9	814	2.8	54.6	.339	.39	3,360
August.....	2,403.3	881	2.2	77.5	.481	.56	4,770
September.....	92.7	11	1	3.09	.019	.02	184
Water year 1942-43.....	35,053.3	3,760	.4	96.0	.596	8.09	69,540
October 1943.....	76.0	7.6	1.7	2.45	.015	.02	151
November.....	66.7	6.9	1.1	2.22	.014	.02	132
December.....	44.4	2.6	.7	1.43	.0089	.01	88
Calendar year 1943.....	32,188.4	3,760	.7	88.2	.548	7.44	63,860
January 1944.....	154.5	44	2	4.98	.031	.04	306
February.....	540.5	106	3	18.6	.116	.12	1,070
March.....	3,928	1,750	13	127	.789	.91	1,750
April.....	19,055	4,680	15	635	3.94	4.40	37,800
May.....	3,086	667	20	99.5	.618	.71	6,120
June.....	3,533.5	2,100	6.2	118	.733	.82	7,010
July.....	92.2	6.2	.9	2.97	.018	.02	183
August.....	700.2	239	2.0	22.6	.140	.16	1,390
September.....	167.4	26	1.5	5.58	.035	.04	332
Water year 1943-44.....	31,444.4	4,680	.2	85.9	.534	7.27	62,370
October 1944.....	2,334.9	842	2.4	75.3	.468	.54	4,630
November.....	1,653.3	702	3.1	55.1	.342	.38	3,280
December.....	2,294	646	9	74.0	.460	.53	4,550
Calendar year 1944.....	37,539.5	4,680	.2	103	.640	8.67	68,420
January 1945.....	474	30	7	15.3	.095	.11	940
February.....	7,012	2,110	9	250	1.55	1.62	13,910
March.....	5,755	1,570	54	186	1.16	1.33	11,410
April.....	4,671	1,900	33	156	.969	1.08	9,260
May.....	10,387	3,910	23	335	2.08	2.40	20,600
June.....	9,312	2,520	18	310	1.93	2.15	18,470
July.....	323.3	29	4	10.4	.065	.07	641
August.....	133.5	5.9	3.1	4.31	.027	.03	265
September.....	803.8	223	3.1	26.8	.166	.19	1,590
Water year 1944-45.....	45,153.8	3,910	2.4	124	.770	10.43	89,550
October 1945.....	626.6	346	3.1	20.2	.125	.14	1,240
November.....	193.8	14	3.1	6.46	.040	.04	384
December.....	370	141	1	11.9	.074	.09	734
Calendar year 1945.....	40,062	3,910	1	110	.683	9.25	79,460
January 1946.....	6,985	3,600	2	225	1.40	1.61	13,850
February.....	1,032	111	10	36.9	.229	.24	2,050
March.....	11,653	1,340	13	376	2.34	2.69	23,110
April.....	1,336.6	360	9.6	44.6	.277	.31	2,650
May.....	3,661	1,230	10	118	.733	.85	7,260
June.....	23,712.9	12,700	1	790	4.91	5.48	47,030
July.....	13,611.8	6,580	2.0	439	2.73	3.14	27,000
August.....	309.2	36	3.5	9.97	.062	.07	613
September.....	897.1	643	2.7	29.9	.186	.21	1,780
Water year 1945-46.....	64,389	12,700	.1	176	1.09	14.87	127,700

Fox River at Cantril, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet			Runoff		
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-foot
October 1946.....	153.2	8.2	2.9	4.94	0.031	0.04	304
November.....	724.7	211	6.9	24.2	.150	.17	1,440
December.....	507.5	174	3.1	16.4	.102	.12	1,010
* Calendar year 1946.....	64,584	12,700	.1	177	1.10	14.93	128,100
January 1947.....	1,244	262	4	40.1	.249	.29	2,470
February.....	380	70	3	13.6	.084	.09	754
March.....	2,211	300	3	71.3	.443	.51	4,390
April.....	11,228	4,010	57	374	2.32	2.59	22,270
May.....	3,046	1,160	11	98.3	.611	.70	6,040
June.....	27,601	4,590	28	920	5.71	6.38	54,750
July.....	760.5	272	2.6	24.5	.152	.18	1,510
August.....	79.9	3.8	1.6	2.58	.016	.02	158
September.....	578.9	472	.8	19.3	.120	.13	1,150
Water year 1946-47.....	48,514.7	4,590	.8	133	.826	11.22	96,250
October 1947.....	107.3	35	.8	3.46	.021	.02	213
November.....	322.7	97	3.1	10.8	.067	.07	640
December.....	2,559.7	1,060	4.3	82.6	.513	.59	5,080
Calendar year 1947.....	50,119.0	4,590	.8	137	.851	11.57	99,420
January 1948.....	615	63	2	19.8	.123	.14	1,220
February.....	4,773.0	1,370	5	165	1.02	1.10	9,470
March.....	7,528	3,180	22	243	1.51	1.74	14,930
April.....	1,129	82	16	37.6	.234	.26	2,240
May.....	1,431.2	196	4.3	46.2	.287	.33	2,840
June.....	329.7	146	2.9	11.0	.068	.08	654
July.....	1,240.7	430	2.7	40.0	.248	.29	2,460
August.....	111.1	12	1.6	3.58	.022	.03	220
September.....	834.9	547	2.4	27.8	.173	.19	1,660
Water year 1947-48.....	20,982.3	3,180	.5	57.3	.356	4.84	41,630
October 1948.....	143.6	27	2.6	4.63	.029	.03	285
November.....	318.8	101	2.4	10.6	.066	.07	632
December.....	170.4	20	2.4	5.50	.034	.04	338
Calendar year 1948.....	18,625.4	3,180	.5	50.9	.316	4.30	36,950
January 1949.....	906.5	140	7.4	29.2	.181	.21	1,800
February.....	4,981	1,000	10	178	1.11	1.15	9,880
March.....	7,903	1,010	25	255	1.58	1.83	15,680
April.....	2,142	287	21	71.4	.443	.49	4,250
May.....	622.6	97	8.3	20.1	.125	.14	1,230
June.....	6,901	1,030	23	230	1.43	1.59	13,690
July.....	2,685	647	11	86.6	.538	.62	5,330
August.....	200.6	30	3.1	6.47	.040	.05	398
September.....	355.7	228	2.5	11.9	.074	.08	706
Water year 1948-49.....	27,330.2	1,030	2.4	74.9	.465	6.30	54,220
October 1949.....	114.6	9.7	2.5	3.70	.023	.03	227
November.....	106.8	13.	2.3	3.56	.022	.02	212
December.....	184.3	76.	2.0	5.95	.037	.04	366
Calendar year 1949.....	27,103.1	1,030	2.0	74.3	.461	6.25	53,760
January 1950.....	1,022.6	500	5.6	33.0	.205	.24	2,030
February.....	5,972.7	2,000	5.6	213	1.32	1.38	11,850
March.....	2,318	347	36.	74.8	.465	.54	4,600
April.....	3,181	1,220	17	106	.658	.73	6,310
May.....	1,616	611	13	52.1	.324	.37	3,210
June.....	13,481	4,470	10	449	2.79	3.11	26,740
July.....	431.7	77	4.9	13.9	.086	.10	856
August.....	162.5	18	2.2	5.24	.033	.04	322
September.....	58.1	4.5	1.0	1.94	.012	.01	115
Water year 1949-50.....	28,649.3	4,470	1.0	78.5	.488	6.62	56,830

MISSOURI RIVER BASIN

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 square miles.

RECORDS AVAILABLE.—September 1928 to September 1931 and October 1938 to September 1950, in reports of U. S. Geological Survey. January 1879 to December 1890 (monthly discharges only) in House Document 238, 73d Congress, 2d session. Gage-height records collected within 1.7 miles of present gage September 1878 to December 1899 are contained in reports of Missouri River Commission and since July 1889 in reports of United States Weather Bureau.

GAGE.—Water-stage recorder. Datum of gage is 1,076.96 feet 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 data. Jan. 1, 1906, to Feb. 14, 1935, chain gage at present site and datum.

AVERAGE DISCHARGE.—15 years (1928-31, 1938-50), 29,600 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43 ..	April 10	212,000	18.72	Dec. 11-15	6,000
1943-44 ..	April 12	180,300	15.45	Dec. 29	10,200
1944-45 ..	Mar. 22	116,400	9.35	Dec. 4	12,000
1945-46 ..	June 21, 22	87,900	8.6	Dec. 21	3,300
1946-47 ..	April 4	178,000	15.1)	Dec. 25, 26	3,520
1947-48 ..	Mar. 27	115,000	(¹)	Dec. 6, 7	7,400
1948-49 ..	April 10	178,000	15.72	Dec. 18	3,700
1949-50 ..	April 25	252,000	18.44	Dec. 25, 26	3,800

(1) Maximum gage height 9.8 feet June 27.

1928-31, 1938-50: Maximum discharge, 252,000 second-feet Apr. 25, 1950 (gage height, 18.44 feet); minimum, 2,500 second-feet Dec. 29, 1941; minimum gage height observed, -3.34 feet Dec. 27, 1946.

Maximum stage known, 22.5 feet Apr. 23, 1881 (discharge about 362,000 second-feet, from information by Corps of Engineers).

REMARKS.—Records good except those for period of ice effect, which are fair. Flow partly regulated by Fort Peck Reservoir.

Missouri River at Sioux City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1	23,500	22,000	16,000	7,000	*6,800	16,000	*153,000	g32,700	29,900	g89,600	34,200	30,800
2	23,500	22,000	14,000	7,000	7,200	14,800	151,000	g31,300	29,300	g93,300	32,300	30,500
3	24,200	22,500	12,000	7,000	8,600	14,500	150,000	g30,600	29,900	g92,000	30,800	30,500
4	24,600	23,100	10,000	6,900	9,000	14,000	155,000	g30,600	31,300	g87,800	30,500	32,900
5	24,900	22,900	8,300	6,900	9,200	14,000	154,000	g31,000	g34,200	87,200	30,200	33,200
6	24,900	22,900	7,400	6,800	9,400	14,800	161,000	g33,400	32,900	85,900	30,500	33,900
7	24,900	23,800	7,000	6,600	9,500	19,700	169,000	g34,400	31,300	86,500	30,200	37,200
8	24,400	24,200	6,600	*6,500	9,600	20,200	181,000	g35,400	g43,700	90,200	29,900	38,400
9	24,000	24,900	6,300	7,000	9,500	19,100	196,000	g34,400	g77,600	82,900	29,900	36,000
10	23,300	24,900	6,100	*7,400	9,400	17,600	208,000	g34,400	g89,000	77,600	30,200	33,600
11	22,900	24,900	6,000	9,400	*8,700	16,700	176,000	g34,700	95,800	80,000	35,500	31,100
12	22,500	25,100	6,000	10,900	8,200	17,800	g90,800	g33,400	95,800	80,000	29,300	30,500
13	22,000	25,100	6,000	11,200	7,900	20,000	g71,400	g33,200	92,000	74,700	30,200	28,800
14	21,400	25,800	6,000	12,100	7,600	34,800	g61,700	g32,400	g89,000	68,600	32,600	28,800
15	21,400	26,300	6,000	12,200	7,400	50,000	g56,200	g30,800	g86,500	64,300	33,200	28,800
16	21,400	26,500	6,100	12,200	7,300	29,900	g52,900	30,400	89,000	65,900	29,900	28,800
17	21,400	26,300	6,400	11,800	7,200	19,000	g50,200	30,400	97,600	67,000	27,700	28,800
18	21,200	26,000	6,600	11,500	7,200	18,000	g49,700	30,400	g100,000	64,300	27,700	28,500
19	21,200	26,000	6,800	11,300	7,200	19,500	g49,700	31,000	g88,400	63,500	27,500	27,500
20	21,200	25,800	7,000	11,100	7,300	21,300	g48,900	31,500	g76,500	g64,400	27,200	27,000
21	20,800	*25,600	7,000	10,500	8,000	*24,700	g47,200	31,700	70,300	60,000	27,200	26,700
22	20,800	24,600	7,000	10,100	9,000	*26,100	g44,800	32,200	73,600	58,200	26,300	26,300
23	20,600	23,100	7,000	9,500	11,000	*29,700	g41,900	31,700	73,600	53,500	25,600	26,000
24	20,600	21,400	7,200	9,000	13,000	40,000	g40,200	31,300	71,400	50,600	25,200	26,000
25	20,800	19,800	7,300	8,200	16,000	48,400	g38,600	30,800	68,600	48,300	25,300	26,000
26	20,600	18,600	7,300	7,800	18,000	*58,700	g37,700	30,600	63,300	45,000	26,000	26,500
27	21,000	18,100	7,300	7,400	21,000	43,300	g36,800	29,900	g65,400	43,500	28,000	26,700
28	21,200	17,300	7,200	7,300	20,000	38,000	g36,000	29,300	g76,800	40,600	31,400	26,700
29	21,600	16,400	7,000	7,200	.....	37,700	g34,400	29,300	g72,500	38,400	32,600	26,700
30	21,800	16,000	6,800	7,100	.....	39,500	g32,700	28,800	g81,200	36,800	35,700	26,700
31	21,800	.....	6,900	7,000	.....	105,000	.....	29,900	.....	35,700	33,200	.....
1943-44												
1	27,000	31,300	25,200	10,900	13,000	19,200	*26,200	33,800	49,700	123,400	35,300	32,300
2	27,200	32,300	25,200	10,800	13,000	17,400	26,800	30,600	45,700	129,800	43,500	32,300
3	27,500	31,300	25,200	10,700	13,000	16,200	29,600	35,000	44,100	124,100	39,600	32,700
4	27,700	31,000	25,000	10,700	14,200	15,100	29,000	40,500	53,900	110,100	58,900	32,000
5	27,200	30,600	25,200	10,600	14,500	14,800	32,300	42,500	53,300	106,300	63,300	31,600
6	26,000	29,300	25,200	10,600	14,900	14,500	100,600	35,300	51,500	110,100	48,500	32,000
7	25,600	30,300	25,200	11,600	*10,900	14,300	119,800	32,000	46,800	135,500	42,500	31,600
8	25,600	30,300	25,500	13,700	17,100	14,500	119,600	30,600	42,500	117,100	39,600	31,000
9	25,300	29,000	25,500	14,900	17,400	14,900	154,200	29,300	45,100	105,000	37,800	30,300
10	25,800	29,000	25,000	15,700	16,600	15,300	162,600	28,700	76,500	93,600	36,100	30,300
11	26,700	29,000	24,300	15,300	14,000	*16,500	167,200	28,100	86,000	96,800	35,300	30,000
12	27,700	30,000	24,100	16,000	16,000	16,500	178,300	47,900	121,500	104,400	32,700	28,700
13	29,300	30,000	23,200	15,700	18,000	17,200	152,300	40,500	124,700	101,800	31,300	28,400
14	29,000	29,000	23,000	15,600	18,000	17,500	142,600	35,700	125,300	92,900	30,300	27,600
15	29,000	29,300	16,800	16,400	18,800	18,800	135,500	31,600	120,200	91,000	30,300	27,000
16	27,700	28,700	14,200	17,200	18,800	20,300	99,300	30,600	112,600	87,200	31,000	27,600
17	27,700	28,400	12,000	17,900	19,900	20,500	75,900	29,300	97,400	86,000	31,300	25,500
18	27,500	27,800	11,200	18,500	19,000	19,800	67,700	27,600	88,500	79,700	32,700	24,800
19	27,700	27,800	11,000	18,300	18,600	17,200	64,600	27,800	82,200	74,900	33,000	25,200
20	28,200	27,500	10,900	18,300	18,700	16,900	60,200	28,700	84,100	70,900	32,400	30,600
21	27,700	26,800	11,000	18,300	19,000	16,500	55,800	27,800	103,100	65,800	32,300	28,400
22	28,500	27,000	10,500	18,500	18,600	16,000	47,400	30,600	115,200	58,300	32,000	26,200
23	28,500	26,500	10,500	18,000	18,300	16,400	44,600	34,600	122,800	53,300	34,200	24,800
24	27,700	26,000	10,500	18,000	17,900	18,000	46,800	33,800	123,400	50,900	36,100	23,800
25	27,500	25,200	10,400	17,500	17,200	20,200	45,700	31,600	126,600	47,400	35,700	23,800
26	27,200	24,500	10,500	16,500	17,200	22,300	42,000	27,600	117,100	44,600	34,600	23,800
27	27,000	24,300	10,500	15,000	18,000	24,100	38,700	27,000	123,400	41,500	36,100	23,600
28	27,000	24,100	10,400	14,500	19,000	24,800	36,500	30,000	132,300	37,800	42,500	23,600
29	27,700	24,300	10,200	14,000	20,000	25,700	34,600	67,100	126,600	33,800	38,200	23,800
30	28,800	25,000	10,500	13,500	.....	26,100	33,400	69,600	117,100	32,300	32,700	24,100
31	29,900	.....	10,800	13,500	.....	26,300	.....	58,300	.....	31,000	32,300	.....

* Winter discharge measurement made on this day.

g Computed from graph based on daily gage readings and portions of recorder graph.

Note—Stage-discharge relation affected by ice Nov. 30 to Dec. 31, 1942, Jan. 1 to Mar. 24, Dec. 17-31, 1943, Jan. 1 to Mar. 31, 1944. Discharge computed from wire-weight gage readings Apr. 6-8, 16, Apr. 23 to May 15, May 30, 31, June 10-12, June 15 to Aug. 31, Sept. 5, 1944.

Missouri River at Sioux City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1	24,100	32,300	23,400	16,800	20,500	*19,000	g52,000	18,800	25,700	39,600	41,500	20,700
2	24,500	32,000	19,200	15,800	21,100	20,700	63,900	18,500	26,500	37,000	42,000	20,500
3	25,000	31,000	15,000	14,800	21,300	21,100	54,600	17,800	27,300	69,000	42,000	20,900
4	25,000	29,600	12,000	14,800	21,600	21,700	47,400	18,000	29,000	90,400	37,800	20,500
5	24,800	27,800	12,100	15,200	22,100	20,900	43,500	17,600	29,000	86,600	37,000	20,000
6	25,000	26,800	*12,000	15,000	21,900	20,900	42,000	17,200	28,400	77,200	36,500	20,300
7	25,700	26,000	12,800	14,400	22,100	20,900	37,800	16,400	29,300	70,200	34,200	20,300
8	26,200	26,000	12,600	13,800	22,500	20,700	34,200	15,600	30,600	63,300	31,600	20,500
9	25,500	25,200	12,600	13,400	24,100	20,000	34,600	15,600	32,700	55,800	29,600	21,100
10	25,000	25,200	12,600	13,600	28,100	25,000	32,700	15,600	35,300	49,700	28,400	21,300
11	25,200	25,000	13,200	13,400	28,100	*34,600	30,600	15,600	58,700	45,700	28,400	21,500
12	25,500	25,000	14,000	13,600	29,600	41,000	28,700	15,600	60,200	43,500	28,100	21,100
13	25,700	25,200	14,400	13,600	30,600	50,900	27,800	15,800	62,700	41,000	26,500	20,700
14	26,000	26,000	13,800	14,400	29,000	50,900	27,300	16,800	75,300	40,000	24,500	20,500
15	26,200	27,000	13,400	14,400	26,800	50,900	26,500	17,600	83,500	49,700	23,200	20,700
16	26,000	26,500	13,400	14,000	24,500	*45,700	26,500	18,400	78,400	37,400	23,600	21,300
17	25,500	26,500	14,000	13,600	23,600	58,900	26,200	18,400	77,800	39,100	24,100	22,500
18	25,000	27,000	14,600	13,800	23,200	g78,400	27,300	17,600	74,000	40,500	24,100	23,200
19	24,300	28,100	14,200	13,600	22,100	g85,400	27,300	16,800	70,200	42,500	26,200	23,400
20	24,100	30,000	13,600	13,600	21,700	g109,400	26,500	16,000	65,800	45,700	25,700	24,100
21	23,800	31,000	12,800	13,600	20,900	g111,400	25,700	16,600	60,800	43,000	26,800	24,800
22	23,600	30,600	12,300	13,600	21,100	g108,200	25,000	19,200	55,800	39,600	27,300	25,200
23	23,600	29,600	12,100	13,800	21,100	103,700	23,400	21,300	52,700	39,100	26,000	27,300
24	23,600	29,300	12,100	14,800	21,300	91,000	22,100	20,500	50,900	40,000	24,800	29,300
25	23,600	28,700	12,600	15,200	21,500	87,900	21,100	18,000	48,500	40,500	23,000	28,400
26	23,800	*29,000	12,000	15,800	21,300	95,500	20,000	17,400	50,300	40,000	22,100	27,300
27	25,500	30,600	13,000	16,200	21,100	90,400	19,600	18,000	51,500	41,000	21,300	27,600
28	30,600	30,600	14,000	16,600	19,200	94,600	19,400	20,500	49,100	42,500	21,100	29,300
29	34,200	28,100	15,800	17,000	.....	g89,800	19,000	g22,300	46,200	45,100	20,900	31,000
30	33,800	25,000	17,000	18,200	.....	g75,900	18,800	g23,800	43,500	45,100	20,900	33,000
31	33,000	.....	17,400	19,200	.....	g62,000	.....	25,200	.....	43,000	20,900	.....
1945-46												
1	33,400	29,600	10,300	10,100	11,700	*19,000	40,500	14,800	g29,600	g55,200	32,300	26,200
2	34,200	30,600	10,900	9,900	11,900	21,300	59,500	15,000	g26,200	g53,300	29,000	26,500
3	34,600	30,600	11,700	9,700	12,000	23,200	48,500	15,400	g24,800	50,900	27,000	26,500
4	33,400	30,600	12,000	9,500	*12,000	24,800	35,700	15,600	g24,300	48,500	25,200	25,700
5	31,000	30,300	14,200	9,500	12,600	26,000	30,600	16,400	g25,200	48,500	24,300	25,000
6	30,000	30,000	16,600	9,300	11,900	26,200	27,600	17,200	g30,300	53,900	23,600	24,500
7	29,300	29,300	*15,000	9,200	10,900	*23,200	25,700	22,300	g40,500	56,400	26,000	24,500
8	29,300	28,100	13,600	9,200	9,900	18,800	24,300	16,100	g36,500	55,800	24,200	25,200
9	29,600	26,500	12,000	9,200	9,700	16,800	23,600	27,600	31,000	50,900	g21,900	26,800
10	29,600	25,200	10,700	9,000	9,300	15,400	23,600	25,500	g30,000	47,400	g20,500	29,300
11	30,000	24,100	9,300	9,000	9,300	15,400	24,500	23,200	g37,400	42,000	g19,400	32,300
12	29,000	23,400	8,600	8,800	9,300	*17,200	24,800	23,000	g37,800	39,600	g18,600	31,600
13	28,400	22,500	8,400	8,800	*9,200	20,300	24,500	21,700	g35,700	38,200	g18,000	31,000
14	27,800	22,100	7,600	8,600	9,000	23,600	23,400	21,900	g34,600	37,000	g17,600	30,300
15	27,300	21,900	6,500	8,600	9,300	24,300	22,500	20,500	g33,000	36,100	g17,400	29,600
16	27,000	21,100	5,400	8,600	9,700	30,600	22,100	21,700	31,300	36,100	17,000	29,000
17	27,300	20,500	5,900	8,600	10,700	44,100	21,700	23,000	30,000	35,700	16,600	28,700
18	28,100	19,200	5,600	8,600	11,700	*49,700	20,900	24,100	30,600	36,100	15,600	29,000
19	27,800	17,800	5,200	8,800	11,900	46,200	20,300	25,000	g42,500	g37,400	15,000	29,600
20	28,100	17,200	3,900	8,800	13,600	38,200	19,800	24,300	g72,800	g39,600	14,600	29,300
21	27,300	*16,200	3,300	8,800	*15,000	36,100	19,800	23,000	g86,600	41,000	g15,400	38,200
22	26,800	12,200	4,400	9,000	16,000	36,500	19,600	22,100	g87,200	43,500	g17,600	52,700
23	26,500	9,300	5,400	*9,300	15,200	36,500	20,900	21,500	g79,100	47,400	g21,700	50,300
24	26,200	8,800	6,700	10,100	15,800	39,100	20,700	22,100	61,400	43,500	g23,400	39,600
25	27,000	8,400	8,200	10,600	16,400	48,500	18,600	23,400	g57,000	37,800	g27,600	33,000
26	27,600	8,200	9,000	10,700	16,600	50,900	17,200	25,000	55,200	35,300	g24,500	31,300
27	27,800	9,000	10,100	10,900	17,200	45,100	16,600	23,000	53,900	33,000	g24,800	30,300
28	27,800	9,200	10,700	11,100	18,000	36,500	16,200	22,500	g57,700	g32,000	g25,200	29,600
29	28,100	9,300	11,100	11,300	.....	32,300	15,600	36,100	g58,300	g31,300	g26,200	30,000
30	28,400	9,700	11,300	11,500	.....	31,000	15,200	42,000	g56,400	g33,000	g27,000	29,600
31	29,000	.....	11,100	11,700	.....	31,600	.....	g35,700	.....	g34,200	27,000	.....

* Winter discharge measurement made on this day.

g Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 3-31, 1944, Jan. 1 to Mar. 14, Nov. 22 to Dec. 6, Dec. 8-31, 1945, Jan. 1 to Mar. 4, 1946.

Missouri River at Sioux City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1	29,600	27,300	g11,900	6,500	11,100	18,000	46,800	g48,500	g41,500	g118,000	g39,100	36,500
2	30,300	27,000	g11,500	6,700	11,100	18,400	116,000	g47,900	g42,500	g103,000	39,100	35,700
3	30,600	26,500	g9,910	6,900	10,100	18,800	163,000	g48,500	46,200	g93,600	39,100	34,600
4	30,600	26,200	g8,390	7,100	11,500	18,050	172,000	g45,100	41,500	g87,900	g39,600	33,400
5	31,600	26,500	g8,900	7,200	11,700	17,800	122,000	g43,500	39,100	g81,000	39,700	33,000
6	33,800	27,300	9,150	8,000	10,300	17,200	91,000	g43,500	38,700	g76,500	39,600	32,700
7	41,500	27,600	9,450	8,400	10,300	17,000	75,300	g44,100	39,100	g74,000	g40,500	32,300
8	43,500	27,600	g9,720	8,800	10,900	17,000	g71,500	g43,500	44,100	g72,800	g40,100	32,700
9	37,400	28,100	g9,720	8,900	10,900	17,400	g72,800	g43,000	53,300	g69,000	g37,000	32,300
10	42,500	g28,100	g9,720	8,200	11,500	18,600	g73,400	g43,000	71,500	g84,600	g31,200	32,300
11	43,500	g28,100	g9,910	8,600	11,500	*20,000	g67,100	g41,000	72,100	g63,300	g32,300	33,000
12	g39,100	g27,600	g9,910	9,300	11,700	20,900	g67,100	g40,100	g66,500	g58,900	31,000	33,000
13	g36,500	g25,700	g9,910	10,100	11,500	21,900	g62,700	g40,100	80,300	g54,600	31,500	31,000
14	37,400	g24,100	g9,910	11,100	12,400	22,500	g59,500	g41,500	94,800	g51,500	33,800	30,300
15	46,200	g23,100	g9,340	12,600	12,200	24,100	g60,200	g41,500	78,400	g63,300	38,700	31,300
16	58,900	g23,400	g8,960	13,400	13,600	24,300	g69,000	49,700	65,200	g51,500	42,000	32,300
17	47,900	g23,000	6,500	14,200	15,200	24,800	g79,700	67,100	g59,500	g60,200	47,400	31,300
18	42,500	g22,500	5,700	14,600	17,600	24,100	g79,100	63,900	g58,900	g60,800	48,500	31,300
19	36,500	g22,100	5,600	15,200	20,700	24,800	g70,200	68,400	57,700	g57,000	41,600	31,000
20	g36,500	g21,300	5,400	15,200	21,500	*24,300	g70,200	74,600	62,700	g63,300	42,500	30,600
21	g33,100	g21,300	5,700	16,000	21,100	24,500	g67,700	72,100	70,900	g51,500	42,500	30,600
22	g32,700	g21,100	5,700	15,400	20,000	25,200	g67,100	67,100	66,500	g50,900	41,000	31,000
23	g32,000	g20,300	5,000	14,800	20,300	28,100	g65,200	58,900	74,000	g52,100	39,100	32,300
24	30,600	g20,000	3,900	14,400	21,100	38,200	g57,000	53,900	71,500	g50,300	39,100	32,300
25	28,100	g19,000	g3,520	13,800	19,800	27,000	g55,200	51,500	115,000	g48,500	41,500	32,700
26	28,100	g14,100	g3,520	13,000	19,600	23,400	54,600	50,300	165,000	g16,800	43,000	34,900
27	27,300	g14,200	3,900	13,200	*18,800	27,000	51,500	49,700	170,000	g44,100	41,500	36,500
28	27,600	g12,800	4,100	12,600	18,000	25,500	g49,100	48,500	163,000	g42,000	39,600	38,200
29	27,600	g12,400	4,400	*12,400	.....	25,000	g50,900	g46,800	150,900	g40,500	38,200	38,700
30	27,600	g12,200	4,800	11,700	.....	46,800	g51,500	g45,700	g132,000	g40,100	37,800	38,700
31	27,300	.....	5,600	11,100	.....	72,100	.....	g12,600	.....	g39,600	37,400	.....
1947-48												
1	37,400	42,000	13,600	9,500	11,700	25,000	71,500	49,700	66,500	62,000	52,100	33,800
2	36,500	42,500	13,600	9,300	13,600	24,300	72,800	45,100	65,200	63,900	49,700	32,700
3	37,000	41,500	13,600	9,900	13,400	*27,800	70,200	43,000	58,300	g69,600	47,400	32,300
4	38,200	39,600	12,400	10,100	*12,600	34,600	69,600	g40,100	49,100	g72,100	45,700	31,600
5	37,400	39,600	8,800	11,100	12,000	30,300	70,200	g37,000	45,100	g69,000	43,500	30,600
6	37,400	40,100	7,400	12,400	11,300	25,200	80,000	34,900	45,700	66,500	39,600	30,300
7	37,000	39,600	7,400	13,800	10,700	20,900	g110,000	35,300	53,900	63,300	37,400	31,300
8	37,000	39,600	8,000	14,800	11,500	17,100	g108,000	35,300	60,200	g59,500	36,500	33,800
9	36,100	39,100	8,000	15,800	11,900	16,400	83,500	37,400	67,700	g58,900	36,500	34,200
10	37,400	38,700	8,600	16,800	11,100	16,200	72,100	42,500	74,600	58,900	38,700	33,400
11	38,700	38,700	9,500	17,200	11,100	17,000	82,200	44,100	g74,600	55,800	40,100	32,000
12	39,100	38,700	9,700	17,200	12,000	17,400	81,000	42,000	g82,200	57,700	49,100	31,300
13	35,300	*38,200	9,700	16,800	11,700	17,200	63,900	38,700	83,500	61,400	49,100	31,000
14	33,800	34,600	9,500	15,600	11,300	19,200	53,300	38,700	87,900	61,600	43,500	30,300
15	33,800	31,600	9,500	14,200	11,500	21,500	48,500	40,100	g84,100	64,600	44,600	30,000
16	34,600	29,600	9,900	13,400	12,600	23,200	46,200	37,400	g83,500	62,700	43,500	30,600
17	36,500	28,700	11,100	14,400	16,000	*26,800	42,500	34,900	g84,100	59,500	43,500	29,600
18	39,100	27,600	15,400	12,600	17,200	31,000	39,600	g37,000	g82,800	55,200	45,700	29,600
19	39,600	26,200	17,000	13,800	17,200	27,600	38,200	34,900	92,300	55,800	45,700	30,000
20	38,700	25,000	19,000	13,400	17,000	29,600	39,200	33,800	g96,100	69,000	44,100	30,000
21	37,400	24,500	18,800	*12,800	16,400	70,100	37,000	33,000	g94,200	g78,400	41,000	30,000
22	36,500	22,500	17,600	*12,600	16,200	*64,600	42,500	32,000	g95,500	g70,200	40,100	29,600
23	36,100	20,900	15,600	12,600	15,600	62,000	47,400	31,300	g98,700	g64,600	38,200	29,600
24	36,500	17,800	14,800	12,800	13,800	53,900	56,100	30,600	g96,800	g60,200	37,800	30,300
25	35,700	g14,200	15,000	12,400	12,600	78,400	91,700	30,000	g97,400	g59,500	37,000	31,300
26	37,000	g12,200	15,000	12,200	12,600	97,400	80,300	29,300	g101,000	g59,500	37,000	31,000
27	39,100	g10,900	14,600	10,700	14,400	104,000	62,700	28,700	g99,300	62,000	38,200	30,600
28	40,500	g10,500	13,400	11,500	20,700	74,000	51,500	27,800	g84,100	82,200	37,800	30,600
29	40,100	11,300	11,300	11,100	22,500	61,400	g47,400	27,600	g70,200	83,500	39,600	31,300
30	39,600	13,400	10,900	11,700	.....	59,500	54,600	28,400	g62,700	69,600	37,400	33,000
31	40,500	.....	10,300	11,700	.....	65,800	.....	39,800	.....	58,300	35,300	.....

* Winter discharge measurement made on this day.

g Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 17-24, 27-31, 1946, Jan. 1 to Mar. 22, Nov. 28 to Dec. 31, 1947, Jan. 1 to Mar. 21, 1948.

Missouri River at Sioux City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1	33,000	37,800	22,100	7,500	15,000	17,400	g99,300	33,800	45,700	42,000	31,600	26,500
2	32,300	38,200	22,100	8,000	15,000	16,800	g95,500	32,300	43,500	40,100	28,100	26,800
3	31,300	40,100	22,300	8,500	*14,800	18,400	g89,800	34,900	38,700	38,700	27,800	27,800
4	31,300	41,000	22,500	9,000	14,500	20,500	g90,400	36,100	39,100	g38,700	28,100	34,200
5	33,000	43,000	23,200	9,000	14,000	24,500	143,000	35,700	44,100	g38,700	28,700	30,300
6	40,100	43,500	22,300	9,000	13,500	30,300	156,000	35,300	43,000	38,700	28,100	30,600
7	43,000	43,500	21,000	9,000	13,500	36,500	165,000	36,500	39,600	39,100	27,300	28,400
8	39,100	43,000	17,000	9,000	13,500	39,100	176,000	g39,600	35,700	38,200	27,300	27,800
9	37,400	43,000	16,000	9,000	13,800	41,500	174,000	g40,100	34,600	40,100	27,000	27,600
10	38,200	43,000	13,000	10,000	14,300	45,700	177,000	g38,700	34,600	37,400	27,300	30,600
11	41,500	42,500	10,000	10,000	15,000	*44,100	153,000	35,700	37,000	37,400	27,300	49,700
12	45,100	43,500	8,000	11,000	15,000	40,500	g110,000	33,400	50,300	35,300	27,300	42,000
13	43,000	41,500	7,500	12,500	15,000	36,500	g92,900	32,000	54,600	34,600	27,300	37,400
14	40,100	39,100	7,500	*13,800	14,700	38,700	g81,600	31,300	48,500	g33,400	27,800	31,600
15	39,100	37,000	7,000	13,800	14,500	36,900	g70,900	31,600	44,100	33,000	29,600	31,600
16	38,700	35,300	*6,500	13,600	15,000	39,100	g60,200	31,600	41,500	32,300	28,700	29,600
17	38,700	33,000	4,300	13,600	15,700	*43,000	g53,300	32,300	40,100	32,200	27,600	29,700
18	38,200	31,000	3,700	14,000	16,000	42,000	g47,900	32,700	38,700	31,300	27,000	29,000
19	37,400	30,600	5,000	14,400	16,000	42,000	g43,000	32,700	36,100	g30,300	27,300	29,000
20	37,400	27,600	5,600	14,200	15,800	44,100	g41,000	32,700	g35,300	g32,300	27,000	29,300
21	38,200	25,200	5,400	14,000	15,500	41,000	g39,600	34,600	g41,000	g33,400	28,400	29,300
22	38,700	23,400	6,000	13,200	15,500	45,700	37,800	35,700	53,300	g33,800	29,300	29,000
23	38,700	22,700	6,500	13,200	15,500	*52,000	35,700	34,600	63,300	33,800	29,600	29,000
24	39,100	*23,000	7,000	*12,200	15,800	56,400	32,700	32,700	60,800	31,300	30,300	29,000
25	39,600	23,400	7,500	13,000	16,000	65,200	31,600	32,300	57,700	29,300	31,000	29,600
26	39,600	22,500	7,000	12,800	15,500	77,800	30,600	32,000	52,700	29,600	30,600	30,000
27	39,600	22,300	6,500	12,600	17,200	104,000	33,400	34,600	49,700	30,000	30,000	30,000
28	39,100	22,100	6,500	14,000	18,000	115,000	38,200	54,600	46,200	29,000	28,400	29,000
29	37,800	21,900	*6,500	15,000	.....	87,200	37,800	58,900	45,100	29,000	27,800	28,400
30	37,800	21,900	6,500	15,800	.....	*82,800	34,900	54,600	43,500	30,000	27,000	28,100
31	37,000	.....	7,000	15,400	.....	98,700	.....	48,500	.....	30,300	26,500	.....
1949-50												
1	27,700	36,300	17,500	7,000	8,100	11,400	74,000	54,100	35,200	60,300	35,500	30,600
2	27,100	35,500	17,500	7,500	8,200	13,000	82,300	53,100	34,800	59,200	34,400	30,600
3	27,100	34,400	17,600	7,200	8,700	16,000	135,000	52,600	34,400	68,500	33,700	30,300
4	26,800	33,000	17,500	6,600	8,900	16,000	143,000	51,200	35,200	71,000	32,700	29,600
5	26,200	31,300	17,500	7,000	9,200	17,000	108,000	53,100	34,100	62,400	33,000	29,600
6	26,200	30,600	*17,700	7,400	*9,600	17,000	93,000	52,100	32,000	56,100	33,000	29,600
7	25,900	29,600	17,400	7,600	9,800	16,500	97,300	47,400	30,600	54,100	32,700	29,300
8	26,200	29,000	16,500	8,000	10,100	16,000	101,000	47,800	30,300	50,200	32,000	28,600
9	26,800	27,100	15,600	8,300	10,400	16,000	101,000	g52,100	32,000	46,900	30,600	28,600
10	29,000	26,500	14,700	*8,600	10,500	16,000	g98,600	g63,600	34,100	46,900	31,300	29,000
11	28,000	25,900	13,200	8,500	10,500	16,000	96,700	76,700	33,700	49,700	31,600	29,000
12	29,600	25,300	12,100	8,200	10,500	16,000	94,200	74,500	32,700	52,600	33,000	29,000
13	28,600	24,700	9,600	8,000	10,400	17,000	80,000	64,600	33,000	49,200	38,200	29,900
14	28,300	24,400	6,000	8,000	10,400	18,000	69,600	62,400	34,800	54,100	42,000	30,600
15	29,900	22,800	5,500	8,000	10,400	*18,500	64,100	61,400	36,300	55,600	38,200	30,600
16	33,000	21,600	5,600	8,000	10,300	19,000	g60,800	56,100	34,800	53,100	37,000	30,900
17	32,000	20,500	6,000	8,000	10,100	19,500	g82,300	53,600	35,200	50,700	37,000	30,900
18	29,300	20,100	6,200	8,600	*10,100	19,000	g127,000	54,100	g64,100	50,700	34,800	30,900
19	29,600	19,700	6,000	8,100	10,000	18,000	144,000	59,800	77,800	54,600	34,800	30,600
20	28,600	19,300	5,800	8,300	9,900	17,000	163,000	67,900	58,700	51,600	35,200	30,900
21	29,000	19,300	5,600	8,400	9,800	16,000	166,000	58,200	48,300	52,100	40,700	35,500
22	29,300	19,200	4,500	8,800	9,800	15,500	183,000	53,600	45,500	49,200	42,400	38,200
23	29,600	19,000	4,100	8,900	9,900	*15,200	198,000	49,200	44,600	47,400	39,800	41,100
24	29,900	18,600	3,900	8,800	*10,000	18,000	219,000	45,100	41,100	48,800	38,200	40,700
25	30,600	18,300	3,800	8,600	10,100	27,000	219,000	43,700	42,400	45,500	36,300	44,200
26	30,600	18,400	3,800	8,300	10,200	40,000	111,000	41,500	60,300	44,600	35,200	44,200
27	30,600	18,100	4,000	8,100	10,400	60,000	82,800	38,600	68,500	44,200	33,400	42,400
28	30,300	*17,700	4,500	7,900	10,800	85,000	73,400	37,400	74,500	42,400	32,000	39,000
29	30,600	17,500	5,000	7,900	.....	*139,000	65,700	37,400	72,000	40,700	31,300	37,800
30	31,600	17,500	5,800	*8,000	.....	97,900	60,300	36,700	65,700	39,000	31,600	36,700
31	33,700	.....	6,500	8,000	.....	81,100	.....	35,900	.....	37,000	31,600	.....

* Winter discharge measurement made on this day.

g Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 7-31, 1943, Jan. 1 to Mar. 23, Dec. 13-31, 1949, Jan. 1 to Mar. 28, 1950 (no gage-height record Feb. 15-21, 1949).

Missouri River at Sioux City, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet			Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acro-feet
October 1942	690,700	24,900	29,600	22,280		1,370,000
November	691,900	26,500	16,000	23,060		1,372,000
December	234,600	16,000	6,000	7,568		465,300
Calendar year 1942	10,826,400	126,000	4,500	29,660		21,470,000
January 1943	273,900	12,200	6,500	8,835		543,300
February	280,200	21,000	6,800	10,019		555,800
March	903,400	105,000	14,000	29,140		1,792,000
April	2,775,800	208,000	32,700	92,530		5,506,000
May	981,900	35,400	28,800	31,670		1,918,000
June	2,050,400	100,000	29,300	68,350		4,067,000
July	2,076,100	93,300	35,700	66,970		4,118,000
August	921,100	35,700	25,300	29,710		1,827,000
September	890,200	38,400	26,000	29,670		1,766,000
Water year 1942-43	12,770,200	208,000	6,000	34,990		25,330,000
October 1943	853,800	29,900	25,300	27,540		1,693,000
November	846,200	32,300	24,100	28,210		1,678,000
December	538,700	25,500	10,200	17,380		1,068,000
Calendar year 1943	13,391,700	208,000	6,500	36,690		26,560,000
January 1944	466,700	18,500	10,600	15,050		925,700
February	496,000	20,000	13,000	17,100		983,800
March	573,800	26,300	14,300	18,510		1,138,000
April	2,369,800	178,300	26,200	78,990		4,700,000
May	1,101,500	69,600	27,000	35,530		2,185,000
June	2,754,100	132,300	42,500	91,800		5,463,000
July	2,537,000	135,500	31,000	81,840		5,032,000
August	1,152,100	63,300	30,300	37,160		2,285,000
September	836,800	32,700	23,600	27,890		1,660,000
Water year 1943-44	14,526,500	178,300	10,200	39,690		28,810,000
October 1944	803,400	34,200	23,600	25,920		1,594,000
November	840,700	32,300	25,000	28,020		1,668,000
December	434,600	23,400	12,000	14,020		862,000
Calendar year 1944	14,366,500	178,300	10,600	39,250		28,500,000
January 1945	460,200	19,200	13,400	14,850		912,800
February	652,300	30,600	19,200	23,300		1,294,000
March	1,827,400	111,400	19,000	58,950		3,625,000
April	941,500	63,900	18,800	31,380		1,867,000
May	562,600	25,200	15,600	18,150		1,116,000
June	1,569,700	83,500	25,700	50,320		2,994,000
July	1,511,800	90,400	37,000	48,770		2,999,000
August	870,100	42,000	20,900	28,070		1,726,000
September	708,300	33,000	20,000	23,610		1,405,000
Water year 1944-45	11,122,600	111,400	12,000	30,470		22,060,000
October 1945	897,700	34,600	26,200	28,960		1,781,000
November	600,900	30,600	8,200	20,030		1,192,000
December	284,700	16,600	3,300	9,184		564,700
Calendar year 1945	10,827,200	111,400	3,300	29,660		21,480,000
January 1946	296,700	11,700	8,600	9,571		588,500
February	345,800	18,000	9,000	12,350		685,900
March	947,800	50,900	15,400	30,570		1,880,000
April	744,500	59,500	15,200	24,820		1,477,000
May	730,300	42,000	14,800	23,560		1,449,000
June	1,336,900	87,200	24,300	44,560		2,652,000
July	1,310,600	56,400	31,300	42,280		2,600,000
August	680,800	32,300	14,600	21,960		1,350,000
September	925,200	52,700	24,500	30,840		1,835,000
Water year 1945-46	9,101,900	87,200	3,300	24,940		18,060,000

Missouri River at Sioux City, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet			Runoff	
		Maximum	Minimum	Mean	per square mile	Inches	Acres-feet
October 1946.....	1,098,400	58,900	27,300	35,430		2,170,000
November.....	681,100	28,100	12,200	22,700		1,351,000
December.....	229,700	11,900	3,520	7,410		455,600
Calendar year 1946.....	9,327,800	87,200	3,520	25,560		18,500,000
January 1947.....	349,100	16,000	6,500	11,260		692,400
February.....	416,400	21,500	10,100	14,870		825,900
March.....	772,700	72,100	17,000	24,920		1,533,000
April.....	2,258,400	172,000	46,800	75,280		4,479,000
May.....	1,565,000	74,600	40,100	50,480		3,104,000
June.....	2,331,500	170,000	38,700	77,720		4,624,000
July.....	1,906,400	118,000	39,600	61,500		3,781,000
August.....	1,220,700	48,500	31,000	39,380		2,421,000
September.....	996,500	38,700	30,300	33,220		1,977,000
Water year 1946-47.....	13,825,900	172,000	3,520	37,880		27,420,000
October 1947.....	1,159,600	40,500	33,800	37,410		2,300,000
November.....	879,400	42,500	10,500	29,310		1,744,000
December.....	379,000	19,000	7,400	12,230		751,700
Calendar year 1947.....	14,234,700	172,000	6,500	39,000		28,230,000
January 1948.....	404,200	17,200	9,300	13,040		801,700
February.....	402,200	22,500	10,700	13,870		797,800
March.....	1,259,500	104,000	16,200	40,630		2,498,000
April.....	1,911,700	110,000	37,000	63,720		3,792,000
May.....	1,120,400	49,700	27,600	36,140		2,222,000
June.....	2,337,500	101,000	45,100	77,910		4,636,000
July.....	1,998,600	83,500	55,200	64,450		3,963,000
August.....	1,295,400	52,100	35,300	41,790		2,569,000
September.....	935,100	34,200	29,600	31,170		1,855,000
Water year 1947-48.....	14,081,800	110,000	7,400	38,470		27,930,000
October 1948.....	1,183,100	45,100	31,300	38,160		2,347,000
November.....	1,006,200	43,500	21,900	33,540		1,996,000
December.....	339,000	23,200	3,700	10,940		672,400
Calendar year 1948.....	14,192,100	110,000	3,700	38,780		28,150,000
January 1949.....	370,600	15,800	7,500	11,950		735,100
February.....	424,600	18,000	13,500	15,160		842,200
March.....	1,523,400	115,000	16,800	49,140		3,022,000
April.....	2,472,100	177,000	30,600	82,400		4,903,000
May.....	1,142,100	58,900	31,300	36,840		2,265,000
June.....	1,338,100	63,300	34,600	44,600		2,654,000
July.....	1,063,400	42,000	29,000	34,300		2,109,000
August.....	881,400	31,600	26,800	28,430		1,748,000
September.....	918,500	49,700	26,500	30,620		1,822,000
Water year 1948-49.....	12,662,500	177,000	3,700	34,690		25,120,000
October 1949.....	901,100	33,700	25,900	29,070		1,787,000
November.....	721,200	36,300	17,500	24,040		1,430,000
December.....	296,300	17,700	3,800	9,558		587,700
Calendar year 1949.....	11,989,800	177,000	3,800	32,850		23,900,000
January 1950.....	248,800	8,600	6,600	8,000		491,900
February.....	277,100	10,800	8,100	9,896		549,600
March.....	927,600	139,000	11,400	29,920		1,840,000
April.....	3,393,100	219,000	60,800	113,100		6,730,000
May.....	1,625,500	76,700	35,900	52,440		3,224,000
June.....	1,337,600	77,800	30,300	44,590		2,653,000
July.....	1,588,600	71,200	37,000	51,250		3,151,000
August.....	1,083,500	42,400	30,900	34,950		2,149,000
September.....	998,900	44,200	28,600	33,300		1,981,000
Water year 1949-50.....	13,398,500	219,000	3,800	36,710		26,570,000

Missouri River at Omaha, Nebr.

LOCATION.—Lat. 41°15'40", long. 95°55'15", in sec. 23, T. 15 N., R. 13 E. sixth principal meridian, on downstream side of left main span pier of Ak-Sar-Ben Bridge at Omaha.

DRAINAGE AREA.—322,800 square miles.

RECORDS AVAILABLE.—September 1928 to September 1950. Gage-height records collected at same site April 1872 to December 1899 are contained in reports of the Missouri River Commission and those since January 1875 are contained in reports of the United States Weather Bureau.

GAGE.—Water-stage recorder. Datum of gage is 958.24 feet above mean sea level, datum of 1929. Apr. 10, 1872, to Sept. 1, 1928, staff, cable, and chain gages at several sites within 0.6 mile of present site not more than 0.43 foot below present datum. Sept. 1, 1928, to Nov. 30, 1929, chain gage attached to Illinois Central Railroad bridge 2 miles upstream, at datum 2.97 feet 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.—22 years, 28,110 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43 ..	Apr. 12	200,000	(¹)	Dec. 11	6,500
1943-44 ..	Apr. 16, 17	149,000	(²)	Dec. 28	9,500
1944-45 ..	Mar. 22	106,000	(³)	Dec. 4	11,100
1945-46 ..	June 24	84,700	13.20	Dec. 20, 24	4,500
1946-47 ..	July 1	150,000	(⁴)	Dec. 31	2,500
1947-48 ..	Mar. 28	112,000	14.0	Dec. 12	6,200
1948-49 ..	Apr. 13	183,000	20.00	Jan. 1, 2	6,180
1949-50 ..	Apr. 27	196,000	21.24	Dec. 27	3,830

(1) Maximum gage height 22.45 feet Apr. 13.

(2) Maximum gage height 19.40 feet Apr. 16.

(3) Maximum gage height 14.52 feet Mar. 23.

(4) Maximum gage height 19.10 feet July 1, 2.

1928-50: Maximum discharge, 200,000 second-feet Apr. 12, 1943; maximum gage height, 22.45 feet Apr. 13, 1943; minimum discharge, about 2,200 second-feet Jan. 6, 1937; minimum gage height observed, -1.7 feet Dec. 27, 1949.

Maximum stage known, 24.65 feet, present datum, April 25, 1881 (ice jam).

REMARKS.—Records good except those for period of ice effect, which are fair. Flow partly regulated by Fort Peck Reservoir.

Missouri River at Omaha, Nebr.—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	21,800	21,800	13,800	8,600	7,200	19,500	85,000	32,200	26,700	86,100	39,200	36,100
2.....	22,200	21,500	12,800	8,600	*7,000	15,800	98,800	31,300	29,600	92,800	37,900	33,700
3.....	23,400	21,500	11,400	8,500	7,500	14,300	107,000	30,500	37,900	97,700	38,300	32,800
4.....	23,400	21,200	10,200	8,400	11,000	14,500	119,000	30,200	26,100	97,700	34,900	32,800
5.....	23,400	22,500	9,100	8,300	23,000	14,500	127,000	31,000	27,000	98,200	g34,600	34,600
6.....	24,100	22,200	8,200	8,200	20,000	13,400	132,000	30,800	32,500	96,000	g34,300	35,800
7.....	24,400	21,800	7,700	8,200	18,000	13,200	137,000	31,900	34,600	94,400	g34,300	35,800
8.....	24,100	22,500	7,300	8,000	16,700	17,100	138,000	33,700	34,600	93,900	32,200	37,600
9.....	24,100	22,800	6,800	8,000	15,600	20,600	141,000	34,000	54,000	95,500	31,900	38,300
10.....	23,800	23,100	6,600	8,200	15,000	19,500	149,000	33,400	77,300	92,800	31,300	36,100
11.....	23,100	23,400	6,500	8,600	16,000	17,600	169,000	32,500	85,000	85,000	31,300	34,600
12.....	22,500	24,100	6,600	9,700	15,200	16,500	189,000	32,500	87,100	83,600	32,500	32,500
13.....	22,200	24,100	6,600	10,200	13,600	17,600	190,000	33,400	81,200	83,600	32,500	34,300
14.....	21,800	24,400	6,600	10,700	12,400	19,800	174,000	33,400	81,800	80,600	34,900	30,200
15.....	21,500	25,100	6,600	12,100	10,900	35,000	135,000	36,400	93,900	72,600	36,100	29,300
16.....	21,500	25,500	6,700	12,400	10,100	51,900	90,700	37,600	95,000	69,400	34,900	29,300
17.....	21,800	25,100	6,900	12,200	9,460	g30,000	64,600	31,000	95,000	69,400	32,200	29,900
18.....	21,800	24,400	6,900	11,900	9,160	g20,100	58,100	30,800	97,200	69,000	30,500	29,300
19.....	21,800	24,400	7,100	11,200	8,700	18,400	54,400	30,200	101,000	73,100	29,000	29,300
20.....	21,800	24,400	7,300	11,100	8,560	18,200	52,000	30,800	99,900	69,400	g28,700	29,000
21.....	21,800	24,800	7,600	11,000	9,160	19,800	49,200	31,900	87,600	75,800	g28,700	27,800
22.....	22,200	g24,800	7,900	10,600	g10,600	22,800	46,800	33,100	78,700	68,100	35,800	27,800
23.....	22,200	24,800	8,000	10,100	13,600	27,400	44,500	33,400	82,600	64,600	29,900	27,600
24.....	22,200	23,400	8,000	9,600	16,500	g32,700	41,600	33,100	82,100	62,000	26,700	26,700
25.....	21,800	21,500	8,000	9,300	19,800	49,400	40,900	31,900	77,300	53,600	26,400	26,700
26.....	22,200	20,100	8,200	9,000	21,800	65,300	39,200	30,500	74,000	51,200	28,400	26,700
27.....	21,500	18,700	8,200	8,300	23,100	60,600	38,500	29,300	69,000	49,200	25,900	27,000
28.....	21,800	18,400	8,400	8,000	24,800	42,500	37,900	27,800	70,800	47,600	27,300	26,700
29.....	21,800	16,800	8,500	7,800	.....	36,800	35,800	26,400	77,300	43,400	30,000	27,000
30.....	22,200	16,000	8,500	7,600	.....	38,700	34,600	26,100	80,100	42,000	33,400	27,300
31.....	22,200	.....	8,500	7,500	.....	50,900	.....	25,300	.....	40,600	36,400	.....
1943-44												
1.....	27,700	29,900	25,300	11,000	15,000	29,600	25,900	31,200	58,400	134,000	45,000	35,400
2.....	27,700	30,600	25,300	10,800	13,700	29,300	25,300	30,200	51,400	132,000	50,600	34,700
3.....	28,000	31,600	24,800	10,500	14,300	29,600	26,800	30,600	47,500	131,000	50,200	34,400
4.....	28,600	30,900	24,500	10,400	15,400	27,100	30,600	33,600	49,800	131,000	46,700	34,400
5.....	29,000	30,600	24,200	10,600	15,600	22,300	31,900	42,500	60,900	123,000	59,600	33,600
6.....	29,000	30,900	24,200	10,900	15,800	20,300	43,200	42,800	54,600	107,000	59,600	32,600
7.....	27,700	31,200	24,500	11,000	13,900	17,900	87,000	36,900	51,800	104,000	48,600	31,900
8.....	26,800	31,900	24,800	11,000	17,900	14,300	106,000	33,300	58,400	115,000	42,500	30,900
9.....	25,900	31,200	24,500	11,200	20,600	12,500	109,000	33,000	58,000	112,000	39,800	30,900
10.....	25,600	29,600	24,200	11,800	20,800	13,500	112,000	32,600	56,700	95,000	38,300	30,200
11.....	25,600	28,600	23,600	12,800	15,600	15,600	118,000	34,000	88,500	98,000	35,800	29,600
12.....	26,200	28,600	22,800	14,500	14,000	18,100	131,000	39,400	106,000	94,000	33,600	29,300
13.....	28,300	29,600	h22,600	17,000	12,000	19,100	140,000	51,800	121,000	98,500	33,000	29,000
14.....	30,600	30,200	h21,600	16,700	12,400	18,100	146,000	45,900	122,000	97,000	32,300	28,000
15.....	31,900	30,200	18,000	16,500	12,800	19,100	148,000	38,300	128,000	89,500	33,000	27,100
16.....	31,600	30,200	13,000	16,300	14,000	21,600	147,000	33,300	133,000	88,500	36,500	26,500
17.....	30,200	29,900	10,000	16,200	17,000	23,900	148,000	30,900	138,000	86,500	36,500	27,400
18.....	29,900	29,300	10,500	16,200	21,000	25,600	130,000	30,600	138,000	82,500	35,400	25,600
19.....	27,700	28,600	11,000	16,500	25,000	23,600	88,500	37,200	132,000	75,700	35,400	26,500
20.....	27,100	28,000	11,000	17,000	23,500	22,300	71,600	36,900	120,000	70,300	34,400	26,500
21.....	27,100	27,400	10,800	17,500	22,000	21,600	61,800	38,000	113,000	66,200	32,300	31,600
22.....	26,500	27,700	10,600	18,500	20,000	20,600	53,000	34,000	113,000	60,100	31,200	32,300
23.....	27,100	27,400	10,300	19,800	18,000	20,300	47,800	33,000	116,000	58,000	33,000	28,600
24.....	27,700	27,100	10,000	21,800	18,400	24,500	47,100	36,500	119,000	55,000	34,000	26,800
25.....	27,700	26,500	10,200	23,000	18,600	33,600	46,300	37,200	123,000	54,200	36,900	25,600
26.....	27,400	25,900	10,200	22,600	30,600	35,100	44,400	34,000	126,000	47,500	38,300	25,300
27.....	27,400	25,900	9,700	19,100	23,900	37,200	40,200	29,900	130,000	44,400	35,100	25,000
28.....	27,100	25,900	9,500	17,700	25,900	33,300	36,500	29,000	132,000	42,500	36,900	24,500
29.....	27,400	26,200	10,000	16,000	28,300	31,600	34,000	34,400	132,000	40,600	42,100	24,500
30.....	28,000	25,900	10,700	14,100	.....	31,200	33,000	63,100	134,000	37,600	41,700	24,800
31.....	29,300	.....	11,300	15,400	.....	28,300	.....	65,400	.....	36,900	37,200	.....

* Winter discharge measurement made on this day.

g Computed from graph based on wire-weight gage readings and portions of recorder graph.

h Computed from wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 3-31, 1942, Jan. 1 to Feb. 10, Dec. 15-31, 1943, Jan. 1-25, Feb. 12-23, 1944.

Missouri River at Omaha, Nebr.—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1	24,600	32,600	g24,000	14,000	17,000	26,900	65,400	23,400	50,800	42,700	43,100	23,900
2	24,900	32,600	17,400	*14,000	*18,000	*28,500	63,600	23,400	41,900	40,600	41,400	23,600
3	24,900	31,900	11,200	14,000	18,000	28,200	62,800	22,500	40,400	38,900	42,700	22,600
4	25,900	30,500	11,100	14,000	19,000	27,500	54,200	21,900	39,300	66,400	45,700	22,300
5	26,200	29,200	12,200	14,000	20,000	28,800	49,200	21,000	40,000	83,900	43,100	23,300
6	25,900	27,200	13,600	15,000	21,000	25,600	45,500	20,200	45,500	82,400	47,000	21,300
7	25,600	26,900	15,600	15,000	22,000	21,900	43,100	19,600	40,800	76,600	48,300	20,700
8	26,500	26,200	16,600	15,000	23,000	23,700	39,300	18,800	39,300	72,400	46,500	20,400
9	27,200	26,200	17,400	15,000	24,000	27,800	37,400	18,500	41,600	67,400	42,700	20,100
10	26,200	25,900	16,900	15,000	26,000	31,200	37,000	18,800	51,300	61,000	38,100	20,400
11	25,600	25,600	15,400	15,000	28,000	36,300	34,400	18,500	49,200	54,000	34,100	20,700
12	g25,900	25,900	13,900	*15,000	32,000	52,100	32,600	18,200	66,400	48,300	33,700	20,700
13	g25,900	26,200	13,300	15,000	*35,000	89,100	31,200	19,100	69,600	45,700	33,300	20,700
14	g26,200	26,200	13,000	15,000	37,000	96,400	30,200	25,600	71,500	46,500	32,100	20,100
15	g26,500	26,900	12,800	15,000	35,600	83,100	29,200	23,400	81,600	43,900	29,500	19,800
16	g26,500	27,500	11,800	15,000	33,000	67,700	30,500	21,000	92,200	43,100	28,800	20,100
17	g26,500	27,200	11,400	15,000	h31,900	59,200	31,200	21,000	86,600	62,900	29,200	20,700
18	25,600	26,900	11,400	15,000	h27,200	70,100	29,500	21,900	82,400	62,400	29,500	23,300
19	24,900	27,500	12,000	15,000	h25,600	80,600	29,500	22,500	77,600	50,900	28,400	24,600
20	24,300	28,800	13,000	15,000	h27,800	87,600	29,200	22,800	74,500	49,600	28,800	24,300
21	24,000	30,900	13,000	15,000	h25,900	102,000	27,800	37,000	67,400	50,000	29,200	24,300
22	23,700	31,900	13,000	15,000	*24,900	105,000	26,500	32,300	62,000	47,400	28,800	24,600
23	23,700	31,600	12,000	*15,000	24,900	102,000	41,900	29,200	57,200	43,500	30,300	25,300
24	23,100	30,200	12,000	15,000	25,900	94,200	33,700	28,800	54,000	43,100	29,200	26,700
25	22,800	29,900	12,000	16,000	26,200	88,600	29,500	27,500	52,700	44,800	27,700	29,500
26	g22,800	29,200	12,000	16,000	27,200	87,600	26,900	25,300	50,900	44,400	25,600	30,300
27	g23,100	*29,500	12,000	16,000	25,600	94,200	25,300	31,200	54,000	42,700	24,600	31,800
28	g24,600	30,900	12,000	16,000	25,900	91,100	24,600	28,800	55,400	43,100	24,600	32,100
29	30,200	30,500	13,000	16,600	.....	94,200	24,300	29,900	51,400	41,800	23,900	32,500
30	34,800	g27,200	13,000	17,000	.....	89,100	23,700	32,300	46,100	44,800	23,900	32,500
31	34,100	.....	13,000	17,000	.....	77,200	.....	43,500	.....	47,000	23,900	.....
1945-46												
1	33,000	28,800	9,380	13,000	13,000	*19,900	34,400	15,500	26,600	57,000	31,400	25,500
2	34,100	29,100	11,200	13,000	13,200	23,400	44,300	15,000	31,700	52,800	30,000	24,900
3	34,800	29,400	12,600	13,000	13,500	23,400	56,600	17,400	27,400	49,900	27,400	25,200
4	33,800	29,700	12,100	13,000	15,000	26,800	49,100	17,200	24,000	48,300	25,800	32,000
5	32,400	29,700	11,200	13,000	19,000	27,400	37,600	16,000	23,400	48,300	25,200	27,800
6	30,400	30,000	15,000	13,500	22,500	*27,800	32,700	15,500	24,000	48,700	23,700	26,200
7	29,700	29,700	18,200	14,000	21,900	28,100	28,400	16,000	27,100	53,600	24,000	28,100
8	29,100	29,400	17,200	12,500	19,600	26,200	26,200	22,200	36,900	54,900	25,500	27,800
9	28,900	28,800	15,700	11,500	17,000	20,200	25,200	38,600	34,800	51,100	25,500	27,400
10	29,400	27,100	13,700	11,000	14,400	16,700	24,000	33,400	29,400	46,300	22,500	28,100
11	29,700	25,200	11,500	10,500	12,700	*16,200	24,000	26,500	30,000	43,100	21,000	29,100
12	29,700	24,000	10,000	10,000	12,700	17,200	24,300	24,900	34,100	40,900	19,600	30,400
13	28,800	22,800	9,600	9,600	12,000	21,900	24,600	22,200	35,500	39,400	18,500	29,700
14	27,800	22,500	10,000	9,600	*11,000	27,800	25,200	21,000	34,800	38,000	17,400	28,800
15	27,100	21,900	11,000	9,400	11,200	29,700	23,400	20,400	33,000	37,200	17,000	27,800
16	27,100	21,900	7,000	9,400	10,500	28,800	21,600	19,900	31,700	36,600	16,700	27,400
17	27,100	21,000	6,000	9,200	10,500	35,500	21,000	20,200	32,000	35,500	17,200	27,800
18	27,100	19,900	5,500	9,000	11,000	41,600	20,700	22,500	36,900	34,400	17,200	28,400
19	28,100	19,000	5,000	9,000	*11,600	42,500	19,900	28,100	30,700	36,600	16,400	28,100
20	28,800	17,400	4,500	9,000	14,500	41,200	19,300	25,800	41,200	35,800	16,000	28,400
21	29,400	16,700	5,000	9,100	16,000	35,500	19,000	24,000	57,000	36,600	16,000	28,800
22	29,400	15,700	5,500	9,100	19,000	33,800	19,000	23,400	72,400	37,200	18,500	37,200
23	28,400	12,500	5,000	9,200	19,000	33,400	19,300	23,400	80,700	38,300	18,000	47,500
24	28,400	8,610	4,500	9,200	16,700	34,400	19,000	31,400	80,700	40,500	21,600	45,100
25	27,800	7,460	5,500	9,400	18,200	38,600	20,200	31,700	69,600	40,900	23,400	38,600
26	27,400	7,880	7,000	9,800	19,000	45,500	19,300	29,000	59,200	36,200	24,000	32,700
27	27,400	7,740	8,000	10,300	18,000	47,500	17,700	29,100	51,100	33,000	23,700	29,700
28	27,400	*7,600	9,000	11,000	18,200	43,100	17,200	26,200	50,700	31,000	23,100	29,100
29	27,400	7,880	10,000	11,500	.....	37,200	16,700	25,200	59,200	29,400	23,400	28,800
30	27,800	8,460	11,000	12,200	.....	34,400	16,000	37,200	57,000	29,400	23,700	28,400
31	28,400	.....	12,000	12,500	.....	33,800	.....	40,900	.....	30,700	24,900	.....

* Winter discharge measurement made on this day.

g Computed from graph based on wire-weight gage readings.

h Computed from wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 19-31, 1944, Jan. 1 to Feb. 16, Dec. 11-31, 1945, Jan. 1 to Feb. 5, Feb. 13-22 1946.

Missouri River at Omaha, Nebr.—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1	30,400	27,700	13,800	3,500	12,800	19,700	76,200	51,900	57,000	149,000	41,600	36,800
2	30,400	27,300	13,500	5,000	11,400	19,400	63,200	55,300	51,500	147,000	42,000	35,200
3	30,400	26,500	10,900	7,500	10,500	19,400	96,800	54,400	47,700	141,000	41,200	34,100
4	30,000	26,200	9,320	7,200	10,800	19,400	117,000	49,400	49,400	126,000	40,800	33,700
5	30,000	25,800	9,460	7,000	11,200	19,400	131,000	46,100	50,600	112,000	40,400	33,300
6	30,800	26,200	10,000	6,800	11,400	*19,700	143,000	45,600	51,100	102,000	40,800	32,900
7	31,900	26,900	10,400	7,100	11,600	19,000	142,000	45,200	54,000	94,400	40,000	32,500
8	36,700	26,900	10,500	11,800	11,800	18,000	95,800	41,000	49,400	87,700	40,000	32,200
9	38,300	27,300	*11,000	9,400	11,500	18,000	80,800	42,800	49,000	83,000	40,000	32,200
10	38,300	29,200	10,700	9,000	11,300	18,400	87,300	41,600	56,600	77,200	38,800	g31,400
11	41,200	30,000	10,500	8,800	12,000	*19,000	84,500	41,200	70,800	73,000	37,200	g32,500
12	40,800	30,000	10,500	8,400	12,000	20,000	77,600	41,200	87,800	69,800	36,400	g32,200
13	37,900	28,800	10,500	9,600	12,400	22,800	73,500	41,600	81,300	64,400	36,000	32,500
14	35,100	27,300	10,500	*10,200	*12,800	23,900	67,600	41,200	89,200	57,600	36,000	30,700
15	36,300	25,400	10,200	11,500	13,600	23,200	62,700	44,400	98,200	53,600	37,200	29,900
16	43,600	24,600	10,000	12,500	14,600	23,900	62,700	42,400	87,300	53,600	39,600	30,700
17	51,900	23,900	9,600	13,500	15,800	25,000	69,900	50,200	73,100	57,200	41,200	31,800
18	46,500	22,800	6,960	15,000	*16,800	25,400	79,000	65,400	68,100	63,000	43,600	31,800
19	39,500	22,800	6,160	16,000	19,000	26,200	77,600	65,000	63,200	64,400	45,200	31,400
20	35,500	22,100	5,660	*15,500	22,000	25,800	74,900	67,600	62,700	g62,600	43,200	32,200
21	33,500	21,400	5,660	16,500	23,000	25,000	73,500	73,500	68,600	g61,200	41,600	31,800
22	32,300	21,100	5,730	17,000	*22,500	24,600	72,200	72,600	84,500	59,400	41,600	32,200
23	31,900	20,000	6,020	16,800	22,000	30,000	69,900	67,200	90,600	58,600	g42,400	33,900
24	32,300	19,000	*6,060	*16,100	21,500	37,000	65,800	61,400	90,600	57,200	g42,000	33,700
25	31,200	17,400	6,090	15,500	21,000	45,600	59,600	54,000	91,500	55,000	g42,800	33,700
26	28,800	15,300	6,240	15,000	20,500	33,900	55,300	50,600	g105,000	52,000	42,400	32,900
27	27,300	14,800	6,480	14,800	20,500	28,400	52,700	49,000	g124,000	47,700	42,400	33,700
28	27,300	14,300	6,720	14,600	20,000	31,600	49,000	48,500	g133,000	45,200	42,000	35,600
29	28,100	14,000	g5,130	14,300	.....	29,600	49,000	47,300	g140,000	43,200	39,600	36,000
30	28,800	14,500	4,000	14,000	.....	27,700	49,000	47,300	g147,000	42,400	38,400	36,400
31	28,100	.....	2,500	13,700	.....	57,900	47,700	47,700	.....	42,000	37,200	.....
1947-48												
1	36,000	38,500	12,000	g9,480	11,000	32,300	66,200	50,600	48,100	g65,700	56,700	35,700
2	35,700	40,200	*13,200	g9,250	11,500	30,500	72,200	48,600	66,800	g67,300	51,100	41,500
3	35,300	40,200	14,700	9,800	12,000	27,600	72,200	44,700	59,900	68,900	49,600	34,900
4	35,300	39,800	15,700	10,600	12,000	25,900	71,100	41,500	51,100	73,900	47,600	34,100
5	35,300	38,100	14,400	10,900	12,000	27,200	70,600	39,300	45,200	76,100	46,100	33,400
6	35,300	38,500	12,100	11,200	12,000	28,700	71,600	37,200	43,300	73,300	44,700	32,300
7	35,300	38,900	10,600	11,500	12,000	26,900	79,500	35,300	45,700	68,400	42,400	31,900
8	34,900	38,500	g9,080	12,800	11,500	23,900	103,000	34,500	53,100	64,600	40,200	31,900
9	34,900	38,500	g7,640	13,800	11,000	20,900	101,000	34,900	53,900	62,500	38,900	31,900
10	34,500	38,100	g8,840	15,100	11,000	g17,300	81,200	37,200	65,200	60,900	39,800	33,000
11	36,000	37,600	g6,840	g17,000	10,800	g16,600	69,500	42,900	68,900	58,800	46,100	32,700
12	37,200	38,100	g6,200	g18,200	10,800	18,500	75,500	43,300	69,500	56,200	44,200	32,300
13	36,800	37,600	g6,760	18,200	*10,800	18,000	72,200	41,100	76,100	57,300	49,100	31,600
14	34,500	36,000	g7,480	18,000	10,800	17,700	56,700	39,300	80,100	63,000	49,600	30,500
15	35,400	34,100	g7,970	17,000	11,000	*18,500	48,600	39,300	84,100	64,100	47,600	30,500
16	33,400	31,600	g6,920	15,500	13,000	28,000	44,200	40,200	82,900	64,100	48,100	30,100
17	34,500	30,500	g7,640	13,000	18,000	42,000	41,500	36,800	84,600	62,500	44,200	29,800
18	35,300	28,700	8,500	14,000	19,000	47,600	39,800	33,800	81,600	59,900	42,000	29,800
19	36,800	26,900	9,690	11,500	23,000	62,000	37,600	33,000	82,900	56,700	45,700	29,800
20	36,800	25,200	12,400	9,000	28,000	54,700	35,700	31,900	91,000	58,300	47,100	29,800
21	37,200	23,900	g16,300	11,000	28,500	84,100	34,900	31,600	95,600	71,600	45,700	30,500
22	35,700	23,300	*19,200	12,000	27,500	*85,800	35,300	31,200	90,700	79,500	42,900	30,100
23	35,700	21,200	18,200	13,000	27,000	73,300	38,900	30,800	96,200	71,100	40,600	29,000
24	36,000	19,200	14,700	13,000	25,500	71,100	43,800	30,800	96,700	65,700	38,900	29,000
25	36,800	16,300	14,700	12,500	24,500	66,800	54,200	30,100	92,100	63,600	38,100	29,800
26	g37,200	11,500	14,900	12,000	23,000	86,400	82,400	30,100	93,800	63,600	37,200	30,100
27	g37,200	10,800	14,700	11,500	31,200	104,000	70,000	29,800	98,500	61,500	36,800	30,800
28	g38,900	11,500	14,700	11,000	37,200	104,000	54,200	29,000	g90,200	62,000	36,400	30,500
29	g38,500	11,800	14,600	11,500	31,900	76,700	46,600	29,000	g85,200	59,200	36,400	30,800
30	g37,600	11,900	14,600	11,000	.....	64,100	46,600	29,000	g74,400	84,100	38,100	31,200
31	37,600	.....	g11,900	11,000	.....	61,000	.....	30,100	.....	68,400	38,100	.....

* Winter discharge measurement made on this day.

g Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 30, 31, 1946, Jan. 1 to Feb. 28, 1947, Jan. 16 to Feb. 26, 1948.

Missouri River at Omaha, Nebr.—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1	32,700	37,100	21,700	h6,180	14,500	25,000	107,000	37,100	49,200	46,000	30,000	27,100
2	33,600	38,000	21,700	h6,180	14,500	25,000	112,000	35,800	50,100	44,900	32,700	26,800
3	33,600	38,300	22,000	g6,660	14,500	35,000	109,000	35,200	48,800	43,800	29,400	26,000
4	32,700	39,600	22,200	g8,040	14,500	56,000	98,200	36,400	42,400	40,600	27,700	28,600
5	32,400	42,000	22,500	9,060	14,500	58,400	102,000	36,100	41,600	39,600	27,700	35,200
6	34,600	43,000	22,730	10,200	14,500	43,400	114,000	36,700	45,600	39,300	28,300	32,700
7	40,300	43,400	22,200	9,420	14,500	*40,300	129,000	36,700	45,300	40,600	28,600	30,300
8	42,400	43,000	21,700	8,640	*14,500	47,200	144,000	36,100	41,600	39,000	28,000	28,800
9	39,600	41,600	16,400	h9,300	14,500	45,300	154,000	36,400	38,500	39,000	27,700	27,400
10	38,300	40,600	10,400	h9,780	15,000	46,400	166,000	37,100	37,400	37,400	27,700	27,400
11	38,300	40,900	g6,740	h10,000	15,500	*46,000	170,000	37,100	36,700	35,200	28,000	35,800
12	40,600	40,900	g6,660	h10,600	16,000	38,300	174,000	35,800	37,100	34,600	30,000	52,800
13	42,700	41,300	*6,740	*11,800	16,000	42,000	182,000	34,600	47,200	34,200	30,900	44,600
14	42,700	40,000	g7,820	h12,500	14,000	42,000	170,000	33,000	51,400	34,200	33,900	40,300
15	40,900	38,000	g8,260	h13,200	14,000	39,600	129,000	33,300	46,000	34,600	31,500	31,800
16	40,300	36,100	g7,500	h14,300	14,500	37,400	89,200	33,600	41,000	33,000	29,700	29,700
17	39,300	34,200	h7,010	13,000	15,500	36,400	70,600	34,200	39,300	31,800	30,000	28,600
18	39,300	33,900	h6,830	12,500	17,000	37,100	60,000	33,000	39,000	31,800	29,100	28,300
19	38,300	35,200	h6,740	12,000	19,000	37,700	53,200	37,100	39,000	31,200	31,500	28,000
20	37,400	34,200	h6,660	12,000	20,000	38,300	48,000	34,600	38,000	33,600	30,300	27,700
21	38,000	30,900	h6,330	12,500	20,000	44,900	43,800	34,900	41,000	31,800	30,000	27,700
22	38,300	26,800	h6,580	14,000	20,000	63,000	41,600	38,300	42,700	32,400	29,700	27,100
23	38,300	h25,200	*h6,830	15,000	*19,500	58,400	40,000	40,800	55,000	32,400	30,900	26,800
24	38,300	h24,600	h6,830	17,000	*19,500	53,200	38,700	38,000	65,600	32,700	30,900	26,800
25	39,000	h24,600	h6,830	17,500	20,000	58,400	36,100	36,100	61,400	31,500	30,600	27,100
26	39,000	h24,900	h6,660	17,500	23,000	63,000	35,200	35,200	55,600	30,000	30,600	27,400
27	38,300	23,300	h6,410	17,000	25,000	83,800	34,200	34,600	53,700	33,300	31,200	28,600
28	38,000	22,700	h6,330	*16,000	25,500	108,000	34,900	35,800	51,800	34,200	31,200	28,600
29	37,700	22,200	h6,330	15,000	.....	122,000	37,400	49,200	48,800	29,400	29,700	28,600
30	37,400	22,200	h6,260	13,000	.....	107,000	38,300	54,200	47,200	28,300	28,000	27,700
31	37,100	.....	h6,260	14,000	.....	95,800	.....	51,400	.....	28,800	27,400	.....
1949-50												
1	27,100	33,200	17,400	6,960	8,700	18,000	80,600	70,300	33,900	63,600	39,000	34,300
2	26,800	35,400	17,000	7,420	8,800	17,300	77,500	63,200	39,400	59,800	34,600	33,200
3	27,100	34,300	17,200	7,420	9,000	17,900	77,600	58,800	33,900	60,600	32,500	33,600
4	26,800	33,200	17,000	6,600	9,100	18,100	112,000	55,100	32,500	68,500	33,200	33,200
5	26,500	30,300	17,000	7,400	9,200	21,900	122,000	54,800	33,600	69,400	32,100	32,800
6	26,200	29,300	17,000	8,200	9,300	27,100	110,000	54,400	33,600	59,300	30,700	31,800
7	26,200	28,700	*17,200	*8,800	*9,500	28,700	90,700	51,400	31,800	53,200	32,100	31,400
8	25,600	28,000	17,000	9,200	10,200	17,700	91,800	51,400	30,700	50,600	33,600	31,000
9	26,500	27,100	16,500	9,200	11,200	17,000	92,400	57,600	30,700	52,500	33,900	31,000
10	29,000	25,600	15,400	9,100	11,800	11,800	96,300	58,500	31,800	47,600	32,100	31,400
11	31,000	24,500	15,000	9,000	11,700	18,300	94,600	59,800	34,300	49,100	31,800	30,700
12	30,300	24,000	14,500	8,800	11,600	16,900	92,400	78,500	41,200	58,900	43,900	30,700
13	30,300	23,400	g11,400	8,600	11,200	16,400	88,000	79,500	45,800	59,300	36,100	30,700
14	30,000	22,000	g0,080	8,500	11,000	*17,200	77,500	71,600	35,700	51,400	37,200	31,000
15	28,300	22,400	g*5,660	8,500	10,700	18,400	69,400	67,600	39,800	53,600	45,000	31,400
16	29,600	21,900	6,000	8,600	10,500	19,800	64,900	62,700	48,400	62,300	42,000	30,700
17	32,100	21,000	6,510	*8,700	*10,500	22,900	64,400	56,800	443,900	54,000	43,100	30,700
18	32,100	20,000	6,510	8,960	10,500	23,400	88,000	53,600	63,200	53,200	42,400	30,300
19	31,400	19,600	6,340	9,100	10,500	22,200	112,000	52,900	91,200	55,100	38,300	31,000
20	30,300	19,200	*6,340	9,200	10,500	19,600	121,000	57,600	92,400	52,500	37,200	29,600
21	31,000	18,800	g6,080	9,300	10,500	18,300	127,000	59,300	68,000	55,900	35,700	31,000
22	30,700	18,400	g4,640	9,400	10,600	17,600	133,000	50,600	57,600	58,000	39,000	34,600
23	31,000	18,300	g4,640	9,400	10,800	18,400	150,000	47,600	52,900	53,200	41,600	39,000
24	30,000	18,300	g3,970	9,400	11,000	22,700	162,000	45,000	49,100	50,600	40,100	42,000
25	29,300	17,900	g3,970	9,200	11,200	28,300	165,000	47,600	45,400	52,100	37,900	42,000
26	29,600	17,700	g4,120	*9,100	11,300	35,400	189,000	41,600	47,200	49,100	36,800	44,200
27	30,000	17,700	g3,830	8,800	*11,400	48,400	192,000	41,200	61,900	46,900	36,800	43,500
28	29,600	17,700	g4,190	8,700	13,000	74,000	174,000	38,300	68,000	44,600	35,700	41,600
29	29,300	17,600	4,870	8,600	.....	103,000	129,000	38,300	71,600	42,800	34,300	40,100
30	30,000	17,400	*5,500	8,600	.....	123,000	83,600	38,300	69,400	41,200	33,900	37,900
31	31,400	.....	6,340	8,600	.....	114,000	.....	35,400	.....	40,900	33,900	.....

* Winter discharge measurement made on this day.

g Computed from graph based on wire-weight gage readings.

h Computed from wire-weight gage readings.

Note—Stage-discharge relation affected by ice Jan. 17 to Mar. 3, 1949, Jan. 5 to Mar. 2, 1950.

Missouri River at Omaha, Nebr.—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acres-foot
October 1942.....	696,400	24,400	21,500	22,460		1,381,000	
November.....	675,100	25,500	16,000	22,500		1,339,000	
December.....	251,500	13,800	6,500	8,113		498,800	
Calendar year 1942	11,540,960	120,000	3,620	31,620		22,890,000	
January 1943.....	291,900	12,400	7,500	9,416		579,000	
February.....	394,440	24,800	7,000	14,090		782,400	
March.....	854,400	65,300	13,200	27,560		1,695,000	
April.....	2,819,700	190,000	34,600	93,990		5,593,000	
May.....	976,400	37,600	25,300	31,500		1,937,000	
June.....	2,096,900	101,000	26,100	69,900		4,159,000	
July.....	2,298,900	98,200	40,600	74,160		4,560,000	
August.....	1,001,200	39,200	25,900	32,300		1,986,000	
September.....	932,600	38,300	26,700	31,090		1,850,000	
Water year 1942-43	13,289,440	190,000	6,500	36,410		26,360,000	
October 1943.....	866,900	31,900	25,600	27,960		1,719,000	
November.....	867,500	31,900	25,900	28,920		1,721,000	
December.....	523,700	25,300	9,500	16,890		1,039,000	
Calendar year 1943	13,924,540	190,000	7,000	38,150		27,620,000	
January 1944.....	474,400	23,000	10,400	15,300		941,000	
February.....	535,100	30,600	12,000	18,450		1,061,000	
March.....	740,700	37,200	12,500	23,890		1,469,000	
April.....	2,309,900	148,000	25,300	77,000		4,582,000	
May.....	1,159,500	65,400	29,000	37,400		2,300,000	
June.....	3,012,000	138,000	47,500	100,400		5,974,000	
July.....	2,607,500	134,000	36,900	84,110		5,172,000	
August.....	1,226,400	59,600	31,200	39,560		2,433,000	
September.....	873,500	35,400	24,500	29,120		1,733,000	
Water year 1943-44	15,197,100	148,000	9,500	41,520		30,140,000	
October 1944.....	802,700	34,800	22,800	25,890		1,592,000	
November.....	859,700	32,600	25,600	28,660		1,705,000	
December.....	421,300	24,000	11,100	13,590		835,600	
Calendar year 1944	15,022,700	148,000	10,400	41,050		29,800,000	
January 1945.....	469,000	17,000	14,000	15,130		930,200	
February.....	727,000	37,000	17,000	25,960		1,442,000	
March.....	2,017,500	105,000	21,900	65,080		4,002,000	
April.....	1,089,200	65,400	23,700	36,310		2,160,000	
May.....	767,900	43,500	18,200	24,770		1,523,000	
June.....	1,733,600	92,200	39,300	57,790		3,439,000	
July.....	1,632,200	83,900	38,900	52,650		3,237,000	
August.....	1,037,700	48,300	23,900	33,470		2,058,000	
September.....	723,200	32,500	19,800	24,110		1,434,000	
Water year 1944-45	12,281,000	105,000	11,100	33,650		24,360,000	
October 1945.....	906,000	34,800	27,100	29,230		1,797,000	
November.....	607,830	30,000	7,460	20,260		1,206,000	
December.....	298,580	18,200	4,500	9,632		592,200	
Calendar year 1945	12,009,710	105,000	4,500	32,900		23,820,000	
January 1946.....	336,000	14,000	9,000	10,840		666,400	
February.....	430,900	22,500	10,500	15,390		854,700	
March.....	959,800	47,500	16,200	30,960		1,904,000	
April.....	765,900	56,600	16,000	25,530		1,519,000	
May.....	760,200	40,900	15,000	24,520		1,508,000	
June.....	1,272,800	80,700	23,400	42,430		2,525,000	
July.....	1,271,600	57,000	29,400	41,020		2,522,000	
August.....	678,300	31,400	16,000	21,850		1,345,000	
September.....	905,200	47,900	24,900	30,170		1,795,000	
Water year 1945-46	9,193,110	80,700	4,500	25,190		18,230,000	

Missouri River at Omaha, Nebr.—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet			Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October 1946.....	1,065,100	51,900	27,300	34,360		2,113,000
November.....	699,500	30,000	14,000	23,320		1,387,000
December.....	260,820	13,800	2,500	8,414		517,300
Calendar year 1946	9,406,120	80,700	2,500	25,770		18,660,000
January 1947.....	359,800	17,000	3,500	11,610		713,700
February.....	436,300	23,000	10,500	15,520		865,400
March.....	797,400	57,900	18,000	25,720		1,582,000
April.....	2,359,100	143,000	49,000	78,640		4,679,000
May.....	1,595,600	73,500	41,200	51,470		3,165,000
June.....	2,373,800	147,000	47,700	79,130		4,708,000
July.....	2,302,400	149,000	42,000	74,270		4,567,000
August.....	1,253,600	45,200	36,000	40,440		2,486,000
September.....	988,900	36,800	29,900	32,960		1,961,000
Water year 1946-47	14,492,320	149,000	2,500	39,700		28,740,000
October 1947.....	1,115,600	38,900	33,400	35,990		2,213,000
November.....	876,500	40,200	10,800	29,220		1,739,000
December.....	365,160	19,200	6,200	11,780		724,300
Calendar year 1947	14,824,160	149,000	3,500	40,610		29,400,000
January 1948.....	395,360	18,200	9,000	12,750		784,200
February.....	527,500	37,200	10,800	18,190		1,046,000
March.....	1,465,700	104,000	16,600	47,280		2,907,000
April.....	1,816,800	103,000	34,900	60,560		3,604,000
May.....	1,116,900	50,600	29,000	36,030		2,215,000
June.....	2,267,800	98,500	43,300	75,590		4,498,000
July.....	2,062,800	89,200	56,200	66,540		4,092,000
August.....	1,350,000	56,700	36,400	43,550		2,678,000
September.....	949,300	41,500	29,000	31,640		1,883,000
Water year 1947-48	14,309,420	104,000	6,200	39,100		28,380,000
October 1948.....	1,179,400	42,700	32,400	38,050		2,339,000
November.....	1,028,700	43,400	22,200	34,290		2,040,000
December.....	346,110	22,700	6,260	11,160		686,500
Calendar year 1948	14,596,370	104,000	6,260	39,630		28,770,000
January 1949.....	374,160	17,500	6,180	12,070		742,100
February.....	479,500	25,500	14,000	17,120		951,100
March.....	1,674,300	122,000	25,000	54,010		3,321,000
April.....	2,761,400	182,000	34,200	92,050		5,477,000
May.....	1,164,100	54,200	33,300	37,550		2,309,000
June.....	1,381,100	65,600	36,700	46,040		2,739,000
July.....	1,088,200	46,000	28,300	35,100		2,158,000
August.....	922,900	33,900	27,400	29,770		1,831,000
September.....	914,600	52,800	26,000	30,490		1,814,000
Water year 1948-49	13,314,470	182,000	6,180	36,480		26,410,000
October 1949.....	905,100	32,100	25,600	29,200		1,795,000
November.....	793,800	35,400	17,400	23,460		1,396,000
December.....	305,190	17,400	3,830	9,810		605,300
Calendar year 1949	12,674,350	182,000	3,830	34,720		25,140,000
January 1950.....	267,300	9,400	6,600	8,620		530,200
February.....	295,300	13,000	8,700	10,550		585,700
March.....	1,001,300	123,000	16,400	32,300		1,986,000
April.....	3,336,100	192,000	64,400	111,200		6,617,000
May.....	1,699,400	79,500	35,400	54,820		3,371,000
June.....	1,458,900	92,400	30,700	48,630		2,894,000
July.....	1,669,800	69,400	40,900	53,860		3,312,000
August.....	1,139,000	45,000	30,700	36,740		2,259,000
September.....	1,026,400	44,200	29,600	34,210		2,036,000
Water year 1949-50	13,807,590	192,000	3,830	37,830		27,390,000

Missouri River at Nebraska City, Nebr.

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.—414,000 square miles.

RECORDS AVAILABLE.—August 1929 to September 1950. 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 feet above mean sea level, datum of 1929. Aug. 1, 1878, to Oct. 30, 1888, inclined masonry gage 0.5 mile downstream and Oct. 31, 1888, to Dec. 31, 1899, cable gage on railroad bridge 50 feet downstream at datum 491.80 feet lower (St. Louis directrix). 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.—21 years, 33,350 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43 ..	Apr. 14	181,000	19.88	Dec. 10	9,200
1943-44 ..	June 14	214,000	19.70	Dec. 18, 29, Feb. 14	8,000
1944-45 ..	June 17	129,000	(¹)	Dec. 24-30	13,000
1945-46 ..	June 24	96,700	13.7	Dec. 19	5,000
1946-47 ..	July 1, 2	172,000	20.1	Dec. 31	1,800
1947-48 ..	July 29	135,000	(²)	Dec. 12	7,120
1948-49 ..	Apr. 13	182,000	(³)	Dec. 31, Jan. 1	8,000
1949-50 ..	Apr. 28	185,000	20.95	Dec. 27-29	5,200

(1) Maximum gage height 16.85 feet Feb. 14, 15 (ice jam).

(2) Maximum gage height 18.65 feet Feb. 27 (ice jam).

(3) Maximum gage height 25.8 feet Mar. 6 (ice jam).

1929-50: Maximum discharge, 214,000 second-feet June 14, 1944, maximum gage height, 25.8 feet Mar. 6, 1949 (ice jam); minimum discharge, 1,600 second-feet Dec. 31, 1946 (discharge measurement); minimum gage height observed, 1.2 feet Jan. 1, 1940.

REMARKS.—Records good except those for periods of ice effect, which are fair. Flow partly regulated by Fort Peck Reservoir.

Missouri River at Nebraska City, Nebr.—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1....	h26,800	h25,900	h18,700	13,500	11,400	30,300	80,600	39,200	32,700	88,000	43,900	39,200
2....	h26,500	h25,600	h18,700	13,000	11,500	26,500	94,500	37,200	33,500	90,600	41,800	37,600
3....	h26,800	h25,900	h12,100	12,500	11,500	22,200	97,800	36,100	59,000	95,000	47,000	36,800
4....	h28,300	h25,900	h11,500	12,200	12,500	18,900	106,600	34,600	49,300	101,000	40,100	36,800
5....	h26,500	h26,800	h10,800	12,000	25,000	18,200	117,000	32,700	37,200	110,000	37,200	37,600
6....	h26,500	h28,700	h10,500	11,900	*39,500	16,800	125,000	40,100	39,200	112,000	36,100	40,100
7....	h26,800	h27,100	g10,000	11,900	45,000	14,700	130,000	36,100	40,900	108,000	34,600	39,200
8....	h26,500	h27,400	g9,900	12,200	39,000	15,300	137,000	38,400	40,900	106,000	34,200	40,900
9....	26,500	h28,300	9,400	11,700	33,800	19,100	139,000	38,000	47,900	105,000	32,400	41,400
10....	25,900	h26,800	9,200	11,400	27,400	21,700	143,000	37,600	88,500	102,000	31,700	39,600
11....	25,300	h27,700	9,300	11,000	23,900	20,900	148,000	36,100	96,200	96,700	31,300	37,600
12....	24,200	h27,400	9,400	11,700	24,200	20,400	157,000	35,700	96,700	94,000	32,400	36,400
13....	23,600	h27,400	9,700	12,500	22,200	22,200	172,000	37,600	94,000	97,200	34,200	39,600
14....	h23,600	h27,700	9,500	*13,100	20,700	24,700	179,000	37,600	107,000	95,000	35,000	36,100
15....	h25,000	h27,700	9,600	14,200	20,700	41,400	167,000	38,800	125,000	87,000	38,000	32,400
16....	h23,900	h29,600	10,000	17,000	19,100	53,100	148,000	65,000	132,000	78,000	38,400	31,300
17....	h24,200	h28,000	10,300	16,500	18,000	47,400	107,000	39,200	135,000	77,000	36,100	31,000
18....	h23,600	h27,700	10,700	16,000	17,500	30,000	79,100	34,200	122,000	75,900	33,100	30,600
19....	h23,900	h27,400	10,900	15,500	17,000	24,400	66,500	31,700	117,000	67,000	30,300	30,000
20....	h23,900	h27,700	10,900	15,000	17,500	22,200	61,500	31,300	115,000	69,600	29,600	30,000
21....	h23,000	h28,000	11,000	14,500	18,200	21,700	57,000	31,700	104,000	678,600	29,300	29,300
22....	h23,600	h28,300	10,800	13,800	*18,900	23,600	54,000	33,500	94,500	681,700	31,300	29,000
23....	h24,400	h28,000	10,800	13,000	23,300	27,700	61,700	33,500	95,600	672,800	35,000	29,300
24....	h25,000	h27,100	11,100	12,000	27,100	35,700	47,400	32,700	96,700	668,600	27,700	28,700
25....	h24,200	h26,500	11,500	11,500	28,700	51,200	46,600	33,500	91,000	622,000	27,100	28,700
26....	h23,600	h25,300	11,900	10,800	26,800	66,000	46,100	33,100	87,500	657,000	29,000	28,300
27....	h23,300	h24,200	13,200	10,000	24,700	68,600	46,100	32,400	82,200	656,500	29,000	28,300
28....	h23,600	h*22,800	12,200	11,000	23,900	61,500	44,300	31,700	79,600	654,000	28,000	28,300
29....	h24,200	h20,700	12,500	11,500	.....	48,800	43,900	30,300	83,300	50,200	30,000	28,300
30....	h25,900	h19,600	12,700	11,600	.....	47,000	42,600	29,000	84,800	46,100	33,800	28,300
31....	h26,200	.....	13,100	11,400	.....	*48,800	.....	29,300	.....	45,200	37,200	.....
1943-44												
1....	29,000	32,400	29,000	10,000	24,200	42,200	33,500	46,100	76,400	138,000	48,400	45,200
2....	28,700	33,500	29,600	11,000	22,200	42,600	32,000	45,200	62,500	135,000	60,500	41,800
3....	28,300	33,800	30,300	11,500	21,200	42,200	31,700	47,000	53,600	132,000	58,000	40,100
4....	29,000	33,500	30,000	12,000	20,900	39,600	34,600	58,500	57,500	131,000	57,500	38,000
5....	29,300	33,500	29,600	12,000	21,200	35,300	36,100	71,200	80,100	130,000	63,000	36,100
6....	30,000	33,100	28,700	12,000	21,700	29,600	36,800	68,000	73,300	120,000	73,800	35,000
7....	29,600	32,700	29,000	12,000	21,200	26,800	73,800	56,000	64,000	114,000	60,000	34,600
8....	29,000	32,000	*28,300	11,000	*20,900	23,900	97,200	48,800	69,100	125,000	45,600	33,500
9....	28,300	33,100	28,700	11,500	23,600	20,400	104,000	46,600	92,300	124,000	40,100	32,700
10....	28,000	32,400	28,700	12,000	23,500	18,700	113,000	43,900	80,600	107,000	38,000	32,700
11....	28,000	31,700	28,300	12,500	20,900	19,600	123,000	42,200	106,000	107,000	36,400	31,700
12....	28,300	32,000	28,000	13,000	15,000	21,700	135,000	50,200	138,000	104,000	36,100	31,300
13....	29,300	33,500	26,800	15,000	11,000	25,000	141,000	64,500	181,000	103,000	34,600	31,300
14....	31,300	34,600	26,200	17,000	8,000	27,100	149,000	74,400	207,000	106,000	33,800	30,700
15....	32,700	35,700	21,400	18,000	8,500	25,600	156,000	67,500	203,000	99,400	33,500	29,600
16....	32,700	34,600	13,500	18,000	9,000	27,100	168,000	61,000	200,000	99,400	36,100	29,000
17....	31,300	33,100	10,000	18,000	10,000	28,700	160,000	61,000	172,000	99,400	39,200	29,300
18....	31,000	32,700	8,000	18,000	12,000	32,700	153,000	50,200	160,000	97,800	38,400	29,300
19....	30,700	31,300	9,000	18,000	15,000	32,700	145,000	48,800	154,000	90,100	38,000	33,800
20....	30,000	31,700	10,000	18,500	20,000	30,000	99,400	53,600	147,000	82,200	38,800	31,300
21....	31,300	32,000	9,800	19,000	30,000	29,000	88,000	59,500	132,000	77,500	37,600	32,000
22....	31,300	31,700	9,500	22,000	27,000	28,700	75,400	51,700	127,000	70,200	35,100	34,600
23....	31,300	31,300	9,000	25,000	25,000	27,400	70,200	43,500	127,000	66,000	35,700	32,400
24....	31,700	30,300	8,500	28,000	28,000	29,000	78,000	48,800	129,000	62,000	35,100	29,300
25....	31,300	29,300	8,500	33,000	33,000	40,100	82,200	52,600	130,000	59,500	39,200	g28,000
26....	31,000	29,300	9,000	35,000	40,000	48,400	74,900	51,700	131,000	58,000	47,400	g28,000
27....	30,300	28,300	8,600	34,600	44,800	50,700	71,200	42,200	133,000	51,200	43,500	g27,100
28....	30,000	28,000	8,300	32,000	*40,900	50,700	61,500	39,200	140,000	47,900	43,000	g26,800
29....	30,000	28,700	8,000	*30,000	41,800	45,600	53,600	38,400	141,000	45,200	45,600	g26,500
30....	31,000	28,700	8,500	25,600	.....	43,000	48,400	48,400	67,500	139,000	41,800	58,000
31....	31,700	.....	9,000	23,600	.....	38,400	.....	85,400	.....	39,200	49,300	.....

* Winter discharge measurement made on this day.

g Computed from graph based on gage readings.

h Computed from wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 9-31, 1942, Jan. 1 to Feb. 8, Dec. 17-31, 1943, Jan. 1-26, Feb. 12-26, 1944.

Missouri River at Nebraska City, Nebr.—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	27,200	35,200	28,000	15,000	22,000	34,400	74,000	29,200	75,700	56,600	46,700	25,500
2.....	27,600	33,900	22,000	15,000	22,000	37,000	67,600	28,40 ^g	75,700	50,300	44,200	24,700
3.....	26,800	33,500	*14,000	*16,000	*22,000	47,200	68,200	28,400	60,500	46,700	47,200	23,400
4.....	28,400	33,000	14,000	16,000	22,000	44,700	61,600	27,200	52,400	66,000	48,200	23,400
5.....	30,900	32,600	15,000	16,000	22,000	44,200	54,500	26,800	49,800	106,000	45,200	24,200
6.....	29,200	31,700	17,000	17,000	22,000	39,300	50,300	26,000	56,100	102,000	46,700	23,800
7.....	29,200	31,300	21,000	18,000	23,000	28,800	49,300	25,600	65,400	92,600	51,900	22,200
8.....	29,200	30,900	21,000	18,000	24,000	25,200	48,200	24,000	64,400	84,000	51,900	22,200
9.....	29,200	30,000	20,000	18,000	25,000	32,200	45,700	23,600	59,400	77,400	48,800	22,200
10.....	29,200	29,600	19,000	18,000	27,000	41,700	45,700	23,600	73,400	65,200	47,700	22,200
11.....	28,400	28,000	17,000	18,000	30,000	58,300	43,200	24,000	86,000	60,000	41,200	22,600
12.....	28,000	27,200	*15,000	18,000	34,000	75,100	41,700	24,000	86,000	53,500	38,900	23,000
13.....	27,600	27,200	15,000	*17,500	38,000	99,900	45,700	23,600	89,000	49,800	38,000	23,000
14.....	28,000	27,600	15,000	18,000	*45,000	105,000	38,000	40,800	87,800	49,800	41,200	22,600
15.....	28,800	27,600	15,000	19,000	50,000	105,000	36,100	42,700	93,800	48,200	33,900	22,200
16.....	28,800	28,400	14,000	19,000	45,000	87,200	41,200	31,300	121,000	45,200	33,000	21,800
17.....	28,800	29,200	14,000	19,000	41,000	72,200	41,700	28,800	124,000	62,700	32,600	22,200
18.....	28,400	29,600	14,000	19,000	37,000	72,200	40,300	28,400	112,000	102,000	33,500	23,800
19.....	28,000	30,400	14,000	19,000	35,000	89,600	41,200	27,200	101,000	76,800	33,000	26,000
20.....	28,000	31,700	14,000	19,000	35,000	89,600	42,700	26,800	95,000	65,400	32,600	26,400
21.....	26,800	33,500	14,000	19,000	34,000	105,000	41,200	49,800	85,400	61,600	33,900	26,800
22.....	26,000	34,400	*14,000	20,000	32,000	110,000	39,800	69,400	76,800	58,300	32,600	27,300
23.....	25,600	34,800	14,000	21,000	30,900	109,000	63,200	52,400	70,500	54,000	32,600	28,200
24.....	26,000	33,900	13,000	*22,600	31,700	111,000	62,700	41,700	67,100	50,300	32,600	28,200
25.....	26,000	33,900	13,000	23,000	33,900	100,000	47,700	38,400	67,600	60,000	30,900	29,600
26.....	26,000	33,900	13,000	23,000	39,800	93,800	39,300	33,900	60,000	51,400	28,400	32,100
27.....	26,000	33,500	13,000	23,000	38,900	95,000	36,100	35,200	67,100	49,300	27,600	34,600
28.....	26,400	34,400	13,000	23,000	34,800	93,200	32,600	44,700	71,600	61,900	27,200	37,700
29.....	28,800	35,700	13,000	23,000	.....	95,600	31,700	43,200	67,100	47,200	26,400	35,100
30.....	34,400	36,100	13,000	23,000	.....	93,800	30,000	46,700	62,200	47,700	26,400	34,600
31.....	35,700	.....	14,000	23,000	.....	85,400	.....	51,400	.....	30,300	26,400	.....
1945-46												
1.....	37,900	30,700	15,800	13,500	15,000	25,700	39,600	19,100	44,700	71,800	32,300	27,200
2.....	39,600	31,000	16,600	14,500	15,500	27,600	44,200	18,500	40,400	62,600	32,600	27,200
3.....	40,400	31,300	18,000	15,000	16,000	29,100	66,400	21,000	35,500	58,200	30,100	26,600
4.....	40,000	31,700	17,400	15,500	17,500	30,100	63,100	23,300	31,300	53,200	27,600	40,400
5.....	37,900	32,300	g15,100	16,000	27,000	33,000	50,400	21,600	27,600	51,600	26,600	35,900
6.....	35,200	32,600	g15,800	17,000	24,800	34,400	39,600	21,000	26,600	49,900	25,700	28,800
7.....	33,700	32,600	g20,500	19,000	24,200	34,800	34,400	20,700	27,600	53,800	25,100	28,200
8.....	33,000	32,300	g20,200	19,000	24,200	32,600	31,300	20,200	35,200	56,000	28,200	30,700
9.....	32,600	31,700	g17,400	18,500	23,600	27,900	29,700	34,800	40,000	56,000	26,900	28,500
10.....	32,600	30,400	g13,300	18,000	20,700	22,700	28,200	37,900	35,200	49,400	26,000	29,100
11.....	32,600	29,400	g14,300	17,500	18,500	21,300	28,200	31,000	32,300	45,200	23,000	29,700
12.....	32,600	28,200	g7,640	16,500	17,400	21,300	28,200	27,900	35,900	43,700	21,600	32,600
13.....	32,300	27,600	g9,250	15,500	16,400	25,000	28,500	26,000	37,900	41,400	20,200	34,400
14.....	32,000	26,300	g7,010	15,000	16,600	28,800	29,100	24,800	37,500	40,000	19,100	33,700
15.....	31,000	25,700	g7,770	14,700	16,400	33,000	28,800	24,200	37,100	39,600	18,500	33,400
16.....	31,000	25,400	g7,010	14,400	16,600	35,200	26,900	23,900	33,400	39,600	18,500	33,000
17.....	30,100	25,400	g6,500	14,000	16,100	38,700	25,100	23,000	32,300	37,500	19,600	32,300
18.....	30,400	24,500	g7,700	13,500	16,400	52,100	24,800	23,300	53,200	35,900	19,900	31,700
19.....	30,400	23,300	g5,000	13,300	16,900	53,800	23,900	27,900	56,000	35,500	18,500	31,000
20.....	31,300	21,600	g5,200	13,200	*17,400	55,400	23,000	30,700	63,100	40,000	17,400	31,000
21.....	31,300	19,900	g5,500	13,000	21,000	47,200	21,600	28,200	73,000	38,700	16,400	31,300
22.....	31,000	19,300	g6,000	12,800	23,900	40,400	21,300	26,300	85,000	40,000	17,400	36,700
23.....	30,700	17,400	g6,500	12,500	39,600	39,200	21,300	25,400	91,500	40,400	20,200	48,200
24.....	30,700	12,600	g7,000	12,800	33,700	40,900	21,600	28,200	95,400	42,200	25,100	50,400
25.....	30,700	g12,100	g7,500	13,200	33,400	43,200	21,600	38,300	83,000	44,200	29,400	43,700
26.....	30,400	g11,000	g8,000	13,500	29,400	50,400	22,400	33,000	67,000	40,900	26,300	37,500
27.....	29,700	g10,800	g9,000	13,500	28,500	57,600	20,700	33,700	54,800	34,800	25,700	32,600
28.....	29,400	g10,600	g10,000	13,500	26,000	53,800	19,600	33,700	50,400	32,600	24,800	31,300
29.....	29,700	*11,600	g11,500	13,500	.....	45,200	19,300	31,300	71,200	30,700	24,200	30,700
30.....	29,400	14,300	g12,500	14,000	.....	40,000	19,300	36,300	73,000	30,100	24,800	30,400
31.....	29,700	.....	g13,500	14,000	.....	38,700	.....	49,900	.....	30,700	26,000	.....

* Winter discharge measurement made on this day.

g Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 1-31, 1944, Jan. 1 to Feb. 22, Dec. 17-31, 1945, Jan. 1 to Feb. 5, 1946.

Missouri River at Nebraska City, Nebr.—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1	30,200	32,200	21,600	3,000	17,200	25,600	85,100	55,000	74,500	171,000	45,300	38,400
2	31,000	32,200	20,600	4,000	15,800	24,100	72,500	59,200	93,900	171,000	44,000	36,300
3	31,800	31,000	19,400	6,000	*15,200	23,400	90,600	60,700	79,500	167,000	44,000	35,000
4	32,600	31,800	16,100	8,000	g14,000	23,400	116,000	56,900	78,000	156,000	43,100	34,200
5	32,600	31,400	16,400	8,500	g13,500	23,400	123,000	52,600	111,000	140,000	42,600	33,800
6	34,200	31,000	18,100	8,500	g14,200	24,100	132,000	52,100	86,800	124,000	42,600	33,000
7	37,100	32,600	19,000	7,500	g11,200	*24,100	141,000	51,200	71,500	116,000	43,100	32,600
8	49,400	33,400	18,700	6,500	9,500	24,400	126,000	50,700	70,500	108,000	42,200	32,600
9	53,100	33,800	18,400	9,000	8,000	24,400	96,100	49,400	64,000	99,400	42,200	32,600
10	60,700	35,800	*18,100	11,000	7,500	24,800	104,000	46,600	67,000	90,600	41,800	32,600
11	61,600	36,300	17,800	*12,400	7,000	25,900	107,000	45,300	77,000	82,000	39,700	33,000
12	61,600	34,600	18,400	12,500	15,000	26,300	97,200	44,000	114,000	76,000	38,000	33,000
13	55,000	34,200	18,700	12,500	40,000	29,000	89,500	43,500	131,000	100,000	36,700	33,000
14	49,400	33,400	18,400	12,400	28,600	33,800	82,000	42,600	126,000	73,500	36,700	33,800
15	47,600	31,800	18,100	*12,300	20,000	32,200	75,000	55,900	120,000	67,500	37,600	33,400
16	50,200	31,000	17,200	12,300	21,600	33,000	71,000	47,600	111,000	65,500	39,700	33,800
17	63,500	33,000	16,900	13,000	23,800	35,000	73,000	52,100	95,600	64,500	42,600	34,600
18	70,500	33,000	15,800	16,000	25,900	37,600	80,500	72,000	96,600	72,500	45,300	35,800
19	56,900	31,800	10,000	22,000	28,200	35,800	81,000	67,000	95,600	77,500	47,600	34,600
20	47,600	31,400	8,660	21,000	*31,000	34,600	80,000	68,000	91,200	78,000	45,800	34,200
21	42,200	30,200	8,390	19,000	31,400	34,200	77,500	74,500	86,800	74,000	43,100	35,000
22	39,700	29,800	8,560	17,500	33,000	36,300	75,500	76,500	108,000	68,500	41,800	34,200
23	39,200	29,400	8,900	24,000	31,400	42,200	76,500	75,000	158,000	67,500	42,200	34,200
24	38,800	28,600	8,900	23,000	29,400	42,600	73,500	69,000	154,000	63,000	43,100	34,600
25	39,700	*26,700	8,900	22,000	27,800	61,200	66,500	60,700	155,000	60,200	46,200	35,000
26	37,100	24,100	*11,900	21,000	26,700	48,900	60,700	55,900	160,000	55,900	44,400	34,600
27	35,800	22,400	12,600	22,700	26,700	39,200	57,400	52,600	161,000	53,600	44,800	35,000
28	34,200	22,400	12,800	26,700	27,000	39,700	53,600	54,000	161,000	51,200	44,400	36,300
29	34,600	21,600	10,000	22,000	.....	40,500	52,100	57,400	160,000	48,900	42,600	37,600
30	34,200	*21,600	5,000	22,400	.....	37,100	55,000	56,400	165,000	47,600	41,400	38,400
31	33,800	.....	*1,800	20,600	.....	48,900	.....	56,400	.....	46,600	40,100	.....
1947-48												
1	39,700	41,400	18,100	g13,800	12,500	g71,000	73,500	53,600	36,300	81,000	77,500	39,200
2	39,700	41,800	17,500	g7,940	12,500	g70,500	74,000	54,500	66,000	75,500	63,000	69,200
3	38,800	42,600	*19,000	g7,510	12,500	g56,400	74,000	52,600	65,000	74,500	58,800	46,600
4	38,000	43,500	21,600	12,100	12,500	g48,900	72,000	48,900	57,800	77,000	56,900	43,100
5	38,000	43,100	22,400	13,800	12,500	g44,000	72,000	46,200	50,200	70,500	53,600	38,400
6	38,400	43,100	18,700	14,500	12,500	g43,500	71,500	43,100	46,200	78,000	55,900	36,700
7	37,600	43,500	14,800	15,100	12,500	g44,400	75,000	40,100	45,800	74,000	54,000	39,700
8	36,700	43,100	13,000	16,400	12,500	g35,000	97,200	38,400	49,000	68,000	49,800	38,400
9	36,700	43,100	11,000	22,700	12,500	g33,000	100,000	36,700	56,900	64,000	46,200	37,100
10	36,300	41,800	8,240	21,300	12,500	g30,200	85,100	37,100	64,500	62,100	51,200	36,700
11	36,300	41,400	7,250	26,700	12,500	g29,400	71,000	44,000	70,000	62,100	51,600	36,700
12	37,100	41,400	g7,120	28,600	12,500	g25,900	75,000	49,400	71,000	59,700	58,300	35,800
13	38,400	41,400	g7,510	28,600	13,200	g22,400	78,000	48,000	76,000	59,200	63,000	34,600
14	38,000	41,400	g8,560	g25,900	*14,400	g22,400	65,000	45,300	78,000	63,000	65,000	33,800
15	36,300	39,700	g9,070	g24,100	18,000	g25,200	57,400	46,200	80,500	64,500	65,500	32,200
16	35,400	37,100	g9,430	g22,000	20,000	*35,000	52,600	45,300	81,500	66,000	65,500	32,600
17	36,300	35,800	g9,810	16,000	21,000	73,000	49,400	43,100	83,500	63,000	60,700	31,800
18	37,600	34,200	g9,810	11,000	25,000	87,800	46,200	40,100	85,100	61,200	53,100	32,200
19	38,400	32,600	g11,000	10,000	33,000	115,000	44,800	37,600	84,000	58,300	50,700	32,200
20	39,700	31,400	g14,000	11,000	25,000	100,000	43,100	36,300	89,500	57,400	51,200	32,200
21	39,700	30,200	g19,400	10,500	30,000	100,000	41,800	35,800	93,900	66,500	51,200	32,600
22	39,200	30,200	g24,400	7,500	33,000	100,000	40,100	34,600	96,100	80,500	48,900	32,600
23	38,400	29,800	g29,400	8,000	33,000	88,400	43,100	33,800	93,000	79,500	45,800	32,200
24	38,800	27,000	26,300	9,000	31,000	82,500	46,600	33,000	96,600	74,000	44,400	32,200
25	39,700	25,200	24,100	10,000	30,000	74,000	51,600	33,000	98,800	67,500	42,200	31,800
26	40,100	21,300	24,100	11,000	35,000	86,200	84,000	33,000	93,900	68,000	41,000	31,800
27	40,100	15,200	24,100	12,000	80,000	102,000	82,000	33,000	98,300	65,000	40,100	35,400
28	41,000	14,800	24,100	13,500	70,000	112,000	65,500	32,200	114,000	63,000	40,000	36,300
29	41,800	*16,600	23,800	13,000	g63,000	92,800	54,000	31,400	111,000	106,000	40,100	35,000
30	41,000	18,100	23,400	12,500	.....	77,000	50,700	30,200	91,700	110,000	39,200	35,000
31	41,400	.....	g21,600	12,500	.....	73,000	.....	30,600	.....	92,200	41,800	.....

* Winter discharge measurement made on this day.

g Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 29-31, 1946, Jan. 1-25, Feb. 8-13, 1947, Jan. 17 to Feb. 27, 1948.

Missouri River at Nebraska City, Nebr.—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1	36,200	39,400	28,400	8,000	16,000	34,000	120,000	42,800	55,900	65,000	34,300	28,400
2	35,800	39,800	*27,700	g9,910	17,000	33,000	123,000	42,300	67,500	63,000	35,800	27,700
3	35,100	40,200	27,700	g11,900	17,500	45,000	121,000	40,600	81,000	62,600	35,800	27,700
4	34,700	41,000	27,300	13,500	17,500	70,000	116,000	41,500	66,000	61,600	31,600	29,800
5	33,900	43,600	27,700	15,000	17,500	110,000	115,000	41,900	60,200	57,400	30,800	32,700
6	35,100	44,400	28,700	g15,400	17,800	108,000	128,000	43,200	56,900	54,500	30,500	36,600
7	40,600	44,900	27,300	g15,600	17,800	104,000	133,000	43,600	53,100	55,000	30,500	33,100
8	47,100	45,300	25,000	g15,800	18,000	*102,000	140,000	42,800	51,600	53,600	30,100	33,900
9	46,200	44,400	24,400	14,000	18,000	98,800	150,000	44,400	49,400	47,100	29,400	33,900
10	42,800	43,200	16,900	11,000	18,000	88,400	158,000	49,400	55,400	47,600	29,400	35,400
11	40,600	43,200	12,400	11,000	20,000	84,000	168,000	46,600	61,600	45,800	29,400	39,000
12	41,900	43,600	g9,250	12,500	22,000	73,000	176,000	47,600	63,000	41,500	30,800	59,700
13	44,900	43,600	g9,250	13,500	22,600	70,000	180,000	46,200	70,500	41,900	32,000	53,100
14	47,600	42,800	*10,200	15,000	20,500	67,500	178,000	44,900	74,500	41,500	35,400	45,800
15	44,000	40,600	g11,600	18,000	*18,500	65,000	165,000	45,300	65,000	42,300	35,800	35,800
16	41,900	38,600	g12,400	20,000	18,000	59,700	129,000	47,100	58,800	41,900	32,700	33,100
17	41,000	37,800	g11,900	20,000	20,000	55,900	105,000	49,400	53,600	39,000	34,300	32,700
18	41,000	36,200	g11,800	18,500	24,000	54,000	90,000	48,900	49,800	37,000	34,300	32,700
19	41,500	41,500	g11,500	17,000	27,000	55,400	76,000	51,200	52,600	36,600	36,600	32,700
20	39,400	39,400	g11,500	16,000	28,000	55,000	66,500	46,200	48,900	35,100	37,400	32,000
21	39,800	35,800	g11,300	15,000	27,000	74,500	60,700	44,000	48,900	37,400	34,300	31,200
22	40,600	30,500	g11,200	15,000	26,000	115,000	56,900	55,900	52,100	33,900	33,900	32,300
23	40,600	27,000	g11,300	18,000	27,000	106,000	52,600	62,600	67,000	35,100	34,700	32,700
24	40,600	26,000	*12,400	20,000	29,000	87,300	50,200	55,400	72,000	35,100	34,700	33,500
25	40,200	25,700	11,000	20,000	33,000	85,600	47,100	52,100	69,000	35,100	33,900	33,500
26	41,900	28,400	10,000	20,000	35,000	93,900	45,300	48,000	63,000	35,400	33,500	33,100
27	42,300	29,000	9,000	20,000	35,000	100,000	42,800	46,600	64,500	39,400	32,700	33,900
28	41,000	31,600	g10,600	20,000	35,000	117,000	40,600	45,300	71,500	41,900	33,100	33,900
29	40,200	30,100	9,500	18,000	.....	130,000	42,300	49,800	65,500	37,400	33,100	33,500
30	41,500	28,700	8,500	15,000	.....	121,000	43,600	61,600	67,500	33,100	31,200	32,700
31	42,300	.....	8,000	13,000	.....	111,000	.....	59,200	.....	33,500	29,400	.....
1949-50												
1	32,000	34,000	21,600	12,000	12,000	33,000	105,000	90,300	42,300	68,200	49,200	37,200
2	30,800	37,600	21,000	13,700	12,200	30,000	91,300	77,200	42,800	62,000	42,800	37,600
3	30,100	37,600	21,000	10,500	12,800	27,000	96,100	70,800	50,100	59,600	39,400	36,800
4	30,100	37,200	21,600	9,000	13,000	36,000	119,000	65,100	53,600	63,500	38,900	36,400
5	29,400	34,800	21,300	10,000	13,500	45,700	130,000	67,200	52,300	68,800	40,200	35,600
6	29,400	33,200	21,300	10,500	14,000	49,600	133,000	62,500	50,100	62,500	40,200	34,300
7	30,500	33,200	22,000	11,000	14,600	60,500	112,000	59,600	44,400	57,600	44,400	34,000
8	29,700	32,800	*22,000	11,500	*15,500	44,900	102,000	58,600	39,800	54,400	52,200	34,000
9	29,700	32,600	21,300	11,000	18,000	27,200	107,000	117,000	41,000	55,400	41,500	35,600
10	30,100	31,200	18,900	10,000	21,000	*25,500	110,000	88,700	38,100	57,200	39,800	34,000
11	34,300	30,500	18,900	11,000	27,000	25,500	111,000	74,500	39,800	70,200	35,200	33,200
12	34,300	29,400	19,000	11,000	22,000	23,800	106,000	88,700	40,600	82,900	50,500	32,800
13	34,300	28,600	18,900	11,000	19,000	21,000	103,000	96,100	58,600	84,000	54,000	32,800
14	36,000	28,600	16,700	11,000	17,000	20,600	92,400	88,700	43,600	65,100	49,600	32,800
15	34,000	28,000	10,500	11,200	16,500	22,600	81,400	80,800	41,900	61,000	57,600	32,800
16	33,600	27,600	*8,750	11,200	16,000	24,400	73,000	74,500	47,000	77,200	52,300	32,800
17	35,200	27,600	8,750	*11,600	15,700	28,000	67,700	68,200	47,000	70,800	51,400	33,600
18	36,400	26,600	8,500	12,600	15,600	33,600	82,900	63,500	51,400	62,500	50,100	33,600
19	36,400	25,500	8,500	12,300	15,500	34,800	109,000	61,500	89,800	71,900	44,000	33,600
20	36,400	24,800	8,750	12,600	*15,500	30,500	122,000	64,000	98,800	98,300	41,500	32,800
21	37,600	23,800	9,250	12,800	15,500	30,800	131,000	70,000	84,000	81,900	38,900	33,200
22	35,200	23,400	8,260	12,700	15,700	30,100	136,000	75,300	66,100	78,700	42,300	34,300
23	36,800	23,000	7,540	12,400	16,000	30,100	145,000	57,200	63,000	75,000	47,500	37,600
24	36,400	22,700	6,350	12,200	16,200	37,200	153,000	54,600	57,200	65,600	47,500	41,900
25	34,800	22,400	5,660	12,000	16,600	54,400	166,000	58,100	49,600	71,400	44,000	43,200
26	33,200	22,000	5,430	11,800	17,000	54,400	168,000	52,700	47,000	64,000	41,500	43,600
27	33,200	21,600	5,200	*11,400	17,800	68,500	174,000	49,200	56,200	57,200	41,500	45,700
28	32,800	22,400	5,200	11,300	37,000	86,100	182,000	44,400	60,600	53,100	42,300	45,300
29	33,200	22,000	5,200	11,300	.....	89,400	163,000	44,400	73,000	51,000	38,500	44,400
30	32,800	21,600	6,580	11,500	.....	122,000	113,000	47,000	74,000	48,300	36,400	42,800
31	33,200	.....	9,500	11,700	.....	121,000	.....	45,300	.....	51,000	36,000	.....

* Winter discharge measurement made on this day.

g Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 25-27, 29-31, 1948, Jan. 1, 4, 5, Jan. 9 to Mar. 6, 1949, Jan. 5 to Mar. 4, 1950.

Missouri River at Nebraska City, Nebr.—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet			Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October 1942.....	775,300	28,300	23,000	25,010		1,538,000
November.....	797,200	29,600	19,600	26,570		1,581,000
December.....	351,900	18,700	9,200	11,350		698,000
Calendar year 1942	13,553,100	133,000	5,800	37,130		26,890,000
January 1943.....	395,900	17,000	10,000	12,770		785,300
February.....	649,000	45,000	11,400	23,180		1,287,000
March.....	1,011,000	68,600	14,700	32,610		2,005,000
April.....	2,934,700	179,000	42,600	97,820		5,821,000
May.....	1,107,900	65,000	29,000	35,740		2,197,000
June.....	2,508,400	135,000	32,700	83,610		4,975,000
July.....	2,547,700	112,000	45,200	82,180		5,053,000
August.....	1,054,800	47,000	27,100	34,030		2,092,000
September.....	1,010,400	41,400	28,300	33,680		2,004,000
Water year 1942-43	15,144,200	179,000	9,200	41,490		30,040,000
October 1943.....	935,400	32,700	28,000	30,170		1,855,000
November.....	958,500	35,700	28,000	31,950		1,901,000
December.....	569,800	30,300	8,000	18,380		1,130,000
Calendar year 1943	15,683,500	179,000	8,000	42,970		31,110,000
January 1944.....	588,800	35,000	10,000	18,990		1,168,000
February.....	660,900	44,800	8,000	22,790		1,311,000
March.....	1,022,500	50,700	18,700	32,980		2,028,000
April.....	2,725,500	168,000	31,700	90,850		5,406,000
May.....	1,685,200	85,400	38,400	54,360		3,343,000
June.....	3,706,400	207,000	53,600	123,500		7,352,000
July.....	2,863,800	138,000	39,200	92,380		5,680,000
August.....	1,381,300	73,800	33,500	44,560		2,740,000
September.....	967,900	45,200	26,200	32,260		1,920,000
Water year 1943-44	18,066,000	207,000	8,000	49,360		35,830,000
October 1944.....	877,400	35,700	25,600	28,300		1,740,000
November.....	952,700	36,100	27,200	31,760		1,890,000
December.....	485,000	28,000	13,000	15,650		962,000
Calendar year 1944	17,917,400	207,000	8,000	48,950		35,540,000
January 1945.....	595,500	23,000	15,000	19,210		1,181,000
February.....	897,000	50,000	22,000	32,040		1,779,000
March.....	2,329,600	111,000	25,200	74,860		4,693,000
April.....	1,401,200	74,000	30,000	46,710		2,779,000
May.....	1,067,200	69,400	23,600	34,430		2,117,000
June.....	2,323,800	124,000	49,800	77,160		4,609,000
July.....	1,946,100	106,000	45,200	62,780		3,860,000
August.....	1,161,400	51,900	26,400	37,460		2,304,000
September.....	781,600	37,700	21,800	26,050		1,550,000
Water year 1944-45	14,809,500	124,000	13,000	40,570		29,370,000
October 1945.....	1,009,300	40,400	29,400	32,560		2,002,000
November.....	713,000	32,600	10,600	23,770		1,414,000
December.....	339,480	20,500	5,000	10,950		673,300
Calendar year 1945	14,556,180	124,000	5,000	39,880		28,870,000
January 1946.....	459,900	19,000	12,500	14,840		912,200
February.....	612,700	39,600	15,000	21,880		1,215,000
March.....	1,157,100	57,600	21,300	37,330		2,295,000
April.....	902,400	66,400	19,300	30,080		1,790,000
May.....	866,000	49,900	18,500	27,940		1,718,000
June.....	1,507,100	95,400	26,600	50,240		2,989,000
July.....	1,366,200	71,800	30,100	44,070		2,710,000
August.....	737,700	32,600	16,400	23,800		1,463,000
September.....	998,200	50,400	26,600	33,270		1,980,000
Water year 1945-46	10,669,080	95,400	5,000	29,230		21,160,000

Missouri River at Nebraska City, Nebr.—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet			Per square mile	Runoff	
		Maximum	Minimum	Mean		Inches	Acre-feet
October 1946.....	1,365,900	70,500	30,200	44,060		2,709,000	
November.....	912,500	36,300	21,600	30,420		1,810,000	
December.....	444,010	21,600	1,800	14,320		880,700	
Calendar year 1946	11,329,710	95,400	1,800	31,040		22,470,000	
January 1947.....	459,300	26,700	3,000	14,820		911,000	
February.....	600,600	40,600	7,000	21,450		1,191,000	
March.....	1,035,700	61,200	23,400	33,410		2,054,000	
April.....	2,570,800	141,000	52,100	85,690		5,099,000	
May.....	1,760,800	76,500	42,600	56,800		3,492,000	
June.....	3,323,500	165,000	64,000	110,800		6,592,000	
July.....	2,737,000	171,000	46,600	88,290		5,429,000	
August.....	1,314,700	47,600	36,700	42,410		2,608,000	
September.....	1,035,600	38,400	32,200	34,520		2,054,000	
Water year 1946-47	17,560,410	171,000	1,800	48,110		34,830,000	
October 1947.....	1,194,600	41,800	35,400	38,540		2,369,000	
November.....	1,031,800	43,500	14,800	34,390		2,047,000	
December.....	522,600	29,400	7,120	16,860		1,037,000	
Calendar year 1947	17,587,000	171,000	3,000	48,180		34,880,000	
January 1948.....	468,850	28,600	7,500	15,120		930,000	
February.....	724,700	80,000	12,500	24,990		1,437,000	
March.....	2,000,900	115,000	22,400	64,550		3,969,000	
April.....	1,936,200	100,000	40,100	64,540		3,840,000	
May.....	1,247,100	54,500	30,200	40,230		2,474,000	
June.....	2,324,900	114,000	36,300	77,500		4,611,000	
July.....	2,220,200	110,000	57,400	71,620		4,404,000	
August.....	1,626,700	77,500	39,200	52,470		3,227,000	
September.....	1,084,100	59,200	31,800	36,140		2,150,000	
Water year 1947-48	16,382,650	115,000	7,120	44,760		32,500,000	
October 1948.....	1,262,300	47,600	33,900	40,720		2,504,000	
November.....	1,126,300	45,300	25,700	37,540		2,234,000	
December.....	485,700	28,700	8,000	15,670		963,400	
Calendar year 1948	16,507,950	115,000	6,000	45,100		32,740,000	
January 1949.....	485,610	20,000	8,000	15,660		963,200	
February.....	642,600	35,000	16,000	22,950		1,275,000	
March.....	2,574,000	130,000	33,000	83,030		5,105,000	
April.....	3,119,600	180,000	40,600	104,000		6,188,000	
May.....	1,486,400	62,600	40,600	47,950		2,948,000	
June.....	1,836,300	81,000	48,900	61,210		3,642,000	
July.....	1,367,300	65,000	33,100	44,110		2,712,000	
August.....	1,021,400	37,400	29,400	32,950		2,026,000	
September.....	1,046,100	59,700	27,700	34,870		2,075,000	
Water year 1948-49	16,453,610	180,000	8,000	45,080		32,640,000	
October 1949.....	1,031,900	37,600	29,400	33,290		2,047,000	
November.....	845,700	37,600	21,600	28,190		1,677,000	
December.....	413,720	22,000	5,200	13,350		820,600	
Calendar year 1949	15,870,630	180,000	5,200	43,480		31,480,000	
January 1950.....	355,200	13,700	9,000	11,460		704,500	
February.....	478,200	37,000	12,000	17,080		948,500	
March.....	1,377,000	122,000	20,600	44,420		2,731,000	
April.....	3,554,800	182,000	67,700	119,500		7,110,000	
May.....	2,116,000	117,000	44,400	68,260		4,197,000	
June.....	1,649,700	98,800	38,100	54,990		3,272,000	
July.....	2,050,400	98,300	48,300	66,140		4,067,000	
August.....	1,368,300	57,600	35,200	44,140		2,714,000	
September.....	1,096,300	45,700	32,800	36,540		2,174,000	
Water year 1948-50	16,367,220	182,000	5,200	44,840		32,460,000	

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 feet downstream from county highway bridge in Akron and 2¾ miles upstream from Union Creek.

DRAINAGE AREA.—8,851 square miles.

RECORDS AVAILABLE.—October 1928 to September 1950.

GAGE.—Water-stage recorder. Datum of gage is 1,118.90 feet above mean sea level, datum of 1929. Oct. 1, 1928, to Dec. 2, 1934, chain gage at county highway bridge 300 feet upstream, same datum.

AVERAGE DISCHARGE.—22 years, 782 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43 . .	June 18	12,000	17.35	Jan. 25	70
1943-44 . .	Feb. 29	15,900	18.24	Jan. 12	100
1944-45 . .	Mar. 14	12,300	17.42	Feb. 3	109
1945-46 . .	Mar. 5	8,970	15.27	Feb. 2	73
1946-47 . .	June 15	10,500	16.84	Jan. 3-8	160
1947-48 . .	Mar. 21	10,800	(¹)	Jan. 26 to Feb. 5	60
1948-49 . .	Mar. 8, Apr. 9	11,400	(²)	Jan. 29 to Feb. 3	60
1949-50 . .	June 18	5,450	13.40	Jan. 25, 26, 29-Feb. 3	40

(1) Maximum gage height 18.50 feet Mar. 2 (ice jam).

(2) Maximum gage height 17.11 feet Apr. 9.

1928-50: Maximum discharge, 21,400 second-feet June 4, 1942 (gage height, 19.23 feet); minimum daily, 7 second-feet Feb. 26-28, 1936.

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

COOPERATION.—Gage-height record collected in cooperation with Corps of Engineers and U. S. Weather Bureau.

Big Sioux River at Akron, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	1,110	446	260	200	90	1,400	2,770	618	1,170	4,420	808	813
2.....	1,030	446	230	200	90	1,250	3,130	603	1,080	3,200	756	748
3.....	975	439	210	170	500	1,200	3,240	577	1,430	2,400	713	681
4.....	929	429	210	160	900	1,150	2,890	548	1,320	2,050	691	629
5.....	894	422	220	150	800	980	2,330	538	975	1,940	678	624
6.....	856	414	220	150	600	900	1,950	527	1,420	3,050	618	678
7.....	845	414	210	155	500	980	1,760	507	1,860	3,780	577	650
8.....	837	412	200	160	600	980	1,610	494	2,070	3,470	546	775
9.....	813	416	190	160	750	1,000	1,500	482	2,000	2,840	525	888
10.....	778	406	185	160	900	1,050	1,420	466	1,680	2,260	509	913
11.....	737	404	185	150	800	1,100	1,340	459	1,280	1,810	484	851
12.....	702	404	185	160	700	1,150	1,310	459	2,440	1,520	1,180	789
13.....	673	404	190	160	600	1,200	1,280	454	5,600	1,340	2,130	743
14.....	644	399	190	160	500	700	1,220	446	7,950	1,210	3,610	705
15.....	626	394	200	160	450	550	1,160	446	8,010	1,080	3,220	710
16.....	600	394	205	150	400	520	1,110	454	9,570	1,050	1,820	751
17.....	579	390	210	140	350	520	1,050	449	9,730	1,060	1,450	748
18.....	559	382	200	130	300	500	1,000	459	11,600	942	1,380	729
19.....	540	380	190	120	350	520	945	484	9,650	2,090	1,350	697
20.....	533	378	190	110	800	520	880	525	5,720	1,820	1,210	642
21.....	517	370	200	105	1,300	*520	832	517	3,100	2,200	1,050	585
22.....	482	361	210	95	4,500	600	810	486	2,320	2,330	956	551
23.....	494	354	220	85	5,610	1,200	786	459	1,940	2,250	870	514
24.....	476	346	210	75	6,810	1,800	759	444	1,660	2,040	797	479
25.....	474	339	205	70	6,870	3,060	740	429	1,950	1,710	1,010	446
26.....	466	301	205	80	4,540	3,090	716	409	4,400	1,370	1,860	409
27.....	479	275	200	90	2,050	3,700	705	399	6,220	1,280	1,790	404
28.....	472	270	200	*90	1,940	3,000	676	390	6,160	1,250	1,740	397
29.....	446	275	200	90	.....	2,370	668	387	5,330	1,110	1,300	380
30.....	397	280	195	90	.....	2,250	652	390	4,660	970	991	358
31.....	426	.....	190	90	.....	2,390	.....	740	.....	870	870	.....
1943-44												
1.....	337	339	530	170	1,240	9,910	1,640	1,510	1,330	1,110	953	1,970
2.....	332	363	522	170	860	5,410	1,650	1,470	1,220	1,050	926	2,110
3.....	325	402	496	160	800	2,920	1,600	1,610	1,420	999	1,730	1,850
4.....	317	456	496	160	800	2,050	1,520	2,260	3,350	1,310	2,860	1,500
5.....	310	474	*517	160	730	1,530	1,400	3,330	3,110	1,960	4,270	1,310
6.....	303	449	535	150	640	1,260	1,280	4,150	3,400	1,180	4,360	1,160
7.....	295	459	533	130	620	1,240	1,220	4,740	2,910	1,040	4,680	1,040
8.....	288	482	522	125	550	1,130	1,200	4,400	2,020	972	3,250	994
9.....	290	330	520	125	560	1,310	1,260	3,700	1,740	1,190	2,050	905
10.....	284	337	459	120	350	1,410	1,210	3,400	1,730	2,390	1,620	862
11.....	279	385	444	110	300	1,490	1,100	3,510	2,850	4,740	1,370	845
12.....	281	356	397	100	250	1,620	1,040	5,380	9,890	7,180	1,200	859
13.....	312	334	350	105	210	2,250	986	6,040	10,500	7,400	1,150	875
14.....	332	334	310	105	200	2,490	948	6,220	9,510	8,760	1,180	878
15.....	356	319	310	110	200	2,490	918	6,150	9,420	9,340	1,080	859
16.....	380	325	320	110	210	2,350	891	3,920	8,340	5,700	1,060	907
17.....	429	290	310	110	210	1,740	905	3,140	7,040	3,880	1,020	921
18.....	434	337	310	115	210	1,140	972	3,400	10,100	3,210	1,040	1,200
19.....	406	385	320	115	240	991	945	2,840	7,970	2,910	1,190	2,600
20.....	385	378	325	120	250	1,060	913	2,360	4,840	2,500	1,450	2,330
21.....	380	397	320	*130	265	1,220	891	2,980	3,450	2,180	1,550	1,960
22.....	373	409	310	130	290	1,100	875	3,030	2,940	1,940	1,230	1,700
23.....	366	434	290	130	310	1,080	929	2,940	2,490	1,720	980	1,420
24.....	358	454	260	140	420	1,260	1,230	3,020	2,160	1,530	956	1,250
25.....	344	469	230	150	1,160	1,300	1,850	3,070	1,920	1,380	883	1,190
26.....	334	504	210	180	3,870	1,370	2,170	3,150	1,730	1,270	899	1,220
27.....	328	522	200	220	10,200	1,570	2,020	3,020	1,550	1,170	1,050	1,160
28.....	321	479	190	240	*15,400	1,580	1,830	2,260	1,410	1,090	1,480	1,070
29.....	321	499	180	380	15,000	1,670	1,750	1,820	1,290	1,020	1,980	1,000
30.....	321	479	180	590	.....	1,560	1,630	1,580	1,190	959	2,140	951
31.....	332	.....	175	960	.....	1,430	.....	1,430	.....	910	1,970	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 27 to Dec. 31, 1942, Jan. 1 to Feb. 22, Mar. 1-24, Dec. 13-31, 1943, Jan. 1 to Feb. 25, 1944 (no gage-height record Dec. 21-25, 1943).

Big Sioux River at Akron, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	903	482	579	183	120	1,440	1,520	968	2,420	1,920	672	361
2.....	871	482	482	163	110	1,600	1,480	935	2,420	2,650	1,360	361
3.....	839	470	496	168	109	1,280	1,400	935	2,610	2,910	1,440	349
4.....	839	470	538	161	124	1,140	1,360	968	2,910	2,610	1,140	337
5.....	839	470	540	157	139	968	1,280	935	3,110	2,230	1,030	325
6.....	903	470	543	157	161	1,000	1,210	903	3,280	2,000	968	314
7.....	935	470	574	*154	170	1,000	1,210	871	3,440	2,100	903	302
8.....	903	482	556	159	174	871	1,360	807	3,440	2,140	903	302
9.....	839	508	543	157	266	1,100	1,520	776	3,220	1,920	807	302
10.....	807	574	548	154	569	2,810	1,560	745	4,150	1,740	745	295
11.....	760	629	482	141	507	5,080	1,440	715	5,750	1,520	839	286
12.....	730	629	494	141	464	6,470	1,280	715	7,150	1,360	807	281
13.....	715	615	459	146	514	9,820	1,170	700	7,290	1,280	871	286
14.....	686	601	449	159	546	11,400	1,100	700	6,600	1,240	1,100	284
15.....	672	588	504	157	626	7,430	1,070	776	6,300	1,210	1,030	277
16.....	657	574	496	164	1,050	5,650	1,030	776	8,390	2,140	968	268
17.....	629	574	434	168	1,140	5,750	1,100	745	9,600	2,420	839	279
18.....	629	588	366	163	2,030	6,340	1,210	715	8,960	1,360	715	300
19.....	601	601	387	150	3,040	5,450	1,360	672	7,010	1,140	643	314
20.....	574	601	346	159	3,110	4,500	1,400	643	5,170	1,030	601	314
21.....	560	588	301	168	*1,780	4,150	1,360	1,600	3,970	968	574	349
22.....	560	574	288	168	1,560	3,550	1,280	2,960	3,330	903	547	615
23.....	560	560	284	174	1,400	2,910	1,240	3,280	2,910	935	521	839
24.....	534	547	270	174	1,280	2,420	1,240	2,420	2,510	1,100	508	643
25.....	534	547	249	174	1,210	2,190	1,400	1,820	2,230	1,070	482	521
26.....	521	547	241	178	1,210	2,000	1,320	2,190	2,000	935	458	445
27.....	521	547	235	178	1,400	1,920	1,170	3,220	1,920	839	445	421
28.....	521	534	214	159	1,320	1,870	1,100	3,670	1,740	776	421	409
29.....	508	521	195	141	.....	1,820	1,070	4,090	1,600	730	409	385
30.....	495	508	193	124	.....	1,740	1,000	3,970	1,600	730	397	373
31.....	495	.....	183	132	.....	1,600	.....	2,760	.....	715	385	.....
1945-46												
1.....	373	238	270	93	74	5,020	1,960	686	615	839	409	230
2.....	373	236	260	*93	*73	6,030	1,920	672	574	968	397	223
3.....	349	234	250	95	75	6,030	1,780	672	547	1,100	385	221
4.....	337	230	*247	95	78	7,250	1,690	643	508	1,030	385	204
5.....	325	232	250	100	100	8,780	1,600	629	482	1,000	385	193
6.....	325	234	250	105	110	7,890	1,520	615	458	935	361	225
7.....	272	236	220	110	105	4,370	1,440	601	470	935	373	270
8.....	295	241	180	115	100	3,280	1,360	588	433	1,360	361	238
9.....	286	234	160	115	98	2,470	1,320	588	409	1,480	349	349
10.....	270	212	140	115	98	1,870	1,280	601	397	1,360	325	871
11.....	270	204	140	110	95	1,740	1,280	601	397	1,440	314	1,480
12.....	274	268	130	110	94	1,820	1,240	574	433	1,210	302	1,240
13.....	268	290	110	105	90	2,000	1,210	547	482	968	297	1,030
14.....	263	302	105	105	89	3,100	1,170	534	445	839	293	935
15.....	263	307	100	*104	*86	4,920	1,140	521	397	776	325	839
16.....	261	314	100	95	100	6,540	1,070	508	508	776	325	730
17.....	261	325	100	95	150	8,230	1,070	495	807	776	302	657
18.....	258	325	100	95	300	7,400	1,030	495	715	760	337	601
19.....	256	307	95	95	500	6,150	1,000	521	903	730	325	574
20.....	247	304	*90	90	1,000	5,790	968	534	871	700	274	534
21.....	247	290	90	85	1,300	5,560	935	521	935	657	286	508
22.....	243	187	90	85	1,500	5,450	2,430	508	903	601	277	495
23.....	241	200	90	85	2,400	5,230	2,150	521	1,000	574	286	433
24.....	241	210	90	85	3,500	4,820	1,030	521	968	547	277	458
25.....	249	230	90	85	4,600	4,460	935	560	935	521	261	433
26.....	247	230	90	80	4,920	4,370	871	615	903	508	243	409
27.....	252	230	90	85	5,340	3,340	807	629	1,140	495	241	397
28.....	249	240	92	85	*5,340	2,800	776	601	1,140	470	238	421
29.....	247	250	92	85	.....	2,470	745	574	1,000	458	241	373
30.....	241	260	92	80	.....	2,230	715	574	1,000	445	241	349
31.....	236	.....	92	75	.....	2,050	.....	574	.....	421	241	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 1-31, 1944, Jan. 1 to Feb. 19, Nov. 23 to Dec. 31, 1945, Jan. 1 to Feb. 25, 1946.

Big Sioux River at Akron, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	325	601	420	200	190	440	1,320	4,820	1,240	4,150	458	302
2.....	325	588	410	180	170	420	1,320	4,730	1,210	4,290	445	290
3.....	325	601	*410	*160	180	380	1,320	3,540	1,140	3,440	433	274
4.....	349	629	380	160	190	360	1,360	3,100	1,140	2,510	421	268
5.....	433	615	410	160	190	340	1,480	2,740	1,140	2,420	397	252
6.....	686	629	420	160	190	340	1,780	2,520	1,170	2,410	397	238
7.....	1,100	672	360	160	180	340	2,140	2,370	1,360	1,820	385	238
8.....	1,480	715	340	160	170	350	2,470	2,230	1,360	1,600	373	234
9.....	1,600	760	340	170	180	380	2,640	2,140	1,440	1,480	361	227
10.....	1,480	807	340	180	180	420	2,860	2,000	2,000	1,360	349	238
11.....	1,400	807	340	190	170	460	3,540	1,920	2,860	1,240	349	325
12.....	1,360	807	340	200	170	560	4,640	1,870	4,430	1,170	349	385
13.....	1,320	807	320	210	*190	730	5,790	1,960	5,450	1,100	349	314
14.....	1,280	807	300	220	240	780	7,100	1,740	9,170	1,070	349	261
15.....	1,240	*807	220	*210	310	690	6,800	1,920	9,820	1,000	337	238
16.....	1,170	800	280	200	670	670	5,790	1,960	8,050	935	314	230
17.....	1,140	790	300	200	1,000	630	5,340	1,960	6,600	903	314	221
18.....	1,070	780	310	190	1,450	*620	5,340	1,920	5,170	839	325	214
19.....	1,000	760	320	200	1,450	a620	5,560	1,780	4,900	807	495	210
20.....	935	730	360	210	1,250	a620	5,790	1,740	4,500	760	547	208
21.....	903	700	350	210	1,050	a840	5,670	1,690	3,380	715	409	204
22.....	871	670	400	210	970	a1,100	5,020	1,650	2,860	686	373	197
23.....	807	630	400	210	810	1,320	4,200	1,650	3,010	643	337	199
24.....	776	590	380	210	690	1,400	3,810	1,560	3,970	629	325	208
25.....	745	580	370	280	600	1,400	3,670	1,520	4,500	601	314	199
26.....	715	530	340	270	520	1,320	3,600	1,480	4,500	588	314	195
27.....	686	520	330	270	*490	1,240	3,410	1,440	3,010	560	302	187
28.....	657	480	310	260	470	1,240	3,220	1,440	2,460	547	314	187
29.....	643	450	300	*260	.....	1,240	3,220	1,360	2,280	521	302	187
30.....	629	440	290	*230	.....	1,280	3,740	1,360	3,110	508	302	195
31.....	601	.....	240	210	.....	1,280	.....	1,280	.....	482	302	.....
1947-48												
1.....	204	295	335	100	60	5,100	5,260	2,320	760	1,170	3,670	657
2.....	204	297	315	95	60	*6,300	4,430	2,140	745	1,070	3,220	643
3.....	236	300	*275	95	60	5,200	3,970	2,140	715	1,000	1,960	629
4.....	238	302	200	95	60	3,900	3,670	2,050	700	903	1,600	574
5.....	236	300	185	95	*60	2,900	3,330	2,000	672	839	1,400	560
6.....	238	314	175	95	65	1,600	2,910	2,000	657	807	1,280	547
7.....	238	302	170	*100	65	1,200	2,610	1,870	629	745	1,170	547
8.....	232	297	165	100	65	1,000	2,420	1,740	601	700	1,100	700
9.....	227	290	160	120	65	*950	2,190	1,650	574	672	1,030	715
10.....	223	265	155	125	65	1,050	2,050	1,690	547	657	1,030	643
11.....	227	268	150	130	65	1,100	1,960	2,710	534	629	1,000	601
12.....	290	a270	145	180	65	1,100	1,820	3,380	521	629	903	588
13.....	256	a270	145	160	65	1,100	1,740	2,460	521	715	839	574
14.....	249	a270	140	125	65	1,600	1,650	2,100	547	1,170	807	574
15.....	243	a300	140	135	70	2,460	1,600	1,920	534	1,360	1,030	588
16.....	232	361	130	110	75	3,440	1,520	1,740	521	2,460	1,030	588
17.....	225	314	125	90	380	4,820	1,480	1,560	547	2,810	968	560
18.....	221	284	120	85	580	6,600	1,440	1,400	643	1,960	935	547
19.....	208	249	115	85	1,100	7,730	1,440	1,320	807	1,480	935	508
20.....	204	263	115	80	1,500	9,170	1,400	1,210	839	1,240	903	495
21.....	199	270	115	80	1,800	10,300	1,360	1,140	807	1,690	839	470
22.....	199	285	110	80	1,200	8,570	1,360	1,070	903	3,220	776	470
23.....	204	245	105	75	660	6,870	1,360	1,030	1,100	4,580	776	458
24.....	202	245	105	65	380	5,450	1,360	968	968	5,260	760	495
25.....	208	250	105	65	260	4,660	1,440	935	1,000	6,210	760	560
26.....	221	280	105	60	220	4,740	2,510	871	1,100	3,380	745	521
27.....	230	300	105	60	520	5,080	2,960	807	1,140	2,320	871	470
28.....	234	320	105	60	2,200	5,550	3,060	776	1,170	1,960	1,360	421
29.....	232	330	105	60	2,500	5,970	2,960	760	1,280	1,780	807	409
30.....	245	335	100	60	.....	5,970	2,710	745	1,240	2,190	760	385
31.....	281	.....	100	60	.....	5,650	.....	760	.....	3,330	700	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Nov. 16 to Dec. 31, 1946, Jan. 1 to Mar. 18, Nov. 21 to Dec. 31, 1947, Jan. 1 to Mar. 16, 1948. (No gage-height record Nov. 27-29, Dec. 9-13, 30, 31, 1947, Jan. 1-3, 5, 6, Mar. 12, 13, 1948).

Big Sioux River at Akron, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	383	310	*175	130	60	700	8,760	1,020	563	358	358	h144
2.....	370	305	175	125	60	900	5,390	989	590	346	380	160
3.....	358	298	200	135	60	2,100	3,500	956	590	334	380	250
4.....	358	298	240	150	*65	3,200	3,970	923	576	310	360	h334
5.....	346	298	270	145	65	6,000	4,740	923	563	288	320	350
6.....	370	288	260	140	65	9,000	5,860	923	550	209	280	h243
7.....	396	281	230	140	65	9,600	7,890	923	550	255	h243	210
8.....	396	281	215	140	65	*10,800	9,820	890	563	346	230	190
9.....	396	284	215	120	65	9,380	11,100	890	536	383	210	190
10.....	396	276	200	120	65	5,340	10,300	858	536	383	210	397
11.....	396	276	190	120	70	3,160	6,730	858	536	396	230	1,130
12.....	396	281	200	115	70	2,210	3,910	826	523	563	h262	900
13.....	396	269	190	100	65	1,920	3,220	795	523	738	350	h458
14.....	383	267	190	*100	65	1,870	2,890	858	510	604	h484	400
15.....	370	264	190	110	70	1,510	2,560	858	484	510	510	370
16.....	370	269	*170	105	70	1,200	2,410	956	497	450	470	350
17.....	358	264	170	100	70	1,270	2,260	923	458	400	350	320
18.....	358	272	170	100	70	1,270	2,110	858	420	360	360	h291
19.....	346	260	165	90	75	1,200	2,010	795	809	320	380	260
20.....	334	220	165	80	75	1,090	1,870	734	999	280	380	240
21.....	334	174	165	75	90	1,420	1,730	795	890	270	h310	220
22.....	334	200	160	75	*90	1,600	1,690	956	795	260	280	210
23.....	334	250	155	75	120	1,430	1,600	923	690	250	250	180
24.....	322	290	150	70	300	3,330	1,510	858	618	h231	220	160
25.....	322	265	140	65	500	3,730	1,430	795	576	210	200	h152
26.....	310	220	130	65	2,000	3,910	1,350	734	523	210	190	150
27.....	303	200	130	65	1,800	3,970	1,270	690	510	230	180	150
28.....	298	190	125	65	1,200	4,580	1,200	660	458	240	h168	150
29.....	296	180	*115	60	.....	5,650	1,130	618	420	240	160	h148
30.....	303	175	120	60	.....	7,430	1,060	590	383	270	150	137
31.....	303	.....	130	60	.....	8,760	.....	563	.....	322	145	.....
1949-50												
1.....	135	161	150	75	40	50	2,560	719	826	358	272	118
2.....	135	159	*146	65	40	50	2,720	719	795	334	257	111
3.....	130	155	150	50	40	50	2,840	704	826	334	233	101
4.....	126	159	148	50	45	200	2,840	690	826	322	231	99
5.....	116	152	133	50	60	1,500	2,890	704	764	322	231	92
6.....	122	152	94	50	100	3,000	2,840	734	719	310	220	90
7.....	133	150	80	50	150	3,000	2,410	795	675	300	213	84
8.....	137	148	70	60	200	2,000	2,010	858	646	281	210	82
9.....	148	148	70	60	200	1,200	1,600	956	604	281	210	78
10.....	157	146	100	50	200	800	1,310	1,160	576	272	206	76
11.....	168	146	100	60	150	500	1,130	1,390	536	272	213	74
12.....	163	150	80	50	100	400	1,020	1,470	550	303	224	70
13.....	172	152	70	50	80	400	923	1,430	774	310	194	70
14.....	177	155	70	50	80	450	890	1,390	1,130	310	192	68
15.....	170	148	75	50	100	500	923	1,390	1,020	322	185	62
16.....	166	152	75	45	100	500	923	1,310	764	300	174	64
17.....	163	148	75	45	100	550	923	1,270	685	284	166	62
18.....	157	141	75	45	100	550	923	1,200	4,030	322	163	60
19.....	161	148	75	45	100	500	923	1,130	1,560	510	163	56
20.....	172	148	75	50	100	500	989	1,060	1,020	510	161	445
21.....	172	148	70	50	100	450	1,060	1,160	795	675	161	1,060
22.....	170	144	65	50	100	420	1,200	1,470	985	675	152	310
23.....	168	141	60	50	80	800	1,240	1,350	764	764	146	660
24.....	163	166	60	50	60	2,310	1,240	1,200	618	484	139	523
25.....	166	152	65	40	60	4,580	1,130	1,130	550	446	133	458
26.....	161	148	65	40	60	4,740	989	1,090	497	420	133	346
27.....	157	148	65	*45	*65	4,900	858	1,060	446	396	133	269
28.....	159	152	65	50	65	5,170	795	1,020	420	383	130	220
29.....	161	150	*65	40	.....	5,080	764	956	396	358	124	217
30.....	163	148	70	40	.....	4,150	749	923	370	322	120	279
31.....	152	.....	75	40	.....	2,410	.....	858	.....	298	118	.....

* Winter discharge measurement made on this day.

h Computed from wire-weight gage readings.

Note—Stage-discharge relation affected by ice Nov. 19, 20, Nov. 22 to Dec. 31, 1948, Jan. 1 to Mar. 7, Dec. 7-31, 1949, Jan. 1 to Mar. 23, 1950 (no gage-height record Jan. 5-7, 9-14, 16-21, 23-25, 28, Jan. 30 to Feb. 4, Feb. 6-11, 13-15, 17, 18, 20-25, Mar. 8-11, 1950). No gage-height record July 15-23, 25-30, Aug. 2-6, 8-11, 13, 15-20, 22-27, 29-31, Sept. 2, 3, 5, 7-9, 12, 14-17, 19-24, 26-28, 1949; discharge computed on basis of records for nearby stations.

Big Sioux River at Akron, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October 1942.....	20,389	1,110	397	658	0.074	0.09	40,440
November.....	11,344	446	270	378	.043	.05	22,500
December.....	6,315	260	185	204	.023	.03	12,530
Calendar year 1942	500,362	20,000	18	1,371	.155	2.12	992,500
January 1943.....	4,065	200	70	131	.015	.02	8,060
February.....	44,600	6,870	90	1,593	.180	.19	88,460
March.....	42,150	3,700	500	1,360	.154	.18	83,600
April.....	41,239	3,240	652	1,375	.155	.17	81,800
May.....	15,045	740	387	485	.055	.06	29,840
June.....	124,295	11,600	975	4,143	.468	.52	246,500
July.....	60,712	4,420	870	1,958	.221	.26	120,400
August.....	37,549	3,610	484	1,211	.137	.16	74,480
September.....	19,287	913	358	643	.073	.08	38,260
Water year 1942-43	426,990	11,600	70	1,170	.132	1.81	846,900
October 1943.....	10,453	434	279	337	.038	.04	20,730
November.....	12,180	522	290	406	.046	.05	24,160
December.....	11,071	535	175	357	.040	.05	21,980
Calendar year 1943	422,646	11,600	70	1,158	.130	1.78	838,200
January 1944.....	5,820	960	100	188	.021	.02	11,540
February.....	56,345	15,400	200	1,943	.220	.24	111,800
March.....	60,931	9,910	991	1,966	.222	.26	120,900
April.....	38,773	2,170	875	1,292	.146	.16	76,910
May.....	101,850	6,220	1,430	3,285	.371	.43	202,000
June.....	122,820	10,500	1,190	4,094	.463	.52	243,600
July.....	83,990	9,340	910	2,709	.306	.35	166,600
August.....	53,557	4,680	883	1,728	.195	.23	106,200
September.....	38,866	2,600	845	1,296	.146	.16	77,090
Water year 1943-44	596,636	15,400	100	1,630	.184	2.51	1,183,000
October 1944.....	21,140	935	495	652	.077	.09	41,930
November.....	16,351	629	470	545	.062	.07	32,430
December.....	12,469	579	183	402	.045	.05	24,730
Calendar year 1944	612,892	15,400	100	1,675	.189	2.58	1,216,000
January 1945.....	4,931	183	124	159	.018	.02	9,780
February.....	26,129	3,110	109	933	.105	.11	51,830
March.....	107,269	11,400	871	3,460	.391	.45	212,800
April.....	38,240	1,560	1,000	1,275	.144	.16	75,850
May.....	47,980	4,060	643	1,548	.175	.20	95,170
June.....	127,070	9,600	1,600	4,236	.479	.53	252,000
July.....	46,631	2,910	715	1,504	.170	.20	92,490
August.....	23,528	1,440	385	759	.086	.10	46,670
September.....	11,137	839	268	371	.042	.05	22,090
Water year 1944-45	482,875	11,400	109	1,323	.149	2.03	957,800
October 1945.....	8,519	373	236	275	.031	.04	16,900
November.....	7,600	325	187	253	.029	.03	15,070
December.....	4,295	270	90	139	.016	.02	8,520
Calendar year 1945	453,329	11,400	90	1,239	.140	1.91	899,200
January 1946.....	2,955	115	75	95.3	.011	.01	5,860
February.....	32,215	5,340	73	1,151	.130	.14	63,900
March.....	143,460	8,780	1,740	4,628	.523	.60	284,500
April.....	38,442	2,430	715	1,281	.145	.16	76,250
May.....	17,823	686	495	575	.065	.07	35,350
June.....	20,775	1,140	397	692	.078	.09	41,210
July.....	25,679	1,480	421	828	.094	.11	50,930
August.....	9,656	409	238	311	.035	.04	19,150
September.....	15,920	1,480	193	531	.060	.07	31,580
Water year 1945-46	327,339	8,780	73	897	.101	1.38	649,200

Big Sioux River at Akron, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acres-foot
October 1946.....	28,051	1,600	325	905	0.102	0.12	55,640
November.....	20,102	807	440	670	.076	.08	39,870
December.....	10,630	420	220	343	.039	.04	21,080
Calendar year 1946	365,708	8,780	73	1,002	.113	1.53	725,300
January 1947.....	6,340	280	160	205	.023	.03	12,580
February.....	11,320	1,450	170	511	.058	.06	28,400
March.....	23,810	1,400	340	768	.087	.10	47,230
April.....	113,940	7,100	1,320	3,798	.429	.48	226,000
May.....	65,390	4,820	1,280	2,109	.238	.27	129,700
June.....	107,230	9,820	1,140	3,574	.404	.45	212,700
July.....	41,784	4,290	482	1,348	.152	.18	82,880
August.....	11,341	547	302	366	.041	.05	22,490
September.....	7,125	385	187	238	.027	.03	14,130
Water year 1946-47	450,063	9,820	160	1,233	.139	1.89	892,700
October 1947.....	7,086	290	199	229	.026	.03	14,050
November.....	8,671	361	245	289	.033	.04	17,200
December.....	4,620	335	100	149	.017	.02	9,160
Calendar year 1947	411,657	9,820	100	1,128	.127	1.74	816,500
January 1948.....	2,925	180	60	84.4	.011	.01	5,800
February.....	14,330	2,500	60	494	.056	.06	28,420
March.....	137,130	10,300	950	4,424	.500	.58	272,000
April.....	69,970	5,260	1,360	2,332	.263	.29	138,800
May.....	49,262	3,380	745	1,589	.180	.21	97,710
June.....	23,322	1,280	521	777	.088	.10	46,260
July.....	58,936	6,210	629	1,901	.215	.25	116,900
August.....	35,964	3,670	700	1,160	.131	.15	71,330
September.....	16,497	715	385	550	.062	.07	32,720
Water year 1947-48	428,713	10,300	60	1,171	.132	1.81	850,400
October 1948.....	10,935	396	296	353	.040	.05	21,690
November.....	7,705	310	174	257	.029	.03	15,280
December.....	5,500	270	115	177	.020	.02	10,910
Calendar year 1948	432,476	10,300	60	1,182	.134	1.82	857,800
January 1949.....	3,100	150	60	100	.011	.01	6,150
February.....	7,435	2,000	60	266	.030	.03	14,750
March.....	119,530	10,800	700	3,856	.436	.50	237,100
April.....	115,270	11,100	1,060	3,842	.434	.48	228,600
May.....	25,938	1,020	563	837	.095	.11	51,450
June.....	17,239	999	383	575	.065	.07	34,190
July.....	10,626	738	210	343	.039	.04	21,080
August.....	9,000	510	145	290	.033	.04	17,850
September.....	8,844	1,130	137	295	.033	.04	17,540
Water year 1948-49	341,122	11,100	60	935	.106	1.42	676,600
October 1949.....	4,800	177	116	155	.018	.02	9,520
November.....	4,515	166	141	150	.017	.02	8,960
December.....	2,636	150	60	85.0	.0096	.01	5,230
Calendar year 1949	328,933	11,100	60	901	.102	1.37	652,420
January 1950.....	1,545	75	40	49.8	.0056	.006	3,060
February.....	2,675	200	40	95.5	.011	.01	5,310
March.....	51,710	5,170	50	1,670	.189	.22	102,600
April.....	43,612	2,890	749	1,450	.164	.18	86,500
May.....	33,296	1,470	690	1,070	.121	.14	66,040
June.....	25,167	4,030	370	839	.095	.11	49,920
July.....	11,778	764	272	380	.043	.05	23,360
August.....	5,600	272	118	181	.020	.02	11,110
September.....	6,304	1,060	56	210	.024	.03	12,500
Water year 1949-50	193,638	5,170	.40	531	.060	.816	384,100

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 upstream side of bridge on U. S. Highway 18, 1¾ miles west of Rock Valley, and 17 miles upstream from mouth.

DRAINAGE AREA.—1,630 square miles.

RECORDS AVAILABLE.—June 1948 to September 1950.

GAGE.—Wire-weight gage, read once daily, and auxiliary high-water water-stage recorder. Datum of gage is 1,216.00 feet above mean sea level (Iowa State Highway Commission bench mark). June 11, 1948, to June 2, 1949, wire-weight gage only.

EXTREMES.—Maximum and minimum discharge for the water years 1948-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1948 ⁽¹⁾ ...	July 23	4,090	⁽²⁾ 10.9	Sept. 17, 18	38
1948-49 ..	Mar. 6	5,790	⁽²⁾ 12.30	Feb. 8-22	10
1949-50 ..	Mar. 25	4,560	⁽³⁾	Dec. 3-26	8

(1) Period June to September, 1948.

(2) From graph based on gage readings.

(3) Maximum gage height, 11.60 feet, Mar. 5 (backwater from ice).

1948-50: Maximum discharge 5,790 second-feet Mar. 6, 1949 (gage height 12.30 feet, from graph based on gage readings); minimum daily, 8 second-feet Dec. 23-26, 1949.

Flood of 1897 reached a stage of 17.0 feet (discharge not determined), from information by Iowa State Highway Commission.

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

Rock River near Rock Valley, Iowa—Continued

Daily Discharge, in second-feet, for Water years 1948 and 1949

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1947-48												
1										270	380	80
2										215	291	54
3										172	291	48
4										172	320	43
5										149	215	43
6										116	215	54
7										116	203	60
8										99	192	73
9										99	203	80
10										99	170	66
11									65	98	149	60
12									78	112	155	54
13									79	149	149	43
14									79	350	192	43
15									79	310	170	43
16									79	1,850	170	43
17									151	655	149	38
18									250	535	a125	38
19									257	444	a110	196
20									230	960	a98	189
21									230	2,020	88	167
22									286	3,150	80	157
23									320	3,870	66	141
24									350	2,430	66	141
25									350	1,140	60	130
26									323	718	54	107
27									270	555	48	72
28									383	215	130	65
29									356	482	112	59
30									326	482	96	59
31										448	96	.....
1948-49												
1	53	a60	58	19	*11	460	1,570	a290	149	93	a86	a48
2	53	a64	52	19	11	600	1,470	270	159	82	78	46
3	47	66	46	18	11	1,740	1,380	265	176	a76	69	a50
4	47	a70	47	18	11	2,500	3,150	a270	174	a70	63	a54
5	47	a74	47	17	11	4,700	4,320	278	a160	66	a56	61
6	47	66	45	17	11	5,400	5,040	270	141	60	52	63
7	59	54	41	16	11	5,200	4,920	268	130	58	a46	a56
8	59	61	37	16	10	3,000	5,400	380	a125	a70	42	53
9	59	64	33	16	10	2,000	4,090	905	112	94	41	50
10	59	a68	31	15	10	1,290	1,970	535	111	a165	40	a130
11	59	a66	40	15	10	830	1,200	237	109	314	170	a170
12	59	61	39	14	10	635	a1,060	213	a120	196	82	234
13	53	55	37	14	10	a510	930	217	147	159	518	270
14	47	61	35	14	10	380	830	203	116	a340	a220	.....
15	47	61	33	13	10	260	785	a235	a105	257	210	163
16	47	61	*32	13	10	235	740	a260	93	153	137	145
17	47	61	31	13	10	230	718	240	121	a115	116	116
18	47	a60	30	13	10	230	740	210	595	86	125	a98
19	47	26	29	12	10	270	635	a200	437	a74	159	a86
20	47	32	28	12	10	335	a580	222	356	69	174	a78
21	47	42	27	12	10	655	535	262	a290	69	a125	a72
22	47	56	25	12	10	930	535	a300	234	59	90	119
23	47	58	25	12	82	1,000	518	270	227	56	79	a98
24	a47	56	24	12	.....	1,740	500	244	189	a54	69	a76
25	a47	52	23	12	1,100	2,520	a470	234	203	a52	65	a64
26	a47	50	22	11	780	2,610	430	203	a180	82	61	60
27	a47	48	22	11	580	3,060	377	187	149	180	56	60
28	47	52	21	11	390	4,440	365	167	a125	176	56	a58
29	56	66	21	11	.....	4,920	341	a155	a110	174	46	56
30	56	68	17	11	.....	3,550	326	147	96	159	48	56
31	56	.....	20	11	.....	2,250	.....	139	.....	a105	a50	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Nov. 21 to Dec. 31, 1948, Jan. 1 to Mar. 4, Mar. 14-20, 1949.

Rock River near Rock Valley, Iowa—Continued
Daily Discharge, in second-feet, for Water Year 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1949-50												
1.....	a54	a47	a43	14	9	17	855	139	141	a76	a96	a24
2.....	53	46	*42	16	9	17	930	a144	201	a72	88	22
3.....	a52	a46	42	16	9	30	785	149	165	69	84	a22
4.....	a52	46	a42	12	9	80	535	151	a165	a72	72	21
5.....	a52	46	a41	9	9	2,100	434	192	165	72	70	a20
6.....	a52	a46	a41	9	9	1,900	386	a235	159	68	a68	a19
7.....	54	a46	53	9	9	1,300	350	a250	130	66	65	a18
8.....	59	a46	73	9	9	700	320	208	104	60	a62	17
9.....	a59	45	59	9	9	200	a270	g416	94	a62	59	17
10.....	a58	a45	59	9	50	100	222	g595	82	68	a57	a17
11.....	a70	a45	a55	*9	40	70	208	g655	a74	86	a55	a17
12.....	82	a45	40	9	30	70	203	500	g499	109	54	17
13.....	79	a45	20	9	25	70	192	500	g883	125	a53	17
14.....	a70	46	20	9	23	70	203	a380	g300	121	53	16
15.....	a64	a45	20	9	20	*70	203	300	167	93	48	a16
16.....	a60	45	20	9	17	70	a196	a220	128	a86	a48	16
17.....	a59	a44	20	9	17	70	182	a180	g119	82	47	a16
18.....	a58	43	20	9	17	70	a182	203	g595	a140	45	a16
19.....	58	a42	20	9	17	70	182	265	g458	270	41	a16
20.....	a58	a42	20	9	17	70	180	a340	320	a400	a38	a24
21.....	a58	a42	14	9	17	70	174	a320	237	535	34	34
22.....	a58	a42	10	9	17	100	155	289	a200	392	33	a50
23.....	a58	a42	8	9	17	g896	a150	260	176	a300	33	40
24.....	a58	a50	8	9	17	g2,780	139	a220	139	257	a32	a36
25.....	59	69	8	9	17	g3,150	139	201	a120	a220	30	a34
26.....	59	a54	8	9	17	g3,250	137	189	111	182	26	32
27.....	a57	a45	10	9	17	g3,760	134	174	98	178	a22	a31
28.....	a53	a45	11	9	*17	g4,200	130	a162	98	167	20	30
29.....	a51	a44	12	9	.....	g3,440	130	155	98	130	a22	a30
30.....	48	44	13	9	.....	*g1,080	a135	a145	82	a120	a24	30
31.....	a47	.....	14	9	.....	808	.....	137	.....	109	25	.....

* Winter discharge measurement made on this day.

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

g Computed from graph based on wire-weight gage readings and recorder trace.

Note—Stage-discharge relation affected by ice Dec. 12-31, 1949, Jan. 1 to Mar. 22, 1950.

Rock River near Rock Valley, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1948 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
June 11-30, 1948.....	4,541	383	65	227	0.139	0.10	9,010
July.....	22,480	3,870	98	725	.445	.51	44,590
August.....	4,843	380	48	156	.096	.11	9,610
September.....	2,446	196	38	81.5	.050	.06	4,850
The period.....							68,060
October 1948.....	1,574	59	47	50.8	.031	.04	3,120
November.....	1,739	74	26	58.0	.036	.04	3,450
December.....	1,018	58	17	32.8	.020	.02	2,020
January 1949.....	430	19	11	13.9	.0085	.01	853
February.....	3,439	1,100	10	123	.075	.08	6,820
March.....	58,600	5,400	230	1,890	1.16	1.33	116,200
April.....	45,925	5,400	326	1,531	.939	1.05	91,090
May.....	8,276	905	139	267	.164	.19	16,420
June.....	5,439	595	93	181	.111	.12	10,790
July.....	3,839	416	52	124	.076	.09	7,610
August.....	3,349	518	40	108	.066	.08	6,640
September.....	2,910	270	46	97.0	.060	.07	5,770
Water year 1948-49	136,538	5,400	10	374	.229	3.12	270,800
October 1949.....	1,809	82	47	58.4	.036	.04	3,590
November.....	1,378	69	42	45.9	.028	.03	2,730
December.....	865	73	8	27.9	.017	.02	1,720
Calendar year 1949	136,260	5,400	8	373	.229	3.11	270,200
January 1950.....	301	16	9	9.7	.006	.007	597
February.....	490	50	9	17.5	.011	.01	972
March.....	30,678	4,200	17	990	.607	.70	60,850
April.....	8,441	930	130	281	.172	.19	16,740
May.....	8,274	655	137	267	.164	.19	16,410
June.....	6,308	883	74	210	.129	.14	12,510
July.....	4,787	535	60	154	.094	.11	9,490
August.....	1,504	96	20	48.5	.030	.03	2,980
September.....	715	50	16	23.8	.015	.02	1,420
Water year 1949-50	65,551	4,200	8	180	.110	1.50	130,000

Dry Creek at Hawarden, Iowa

LOCATION.—Lat. 52°59'30", long. 96°28'10", in NE¼ NE¼ sec. 2, T. 94 N., R. 48 W., on left bank 6 feet downstream from bridge on State Highway 10, at east edge of Hawarden, 1.7 miles upstream from mouth.

DRAINAGE AREA.—48 square miles.

RECORDS AVAILABLE.—June 1948 to September 1950.

GAGE.—Water-stage recorder. Datum of gage is 1,170.42 feet above mean sea level, datum of 1929 (Corps of Engineers bench mark). Prior to Oct. 30, 1949 wire-weight gage at same site and datum.

EXTREMES.—Maximum and minimum discharge for the water years 1948-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
June 11 to Sept. 1948	Aug. 15	55	(¹)7.0	.....	(²)
1948-49 ..	Mar. 5	686	(¹)13.10	.....	(³)
1949-50 ..	Mar. 24	500	(⁴)13.5	.....	(³)

- (1) From graph based on gage readings.
 (2) No flow many times in Aug. and Sept.
 (3) No flow many times during year.
 (4) Ice jam.

1948-50: Maximum discharge, 686 second-feet Mar. 5, 1949; maximum gage-height 13.5 feet (ice jam) Mar. 24, 1950; no flow at times.

Flood of September 1926 reached a stage of 18.0 feet (discharge not determined) and flood of 1934 reached a stage of 15.8 feet (discharge not determined), from information by Iowa State Highway Commission.

REMARKS.—Records fair.

Dry Creek at Hawarden, Iowa—Continued
Daily Discharge, in second-feet for Water Years 1948 and 1949

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1947-48												
1										0.6	0.4	0.4
2										.2	.3	.3
3										.2	.3	.3
4										.2	.2	.3
5										.1	.1	.2
6										.1	0	.4
7										.1	0	.4
8										.1	0	.2
9										.2	0	.2
10										.5	.2	.2
11									0.1	.4	1.4	.2
12									.6	.2	1.1	.2
13									.6	.1	.7	.2
14									1.0	.8	.3	.1
15									1.2	.3	g28	0
16									1.2	.1	g23	0
17									1.5	.1	d.6	0
18									1.2	.1	d.5	0
19									1.1	.2	d.4	0
20									1.1	.2	d.3	0
21									1.1	.1	d.2	0
22									1.4	.1	d.3	0
23									1.4	.2	d.1	0
24									2.2	.1	d.1	.1
25									1.4	.3	do	0
26									1.0	.2	do	0
27									1.2	.2	2.4	0
28									.9	.1	.6	0
29									.9	.6	2.7	0
30									.6	.5	1.1	0
31										.7	.3	
1948-49												
1	0	0.1	0.3	0.1	0	6	10	3.0	2.0	.4	.4	0
2	0	.2	.4	.1	0	50	7.6	2.6	2.2	.5	.4	0
3	0	.2	.3	.1	0	200	7.1	2.0	2.1	.5	.4	0
4	0	.2	.3	.1	0	300	6.6	1.8	2.0	.2	.2	.7
5	0	.2	.2	.1	.1	g550	5.8	1.6	1.8	.2	.2	.2
6	.2	.2	.1	0	.1	g172	5.2	1.2	1.8	.2	.1	.6
7	.3	.2	.1	0	.1	23	4.8	.9	1.8	.1	0	.8
8	.1	.2	.1	0	.2	13	4.6	.7	1.8	.4	0	1.0
9	.1	.2	.2	0	.2	7.5	4.2	.7	1.7	.3	.4	.9
10	.1	.2	.2	0	.2	5.6	4.2	1.2	1.7	2.6	.3	.9
11	.1	.3	.2	0	.3	4.5	4.1	1.6	1.6	.6	0	3.2
12	0	.3	.2	0	.3	3.8	4.1	1.8	1.6	.5	0	2.9
13	0	.3	.2	0	.3	2.9	4.2	2.0	2.3	.4	.8	2.2
14	0	.2	.2	0	.4	2.7	4.3	2.0	3.2	g7.4	.5	1.5
15	0	.3	.2	0	.4	2.4	4.5	1.8	1.4	g14	.3	.9
16	0	.3	.2	0	.5	2.0	4.6	1.8	1.2	1.0	.2	.6
17	0	1.2	.2	0	.6	2.0	4.7	1.8	1.1	.8	.2	.4
18	0	2.3	.2	0	.7	1.9	4.4	1.8	1.1	.5	.2	.4
19	0	2.2	.2	0	.8	1.8	4.2	1.9	1.2	.5	.1	.4
20	0	.4	.2	0	.9	6.9	4.0	2.0	1.3	.2	.2	.5
21	0	.4	.2	0	1.0	20	4.1	4.1	2.0	.5	.1	.5
22	0	.3	.2	0	1.5	4.6	4.0	4.2	5.2	.3	0	.5
23	0	.3	.1	0	2.5	g9.6	3.8	4.2	3.0	.4	0	.2
24	0	.3	.1	0	4.0	g159	3.4	3.4	1.1	.5	0	.2
25	0	.2	.1	0	5.5	g6.3	3.4	2.8	.8	.5	0	.3
26	.1	.2	.1	0	5.0	10	3.3	2.2	.7	.2	0	.3
27	.1	.1	.1	0	4.5	18	3.2	1.7	.7	.3	0	.2
28	0	.2	.1	0	4.5	15	3.2	1.6	.4	.2	0	0
29	.1	.2	.1	0		11	3.2	1.6	.4	0	0	0
30	.1	.3	.1	0		12	3.0	1.6	.3	.2	0	.1
31	.2		.1	0		20		1.6		.3	0	

d Doubtful gage-height record; discharge computed on basis of records for nearby stations.
g Computed from graph based on gage readings.

Note—Stage-discharge relation affected by ice Nov. 21-24, Nov. 29 to Dec. 31, 1948, Jan. 1 to Mar. 4, Mar. 8-11, 14-19, 1949.

Dry Creek at Hawarden, Iowa—Continued
Daily Discharge, in second-feet, for Water Year 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1949-50												
1.....	0.1	0.2	0	0.2	0	0	2.3	1.0	0.7	0.3	0.2	0.2
2.....	.1	.1	* 1	.2	0	0	2.2	.9	.6	.2	.1	.2
3.....	.1	.4	0	.1	0	1	2.2	1.3	.5	.3	.1	.2
4.....	.2	.4	.2	.1	0	10	1.8	1.2	.4	.3	.3	.2
5.....	.2	.3	.5	0	0	100	2.2	1.6	.4	.3	.3	.2
6.....	.2	.2	.4	0	0	10	1.6	1.5	.4	.2	.2	.2
7.....	.2	.3	.3	0	.1	5.0	1.5	1.5	.3	.2	.2	.2
8.....	.7	.2	.4	0	10	.9	1.2	2.2	.3	.2	.3	.2
9.....	.5	.2	.7	0	20	.1	1.5	4.2	.3	.3	.2	.2
10.....	.4	.3	.8	0	40	0	1.3	2.7	.3	.2	.2	.2
11.....	.2	.2	.8	†0	35	0	1.2	1.6	.3	.2	.2	.2
12.....	.1	.2	.5	0	30	0	1.6	.6	g 7	.2	.3	.2
13.....	.1	.1	.3	0	25	0	2.0	.6	1.2	.2	.3	.2
14.....	.1	.2	.2	0	18	0	2.2	a 5	1.2	.2	.2	.2
15.....	.1	.1	.2	0	4.0	†0	1.4	a 5	2.1	.1	.2	.2
16.....	.1	.1	.3	0	* 2	0	1.4	a 4	.9	.1	.3	.2
17.....	0	.1	.3	0	.2	0	1.2	a 4	4.5	.1	.2	.2
18.....	0	.1	.3	0	.2	.1	.8	a 3	g 17	2.0	.2	.2
19.....	0	0	.3	0	.2	20	.9	.3	2.3	2.2	.2	.2
20.....	0	0	.3	0	.2	20	.9	.8	.9	1.6	.3	5.7
21.....	.2	.1	.2	0	.2	g 26	.7	.8	.6	1.1	.2	0.0
22.....	.1	.1	.2	0	.1	g 100	.5	.8	3.5	5.8	.1	1.3
23.....	.1	0	.2	0	0	g 175	.7	.8	1.4	.6	.1	.7
24.....	.2	.1	.2	0	0	g 300	.8	.8	.5	.4	.3	.5
25.....	.4	.2	.2	0	0	g 103	.8	.9	.4	g 3	.1	.5
26.....	.2	.1	.2	0	0	g 19	.7	.9	.3	g 2	.1	.7
27.....	.1	0	.2	0	0	5.4	.8	.7	.3	g 3	.1	.6
28.....	.1	0	.2	0	†0	3.7	.8	.6	.3	g 1.0	.2	.7
29.....	0	0	.2	0	.....	g 3.6	.8	.7	.2	.3	.1	4.7
30.....	.2	.1	.2	0	.....	*g 2.9	.9	.7	.2	.4	.2	.2
31.....	.2	.....	.2	0	.....	2.3	.....	.8	.....	.3	.2	.....

* Winter discharge measurement made on this day.

† Field observation of no flow made on this day.

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

g Computed from graph based on gage readings.

Note—Stage-discharge relation affected by ice Dec. 12-31, 1949, Jan. 1 to Mar. 20, Mar. 24, 1950. Discharge computed from wire-weight gage readings Oct. 1-25, 27-29, Dec. 3-11, 1949, Apr. 1 to May 13, May 19 to June 11, June 25, June 27 to July 17, July 29 to Sept. 19, Sept. 24-27, 1950.

Dry Creek at Hawarden, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1948 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
June 11-30, 1948.....	21.7	2.2	0.1	1.08	0.022	0.02	43
July.....	7.9	.8	.1	.25	.0052	.006	16
August.....	44.9	28	0	1.45	.030	.03	89
September.....	3.7	.4	0	1.23	.026	.03	7.3
The period.....							155
October 1948.....	1.5	.3	0	.05	.0010	.001	3.0
November.....	12.2	2.3	.1	.41	.0085	.009	24
December.....	5.5	.4	.1	.18	.0038	.004	11
January 1949.....	.5	.1	0	.02	.00042	.0004	1.0
February.....	34.6	5.5	0	1.24	.026	.03	69
March.....	1,643.5	550	1.8	53.0	1.10	1.27	3,260
April.....	137.8	10	3.0	4.59	.096	.11	273
May.....	63.2	4.2	.7	2.04	.042	.05	125
June.....	49.5	5.2	.3	1.65	.034	.04	98
July.....	34.7	14	0	1.12	.023	.03	69
August.....	5.0	.8	0	.16	.0033	.004	9.9
September.....	20.4	3.2	0	.68	.014	.02	40
Water year 1948-49	2,008.4	550	0	5.50	.115	1.57	3,980
October 1949.....	5.2	.7	0	.17	.0035	.004	10
November.....	4.4	.4	0	.15	.0031	.003	8.7
December.....	9.1	.8	0	.29	.0060	.007	18
Calendar year 1949	2,007.9	550	0	5.50	.115	1.56	3,980
January 1950.....	.6	.2	0	.02	.00042	.0005	1.2
February.....	183.4	40	0	6.55	.136	.14	364
March.....	907.1	300	0	29.3	.610	.70	1,800
April.....	38.9	2.3	.5	1.30	.027	.03	77
May.....	32.6	4.2	.3	1.05	.022	.03	65
June.....	43.0	17	.2	1.43	.030	.03	85
July.....	20.1	5.8	.1	.65	.014	.02	40
August.....	6.2	.3	.1	.20	.0042	.005	12
September.....	39.1	10	.2	1.30	.027	.03	78
Water year 1949-50	1,289.7	300	0	3.53	.074	1.00	2,560

Perry Creek at 38th Street, Sioux City, Iowa

LOCATION.—Lat. 42°32', long. 96°25', in SW¼ sec. 9, T. 89, R. 47 W., on upstream handrail of bridge on 38th Street in Sioux City, 3.6 miles upstream from mouth.

DRAINAGE AREA.—60 square miles.

RECORDS AVAILABLE.—October 1945 to September 1950.

GAGE.—Wire-weight gage read once daily. Auxiliary water-stage recorder operates above gage height 5.0 feet.

AVERAGE DISCHARGE.—5 years (1945-50), 18.1 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1946-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1945-46 ..	May 18	1,070	(1)	July 14, 20. Aug. 30 to Sept. 2	0
1946-47 ..	June 22	246	(2)	Sept. 3-8	.2
1947-48 ..	Aug. 14	3,350	14.12	Aug. 22, Sept. 30	.2
1948-49 ..	Sept. 10	7,780	21.80	Oct. 1-5	.2
1949-50 ..	July 12	5,380	17.75	Dec. 7, 8	1.9

(1) Maximum gage height, 8.44 feet Feb. 6 (ice jam).

(2) Maximum gage height, 7.15 feet Mar. 12 (ice jam).

1946-50: Maximum discharge, 7,780 second-feet Sept. 10, 1949 (gage height, 21.80 feet); no flow July 14, 20, Aug. 30 to Sept. 2, 1946.

Flood of July 7, 1944, reached a stage of about 25.5 feet, from flood-marks; (discharge, 9,600 second-feet, by contracted opening method, Corps of Engineers).

REMARKS.—Records fair except those for periods of ice effect, doubtful gage heights or no gage-height records, which are poor.

Perry Creek at 38th Street, Sioux City, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1946 and 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1945-46												
1.....	3.0	4.8	e6.0	1.8	2.1	9.5	7.4	1.6	1.7	1.2	0.2	0
2.....	3.3	4.5	a5.5	2.0	2.0	8.0	4.2	2.0	1.7	.9	.2	0
3.....	2.5	4.5	a5.5	2.4	2.4	7.0	3.3	36	a1.7	.6	.2	.1
4.....	3.0	4.0	e5.0	2.7	10	6.0	4.2	7.8	a1.6	.6	.1	2.2
5.....	2.8	5.8	e5.0	3.1	*100	*5.6	6.8	2.5	1.6	.7	.7	1.9
6.....	4.8	6.0	e5.0	2.9	130	5.6	5.0	2.2	1.4	.6	.5	1.4
7.....	4.8	5.8	*5.0	2.7	100	7.0	6.2	2.2	1.0	.4	.5	2.4
8.....	3.2	5.8	4.8	2.5	70	9.0	5.5	2.0	1.0	.4	.4	306
9.....	2.8	6.2	4.3	2.3	55	11	5.2	2.5	1.0	.3	.3	27
10.....	3.7	6.0	3.8	2.2	45	15	4.8	33	1.0	.4	.3	8.6
11.....	3.5	5.8	3.5	2.1	40	19	11	63	.9	.3	.2	4.8
12.....	3.0	5.5	3.4	2.0	35	16	7.4	13	20	.2	.2	3.2
13.....	3.5	5.2	3.2	*1.8	32	100	6.2	2.5	2.7	.1	.2	6.5
14.....	3.5	5.0	3.0	1.7	30	81	5.5	2.1	a2.0	0	.1	1.4
15.....	3.5	4.8	2.8	1.6	35	61	4.8	2.0	a1.5	.4	.1	.9
16.....	3.7	4.5	2.5	1.6	40	58	4.3	1.8	1.2	.4	.8	.6
17.....	3.5	3.8	2.3	1.5	35	99	4.8	1.8	1.0	.5	.4	.5
18.....	3.5	e3.8	2.0	1.6	30	82	5.2	110	1.3	.3	.3	.4
19.....	4.8	e3.8	1.9	1.7	100	44	5.0	20	1.4	.1	.3	2.0
20.....	5.2	e3.8	1.8	1.8	50	40	4.2	2.8	1.3	0	.3	1.6
21.....	4.8	e3.5	1.8	1.9	80	38	5.5	2.6	1.1	.1	.4	1.4
22.....	4.5	e3.5	1.9	2.0	70	35	30	2.3	1.1	.2	.2	1.1
23.....	4.5	e3.5	1.9	1.9	60	35	2.7	85	1.0	.2	.3	1.0
24.....	4.5	e3.5	2.0	1.8	30	33	2.2	29	a1.2	.2	.3	1.0
25.....	4.8	e4.0	2.1	1.8	20	33	2.1	5.0	a1.4	.2	.3	.8
26.....	4.8	e4.0	2.0	1.7	15	26	1.9	3.7	1.5	.3	.8	.7
27.....	6.2	e4.0	1.9	1.7	13	18	1.9	3.2	1.2	.2	.4	.9
28.....	6.0	e4.5	1.8	1.8	11	13	2.1	1.9	1.1	.3	.4	2.0
29.....	5.8	e5.0	1.7	1.9	.....	11	1.9	1.7	1.1	.3	.1	1.3
30.....	5.5	e5.0	1.6	2.0	.....	9.0	1.7	1.6	1.6	.3	0	1.1
31.....	5.5	.....	1.5	2.2	.....	7.4	.....	1.7	.....	.3	0	.....
1946-47												
1.....	1.0	1.0	.7	.6	1.7	6.0	12	11	7.0	7.4	.8	.3
2.....	1.0	.9	.8	.5	1.6	6.0	11	9.0	6.2	5.0	.8	.3
3.....	1.5	1.0	1.3	.4	1.5	6.0	31	6.8	5.8	4.8	.6	.2
4.....	10	1.1	2.4	.5	1.1	4.8	30	6.0	5.5	5.2	.5	.2
5.....	7.0	.9	*3.0	.5	.9	4.3	25	5.8	5.0	6.2	.5	.2
6.....	5.5	4.3	3.0	.5	1.0	4.5	24	5.5	4.8	6.0	.4	.2
7.....	4.3	3.7	3.5	.6	.9	7.0	16	4.8	40	5.0	.5	.2
8.....	3.0	3.3	3.7	.8	.9	17	12	4.2	11	4.2	.6	.2
9.....	1.6	4.5	3.5	*1.1	1.0	40	11	4.2	7.0	3.7	.5	.3
10.....	1.6	4.3	4.2	1.5	1.1	65	32	3.8	5.5	2.8	.4	1.0
11.....	2.3	3.8	3.8	1.8	1.6	110	25	3.8	4.3	4.8	.5	1.3
12.....	1.9	3.2	3.7	2.3	*2.6	*140	18	4.5	66	3.8	.7	.9
13.....	1.4	2.4	4.3	3.0	9	160	14	56	16	2.5	.5	.8
14.....	1.4	2.7	3.8	*4.5	16	100	13	9.8	7.4	2.4	.5	.6
15.....	1.0	2.7	3.3	3.5	26	70	12	23	6.8	2.5	.4	.6
16.....	.9	3.5	*2.7	2.2	40	50	10	9.4	7.4	2.8	.4	.5
17.....	.9	6.5	1.6	1.7	65	44	9.8	6.8	52	2.5	.3	.5
18.....	1.0	9.0	1.0	1.7	60	40	7.4	6.2	6.2	2.0	.3	.4
19.....	.8	5.0	.8	1.8	46	42	5.8	6.2	6.0	2.0	.3	.4
20.....	.6	4.3	1.0	1.8	24	50	6.2	5.5	5.5	2.8	.6	.3
21.....	1.0	3.8	1.2	1.7	7	55	6.5	5.0	a5.0	2.1	.5	.3
22.....	.9	3.5	1.4	1.8	3.7	60	7.8	4.8	e170	2.2	.4	.3
23.....	1.1	2.7	1.6	2.2	2.6	55	5.8	4.3	13	2.1	.3	.3
24.....	1.2	2.7	1.8	2.6	2.5	40	5.0	4.3	7.8	2.0	.4	.4
25.....	1.1	1.6	1.9	6.0	2.5	14	4.8	4.0	6.2	2.0	.6	.4
26.....	1.3	1.4	2.0	10	*2.7	*7.0	4.3	3.8	6.0	2.2	.4	.4
27.....	1.1	1.3	2.0	6.0	3.8	6.0	4.0	5.0	5.5	1.8	.4	.5
28.....	1.1	1.1	2.0	*4.0	*5.0	5.0	37	20	4.5	1.7	.4	.5
29.....	1.1	1.1	1.8	3.3	.....	4.5	24	17	5.2	1.5	.3	.5
30.....	1.0	1.1	*1.4	2.6	.....	4.3	15	16	7.8	1.1	.3	.6
31.....	.9	.....	1.0	2.3	.....	11	.....	11	.....	.9	.4	.....

* Winter discharge measurement made on this day.

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

e Gage-height not representative of average for day or uncertain stage-discharge relation; discharge computed on basis of weather records or records for nearby stations.

Note—Stage-discharge relation affected by ice Dec. 9-31, 1945; Jan. 1 to Mar. 13, Nov. 22 to Dec. 4, Dec. 17-31, 1946, Jan. 1 to Mar. 29, 1947.

Perry Creek at 38th Street, Sioux City, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1948 and 1949

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1947-48												
1	a0.6	1.8	1.1	1.5	5.0	35	3.2	16	2.0	3.3	2.2	0.4
2	.6	1.7	1.1	1.4	4.0	20	3.0	4.3	1.6	2.6	1.7	.4
3	.6	1.6	1.4	1.3	3.0	16	2.8	4.2	1.0	2.2	1.5	.4
4	.5	3.0	1.4	1.2	2.0	15	2.7	4.3	.8	2.0	1.3	.4
5	.5	2.3	1.6	1.1	1.5	14	2.3	141	.7	1.7	1.4	.4
6	.6	1.7	2.3	*1.0	1.0	14	2.6	118	.7	1.6	1.7	.4
7	.6	1.5	2.0	1.4	.9	13	15	21	.5	1.6	1.6	.4
8	.5	1.1	2.3	2.0	.8	12	6.8	13	.4	1.8	1.4	.4
9	.5	.7	*2.1	2.5	.7	11	3.8	4.5	.3	2.1	1.4	.4
10	.5	.5	2.0	3.0	*.6	10	3.0	3.8	.3	2.4	5.8	.4
11	.5	.4	2.0	3.5	.6	10	2.6	3.5	.3	1.8	12	.4
12	2.4	3	1.8	4.0	.6	8.0	2.4	2.8	4.2	1.8	2.6	.4
13	1.9	.4	2.0	5.0	1.0	10	2.3	2.0	2.6	1.8	1.9	.4
14	.9	.5	2.2	6.0	3.0	200	2.1	1.4	2.3	1.6	349	.4
15	1.0	.9	2.0	5.0	6.0	230	2.1	1.4	3.2	1.7	117	.4
16	1.0	1.4	1.6	4.0	180	65	2.0	2.1	5.8	1.6	11	.4
17	.9	1.2	1.0	3.0	584	50	1.8	1.4	2.1	1.8	4.5	.3
18	.7	1.1	*.8	2.0	487	*45	1.8	1.4	1.9	1.6	2.2	.4
19	.7	1.1	.8	*1.0	150	34	1.8	1.4	2.0	1.6	1.5	.4
20	.6	1.4	1.0	.9	20	28	1.7	1.0	2.3	7.8	.7	.5
21	.5	1.3	1.5	.8	10	23	2.6	1.0	43	3.2	.3	.5
22	.4	1.2	1.8	.7	4.0	18	2.2	.8	378	1.4	.2	.4
23	.8	1.0	*1.9	.6	3.0	13	1.9	.8	412	1.2	.5	.4
24	2.5	1.0	1.8	.6	*2.0	10	1.8	.7	8.2	1.2	.4	.4
25	1.6	1.0	1.9	.7	2.0	10	73	.6	4.5	47	.5	.3
26	2.8	.8	2.0	.8	10	9.0	60	.6	6.2	1.6	.6	.3
27	2.2	.8	2.2	1.0	400	6.8	45	.6	103	1.7	.6	.3
28	2.1	.9	2.0	2.0	350	4.8	28	.6	17	1.3	.6	.3
29	1.5	.8	2.0	2.5	40	3.8	8.6	.6	26	428	.5	.3
30	3.5	1.0	1.8	3.0	.....	3.5	1.9	63	3.5	8.2	.5	.2
31	2.6	.....	1.6	4.0	.....	3.2	.....	2.4	.....	2.7	.4	.....
1948-49												
1	.2	1.1	1.1	d1.5	*1.3	90	25	4.2	36	8.4	2.3	54
2	.2	1.0	1.1	d1.6	1.3	200	22	4.0	5.9	5.1	2.5	58
3	.2	.9	1.1	25	*1.4	250	14	3.8	3.4	2.1	2.1	1,600
4	.2	.9	1.0	20	1.4	350	d11	3.4	3.4	1.9	1.7	605
5	.2	1.2	a1.0	10	1.3	200	d9.0	15	3.4	1.9	1.0	83
6	26	1.1	1.0	10	1.2	d19	d7.5	5.1	2.3	2.1	1.6	44
7	1.5	1.1	1.0	8.5	1.3	d*10	d6.4	3.8	2.3	1.7	1.3	8.4
8	.6	1.1	.9	7.5	1.4	d9.0	d5.8	5.5	2.1	4.9	1.6	6.2
9	.4	1.2	.9	6.0	1.4	d8.5	d5.3	4.4	2.3	3.0	1.3	4.4
10	.4	1.6	.9	4.0	1.5	d8.0	d5.0	3.6	2.3	2.8	1.6	975
11	.4	a1.4	.8	3.0	1.5	d7.8	d4.7	3.6	2.1	3.0	1.7	670
12	.4	a1.3	.9	2.2	1.5	d7.4	d4.6	3.2	2.3	2.3	.44	68
13	.4	a1.2	1.0	*1.8	1.6	d7.2	d4.5	2.8	6.7	7.9	1,560	42
14	.4	1.1	1.1	1.6	1.6	d7.0	d4.4	2.6	3.8	7.4	327	30
15	.4	1.1	d*1.3	1.4	1.7	d6.6	d4.3	2.5	3.8	4.9	69	20
16	.4	1.0	d*1.1	1.3	1.8	d6.4	d4.3	2.8	3.4	3.8	12	16
17	.4	1.0	d1.1	1.2	2.0	d6.2	d4.3	3.8	2.1	3.2	4.4	14
18	.5	1.0	d1.2	1.1	2.5	d6.0	d4.2	7.3	2.1	3.0	29	14
19	.4	2.5	d1.1	1.0	3.0	12	4.2	6.0	2.1	3.0	31	12
20	.5	1.5	d1.1	1.0	3.5	22	4.2	12	3.8	2.8	4.4	10
21	.5	1.5	d1.0	1.0	5.0	15	4.2	54	4.0	4.9	4.2	10
22	.5	1.5	d.9	1.0	8.0	14	4.0	14	3.6	2.5	3.8	9.0
23	.5	1.2	d.9	1.1	*10	12	4.0	10	3.4	2.5	3.8	8.8
24	.6	1.2	d.8	1.2	12	260	3.8	9.0	72	2.5	3.4	8.4
25	.6	1.2	a.8	1.2	50	197	4.0	7.5	27	1.9	3.8	7.9
26	.6	1.2	d.8	1.2	55	44	4.0	6.3	6.2	220	3.8	7.9
27	.6	1.1	d.9	1.1	60	30	4.0	5.9	3.0	683	3.8	7.5
28	.5	1.0	d1.2	1.2	65	28	3.6	5.3	2.5	65	3.8	7.3
29	9.8	1.0	d1.4	1.2	.....	54	4.0	5.1	4.4	15	3.8	6.8
30	2.7	1.0	d*1.6	1.3	.....	36	3.8	4.9	4.2	4.4	4.4	6.8
31	1.5	.....	d1.5	1.3	.....	26	.....	4.7	.....	2.5	4.4	.....

* Winter discharge measurement made on this day.

a No gage-height record; discharge computed on basis of records for nearby stations.
 d Doubtful gage-height record; discharge computed on basis of 6 discharge measurements and records for nearby stations.

Note—Stage-discharge relation affected by ice Dec. 10-31, 1947, Jan. 1 to Feb. 16, Feb. 19 to Mar. 18, Dec. 6-14, 1948, Jan. 3 to Mar. 5, 1949.

Perry Creek at 38th Street, Sioux City, Iowa—Continued

Daily Discharge, in second-feet, for Water Year 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1949-50												
1.....	7.3	5.4	2.3	4.5	2.4	18	20	8.6	3.0	a3.8	9.2	4.6
2.....	7.3	4.9	2.0	4.5	2.4	19	17	7.7	4.1	4.1	9.5	4.6
3.....	7.3	4.9	2.0	4.5	2.4	*23	10	7.5	3.2	4.6	10	4.8
4.....	6.4	5.6	2.3	4.5	2.4	309	7.5	7.9	3.5	4.9	11	4.6
5.....	6.1	5.2	2.5	4.5	*2.4	*g176	7.1	7.1	3.8	4.9	10	4.6
6.....	6.1	5.7	2.3	4.5	g36	g56	7.7	8.2	3.7	4.0	9.5	4.1
7.....	5.9	5.1	1.9	4.0	g52	35	7.5	7.7	3.4	4.1	g218	4.0
8.....	6.4	5.1	1.9	3.5	70	31	7.1	8.2	3.2	4.0	10	3.8
9.....	6.4	5.1	2.0	3.3	60	30	7.1	10	3.4	4.4	10	4.2
10.....	g35	5.1	2.5	*3.2	40	15	6.9	9.2	3.5	4.0	9.2	4.1
11.....	g20	5.1	2.7	3.0	35	14	6.8	8.6	3.5	g358	g80	4.0
12.....	8.6	5.1	3.4	3.0	30	a14	6.8	7.5	3.8	g1620	g48	4.0
13.....	8.4	4.6	3.4	3.0	25	36	6.6	7.7	3.7	g160	7.9	4.0
14.....	8.4	5.2	*3.4	3.0	24	54	6.8	7.5	4.4	60	7.0	3.7
15.....	7.9	4.9	3.8	3.0	23	41	6.2	7.5	3.8	64	6.8	4.1
16.....	6.8	5.2	3.8	3.0	22	g195	6.2	11	3.4	66	6.8	4.1
17.....	6.6	5.2	3.5	3.0	21	g240	6.2	9.7	g92	66	6.4	4.2
18.....	6.4	4.8	4.0	3.0	20	192	6.1	9.0	g564	g137	7.2	4.3
19.....	6.4	4.8	4.3	3.0	18	164	5.7	7.5	g18	g69	6.6	4.1
20.....	9.0	4.8	4.4	3.0	17	156	5.7	7.1	9.0	g14	6.2	4.3
21.....	8.0	4.4	3.8	3.0	16	164	5.4	9.0	a8.7	g246	5.8	g46
22.....	7.0	4.4	3.7	2.9	15	159	5.4	7.3	8.4	g77	5.8	g48
23.....	7.0	4.9	4.0	2.8	15	152	5.7	6.6	4.0	26	5.3	13
24.....	6.8	4.8	4.0	2.7	15	141	6.2	5.6	4.1	11	5.6	10
25.....	6.8	4.8	4.2	2.6	15	140	5.9	a5.0	a3.7	10	5.6	5.4
26.....	6.6	4.4	4.5	2.5	15	64	5.7	a4.5	3.4	10	5.3	4.5
27.....	6.4	2.5	4.6	2.5	16	50	5.7	a4.0	3.4	10	5.4	4.3
28.....	6.2	2.0	4.8	2.5	17	47	6.2	a3.6	3.5	10	5.4	4.2
29.....	6.0	2.0	5.0	2.5	.....	42	5.9	a3.4	3.4	9.8	5.4	4.1
30.....	5.7	2.3	4.5	2.5	.....	40	14	a3.2	3.4	9.8	5.1	4.0
31.....	5.4	.....	4.5	2.5	.....	21	.....	3.0	.....	9.2	5.1	.....

* Winter discharge measurement made on this day.

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

g Computed from graph based on gage readings.

Note—Stage-discharge relation affected by ice Dec. 23-31, 1949, Jan. 1 to Feb. 5, Feb. 8 to Mar. 4, 1950. Doubtful gage-height record Oct. 20-25, 27-29, 1949, Sept. 10-20, 25-30, 1950; discharge computed on basis of records for nearby stations.

Perry Creek at 38th Street, Sioux City, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1946 and 1947

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October 1945.....	128.5	6.2	2.5	4.15	0.069	0.08	255
November.....	139.9	6.2	3.5	4.66	.078	.09	277
December.....	96.5	6.0	1.5	3.11	.052	.06	191
January 1946.....	62.7	3.1	1.5	2.02	.034	.04	124
February.....	1,242.5	130	2.0	44.4	.740	.77	2,460
March.....	942.1	100	5.6	30.4	.507	.58	1,870
April.....	166.6	30	1.7	5.55	.093	.10	330
May.....	444.9	110	1.6	14.4	.240	.28	882
June.....	59.3	20	.9	1.98	.033	.04	118
July.....	11.0	1.2	0	.35	.0058	.007	22
August.....	9.6	.8	0	.31	.0052	.006	19
September.....	382.8	306	0	12.8	.213	.24	759
Water year 1945-46	3,686.4	306	0	10.1	.168	2.29	7,310
October 1946.....	60.5	10	.6	1.95	.032	.04	120
November.....	88.4	9.0	.9	2.95	.049	.05	175
December.....	70.2	4.3	.7	2.26	.038	.04	139
Calendar year 1946	3,540.6	306	0	9.70	.162	2.19	7,020
January 1947.....	73.8	10	.4	2.38	.040	.05	146
February.....	331.7	65	.9	11.8	.107	.21	658
March.....	1,228.4	160	4.3	39.6	.660	.76	2,440
April.....	439.4	37	4.0	14.6	.243	.27	872
May.....	287.5	56	3.8	9.27	.154	.18	570
June.....	506.4	170	4.3	16.9	.282	.31	1,000
July.....	98.0	7.4	.9	3.16	.053	.06	194
August.....	14.5	.8	.3	.47	.0078	.009	29
September.....	13.6	1.3	.2	.45	.0075	.008	27
Water year 1946-47	3,212.4	170	.2	8.80	.147	1.99	6,370

Perry Creek at 38th Street, Sioux City, Iowa—Continued
 Monthly Discharge, for Calendar and Water Years 1948 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October 1947.....	36.6	3.5	0.4	1.18	0.020	0.02	73
November.....	34.4	3.0	.3	1.15	.019	.02	68
December.....	53.0	2.3	.8	1.71	.029	.03	105
Calendar year 1947	3,117.3	170	.2	8.54	.142	1.93	6,180
January 1948.....	87.5	6.0	.6	2.18	.036	.04	134
February.....	2,272.7	584	.6	78.4	1.31	1.41	4,510
March.....	945.1	230	3.2	30.5	.508	.59	1,870
April.....	290.8	73	1.7	9.69	.162	.18	577
May.....	420.2	141	.6	13.6	.227	.26	2,060
June.....	1,036.4	412	.3	34.5	.575	.64	1,070
July.....	541.9	428	1.2	17.5	.292	.34	1,050
August.....	527.5	349	.2	17.0	.283	.33	23
September.....	11.4	.5	.2	.38	.0063	.007	
Water year 1947-48	6,237.5	584	.2	17.0	.283	3.87	12,370
October 1948.....	52.5	26	.2	1.69	.028	.03	104
November.....	36.2	2.5	.9	1.21	.020	.02	72
December.....	32.5	1.6	.8	1.05	.018	.02	64
Calendar year 1948	6,234.7	584	.2	17.0	.283	3.87	12,370
January 1949.....	122.5	25	1.0	3.95	.066	.08	243
February.....	299.2	65	1.2	10.7	.178	.19	593
March.....	1,949.1	350	6.0	62.9	1.05	1.21	3,870
April.....	194.1	25	3.6	6.47	.108	.12	385
May.....	226.1	54	2.5	7.29	.122	.14	448
June.....	225.9	72	2.1	7.53	.126	.14	448
July.....	1,079.4	683	1.7	34.8	.580	.67	2,140
August.....	2,142.5	1,560	1.0	69.1	1.15	1.33	4,250
September.....	4,414.4	1,600	4.4	147	2.45	2.74	8,760
Water year 1948-49	10,774.4	1,600	.2	29.5	.492	6.69	21,380
October 1949.....	254.6	35	5.4	8.21	.137	.16	505
November.....	138.3	5.7	2.0	4.61	.077	.09	274
December.....	106.0	5.0	1.9	3.42	.057	.07	210
Calendar year 1949	11,152.1	1,600	1.0	30.6	.510	6.94	22,130
January 1950.....	100.0	4.5	2.5	3.23	.054	.06	198
February.....	629.0	70	2.4	22.5	.375	.39	1,250
March.....	2,826	300	14	91.2	1.52	1.75	5,610
April.....	227.1	20	5.4	7.57	.126	.14	450
May.....	220.4	11	3.0	7.11	.118	.14	437
June.....	786.4	564	3.0	26.2	.437	.49	1,560
July.....	3,085.6	1,620	3.8	99.5	1.66	1.91	6,120
August.....	558.1	218	5.1	18.0	.300	.35	1,110
September.....	227.7	48	3.7	7.59	.126	.14	452
Water year 1949-50	9,159.2	1,620	1.9	25.1	.418	5.69	18,180

Floyd River at James, Iowa

LOCATION.—Lat. 42°34'40", long. 96°18'40", in NW ¼ NW ¼ sec. 32, T 90 N., R. 46 W., on left bank, 6 feet downstream from bridge on Plymouth County highway J at James, 9.5 miles upstream from mouth and 14 miles downstream from West Floyd River.

DRAINAGE AREA.—918 square miles.

RECORDS AVAILABLE.—December 1934 to September 1950.

GAGE.—Water-stage recorder. Datum of gage is 1,102.59 feet above mean sea level, datum of 1929. Prior to Sept. 11, 1938, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—15 years (1935-50), 157 second feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43 ..	June 17	1,360	(¹)	Jan. 19	14
1943-44 ..	May 13	7,440	18.83	Jan. 8-12	10
1944-45 ..	Mar. 12	6,180	18.41	Jan. 4	20
1945-46 ..	Mar. 1	1,400	(²)	Sept. 2, 3	8
1946-47 ..	June 25	3,240	17.81	Oct. 3, Sept. 26	15
1947-48 ..	Mar. 17	2,710	(³)	Feb. 11-15	8
1948-49 ..	Mar. 5	4,520	(⁴)	Oct. 27	5.0
1949-50 ..	June 19	4,840	19.23	Jan. 13 to Feb. 5	13

(1) Maximum gage height 17.29 feet Feb. 22 (ice jam).

(2) Maximum gage height 17.10 feet Feb. 21 (ice jam).

(3) Maximum gage height 17.20 feet Feb. 18 (ice jam).

(4) Maximum gage height 18.13 feet Sept. 12.

1934-50: Maximum discharge, 7,440 second-feet May 13, 1944; maximum gage height, 19.23 feet June 19, 1950; minimum observed, 1 second-foot Aug. 20, 27, 1936.

REMARKS.—Records fair except those for period of ice effect and no gage-height record which are poor.

Floyd River at James, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	99	49	29	20	16	130	122	47	475	a900	a120	53
2.....	95	49	28	19	17	100	114	45	271	a850	a100	48
3.....	91	46	26	17	200	85	106	42	260	a700	a110	44
4.....	87	50	24	15	400	75	101	40	185	a650	a120	42
5.....	86	47	23	15	360	65	91	38	131	f691	a130	44
6.....	83	46	22	17	250	60	85	36	99	f750	137	56
7.....	80	46	20	18	200	57	79	34	78	f956	97	148
8.....	79	46	19	19	210	54	75	34	65	f1,260	81	310
9.....	76	46	18	17	300	52	70	33	62	f806	71	154
10.....	72	46	18	15	250	51	65	32	60	f344	64	80
11.....	67	46	17	15	210	50	70	32	130	f276	59	61
12.....	64	46	18	15	180	50	77	28	190	h205	57	93
13.....	61	45	19	16	165	53	83	19	f271	a180	390	49
14.....	59	44	*19	19	158	60	102	22	307	a200	592	46
15.....	58	44	20	21	155	70	100	30	386	a280	357	57
16.....	57	44	20	20	157	70	85	32	f596	h464	168	66
17.....	50	43	20	18	164	66	75	33	f1,230	a450	119	59
18.....	52	42	19	15	175	66	69	36	1,100	a500	95	48
19.....	51	42	18	14	210	70	62	66	605	f814	83	43
20.....	50	42	16	15	300	74	60	76	399	f994	73	40
21.....	51	40	17	15	500	*80	57	64	296	980	68	39
22.....	50	38	18	16	1,000	90	55	54	f229	1,090	62	37
23.....	50	37	19	16	800	120	54	49	f172	546	54	36
24.....	49	34	20	15	500	400	54	48	f138	a350	62	34
25.....	49	37	21	15	280	743	55	46	f120	a250	56	33
26.....	49	32	20	15	170	610	55	42	f156	a180	54	32
27.....	46	30	19	15	180	446	53	44	f454	h171	146	30
28.....	48	30	17	*15	200	233	47	44	f939	a150	135	30
29.....	47	30	18	15	.....	171	52	44	a1,100	h127	101	28
30.....	48	30	19	15	.....	144	49	46	a800	h128	71	28
31.....	49	.....	20	15	.....	130	.....	61	.....	h128	61	.....
1943-44												
1.....	28	32	58	16	108	386	208	162	192	205	613	397
2.....	28	31	50	17	134	250	503	150	183	195	236	375
3.....	27	31	39	16	107	221	363	180	172	181	249	334
4.....	26	36	48	17	95	178	241	232	a480	170	328	302
5.....	26	37	*55	15	83	147	161	f400	g1,110	158	390	278
6.....	25	36	52	14	53	120	124	f515	g1,290	228	a845	255
7.....	25	36	46	12	81	107	105	f376	1,180	1,730	g1,130	a280
8.....	24	51	48	10	78	100	95	f327	488	216	634	a260
9.....	24	30	52	10	57	90	91	f291	399	189	443	a240
10.....	23	24	38	10	46	95	87	290	382	550	363	a200
11.....	23	34	34	10	40	100	88	298	451	f1,280	310	a150
12.....	31	27	30	10	35	121	87	f1,450	581	2,120	277	a140
13.....	36	28	20	11	30	127	83	6,270	4,430	3,050	253	g141
14.....	30	33	20	11	30	123	77	3,550	3,570	2,300	331	a180
15.....	30	27	20	11	32	143	77	1,800	3,300	1,480	398	a200
16.....	31	34	21	11	32	122	79	830	2,100	746	g338	f232
17.....	34	30	21	11	31	113	95	746	1,120	855	a300	a300
18.....	35	25	21	11	28	91	103	718	804	881	a275	a450
19.....	33	26	22	12	32	77	92	648	1,660	754	a260	a700
20.....	32	31	22	12	35	82	87	585	1,920	577	246	g996
21.....	32	32	22	*12	38	88	85	553	925	f452	230	g1,040
22.....	30	29	20	13	42	88	91	483	549	g379	f264	f536
23.....	30	38	15	14	45	155	137	429	464	a300	g591	g350
24.....	30	44	15	18	109	326	178	377	405	a270	f395	g305
25.....	30	44	16	30	320	425	350	332	361	a250	342	a280
26.....	30	48	16	59	1,220	296	456	299	320	g227	303	g260
27.....	30	45	16	86	2,760	180	299	275	284	259	290	g238
28.....	30	46	16	100	*3,020	132	237	252	265	225	337	a220
29.....	31	64	16	103	1,290	105	206	231	243	212	440	a200
30.....	30	57	16	159	.....	72	181	219	221	196	460	g190
31.....	31	.....	16	144	.....	92	.....	208	.....	181	434	.....

* Winter discharge measurement made on this day.

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

f Computed from partly estimated gage-height record.

g Computed from graph based on wire-weight gage readings.

h Computed from wire-weight gage readings.

Note—Stage-discharge relation affected by ice Nov. 27 to Dec. 31, 1942, Jan. 1 to Mar. 24, Dec. 11-31, 1943, Jan. 1-25, Feb. 11-23, Mar. 8-11, 1944 (no gage-height record Feb. 12-19, 1943).

Floyd River at James, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	a190	h76	a80	22	26	160	a230	h152	h605	h881	h136	h74
2.....	a190	a75	75	20	26	170	h217	h158	h584	h776	g265	a100
3.....	a190	a70	77	21	27	160	215	h124	h572	h654	g505	h207
4.....	a200	a70	80	21	27	160	191	h162	h470	h528	g557	h73
5.....	h201	a75	84	22	25	160	a180	h162	h453	h503	g1,080	h70
6.....	h202	a80	87	22	25	160	a170	h163	h425	h440	g809	h65
7.....	g201	h92	88	*22	28	150	h162	h143	h332	h326	h502	h58
8.....	g198	a96	93	22	40	180	h470	h111	h337	a380	h472	h57
9.....	g187	h101	91	22	180	480	h453	h111	g828	h429	h470	h55
10.....	g156	h118	87	22	280	g1,880	a370	h110	906	h274	h254	h53
11.....	g148	h117	86	24	400	g5,580	a290	h85	1,320	h261	h249	h52
12.....	g148	h118	87	26	510	g5,780	h220	h87	1,740	g261	a245	h51
13.....	g142	h108	92	28	560	g4,780	h190	h191	1,260	h244	a238	h52
14.....	a140	h107	a90	30	490	2,360	h170	h204	h806	g265	a234	h52
15.....	a135	h107	h85	30	380	1,040	h170	h311	h937	g247	a231	a50
16.....	a130	h105	h72	30	220	939	h171	h333	h1,060	g234	h228	h49
17.....	a125	h104	69	30	120	1,530	h168	h236	1,110	g263	h192	h58
18.....	a125	h104	65	32	100	g966	h169	h176	922	g355	h189	h56
19.....	a120	h103	65	32	110	h553	h170	h177	627	h250	h190	h57
20.....	a120	h102	46	34	125	h550	h171	g182	518	h201	h160	h51
21.....	a120	h99	45	36	*125	h528	h170	g261	435	h189	h162	h50
22.....	h117	h97	42	38	125	h532	h188	g294	394	h190	h145	h50
23.....	a115	h103	38	40	125	a490	h172	g591	338	h187	h142	h50
24.....	a110	h103	34	40	120	h453	h170	g590	308	h179	h126	h49
25.....	a105	h99	30	35	140	a450	h160	g496	h266	h170	h111	h49
26.....	a100	h99	30	30	160	h452	h154	g500	546	h163	h101	h49
27.....	a95	h93	30	28	150	a400	h151	g889	1,500	h163	h95	h49
28.....	a90	h87	30	27	150	a350	h150	g1,020	1,870	h162	h91	h49
29.....	a85	h87	29	26	.....	a300	h149	g770	1,860	h159	h79	h49
30.....	a80	a80	28	25	.....	a280	h151	h680	933	h157	h78	h48
31.....	a75	.....	26	24	.....	a260	.....	g676	.....	h147	h75	.....
1945-46												
1.....	52	a40	a64	23	50	g1,290	214	81	99	89	23	9
2.....	52	40	66	23	50	g1,260	194	77	90	133	23	8
3.....	52	39	68	23	54	g*923	174	81	83	114	22	8
4.....	50	a39	67	24	60	g740	155	80	78	91	20	10
5.....	49	a38	a58	24	440	g450	144	83	73	72	21	39
6.....	55	38	50	24	480	344	138	84	67	64	22	37
7.....	55	38	*25	23	340	g284	130	81	60	58	20	95
8.....	45	38	24	23	310	140	126	76	57	53	20	160
9.....	43	38	26	22	300	160	118	71	55	62	18	177
10.....	42	38	25	21	300	180	116	74	50	52	17	141
11.....	40	38	24	21	300	202	118	74	46	45	16	97
12.....	38	39	24	*21	305	g220	118	83	55	41	16	67
13.....	38	a39	24	21	310	g272	125	94	51	38	15	49
14.....	a38	a40	24	21	320	g474	128	82	64	36	16	28
15.....	39	40	24	21	330	g595	116	73	65	34	15	17
16.....	40	41	23	21	370	g423	106	67	51	34	16	15
17.....	41	41	23	21	400	343	98	65	g138	34	30	12
18.....	41	a40	23	21	440	345	92	62	g273	34	16	10
19.....	a40	40	23	21	800	360	87	94	g136	32	16	11
20.....	40	40	23	21	900	313	81	70	107	30	13	11
21.....	a40	39	23	21	950	276	78	131	g133	28	18	10
22.....	41	38	23	22	1,000	266	77	138	g207	27	21	12
23.....	a40	37	23	23	1,050	262	75	111	g157	26	15	11
24.....	40	36	23	25	1,100	252	g271	110	g116	25	18	11
25.....	a40	36	23	28	1,150	297	g181	180	98	26	17	10
26.....	41	36	23	32	1,200	324	121	171	83	25	14	10
27.....	41	36	23	36	g1,080	g439	102	223	89	24	12	10
28.....	a40	36	26	40	g906	g420	90	191	86	24	12	18
29.....	40	36	29	34	.....	302	90	145	72	23	10	74
30.....	40	38	26	30	.....	260	89	132	79	23	10	36
31.....	40	.....	24	48	.....	235	.....	108	.....	24	9	.....

* Winter discharge measurement made on this day.

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

g Computed from graph based on wire-weight gage readings.

h Computed from wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 2-13, 17-31, 1944, Jan. 1 to Mar. 9, Nov. 21-28, Dec. 6-31, 1945, Jan. 1 to Feb. 26, Mar. 8-10, 1946. (No gage-height record Jan. 6, 8, 9, 12, 15-18, 24, 25, 28, 30, 31, Feb. 2-8, 15-17, 19, 22, 25, Feb. 28 to Mar. 2, Mar. 4-7, Nov. 24, 25, 28, Dec. 13, 15, 16, 18, 22, 23, 25, 26, 28, 30, 1945, Jan. 1, 3, 7, 8, 15-17, 22, 25-27, 29, Feb. 12, 15, 18, 1946.)

Floyd River at James, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	22	45	150	30	28	125	g312	1,380	g356	945	66	30
2.....	18	46	145	28	24	115	g282	1,320	g314	1,380	64	29
3.....	15	46	110	26	24	105	g269	658	g289	872	62	28
4.....	26	44	121	24	22	95	g258	483	g270	502	58	26
5.....	58	42	*135	24	20	95	g282	g398	261	g408	54	25
6.....	69	44	133	23	20	90	g355	g352	266	g366	g53	24
7.....	82	50	125	23	20	85	g363	320	g364	349	50	24
8.....	91	50	130	23	20	85	501	g304	g280	339	48	23
9.....	81	58	148	*23	20	90	570	g282	247	g301	47	23
10.....	72	66	119	24	20	190	619	257	233	g263	44	23
11.....	76	81	114	26	20	410	766	242	g222	g241	43	26
12.....	71	72	100	28	20	465	969	231	g258	227	43	35
13.....	73	64	55	28	22	590	843	g255	g259	g219	g46	40
14.....	86	102	60	30	40	565	604	g368	g275	g210	47	39
15.....	92	90	60	30	50	540	510	912	337	g191	44	26
16.....	81	145	65	30	115	520	465	960	g313	170	43	25
17.....	72	158	65	30	170	500	464	967	g330	157	42	24
18.....	63	243	70	28	260	475	g428	667	g372	142	g40	22
19.....	59	276	70	28	350	460	g392	484	g600	131	40	20
20.....	55	256	70	28	325	450	g362	g399	g356	126	40	20
21.....	53	a184	70	26	280	450	g337	g339	g285	g116	g40	18
22.....	53	143	70	26	265	460	319	g304	g423	108	40	17
23.....	49	135	70	28	235	465	317	g349	g920	103	38	18
24.....	48	135	70	30	215	475	324	g360	1,480	95	g36	17
25.....	49	150	70	36	190	480	a320	g293	2,960	90	g36	20
26.....	45	155	65	44	170	465	319	260	2,650	86	32	15
27.....	46	160	55	60	150	430	g300	a255	845	83	24	16
28.....	50	160	48	46	135	g368	273	256	573	80	g26	17
29.....	49	160	44	40	.....	317	g380	269	470	76	29	17
30.....	47	150	38	34	.....	g293	797	a310	454	70	28	18
31.....	44	.....	34	30	.....	g319	.....	g381	.....	67	29	.....
1947-48												
1.....	18	25	30	22	10	1,420	112	113	34	151	76	g123
2.....	19	35	32	21	10	749	106	117	34	124	59	93
3.....	20	50	30	22	10	g373	102	178	32	109	48	76
4.....	20	48	28	22	10	303	94	138	30	96	45	66
5.....	20	45	28	23	10	214	90	136	28	84	44	58
6.....	20	42	28	23	9	169	84	137	28	76	40	54
7.....	19	42	26	23	9	170	94	130	27	74	40	48
8.....	18	40	24	24	9	156	101	116	26	63	39	47
9.....	17	38	25	24	9	171	149	102	a24	57	35	44
10.....	16	36	26	24	9	167	131	94	23	56	36	40
11.....	15	34	28	26	8	148	110	95	22	58	52	38
12.....	14	32	27	28	8	124	99	83	28	54	52	34
13.....	14	30	26	26	8	106	a98	81	28	51	g71	34
14.....	14	32	26	24	8	g146	97	78	29	48	168	32
15.....	14	34	26	20	8	653	91	68	28	71	486	30
16.....	14	36	25	18	100	1,270	82	61	29	58	589	29
17.....	13	36	25	16	1,000	2,140	76	58	29	50	g215	26
18.....	13	36	*25	15	1,200	1,950	72	53	28	46	g97	24
19.....	13	35	25	14	1,100	1,540	69	50	26	42	g73	24
20.....	13	36	25	13	1,000	1,280	66	44	a34	50	56	24
21.....	13	34	25	12	994	607	69	44	42	44	51	24
22.....	13	32	25	*12	691	g357	69	42	133	40	45	24
23.....	13	25	25	12	g456	g262	70	40	1,120	124	a41	23
24.....	14	26	24	12	g356	g218	74	42	880	74	a37	22
25.....	14	28	24	11	g324	187	98	40	394	67	a33	22
26.....	15	30	24	10	g350	168	143	38	231	74	30	21
27.....	16	32	24	10	640	157	142	37	336	54	29	20
28.....	18	34	24	10	1,470	146	145	34	285	43	g125	19
29.....	19	32	24	10	2,310	137	132	34	g296	g275	1,020	18
30.....	19	30	24	10	.....	130	145	38	g194	190	573	16
31.....	21	.....	23	10	.....	120	.....	36	.....	116	g204	.....

* Winter discharge measurement made on this day.

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

g Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Nov. 23 to Dec. 3, Dec. 12-31, 1946, Jan. 1 to Mar. 26, Dec. 7-31, 1947, Jan. 1 to Feb. 20, 1948 (no gage-height record Dec. 18-31, 1946, Jan. 1-8, Feb. 3, 1947). Stage-discharge relation affected by backwater from earth dam across old channel Sept. 3 to Dec. 6, 1947.

Floyd River at James, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1	16	34	15	11	*10	403	1,350	105	120	84	39	10
2	16	28	28	11	10	688	710	100	209	64	32	10
3	16	22	31	18	10	1,720	442	99	161	50	22	177
4	16	20	33	50	10	2,720	455	97	134	49	22	664
5	15	22	27	35	10	3,940	351	104	116	48	24	138
6	20	21	24	33	10	*3,940	283	125	103	43	20	60
7	33	20	23	31	9.0	3,520	248	189	93	44	19	39
8	43	a18	21	30	9.0	1,230	220	130	85	39	17	33
9	40	17	20	29	10	469	199	114	81	92	16	25
10	30	18	20	29	10	301	189	106	79	46	17	242
11	30	18	19	26	10	240	189	100	75	48	66	2,020
12	22	22	19	23	9.0	200	170	91	71	39	25	2,420
13	a20	18	10	22	9.0	100	166	91	74	27	170	603
14	18	20	18	20	10	140	166	89	81	51	97	313
15	17	18	*17	18	11	125	166	87	73	39	38	231
16	16	20	16	16	12	120	166	143	66	21	27	189
17	16	20	15	15	13	120	189	112	59	28	24	152
18	15	19	14	14	25	130	199	a130	56	26	27	134
19	18	31	14	14	40	143	184	166	53	22	52	116
20	17	32	13	13	40	152	161	125	49	33	27	108
21	18	28	13	13	35	199	152	259	68	25	19	97
22	17	18	12	12	45	259	152	214	72	22	49	88
23	16	25	12	12	60	259	156	442	62	12	20	81
24	16	43	11	11	80	518	148	313	61	16	15	77
25	16	a40	11	11	100	1,860	138	236	520	16	12	73
26	6.0	36	10	11	200	1,660	134	194	253	185	12	69
27	a5.0	31	10	12	300	630	130	166	189	451	13	64
28	16	25	10	11	350	815	125	148	125	102	13	64
29	18	15	11	11	11	615	116	134	91	56	12	60
30	20	15	10	11	11	469	110	120	77	46	11	56
31	25	10	11	11	11	670	109	109	40	11	11	56
1949-50												
1	53	40	28	21	13	40	209	62	48	148	156	45
2	52	37	30	21	13	35	194	72	51	138	156	44
3	51	38	31	20	13	*31	174	67	47	226	143	44
4	50	39	30	19	13	100	156	66	42	242	134	43
5	47	38	22	18	*13	*770	143	98	41	130	130	43
6	46	38	27	17	15	1,800	134	89	39	125	120	42
7	59	39	21	16	40	*1,600	134	92	35	109	125	42
8	51	35	28	16	90	g555	130	88	32	108	120	42
9	47	*36	27	15	150	277	120	130	31	104	116	52
10	87	36	27	15	300	150	116	130	27	99	112	76
11	108	36	30	14	250	130	113	125	24	g221	105	a90
12	75	36	30	14	190	110	109	116	g27	g1,780	116	a110
13	61	a37	26	13	100	110	102	103	g326	g338	a104	98
14	52	38	*24	13	70	100	103	93	g89	g226	93	51
15	48	34	24	13	50	90	101	85	g59	g236	87	a44
16	48	34	23	13	40	120	97	108	g60	g194	83	37
17	46	33	23	13	30	200	93	97	g31	g194	80	a37
18	42	31	23	13	25	350	85	90	g1,390	g301	77	36
19	44	31	23	13	23	350	82	85	g4,220	g555	83	33
20	43	34	23	13	20	g364	80	81	g1,680	g351	67	a33
21	47	33	22	13	25	g377	75	84	g555	g751	61	g316
22	46	33	19	13	35	g325	70	83	g548	g555	a58	g742
23	46	33	18	13	40	g585	67	83	g650	g390	56	g313
24	43	33	18	13	40	g1,340	61	70	g455	g390	53	g134
25	42	30	18	13	40	g1,940	61	68	g325	g390	49	a108
26	42	30	17	13	30	g1,940	59	63	g253	g301	48	89
27	44	31	18	13	25	g2,020	58	60	189	g242	49	75
28	42	32	18	13	35	g650	57	58	170	231	51	76
29	42	30	18	13	35	g325	61	56	a166	253	49	76
30	41	31	19	13	35	253	66	56	161	199	45	a75
31	41	20	13	13	35	*242	51	51	174	45	45	76

* Winter discharge measurement made on this day.

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

g Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 5-31, 1948, Jan. 1 to Feb. 23, Mar. 11-18, Dec. 8-31, 1949, Jan. 1 to Mar. 7, Mar. 10-19, 1950. Stage-discharge relation affected by backwater from earth dam across old channel Sept. 1-8, 1950.

Floyd River at James, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-foot
October 1942.....	1,953	99	46	63.0	0.069	0.08	3,870
November.....	1,247	50	30	41.6	.045	.05	2,470
December.....	621	29	16	20.0	.022	.03	1,230
Calendar year 1942	69,299	4,480	6	190	.207	2.82	137,403
January 1943.....	507	21	14	16.4	.018	.02	1,010
February.....	7,707	1,000	16	275	.300	.31	15,290
March.....	4,525	743	50	146	.159	.18	8,980
April.....	2,222	122	47	74.1	.081	.09	4,410
May.....	1,297	76	19	41.8	.046	.05	2,570
June.....	11,304	1,230	60	377	.411	.46	22,420
July.....	16,270	1,260	127	525	.572	.66	32,270
August.....	3,893	592	54	126	.137	.16	7,720
September.....	1,868	310	28	62.3	.068	.08	3,710
Water year 1942-43	53,414	1,260	14	146	.159	2.17	106,000
October 1943.....	905	36	23	29.2	.032	.04	1,800
November.....	1,086	64	24	36.2	.039	.04	2,150
December.....	901	58	15	29.1	.032	.04	1,790
Calendar year 1943	52,485	1,260	14	144	.157	2.13	104,100
January 1944.....	985	159	10	31.8	.035	.04	1,950
February.....	10,011	3,020	28	345	.376	.41	19,860
March.....	4,752	425	72	153	.167	.19	9,430
April.....	5,066	503	77	169	.184	.21	10,050
May.....	23,476	6,270	150	757	.825	.95	46,560
June.....	29,939	4,430	172	998	1.09	1.21	59,380
July.....	20,796	3,050	158	671	.731	.84	41,250
August.....	12,305	1,130	230	397	.432	.50	24,410
September.....	10,029	1,040	140	334	.364	.41	19,890
Water year 1943-44	120,251	6,270	10	329	.358	4.88	238,500
October 1944.....	4,340	202	75	140	.153	.18	8,610
November.....	2,875	118	70	95.8	.104	.12	5,700
December.....	1,961	93	26	63.3	.069	.08	3,890
Calendar year 1944	126,535	6,270	10	346	.377	5.14	251,000
January 1945.....	861	40	20	27.8	.030	.03	1,710
February.....	4,794	560	25	171	.186	.19	9,510
March.....	32,233	5,780	150	1,040	1.13	1.31	63,930
April.....	6,162	470	149	205	.223	.25	12,220
May.....	10,505	1,020	85	339	.369	.43	20,840
June.....	24,262	1,870	266	809	.881	.98	48,120
July.....	10,138	881	147	327	.356	.41	20,110
August.....	8,411	1,080	75	271	.295	.34	16,680
September.....	1,832	207	48	61.1	.067	.07	3,630
Water year 1944-45	108,374	5,780	20	297	.324	4.39	215,000
October 1945.....	1,333	55	38	43.0	.047	.05	2,640
November.....	1,152	41	36	38.4	.042	.05	2,280
December.....	974	68	23	31.4	.034	.04	1,930
Calendar year 1945	102,657	5,780	20	281	.306	4.15	203,600
January 1946.....	779	48	21	25.1	.027	.03	1,550
February.....	15,295	1,200	50	546	.595	.62	30,340
March.....	12,651	1,290	140	408	.444	.51	25,090
April.....	3,752	271	75	125	.136	.15	7,440
May.....	3,192	223	62	103	.112	.13	6,330
June.....	2,818	273	46	93.9	.102	.11	5,590
July.....	1,421	133	23	45.8	.050	.06	2,820
August.....	531	30	9	17.1	.019	.02	1,050
September.....	1,203	177	8	40.1	.044	.05	2,390
Water year 1945-46	45,101	1,290	8	124	.135	1.82	89,450

Floyd River at James, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October 1946.....	1,795	92	15	57.9	0.063	0.07	3,560
November.....	3,510	276	42	117	.127	.14	6,960
December.....	2,679	150	34	86.4	.094	.11	5,310
Calendar year 1946	49,626	1,290	8	136	.148	2.00	98,430
January 1947.....	934	60	23	30.1	.033	.04	1,850
February.....	3,230	350	20	115	.125	.13	6,410
March.....	10,572	590	85	341	.371	.43	20,970
April.....	13,500	969	258	450	.490	.55	26,780
May.....	14,615	1,380	231	471	.513	.59	28,990
June.....	17,271	2,960	222	576	.627	.70	34,260
July.....	8,513	1,380	67	275	.300	.34	16,890
August.....	1,332	66	24	43.0	.047	.05	2,640
September.....	705	40	15	23.5	.026	.03	1,400
Water year 1946-47	78,656	2,960	15	215	.234	3.18	156,000
October 1947.....	499	21	13	16.1	.018	.02	990
November.....	1,045	50	25	34.8	.038	.04	2,070
December.....	801	32	23	25.8	.028	.03	1,560
Calendar year 1947	73,017	2,960	13	200	.218	2.95	144,800
January 1948.....	547	28	10	17.6	.019	.02	1,080
February.....	12,126	2,310	8	418	.455	.49	24,050
March.....	15,738	2,140	106	508	.553	.64	31,220
April.....	3,010	149	66	100	.109	.12	5,970
May.....	2,357	178	34	76.0	.083	.10	4,680
June.....	4,478	1,120	22	149	.162	.18	8,880
July.....	2,519	275	40	81.3	.089	.10	5,000
August.....	4,509	1,020	29	145	.158	.18	8,940
September.....	1,153	123	16	38.4	.042	.05	2,290
Water year 1947-48	48,782	2,310	8	133	.145	1.97	97,760
October 1948.....	607	43	5.0	19.6	.021	.02	1,200
November.....	714	43	15	23.8	.026	.03	1,420
December.....	517	33	10	16.7	.018	.02	1,020
Calendar year 1948	48,275	2,310	5.0	132	.144	1.95	95,750
January 1949.....	584	50	11	18.8	.020	.02	1,160
February.....	1,447	350	9.0	51.7	.056	.06	2,870
March.....	28,415	3,950	120	917	.999	1.15	56,360
April.....	7,564	1,350	110	252	.275	.31	15,000
May.....	4,638	442	87	150	.163	.19	9,200
June.....	3,356	520	49	112	.122	.14	6,660
July.....	1,870	451	12	60.3	.066	.08	3,710
August.....	968	170	11	31.2	.034	.04	1,920
September.....	8,503	2,420	10	283	.308	.34	16,870
Water year 1948-49	59,183	3,940	5.0	162	.176	2.40	117,400
October 1949.....	1,586	108	41	51.2	.056	.06	3,150
November.....	1,036	40	30	34.5	.038	.04	2,050
December.....	725	31	17	23.4	.025	.03	1,440
Calendar year 1949	60,692	3,940	9.0	166	.181	2.46	120,400
January 1950.....	453	21	13	14.6	.016	.02	899
February.....	1,728	300	13	61.7	.067	.07	3,430
March.....	17,279	2,020	31	557	.607	.70	34,270
April.....	3,110	209	57	104	.113	.13	6,170
May.....	2,609	130	51	84.2	.092	.11	5,170
June.....	11,870	4,220	24	396	.431	.48	23,540
July.....	9,701	1,780	99	313	.341	.39	19,240
August.....	2,771	156	45	89.4	.097	.11	5,500
September.....	3,046	742	33	102	.111	.12	6,040
Water year 1949-50	55,914	4,220	13	153	.167	2.26	110,900

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 feet 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 square miles.

RECORDS AVAILABLE.—May 1918 to July 1925, October 1928 to July 1932, June 1936 to September 1950.

GAGE.—Water-stage recorder. Datum of gage is 1,096.49 feet above mean sea level, datum of 1929. May 28, 1918, to July 1, 1925, and Oct. 29, 1928 to July 15, 1929, chain gage at Illinois Central Railroad bridge 0.2 mile below present site at different datum. July 16, 1929, to July 2, 1932, and June 15, 1936, to Nov. 7, 1938, chain gage at present site and datum.

AVERAGE DISCHARGE.—18 years (1918-20, 1929-31, 1936-50), 699 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43 ..	July 4	6,530	18.51	Jan. 19	80
1943-44 ..	June 12	13,000	21.06	Jan. 12	110
1944-45 ..	Aug. 5	17,000	21.93	Jan. 9	100
1945-46 ..	Feb. 5	5,870	17.69	Dec. 27	80
1946-47 ..	May 1	11,800	20.29	Sept. 26	86
1947-48 ..	Feb. 27	7,770	18.73	Feb. 1	46
1948-49 ..	Mar. 6	4,710	16.32	Dec. 31, Jan. 1, Sept. 2	45
1949-50 ..	June 18	6,860	18.71	Jan. 31 to Feb. 2	24

1918-25, 1928-32, 1936-50: Maximum discharge, 17,000 second-feet Aug. 5, 1945 (gage height, 21.93 feet), minimum observed, 2.6 second-feet July 17, 25, 1936, caused by construction dam above gage.

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

Little Sioux River at Correctionville, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	708	323	194	100	95	2,450	1,630	464	610	3,250	1,440	1,120
2.....	688	323	184	96	100	a1,800	1,570	446	667	4,150	1,330	990
3.....	661	318	170	92	500	a1,580	1,380	420	1,220	5,870	1,220	890
4.....	633	320	164	88	850	a1,410	1,230	404	940	6,440	1,190	790
5.....	602	318	158	89	800	a1,030	1,120	386	910	5,990	1,130	721
6.....	577	311	154	91	650	a865	1,020	369	949	6,080	1,090	652
7.....	566	309	150	94	600	750	946	354	982	6,210	1,010	593
8.....	560	307	145	97	750	650	874	344	958	5,670	928	558
9.....	552	307	137	100	800	600	829	339	886	4,980	833	545
10.....	540	300	127	100	700	560	787	332	832	4,310	744	568
11.....	524	298	123	98	500	570	763	332	784	3,680	688	552
12.....	502	300	122	97	400	a582	778	337	757	2,790	1,600	526
13.....	483	298	123	100	360	a588	763	330	1,890	2,260	1,500	609
14.....	467	293	*125	104	330	679	740	320	1,290	2,010	1,180	593
15.....	448	295	126	100	320	799	722	335	1,350	1,810	1,100	539
16.....	435	293	125	93	330	763	705	443	2,010	1,670	1,110	520
17.....	420	289	123	87	350	750	661	580	1,890	1,820	1,040	486
18.....	409	284	118	82	400	700	624	796	1,800	1,800	931	452
19.....	396	284	112	80	800	680	596	919	1,770	2,670	938	418
20.....	389	280	107	90	1,500	a711	571	1,030	1,830	3,420	928	394
21.....	374	276	109	96	2,000	805	552	1,030	1,900	3,340	833	370
22.....	366	270	111	98	2,400	*820	540	925	2,710	2,860	744	353
23.....	362	270	112	97	2,500	1,090	540	829	2,260	2,620	685	333
24.....	354	266	113	96	2,000	1,750	527	775	2,160	2,980	642	319
25.....	352	266	110	94	1,800	2,200	516	722	2,150	3,340	738	305
26.....	344	217	107	98	2,410	2,010	500	702	2,140	3,730	705	284
27.....	339	170	105	102	2,920	1,740	492	685	2,430	3,420	775	280
28.....	332	190	104	102	3,030	1,870	473	670	3,240	2,370	914	267
29.....	325	200	104	*98	.....	2,100	513	656	3,180	1,980	1,090	257
30.....	325	200	103	95	.....	2,120	500	636	3,030	1,730	1,230	252
31.....	320	.....	102	93	.....	1,750	.....	613	.....	1,550	1,260	.....
1943-44												
1.....	245	262	498	170	543	1,010	711	1,410	1,410	1,260	1,540	1,860
2.....	234	290	529	165	644	976	952	1,370	1,290	1,160	967	1,850
3.....	231	297	523	160	622	1,030	916	1,360	1,210	1,070	913	1,840
4.....	229	324	492	160	574	1,080	847	1,400	1,640	1,000	1,610	1,830
5.....	225	335	508	155	529	1,030	826	1,580	2,390	937	1,480	1,650
6.....	220	335	*520	145	473	886	746	1,560	1,930	925	1,420	1,370
7.....	216	344	539	135	513	650	685	1,540	1,820	3,720	1,320	1,170
8.....	212	347	508	130	532	640	647	1,660	1,750	1,230	1,360	1,030
9.....	212	319	526	135	428	660	633	1,870	1,870	1,050	1,430	946
10.....	206	300	492	130	318	680	619	1,830	1,970	2,430	1,270	898
11.....	204	255	511	120	260	720	619	1,950	3,050	2,670	1,030	901
12.....	204	a235	470	110	230	750	608	2,670	7,040	2,920	1,240	907
13.....	204	212	330	115	190	740	591	2,400	7,880	2,850	844	859
14.....	204	206	310	115	175	702	588	2,430	6,190	2,780	1,320	835
15.....	202	212	310	120	170	699	594	2,200	5,870	4,120	1,940	811
16.....	202	220	320	120	175	656	610	2,260	5,750	4,210	1,380	805
17.....	214	238	325	120	185	670	619	2,440	5,660	3,790	1,190	793
18.....	227	280	325	120	190	633	636	3,650	5,430	3,680	1,050	871
19.....	231	a310	335	120	225	532	656	6,940	5,280	3,460	946	1,170
20.....	234	a340	350	115	240	518	670	4,930	5,010	3,280	889	1,370
21.....	245	376	345	*115	205	535	670	3,640	4,490	3,280	859	1,080
22.....	240	391	315	115	315	549	682	3,370	4,120	3,090	907	1,090
23.....	245	406	280	125	325	868	731	3,260	4,070	2,540	934	1,180
24.....	240	412	260	135	600	1,810	877	3,140	3,930	2,090	862	1,170
25.....	248	476	235	145	1,090	1,720	1,140	2,960	3,050	1,810	784	1,060
26.....	250	549	220	175	1,510	1,190	1,210	2,690	2,450	1,640	877	991
27.....	250	555	205	206	2,730	952	1,250	2,410	2,030	1,450	976	988
28.....	248	467	195	235	*2,750	778	1,360	2,190	1,750	1,270	1,280	991
29.....	248	492	180	295	1,250	682	1,440	1,990	1,540	1,140	1,420	961
30.....	245	461	180	375	.....	602	1,460	1,740	1,380	1,030	1,560	913
31.....	250	.....	175	455	.....	596	.....	1,550	.....	1,470	1,710	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Nov. 27 to Dec. 31, 1942, Jan. 1 to Feb. 23, Mar. 7-11, 17-19, Dec. 13-31, 1943, Jan. 1-31, Feb. 11-27, Mar. 7-13, 1944 (no gage-height record Mar. 7-11, 18, 19, 1943, Mar. 9, 10, 1944).

Little Sioux River at Correctionville, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	906	435	290	120	120	960	1,490	1,430	3,380	2,730	739	468
2.....	870	430	280	120	120	1,040	1,360	1,360	3,520	2,580	1,360	437
3.....	833	417	270	120	120	1,110	1,280	1,340	3,630	2,550	1,490	732
4.....	815	409	280	120	120	1,120	1,210	1,230	3,380	2,450	1,180	a140
5.....	819	404	290	120	110	1,070	1,110	1,170	3,160	2,300	14,200	a407
6.....	826	404	300	*120	110	1,040	1,080	1,110	3,140	2,090	9,780	a390
7.....	811	417	310	120	110	1,020	1,160	1,040	3,100	1,870	5,890	a377
8.....	783	474	310	110	120	1,000	1,420	936	2,870	1,710	2,690	a366
9.....	754	*495	300	100	440	1,220	1,520	870	2,850	1,770	1,650	349
10.....	729	504	290	110	1,220	3,000	1,540	847	4,240	1,700	1,550	335
11.....	700	462	280	110	1,300	5,300	1,610	826	5,460	1,530	1,710	329
12.....	671	480	270	110	1,450	6,810	1,610	804	5,920	1,380	1,500	329
13.....	653	495	260	110	1,380	7,760	1,500	790	4,520	1,250	1,300	319
14.....	635	486	250	110	1,260	6,070	1,330	925	4,760	1,170	1,470	316
15.....	613	471	240	110	1,150	5,800	1,200	999	7,060	1,050	1,610	310
16.....	596	468	240	110	960	7,070	1,220	1,160	6,740	1,790	1,610	308
17.....	578	477	230	120	820	6,850	1,320	1,200	6,710	1,530	1,480	335
18.....	561	486	220	120	720	5,460	1,400	1,290	6,230	1,270	1,300	412
19.....	533	489	210	120	650	5,000	1,410	1,190	5,520	1,220	1,110	407
20.....	530	489	200	120	640	5,530	1,460	1,080	5,260	1,160	980	368
21.....	527	477	190	120	*620	5,040	1,490	1,160	5,180	1,050	925	345
22.....	514	465	180	130	600	4,370	1,450	1,770	4,920	958	a881	339
23.....	508	462	170	140	560	3,670	2,030	2,030	4,440	980	a815	327
24.....	498	454	160	140	560	3,060	2,190	1,060	3,840	1,170	a743	310
25.....	489	454	150	140	1,000	2,720	2,190	2,070	3,240	1,110	a071	301
26.....	474	460	140	150	1,070	2,420	2,190	2,550	2,810	962	628	297
27.....	465	440	140	150	1,040	2,190	2,110	3,310	3,260	851	592	301
28.....	460	430	130	150	1,000	1,970	1,930	4,150	3,300	765	547	355
29.....	451	412	130	140	.....	1,830	1,750	4,600	3,010	725	508	366
30.....	446	337	120	130	.....	1,710	1,590	3,990	2,770	711	483	351
31.....	437	.....	120	120	.....	1,600	.....	3,470	.....	783	489	.....
1945-46												
1.....	346	224	238	95	135	2,100	1,900	450	1,150	885	216	102
2.....	340	224	296	95	125	2,250	1,650	440	1,090	840	204	99
3.....	311	221	343	95	120	*2,300	1,470	461	995	796	195	94
4.....	290	211	308	100	160	1,990	1,320	519	923	792	183	228
5.....	285	219	279	120	3,790	1,660	1,210	538	836	753	195	172
6.....	276	228	296	160	4,520	1,710	1,140	564	800	686	195	166
7.....	262	228	273	180	a2,400	2,060	1,060	620	749	636	170	321
8.....	251	224	*288	175	a1,500	2,090	999	620	686	597	159	314
9.....	238	216	181	165	a1,170	1,610	961	575	624	586	151	282
10.....	238	214	122	155	a944	1,220	944	590	564	571	144	285
11.....	238	219	180	145	a869	1,100	961	647	523	541	134	299
12.....	238	244	185	140	a836	1,670	936	651	582	404	131	246
13.....	234	236	150	*135	a812	2,450	906	682	549	447	126	234
14.....	234	231	135	130	a784	2,690	860	694	519	418	120	262
15.....	228	234	120	125	a768	2,260	824	698	479	407	120	228
16.....	234	246	105	115	776	1,930	780	624	1,230	400	122	202
17.....	236	249	98	105	890	1,890	721	578	1,100	393	119	183
18.....	236	246	95	100	1,240	1,890	682	651	848	380	110	164
19.....	221	234	92	100	1,370	1,790	643	974	602	369	105	144
20.....	219	234	90	100	2,010	1,720	605	848	1,170	356	117	134
21.....	221	224	87	100	2,220	1,660	575	902	1,330	350	144	124
22.....	219	116	85	100	1,960	1,520	560	1,010	1,370	321	136	111
23.....	219	126	82	98	1,960	1,570	530	1,470	1,360	302	119	101
24.....	219	176	84	98	2,210	1,890	508	2,580	1,320	290	122	98
25.....	219	192	86	95	2,290	2,090	504	1,750	1,230	293	124	97
26.....	221	188	82	95	2,300	2,140	564	1,820	1,130	276	117	98
27.....	221	188	80	90	2,000	2,300	526	1,790	1,020	265	117	98
28.....	221	192	85	90	1,800	2,290	526	1,700	936	254	117	106
29.....	221	197	85	100	.....	2,310	494	1,620	906	249	112	117
30.....	219	199	90	200	.....	2,370	472	1,540	919	236	110	127
31.....	216	.....	95	150	.....	2,220	.....	1,340	.....	228	106	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Dec. 1-31, 1944, Jan. 1 to Mar. 11, Dec. 11-31, 1945, Jan. 1 to Feb. 4, Feb. 26 to Mar. 2, 1946.

Little Sioux River at Correctionville, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	114	369	585	160	150	540	1,250	9,600	1,590	4,070	523	140
2.....	101	346	465	155	140	540	1,180	4,840	1,620	3,760	494	131
3.....	92	343	355	155	135	525	1,120	3,640	1,500	3,100	458	124
4.....	119	343	405	150	135	520	1,100	4,170	1,420	3,130	432	117
5.....	214	340	*470	145	135	510	1,100	4,860	1,380	3,640	397	114
6.....	311	343	525	150	135	510	1,570	4,090	1,290	3,830	363	111
7.....	380	356	601	150	135	510	1,760	3,090	1,250	3,850	343	106
8.....	380	366	675	150	135	620	1,700	2,480	1,160	3,610	318	105
9.....	369	376	671	*155	135	775	1,910	2,130	1,119	3,370	299	102
10.....	446	414	578	160	140	940	2,330	1,920	1,170	3,300	285	99
11.....	497	450	567	170	140	1,130	2,780	1,760	1,210	3,200	273	114
12.....	541	465	540	180	145	1,350	2,940	1,650	1,230	3,000	260	176
13.....	590	483	455	190	169	1,690	2,680	1,640	1,370	2,670	251	145
14.....	552	504	365	200	245	1,990	2,630	1,790	1,430	2,320	241	127
15.....	556	534	295	190	350	1,660	2,743	2,310	1,460	1,990	231	120
16.....	549	636	215	185	800	1,580	2,880	2,350	1,510	1,670	224	117
17.....	515	700	160	180	1,200	1,550	2,990	2,380	1,760	1,420	219	120
18.....	523	923	180	180	1,320	1,550	2,700	2,150	1,550	1,240	204	114
19.....	497	936	220	175	1,160	1,580	2,530	2,150	1,520	1,130	199	102
20.....	461	990	240	170	1,000	1,620	2,410	2,140	1,490	1,040	195	97
21.....	440	986	250	165	910	1,640	2,270	2,039	1,539	940	181	92
22.....	422	890	255	165	830	1,620	2,090	1,890	3,840	885	168	89
23.....	a700	790	260	165	760	1,620	2,100	1,860	7,380	836	161	88
24.....	a650	785	250	165	640	1,600	1,950	1,720	8,070	788	153	88
25.....	a450	705	245	170	590	1,550	1,830	1,610	6,240	745	157	87
26.....	447	510	245	185	555	1,550	1,750	1,510	3,420	710	151	86
27.....	440	475	245	249	550	1,530	1,710	1,390	3,000	686	147	88
28.....	418	525	235	225	545	1,540	1,670	1,380	3,110	647	144	89
29.....	411	565	210	200	.....	1,360	2,370	1,450	3,400	612	140	89
30.....	397	575	180	175	.....	1,280	5,540	1,490	3,660	571	138	89
31.....	383	.....	165	165	.....	1,250	.....	1,570	.....	538	144	.....
1947-48												
1.....	95	b210	180	120	46	2,600	921	1,010	297	685	316	286
2.....	110	a210	180	108	48	2,400	857	961	282	625	261	225
3.....	117	a210	170	109	48	2,090	793	925	282	529	235	185
4.....	115	a210	160	93	49	1,600	745	905	275	441	216	153
5.....	115	b210	155	92	48	1,200	689	897	261	365	193	132
6.....	115	*210	155	100	49	900	645	905	251	312	188	119
7.....	110	210	160	101	48	800	611	857	235	261	188	108
8.....	104	205	160	120	48	840	657	817	210	222	175	98
9.....	98	199	170	142	47	800	665	805	292	199	165	93
10.....	95	199	170	138	48	750	673	773	199	208	158	86
11.....	90	175	170	222	52	790	673	729	183	251	409	84
12.....	89	153	180	280	49	660	625	705	213	286	293	82
13.....	90	162	190	250	52	620	605	685	222	264	493	77
14.....	89	158	190	200	50	600	573	673	251	272	381	72
15.....	87	185	200	167	71	1,400	557	649	225	238	753	68
16.....	84	216	193	122	600	3,090	537	597	208	232	308	63
17.....	83	210	188	108	1,800	3,000	605	561	210	248	225	59
18.....	83	205	*177	106	2,000	3,360	481	557	208	251	190	58
19.....	82	222	167	103	1,600	*3,510	453	649	210	282	177	56
20.....	82	228	162	87	900	2,960	433	629	232	272	151	59
21.....	82	230	156	80	700	3,040	405	557	278	275	115	59
22.....	79	215	151	*77	500	3,510	485	493	350	272	95	57
23.....	76	190	144	71	400	3,480	541	445	397	286	84	58
24.....	93	180	142	63	450	2,620	533	405	749	275	76	57
25.....	h101	200	136	59	900	2,250	605	389	885	298	70	54
26.....	a110	210	134	56	1,470	2,110	717	381	781	261	65	56
27.....	a120	210	136	54	3,440	1,790	841	354	1,040	218	72	55
28.....	a130	190	134	53	5,200	1,480	917	335	901	222	304	54
29.....	a140	190	132	52	2,800	1,330	929	308	755	669	1,340	53
30.....	a140	180	128	49	.....	1,170	1,020	331	681	457	615	52
31.....	a220	.....	122	48	.....	1,030	.....	312	.....	393	385	.....

* Winter discharge measurement made on this day.

h No gage-height record; discharge computed on basis of records for nearby stations.
h Computed from wire-weight gage readings.

Note—Stage-discharge relation affected by ice Nov. 22 to Dec. 6, Dec. 12-31, 1946, Jan. 1 to Mar. 26, Nov. 23 to Dec. 15, 1947, Jan. 12-14, Feb. 16-25, Feb. 28 to Mar. 16, 1948. (No gage-height record Dec. 12, 13, 1946, Jan. 1-3, Feb. 19-21, 23-28, Mar. 3-6, 16-19, 1947.)

Little Sioux River at Correctionville, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	52	79	103	45	50	1,100	2,740	550	1,100	526	130	46
2.....	50	84	108	46	*50	1,800	2,380	526	2,690	482	128	45
3.....	49	83	110	56	50	3,000	2,250	486	2,010	344	110	120
4.....	47	86	115	645	49	3,500	2,250	442	1,670	313	110	610
5.....	46	92	89	389	48	4,000	2,250	466	1,660	290	98	195
6.....	64	87	89	401	48	4,000	2,250	590	1,530	277	87	119
7.....	76	82	89	251	47	*2,780	2,170	650	1,060	253	80	100
8.....	70	77	74	220	46	2,250	2,090	474	850	241	71	90
9.....	77	79	74	200	46	2,400	1,850	482	710	227	66	87
10.....	66	80	70	170	46	2,600	1,690	458	610	211	62	137
11.....	62	77	63	160	47	2,300	1,530	423	518	195	61	530
12.....	60	77	64	150	47	1,800	1,450	394	522	185	59	466
13.....	63	74	63	140	47	h910	1,290	362	690	173	60	330
14.....	62	74	60	130	47	a800	1,130	347	442	164	59	259
15.....	59	76	*61	120	49	a700	1,090	344	383	151	79	247
16.....	55	77	58	100	50	a600	1,010	326	358	142	236	244
17.....	52	76	54	90	50	a600	1,050	369	337	136	198	219
18.....	52	77	55	80	50	a750	1,130	650	320	140	171	195
19.....	52	111	55	75	60	h930	1,090	570	309	130	171	168
20.....	52	140	56	70	70	a1,000	1,050	630	290	185	142	126
21.....	52	156	57	68	70	a1,100	990	1,130	296	168	117	103
22.....	52	130	56	66	100	a1,300	950	1,210	351	144	104	95
23.....	52	126	55	64	350	a1,500	910	1,210	340	126	106	86
24.....	54	146	54	62	600	a1,700	850	1,050	354	122	110	83
25.....	54	166	52	60	900	2,290	810	970	930	115	84	82
26.....	54	146	49	58	1,400	1,970	890	890	1,010	170	72	79
27.....	54	126	48	56	1,300	1,690	730	810	590	250	66	77
28.....	54	117	48	54	1,200	2,210	690	710	550	180	62	76
29.....	62	79	46	54	.....	2,090	630	630	630	140	59	74
30.....	83	85	46	52	.....	1,930	590	570	522	132	58	74
31.....	80	.....	45	52	.....	2,250	.....	514	.....	128	51	.....
1949-50												
1.....	72	90	82	42	24	180	1,050	211	250	371	640	131
2.....	75	92	83	40	24	150	950	216	265	336	625	127
3.....	76	87	86	37	25	90	860	211	265	301	g565	120
4.....	77	87	84	35	25	1,000	810	227	236	290	505	112
5.....	77	83	72	36	25	1,800	690	344	208	270	460	108
6.....	77	83	57	37	26	1,800	590	337	198	244	420	103
7.....	79	89	52	37	27	900	518	290	183	219	445	99
8.....	80	86	50	38	40	800	458	427	173	199	432	95
9.....	83	84	58	39	100	750	412	590	159	232	359	91
10.....	128	86	64	38	150	700	387	570	144	279	336	89
11.....	122	86	*74	37	200	660	358	550	138	293	411	88
12.....	111	84	54	36	150	630	326	570	729	g1,820	1,070	85
13.....	106	82	56	35	130	600	306	550	458	800	347	82
14.....	100	82	52	34	110	580	284	502	316	655	312	82
15.....	100	80	51	32	95	570	268	454	303	725	279	82
16.....	104	79	50	31	85	750	259	446	256	1,000	255	81
17.....	110	77	49	30	75	*1,000	256	470	394	708	336	81
18.....	106	76	49	29	70	1,100	250	454	6,180	980	259	70
19.....	103	79	50	29	70	950	233	530	2,230	1,080	219	77
20.....	140	77	51	29	75	850	219	526	1,400	980	195	114
21.....	153	74	48	29	*80	750	211	494	1,440	1,440	182	201
22.....	122	55	46	28	150	700	203	450	1,620	1,540	172	445
23.....	111	71	44	27	160	800	200	446	g1,280	1,490	162	505
24.....	108	79	42	27	130	960	188	439	1,000	1,720	150	445
25.....	103	80	40	26	110	1,100	178	420	880	1,580	142	383
26.....	101	74	39	26	100	1,400	178	401	780	1,240	138	301
27.....	101	72	40	25	90	1,400	173	358	672	1,080	142	249
28.....	100	68	41	*25	150	1,330	168	323	565	1,000	145	206
29.....	96	76	43	25	.....	1,410	185	337	475	840	140	187
30.....	93	77	44	25	.....	g1,410	208	340	420	725	138	173
31.....	87	.....	44	24	.....	g1,370	.....	284	.....	672	136	.....

* Winter discharge measurement made on this day.

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

g Computed from graph based on wire-weight gage readings.

h Computed from wire-weight gage readings.

Note—Stage-discharge relation affected by ice Jan. 8 to Mar. 6, Mar. 9-12, Dec. 13-31, 1949, Jan. 1 to Mar. 27, 1950 (no gage-height record Jan. 24-28, Feb. 1, 3, 4, 6-11, 13-16, 20-25, 27, 1949, Mar. 12-16, 19-23, 1950).

Little Sioux River at Correctionville, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October 1942.....	14,353	708	320	463	0.189	0.22	28,470
November.....	8,375	323	170	279	.114	.13	16,610
December.....	3,967	194	102	128	.052	.06	7,870
Calendar year 1942	281,109	3,690	102	770	.314	4.27	557,600
January 1943.....	2,947	104	80	95.1	.039	.04	5,850
February.....	30,195	3,030	95	1,078	.440	.46	59,890
March.....	36,772	2,450	560	1,186	.484	.56	72,940
April.....	23,462	1,630	473	782	.319	.36	46,540
May.....	17,523	1,030	320	565	.231	.27	34,760
June.....	49,525	3,240	610	1,651	.674	.75	98,230
July.....	107,100	6,440	1,550	3,455	1.41	1.63	212,400
August.....	31,546	1,600	642	1,018	.416	.48	62,570
September.....	15,545	1,120	252	518	.211	.24	30,830
Water year 1942-43	341,310	6,440	80	935	.382	5.20	677,000
October 1943.....	7,065	250	202	228	.093	.11	14,010
November.....	10,246	555	206	342	.140	.16	20,320
December.....	11,311	539	175	365	.149	.17	22,440
Calendar year 1943	343,237	6,440	80	940	.384	5.23	680,800
January 1944.....	5,036	455	110	162	.066	.08	9,990
February.....	18,081	2,750	170	623	.254	.27	35,860
March.....	25,544	1,810	518	824	.336	.39	50,670
April.....	24,593	1,460	588	820	.335	.37	48,780
May.....	76,300	6,940	1,360	2,461	1.00	1.16	151,300
June.....	103,250	7,880	1,210	3,442	1.40	1.57	204,800
July.....	69,352	4,210	925	2,237	.913	1.05	137,600
August.....	37,308	1,940	784	1,203	.491	.57	74,000
September.....	34,190	1,860	793	1,140	.465	.52	67,810
Water year 1943-44	422,276	7,880	110	1,154	.471	6.42	831,600
October 1944.....	19,485	906	437	629	.257	.30	38,650
November.....	13,583	504	337	453	.185	.21	26,940
December.....	6,950	310	120	224	.091	.11	13,790
Calendar year 1944	433,672	7,880	110	1,185	.484	6.60	860,200
January 1945.....	3,810	150	100	123	.050	.06	7,560
February.....	19,370	1,450	110	692	.282	.29	38,420
March.....	104,810	7,760	960	3,381	1.38	1.59	207,900
April.....	46,150	2,190	1,080	1,538	.628	.70	91,540
May.....	52,657	4,600	790	1,699	.693	.80	104,400
June.....	128,220	7,060	2,770	4,274	1.74	1.95	254,300
July.....	45,165	2,730	711	1,457	.594	.69	89,580
August.....	61,881	14,200	483	1,996	.815	.94	122,700
September.....	11,026	732	297	368	.150	.17	21,870
Water year 1944-45	513,107	14,200	100	1,406	.574	7.81	1,018,000
October 1945.....	7,571	346	216	244	.100	.11	15,020
November.....	6,380	249	116	213	.087	.10	12,650
December.....	4,815	343	80	155	.063	.07	9,550
Calendar year 1945	491,855	14,200	80	1,348	.550	7.47	975,500
January 1946.....	3,751	200	90	121	.049	.06	7,440
February.....	41,959	4,520	120	1,499	.612	.64	83,220
March.....	60,740	2,690	1,100	1,959	.800	.92	120,500
April.....	25,831	1,900	472	861	.351	.39	51,240
May.....	29,946	2,580	440	966	.394	.45	59,400
June.....	27,840	1,370	479	928	.379	.42	55,220
July.....	14,411	885	228	465	.190	.22	28,580
August.....	4,340	216	105	140	.057	.07	8,610
September.....	5,236	321	91	175	.071	.08	10,390
Water year 1945-46	232,820	4,520	80	638	.260	3.53	461,800

Little Sioux River at Correctionville, Iowa—Continued
 Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acres-foot
October 1946.....	12,962	700	92	418	0.171	0.20	25,710
November.....	17,113	990	340	570	.233	.26	33,940
December.....	11,107	675	160	358	.146	.17	22,030
Calendar year 1946	255,236	4,520	90	699	.285	3.88	506,300
January 1947.....	5,370	240	145	173	.071	.08	10,650
February.....	13,275	1,320	135	474	.193	.20	26,330
March.....	38,050	1,900	510	1,227	.501	.58	75,470
April.....	65,590	5,540	1,100	2,186	.892	1.00	130,100
May.....	79,050	9,600	1,380	2,550	1.04	1.20	156,800
June.....	71,670	8,070	1,110	2,389	.975	1.09	142,200
July.....	63,298	4,070	538	2,042	.833	.96	125,500
August.....	7,893	523	138	255	.104	.12	15,660
September.....	3,266	176	86	109	.044	.05	6,480
Water year 1946-47	388,644	9,600	86	1,065	.435	5.91	770,900
October 1947.....	3,224	220	76	104	.042	.05	6,390
November.....	5,982	230	153	199	.081	.09	11,870
December.....	4,992	200	122	161	.066	.08	9,900
Calendar year 1947	361,660	9,600	76	991	.404	5.50	717,400
January 1948.....	3,421	280	48	110	.045	.05	6,790
February.....	23,513	5,200	46	811	.331	.36	46,640
March.....	57,600	3,510	600	1,858	.758	.87	114,200
April.....	19,721	1,020	405	657	.268	.30	39,120
May.....	19,599	1,010	308	632	.258	.30	38,870
June.....	11,483	1,040	183	383	.156	.17	22,780
July.....	10,069	685	199	325	.133	.15	19,970
August.....	8,726	1,340	65	281	.115	.13	17,310
September.....	2,718	286	52	90.6	.037	.04	5,390
Water year 1947-48	171,048	5,200	46	467	.191	2.59	339,200
October 1948.....	1,817	83	46	58.6	.024	.03	3,600
November.....	2,965	166	74	98.8	.040	.05	5,880
December.....	2,066	115	45	66.6	.027	.03	4,100
Calendar year 1948	163,698	5,200	45	447	.182	2.48	324,600
January 1949.....	4,184	645	45	135	.055	.06	8,300
February.....	6,917	1,400	46	247	.101	.10	13,720
March.....	57,850	4,000	600	1,866	.762	.88	114,700
April.....	41,780	2,740	590	1,393	.569	.63	82,870
May.....	19,233	1,210	326	620	.253	.29	38,150
June.....	23,592	2,690	290	786	.321	.36	46,790
July.....	6,440	526	115	208	.085	.10	12,770
August.....	3,067	236	51	98.9	.040	.05	6,080
September.....	5,162	610	45	172	.070	.08	10,240
Water year 1948-49	175,073	4,000	45	480	.196	2.66	347,200
October 1949.....	3,101	153	72	100	.041	.05	6,150
November.....	2,395	92	55	79.8	.033	.04	4,750
December.....	1,695	86	39	54.7	.022	.03	3,360
Calendar year 1949	175,416	4,000	39	481	.196	2.67	347,900
January 1950.....	988	42	24	31.9	.013	.01	1,960
February.....	2,496	200	24	89.1	.036	.04	4,950
March.....	28,430	1,800	90	917	.374	.43	56,390
April.....	11,406	1,050	168	380	.155	.17	22,620
May.....	12,767	570	211	412	.168	.19	25,320
June.....	23,617	6,180	138	787	.321	.36	46,840
July.....	25,109	1,820	199	810	.331	.38	49,800
August.....	10,117	1,070	136	326	.133	.15	20,070
September.....	5,021	505	77	167	.068	.08	9,960
Water year 1949-50	127,142	6,180	24	348	.142	1.93	252,200

Little Sioux River near Kennebec, Iowa

LOCATION.—Lat. 42°05', long. 96°00', in S½ sec. 18, T. 84 N., R. 44 W., on left bank 15 feet downstream from bridge on county road A, 1.3 miles south of Kennebec, 5.5 miles northeast of Onawa, and 6.5 miles upstream from Maple River.

DRAINAGE AREA.—2,730 square miles.

RECORDS AVAILABLE.—April 1939 to September 1950.

GAGE.—Water-stage recorder. Datum of gage is 1,027.89 feet above mean sea level, datum of 1929 (Corps of Engineers bench mark). Prior to May 24, 1950, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—11 years, 779 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43 ..	July 8	6,310	23.49	Jan. 19	88
1943-44 ..	June 13	10,800	24.89	Jan. 13-15	120
1944-45 ..	Aug. 7	8,590	25.03	Jan. 10	130
1945-46 ..	Feb. 6	6,000	(1)23.32	Dec. 27, 28	90
1946-47 ..	May 2	8,390	22.87	Sept. 26, 27	116
1947-48 ..	Feb. 28	7,870	(2)24.17	Feb. 4	60
1948-49 ..	Mar. 4	5,300	(1)24.0	Dec. 30, 31	56
1949-50 ..	June 18	6,140	22.42	Jan. 29 to Feb. 4	27

(1) Affected by ice.

(2) From floodmark.

1939-50: Maximum discharge, 10,800 second-feet June 13, 1944; maximum gage height, 25.03 feet Aug. 7, 1945; minimum daily discharge, 24 second-feet Jan. 25-31, 1940.

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

Little Sioux River near Kennebec, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	a770	a344	220	110	100	3,140	1,720	484	835	3,390	1,460	1,030
2.....	760	343	210	105	120	2,700	1,760	471	601	3,640	1,410	1,010
3.....	731	341	200	100	800	2,200	a1,610	449	1,680	4,210	1,320	864
4.....	709	341	190	95	1,200	1,700	a1,460	431	988	5,500	1,200	806
5.....	687	330	180	92	1,100	1,400	a1,320	414	928	5,900	1,210	794
6.....	658	333	175	95	950	1,100	1,170	386	928	5,910	1,140	694
7.....	a643	327	170	98	850	900	1,070	364	1,000	6,060	1,110	616
8.....	628	327	165	100	950	850	988	355	1,070	6,250	958	571
9.....	649	327	160	105	1,000	800	920	347	1,060	5,800	920	551
10.....	610	320	150	105	950	800	886	339	975	4,990	845	547
11.....	589	318	150	100	850	850	815	330	910	4,270	743	569
12.....	569	a306	140	98	650	950	857	341	845	3,580	1,600	1,330
13.....	545	295	140	105	500	1,100	840	338	2,320	2,760	1,780	537
14.....	520	306	140	115	440	1,200	819	325	1,280	2,300	1,480	622
15.....	501	a307	140	140	380	1,100	794	325	1,750	2,000	1,170	573
16.....	497	308	*145	150	400	1,000	753	407	2,040	1,890	967	545
17.....	465	284	140	120	460	900	725	573	1,880	1,990	1,000	543
18.....	450	296	130	95	550	900	675	612	1,710	1,970	910	497
19.....	438	295	120	88	1,000	950	622	838	1,840	3,380	838	465
20.....	422	289	120	94	1,600	1,000	614	1,030	1,880	3,400	883	441
21.....	405	280	120	100	2,200	1,050	597	1,180	1,860	3,620	852	418
22.....	a395	277	130	100	2,500	1,100	569	1,090	3,050	3,340	707	402
23.....	388	279	130	100	2,600	*1,140	559	910	3,500	2,620	660	398
24.....	a383	276	130	98	2,300	2,000	553	883	2,340	2,920	616	381
25.....	a378	276	125	96	1,990	2,330	541	789	2,280	3,040	1,050	352
26.....	374	260	120	100	3,010	1,960	516	773	2,360	3,480	685	333
27.....	367	210	120	110	4,620	1,830	501	740	2,410	3,390	633	313
28.....	362	220	115	110	4,030	1,860	497	723	3,120	3,020	707	313
29.....	352	230	115	*98	.....	1,980	495	718	3,500	2,140	862	300
30.....	344	230	115	96	.....	2,370	488	507	3,420	1,950	1,030	289
31.....	344	.....	115	95	.....	2,280	.....	499	.....	1,950	1,190	.....
1943-44												
1.....	279	259	480	185	420	1,230	826	1,520	1,420	1,470	3,180	1,780
2.....	273	282	524	180	a600	1,000	835	1,590	1,300	1,290	1,620	1,920
3.....	a265	a300	541	170	a630	978	842	1,550	997	1,160	1,120	1,840
4.....	262	313	524	170	549	1,060	847	1,560	2,020	983	946	1,820
5.....	255	344	518	170	530	1,100	840	1,570	2,620	913	1,960	1,810
6.....	259	357	528	165	480	1,110	806	1,730	1,640	806	1,580	1,610
7.....	246	364	*539	160	490	920	716	1,630	1,760	3,750	1,420	1,360
8.....	240	347	553	150	530	700	692	1,660	1,700	3,640	1,360	1,350
9.....	235	339	526	140	440	650	639	1,760	2,250	1,050	1,430	1,330
10.....	221	343	500	145	350	700	624	1,880	1,840	2,250	1,470	946
11.....	226	312	520	140	300	750	639	1,820	5,400	2,590	1,270	893
12.....	222	288	480	130	250	800	628	2,560	5,360	3,220	1,030	918
13.....	216	242	385	120	215	771	633	2,090	7,540	3,210	869	866
14.....	216	238	340	120	205	709	614	2,640	7,840	3,180	796	840
15.....	216	230	320	120	205	681	612	2,500	6,280	3,900	1,280	817
16.....	214	229	320	125	210	660	607	2,130	6,050	4,040	2,070	799
17.....	a220	247	330	125	200	620	620	2,220	5,800	4,050	1,330	771
18.....	234	265	340	125	205	587	643	4,370	5,800	4,110	1,210	760
19.....	a240	283	340	125	240	553	668	6,510	5,530	3,880	1,050	1,110
20.....	246	a340	350	125	270	539	694	8,100	5,200	3,520	906	1,400
21.....	244	398	350	125	315	533	701	4,950	4,960	3,340	850	1,310
22.....	255	404	340	*125	355	549	701	3,610	4,590	3,340	920	a1,220
23.....	253	416	330	135	390	561	785	3,340	4,290	a2,960	859	1,190
24.....	253	a435	300	140	420	1,680	822	3,200	4,090	2,570	918	1,270
25.....	252	454	280	155	1,000	1,760	1,000	3,090	3,780	2,120	a840	1,220
26.....	258	a510	250	190	1,400	1,290	1,250	2,510	a3,200	1,780	762	1,120
27.....	263	571	230	255	2,000	1,020	1,280	2,560	2,600	1,490	893	1,040
28.....	266	518	215	265	3,000	980	1,360	2,250	2,130	1,290	1,000	1,040
29.....	262	512	205	371	1,790	852	1,470	2,040	1,840	1,030	1,430	1,040
30.....	262	500	200	395	.....	876	1,550	1,800	1,600	1,060	1,580	1,020
31.....	a260	.....	190	418	.....	785	.....	1,630	.....	1,100	1,670	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Nov. 26 to Dec. 31, 1942, Jan. 1 to Feb. 24, Mar. 2-24, Dec. 13-31, 1943, Jan. 1-28, Feb. 5-28, Mar. 8-12, 1944.

Little Sioux River near Kennebec, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	953	476	380	160	160	1,000	1,510	1,740	4,150	2,810	852	536
2.....	956	468	330	160	160	1,100	1,490	1,680	3,700	2,870	855	510
3.....	933	458	310	160	160	1,200	1,480	1,590	3,640	2,920	1,920	508
4.....	920	446	300	160	160	1,250	1,450	1,510	3,600	2,580	1,730	996
5.....	901	448	310	160	150	1,300	1,390	1,450	3,250	2,490	3,590	480
6.....	883	436	330	*160	140	1,250	1,340	1,350	3,160	2,300	7,010	438
7.....	901	440	350	160	145	1,100	1,320	1,280	3,160	2,120	7,850	444
8.....	808	482	360	160	150	1,100	1,400	1,200	3,420	1,870	7,320	382
9.....	834	516	360	150	200	1,150	1,660	1,120	3,400	1,790	3,960	360
10.....	800	564	360	130	900	2,500	1,720	1,070	4,400	1,870	2,350	342
11.....	771	*578	350	140	1,300	5,000	2,160	1,060	4,620	1,710	1,930	344
12.....	741	558	340	145	1,500	6,880	1,850	1,040	4,920	1,430	2,060	339
13.....	722	571	330	145	1,700	7,440	1,800	1,000	5,000	1,390	1,560	323
14.....	695	578	320	145	1,600	7,930	1,620	1,010	4,240	1,790	1,440	318
15.....	654	562	310	150	1,300	7,810	1,500	a1,100	5,000	1,150	1,880	314
16.....	647	556	300	150	1,120	7,000	1,470	1,240	6,810	1,100	1,730	306
17.....	633	542	290	150	950	7,680	1,500	1,370	7,410	a1,700	1,820	a320
18.....	616	567	280	160	850	8,220	1,760	1,420	7,210	1,750	1,760	418
19.....	593	567	270	160	760	6,010	1,680	1,460	6,840	1,830	1,340	438
20.....	567	562	260	160	700	5,450	1,640	1,190	5,740	1,260	1,250	432
21.....	562	560	250	160	550	5,570	1,690	1,300	5,100	1,150	a1,100	382
22.....	553	558	240	165	510	4,780	1,970	1,500	4,980	943	1,020	355
23.....	547	547	230	170	*510	3,970	2,260	2,240	4,630	1,000	938	335
24.....	547	520	220	180	560	3,420	2,340	2,270	3,990	a1,100	1,130	323
25.....	540	496	210	185	1,000	3,090	2,360	2,140	3,580	1,240	1,040	309
26.....	525	a495	200	190	1,100	2,750	2,370	2,470	3,120	1,200	761	325
27.....	512	494	190	195	1,300	2,450	2,340	3,080	2,940	1,150	738	337
28.....	498	492	180	200	1,200	2,220	2,190	3,550	3,320	a1,150	674	360
29.....	506	490	175	200	.....	2,050	2,080	4,070	3,220	1,160	659	402
30.....	488	450	170	190	.....	1,930	1,950	4,510	3,120	1,070	578	366
31.....	480	.....	160	170	.....	1,810	.....	5,840	.....	787	562	.....
1945-46												
1.....	a365	235	285	105	170	1,730	2,200	479	1,340	913	205	a130
2.....	364	238	310	105	150	1,620	1,920	464	1,220	877	208	126
3.....	357	232	320	105	150	2,230	1,710	509	1,100	850	201	130
4.....	333	231	330	120	200	*2,270	1,580	a500	1,000	811	a198	202
5.....	325	222	340	140	3,500	2,400	1,440	569	922	814	195	259
6.....	315	235	309	300	5,800	1,890	1,310	586	859	763	191	322
7.....	304	242	*306	350	5,080	1,950	1,210	602	784	a700	200	a300
8.....	285	a236	300	300	2,790	a2,000	1,120	649	685	639	184	277
9.....	a284	231	300	250	1,730	2,120	1,060	642	652	619	170	261
10.....	283	a230	200	225	1,480	1,520	1,040	a642	599	592	164	264
11.....	269	a230	210	200	1,300	1,370	1,040	642	546	574	162	297
12.....	270	229	205	*175	970	1,380	1,060	a654	509	554	157	316
13.....	266	a250	190	170	945	2,360	997	667	594	486	156	277
14.....	261	228	170	160	920	2,410	943	665	542	434	152	270
15.....	258	234	150	155	900	2,230	916	718	a530	439	142	a202
16.....	248	245	135	145	860	2,220	862	694	a500	446	147	228
17.....	253	232	125	135	970	a2,140	823	624	1,410	391	151	201
18.....	258	a250	115	130	1,360	2,140	778	596	1,080	378	141	193
19.....	251	248	105	125	1,660	2,370	724	949	1,130	364	a137	181
20.....	228	232	100	125	1,720	1,900	676	736	1,300	347	133	174
21.....	a234	a200	97	125	2,280	1,850	632	-691	1,290	334	218	154
22.....	240	180	92	125	2,290	1,760	609	772	a1,400	330	161	154
23.....	240	150	92	125	2,320	1,780	599	1,060	1,410	302	160	147
24.....	238	200	92	125	2,340	1,810	564	2,690	1,410	284	157	136
25.....	a239	210	95	125	2,440	2,110	526	2,230	1,230	278	a153	136
26.....	240	220	95	120	a2,140	2,140	529	a1,800	1,190	275	149	135
27.....	234	225	90	105	1,850	2,220	604	1,750	1,130	259	142	124
28.....	235	230	90	105	1,880	2,300	552	1,760	1,220	249	150	122
29.....	242	259	95	145	.....	2,310	549	1,640	907	242	144	140
30.....	238	274	100	215	.....	2,350	516	1,600	1,100	233	136	139
31.....	232	.....	105	205	.....	2,320	.....	1,550	.....	225	133	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Nov. 30 to Dec. 31, 1944, Jan. 1 to Mar. 11, Nov. 22-28, Dec. 1-5, 8-31, 1945, Jan. 1 to Feb. 6, Feb. 11-17, 1946.

Little Sioux River near Kennebec, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	148	378	620	170	190	570	1,430	6,080	a1,750	3,820	550	184
2.....	142	364	560	165	175	560	1,390	8,010	2,040	3,960	545	177
3.....	143	338	465	165	165	555	1,350	4,800	2,040	3,460	a510	169
4.....	127	343	*445	165	160	555	1,300	3,670	1,580	3,230	475	158
5.....	284	347	470	165	155	545	1,360	4,540	1,490	3,250	458	153
6.....	347	a355	530	170	155	540	1,920	4,680	1,450	4,000	434	144
7.....	a350	364	600	170	155	550	1,890	3,680	1,300	3,720	418	144
8.....	340	384	670	175	155	625	1,910	2,880	1,280	3,660	390	139
9.....	334	389	720	175	155	940	1,950	2,430	1,210	3,380	344	130
10.....	a500	a415	660	*180	155	1,160	2,300	2,220	1,680	3,230	a335	131
11.....	a525	430	595	180	155	1,460	2,540	a1,950	1,270	3,170	329	143
12.....	532	455	575	200	160	1,800	2,820	1,860	1,240	3,100	322	a220
13.....	589	464	550	210	195	2,280	2,820	1,760	1,440	2,770	305	a200
14.....	602	469	470	220	245	2,420	2,800	1,750	1,500	2,580	284	a190
15.....	579	499	340	215	420	2,350	2,450	a2,200	1,620	2,300	272	181
16.....	582	594	280	200	1,260	2,140	2,620	2,740	1,960	1,980	272	186
17.....	572	667	200	210	1,490	1,930	2,780	2,700	1,780	1,760	a260	166
18.....	614	835	220	210	1,660	1,830	2,750	2,360	1,640	1,480	257	a165
19.....	552	970	245	210	1,590	1,830	2,450	2,310	1,620	1,360	250	163
20.....	514	1,000	260	195	1,490	1,880	2,090	2,300	1,580	1,200	241	144
21.....	476	1,040	275	180	1,190	1,920	a2,200	2,270	a1,900	1,130	228	a138
22.....	444	1,000	285	180	1,050	1,950	2,240	2,100	2,610	1,050	221	132
23.....	422	920	290	180	955	1,920	2,600	1,990	6,420	976	204	126
24.....	778	865	295	195	870	1,870	2,020	1,990	7,020	910	194	125
25.....	676	805	295	230	765	1,820	1,950	a1,750	7,740	859	196	120
26.....	454	765	290	255	650	1,850	1,870	1,660	5,770	822	202	116
27.....	408	525	290	285	*615	1,810	1,790	1,540	3,050	a770	186	116
28.....	426	600	275	320	595	1,730	1,780	1,520	3,040	724	187	121
29.....	401	615	255	285	.....	1,630	1,990	1,490	3,200	680	187	121
30.....	389	625	225	245	.....	1,530	3,030	a1,480	a3,600	635	171	121
31.....	382	.....	195	205	.....	1,460	.....	1,380	.....	594	174	.....
1947-48												
1.....	124	a240	200	150	70	2,980	1,120	1,250	334	681	311	303
2.....	126	231	200	140	70	2,630	987	1,020	309	687	292	243
3.....	142	a232	190	130	70	2,490	938	973	302	619	260	186
4.....	144	232	180	140	60	2,300	844	952	296	509	239	154
5.....	142	242	180	140	70	1,700	780	917	288	464	226	a140
6.....	142	248	170	140	70	1,300	723	987	a273	428	214	127
7.....	139	242	170	145	70	980	690	886	258	374	197	117
8.....	153	241	170	150	70	900	a702	816	239	326	a196	107
9.....	133	a236	170	160	70	840	714	a810	246	311	194	102
10.....	128	231	180	180	70	820	744	804	231	307	233	96
11.....	119	234	180	190	75	780	a740	789	228	300	472	93
12.....	a118	a218	180	240	75	740	735	735	233	284	254	85
13.....	116	201	190	290	75	700	687	708	a242	271	656	88
14.....	118	213	200	270	80	1,000	a656	676	250	305	330	83
15.....	119	229	200	220	90	1,500	625	673	279	a294	810	81
16.....	116	a236	205	180	150	4,760	625	a644	250	282	311	78
17.....	113	244	*205	150	1,000	4,910	609	614	244	290	256	73
18.....	110	250	200	140	2,000	*3,510	567	560	228	a256	190	72
19.....	a104	246	190	130	2,250	3,150	530	684	219	311	160	a71
20.....	99	257	190	120	1,500	2,870	498	696	256	338	158	70
21.....	100	250	180	*115	1,000	2,800	487	638	271	a333	139	74
22.....	115	240	180	110	800	2,730	544	604	340	328	a116	73
23.....	120	230	180	100	640	2,980	a564	a533	583	334	94	a72
24.....	128	200	175	90	620	2,690	585	462	622	350	103	72
25.....	131	210	170	80	600	2,280	632	422	889	408	108	71
26.....	a143	220	170	70	1,000	2,120	676	416	819	400	77	65
27.....	155	230	165	70	2,780	2,060	759	402	825	322	110	a67
28.....	164	220	160	70	6,980	a1,750	906	372	1,410	317	126	69
29.....	175	200	160	70	*5,510	1,440	973	358	844	906	903	67
30.....	175	200	155	70	.....	1,400	990	a363	768	a619	1,120	67
31.....	248	.....	150	65	.....	1,250	.....	368	.....	392	738	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Nov. 22 to Dec. 31, 1946, Jan. 1, Mar. 25, Nov. 21 to Dec. 31, 1947, Jan. 1 to Feb. 26, Mar. 4-15, 1948.

Little Sioux River near Kennebec, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	62	89	100	57	64	1,300	2,560	a590	618	661	112	84
2.....	62	83	110	58	*64	1,500	2,520	550	2,100	661	136	81
3.....	62	90	95	60	64	2,500	2,280	528	2,170	430	136	82
4.....	58	91	110	500	64	3,500	2,310	505	1,680	390	120	595
5.....	60	96	120	750	62	4,500	2,340	494	1,640	350	122	462
6.....	a70	95	110	661	62	*4,500	2,310	528	1,680	282	117	189
7.....	84	a96	100	380	62	*3,650	2,310	750	1,330	264	111	121
8.....	87	90	90	300	62	2,700	2,240	574	945	254	a105	108
9.....	79	82	88	250	60	2,480	2,100	a540	750	254	102	100
10.....	a78	78	86	220	60	2,520	1,860	528	a680	217	99	105
11.....	76	89	84	200	60	2,730	1,680	494	562	198	108	370
12.....	72	88	82	180	60	2,450	1,540	462	505	190	a100	585
13.....	72	89	80	160	60	2,000	1,440	a430	780	186	99	516
14.....	70	a86	*78	150	60	1,640	1,300	410	609	176	a98	340
15.....	68	82	78	135	62	1,300	1,190	a410	440	169	96	244
16.....	67	83	78	125	64	910	1,120	400	410	158	98	244
17.....	a66	*87	76	115	62	a800	a1,100	390	380	a154	244	235
18.....	65	89	74	105	62	810	1,160	840	370	150	208	208
19.....	60	140	72	100	64	980	1,220	840	350	150	216	190
20.....	66	156	72	94	80	980	1,160	528	320	163	216	176
21.....	64	a170	72	90	80	1,260	1,080	550	330	208	135	136
22.....	61	96	72	86	80	1,470	1,050	a1,200	a400	150	132	117
23.....	62	170	70	82	300	1,330	980	1,160	410	137	122	122
24.....	a62	170	68	78	800	1,360	910	1,080	360	127	126	121
25.....	62	a170	66	74	1,200	2,100	875	1,050	908	a125	123	121
26.....	67	153	63	70	1,600	2,380	875	945	1,220	162	111	a115
27.....	67	141	60	68	1,500	1,920	840	840	780	a200	103	113
28.....	64	a130	58	66	1,400	2,000	690	635	539	a300	a100	a110
29.....	67	123	57	66	.....	2,310	690	a600	539	a200	98	a105
30.....	86	100	56	64	.....	2,170	635	562	635	150	91	a105
31.....	89	.....	56	64	.....	2,200	.....	574	.....	137	86	.....
1949-50												
1.....	a90	105	92	47	27	200	1,270	252	283	454	725	182
2.....	a92	104	96	43	27	160	1,010	272	305	402	680	180
3.....	93	102	96	41	27	130	950	262	316	376	665	173
4.....	95	a102	92	39	27	500	830	252	283	340	802	162
5.....	95	102	75	40	28	2,100	800	398	g247	340	578	152
6.....	96	a102	65	41	29	1,700	671	362	g235	293	536	144
7.....	a96	103	55	42	30	1,400	602	328	227	260	635	138
8.....	95	105	60	43	45	1,200	549	830	g210	245	680	136
9.....	a120	a104	70	44	130	1,100	472	657	167	251	467	133
10.....	164	103	74	42	440	1,000	460	536	176	271	402	129
11.....	153	101	76	40	370	950	434	484	167	293	376	125
12.....	122	99	76	38	300	900	588	497	g2,040	g1,410	g1,890	125
13.....	105	101	*74	37	230	850	643	497	g1,120	g1,410	g1,650	122
14.....	96	96	72	36	190	800	362	434	g398	g620	467	121
15.....	135	98	70	35	150	770	351	434	g931	g620	402	118
16.....	113	a96	68	34	130	1,100	328	398	g643	1,030	364	118
17.....	116	95	66	33	110	2,300	316	410	g422	834	508	117
18.....	116	99	66	32	100	2,300	283	422	g4,650	930	428	116
19.....	121	94	65	*31	94	1,800	283	434	g4,850	g1,660	352	113
20.....	116	91	65	30	92	1,500	272	510	g1,850	1,140	304	115
21.....	151	a70	64	30	92	1,300	258	460	1,700	g1,390	282	233
22.....	147	115	64	30	*94	1,100	254	447	g2,290	1,810	271	225
23.....	a130	89	61	29	160	*900	243	a420	g2,050	1,770	271	508
24.....	117	a89	58	29	180	1,000	237	398	1,280	1,810	236	564
25.....	113	89	56	29	130	1,200	233	398	g998	1,970	219	522
26.....	a113	87	55	28	110	1,510	221	410	866	1,740	207	441
27.....	113	91	55	28	120	1,510	215	386	802	1,390	201	352
28.....	114	89	55	28	180	1,370	210	362	680	1,250	225	293
29.....	108	91	54	27	.....	*1,370	233	410	592	1,170	211	260
30.....	107	a92	54	27	.....	1,620	262	g510	522	930	203	240
31.....	a106	.....	50	27	.....	1,620	.....	g328	.....	1,500	189	.....

* Winter discharge measurement made on this day.

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

g Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Nov. 23, 24, 30, Dec. 1, 2, 4-31, 1948, Jan. 1-4, Jan. 8 to Mar. 6, Dec. 4-31, 1949, Jan. 1 to Mar. 24, 1950.

Little Sioux River near Kennebec, Iowa—Continued
 Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October 1942.....	15,934	770	344	514	0.188	0.22	31,600
November.....	8,875	344	210	296	.108	.12	17,600
December.....	4,520	220	115	146	.053	.06	8,970
Calendar year 1942	296,391	3,930	115	812	.297	4.02	587,900
January 1943.....	3,213	150	88	104	.038	.04	6,370
February.....	38,100	4,620	100	1,361	.499	.52	75,570
March.....	45,440	3,140	800	1,466	.537	.62	90,130
April.....	25,734	1,760	488	858	.314	.35	51,040
May.....	17,971	1,180	325	580	.212	.24	35,640
June.....	53,860	3,500	601	1,795	.658	.73	106,800
July.....	111,010	6,250	1,890	3,581	1.31	1.51	220,200
August.....	31,974	1,780	616	1,031	.378	.44	63,420
September.....	17,104	1,330	289	570	.209	.23	33,930
Water year 1942-43	373,735	6,250	88	1,024	.375	5.08	741,300
October 1943.....	7,615	279	214	246	.090	.10	15,100
November.....	10,640	571	229	355	.130	.14	21,100
December.....	11,848	553	190	382	.140	.16	23,500
Calendar year 1943	374,509	6,250	88	1,026	.376	5.08	742,800
January 1944.....	5,464	418	120	176	.064	.07	10,840
February.....	17,989	3,000	200	620	.227	.25	35,680
March.....	27,004	1,760	533	871	.319	.37	53,560
April.....	24,944	1,550	607	831	.304	.34	49,480
May.....	82,370	8,100	1,520	2,657	.973	1.12	163,400
June.....	111,607	7,810	997	3,720	1.36	1.52	221,400
July.....	75,112	4,110	806	2,423	.888	1.02	149,000
August.....	39,619	3,180	762	1,278	.468	.54	78,580
September.....	36,410	1,920	760	1,214	.445	.50	72,220
Water year 1943-44	450,622	8,100	120	1,231	.451	6.13	893,900
October 1944.....	21,286	956	480	687	.252	.29	42,220
November.....	15,477	578	436	516	.189	.21	30,700
December.....	8,665	380	160	280	.103	.12	17,190
Calendar year 1944	465,947	8,100	120	1,273	.466	6.35	924,300
January 1945.....	5,070	200	130	164	.060	.07	10,060
February.....	20,825	1,700	140	744	.273	.28	41,310
March.....	116,410	8,220	1,000	3,755	1.38	1.59	230,900
April.....	53,290	2,370	1,320	1,776	.651	.73	105,700
May.....	58,940	5,840	1,000	1,901	.696	.80	116,900
June.....	132,050	7,410	2,940	4,402	1.61	1.80	261,900
July.....	50,710	2,920	787	1,636	.599	.69	100,600
August.....	63,407	7,850	562	2,045	.749	.86	125,800
September.....	12,042	996	306	401	.147	.16	23,850
Water year 1944-45	558,172	8,220	130	1,529	.560	7.60	1,107,000
October 1945.....	8,389	365	238	271	.099	.11	16,640
November.....	6,858	274	150	229	.084	.09	13,600
December.....	5,548	340	90	179	.066	.08	11,000
Calendar year 1945	533,539	8,220	90	1,462	.536	7.26	1,058,000
January 1946.....	5,040	350	105	163	.060	.07	10,000
February.....	50,195	5,800	150	1,793	.657	.68	99,560
March.....	63,180	2,410	1,370	2,038	.747	.86	125,300
April.....	29,089	2,200	516	970	.355	.40	57,700
May.....	30,130	2,690	464	972	.356	.41	59,760
June.....	29,589	1,410	500	986	.361	.40	58,690
July.....	15,002	913	225	484	.179	.20	29,760
August.....	5,097	218	133	161	.060	.07	10,110
September.....	6,057	322	122	202	.074	.08	12,010
Water year 1945-46	254,174	5,800	90	696	.255	3.45	504,100

Little Sioux River near Kennebec, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October 1946.....	13,632	778	127	440	0.161	0.19	27,040
November.....	17,830	1,040	338	594	.218	.24	35,370
December.....	12,445	720	195	401	.147	.17	24,680
Calendar year 1946	277,286	5,800	105	760	.278	3.77	550,000
January 1947.....	6,310	320	165	204	.075	.09	12,520
February.....	16,975	1,660	155	606	.222	.23	33,670
March.....	46,010	2,420	540	1,484	.544	.63	91,260
April.....	64,390	3,030	1,300	2,146	.786	.88	127,700
May.....	84,090	8,010	1,380	2,713	.994	1.15	166,800
June.....	75,850	7,740	1,210	2,528	.926	1.03	150,400
July.....	66,590	4,000	594	2,148	.787	.91	132,100
August.....	9,401	550	171	303	.111	.13	18,650
September.....	4,523	220	116	151	.055	.06	8,970
Water year 1946-47	418,046	8,010	116	1,145	.419	5.71	829,200
October 1947.....	4,159	248	99	134	.049	.06	8,250
November.....	6,903	257	200	230	.084	.09	13,690
December.....	5,595	205	150	180	.066	.08	11,100
Calendar year 1947	390,796	8,010	99	1,071	.392	5.34	775,100
January 1948.....	4,315	290	65	139	.051	.06	8,560
February.....	27,915	6,980	60	963	.353	.38	55,370
March.....	64,360	4,910	700	2,076	.760	.88	127,700
April.....	21,630	1,120	487	721	.264	.29	42,900
May.....	21,132	1,250	358	682	.250	.29	41,910
June.....	12,576	1,410	219	419	.153	.17	24,940
July.....	12,376	906	260	399	.146	.17	24,550
August.....	9,593	1,120	77	309	.113	.13	19,030
September.....	3,066	303	65	102	.037	.04	6,080
Water year 1947-48	193,620	6,980	60	529	.194	2.64	384,100
October 1948.....	2,135	89	58	68.9	.025	.03	4,230
November.....	3,296	170	78	110	.040	.04	6,540
December.....	2,481	120	56	80.0	.029	.03	4,920
Calendar year 1948	184,875	6,980	56	505	.185	2.51	366,700
January 1949.....	5,408	750	57	174	.064	.07	10,730
February.....	8,218	1,600	60	294	.108	.11	16,300
March.....	64,250	4,500	800	2,073	.759	.88	127,400
April.....	44,365	2,560	635	1,479	.542	.60	88,000
May.....	19,987	1,200	390	645	.236	.27	39,640
June.....	24,440	2,170	320	815	.299	.33	48,480
July.....	7,353	661	125	237	.087	.10	14,580
August.....	3,880	244	86	125	.046	.05	7,700
September.....	6,200	595	81	207	.076	.08	12,300
Water year 1948-49	192,013	4,500	56	526	.193	2.59	380,800
October 1949.....	3,548	164	90	114	.042	.05	7,040
November.....	2,904	115	70	96.8	.035	.04	5,760
December.....	2,099	96	50	67.7	.025	.03	4,160
Calendar year 1949	192,652	4,500	50	528	.193	2.61	382,100
January 1950.....	1,080	47	27	34.8	.013	.01	2,140
February.....	3,642	440	27	130	.048	.05	7,220
March.....	37,260	2,300	130	1,202	.440	.51	73,900
April.....	13,840	1,270	210	461	.169	.19	27,450
May.....	13,198	830	252	426	.156	.18	26,180
June.....	31,330	4,850	167	1,044	.382	.43	62,140
July.....	29,909	1,970	245	965	.353	.41	59,320
August.....	14,426	1,890	189	465	.170	.20	28,610
September.....	6,357	564	113	212	.078	.09	12,610
Water year 1949-50	159,593	4,850	27	437	.160	2.19	316,500

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 upstream 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 square miles, (combined area above this station and above station on Monona-Harrison ditch, 1 mile west).

RECORDS AVAILABLE.—April 1939 to September 1950. Prior to May 1942 published as Little Sioux River near Blencoe.

GAGE.—Wire-weight gage read once daily. Datum of gage is 1,020.00 feet above mean sea level, datum of 1929 (Corps of Engineers benchmark). Prior to May 1952, wire-weight gage at site 5.8 miles downstream at datum 9.74 feet lower.

AVERAGE DISCHARGE.—11 years, 418 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43 ..	July 7	3,890	21.96	Dec. 19	0.2
1943-44 ..	June 12	4,040	22.4	Jan. 12, 13	60
1944-45 ..	Aug. 8	6,620	(¹)	Jan. 12	130
1945-46 ..	May 23	2,700	18.70	Sept. 4	26
1946-47 ..	June 22	3,640	20.7	Sept. 1, 2, 25-28	.1
1947-48 ..	Mar. 16	3,920	(²)	(³)	0
1948-49 ..	June 2	2,700	(⁴)	many days	0
1949-50 ..	June 18	3,700	22.6	many days	0

(1) Minimum gage height observed, 23.97 feet Aug. 7.

(2) Maximum gage height observed 25.0 feet Feb. 28 (ice jam).

(3) May 29 to June 11, June 17, July 23, Sept. 11-30.

(4) Maximum gage height, 26.0 feet, from floodmark, Mar. 4 (ice jam).

1939-50: Maximum discharge, 6,620 second-feet Aug. 8, 1945; maximum gage height observed, 26.0 feet, from floodmark, Mar. 4, 1949 (ice jam); no flow at times during period September 1939 to October 1940, and several months in 1948, 1949, and 1950, 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. 492), 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.

Little Sioux River near Turin, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	152	15	0.5	0.3	15	1,900	1,540	488	739	2,300	1,190	839
2.....	151	16	.5	.3	40	1,000	1,520	432	683	2,350	1,320	750
3.....	140	12	.5	.3	260	500	1,530	423	1,380	2,810	880	669
4.....	128	11	.5	.3	320	420	1,510	372	1,180	3,160	822	664
5.....	118	14	.5	.3	260	380	1,500	360	1,050	3,380	839	650
6.....	107	12	.5	.5	200	360	1,140	336	1,030	3,490	1,010	642
7.....	97	11	.5	.5	100	360	1,080	340	1,050	3,710	1,050	631
8.....	89	12	.4	.5	160	380	c950	302	1,110	3,630	725	427
9.....	88	12	.4	.5	240	400	c845	288	1,080	3,420	669	412
10.....	82	11	.4	.5	300	420	c850	283	1,050	2,980	477	383
11.....	74	10	.4	1	310	440	c850	283	1,020	2,380	516	423
12.....	68	9	.4	2	300	500	c850	285	1,200	2,570	1,220	1,500
13.....	61	10	.3	3	200	600	c840	279	1,200	1,980	2,210	447
14.....	51	9	.3	5	130	650	c830	279	1,620	1,740	1,520	694
15.....	46	9	.3	7	100	600	825	324	1,640	1,590	839	626
16.....	41	9	.3	5	95	500	784	380	2,230	1,510	799	443
17.....	33	9	.3	4	90	480	767	1,210	1,960	1,560	714	416
18.....	30	9	.3	3	95	500	778	1,210	1,680	1,510	669	393
19.....	27	9	.2	3	160	550	793	1,000	1,570	3,100	598	362
20.....	22	8	.3	3	300	600	666	1,090	1,610	2,670	590	356
21.....	24	7	.3	4	1,300	650	590	1,150	1,640	2,520	580	302
22.....	22	7	.3	5	1,500	750	565	1,120	1,740	2,590	1,040	298
23.....	21	6	.3	6	1,400	*835	550	1,000	2,170	1,590	1,010	283
24.....	19	6	.3	7	1,200	1,300	545	943	1,860	1,640	886	279
25.....	33	6	.3	6	900	1,500	540	895	2,140	1,760	1,040	269
26.....	20	2	.3	5	1,300	1,600	493	796	1,970	1,900	585	249
27.....	16	1	.3	8	2,500	1,650	481	758	1,930	1,930	603	241
28.....	16	1	.3	9	2,550	1,680	458	702	2,430	1,280	540	230
29.....	16	1	.3	*10	.....	1,620	463	697	2,500	1,300	719	227
30.....	20	1	.3	9	.....	1,860	472	435	2,550	1,150	742	211
31.....	14	.....	.3	8	.....	1,740	.....	391	.....	1,200	848	.....
1943-44												
1.....	198	193	346	140	302	585	591	1,560	705	885	2,220	1,220
2.....	200	206	379	150	310	507	843	1,520	600	816	2,150	1,200
3.....	188	212	361	150	367	505	846	1,410	591	756	1,940	1,160
4.....	185	218	354	150	366	507	819	1,390	1,150	649	1,510	1,160
5.....	184	231	394	145	373	516	810	1,310	1,050	626	1,420	975
6.....	183	234	398	110	316	528	774	1,310	1,020	559	1,190	975
7.....	177	238	*394	90	324	432	765	1,330	978	2,710	1,030	876
8.....	177	249	398	80	235	402	768	1,330	1,520	2,480	918	699
9.....	173	270	380	80	220	416	762	1,280	2,210	1,430	870	631
10.....	170	261	391	85	190	424	756	1,270	2,320	1,450	690	603
11.....	170	218	351	75	160	432	750	1,250	3,120	1,650	603	567
12.....	170	210	340	60	130	434	723	1,720	3,870	1,830	589	520
13.....	169	204	310	60	120	720	783	1,480	3,950	2,410	556	500
14.....	169	181	240	65	130	840	771	1,510	3,830	1,990	576	498
15.....	171	178	220	70	130	885	735	1,520	3,810	2,230	1,530	502
16.....	171	185	230	75	130	753	693	1,490	3,750	2,760	1,260	496
17.....	170	200	240	75	120	765	676	1,480	3,410	2,770	1,110	500
18.....	174	215	240	80	110	720	655	1,760	3,250	2,710	795	484
19.....	179	223	250	80	120	554	687	3,360	3,340	2,340	673	612
20.....	183	244	240	75	140	479	717	3,630	2,860	2,090	626	738
21.....	183	258	210	70	155	511	750	2,760	2,940	1,900	600	720
22.....	189	275	190	*65	195	507	825	1,940	2,770	1,870	600	690
23.....	188	278	160	65	210	500	900	1,760	2,470	1,600	612	679
24.....	193	289	170	70	230	1,300	906	1,700	2,440	1,380	589	657
25.....	186	298	180	80	568	1,410	1,050	1,650	1,630	1,250	556	699
26.....	192	334	180	85	*816	1,050	1,110	1,480	1,560	870	511	631
27.....	191	361	170	115	750	789	1,180	1,290	1,470	870	1,010	617
28.....	191	368	160	160	2,280	705	1,220	1,100	1,330	846	960	603
29.....	189	346	140	283	1,220	636	1,250	1,070	1,100	690	948	589
30.....	192	340	135	289	.....	561	1,390	876	1,010	624	1,140	475
31.....	193	.....	130	293	.....	546	.....	822	.....	589	1,170	.....

* Winter discharge measurement made on this day.

c Backwater from Missouri River; discharge computed on basis of gage heights, two discharge measurements and records for nearby stations.

Note—Stage-discharge relation affected by ice Nov. 26 to Dec. 31, 1942, Jan. 1 to Feb. 26, Mar. 2-26, Dec. 12-31, 1943, Jan. 1-28, Feb. 9-24, 1944.

Little Sioux River near Turin, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	534	314	340	150	175	540	825	978	3,300	1,360	563	415
2.....	507	310	260	150	160	500	720	942	2,140	1,320	552	403
3.....	500	306	230	150	150	520	690	918	1,730	1,280	1,160	372
4.....	500	307	220	150	150	560	629	936	1,710	1,200	1,140	366
5.....	500	307	255	150	155	580	600	870	1,800	1,040	2,060	600
6.....	498	305	300	*150	160	570	677	750	1,890	1,040	4,030	356
7.....	486	312	310	150	150	550	696	738	1,860	1,010	5,200	344
8.....	466	333	335	150	150	520	735	720	1,810	1,010	5,390	338
9.....	453	345	320	150	200	540	696	682	1,980	992	3,760	327
10.....	430	*356	305	140	500	600	825	646	2,620	925	1,830	322
11.....	420	353	290	140	600	1,750	915	636	2,590	982	1,560	318
12.....	416	332	280	130	700	3,100	945	622	2,400	938	1,220	318
13.....	418	330	270	140	750	3,990	930	605	2,380	840	1,130	311
14.....	412	337	255	140	840	3,900	936	993	2,340	815	1,080	310
15.....	409	337	250	140	810	4,110	927	933	2,310	697	1,040	311
16.....	409	345	240	140	660	4,180	912	831	3,960	684	1,080	308
17.....	364	345	250	140	450	4,040	918	792	4,040	1,100	1,140	306
18.....	372	345	240	150	440	3,720	900	798	3,890	2,290	1,010	340
19.....	382	350	240	150	350	3,630	936	798	3,780	1,500	800	337
20.....	308	350	220	150	290	3,550	906	858	3,060	970	738	336
21.....	370	351	220	155	240	4,070	885	1,680	2,790	780	679	330
22.....	372	354	210	165	*180	2,830	870	1,570	2,340	702	658	324
23.....	364	358	205	165	180	2,150	1,320	1,390	2,060	672	702	316
24.....	364	350	200	165	190	1,990	1,820	1,310	1,980	900	812	300
25.....	350	350	190	170	230	1,710	1,510	1,270	1,890	878	679	294
26.....	345	337	190	180	350	1,520	1,360	1,470	1,720	845	620	312
27.....	337	333	180	185	500	1,350	1,340	1,770	1,580	825	450	324
28.....	324	330	180	190	550	1,300	1,250	2,100	1,640	679	472	346
29.....	324	332	170	185	.....	1,060	1,200	2,310	1,640	556	453	376
30.....	319	300	160	180	.....	975	912	3,050	1,440	563	432	364
31.....	317	.....	160	175	.....	942	.....	3,580	.....	567	421	.....
1945-46												
1.....	346	d314	360	290	220	1,220	932	282	546	476	74	45
2.....	346	d311	361	360	225	1,080	820	288	487	453	66	35
3.....	334	d305	388	325	230	918	663	363	472	434	58	30
4.....	327	301	382	360	240	*955	714	300	458	400	61	26
5.....	320	306	379	400	800	d908	661	276	410	387	55	173
6.....	312	316	379	475	1,500	770	516	288	336	313	58	153
7.....	312	306	*391	450	1,250	748	489	308	318	201	68	320
8.....	312	301	384	400	950	716	456	316	306	280	57	387
9.....	308	312	369	350	930	684	451	320	291	265	48	171
10.....	313	316	350	250	920	679	437	403	263	252	42	107
11.....	305	318	340	200	900	711	440	374	233	231	33	94
12.....	300	312	330	*180	880	900	440	341	221	217	36	90
13.....	282	332	315	180	860	1,480	424	345	211	192	46	93
14.....	284	344	310	180	825	1,570	424	344	201	169	45	90
15.....	288	340	300	180	633	1,390	427	337	233	178	42	86
16.....	308	337	285	200	479	1,010	394	372	231	169	42	82
17.....	313	333	270	210	493	1,050	372	364	537	140	58	76
18.....	318	327	269	215	593	938	346	323	587	135	39	68
19.....	316	329	265	205	738	825	328	526	653	134	36	68
20.....	312	327	250	200	800	782	324	470	425	128	33	63
21.....	300	325	250	165	875	702	306	402	499	120	320	55
22.....	300	325	250	190	942	785	301	372	677	110	313	58
23.....	306	330	250	190	1,080	775	300	1,460	749	98	269	54
24.....	300	330	250	190	1,090	775	305	1,990	749	102	194	40
25.....	288	335	250	190	1,180	780	299	1,610	957	94	49	46
26.....	292	335	250	200	1,220	1,520	292	1,100	614	85	49	43
27.....	305	335	270	210	1,250	1,140	288	802	614	93	53	42
28.....	318	335	280	250	1,230	1,080	284	759	557	91	47	91
29.....	314	340	285	250	.....	1,060	280	675	575	85	50	67
30.....	322	344	285	240	.....	975	280	647	499	78	48	63
31.....	319	.....	290	225	.....	925	.....	587	.....	77	49	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Nov. 30 to Dec. 31, 1944, Jan. 1 to Mar. 12, Nov. 21-29, Dec. 8-31, 1945, Jan. 1 to Feb. 13, 1946.

Little Sioux River near Turin, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	58	156	170	10	30	84	324	2,070	729	1,290	85	0.1
2.....	50	149	150	10	16	76	308	2,760	485	1,500	73	.1
3.....	37	d144	130	10	18	72	304	1,810	455	1,380	64	.2
4.....	39	d131	*115	10	20	70	294	1,320	430	1,140	59	.2
5.....	62	d134	105	10	19	70	258	1,200	422	1,010	56	.2
6.....	73	154	105	10	18	70	485	1,260	571	1,070	52	.2
7.....	93	159	115	11	16	72	532	1,290	588	1,270	47	a.2
8.....	126	172	140	*12	15	74	544	1,090	428	1,290	41	a.2
9.....	128	159	165	13	14	82	476	755	385	1,180	37	a.2
10.....	118	188	180	14	14	125	685	528	349	1,130	36	.2
11.....	347	191	190	16	12	180	1,010	404	349	1,060	34	a.2
12.....	339	178	185	18	13	385	1,000	360	685	1,110	28	14
13.....	257	194	145	19	19	600	1,020	408	571	916	25	12
14.....	224	210	120	20	60	620	994	442	535	824	23	5.5
15.....	233	217	105	14	180	535	910	576	489	716	16	2.4
16.....	228	286	85	13	270	465	840	784	514	574	15	1.6
17.....	217	269	40	16	320	415	784	714	649	514	13	.4
18.....	225	322	18	18	390	395	745	680	507	485	9.4	.2
19.....	204	392	16	20	375	395	669	664	481	317	11	a.2
20.....	200	424	17	19	325	400	649	654	467	301	15	a.2
21.....	192	489	20	17	290	405	646	632	432	248	11	a.2
22.....	178	523	25	15	260	415	617	599	1,920	217	5.5	a.2
23.....	169	500	30	15	180	430	667	542	2,910	200	4.4	.2
24.....	184	470	30	20	145	430	620	518	2,910	176	2.1	a.2
25.....	178	415	30	28	115	425	558	440	3,170	156	1.6	a.1
26.....	168	340	28	35	105	420	496	385	2,670	145	1.2	a.1
27.....	178	305	23	40	*100	410	457	372	2,080	138	1.2	a.1
28.....	173	270	18	45	92	408	432	354	1,700	122	1.0	a.1
29.....	172	225	15	47	.....	383	446	370	1,190	109	.6	a.2
30.....	163	195	13	45	.....	351	941	364	1,080	101	.4	.2
31.....	169	.....	11	40	.....	332	.....	463	.....	89	.....	.....
1947-48												
1.....	.5	a.5	12	1	1	3,350	148	159	0	56	a50	a.4
2.....	a.5	a2.0	10	1	1	1,210	116	149	0	25	a30	a.3
3.....	a.5	4.4	8.8	1	1	711	95	131	a0	9.9	a10	a.2
4.....	a.5	9.9	6	1	1	632	75	105	a0	4.4	a5.0	a.1
5.....	.5	*13	6	1	1	377	55	98	a0	1.6	a1.0	a.1
6.....	a.5	13	5	1	1	147	47	87	a0	1.0	a.5	a.1
7.....	a.6	13	4	1	1	145	43	67	a0	a.6	a.2	.1
8.....	.6	15	4	1	.5	112	52	63	a0	.3	a.1	a.1
9.....	a.6	14	4	1	.5	139	44	67	0	.2	.1	a.1
10.....	a.6	11	3	.....	.5	113	47	62	a0	.2	a20	a.1
11.....	a.6	11	3	5	.5	69	43	55	a0	.2	a100	a0
12.....	.6	12	3	10	.5	69	37	a49	a.1	.1	156	a0
13.....	.6	13	3	12	.5	48	40	43	a.2	.1	a200	0
14.....	.6	16	2	14	1	272	30	36	.3	a1.1	a220	0
15.....	.6	16	2	12	10	1,480	23	33	a.2	2.1	a300	a0
16.....	a.6	21	2	10	100	3,380	16	29	a.1	1.0	a200	0
17.....	a.6	21	*2	5	200	2,800	12	22	a0	.7	a50	a0
18.....	a.7	19	2	3	600	*2,220	6.6	18	a.1	.6	a20	a0
19.....	a.7	15	2	2	800	1,560	5.0	a14	a.2	.4	a5.0	a0
20.....	a.7	22	2	1	900	922	3.4	d40	.3	a.3	a1.0	a0
21.....	.7	30	2	1	600	1,000	a7.7	d45	a1.0	a.2	.1	0
22.....	.2	40	2	1	350	961	12	d35	a5.0	a.1	.1	a0
23.....	a.2	40	1.5	1	200	958	16	d15	a10	0	a.1	a0
24.....	a.3	33	1.5	1	150	776	26	d10	15	a70	a.1	a0
25.....	a.4	33	1.5	1	200	632	45	d5	22	148	a.1	a0
26.....	a.5	31	1.5	1	200	558	75	d5	23	29	a1.0	a0
27.....	a.2	26	1.5	1	800	908	95	d2	98	a20	169	0
28.....	.1	22	1	1	3,000	410	116	d1	216	a15	41	a0
29.....	.7	19	1	1	*3,780	281	127	0	138	489	a34	a0
30.....	a.6	15	1	1	.....	252	138	0	76	162	.27	a0
31.....	a.4	.....	1	1	.....	203	.....	0	.....	a100	.5	.....

* Winter discharge measurement made on this day.

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

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

Note—Stage-discharge relation affected by ice Nov. 23 to Dec. 31, 1946, Jan. 1 to Mar. 27, Dec. 4-31, 1947, Jan. 1 to Feb. 29, 1948 (no gage-height record Jan. 2-5, 7-9, 16-20, 23-26, 30, Feb. 3, 5, 6, 8, 10; 12, 13, 25, 1948).

Little Sioux River near Turin, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1	0	0	0.1	0	0	400	378	0	0	0.1	0.6	0
2	0	0	.1	0	0	500	324	0	782	.1	.3	0
3	0	0	.1	0	0	800	183	0	62	.1	.2	0
4	0	.1	.1	5.0	0	1,200	157	0	51	.1	.1	14
5	0	1.0	.2	4.0	0	*1,500	136	0	47	.1	0	0
6	.1	.5	.1	3.0	0	*2,500	118	0	42	.1	0	0
7	.2	0	0	2.0	0	2,600	102	0	22	.1	0	0
8	.1	0	0	1.0	0	1,980	83	0	5	.1	0	0
9	0	0	0	.8	.1	1,430	78	0	.3	.1	0	0
10	0	0	.1	.6	.2	1,050	68	0	0	.1	0	0
11	0	0	.2	.4	.2	765	62	0	0	.1	0	100
12	0	0	.2	.2	.2	390	55	0	0	.1	0	41
13	0	0	.2	.2	.2	209	32	0	0	.1	98	2
14	0	0	*.2	.2	.2	151	26	0	0	.1	2	1
15	.1	0	.2	.2	.4	126	25	0	0	.1	0	0
16	.1	.1	.2	.1	1.0	118	37	0	0	.1	0	0
17	.1	.1	.2	.1	2.0	98	26	0	0	.1	0	0
18	.1	.5	.2	.1	5.0	80	20	44	48	.1	0	0
19	.1	1.0	.2	0	6.0	64	16	5	2	.1	0	0
20	.1	2.0	.2	0	5.0	42	0	.3	.5	.1	162	0
21	.1	1.0	.1	0	4.0	44	0	.3	.1	35	2	0
22	.1	.8	.1	0	3.0	90	0	118	.1	2	0	0
23	1	.6	.1	0	3.0	200	0	50	.1	1	0	0
24	0	.4	.1	.1	200	151	0	33	.1	.3	0	0
25	0	.3	.1	.2	350	70	0	.3	.1	59	0	0
26	0	.2	.1	.3	450	42	0	.2	.1	40	0	0
27	0	0	.1	.2	450	33	0	0	.1	20	165	0
28	0	0	.2	.1	400	48	0	0	.1	5	1	0
29	.2	0	.2	0	52	0	0	0	.1	2	0	0
30	.4	.1	.1	0	58	0	0	0	.1	1	0	0
31	.1		.1	0	165			0		.8	0	
1949-50												
1	0	.1	.1	.1	0	9.0	2.1	.2	20	.2	1.0	0
2	0	.1	.1	.1	0	8.5	1.8	.2	1.0	.2	.3	0
3	0	.1	.1	.1	0	8.0	1.6	.2	.5	.2	.2	0
4	0	.1	.1	0	15	1.2	.2	.4	.4	.2	20	0
5	0	.2	.1	.1	.1	200	.8	1.4	.3	.2	10	0
6	0	.2	.1	.1	.2	*800	.4	.6	.3	.2	5	0
7	0	.2	.1	.1	.3	150	.2	.2	.2	.2	17	0
8	0	.2	.2	.1	1.8	70	.1	.2	.2	.2	14	0
9	0	.2	.2	.1	4.0	30	.1	45	.2	.2	8	0
10	20	.2	.2	.1	10	16	.1	.2	.2	.2	5	0
11	9	.2	.2	.1	25	12	.1	.2	.2	.2	482	0
12	6	.2	.2	.1	18	10	.1	.2	.2	32	50	0
13	4	.2	.2	.1	13	8.0	.1	.2	850	1.0	20	0
14	3	.1	.2	.1	10	7.0	.1	.2	50	.2	3.5	0
15	2	.1	.2	.1	8.2	6.0	.1	.2	5.0	.2	1.0	0
16	.2	.1	.2	.1	7.2	5.0	.1	.2	.5	.2	.3	0
17	.2	.1	.3	.1	6.8	*190	.1	.2	.3	25	.2	0
18	.2	.1	.3	.1	6.0	312	.1	.2	1,810	3.0	.1	0
19	.2	.1	.3	*.1	5.6	148	.1	.2	3,450	.6	.1	0
20	.2	.1	.3	.1	5.2	92	.1	.2	1,060	.2	0	0
21	.2	.1	.3	.1	5.0	32	.1	.2	587	.2	0	0
22	.2	.1	*.3	.1	4.5	30	.1	.2	448	.2	0	0
23	.2	.1	.3	.1	4.2	25	.1	.2	32	.2	0	0
24	.2	.1	.3	0	3.9	19	.1	.2	3.0	.2	0	0
25	.2	.1	.2	0	3.6	13	.1	.2	.8	.2	0	0
26	.2	.1	.2	0	3.3	4.6	.1	.2	.3	.2	0	0
27	.2	.1	.2	0	3.1	3.0	.1	.2	.2	.2	0	0
28	.1	.1	.2	0	9.4	2.5	.1	.2	.2	.2	0	0
29	.1	.1	.1	0		2.1	.1	.2	.2	.2	0	0
30	.1	.1	.1	0		1.5	.1	.2	.2	.1	0	0
31	.1		.1	0		1.1		.2		67	0	

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 22 to Dec. 31, 1948, Jan. 1 to Mar. 7, Dec. 1-31, 1949, Jan. 1 to Mar. 16, 1950. Gage read intermittently and stage-discharge relation indeterminate on many days.

Little Sioux River near Turin, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Observed				Adjusted for diversion around station by Monora-Harrison ditch			
	Second- foot-days	Maximum	Minimum	Mean	Runoff in acre-foot	Mean	Per square mile	Runoff in inches
October 1942	1,826	152	14	58.9	3,620	624	0.140	0.16
November	255	16	1	8.5	506	347	.078	.09
December	11.1	.5	.2	.36	22	185	.041	.05
Calendar year 1942	232,538.1	3,720	.2	637	461,200	1,139	.255	3.48
January 1943	117.0	10	.3	3.77	232	142	.032	.04
February	16,325	2,550	15	583	32,380	2,625	.589	.61
March	26,725	1,900	369	862	53,016	2,081	.467	.54
April	25,605	1,540	458	854	50,790	956	.221	.25
May	18,852	1,210	279	608	37,390	685	.154	.18
June	47,042	2,550	683	1,568	93,310	2,302	.516	.58
July	70,700	3,710	1,150	2,281	140,200	4,053	.909	1.05
August	27,250	2,210	477	879	54,050	1,527	.342	.39
September	14,319	1,500	211	477	28,400	761	.171	.19
Water year 1942-43	249,027.1	3,710	.2	682	493,900	1,352	.303	4.13
October 1943	5,648	200	169	182	11,200	304	.068	.08
November	7,523	368	178	251	14,920	424	.095	.11
December	8,281	398	130	267	16,430	432	.097	.11
Calendar year 1943	268,387	3,710	.3	735	532,300	1,352	.303	4.13
January 1944	3,470	293	60	112	6,880	236	.053	.06
February	10,717	2,280	110	370	21,260	868	.195	.21
March	19,919	1,410	402	643	39,510	1,240	.278	.32
April	25,515	1,390	591	850	50,610	1,067	.239	.27
May	49,368	3,630	822	1,593	97,920	3,175	.712	.82
June	66,054	3,950	591	2,202	131,000	5,596	1.25	1.40
July	47,630	2,770	559	1,536	94,470	3,502	.805	.93
August	30,952	2,220	511	998	61,390	2,318	.520	.60
September	21,276	1,220	475	709	42,200	1,495	.335	.37
Water year 1943-44	296,353	3,950	60	810	587,800	1,729	.388	5.28
October 1944	12,630	534	317	407	25,050	759	.170	.20
November	10,014	358	300	334	19,860	579	.130	.14
December	7,475	340	160	241	14,830	378	.085	.10
Calendar year 1944	305,020	3,950	60	833	605,000	1,776	.398	5.42
January 1945	4,825	190	130	156	9,570	233	.052	.06
February	10,260	840	150	366	20,350	1,232	.276	.29
March	61,347	4,180	500	1,979	121,700	5,116	1.15	1.32
April	28,785	1,820	600	960	57,090	2,161	.485	.54
May	37,546	3,580	605	1,211	74,470	2,925	.656	.76
June	70,670	4,040	1,440	2,356	140,200	6,302	1.41	1.58
July	29,860	2,290	556	963	59,230	2,359	.529	.61
August	42,767	5,390	421	1,380	84,830	3,502	.785	.91
September	10,324	600	294	344	20,480	665	.149	.17
Water year 1944-45	326,503	5,390	130	895	647,700	2,189	.491	6.68
October 1945	9,620	346	282	310	19,080	502	.113	.13
November	9,731	344	301	324	19,300	421	.094	.11
December	9,567	391	250	309	18,980	377	.085	.10
Calendar year 1945	325,302	5,390	130	891	645,300	2,154	.483	6.58
January 1946	7,880	475	180	254	15,630	477	.107	.12
February	23,333	1,500	220	833	46,280	3,709	.832	.87
March	29,941	1,570	679	966	59,390	2,798	.627	.72
April	12,963	932	280	433	25,770	1,170	.262	.29
May	17,335	1,990	276	550	34,380	1,677	.376	.43
June	13,909	957	201	464	27,590	1,384	.310	.35
July	6,277	476	77	202	12,450	695	.155	.18
August	2,418	320	33	78.0	4,800	351	.079	.09
September	2,816	387	26	93.9	5,590	450	.101	.11
Water year 1945-46	145,820	1,990	26	400	289,200	1,150	.258	3.50

Little Sioux River near Turin, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Observed				Adjusted for diversion around station by Monona-Harrison ditch			
	Second-foot-days	Maximum	Minimum	Mean	Runoff in acre-feet	Mean	Per square mile	Runoff in inches
October 1946.....	5,182	347	37	167	10,280	655	0.147	0.17
November.....	8,000	523	131	267	15,870	885	.199	.22
December.....	2,539	190	11	81.9	5,040	542	.122	.14
Calendar year 1946..	132,623	1,990	11	363	263,100	1,215	.272	3.69
January 1947.....	630	47	10	20.3	1,250	310	.069	.08
February.....	3,401	375	12	121	6,750	1,035	.232	.24
March.....	9,594	620	70	309	19,030	2,092	.469	.54
April.....	18,711	1,020	258	624	37,110	2,851	.639	.71
May.....	24,808	2,760	354	800	49,210	3,122	.700	.81
June.....	30,151	3,170	349	1,005	59,800	3,990	.895	1.00
July.....	20,748	1,500	89	669	41,150	2,688	.603	.69
August.....	768.6	85	.2	24.8	1,520	424	.095	.11
September.....	40.1	14	.1	1.34	80	220	.049	.06
Water year 1946-47..	124,572.7	3,170	.1	341	247,100	1,568	.351	4.77
October 1947.....	16.0	.7	.1	.516	32	211	.047	.05
November.....	550.8	40	.5	18.4	1,090	328	.074	.08
December.....	101.3	12	1	3.27	201	279	.063	.07
Calendar year 1947..	109,519.8	3,170	.1	300	217,200	1,462	.328	4.44
January 1948.....	96.0	14	1	3.10	190	233	.052	.06
February.....	11,901	3,780	.5	410	23,610	1,766	.396	.43
March.....	26,695	3,380	48	861	52,950	4,232	.949	1.09
April.....	1,595.7	148	3.4	53.2	3,170	992	.222	.25
May.....	1,445	159	0	46.6	2,870	915	.205	.24
June.....	605.5	216	0	20.2	1,200	567	.127	.14
July.....	1,139.1	489	0	36.7	2,260	714	.160	.18
August.....	1,641.9	300	.1	53.0	3,260	639	.143	.17
September.....	1.6	.4	0	.053	3.2	170	.038	.04
Water year 1947-48..	45,788.9	3,780	0	125	90,840	920	.206	2.80
October 1948.....	2.0	.4	0	.065	4.0	105	.024	.03
November.....	8.7	2.0	0	.290	17	191	.043	.05
December.....	4.1	.2	0	.132	8.1	145	.033	.04
Calendar year 1948..	45,135.6	3,780	0	123	89,540	889	.199	2.72
January 1949.....	18.8	5.0	0	.606	37	313	.070	.08
February.....	1,880.5	450	0	67.2	3,730	520	.117	.12
March.....	16,956.0	2,600	33	547	33,630	3,864	.860	.99
April.....	1,926.0	378	0	64.2	3,820	1,879	.421	.47
May.....	251.1	118	0	8.10	498	1,102	.247	.28
June.....	1,062.8	782	0	35.4	2,110	1,364	.306	.34
July.....	168.1	59.0	.1	5.42	333	447	.100	.12
August.....	431.2	165	0	13.9	855	261	.059	.07
September.....	157.1	100	0	5.24	312	952	.213	.24
Water year 1948-49..	22,866.4	2,600	0	62.6	45,350	927	.208	2.83
October 1949.....	25.2	20.0	0	.813	50	218	.049	.06
November.....	3.9	.2	.1	.130	7.7	163	.037	.04
December.....	6.0	.3	.1	.194	12	130	.029	.03
Calendar year 1949..	22,886.7	2,600	0	62.7	45,390	934	.209	2.84
January 1950.....	2.3	.1	0	.074	4.6	63.7	.014	.02
February.....	158.4	25	0	5.66	314	300	.067	.07
March.....	2,230.3	800	1.1	71.9	4,420	2,221	.498	.57
April.....	10.4	2.1	.1	.347	21	634	.142	.16
May.....	52.6	45	.2	1.70	104	692	.155	.18
June.....	8,593.2	3,450	.2	286	17,040	2,746	.616	.69
July.....	133.5	67	.1	4.31	265	1,510	.339	.39
August.....	637.7	482	0	20.6	1,260	1,064	.239	.28
September.....	0	0	0	0	0	341	.076	.09
Water year 1949-50..	11,853.5	3,450	0	32.5	23,500	843	.189	2.58

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 downstream handrail near center of bridge on 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 square miles (combined area above this station and above station on Little Sioux River, 1 mile east).

RECORDS AVAILABLE.—April 1939 to September 1950. Prior to May 1942 published as Monona-Harrison ditch near Blencoe.

GAGE.—Wire-weight gage read once daily. Datum of gage is 1,020.00 feet above mean sea level, datum of 1929 (Corps of Engineers bench mark). Prior to May 1942, wire-weight gage at site 4.8 miles downstream at datum 10.40 feet lower.

AVERAGE DISCHARGE.—11 years, 760 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43 ..	Feb. 28	5,090	(¹)	May 8	56
1943-44 ..	June 16	6,700	21.08	Apr. 13	84
1944-45 ..	Aug. 7	8,300	21.00	Jan. 11	50
1945-46 ..	Feb. 6	6,160	18.15	Dec. 19	30
1946-47 ..	June 22	10,000	19.3	Sept. 29	163
1947-48 ..	Mar. 16	11,800	(²)	Sept. 30	97
1948-49 ..	Mar. 5	10,000	(³)	Oct. 14	80
1949-50 ..	June 18	13,200	22.0	Feb. 1-4	46

(1) Maximum gage height observed, 18.90 feet Feb. 3 (ice jam).

(2) Maximum gage height observed, 22.85 feet Feb. 28 (ice jam).

(3) Maximum gage height observed, 25.6 feet Mar. 4 (ice jam).

1939-50: Maximum discharge, 13,200 second-feet June 18, 1950; maximum gage height, 25.6 feet, from floodmarks, Mar. 4, 1949 (ice jam); minimum discharge observed, 3 second-feet Sept. 8, 1941.

REMARKS.—Records fair except those for period of ice effect, 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 Missouri River. At times part or all of flow of Little Sioux River 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.

Monona-Harrison Ditch near Turin, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	800	395	230	160	105	4,630	399	96	1,020	1,620	725	558
2.....	795	391	220	150	160	4,080	350	76	510	1,520	732	505
3.....	775	386	215	140	1,800	3,690	300	72	962	2,010	675	393
4.....	748	386	210	130	2,700	3,000	250	61	330	2,380	560	393
5.....	730	380	205	120	2,400	2,500	200	65	126	2,670	560	408
6.....	700	384	200	130	1,900	2,000	150	65	97	3,020	528	384
7.....	692	382	195	140	1,500	1,200	130	69	100	3,020	508	388
8.....	675	377	195	150	1,700	1,000	125	66	132	3,220	712	254
9.....	660	382	190	150	2,000	850	120	59	100	2,800	297	233
10.....	648	371	190	150	2,200	650	120	60	97	2,010	369	222
11.....	648	362	190	150	2,000	700	115	60	99	1,450	395	239
12.....	625	364	185	140	1,400	750	110	61	86	1,410	795	661
13.....	608	362	185	140	1,200	800	105	57	1,350	932	1,850	391
14.....	578	362	180	160	1,000	800	98	58	842	708	1,750	408
15.....	568	358	180	180	900	750	96	67	1,240	540	632	384
16.....	568	362	*180	200	800	600	91	76	1,420	685	580	247
17.....	532	362	190	180	750	500	89	86	1,250	632	535	238
18.....	520	354	190	140	950	450	83	77	962	668	710	235
19.....	500	352	180	120	1,500	450	78	86	572	2,500	428	222
20.....	478	344	170	120	2,700	500	76	89	498	2,650	437	170
21.....	458	334	180	130	2,900	540	76	94	450	2,020	455	183
22.....	446	324	185	130	3,000	600	78	91	522	1,850	758	179
23.....	437	320	185	130	3,000	*660	98	89	662	1,900	765	172
24.....	424	332	180	120	3,100	900	111	90	851	1,770	778	160
25.....	421	316	180	110	2,700	1,000	145	82	760	1,800	884	156
26.....	419	289	170	120	3,600	900	76	76	800	1,890	439	151
27.....	406	176	160	130	4,270	812	75	74	902	2,040	430	144
28.....	397	160	150	130	4,950	660	70	105	1,490	1,680	369	150
29.....	406	200	150	130	.....	635	70	145	2,110	1,630	393	146
30.....	460	300	150	*110	.....	660	77	74	1,630	941	502	132
31.....	384	.....	160	105	.....	510	.....	76	.....	965	532	.....
1943-44												
1.....	144	125	241	120	198	848	154	564	905	1,210	3,690	1,260
2.....	142	133	246	120	203	728	382	604	782	1,180	3,260	1,220
3.....	127	141	259	120	229	740	268	691	770	1,120	2,980	1,200
4.....	132	143	264	120	223	742	202	938	755	885	2,240	1,170
5.....	129	154	252	115	212	693	175	922	1,170	818	2,350	1,090
6.....	125	161	256	115	184	633	169	910	1,180	818	2,020	1,030
7.....	120	167	*246	110	198	1,100	160	935	1,190	4,390	1,410	882
8.....	119	178	248	100	223	1,180	150	958	1,420	3,820	1,240	778
9.....	116	187	238	95	210	855	140	975	2,500	2,610	1,060	698
10.....	110	195	177	100	170	1,030	120	1,040	3,160	2,580	955	676
11.....	106	145	189	100	140	633	100	1,070	5,050	2,840	845	628
12.....	135	144	141	90	110	628	90	1,840	6,340	3,340	561	626
13.....	136	141	140	90	110	422	84	1,860	6,310	3,240	609	552
14.....	142	128	135	100	115	597	90	1,770	6,100	2,490	614	544
15.....	109	117	130	100	120	236	95	1,740	6,310	2,630	2,650	650
16.....	106	121	135	100	120	163	95	1,720	6,700	2,930	2,160	932
17.....	101	134	135	90	115	302	100	1,580	6,640	3,090	1,220	808
18.....	109	135	135	90	110	306	108	1,540	5,920	3,260	915	808
19.....	119	159	130	90	110	118	121	3,420	5,390	2,860	760	798
20.....	117	164	125	85	110	125	135	4,360	4,930	2,540	676	788
21.....	117	177	120	85	115	121	149	3,680	4,350	2,350	621	782
22.....	134	185	115	*85	115	123	199	2,160	3,960	2,250	667	725
23.....	136	193	110	95	120	360	251	2,060	3,640	1,840	696	681
24.....	124	201	110	120	121	2,030	331	1,980	3,380	1,670	600	681
25.....	117	213	115	150	754	1,180	382	1,880	3,000	1,420	576	648
26.....	114	238	115	183	*2,330	980	430	1,680	2,800	1,060	542	648
27.....	120	270	120	203	3,140	686	448	1,470	2,430	1,070	870	609
28.....	118	267	120	243	2,980	472	446	1,290	1,800	985	1,060	583
29.....	121	244	120	212	1,560	219	462	1,270	1,530	860	1,030	576
30.....	122	228	120	206	.....	142	462	1,110	1,410	805	1,080	499
31.....	126	.....	115	210	.....	105	.....	1,040	.....	768	955	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 28 to Dec. 31, 1942, Jan. 1 to Feb. 26, Mar. 4-26, Dec. 13-31, 1943, Jan. 1-25, Feb. 9-23, 1944. Stage-discharge relation affected by backwater from Missouri River Apr. 2-14, 1943 and Apr. 7-17, 1944; discharge computed on basis of discharge measurements and records for nearby stations.

Monona-Harrison Ditch near Turin, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	499	223	200	70	80	1,060	1,110	1,110	6,490	2,200	756	466
2.....	480	217	190	70	70	1,000	1,080	1,070	4,750	2,020	730	442
3.....	455	216	180	70	80	980	1,040	1,040	3,530	1,830	1,280	402
4.....	452	210	170	70	80	1,040	955	1,010	2,880	1,830	2,300	470
5.....	448	212	130	70	70	1,120	902	986	2,510	1,700	3,850	542
6.....	448	206	120	*70	60	1,230	919	856	2,680	1,510	7,530	402
7.....	415	220	140	70	60	1,150	1,010	842	2,700	1,360	8,220	350
8.....	609	238	150	70	60	980	1,040	823	2,520	1,320	7,640	342
9.....	570	246	170	70	200	960	1,050	787	2,680	1,240	5,020	337
10.....	535	256	180	60	1,000	1,100	1,120	765	4,220	1,160	2,920	324
11.....	426	246	190	50	1,500	7,260	1,180	759	5,250	1,110	2,260	254
12.....	356	248	170	60	2,000	6,980	1,160	752	5,060	1,070	1,970	254
13.....	344	246	170	60	2,400	6,870	1,130	723	4,540	1,040	1,830	257
14.....	338	251	170	60	2,200	6,620	1,110	1,160	4,110	1,020	1,850	250
15.....	328	254	160	60	1,800	6,490	1,080	1,050	4,560	890	a2,000	248
16.....	324	254	160	70	1,400	6,320	1,050	1,010	6,560	871	2,140	248
17.....	306	262	140	70	1,200	6,130	1,040	1,011	6,320	1,730	2,280	247
18.....	293	265	140	60	1,150	5,300	1,070	962	5,990	3,840	a1,500	311
19.....	299	264	130	70	1,000	4,910	1,150	940	5,650	2,800	1,080	324
20.....	290	262	130	70	900	4,770	1,100	902	5,020	1,590	1,040	295
21.....	275	265	120	70	800	3,880	1,050	2,570	4,100	1,210	a950	272
22.....	265	267	120	70	*640	3,760	1,050	2,050	3,640	1,080	890	254
23.....	257	265	110	80	520	3,300	1,400	1,910	3,160	1,000	a820	250
24.....	257	264	110	80	560	2,700	2,110	1,900	2,800	1,040	a760	232
25.....	238	262	100	90	1,000	2,150	1,910	1,850	2,740	1,180	712	216
26.....	243	256	90	100	1,200	2,070	1,590	2,620	2,580	1,130	686	240
27.....	238	252	90	110	1,200	1,700	1,490	2,750	2,880	1,010	626	270
28.....	223	248	80	120	1,000	1,570	1,460	3,080	3,280	928	596	337
29.....	238	248	80	120	.....	1,350	1,400	3,250	2,950	842	a560	412
30.....	223	238	80	120	.....	1,300	1,240	5,590	2,240	830	a520	382
31.....	228	.....	70	110	.....	1,200	.....	7,020	.....	796	492	.....
1945-46												
1.....	376	114	101	50	512	2,970	1,130	448	1,250	1,030	276	164
2.....	364	109	113	50	514	2,460	1,090	509	1,130	933	259	157
3.....	324	106	115	158	504	2,110	1,040	719	1,010	884	239	149
4.....	297	104	113	203	404	*1,850	990	605	915	772	232	144
5.....	270	100	115	306	1,550	1,680	951	582	893	711	224	484
6.....	246	108	125	546	5,570	1,540	921	578	851	687	209	463
7.....	227	106	*134	450	5,090	1,300	907	572	722	673	259	966
8.....	225	99	130	434	4,380	1,220	915	568	640	625	243	1,240
9.....	215	97	125	320	4,150	1,150	893	608	630	612	214	865
10.....	213	91	120	216	3,750	1,240	870	711	615	552	198	635
11.....	208	87	75	*191	3,420	1,480	859	684	552	526	180	452
12.....	202	89	60	210	2,740	2,060	845	668	533	495	185	419
13.....	196	93	60	222	2,240	2,520	803	655	516	475	189	375
14.....	192	106	55	225	2,200	2,840	803	640	509	426	190	350
15.....	185	110	50	200	2,130	2,600	823	645	565	408	185	322
16.....	178	94	40	185	2,100	1,900	750	719	550	470	174	288
17.....	a172	92	35	146	2,160	1,780	719	590	915	448	177	269
18.....	167	90	35	129	2,410	1,270	648	1,410	887	430	173	255
19.....	159	93	30	118	3,120	1,260	608	1,040	1,320	413	164	250
20.....	155	92	35	109	3,010	1,560	595	898	1,200	383	161	239
21.....	145	90	35	107	3,200	1,540	565	697	1,160	362	870	226
22.....	143	92	35	111	3,310	1,550	558	803	1,000	315	851	222
23.....	137	92	35	106	3,380	1,550	552	2,450	1,060	306	638	207
24.....	129	93	35	103	3,720	1,560	545	4,100	1,040	320	484	196
25.....	122	94	35	99	3,760	1,520	466	2,830	1,580	304	255	202
26.....	118	93	40	106	3,840	2,560	450	2,140	1,210	293	236	195
27.....	109	93	40	213	4,060	2,160	450	1,820	990	299	269	189
28.....	106	92	40	290	3,300	2,070	457	1,640	1,010	288	197	281
29.....	104	93	50	348	.....	1,990	450	1,480	1,220	281	201	245
30.....	125	94	50	454	.....	1,800	455	1,440	1,140	269	196	236
31.....	121	.....	50	504	.....	1,700	.....	1,400	.....	272	183	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Dec. 1-31, 1944, Jan. 1 to Mar. 10, Dec. 9-31, 1945, Jan. 1, 2, 15, 16, 1946.

Monona-Harrison Ditch near Turin, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	209	450	620	220	265	945	1,360	4,850	2,070	3,730	689	258
2.....	225	428	590	220	250	855	1,330	5,600	1,780	3,840	655	253
3.....	185	419	550	220	225	810	1,390	4,450	1,740	3,600	612	239
4.....	190	426	540	220	210	790	1,560	3,280	1,650	3,120	502	224
5.....	430	415	550	225	200	780	1,530	3,100	1,600	2,810	572	208
6.....	582	408	575	230	200	780	1,720	3,380	1,960	2,930	540	194
7.....	582	437	640	235	205	800	1,780	3,390	2,020	3,210	516	190
8.....	450	470	668	240	210	825	1,970	3,110	1,670	3,150	504	184
9.....	468	477	658	250	215	970	1,920	2,360	1,540	2,970	488	176
10.....	461	495	640	260	225	1,160	2,400	1,840	1,470	2,860	466	202
11.....	722	523	612	290	245	1,620	3,600	1,690	1,440	2,740	435	188
12.....	711	533	550	300	275	2,320	3,590	1,630	1,800	2,620	411	430
13.....	648	548	510	315	350	2,980	3,170	1,580	2,270	2,500	394	381
14.....	590	558	460	330	555	3,280	2,860	1,550	2,250	2,380	383	299
15.....	588	618	435	335	920	3,120	2,720	1,690	2,030	2,080	370	271
16.....	582	792	355	320	1,560	2,800	2,580	2,220	2,000	1,850	358	258
17.....	578	876	350	295	1,930	2,490	2,520	2,290	2,500	1,740	352	226
18.....	542	945	320	300	2,160	2,310	2,410	2,200	2,220	1,680	332	224
19.....	523	999	340	305	2,450	2,210	2,240	2,080	2,150	1,400	328	214
20.....	535	978	345	295	1,980	2,200	2,140	1,990	2,110	1,250	326	200
21.....	459	890	360	285	1,790	2,250	2,110	1,980	2,000	1,160	311	196
22.....	472	842	370	265	1,620	2,290	2,250	1,880	5,220	1,070	299	191
23.....	468	823	385	260	1,530	2,290	2,770	1,720	7,210	1,050	290	181
24.....	479	720	395	265	1,400	2,270	3,100	1,700	7,120	986	276	178
25.....	475	670	405	295	1,320	2,180	2,510	1,570	7,430	951	269	174
26.....	504	650	400	315	1,200	2,080	1,850	1,500	5,850	915	266	171
27.....	516	484	385	360	*1,100	1,850	1,660	1,510	5,040	870	272	168
28.....	493	530	390	405	1,000	1,600	1,540	1,380	4,390	842	267	166
29.....	507	568	335	430	.....	1,550	1,570	1,430	3,580	792	269	163
30.....	472	588	285	375	.....	1,440	2,670	1,480	3,430	750	266	164
31.....	477	.....	240	310	.....	1,400	.....	1,470	.....	719	263	.....
1947-48												
1.....	182	286	293	210	130	8,200	1,350	1,480	455	903	891	a616
2.....	175	304	281	210	130	4,800	1,290	1,340	436	837	735	489
3.....	182	311	299	200	130	3,560	1,190	1,320	421	762	394	350
4.....	194	330	261	200	130	3,190	1,070	1,250	400	576	350	244
5.....	208	338	286	215	130	3,000	960	1,170	386	542	332	217
6.....	214	342	309	220	130	2,800	927	1,130	371	520	338	198
7.....	259	330	322	230	120	2,650	891	1,100	340	a524	326	180
8.....	290	320	280	240	120	2,500	912	1,100	310	529	310	a168
9.....	240	304	250	250	120	2,200	873	1,060	310	520	298	157
10.....	232	309	250	260	120	1,800	921	1,050	298	509	637	151
11.....	208	295	280	290	120	1,400	840	1,000	286	564	494	154
12.....	196	286	300	340	120	1,200	912	a983	455	556	666	154
13.....	181	279	320	420	130	1,100	840	966	434	552	804	136
14.....	175	283	340	480	140	2,000	822	927	419	529	852	124
15.....	169	291	340	440	150	4,000	804	840	398	476	2,230	a122
16.....	162	348	320	370	200	9,560	735	750	a392	444	1,400	119
17.....	162	372	*300	300	700	8,200	706	738	386	413	666	111
18.....	164	352	280	250	2,500	7,120	684	714	360	390	a550	109
19.....	161	342	270	200	3,000	6,000	666	682	330	371	434	105
20.....	159	330	270	200	3,200	5,260	648	a770	411	356	298	119
21.....	157	318	260	180	2,200	2,920	a693	a790	434	a399	250	115
22.....	156	309	260	*160	1,400	2,760	738	a745	425	442	235	a134
23.....	151	295	250	160	1,200	2,710	792	a715	a541	430	213	112
24.....	269	286	240	150	1,100	2,580	840	a650	656	415	172	113
25.....	247	253	250	140	1,200	2,170	972	a575	888	609	a184	110
26.....	304	283	260	140	1,400	2,210	1,110	a535	981	566	196	107
27.....	295	304	270	140	2,000	2,100	1,140	520	1,170	566	861	105
28.....	253	311	260	130	8,000	1,980	1,190	507	1,480	520	810	100
29.....	253	295	240	130	*9,300	1,590	1,290	498	1,200	2,700	750	a98
30.....	258	286	220	130	.....	1,490	1,360	502	1,020	2,150	756	97
31.....	274	.....	220	130	.....	1,440	.....	498	.....	1,320	744	.....

* Winter discharge measurement made on this day.
a No or doubtful gage-height record; discharge computed on basis of records for nearby stations.

Note—Stage-discharge relation affected by ice Nov. 24-26, Nov. 30 to Dec. 6, Dec. 12-31, 1946, Jan. 1 to Mar. 27, Dec. 8-31, 1947, Jan. 1 to Feb. 29, Mar. 5-15, 1948 (no gage-height record Jan. 16-20, 23, 25, 26, 30, Feb. 3, 5, 6, 8, 11-13, 25, 1948).

Monona-Harrison Ditch near Turin, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	93	165	152	100	115	2,200	3,000	900	1,220	627	250	131
2.....	94	159	147	100	115	2,100	3,100	880	4,450	590	231	124
3.....	90	158	148	110	*115	4,000	3,000	850	2,880	554	215	128
4.....	88	157	143	1,500	115	7,000	2,800	830	2,640	531	199	2,160
5.....	82	198	178	1,200	115	*9,200	2,700	820	2,340	509	193	2,820
6.....	96	180	203	1,000	115	*8,200	2,600	830	2,160	498	162	1,890
7.....	103	168	240	700	115	*5,600	2,600	900	1,840	542	165	1,840
8.....	95	162	250	500	110	5,000	2,500	1,050	1,640	566	157	1,840
9.....	90	162	220	430	110	4,600	2,450	900	1,540	602	138	1,740
10.....	84	157	190	380	110	4,200	2,150	870	930	360	136	1,940
11.....	81	152	160	340	110	3,500	1,950	820	900	350	120	2,580
12.....	82	139	145	300	110	3,180	1,700	800	840	330	666	2,880
13.....	81	131	140	270	110	3,060	1,540	780	1,080	310	590	2,220
14.....	80	123	*135	250	110	2,760	1,460	740	1,020	290	280	1,020
15.....	95	120	130	230	110	2,280	1,380	720	975	280	250	780
16.....	104	116	130	210	110	2,040	1,420	710	930	270	260	640
17.....	105	150	125	190	110	1,590	1,470	700	900	260	260	487
18.....	103	203	125	180	110	1,260	1,500	880	1,020	260	260	382
19.....	103	226	125	170	130	1,180	1,550	1,100	1,110	250	509	350
20.....	107	300	125	160	140	1,110	1,600	1,500	990	614	360	330
21.....	106	310	125	150	140	1,400	1,550	900	960	455	280	305
22.....	108	300	125	140	150	1,750	1,450	2,700	800	320	250	280
23.....	106	290	120	130	210	2,050	1,350	2,160	627	270	239	248
24.....	107	280	120	130	500	2,300	1,270	1,990	542	235	217	210
25.....	105	250	120	120	2,000	2,700	1,190	1,540	661	213	204	194
26.....	108	220	115	115	2,600	2,900	1,140	1,300	780	239	198	190
27.....	106	211	115	115	2,500	2,700	1,100	1,180	1,380	1,640	250	185
28.....	105	198	110	115	2,300	2,650	1,010	1,140	1,140	554	183	172
29.....	194	180	105	115	.....	3,500	960	1,180	900	509	151	168
30.....	182	157	105	115	.....	2,880	940	1,140	653	413	146	157
31.....	170	.....	105	115	.....	3,000	.....	1,110	.....	260	136	.....
1949-50												
1.....	167	195	158	94	46	450	1,580	385	470	700	1,330	360
2.....	167	190	158	88	46	480	1,502	410	440	685	910	340
3.....	166	184	158	82	46	430	1,420	395	410	670	820	280
4.....	167	178	163	76	46	700	1,140	380	380	640	1,330	280
5.....	170	178	158	74	47	1,800	1,100	670	360	625	1,090	271
6.....	171	173	158	76	50	*5,000	950	645	335	610	715	262
7.....	172	173	153	78	60	*3,500	850	420	318	595	950	254
8.....	173	173	148	78	70	2,500	750	658	310	595	1,370	246
9.....	175	163	143	78	210	1,950	700	1,220	294	580	820	196
10.....	467	178	143	76	700	1,700	650	950	294	550	580	238
11.....	371	168	143	74	1,000	1,550	600	915	286	482	5,400	238
12.....	286	173	140	72	1,050	1,400	700	850	4,680	2,330	3,430	223
13.....	256	163	140	70	900	1,350	850	790	4,630	3,640	1,900	223
14.....	234	153	135	68	580	1,250	500	700	1,060	1,600	1,290	223
15.....	220	153	135	64	400	1,250	450	645	1,220	950	930	216
16.....	205	143	130	62	300	1,400	420	595	915	1,290	700	216
17.....	195	163	128	58	240	*2,800	400	640	545	1,330	1,010	216
18.....	192	158	125	56	200	4,000	380	680	10,200	1,210	1,450	216
19.....	190	153	125	*54	170	3,500	370	740	12,200	2,130	930	209
20.....	195	153	120	52	160	3,200	360	780	8,150	2,250	550	246
21.....	300	148	115	52	*160	2,900	350	840	6,750	2,250	470	470
22.....	275	148	*115	51	170	2,700	340	780	5,670	2,130	508	382
23.....	245	143	110	50	200	2,700	340	720	3,500	2,490	482	540
24.....	225	148	110	50	250	2,850	330	660	2,850	2,430	470	740
25.....	205	153	105	50	300	2,900	320	680	2,250	2,370	458	700
26.....	195	153	103	49	260	2,850	320	700	1,410	2,190	445	620
27.....	190	163	103	49	240	2,640	310	640	1,210	1,750	445	540
28.....	190	163	102	48	350	2,050	300	600	950	1,550	432	470
29.....	190	158	100	48	.....	1,620	350	1,000	930	1,500	420	430
30.....	105	158	100	47	.....	1,580	371	800	775	1,450	395	380
31.....	195	.....	95	47	.....	1,620	.....	520	.....	3,120	330	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 7-31, 1948, Jan. 1 to Mar. 10, Dec. 13-31, 1949, Jan. 1 to Mar. 26, 1950 (no gage-height Jan. 5, 27-30, Feb. 9, 16, 1949, Jan. 24 to Feb. 4, Mar. 21, 1950). No or doubtful gage-height record Oct. 13, 27, Nov. 3, 10, Dec. 1, 1948, Mar. 21 to Apr. 12, Apr. 17 to May 22, June 15, 22, 25, 29, July 13, Aug. 3, 17, Sept. 21, Oct. 1-9, 15-28, 1949, Apr. 5-29, May 1-5, May 17 to June 5, Sept. 23-30, 1950; discharge computed on basis of records for nearby stations.

Monona-Harrison Ditch near Turin, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet			Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October 1942.....	17,506	800	384	565		34,720
November.....	10,167	395	160	339		20,170
December.....	5,730	230	150	185		11,370
Calendar year 1942	183,224	4,840	8	502		363,400
January 1943.....	4,295	200	105	139		8,520
February.....	57,185	4,950	105	2,042		113,400
March.....	37,777	4,630	450	1,219		74,930
April.....	3,961	399	70	132		7,860
May.....	2,392	145	56	77.2		4,740
June.....	22,030	2,110	86	734		43,700
July.....	54,931	3,220	540	1,772		109,000
August.....	20,083	1,850	297	648		39,830
September.....	8,506	661	132	284		16,870
Water year 1942-43	244,563	4,950	56	670		485,100
October 1943.....	3,793	144	101	122		7,520
November.....	5,188	270	117	173		10,290
December.....	5,102	264	110	165		10,120
Calendar year 1943	225,243	4,950	56	617		446,800
January 1944.....	3,842	243	85	124		7,620
February.....	14,445	3,140	110	498		28,650
March.....	18,497	2,030	105	597		36,690
April.....	6,498	462	84	217		12,800
May.....	49,057	4,360	564	1,582		97,300
June.....	101,822	6,700	755	3,394		202,000
July.....	63,729	4,390	768	2,056		126,400
August.....	40,912	3,690	542	1,320		81,150
September.....	23,570	1,260	199	786		46,750
Water year 1943-44	336,455	6,700	84	919		667,400
October 1944.....	10,900	609	223	352		21,620
November.....	7,361	267	206	245		14,600
December.....	4,240	200	70	137		8,410
Calendar year 1944	344,873	6,700	70	942		684,100
January 1945.....	2,390	120	50	77.1		4,740
February.....	24,230	2,400	60	865		48,060
March.....	97,250	7,260	960	3,137		192,900
April.....	36,056	2,110	902	1,202		71,520
May.....	53,118	7,020	723	1,713		105,400
June.....	118,390	6,560	2,240	3,946		234,800
July.....	43,257	3,840	796	1,395		85,800
August.....	65,808	8,220	492	2,123		130,500
September.....	9,630	542	216	321		19,100
Water year 1944-45	472,630	8,220	50	1,295		937,400
October 1945.....	5,930	376	104	191		11,760
November.....	2,906	114	87	96.9		5,760
December.....	2,111	134	30	68.1		4,190
Calendar year 1945	461,076	8,220	30	1,263		914,500
January 1946.....	6,909	546	50	223		13,700
February.....	80,524	5,570	404	2,876		159,700
March.....	56,790	2,970	1,150	1,832		112,600
April.....	22,108	1,130	450	737		43,850
May.....	34,649	4,100	448	1,118		68,730
June.....	27,613	1,580	509	920		54,770
July.....	15,262	1,030	269	492		30,270
August.....	8,451	870	161	273		16,760
September.....	10,685	1,240	144	356		21,190
Water year 1945-46	273,938	5,570	30	751		543,300

Monona-Harrison Ditch near Turin, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October 1946.....	15,125	722	185	488			30,000
November.....	18,560	999	408	619			36,810
December.....	14,258	668	240	460			28,280
Calendar year 1946	310,934	5,570	50	852			616,700
January 1947.....	8,970	430	220	289			17,790
February.....	25,590	2,450	200	914			50,760
March.....	55,245	3,280	780	1,782			132,500
April.....	66,820	3,600	1,330	2,227			109,600
May.....	71,970	5,600	1,380	2,322			132,500
June.....	89,540	7,430	1,440	2,985			142,800
July.....	62,575	3,840	719	2,019			177,600
August.....	12,371	689	263	399			124,100
September.....	6,571	430	163	219			24,540
Water year 1946-47	447,595	7,430	163	1,226			13,030
October 1947.....	6,530	304	151	211			887,800
November.....	9,292	372	253	310			12,950
December.....	8,551	340	220	276			18,430
Calendar year 1947	424,025	7,430	151	1,162			16,960
January 1948.....	7,115	480	130	230			841,100
February.....	39,320	9,300	120	1,360			14,110
March.....	104,490	9,560	1,100	3,370			77,990
April.....	28,166	1,360	648	939			207,300
May.....	26,905	1,480	498	868			55,870
June.....	16,394	1,480	286	546			53,370
July.....	20,990	2,700	356	677			32,520
August.....	18,176	2,230	172	586			41,630
September.....	5,094	616	97	170			36,050
Water year 1947-48	291,023	9,560	97	795			10,100
October 1948.....	3,253	194	80	105			577,300
November.....	5,722	310	116	191			6,450
December.....	4,476	250	105	144			11,350
Calendar year 1948	280,101	9,560	80	765			8,880
January 1949.....	9,680	1,500	100	312			555,600
February.....	12,685	2,600	110	453			19,200
March.....	101,890	9,290	1,110	3,286			25,160
April.....	54,430	3,100	940	1,814			202,100
May.....	33,920	2,700	700	1,094			108,000
June.....	39,848	4,450	542	1,328			67,280
July.....	13,701	1,640	213	442			79,040
August.....	7,655	666	130	247			27,180
September.....	28,391	2,880	124	946			15,180
Water year 1948-49	315,651	9,200	80	865			56,310
October 1949.....	6,744	467	166	218			626,100
November.....	4,900	195	143	163			13,380
December.....	4,019	163	95	130			9,720
Calendar year 1949	317,863	9,200	95	871			7,970
January 1950.....	1,971	94	47	63.6			630,500
February.....	8,251	1,050	46	295			3,910
March.....	66,620	5,000	430	2,149			16,370
April.....	19,001	1,580	300	633			132,100
May.....	21,408	1,220	380	691			37,690
June.....	73,792	12,200	286	2,460			42,460
July.....	46,892	3,640	482	1,506			146,400
August.....	32,360	5,400	330	1,044			92,610
September.....	10,225	740	196	341			64,190
Water year 1949-50	295,983	12,200	46	811			20,280

Maple River at Mapleton, Iowa

LOCATION.—Lat. 42°09', long. 95°48', in SE¼ sec. 23, T. 85N., R. 43 W., on upstream handrail near center of bridge on State Highway 35, 80 feet downstream from Chicago & North Western Railway bridge, 0.8 mile southwest of Mapleton, 12.5 miles northeast of Turin, and 16 miles upstream from mouth.

DRAINAGE AREA.—661 square miles.

RECORDS AVAILABLE.—October 1941 to September 1950. April 1939 to October 1941 at site 14 miles downstream, published as Maple River at Turin, records not equivalent.

GAGE.—Wire-weight gage read once daily. Auxiliary water-stage recorder operates above gage height 9.5 feet. Datum of gage is 1,085.86 feet above mean sea level, datum of 1929. April 1939 to October 1941, wire-weight gage 14 miles downstream at datum 57.41 feet lower.

AVERAGE DISCHARGE.—9 years (1941-50), 222 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43 ..	June 16	3,940	18.85	Jan. 19	15
1943-44 ..	June 13	4,730	20.00	Dec. 15	17
1944-45 ..	Aug. 7	7,570	21.00	Sept. 21, 22	0
1945-46 ..	May 24	4,760	17.45	Dec. 20-25	25
1946-47 ..	June 22	4,800	17.0	Sept. 28	31
1947-48 ..	Feb. 27	7,840	(¹)21.1	Oct. 22, Sept. 17, 21	24
1948-49 ..	Mar. 4	7,000	(²)19.2	Jan. 30 to Feb. 18	13
1949-50 ..	June 12	13,000	22.1	Feb. 2-7	8.0

(1) Floodmark.

(2) Floodmark (backwater from ice).

1939-50: Maximum discharge, 13,000 second-feet June 12, 1950 (gage height, 22.1 feet); 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.

Maple River at Mapleton, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	58	43	24	22	25	190	96	72	48	363	104	78
2.....	57	42	23	21	40	180	91	58	147	228	168	78
3.....	58	42	22	20	500	140	84	54	226	233	135	74
4.....	56	42	22	18	900	100	90	51	166	200	120	67
5.....	54	41	23	18	700	90	83	49	121	282	108	67
6.....	53	42	22	19	600	85	78	46	85	575	102	83
7.....	51	41	21	20	550	82	73	44	133	580	96	80
8.....	51	41	23	18	500	85	71	44	153	305	90	76
9.....	47	42	24	19	480	90	71	45	136	218	85	72
10.....	48	44	24	20	440	95	85	44	172	164	84	65
11.....	46	44	24	21	360	100	90	44	84	136	74	63
12.....	46	42	23	18	320	110	88	60	76	118	898	150
13.....	45	42	22	16	300	120	84	45	71	127	3,000	319
14.....	44	42	24	40	280	130	80	46	113	108	3,520	165
15.....	44	41	*26	60	260	135	74	58	463	90	859	100
16.....	44	41	28	50	240	120	70	154	1,770	84	382	78
17.....	44	41	27	40	240	95	66	302	838	70	249	73
18.....	43	40	25	20	260	90	62	306	423	236	190	66
19.....	42	40	24	15	400	95	62	184	373	1,150	170	63
20.....	42	40	23	18	690	100	63	125	224	1,450	148	52
21.....	42	40	23	20	955	120	61	98	128	943	138	58
22.....	42	46	24	21	775	140	60	87	491	538	148	57
23.....	41	46	25	20	679	*186	60	84	1,100	488	133	52
24.....	43	46	24	18	450	591	59	81	382	275	112	50
25.....	43	42	23	17	200	420	58	80	321	214	130	50
26.....	42	20	23	18	180	301	56	76	252	191	221	48
27.....	43	20	23	*19	180	277	56	68	296	168	110	48
28.....	44	24	21	20	200	146	56	63	550	139	107	46
29.....	44	26	21	20	.....	112	120	56	1,170	127	99	42
30.....	44	27	21	20	.....	105	76	54	698	120	91	40
31.....	44	.....	22	20	.....	100	.....	52	.....	108	84	.....
1943-44												
1.....	45	60	64	26	60	141	146	80	181	230	2,400	514
2.....	47	51	54	26	58	179	218	71	164	220	1,970	302
3.....	43	47	44	26	60	134	246	65	155	200	878	271
4.....	41	42	50	26	58	141	204	66	990	180	490	246
5.....	41	42	48	25	57	108	117	68	680	170	953	200
6.....	41	42	*56	25	59	84	98	82	230	180	1,020	152
7.....	40	44	50	24	58	74	66	98	200	1,000	588	215
8.....	34	42	49	24	58	67	71	111	703	400	575	198
9.....	40	45	46	23	52	69	59	92	1,920	500	562	204
10.....	38	43	36	22	40	73	102	108	780	1,300	343	198
11.....	38	40	35	21	30	76	117	478	3,260	900	280	199
12.....	38	39	30	21	20	89	105	353	3,680	500	277	198
13.....	40	38	22	20	25	139	122	162	4,040	400	261	191
14.....	40	40	19	21	25	267	199	61	4,410	400	357	191
15.....	41	42	17	21	24	705	280	67	3,100	450	790	191
16.....	40	45	20	21	25	469	310	68	2,200	1,500	850	184
17.....	39	48	23	21	25	330	412	98	2,130	900	330	178
18.....	40	50	25	22	20	199	277	1,640	1,760	780	285	173
19.....	40	54	24	22	23	263	432	1,730	1,480	700	263	170
20.....	40	60	25	23	26	255	455	1,760	1,160	620	245	178
21.....	40	64	23	22	28	156	261	1,480	725	580	232	172
22.....	40	62	20	*22	37	129	217	700	502	500	254	165
23.....	40	60	18	30	44	626	140	420	450	410	232	170
24.....	38	60	18	75	140	1,200	190	310	390	370	217	192
25.....	39	69	19	90	958	798	180	275	340	350	211	177
26.....	40	64	22	88	*755	277	140	261	310	390	280	172
27.....	40	60	25	87	277	169	130	250	280	380	478	165
28.....	39	50	25	81	246	208	100	270	250	338	423	165
29.....	37	59	24	74	190	233	90	250	240	310	328	158
30.....	39	60	26	72	.....	266	90	220	240	293	600	158
31.....	41	.....	26	64	.....	222	.....	200	.....	280	682	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 26 to Dec. 31, 1942, Jan. 1 to Feb. 19, Feb. 25 to Mar. 22, Dec. 12-31, 1943, Jan. 1-24, Feb. 1-5, 9-23, 1944. No gage-height record Oct. 18, 25, 1942, Mar. 25, May 6, 23, 30, July 4, 15, 17, Aug. 4, 8, 19, 25, Sept. 12, 15, 29, 30, Oct. 20, 25, Nov. 8-11, 13-18, 20-22, Dec. 13, 14, 22, 1943, Apr. 24-29, May 22-25, 27-31, June 3-7, June 23 to July 15, July 17-26, Aug. 20, Sept. 5, 1944; discharge computed on basis of records for nearby stations.

Maple River at Mapleton, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	152	98	55	45	60	190	a230	365	4,220	294	275	206
2.....	146	98	50	45	55	210	232	a430	2,860	a300	320	a205
3.....	152	98	50	45	55	230	a225	492	1,530	a375	772	205
4.....	152	94	65	45	50	240	a220	363	727	a450	892	199
5.....	158	94	80	45	50	210	a215	a345	482	540	837	199
6.....	158	102	96	45	45	190	210	327	478	318	4,400	189
7.....	152	102	104	45	45	170	381	312	534	236	6,800	187
8.....	146	102	98	*45	45	150	430	288	580	199	3,200	182
9.....	140	102	101	40	150	220	469	a280	591	200	997	179
10.....	140	101	92	35	300	1,420	349	322	648	194	624	172
11.....	128	101	90	40	400	3,390	292	317	703	188	525	172
12.....	128	100	80	45	500	5,570	275	a310	558	218	547	174
13.....	128	114	75	45	800	3,920	260	a300	490	184	440	a170
14.....	122	114	75	45	650	1,190	246	432	478	233	343	a170
15.....	122	110	70	45	500	997	240	410	a500	188	381	a165
16.....	117	109	70	45	450	986	a230	379	518	1,100	440	a160
17.....	122	107	70	50	400	949	453	336	a560	2,260	a400	a180
18.....	122	102	65	50	300	587	418	313	620	3,670	345	199
19.....	122	101	60	50	250	573	331	296	492	2,110	270	203
20.....	122	100	60	55	200	484	245	304	a465	636	256	184
21.....	128	100	60	60	140	424	284	1,470	436	503	249	0
22.....	122	100	55	60	*120	383	1,640	1,480	385	430	226	0
23.....	117	100	55	65	115	376	2,110	830	325	363	310	a100
24.....	117	101	50	70	115	361	1,150	643	a330	631	231	177
25.....	112	102	50	80	250	345	747	505	338	580	211	186
26.....	112	99	50	85	260	334	569	410	318	482	a210	201
27.....	107	99	50	85	220	313	478	400	297	385	207	a250
28.....	107	98	50	90	200	292	440	499	370	318	196	294
29.....	107	98	50	90	.....	272	404	503	381	270	199	312
30.....	107	69	50	80	.....	a250	381	492	308	492	367	270
31.....	107	.....	50	70	.....	230	.....	2,770	.....	260	211	.....
1945-46												
1.....	217	a100	96	40	65	297	370	127	357	a280	94	50
2.....	197	100	123	40	65	256	313	120	325	a260	96	50
3.....	174	100	a128	50	80	288	309	197	334	240	92	49
4.....	181	a98	134	70	115	194	303	207	290	220	90	1,400
5.....	178	96	a130	90	700	*286	293	215	280	210	93	705
6.....	166	94	a125	120	1,700	352	292	204	267	200	97	630
7.....	162	94	*123	160	1,500	442	272	194	263	189	93	325
8.....	a155	a94	131	140	1,300	297	267	145	259	170	89	202
9.....	144	93	100	130	1,000	313	258	124	258	176	79	145
10.....	144	94	35	125	850	267	252	163	215	156	72	138
11.....	141	92	65	*120	700	348	258	181	205	150	67	119
12.....	116	107	75	110	600	350	267	181	202	137	64	100
13.....	a112	116	70	100	550	1,460	256	176	254	135	64	81
14.....	109	90	60	90	500	1,330	234	158	224	130	64	76
15.....	135	109	50	85	520	505	220	156	220	222	64	72
16.....	130	103	40	80	540	396	204	231	229	196	63	72
17.....	123	a100	35	75	555	329	181	a205	231	175	84	67
18.....	116	98	30	75	a800	342	174	180	272	a160	71	64
19.....	a110	100	30	75	a900	327	166	660	245	145	64	64
20.....	102	105	25	75	1,140	317	164	274	a240	135	105	63
21.....	a100	96	25	75	705	313	160	227	232	124	222	62
22.....	a98	80	25	75	a550	301	157	109	225	128	a150	59
23.....	96	65	25	70	455	538	151	241	217	128	86	58
24.....	83	75	25	70	418	462	163	3,530	199	128	151	58
25.....	116	83	25	65	332	505	138	2,960	241	126	116	57
26.....	102	87	30	65	492	1,550	127	926	236	123	81	a75
27.....	98	89	30	65	705	606	123	630	a350	119	71	94
28.....	a98	a90	30	65	280	510	a135	508	621	113	76	83
29.....	97	92	30	75	.....	488	144	448	a360	110	74	75
30.....	90	90	35	80	.....	442	131	414	a300	106	62	71
31.....	97	.....	40	65	.....	442	.....	365	.....	100	57	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Dec. 1-5, 12-31, 1944, Jan. 1 to Mar. 9, Nov. 22-26, Dec. 9-31, 1945, Jan. 1 to Feb. 16, 1946 (no gage-height record Dec. 14-16, 20, 31, 23-28, 30, 31, 1944, Jan. 1-7, 9-11, Jan. 13 to Feb. 11, Feb. 13-21, Dec. 12, 14, 16, 25, 30, 1945, Jan. 8, 13, 18-21, 26-30, Feb. 3-5, 12, 15, 18, 19, 22, 1946).

Maple River at Mapleton, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	63	90	80	41	41	115	191	a240	178	385	109	45
2.....	57	90	86	41	38	115	208	241	152	372	106	41
3.....	62	86	100	41	37	115	212	241	141	340	105	41
4.....	76	84	109	41	37	115	212	a225	121	561	102	41
5.....	72	80	*126	41	37	115	194	212	a110	452	97	38
6.....	76	79	103	41	37	115	342	192	176	288	90	40
7.....	81	94	103	45	37	125	311	176	176	241	86	40
8.....	77	85	101	48	38	140	263	175	126	240	88	41
9.....	71	79	105	51	41	210	259	162	113	240	86	42
10.....	97	72	98	*57	46	310	a750	162	194	227	84	40
11.....	92	74	98	60	54	440	648	142	200	220	80	a110
12.....	112	80	97	64	67	530	409	141	a1,500	213	79	92
13.....	120	84	86	68	80	490	409	222	915	200	74	80
14.....	119	83	80	72	100	430	405	200	542	175	74	79
15.....	102	80	83	63	125	370	357	a220	428	174	67	54
16.....	92	76	75	55	160	320	355	208	348	174	66	46
17.....	a95	75	67	53	195	300	342	189	338	a160	63	46
18.....	227	84	66	58	240	270	258	176	319	148	62	42
19.....	128	80	66	54	220	260	243	163	303	148	57	40
20.....	107	105	66	53	195	260	a250	163	303	147	55	40
21.....	98	125	64	51	175	270	261	158	295	140	55	37
22.....	94	125	64	51	160	280	250	a155	1,780	137	54	34
23.....	90	120	67	50	150	300	357	152	1,360	137	50	34
24.....	90	115	67	53	135	330	396	147	890	134	50	36
25.....	94	105	64	54	125	320	263	152	736	126	50	a35
26.....	83	100	63	53	125	303	261	141	a600	119	50	33
27.....	81	97	60	50	*125	a270	256	130	442	113	49	33
28.....	80	90	57	48	120	240	254	127	374	113	51	31
29.....	80	84	51	45	.....	210	245	a170	392	110	a49	33
30.....	109	81	46	44	.....	210	232	215	385	106	a47	41
31.....	93	.....	41	41	.....	194	.....	194	.....	109	45	.....
1947-48												
1.....	42	46	57	30	30	490	a240	200	82	82	128	40
2.....	33	80	60	30	30	450	a235	194	80	76	96	33
3.....	32	79	63	35	30	430	a229	190	88	70	96	a32
4.....	33	79	a64	35	30	a408	a193	197	82	62	80	a33
5.....	34	62	66	35	30	387	157	205	77	60	80	a31
6.....	34	66	64	35	30	378	157	a198	70	59	80	a31
7.....	34	64	64	35	30	376	154	190	67	55	80	a30
8.....	33	63	64	35	25	360	a148	194	60	52	101	a30
9.....	29	57	64	35	30	360	142	184	56	53	98	a29
10.....	29	53	64	40	30	344	139	178	54	52	96	a29
11.....	31	42	66	100	30	a340	134	176	54	50	104	a28
12.....	31	50	64	60	25	336	130	171	55	50	134	a28
13.....	29	a50	64	100	30	302	126	171	61	45	128	a27
14.....	29	50	60	90	30	302	126	158	65	44	114	a27
15.....	28	49	50	80	60	565	123	147	79	41	610	a26
16.....	28	53	45	60	90	2,310	117	130	93	42	331	26
17.....	28	54	*40	40	800	2,980	114	120	86	40	253	24
18.....	28	57	40	35	600	*2,800	110	110	86	41	206	26
19.....	29	58	40	30	400	580	98	102	83	40	142	26
20.....	27	62	40	30	700	290	94	101	94	40	82	25
21.....	27	59	40	*28	500	242	86	101	110	39	59	24
22.....	24	59	35	26	350	222	195	96	134	40	59	26
23.....	a46	58	35	25	400	219	197	94	251	40	59	26
24.....	68	60	35	30	370	218	208	90	a226	40	59	25
25.....	79	63	35	30	650	a198	210	90	202	37	59	26
26.....	64	64	35	30	1,200	179	226	82	182	38	59	25
27.....	54	64	35	25	5,530	181	224	80	174	34	383	25
28.....	51	63	35	25	*4,390	176	221	74	162	40	246	a25
29.....	46	63	35	30	2,420	304	200	69	144	1,150	126	25
30.....	a48	59	35	30	.....	320	198	96	122	540	79	a25
31.....	49	.....	30	30	.....	306	.....	110	.....	224	55	.....

* Winter discharge measurement made on this day.

a No or doubtful gage-height record; discharge computed on basis of records for nearby stations.

Note—Stage-discharge relation affected by ice Nov. 11 to Dec. 3, Dec. 13-31, 1946, Jan. 1 to Mar. 25, Dec. 14-31, 1947, Jan. 1 to Feb. 26, 1948.

Maple River at Mapleton, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	25	26	21	17	13	350	251	86	125	77	34	22
2.....	25	26	22	17	13	800	218	82	168	389	33	21
3.....	24	24	21	18	13	1,400	189	82	378	269	a32	19
4.....	23	24	22	350	*13	3,500	173	80	a280	100	31	1,080
5.....	23	24	22	250	13	*4,500	159	76	173	79	30	170
6.....	a29	24	21	160	13	3,570	150	70	126	69	29	79
7.....	35	24	21	130	13	1,380	140	66	119	64	27	a65
8.....	a32	25	20	90	13	695	131	71	113	57	26	51
9.....	28	24	20	60	13	420	128	73	109	56	a26	a50
10.....	25	23	20	50	13	298	125	71	102	52	26	124
11.....	24	23	20	40	13	218	117	66	98	a50	26	988
12.....	22	23	20	35	13	200	121	62	96	49	140	435
13.....	20	24	21	30	13	180	117	59	97	a50	78	180
14.....	18	22	*24	25	13	170	a115	56	95	50	34	125
15.....	19	22	22	23	13	160	109	64	95	a48	31	a100
16.....	18	a23	20	22	13	152	110	70	92	47	26	74
17.....	17	24	20	21	13	142	a170	68	88	46	26	a64
18.....	a18	20	20	20	13	140	226	1,090	a110	a45	a26	55
19.....	a20	21	20	19	15	150	226	417	128	a45	a50	53
20.....	21	22	20	18	17	141	200	210	413	329	62	51
21.....	a21	25	20	17	20	766	181	178	310	a150	56	49
22.....	a22	26	20	16	25	1,750	156	516	168	a80	40	46
23.....	22	26	20	16	150	680	142	340	129	40	33	44
24.....	22	a26	20	16	600	378	129	390	113	40	30	42
25.....	22	a24	18	15	700	1,400	115	218	102	37	28	42
26.....	22	24	17	15	500	485	115	196	98	a37	28	42
27.....	23	24	17	15	430	288	118	173	246	348	26	41
28.....	24	22	17	14	380	340	110	156	134	112	27	41
29.....	25	20	17	14	.....	260	98	147	93	62	29	41
30.....	25	20	17	13	.....	226	91	140	78	42	24	40
31.....	26	.....	17	13	.....	269	.....	132	.....	38	24	.....
1949-50												
1.....	39	38	31	29	8.5	170	109	61	140	a123	164	c84
2.....	38	38	31	28	8.0	155	108	61	160	a110	140	c82
3.....	38	38	30	26	8.0	*142	102	60	125	a100	142	c78
4.....	38	38	a30	24	8.0	1,000	92	58	96	a92	137	c74
5.....	36	38	30	21	8.0	*1,600	85	a58	72	a150	133	c72
6.....	37	38	a30	19	8.0	1,200	79	128	53	125	119	c68
7.....	36	38	31	21	8.0	700	76	112	51	a110	a205	a66
8.....	a38	38	a35	22	100	500	73	487	48	a92	a150	c62
9.....	a39	38	41	19	*300	390	71	238	45	a80	a138	c60
10.....	a100	37	a45	18	350	300	69	181	43	a72	127	c58
11.....	a72	37	a48	17	300	260	68	162	a40	a70	129	56
12.....	a64	36	a50	18	230	220	65	159	4,600	1,040	1,830	56
13.....	a58	36	a50	18	180	190	61	144	624	a1,500	133	54
14.....	a52	35	45	18	140	170	58	117	405	a600	103	a53
15.....	a49	34	40	17	100	190	59	100	1,090	a450	a90	52
16.....	a45	a34	35	15	80	220	57	92	601	380	100	52
17.....	a43	34	37	14	65	1,040	57	92	457	322	245	51
18.....	a41	34	39	14	50	a940	56	92	6,110	357	107	50
19.....	a40	34	39	14	45	a720	55	118	5,000	380	102	50
20.....	43	33	39	13	40	a550	53	97	562	334	100	a40
21.....	105	34	38	12	40	a460	51	132	a460	300	98	49
22.....	74	34	36	12	40	a620	50	95	1,420	270	92	50
23.....	68	35	35	*11	45	a660	50	87	a1,120	207	89	48
24.....	62	36	33	11	45	a630	48	80	a660	183	87	48
25.....	46	36	31	10	50	435	47	91	357	166	85	48
26.....	41	38	30	10	55	288	46	82	346	156	84	47
27.....	40	34	30	9.5	65	200	47	74	227	148	c100	46
28.....	39	34	30	9.5	180	153	46	71	168	148	c97	a45
29.....	40	34	32	9.0	.....	104	a54	643	143	144	c94	44
30.....	40	32	30	9.0	.....	105	65	176	143	148	a92	44
31.....	39	.....	29	8.5	.....	109	.....	115	.....	2,060	c88	.....

* Winter discharge measurement made on this day.

a No or doubtful gage-height record; discharge computed on basis of records for nearby stations.

c Stage-discharge relation affected by backwater from construction work downstream; discharge computed on basis of records for nearby stations.

Note—Stage-discharge relation affected by ice Nov. 28 to Dec. 31, 1948, Jan. 1 to Mar. 5, Mar. 12-15, Dec. 14-31, 1949, Jan. 1 to Mar. 16, 1950.

Maple River at Mapleton, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October 1942.....	1,445	58	41	46.6	0.070	0.08	2,870
November.....	1,168	46	20	38.9	.059	.07	2,320
December.....	724	28	21	23.4	.035	.04	1,440
Calendar year 1942	70,077	4,510	20	192	.290	3.95	139,000
January 1943.....	706	60	15	22.8	.034	.04	1,400
February.....	11,704	955	25	418	.632	.66	23,210
March.....	4,730	591	82	153	.231	.27	9,380
April.....	2,223	120	56	74.1	.112	.13	4,410
May.....	2,690	362	44	86.8	.131	.15	5,340
June.....	11,210	1,770	48	374	.566	.63	22,230
July.....	10,028	1,450	70	323	.489	.56	19,890
August.....	11,964	3,520	74	386	.584	.67	23,730
September.....	2,360	319	40	78.7	.119	.13	4,680
Water year 1942-43	60,952	3,520	15	167	.253	3.43	120,900
October 1943.....	1,239	47	34	40.0	.061	.07	2,460
November.....	1,522	69	38	50.7	.077	.09	3,020
December.....	983	64	17	31.7	.048	.06	1,950
Calendar year 1943	61,359	3,520	15	168	.254	3.46	121,700
January 1944.....	1,165	90	20	37.6	.057	.07	2,310
February.....	3,478	958	20	120	.182	.20	6,900
March.....	8,146	1,200	67	263	.398	.46	16,160
April.....	5,574	455	59	186	.281	.31	11,060
May.....	11,894	1,760	61	384	.581	.67	23,590
June.....	36,950	4,410	155	1,232	1.86	2.08	73,290
July.....	15,731	1,500	170	507	.767	.89	31,200
August.....	17,672	2,400	211	570	.862	.99	35,050
September.....	6,047	514	152	202	.306	.34	11,990
Water year 1943-44	110,401	4,410	17	302	.457	6.23	219,000
October 1944.....	3,072	158	107	128	.194	.22	7,880
November.....	3,015	114	69	100	.151	.17	5,980
December.....	2,076	104	50	67.0	.101	.12	4,120
Calendar year 1944	115,720	4,410	20	316	.478	6.52	229,500
January 1945.....	1,740	90	35	56.1	.085	.10	3,450
February.....	6,725	800	45	240	.363	.38	13,340
March.....	25,456	5,570	150	821	1.24	1.43	50,490
April.....	14,154	2,110	210	472	.714	.80	28,070
May.....	16,923	2,770	280	546	.826	.95	33,570
June.....	21,522	4,220	297	717	1.08	1.21	42,690
July.....	18,607	3,670	184	600	.908	1.05	36,910
August.....	25,681	6,800	196	828	1.25	1.44	50,940
September.....	5,490	312	0	183	.277	.31	11,890
Water year 1944-45	145,361	6,800	0	398	.602	8.18	289,300
October 1945.....	3,993	217	83	129	.195	.22	7,920
November.....	2,830	116	65	94.3	.143	.16	5,610
December.....	1,925	134	25	62.1	.094	.11	3,820
Calendar year 1945	145,046	6,800	0	397	.601	8.16	288,700
January 1946.....	2,620	160	40	84.5	.128	.15	5,200
February.....	18,117	1,700	65	647	.979	1.02	35,936
March.....	14,853	1,550	194	479	.725	.84	29,460
April.....	6,482	370	123	216	.327	.36	12,860
May.....	14,546	3,530	120	469	.710	.82	28,850
June.....	8,151	621	199	272	.411	.46	16,170
July.....	4,991	280	100	161	.244	.28	9,900
August.....	2,751	222	57	88.7	.134	.15	5,460
September.....	5,164	1,400	49	172	.260	.29	10,240
Water year 1945-46	86,423	3,530	25	237	.359	4.86	171,400

Maple River at Mapleton, Iowa—Continued
 Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October 1946.....	2,918	227	57	94.1	0.142	0.16	5,790
November.....	2,692	125	72	89.7	.136	.15	5,340
December.....	2,439	126	41	78.7	.119	.14	4,840
Calendar year 1946	85,724	3,530	40	235	.356	4.82	170,000
January 1947.....	1,587	72	41	51.2	.077	.09	3,150
February.....	2,940	240	37	105	.159	.17	5,830
March.....	8,072	530	115	263	.393	.45	16,010
April.....	9,393	750	191	313	.474	.53	18,630
May.....	5,591	241	127	180	.272	.31	11,090
June.....	13,937	1,780	110	465	.703	.78	27,640
July.....	6,446	561	106	208	.315	.36	12,790
August.....	2,180	109	45	70.3	.106	.12	4,320
September.....	1,385	110	31	46.2	.070	.08	2,750
Water year 1946-47	59,583	1,780	31	163	.247	3.34	118,200
October 1947.....	1,177	79	24	38.0	.057	.07	2,330
November.....	1,786	80	42	59.5	.090	.10	3,540
December.....	1,524	66	30	49.2	.074	.09	3,020
Calendar year 1947	56,021	1,780	24	153	.231	3.15	111,100
January 1948.....	1,279	100	25	41.3	.062	.07	2,540
February.....	18,870	5,530	25	651	.985	1.06	37,430
March.....	17,353	2,980	176	560	.847	.98	34,420
April.....	4,931	240	86	164	.248	.28	9,780
May.....	4,298	205	69	139	.210	.24	8,520
June.....	3,179	251	54	106	.160	.18	6,310
July.....	3,276	1,150	34	106	.160	.18	6,500
August.....	4,282	610	55	138	.209	.24	8,490
September.....	833	40	24	27.8	.042	.05	1,650
Water year 1947-48	62,788	5,530	24	172	.260	3.54	124,500
October 1948.....	720	35	17	23.2	.035	.04	1,430
November.....	705	26	20	23.5	.036	.04	1,400
December.....	617	21	17	19.9	.030	.03	1,220
Calendar year 1948	60,343	5,530	17	165	.250	3.40	119,700
January 1949.....	1,559	350	13	50.3	.076	.09	3,090
February.....	3,071	700	13	110	.166	.17	6,090
March.....	25,408	4,500	140	820	1.24	1.43	50,400
April.....	4,430	251	91	148	.224	.25	8,790
May.....	5,595	1,090	56	178	.269	.31	10,920
June.....	4,476	413	78	149	.225	.25	8,880
July.....	2,957	359	37	95.4	.144	.17	5,860
August.....	1,138	140	24	36.7	.056	.06	2,260
September.....	4,234	1,080	19	141	.213	.24	8,400
Water year 1948-49	54,820	4,500	13	150	.227	3.08	108,700
October 1949.....	1,540	105	36	49.7	.075	.09	3,050
November.....	1,073	38	32	35.8	.054	.06	2,130
December.....	1,110	50	29	35.8	.054	.06	2,200
Calendar year 1949	56,501	4,500	13	155	.234	3.18	112,100
January 1950.....	496.5	29	8.5	16.0	.024	.03	985
February.....	2,556.5	350	8.0	91.3	.138	.14	5,070
March.....	14,421	1,600	104	465	.703	.81	28,600
April.....	1,957	109	46	65.2	.099	.11	3,880
May.....	4,263	643	58	138	.209	.24	8,460
June.....	25,266	6,110	40	842	1.27	1.42	50,110
July.....	10,417	2,060	70	336	.508	.59	20,660
August.....	5,403	1,830	84	174	.263	.30	10,710
September.....	1,696	84	44	56.5	.085	.10	3,360
Water year 1949-50	70,196	6,110	8.0	192	.290	3.95	139,200

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., on upstream side near center of span 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 square miles.

RECORDS AVAILABLE.—April 1939 to September 1950.

GAGE.—Wire-weight gage read once daily. Datum of gage is 1,052.82 feet above mean sea level, datum of 1929 (Corps of Engineers bench mark).

AVERAGE DISCHARGE.—11 years, 84.9 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43 ..	July 19	2,480	(¹)18.0	Sept. 24	1.4
1943-44 ..	July 8	3,160	(¹)19.7	Dec. 14-16, Jan. 7-9, 11-13, Feb. 17, 18	1.0
1944-45 ..	Aug. 6	6,000	(¹)22.4	Jan. 1-5	3.0
1945-46 ..	Feb. 7	1,000	(²)17.49	Aug. 19	2.9
1946-47 ..	June 25	1,520	15.84	Sept. 27	8.0
1947-48 ..	Feb. 29	2,000	(¹)17.2	Oct. 21	5.0
1948-49 ..	June 1	2,040	(³)	Sept. 2	7.8
1949-50 ..	June 19	6,300	22.16	Feb. 2-7	5.5

(1) Floodmark.

(2) Ice jam.

(3) Maximum gage height, 20.9 feet Mar. 4 (ice jam).

1939-50: Maximum discharge, 6,300 second-feet June 19, 1950; maximum gage height 22.4 feet, from floodmark, Aug. 6, 1945; minimum daily observed, 1.0 second-feet Dec. 14-16, 1943, Jan. 7-9, 11-13, Feb. 17, 18, 1944.

REMARKS.—Records fair except those for periods 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 a 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.

West Fork ditch at Holly Springs, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1	20	13	3	6	7	70	33	16	130	29	25	6.3
2	18	13	2	6	8	50	35	a13	457	23	19	5.7
3	17	12	3	5	60	40	35	a10	171	22	18	3.8
4	16	12	3	4	100	30	24	a8	71	22	18	25
5	16	12	3	3	150	24	24	a7	31	20	17	14
6	15	12	4	4	100	22	22	a6	24	18	16	6.3
7	15	12	5	4	90	20	22	a5	27	24	16	5.9
8	15	12	5	3	500	20	20	a5	27	24	16	4.7
9	14	12	5	4	700	22	22	a5	26	17	15	5.3
10	13	13	5	6	500	24	22	a5	27	15	14	4.4
11	13	13	4	6	300	26	25	a6	23	13	12	4
12	12	13	4	5	100	28	34	a8	20	12	13	220
13	12	13	4	4	90	32	36	8.5	495	12	12	16
14	12	13	5	4	85	36	43	8.7	167	13	11	4.7
15	12	12	*6	7	85	32	27	10	252	15	10	3.4
16	12	12	7	8	85	24	25	28	126	71	11	2.5
17	12	12	7	7	85	20	24	23	408	37	9.2	2.9
18	11	11	6	6	90	20	22	22	218	18	8.9	2.5
19	11	12	5	5	100	22	17	20	66	1,440	8.7	3.0
20	11	12	4	5	400	26	16	14	46	893	8.5	2.4
21	11	12	4	6	700	28	16	11	36	519	8.9	3.8
22	11	11	5	7	1,080	*30	16	11	154	388	60	3.3
23	10	11	6	7	583	60	16	9.4	66	230	26	1.8
24	10	10	6	6	462	100	16	21	31	52	6.9	1.4
25	13	9	5	5	100	300	16	11	28	37	40	1.9
26	12	8	5	5	80	204	19	12	23	31	13	6.5
27	12	8	5	*6	85	88	14	13	21	28	7.4	5.5
28	12	8	4	6	90	80	15	11	34	43	6.7	1.5
29	12	7	3	6	.....	43	39	8.3	96	26	6.1	3.4
30	13	6	4	6	.....	39	17	9.2	45	22	7.6	2.9
31	13	.....	5	6	.....	37	.....	9.9	.....	22	6.7	.....
1943-44												
1	4.4	3.4	6.1	6	30	53	25	30	27	36	1,600	29
2	2.9	3.6	6.7	6	35	21	123	30	27	36	156	25
3	3.3	4.2	13	6	20	18	a41	a27	36	32	59	23
4	3.4	11	6.9	6	20	14	a48	42	192	31	92	21
5	2.2	3.4	8.5	5	25	9	33	48	603	30	688	20
6	3.3	2.8	*5.9	3	15	7	27	62	204	30	120	18
7	2.9	a3.0	10	1	20	5	27	40	122	775	64	17
8	2.4	a8.0	4.9	1	15	4	23	18	129	2,060	37	16
9	3.2	16	4	1	9	8	24	17	83	341	32	18
10	2.2	10	4	2	6	12	20	83	81	904	28	17
11	4.7	8.3	3	1	5	25	15	29	184	1,320	26	18
12	1.9	6.9	2	1	3	47	27	415	895	951	24	18
13	14	4.9	2	1	2	92	21	135	987	493	23	19
14	6.1	4.5	1	2	2	39	20	92	1,260	280	271	17
15	1.4	4.5	1	2	3	46	24	107	603	148	726	18
16	2.3	4.2	1	3	2	31	25	148	731	122	771	113
17	2.0	4.5	2	3	1	23	24	95	151	245	74	117
18	2.3	3.0	3	2	1	30	25	339	114	123	41	114
19	1.6	3.3	3	2	2	36	25	448	95	107	33	99
20	2.8	3.4	4	3	3	40	28	179	77	76	29	58
21	3.3	4.5	4	3	5	41	23	67	67	59	26	40
22	5.7	4.5	5	*2	8	41	24	133	63	54	87	27
23	4.9	5.3	4	2	13	114	15	70	59	48	88	21
24	2.6	6.1	4	4	4	702	45	120	55	43	26	20
25	2.0	5.7	5	10	200	400	112	42	52	42	26	19
26	1.4	11	6	20	400	46	45	38	167	39	44	18
27	1.9	8.5	7	40	*1,300	13	12	32	64	41	49	18
28	1.8	4.9	7	60	1,200	9	9	33	45	36	54	17
29	2.5	8.5	6	45	84	8	37	29	40	32	52	16
30	2.6	7.6	6	35	.....	17	35	29	38	29	48	15
31	3.2	.....	5	30	.....	24	.....	29	.....	27	41	.....

* Winter discharge measurement made on this day.

a No or doubtful gage-height record; discharge computed on basis of records for nearby stations.

Note—Stage-discharge relation affected by ice Nov. 25 to Dec. 31, 1942, Jan. 1 to Feb. 21, Feb. 25 to Mar. 25, Dec. 9-31, 1943, Jan. 1 to Feb. 27, Mar. 5-11, 18, 19, 1944.

West Fork ditch at Holly Springs, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	14	9.9	11	3.0	12	20	36	59	145	283	95	72
2.....	15	10	12	3.0	11	25	33	76	335	241	76	69
3.....	15	9.2	17	3.0	13	30	31	42	179	171	721	69
4.....	16	9.2	18	3.0	14	25	33	50	127	154	721	262
5.....	45	9.7	20	3.0	15	15	26	51	115	261	1,280	72
6.....	39	9.4	22	3.5	16	15	24	42	111	150	4,990	66
7.....	18	12	24	3.5	20	17	44	37	121	115	3,210	65
8.....	14	12	18	*3.5	25	30	95	33	126	101	811	70
9.....	13	12	16	4.0	100	180	122	31	624	110	289	60
10.....	12	12	15	3.5	690	919	78	40	1,140	167	266	58
11.....	11	13	14	4.0	1,100	2,190	52	48	1,350	110	342	57
12.....	12	12	12	5.0	968	4,610	40	43	575	83	247	57
13.....	12	12	12	5.5	1,070	2,870	35	44	273	77	105	57
14.....	12	11	12	4.0	930	896	32	71	469	89	170	56
15.....	12	10	14	5.5	518	433	31	70	687	88	397	55
16.....	11	11	15	7.0	300	409	46	67	959	414	325	54
17.....	10	12	17	6.5	105	297	65	55	673	865	795	56
18.....	11	11	15	8.0	30	152	80	47	297	457	334	68
19.....	12	11	15	8.0	20	140	60	40	205	162	181	76
20.....	9.7	11	14	8.5	19	111	46	38	177	119	145	68
21.....	12	11	14	10	16	96	40	123	152	125	129	59
22.....	12	11	13	11	*15	85	45	195	133	96	127	58
23.....	10	11	11	12	15	79	275	203	120	91	122	56
24.....	10	12	9.5	13	14	72	116	116	108	162	109	55
25.....	9.7	12	8.5	13	16	66	60	82	100	176	101	53
26.....	9.7	14	9.0	14	17	62	47	95	95	108	95	53
27.....	9.7	14	7.0	12	13	58	43	228	391	87	90	55
28.....	10	12	5.5	11	15	50	39	388	1,160	82	86	64
29.....	11	11	5.0	10	.....	45	38	283	1,040	77	82	67
30.....	9.7	10	4.5	11	.....	42	35	131	436	101	79	68
31.....	9.7	.....	3.5	10	.....	39	.....	385	.....	73	76	.....
1945-46												
1.....	61	39	39	17	25	278	81	33	56	24	7.8	4.0
2.....	58	38	a37	18	18	259	74	33	38	21	5.0	3.0
3.....	54	36	35	19	18	a260	70	45	34	25	5.8	3.5
4.....	51	37	33	40	30	264	62	51	32	17.6	4.8	66
5.....	47	34	32	60	800	171	64	50	29	15.5	7.0	37
6.....	45	37	28	70	950	150	58	54	28	12.8	8.2	53
7.....	45	38	*21	75	900	124	54	41	25	15.5	8.2	256
8.....	43	36	19	60	800	a100	53	35	23	14.2	6.4	40
9.....	43	35	17	35	400	79	54	34	21	14.2	7.5	86
10.....	44	33	15	28	300	a80	52	37	20	13.5	6.8	118
11.....	44	36	17	23	250	87	54	41	19.1	11.8	4.8	124
12.....	42	43	17	*21	220	109	69	56	17.9	12.0	5.2	54
13.....	41	41	17	20	200	299	66	50	21	9.8	3.4	36
14.....	42	40	17	19	a190	405	58	41	40	9.2	4.4	25
15.....	43	39	17	19	a180	219	54	36	28	10.8	4.6	21
16.....	43	35	17	18	177	161	51	33	21	14.0	5.8	16.5
17.....	43	37	17	18	a200	160	45	33	18.8	14.2	7.2	14.0
18.....	42	37	17	18	395	162	42	144	22	15.8	3.6	11.0
19.....	41	35	16	18	700	178	41	74	24	15.8	2.9	10.5
20.....	40	34	16	18	850	134	38	90	30	13.8	3.4	10.0
21.....	39	32	15	19	830	119	34	82	33	14.2	30	8.8
22.....	37	31	15	19	766	110	37	54	42	10.2	3.0	9.0
23.....	38	31	15	18	732	115	37	45	27	8.0	7.0	9.8
24.....	38	31	15	18	748	a130	36	168	24	7.5	134	9.2
25.....	39	32	15	18	816	218	35	103	24	8.5	4.7	8.2
26.....	37	33	15	18	656	151	33	75	27	9.5	32	7.5
27.....	37	34	16	18	584	135	31	55	24	39	17.0	8.0
28.....	37	35	16	19	307	118	30	48	21	8.5	24	10.8
29.....	38	37	16	20	.....	103	31	43	19.1	8.2	5.8	18.8
30.....	39	44	17	20	.....	94	41	44	16.2	7.2	5.6	18.8
31.....	40	.....	17	22	.....	89	.....	45	.....	7.0	4.7	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Nov. 24 to Dec. 2, Dec. 8-31, 1944, Jan. 1 to Feb. 11, Feb. 16 to Mar. 10, Nov. 21-29, Dec. 3-31, 1945, Jan. 1 to Feb. 13, Feb. 19-21, 1946 (no gage-height record Dec. 4-6, 9, 10, 12-20, 22-31, 1945, Jan. 1-4, 6, 8, 9, 11, 14-16, 20-28, 30, 31, Feb. 3, 1946).

West Fork ditch at Holly Springs, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	22	29	41	13	16	57	112	602	144	238	34	17
2.....	16	30	62	13	14	55	102	253	124	188	33	16
3.....	9.5	30	65	13	14	54	105	213	119	156	35	15
4.....	17	28	50	14	12	50	106	179	99	136	33	15
5.....	197	27	*43	14	12	49	136	159	92	122	31	15
6.....	251	27	31	14	12	48	257	143	92	243	28	14
7.....	150	31	45	15	12	46	360	134	85	119	26	14
8.....	84	31	50	16	12	46	218	134	93	100	25	13
9.....	82	43	45	*16	12	56	262	125	75	94	24	12
10.....	88	43	43	17	13	66	333	110	89	87	23	12
11.....	64	46	42	18	14	77	486	106	106	90	22	22
12.....	72	39	39	20	14	138	350	96	145	83	20	63
13.....	80	41	36	22	18	235	260	106	212	93	21	25
14.....	69	43	31	23	33	320	223	126	269	86	24	19
15.....	59	45	34	22	43	287	199	134	205	d75	22	16
16.....	48	87	29	19	56	240	193	209	216	d69	22	14
17.....	45	125	28	19	120	210	183	177	274	d61	22	12
18.....	49	194	26	20	195	185	168	131	294	d57	22	11
19.....	42	127	25	20	175	165	152	123	181	52	20	10
20.....	40	114	25	19	147	156	139	106	135	51	18	10
21.....	40	96	25	16	124	156	127	92	122	53	18	13
22.....	38	82	24	17	108	165	126	88	425	54	17	10
23.....	36	28	24	17	96	175	306	78	1,000	44	16	10
24.....	205	41	23	18	86	230	143	75	1,360	49	18	9.5
25.....	39	40	22	20	74	210	146	78	986	46	18	9.0
26.....	36	39	22	24	66	183	120	74	331	45	18	10
27.....	35	50	22	32	*62	160	105	70	242	44	18	8.0
28.....	32	65	20	26	60	146	98	76	191	42	18	9.8
29.....	29	48	17	22	.....	160	318	102	165	41	17	12
30.....	35	43	14	20	.....	138	755	114	188	40	16	9.5
31.....	27	.....	12	17	.....	119	.....	185	.....	38	15	.....
1947-48												
1.....	10	21	24	22	11	854	36	252	20	37	28	104
2.....	11	26	19	18	11	147	34	69	16	28	21	71
3.....	12	20	21	18	12	64	31	76	15	23	17	51
4.....	12	16	21	20	12	51	30	77	14	21	14	44
5.....	11	15	24	22	12	46	28	74	13	17	13	38
6.....	10	15	23	23	12	80	26	64	12	14	12	33
7.....	9.2	17	16	30	12	50	33	69	12	14	13	30
8.....	5.8	17	13	35	12	40	29	66	10	13	12	29
9.....	9.5	16	11	35	11	35	48	47	10	12	13	26
10.....	8.5	13	9	40	12	34	39	45	11	11	28	24
11.....	7.5	14	8	45	12	32	29	42	9.8	12	169	24
12.....	9.8	14	7	45	11	30	32	41	9.2	12	82	23
13.....	10	21	7	80	10	32	32	42	14	12	165	21
14.....	11	24	7	80	11	34	30	37	16	10	26	20
15.....	9.8	25	6	60	30	400	29	33	21	14	574	19
16.....	10	26	6	50	250	1,240	27	31	15	13	471	18
17.....	10	25	6	30	1,000	1,460	25	28	16	15	105	17
18.....	9.5	23	*6	15	1,100	519	24	25	15	12	97	17
19.....	8.5	21	7	10	1,200	300	24	23	14	12	42	18
20.....	8.0	25	30	9	500	159	22	23	13	11	29	21
21.....	5.0	24	35	*10	70	106	21	24	14	12	22	19
22.....	7.2	22	35	10	50	76	31	20	27	11	18	16
23.....	10	22	35	9	60	63	43	23	50	10	17	15
24.....	13	20	34	8	70	56	42	18	65	9.5	15	18
25.....	12	19	35	8	80	50	52	17	45	25	13	17
26.....	12	21	37	9	100	49	70	16	32	19	12	16
27.....	15	23	36	8	948	46	86	17	27	12	12	15
28.....	14	25	35	7	1,340	45	67	15	220	9.5	12	15
29.....	14	24	35	8	1,780	43	49	14	138	189	421	16
30.....	18	23	27	10	.....	41	38	16	61	270	1,070	12
31.....	19	.....	25	11	.....	39	.....	17	.....	50	147	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Nov. 21 to Dec. 31, 1946, Jan. 1 to Mar. 27, Nov. 25, Dec. 8-24, 31, 1947, Jan. 1 to Feb. 26, Mar. 6-15, 1948.

West Fork ditch at Holly Springs, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	16	18	14	11	10	400	353	39	1,380	38	23	8.8
2.....	13	19	15	11	*10	500	138	37	784	309	21	7.8
3.....	12	17	14	13	10	1,000	116	36	401	51	19	40
4.....	11	16	17	250	10	1,400	78	33	200	35	19	1,150
5.....	12	29	25	200	10	*1,400	68	168	185	32	18	377
6.....	17	14	23	100	10	1,300	63	320	102	29	16	309
7.....	18	13	17	70	10	900	60	220	86	28	16	200
8.....	18	12	15	50	10	506	54	210	75	26	15	116
9.....	19	11	14	40	10	365	51	60	66	34	14	88
10.....	17	11	13	35	10	365	49	57	64	28	16	64
11.....	15	10	13	30	10	300	48	53	61	24	15	871
12.....	13	12	12	25	10	276	46	57	59	23	98	1,390
13.....	13	12	12	23	10	235	45	55	68	22	124	572
14.....	12	12	12	21	10	152	50	42	57	26	225	276
15.....	11	10	*12	20	10	102	50	41	51	21	27	138
16.....	8.0	14	12	19	10	96	45	36	44	20	25	129
17.....	8.0	12	12	17	10	92	62	108	38	19	17	112
18.....	9.0	11	12	16	11	90	134	170	41	18	16	91
19.....	9.0	23	12	15	11	88	97	83	39	18	27	74
20.....	12	26	12	14	13	69	69	67	36	30	18	54
21.....	9.2	27	12	14	13	129	65	475	41	52	21	41
22.....	10	25	12	13	15	129	65	1,290	38	21	15	36
23.....	9.0	22	12	13	50	112	74	578	35	18	14	33
24.....	12	21	12	12	600	56	73	309	52	16	13	20
25.....	10	24	12	12	700	95	66	156	389	16	13	19
26.....	9.0	20	11	12	560	230	50	138	95	70	12	18
27.....	10	18	11	11	500	320	60	112	170	934	12	18
28.....	10	16	11	11	460	225	53	98	86	494	11	17
29.....	12	11	11	11	.....	120	48	88	79	65	12	22
30.....	27	13	11	10	.....	86	42	78	60	38	11	28
31.....	22	.....	11	10	.....	287	.....	69	.....	26	9.0	.....
1949-50												
1.....	34	27	22	16	6.0	74	79	54	30	65	71	38
2.....	32	26	23	15	5.5	70	64	56	32	62	66	34
3.....	33	26	22	14	5.5	68	59	52	31	60	58	36
4.....	32	26	22	13	5.5	74	52	43	28	55	65	32
5.....	31	26	22	12	5.5	*500	49	43	28	91	100	31
6.....	31	25	23	11	5.5	700	45	46	24	71	74	27
7.....	29	25	19	12	5.5	500	46	52	22	65	278	21
8.....	32	25	17	13	90	300	44	112	20	53	401	22
9.....	32	26	20	12	150	200	43	401	18	45	103	23
10.....	270	26	24	12	200	150	42	97	17	43	63	24
11.....	91	26	*24	11	200	120	41	82	16	42	52	23
12.....	58	25	24	12	140	100	36	56	72	555	518	23
13.....	45	24	24	12	95	90	44	52	130	719	250	22
14.....	39	24	22	12	65	84	40	47	92	170	120	23
15.....	34	24	20	11	50	110	41	59	56	156	87	22
16.....	32	24	18	10	40	550	36	54	98	138	78	22
17.....	31	23	19	9.5	35	640	38	52	55	77	84	22
18.....	30	23	20	9.5	30	600	37	55	1,030	70	170	22
19.....	29	23	21	10	25	440	36	50	4,760	442	87	22
20.....	62	24	21	10	25	320	36	43	1,680	331	68	21
21.....	115	22	20	10	25	290	24	58	365	365	59	29
22.....	58	15	19	9.5	25	450	34	53	778	845	52	45
23.....	32	16	18	9.0	26	506	32	47	670	464	47	58
24.....	34	22	17	8.5	28	492	35	40	353	220	46	40
25.....	33	23	16	8.0	*30	425	28	37	220	165	43	31
26.....	31	22	15	7.5	35	287	27	40	147	142	40	25
27.....	30	23	15	7.0	40	185	32	35	116	124	36	24
28.....	29	24	16	*6.5	80	104	28	31	101	104	43	23
29.....	29	23	17	6.5	.....	*58	32	32	89	100	42	22
30.....	28	21	16	6.0	.....	68	43	38	79	82	41	20
31.....	28	.....	16	6.0	.....	84	.....	38	.....	52	40	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 21-23, Nov. 30 to Dec. 31, 1948, Jan. 1 to Mar. 7, Mar. 16, 17, Dec. 5-31, 1949, Jan. 1 to Mar. 22, Mar. 29, 1950.

West Fork ditch at Holly Springs, Iowa—Continued
 Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October 1942.....	406	20	10	13.1	0.033	0.04	805
November.....	336	13	6	11.2	.028	.03	666
December.....	142	7	2	4.6	.012	.01	282
Calendar year 1942	20,552	845	2	56.3	.143	1.94	40,770
January 1943.....	168	8	3	5.4	.014	.02	333
February.....	6,815	1,080	7	243	.615	.64	13,520
March.....	1,597	300	20	51.5	.130	.15	3,170
April.....	712	43	14	23.7	.060	.07	1,410
May.....	355	28	5	11.5	.029	.03	704
June.....	3,346	495	20	112	.284	.32	6,640
July.....	4,136	1,440	12	133	.337	.39	8,200
August.....	467.6	60	6.1	15.1	.038	.04	927
September.....	374.8	220	1.4	12.5	.032	.04	743
Water year 1942-43	18,855.4	1,440	1.4	51.7	.131	1.78	37,400
October 1943.....	101.2	14	1.4	3.26	.0083	.01	201
November.....	179.5	16	2.8	5.98	.015	.02	356
December.....	151	13	1	4.87	.012	.01	300
Calendar year 1943	18,403.1	1,440	1	50.4	.128	1.74	36,500
January 1944.....	308	60	1	9.9	.025	.03	611
February.....	3,469	1,300	1	120	.304	.33	6,880
March.....	1,975	702	4	63.7	.161	.19	3,920
April.....	982	123	9	32.7	.083	.09	1,950
May.....	3,006	448	17	97.0	.246	.28	5,960
June.....	7,251	1,260	27	242	.613	.68	14,380
July.....	8,600	2,060	27	277	.701	.81	17,060
August.....	5,435	1,600	23	175	.443	.51	10,780
September.....	1,005	117	15	33.5	.085	.095	1,990
Water year 1943-44	32,462.7	2,060	1	88.7	.225	3.91	64,390
October 1944.....	427.2	45	9.7	13.8	.035	.04	847
November.....	337.4	14	9.2	11.2	.028	.03	669
December.....	403.5	24	3.5	13.0	.033	.04	800
Calendar year 1944	33,199.1	2,060	1.0	90.7	.230	3.98	65,850
January 1945.....	222	14	3.0	7.16	.018	.02	440
February.....	6,097	1,100	11	218	.552	.57	12,090
March.....	14,078	4,610	15	454	1.15	1.33	27,920
April.....	1,749	275	24	58.3	.148	.16	3,470
May.....	3,213	388	31	104	.263	.30	6,370
June.....	12,424	1,350	95	414	1.05	1.17	24,840
July.....	5,425	865	73	175	.443	.51	10,760
August.....	16,656	4,990	76	537	1.36	1.57	33,040
September.....	2,055	262	53	68.5	.173	.19	4,080
Water year 1944-45	63,087.1	4,990	3.0	173	.438	5.93	125,100
October 1945.....	1,331	61	37	42.9	.109	.13	2,640
November.....	1,080	44	31	36.0	.091	.10	2,140
December.....	616	39	15	19.9	.050	.06	1,220
Calendar year 1945	64,946	4,990	3.0	178	.451	6.11	128,800
January 1946.....	823	75	17	26.5	.067	.08	1,630
February.....	13,042	950	18	466	1.18	1.23	25,870
March.....	5,061	405	79	163	.413	.48	10,040
April.....	1,485	81	30	49.5	.125	.14	2,950
May.....	1,773	168	33	57.2	.145	.17	3,520
June.....	805.1	56	16.2	26.8	.068	.08	1,600
July.....	428.3	39	7.0	13.8	.035	.04	850
August.....	432.8	134	2.9	14.0	.035	.04	858
September.....	1,097.4	256	3.0	36.6	.093	.10	2,180
Water year 1945-46	27,974.6	950	2.9	76.6	.194	2.65	55,500

West Fork ditch at Holly Springs, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October 1946.....	2,036.5	251	9.5	65.7	0.166	0.19	4,040
November.....	1,712	194	27	57.1	.145	.16	3,400
December.....	1,015	65	12	32.7	.083	.10	2,010
Calendar year 1946	29,711.1	950	2.9	81.4	.206	2.81	58,950
January 1947.....	576	32	13	18.6	.047	.05	1,140
February.....	1,620	195	12	57.9	.147	.15	3,210
March.....	4,382	320	46	141	.357	.41	8,690
April.....	6,588	755	98	220	.557	.62	13,070
May.....	4,398	602	70	142	.359	.41	8,720
June.....	8,059	1,360	75	269	.681	.76	15,980
July.....	2,696	243	38	87.0	.220	.25	5,350
August.....	694	35	15	22.4	.057	.07	1,350
September.....	445.8	63	8.0	14.9	.038	.04	884
Water year 1946-47	34,222.3	1,360	8.0	93.8	.237	3.21	67,870
October 1947.....	332.3	19	5.0	10.7	.027	.03	659
November.....	620	26	13	20.7	.052	.06	1,230
December.....	640	37	6	20.6	.052	.06	1,270
Calendar year 1947	31,051.1	1,360	5.0	85.1	.215	2.91	61,580
January 1948.....	785	80	7	25.3	.064	.07	1,560
February.....	8,739	1,780	10	301	.762	.82	17,330
March.....	6,221	1,460	30	201	.509	.59	12,340
April.....	1,107	86	21	36.9	.093	.10	2,200
May.....	1,361	252	14	43.9	.111	.13	2,700
June.....	955	220	9.2	31.8	.081	.09	1,890
July.....	930	270	9.5	30.0	.076	.09	1,840
August.....	3,690	1,070	12	119	.301	.35	7,320
September.....	807	104	12	26.9	.068	.08	1,600
Water year 1947-48	26,187.3	1,780	5.0	71.6	.181	2.47	51,940
October 1948.....	403.2	27	8.0	13.0	.033	.04	800
November.....	499	29	10	16.6	.042	.05	990
December.....	414	25	11	13.4	.034	.04	821
Calendar year 1948	25,911.2	1,780	7	70.8	.179	2.45	51,390
January 1949.....	1,109	250	10	35.8	.091	.10	2,200
February.....	3,103	700	10	111	.281	.29	6,150
March.....	11,434	1,400	56	369	.934	1.08	22,680
April.....	2,272	353	42	75.7	.192	.21	4,510
May.....	5,283	1,290	33	170	.430	.50	10,480
June.....	4,872	1,380	35	162	.410	.46	9,690
July.....	2,581	934	16	83.3	.211	.24	5,120
August.....	912	225	9.0	29.4	.074	.09	1,810
September.....	6,319.6	1,390	7.8	211	.534	.60	12,530
Water year 1948-49	39,201.8	1,400	7.8	107	.271	3.70	77,750
October 1949.....	1,454	270	28	46.9	.119	.14	2,880
November.....	709	27	15	23.6	.060	.07	1,410
December.....	612	24	15	19.7	.050	.06	1,210
Calendar year 1949	40,660.6	1,400	7.8	111	.281	3.84	80,640
January 1950.....	321.5	16	6.0	10.4	.026	.03	638
February.....	1,473	200	5.5	52.6	.133	.14	2,920
March.....	8,639	700	58	279	.706	.81	17,140
April.....	1,223	79	24	40.8	.103	.12	2,430
May.....	1,955	401	31	65.1	.160	.18	3,880
June.....	11,167	4,760	16	372	.942	1.05	22,130
July.....	5,973	845	42	193	.489	.56	11,850
August.....	3,282	518	36	106	.268	.31	6,510
September.....	827	58	20	27.6	.070	.08	1,640
Water year 1949-50	37,625.5	4,760	5.5	103	.261	3.55	74,640

Lakes in Little Sioux River Basin

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 1950 (fragmentary).

GAGE.—Water-stage recorder. Datum of gage is 1,387.25 feet above mean sea level, datum of 1929 and 90.0 feet above Iowa Lake Survey datum. Mar. 16, 1933, to Sept. 4, 1936, several staff gages near lake outlet at same datum. Sept. 5, 1936, to Dec. 11, 1942, float gage, and Dec. 12, 1942, to July 5, 1950, water-stage recorder, on water inlet to State fish hatchery near lake outlet at same datum.

EXTREMES.—Maximum and minimum gage heights for the water years 1943-50 are contained in the following table:

Water Year	Maximum Recorded		Minimum Recorded	
	Date	Gage-height (feet)	Date	Gage-height (feet)
1942-43. . .	Sept. 3	14.72	Nov. 25, 27-29	11.02
1943-44. . .	June 19	15.74	Oct. 13	14.10
1944-45. . .	June 24	15.69	Sept. 30	13.99
1945-46. . .	June 16	15.30	Nov. 23	13.41
1946-47. . .	July 5, 6	15.34	Sept. 27	13.60
1947-48. . .	May 26, 29	14.78	Oct. 23	13.46
1948-49. . .	Apr. 14	14.65	Dec. 10-18	13.17
1949-50. . .	July 27	13.06	Sept. 18	12.32

1933-50: Maximum gage height recorded, 15.74 feet June 19, 1944; minimum observed, 6.75 feet Oct. 20, 1935.

REMARKS.—Gage heights affected by changes in direction and velocity of wind.

COOPERATION.—Services of observer furnished by Iowa State Conservation Commission.

Spirit Lake near Orleans, Iowa—Continued

Daily Gage height, in feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1	11.36		11.03	11.39				12.10		13.82	14.34	14.67
2	11.37	11.28		11.34				12.13			14.36	14.66
3	11.37		11.03	11.35				12.07		13.87	14.38	14.67
4	11.39	11.26		11.34				12.06			14.43	
5	11.43		11.27	11.34				12.07	12.40			
6	11.44		11.27	11.36				12.15				
7	11.40	11.24	11.29	11.37				12.13			14.44	
8				11.38			12.14	12.14				
9	11.43	11.20	11.29	11.40			12.14	12.12				
10				11.38			12.14	12.11		13.93		
11	11.40	11.20		11.37			12.17	12.12				
12			11.30	11.39			12.20	12.14				
13			11.30	11.39			12.24	12.09	12.60			
14	11.42	11.18	11.30	11.39			12.18	12.08			14.42	
15		11.16	11.30	11.39			12.13	12.09	12.76		14.42	
16		11.12	11.30	11.39			12.17	12.21	12.81		14.40	
17		11.10	11.30				12.11	12.21	12.81	13.90	14.37	
18	11.42		11.30				12.13	12.23	12.81		14.35	
19		11.07	11.30				12.11	12.26	12.83		14.34	
20			11.30			11.94	12.09	12.28	12.86			
21	11.44	11.05	11.33				12.07	12.30	12.89			
22	11.44		11.35				12.09	12.30	12.91		14.47	
23	11.42	11.03	11.35				12.11		12.91			
24	11.40		11.36				12.08	12.31	12.93	14.11		
25	11.40	11.02	11.36				12.11	12.33	13.33	14.12		14.41
26	11.38		11.37				12.10	12.33	13.49			
27		11.02	11.40				12.12	12.33	13.60			
28	11.30	11.02	11.37				12.11	12.31	13.80			
29		11.02	11.38				12.14	12.33	13.81		14.66	
30	11.30		11.40				12.16	12.37	13.82		14.67	
31	11.28		11.39							14.33	14.66	
1943-44												
1								14.94	15.48		14.41	
2	14.35							14.99	15.47		14.44	
3	14.35							15.03	15.47	15.14	14.53	
4	14.33							15.03	15.48	15.13	14.50	14.30
5	14.32							15.04	15.44	15.09	14.47	
6	14.32							15.03	15.42	15.06	14.45	
7	14.31							15.02	15.37	15.06		
8	14.30							15.06	15.37	15.05	14.29	
9	14.29							15.09	15.41	15.03	14.27	
10	14.16							15.09	15.39	15.11		
11	14.15							15.23	15.42			
12	14.15							15.26	15.47			
13	14.12							15.26	15.61			
14	14.15							15.26	15.64	15.16		
15	14.17							15.31	15.55	15.19	14.31	
16	14.15						14.93	15.36	15.58	15.18		
17	14.15						14.92	15.41	15.59	15.19		
18							14.92	15.51	15.59			
19							14.92	15.52	15.50	15.20		
20			14.39				14.94	15.55	15.47	15.19		
21							14.92	15.56	15.46	15.19	14.75	
22							14.91	15.56	15.45	15.17	14.72	
23							14.96	15.57	15.44	15.14	14.69	
24							14.93	15.58	15.41	15.10	14.65	
25							14.89	15.57		15.11	14.69	
26							14.89	15.57		15.05		
27		14.40					14.89	15.55		15.00		
28		14.40					14.87	15.54		14.96	14.84	14.86
29		14.45					14.86	15.52		14.92	14.83	
30							14.87	15.50			14.83	14.81
31								15.49		14.40		

Spirit Lake near Orleans, Iowa—Continued

Daily Gage height, in feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1	h14.82	14.68		h14.53						15.56	14.90	14.39
2		14.67	h14.63							15.52	14.87	14.36
3		14.67				h14.52				15.46	14.84	14.32
4		14.65			h14.51					15.46	14.80	14.31
5		14.62								15.46	14.78	14.29
6	h14.82	14.60								15.41	14.76	14.28
7	h14.87	14.62		h14.54			h14.97			15.39	14.71	14.25
8		14.66								15.37	14.70	14.24
9		14.68								15.35	14.68	14.21
10		14.65	h14.64							15.30	14.65	14.17
11		14.64			h14.50	h14.60				15.23	14.65	14.17
12	h14.74	14.65								15.21	14.64	14.17
13		14.64								15.19	14.63	14.15
14	h14.76	14.66		h14.38						15.18	14.75	14.14
15	h14.76	14.73								15.13	14.73	14.11
16		14.69								15.07	14.71	14.05
17		14.68								15.06	14.71	14.08
18		14.67	h14.54		h14.50					15.05	14.71	14.13
19		14.67								15.03	14.68	14.13
20		14.68								15.00	14.66	14.10
21		14.66		h14.60						15.01	14.62	.....
22		14.65								14.99	14.60	.....
23	14.74	14.65								14.95	14.57	14.06
24	14.73	14.62							15.66	14.91	14.56	14.04
25	14.75	14.64	h14.56		h14.50	h15.04			15.62	14.91	14.52	14.05
26	14.73	14.67							15.58	14.89	14.44	14.03
27	14.71	14.66							15.58	14.86	14.45	14.06
28	14.71	14.67		h14.54					15.64	14.83	14.45	14.05
29	14.71	14.66							15.62	14.80	14.44	14.02
30	14.70								15.61	14.90	14.42	14.00
31	14.70									14.90	14.41	.....
1945-46												
1	13.98					h13.53		14.31	14.66	15.10	14.48	14.08
2	13.97							14.37	14.59	15.07	14.47	14.07
3	13.94							14.44	14.56	15.03	14.47	14.05
4	13.92	13.44						14.46	14.55	15.01	14.43	14.04
5	13.91	13.46						14.45	14.52	14.99	14.43	14.04
6	13.90	13.46						14.45	14.52	14.99	14.41	14.06
7	13.92	13.45						14.44	14.52	14.98	14.39	14.06
8	13.90	13.46						14.41	14.51	14.96	14.39	14.23
9	13.86	13.44						14.40	14.51	14.94	14.37	14.40
10	13.85							14.44	14.51	14.91	14.34	14.42
11	13.85	13.45						14.39	14.53	14.88	14.30	14.42
12	13.84	13.47						14.41	14.58	14.84	14.28	14.40
13	13.83	13.48						14.35	14.59	14.78	14.27	14.38
14	13.83	13.47						14.39	14.58	14.79	14.25	14.40
15	13.80	13.44						14.39	14.84	14.77	14.27	h14.40
16	13.79	13.44				h13.54		14.38		14.74	14.33	h14.40
17	13.80	13.45						14.37	15.07	14.72	14.33	h14.40
18	13.80	13.48						14.43	15.08	14.72	14.30	h14.39
19	13.78	13.46						14.46	15.11	14.71	14.28	h14.40
20	13.76	13.47						14.46	15.12	14.68	14.25	h14.38
21	13.77	13.49						14.44	15.12	14.67	14.25	h14.37
22	13.75	13.48						14.47	15.11	14.65	14.23	14.37
23	13.73	13.42				h14.47		14.56	15.09	14.63	14.21	14.39
24	13.71							14.63	15.10	14.59	14.20	14.36
25	13.71							14.66	15.14	14.60	14.18	14.35
26	13.69							14.36	14.66	15.12	14.57	.....
27								14.34	14.67	15.11	14.55	.....
28								14.34	14.66	15.13	14.54	.....
29								14.32	14.65	15.13	14.53	.....
30	h13.65							14.32	14.64	15.13	14.51	.....
31									14.66		14.48	.....

h Once daily readings of tape or outside gage.

Spirit Lake near Orleans, Iowa—Continued

Daily Gage height, in feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1	14.30	14.72	14.62					15.09	14.74	15.10	14.61	14.02
2	14.30	14.71	14.62		14.64	14.56		15.10	14.70	15.08	14.60	13.99
3	14.32	14.68	14.62							15.06		13.98
4	14.32	14.66								15.19		13.98
5	14.35	14.62	14.63	14.62					14.61	15.34		13.96
6	14.38	14.62	14.63				14.26		14.65	15.34		13.93
7	14.41	14.63	14.63						14.69	15.33		13.93
8	14.43	14.67	14.62						14.69	15.31		13.90
9	14.43	14.64	14.60			14.54		14.97	14.69	15.29		13.88
10	14.44	14.69	14.60					14.93	14.69	15.27	14.42	13.85
11	14.54	14.70	14.60					14.89	14.67	15.25		13.87
12	14.53	14.69	14.63	14.61	14.57			14.87	14.65	15.23		13.90
13	14.52	14.69					14.17	14.92		15.23		13.89
14	14.52	14.70						14.91	14.64	15.21		13.89
15	14.51	14.71	14.61					14.92	14.63	15.18		13.84
16	14.53	14.76			14.57	14.52		14.93	14.65	15.15		13.82
17	14.54	14.72						14.92	14.76	15.12		13.80
18	14.53	14.70						14.91	14.79	15.07		13.78
19	14.52	14.71		14.61				14.93	14.79	15.01		13.78
20	14.52	14.71					14.07		14.79	15.00	14.25	13.79
21	14.55	14.69						14.88	14.79	14.93	14.24	
22	14.57	14.74	14.60					14.86	14.85	14.88	14.22	
23	14.58					14.56	14.48	14.96	14.85	14.98	14.84	14.20
24	14.64	14.71						14.83	15.00	14.79	14.19	
25	14.63	14.67						14.83	15.03	14.76	14.18	
26	14.66	14.67		14.62				14.80	15.01	14.74	14.14	
27	14.64	14.67						14.78	15.02	14.73	14.12	13.60
28	14.65	14.67						14.78	15.05	14.71		
29	14.69		14.60				15.03	14.76	15.05	14.67		
30	14.74					14.45	15.04	14.74	15.10	14.67		
31	14.73							14.71		14.64	14.02	
1947-48												
1	13.47	13.48					14.06		14.74	15.27	14.18	13.73
2	13.48	13.48		13.80					14.73	14.26	14.16	
3	13.49	13.48							14.74	14.26	14.16	13.77
4	13.50	13.48	13.80			13.89			14.25	14.15	13.80	
5	13.49	13.49			13.85					14.24	14.13	13.70
6	13.49									14.23	14.12	13.70
7	13.48	13.72								14.23	14.09	13.70
8	13.48			13.81						14.23	14.07	13.69
9	13.48									14.21	14.07	13.69
10	13.48									14.26	14.06	13.68
11	13.49		13.81			13.94				14.30	14.05	13.68
12	13.49				13.86					14.29	14.05	13.67
13	13.50								14.29	14.29	14.10	13.64
14	13.50			13.82					14.29	14.28	14.08	13.61
15	13.50	13.78							14.29	14.28	14.07	13.57
16	13.50	13.79							14.29	14.28	14.07	13.53
17	13.51	13.78							14.29	14.29	14.05	13.51
18	13.52	13.77	13.80			14.02			14.29	14.28	14.05	13.49
19	13.52	13.78			13.86				14.30	14.29	14.03	13.48
20	13.52	13.80							14.30	14.31	14.03	13.51
21	13.53	13.83							14.30	14.30	14.02	13.64
22	13.50			13.84					14.30	14.29	14.01	13.60
23	13.46								14.29	14.28	14.02	13.59
24	13.47								14.30	14.28	14.00	13.58
25	13.47					14.08			14.30	14.26	13.96	13.56
26	13.47		13.79		13.86			14.78	14.29	14.25	13.92	13.54
27	13.47	13.80						14.76	14.28	14.25	13.88	13.52
28	13.47							14.77	14.28	14.22	13.84	13.52
29	13.48			13.85				14.78	14.27	14.21	13.74	13.51
30	13.48							14.75	14.27	14.21	13.73	13.48
31	13.48							14.74		14.20	13.73	

Note—Gage-height is once-daily tape-gage or reference-point reading Oct. 1-5, Dec. 15, 22, 29, 1946, Jan. 5 to Apr. 23, Aug. 10, Sept. 27, Nov. 7, 27, Dec. 4, 11, 18, 26, 1947, Jan. 2 to Apr. 1, June 18 to Sept. 30, 1948.

Spirit Lake near Orleans, Iowa—Continued

Daily Gage height, in feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1		13.28	e13.20	13.24			14.21	e14.43	e14.42	e14.41	e13.98	
2		13.28	e13.20	13.20			14.25	e14.43	14.45	e14.39	e13.95	
3		13.28	13.20	13.21			14.30	e14.43		e14.38	e13.92	
4		13.29	13.19	13.30			14.33	e14.43		e14.35	e13.88	
5		13.33	13.21	13.29			14.37	e14.44		14.33	e13.85	
6		13.30	13.21	13.29			14.40	e14.44		14.30	e13.82	
7		13.30	13.20	13.29			e14.43	e14.44		14.26	e13.79	
8		13.32	13.19	13.28			e14.48	e14.44		f14.22	e13.76	
9		13.32	13.18	13.28			e14.50	e14.45		e14.21		
10		13.31	13.17	13.28			e14.52	e14.45		e14.21		
11		13.32	13.17				e14.55	e14.43		e14.20		
12		13.33	13.17				e14.58	e14.41		e14.20		
13		13.32	13.17				e14.62	e14.37		e14.19		
14		13.31	13.17	13.30			e14.65	e14.35		e14.17		
15		13.30	13.17				14.56	e14.34		e14.17		
16		13.31	13.17				14.52	e14.33		e14.16		
17		e13.31	13.17				14.56	e14.35		e14.15		
18	13.30	e13.33	13.17				14.53	e14.38	14.38	e14.14		
19	13.29	13.47	13.18				14.51	e14.40	14.38	e14.14		
20	13.27	13.54	13.18				14.49	e14.38	14.39	e14.13		
21	13.28	13.55	13.18				e14.48	14.36	14.40	e14.12		
22	13.29	13.54	13.18				e14.47	14.34	e14.43	e14.11		
23	13.27	13.54	13.18				e14.46	14.35	f14.45	e14.10		
24	13.25	13.54	13.18				e14.44	14.32	e14.50	e14.09		
25	13.25	13.55	13.18				e14.44	14.34	e14.53	e14.08		
26	13.26	e13.50	13.18				e14.44	f14.36	14.50	f14.08		
27	13.26	e13.40	13.18				e14.44	14.40	f14.49	14.16		
28	13.26	e13.32	13.18				e14.43	14.38	e14.48	14.15		
29	13.26	e13.25	e13.19				e14.43	14.37	e14.47	e14.12		
30	13.28	e13.22	e13.21				e14.43	f14.37	e14.43	e14.07		
31	13.28		e13.23					e14.39		e14.02		
1949-50												
1											12.98	12.54
2											12.96	12.53
3											12.95	12.51
4											12.93	12.50
5											12.91	12.47
6										f12.92	12.90	12.45
7										12.90	12.90	12.43
8										12.87	12.91	12.42
9										12.94	12.90	12.41
10										12.98	12.89	12.41
11										12.97	12.88	12.40
12										13.01	12.85	12.38
13										12.98	12.83	12.36
14										12.95	12.80	12.36
15											12.80	12.35
16											12.79	12.35
17											12.79	12.34
18											12.76	12.33
19											12.71	12.33
20											12.68	12.37
21											12.66	12.53
22											12.64	12.53
23											12.62	12.53
24											12.61	12.50
25											12.60	12.49
26											12.59	12.47
27										13.06	12.58	12.45
28										13.04	12.58	12.45
29										13.03	12.57	12.44
30										13.02	12.56	12.44
31										13.01	12.55	

e Computed from graph based on fragmentary gage-height record and records for Okoboji Lake near Milford.

f Computed on basis of partly estimated gage-height record.

h Tape gage reading.

Lakes in Little Sioux River Basin

Okoboji Lake at Lakeside Laboratory, near Milford, Iowa

LOCATION.—Lat. $43^{\circ}22'40''$, long. $95^{\circ}10'40''$, in $W\frac{1}{2}$ 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 1950.

GAGE.—Water-stage recorder. Datum of gage is 1,391.76 feet above mean sea level, datum of 1929, and 94.51 feet above Iowa Lake Survey datum. Prior to June 17, 1938, staff gage on sheet piling at State pier at Arnolds Park at same datum.

EXTREMES.—Maximum and minimum gage heights for water years 1943-50 are contained in the following table:

Water Year	Maximum Recorded		Minimum Recorded	
	Date	Gage-height (feet)	Date	Gage-height (feet)
1942-43...	June 28	5.25	Dec. 14, 15	3.95
1943-44...	June 18	5.03	Nov. 3	3.85
1944-45...	June 15	5.42	Sept. 30	3.83
1945-46...	June 28	4.68	Nov. 22	3.29
1946-47...	July 5-10	5.17	Sept. 30	3.54
1947-48...	May 15	4.48	Sept. 30	3.31
1948-49...	June 26	(¹)4.50	Nov. 16	2.89
1949-50...	July 19	3.68	Dec. 7-10, 19, 28-30	2.87

(1) Daily.

1933-50:: Maximum gage height, 5.42 feet June 15, 1945; minimum observed, 1.38 feet Nov. 17, 19, 24, 25, 1934, Jan. 27, 1935.

COOPERATION.—Services of observer furnished by Iowa State Conservation Commission.

Okoboji Lake at Lakeside Laboratory, near Milford, Iowa—Continued
 Daily Gage height, in feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	4.27	4.10	3.98	4.04	4.11	4.50	4.67	4.40	4.51	5.13	4.65	4.34
2.....	4.27	4.09	3.99	4.05	4.11	4.49	4.63	4.38	4.51	5.12	4.63	4.33
3.....	4.26	4.07	3.98	4.05	4.13	4.50	4.60	4.37	4.51	5.12	4.60	4.32
4.....	4.27	4.06	3.98	4.07	4.15	4.49	4.59	4.36	4.48	5.11	4.56	4.31
5.....	4.30	4.06	3.98	4.07	4.15	4.49	4.57	4.34	4.47	5.09	4.54	4.30
6.....	4.30	4.06	3.98	4.07	4.15	4.48	4.55	4.34	4.47	5.09	4.51	4.30
7.....	4.30	4.06	3.98	4.07	4.15	4.47	4.54	4.33	4.47	5.07	4.48	4.26
8.....	4.29	4.05	3.97	4.08	4.14	4.46	4.53	4.31	4.47	5.06	4.47	4.22
9.....	4.28	4.06	3.97	4.08	4.14	4.46	4.53	4.29	4.45	5.03	4.47	4.21
10.....	4.27	4.04	3.98	4.08	4.14	4.45	4.53	4.28	4.44	5.00	4.46	4.20
11.....	4.27	4.03	3.97	4.07	4.15	4.45	4.53	4.28	4.43	4.96	4.49	4.21
12.....	4.26	4.02	3.96	4.07	4.15	4.45	4.54	4.30	4.44	4.91	4.48	4.21
13.....	4.25	4.02	3.96	4.08	4.15	4.43	4.53	4.28	4.47	4.88	4.47	4.20
14.....	4.25	4.01	3.95	4.08	4.15	4.42	4.50	4.27	4.50	4.87	4.43	4.19
15.....	4.25	4.01	3.95	4.09	4.16	4.43	4.49	4.30	4.56	4.81	4.48	4.18
16.....	4.25	4.01	3.96	4.12	4.17	4.48	4.48	4.44	4.58	4.83	4.45	4.16
17.....	4.24	4.01	3.97	4.12	4.17	4.48	4.47	4.45	4.56	4.79	4.41	4.14
18.....	4.23	4.01	3.96	4.12	4.17	4.48	4.48	4.44	4.54	4.78	4.39	4.12
19.....	4.22	4.00	3.97	4.11	4.18	.....	4.45	4.44	4.53	4.86	4.35	4.12
20.....	4.21	4.02	3.97	4.11	4.20	4.52	4.43	4.43	4.52	4.84	4.34	4.10
21.....	4.18	4.01	3.98	4.11	4.28	.....	4.42	4.43	4.52	4.84	4.33	4.08
22.....	4.19	4.00	4.02	4.11	4.37	.....	4.43	4.40	4.49	4.80	4.35	4.07
23.....	4.16	3.99	4.03	4.12	4.44	4.51	4.44	4.41	4.47	4.77	4.34	4.06
24.....	4.15	3.98	4.03	4.12	4.46	4.57	4.42	4.42	4.46	4.80	4.36	4.05
25.....	4.12	3.98	4.03	.....	4.47	4.60	4.42	4.42	4.87	4.80	4.46	4.04
26.....	4.10	3.96	4.04	.....	4.49	4.61	4.42	4.43	5.06	4.76	4.47	4.01
27.....	4.10	3.97	4.03	.....	4.49	4.62	4.41	4.42	5.13	4.74	4.45	4.01
28.....	4.10	4.00	4.03	.....	4.49	4.63	4.41	4.41	5.24	4.75	4.41	4.03
29.....	4.09	3.98	4.03	.....	.....	4.64	4.41	4.42	5.21	4.75	4.39	4.03
30.....	4.09	3.99	4.04	4.10	.....	4.66	4.43	4.45	5.17	4.71	4.38	4.04
31.....	4.09	.....	4.05	4.10	.....	4.68	.....	4.49	.....	4.69	4.35	.....
1943-44												
1.....	4.04	3.86	3.96	3.94	4.07	4.19	4.26	4.41	4.62	4.79	4.57	4.45
2.....	4.01	3.86	3.96	3.94	4.07	4.19	4.27	4.45	4.61	4.76	4.55	4.44
3.....	4.01	3.86	3.95	3.94	4.07	4.19	4.26	4.51	4.60	4.74	4.55	4.43
4.....	3.98	3.87	3.95	3.94	4.07	4.20	4.26	4.52	4.62	4.72	4.67	4.40
5.....	3.98	3.87	3.96	3.96	4.07	4.20	4.26	4.50	4.63	4.68	4.67	4.40
6.....	3.98	3.87	3.96	3.95	4.06	4.20	4.26	4.47	4.62	4.66	4.66	4.36
7.....	3.97	3.95	3.95	3.95	4.06	4.20	4.26	4.45	4.61	4.65	4.63	4.35
8.....	3.96	4.01	3.96	3.95	4.06	4.21	4.26	4.45	4.62	4.64	4.60	4.33
9.....	3.95	3.99	3.96	3.95	4.05	4.21	4.27	4.44	4.66	4.62	4.58	4.32
10.....	3.94	3.98	3.96	3.95	4.07	4.21	4.27	4.43	4.64	4.73	4.55	4.33
11.....	3.92	3.98	3.96	3.95	4.07	4.21	4.25	4.51	4.65	4.84	4.53	4.32
12.....	3.92	3.97	3.96	3.94	4.07	4.21	4.22	4.56	4.75	4.90	4.50	4.32
13.....	3.98	3.97	3.95	3.95	4.08	4.21	4.25	4.57	4.80	4.89	4.48	4.30
14.....	3.96	3.96	3.95	3.95	4.07	4.20	4.26	4.56	4.87	4.89	4.49	4.28
15.....	3.94	3.95	3.95	3.95	4.07	4.21	4.29	4.54	4.91	4.98	4.47	4.27
16.....	3.93	3.95	3.95	3.95	4.07	4.21	4.26	4.56	4.95	4.97	4.47	4.27
17.....	3.92	3.95	3.95	3.95	4.08	4.21	4.25	4.56	5.00	4.99	4.48	4.25
18.....	3.91	3.95	3.94	3.95	4.08	4.21	4.25	4.60	5.02	4.98	4.45	4.27
19.....	3.90	3.95	3.94	3.95	4.10	4.20	4.25	4.65	5.00	4.95	4.42	4.30
20.....	3.93	3.96	3.94	3.95	4.10	4.21	4.28	4.66	4.98	4.91	4.40	4.29
21.....	3.93	3.97	3.94	3.94	4.10	4.21	4.29	4.68	4.97	4.86	4.40	4.27
22.....	3.93	3.96	3.93	3.94	4.10	4.22	4.31	4.66	4.97	4.84	4.38	4.26
23.....	3.93	3.96	3.93	3.93	4.10	4.22	4.35	4.67	4.97	4.82	4.36	4.30
24.....	3.92	3.95	3.93	3.93	4.10	4.23	4.37	4.66	4.94	4.79	4.33	4.28
25.....	3.90	3.95	3.92	3.94	4.12	4.23	4.37	4.65	4.94	4.76	4.30	4.27
26.....	3.88	3.95	3.93	3.96	4.19	4.24	4.38	4.65	4.92	4.74	4.35	4.27
27.....	3.88	3.96	3.94	4.02	4.20	4.24	4.38	4.66	4.89	4.68	4.44	4.27
28.....	3.87	3.96	3.94	4.06	4.20	4.25	4.38	4.65	4.86	4.63	4.43	4.26
29.....	3.86	3.96	3.93	4.06	4.19	4.25	4.38	4.63	4.84	4.62	4.46	4.25
30.....	3.88	3.96	3.94	4.07	.....	4.25	4.41	4.63	4.82	4.59	4.47	4.23
31.....	3.88	.....	3.94	4.07	.....	4.25	.....	4.62	.....	4.57	4.45	.....

Okoboji Lake at Lakeside Laboratory, near Milford, Iowa—Continued

Daily Gage height, in Feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1												
2	4.21	3.97	3.96	4.05	4.15	4.31	4.98	4.65	4.75	5.13	4.69	4.18
3	4.21	3.96	3.95	4.05	4.15	4.35	4.99	4.66	4.75	5.10	4.67	4.16
4	4.21	3.95	3.94	4.05	4.16	4.36	4.98	4.64	4.73	5.05	4.64	4.13
5	4.20	3.94	3.94	4.05	4.18	4.36	5.01	4.61	4.70	5.05	4.62	4.12
6	4.20	3.92	3.94	4.05	4.19	4.38	5.00	4.59	4.69	5.07	4.60	4.11
7	4.19	3.91	3.94	4.06	4.19	4.38	4.99	4.57	4.68	5.04	4.57	4.09
8	4.17	3.93	3.96	4.06	4.19	4.37	5.00	4.56	4.66	5.02	4.53	4.08
9	4.16	3.85	3.96	4.05	4.19	4.37	4.98	4.50	4.65	4.99	4.51	4.06
10	4.14	3.96	3.97	4.05	4.21	4.37	4.98	4.50	4.72	4.96	4.49	4.03
11	4.12	3.96	3.98	4.06	4.21	4.41	4.99	4.50	5.14	4.91	4.49	3.99
12	4.10	3.95	3.98	4.06	4.21	4.53	4.98	4.48	5.19	4.86	4.48	3.98
13	4.08	3.95	3.98	4.07	4.21	4.59	4.97	4.47	5.21	4.83	4.45	3.96
14	4.08	3.96	3.99	4.08	4.23	4.62	4.97	4.47	5.28	4.82	4.45	3.94
15	4.08	3.98	4.00	4.10	4.25	4.66	4.94	4.49	5.31	4.81	4.45	3.93
16	4.07	4.01	3.99	4.10	4.26	4.83	4.90	4.47	5.38	4.77	4.43	3.92
17	4.06	4.00	4.00	4.10	4.27	4.90	4.92	4.44	5.37	4.75	4.42	3.90
18	4.05	4.00	4.00	4.11	4.28	4.95	4.88	4.42	5.35	4.73	4.40	3.97
19	4.05	4.00	4.01	4.13	4.28	4.96	4.87	4.41	5.32	4.71	4.39	3.97
20	4.05	4.00	4.01	4.13	4.28	4.97	4.86	4.40	5.28	4.69	4.38	3.95
21	4.05	3.99	4.02	4.14	4.28	4.99	4.84	4.44	5.27	4.68	4.37	3.93
22	4.05	3.98	4.02	4.14	4.28	4.99	4.82	4.50	5.23	4.67	4.34	3.93
23	4.03	3.98	4.03	4.14	4.29	4.99	4.80	4.53	5.20	4.64	4.33	3.91
24	4.03	3.98	4.03	4.14	4.28	4.99	4.83	4.54	5.20	4.65	4.31	3.90
25	4.02	3.97	4.02	4.15	4.30	5.00	4.80	4.54	5.19	4.64	4.29	3.90
26	4.01	3.98	4.02	4.16	4.36	5.00	4.78	4.60	5.14	4.63	4.27	3.89
27	4.00	3.98	4.02	4.16	4.36	4.99	4.74	4.63	5.12	4.60	4.23	3.88
28	3.99	3.98	4.02	4.15	4.35	5.00	4.72	4.64	5.11	4.61	4.22	3.90
29	3.99	3.98	4.03	4.15	4.35	5.00	4.70	4.63	5.19	4.62	4.22	3.87
30	3.99	3.96	4.03	4.15	.....	5.01	4.68	4.64	5.18	4.60	4.21	3.86
31	3.98	3.96	4.04	4.15	.....	5.01	4.65	4.64	5.17	4.68	4.21	3.83
	3.98	.....	4.05	4.14	.....	5.00	.....	4.66	.....	4.70	4.19	.....
1945-46												
1	3.82	3.48	3.35	3.50	3.54	3.84	4.32	4.16	4.37	4.64	4.16	3.80
2	3.82	3.47	3.38	3.50	3.54	3.86	4.32	4.19	4.35	4.62	4.16	3.77
3	3.79	3.46	3.38	3.49	3.53	3.88	4.30	4.25	4.32	4.60	4.15	3.75
4	3.79	3.43	3.35	3.50	3.53	3.90	4.29	4.24	4.31	4.58	4.13	3.75
5	3.78	3.43	3.38	3.50	3.57	3.91	4.29	4.23	4.30	4.57	4.13	3.76
6	3.78	3.43	3.38	3.50	3.60	3.93	4.27	4.22	4.31	4.55	4.11	3.77
7	3.77	3.44	3.39	3.49	3.61	3.96	4.25	4.20	4.31	4.57	4.09	3.81
8	3.76	3.43	3.38	3.50	3.61	3.98	4.26	4.18	4.28	4.56	4.08	3.89
9	3.73	3.42	3.37	3.50	3.61	3.98	4.24	4.17	4.26	4.56	4.05	4.06
10	3.71	3.40	3.37	3.50	3.61	3.98	4.22	4.19	4.26	4.52	4.03	4.08
11	3.70	3.39	3.36	3.50	3.61	3.98	4.24	4.15	4.27	4.50	4.02	4.10
12	3.70	3.40	3.36	3.50	3.61	3.99	4.22	4.14	4.34	4.48	4.00	4.08
13	3.69	3.41	3.37	3.50	3.61	4.00	4.23	4.11	4.34	4.45	3.98	4.08
14	3.68	3.41	3.37	3.50	3.61	4.02	4.23	4.12	4.35	4.45	3.96	4.08
15	3.67	3.39	3.37	3.50	3.61	4.05	4.22	4.12	4.51	4.43	3.96	4.08
16	3.65	3.39	3.37	3.50	3.61	4.07	4.19	4.11	4.58	4.41	3.98	4.07
17	3.66	3.39	3.37	3.50	3.61	4.12	4.18	4.16	4.60	4.40	3.98	4.06
18	3.65	3.39	3.37	3.51	3.61	4.14	4.18	4.19	4.58	4.39	3.95	4.05
19	3.63	3.37	3.37	3.50	3.62	4.14	4.17	4.26	4.60	4.38	3.93	4.05
20	3.63	3.37	3.37	3.50	3.65	4.16	4.16	4.25	4.59	4.35	3.91	4.06
21	3.62	3.36	3.37	3.50	3.65	4.16	4.14	4.25	4.60	4.33	3.93	4.04
22	3.61	3.31	3.37	3.50	3.67	4.17	4.22	4.30	4.60	4.31	3.91	4.02
23	3.59	3.33	3.39	3.50	3.68	4.24	4.24	4.38	4.59	4.29	3.91	4.01
24	3.58	3.33	3.41	3.51	3.70	4.27	4.22	4.42	4.60	4.26	3.89	4.00
25	3.56	3.33	3.42	3.51	3.71	4.34	4.22	4.45	4.62	4.26	3.87	3.99
26	3.54	3.33	3.44	3.52	3.77	4.34	4.20	4.44	4.63	4.24	3.84	3.99
27	3.54	3.34	3.46	3.51	3.78	4.34	4.18	4.44	4.62	4.22	3.86	3.99
28	3.52	3.35	3.47	3.51	3.81	4.33	4.19	4.42	4.64	4.21	3.87	3.98
29	3.52	3.34	3.49	3.51	.....	4.35	4.16	4.41	4.66	4.20	3.83	3.95
30	3.50	3.33	3.50	3.53	.....	4.34	4.16	4.39	4.66	4.19	3.81	3.94
31	3.49	.....	3.50	3.54	.....	4.33	.....	4.39	.....	4.18	3.80	.....

Okoboji Lake at Lakeside Laboratory, near Milford, Iowa—Continued

Daily Gage height, in Feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	3.91	4.13	4.24	4.39	4.50	4.43	4.42	4.94	4.62	4.97	4.50	3.93
2.....	3.90	4.13	4.24	4.39	4.50	4.42	4.42	4.98	4.58	4.95	4.48	3.93
3.....	3.89	4.12	4.23	4.39	4.50	4.41	4.42	4.99	4.55	4.91	4.45	3.92
4.....	3.95	4.10	4.24	4.39	4.50	4.40	4.45	4.97	4.56	5.07	4.43	3.91
5.....	4.05	4.10	4.25	4.39	4.50	4.39	4.49	4.96	4.56	5.17	4.40	3.89
6.....	4.04	4.10	4.26	4.39	4.50	4.39	4.52	4.96	4.59	5.17	4.39	3.86
7.....	4.06	4.12	4.27	4.39	4.50	4.40	4.52	4.95	4.59	5.17	4.37	3.85
8.....	4.05	4.13	4.27	4.39	4.50	4.40	4.51	4.92	4.59	5.17	4.35	3.82
9.....	4.06	4.15	4.28	4.39	4.49	4.40	4.55	4.90	4.58	5.17	4.31	3.80
10.....	4.10	4.18	4.28	4.39	4.48	4.40	4.60	4.88	4.57	5.17	4.27	3.78
11.....	4.12	4.18	4.29	4.40	4.47	4.41	4.63	4.85	4.57	5.16	4.25	3.78
12.....	4.12	4.17	4.30	4.39	4.46	4.44	4.64	4.87	4.61	5.15	4.23	3.85
13.....	4.11	4.17	4.29	4.41	4.45	4.47	4.63	4.93	4.65	5.12	4.20	3.87
14.....	4.10	4.18	4.29	4.41	4.46	4.47	4.64	4.91	4.64	5.11	4.19	3.84
15.....	4.10	4.19	4.30	4.41	4.46	4.47	4.67	4.92	4.63	5.09	4.17	3.81
16.....	4.11	4.23	4.27	4.41	4.47	4.46	4.64	4.90	4.63	5.07	4.14	3.79
17.....	4.10	4.22	4.26	4.41	4.48	4.45	4.64	4.89	4.68	5.05	4.12	3.76
18.....	4.08	4.21	4.28	4.41	4.48	4.45	4.65	4.87	4.69	5.00	4.11	3.75
19.....	4.08	4.22	4.28	4.41	4.48	4.46	4.63	4.85	4.68	4.94	4.12	3.75
20.....	4.07	4.24	4.28	4.40	4.49	4.47	4.62	4.81	4.68	4.91	4.14	3.74
21.....	4.06	4.24	4.29	4.40	4.48	4.47	4.60	4.78	4.70	4.85	4.13	3.73
22.....	4.07	4.25	4.29	4.39	4.48	4.47	4.61	4.76	4.76	4.80	4.11	3.69
23.....	4.07	4.26	4.30	4.39	4.47	4.49	4.64	4.74	4.91	4.76	4.08	3.66
24.....	4.11	4.26	4.30	4.39	4.46	4.48	4.64	4.71	4.92	4.72	4.09	3.65
25.....	4.12	4.25	4.31	4.40	4.45	4.47	4.64	4.69	4.92	4.69	4.08	3.63
26.....	4.13	4.24	4.32	4.39	4.45	4.45	4.63	4.66	4.91	4.67	4.05	3.61
27.....	4.11	4.23	4.35	4.39	4.44	4.44	4.63	4.65	4.90	4.66	4.02	3.59
28.....	4.10	4.23	4.36	4.40	4.43	4.43	4.64	4.65	4.94	4.62	4.01	3.57
29.....	4.10	4.24	4.39	4.42	.....	4.43	4.85	4.63	4.93	4.59	3.98	3.57
30.....	4.12	4.24	4.39	4.49	.....	4.42	4.87	4.62	4.97	4.57	3.98	3.56
31.....	4.12	.....	4.39	4.50	.....	4.41	.....	4.61	.....	4.54	3.96	.....
1947-48												
1.....	3.56	3.57	3.61	3.65	3.65	4.01	4.29	4.43	4.31	4.24	4.01	3.71
2.....	3.56	3.56	3.61	3.65	3.65	4.02	4.29	4.42	4.30	4.22	4.00	3.69
3.....	3.56	3.55	3.61	3.65	3.64	4.03	4.26	4.41	4.30	4.21	3.99	3.69
4.....	3.55	3.57	3.64	3.65	3.65	4.03	4.27	4.40	4.29	4.21	3.98	3.66
5.....	3.54	3.61	3.65	3.65	3.65	4.04	4.27	4.42	4.29	4.20	3.96	3.64
6.....	3.54	3.63	3.65	3.65	3.65	4.08	4.27	4.40	4.26	4.20	3.95	3.62
7.....	3.53	3.65	3.65	3.65	3.65	4.10	4.31	4.38	4.24	4.18	3.95	3.60
8.....	3.53	3.62	3.65	3.65	3.65	4.10	4.31	4.37	4.21	4.16	3.94	3.57
9.....	3.52	3.62	3.65	3.65	3.65	4.11	4.31	4.39	4.20	4.14	3.94	3.55
10.....	3.51	3.61	3.65	3.65	3.65	4.11	4.31	4.36	4.20	4.14	3.92	3.53
11.....	3.50	3.58	3.65	3.65	3.65	4.11	4.33	4.35	4.18	4.14	3.91	3.51
12.....	3.50	3.57	3.65	3.65	3.65	4.11	4.33	4.34	4.22	4.12	3.91	3.50
13.....	3.49	3.57	3.65	3.65	3.65	4.11	4.32	4.33	4.20	4.14	3.92	3.49
14.....	3.48	3.57	3.65	3.65	3.65	4.11	4.31	4.35	4.21	4.22	3.92	3.46
15.....	3.48	3.61	3.64	3.65	3.65	4.12	4.31	4.48	4.21	4.19	3.93	3.44
16.....	3.48	3.61	3.64	3.65	3.65	4.13	4.31	4.47	4.21	4.17	3.92	3.40
17.....	3.47	3.60	3.65	3.65	3.65	4.17	4.29	4.46	4.24	4.15	3.90	3.38
18.....	3.47	3.60	3.66	3.64	3.73	4.23	4.29	4.45	4.23	4.14	3.88	3.38
19.....	3.44	3.60	3.66	3.65	3.77	4.28	4.29	4.44	4.22	4.13	3.86	3.39
20.....	3.43	3.61	3.66	3.64	3.77	4.29	4.27	4.43	4.22	4.13	3.84	3.43
21.....	3.42	3.61	3.66	3.65	3.78	4.31	4.24	4.46	4.23	4.13	3.84	3.45
22.....	3.42	3.62	3.65	3.65	3.77	4.31	4.28	4.43	4.25	4.12	3.82	3.44
23.....	3.41	3.62	3.65	3.65	3.77	4.31	4.32	4.42	4.27	4.11	3.79	3.42
24.....	3.44	3.61	3.65	3.65	3.77	4.30	4.35	4.38	4.27	4.09	3.76	3.39
25.....	3.45	3.60	3.64	3.65	3.77	4.32	4.41	4.36	4.27	4.08	3.74	3.37
26.....	3.45	3.60	3.64	3.65	3.77	4.32	4.44	4.35	4.26	4.06	3.73	3.36
27.....	3.45	3.61	3.65	3.65	3.85	4.33	4.44	4.33	4.30	4.05	3.73	3.34
28.....	3.44	3.61	3.64	3.65	3.98	4.29	4.42	4.31	4.31	4.03	3.76	3.33
29.....	3.43	3.61	3.64	3.65	4.00	4.30	4.42	4.30	4.29	4.06	3.76	3.32
30.....	3.44	3.61	3.64	3.65	.....	4.30	4.42	4.32	4.26	4.04	3.74	3.31
31.....	3.54	.....	3.65	3.65	.....	4.29	.....	4.32	.....	4.02	3.72	.....

Okoboji Lake at Lakeside Laboratory, near Milford, Iowa—Continued

Daily Gage height, in feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	3.29	2.98	3.05	3.11	3.25	3.29	.....	4.21	4.39	4.44	.....	3.61
2.....	3.27	2.98	3.05	3.11	3.26	3.29	4.14	4.19	4.49	4.44	.....	3.48
3.....	3.25	2.98	3.05	3.11	3.25	3.31	4.15	4.19	4.48	4.44	.....	3.47
4.....	3.22	2.98	3.05	3.14	3.25	3.35	4.17	4.21	4.47	4.44	.....	3.50
5.....	3.19	2.98	3.05	3.19	3.25	3.43	4.17	4.28	4.45	4.44	.....	3.51
6.....	3.18	2.95	3.05	3.19	3.25	3.48	4.18	4.32	4.44	4.44	3.80	3.51
7.....	3.20	2.95	3.04	.....	3.25	3.51	4.17	4.31	4.41	4.44	3.79	3.50
8.....	3.19	2.97	3.04	.....	3.25	3.53	4.17	4.30	4.37	4.44	3.78	3.49
9.....	3.17	2.96	3.04	.....	3.25	3.53	4.17	4.29	4.34	4.43	3.76	3.47
10.....	3.15	2.94	3.04	.....	3.25	3.53	4.18	4.28	4.33	.....	3.76	3.48
11.....	3.14	2.94	3.03	.....	3.25	3.54	4.18	4.27	4.32	.....	3.81	3.59
12.....	3.13	2.93	3.04	.....	3.25	3.55	4.18	4.28	4.32	.....	3.83	3.61
13.....	3.12	2.92	3.04	.....	3.25	3.55	4.20	4.28	4.33	.....	3.83	3.59
14.....	3.11	2.91	.....	.....	3.25	3.55	4.24	4.28	4.31	.....	3.85	3.59
15.....	3.09	2.90	.....	.....	3.25	3.55	4.22	4.28	4.31	.....	3.84	3.57
16.....	3.08	2.89	.....	.....	3.25	3.55	4.21	4.29	4.25	.....	3.83	3.56
17.....	3.05	2.91	.....	.....	3.25	3.55	.....	4.34	4.25	.....	3.82	3.56
18.....	3.04	2.95	3.04	.....	3.25	3.55	4.22	4.36	4.28	.....	3.80	3.53
19.....	3.04	3.08	3.05	.....	3.25	3.56	4.21	4.35	4.26	.....	3.82	3.51
20.....	3.02	3.10	3.06	.....	3.25	3.57	4.21	4.34	4.26	.....	3.79	3.49
21.....	3.01	3.09	3.06	.....	3.26	3.60	4.23	4.38	4.25	.....	3.77	3.46
22.....	3.00	3.08	3.05	.....	3.26	3.63	4.25	4.40	4.24	.....	3.74	3.44
23.....	2.99	3.07	3.05	.....	3.26	3.63	4.25	4.40	4.24	.....	3.72	3.42
24.....	2.97	3.07	3.05	.....	3.28	3.68	4.25	4.39	4.33	.....	3.68	3.41
25.....	2.95	3.08	3.05	.....	3.29	3.73	4.24	4.38	4.46	.....	3.66	3.38
26.....	2.95	3.07	3.05	.....	3.29	3.75	4.25	4.37	4.50	.....	3.65	3.37
27.....	2.95	3.07	3.05	.....	3.29	3.83	4.24	4.36	4.48	.....	3.64	3.37
28.....	2.94	3.07	3.06	.....	3.29	3.88	4.22	4.34	4.46	.....	3.63	3.36
29.....	2.96	3.06	3.11	.....	.....	3.92	4.22	4.33	4.45	.....	3.61	3.34
30.....	2.98	3.05	3.11	.....	.....	3.96	4.22	4.32	4.44	.....	3.59	3.32
31.....	2.98	.....	3.11	.....	.....	.....	4.32	.....	.....	.....	3.55	.....
1949-50												
1.....	3.30	3.11	2.92	2.89	2.95	2.97	3.33	3.36	3.55	.....	3.56	3.22
2.....	3.30	3.11	2.90	2.89	2.95	2.97	3.33	3.37	3.63	.....	3.54	3.21
3.....	3.31	3.08	2.91	2.90	2.95	2.97	3.33	3.37	3.62	.....	3.53	3.19
4.....	3.31	3.08	2.89	2.90	2.95	2.97	3.33	3.38	3.60	.....	3.52	3.17
5.....	3.30	3.07	2.90	2.90	2.96	3.00	3.33	3.38	3.59	.....	3.50	3.14
6.....	3.30	3.07	2.89	2.90	2.96	3.03	3.33	3.37	3.58	.....	3.49	3.12
7.....	3.30	3.06	2.87	2.90	2.96	3.06	3.33	3.42	3.57	.....	3.49	3.10
8.....	3.31	3.06	2.87	.....	2.95	3.07	3.32	3.44	3.57	3.40	3.50	3.08
9.....	3.32	3.05	2.87	.....	2.95	3.07	3.32	3.45	3.55	3.46	3.50	3.08
10.....	3.29	3.05	2.87	.....	2.95	3.10	3.34	3.46	3.54	3.51	3.50	3.07
11.....	3.32	3.05	2.89	.....	2.95	3.13	3.34	3.46	3.52	3.50	3.49	3.06
12.....	3.32	3.06	2.89	.....	2.95	3.13	3.34	3.46	3.50	3.54	3.47	3.04
13.....	3.32	3.04	2.89	2.92	2.95	3.13	3.34	3.48	3.50	3.51	3.45	3.02
14.....	3.30	3.02	2.89	2.91	2.96	3.13	3.33	3.48	3.50	3.49	3.43	3.02
15.....	3.28	3.01	2.88	.....	2.97	3.13	3.32	3.48	3.51	3.48	3.42	3.00
16.....	3.27	3.00	2.88	.....	2.97	3.13	3.32	3.49	3.52	3.49	3.42	3.01
17.....	3.26	2.99	2.88	.....	2.97	3.13	3.32	3.50	3.52	3.50	3.42	3.01
18.....	3.25	2.98	2.88	.....	2.96	3.13	3.33	3.52	3.52	3.54	3.40	3.00
19.....	3.25	2.98	2.87	.....	2.96	3.13	3.33	3.54	3.53	3.65	3.36	3.00
20.....	3.26	2.98	2.89	.....	2.96	3.13	3.32	3.55	3.53	3.65	3.32	3.02
21.....	3.27	2.97	2.89	2.91	2.96	3.13	3.32	3.60	3.53	3.65	3.30	3.06
22.....	3.24	2.95	2.88	2.92	2.95	3.14	3.32	3.60	3.53	3.65	3.29	3.14
23.....	.....	2.95	2.88	2.91	2.95	3.16	3.33	3.60	3.53	3.65	3.27	3.17
24.....	.....	2.94	2.88	2.92	2.95	3.20	3.32	3.63	3.53	3.64	3.25	3.15
25.....	.....	2.94	2.88	2.94	2.97	3.23	3.31	3.63	.....	3.63	3.25	3.13
26.....	.....	2.92	2.88	2.95	2.98	3.25	3.31	3.61	.....	3.62	3.23	3.11
27.....	.....	2.93	2.88	2.96	2.98	3.30	3.31	3.60	.....	3.62	3.22	3.10
28.....	.....	2.92	2.87	2.96	2.98	3.32	3.31	3.60	.....	3.61	3.24	3.09
29.....	3.17	2.91	2.87	2.95	.....	3.32	3.34	3.60	.....	3.60	3.24	3.08
30.....	3.17	2.91	2.87	2.95	.....	3.33	3.34	3.60	.....	3.59	3.23	3.07
31.....	3.14	.....	2.89	2.96	.....	3.33	.....	3.56	.....	3.58	3.22	.....

Soldier River at Pisgah, Iowa

LOCATION.—Lat. $41^{\circ}50'$, long. $95^{\circ}56'$, in NW $\frac{1}{4}$ sec. 14, T. 81 N., R. 44 W., on upstream handrail near center of bridge on Harrison County highway D at west edge of Pisgah, $2\frac{1}{2}$ miles downstream from Stowe Creek, and 13 miles upstream from mouth.

DRAINAGE AREA.—417 square miles.

RECORDS AVAILABLE.—March 1940 to September 1950.

GAGE.—Wire-weight gage read twice daily. Auxiliary water-stage recorder, used for stages above 8.2 feet since March, 1946. Datum of gage is 1,036.34 feet above mean sea level, datum of 1929.

AVERAGE DISCHARGE.—10 years, 122 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43 ..	Aug. 22	9,760	(¹)20.0	Jan. 19, 24, 25	8
1943-44 ..	June 12	15,700	25.00	Feb. 18	5
1944-45 ..	May 31	9,940	20.2	Jan 2-10	2
1945-46 ..	Sept. 4	12,400	22.6	June 17	19
1946-47 ..	June 22	5,270	14.10	Sept. 22	27
1947-48 ..	Feb. 27	11,800	22.08	Jan. 20, 23, 24	10
1948-49 ..	Mar. 4	9,500	(²)22.0	Aug. 31, Sept. 1, 2	6
1949-50 ..	June 12	22,500	28.17	Jan. 10-31	4

(1) Floodmark.

(2) Floodmark (ice jam).

1940-50: Maximum discharge, 22,500 second-feet June 12, 1950 (gage height, 28.17 feet); minimum daily, 2 second-feet Jan. 2-10, 1945.

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

Soldier River at Pisgah, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	28	21	20	15	10	49	28	16	431	14	150	12
2.....	28	20	18	14	15	46	26	12	68	15	25	10
3.....	28	20	15	12	3,000	40	26	11	579	21	28	10
4.....	34	19	15	11	1,500	30	25	12	45	25	17	10
5.....	28	21	15	10	724	25	20	12	26	18	14	10
6.....	24	20	16	10	180	15	18	14	26	19	12	18
7.....	22	20	16	10	96	10	20	12	21	14	14	12
8.....	21	21	15	12	160	20	20	12	38	12	12	10
9.....	20	24	15	14	120	35	21	14	25	12	10	10
10.....	20	23	13	15	92	50	33	18	18	12	9	10
11.....	20	21	12	15	55	60	36	17	21	13	9	9
12.....	21	20	10	10	50	70	36	23	18	11	444	323
13.....	20	21	10	10	45	80	28	33	1,940	14	154	178
14.....	20	21	10	15	40	107	20	18	120	77	35	49
15.....	20	21	10	30	37	89	18	111	180	36	23	25
16.....	20	21	*11	30	37	70	18	418	1,680	152	18	20
17.....	21	20	12	20	37	60	16	78	122	54	17	17
18.....	20	18	12	10	40	55	15	48	46	21	16	16
19.....	20	19	12	8	50	50	14	38	33	1,010	15	15
20.....	21	21	11	9	100	50	16	34	26	790	14	14
21.....	21	19	10	10	108	65	16	30	23	1,510	16	14
22.....	21	18	12	10	91	100	17	28	21	1,68	1,770	14
23.....	21	18	13	9	70	430	18	26	19	52	123	14
24.....	20	19	12	8	57	*207	18	35	19	943	42	13
25.....	20	21	11	8	37	127	16	32	18	59	595	13
26.....	21	17	10	12	20	77	14	26	28	34	110	12
27.....	20	15	10	15	30	50	14	24	16	42	21	12
28.....	22	17	10	16	40	41	14	20	24	20	25	12
29.....	23	17	10	14	.....	45	14	18	22	17	18	12
30.....	21	20	12	*11	.....	49	25	18	16	14	15	12
31.....	21	.....	15	9	.....	41	.....	18	.....	38	14	.....
1943-44												
1.....	14	17	16	8	23	64	57	57	48	127	3,120	50
2.....	12	14	17	9	21	68	30	54	42	120	227	44
3.....	12	12	14	10	24	72	22	108	40	110	67	41
4.....	11	11	16	12	21	71	21	96	575	107	49	39
5.....	11	12	16	12	17	51	17	67	62	101	44	37
6.....	10	14	17	11	15	40	18	59	35	101	35	37
7.....	12	16	*16	10	14	35	65	54	31	131	31	36
8.....	12	32	14	9	14	30	35	63	2,090	148	29	36
9.....	10	28	14	8	13	30	28	54	1,150	92	29	35
10.....	10	26	12	7	11	46	24	50	227	195	28	35
11.....	10	30	10	6	9	290	310	703	2,190	570	26	35
12.....	10	30	9	6	7	150	88	1,610	4,690	257	26	35
13.....	13	25	8	6	7	105	51	84	1,660	116	26	35
14.....	11	25	8	6	8	58	43	57	600	99	26	35
15.....	10	21	7	6	8	135	45	53	484	168	28	35
16.....	10	16	7	6	7	84	43	49	414	96	35	32
17.....	10	21	8	7	6	182	35	52	346	260	29	35
18.....	10	18	9	7	5	89	51	427	294	99	25	31
19.....	11	18	12	7	7	89	39	1,070	242	78	24	36
20.....	12	20	10	7	11	74	70	411	222	72	24	29
21.....	12	21	9	6	15	75	62	139	224	70	24	29
22.....	12	18	9	*6	22	72	45	88	224	70	170	28
23.....	12	14	8	6	50	249	81	72	198	65	72	32
24.....	12	14	8	10	443	589	94	59	182	63	29	31
25.....	11	17	9	40	343	65	57	175	168	96	29	29
26.....	10	20	10	91	*266	43	52	68	161	84	75	29
27.....	10	18	10	315	107	29	45	54	157	65	74	29
28.....	10	16	9	67	86	40	40	64	137	59	48	28
29.....	10	14	9	31	67	14	38	110	137	60	39	27
30.....	12	16	9	24	.....	21	57	64	137	56	466	28
31.....	16	.....	8	25	.....	35	.....	59	.....	56	84	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 26 to Dec. 31, 1942, Jan. 1 to Feb. 3, Feb. 8, 9, 11-20, 23, 26-28, Mar. 3-13, 16-22, Dec. 11-31, 1943, Jan. 1-25, Feb. 5-23, Mar. 6-9, 1944.

Soldier River at Pisgah, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1	29	26	27	3	5	1,830	129	198	1,500	118	139	58
2	30	26	30	2	6	1,200	125	152	372	108	98	62
3	34	25	29	2	6	670	148	157	192	112	99	62
4	36	25	30	2	6	1,200	146	123	185	125	394	70
5	43	26	52	*2	7	665	161	123	242	116	118	63
6	35	30	49	2	6	406	205	122	689	108	92	60
7	28	42	42	2	7	484	290	112	242	103	80	59
8	26	29	40	2	7	1,230	263	108	192	103	77	60
9	26	26	41	2	239	3,510	248	135	180	116	77	62
10	26	26	37	2	1,380	2,890	180	195	185	108	89	65
11	26	*27	32	3	700	2,030	161	157	168	99	84	62
12	26	28	23	3	448	430	154	131	161	94	77	63
13	26	30	21	4	372	346	170	131	157	86	74	68
14	26	77	15	5	152	340	166	1,590	150	313	80	65
15	26	36	12	6	137	493	161	216	1,150	99	70	63
16	26	32	10	10	45	287	484	144	304	361	84	63
17	26	28	9	10	30	323	263	135	150	1,690	81	70
18	26	28	8	12	31	239	170	131	133	292	74	116
19	26	28	7	9	29	214	157	135	127	125	70	83
20	30	28	6	8	33	200	146	142	129	112	70	68
21	34	27	5	8	35	185	133	5,470	122	103	72	67
22	26	26	5	8	51	180	131	360	118	94	72	67
23	26	28	5	7	*64	175	1,660	192	114	94	71	65
24	26	28	4	6	74	161	211	173	112	152	70	63
25	25	34	4	9	406	166	146	157	112	81	68	62
26	25	44	4	16	313	154	133	146	108	91	68	68
27	23	34	4	14	439	148	122	812	118	323	65	390
28	25	30	3	10	346	137	116	239	188	108	65	310
29	25	32	3	10	.....	133	112	144	122	91	63	89
30	26	29	3	8	.....	133	110	133	118	281	64	57
31	26	.....	3	7	.....	131	.....	3,420	.....	148	63	.....
1945-46												
1	57	41	65	36	250	107	48	23	101	394	34	32
2	60	40	94	38	250	*92	39	29	68	142	31	30
3	50	38	50	40	250	105	37	545	60	116	28	32
4	43	37	42	60	500	99	30	123	57	101	27	g3,070
5	44	40	62	1,600	3,500	89	32	52	67	98	46	346
6	43	43	*65	676	g754	448	39	43	50	91	50	287
7	42	40	45	320	266	105	37	32	46	86	41	g1,880
8	37	40	51	98	170	78	43	30	41	80	48	372
9	35	39	40	72	152	49	34	30	36	74	32	208
10	39	33	36	80	168	83	37	53	37	68	30	129
11	39	42	34	*71	148	96	67	77	30	63	30	107
12	39	42	33	70	175	g615	53	37	30	65	32	99
13	37	38	32	74	190	g394	41	32	37	65	34	91
14	39	36	32	70	300	159	32	30	g57	67	34	92
15	39	36	31	65	180	98	32	195	g52	192	34	86
16	39	37	31	78	150	98	26	56	22	114	159	81
17	40	38	31	74	170	96	27	43	19	96	131	77
18	39	36	30	69	280	70	26	g219	137	91	68	74
19	39	36	29	68	300	57	26	g585	154	g772	41	70
20	35	36	30	73	175	48	26	70	98	91	32	80
21	37	34	30	76	155	52	24	44	53	63	g1,160	77
22	36	33	31	78	150	51	26	32	48	51	g802	75
23	38	32	31	80	150	91	37	g236	41	44	g91	75
24	39	32	31	78	142	127	26	g2,130	39	41	g1,310	74
25	40	32	31	72	108	122	24	154	g1,100	51	110	70
26	37	33	32	68	129	137	23	96	108	53	72	70
27	39	45	32	65	281	74	22	81	60	44	60	g313
28	39	55	36	65	81	60	28	74	g1,790	41	70	173
29	40	60	58	65	.....	53	28	64	g1,030	44	50	214
30	39	60	35	400	.....	44	23	101	g1,680	41	44	91
31	39	.....	34	300	.....	53	.....	91	.....	37	40	.....

* Winter discharge measurement made on this day.

g Computed from graph based on wire-weight gage readings and water-stage recorder graph.

Note—Stage-discharge relation affected by ice Nov. 30 to Dec. 31, 1944, Jan. 1 to Mar. 7, Nov. 22 to Dec. 1, Dec. 9-31, 1945, Jan. 1-5, Jan. 10 to Feb. 5, Feb. 13-22, 1946.

Soldier River at Pisgah, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	74	80	70	31	36	56	96	112	g272	216	77	48
2.....	74	80	62	30	35	53	80	88	216	182	83	42
3.....	70	80	75	30	34	52	91	88	96	173	80	40
4.....	74	80	*94	30	32	52	99	81	208	161	75	40
5.....	154	83	89	31	32	54	166	83	114	175	67	35
6.....	70	89	84	32	31	58	164	96	142	368	64	33
7.....	71	112	84	33	30	62	101	86	192	148	63	34
8.....	75	91	88	*34	30	70	114	80	173	133	63	31
9.....	71	91	80	36	30	83	107	78	103	125	60	30
10.....	333	150	80	38	30	110	g590	81	185	122	58	30
11.....	368	118	74	44	29	125	195	77	103	161	53	40
12.....	112	101	72	52	32	225	146	80	g1,580	142	53	118
13.....	94	98	62	60	37	280	125	91	340	129	52	63
14.....	88	101	59	57	52	225	123	90	230	118	57	39
15.....	88	110	52	60	78	190	120	122	192	110	57	31
16.....	83	178	71	80	130	150	114	105	263	110	53	36
17.....	84	105	64	68	180	135	120	103	166	116	52	35
18.....	570	94	62	56	120	125	120	96	254	125	46	32
19.....	137	110	60	46	105	110	114	84	195	103	39	29
20.....	101	105	58	40	94	129	110	75	154	114	39	28
21.....	88	105	56	37	84	190	105	78	200	103	46	28
22.....	86	81	54	34	78	164	105	77	g1,610	98	42	27
23.....	83	74	52	32	72	251	114	71	580	94	42	28
24.....	108	71	50	30	68	233	118	78	242	89	39	30
25.....	101	65	48	35	64	110	108	75	g911	92	51	29
26.....	88	74	46	44	62	78	105	99	281	98	51	29
27.....	80	83	43	43	*60	107	107	70	233	91	50	31
28.....	80	86	40	41	58	94	98	127	216	88	49	33
29.....	80	83	38	40	.....	91	112	188	203	81	46	31
30.....	103	78	35	38	.....	86	137	105	203	80	45	29
31.....	83	.....	33	37	.....	89	.....	78	.....	74	45	.....
1947-48												
1.....	36	63	53	22	24	64	116	58	38	29	62	18
2.....	35	49	62	20	22	236	94	51	34	24	52	21
3.....	33	44	58	20	22	137	86	49	29	22	45	19
4.....	30	48	59	25	28	78	80	51	30	21	35	19
5.....	30	52	99	30	32	103	68	51	30	21	27	19
6.....	30	49	70	40	34	188	64	58	31	20	27	18
7.....	29	52	81	55	36	135	70	51	30	19	34	18
8.....	26	52	52	70	36	89	68	49	26	19	35	19
9.....	27	48	60	200	38	62	60	46	26	19	29	19
10.....	29	52	80	160	40	50	60	49	26	26	g211	20
11.....	29	35	75	140	42	40	65	53	26	27	g1,240	18
12.....	28	38	60	150	40	40	60	51	65	24	135	16
13.....	29	37	50	120	55	50	58	51	54	g144	94	16
14.....	30	57	35	90	80	89	53	50	44	307	33	15
15.....	31	54	30	70	130	g1,350	53	45	48	52	g402	15
16.....	30	74	28	50	300	g3,170	50	38	40	148	75	14
17.....	30	59	*28	40	800	g*1,980	50	37	42	88	35	14
18.....	31	54	30	25	688	g2,030	49	39	44	24	27	13
19.....	31	52	32	15	297	712	44	36	38	18	23	13
20.....	33	60	34	10	48	323	44	36	43	17	24	13
21.....	33	58	34	*12	45	159	43	36	59	14	21	18
22.....	33	57	34	12	77	99	56	44	g368	13	19	18
23.....	36	50	34	10	65	89	89	37	152	13	18	16
24.....	68	45	32	10	50	83	78	34	51	13	16	15
25.....	83	70	30	12	52	81	142	33	37	g307	16	15
26.....	56	80	30	14	56	80	139	34	35	101	15	14
27.....	58	70	32	14	g4,070	125	80	34	37	31	44	15
28.....	52	62	34	12	g1,040	157	59	32	96	19	37	15
29.....	46	48	32	12	g150	216	51	33	58	g2,670	39	15
30.....	53	52	30	16	.....	192	53	39	37	g555	22	15
31.....	101	.....	26	20	.....	364	.....	56	.....	64	20	.....

* Winter discharge measurement made on this day.

g Computed from graph based on wire-weight gage readings and auxiliary water-stage recorder graph.

Note—Stage-discharge relation affected by ice Nov. 23 to Dec. 6, Dec. 12-31, 1946, Jan. 1 to Mar. 19, Nov. 23-25, Dec. 9-31, 1947, Jan. 1 to Feb. 17, Mar. 10-13, 1948.

Soldier River at Pisgah, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	15	20	35	13	30	400	135	80	63	29	29	6
2.....	15	17	31	14	30	500	113	82	198	216	20	6
3.....	15	16	29	40	*30	2,000	103	78	54	44	24	g153
4.....	15	18	30	300	30	3,000	98	76	40	33	23	50
5.....	15	84	28	240	29	g*2,620	98	74	38	28	23	13
6.....	29	47	25	200	29	g1,100	86	76	32	29	20	12
7.....	49	24	23	190	29	780	82	80	28	26	18	9
8.....	32	17	21	200	28	525	74	94	30	38	18	8
9.....	22	15	20	150	28	234	74	111	29	44	20	7
10.....	20	16	19	100	28	192	76	91	32	29	20	g132
11.....	20	16	19	90	28	135	67	84	29	29	g278	g476
12.....	18	16	19	80	28	120	67	82	26	29	g686	g319
13.....	17	16	18	70	28	110	63	84	144	30	g1,200	61
14.....	15	15	*18	64	28	101	80	127	47	47	49	32
15.....	16	16	18	60	28	156	89	122	32	30	30	28
16.....	15	16	18	54	28	419	141	101	26	29	23	23
17.....	13	16	17	50	28	592	174	113	26	28	40	17
18.....	13	74	17	48	35	290	150	g887	29	26	16	16
19.....	13	144	17	45	34	113	122	101	58	26	40	12
20.....	16	138	17	43	33	336	113	61	g522	g993	103	15
21.....	17	38	17	41	32	g845	124	108	g1,520	116	23	15
22.....	16	22	16	39	32	g1,290	127	237	122	e40	14	14
23.....	16	65	16	38	50	213	96	101	86	e30	10	14
24.....	16	69	16	36	400	376	84	96	39	e25	8	14
25.....	16	61	16	35	450	395	76	58	34	e23	8	14
26.....	17	45	16	34	400	165	94	47	34	g890	7	15
27.....	18	34	14	33	360	207	94	49	26	g1,070	10	15
28.....	18	32	14	32	320	130	84	47	g363	168	8	16
29.....	36	16	13	31	.....	113	80	47	54	51	8	16
30.....	141	40	13	30	.....	153	78	50	40	32	8	18
31.....	36	.....	13	30	.....	195	.....	54	.....	30	6	.....
1949-50												
1.....	18	20	13	24	6	g825	65	69	33	49	g286	30
2.....	18	20	14	25	8	g707	63	59	g2,100	47	111	29
3.....	18	20	14	23	10	g1,200	59	63	213	45	82	26
4.....	16	20	14	21	13	g2,600	49	56	82	45	g930	24
5.....	18	20	10	18	16	g1,560	36	300	59	49	g214	24
6.....	18	20	9	14	20	g845	39	119	42	61	76	24
7.....	42	23	11	10	100	g444	45	63	36	45	61	25
8.....	39	23	23	8	1,000	165	42	g777	30	42	91	26
9.....	22	23	30	6	800	160	39	g736	28	g545	58	29
10.....	207	22	36	4	600	155	56	108	23	171	49	34
11.....	45	20	49	4	200	150	42	67	20	84	52	30
12.....	33	*23	39	4	100	150	36	59	g6,310	g298	g2,140	30
13.....	30	25	*16	4	90	150	25	54	g706	122	g183	30
14.....	29	22	14	4	100	180	32	49	g261	80	54	30
15.....	30	20	14	4	120	500	36	39	g765	71	38	26
16.....	33	22	16	4	130	600	36	42	g297	101	25	26
17.....	32	23	18	4	140	*450	38	42	g108	122	g618	26
18.....	32	22	18	4	150	198	36	36	g4,350	g261	g116	26
19.....	423	15	18	*4	100	103	32	71	g411	g594	36	29
20.....	32	14	20	4	40	165	26	56	195	119	30	28
21.....	287	13	20	4	*38	127	24	91	141	103	30	58
22.....	38	13	20	4	40	171	30	59	g948	80	29	32
23.....	19	12	20	4	45	399	47	39	255	69	101	26
24.....	16	13	20	4	40	309	47	36	96	63	49	23
25.....	17	15	20	4	35	195	56	g290	80	61	30	22
26.....	17	12	21	4	30	201	49	119	65	63	29	24
27.....	19	14	21	4	500	165	42	67	58	61	38	22
28.....	19	16	22	4	5,000	80	49	58	58	59	41	22
29.....	19	16	22	4	.....	61	71	g717	54	56	38	g303
30.....	22	13	23	4	.....	80	106	g109	52	52	34	61
31.....	20	.....	23	4	.....	76	.....	67	.....	g1,270	33	.....

* Winter discharge measurement made on this day.

e Stage-discharge relation indefinite; discharge computed on basis of records for nearby stations.

g Computed from graph based on wire-weight gage readings and water-stage recorder graph.

Note—Stage-discharge relation affected by ice Nov. 30 to Dec. 2, Dec. 6-31, 1948, Jan. 1 to Mar. 4, Mar. 12, 13, Dec. 12-31, 1949, Jan. 1 to Feb. 28, Mar. 9-17, 1950.

Soldier River at Pisgah, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet			Runoff		
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October 1942.....	687	34	20	22.2	0.053	0.06	1,360
November.....	593	24	15	19.8	.047	.05	1,180
December.....	393	20	10	12.7	.030	.04	780
Calendar year 1942	44,838	7,250	4	123	.295	3.99	88,930
January 1943.....	402	30	8	13.0	.031	.04	797
February.....	6,841	3,000	10	244	.585	.61	13,570
March.....	2,333	430	10	75.3	.181	.21	4,630
April.....	620	35	14	20.7	.050	.06	1,230
May.....	1,226	418	11	39.5	.095	.11	2,430
June.....	5,669	1,940	16	189	.453	.51	11,210
July.....	5,237	1,510	11	169	.405	.47	10,390
August.....	3,795	1,770	9	122	.293	.34	7,530
September.....	906	323	9	30.2	.072	.08	1,800
Water year 1942-43	28,702	3,000	8	78.6	.188	2.58	56,940
October 1943.....	348	16	10	11.2	.027	.03	690
November.....	574	32	11	19.1	.046	.05	1,140
December.....	338	17	7	10.9	.026	.03	670
Calendar year 1943	28,289	3,000	7	77.5	.186	2.54	56,120
January 1944.....	781	315	6	25.2	.060	.07	1,550
February.....	1,647	413	5	56.8	.136	.15	3,270
March.....	2,995	589	14	96.6	.232	.27	5,940
April.....	1,663	310	17	55.4	.143	.15	3,300
May.....	6,130	1,610	49	198	.475	.55	12,160
June.....	17,167	4,690	31	572	1.37	1.55	34,050
July.....	3,791	570	56	122	.293	.34	7,520
August.....	5,038	3,120	24	163	.391	.45	9,990
September.....	1,018	50	27	33.9	.081	.09	2,020
Water year 1943-44	41,490	4,690	5	113	.271	3.71	82,300
October 1944.....	864	43	23	27.9	.067	.08	1,710
November.....	935	77	25	31.2	.075	.08	1,850
December.....	563	52	3	18.2	.044	.05	1,120
Calendar year 1944	42,592	4,690	3	116	.278	3.81	84,480
January 1945.....	194	16	2	6.3	.015	.02	385
February.....	5,374	1,380	5	191.9	.460	.48	10,660
March.....	20,690	3,510	131	667.4	1.60	1.85	41,040
April.....	6,801	1,660	110	226.7	.544	.61	13,490
May.....	15,583	5,470	108	502.7	1.21	1.39	30,910
June.....	7,840	1,500	108	261.3	.627	.70	15,550
July.....	5,954	1,690	81	192.1	.461	.53	11,810
August.....	2,768	394	63	89.3	.214	.25	5,490
September.....	2,580	390	57	86.0	.206	.23	5,120
Water year 1944-45	70,146	5,470	2	192	.460	6.27	139,100
October 1945.....	1,258	60	35	40.6	.097	.11	2,500
November.....	1,184	60	32	39.5	.095	.11	2,350
December.....	1,224	94	29	39.5	.095	.11	2,430
Calendar year 1945	71,450	5,470	2	196	.470	6.39	141,700
January 1946.....	5,079	1,600	36	164	.393	.45	10,070
February.....	9,524	3,500	81	340	.815	.85	18,890
March.....	3,900	615	48	126	.302	.35	7,740
April.....	993	67	22	33.1	.079	.09	1,970
May.....	5,407	2,130	23	174	.417	.48	10,720
June.....	7,148	1,790	19	238	.571	.64	14,180
July.....	3,376	772	37	109	.261	.30	6,700
August.....	4,771	1,310	27	154	.369	.43	9,460
September.....	8,475	3,070	30	282	.676	.76	16,810
Water year 1945-46	52,339	3,500	19	143	.343	4.68	103,800

Soldier River at Pisgah, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet			Runoff		
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October 1946.....	3,771	570	70	122	0.263	0.34	7,480
November.....	2,856	178	65	95.2	.228	.25	5,660
December.....	1,935	94	33	62.4	.150	.17	3,840
Calendar year 1946	57,235	3,500	19	157	.376	5.11	113,500
January 1947.....	1,299	80	30	41.9	.100	.12	2,580
February.....	1,723	180	29	61.5	.147	.15	3,420
March.....	3,837	280	52	124	.297	.34	7,610
April.....	4,013	590	89	134	.321	.36	7,960
May.....	2,841	188	70	91.6	.220	.25	5,640
June.....	10,312	1,610	96	344	.825	.92	20,450
July.....	4,019	368	74	130	.312	.36	7,970
August.....	1,697	83	39	54.7	.131	.15	3,370
September.....	1,109	118	27	37.0	.089	.10	2,200
Water year 1946-47	39,412	1,610	27	108	.259	3.51	78,180
October 1947.....	1,226	101	26	39.5	.095	.11	2,430
November.....	1,621	80	35	54.0	.129	.14	3,220
December.....	1,424	99	26	45.9	.110	.13	2,820
Calendar year 1947	35,121	1,610	26	96.2	.231	3.13	69,670
January 1948.....	1,496	200	10	48.3	.116	.13	2,970
February.....	8,397	4,070	22	290	.695	.75	16,660
March.....	12,571	3,170	40	406	.974	1.12	24,930
April.....	2,082	142	43	69.4	.166	.19	4,130
May.....	1,361	58	32	43.9	.105	.12	2,700
June.....	1,674	368	26	55.8	.134	.15	3,320
July.....	4,869	2,670	13	157	.376	.43	9,660
August.....	2,912	1,240	15	93.9	.225	.26	5,780
September.....	493	21	13	16.4	.039	.04	978
Water year 1947-48	40,126	4,070	10	110	.264	3.57	79,600
October 1948.....	730	141	13	23.5	.056	.07	1,450
November.....	1,163	144	15	38.8	.093	.10	2,310
December.....	603	35	13	19.5	.047	.05	1,200
Calendar year 1948	38,351	4,070	10	105	.251	3.41	76,090
January 1949.....	2,430	300	13	78.4	.188	.22	4,820
February.....	2,633	450	28	94.0	.225	.23	5,220
March.....	17,805	3,900	101	574	1.38	1.59	35,320
April.....	2,942	174	63	98.1	.235	.26	5,840
May.....	3,498	887	47	113	.271	.31	6,940
June.....	3,801	1,520	26	127	.305	.34	7,540
July.....	4,261	1,070	23	137	.329	.38	8,450
August.....	2,790	1,200	6	90.0	.216	.25	5,530
September.....	1,546	476	6	51.5	.124	.14	3,070
Water year 1948-49	44,202	3,000	6	121	.290	3.94	87,690
October 1949.....	1,628	423	16	52.5	.126	.15	3,230
November.....	554	25	12	18.5	.044	.05	1,100
December.....	628	49	9	20.3	.049	.06	1,250
Calendar year 1949	44,516	3,000	6	122	.293	3.98	88,310
January 1950.....	237	25	4	7.6	.018	.02	470
February.....	9,471	5,000	6	338	.811	.84	18,790
March.....	13,171	2,600	61	425	1.02	1.17	26,120
April.....	1,353	106	24	45.1	.108	.12	2,680
May.....	4,817	777	36	155	.372	.43	9,550
June.....	17,876	5,310	20	596	1.43	1.59	35,460
July.....	4,858	1,270	42	157	.376	.43	9,640
August.....	5,705	2,140	25	184	.441	.51	11,320
September.....	1,145	303	22	38.2	.092	.10	2,270
Water year 1949-50	61,443	6,310	4	168	.403	5.47	121,900

Boyer River at Logan, Iowa

LOCATION.—Lat. 41°38', long. 95°47', in NW ¼ sec. 19, T. 79 N., R. 42 W., on downstream handrail of highway bridge 300 feet downstream 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 1950.

GAGE.—Wire-weight gage read once daily. Since Oct. 22, 1946, auxiliary water-stage recorder which operates above gage height 4.8 feet. Datum of gage is 1,009.38 feet above mean sea level (Chicago & North Western Railway bench mark). May 25, 1918, to Apr. 16, 1925, chain gage at same site and datum. Apr. 17 to July 1, 1925, cantilever gage 300 feet downstream at same datum.

AVERAGE DISCHARGE.—15 years (1918-20, 1922-23, 1938-50), 299 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43 ..	May 15	13,400	19.03	Jan. 19	19
1943-44 ..	June 12	12,300	18.18	Feb. 18	15
1944-45 ..	Apr. 23	13,000	19.1	Jan. 31	36
1945-46 ..	Sept. 4	11,000	17.20	Sept. 26	86
1946-47 ..	June 22	12,600	(¹)18.24	Feb. 11	39
1947-48 ..	Feb. 27	9,630	15.19	Jan. 23	20
1948-49 ..	Mar. 4	17,400	(²)	Oct. 5, 18	21
1949-50 ..	June 18	18,800	20.01	Jan. 16-19	8

(1) Floodmark.

(2) Maximum gage height, 20.7 feet March 3.

1918-25, 1937-50: Maximum discharge, 18,000 second-feet June 18, 1950, maximum gage height, 20.7 feet Mar. 3, 1949 (backwater from ice); no flow Sept. 27-29, 1918.

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

Boyer River at Logan, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	94	66	45	29	25	183	115	96	322	269	77	136
2.....	89	64	40	27	50	170	103	68	359	169	826	123
3.....	249	60	40	25	3,500	150	95	58	4,260	167	1,380	113
4.....	161	60	44	25	3,040	130	92	54	816	146	307	105
5.....	107	60	45	25	2,110	110	84	68	310	146	192	98
6.....	87	60	45	25	1,350	90	80	72	233	385	174	118
7.....	79	60	44	26	684	80	79	61	156	260	806	255
8.....	78	58	43	27	722	90	76	64	143	178	146	123
9.....	71	63	40	27	940	95	78	62	139	118	134	99
10.....	70	63	38	28	550	95	87	60	197	106	113	91
11.....	68	63	35	27	450	100	100	61	868	96	105	87
12.....	68	60	33	25	420	110	113	73	583	90	1,630	84
13.....	66	60	31	26	400	120	100	78	2,360	83	1,240	278
14.....	66	58	30	30	385	156	100	75	1,020	334	1,490	502
15.....	65	58	30	50	370	202	91	4,150	551	132	2,030	225
16.....	64	58	31	45	365	143	80	4,270	828	225	2,210	139
17.....	64	57	*32	35	370	120	74	1,750	1,210	235	1,800	100
18.....	63	56	30	25	380	110	70	696	516	113	1,200	90
19.....	60	56	29	19	400	100	63	292	258	594	684	87
20.....	60	56	28	21	500	100	63	185	185	362	509	80
21.....	60	55	30	23	1,500	120	61	157	163	981	414	79
22.....	60	54	32	24	1,000	150	64	150	143	733	2,640	76
23.....	59	53	30	22	711	220	65	134	187	258	1,240	75
24.....	60	54	29	20	354	*608	64	131	283	731	468	69
25.....	62	57	27	22	187	741	70	127	172	235	1,460	66
26.....	64	55	26	25	170	757	60	118	134	132	1,230	65
27.....	61	42	25	28	190	260	63	106	113	107	395	62
28.....	64	45	24	30	178	167	60	90	356	96	298	62
29.....	67	45	25	27	.....	143	58	84	401	86	190	60
30.....	69	50	27	*25	.....	148	57	79	424	83	163	60
31.....	67	.....	30	22	.....	136	.....	76	.....	78	150	.....
1943-44												
1.....	57	64	63	30	76	118	50	241	222	292	3,740	289
2.....	56	80	71	35	60	100	183	260	202	280	4,320	258
3.....	56	68	68	35	55	100	136	468	185	252	1,650	235
4.....	56	57	79	40	72	87	113	424	2,000	220	673	202
5.....	52	52	59	40	62	73	105	388	2,200	217	509	187
6.....	52	58	*73	35	55	82	92	325	745	215	1,140	169
7.....	51	63	*71	35	51	61	150	238	362	212	1,240	163
8.....	51	50	69	30	60	47	148	301	6,300	340	523	159
9.....	50	58	64	25	60	40	131	301	3,580	856	411	150
10.....	52	76	65	25	42	40	139	275	1,470	948	353	150
11.....	52	51	63	20	35	64	481	730	6,020	1,760	304	144
12.....	52	64	55	18	18	434	334	772	10,600	1,200	266	143
13.....	51	60	25	16	20	278	441	554	6,450	1,050	244	144
14.....	49	65	20	16	20	146	313	692	1,480	1,090	235	144
15.....	50	71	20	17	20	146	266	464	2,880	576	222	141
16.....	51	66	25	19	25	190	249	378	2,280	816	753	131
17.....	51	64	30	20	17	220	235	340	1,530	1,490	526	134
18.....	50	64	35	20	15	344	249	307	1,400	1,090	441	126
19.....	52	74	35	25	16	150	212	1,180	856	718	266	228
20.....	53	80	35	25	19	129	289	1,080	677	481	235	139
21.....	49	82	30	20	25	134	451	1,750	583	395	200	129
22.....	49	83	25	*20	35	131	401	1,100	554	344	190	123
23.....	53	83	20	25	40	139	366	587	506	313	185	123
24.....	50	68	20	40	60	1,150	404	457	417	356	258	126
25.....	49	71	20	50	455	908	382	534	418	350	180	141
26.....	47	74	25	100	*652	580	401	414	388	424	260	143
27.....	47	79	25	204	418	235	298	347	382	369	286	127
28.....	46	80	30	300	378	172	255	498	325	289	488	121
29.....	48	70	30	197	280	154	230	382	319	292	554	116
30.....	51	64	30	103	.....	222	215	278	316	230	644	113
31.....	55	.....	30	87	.....	89	.....	252	.....	202	369	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 26 to Dec. 31, 1942, Jan. 1 to Feb. 3, Feb. 10-22, 26, 27, Mar. 2-13, 17-23, Dec. 12-31, 1943, Jan. 1-26, Feb. 6, 11-23, Mar. 9, 10, 1944.

Boyer River at Logan, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	116	100	85	38	38	860	212	759	9,130	514	598	198
2.....	119	102	85	38	40	1,000	185	808	3,760	478	469	196
3.....	119	98	90	40	44	780	191	805	2,610	451	499	178
4.....	124	97	105	42	44	833	169	818	1,600	427	976	200
5.....	159	95	115	*44	44	895	159	688	1,390	412	657	200
6.....	205	103	120	46	48	920	257	632	5,010	424	535	178
7.....	149	107	130	48	56	960	384	577	1,600	398	1,180	165
8.....	138	107	105	48	60	799	619	520	1,170	373	1,440	161
9.....	118	105	95	48	66	808	678	523	3,420	378	1,100	161
10.....	113	102	90	50	540	2,090	529	666	4,100	356	880	161
11.....	110	*97	80	54	740	3,310	407	644	1,460	323	787	163
12.....	110	98	75	58	620	3,130	262	604	1,080	315	697	161
13.....	112	98	75	56	900	2,220	716	571	1,300	307	892	167
14.....	109	115	80	54	950	1,410	852	2,740	855	737	544	161
15.....	107	119	80	54	1,100	1,780	571	2,250	923	410	451	142
16.....	102	153	80	58	720	1,320	1,080	1,040	1,940	1,290	517	163
17.....	103	123	75	58	150	936	960	808	1,340	11,000	463	163
18.....	105	113	70	65	60	883	725	722	1,290	9,280	412	229
19.....	103	109	65	65	60	583	607	660	818	2,740	370	203
20.....	133	105	65	65	90	496	529	647	750	1,540	345	178
21.....	140	103	60	65	100	436	478	3,120	697	908	326	167
22.....	112	105	55	75	200	384	469	4,580	650	787	345	157
23.....	112	105	50	75	*160	362	10,800	2,840	616	703	307	155
24.....	107	103	44	80	210	342	5,150	1,840	577	1,180	291	140
25.....	103	112	38	80	330	331	3,040	1,220	559	734	262	138
26.....	103	126	38	85	810	320	1,830	1,050	562	654	254	157
27.....	99	134	38	85	740	280	1,180	3,680	517	592	249	354
28.....	98	113	40	80	840	259	988	1,860	2,300	574	239	433
29.....	99	92	40	75	.....	231	920	1,110	650	538	217	398
30.....	99	90	40	50	.....	219	812	951	547	1,330	217	323
31.....	99	.....	38	36	.....	207	.....	3,440	.....	663	200	.....
1945-46												
1.....	249	131	169	90	345	285	505	131	445	1,040	115	110
2.....	252	129	212	100	360	*299	404	127	370	558	109	112
3.....	207	127	194	125	380	291	320	577	339	364	106	116
4.....	196	119	171	150	420	288	265	609	315	288	99	2,570
5.....	185	127	113	800	4,220	293	234	398	291	259	116	517
6.....	176	142	*131	1,650	1,360	867	246	318	262	234	115	502
7.....	171	134	140	808	1,200	781	219	270	254	224	555	2,020
8.....	163	131	145	547	948	553	217	236	234	207	239	616
9.....	151	126	100	398	746	430	207	219	212	219	121	448
10.....	153	115	95	250	427	198	200	217	198	180	107	359
11.....	155	113	92	*218	390	222	229	252	189	155	98	210
12.....	153	157	90	235	362	505	231	278	174	145	95	169
13.....	151	153	90	350	514	1,650	229	236	217	136	95	147
14.....	149	133	90	500	654	1,280	205	222	226	127	94	134
15.....	151	119	90	300	598	833	203	212	178	136	93	126
16.....	155	116	90	335	499	604	185	200	171	155	94	116
17.....	149	123	89	390	644	484	169	222	1,210	153	149	110
18.....	149	124	88	330	771	398	159	272	1,040	171	102	102
19.....	143	121	87	320	337	390	153	728	731	1,270	93	102
20.....	133	118	88	300	376	370	151	678	622	759	107	100
21.....	138	110	89	300	421	320	133	370	505	296	1,980	106
22.....	140	100	89	320	475	310	134	342	508	217	1,570	102
23.....	131	98	90	310	523	328	142	272	398	187	805	93
24.....	131	108	90	310	427	703	145	1,500	367	159	2,080	98
25.....	140	110	90	300	401	632	136	1,550	565	153	508	89
26.....	134	110	90	290	445	562	129	1,240	843	161	249	86
27.....	133	150	90	280	312	451	121	886	280	147	189	87
28.....	134	155	95	290	283	517	124	622	222	142	169	167
29.....	134	160	95	360	.....	407	136	457	1,630	134	161	174
30.....	133	165	92	400	.....	392	138	424	1,120	131	138	138
31.....	131	.....	90	340	.....	562	.....	412	.....	121	131	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 30 to Dec. 31, 1944, Jan. 1 to Mar. 3, Nov. 22-30, Dec. 9-31, 1945, Jan. 1-5, Jan. 10 to Feb. 4, 1946.

Boyer River at Logan, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	103	142	99	40	46	210	a245	278	g2,440	g1,040	214	118
2.....	93	163	89	40	45	198	231	257	g1,400	g848	210	98
3.....	88	136	152	40	44	174	226	249	g948	g641	200	94
4.....	87	134	*170	40	42	150	236	226	g1,120	586	178	89
5.....	89	129	156	40	40	148	246	229	g988	g706	167	85
6.....	99	138	157	41	40	148	249	231	g1,040	700	191	81
7.....	94	165	140	42	41	150	285	229	g745	g610	163	79
8.....	98	147	147	*44	40	154	g320	224	g940	505	159	74
9.....	g115	133	147	47	40	178	g547	a222	666	463	155	72
10.....	g1,020	171	133	50	40	290	g1,300	219	619	433	145	73
11.....	694	165	124	60	39	370	g970	207	616	433	138	98
12.....	g337	157	123	77	42	480	827	207	g4,840	g562	131	134
13.....	194	149	112	87	46	855	660	219	g2,540	g448	129	112
14.....	182	143	94	82	166	730	613	217	g1,740	410	133	97
15.....	167	157	68	77	235	620	574	421	g1,170	387	127	80
16.....	149	185	99	112	375	440	502	353	904	370	129	79
17.....	g163	169	93	87	425	370	472	296	824	362	142	77
18.....	g936	136	84	77	210	355	454	283	g820	350	129	73
19.....	g568	171	80	60	142	285	401	257	g1,020	339	119	68
20.....	239	161	77	52	148	359	337	244	g733	339	99	64
21.....	196	150	75	51	210	430	307	219	g692	331	99	57
22.....	191	130	73	47	225	574	307	224	g4,310	312	94	61
23.....	180	108	72	42	315	722	304	222	g6,030	307	83	65
24.....	189	112	71	40	250	g802	334	207	g3,140	299	83	64
25.....	198	120	68	48	240	632	312	205	g2,140	285	134	62
26.....	174	91	65	62	*235	362	307	207	1,180	280	129	64
27.....	167	132	62	59	225	270	302	219	g936	283	121	62
28.....	159	118	59	54	220	293	280	367	820	259	121	65
29.....	133	165	51	50	.....	259	280	362	753	252	112	67
30.....	161	118	46	50	.....	259	283	442	g741	236	94	67
31.....	149	.....	43	47	.....	259	.....	370	.....	212	105	.....
1947-48												
1.....	77	185	113	35	40	g870	753	210	84	72	98	g37
2.....	77	123	121	30	40	601	481	222	75	68	121	g109
3.....	76	109	118	30	40	559	376	217	62	60	84	34
4.....	79	a115	a120	35	40	339	326	196	66	57	76	31
5.....	74	121	a120	40	42	348	307	196	65	53	64	31
6.....	71	121	a123	50	45	378	275	203	63	53	64	38
7.....	66	118	a126	60	40	445	270	246	64	52	64	27
8.....	78	116	129	90	38	420	280	231	63	52	66	27
9.....	66	110	140	120	40	400	236	196	61	52	63	28
10.....	68	99	160	178	45	380	207	180	59	52	g79	30
11.....	66	93	180	280	50	360	224	174	59	54	g985	30
12.....	66	88	140	224	45	340	214	180	85	55	g331	27
13.....	65	98	100	163	50	370	205	169	109	62	61	27
14.....	72	102	70	150	80	427	174	143	78	629	59	26
15.....	68	116	60	140	120	g880	163	138	81	198	g743	25
16.....	67	a124	55	130	160	g3,720	149	138	87	254	345	26
17.....	67	131	*53	80	550	*g3,660	134	126	83	229	71	24
18.....	64	116	50	60	900	g5,020	131	126	77	92	49	24
19.....	62	109	55	40	800	g5,140	123	116	71	75	42	24
20.....	66	126	60	35	g592	g1,840	123	109	75	67	40	30
21.....	66	133	60	*30	342	g942	110	107	82	66	36	24
22.....	67	99	60	25	345	g520	116	145	99	54	34	25
23.....	69	82	60	20	353	407	161	98	275	49	33	25
24.....	115	87	55	25	350	337	229	95	167	45	26	25
25.....	115	105	58	30	136	291	526	93	112	g586	26	24
26.....	112	171	60	30	161	267	353	81	84	g638	25	25
27.....	110	180	55	25	g2,710	1,010	312	80	81	105	27	24
28.....	105	134	50	25	*g5,350	320	254	81	112	77	25	24
29.....	89	102	45	28	g1,870	595	205	75	167	g2,340	33	23
30.....	88	105	42	30	.....	565	212	83	91	g574	46	23
31.....	91	.....	40	40	.....	1,680	.....	91	.....	200	32	.....

* Winter discharge measurement made on this day.

n No gage-height record; discharge computed on basis of records for nearby stations.

g Computed from graph based on wire-weight gage readings and water-stage recorder graph.

Note—Stage-discharge relation affected by ice Nov. 21-27, Nov. 30 to Dec. 5, Dec. 14-31, 1946, Jan. 1 to Mar. 18, Dec. 9-31, 1947, Jan. 1-9, Jan. 14 to Feb. 19, Mar. 8-13, 1948.

Boyer River at Logan, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1	23	34	37	22	50	740	265	133	g612	88	41	38
2	22	29	36	22	50	940	268	123	g672	84	40	40
3	22	30	36	90	50	3,500	218	111	g218	83	43	g40
4	23	g34	34	580	50	9,200	225	109	146	83	39	g1,120
5	21	g91	38	350	50	*g6,940	216	105	133	86	39	g875
6	29	g83	41	200	49	g4,050	205	102	116	76	39	152
7	28	g59	38	180	49	g2,480	187	100	109	63	39	103
8	27	40	37	160	48	*g1,650	177	102	93	g504	38	61
9	26	38	36	150	48	g812	170	105	97	g274	34	52
10	26	36	34	140	48	g508	158	109	102	62	38	g584
11	25	36	34	130	48	350	152	87	107	70	g350	g3,030
12	24	34	33	120	48	280	150	87	g419	66	240	g995
13	24	31	*32	110	48	250	150	80	g496	68	g458	g472
14	22	31	*32	100	48	225	152	g87	g223	58	66	132
15	23	32	31	92	48	215	160	g304	g134	55	47	91
16	24	36	31	88	48	g471	168	g121	88	50	g611	70
17	23	34	30	82	49	g262	g242	g221	88	46	96	68
18	21	g38	30	77	52	216	g337	g1,630	154	44	74	67
19	22	g105	30	73	56	221	g280	g750	179	44	g850	62
20	22	g108	30	70	59	g585	g230	g358	156	g1,790	g332	56
21	22	g76	29	67	57	g1,450	214	g295	g1,710	g163	108	52
22	24	50	28	65	56	g2,710	214	g490	g244	127	72	50
23	24	51	28	64	54	g970	183	g367	g454	112	51	48
24	24	59	28	62	100	730	168	g376	g500	61	50	48
25	24	61	27	60	900	750	170	g262	g116	55	44	48
26	23	49	26	58	1,000	750	177	g194	g77	g155	40	47
27	23	39	24	56	900	650	183	181	g716	g682	42	45
28	23	38	24	54	800	525	172	162	g1,320	g99	44	47
29	24	36	23	54	.....	415	162	148	174	66	61	45
30	64	34	23	52	.....	272	131	133	117	52	49	45
31	40	.....	22	52	.....	367	.....	127	.....	43	46	.....
1949-50												
1	43	45	34	40	30	1,000	83	50	108	210	280	78
2	38	41	39	45	30	600	70	42	g3,170	198	223	71
3	38	45	39	35	30	g1,130	71	40	g852	226	109	67
4	48	45	39	30	30	g3,460	64	39	225	176	244	62
5	47	45	39	25	30	g3,450	53	g315	202	154	241	59
6	46	45	34	20	30	g1,720	51	g379	136	186	244	58
7	40	46	34	16	100	g1,220	48	70	114	137	114	57
8	43	45	35	14	1,600	g350	46	g1,370	105	135	104	58
9	58	46	36	12	g1,660	276	46	g1,840	96	g1,250	90	61
10	80	41	39	12	g1,270	279	47	490	82	324	86	63
11	77	40	56	10	g875	294	48	200	108	244	g165	61
12	58	*43	46	10	174	309	43	170	g4,400	g2,120	g5,970	58
13	46	45	*32	10	140	320	37	142	g817	g483	371	57
14	46	43	30	10	100	350	36	117	294	g280	242	56
15	44	39	30	10	80	400	38	103	g1,390	218	220	52
16	40	38	30	*8	70	700	39	116	550	486	168	50
17	42	36	30	8	60	g1,070	38	96	178	g493	g695	45
18	44	30	30	8	70	490	37	66	g10,100	g945	g385	53
19	51	38	33	8	80	258	36	273	g3,830	720	g180	52
20	g471	47	35	10	80	188	34	101	g1,650	560	132	54
21	g451	30	32	15	*113	154	34	98	g810	321	125	127
22	228	28	30	15	120	g396	34	86	600	208	119	117
23	54	34	30	15	120	*g875	45	80	1,120	154	112	71
24	57	44	30	15	90	g590	38	g360	580	149	107	49
25	52	43	30	15	60	416	38	g5,170	508	139	100	50
26	43	43	30	15	60	388	38	385	372	141	89	55
27	43	44	30	20	100	285	32	282	348	133	96	56
28	45	47	30	20	5,500	182	34	245	288	122	94	46
29	47	40	32	25	.....	83	43	g1,260	255	107	93	56
30	46	38	35	25	.....	76	64	228	213	94	88	70
31	46	.....	35	25	.....	105	.....	220	.....	131	83	.....

* Winter discharge measurement made on this day.

g Computed from graph based on wire-weight gage readings and water-stage recorder graph.

Note—Stage-discharge relation affected by ice Dec. 5-31, 1948, Jan. 1 to Mar. 4, Mar. 11-15, Dec. 7-9, 13-31, 1949, Jan. 1 to Feb. 8, Feb. 13 to Mar. 2, Mar. 13-16, 1950.

Boyer River at Logan, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October 1942.....	2,422	249	59	78.1	0.096	0.11	4,800
November.....	1,706	66	42	56.9	.070	.08	3,380
December.....	1,038	45	24	33.5	.041	.05	2,060
Calendar year 1942	97,277	5,080	7	267	.330	4.47	192,900
January 1943.....	835	50	19	26.9	.033	.04	1,660
February.....	21,303	3,500	25	761	.940	.98	42,250
March.....	5,904	757	80	190	.235	.27	11,710
April.....	2,365	115	57	78.8	.097	.11	4,690
May.....	13,545	4,270	54	437	.540	.62	26,870
June.....	17,690	4,260	113	590	.728	.81	35,090
July.....	7,728	981	78	249	.307	.35	15,330
August.....	25,631	2,640	77	827	1.02	1.18	50,840
September.....	3,607	502	60	120	.148	.17	7,150
Water year 1942-43	103,774	4,270	19	284	.351	4.77	205,800
October 1943.....	1,588	57	46	51.2	.063	.07	3,150
November.....	2,039	83	50	68.0	.084	.09	4,040
December.....	1,310	79	20	42.3	.052	.06	2,600
Calendar year 1943	103,545	4,270	19	284	.351	4.75	205,400
January 1944.....	1,672	300	16	53.9	.067	.08	3,320
February.....	3,141	652	15	108	.133	.14	6,230
March.....	6,763	1,150	40	218	.269	.31	13,410
April.....	7,722	481	50	257	.317	.35	15,320
May.....	16,377	1,750	238	528	.652	.75	32,480
June.....	55,677	10,600	185	1,856	2.29	2.56	110,400
July.....	17,667	1,760	202	570	.704	.81	35,040
August.....	21,665	4,320	180	699	.863	.99	42,970
September.....	4,698	289	113	157	.194	.22	9,320
Water year 1943-44	140,319	10,600	15	383	.473	6.43	278,300
October 1944.....	3,625	205	98	117	.144	.17	7,190
November.....	3,229	153	90	108	.133	.15	6,400
December.....	2,246	130	38	72.5	.090	.10	4,450
Calendar year 1944	144,482	10,600	15	395	.488	6.63	286,500
January 1945.....	1,815	85	36	58.5	.072	.08	3,600
February.....	9,760	1,100	38	349	.431	.45	19,360
March.....	29,384	3,310	207	948	1.17	1.35	58,280
April.....	35,759	10,800	159	1,192	1.47	1.64	70,930
May.....	43,173	4,580	520	1,393	1.72	1.98	85,630
June.....	53,212	9,130	517	1,774	2.19	2.44	105,500
July.....	40,816	11,000	307	1,317	1.63	1.87	80,960
August.....	16,779	1,440	200	541	.668	.77	33,280
September.....	5,960	433	138	199	.246	.27	11,820
Water year 1944-45	245,758	11,000	36	673	.831	11.27	487,400
October 1945.....	4,870	252	131	157	.194	.22	9,660
November.....	3,824	165	98	127	.157	.18	7,580
December.....	3,364	212	87	109	.135	.15	6,670
Calendar year 1945	248,716	11,000	36	681	.841	11.40	493,300
January 1946.....	11,696	1,650	90	377	.465	.54	23,200
February.....	18,838	4,220	283	673	.831	.86	37,360
March.....	16,205	1,650	198	523	.646	.74	32,140
April.....	6,069	505	121	202	.249	.28	12,040
May.....	14,537	1,550	127	469	.579	.67	28,830
June.....	14,506	1,930	171	484	.598	.67	28,770
July.....	8,628	1,270	121	278	.343	.40	17,110
August.....	10,682	2,080	93	345	.426	.49	21,190
September.....	9,835	2,570	86	328	.405	.45	19,510
Water year 1945-46	123,054	4,220	86	337	.416	5.65	244,100

Boyer River at Logan, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October 1946.....	7,412	1,020	87	239	0.295	0.34	14,700
November.....	4,295	185	91	143	.177	.20	8,520
December.....	3,029	170	43	97.7	.121	.14	6,010
Calendar year 1946	125,732	4,220	86	344	.425	5.78	249,400
January 1947.....	1,745	112	40	56.3	.070	.08	3,460
February.....	4,166	425	39	149	.184	.19	8,260
March.....	11,535	855	148	372	.459	.53	22,880
April.....	12,711	1,300	226	424	.523	.58	25,210
May.....	8,112	442	205	262	.323	.37	16,090
June.....	46,945	6,030	616	1,565	1.93	2.16	93,110
July.....	13,588	1,040	212	438	.541	.62	26,950
August.....	4,233	214	83	137	.169	.19	8,400
September.....	2,379	134	57	79.3	.098	.11	4,720
Water year 1946-47	120,150	6,030	39	329	.406	5.51	238,300
October 1947.....	2,422	115	62	78.1	.096	.11	4,800
November.....	3,578	185	82	119	.147	.16	7,100
December.....	2,678	180	40	86.4	.107	.12	5,310
Calendar year 1947	114,092	6,030	39	313	.386	5.22	226,300
January 1948.....	2,278	280	20	73.5	.091	.10	4,520
February.....	15,374	5,350	38	530	.654	.71	30,490
March.....	34,411	6,020	267	1,110	1.375	1.58	68,250
April.....	7,629	753	110	254	.314	.35	15,130
May.....	4,545	246	75	147	.181	.21	9,010
June.....	2,737	275	59	91.2	.113	.13	5,430
July.....	7,020	2,340	45	226	.279	.32	13,920
August.....	3,848	985	25	124	.153	.18	7,630
September.....	897	109	23	29.9	.037	.04	1,780
Water year 1947-48	87,417	6,020	20	239	.295	4.01	173,400
October 1948.....	790	64	21	25.5	.031	.04	1,570
November.....	1,462	108	29	48.7	.060	.07	2,900
December.....	962	41	22	31.0	.038	.04	1,910
Calendar year 1948	81,953	6,020	20	224	.277	3.77	162,500
January 1949.....	3,480	580	22	112	.138	.16	6,900
February.....	4,863	1,000	48	174	.215	.22	9,650
March.....	43,514	9,200	215	1,404	1.73	2.00	86,310
April.....	5,914	337	131	197	.243	.27	11,730
May.....	7,559	1,630	80	244	.301	.35	14,990
June.....	9,770	1,710	77	326	.402	.45	19,380
July.....	5,309	1,790	43	171	.211	.24	10,530
August.....	4,121	850	34	133	.164	.19	8,170
September.....	8,583	3,030	38	286	.353	.39	17,020
Water year 1948-49	96,327	9,200	21	264	.326	4.42	191,160
October 1949.....	2,512	471	38	81.0	.100	.12	4,980
November.....	1,234	47	28	41.1	.051	.06	2,450
December.....	1,064	56	30	34.3	.042	.05	2,110
Calendar year 1949	97,923	9,200	22	268	.331	4.50	194,200
January 1950.....	546	45	8	17.6	.022	.03	1,080
February.....	12,702	5,500	30	454	.560	.58	25,190
March.....	21,414	3,460	76	691	.853	.98	42,470
April.....	1,365	83	32	45.5	.056	.06	2,710
May.....	14,433	5,170	39	466	.575	.66	28,630
June.....	33,501	10,100	82	1,117	1.38	1.54	66,450
July.....	11,244	2,120	94	363	.448	.52	22,300
August.....	11,369	5,970	83	367	.453	.52	22,550
September.....	1,869	127	45	62.3	.077	.09	3,710
Water year 1949-50	113,253	10,100	8	310	.383	5.21	224,600

Waubonsie Creek near Bartlett, Iowa

LOCATION.—Lat. 40°53', long. 95°45', in NE¼ sec. 11, T. 70 N., R. 43 W., at left pier on downstream side of bridge on Fremont County highway M, 2.5 miles east of Bartlett, and 4.5 miles west of Tabor.

DRAINAGE AREA.—30 square miles.

RECORDS AVAILABLE.—January 1946 to September 1950.

GAGE.—Wire-weight gage and auxiliary high-stage recorder. Datum of gage is 936.96 feet above mean sea level, datum of 1929.

AVERAGE DISCHARGE.—4 years, 17.0 second-feet.

EXTREMES.—Maximum and minimum discharges for water years 1946-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1946 ⁽¹⁾ . . .	Sept. 4	12,500	37.7	Aug. 2-4	0.1
1946-47 . .	June 4	9,400	34.0	Feb. 4-6, 9, 10, 22, 23	.6
1947-48 . .	Feb. 27	2,700	⁽²⁾ 23.5	July 18-28	.6
1948-49 . .	June 27	10,300	32.83	Oct. 4	1.0
1949-50 . .	May 8	14,500	⁽³⁾ 37.8	Jan. 4, 5	.5

(1) Period Jan. 10 to Sept. 30.

(2) Ice jam.

(3) From floodmark.

1946-50: Maximum discharge, 14,500 second-feet May 8, 1950 (gage height, 37.8 feet, from floodmarks), from rating curve extended above 800 second-feet on basis of slope-area determinations at gage heights 32.8 feet and 37.8 feet; minimum daily, 0.1 second-foot Aug. 2-4, 1946.

REMARKS.—Records poor.

Waubonsie Creek near Bartlett, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1946 and 1947

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1945-46												
1					4.0	*6.4	6.0	3.2	1.1	0.6	0.2	0.2
2					3.5	5.2	5.6	3.6	2.2	.5	.1	.2
3					4.5	5.6	5.6	7.2	1.5	.6	.1	.2
4					60	8.0	5.2	5.6	1.5	.6	1,640	
5			3.8		40	94	5.2	4.0	1.5	.5	5.6	4.0
6					20	22	5.6	4.0	1.3	.6	.3	7.2
7					10	11	5.6	4.4	1.3	.8	90	4.2
8					9.0	27	5.6	4.0	1.3	.8	21	1.5
9					8.0	24	6.0	4.0	.7	.8	1.1	4.2
10				*1.3	7.5	15	5.6	5.2	.7	.6	.8	1.6
11				1.3	7.0	7.6	13	4.8	.6	.4	.7	1.5
12				1.3	6.8	16	6.0	2.9	.5	.4	1.1	3.6
13				1.4	6.6	11	5.6	2.9	.4	.4	1.3	1.3
14				1.4	6.5	8.0	5.2	2.9	.4	.4	1.1	1.3
15				1.3	6.4	7.2	5.6	6.4	.5	.4	.7	1.1
16				1.3	6.3	27	5.6	5.6	a.4	29	.7	1.1
17				1.2	6.2	16	5.2	7.2	a.4	.9	2.5	1.0
18				1.4	6.2	9.2	5.2	2.9	30	.4	1.1	.9
19				1.6	6.1	6.8	5.2	2.2	20	.6	.6	1.0
20				2.2	6.0	6.0	5.2	2.2	4.8	.5	.5	1.1
21				3.0	*6.0	6.0	4.0	2.5	4.4	.4	10	1.0
22				2.1	5.9	5.6	4.4	2.5	4.0	.3	1.1	.69
23				2.0	5.8	15	4.0	2.5	3.2	.3	2.2	1.9
24				4.0	5.9	8.8	4.0	6.8	6.9	.3	18	2.0
25				3.6	5.9	8.0	4.4	2.9	30	.3	1.1	2.0
26				3.0	6.5	13	4.0	1.5	4.0	.3	.4	1.9
27				2.6	7.0	6.8	4.0	1.1	4.0	.3	.3	.76
28				2.7	8.0	8.0	3.6	1.1	96	.2	.3	2.5
29				2.9		7.2	3.6	1.3	8.0	.2	.2	2.3
30				3.0		6.8	3.6	7.6	1.8	.2	.2	2.3
31				5.0		6.0		2.5		.2	.2	
1946-47												
1	2.0	3.5	3.0	.8	1.0	2.2	2.1	a5.6	120	13	a2.5	1.9
2	1.7	1.3	3.0	.8	.8	2.2	2.4	5.0	13	13	2.4	a1.8
3	1.7	1.1	*4.0	1.0	.8	2.2	2.6	4.7	8.9	12	a2.1	1.8
4	1.6	1.1	2.0	1.3	.6	2.2	31	3.8	1,240	12	a1.8	1.7
5	1.7	a1.2	1.7	1.3	.6	2.2	7.8	4.0	192	10	a1.5	a1.6
6	2.4	2.3	1.6	1.3	.6	2.4	6.1	4.2	85	8.2	a1.2	1.6
7	2.9	4.3	1.5	*1.5	1.6	2.6	6.3	4.2	18	a8.0	1.0	a1.6
8	2.6	3.0	1.3	1.6	.8	2.8	5.7	a4.2	16	7.8	1.0	1.6
9	2.5	3.0	1.4	2.4	.8	3.2	a6.0	4.0	a20	7.2	.6	1.6
10	105	2.0	1.4	6.0	1.0	4.4	241	3.8	248	a6.8	.6	a3.0
11	4.0	1.7	1.3	5.0	1.6	8.0	16	3.8	15	6.3	1.2	12
12	3.8	1.7	1.2	4.8	2.4	11	12	4.2	1,240	66	1.3	a6.0
13	3.8	1.6	1.2	4.6	4.4	17	8.6	4.2	22	420	1.5	2.4
14	4.0	1.6	1.1	4.4	10	11	7.2	3.8	a18	7.6	2.4	1.7
15	3.8	1.9	1.0	3.2	8.0	9.0	7.2	4.2	12	a6.5	2.8	a1.6
16	3.3	2.9	1.0	2.6	7.0	8.0	a7.2	4.2	14	5.8	3.3	1.6
17	158	.7	1.0	2.0	7.0	7.0	7.2	5.4	13	5.8	a3.0	a1.6
18	49	.7	.9	1.8	6.0	6.0	6.8	3.8	294	a5.7	a2.6	1.6
19	2.0	a1.5	.9	1.4	5.0	6.0	7.8	4.8	36	a5.5	2.3	a1.6
20	1.8	a2.0	.9	1.2	4.0	5.7	7.2	3.8	10	a15	a1.8	1.6
21	1.6	a1.6	.9	1.2	3.2	5.7	7.0	4.2	a15	a6.0	1.0	1.6
22	1.6	1.1	.9	1.6	3.0	5.4	7.0	13	720	a5.8	.6	a1.6
23	a1.6	a1.0	.9	2.0	2.8	5.7	a6.6	5.0	42	a5.6	a.6	1.6
24	65	1.0	.8	2.8	2.8	a5.2	a6.2	4.0	13	5.4	58	1.8
25	2.0	1.0	.8	3.4	*2.6	15.0	5.7	3.6	13	5.8	73	1.6
26	1.7	1.0	.8	3.2	2.6	4.2	5.4	3.5	a13	5.4	3.8	a1.6
27	1.6	1.0	.8	3.0	2.4	a3.4	5.2	3.5	13	3.9	2.5	1.6
28	1.5	1.5	.7	2.6	2.4	2.6	5.2	33	49	a3.6	a2.4	1.6
29	a1.5	2.5	.7	2.2		2.0	8.6	9.2	21	3.3	a2.2	a1.6
30	a1.5	3.0	.7	1.8		2.0	6.1	11	12	2.8	2.1	a1.6
31	a1.4		.7	1.2		2.1		6.3		a2.7	2.1	

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Jan. 10 to Feb. 27, Nov. 24 to Dec. 4, Dec. 12-31, 1946, Jan. 1 to Mar. 19, 1947 (no gage-height record Dec. 12-17, 24, 25, 1946, Jan. 8, 15, 23, Feb. 6, 7, 16, 24, Mar. 7, 1947).

Waubonsie Creek near Bartlett, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1948 and 1949

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1947-48												
1.....	16	a5.0	a1.2	a1.4	b1.5	b2.0	3.8	3.2	a1.8	1.6	1.8	67
2.....	a10	a4.5	a1.5	a1.4	a1.5	a2.0	a3.7	4.1	a1.5	a1.6	a5.0	78
3.....	3.6	a4.0	a2.0	a1.5	a1.5	a2.1	3.6	a4.1	1.2	a2.0	a10	a3.0
4.....	2.8	a4.0	a5.0	a1.8	b1.5	a2.1	a3.5	a4.0	1.2	15	2.3	a2.7
5.....	2.3	3.9	a4.0	b2.0	a1.5	b2.2	a3.4	4.0	.9	5.0	a2.3	2.4
6.....	2.1	a4.0	a3.0	a2.0	a1.6	a2.2	3.3	a3.9	.8	1.5	a2.3	59
7.....	a2.0	a3.5	a2.5	a2.4	b1.6	a2.1	a3.0	a3.8	a.8	a1.4	2.3	225
8.....	1.9	a3.0	a2.0	a2.8	a1.6	b2.0	2.8	3.8	a.8	a1.4	a2.0	11
9.....	a1.8	a2.5	a1.8	b3.0	b1.7	a1.9	a3.2	3.8	.8	2.4	1.8	a4.0
10.....	a1.7	a2.5	a2.0	a2.5	a2.0	a1.8	3.5	a3.5	a.8	a1.3	83	a3.0
11.....	1.6	a2.0	a2.2	a2.0	b2.5	b1.7	3.8	a3.3	a.8	1.0	a2.5	2.3
12.....	2.0	a2.0	a2.0	a1.8	a2.6	a1.8	a3.6	3.2	.8	a1.0	a2.0	a1.8
13.....	a1.8	a2.0	a1.9	b1.4	a2.8	b2.0	a3.4	3.2	a.8	a1.0	93	a1.5
14.....	1.7	a1.5	a1.9	a1.2	b3.0	b2.5	3.2	a3.0	a.9	a.9	a2.0	1.2
15.....	a1.6	a2.0	a1.8	a1.0	b3.0	b30	a3.1	2.7	1.0	.9	a2.0	1.5
16.....	1.6	a1.8	b*1.7	a1.1	a4.0	b110	a2.9	2.5	a1.0	a.8	a2.0	1.2
17.....	a1.6	a1.6	a1.7	a1.2	a6.0	b150	2.8	a2.5	a1.0	.7	2.6	a1.1
18.....	1.6	a1.6	a1.6	a1.2	a8.0	b170	a2.7	2.4	a1.0	.6	a2.3	1.0
19.....	1.6	a1.4	a1.6	a1.3	b10	a50	2.6	a2.4	1.0	a.6	a1.9	1.2
20.....	a1.6	a1.4	a1.7	b*1.3	a9.0	7.8	a2.6	a2.4	1.0	.6	a1.6	a2.0
21.....	1.6	a1.4	a1.8	a1.3	a8.0	8.2	a2.6	a2.4	2.9	a.6	1.3	a5.0
22.....	a1.6	a1.6	b1.8	a1.1	a7.0	a7.6	6.3	2.4	64	a.6	a1.2	1.2
23.....	12	a1.4	a1.8	a1.0	b6.0	7.0	a5.0	a2.3	5.4	.6	1.0	a1.2
24.....	a7.0	a1.4	a1.7	a1.0	a6.0	a6.2	3.2	2.2	2.5	a.6	a1.0	a1.2
25.....	2.4	a1.2	a1.6	a1.0	a6.0	5.4	8.4	a2.1	a2.2	.6	a1.0	1.2
26.....	1.9	a1.2	b1.5	a1.0	b7.0	5.9	a5.0	a2.1	2.0	a.6	a1.0	a1.2
27.....	a1.8	a1.8	a1.5	a1.2	b220	a6.4	4.1	2.0	1.8	.6	1.0	a1.1
28.....	a1.6	a1.2	a1.5	a1.4	3.6	6.7	a4.0	a2.0	5.8	a.6	a1.0	a1.1
29.....	a1.6	a1.2	a1.5	b1.5	2.6	a5.8	3.8	1.9	a3.0	90	.9	a1.0
30.....	a1.6	a1.2	a1.5	a1.5	.....	a4.8	a3.5	2.4	2.0	a5.0	a.9	a1.0
31.....	a2.0	.....	a1.5	b1.5	.....	3.8	.....	a2.0	.....	1.9	a.9	.....
1948-49												
1.....	a1.1	a2.1	a2.0	a2.3	b2.7	b60	a9.4	a3.8	173	4.2	a3.1	2.6
2.....	a1.1	a1.6	a1.9	a2.3	a2.6	a100	a8.6	3.8	a14	4.7	2.8	a2.5
3.....	a1.1	a1.6	a1.9	b20	*b2.6	b120	a8.0	a3.7	a13	4.2	a2.8	a2.5
4.....	1.0	a1.6	a1.8	a15	a2.6	a140	7.6	a3.6	12	a4.0	a2.7	a5.0
5.....	a1.2	14	a1.8	a9.0	b2.5	91	a7.2	3.6	12	3.9	a2.6	a3.0
6.....	3.2	a2.5	a1.8	b5.2	a2.5	73	a6.8	a5.0	a10	75	a2.5	45
7.....	2.2	a2.3	a1.8	a3.1	b2.5	a45	6.3	a4.0	a15	a5.0	a2.5	a3.5
8.....	a1.8	a2.1	a1.8	a2.8	a2.5	*30	a6.0	a6.0	12	a3.5	a2.5	a2.5
9.....	1.6	a2.0	a1.8	a2.6	a2.5	a25	a5.8	a15	11	a3.2	a3.5	4.6
10.....	a1.5	a1.9	a1.8	b2.5	b2.5	b21	a5.6	a5.0	a10	a3.1	a2.5	a120
11.....	1.4	a1.8	a2.0	*b2.4	a2.5	a18	a5.4	a4.4	a9.0	3.0	a2.5	a8.0
12.....	a1.3	a1.7	a2.3	a2.4	a2.5	17	5.3	a4.1	34	3.0	a2.5	a5.0
13.....	1.3	a1.6	a2.7	b2.3	a2.6	a19	a5.2	a3.9	239	a10	a2.5	3.6
14.....	a1.3	a1.6	a2.8	a2.3	a2.6	a10	a8.0	a3.9	a14	5.5	a2.5	a3.6
15.....	a1.2	a1.6	a2.9	b160	b15	a7.0	a5.4	a3.9	a10	a4.1	a20	3.6
16.....	1.2	3.0	a2.9	a25	a10	a6.0	5.0	a9.0	8.4	a3.6	a3.5	a3.4
17.....	1.2	a2.3	a2.9	a10	a8.0	12	a5.0	a5.0	a15	a3.4	a3.0	3.3
18.....	a1.2	a2.3	a2.9	b8.0	b150	a10	a5.0	a4.5	12	a3.4	a30	3.2
19.....	a1.2	130	a2.8	a6.4	a8.0	14	5.0	a12	5.1	4.4	a5.0	a3.1
20.....	1.3	4.7	a2.7	a6.2	a6.0	26	a6.0	5.6	3.9	a5.0	a3.4	a3.1
21.....	1.6	a4.0	a2.6	b6.0	a5.0	a100	a8.0	36	7.2	a5.0	3.1	a3.0
22.....	a1.3	a3.5	a2.5	a6.0	a4.5	a23	a6.0	a8.0	391	a1.5	*a3.0	a3.0
23.....	1.2	3.2	a2.3	b110	b100	a10	4.7	5.9	202	4.1	a2.9	3.0
24.....	1.3	a2.9	a2.5	a6.0	b190	.....	8.2	4.4	6.1	83	4.1	a2.9
25.....	a1.4	a2.7	a2.6	b5.0	a50	a7.0	a4.3	a6.8	5.1	a1.0	2.9	3.0
26.....	a1.3	a2.5	a2.6	a4.0	a35	a30	a4.2	a7.4	4.6	a1.1	a2.9	a2.9
27.....	1.3	a2.4	a2.5	a3.5	a25	a8.0	a4.1	7.8	987	a5.0	a2.8	a2.9
28.....	a1.3	a2.3	a2.4	a3.2	a20	7.2	a4.0	a6.2	10	a4.3	2.7	a2.9
29.....	a1.3	a2.2	a2.3	b3.0	.....	a7.2	4.0	a6.2	20	3.6	a2.7	2.9
30.....	3.4	a2.1	a2.5	a2.8	.....	a18	a3.9	6.7	4.0	a3.1	a2.7	a2.8
31.....	2.9	.....	a2.3	a2.7	.....	11	.....	a7.2	.....	a3.5	a2.7	.....

* Winter discharge measurement made on this day.
 a No gage-height record; discharge computed on basis of weather records and records for nearby stations.
 b Stage-discharge relation affected by ice.

Waubonsie Creek near Bartlett, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October 1946.....	439.6	158	1.4	14.2	0.473	0.54	872
November.....	53.8	4.3	.7	1.79	.060	.07	107
December.....	40.1	4.0	.7	1.29	.043	.05	80
January 1947.....	74.0	6.0	.8	2.39	.080	.09	147
February.....	85.8	10	.6	3.06	.102	.11	170
March.....	158.4	17	2.0	5.11	.170	.20	314
April.....	461.2	241	2.1	15.4	.513	.57	915
May.....	182.0	33	3.5	5.87	.196	.23	361
June.....	4,545.9	1,240	8.9	152	5.07	5.64	9,020
July.....	692.5	420	2.7	22.3	.743	.86	1,370
August.....	185.2	73	.6	5.97	.199	.23	367
September.....	66.1	12	1.6	2.20	.073	.08	131
Water year 1946-47	6,984.6	1,240	.6	19.1	.637	8.67	13,850
October 1947.....	96.0	16	1.6	3.10	.103	.12	190
November.....	67.4	5.0	1.2	2.25	.075	.08	134
December.....	60.8	5.0	1.2	1.96	.065	.08	121
Calendar year 1947	6,675.3	1,240	.6	18.3	.610	8.29	13,240
January 1948.....	47.8	3.0	1.0	1.54	.051	.06	95
February.....	333.1	220	1.5	11.5	.383	.41	661
March.....	614.0	170	1.7	19.8	.660	.76	1,220
April.....	110.4	8.4	2.6	3.68	.123	.14	219
May.....	89.6	4.1	1.9	2.89	.096	.11	178
June.....	111.5	64	.8	3.72	.124	.14	221
July.....	143.0	90	.6	4.61	.154	.18	284
August.....	235.9	93	.9	7.61	.254	.29	468
September.....	489.1	225	1.0	16.2	.540	.60	962
Water year 1947-48	2,394.6	225	.6	6.54	.218	2.97	4,750
October 1948.....	46.7	3.4	1.0	1.51	.050	.06	93
November.....	210.1	130	1.6	7.00	.233	.26	417
December.....	72.4	2.9	1.8	2.34	.078	.09	144
Calendar year 1948	2,499.6	225	.6	6.83	.228	3.10	4,960
January 1949.....	442.0	160	2.3	14.3	.477	.55	877
February.....	662.2	190	2.5	23.6	.787	.82	1,310
March.....	1,073.6	140	6.0	34.6	1.15	1.33	2,130
April.....	174.2	9.4	3.9	5.81	.194	.22	346
May.....	214.1	36	3.6	6.91	.230	.27	425
June.....	2,346.3	987	3.9	78.2	2.61	2.91	4,650
July.....	201.5	75	3.0	6.50	.217	.25	400
August.....	133.7	30	2.5	4.31	.144	.17	265
September.....	260.5	120	2.5	8.68	.289	.32	517
Water year 1948-49	5,837.3	987	1.0	16.0	.533	7.25	11,570
October 1949.....	110.2	16	2.5	3.55	.118	.14	219
November.....	88.5	3.4	2.5	2.95	.098	.11	176
December.....	64.5	4.8	1.2	2.08	.069	.08	128
Calendar year 1949	5,771.3	987	1.2	15.8	.527	7.17	11,440
January 1950.....	23.5	1.1	.5	.76	.025	.03	47
February.....	101.3	48	.7	3.62	.121	.13	201
March.....	553.0	41	7.0	17.8	.593	.69	1,100
April.....	172.3	8.0	4.1	5.74	.191	.21	342
May.....	4,312.8	2,160	3.6	139	4.63	5.35	8,550
June.....	2,321.5	2,080	4.4	77.4	2.58	2.88	4,600
July.....	1,025.0	709	4.2	33.1	1.10	1.27	2,030
August.....	660.3	157	3.2	21.3	.710	.82	1,310
September.....	251.9	40	3.2	8.40	.280	.31	500
Water year 1949-50	9,694.8	2,160	.5	26.5	.883	12.02	19,200

West Nishnabotna River at Randolph, Iowa

LOCATION.—Lat. 40°52', long. 95°35', in NE¼ sec. 17, T. 70 N., R. 41 W., near center of main span 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 square miles.

RECORDS AVAILABLE.—June 1948 to September 1950.

GAGE.—Wire-weight gage read once daily and auxiliary water-stage recorder operates above gage height 8.4 feet. Datum of gage is 956.55 feet above mean sea level, unadjusted.

EXTREMES.—Maximum and minimum discharge for the water years 1948-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1948(1) . . .	July 29	8,680	15.45	Sept. 18, 19	69
1948-49 . . .	Mar. 5	16,000	(?)24.6	Oct. 4, 5, 23	68
1949-50 . . .	May 9	29,600	21.93	Jan. 18 to Feb. 5	50

(1) Period June 3 to Sept. 30.
(2) Ice jam.

1948-50: Maximum discharge, 29,600 second-feet May 9, 1950, maximum gage height, 24.6 feet (ice jam) Mar. 5, 1949; minimum daily discharge, 50 second-feet Jan. 18 to Feb. 5, 1950.

Flood of June 1947 reached a stage of about 24 feet, from information by local residents (discharge not determined).

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

Daily Discharge, in second-feet, for period June to September 1948

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1	.....	123	406	76	16	126	234	g352	87
2	.....	114	365	g2,240	17	135	157	g595	73
3	135	104	540	610	18	130	135	g220	69
4	140	340	319	660	19	126	204	167	69
5	132	126	234	121	20	140	130	142	74
6	132	100	176	144	21	173	g1,410	132	352
7	128	94	167	g1,020	22	227	g842	126	114
8	130	87	a150	g775	23	269	g440	114	94
9	126	85	a250	g240	24	184	162	112	98
10	119	83	a250	157	25	176	137	108	90
11	123	211	a300	128	26	144	128	98	78
12	126	102	g406	121	27	132	475	98	79
13	140	104	g1,360	106	28	147	g227	94	76
14	135	595	g388	102	29	142	g3,640	98	74
15	135	475	g595	90	30	142	g3,240	81	73
					31	.....	g972	78	.....

a No gage-height record; discharge computed on basis of records for nearby stations.
g Computed from graph based on wire-weight gage readings and recorder trace.

West Nishnabotna River at Randolph, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1	73	96	126	170	260	2,100	752	272	g379	420	152	128
2	73	85	123	180	230	3,000	555	280	g3,370	331	152	102
3	71	83	150	400	190	4,200	470	265	g1,370	284	137	102
4	68	85	119	1,200	170	6,000	445	247	450	265	132	130
5	68	204	105	960	160	15,000	420	247	323	240	128	251
6	114	189	96	760	155	8,000	392	280	295	311	128	655
7	144	a130	90	600	150	*4,500	374	291	280	230	123	505
8	116	a115	94	500	150	1,500	352	280	244	280	128	780
9	94	a110	105	450	150	1,200	335	465	223	357	116	280
10	85	a105	120	270	150	g972	340	352	331	311	152	108
11	79	a98	135	*180	155	780	323	269	237	265	140	580
12	79	a94	155	160	160	725	315	240	g284	208	128	898
13	81	a91	180	150	165	780	299	230	g3,300	297	128	945
14	76	a88	190	150	165	780	311	234	890	240	128	319
15	76	a85	190	800	170	352	335	311	520	208	265	192
16	74	83	180	2,500	175	392	392	280	374	189	152	154
17	76	81	190	1,500	210	545	435	g470	310	162	126	132
18	71	83	185	1,200	325	470	475	g780	331	178	550	126
19	73	g749	175	950	450	445	640	g515	370	550	g650	121
20	71	g880	175	860	400	445	383	323	490	570	500	a115
21	69	g303	180	860	370	g1,440	383	g735	g1,280	g608	208	110
22	73	181	150	1,100	350	g2,810	392	g2,440	g932	g625	152	98
23	68	160	130	1,500	350	g1,610	420	g595	g990	295	98	98
24	73	154	140	2,000	600	g808	327	379	g1,940	223	119	90
25	74	154	155	1,500	4,500	620	299	335	g1,090	198	108	90
26	71	150	170	1,100	4,000	725	237	295	g598	162	104	88
27	71	132	155	900	3,000	1,300	315	267	g2,280	272	108	88
28	71	142	150	700	2,500	780	370	261	g3,400	247	104	87
29	73	108	160	500	.....	555	299	234	g1,410	510	108	90
30	162	106	180	400	.....	535	258	251	670	240	112	94
31	104	.....	170	310	.....	645	.....	234	.....	162	130	.....
1949-50												
1	96	88	81	54	50	g2,320	164	175	241	252	328	204
2	92	87	81	54	50	g1,960	162	162	496	238	257	199
3	92	85	60	54	50	g2,140	152	154	g1,460	229	257	180
4	100	88	68	54	50	g2,790	159	g155	g655	224	249	185
5	96	87	68	54	50	g3,350	147	g2,490	g346	229	361	167
6	87	87	71	54	150	*g1,960	102	g900	g286	224	331	154
7	g723	90	68	52	400	g740	123	g431	g447	215	g1,710	142
8	g327	94	68	52	g2,590	292	123	g3,240	g283	210	g1,630	144
9	g173	94	66	52	g2,470	142	119	g16,900	g2,650	215	g818	g202
10	g142	98	64	52	g1,570	137	104	g1,960	g377	266	431	g304
11	g211	a94	62	52	g790	130	110	g718	275	243	383	128
12	128	90	62	52	g399	130	115	479	263	g3,150	g3,570	128
13	119	83	60	52	a350	140	110	364	g2,210	g930	g1,200	137
14	112	79	60	52	283	160	108	307	g1,500	374	g718	128
15	108	112	58	52	334	g257	106	235	g528	399	g2,440	d119
16	112	88	58	52	257	g780	100	180	g368	g2,650	g635	123
17	102	88	58	52	283	g580	98	188	g635	g1,530	g655	d115
18	104	74	58	50	221	g447	89	142	g3,270	718	g545	d117
19	106	92	58	50	200	g227	89	286	g2,900	598	479	d112
20	116	*83	*58	50	221	170	89	512	g845	479	358	d119
21	g335	83	58	50	g361	204	85	528	g655	415	322	a120
22	g284	74	56	50	g431	*g249	79	512	g431	368	322	130
23	g465	74	56	*50	g512	g463	78	164	g818	328	278	d126
24	g121	78	56	50	g545	g790	74	g236	g1,330	316	275	d123
25	100	83	56	50	g463	g479	128	g2,950	g655	301	257	d119
26	106	85	56	50	g431	g289	172	g1,360	g463	283	252	102
27	88	74	56	50	g797	241	152	g512	325	278	340	115
28	90	87	56	50	*g11,000	229	170	322	286	257	g562	d126
29	92	87	56	50	.....	479	132	346	280	257	255	164
30	a90	79	56	50	.....	175	215	479	263	241	232	d130
31	87	.....	54	50	.....	175	.....	368	.....	g863	213	.....

* Winter discharge measurement made on this day.

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

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

g Computed from graph based on wire-weight gage readings and recorder trace.

Note—Stage-discharge relation affected by ice Dec. 5-31, 1948, Jan. 1 to Mar. 9, Dec. 9-31, 1949, Jan. 1 to Feb. 7, Feb. 19, Mar. 11-14, 1950.

West Nishnabotna River at Randolph, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acro-feet
June 3-30, 1948.....	4,094	269	119	146	0.111	0.12	8,120
July.....	15,276	3,640	83	493	.376	.43	30,300
August.....	8,521	1,360	78	275	.210	.24	16,900
September.....	8,090	2,240	69	270	.206	.23	16,050
October 1948.....	2,571	162	68	82.9	.063	.07	5,100
November.....	5,124	880	81	171	.131	.15	10,160
December.....	4,613	190	90	149	.114	.13	9,150
January 1949.....	24,810	2,500	150	800	.611	.70	49,210
February.....	19,810	4,500	150	708	.540	.56	39,290
March.....	64,014	15,000	352	2,065	1.58	1.82	127,000
April.....	11,643	752	237	388	.296	.33	23,090
May.....	12,651	2,440	230	408	.311	.36	25,090
June.....	28,970	3,400	223	966	.737	.82	57,460
July.....	9,588	698	162	309	.236	.27	19,020
August.....	5,466	650	98	176	.134	.16	10,840
September.....	7,556	945	87	252	.192	.21	14,990
Water year 1948-49	196,816	15,000	68	539	.411	5.58	390,400
October 1949.....	5,004	723	87	161	.123	.14	9,930
November.....	2,585	112	74	86.2	.066	.07	5,130
December.....	1,903	81	54	61.4	.047	.05	3,770
Calendar year 1949	194,450	15,000	54	533	.407	5.50	385,700
January 1950.....	1,596	54	50	51.5	.039	.05	3,170
February.....	25,308	11,000	50	904	.690	.72	50,200
March.....	22,625	3,350	130	730	.557	.64	44,880
April.....	3,654	215	74	122	.093	.10	7,250
May.....	37,755	16,900	142	1,218	.930	1.07	74,890
June.....	25,541	3,270	241	851	.650	.73	50,660
July.....	17,280	3,150	210	557	.425	.49	34,270
August.....	20,663	3,570	213	667	.509	.59	40,980
September.....	4,362	304	102	145	.111	.12	8,650
Water year 1949-50	168,276	16,900	50	461	.352	4.77	333,800

Nishnabotna River above Hamburg, Iowa

LOCATION.—Lat. 40°38', long. 95°37', in SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 11, T. 67 N., R. 42 W., on left bank 1,000 feet below Chicago, Burlington & Quincy Railroad bridge, 1½ miles downstream from confluence of East Nishnabotna and West Nishnabotna Rivers, and 2 miles northeast of Hamburg.

DRAINAGE AREA.—2,800 square miles.

RECORDS AVAILABLE.—March 1922 to September 1923, October 1928 to September 1950.

GAGE.—Staff gage read once daily. Datum of gage is 894.17 feet above mean sea level, datum of 1929. Mar. 26, 1922, to Sept. 30, 1923, chain gage at site 6 miles downstream at different datum. Oct. 5, 1928, to Sept. 6, 1929, chain gage at site 1,000 feet upstream at datum 0.42 foot 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 1,000 feet upstream at different datum.

AVERAGE DISCHARGE.—22 years (1928-50), 896 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43 ..	May 16	9,660	19.10	Sept. 29	130
1943-44 ..	June 15	11,800	20.75	Feb. 18, 19	45
1944-45 ..	May 23	21,000	22.6	Feb. 1	90
1945-46 ..	Sept. 4	11,300	(¹)	Dec. 21, 22	220
1946-47 ..	June 24	55,500	(²)26.03	Sept. 27	281
1947-48 ..	Mar. 20	36,300	24.48	Sept. 30	123
1948-49 ..	Mar. 7	32,200	25.9	Oct. 2-5	118
1949-50 ..	May 10	19,900	22.47	Jan. 27-29	80

(1) Maximum gage height 20.0 feet Jan. 8 (ice jam).

(2) From floodmark.

1922-23, 1928-50: Maximum discharge, 55,500 second-feet June 24, 1947 (gage height, 26.03 feet, from floodmark); minimum, 4.5 second-feet Aug. 30, 1934.

REMARKS.—Records fair except those for periods of ice effect or backwater from Missouri River, which are poor.

Nishnabotna River above Hamburg, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	347	247	170	400	*184	772	654	234	250	440	483	359
2.....	338	257	160	300	200	650	611	226	1,240	440	874	361
3.....	338	234	170	200	3,110	700	594	197	5,570	424	4,970	327
4.....	517	243	190	180	7,640	600	550	184	5,240	443	1,940	278
5.....	500	249	180	170	8,240	550	510	197	7,520	1,240	747	313
6.....	432	245	170	180	6,140	520	490	1,130	6,300	794	543	641
7.....	359	245	160	160	3,010	550	480	878	3,660	514	458	270
8.....	320	245	160	170	1,980	600	500	435	2,760	407	908	255
9.....	301	253	170	180	1,620	650	560	313	3,120	385	561	228
10.....	288	260	180	190	1,390	692	700	251	5,180	373	322	221
11.....	280	257	190	180	1,600	697	900	253	2,730	349	318	198
12.....	276	253	180	170	1,300	683	1,000	225	3,520	327	1,020	207
13.....	272	258	160	170	1,100	692	680	217	1,720	284	1,820	567
14.....	272	238	170	180	900	772	410	272	1,220	378	1,450	1,860
15.....	270	234	180	250	820	810	310	4,650	6,740	294	651	374
16.....	268	245	190	500	760	836	290	9,440	7,130	385	359	475
17.....	264	238	200	340	720	813	260	6,780	5,190	407	286	282
18.....	264	236	*184	250	700	900	240	2,750	2,540	488	262	240
19.....	260	236	170	200	760	860	230	1,750	1,610	1,820	238	217
20.....	260	228	170	205	850	600	230	1,520	1,120	651	282	217
21.....	257	223	180	220	978	550	236	1,240	921	2,370	251	216
22.....	249	226	200	250	1,120	901	255	899	797	1,710	841	200
23.....	249	236	250	220	1,100	2,170	272	676	1,290	700	1,640	214
24.....	253	234	345	210	1,010	*2,750	260	740	878	437	4,560	204
25.....	249	234	395	196	832	2,300	376	567	665	2,680	3,090	177
26.....	247	210	528	192	703	1,600	356	508	582	1,300	1,140	160
27.....	253	160	1,110	200	749	1,210	486	435	522	522	942	152
28.....	260	216	1,000	205	800	839	605	294	978	371	751	147
29.....	260	185	900	210	.....	680	414	200	534	331	469	130
30.....	288	180	700	200	.....	654	359	190	480	316	380	147
31.....	253	.....	500	180	.....	669	.....	190	.....	280	352	.....
1943-44												
1.....	162	164	137	80	205	306	531	1,600	3,020	2,190	1,350	821
2.....	143	178	158	85	196	278	576	3,710	2,210	2,060	2,580	728
3.....	139	180	135	90	162	292	492	5,320	1,640	1,900	4,490	553
4.....	135	162	162	105	162	292	406	4,390	7,560	1,620	4,690	534
5.....	130	135	203	115	180	256	341	3,080	8,240	1,600	4,250	483
6.....	121	141	198	95	135	243	365	2,750	5,380	1,420	2,610	447
7.....	130	148	176	95	135	220	341	2,410	3,590	1,370	1,890	393
8.....	126	117	*180	90	141	200	365	2,210	5,230	2,800	1,150	387
9.....	119	174	180	80	165	190	547	2,260	8,140	2,150	861	374
10.....	121	174	172	75	143	220	531	2,150	7,120	1,800	770	702
11.....	112	143	148	65	110	300	1,340	1,810	5,630	2,650	652	586
12.....	104	160	145	60	100	347	1,260	1,570	6,130	3,750	563	435
13.....	124	156	120	65	90	463	1,470	1,630	8,500	3,390	543	378
14.....	119	176	115	70	80	924	1,220	1,400	11,200	1,910	550	374
15.....	124	183	105	70	70	652	850	1,370	11,300	1,380	786	344
16.....	124	180	90	80	55	739	750	1,280	8,720	1,250	563	344
17.....	126	198	90	85	50	857	670	1,500	6,310	1,150	1,810	297
18.....	126	180	95	45	50	993	630	1,060	5,000	1,140	1,090	297
19.....	126	172	100	95	45	739	700	1,030	3,990	1,290	962	1,890
20.....	130	191	105	90	55	586	1,110	1,480	3,470	1,020	702	1,250
21.....	126	205	105	90	95	563	1,280	2,550	3,210	899	508	845
22.....	124	191	90	90	125	586	1,320	5,340	2,870	793	447	399
23.....	124	189	70	80	200	907	2,560	4,880	2,680	732	425	384
24.....	121	170	75	*85	590	1,070	2,350	3,990	2,450	793	406	378
25.....	117	170	80	300	*910	1,380	2,250	3,470	2,300	1,470	483	353
26.....	117	172	80	359	1,110	1,000	3,010	5,910	2,070	3,170	2,040	350
27.....	117	172	85	702	1,110	698	2,590	4,580	1,870	2,500	3,640	329
28.....	117	178	80	680	1,060	540	2,310	5,230	4,010	2,140	3,080	403
29.....	117	154	75	702	329	531	1,850	4,260	3,610	1,380	2,350	365
30.....	133	137	75	403	.....	444	1,500	4,660	2,530	911	1,510	318
31.....	133	.....	75	264	.....	332	.....	3,020	.....	739	899	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 30 to Dec. 23, Dec. 28-31, 1942, Jan. 1 to Feb. 2, Feb. 11-20, Mar. 2-9, Dec. 13-31, 1943, Jan. 1-24, Feb. 11-25, Mar. 7-11, 1944. Stage-discharge affected by backwater from Missouri River Apr. 4-20, 1943, Apr. 14-28, 1944.

* Nishnabotna River above Hamburg, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	438	329	120	200	90	950	876	1,940	6,190	2,470	2,160	541
2.....	1,710	326	110	190	100	1,100	844	1,870	7,670	2,330	3,640	511
3.....	984	323	150	180	130	1,300	868	1,880	8,400	1,820	4,210	493
4.....	1,810	315	200	180	150	1,400	1,140	1,760	5,780	1,530	3,190	475
5.....	2,170	320	210	*190	130	1,650	1,170	1,570	4,990	5,050	1,760	988
6.....	1,190	353	200	210	130	1,200	1,270	1,420	4,840	2,220	1,670	421
7.....	669	353	190	220	140	960	1,510	1,380	8,200	1,620	1,230	403
8.....	505	368	220	200	140	1,000	1,990	1,300	7,340	1,280	988	392
9.....	441	356	300	190	150	2,000	1,600	1,250	6,060	1,260	628	585
10.....	374	344	350	180	400	5,500	1,260	1,480	5,780	1,220	4,470	445
11.....	374	338	300	200	600	7,000	1,910	2,230	4,870	1,140	3,430	475
12.....	378	353	180	220	750	7,270	2,870	1,600	3,410	1,060	1,750	451
13.....	381	*347	150	250	1,200	4,920	4,310	1,530	3,320	1,040	1,300	445
14.....	368	338	170	270	1,600	3,390	2,700	6,750	3,190	2,020	6,040	436
15.....	359	332	220	290	2,000	4,690	2,080	7,570	3,190	1,930	2,960	430
16.....	359	329	210	270	1,700	4,830	3,260	6,730	7,240	1,200	1,880	412
17.....	270	332	200	280	1,100	4,020	3,610	4,330	5,700	3,230	1,160	403
18.....	344	332	190	300	1,000	2,940	2,750	3,130	4,010	3,510	1,110	409
19.....	338	356	190	350	900	2,310	2,330	2,870	3,090	2,820	970	400
20.....	378	387	150	390	800	1,900	2,060	2,460	6,910	1,680	892	400
21.....	540	378	180	410	750	1,670	1,810	6,450	3,700	1,280	840	409
22.....	403	371	180	380	700	1,490	1,620	13,200	2,860	1,180	568	409
23.....	378	359	180	390	680	1,420	3,900	19,200	2,410	1,130	906	392
24.....	362	344	180	420	*670	1,430	6,910	15,400	3,080	1,000	850	511
25.....	353	371	170	490	700	1,730	5,220	13,600	2,160	4,200	710	442
26.....	341	521	170	350	900	1,610	3,780	10,300	2,330	3,240	670	412
27.....	332	479	160	320	700	1,410	3,040	8,310	5,210	1,930	637	529
28.....	329	422	140	280	850	1,190	2,640	8,420	2,690	5,010	613	1,700
29.....	326	200	160	120	.....	884	2,300	7,460	2,240	2,840	574	1,440
30.....	332	135	180	100	.....	1,000	2,080	5,930	3,550	2,000	571	798
31.....	329	.....	200	100	.....	952	.....	4,980	.....	2,630	565	.....
1945-46												
1.....	679	341	383	340	2,300	582	1,020	472	714	1,100	365	900
2.....	589	341	400	350	1,500	639	924	488	654	1,060	342	788
3.....	529	343	448	365	1,200	639	840	1,520	630	939	328	735
4.....	490	341	386	400	1,400	615	789	3,860	612	840	318	8,320
5.....	460	341	328	900	7,540	885	666	2,300	532	726	342	5,640
6.....	451	341	*330	6,000	9,960	3,620	750	1,500	558	690	350	3,890
7.....	433	343	330	5,500	9,820	3,080	735	1,280	531	675	342	3,830
8.....	400	514	330	2,100	6,760	2,200	753	1,100	522	976	352	4,710
9.....	386	442	310	920	3,690	1,890	741	1,070	485	690	1,590	4,590
10.....	380	427	290	840	2,820	1,230	720	1,050	462	633	795	3,270
11.....	378	415	280	800	1,880	1,260	756	1,010	432	594	508	2,060
12.....	378	375	260	760	2,400	1,280	774	970	422	543	405	1,540
13.....	372	372	255	700	960	4,010	765	924	412	520	388	1,210
14.....	372	364	250	780	800	3,200	753	891	412	510	380	1,100
15.....	375	359	245	740	714	2,120	699	918	408	458	372	994
16.....	369	349	240	700	924	2,530	657	915	418	801	358	924
17.....	372	333	240	640	885	2,440	618	1,070	485	645	395	858
18.....	383	330	230	600	795	1,970	591	903	6,340	618	645	786
19.....	359	330	225	660	810	1,490	564	906	10,000	605	615	792
20.....	354	325	225	720	813	1,330	555	921	8,230	600	400	798
21.....	351	300	220	730	*801	1,250	518	888	4,250	576	332	79
22.....	351	280	220	700	822	1,180	505	858	2,330	543	1,480	798
23.....	349	265	225	640	816	2,080	630	807	1,760	485	2,190	777
24.....	354	440	230	690	834	2,290	549	852	1,460	462	2,690	1,660
25.....	356	380	240	500	789	2,330	515	912	1,950	440	4,550	970
26.....	356	310	250	450	744	2,180	492	1,020	1,660	418	5,150	738
27.....	351	315	260	470	645	1,540	475	798	1,380	442	5,150	1,100
28.....	349	333	280	480	630	1,380	472	714	1,030	422	2,960	1,960
29.....	346	338	290	500	.....	1,260	475	672	2,440	412	1,720	2,360
30.....	341	349	320	1,300	.....	1,150	472	672	1,240	392	1,260	1,350
31.....	336	.....	330	2,000	.....	1,050	.....	732	.....	380	1,050	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Nov. 29 to Dec. 9, Dec. 11-31, 1944, Jan. 1 to Mar. 11, Nov. 21-25, Dec. 9-31, 1945, Jan. 1 to Feb. 5, Feb. 12-14, 1946.

Nishnabotna River above Hamburg, Iowa—Continued *

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	855	1,230	822	380	360	735	666	3,340	5,730	7,060	1,160	474
2.....	792	1,280	813	395	350	715	702	2,420	10,800	6,230	1,120	486
3.....	735	1,530	*756	380	375	700	705	2,120	9,370	4,270	1,090	480
4.....	666	1,200	807	380	390	700	1,490	1,700	8,700	3,400	1,080	468
5.....	645	1,090	801	385	405	700	1,920	1,300	13,000	3,300	1,030	447
6.....	642	1,140	795	395	410	690	1,960	1,460	21,000	4,970	964	426
7.....	858	1,160	798	*405	420	690	1,820	1,450	17,900	3,920	940	415
8.....	870	1,200	795	415	440	700	1,420	1,330	14,300	3,160	932	404
9.....	777	1,220	789	430	460	720	1,370	1,300	11,300	2,840	860	393
10.....	750	1,440	777	460	480	840	8,450	1,230	9,370	2,690	825	378
11.....	1,820	1,520	741	500	510	960	10,200	1,210	8,480	2,560	797	444
12.....	2,480	1,330	717	550	545	1,500	6,090	1,170	12,200	2,660	783	492
13.....	2,220	1,130	684	600	580	1,850	4,320	1,180	29,200	8,220	783	447
14.....	1,460	1,100	645	650	620	2,530	3,560	1,190	49,600	3,930	762	415
15.....	1,100	1,060	610	700	1,250	1,470	3,100	3,190	35,600	2,880	797	380
16.....	994	1,220	585	670	2,350	1,280	2,850	2,800	17,100	2,510	780	365
17.....	1,240	1,070	575	650	1,900	1,460	2,830	2,130	13,800	2,280	755	349
18.....	5,860	1,040	565	600	1,500	1,540	2,510	1,970	13,800	2,190	741	342
19.....	4,500	984	560	590	1,100	1,400	2,350	1,730	13,600	2,230	720	333
20.....	3,280	980	555	585	950	864	2,530	1,480	13,000	2,130	678	324
21.....	2,290	980	555	580	890	885	3,090	1,320	12,600	1,910	637	319
22.....	1,660	936	560	580	920	900	2,410	1,570	12,300	1,730	564	310
23.....	1,090	882	570	590	820	984	2,160	1,780	14,500	1,630	514	298
24.....	1,630	891	580	600	690	1,040	2,060	1,860	36,200	1,560	495	289
25.....	2,020	918	585	640	670	1,070	1,960	1,460	35,600	1,560	1,990	298
26.....	1,920	915	580	680	700	885	1,760	1,380	14,800	1,520	1,600	285
27.....	1,470	912	480	720	730	1,400	1,680	1,360	12,600	1,440	1,010	281
28.....	1,360	912	450	570	760	1,740	1,550	1,990	9,210	1,400	699	298
29.....	1,280	864	415	490	.....	987	1,640	5,380	8,560	1,330	617	298
30.....	1,270	852	400	400	.....	675	2,830	4,440	8,790	1,280	581	315
31.....	1,250	.....	380	370	.....	654	.....	3,730	.....	1,220	542	.....
1947-48												
1.....	356	571	319	260	190	*5,630	2,120	974	310	255	1,200	151
2.....	356	685	489	260	180	2,580	1,700	998	320	240	860	1,510
3.....	351	571	564	320	180	1,760	1,330	918	310	240	900	1,600
4.....	342	*444	637	360	170	1,320	1,270	878	300	280	1,000	418
5.....	324	790	630	420	170	1,010	1,230	854	290	260	800	268
6.....	319	610	604	420	180	830	1,190	838	290	230	420	274
7.....	324	558	617	420	170	760	1,130	809	280	210	370	1,690
8.....	319	447	375	680	170	655	1,040	795	280	200	340	1,680
9.....	315	412	319	740	170	620	918	753	280	200	340	585
10.....	310	380	277	760	180	600	910	725	270	210	1,100	550
11.....	298	342	260	520	170	560	910	711	270	213	920	515
12.....	289	337	280	540	180	600	910	680	280	352	2,000	200
13.....	277	333	300	400	200	640	918	676	290	241	1,250	198
14.....	285	346	300	280	220	680	870	669	300	599	650	177
15.....	289	477	280	180	250	740	809	669	290	816	500	160
16.....	289	489	*270	160	340	*1,700	998	606	280	515	1,800	154
17.....	281	441	260	180	520	8,000	795	543	280	300	800	148
18.....	277	418	290	170	1,300	11,200	711	515	280	260	400	137
19.....	261	412	250	160	900	15,200	704	508	290	340	350	130
20.....	246	407	240	*160	860	*25,400	704	508	290	300	304	125
21.....	254	418	230	150	660	16,700	655	501	320	809	263	450
22.....	246	441	260	140	640	8,240	648	564	440	5,130	236	200
23.....	246	429	280	140	620	4,680	718	725	500	2,350	213	160
24.....	435	319	260	130	620	3,150	753	676	320	704	196	160
25.....	429	285	280	130	600	2,560	1,650	501	310	460	185	148
26.....	418	400	300	140	560	2,100	1,950	467	300	440	167	132
27.....	396	440	300	140	7,500	1,830	1,860	430	320	1,100	148	130
28.....	375	420	290	150	15,400	1,630	1,320	418	360	600	157	130
29.....	365	380	290	150	*13,600	1,740	1,070	380	380	2,500	167	130
30.....	407	333	290	160	.....	2,200	990	350	300	7,000	163	123
31.....	520	.....	280	180	.....	2,040	.....	320	.....	3,000	154	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 15-31, 1946, Jan. 1 to Mar. 12, Nov. 26-29, Dec. 11-31, 1947, Jan. 1 to Feb. 27, Mar. 9-17, 1948. Stage-discharge relation affected by backwater from Missouri River June 26 to July 12, 1947, May 29 to July 10, July 17-20, July 25 to Aug. 19, 1948.

Nishnabotna River above Hamburg, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1	168	316	219	250	760	5,000	1,770	462	550	1,020	358	211
2	118	223	215	240	640	4,000	1,180	450	8,710	850	337	200
3	118	185	215	270	500	5,500	1,100	438	3,920	725	337	196
4	118	185	211	500	400	7,000	920	414	1,920	665	316	316
5	118	323	265	2,000	300	*7,200	868	391	955	665	316	255
6	291	348	189	1,700	290	20,000	868	380	755	1,140	316	635
7	295	285	189	1,300	280	*29,000	840	680	1,150	725	295	337
8	231	306	158	1,100	280	17,200	820	414	832	872	295	275
9	211	215	175	1,200	290	9,290	810	488	770	1,020	285	259
10	195	195	195	530	300	4,760	800	575	920	1,340	306	243
11	148	189	210	*400	310	2,250	800	475	770	665	306	620
12	148	178	250	300	320	2,070	790	391	815	550	295	488
13	139	178	270	320	330	1,720	760	391	6,210	500	285	605
14	136	175	300	340	340	1,100	720	380	2,490	562	306	492
15	130	178	320	450	350	1,060	670	380	1,140	488	306	380
16	121	*175	450	2,500	380	920	630	512	990	462	265	316
17	124	171	400	4,600	410	898	590	512	770	450	295	285
18	124	183	380	2,500	470	832	815	920	740	414	255	275
19	124	1,110	360	1,800	900	832	815	725	1,260	380	402	247
20	127	710	340	1,400	700	832	785	475	850	358	884	227
21	130	620	300	1,300	600	1,260	785	1,000	1,800	2,820	500	207
22	133	450	280	1,300	570	6,180	770	4,310	2,370	1,540	348	204
23	136	306	250	1,800	540	4,340	740	2,070	2,060	832	295	196
24	148	285	130	3,100	2,000	2,070	665	1,380	3,090	575	265	196
25	139	316	175	2,600	3,500	1,300	605	920	2,550	488	243	196
26	130	316	220	2,000	5,000	1,380	718	665	1,300	402	227	192
27	127	316	230	1,700	6,000	1,970	832	665	1,180	885	231	192
28	130	251	240	1,500	7,000	2,250	680	605	6,780	850	243	192
29	139	231	230	1,300	.....	1,770	512	590	3,220	815	223	192
30	358	219	250	1,100	.....	1,220	414	575	1,460	710	231	189
31	316	.....	260	1,000	.....	1,970	.....	562	.....	500	223	.....
1949-50												
1	185	204	175	200	100	*7,500	325	305	810	300	560	350
2	183	200	175	180	110	4,980	305	305	1600	195	400	330
3	202	200	175	160	120	3,980	305	285	4410	340	350	320
4	327	196	178	140	140	3,400	410	257	1,380	390	330	300
5	920	196	178	130	170	5,090	365	2,650	1870	410	330	280
6	620	192	175	120	210	4,740	385	1,850	1435	400	330	270
7	475	196	161	120	306	3,540	305	1,020	1245	370	370	270
8	414	215	127	120	1,620	1,600	305	1,570	1220	360	2,900	270
9	391	223	153	120	*8,340	810	261	14,900	3,840	390	830	270
10	337	196	136	110	*4,340	660	265	16,000	1615	400	535	448
11	295	196	120	109	3,150	472	257	15,570	1385	400	422	350
12	275	196	*102	109	2,190	422	257	13,120	275	4,360	6,040	250
13	238	192	140	109	1,460	400	225	12,160	2,190	1,940	2,320	250
14	202	192	200	109	885	450	225	11,500	3,470	1,020	860	250
15	211	189	231	109	885	525	216	11,300	1,300	575	2,400	242
16	204	189	265	109	725	585	210	1980	870	2,990	1,880	250
17	192	185	275	109	850	705	210	1840	1,400	3,660	830	234
18	185	185	285	109	815	810	207	1750	1,100	1,450	830	234
19	191	185	275	109	525	615	207	1720	7,480	940	725	230
20	204	182	255	109	562	448	207	1840	3,900	830	590	370
21	680	178	230	109	885	435	207	11,300	1,500	740	472	410
22	635	178	204	109	1,100	472	205	840	980	605	460	260
23	391	178	251	*109	1,180	765	200	570	830	535	435	234
24	285	178	255	109	1,140	1,350	200	555	1,880	485	410	226
25	247	178	219	109	1,060	980	210	4,280	1,720	460	390	214
26	221	178	210	90	885	660	225	2,700	900	435	390	210
27	213	178	200	80	770	472	210	1,700	635	435	472	210
28	213	178	190	80	5,420	422	260	1,140	510	422	1,090	198
29	209	178	210	80	.....	398	275	940	510	410	740	240
30	202	175	230	100	.....	365	285	840	498	390	435	280
31	202	.....	220	100	.....	355	.....	900	.....	1,020	380	.....

* Winter discharge measurement made on this day.

f Fragmentary gage-height record, discharge computed on basis of record at auxiliary gage 3 miles downstream.

Note—Stage-discharge relation affected by ice Dec. 9-23, 25-31, 1948, Jan. 1 to Mar. 6, Dec. 12-14, 26-31, 1949, Jan. 1 to Feb. 6, Mar. 13, 14, 1950. Stage-discharge relation affected by backwater from Missouri River Apr. 7-17, 1949, Apr. 21-30, 1950.

Nishnabotna River above Hamburg, Iowa—Continued
 Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October 1942.....	9,244	517	247	298	0.106	0.12	18,340
November.....	7,005	260	160	234	.084	.09	13,890
December.....	9,612	1,110	160	310	.111	.13	19,070
Calendar year 1942	389,036	7,910	160	1,066	.381	5.15	771,700
January 1943.....	6,838	500	160	221	.079	.09	13,560
February.....	50,616	8,240	184	1,808	.646	.67	100,400
March.....	28,270	2,750	520	912	.326	.38	56,070
April.....	13,848	1,000	230	462	.165	.18	27,470
May.....	37,841	9,440	184	1,221	.436	.50	75,060
June.....	82,007	7,520	250	2,734	.976	1.09	162,700
July.....	21,860	2,680	280	705	.252	.29	43,360
August.....	32,878	4,970	238	1,061	.379	.44	65,210
September.....	10,137	1,860	130	338	.121	.13	20,110
Water year 1942-43	310,156	9,440	130	850	.304	4.11	615,200
October 1943.....	3,887	162	104	125	.045	.05	7,710
November.....	5,050	205	117	168	.060	.07	10,020
December.....	3,704	203	70	119	.042	.05	7,350
Calendar year 1943	296,936	9,440	70	814	.291	3.94	589,000
January 1944.....	5,435	702	60	175	.062	.07	10,780
February.....	7,856	1,110	45	271	.097	.10	15,580
March.....	17,148	1,380	190	553	.198	.23	34,010
April.....	35,515	3,010	341	1,184	.423	.47	70,440
May.....	91,900	6,910	1,030	2,965	1.06	1.22	182,300
June.....	150,010	11,300	1,640	5,000	1.79	1.99	297,600
July.....	53,367	3,750	732	1,722	.615	.71	105,900
August.....	48,650	4,690	406	1,569	.560	.65	96,500
September.....	15,741	1,890	297	525	.188	.21	31,220
Water year 1943-44	438,263	11,300	45	1,197	.428	5.82	869,300
October 1944.....	17,865	2,170	270	576	.206	.24	35,430
November.....	10,411	521	135	347	.124	.14	20,650
December.....	5,940	350	110	192	.069	.08	11,780
Calendar year 1944	459,838	11,300	45	1,256	.449	6.11	912,100
January 1945.....	8,120	490	100	262	.094	.11	16,110
February.....	19,160	2,000	90	684	.244	.25	38,000
March.....	75,116	7,270	884	2,423	.865	1.00	149,000
April.....	73,708	6,910	844	2,457	.877	.98	146,200
May.....	168,300	19,200	1,250	5,429	1.94	2.24	333,800
June.....	140,410	8,400	2,160	4,680	1.67	1.86	278,500
July.....	66,870	5,050	1,000	2,157	.770	.89	132,600
August.....	53,242	6,040	565	1,717	.613	.71	105,600
September.....	16,507	1,700	392	550	.196	.22	32,740
Water year 1944-45	655,649	19,200	90	1,796	.641	8.72	1,300,000
October 1945.....	12,349	679	336	398	.142	.16	24,490
November.....	10,636	514	265	355	.127	.14	21,100
December.....	8,850	448	220	285	.102	.12	17,550
Calendar year 1945	653,268	19,200	90	1,790	.639	8.68	1,296,000
January 1946.....	33,185	6,000	340	1,070	.382	.44	65,820
February.....	64,052	9,960	630	2,288	.817	.85	127,000
March.....	54,700	4,010	582	1,765	.630	.73	108,500
April.....	19,773	1,020	472	659	.235	.26	39,220
May.....	32,933	3,800	472	1,062	.379	.44	65,320
June.....	52,539	10,000	408	1,761	.629	.70	104,800
July.....	19,196	1,100	380	619	.221	.25	38,070
August.....	38,062	5,150	318	1,228	.439	.51	75,490
September.....	60,241	8,320	735	2,008	.717	.80	119,500
Water year 1945-46	406,816	10,000	220	1,115	.398	5.40	806,900

Nishnabotna River above Hamburg, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet			Runoff		
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October 1946.....	49,784	5,860	642	1,606	0.574	0.66	98,750
November.....	32,986	1,530	852	1,100	.393	.44	65,430
December.....	19,745	822	380	637	.228	.26	39,160
Calendar year 1946	477,496	10,000	318	1,308	.467	6.34	947,100
January 1947.....	16,340	720	370	527	.188	.22	32,410
February.....	21,575	2,350	350	771	.275	.29	42,790
March.....	33,264	2,530	654	1,073	.383	.44	65,980
April.....	81,953	10,200	666	2,732	.976	1.09	162,600
May.....	61,960	5,380	1,170	1,999	.714	.82	122,900
June.....	493,010	49,600	5,730	16,430	5.87	6.55	977,900
July.....	90,010	8,220	1,220	2,904	1.04	1.20	178,500
August.....	26,746	1,890	495	863	.308	.36	53,050
September.....	11,253	492	281	375	.134	.15	22,320
Water year 1946-47	938,626	49,600	281	2,572	.919	12.48	1,862,000
October 1947.....	10,199	520	246	329	.118	.14	20,230
November.....	13,335	790	285	444	.159	.17	26,450
December.....	10,581	637	230	341	.122	.14	20,990
Calendar year 1947	870,226	49,600	230	2,380	.850	11.57	1,726,000
January 1948.....	9,000	760	130	290	.104	.12	17,850
February.....	46,900	15,400	170	1,620	.579	.62	93,020
March.....	127,355	25,400	560	4,110	1.47	1.69	252,600
April.....	32,781	2,120	648	1,090	.389	.44	65,020
May.....	19,959	998	320	644	.230	.27	39,590
June.....	9,330	500	270	311	.111	.12	18,510
July.....	30,354	7,000	200	979	.350	.40	60,210
August.....	18,353	2,000	148	592	.211	.24	36,400
September.....	12,433	1,690	123	414	.148	.17	24,660
Water year 1947-48	340,580	25,400	123	931	.332	4.52	675,530
October 1948.....	5,006	358	118	161	.058	.07	9,930
November.....	9,139	1,110	171	305	.109	.12	18,130
December.....	7,876	450	130	254	.091	.10	15,620
Calendar year 1948	328,486	25,400	118	898	.321	4.36	651,500
January 1949.....	42,400	4,600	240	1,368	.489	.56	84,100
February.....	33,760	7,000	280	1,206	.431	.45	66,960
March.....	147,144	29,000	832	4,747	1.70	1.95	291,900
April.....	24,072	1,770	414	802	.286	.32	47,750
May.....	23,195	4,310	380	1,748	.267	.31	46,010
June.....	62,327	8,710	550	2,078	.742	.83	123,600
July.....	24,268	2,820	358	783	.280	.32	48,130
August.....	9,789	884	223	316	.113	.13	19,420
September.....	8,818	635	189	294	.105	.12	17,490
Water year 1948-49	397,794	29,000	118	1,090	.389	5.28	789,000
October 1949.....	9,749	920	183	314	.112	.13	19,340
November.....	5,686	223	175	190	.068	.08	11,280
December.....	6,200	285	102	200	.071	.08	12,300
Calendar year 1949	397,408	29,000	102	1,089	.389	5.28	788,300
January 1950.....	3,565	200	80	115	.041	.05	7,070
February.....	39,943	8,340	100	1,427	.510	.53	79,230
March.....	48,406	7,500	355	1,561	.558	.64	99,010
April.....	7,759	410	200	259	.092	.10	15,390
May.....	72,687	16,000	257	2,345	.837	.97	144,200
June.....	41,758	7,480	220	1,392	.497	.55	82,830
July.....	27,657	4,360	195	892	.319	.37	54,860
August.....	29,476	6,040	330	951	.340	.39	58,460
September.....	8,250	448	198	275	.098	.11	16,360
Water year 1949-50	301,136	16,000	80	825	.295	4.00	597,300

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 downstream side near center of bridge on U. S. Highway 34, ½ mile west of Red Oak, 28 miles downstream from Indian Creek, and 49 miles upstream from confluence with West Nishnabotna River.

DRAINAGE AREA.—890 square miles.

RECORDS AVAILABLE.—May 1918 to July 1925, May 1936 to September 1950.

GAGE.—Wire-weight gage read once daily. Since July 30, 1939, auxiliary water-stage recorder used for stages above 3.2 feet. Datum of gages is 1,010.45 feet above mean sea level, unadjusted. May 22, 1918, to July 4, 1925, chain gage at Coolbaugh Street bridge ½ mile downstream at datum 0.40 foot lower.

AVERAGE DISCHARGE.—17 years (1918-20, 1921-22, 1936-50) 346 second-feet. feet.

EXTREMES.—Maximum and minimum discharge for water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43 ..	Feb. 4	8,610	17.92	Jan. 31	40
1943-44 ..	Aug. 2	6,790	17.89	Feb. 18, 19	15
1944-45 ..	May 23	16,100	20.54	Jan. 3, Feb. 1	55
1945-46 ..	Aug. 26	9,430	18.20	Dec. 18	25
1946-47 ..	June 13	36,200	23.23	Sept. 30	60
1947-48 ..	Mar. 19	18,400	18.93	Jan. 16	32
1948-49 ..	Mar. 5	15,800	17.69	Oct. 25-29	25
1949-50 ..	Feb. 28	8,580	11.8	Sept. 19, 20	10

1918-25, 1936-50: Maximum discharge 36,200 second-feet June 13, 1947 (gage height, 23.23 feet), from rating curve extended above 14,000 second-feet on basis of an overflow profile and extended channel rating; minimum daily, 6 second-feet (estimated) Aug. 18, 1936.

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

East Nishnabotna River at Red Oak, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	113	87	55	105	*44	65	106	h56	886	129	562	184
2.....	110	81	50	96	50	55	92	a51	814	129	598	224
3.....	112	79	53	85	1,880	60	83	a48	1,170	122	218	180
4.....	170	78	57	78	6,610	55	77	a50	791	124	146	116
5.....	175	76	54	80	3,880	50	73	a53	900	386	199	98
6.....	142	77	50	75	865	48	68	964	1,800	414	116	112
7.....	114	76	47	70	372	50	65	520	838	148	145	120
8.....	105	77	50	65	289	60	68	176	479	116	456	108
9.....	101	77	52	65	282	67	77	108	647	104	136	85
10.....	96	79	55	70	182	a64	87	92	809	90	85	78
11.....	94	80	57	67	222	a60	187	87	479	81	68	73
12.....	92	81	52	62	207	a55	448	85	440	76	77	403
13.....	90	78	47	60	138	b55	226	77	324	74	1,010	1,210
14.....	88	77	48	65	110	77	131	74	257	73	594	745
15.....	87	77	50	70	94	114	90	903	928	70	252	251
16.....	87	77	52	250	83	231	80	4,980	1,600	70	94	136
17.....	86	76	51	150	74	126	73	2,580	801	72	89	106
18.....	85	75	*49	100	67	172	64	716	458	72	64	88
19.....	84	74	47	70	63	184	a54	513	300	91	a62	81
20.....	82	73	46	72	80	65	a50	453	257	185	a56	76
21.....	80	73	48	75	111	67	a50	370	222	622	a60	62
22.....	79	74	50	80	142	58	a53	298	199	432	1,640	92
23.....	79	75	53	77	138	137	a55	253	253	133	3,630	68
24.....	79	75	57	65	124	1,690	b51	248	214	700	2,600	67
25.....	78	76	70	50	77	*880	81	251	174	1,420	882	63
26.....	78	71	100	46	68	370	109	220	156	500	572	a58
27.....	78	58	414	50	61	188	442	186	146	160	589	a55
28.....	78	78	311	53	68	126	213	160	197	108	275	a50
29.....	79	60	187	56	.....	106	90	142	226	91	195	a52
30.....	85	58	134	46	.....	106	68	136	150	80	168	a55
31.....	87	.....	117	40	.....	111	.....	133	.....	78	148	.....
1943-44												
1.....	a55	68	a66	35	84	100	253	545	1,200	410	2,240	372
2.....	b55	70	a65	42	69	98	266	913	817	372	5,870	324
3.....	a54	64	a65	42	68	102	184	2,410	705	336	3,540	a310
4.....	a53	a60	b65	40	72	98	174	1,780	1,630	303	934	a290
5.....	a52	a55	a80	38	70	102	162	1,140	1,000	282	940	a270
6.....	a51	b51	a76	36	70	80	135	940	702	264	1,030	a260
7.....	a50	a60	a74	35	a65	64	146	829	591	264	753	a260
8.....	h48	67	*b77	32	a65	55	188	823	1,890	559	427	a220
9.....	h48	67	a70	28	a70	50	205	916	3,530	663	383	198
10.....	a48	68	a60	b23	74	55	233	741	2,110	326	344	234
11.....	a47	68	b57	20	55	88	243	646	1,180	3,150	306	248
12.....	a45	a70	a50	18	b35	117	674	597	1,730	1,990	260	a240
13.....	a50	70	a40	16	20	425	471	548	3,910	892	244	a240
14.....	a48	76	25	17	19	360	322	500	3,810	458	394	a235
15.....	a49	81	22	b20	18	287	284	469	1,280	392	289	a240
16.....	h48	78	25	23	17	317	271	580	1,030	341	728	230
17.....	a48	69	27	26	16	343	237	660	889	326	498	a230
18.....	a48	69	h30	28	15	425	264	443	785	402	401	a220
19.....	a48	76	32	28	h15	298	425	408	705	378	263	275
20.....	a50	78	30	26	18	226	1,070	2,150	660	331	226	242
21.....	a49	83	27	23	45	255	1,260	5,320	605	262	222	204
22.....	a49	80	24	23	a75	278	910	5,700	594	233	220	182
23.....	h48	76	20	22	530	319	1,070	3,360	562	222	220	189
24.....	a47	70	20	*35	702	822	1,280	2,310	495	271	217	172
25.....	a46	68	25	45	*551	683	994	1,460	453	462	236	173
26.....	a46	70	30	55	572	392	835	3,770	422	2,260	2,580	166
27.....	a46	70	32	195	492	289	958	2,550	400	1,710	2,100	172
28.....	a46	69	35	551	205	244	762	2,400	1,710	838	1,220	497
29.....	a46	69	32	235	129	264	627	1,570	652	395	556	322
30.....	h48	a68	30	114	.....	126	562	1,100	445	322	457	252
31.....	a55	.....	30	88	.....	182	.....	1,340	.....	322	420	.....

* Winter discharge measurement made on this day.

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

h Computed from wire-weight gage readings.

Note—Stage-discharge relation affected by ice Nov. 30 to Dec. 26, 1942, Jan. 5 to Feb. 2, Feb. 14-17, Mar. 1-8, Dec. 14-31, 1943, Jan. 1-27, Feb. 11-21, Mar. 8-10, 1944 (no gage-height record Dec. 16, 17, 19-30, 1943, Jan. 7-9, 11-14, 16-20, Feb. 13-18, 20, 21, 1944).

East Nishnabotna River at Red Oak, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	175	117	80	65	55	330	369	626	6,000	706	394	h115
2.....	180	117	65	60	60	430	353	676	3,920	639	g270	h104
3.....	182	114	65	55	65	1,030	342	713	g1,440	523	g242	h102
4.....	215	109	90	*60	70	1,100	461	630	g985	499	f336	h102
5.....	408	107	100	60	70	1,000	541	551	g849	g467	574	h98
6.....	404	117	95	60	75	800	660	522	g1,110	g430	368	h92
7.....	226	129	90	60	80	690	838	515	4,790	g410	g266	h87
8.....	179	126	80	65	85	541	776	498	2,810	a390	g226	h88
9.....	160	112	80	60	160	2,560	589	450	1,290	a380	g214	h92
10.....	151	107	70	65	360	4,330	510	768	f1,080	a360	f294	h98
11.....	146	104	70	70	570	4,700	945	784	f1,050	a350	332	h94
12.....	141	104	65	75	790	3,480	1,400	584	a900	a650	g272	h87
13.....	138	*107	60	90	1,060	1,260	1,150	056	a850	a500	g232	h109
14.....	139	107	60	110	1,350	1,020	1,040	4,160	a800	h344	g260	h104
15.....	138	104	65	90	1,440	2,050	789	5,240	a800	a400	508	h66
16.....	134	104	70	80	784	2,460	1,610	1,780	f2,700	f476	g256	h94
17.....	127	102	65	70	404	1,160	1,660	1,070	f1,360	f1,150	h226	h84
18.....	127	101	60	70	335	914	976	g940	f1,130	f800	h203	h88
19.....	129	102	65	80	300	791	820	g846	f1,120	a680	h188	h99
20.....	182	106	70	90	280	728	768	833	g985	a560	h180	h102
21.....	166	106	65	90	290	658	720	3,170	f778	h348	h164	h96
22.....	141	106	70	95	320	582	656	12,300	f692	a330	h148	h93
23.....	131	107	70	100	*270	522	2,030	10,400	g652	h312	h143	h87
24.....	126	104	70	90	260	539	3,540	2,410	644	h300	h138	h106
25.....	124	109	65	80	260	678	1,140	g2,240	840	h362	h129	h101
26.....	124	131	65	80	270	673	940	g1,710	905	h294	h131	h96
27.....	124	139	70	75	280	553	820	g2,460	618	h282	h132	h92
28.....	117	124	70	70	290	473	753	g3,880	f587	415	h124	600
29.....	121	107	75	70	.....	424	713	g1,980	f537	336	h119	377
30.....	121	88	75	65	.....	401	670	g1,410	547	g278	h114	216
31.....	121	.....	70	60	.....	385	.....	g3,030	513	h117	.....	.....
1945-46												
1.....	a199	a86	h114	60	550	h157	352	h178	242	379	h81	443
2.....	h182	a86	105	65	420	h192	338	h175	212	288	h75	406
3.....	h150	a84	85	50	400	h160	310	g1,410	h205	242	h72	364
4.....	h134	a84	65	125	360	a200	286	g1,890	h195	224	h70	370
5.....	h122	h92	*50	1,000	3,500	a300	270	g792	h178	210	h74	474
6.....	h117	h93	45	3,800	15,690	2,730	280	g595	h171	207	h122	1,220
7.....	h114	h98	45	1,800	g1,190	1,040	282	g518	h168	209	h99	1,600
8.....	h110	h94	40	700	g540	1,320	280	f474	a164	236	743	2,150
9.....	h102	a100	35	*315	g334	469	278	436	h159	195	805	1,510
10.....	h96	a105	*30	280	294	324	268	419	h139	184	377	1,150
11.....	h98	a105	45	275	290	394	272	423	h129	h164	216	g719
12.....	h99	a105	35	262	292	1,340	394	408	h117	h153	h153	g564
13.....	h96	a105	35	238	274	2,390	302	375	h119	h157	h138	g488
14.....	h94	h104	35	276	262	916	280	356	h117	h141	h124	g441
15.....	h99	h109	30	250	a260	668	268	360	h112	h144	h117	g417
16.....	h104	h114	30	220	a275	631	254	467	h109	h216	h119	g383
17.....	h102	h98	30	210	a250	655	h232	389	a110	246	h188	h368
18.....	h99	h98	25	201	a200	639	h228	373	4,240	197	445	336
19.....	h96	h96	30	222	h186	502	a220	410	3,230	175	222	322
20.....	h93	h93	30	250	h182	456	a210	458	2,230	182	g129	338
21.....	h88	90	30	260	h*178	419	h205	364	991	175	f354	360
22.....	h87	85	30	240	h209	404	h199	336	508	h132	1,000	332
23.....	h88	90	35	200	h222	520	h201	316	458	h120	621	743
24.....	h90	h98	35	190	h226	873	h197	342	406	h110	1,650	922
25.....	h93	h101	40	180	h222	668	h190	497	427	h127	5,460	398
26.....	h92	h104	45	180	h218	560	h178	326	504	h122	5,890	330
27.....	h93	h106	55	195	h216	504	h169	272	427	h110	1,300	383
28.....	h93	h96	60	185	h144	441	h175	246	350	h104	805	1,590
29.....	h90	h88	65	175	.....	412	h178	234	348	h101	644	1,120
30.....	a88	h93	65	450	.....	394	h182	238	h326	h94	542	g530
31.....	a88	.....	60	750	.....	373	.....	262	.....	h86	488	.....

* Winter discharge measurement made on this day.

f Computed on basis of partly estimated gage-height record.

g Computed from graph based on wire-weight gage.

h Computed from wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 1-31, 1944, Jan. 1 to Feb. 14, Feb. 19 to Mar. 7, Nov. 21-23, Dec. 2-31, 1945, Jan. 1-11, 15-17, Jan. 20 to Feb. 5, 1946.

East Nishnabotna River at Red Oak, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	g402	535	332	125	80	235	260	1,500	3,920	1,090	h271	a120
2.....	g366	738	280	115	125	235	268	930	12,000	a861	h254	a115
3.....	g340	681	*240	100	170	230	266	720	5,800	a795	h249	a120
4.....	g320	537	334	105	140	220	499	660	3,870	a762	h238	a110
5.....	g208	492	348	120	100	220	870	603	12,500	g744	h218	a110
6.....	g306	485	330	135	170	215	754	592	6,910	1,150	h207	a105
7.....	g348	508	320	*150	140	215	676	592	2,370	903	h198	a100
8.....	g430	552	322	165	135	220	492	542	1,800	a732	h196	a96
9.....	g332	511	322	175	145	260	647	512	1,470	a702	h187	a92
10.....	381	618	294	190	180	290	3,910	484	1,350	a666	h183	a90
11.....	1,400	789	278	205	200	316	5,640	470	1,240	a639	h175	a170
12.....	916	564	284	215	210	350	1,750	h454	5,890	g615	h169	a220
13.....	554	499	266	230	240	1,850	1,270	h474	24,100	g690	h167	a230
14.....	499	483	234	240	500	1,300	1,100	470	14,700	g542	h163	a170
15.....	454	483	222	250	750	499	1,010	1,970	4,100	g500	h155	a120
16.....	421	485	218	240	600	328	1,110	972	2,580	a490	h159	a150
17.....	499	511	215	230	500	316	1,090	693	2,220	a472	h165	a120
18.....	4,200	430	220	225	400	340	939	885	3,640	a460	h123	a85
19.....	2,710	425	224	220	260	328	870	666	3,530	a444	a115	a80
20.....	1,150	434	220	220	255	304	1,310	575	2,410	a127	a110	a80
21.....	865	423	230	205	265	334	1,160	527	2,240	g410	a108	a80
22.....	760	396	235	215	260	368	915	575	2,840	g392	a107	a76
23.....	703	354	235	230	250	364	870	1,160	8,200	g374	a105	h73
24.....	862	398	235	245	190	476	858	759	8,150	g367	a105	h70
25.....	1,460	400	230	260	240	452	774	594	2,020	357	483	h70
26.....	881	340	225	280	*250	314	720	564	1,760	352	g268	h70
27.....	689	342	215	270	250	254	663	522	1,380	344	h198	h68
28.....	616	350	185	230	240	288	621	985	1,210	322	a155	h77
29.....	590	346	110	160	.....	274	609	3,070	1,380	h312	a220	h77
30.....	587	342	115	85	.....	260	2,030	1,500	1,130	h297	a170	h60
31.....	570	.....	112	80	.....	252	.....	1,350	.....	h273	a130	.....
1947-48												
1.....	70	g440	103	40	41	*190	g401	228	a101	76	g242	77
2.....	287	245	139	50	42	180	362	212	103	62	203	104
3.....	85	145	139	60	43	170	287	205	94	58	187	94
4.....	81	145	187	60	44	160	269	205	86	a56	203	89
5.....	66	192	187	60	45	170	245	201	81	a54	192	81
6.....	75	194	207	60	45	173	236	201	79	a52	142	76
7.....	68	145	192	60	46	214	230	196	76	a50	115	101
8.....	56	133	173	65	47	220	192	194	76	a48	91	138
9.....	83	123	129	70	48	190	174	194	72	a50	144	116
10.....	66	113	120	60	49	150	142	179	72	a53	133	101
11.....	74	121	200	55	50	140	142	164	72	a56	g431	86
12.....	72	121	150	50	50	130	152	157	77	59	g374	77
13.....	66	121	120	45	55	130	161	149	74	60	g236	59
14.....	66	121	110	40	60	157	152	147	70	62	123	48
15.....	66	115	100	35	80	171	144	140	67	72	g500	44
16.....	66	121	*85	32	150	g603	144	140	67	103	g872	42
17.....	66	117	70	35	380	g2,630	144	140	70	60	272	40
18.....	64	117	60	37	464	g4,360	135	128	74	64	190	38
19.....	60	113	60	38	482	g14,600	123	110	74	62	152	38
20.....	58	113	70	*38	494	g*13,700	123	101	67	62	142	36
21.....	58	127	70	38	427	g2,560	115	118	74	g2,970	135	36
22.....	60	133	70	36	380	g866	81	128	140	g2,710	125	42
23.....	68	111	80	35	367	621	89	122	125	g527	122	38
24.....	85	87	70	35	344	446	278	113	103	263	108	36
25.....	87	113	70	35	317	419	g503	106	91	212	101	36
26.....	117	131	70	35	322	344	g755	94	72	198	86	36
27.....	109	133	80	36	g2,250	317	425	94	72	290	86	35
28.....	117	133	70	36	g5,600	368	332	98	77	172	79	35
29.....	101	123	70	38	900	353	220	98	98	g1,400	79	35
30.....	89	119	65	38	.....	g365	218	99	79	g2,480	82	34
31.....	179	.....	60	40	.....	g599	.....	99	.....	g674	81	.....

* Winter discharge measurement made on this day.

a No or doubtful gage-height record; discharge computed on basis of records for nearby stations.

g Computed from graph based on wire-weight gage readings.

h Computed from wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 15-31, 1946, Jan. 1 to Mar. 10, Dec. 10-31, 1947, Jan. 1 to Feb. 16, Feb. 29 to Mar. 5, Mar. 10-13, 1948.

East Nishnabotna River at Red Oak, Iowa—Continued
Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	30	90	48	83	210	g1,160	g930	208	g544	215	119	a62
2.....	33	61	46	85	170	g910	g502	206	g2,720	171	106	a60
3.....	33	48	98	89	140	g2,980	394	204	g758	163	81	a60
4.....	33	33	83	320	*115	g4,360	364	188	358	150	75	a62
5.....	33	73	65	700	100	g10,500	355	178	320	144	67	a65
6.....	41	119	56	600	94	10,800	331	178	265	138	67	a66
7.....	67	127	47	480	90	3,100	305	219	242	119	67	a65
8.....	85	108	52	380	88	1,780	286	188	224	119	59	a65
9.....	65	a90	60	300	88	872	273	346	213	g496	59	a66
10.....	57	a80	67	160	88	758	260	252	219	g346	57	a67
11.....	a48	a72	75	120	88	618	252	204	191	155	57	85
12.....	a46	a60	87	*105	93	618	238	188	157	142	55	136
13.....	a44	a53	105	100	98	439	221	167	g969	117	79	119
14.....	a42	a49	125	110	100	337	219	165	g502	108	a74	110
15.....	a41	a48	140	400	105	281	235	165	320	104	a70	83
16.....	a39	48	130	2,000	105	159	240	208	213	98	a82	278
17.....	a38	46	120	1,400	110	217	534	219	195	90	a76	275
18.....	a37	152	110	834	160	231	502	195	180	81	a135	213
19.....	a37	294	103	518	250	210	379	184	a270	77	g438	81
20.....	a37	g534	96	454	230	210	286	167	a450	g1,810	155	45
21.....	36	252	89	505	215	g758	265	g454	g1,280	g2,310	117	33
22.....	35	152	79	600	210	g2,900	297	g2,460	g567	g486	92	33
23.....	35	134	71	760	220	g1,100	300	g740	g281	409	79	33
24.....	31	108	70	1,020	250	g518	292	221	g1,110	283	64	33
25.....	25	140	87	920	1,500	g669	265	300	g584	174	73	31
26.....	25	115	88	720	2,840	g618	213	268	286	146	a69	31
27.....	25	106	84	580	2,540	g930	217	255	238	260	a67	31
28.....	25	92	80	480	2,000	g740	242	247	g950	213	a66	31
29.....	25	85	96	390	.....	424	219	210	311	138	a65	31
30.....	65	75	83	320	.....	394	210	208	262	260	a64	31
31.....	73	.....	82	250	.....	g635	.....	204	.....	a190	a63	.....
1949-50												
1.....	a31	41	38	40	25	*g2,220	93	88	142	81	103	59
2.....	a31	41	45	40	25	g520	90	77	130	70	79	56
3.....	35	41	43	40	25	390	88	70	384	90	74	54
4.....	36	41	35	40	*25	698	88	65	212	84	160	50
5.....	33	41	31	40	25	2,900	83	919	149	74	149	46
6.....	31	41	31	40	176	1,130	79	752	109	62	121	39
7.....	28	41	30	35	439	343	79	263	99	48	140	36
8.....	188	39	29	35	2,120	194	81	301	84	65	188	21
9.....	132	39	28	35	*3,650	194	79	5,470	a258	58	153	41
10.....	104	39	27	35	1,460	170	76	1,210	117	48	136	36
11.....	87	38	30	35	648	150	74	565	88	313	121	28
12.....	94	52	32	*35	490	140	70	447	76	432	404	23
13.....	90	46	35	35	505	140	62	362	g811	g432	123	19
14.....	75	43	40	35	128	160	62	343	2,070	g188	172	16
15.....	57	43	41	35	110	232	58	294	705	g158	156	16
16.....	a50	35	42	35	100	260	58	258	520	729	115	33
17.....	46	24	42	30	90	327	56	228	324	g626	93	22
18.....	a40	35	43	30	90	390	56	216	3,260	g297	84	14
19.....	38	46	43	30	142	248	52	245	2,780	263	113	10
20.....	33	*39	71	30	g462	153	46	248	a648	a276	81	10
21.....	325	35	60	30	g752	169	46	238	a376	286	60	23
22.....	174	25	56	30	g505	*160	47	218	a303	165	62	a40
23.....	119	25	*54	30	263	603	43	192	815	123	58	a57
24.....	61	25	50	30	252	520	39	181	668	109	53	34
25.....	55	38	50	30	228	300	62	994	303	211	46	a34
26.....	50	52	50	30	228	273	67	630	213	162	43	a33
27.....	46	41	45	25	g228	211	64	308	162	136	43	33
28.....	52	41	45	25	*g4,430	169	65	278	136	121	172	29
29.....	59	39	45	25	.....	117	69	248	123	97	109	36
30.....	50	38	45	25	.....	107	343	232	115	67	84	48
31.....	41	.....	45	25	.....	101	.....	228	.....	119	65	.....

* Winter discharge measurement made on this day.
 a No or doubtful gage-height record; discharge computed on basis of records for nearby stations.

g Computed from graph based on gage readings or water-stage record chart.

Note—Stage-discharge relation affected by ice Dec. 6-31, 1948, Jan. 1-17, Jan. 21 to Feb. 25, Dec. 7-18, 21-31, 1949, Jan. 1 to Feb. 5, Feb. 15-18, Mar. 10-13, 1950. Discharge computed from wire-weight gage readings.

East Nishnabotna River at Red Oak, Iowa—Continued
Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet			Runoff		
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October 1942.....	2,993	175	78	96.5	0.108	0.13	5,940
November.....	2,253	87	58	75.1	.084	.09	4,470
December.....	2,563	414	46	82.7	.093	.11	5,080
Calendar year 1942	137,728	6,240	46	377	.424	5.76	273,200
January 1943.....	2,393	250	40	77.2	.087	.10	4,750
February.....	16,381	6,610	44	585	.657	.68	32,490
March.....	5,552	1,690	48	179	.201	.23	11,010
April.....	3,411	448	50	114	.128	.14	6,770
May.....	14,983	4,980	48	483	.543	.63	29,720
June.....	16,915	1,800	146	564	.634	.71	33,550
July.....	6,950	1,420	70	224	.252	.29	13,790
August.....	15,766	3,630	56	509	.572	.66	31,270
September.....	5,096	1,210	50	170	.191	.21	10,110
Water year 1942-43	95,256	6,610	40	261	.293	3.98	189,000
October 1943.....	1,521	55	45	49.1	.055	.06	3,020
November.....	2,088	83	51	69.6	.078	.09	4,140
December.....	1,341	80	20	43.3	.049	.06	2,660
Calendar year 1943	92,397	6,610	20	253	.284	3.86	183,300
January 1944.....	1,959	551	16	63.2	.071	.08	3,890
February.....	4,236	702	15	146	.164	.18	8,400
March.....	7,544	822	50	243	.273	.32	14,960
April.....	15,565	1,280	135	519	.583	.65	30,870
May.....	48,918	5,700	408	1,578	1.77	2.04	97,030
June.....	36,492	3,910	400	1,216	1.37	1.52	72,380
July.....	19,736	3,150	222	637	.716	.82	39,150
August.....	28,518	5,870	217	920	1.03	1.19	56,560
September.....	7,467	497	166	249	.280	.31	14,810
Water year 1943-44	175,385	5,870	15	479	.538	7.32	347,900
October 1944.....	5,097	408	117	164	.184	.21	10,110
November.....	3,317	139	88	111	.125	.14	6,580
December.....	2,230	100	60	71.9	.081	.09	4,420
Calendar year 1944	181,079	5,870	15	495	.556	7.55	359,200
January 1945.....	2,310	110	55	74.5	.084	.10	4,580
February.....	10,633	1,440	55	380	.427	.44	21,090
March.....	37,262	4,700	330	1,202	1.35	1.56	73,910
April.....	28,579	3,540	342	953	1.07	1.19	56,690
May.....	67,832	12,300	450	2,188	2.46	2.83	134,500
June.....	42,769	6,000	537	1,426	1.60	1.79	84,830
July.....	14,484	1,150	278	467	.525	.61	28,730
August.....	7,294	574	114	235	.264	.30	14,470
September.....	3,799	600	84	127	.143	.16	7,540
Water year 1944-45	225,606	12,300	55	618	.694	9.42	447,400
October 1945.....	3,296	199	87	106	.119	.14	6,540
November.....	2,900	114	84	96.7	.109	.12	5,750
December.....	1,459	114	25	47.1	.053	.06	2,890
Calendar year 1945	222,617	12,300	25	610	.685	9.30	441,500
January 1946.....	13,644	3,800	60	440	.494	.57	27,060
February.....	17,384	5,690	144	621	.698	.73	34,480
March.....	21,081	2,730	157	680	.764	.88	41,810
April.....	7,388	352	169	246	.276	.31	14,650
May.....	14,339	1,890	175	463	.520	.60	28,440
June.....	17,091	4,240	109	570	.640	.71	33,900
July.....	5,430	379	86	175	.197	.23	10,770
August.....	23,123	5,890	70	746	.838	.97	45,860
September.....	20,771	2,150	322	662	.778	.87	41,200
Water year 1945-46	147,906	5,890	25	405	.455	6.19	293,400

East Nishnabotna River at Red Oak, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet			Runoff		
		Maximum	Minimum	Mean	Per square mile	Inches	Acres-foot
October 1946.....	24,909	4,200	298	804	0.903	1.04	49,410
November.....	14,451	789	340	482	.542	.60	28,660
December.....	7,630	348	110	246	.276	.32	15,130
Calendar year 1946	187,241	5,890	60	513	.576	7.83	371,400
January 1947.....	5,915	280	80	191	.215	.25	11,730
February.....	7,305	750	80	261	.293	.31	14,490
March.....	11,907	1,850	215	384	.431	.50	23,620
April.....	33,921	5,640	260	1,131	1.27	1.42	67,280
May.....	26,367	3,070	454	851	.956	1.10	52,300
June.....	146,740	24,100	1,130	4,891	5.50	6.13	291,100
July.....	17,484	1,150	273	564	.634	.73	34,680
August.....	5,751	483	105	186	.209	.24	11,410
September.....	3,204	230	60	107	.120	.13	6,360
Water year 1946-47	305,584	24,100	60	837	.940	12.77	606,200
October 1947.....	2,665	287	56	86.0	.097	.11	5,290
November.....	4,265	440	87	142	.160	.18	8,460
December.....	3,376	207	60	109	.122	.14	6,700
Calendar year 1947	268,900	24,100	56	737	.828	11.24	533,400
January 1948.....	1,392	70	32	44.9	.050	.06	2,760
February.....	13,622	5,600	41	470	.528	.57	27,020
March.....	45,596	14,600	130	1,470	1.65	1.91	90,440
April.....	6,974	755	81	232	.261	.29	13,830
May.....	4,560	228	94	147	.165	.19	9,040
June.....	2,483	140	67	82.8	.093	.10	4,920
July.....	13,115	2,970	48	423	.475	.55	26,010
August.....	6,028	872	79	194	.218	.25	11,960
September.....	1,848	138	34	61.6	.069	.08	3,670
Water year 1947-48	105,924	14,600	32	289	.325	4.43	210,100
October 1948.....	1,286	85	25	41.5	.047	.05	2,550
November.....	3,444	534	33	115	.129	.14	6,830
December.....	2,622	140	46	84.6	.095	.11	5,200
Calendar year 1948	102,970	14,600	25	281	.316	4.30	204,200
January 1949.....	15,783	2,000	83	509	.572	.66	31,310
February.....	12,297	2,840	88	439	.493	.51	24,390
March.....	50,208	10,800	159	1,620	1.82	2.10	99,590
April.....	9,626	930	210	321	.361	.40	19,090
May.....	9,596	2,460	165	310	.348	.40	19,030
June.....	15,179	2,720	157	506	.569	.63	30,110
July.....	9,712	2,310	77	313	.352	.41	19,290
August.....	2,797	438	55	90.2	.101	.12	5,550
September.....	2,381	278	31	79.4	.089	.10	4,720
Water year 1948-49	134,931	10,800	25	370	.416	5.63	267,600
October 1949.....	2,292	325	28	73.9	.083	.10	4,550
November.....	1,164	52	24	38.8	.044	.05	2,310
December.....	1,301	71	27	42.0	.047	.05	2,580
Calendar year 1949	132,336	10,800	24	363	.408	5.53	262,600
January 1950.....	1,015	40	25	32.7	.037	.04	2,010
February.....	17,621	4,430	25	629	.707	.74	34,950
March.....	13,689	2,900	101	442	.497	.57	27,150
April.....	2,275	343	39	75.8	.085	.10	4,510
May.....	16,168	5,470	65	522	.587	.68	32,070
June.....	16,271	3,260	76	542	.609	.68	32,270
July.....	5,990	729	48	193	.217	.25	11,880
August.....	3,560	404	43	115	.129	.15	7,090
September.....	976	59	10	32.5	.036	.04	1,940
Water year 1949-50	82,322	5,470	10	226	.254	3.45	163,300

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 square miles.

RECORDS AVAILABLE.—May 1918 to July 1925, May 1936 to Septemebr 1950.

GAGE.—Wire-weight gage read once daily, more often during high stages. Datum of gage is 960.36 feet above mean sea level, datum of 1929. May 17, 1918, to July 4, 1925, chain gage.

AVERAGE DISCHARGE.—16 years (1920-21, 1922-23, 1936-50), 275 second-feet.

EXTREMES.—Maximum and minimum discharge for water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43 ..	June 16	8,030	13.8	Apr. 23	18
1943-44 ..	June 4	10,300	(¹)16.6	Jan. 12-15	14
1944-45 ..	May 14	12,200	15.9	Dec. 27	26
1945-46 ..	June 18	11,100	15.81	Dec. 18	5
1946-47 ..	June 13	31,100	(¹)25.3	Sept. 26	19
1947-48 ..	Mar. 19	12,800	17.36	Jan. 25, 26	8
1948-49 ..	June 1	11,000	15.95	Oct. 4, 5	10
1949-50 ..	May 9	15,400	(¹)19.8	Dec. 21	6

(1) From floodmark.

1918-25, 1936-50: Maximum discharge observed, 31,100 second-feet June 13, 1947 (gage height, 25.3 feet, from floodmark), from rating curve extended above 15,000 second-feet on basis of an overflow profile and extended channel rating; practically no flow Aug. 25, 1919.

Maximum stage known 25.4 feet from floodmarks, in August 1903.

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

COOPERATION.—Part of observers service furnished by City of Clarinda.

Nodaway River at Clarinda, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	a70	a70	22	148	*27	50	94	39	94	169	135	383
2.....	66	59	21	113	30	44	68	33	146	148	575	195
3.....	343	56	23	100	3,070	46	59	22	154	113	3,300	247
4.....	150	a57	26	95	2,350	42	57	23	158	92	642	117
5.....	123	56	25	90	1,030	40	35	23	1,070	341	327	144
6.....	105	a52	24	80	321	41	32	374	1,160	1,320	211	156
7.....	a80	49	27	77	104	43	a31	a250	623	341	228	152
8.....	a70	49	30	70	a97	46	33	148	352	a270	156	156
9.....	a60	49	34	60	111	39	36	64	371	a240	164	85
10.....	57	64	37	62	a92	39	69	51	2,120	a210	131	64
11.....	59	a68	38	58	a112	35	113	39	2,140	175	131	51
12.....	57	64	37	52	104	29	158	a33	996	98	411	a100
13.....	56	64	37	50	96	57	171	28	564	87	144	144
14.....	49	a60	38	52	88	87	94	23	397	85	480	534
15.....	53	a56	40	56	78	107	a55	560	3,850	81	167	173
16.....	54	51	40	70	65	561	42	2,340	6,050	73	109	121
17.....	a50	42	37	100	55	279	42	1,320	5,880	76	92	64
18.....	49	43	*35	65	50	a100	36	477	2,240	74	92	36
19.....	49	a45	33	50	56	37	a25	349	816	85	81	64
20.....	49	46	32	52	64	39	20	292	626	318	80	45
21.....	49	a45	31	54	76	109	19	a250	a480	1,090	96	51
22.....	49	46	30	56	92	a100	19	a200	414	231	1,080	119
23.....	48	a44	33	53	121	371	18	167	a450	a100	3,600	45
24.....	a47	43	40	46	76	1,530	19	243	391	74	2,630	45
25.....	46	45	100	40	a60	812	71	226	292	1,310	506	45
26.....	a46	a35	300	35	a45	432	111	a180	259	483	228	42
27.....	46	19	682	34	39	207	98	135	245	127	186	39
28.....	a30	626	36	56		144	432	92	292	98	141	39
29.....	49	24	267	37	.....	109	173	83	311	78	121	39
30.....	73	a23	184	30	.....	102	73	81	a200	74	102	39
31.....	83	.....	129	25	.....	94	.....	81	.....	61	83	.....
1943-44												
1.....	57	57	28	18	89	114	345	1,020	1,120	244	358	218
2.....	44	87	36	20	76	148	335	2,490	752	225	1,160	179
3.....	41	63	15	18	105	150	244	5,160	615	184	1,020	165
4.....	40	47	42	18	71	136	244	3,400	6,560	162	335	136
5.....	40	36	41	19	94	160	196	1,800	2,630	158	222	124
6.....	36	32	59	20	40	96	222	1,340	1,220	141	394	114
7.....	31	34	40	17	47	46	239	1,220	904	165	294	107
8.....	29	40	71	16	53	45	227	1,360	4,570	328	153	105
9.....	32	61	*55	16	47	50	244	1,300	5,130	434	124	122
10.....	a35	80	63	16	26	100	381	892	2,780	242	110	136
11.....	38	87	46	15	20	330	1,440	800	1,570	107	91	203
12.....	36	55	23	14	18	629	1,200	720	1,570	582	80	162
13.....	35	67	20	14	18	732	700	632	1,980	516	67	141
14.....	34	74	18	14	20	896	632	584	1,400	186	89	138
15.....	31	61	16	14	19	1,180	700	511	876	158	98	114
16.....	30	65	17	15	19	804	666	820	892	150	273	98
17.....	a30	44	18	16	18	548	448	856	612	138	98	94
18.....	30	55	20	17	17	545	588	494	542	194	67	82
19.....	30	51	22	17	20	388	902	535	612	158	59	254
20.....	41	51	21	18	30	388	1,730	904	458	117	61	124
21.....	36	61	20	18	40	395	1,940	3,240	419	110	69	189
22.....	36	42	19	25	60	407	2,010	2,110	405	94	65	158
23.....	35	36	16	30	120	474	2,690	2,330	364	94	65	160
24.....	36	41	16	*23	250	567	2,490	2,040	314	105	55	172
25.....	35	35	18	67	*438	461	1,980	940	275	114	100	114
26.....	35	34	21	78	502	431	1,840	5,210	256	244	632	98
27.....	31	32	22	290	352	328	1,870	5,420	225	463	1,800	91
28.....	31	34	20	423	222	371	1,270	2,960	896	328	1,050	516
29.....	31	34	19	357	148	352	1,060	1,540	483	165	381	924
30.....	31	30	19	155	.....	405	968	1,020	258	136	287	357
31.....	57	.....	18	124	.....	335	.....	1,310	.....	131	246	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Dec. 1-17, 19-21, 23-26, 1942, Jan. 3 to Feb. 2, Feb. 13-20, Mar. 1-8, Dec. 13-31, 1943, Jan. 1-19, 23, Feb. 11-24, Mar. 8-10, 1944 (no gage-height record Dec. 2, 4, 6, 9, 12, 16, 19, 21, 23, 26, 1942, Jan. 4, 6, 9, 11, 15, 18, 20, 22, 23, 25, 26, 28, 30, Feb. 16, 18, 20, Mar. 1, 4, 6, 8, 1943).

Nodaway River at Clarinda, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	196	80	40	40	60	340	376	407	1,620	511	203	35
2.....	469	80	47	38	65	775	330	405	1,060	378	112	35
3.....	225	69	65	36	70	1,200	410	419	584	256	117	35
4.....	222	69	195	*40	75	1,260	972	369	464	242	414	32
5.....	364	69	100	42	60	1,230	1,660	326	595	369	402	32
6.....	242	94	185	46	55	850	985	323	656	244	112	32
7.....	194	89	180	50	75	540	1,120	347	1,220	218	100	32
8.....	170	94	195	60	90	505	792	340	605	210	94	34
9.....	136	89	145	65	200	608	766	323	622	206	87	34
10.....	129	69	90	75	500	1,480	649	621	520	182	215	35
11.....	124	80	75	80	612	3,560	1,340	538	465	167	158	34
12.....	117	69	70	95	800	2,620	2,330	505	383	162	146	46
13.....	117	74	70	210	1,460	1,340	1,840	639	352	155	110	36
14.....	114	*65	65	400	1,130	1,070	1,440	9,330	323	218	107	35
15.....	110	74	60	240	1,080	4,820	940	5,230	323	189	87	34
16.....	103	74	55	170	461	3,910	1,660	1,580	1,460	155	82	34
17.....	98	61	50	180	326	1,770	2,240	1,120	635	160	71	34
18.....	98	57	47	190	290	1,170	1,330	808	424	167	65	34
19.....	94	69	42	200	270	828	968	683	362	150	67	35
20.....	129	80	40	220	260	690	784	666	768	131	57	32
21.....	100	80	38	215	255	591	752	3,280	412	124	53	34
22.....	96	78	36	205	250	a650	656	5,230	335	124	51	40
23.....	89	69	34	185	245	a750	708	1,720	311	107	47	40
24.....	89	61	32	300	*240	828	944	1,120	290	100	47	36
25.....	85	89	29	255	245	1,430	659	1,310	1,240	273	46	35
26.....	82	136	28	245	250	812	538	1,400	474	153	46	35
27.....	76	112	26	210	270	598	482	1,760	690	124	41	40
28.....	78	98	28	160	305	474	448	1,520	386	146	40	114
29.....	80	65	30	115	.....	414	446	908	326	134	38	153
30.....	80	30	35	80	.....	395	407	652	652	105	35	138
31.....	80	.....	40	55	.....	381	.....	792	.....	105	35	.....
1945-46												
1.....	111	39	51	40	300	74	313	142	a200	251	42	116
2.....	74	36	61	35	240	86	281	138	104	176	40	108
3.....	64	a36	40	60	200	78	249	1,570	90	145	39	99
4.....	a62	35	*23	90	220	83	228	2,010	86	110	31	a96
5.....	59	39	22	1,500	1,580	97	230	818	80	110	a36	94
6.....	54	38	25	2,740	1,080	446	236	540	69	108	40	131
7.....	47	38	23	1,230	574	436	a250	417	65	122	38	574
8.....	43	58	20	472	190	656	265	357	56	118	58	546
9.....	41	55	18	*162	150	360	233	321	59	79	a69	593
10.....	41	52	*16	130	100	195	223	316	52	93	80	343
11.....	41	a56	14	100	92	270	254	298	46	87	56	462
12.....	39	61	12	95	88	a500	251	268	44	79	44	272
13.....	38	50	10	92	85	968	246	238	34	66	39	174
14.....	39	46	9	90	80	499	218	218	39	54	39	134
15.....	a42	47	8	88	70	301	212	205	37	65	39	127
16.....	46	47	7	85	80	964	193	195	26	90	37	115
17.....	a44	41	6	82	70	a500	181	372	47	138	a40	102
18.....	41	40	5	80	60	333	163	220	5,950	112	43	81
19.....	40	38	6	80	64	238	148	212	7,560	80	37	104
20.....	38	37	7	78	a71	198	146	177	4,180	64	38	93
21.....	37	45	7	75	78	184	142	157	1,080	a58	34	105
22.....	39	a36	7	70	*89	161	138	140	528	53	53	125
23.....	38	28	7	70	104	818	660	144	383	44	110	247
24.....	37	37	7	72	144	800	301	142	a346	40	108	397
25.....	38	46	7	73	a137	506	230	144	310	102	687	215
26.....	36	40	7	62	130	2,350	195	132	279	a70	2,540	132
27.....	35	a40	7	60	75	1,100	179	117	230	48	590	a125
28.....	38	41	8	60	71	608	172	106	162	a49	258	980
29.....	38	40	10	62	.....	a504	161	97	571	50	186	a900
30.....	38	43	30	70	.....	401	157	104	343	47	160	346
31.....	37	.....	55	350	.....	351	.....	550	.....	45	140	.....

* Winter discharge measurement made on this day.
 a No or doubtful gage-height record; discharge computed on basis of records for nearby stations.

Note—Stage-discharge relation affected by ice Nov. 29 to Dec. 31, 1944, Jan. 1 to Feb. 10, Feb. 18 to Mar. 8, Dec. 3-31, 1945, Jan. 1-5, Jan. 9 to Feb. 4, Feb. 10-17, 1946 (no gage-height record Dec. 6, 14, 17, 20, 22, 24, 25, 27, 28, 1945, Jan. 1-3, 11, 19, 27, Feb. 2, 10, 12, 1946).

Nodaway River at Clarinda, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	219	251	156	35	75	72	200	628	3,100	a600	90	33
2.....	188	251	*93	37	75	68	a400	486	5,560	547	a83	31
3.....	168	258	92	35	77	64	a700	340	2,300	491	a78	34
4.....	154	228	125	30	75	63	2,620	295	1,870	461	74	29
5.....	143	215	192	32	62	64	1,530	260	14,500	489	68	a29
6.....	143	215	174	34	48	76	1,190	a260	15,300	a750	63	28
7.....	a143	226	154	*39	42	87	713	260	4,140	455	78	a27
8.....	143	258	147	46	37	96	580	230	2,350	362	53	26
9.....	a144	a254	145	55	34	94	612	209	1,670	329	a51	24
10.....	145	249	136	64	33	127	4,360	204	1,580	309	49	24
11.....	192	353	127	80	40	a145	3,200	a196	1,420	296	46	53
12.....	308	245	127	95	50	a210	1,420	188	8,820	336	a43	70
13.....	184	232	123	115	95	1,230	1,180	184	18,900	339	41	73
14.....	a202	217	100	135	130	836	794	170	14,200	260	41	54
15.....	330	204	100	125	450	a450	a710	180	2,900	236	42	39
16.....	219	245	94	105	141	312	635	240	a1,690	215	a43	a50
17.....	a500	204	90	90	93	254	694	272	a1,600	211	43	a40
18.....	a1,200	192	87	92	90	274	584	442	8,440	206	39	27
19.....	1,580	200	93	95	100	243	531	263	3,420	194	34	25
20.....	a800	192	108	97	115	238	1,760	198	1,620	a180	a34	26
21.....	411	184	103	78	170	338	892	172	10,300	167	34	26
22.....	351	178	98	77	115	312	684	288	6,750	156	32	23
23.....	322	174	97	90	88	303	619	383	2,770	152	a32	22
24.....	364	172	95	100	100	343	555	320	2,040	147	a34	23
25.....	1,430	170	93	122	*99	303	477	247	1,260	143	477	a21
26.....	a750	166	98	154	94	221	431	226	1,070	143	169	19
27.....	364	162	105	170	83	186	a390	215	896	136	60	20
28.....	a290	164	112	a185	75	a190	348	1,360	745	126	49	a20
29.....	a280	a164	75	a130	.....	194	361	4,870	a1,400	a150	a75	20
30.....	270	164	53	94	.....	188	632	1,780	751	111	a55	21
31.....	263	.....	35	82	.....	186	.....	1,180	.....	101	34	.....
1947-48												
1.....	34	a80	a43	25	25	*100	306	109	29	29	a300	16
2.....	28	92	49	20	22	70	a290	109	32	28	a250	25
3.....	28	70	57	20	20	130	a270	93	28	19	a200	42
4.....	24	89	a200	25	20	70	a230	122	28	a18	170	a30
5.....	24	101	a150	30	22	95	a190	98	27	a16	111	18
6.....	a24	a80	125	35	25	120	149	111	a25	15	86	a18
7.....	a25	a60	103	42	22	105	163	97	23	11	a70	a20
8.....	a28	48	95	45	20	90	138	a90	18	11	54	93
9.....	a25	43	85	50	18	80	130	a82	18	a12	53	48
10.....	24	39	80	52	20	70	125	a78	22	12	50	a43
11.....	a24	a36	75	55	24	60	a122	77	25	a22	a70	38
12.....	25	33	65	50	30	70	120	77	23	31	a80	28
13.....	24	30	60	40	30	70	109	77	a22	20	a66	25
14.....	22	a44	55	35	35	80	100	a75	21	a22	a100	19
15.....	22	58	*52	30	40	1,150	91	73	20	a24	a250	a16
16.....	22	a56	50	25	100	*2,030	90	a64	a20	27	373	14
17.....	22	54	46	22	500	2,940	83	56	21	18	a221	12
18.....	21	a56	47	20	340	4,900	a82	53	a20	14	72	a12
19.....	a21	57	a50	*17	230	11,800	80	49	19	14	52	a13
20.....	a20	44	a53	15	170	7,340	73	46	a30	a12	a44	13
21.....	20	a45	56	12	150	1,070	70	47	40	421	35	79
22.....	20	a45	57	10	140	531	80	a45	34	4,620	28	42
23.....	a22	a43	54	10	70	392	112	a43	34	867	25	27
24.....	a40	40	a54	9	80	361	136	42	29	315	22	20
25.....	a38	a46	a56	8	84	325	225	38	23	147	21	a18
26.....	a35	51	57	8	108	302	a206	37	27	109	21	a16
27.....	32	49	54	9	5,200	283	187	34	a36	129	20	a14
28.....	a4	a46	53	10	1,560	251	172	34	44	87	a19	a13
29.....	30	42	44	13	540	272	120	a33	64	1,600	a18	a12
30.....	a40	a40	34	16	.....	a420	109	a32	a46	1,540	17	a12
31.....	a60	.....	a30	22	.....	567	.....	32	.....	a700	17	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Dec. 2-4, 14-31, 1946, Jan. 1-24, Jan. 31 to Feb. 15, Feb. 18 to Mar. 5, Dec. 8-16, 1947, Jan. 1 to Feb. 24, Feb. 29 to Mar. 14, 1948 (no gage-height record Dec. 17, 28, 1946, Jan. 2-4, Feb. 1, 3, 4, 7, 8, 10, Mar. 1, Dec. 8-10, 13, 14, 16, 1947, Jan. 1, 11-13, 15, 21-24, 26, 28, 29, 31, Feb. 3-5, 7, 8, 12, 19, 20, 24, Mar. 5, 7, 9, 10, 14, 1948).

Nodaway River at Clarinda, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1	a12	a61	41	42	26	540	570	133	1,240	200	109	25
2	a11	41	40	48	24	525	342	132	3,860	162	95	27
3	a11	41	a39	62	24	1,300	293	133	970	145	81	28
4	10	25	a39	250	24	3,520	268	133	279	a135	73	a27
5	a10	a38	a48	290	24	4,310	250	114	222	124	67	27
6	a13	355	66	250	24	2,140	237	131	191	113	65	a33
7	a20	a270	58	220	24	850	217	125	171	112	60	38
8	a31	113	60	150	24	950	197	126	144	109	55	a35
9	a36	63	52	150	24	*585	191	139	135	1,750	53	32
10	a28	50	49	150	24	409	183	171	131	958	58	33
11	a25	50	56	*147	24	305	169	135	126	128	54	66
12	a22	41	53	115	26	190	162	115	119	113	54	77
13	a20	a38	48	86	70	140	159	107	286	106	71	a66
14	a18	a35	45	60	62	140	197	103	195	a100	56	55
15	a17	33	47	400	57	110	248	101	139	93	51	a42
16	a16	a31	80	1,500	53	80	342	118	115	89	43	33
17	a15	a30	118	700	50	80	465	131	101	83	41	30
18	a14	29	120	450	230	80	381	185	115	75	37	a28
19	14	a42	84	250	1,000	80	259	142	101	70	63	27
20	a13	a300	70	130	740	100	215	132	93	813	a82	26
21	12	a180	60	72	550	540	206	270	1,170	2,390	a58	a25
22	a12	101	52	60	400	1,300	208	1,600	722	437	a46	25
23	a12	77	48	76	3,910	870	211	810	1,510	193	39	22
24	a12	a66	34	63	2,820	465	189	a480	a1,900	142	35	21
25	12	a58	30	54	2,400	423	159	224	a1,200	125	33	20
26	13	a100	27	48	1,880	495	166	193	a700	112	a31	21
27	14	a70	32	42	1,680	702	215	164	281	a100	28	20
28	15	a50	39	38	1,180	585	171	155	990	119	38	21
29	a16	40	35	35	36	342	149	a145	451	a250	28	a21
30	a150	a41	33	32	32	342	136	a135	259	540	27	20
31	83	38	29	29	368	129	129	208	208	28	28	.....
1949-50												
1	18	31	24	19	40	1,510	72	71	104	78	282	a68
2	a19	32	21	20	42	395	71	65	83	74	64	a56
3	22	32	26	22	45	168	a77	a58	80	70	54	a50
4	a26	32	a27	23	48	305	84	51	a72	64	140	a45
5	31	31	27	23	54	950	77	548	67	62	510	a40
6	a28	30	27	22	60	650	a88	510	62	76	193	a40
7	a26	31	28	21	132	409	60	a300	56	70	a250	a35
8	24	31	13	21	368	173	60	212	50	65	a850	a35
9	a32	30	a15	21	*688	125	60	8,870	225	a70	a150	a120
10	65	a30	30	22	395	a110	61	2,460	312	77	92	a500
11	89	30	52	24	164	99	48	750	a130	54	61	a350
12	a90	44	17	33	166	129	52	460	a64	225	968	97
13	33	50	17	33	a65	a123	43	361	67	400	445	a54
14	a31	a45	17	32	22	a120	36	312	2,170	142	138	a40
15	29	40	17	27	55	119	36	255	1,170	77	190	35
16	a26	36	36	25	67	193	34	225	400	a450	131	33
17	24	32	a33	22	54	215	32	202	280	732	a120	32
18	16	21	a32	20	55	a150	35	190	a325	300	113	31
19	21	32	30	18	90	95	30	186	2,280	200	69	29
20	28	*26	a25	17	160	117	a29	168	968	146	56	31
21	288	21	6	17	632	120	28	325	a355	83	47	43
22	181	a25	13	17	480	166	28	312	275	64	43	31
23	a90	33	*18	*17	a270	342	31	280	225	60	42	a30
24	a60	30	19	17	155	281	31	166	a190	58	38	28
25	48	26	21	17	144	169	41	195	152	58	37	26
26	42	27	21	17	129	120	48	a200	127	56	36	25
27	41	28	21	17	250	a110	47	212	107	50	200	a70
28	36	29	21	18	4,000	106	39	176	97	46	280	a400
29	34	28	20	23	88	a47	152	89	43	150	a150	a50
30	32	a26	19	30	73	56	152	a84	a100	109	109	a60
31	32	19	35	35	a72	158	158	320	86	86	.....	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Dec. 6-31, 1948, Jan. 1 to Feb. 22, Mar. 12-20, Dec. 14, 15, 22-31, 1949, Jan. 1-11, Jan. 15 to Feb. 6, 1950 (no gage-height record Dec. 7-10, 15, 18 19, 23-27, 29-31, 1948, Jan. 1-5, 9, 24, 27, 29, 31, Feb. 3, Dec. 15, 1949, Jan. 1-3, 15, 31, Feb. 5, 1950).

Nodaway River at Clarinda, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet			Runoff		
		Maximum	Minimum	Mean	Per square mile	Inches	Acro-feet
October 1942.....	2,231	343	46	72.0	0.097	0.11	4,430
November.....	1,454	70	19	48.5	.066	.07	2,880
December.....	3,058	682	21	98.6	.133	.15	6,070
Calendar year 1942	157,593	5,870	19	432	.584	7.91	312,600
January 1943.....	1,946	148	25	62.8	.085	.10	3,860
February.....	8,565	3,070	27	306	.414	.43	16,990
March.....	5,771	1,530	29	186	.251	.29	11,450
April.....	2,303	432	18	76.8	.104	.12	4,570
May.....	8,226	2,340	22	265	.358	.41	16,320
June.....	33,141	6,050	94	1,105	1.49	1.67	65,730
July.....	8,122	1,320	61	262	.354	.41	16,110
August.....	16,429	3,600	80	530	.716	.83	32,590
September.....	4,950	1,560	39	165	.223	.25	9,820
Water year 1942-43	96,196	6,050	18	264	.357	4.84	190,800
October 1943.....	1,114	57	29	35.9	.049	.06	2,210
November.....	1,532	87	30	51.1	.069	.08	3,040
December.....	879	71	15	28.4	.038	.04	1,740
Calendar year 1943	92,978	6,050	15	255	.345	4.69	184,400
January 1944.....	1,922	423	14	62.0	.084	.10	3,810
February.....	2,979	502	17	103	.139	.15	5,910
March.....	12,011	1,180	45	387	.523	.60	23,820
April.....	29,801	2,690	196	993	1.34	1.50	59,110
May.....	54,988	5,420	494	1,774	2.40	2.76	109,100
June.....	40,688	6,560	225	1,356	1.83	2.04	80,700
July.....	6,573	582	94	212	.286	.33	13,040
August.....	9,903	1,900	55	319	.431	.50	19,640
September.....	5,595	924	82	186	.251	.28	11,100
Water year 1943-44	167,985	6,560	14	459	.620	8.44	333,220
October 1944.....	4,386	469	76	141	.191	.22	8,700
November.....	2,323	136	30	77.4	.105	.12	4,610
December.....	2,232	195	26	72.0	.097	.11	4,430
Calendar year 1944	173,401	6,560	14	474	.641	8.71	344,000
January 1945.....	4,502	400	36	145	.196	.23	8,930
February.....	9,999	1,460	55	357	.482	.50	19,830
March.....	37,889	4,820	340	1,222	1.65	1.90	75,150
April.....	28,972	2,330	330	966	1.31	1.46	57,470
May.....	44,671	9,330	323	1,441	1.95	2.25	88,600
June.....	18,557	1,620	290	619	.836	.93	36,810
July.....	5,965	511	100	192	.259	.30	11,830
August.....	3,285	414	35	106	.143	.17	6,520
September.....	1,355	153	32	45.2	.061	.07	2,690
Water year 1944-45	164,136	9,330	26	450	.608	8.26	325,600
October 1945.....	1,415	111	35	45.6	.062	.07	2,810
November.....	1,285	61	28	42.8	.058	.06	2,550
December.....	535	61	5	17.3	.023	.03	1,060
Calendar year 1945	158,430	9,330	5	434	.586	7.97	314,200
January 1946.....	8,353	2,740	35	269	.364	.42	16,570
February.....	6,222	1,580	60	222	.300	.31	12,340
March.....	15,065	2,350	74	486	.657	.76	29,880
April.....	6,855	600	138	228	.308	.34	13,600
May.....	10,865	2,010	97	350	.473	.55	21,550
June.....	23,056	7,560	26	769	1.04	1.16	45,730
July.....	2,753	251	40	88.8	.120	.14	5,460
August.....	5,751	2,540	31	186	.251	.29	11,410
September.....	7,936	980	81	265	.358	.40	15,740
Water year 1945-46	90,091	7,560	5	247	.334	4.53	178,700

Nodaway River at Clarinda, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October 1946.....	12,200	1,580	143	394	0.532	0.61	24,200
November.....	6,387	353	162	213	.288	.32	12,670
December.....	3,427	192	35	111	.150	.17	6,800
Calendar year 1946	108,870	7,560	26	298	.403	5.47	216,000
January 1947.....	2,718	185	30	87.7	.119	.14	5,390
February.....	2,686	450	33	95.9	.130	.13	5,330
March.....	7,767	1,230	63	251	.339	.39	15,410
April.....	29,802	4,360	200	993	1.34	1.50	59,110
May.....	16,546	4,870	170	534	.722	.83	32,820
June.....	143,362	18,900	745	4,779	6.46	7.20	284,400
July.....	8,798	750	101	284	.384	.44	17,450
August.....	2,144	477	32	69.2	.094	.11	4,250
September.....	957	73	19	31.9	.043	.05	1,900
Water year 1946-47	236,794	18,900	19	649	.877	11.89	469,700
October 1947.....	858	60	20	27.7	.037	.04	1,700
November.....	1,617	101	30	53.9	.073	.08	3,210
December.....	2,089	200	30	67.4	.091	.10	4,140
Calendar year 1947	219,344	18,900	19	601	.812	11.01	435,100
January 1948.....	780	55	8	25.2	.034	.04	1,550
February.....	9,645	5,200	18	333	.450	.48	19,130
March.....	36,144	11,800	60	1,170	1.58	1.82	71,660
April.....	4,358	306	70	145	.196	.22	8,640
May.....	2,053	122	32	66.2	.089	.10	4,070
June.....	848	64	18	28.3	.038	.04	1,650
July.....	10,910	4,620	11	352	.476	.55	21,640
August.....	2,915	373	17	94.0	.127	.15	5,750
September.....	796	93	12	26.5	.036	.04	1,550
Water year 1947-48	73,013	11,800	8	199	.269	3.66	144,800
October 1948.....	707	150	10	22.8	.031	.04	1,400
November.....	2,469	355	25	82.3	.111	.12	4,900
December.....	1,641	120	27	52.9	.071	.08	3,250
Calendar year 1948	73,266	11,800	8	200	.270	3.68	145,300
January 1949.....	6,000	1,500	29	194	.262	.30	11,900
February.....	17,384	3,910	24	621	.839	.87	34,480
March.....	22,866	4,310	80	738	.997	1.15	45,350
April.....	7,155	570	136	238	.322	.36	14,190
May.....	6,911	1,600	101	223	.301	.35	13,710
June.....	17,916	3,860	93	597	.807	.90	35,540
July.....	10,094	2,390	70	326	.441	.51	20,020
August.....	1,659	109	27	53.5	.072	.08	3,290
September.....	971	77	20	32.4	.044	.05	1,930
Water year 1948-49	95,773	4,310	10	262	.354	4.81	190,000
October 1949.....	1,532	288	16	49.4	.067	.08	3,040
November.....	939	50	21	31.3	.042	.05	1,850
December.....	712	52	6	23.0	.031	.04	1,410
Calendar year 1949	94,139	4,310	6	258	.349	4.74	186,700
January 1950.....	600	35	17	22.3	.030	.03	1,370
February.....	8,810	4,000	22	315	.426	.44	17,470
March.....	7,802	1,510	72	252	.341	.39	15,480
April.....	1,461	84	28	48.7	.066	.07	2,900
May.....	18,582	8,870	51	599	.809	.93	36,860
June.....	10,665	2,280	50	356	.481	.54	21,160
July.....	4,370	732	43	141	.191	.22	8,670
August.....	5,944	968	36	192	.259	.30	11,790
September.....	2,584	500	25	86.1	.116	.13	5,130
Water year 1949-50	64,092	8,870	6	176	.238	3.22	127,100

Thompson River at Davis City, Iowa

LOCATION.—Lat. 40°38'25", long. 93°48'20", in SE¼ SE¼ sec. 35, T. 68 N., R. 26 W., on right bank 15 feet 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 square miles.

RECORDS AVAILABLE.—May 1918 to July 1925, July 1941 to September 1950.

GAGE.—Water-stage recorder. Datum of gage is 875.55 feet above mean sea level, unadjusted (Corps of Engineers bench mark). May 14, 1918, to July 2, 1925, chain gage at same site and datum. July 14, 1941, to Oct. 29, 1941, various gages at same site and datum. Oct. 30, 1941, to Feb. 24, 1942, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—12 years (1918-21, 1941-50), 398 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43 ..	June 13	6,910	12.10	Sept. 29	17
1943-44 ..	Apr. 23	8,810	14.15	Dec. 24, Jan. 12-14	6
1944-45 ..	Apr. 17	8,700	13.95	Sept. 18-21	11
1945-46 ..	Jan. 6	9,930	15.18	Dec. 18, 19	20
1946-47 ..	June 14	24,400	20.14	Sept. 30	6.6
1947-48 ..	Mar. 20	4,860	8.56	Oct. 19, 21	6.0
1948-49 ..	June 26	4,190	7.78	Oct. 5	2.8
1949-50 ..	May 10	12,000	11.85	Dec. 9	6.2

1918-25, 1941-50: Maximum discharge, 24,400 second-feet June 14, 1947 (gage height, 20.14 feet); minimum, about 1 second-foot Sept. 18-24, 27-29, Oct. 15, 16, 1918.

Minimum flow known, 0.10 second-foot Aug. 16, 1934, discharge measurements.

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

Thompson River at Davis City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	44	103	53	260	33	70	140	78	455	168	48	39
2.....	40	74	34	221	*33	60	118	68	206	130	86	34
3.....	54	62	38	202	1,280	44	94	56	159	115	229	31
4.....	118	54	33	116	2,100	44	80	47	139	110	91	42
5.....	495	244	30	123	1,900	28	69	47	1,250	473	65	141
6.....	357	130	27	118	794	36	61	54	3,490	1,010	54	91
7.....	142	92	25	107	296	28	59	66	1,640	684	52	63
8.....	80	69	24	98	216	29	58	130	1,090	226	44	31
9.....	69	210	26	80	227	31	61	76	856	141	72	27
10.....	56	273	30	80	207	31	71	64	810	112	117	26
11.....	52	254	37	73	128	34	76	61	3,800	93	58	24
12.....	47	182	36	61	118	44	128	58	5,250	82	40	25
13.....	44	111	33	54	84	54	160	56	6,610	72	40	66
14.....	42	82	30	59	86	69	152	46	2,620	68	44	292
15.....	42	73	29	82	71	264	107	2,780	1,340	59	50	340
16.....	40	68	29	98	56	506	74	4,880	1,860	84	33	105
17.....	39	61	31	75	53	480	59	3,000	1,430	817	27	54
18.....	39	56	38	55	50	300	56	1,160	1,590	294	23	38
19.....	38	56	*46	57	58	*50	50	1,020	1,020	110	21	29
20.....	37	54	38	55	80	44	46	886	512	74	22	25
21.....	34	58	34	52	86	94	42	756	380	82	20	23
22.....	33	64	38	48	98	190	40	466	309	95	22	28
23.....	32	78	39	53	135	267	40	344	258	70	847	24
24.....	31	88	53	50	135	538	38	313	313	59	1,270	21
25.....	30	74	71	47	109	749	75	368	269	1,010	611	20
26.....	30	64	595	45	86	598	264	340	325	768	813	20
27.....	30	37	1,580	44	80	302	315	240	209	206	271	20
28.....	30	58	1,090	44	78	196	160	187	272	98	98	18
29.....	31	33	718	42	.....	152	158	150	298	70	74	17
30.....	357	46	452	40	.....	145	137	141	262	56	58	18
31.....	230	.....	324	37	.....	150	.....	139	.....	54	46	.....
1943-44												
1.....	17	19	18	7	100	a150	153	642	283	85	58	254
2.....	17	20	22	7	68	a80	174	4,310	247	85	48	190
3.....	16	21	17	7	60	b45	147	6,470	220	76	87	144
4.....	16	29	19	8	51	a250	117	5,690	190	72	100	122
5.....	16	31	23	9	55	a130	98	4,490	203	65	372	110
6.....	16	29	25	9	29	a75	93	2,130	611	58	529	95
7.....	16	28	22	8	50	a40	91	1,100	441	54	283	82
8.....	15	26	23	7	38	a55	107	990	1,400	85	141	74
9.....	14	27	*27	7	32	a70	156	886	4,220	67	67	68
10.....	14	29	33	7	22	a75	168	818	3,420	85	46	67
11.....	14	29	24	7	13	a70	1,140	660	1,420	128	38	61
12.....	14	33	26	6	10	559	2,000	520	723	103	33	58
13.....	16	29	12	6	9	633	1,500	466	925	568	29	59
14.....	16	26	10	6	9	425	637	417	714	165	27	68
15.....	14	26	7	7	10	856	662	372	458	89	25	67
16.....	14	22	7	9	11	1,220	789	392	360	67	26	58
17.....	15	25	7	9	10	a1,000	611	478	291	59	23	54
18.....	21	26	8	11	9	a700	1,040	491	251	56	22	52
19.....	21	25	9	10	9	b376	2,080	325	495	85	21	52
20.....	20	24	9	10	10	a330	2,580	348	478	74	22	74
21.....	21	23	9	11	10	a320	2,960	2,670	302	61	27	54
22.....	18	22	9	11	14	a300	6,400	1,340	216	44	26	1,420
23.....	17	22	7	12	22	a470	8,260	673	193	42	26	362
24.....	18	21	6	11	26	b572	6,660	837	177	136	28	316
25.....	18	21	7	*10	*70	a520	2,660	637	147	177	28	454
26.....	18	21	7	12	235	b251	1,720	508	125	171	1,380	206
27.....	20	17	8	27	368	206	2,810	425	110	74	2,700	139
28.....	19	14	9	34	a300	187	1,670	980	100	91	2,660	107
29.....	19	20	8	136	a250	174	995	700	91	130	1,280	93
30.....	19	16	8	254	.....	159	760	474	87	136	732	85
31.....	20	.....	8	174	.....	144	.....	340	.....	70	400	.....

* Winter discharge measurement made on this day.

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

h Computed from wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 12, 13, 18-20, 1942, Jan. 17-21, 24-27, Mar. 1, 2, 17-19, Dec. 14-18, 1943, Jan. 1-29, Feb. 1, 3, 5, 11-15, 18, 19, 22-26, 1944 (no gage-height record Jan. 13-24, 1944).

Thompson River at Davis City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1.....	89	45	56	45	95	615	329	272	1,060	449	44	22
2.....	291	50	54	50	82	1,550	294	233	352	813	61	20
3.....	550	105	59	51	76	2,690	265	265	283	412	87	19
4.....	352	80	400	*50	74	2,110	1,190	258	244	223	147	19
5.....	213	95	950	45	74	1,360	2,760	237	247	276	233	19
6.....	171	72	818	44	76	1,000	2,620	213	302	244	130	19
7.....	177	59	606	46	78	572	945	237	478	200	58	19
8.....	165	63	538	44	85	474	723	230	628	372	42	20
9.....	128	63	462	42	93	525	533	213	1,650	220	37	48
10.....	93	56	276	46	305	664	449	306	751	156	35	302
11.....	82	51	155	50	585	789	533	298	491	122	34	180
12.....	74	50	110	48	1,040	2,020	1,280	429	585	107	33	45
13.....	67	48	140	48	1,700	1,620	1,720	283	329	122	31	24
14.....	67	45	130	100	2,350	784	1,340	3,690	254	95	33	19
15.....	65	44	165	82	2,600	2,280	1,120	7,640	1,300	89	33	17
16.....	61	44	156	70	2,110	5,060	6,980	6,250	1,670	82	31	14
17.....	59	40	153	76	a1,500	6,350	8,380	6,280	1,330	78	32	12
18.....	56	39	125	100	a800	2,660	7,480	2,270	856	76	42	11
19.....	56	42	107	128	a500	920	2,200	960	491	78	29	11
20.....	54	45	89	130	a300	775	876	723	520	89	28	11
21.....	54	45	72	125	a250	700	705	620	417	74	27	11
22.....	52	50	65	120	a270	559	611	760	313	67	27	40
23.....	50	51	65	120	321	458	525	1,000	251	61	26	44
24.....	50	48	58	122	482	744	487	593	213	58	26	103
25.....	46	52	52	136	*935	3,730	474	516	206	61	25	63
26.....	46	265	48	144	822	3,540	449	832	542	59	23	48
27.....	45	276	44	153	794	1,280	396	1,040	700	56	23	72
28.....	45	196	42	147	642	664	352	637	660	52	23	499
29.....	44	115	40	136	.....	491	317	784	269	51	22	408
30.....	44	61	40	120	.....	404	298	546	441	50	24	1,220
31.....	46	.....	44	105	.....	360	.....	633	.....	46	22	.....
1945-46												
1.....	1,200	35	305	47	204	127	323	102	326	315	34	82
2.....	406	36	557	40	153	151	268	130	351	258	32	70
3.....	159	37	*265	33	159	151	223	4,390	140	145	30	64
4.....	95	34	138	288	242	170	184	4,100	91	104	28	64
5.....	78	34	80	6,180	670	333	159	1,820	76	86	29	61
6.....	67	34	74	9,410	1,220	1,820	159	690	70	78	28	67
7.....	56	34	68	8,790	990	1,160	620	442	62	76	28	64
8.....	48	48	60	*5,150	474	602	2,050	344	59	72	29	64
9.....	42	42	48	1,030	268	403	562	278	53	73	38	64
10.....	39	39	43	418	200	281	323	248	49	70	36	117
11.....	39	38	40	323	160	366	945	226	47	62	34	102
12.....	37	52	31	235	130	820	1,220	216	46	54	38	58
13.....	36	59	29	150	110	1,100	566	201	44	49	34	50
14.....	38	45	28	175	100	1,120	388	178	40	48	41	47
15.....	39	41	27	170	88	880	305	216	39	47	86	45
16.....	39	40	23	162	102	1,490	245	167	40	48	38	40
17.....	39	39	21	130	84	2,170	204	539	76	78	30	37
18.....	38	38	20	127	100	1,030	181	895	1,780	62	28	36
19.....	35	37	20	122	89	588	156	388	5,390	57	24	36
20.....	33	35	21	112	72	418	143	216	5,830	73	26	39
21.....	31	36	21	97	91	337	128	164	4,500	52	31	38
22.....	30	28	21	86	*91	298	125	162	990	48	38	80
23.....	30	29	22	95	104	490	192	132	454	44	37	110
24.....	30	31	22	82	125	1,060	458	143	315	40	255	59
25.....	30	30	21	84	151	760	414	164	291	39	1,140	76
26.....	30	28	22	70	207	870	192	132	245	38	1,060	117
27.....	30	34	22	76	164	2,630	132	122	201	93	1,260	64
28.....	32	36	22	72	114	1,420	112	102	172	58	526	518
29.....	33	32	24	70	.....	584	104	86	153	58	184	765
30.....	34	35	45	127	.....	620	100	88	275	45	127	326
31.....	34	.....	64	395	.....	462	.....	88	.....	37	97	.....

* Winter discharge measurement made on this day.

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

Note—Stage-discharge relation affected by ice Dec. 11-14, 22, 23, 26, 27, 1944, Feb. 10-14, Dec. 5-10, 1945, Jan. 12-15, Feb. 5, 10-14, 1946.

Thompson River at Davis City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	172	130	93	31	68	46	506	507	1,780	568	50	19
2.....	91	470	*61	30	50	46	434	490	2,380	420	49	13
3.....	70	337	65	29	48	44	422	412	1,420	352	46	12
4.....	61	204	62	27	44	45	4,580	334	1,290	309	40	12
5.....	54	151	91	26	36	45	7,360	266	9,280	1,240	38	12
6.....	52	130	100	*26	35	44	7,430	249	14,200	1,420	35	12
7.....	48	127	102	25	34	44	4,190	227	14,600	659	35	12
8.....	46	127	100	26	30	45	1,240	214	6,860	382	31	12
9.....	44	135	91	27	27	50	865	198	1,460	289	29	14
10.....	47	159	86	29	26	59	4,760	176	1,010	239	26	14
11.....	68	210	78	31	25	84	5,860	163	750	211	24	13
12.....	102	213	78	33	25	190	7,300	154	2,180	195	25	12
13.....	84	192	73	42	27	2,360	4,620	151	10,400	179	24	12
14.....	110	143	70	93	122	3,600	1,130	148	18,200	170	24	11
15.....	72	130	65	120	720	1,550	865	160	10,100	154	23	10
16.....	62	148	65	112	593	498	755	166	3,280	131	24	9.8
17.....	162	242	50	102	348	341	687	179	1,010	120	24	28
18.....	593	284	38	91	240	278	654	217	1,680	115	22	22
18.....	1,060	184	42	80	162	291	622	233	2,040	108	21	14
20.....	1,100	153	42	67	117	288	3,360	217	2,720	100	18	14
21.....	442	145	47	62	68	278	3,300	154	4,800	94	17	14
22.....	226	130	40	57	70	442	1,510	134	6,710	84	16	13
23.....	175	114	44	59	68	611	1,030	134	8,630	80	15	11
24.....	151	110	42	64	68	995	750	151	6,910	75	15	9.8
25.....	148	107	44	80	*65	865	604	211	3,730	70	30	9.3
26.....	620	107	49	112	64	490	520	214	1,220	70	25	8.8
27.....	462	97	56	167	57	312	453	211	780	68	17	8.2
28.....	220	89	62	132	50	248	382	356	622	66	32	7.6
29.....	167	84	37	120	.....	235	444	4,000	1,620	63	42	7.6
30.....	145	97	34	117	.....	204	482	4,500	835	61	32	6.6
31.....	138	.....	33	80	.....	330	.....	3,270	.....	55	23	.....
1947-48												
1.....	12	243	22	12	15	g515	285	166	35	68	22	19
2.....	14	183	25	19	14	g*191	250	440	34	47	75	17
3.....	12	110	30	23	13	a160	217	572	34	31	55	17
4.....	23	96	815	26	12	a140	185	374	34	25	40	13
5.....	16	80	1,090	24	12	a110	173	233	32	19	40	12
6.....	17	53	503	24	12	a90	195	214	29	21	60	10
7.....	17	61	296	23	11	70	230	1,040	25	19	50	9.3
8.....	154	47	214	28	11	a63	191	645	24	11	41	19
9.....	77	47	148	44	10	a57	160	323	22	9.3	30	23
10.....	25	46	73	61	10	g50	131	246	21	9.3	22	17
11.....	15	34	77	78	10	g50	128	239	20	8.2	28	12
12.....	10	26	72	60	9	g53	128	195	22	33	28	10
13.....	9.8	22	55	40	9	g57	128	166	21	154	21	9.3
14.....	8.8	23	65	30	9	g68	118	154	22	72	21	9.3
15.....	8.2	96	*58	20	12	g1,210	108	142	23	57	19	9.8
16.....	7.6	61	40	20	20	3,050	100	125	19	40	40	10
17.....	7.1	61	50	20	31	3,210	90	112	17	29	72	8.8
18.....	6.6	61	46	18	35	2,210	84	94	18	18	179	7.6
19.....	6.0	49	44	*16	42	3,650	78	75	19	12	102	7.1
20.....	6.6	44	46	15	50	4,580	75	70	19	9.8	61	7.6
21.....	6.0	44	34	14	52	3,900	70	63	28	7.6	38	10
22.....	6.6	42	46	14	53	1,520	148	61	19	7.1	28	8.2
23.....	18	34	44	13	55	654	1,220	60	18	239	21	17
24.....	28	32	32	14	60	490	490	60	16	503	17	46
25.....	17	29	41	14	65	408	363	55	16	125	14	35
26.....	25	30	38	14	68	393	352	49	20	236	12	24
27.....	29	30	36	14	840	428	385	42	52	61	14	15
28.....	21	30	31	14	2,920	359	272	42	26	36	21	10
29.....	16	28	31	14	1,360	302	233	41	24	29	12	9.3
30.....	17	21	35	14	.....	285	201	40	24	26	35	7.1
31.....	52	.....	22	15	.....	289	.....	38	.....	22	26	.....

* Winter discharge measurement made on this day.

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

g Computed from graph based on wire-weight gage readings.

Note—Stage-discharge relation affected by ice Dec. 2-4, 17-31, 1946, Jan. 1-9, 16-20, Jan. 28 to Feb. 24, Mar. 12, 13, 1947, Jan. 12-24, Feb. 1-16, 1948.

Thompson River at Davis City, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	6.0	8.2	13	7.6	31	700	520	91	42	231	53	33
2.....	4.8	8.8	14	7.6	30	540	412	85	416	172	49	32
3.....	4.0	8.2	11	9.8	29	500	357	82	1,070	141	53	31
4.....	4.0	12	15	17	28	800	271	80	376	116	46	31
5.....	2.8	21	15	18	27	1,300	224	74	200	172	39	32
6.....	4.8	19	11	20	26	1,500	197	68	100	310	37	33
7.....	7.6	13	11	90	24	1,290	178	65	72	104	36	33
8.....	5.6	11	9.3	150	23	865	166	62	58	128	33	32
9.....	4.4	18	9.8	95	23	*685	149	65	52	109	32	33
10.....	3.6	61	7.6	*72	23	465	136	67	52	89	33	33
11.....	4.0	38	12	58	23	326	126	74	80	72	36	50
12.....	4.0	26	19	50	22	242	116	80	42	185	560	1,070
13.....	4.4	19	18	45	22	220	111	76	173	214	314	68
14.....	4.8	15	18	52	22	195	123	85	1,470	82	523	40
15.....	7.1	*12	18	100	22	175	191	60	1,110	60	217	31
16.....	6.0	12	9.8	250	21	160	271	67	372	52	93	29
17.....	5.2	12	9.8	500	20	145	341	68	141	48	62	28
18.....	3.6	11	15	600	25	138	535	74	91	45	48	24
19.....	4.0	14	17	300	350	141	520	74	70	40	45	20
20.....	4.4	18	22	200	850	136	318	72	60	204	60	18
21.....	4.0	42	26	130	1,500	191	211	80	101	1,690	160	18
22.....	4.0	176	18	95	1,700	618	228	164	1,570	1,230	85	15
23.....	4.8	122	17	75	1,900	710	224	197	674	447	56	14
24.....	5.2	63	8.8	60	2,000	685	204	182	1,520	271	42	14
25.....	5.2	42	9.3	47	1,850	400	160	146	3,560	211	36	14
26.....	4.8	34	7.6	42	1,650	600	126	83	3,470	109	35	14
27.....	4.8	28	8.8	38	1,300	810	106	65	1,440	85	37	14
28.....	4.8	25	11	37	1,000	1,000	98	54	785	74	36	14
29.....	4.4	21	11	36	.....	570	93	48	635	139	36	13
30.....	7.1	20	9.3	35	.....	730	95	43	337	67	36	13
31.....	10	.....	8.8	33	.....	865	.....	42	.....	53	34	.....
1949-50												
1.....	13	14	13	250	11	1,900	60	52	153	101	41	65
2.....	13	14	13	180	11	1,600	58	46	153	93	29	44
3.....	13	14	14	50	11	1,200	70	50	239	86	26	36
4.....	13	14	14	39	11	948	109	56	112	78	61	28
5.....	13	14	14	35	33	735	136	48	90	76	88	23
6.....	13	13	14	32	450	1,140	116	43	84	72	273	19
7.....	12	13	14	30	950	1,320	113	76	76	69	302	17
8.....	12	13	10	29	1,620	785	100	54	67	69	2,880	16
9.....	12	13	6.2	27	1,200	278	102	3,620	124	67	1,170	15
10.....	12	14	16	26	892	160	109	10,800	90	59	388	14
11.....	13	14	158	26	600	123	89	5,980	88	52	162	13
12.....	32	21	95	35	500	118	72	866	80	48	326	12
13.....	42	33	28	450	1,300	98	60	515	78	48	460	12
14.....	39	19	19	280	840	91	52	379	340	50	225	12
15.....	36	19	*15	150	h197	85	49	300	2,800	67	145	11
16.....	25	29	14	90	130	82	46	246	996	86	119	11
17.....	20	31	16	45	*90	80	43	273	451	1,550	95	11
18.....	18	25	17	25	500	82	40	254	3,200	807	76	11
19.....	18	21	18	19	300	87	39	232	10,200	442	63	13
20.....	37	18	18	16	200	80	38	242	6,460	250	57	26
21.....	33	16	12	14	1,000	82	37	1,050	1,920	150	48	117
22.....	31	13	14	14	1,100	*123	36	1,020	688	112	42	38
23.....	21	14	14	*13	700	197	40	510	451	90	39	24
24.....	45	14	12	13	400	326	48	325	352	70	34	19
25.....	37	13	12	13	250	242	42	250	300	61	29	14
26.....	25	14	12	12	200	146	39	192	214	54	28	11
27.....	20	13	11	12	190	126	36	205	176	46	28	8.9
28.....	18	13	10	12	1,700	109	34	397	145	42	28	8.9
29.....	18	13	11	11	.....	89	52	300	124	41	29	13
30.....	16	13	12	11	.....	74	60	269	110	39	34	54
31.....	14	.....	23	11	.....	65	.....	208	.....	38	59	.....

* Winter discharge measurement made on this day.

h Computed from daily wire-weight gage readings.

Note—Stage-discharge relation affected by ice Jan. 4 to Mar. 6, Mar. 13-17, 1949, Jan. 1 to Feb. 7, Feb. 9, 11-14, Feb. 16 to Mar. 3, 1950 (no gage-height record Feb. 21-23, 1949, Jan. 21, 22, Jan. 24 to Feb. 7, Feb. 9, 11-14, 16, 18-26, 1950).

Thompson River at Davis City, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acro-feet
October 1942.....	2,743	495	30	88.5	0.126	0.15	5,440
November.....	2,908	273	33	96.9	.138	.15	5,770
December.....	5,661	1,580	24	183	.261	.30	11,230
Calendar year 1942	130,620	5,700	24	358	.510	6.91	259,100
January 1943.....	2,576	260	37	83.1	.118	.14	5,110
February.....	8,677	2,100	33	310	.442	.46	17,210
March.....	5,627	749	28	182	.259	.30	11,160
April.....	2,988	315	38	99.6	.142	.16	5,930
May.....	18,077	4,880	46	583	.830	.96	35,860
June.....	39,022	6,610	139	1,301	1.85	2.07	77,400
July.....	7,490	1,010	54	242	.345	.40	14,860
August.....	5,346	1,270	20	172	.245	.28	10,600
September.....	1,732	340	17	57.7	.082	.09	3,440
Water year 1942-43	102,847	6,610	17	282	.402	5.46	204,000
October 1943.....	529	21	14	17.1	.024	.03	1,050
November.....	721	33	14	24.0	.034	.04	1,430
December.....	434	33	6	14.0	.020	.02	861
Calendar year 1943	93,219	6,610	6	255	.363	4.95	184,900
January 1944.....	849	254	6	27.4	.039	.04	1,680
February.....	1,900	368	9	65.5	.093	.10	3,770
March.....	10,442	1,220	40	337	.480	.55	20,710
April.....	49,178	8,260	91	1,639	2.33	2.61	97,540
May.....	41,579	6,470	325	1,341	1.91	2.20	82,470
June.....	18,898	4,220	87	630	.897	1.00	37,480
July.....	3,258	568	42	105	.150	.17	6,460
August.....	11,284	2,700	21	364	.519	.60	22,380
September.....	5,539	1,420	52	185	.264	.29	10,990
Water year 1943-44	144,611	8,260	6	395	.563	7.65	286,800
October 1944.....	3,392	550	44	109	.155	.18	6,730
November.....	2,295	276	39	76.5	.109	.12	4,550
December.....	6,119	950	40	197	.281	.32	12,140
Calendar year 1944	154,733	8,260	6	423	.603	8.18	306,900
January 1945.....	2,723	153	42	87.8	.125	.14	5,400
February.....	19,039	2,600	74	680	.969	1.01	37,760
March.....	47,748	6,350	360	1,540	2.19	2.53	94,710
April.....	46,631	8,380	265	1,554	2.21	2.47	92,490
May.....	39,248	7,640	213	1,266	1.80	2.08	77,850
June.....	17,843	1,670	206	595	.848	.95	35,390
July.....	4,938	813	46	159	.226	.26	9,790
August.....	1,468	233	22	47.4	.068	.08	2,910
September.....	3,359	1,220	11	112	.160	.18	6,660
Water year 1944-45	194,803	8,380	11	534	.761	10.32	386,400
October 1945.....	2,907	1,200	30	93.8	.133	.15	5,770
November.....	1,116	59	28	37.2	.053	.06	2,210
December.....	2,204	557	20	71.1	.101	.12	4,370
Calendar year 1945	189,224	8,380	11	518	.738	10.03	375,300
January 1946.....	34,346	9,410	33	1,108	1.58	1.82	68,120
February.....	6,662	1,220	72	238	.339	.35	13,210
March.....	24,711	2,630	127	797	1.14	1.31	49,010
April.....	11,181	2,050	100	373	.531	.59	22,180
May.....	17,169	4,390	86	554	.789	.91	34,050
June.....	22,205	5,830	39	740	1.05	1.18	44,040
July.....	2,407	315	37	77.6	.111	.13	4,770
August.....	5,446	1,260	24	176	.251	.29	10,800
September.....	3,360	765	36	112	.160	.18	6,660
Water year 1945-46	133,714	9,410	20	366	.521	7.09	265,200

Thompson River at Davis City, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet				Runoff	
		Maximum	Minimum	Mean	Per square mile	Inches	Acres-foot
October 1946.....	6,992	1,100	44	226	0.322	0.37	13,870
November.....	4,949	470	84	165	.235	.26	9,820
December.....	1,940	102	33	62.6	.089	.10	3,850
Calendar year 1946	141,368	9,410	24	387	.551	7.49	280,400
January 1947.....	2,097	167	25	67.6	.096	.11	4,160
February.....	3,287	720	25	117	.167	.17	6,520
March.....	14,958	3,600	44	483	.688	.79	29,670
April.....	67,115	7,430	382	2,237	3.19	3.56	133,100
May.....	18,196	4,500	134	587	.836	.96	36,090
June.....	142,497	18,200	622	4,750	6.77	7.55	282,600
July.....	8,147	1,420	55	263	.375	.43	16,160
August.....	872	50	15	28.1	.040	.05	1,730
September.....	373.7	28	6.6	12.5	.018	.02	741
Water year 1946-47	271,423.7	18,200	6.6	744	1.06	14.37	538,300
October 1947.....	688.3	154	6.0	22.2	.032	.04	1,370
November.....	1,743	243	21	58.1	.083	.09	3,460
December.....	4,159	1,090	22	134	.191	.22	8,250
Calendar year 1947	264,133.0	18,200	6.0	724	1.03	13.99	523,900
January 1948.....	755	78	12	24.4	.035	.04	1,500
February.....	5,820	2,920	9	201	.286	.31	11,540
March.....	28,612	4,580	50	923	1.31	1.52	56,750
April.....	6,797	1,220	70	227	.323	.36	13,480
May.....	6,176	1,040	38	199	.283	.33	12,250
June.....	733	52	16	24.4	.035	.04	1,450
July.....	1,984.3	503	7.1	64.0	.091	.11	3,940
August.....	1,244	179	12	40.1	.057	.07	2,470
September.....	429.4	46	7.1	14.3	.020	.02	852
Water year 1947-48	59,141.0	4,580	6.0	162	.231	3.15	117,300
October 1948.....	154.2	10	2.8	4.97	.0071	.008	306
November.....	930.2	176	8.2	31.0	.044	.05	1,850
December.....	410.9	26	7.6	13.3	.019	.02	815
Calendar year 1948	54,046.0	4,580	2.8	148	.211	2.88	107,200
January 1949.....	3,270.0	600	7.6	105	.150	.17	6,490
February.....	14,541	2,000	20	519	.739	.77	28,840
March.....	17,702	1,600	136	571	.813	.94	35,110
April.....	6,807	535	93	227	.323	.36	13,500
May.....	2,573	197	42	83.0	.118	.14	5,100
June.....	20,139	3,560	42	671	.956	1.07	39,950
July.....	6,650	1,690	40	224	.319	.37	13,790
August.....	2,962	560	32	95.5	.136	.16	5,880
September.....	1,844	1,070	13	61.5	.088	.10	3,660
Water year 1948-49	78,283.3	3,560	2.8	214	.305	4.16	155,300
October 1949.....	684	45	12	22.1	.031	.04	1,300
November.....	502	33	13	16.7	.024	.03	995
December.....	669.2	158	6.2	21.6	.031	.04	1,330
Calendar year 1949	78,643.2	3,560	6.2	215	.306	4.19	156,000
January.....	1,970	450	11	63.5	.090	.10	3,910
February.....	15,386	1,700	11	550	.783	.82	30,520
March.....	12,571	1,900	65	406	.578	.67	24,930
April.....	1,925	136	34	64.2	.091	.10	3,820
May.....	28,858	10,800	43	931	1.33	1.53	57,240
June.....	30,361	10,200	67	1,012	1.44	1.61	60,220
July.....	4,943	1,550	38	159	.226	.26	9,800
August.....	7,384	2,880	26	238	.339	.39	14,650
September.....	716.8	117	8.9	23.9	.034	.04	1,420
Water year 1949-50	105,970	10,800	6.2	290	.413	5.63	210,200

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 feet downstream from bridge on State Highway 2, 2.5 miles downstream from Cooper Creek, and 3 miles east of Centerville.

DRAINAGE AREA.—727 square miles.

RECORDS AVAILABLE.—May 1938 to September 1950.

GAGE.—Water-stage recorder and concrete control. Datum of gage is 825.68 feet above mean sea level, datum of 1929.

AVERAGE DISCHARGE.—12 years, 409 second-feet.

EXTREMES.—Maximum and minimum discharge for the water years 1943-50 are contained in the following table:

Water Year	Maximum			Minimum Daily	
	Date	Discharge (sec.-ft.)	Gage-height (feet)	Date	Discharge (sec.-ft.)
1942-43 ..	May 17	9,610	21.93	Oct. 25-29	8
1943-44 ..	Apr. 24	12,100	22.55	Jan. 13, 14	2.1
1944-45 ..	May 17	12,600	22.64	Aug. 20	5.8
1945-46 ..	June 20	21,700	(¹)24.20	Nov. 4, 5	10.3
1946-47 ..	June 7	20,300	23.94	Sept. 27-30	2.2
1947-48 ..	Mar. 19	4,510	14.86	Oct. 17-19	1.4
1948-49 ..	June 25	4,790	(²)	Oct. 23-31	1.5
1949-50 ..	June 21	10,800	21.84	Sept. 26	2.0

(1) From floodmark.

(2) Maximum gage height 17.96 feet Feb. 27 (ice jam).

1938-50: Maximum discharge, 21,700 second-feet June 20, 1946 (gage height, 24.20 feet, from floodmark); minimum, 0.1 second-foot Oct. 11, 1938, Sept. 30, Oct. 1, 1940.

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

Chariton River near Centerville, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1943 and 1944

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1942-43												
1.....	26	618	97	1,360	42	92	276	368	133	86	360	38
2.....	22	382	78	780	*41	80	252	208	301	64	205	28
3.....	25	203	81	500	1,340	62	203	151	477	54	153	22
4.....	144	140	70	400	1,900	56	163	118	178	87	131	17
5.....	112	129	59	340	1,550	40	135	99	231	450	83	16
6.....	70	220	54	283	1,550	47	112	116	1,720	332	58	24
7.....	62	305	53	242	1,380	40	99	200	2,020	203	1,180	253
8.....	62	220	51	236	1,010	34	95	249	1,960	120	1,740	469
9.....	43	183	55	194	712	34	93	242	2,040	60	1,220	348
10.....	31	585	60	153	500	39	101	211	2,780	46	703	158
11.....	24	723	62	135	360	48	110	191	3,740	35	414	81
12.....	19	388	62	120	250	63	149	183	5,190	30	478	51
13.....	16	249	60	106	200	f86	203	156	6,620	27	280	37
14.....	15	158	55	97	150	f118	189	127	f5,810	90	137	46
15.....	14	133	51	90	110	f101	146	1,470	f4,850	80	76	78
16.....	12	114	50	75	90	f401	124	5,720	f4,500	375	50	439
17.....	12	183	53	65	80	f553	114	7,090	f4,340	587	37	498
18.....	11	348	69	60	75	f451	95	8,120	4,180	616	28	273
19.....	11	205	*97	60	81	f368	78	5,790	3,650	204	22	186
20.....	a10	166	106	62	104	186	68	f6,910	1,980	86	20	114
21.....	a10	401	103	65	124	131	60	f4,630	725	55	17	62
22.....	a9	419	88	70	144	220	58	f4,400	379	36	47	39
23.....	a9	362	90	78	156	426	55	2,400	203	28	743	28
24.....	a9	344	122	75	142	629	53	910	144	27	508	21
25.....	a8	287	163	70	120	591	85	612	114	39	166	18
26.....	8	208	637	65	100	545	245	454	93	104	83	15
27.....	8	149	3,510	60	90	478	627	290	76	68	74	12
28.....	8	120	2,410	55	103	385	1,300	205	106	35	50	11
29.....	8	114	1,830	50	.....	301	1,180	163	103	28	39	10
30.....	45	95	2,060	46	.....	266	750	140	92	31	74	10
31.....	786	.....	2,170	43	.....	269	.....	124	.....	124	58	.....
1943-44												
1.....	9.3	20.0	14.0	6.1	190	151	186	1,050	742	24	5.4	72
2.....	6.8	44	14.5	5.6	137	120	191	970	362	22.0	5.6	55
3.....	6.8	41	14.0	5.6	90	99	166	3,070	203	20.5	5.6	41
4.....	6.8	25	14.0	6.1	48	168	137	2,980	129	18.5	27	32
5.....	7.6	18.5	14.0	6.4	55	481	114	4,000	103	16.0	784	24
6.....	7.1	*18.5	21.0	*5.6	34	696	101	4,410	92	15.0	433	18.5
7.....	6.8	20.0	30	4.3	40	680	97	3,270	76	14.0	173	15.5
8.....	6.8	42	35	3.5	38	270	101	2,040	1,760	14.0	51	13.5
9.....	6.6	120	48	2.8	20.0	240	104	1,150	6,920	14.0	29	11.0
10.....	6.6	64	*44	2.9	13	260	131	893	6,970	12.5	20.5	10.3
11.....	9.0	43	42	2.9	11	239	1,250	557	8,040	12.5	30	17.5
12.....	8.3	33	34	2.4	9	220	2,310	398	5,710	14.0	205	11.5
13.....	8.3	28	28	2.1	9	252	1,810	294	3,800	22.0	106	23
14.....	7.1	23	15	2.1	10	283	1,610	223	2,080	16.0	39	26
15.....	7.4	21.0	11	2.2	11	1,320	3,530	183	1,010	14.0	22.5	18.0
16.....	7.4	20.5	12	2.2	11	2,010	2,610	205	495	11.5	16.5	13.0
17.....	7.1	20.0	13	2.2	10	1,820	2,250	239	242	10.7	17.5	10.7
18.....	7.4	18.0	13.5	3.1	10	1,600	2,000	200	222	9.6	37	9.0
19.....	7.9	16.5	11.5	3.3	10	1,150	1,750	142	378	9.6	22.5	7.9
20.....	9.3	15.5	11.0	3.5	12.5	756	1,660	372	176	16.5	24	8.3
21.....	9.3	15.0	10.7	3.9	14.0	487	1,600	1,580	200	9.3	18.5	401
22.....	7.9	14.0	10.0	4.7	34	417	3,640	1,990	135	8.3	13.5	1,100
23.....	14.5	13.5	8.3	4.5	214	584	4,890	2,080	131	8.3	10.7	1,000
24.....	16.5	12.5	6.6	5.4	392	796	10,990	1,940	101	8.3	8.6	591
25.....	16.0	13.0	6.6	*7.9	460	687	8,690	708	69	7.6	8.3	616
26.....	15.5	14.5	6.4	14.5	*487	510	5,110	445	53	8.3	241	344
27.....	16.5	14.0	7.4	49	408	368	3,880	466	43	7.4	1,350	178
28.....	18.5	14.0	7.4	80	305	262	3,070	454	35	6.1	1,610	108
29.....	16.0	14.0	7.1	110	211	217	1,930	436	29	5.6	675	74
30.....	15.0	13.5	6.6	200	.....	180	1,190	2,020	27	5.1	205	54
31.....	20.5	.....	6.4	230	.....	170	.....	1,220	.....	4.9	104	.....

* Winter discharge measurement made on this day.

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

f Computed from partly estimated gage-height record.

Note—Stage-discharge relation affected by ice Dec. 11-14, 1942, Jan. 3-5, 11, 12, 15-21, 24-29, Feb. 10-18, 25, 26, Mar. 2, Dec. 13-17, 1943, Jan. 28 to Feb. 1, Feb. 3, 10-19, Mar. 7-10, 1944.

Chariton River near Centerville, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1945 and 1946

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1944-45												
1....	88	22.5	80	55	99	674	305	160	211	485	12	6.1
2....	1,090	22	65	55	92	653	236	153	252	665	12	6.6
3....	3,080	307	75	*55	85	1,050	191	158	646	501	11	6.4
4....	2,420	417	144	55	81	1,090	476	168	600	382	11.5	10.3
5....	1,750	301	1,900	55	76	862	482	170	492	233	12	10.3
6....	839	160	2,620	51	75	684	436	137	252	156	11	9
7....	472	186	2,120	50	75	460	337	144	581	156	10.3	7.6
8....	305	191	1,950	50	74	312	283	220	708	158	10	7.9
9....	183	153	1,300	49	74	355	220	249	1,140	124	9.6	10.3
10....	124	106	778	48	90	382	178	211	1,050	88	9.6	20
11....	97	83	420	48	144	426	168	226	959	72	9.3	9
12....	81	72	370	48	612	1,070	266	220	597	55	8.6	11
13....	70	66	285	50	2,150	1,110	417	178	362	39	7.9	53
14....	62	62	325	56	3,000	665	337	1,740	223	36	7.6	58
15....	54	*58	280	64	3,540	937	298	6,160	290	81	7.1	53
16....	47	53	255	72	3,380	1,870	3,220	7,580	3,130	72	6.1	41
17....	43	50	215	85	3,100	1,960	3,740	11,900	3,150	55	6.4	28
18....	39	47	190	108	2,690	2,170	5,710	7,510	2,220	50	6.6	20
19....	36	44	158	137	1,930	1,860	5,370	5,550	1,860	36	6.1	15
20....	34	48	144	131	1,320	1,230	3,560	4,020	1,530	29	5.8	12.5
21....	34	53	122	118	696	643	2,530	2,950	1,600	25	11.5	10.3
22....	31	58	110	112	465	401	1,280	1,730	1,290	22.5	18	14.5
23....	29	59	93	116	495	305	557	763	798	20.5	16	14
24....	28	54	78	118	530	252	385	401	355	18	12.5	17.5
25....	28	54	72	118	*1,050	2,370	382	448	451	18	10.7	15.5
26....	26	78	66	118	1,500	2,570	401	1,210	482	15.5	8.3	203
27....	26	144	59	118	1,160	2,440	334	1,130	348	15.5	7.4	236
28....	24	211	51	118	801	2,160	266	619	208	14.5	6.4	186
29....	23	153	48	112	.....	1,550	217	436	180	13	7.1	426
30....	22.5	115	50	104	.....	965	186	379	163	12.5	7.4	597
31....	22.5	.....	50	99	.....	436	.....	294	.....	13	6.6	.....
1945-46												
1....	754	11.0	80	95	269	95	476	63	55	183	41	504
2....	1,240	11.0	372	186	398	112	348	69	53	223	34	504
3....	839	11.0	*986	142	262	114	266	180	43	146	30	135
4....	430	10.3	705	223	220	137	197	640	37	99	28	97
5....	252	10.3	467	4,410	276	245	156	581	33	60	28	86
6....	116	10.7	312	5,170	476	904	151	344	28	47	32	78
7....	68	11.0	168	9,830	742	1,630	203	301	26	38	34	74
8....	47	13.5	124	*8,740	557	1,670	417	233	22.5	34	42	66
9....	37	16.5	110	5,180	442	11,590	643	166	20.0	32	54	62
10....	31	106	80	3,700	290	11,290	597	122	18.0	29	72	88
11....	27	312	50	2,780	186	1,080	600	104	15.5	28	83	197
12....	25	200	45	11,530	151	2,210	1,280	95	14.0	27	56	131
13....	22.0	173	42	6606	131	1,930	1,370	85	13.5	25	39	97
14....	22.0	205	32	392	99	1,730	1,000	75	12.0	20.5	33	172
15....	20.5	180	27	408	80	1,850	665	72	176	21.0	72	55
16....	20.0	118	22.0	191	78	2,420	385	70	1,020	55	86	47
17....	20.5	72	18.0	189	68	3,760	256	81	959	13,100	106	44
18....	23	68	15.5	178	63	3,100	194	200	8,010	6,490	76	41
19....	23	59	15.0	149	68	3,090	160	476	15,100	3,510	50	36
20....	22.5	46	13.5	142	95	2,360	140	330	19,800	2,700	43	40
21....	21.0	40	12.5	124	75	1,410	122	226	11,400	1,100	41	42
22....	16.5	35	11.0	135	*80	2,100	108	166	17,160	379	86	58
23....	15.5	28	10.7	120	90	42,870	106	168	4,450	176	708	1,300
24....	14.0	30	10.7	86	90	4,010	160	476	3,210	99	1,120	1,840
25....	13.0	28	12.0	78	95	3,280	127	348	2,240	78	2,820	2,040
26....	11.5	28	12.5	72	112	3,400	95	262	11,160	70	2,470	1,690
27....	10.7	32	13.5	66	110	2,620	78	153	1532	66	2,500	708
28....	11.5	40	14.0	62	106	11,540	70	92	1283	63	3,310	308
29....	11.5	46	15.5	59	.....	11,200	68	66	1183	85	3,310	262
30....	14.5	43	30	86	.....	1992	66	66	1149	78	2,340	341
31....	11.0	.....	76	166	.....	1733	.....	59	.....	56	1,400	.....

* Winter discharge measurement made on this day.
 † Computed from partly estimated gage-height record.

Note—Stage-discharge relation affected by ice Nov. 30 to Dec. 2, Dec. 11-18, 31, 1944, Jan. 1-5, Feb. 22-24, Dec. 9-12, 1945, Jan. 4-9, 1946.

Chariton River near Centerville, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1947 and 1948

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1946-47												
1.....	146	146	95	54	540	46	312	1,740	1,580	1,170	14	4.3
2.....	97	191	*83	42	240	43	448	2,070	2,580	690	12	3.7
3.....	80	280	74	39	185	43	464	1,570	1,730	420	10	4.3
4.....	74	276	70	39	125	42	1,630	850	1,360	242	9.3	4.3
5.....	66	214	78	38	115	43	7,210	464	4,340	203	8.6	4.1
6.....	56	168	88	*37	105	46	9,310	301	8,580	705	7.9	3.9
7.....	48	142	90	38	85	59	8,650	230	17,400	532	7.6	3.9
8.....	43	135	90	42	68	81	5,930	191	9,380	242	7.1	6.8
9.....	39	140	90	48	55	97	3,600	155	5,690	153	6.6	7.1
10.....	37	436	93	56	43	114	2,740	137	3,780	129	6.4	7.9
11.....	39	476	93	72	36	122	2,880	122	2,660	104	5.6	10
12.....	68	392	170	104	36	183	2,520	110	2,020	78	5.4	13
13.....	135	131	482	160	69	1,700	2,280	104	3,720	64	5.1	11
14.....	120	211	566	646	151	2,490	1,790	97	2,990	53	5.6	8.6
15.....	95	180	283	859	276	1,870	1,620	103	2,750	49	6.8	6.8
16.....	66	203	191	784	479	2,090	1,240	628	2,740	41	6.4	7.1
17.....	60	388	146	439	464	1,900	1,210	334	2,020	37	5.8	6.8
18.....	445	411	99	269	312	1,440	1,230	280	2,520	34	5.1	6.4
19.....	1,190	273	112	211	214	859	816	214	2,750	29	5.1	4.1
20.....	763	211	103	205	160	454	2,380	173	1,850	27	4.9	4.3
21.....	375	189	90	153	120	398	2,350	146	2,020	22	4.7	13
22.....	276	163	88	*135	104	388	2,690	118	3,470	21	4.5	9.0
23.....	200	151	93	122	88	637	2,960	108	9,870	20	4.3	5.1
24.....	998	140	80	124	*75	1,740	2,280	104	12,600	17	4.3	3.5
25.....	2,750	135	76	158	63	2,190	1,430	205	10,800	16	5.4	2.4
26.....	1,990	127	88	233	55	1,880	702	280	6,650	16	5.6	2.4
27.....	1,390	110	95	290	51	1,320	433	262	4,220	20	4.5	2.2
28.....	529	103	129	211	49	784	298	298	3,020	33	3.9	2.2
29.....	305	99	76	217	.....	485	276	2,770	2,260	43	3.7	2.2
30.....	208	97	69	414	.....	368	1,180	1,860	1,610	28	3.5	2.2
31.....	163	.....	60	479	.....	312	.....	1,540	.....	19	3.9	.....
1947-48												
1.....	3.1	9.6	6.8	14	6	3,570	163	104	12	90	37	14
2.....	3.7	12	7.4	16	6	*3,280	151	230	12	51	26	7.9
3.....	3.1	9.0	8.6	18	6	2,060	133	430	11	27	18	5.1
4.....	5.6	8.3	69	18	6	1,410	112	439	10	25	13	3.9
5.....	4.9	8.6	316	18	6	932	101	368	11	21	9.6	2.8
6.....	3.1	7.1	287	19	6	479	93	810	11	12	7.9	2.1
7.....	2.8	6.4	249	19	6	305	103	609	11	9.0	7.1	3.9
8.....	2.4	6.1	211	22	6	294	114	344	10	6.8	6.4	12
9.....	2.8	6.6	180	26	5	168	108	236	9.0	5.6	5.1	14
10.....	2.9	6.6	178	26	5	153	93	203	9.0	4.3	4.5	10
11.....	3.5	6.4	118	28	5	122	83	211	9.3	3.5	4.7	7.6
12.....	3.5	5.8	83	25	5	101	81	223	8.3	2.4	4.5	6.6
13.....	3.1	4.9	63	24	6	88	81	189	9.3	2.2	4.1	5.1
14.....	2.4	5.8	66	22	6	245	81	153	10	5.6	3.9	4.7
15.....	2.1	9.6	*54	20	6	1,900	80	140	10	41	3.3	4.7
16.....	1.7	12	42	18	15	2,610	80	120	9.6	24	3.1	4.3
17.....	1.4	11	37	15	900	2,500	78	88	9.6	22	3.1	3.5
18.....	1.4	9.6	34	12	2,340	2,710	74	70	9.3	81	3.1	3.7
19.....	1.4	9.0	32	*10	2,510	3,540	64	59	6.6	39	2.2	3.9
20.....	1.7	7.9	29	10	1,780	3,600	56	49	7.6	28	10	3.7
21.....	2.2	7.9	26	10	1,150	2,970	51	42	11	19	11	33
22.....	2.1	9.3	26	9	681	2,770	47	41	9.6	19	7.6	9.0
23.....	1.9	9.6	26	8	522	1,940	47	32	12	17	5.1	4.9
24.....	2.2	9.3	25	7	417	1,150	120	30	8.6	12	3.5	3.3
25.....	7.1	10	23	7	482	625	382	26	11	10	2.4	2.6
26.....	5.4	9.3	22	7	696	445	408	23	23	19	3.3	2.1
27.....	4.9	8.6	22	6	1,390	358	312	20	31	15	54	1.9
28.....	7.6	8.3	21	6	3,430	276	176	17	32	48	19	2.1
29.....	8.3	7.9	20	6	2,780	217	124	16	88	51	97	2.4
30.....	7.6	6.8	21	6	.....	186	106	15	149	38	32	2.4
31.....	8.6	.....	17	6	.....	170	.....	13	.....	28	22	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Dec. 31, 1946, Feb. 1-6, 1947, Jan. 12 to Feb. 17, 1948.

Chariton River near Centerville, Iowa—Continued

Daily Discharge, in second-feet, for Water Years 1949 and 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1948-49												
1.....	1.8	1.8	3.8	7.0	14	1,450	1,940	57	48	598	302	14
2.....	1.8	1.8	3.5	5.5	12	1,050	1,190	54	296	731	110	13
3.....	1.9	2.0	3.2	7.0	11	900	674	46	232	288	64	12
4.....	1.9	2.8	3.5	7.7	11	1,250	424	44	91	155	44	13
5.....	2.0	3.8	4.0	45	10	2,000	288	36	49	106	32	14
6.....	3.5	2.8	3.8	30	9.0	1,970	220	34	38	85	25	14
7.....	7.5	2.2	3.2	20	8.5	1,520	177	29	30	379	22	15
8.....	7.0	1.9	3.0	30	8.5	1,030	150	29	25	354	18	15
9.....	4.2	2.0	2.5	39	8.5	*876	133	39	31	133	16	14
10.....	3.8	2.2	1.9	*25	8.0	636	116	45	28	72	13	13
11.....	4.0	2.8	1.9	21	7.5	396	102	44	24	44	13	22
12.....	3.8	5.5	2.2	19	10	247	95	42	20	72	2,260	274
13.....	2.0	4.5	2.0	15	14	193	89	38	26	110	2,200	1,030
14.....	1.9	3.8	3.0	12	20	182	95	33	612	190	1,940	461
15.....	1.8	*2.8	6.0	74	20	153	209	29	288	165	786	137
16.....	1.8	4.2	6.5	322	18	126	305	33	77	78	272	70
17.....	1.9	8.0	4.0	257	17	106	358	183	57	44	133	48
18.....	1.8	4.0	3.8	373	28	95	312	96	41	39	72	37
19.....	1.6	42	3.2	148	450	87	235	65	29	44	50	29
20.....	1.6	67	3.2	96	550	80	190	64	23	964	1,110	24
21.....	2.0	18	3.2	78	700	98	160	91	173	2,700	1,340	20
22.....	2.2	13	3.2	57	600	396	153	377	377	1,830	540	17
23.....	1.5	20	3.2	44	700	1,030	153	288	2,320	1,660	139	14
24.....	1.5	14	3.2	41	3,000	768	158	148	4,430	1,490	75	15
25.....	1.5	12	3.2	46	2,700	503	139	85	4,490	1,190	46	15
26.....	1.5	11	2.8	45	2,500	1,340	122	80	3,520	457	36	13
27.....	1.5	8.0	2.0	34	3,000	2,400	98	98	3,200	160	31	11
28.....	1.5	7.0	3.2	29	2,000	1,830	78	60	3,020	95	26	12
29.....	1.5	5.5	13	24	.....	1,130	67	41	1,120	374	21	12
30.....	1.5	4.0	13	22	.....	1,370	57	30	1,430	1,220	19	11
31.....	1.5	.....	11	20	.....	2,520	.....	24	.....	858	17	.....
1949-50												
1.....	9.5	17	14	198	32	1,800	126	400	247	65	17	5.5
2.....	8.0	15	14	373	31	1,660	124	288	167	1,280	16	5.0
3.....	9.0	13	14	432	29	1,690	148	223	128	876	14	4.2
4.....	9.5	11	13	150	24	1,310	424	182	128	241	14	4.2
5.....	9.5	11	12	100	33	1,130	693	155	288	137	15	4.2
6.....	10	11	13	80	750	964	590	128	295	84	13	4.0
7.....	9.0	11	12	70	1,000	712	366	104	229	60	14	4.0
8.....	7.5	11	11	60	2,000	*540	262	85	118	46	62	4.0
9.....	7.0	11	11	42	1,700	285	218	858	78	38	428	5.0
10.....	7.0	11	11	70	1,500	182	235	1,690	60	32	347	5.5
11.....	6.5	11	31	70	1,800	140	298	1,580	57	29	172	8.0
12.....	5.5	16	126	57	1,400	120	312	1,430	126	27	93	8.0
13.....	5.5	87	57	520	800	104	206	1,400	520	25	201	7.5
14.....	7.5	53	80	1,130	436	87	146	1,220	2,260	22	190	7.0
15.....	3.5	35	57	1,220	275	85	122	461	2,610	21	126	6.5
16.....	2.5	29	*41	655	198	82	110	206	2,440	20	84	7.0
17.....	3.0	24	31	275	*209	82	104	158	2,120	98	54	6.0
18.....	4.5	22	29	158	377	84	98	141	3,280	333	38	5.0
19.....	6.0	20	28	133	408	75	89	124	7,990	366	29	4.0
20.....	13	18	29	120	636	65	84	120	8,860	165	24	3.5
21.....	77	16	25	89	1,490	65	70	193	9,960	85	20	2.8
22.....	165	15	24	77	1,520	160	67	354	6,060	53	16	2.5
23.....	322	15	24	*70	1,340	930	78	428	3,680	48	14	2.8
24.....	160	15	24	64	858	1,100	193	436	2,400	45	13	2.5
25.....	78	15	23	58	530	579	693	520	1,520	39	11	2.2
26.....	46	14	20	53	400	392	474	358	540	35	10	2.0
27.....	33	14	18	48	347	388	253	172	262	31	9.5	2.2
28.....	27	15	17	43	1,830	322	180	674	148	27	8.5	2.8
29.....	23	15	18	39	.....	226	220	540	102	23	8.0	3.2
30.....	20	15	19	37	.....	167	440	366	75	20	7.0	4.2
31.....	18	.....	37	34	.....	135	.....	288	.....	17	6.5	.....

* Winter discharge measurement made on this day.

Note—Stage-discharge relation affected by ice Feb. 19 to Mar. 4, Dec. 22, 23, 1949, Jan. 4-7, 24-28, Jan. 30 to Feb. 3, Feb. 7-13, 25, 26, Mar. 11, 12, 1950.

Chariton River near Centerville, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1943 to 1946

Month	Second-foot-days	Discharge in second-feet			Runoff		
		Maximum	Minimum	Mean	Per square mile	Inches	Acro-feet
October 1942.....	1,649	786	8	53.2	0.073	0.08	3,270
November.....	8,151	618	95	272	.364	.42	16,170
December.....	14,506	3,510	50	468	.644	.74	28,770
Calendar year 1942	107,002	3,860	8	293	.403	5.48	212,200
January 1943.....	6,035	1,360	43	195	.268	.31	11,970
February.....	12,504	1,000	41	447	.615	.64	24,800
March.....	7,140	629	34	230	.316	.37	14,160
April.....	7,218	1,300	53	241	.331	.37	14,320
May.....	50,687	8,120	99	1,635	2.25	2.59	100,500
June.....	58,735	6,620	76	1,958	2.69	3.00	116,500
July.....	4,207	616	27	136	.187	.22	8,340
August.....	9,234	1,740	17	298	.410	.47	18,320
September.....	3,402	498	10	113	.155	.17	6,750
Water year 1942-43	183,468	8,120	8	503	.692	9.38	363,900
October 1943.....	316.6	20.5	6.6	10.2	.014	.02	628
November.....	789.5	120	12.5	26.3	.036	.04	1,570
December.....	523.0	48	6.4	16.9	.023	.03	1,040
Calendar year 1943	160,791.1	8,120	6.4	441	.607	8.23	318,900
January 1944.....	784.9	230	2.1	25.3	.035	.04	1,560
February.....	3,293.5	487	9	114	.157	.17	6,530
March.....	17,493	2,010	99	564	.776	.89	34,700
April.....	67,008	10,900	97	2,234	3.07	3.43	132,900
May.....	39,985	4,410	142	1,290	1.77	2.05	79,310
June.....	40,333	8,040	27	1,344	1.85	2.06	80,000
July.....	386.1	24	4.9	12.5	.017	.02	766
August.....	6,298.7	1,610	5.4	203	.279	.32	12,490
September.....	4,903.7	1,100	7.9	163	.224	.25	9,730
Water year 1943-44	182,115	10,900	2.1	498	.685	9.32	361,200
October 1944.....	11,208	3,080	22.5	362	.498	.57	22,230
November.....	3,427.5	417	22.0	114	.157	.18	6,800
December.....	14,483	2,620	48	467	.642	.74	28,730
Calendar year 1944	209,604.4	10,900	2.1	573	.788	10.72	415,700
January 1945.....	2,573	137	48	83.0	.114	.13	5,100
February.....	29,984	3,600	74	1,071	1.47	1.53	59,470
March.....	33,912	2,570	252	1,094	1.50	1.73	67,260
April.....	32,768	5,710	168	1,092	1.50	1.68	64,990
May.....	56,914	11,600	137	1,836	2.53	2.91	112,900
June.....	26,128	3,150	163	871	1.20	1.34	51,820
July.....	3,661	665	12.5	118	.162	.19	7,260
August.....	292.4	18.0	5.8	9.43	.013	.01	580
September.....	2,114.8	597	6.1	70.5	.097	.11	4,190
Water year 1944-45	217,465.7	11,600	5.8	596	.820	11.12	431,300
October 1945.....	4,190.2	1,240	10.7	135	.186	.21	8,310
November.....	1,994.3	312	10.3	66.5	.091	.10	3,960
December.....	3,902.4	986	10.7	126	.173	.20	7,740
Calendar year 1945	198,434.1	11,600	5.8	544	.748	10.14	393,600
January 1946.....	45,295	9,830	59	1,461	2.01	2.32	89,840
February.....	5,709	742	63	204	.281	.29	11,320
March.....	55,452	4,010	95	1,789	2.46	2.84	110,000
April.....	10,504	1,370	66	350	.481	.54	20,830
May.....	6,363	640	59	205	.282	.33	12,620
June.....	76,222.5	19,800	12.0	2,541	3.50	3.90	151,200
July.....	29,117.5	13,100	20.5	939	1.29	1.49	57,750
August.....	20,944	3,310	28	676	.930	1.07	41,540
September.....	10,769	2,040	36	359	.494	.55	21,360
Water year 1945-46	270,462.9	19,800	10.3	741	1.02	13.84	535,500

Chariton River near Centerville, Iowa—Continued

Monthly Discharge for Calendar and Water Years 1947 to 1950

Month	Second-foot-days	Discharge in second-feet			Runoff		
		Maximum	Minimum	Mean	Per square mile	Inches	Acre-feet
October 1946.....	12,851	2,750	37	415	0.571	0.66	25,490
November.....	6,318	476	97	211	.290	.32	12,530
December.....	4,040	566	60	130	.179	.21	8,010
Calendar year 1946	283,585.0	19,800	12.0	777	1.07	14.52	562,500
January 1947.....	6,718	859	37	217	.298	.34	13,320
February.....	4,363	540	36	156	.215	.22	8,650
March.....	24,224	2,490	42	781	1.07	1.24	48,050
April.....	72,859	9,310	276	2,429	3.34	3.73	144,500
May.....	17,567	2,770	97	567	.780	.90	34,840
June.....	139,960	17,400	1,360	4,665	6.42	7.16	277,600
July.....	5,257	1,170	16	170	.234	.27	10,430
August.....	193.6	14	3.5	6.25	.0086	.01	384
September.....	172.6	13	2.2	5.75	.0079	.009	342
Water year 1946-47	294,523.2	17,400	2.2	807	1.11	15.07	584,100
October 1947.....	114.5	8.6	1.4	3.69	.0051	.006	227
November.....	249.3	12	4.9	8.31	.011	.01	494
December.....	2,319.8	316	6.8	74.8	.103	.12	4,600
Calendar year 1947	273,997.8	17,400	1.4	751	1.03	14.02	543,400
January 1948.....	458	28	6	14.8	.020	.02	908
February.....	19,179	3,430	5	661	.909	.98	38,040
March.....	41,174	3,600	88	1,330	1.83	2.11	81,670
April.....	3,702	408	47	123	.169	.19	7,340
May.....	5,350	810	13	173	.238	.27	10,610
June.....	570.8	149	6.6	19.0	.026	.03	1,130
July.....	776.4	90	2.2	25.0	.034	.04	1,540
August.....	433.5	97	2.2	14.0	.019	.02	850
September.....	187.2	33	1.9	6.24	.0086	.01	371
Water year 1947-48	74,514.5	3,600	1.4	204	.281	3.81	147,800
October 1948.....	75.3	7.5	1.5	2.43	.0033	.004	149
November.....	280.4	67	1.8	9.35	.013	.01	556
December.....	129.2	13	1.9	4.17	.0057	.007	256
Calendar year 1948	72,315.8	3,600	1.5	198	.272	3.69	143,400
January 1949.....	2,062.5	373	5.5	66.5	.091	.11	4,090
February.....	16,435	3,000	7.5	587	.807	.84	32,600
March.....	27,732	2,520	80	895	1.23	1.42	55,010
April.....	8,487	1,940	57	283	.389	.43	16,830
May.....	2,362	377	24	76.2	.105	.12	4,680
June.....	27,145	4,490	20	905	.124	1.39	53,840
July.....	16,685	2,700	39	538	.740	.85	33,090
August.....	11,772	2,260	13	380	.523	.60	23,350
September.....	2,409	1,030	11	80.3	.110	.12	4,780
Water year 1948-49	115,577.4	4,490	1.5	317	.436	5.90	229,200
October 1949.....	1,112.5	322	2.5	35.9	.049	.06	2,210
November.....	586	87	11	19.5	.027	.03	1,160
December.....	883	126	11	28.5	.039	.05	1,750
Calendar year 1949	117,674.0	4,490	2.5	322	.443	6.02	233,400
January 1950.....	6,525	1,220	34	210	.289	.33	12,940
February.....	21,953	2,000	24	784	1.08	1.12	43,540
March.....	15,661	1,800	65	505	.695	.80	31,060
April.....	7,393	693	67	246	.338	.38	14,660
May.....	15,252	1,660	85	492	.677	.78	30,250
June.....	56,748	9,960	57	1,892	2.60	2.90	112,600
July.....	4,388	1,280	17	142	.195	.22	8,700
August.....	2,074.5	428	6.5	66.9	.092	.11	4,110
September.....	135.3	8.0	2.0	4.51	.0062	.007	268
Water year 1949-50	132,711.3	9,960	2.0	364	.501	6.79	263,200

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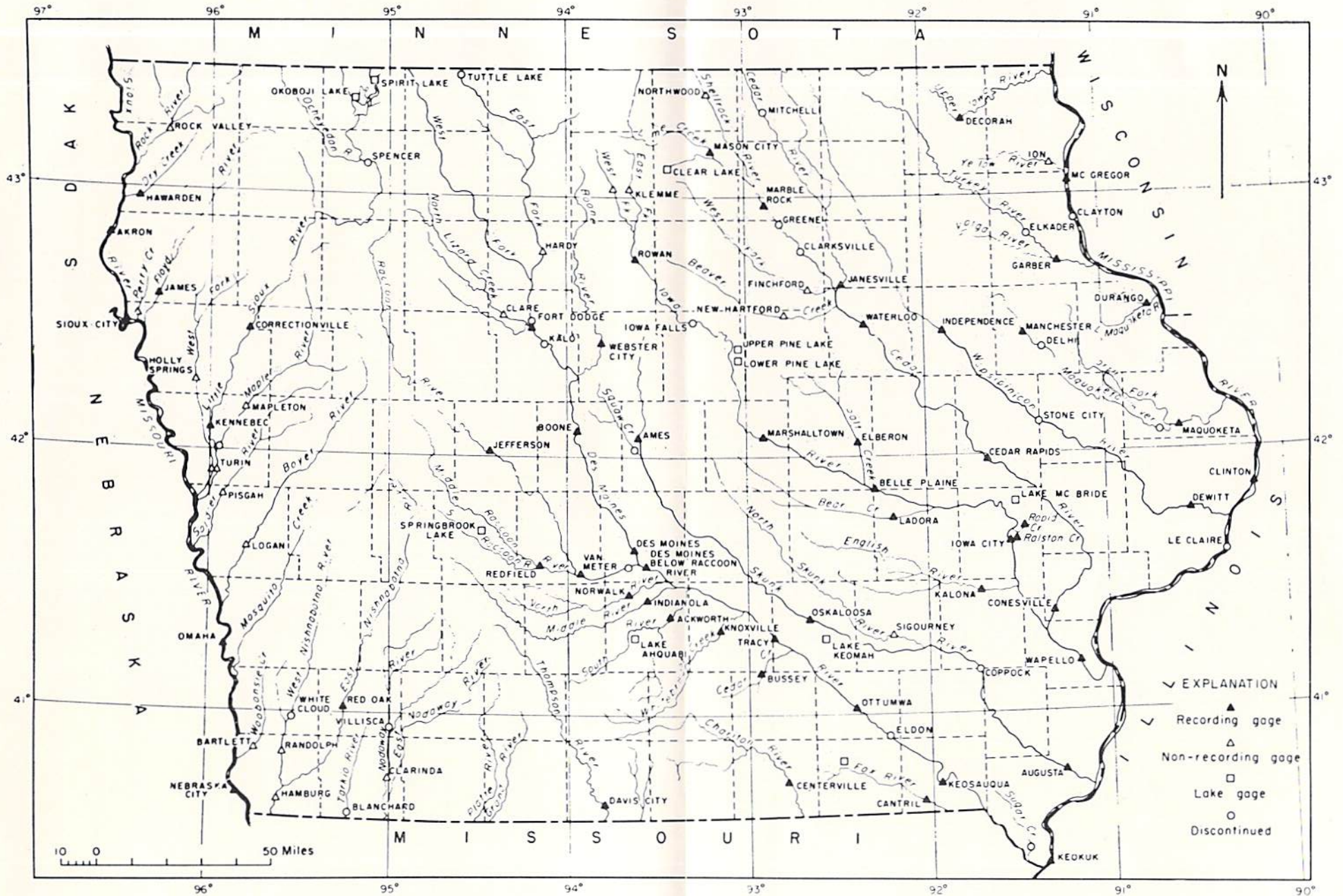


Plate 5—Map of Iowa showing location of stream-gaging stations and lake gages operated by the United States Geological Survey in cooperation with other agencies, October 1950.