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

WATER-SUPPLY BULLETIN NO. 8

SURFACE WATER RESOURCES OF IOWA
OCTOBER 1, 1955, TO SEPTEMBER 30, 1960

by
RICHARD E. MYERS, HYDRAULIC ENGINEER

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

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

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FOREWORD

Presented in the following pages is a report on the streamflow records of Iowa for the period 1955-60. This continues the series of basic data reports on the water resources of the State. Such information is necessary for the proper design of bridge and culvert openings, the establishment of highway and railway grade elevations, as well as the maintenance and operation of all surface water facilities. Moreover, it is essential in the consideration and planning of structures for flood protection, navigation development, municipal supplies, pollution control, power and industrial plants, and conservation of water.

It is planned to continue the collection, printing, and distribution of the measurements of stage, flow, sediment and mineral content, and temperature of Iowa streams and lakes. This work on the systematic collection of streamflow records was begun in 1914, although some authenticated records extend back to 1873.

H. Garland Hershey,
State Geologist

Iowa City, Iowa
May 1, 1963

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Surface Water Resources of Iowa¹

for the Period

October 1, 1955, to September 30, 1960

Introduction

This volume is one of a series of water-supply bulletins. It presents records of stream discharges, lake stages, and reservoir contents collected in Iowa during the period October 1, 1955, to September 30, 1960, arranged by water years.

The State and Federal cooperative program for the systematic collection of streamflow records in Iowa began in 1914, although a few records were obtained for short periods from 1902 to 1906. Since the beginning of the cooperative program, records of stage or discharge have been obtained at about 150 points on Iowa streams and lakes for periods of various length. The longest continuous and most reliable record within the State, exclusive of the Mississippi and Missouri Rivers, is the record for the gaging station on the Cedar River at Cedar Rapids, which is continuous since October, 1902. The records for the Mississippi River at Clinton (combined with those for Le Claire) are continuous since 1873, and those at Keokuk since 1878, based on authentic data from other sources prior to 1933. Discharge measurements at low-flow partial-record stations and at miscellaneous sites, and annual maximum discharges at crest-stage stations are not included in this report but are published in annual reports of the U. S. Geological Survey.

During the period October 1, 1955, to September 30, 1960, about 120 discharge and lake-level stations were maintained on streams and lakes in Iowa by the Water Resources Division of the U. S. Geological Survey in cooperation with various municipalities and State and Federal Agencies.

Table 1, pages 2 to 6, shows the periods of operation and other pertinent data for all gaging stations maintained in Iowa, including those currently operated and those which have been discontinued. Stations with dates followed by a dash in the "Records Available" column were in operation on September 30, 1960. Although gaging stations have been maintained on all the principal rivers of the State for several years, a relatively large number, especially those on the smaller watersheds, have been in operation only a few years. Since 1933, the general State cooperative program has included records of lake levels as a part of the cooperation because of the authorized jurisdiction of the State Conservation Commission over artificial lakes, meandered streams, and natural lakes of Iowa. Therefore, the records of water stages in lakes have been included in this report so that the data may be readily accessible to all interests.

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

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

Stream (or Lake) Station	Place	Drainage Area (sq. mi.)	Type of Gage	Altitude of zero above M.S.L. (feet)	Records Available	Maximum Gage Height (feet)	Discharge				Average (cfs)
							Maximum		Minimum Daily		
							Date	Flow (cfs)	Date	Flow (cfs)	
1	2	3	4	5	6	7	8	9	10	11	12
MISSISSIPPI RIVER BASIN											
Bear Creek	Ladora	189	Recorder	759.28	1945-	14.60	Mar. 30, 1960	10,500	Jan. 22 to Feb. 8, 1956	0	105
Bear Creek	Monmouth	61.3	Recorder	728.80	1957-	11.56	Jan. 12, 1960	2,440	Dec. 8-12, 1958	1.8	.....
Beaver Creek	New Hartford	347	Recorder	881.50	1945-	13.5	June 13, 1947	18,000	Jan. 20-24, 1956	2.3	158
Big Cedar Creek	Varina	80.0	Recorder	1,225.12	1959-	*13.13	Mar. 27, 1960	1,020	Aug. 23, 1960	2.0	.....
Big Creek	Mt. Pleasant	106	Recorder	630.53	1955-	15.30	Mar. 29, 1960	4,420	Many days most years	0	48.6
Blackhawk Creek	Hudson	303	Recorder	835.03	1952-	16.93	Mar. 31, 1960	9,000	Jan. 21-23, July 30, 1956	1.9	106
Boone River	Webster City	844	Recorder	989.57	1940-	18.55	June 22, 1954	20,300	Sept. 30, Oct. 1, 1956	1.6	329
Cedar Creek	Bussey	374	Recorder	682.15	1947-	*28.06	May 9, 1950	29,300	Sept. 6-20, 1955,		
									Oct. 11-12, 1956	0	183
Cedar River	Cedar Rapids	6,510	Recorder	700.33	1902-	20.0	Mar. 18, 1929	64,000	Dec. 10, 1949	212	3,021
Cedar River	Conesville	7,785	Recorder	581.95	1939-	*15.60	June 18, 1947	60,000	Nov. 28, 1955	250	3,837
Cedar River	Janesville	1,661	Recorder	868.46	1904-6, 1914-27, 1932-42, 1945-	16.0	Apr. 1, 1933	33,300	Oct. 21, 1922	28	692
Cedar River	Mitchell	826	Staff	1,000	1933-42	89.7	Apr. 4, 1933	13,000	Many days during 1933-35	5	288
Cedar River	Waterloo	5,146	Recorder	824.09	1940-	18.83	Apr. 9, 1951	56,400	Jan. 28, 1959	152	2,425
Clear Creek	Coralville	98.1	Recorder	648.43	1952-	11.79	Jan. 13, 1960	3,060	July 1, 1956	1	37.9
Clear Lake	Clear Lake	22.6	Recorder	1,222.24	1933-	5.94	July 3, 1951				
Des Moines River	Boone	5,511	Recorder	871.52	1920-	25.35	June 22, 1954	57,400	Jan. 28, 1940	17	1,557
Des Moines River	Des Moines	6,245	Recorder	773.68	1902-03, 1905- 06, 1914-	30.16	June 24, 1954	60,200	Jan. 29, 30, 1940	24	1,979
Des Moines River below Raccoon River	Des Moines	9,879	Recorder	773.68	1940-	20.8	June 26, 1947	77,000	Oct. 12, 1956	55	3,755
Des Moines River	Fort Dodge (near)	3,753	Chain	960	1911-13	8.9	Mar. 29, 1912	12,200	Aug. 4, 1911	29	
Des Moines River	Fort Dodge (at)	4,190	Recorder	969.38	1905-6, 1913-27, 1946-	19.28	June 21, 1954	35,400	Nov. 3, 1955	14	1,272
Des Moines River	Keosauqua	14,038	Recorder	558.10	1903-6, 1910-	27.85	June 1, 1903	146,000	Jan. 30, 1940	40	5,134
Des Moines River	Ottumwa	13,374	Recorder	622.77	1917-	20.2	June 7, 1947	135,000	Jan. 27-29, 31, Feb. 2, 3, 5-7, 1940	30	4,595
Des Moines River	Tracy	12,479	Wire-weight	670.91	1920-	26.5	June 14, 1947	155,000	Jan. 29 to Feb. 1, 1940	40	4,137
E. Fk. Des Moines River	Burt	462	Recorder	1,109.92	1951-	12.67	June 21, 1954	3,870	Jan. 24 to Mar. 3, 1959	0	92.2
E. Fk. Des Moines River	Dakota City	1,308	Recorder	1,038.71	1940-	24.02	June 21, 1954	18,800	Sept. 23, 1948	5.0	447
E. Fk. Hardin Creek	Churdan	24.0	Recorder	1,050.90	1952-	8.92	May 5, 1960	413	At times each year	0	6.89
E. Branch Iowa River	Klemme	133	Recorder	1,179.02	1948-	11.2	June 19, 1954	5,960	Feb. 22-26, 1959	.2	39.7
English River	Kalona	573	Recorder	633.45	1939-	19.89	Mar. 31, 1960	18,500	Jan. 20-27, 1956	1.1	309
Fox River	Bloomfield	87.7	Recorder	755.57	1957-	24.02	May 6, 1960	8,600	Oct. 1-14, 18-21, 1957, June 30, 1958	0	.....

Fox River.....	Cantril.....	161	Recorder.....	657.98	1940-1951.....	18.94	June 18, 1946	16,500	Aug. 9-16, Aug. 31 to Sept. 3, 1941.....	0	97.7
Indian Creek.....	Mingo.....	276	Recorder.....	810.47	1958.....	15.07	May 7, 1960	5,860	Sept. 13-15, 1959.....	2.2	
Iowa River.....	Belle Plaine.....	2,455	Recorder.....	749.82	1939-1959.....	17.07	June 14, 1947	34,000	Jan. 6, 1940.....	19	1,156
Iowa River.....	Iowa City.....	3,271	Recorder.....	627.27	1903.....	19.6	June 8, 1918	42,500	Oct. 21, 22, 1916.....	29	1,500
Iowa River.....	Lone Tree.....	4,293	Recorder.....	588.16	1956.....	17.90	Apr. 1, 1960	28,100	Dec. 8, 1956.....	75	
Iowa River.....	Marengo.....	2,794	Recorder.....	725.06	1956.....	19.21	Mar. 31, 1960	30,800	Oct. 11, 12, 1956.....	54	
Iowa River.....	Marshalltown.....	1,564	Recorder.....	853.10	1902-3, 1914-27, 1932.....	17.74	June 4, 1918	42,000	Jan. 9-10, 1940.....	9	711
Iowa River.....	Rowan.....	429	Recorder.....	1,143.35	1940.....	14.88	June 21, 1954	8,460	Jan. 21-23, 1959.....	2.9	165
Iowa River.....	Wapello.....	12,499	Recorder.....	548.98	1914.....	*17.02	June 18, 1947	94,000	Nov. 28, 1955.....	300	6,055
Lake Ahquabi.....	Indianola.....	4.93	Recorder.....	862.77	1936.....	9.95	June 5, 1947				
Lake Keomah.....	Oskaloosa.....	1.22	Staff.....		1936.....	7.80	July 3, 1951				
Lake Macbride.....	Solon.....	27.0	Recorder.....	675.54	1936.....	38.50	Mar. 29, 1960				
Lake Wapello.....	Drakesville.....	7.75	Recorder.....		1936.....	12.70	June 12, 1941				
Little Cedar River.....	Ionia.....	306	Recorder.....	973.23	1954.....	9.19	June 25, 1960	2,790	Feb. 4-9, 1959.....	3.0	72.3
Little Maquoketa River.....	Durango.....	130	Recorder.....	612.03	1934.....	21.23	June 13, 1947	23,000	July 12, 13, 1936.....	5	77.8
Lizard Creek.....	Clare.....	257	Recorder.....	1,079.30	1940.....	16.0	June 23, 1947	10,000	Sept. 30, 1943, Aug. 27-29, 1956.....	0	90.3
Lower Pine Lake.....	Eldora.....	15.9	Staff.....		1936.....	7.59	June 2, 1942				
Maquoketa River.....	Delhi.....	347	Recorder.....	774.32	1933-40.....	89.2	Mar. 4, 1937	6,740	Apr. 16, Aug. 27, Sept. 10, 17, 1939.....	5	136
Maquoketa River.....	Manchester.....	305	Recorder.....	895.06	1933.....	21.36	June 13, 1947	20,000	June 8, 29, 1934.....	6	187
Maquoketa River.....	Maquoketa.....	938	Chain.....		1913-1914.....	14.4	Sept. 15, 1914	8,640	Aug. 10-15, 1914.....	170	
Maquoketa River.....	Maquoketa.....	1,553	Recorder.....	636.52	1913.....	24.70	June 27, 1944	48,000	Feb. 11-20, 1936.....	105	939
Middle Raccoon River.....	Panora.....	440	Recorder.....	991.20	1958.....	11.87	July 2, 1958	9,150	Nov. 14, 1959.....	12	
Middle River.....	Indianola.....	506	Recorder.....	773.34	1940.....	26.40	June 13, 1947	34,000	Nov. 30, 1955, July 14, Oct. 5, 8-12, 1956.....	1.0	248
Mississippi River.....	Clayton.....	79,200	Staff.....	602.60	1930-1936.....	15.36	Apr. 2, 3, 1936	137,000	Dec. 14, 1933.....	5,540	25,620
Mississippi River.....	Clinton (combined with LeClaire).....	85,600	Recorder.....	562.68	1873.....	14.50	June 25, 1880	250,000	Dec. 25-27, 1933.....	6,500	47,100
Mississippi River.....	Keokuk.....	119,000	Recorder.....	477.41	1878.....	19.6	May 18, 1888	314,000	Dec. 27, 1933.....	5,000	60,980
Mississippi River.....	McGregor.....	67,500	Recorder.....	605.30	1936.....	*20.89	Apr. 23, 1952	197,500	Dec. 9, 1936.....	6,200	32,200
North Raccoon River.....	Jefferson.....	1,619	Recorder.....	967.09	1940.....	22.3	June 23, 1947	29,100	Oct. 5, 1956.....	.6	625
North Raccoon River.....	Sac City.....	713	Recorder.....	1,157.65	1958.....	16.73	Mar. 30, 1960	9,020	Jan. 25 to Feb. 5, 1959.....	1.0	
North River.....	Norwalk.....	349	Recorder.....	788.45	1940.....	25.3	June 13, 1947	32,000	Several days each year 1954-58.....	0	170
North Skunk River.....	Sigourney.....	730	Recorder.....	651.53	1945.....	25.33	Mar. 31, 1960	27,500	Oct. 7 to Nov. 15, 1956.....	0.1	379
Paint Creek.....	Waterville.....	42.8	Recorder.....		1952.....	8.53	July 26, 1953	2,840	Several days in Aug. and Sept. 1958.....	1.1	13.7
Raccoon River.....	Van Meter.....	3,441	Recorder.....	841.16	1915.....	*21.77	June 13, 1947	41,200	Jan. 22-31, 1940.....	10	1,174
Ralston Creek.....	Iowa City.....	3.01	Recorder.....	662.53	1924.....	9.06	July 18, 1956	1,690	At times during most years.....	0	1.46
Rapid Creek.....	Iowa City.....	24.6	Recorder.....	673.72	1937.....	*13.05	May 20, 1944	3,890	At times during most years.....	0	12.5
Richland Creek.....	Haven.....	56.1	Recorder.....	798.69	1949.....	12.39	Mar. 30, 1960	3,650	Several days in 1949, 1953-54, 1955.....	.1	24.7
Salt Creek.....	Elberon.....	201	Recorder.....	781.58	1945.....	17.6	June 13, 1947	35,000	Jan. 16-29, 1954.....	2.4	110
Shell Rock River.....	Clarksville.....	1,626	Chain.....	916	1915-27, 1932-34.....	16.7	Mar. 31, 1933	23,800	Aug. 2, 1932.....	10	562
Shell Rock River.....	Marble Rock.....	1,318	Staff.....	961.17	1933-1953.....	9.35	Apr. 7, 1951	22,700	Jan. 20, 23, 30, 31, 1935.....	6	614
Shell Rock River.....	Northwood.....	300	Recorder.....	1,176.48	1945.....	*11.38	Apr. 10, 1951	2,430	Feb. 17-26, 1959.....	.3	112
Shell Rock River.....	Shell Rock.....	1,746	Recorder.....	885.34	1953.....	14.00	June 22, 1954	21,300	Feb. 4-9, 1959.....	39	476

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

Stream (or Lake) Station	Place	Drainage Area (sq. mi.)	Type of Gage	Altitude of zero above M.S.L. (feet)	Records Available	Maximum Gage Height (feet)	Discharge				
							Maximum		Minimum Daily		Average (cfs)
							Date	Flow (cfs)	Date	Flow (cfs)	
1	2	3	4	5	6	7	8	9	10	11	12
Skunk River.....	Ames.....	315	Recorder....	893.6	1920-27, 1932--	*13.90	June 10, 1954	8,630	At times in 1934, 1937, 1953-57.....	0	127
Skunk River below Squaw Creek.....	Ames.....	556	Recorder....	867.10	1952-.....	13.20	Mar. 30, 1960	9,260	Many days in 1953-57....	0	198
Skunk River.....	Augusta.....	4,303	Recorder....	521.69	1913, 1914-.....	25.00	Apr. 3, 1960	51,000	Aug. 27 to Sept. 1, 1934..	7	2,177
Skunk River.....	Coppock.....	2,916	Wire-weight..	583	1913-1944.....	22.27	May 24, 1944	41,500	Jan. 27, 28, 1940.....	8	1,350
Skunk River.....	Oskalooza.....	1,635	Recorder....	685.50	1945-.....	21.26	June 15, 1947	20,000	Oct. 11-13, 1956.....	1.8	755
South River.....	Ackworth.....	474	Wire-weight..	761.91	1940-.....	24.60	June 5, 1947	34,000	Sept. 19 to Oct. 13, 1956.	0	229
South Raccoon River.....	Redfield.....	988	Recorder....	896.43	1940-.....	29.04	July 2, 1958	35,000	July 27, 1940, Nov. 30, 1955.....	19	414
Springbrook Lake.....	Guthrie Center...	5.18	Staff.....	1,085.04	1936-.....	7.00	July 25, 1942 June 1, 1947 July 17, 1922.....				
Squaw Creek.....	Ames.....	204	Chain.....	885	1919-1927.....	10.7	July 17, 1922	4,130	Aug. 26 to Sept. 17, 1919, July 31 to Aug. 5, 1925.	0	89.8
Sugar Creek.....	Keokuk.....	105	Recorder....	510.20	1922-31, 1958--	13.85	Oct. 1, 1927	6,620	At times in most years...	0	73.9
Timber Creek.....	Marshalltown.....	118	Recorder....	849.44	1949-.....	15.77	June 18, 1950	4,940	July 24-26, Oct. 4-12, 1956.....	0	48.5
Turkey River.....	Elkader.....	891	Wire-weight..	701.61	1932-1942.....	29.1	May 31, 1941	19,300	Jan. 23, 26, 29, 31, 1940..	21	487
Turkey River.....	Garber.....	1,545	Recorder....	635.34	1913-16, 1919-27, 1929-30, 1932--	28.06	Feb. 23, 1922	32,300	Jan. 28, 29, 1940.....	49	851
Turkey River.....	Spillville.....	177	Recorder....	1,034.77	1956-.....	*11.48	Mar. 30, 1960	3,220	Feb. 1-3, 1959.....	4.4	
Upper Iowa River.....	Decorah (near)...	568	Recorder....	829.8	1913-14, 1919-27, 1933-51.....	15.19	May 29, 1941	28,500	Many days in 1933-34....	10	331
Upper Iowa River.....	Decorah (at).....	511	Recorder....	850.00	1951-.....	10.12	June 21, 1954	11,600	Feb. 2-7, 1959.....	22	231
Upper Pine Lake.....	Eldora.....	14.9	Staff.....	993.41	1936-.....	8.06	June 2, 1942				
Walnut Creek.....	Hartwick.....	70.9	Recorder....	786.59	1949-.....	15.67	Sept. 3, 1958	4,930	At times for most years...	0	33.6
Wapsipicon River.....	De Witt.....	2,330	Recorder....	599.73	1934-.....	12.07	June 27, 1944	26,000	Jan. 17-24, 1940.....	70	1,304
Wapsipicon River.....	Elma.....	95.2	Recorder....	1,131.46	1958-.....	13.44	June 24, 1960	2,980	Feb. 4-8, 1959.....	1.9	
Wapsipicon River.....	Independence.....	1,048	Recorder....	882.85	1933-.....	18.74	June 14, 1947	21,500	Many times during 1933-34.....	7	501
Wapsipicon River.....	Stone City.....	1,324	Chain.....	776.7	1903-1914.....	15.6	Apr. 1, 1912	11,500	Nov. 30, 1905.....	39	616
W. Br. Iowa River.....	Klemme.....	122	Wire-weight..	1,180.83	1948-1958.....	14.97	June 21, 1954	1,920	Part of day, Jan. 12, 1950	0	38.2
W. Fk. Cedar River.....	Finchford.....	846	Recorder....	867.06	1945-.....	17.28	June 27, 1951	31,900	Feb. 26, 27, 1959.....	5.9	349
W. Fk. Des Moines River.....	Estherville.....	1,372	Recorder....	1,247.55	1951-.....	15.53	June 8, 1953	10,800	Sept. 21, 22, 28, Oct. 19, 1958.....	0.2	206

Whitebreast Creek	Knoxville	380	Recorder	734.73	1945	19.6	June 6, 1947	14,000	June 27, 1956	0.2	182
Winnabago River	Mason City	526	Recorder	1,069.59	1932	15.7	Mar. 30, 1933	10,800	Dec. 29-31, 1933, Aug. 5, 1934	2.5	201
Yellow River	Ion	221	Wire-weight	664.65	1934-1951	15.2	May 29, 1941	21,200	Dec. 14, 30, 31, 1939	14	140

MISSOURI RIVER BASIN

Big Sioux River	Akron	9,030	Recorder	1,118.90	1928	21.56	Apr. 1, 1960	49,500	Feb. 26-28, 1936	7	827
Boyer River	Logan	871	Wire-weight	1,009.38	1918-1925, 1937-	23.32	June 16, 1957	23,600	July 16, 1938	1.5	299
Chariton River	Centerville	708	Recorder	825.68	1938-1959	24.20	June 20, 1946	21,700	Oct. 11, 1938, Sept. 30, Oct. 1-3, 1940	0.1	336
Chariton River	Rathbun	551	Wire-weight	843.27	1956	25.3	Mar. 31, 1960	21,800	Oct. 12-14, 17-24, 1957	0.1	
David's Creek	Hamlin	26.0	Recorder	1,266.54	1952	19.35	July 2, 1958	22,700	No flow for many days in 1952-56	0	9.36
Dry Creek	Hawarden	48.4	Recorder	1,170.42	1948	17.57	June 7, 1953	10,900	Many days in most years	0	7.88
E. Fk. One Hundred and Two River	Bedford	92.1	Recorder		1959	15.95	Jan. 12, 1960	5,400	Aug. 4, 1960	0.2	
E. Nishnabotna River	Red Oak	894	Recorder	1,010.45	1918-1925, 1936-	23.23	June 13, 1947	36,200	Aug. 18, 1936	6	348
Floyd River	Alton	265	Recorder	1,269.55	1955	17.27	Mar. 28, 1960	4,150	At times in 1956, 1958-1959	0	20.0
Floyd River	James	882	Recorder	1,102.59	1934	25.3	June 8, 1953	71,500	Aug. 20, 27, 1936, Feb. 10-23, 1959	1	181
Honey Creek	Russell	13.2	Recorder	901.73	1952	11.26	May 21, 1959	4,100	No flow at times each year	0	6.09
Indian Creek	Council Bluffs	7.99	Recorder	1,038.86	1954	14.16	July 29, 1958	2,200	No flow at times most years	0	1.32
Little Sioux River	Correctionville	2,500	Recorder	1,096.49	1918-1925, 1928-1932, 1936	23.36	June 21, 1954	20,900	July 17, 25, 1936	2.6	652
Little Sioux River	Gillett Grove	1,334	Recorder	1,266.84	1958	13.78	Mar. 30, 1960	5,140	Feb. 3-27, 1959	1.0	
Little Sioux River	Kennebec	2,738	Recorder	1,027.02	1939	*26.63	Mar. 30, 1960	16,400	Oct. 11, 1956	11	761
Little Sioux River	Spencer	990	Wire-weight	1,294.56	1936-1942	14.97	Sept. 16, 1938	5,000	Jan. 23, 1937	4.7	200
Little Sioux River	Turin	3,526	Recorder	1,019.85	1939	25.08	Mar. 30, 1960	23,900	At times in 1939-40, 1948-52, 1956-57	0	276
Maple River	Mapleton	669	Recorder	1,085.86	1941	*22.1	June 20, 1954	15,600	Sept. 21, 22, 1945	0	221
Maple River	Turin	734	Wire-weight	1,028.45	1939-1941	19.42	June 4, 1940	2,920	Jan. 18-23, 1940	4	
Missouri River	Nebraska City	414,400	Recorder	903.94	1929	*27.66	Apr. 19, 1952	414,000	Dec. 31, 1946	1,600	33,880
Missouri River	Omaha	322,800	Recorder	958.24	1928	*30.20	Apr. 18, 1952	396,000	Jan. 6, 1937	2,200	28,280
Missouri River	Sioux City	314,600	Recorder	1,076.96	1897	*24.28	Apr. 14, 1952	441,000	Dec. 29, 1941	2,500	32,660
Monona-Harrison ditch	Turin	900	Recorder	1,020.00	1939	*25.6	June 20, 1954	21,000	Sept. 8, 1941	3	975
Mule Creek	Malvern	10.6	Recorder	974.20	1954	15.84	Aug. 21, 1954	2,070	Jan. 20-25, 1956	0	3.70
Nishnabotna River	Hamburg	2,806	Recorder	894.17	1922-23, 1928	26.03	June 24, 1947	55,500	Aug. 30, 1934	4.5	930
Nodaway River	Clarinda	762	Recorder	960.36	1918-1925, 1936-	25.3	June 13, 1947	31,100	Sept. 5, 9, 12, 14, 1918, Dec. 9, 27-31, 1923	1	291
Odeholt Creek	Arthur	39.3	Recorder	1,258.57	1957	*13.00	May 31, 1959	5,160	Jan. 2 to Feb. 27, 1959	0.2	
Okoboji Lake	Milford	125	Recorder	1,391.76	1933	5.42	June 15, 1945				
Perry Creek	Sioux City	65.1	Recorder	1,117.04	1945	21.80	Sept. 10, 1949	7,780	At times in 1946, 1958-60	0	17.3
Rock River	Rock Rapids	788	Recorder	1,337.81	1959	8.86	Mar. 30, 1960	15,500	Aug. 20, 21, 1959	6.0	
Rock River	Rock Valley	1,600	Recorder	1,216.00	1948	*15.99	June 21, 1954	19,200	Feb. 20-23, Feb. 27 to Mar. 8, 1959	0	291
Soldier River	Pisgah	407	Recorder	1,036.53	1940	28.17	June 12, 1950	22,500	Jan. 2-10, 1945	2	122
Spirit Lake	Orleans	75.6	Recorder	1,387.25	1933	15.74	June 19, 1944				
Spring Valley Creek	Tabor	7.65	Recorder	975	1955	15.48	July 30, 1958	4,150	At times 1955-58	0	2.61

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

Stream (or Lake) Station	Place	Drainage Area (sq. mi.)	Type of Gage	Altitude of zero above M.S.L. (feet)	Records Available	Maximum Gage Height (feet)	Discharge				Average (cfs)
							Maximum		Minimum Daily		
							Date	Flow (cfs)	Date	Flow (cfs)	
1	2	3	4	5	6	7	8	9	10	11	12
Tarkio River.....	Blanchard.....	200	Recorder.....	940.32	1934-1940.....	23.12	Mar. 12, 1939	9,980	Nov. 22, Dec. 10, 11, 1937, Feb. 11, 12, 1939.	0	43.0
Tarkio River.....	Stanton.....	49.3	Recorder.....	.....	1957-.....	16.61	Sept. 18, 1960	4,650	Oct. 1-5, 1958.....	0	.....
Thompson River.....	Davis City.....	701	Recorder.....	875.55	1918-1925, 1941-.....	20.14	June 14, 1947	21,300	June 25, 1956.....	0.1	316
Waubensie Creek.....	Bartlett.....	30.4	Recorder.....	936.96	1946-.....	37.8	May 8, 1950	14,500	At times in 1954-59.....	0	11.7
W. Br. Floyd River.....	Struble.....	181	Recorder.....	.....	1955-.....	14.72	Mar. 29, 1960	3,880	Many days in 1956-59.....	0	13.3
Weldon River.....	Leon.....	104	Recorder.....	906.21	1958-.....	25.27	Aug. 6, 1959	48,600	July 25, 26, Sept. 16, 1959, Aug. 14, 1960.....	0.7	.....
West Fork Ditch.....	Holly Springs.....	399	Recorder.....	1,052.82	1939-.....	22.43	Mar. 30, 1960	10,000	July 30, Aug. 17, 1956.....	0.2	94.9
W. Nishnabotna River.....	Hancock.....	609	Recorder.....	1,085.94	1959-.....	13.64	Mar. 29, 1960	9,320	Jan. 6, 1960.....	23	.....
W. Nishnabotna River.....	Randolph.....	1,326	Recorder.....	932.99	1948-.....	*24.8	May 9, 1950	29,600	Dec. 17-21, 1955.....	10	490
W. Nishnabotna River.....	White Cloud.....	967	Chain.....	.....	1918-1924.....	19.4	July 30, 1922	10,600	Sept. 10, 14-18, 22, 1918.....	9	376
W. Nodaway River.....	Villisca.....	342	Chain.....	.....	1918-1925.....	12.4	June 9, 1924	6,200	1918, 1921, 1925.....	1	111

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

Plate 1 shows the location of all gaging stations and lake-level gages that have been operated in Iowa by the Water Resources Division of the U. S. Geological Survey in cooperation with other agencies. The State of Iowa is topographically divided into two major drainage basins; the Upper Mississippi River and the Missouri River basins. The Upper Mississippi River basin comprises about 70 percent of the State's total area, and includes the Upper Iowa, Turkey, Maquoketa, Wapsipinicon, Iowa-Cedar, Skunk, Des Moines Rivers, and other small-river systems. The Missouri River basin includes the western 30 percent of the State, and the tributary streams have a general direction of course from northeast to southwest, or nearly at right angles to the Mississippi River tributaries.

For the purpose of publication of the annual series of U. S. Geological Survey water-supply papers on surface-water supply of the United States, the country has been divided into areas comprising 14 major drainage basins. These areas are designated as "Parts" and assigned numbers 1 to 14, and all the surface-water records for each major basin or part are published in one water-supply paper for each year. Beginning with the reports for 1951, four of the larger basins, Parts 1, 2, 3, and 6, were each subdivided into Parts "A" and "B." Records of streamflow, lake stages, and reservoir contents at the continuous gaging stations, discharge measurements of low-flow and annual maximums at crest-stage partial-record sites and miscellaneous measurements are published annually by water years in the U. S. Geological Survey water-supply papers in the following parts:

Part 5: Hudson Bay and Upper Mississippi River basins.

Part 6: Missouri River basin, in two volumes:

A, Missouri River basin above Sioux City, Iowa

B, Missouri River basin below Sioux City, Iowa

The purpose of this publication is to make available, in one volume, the streamflow records in Iowa for the period covered by this report. Therefore, this bulletin has been prepared as one of a series of Water-Supply Bulletins of the Iowa Geological Survey, and presents records of streamflow and lake stages by water years for the period October 1, 1955, to September 30, 1960.

Cooperation and Acknowledgments

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

Several State, Federal, and municipal agencies as well as private organizations have cooperated in the execution of work whereby the records of streamflow have been obtained. The various agencies and organizations have cooperated either by supplying data or by assisting in the collection

of data through cooperative agreements with the U. S. Geological Survey. Acknowledgments for cooperation in effect at the time of this report are outlined in the following paragraphs.

During the period (1956-60) covered by this report, the program in Iowa was accomplished under cooperative agreements between the U. S. Geological Survey and the following State organizations: Iowa Geological Survey, H. G. Hershey, Director and State Geologist; State Conservation Commission, B. F. Stiles, Director, succeeded by Glen Powers; State University of Iowa, Institute of Hydraulic Research, F. M. Dawson, Dean of College of Engineering, succeeded by Arthur W. Melloh, and Hunter Rouse, Director; State Highway Commission, J. G. Butter, Chief Engineer, succeeded by L. M. Clausen and Mark Morris, Director of Research, succeeded by Stephen E. Roberts; Iowa Natural Resources Council, R. L. Smith, R. G. Bullard, acting Director succeeded by O. R. McMurry, Director; and Iowa State University of Science and Technology, Agriculture Experiment Station, G. M. Browning, Associate Director.

The following cities and other organizations also assisted by furnishing services of gage observers, or by providing financial cooperation through the Iowa Institute of Hydraulic Research, or in various other ways: the cities of Ames, Boone, Cedar Rapids, Council Bluffs, Des Moines, Estherville, Fort Dodge, Iowa City, Marshalltown, Rock Rapids, Sioux City, and Waterloo; Des Moines Waterworks, Ottumwa Waterworks, and Waterloo Sewage Disposal Plant; Jacob E. Decker & Sons; Union Electric Company; and the State University of Iowa Physical Plant. Much valuable assistance has thus been afforded the stream-gaging program, the cooperation being of mutual benefit to the participating parties as well as to many other governmental agencies and private companies or individuals.

At the time of this report, the Corps of Engineers, Department of the Army, with district offices at Kansas City, Mo., Omaha, Nebr., Rock Island, Ill., and St. Paul, Minn., furnished financial assistance for the operation of 79 gaging stations in Iowa. In addition to financial assistance, the Rock Island District furnished services of gage observers and results of discharge measurements at many gaging stations.

The Soil Conservation Service of the U. S. Department of Agriculture furnished financial assistance for the operation and maintenance of the gaging station on Mule Creek near Malvern, Iowa.

Acknowledgement is made to the Weather Bureau of the U. S. Department of Commerce for the use of certain climatological data, for rainfall reports of the Hydroclimatic Network, and for assistance with observers' services at a few gaging stations.

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

The stream-gaging work in Iowa was done by the personnel of the Water Resources Division of the U. S. Geological Survey, under the direction of V. R. Bennion, District Engineer, Branch of Surface Water. Field data were analyzed and computations were made by the technical staff of the U. S. Geological Survey district office in Iowa City and the sub-offices in Council Bluffs and Fort Dodge.

Other State and Federal Publications

The records of the U. S. Geological Survey and cooperating agencies form the original source of practically all the existing quantitative streamflow information in Iowa. The annual water-supply papers of the U. S. Geological Survey that include streamflow records for streams in Iowa (Parts 5, 6A, and 6B) are shown in table 2. This table gives by water years (calendar years prior to 1913) the serial numbers of the water-supply papers published from 1899 to 1960 that contain streamflow records. Table 2 will be convenient as a source of 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.

Table 2.—Numbers of U. S. Geological Survey water-supply papers containing results of streamflow records in Iowa, 1899-1960.

Year	Part 5	Part 6	Year	Part 5	Part 6	Year	Part 5	Part 6
1899	36	37	1921	525	526	1941	925	926
1900	49	49	1922	545	546	1942	955	956
1901	66, 75	66, 81	1923	565	566	1943	975	976
1902	85		1924	585	586	1944	1005	1006
1903	99	99	1925	605	606	1945	1035	1036
1904	130	130	1926	625	626	1946	1055	1056
1905	171	172	1927	645	646	1947	1085	1086
1906	207	208	1928	665	666	1948	1115	1116
1907-8	245	246	1929	685	686	1949	1145	1146
1909	265	266	1930	700	701	1950	1175	1176
1910	285	288	1931	715	716	1951	1208	1209, 1210
1911	305	306	1932	730	731	1952	1238	1239, 1240
1912	325	326	1933	745	746	1953	1278	1279, 1280
1913	355	356	1934	760	761	1954	1338	1339, 1340
1914	385	386	1935	785	786	1955	1388	1389, 1390
1915	405	406	1936	805	806	1956	1438	1439, 1440
1916	435	436	1937	825	826	1957	1508	1509, 1510
1917	455	456	1938	855	856	1958	1558	1559, 1560
1918	475	476	1939	875	876	1959	1628	1629, 1630
1919-20	505	506	1940	895	896	1960	1708	1709, 1710

The data for any particular station will, in general, be found in U. S. Geological Survey water-supply papers covering the years during which the station was maintained. The reports contain station records for several States in the Upper Mississippi and Missouri River basins for that year. In addition to the regular continuous gaging station records, discharge measurements are made and annual maximum discharges computed at many sites which are given at the end of the annual water-supply paper. These miscellaneous records include discharge measurements at low-flow partial-record stations, annual maximum discharges at crest-stage partial-record stations, and discharge measurements at miscellaneous sites.

In addition to the water-supply papers listed in Table 2, compilation reports have been published by the U. S. Geological Survey. Water-Supply Papers 1308, 1309, and 1310 for Part 5, 6A, and 6B respectively, contain the compilation of surface-water records at all gaging stations for the entire period of record through September 30, 1950. These reports contain summary tables of monthly and yearly discharge and runoff, and revisions of previously published records found to be in error as the result of a comprehensive review made for the compilation reports. A second series, Water-Supply Papers 1728, 1729, and 1730 (not yet published) will contain the compilation of all records for the period October 1, 1950, to September 30, 1960, for Parts 5, 6A, and 6B respectively.

At nine gaging stations in Iowa, water samples are collected from the streams for the purpose of making analyses of suspended-sediment content and measuring water temperatures. From these data, daily records of suspended-sediment loads are published in the annual U. S. Geological Survey water-supply papers entitled "Quality of Surface Waters of the United States." In this report under "Remarks" a reference is made to quality-of-water records that are published.

Streamflow records also have been published in a few reports by State agencies in Iowa. In 1935, the Iowa State Planning Board published a report, "Stream Flow Records of Iowa, 1873-1932." That report contains records previously published by the U. S. Geological Survey as well as some not previously published in the annual water-supply papers. Daily streamflow records at 37 gaging stations in Iowa prior to December 31, 1932, together with a gazetteer of Iowa Streams, were presented in that report. As a result of revisions to these records in the U. S. Geological Survey's compilation water-supply papers mentioned above, that report is obsolete.

The Iowa Geological Survey has published Water-Supply Bulletins Nos. 1-6 of this series. Water-Supply Bulletin No. 1, "Summaries of Yearly and Flood Flow Relating to Iowa Streams, 1873-1940," contains a description and history of each station with 5 or more years of record, a table of maximum and minimum daily discharge, yearly mean discharge, and runoff in inches or acre-feet for both the water and calendar years. Also, the results of approximately 300 miscellaneous discharge measurements, some other previously unpublished data, and maximum discharges with other pertinent flood flow data were included. The bulletin is out of print, and much of the data has been changed or revised.

Water-Supply Bulletins Nos. 2, 3, and 6 for the periods of water years 1941-42, 1943-50, and 1951-55 respectively, contain a compilation of streamflow and lake-stage records similar to the data in this report. Some of the records in Bulletins 2, 3, and 6 have been revised as a result of the compilation reports for 1950 and 1960 in the U. S. Geological Survey's water-supply papers as previously explained.

Water-Supply Bulletin No. 4 contains data on the geology and ground-water resources of Webster County. Bulletin No. 5 presents data on quality-of-water investigations in Iowa from 1886 to 1954, and contains records of chemical quality, suspended-sediment, and water temperatures.

The Iowa Natural Resources Council has published, in the period 1953-58, a series of 8 bulletins covering water resources and water problems by areas or river basins in Iowa. Bulletin No. 9, published during 1958 in cooperation with the U. S. Geological Survey, presents the results of a study of the occurrence of low flows of Iowa streams.

The Iowa Highway Research Board has published a series of bulletins, three of which contained information relative to Iowa streams. Bulletin No. 1, published in 1953 in cooperation with the U. S. Geological Survey, presents a study of the magnitude and frequency of floods in Iowa. Bulletin No. 7, prepared in cooperation with the U. S. Geological Survey, is a compilation by counties of the drainage areas of Iowa streams in excess of 5 square miles, with numerous determinations at intermediate points on

the larger streams. Bulletin No. 16, published in 1960, is an analysis of the hydrologic record of Ralston Creek at Iowa City. The streamflow and hydrologic record for Ralston Creek at Iowa City, continuous since 1924, is unique because it is the longest and most complete record of runoff from a small watershed available in the State or the United States.

Detailed information on the stage and discharge of many streams during major floods has been included in special reports published by the U. S. Geological Survey. The following list gives the water-supply paper numbers and titles of flood reports which contain flood records on Iowa streams.

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

In addition to these special reports on major floods, flood covering smaller areas are published in annual water-supply papers entitled "Summary of Flood Discharges in the United States."

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

Some of the State and Federal publications to which reference has been made are out of print. Water-Supply Bulletin No. 1 is out of print, but Nos. 2-6 may be obtained from the Iowa Geological Survey, Iowa City. U. S. Geological Survey water-supply papers not out of print may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.; price lists will be furnished on application. Complete sets of these publications may be consulted at the office of the U. S. Geological Survey in Iowa City, and at public libraries in the principal cities. Lists of U. S. Geological Survey publications, both for the State of Iowa and the United States, may be obtained upon application to the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

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

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.

Downstream Order of Listing Stations

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

Definition of Terms and Abbreviations

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

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

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

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

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

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

Contents is the volume of water in a reservoir in acre-feet. Unless otherwise indicated, volume is computed on basis of a level pool and does not include bank storage.

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

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

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

Explanation of Field and Office Work

This report contains records for the period October 1, 1955, to September 30, 1960, arrayed by water years. Much of the precipitation that occurs in Iowa during the winter 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 runs off in the streams during the spring months. At the end of September, the only stored water available for surface runoff is possibly a small quantity in the ground; therefore, the runoff for the water year ending September 30 may usually be considered to have been derived from the precipitation within the preceding 12 months. For the convenience of users of the records, however, annual summaries of gaging-station data are 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 daily 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 a water-stage recorder that gives a continuous record of the water-level fluctuations in the stream channel or from direct observations on a nonrecording gage by a local observer. Nearly all regular streamflow and lake stations in Iowa are now equipped with stage recorders which have greatly improved the quality of the records. A diagrammatic sketch of an installation of a typical structure for housing water-stage recording equipment at gaging stations in Iowa is shown in figure 1. A total of some 120 water-stage recorder installations were being operated by the Iowa district of the U. S. Geological Survey on September 30, 1960. Typical gaging station structures and types of discharge measuring equipment are shown on figures 2 to 9.

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

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

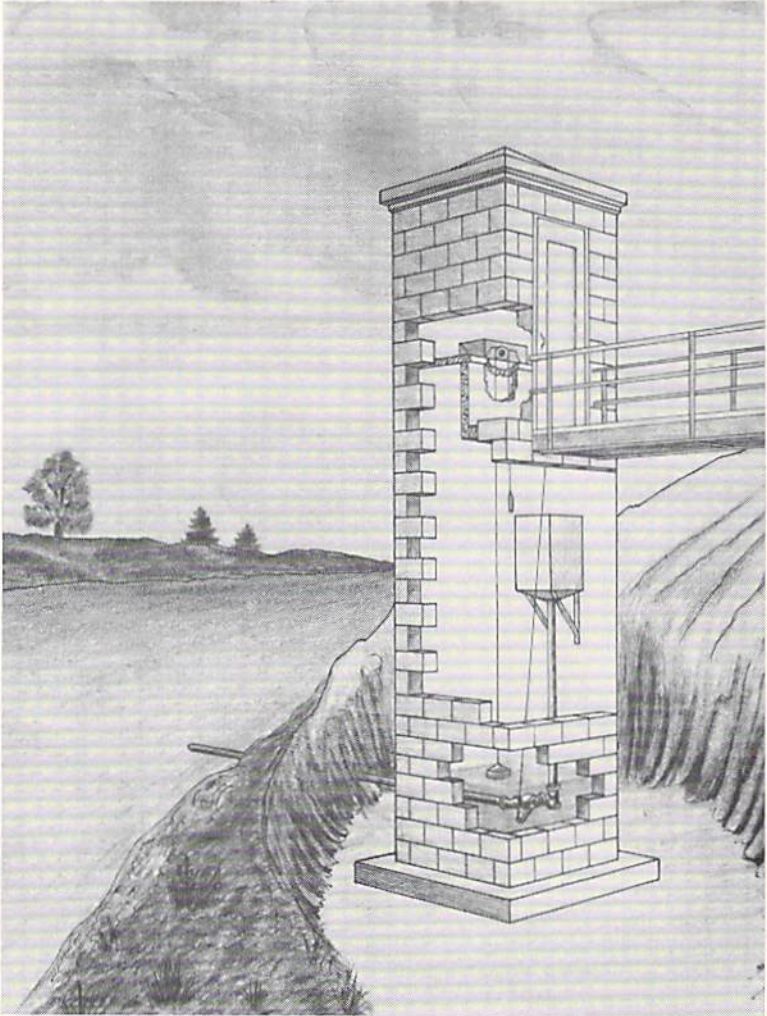


Figure 1. TYPICAL DESIGN OF RIVER-MEASUREMENT STATION SHOWING CON-
CRETE BLOCK HOUSE AND WELL FOR WATER STAGE RECORDER.

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, rating tables are prepared that give the discharge at any stage with proper consideration for slope, if significant. The proper application of daily mean gage heights to these rating tables gives the mean daily discharges from which the monthly and yearly figures are computed. Graphs of the daily discharges thus obtained are plotted on semilogarithmic paper for comparison with the flow of comparable streams, so that any apparent inconsistencies may be studied.

It should be mentioned that a permanent stage-discharge relation as revealed by the station-rating curve is by no means the rule for most gaging stations in Iowa. During the 5-year period ending September 30, 1960, more than 8,000 current-meter discharge measurements were made to determine and verify the stage-discharge relations. 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, as caused by the operation of a hydroelectric powerplant above the station, the discharge obtained from the application of the rating table to the daily mean gage height may not be the true mean discharge for the day. The daily mean discharge is 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 the station.

During the winter months, the formation of ice causes backwater at most gaging stations in Iowa, so that it becomes impossible to compute the daily discharge from the open-water stage-discharge relation. Discharge for periods of ice effect is computed on the basis of winter discharge measurements and gage-height record, consideration being given to information on temperature and precipitation, notes by gage observers and engineers, and comparable records of discharge for stations on the same or nearby basins. During periods of doubtful or no gage-height record; discharge is estimated from precipitation records, comparison with records at another gaging station on the same or nearby stream, and other pertinent data. The dates of the periods of backwater from ice and no gage-height record are given in the notes to the tables of daily discharge following the yearly discharge table.

At gaging stations on the Mississippi River the stage-discharge relation is affected by backwater from the locks and dams in the navigation development. The existence of those variable conditions necessitates the consideration of the fall in a reach of the river as a factor in the determination of discharge. The fall is obtained by means of an auxiliary gage located



Figure 2. CONCRETE GAGE HOUSE ON CEDAR RIVER AT CEDAR RAPIDS, IOWA, DURING LOW FLOW.



Figure 3. CONCRETE GAGE HOUSE ON CEDAR RIVER AT CEDAR RAPIDS, IOWA, AT PEAK OF FLOOD ON MARCH 31, 1961.

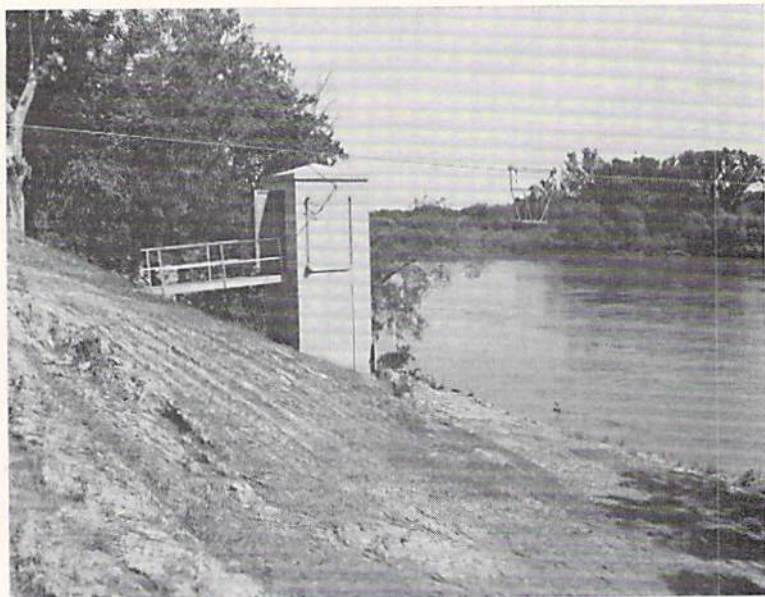


Figure 4. CONCRETE BLOCK GAGE HOUSE AND CABLEWAY MEASURING EQUIPMENT ON THE DES MOINES RIVER NEAR TRACY, IOWA.

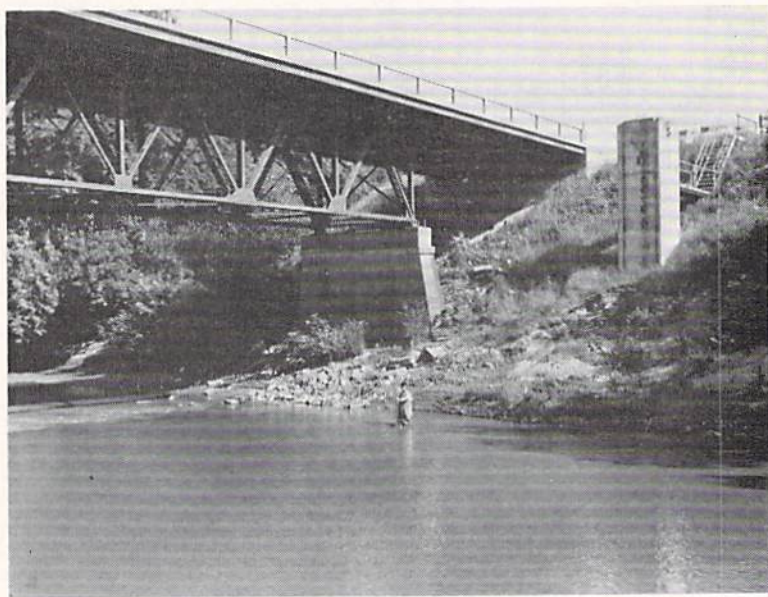


Figure 5. CONCRETE GAGE HOUSE, NATURAL LOW WATER CONTROL AND MEASUREMENT OF FLOW BY WADING ON ENGLISH RIVER AT KALONA, IOWA.



Figure 6. CONCRETE GAGE HOUSE ON CEDAR RIVER AT WATERLOO, IOWA, AT PEAK OF FLOOD ON MARCH 29, 1961.



Figure 7. CONCRETE GAGE HOUSE ON CEDAR RIVER AT WATERLOO, IOWA, DURING LOW FLOW.

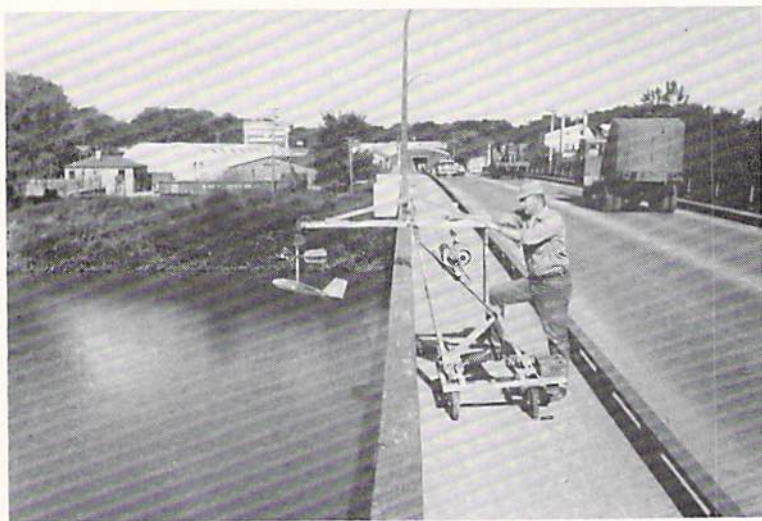


Figure 8. HAND OPERATED EQUIPMENT FOR MEASURING RIVER FLOW FROM BRIDGES.

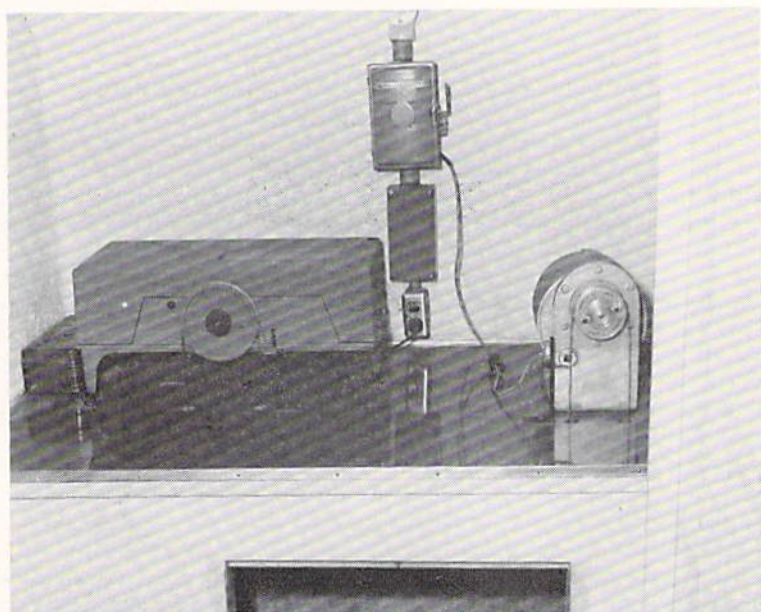


Figure 9. ELECTRIC WATER-STAGE RECORDING GAGE AND RADIO TELEMETERING EQUIPMENT ON ENGLISH RIVER AT KALONA, IOWA.

several miles from the base gage. Occasionally, the stage-discharge relation at certain gaging stations is affected by backwater from another stream, or other unusual conditions may be present which require special methods of computation; for example, periods of indefinite stage-discharge relation.

Accuracy of Data and Computed Results

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

In this report, the degree of accuracy of the daily discharge records is not given for each individual station. In general, the accuracy of the records is good (within 10 percent), except for periods of ice effect and no gage-height record, which are poor (more than 15 percent). The records of monthly and yearly mean discharge are, in general, more accurate than the daily records.

Gaging Station Records

The data presented in this report cover the five water years beginning October 1, 1955, and ending September 30, 1960. The technical data given for each gaging station comprise a description of the station, yearly tables of daily discharge, tables of monthly discharge and runoff, a yearly summary table, a list of momentary peak discharges above a selected base discharge, and notes to the tables of daily discharge.

In general, the following parts comprise the station description: location, drainage area, records available, type and history of gages, average discharge, extremes of discharge and gage height, remarks, and a revisions summary. The "Location" of the gaging station is obtained from the most accurate maps available. The "Drainage area" is obtained from Iowa Highway Research Board, Bulletin No. 7, "Drainage Areas of Iowa Streams." The "Gage" paragraph gives the type of gage currently in use and the datum in feet above mean sea level, together with a condensed history of the types, locations and datums of all previous gages for which discharge records are generally equivalent to those at the present site. The "Datum of gage" given in feet above mean sea level or "altitude of zero above M.S.L. in feet" (see Table 1) are synonymous and mean the elevation in feet of zero point on the gage, referred to mean sea level as the datum plane. The "Average discharge" is given for the total years of record where five or more complete years of record are available. The "Extremes" paragraph gives the maximum instantaneous discharge and gage height and the minimum daily discharge recorded during the period of record together with occasional historical flood data antedating the period of record. If the maximum gage height did not occur at the same time as the maximum discharge, it is given separately. Under "Remarks" is given pertinent facts pertaining to the individual station and a statement of the approximate gage height when the stream is bankfull. The "Revisions (water years)" paragraph lists U. S. Geological Survey water-supply papers in which

revised records for some stations have been published. The water-supply paper numbers are followed by the water years in which figures are revised in that report. In listing water years, only one number is given; for instance, 1947 stands for the water year October 1, 1946, to September 30, 1947. If no daily, monthly, or annual figures are concerned in the revision, that fact is brought out by notations after the year dates as follows: "(M)" means that only the maximum instantaneous discharge was revised; "(m)" that only the minimum discharge was revised; and "(P)" that only peak discharges were revised.

The streamflow data presented in this report are given in daily, monthly, and yearly tables for the 5-year period ending September 30, 1960. The tables of daily discharge give, in general, the discharge in cubic feet per second corresponding to the mean daily gage height as explained in the section, "Explanation of Field and Office Work."

The first monthly table is a tabulation of monthly mean discharge in cubic feet per second with each monthly figure representing the mean flow for the entire month. The second monthly table is a tabulation of monthly discharge in cubic feet per second per square mile, and the third monthly table is a tabulation of runoff in inches. For those stations in the Missouri River basin a fourth monthly table is given tabulating the monthly runoff in acre-feet.

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

Following the table of yearly discharge is a list of peak discharges above a selected base discharge with their date, time of occurrence, discharge, and gage height. In general, the base for peaks was selected, or revised for some stations for this report, on the basis of regional flood frequency curves and a recurrence interval of 1.5 years, together with some judgment. With this base, the number of peaks listed average about three per year. For some stations during dry years, no peak discharge will exceed the base. In such cases, the maximum discharge will be found in the yearly discharge table.

The "Notes to Tables of Daily Discharge" following the list of peak discharges designate the periods of stage-discharge relation affected by ice and no gage-height record. These periods do not have the same degree of accuracy as other daily discharge figures, and are rated as poor (probably more than 15 percent).

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

For the Coralville Reservoir near Coralville, Iowa, the data presented comprise a description of the station and daily tables of reservoir contents or storage expressed in acre-feet.

UPPER MISSISSIPPI RIVER BASIN

Upper Iowa River at Decorah, Iowa

LOCATION.—Lat. 43°18'20", long. 91°48'05", NE¼SW¼ sec. 16, T. 98 N., R. 8 W., on right bank 1,200 ft. upstream from bridge on State Highway 52, 1,500 ft. downstream from Dry Run cutoff, and 3 miles upstream from Trout Run.

DRAINAGE AREA.—511 square miles (revised in 1956).

RECORDS AVAILABLE.—August 1951 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 850.00 ft. above mean sea level, datum of 1929.

AVERAGE DISCHARGE.—9 years, 231 cfs.

EXTREMES.—1951-60: Maximum discharge, 11,600 cfs June 21, 1954 (gage height, 10.12 ft.); minimum daily, 22 cfs Feb. 2-7, 1959.

REMARKS.—Levees are never overtopped.

REVISIONS (water years).—WSP 1728: 1954 (m).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	71	68	46	45	56	90	2,590	195	265	117	246	68
2.....	68	66	50	43	56	200	4,350	261	246	124	191	73
3.....	66	64	56	45	56	500	3,070	328	211	137	207	71
4.....	66	64	59	47	52	450	1,440	437	183	140	176	71
5.....	68	62	60	49	55	540	810	450	168	120	176	147
6.....	80	62	59	50	55	800	583	418	154	109	140	130
7.....	78	62	56	48	55	300	485	368	150	106	130	93
8.....	76	60	55	46	55	200	418	328	143	117	124	83
9.....	76	60	52	46	55	150	370	286	134	95	114	83
10.....	73	60	48	50	55	130	320	261	130	88	104	85
11.....	71	60	46	54	52	110	290	246	124	85	98	78
12.....	68	62	40	54	52	140	251	227	117	80	101	73
13.....	64	62	*44	54	52	*130	227	241	114	78	109	71
14.....	62	60	47	54	52	130	215	219	124	76	98	*66
15.....	68	*62	44	54	50	130	199	*203	120	73	90	66
16.....	68	56	42	54	*50	110	191	195	112	68	88	66
17.....	66	50	39	52	50	100	*180	187	124	73	85	62
18.....	*66	54	37	*52	50	88	168	172	117	80	85	62
19.....	64	59	38	52	50	92	161	165	109	127	83	62
20.....	64	64	41	52	50	86	150	161	114	464	*78	62
21.....	64	64	45	56	50	95	150	157	106	161	76	60
22.....	68	64	45	56	50	88	143	154	253	114	73	58
23.....	73	64	45	56	50	83	140	147	154	101	71	56
24.....	73	61	45	56	54	83	134	140	104	*93	66	54
25.....	68	55	42	56	59	85	134	134	*93	203	64	54
26.....	68	50	44	56	64	397	134	127	228	114	68	52
27.....	66	46	46	56	74	1,970	191	124	256	93	80	50
28.....	66	41	48	56	80	3,820	157	154	147	85	71	48
29.....	66	36	49	56	60	1,510	187	1,220	134	83	76	46
30.....	71	40	50	56	.....	984	195	430	117	80	83	46
31.....	71	.....	47	56	.....	1,210	.....	291	.....	656	71	.....

Upper Iowa River at Decorah, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1.....	44	64	56	41	44	68	127	71	207	104	157	715
2.....	44	62	56	40	44	66	117	66	180	90	130	464
3.....	44	60	56	38	44	70	109	62	154	137	120	328
4.....	43	58	56	37	44	74	106	60	137	130	112	270
5.....	43	58	54	36	44	74	104	58	168	98	104	219
6.....	43	60	52	34	44	70	95	56	143	90	98	187
7.....	41	60	50	33	44	66	93	54	137	83	93	165
8.....	41	58	47	32	50	64	88	52	130	241	90	147
9.....	41	58	50	31	90	62	83	54	130	175	93	134
10.....	41	56	52	30	100	62	83	60	155	104	93	124
11.....	44	56	54	29	85	62	83	60	183	88	90	130
12.....	43	56	58	28	80	70	78	58	*143	98	88	130
13.....	43	*54	54	27	76	80	76	64	134	93	131	120
14.....	48	58	50	26	100	98	76	64	127	95	203	114
15.....	*50	66	47	26	88	85	73	64	134	130	120	176
16.....	60	64	45	26	72	80	*73	62	254	3,870	104	140
17.....	58	52	45	26	62	76	71	71	203	*920	93	*124
18.....	58	58	*46	26	54	85	68	76	246	733	95	114
19.....	56	64	45	26	*52	*112	78	78	187	437	90	120
20.....	54	64	46	27	50	76	80	78	154	312	*85	120
21.....	52	56	46	100	49	72	80	*95	140	325	80	117
22.....	50	70	47	*109	49	78	80	88	124	410	76	112
23.....	50	64	47	70	49	328	80	85	134	*545	101	106
24.....	52	64	48	60	50	875	76	83	211	520	90	104
25.....	52	62	48	54	52	499	73	181	176	312	78	101
26.....	54	62	48	52	54	368	194	150	157	227	71	98
27.....	54	62	48	50	58	256	109	124	140	199	68	98
28.....	52	62	47	48	62	215	85	109	120	176	83	95
29.....	56	60	45	46	.....	183	78	187	124	180	98	93
30.....	64	56	44	45	.....	154	73	275	109	161	1,380	93
31.....	64	.....	43	44	.....	137	.....	219	.....	147	857	.....
1957-58												
1.....	90	73	120	76	72	418	96	125	63	56	40	38
2.....	88	95	130	72	70	320	104	122	63	68	39	38
3.....	85	114	130	70	66	266	109	125	66	58	38	38
4.....	83	104	120	70	62	222	115	115	70	72	39	38
5.....	80	104	110	70	60	192	152	106	70	74	46	42
6.....	78	109	120	70	56	171	261	104	72	70	44	54
7.....	78	106	115	70	54	160	604	104	80	60	49	46
8.....	78	101	110	70	52	152	430	96	93	54	46	43
9.....	78	88	100	68	50	141	298	83	85	51	42	40
10.....	76	80	95	68	47	135	246	93	78	51	43	39
11.....	76	80	100	68	46	131	218	88	72	49	94	35
12.....	73	83	110	70	45	128	192	85	68	49	68	35
13.....	73	88	105	74	43	128	183	80	66	48	53	35
14.....	80	88	101	80	42	125	171	80	61	53	49	39
15.....	*85	90	98	88	42	122	*164	80	61	56	48	46
16.....	83	109	101	90	42	119	160	78	60	53	46	*43
17.....	78	120	*104	90	42	112	156	78	*63	53	44	38
18.....	71	110	106	90	42	*109	149	78	61	53	42	38
19.....	71	95	117	90	42	106	145	72	60	54	*39	39
20.....	71	120	127	90	*42	104	141	*68	58	54	48	38
21.....	71	*157	127	*85	42	101	138	63	54	51	43	38
22.....	73	154	130	83	42	98	135	63	56	49	39	38
23.....	78	130	165	82	47	98	135	61	56	*49	39	35
24.....	78	130	172	84	150	98	145	61	60	48	39	42
25.....	80	130	160	85	1,000	98	145	61	63	49	39	42
26.....	78	147	140	84	1,100	98	156	61	60	46	38	38
27.....	76	165	120	84	800	106	164	61	56	44	39	38
28.....	76	161	110	82	552	106	156	60	53	44	40	36
29.....	76	140	100	80	.....	104	138	58	53	44	40	40
30.....	76	110	90	78	.....	101	131	60	53	42	39	40
31.....	73	.....	80	74	.....	98	.....	61	.....	42	38	.....

SURFACE WATER RESOURCES OF IOWA, 1956-1960

Upper Iowa River at Decorah, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	36	43	38	36	23	29	4,080	104	500	502	80	173
2.....	36	44	30	34	22	30	3,580	102	370	514	80	238
3.....	36	44	47	32	22	32	2,650	99	300	440	326	230
4.....	36	43	53	30	22	35	1,800	112	250	350	177	206
5.....	36	42	54	28	22	38	1,460	125	210	286	115	206
6.....	33	40	50	26	22	40	891	140	180	246	102	166
7.....	36	39	45	25	22	37	652	125	160	*210	92	149
8.....	42	39	43	25	23	35	508	115	140	234	89	133
9.....	36	40	40	25	24	32	425	110	125	350	84	124
10.....	31	39	39	24	25	30	370	120	*112	313	82	112
11.....	30	39	37	24	26	29	317	130	104	365	80	104
12.....	31	39	35	25	26	*29	282	120	99	242	77	102
13.....	36	39	34	*25	26	32	254	*110	94	199	73	99
14.....	37	39	33	25	26	36	*234	105	89	173	73	96
15.....	36	39	31	25	26	36	214	100	92	149	86	94
16.....	34	40	*31	25	26	35	195	94	92	139	75	92
17.....	39	68	31	25	*26	34	195	90	82	136	75	89
18.....	40	*92	31	25	26	38	188	88	77	163	75	89
19.....	36	75	33	25	26	45	184	86	77	136	73	89
20.....	36	64	35	25	26	56	180	170	73	121	69	92
21.....	*34	58	38	25	26	68	170	250	71	127	75	92
22.....	36	53	40	25	27	64	159	215	69	124	146	874
23.....	37	53	43	24	27	170	153	190	66	109	136	*490
24.....	37	52	44	24	27	600	142	170	71	102	*488	425
25.....	40	46	46	24	28	*2,600	136	150	184	96	744	380
26.....	42	36	47	24	28	2,800	130	130	*1,910	92	405	405
27.....	43	45	46	24	28	1,220	124	200	440	92	435	550
28.....	42	51	46	23	29	1,530	118	190	365	*89	270	630
29.....	42	52	44	23	.....	2,350	109	180	322	89	350	520
30.....	43	46	42	23	.....	3,320	106	400	380	84	270	375
31.....	43	.....	39	23	.....	3,820	.....	788	.....	82	206	.....
1959-60												
1.....	304	159	210	385	124	88	538	385	1,620	390	153	435
2.....	266	142	188	345	118	86	415	350	620	365	*149	345
3.....	250	139	180	250	109	84	415	322	390	619	159	286
4.....	230	206	177	140	115	82	457	*290	350	479	156	250
5.....	222	370	159	160	149	80	*365	299	320	375	149	218
6.....	214	474	150	190	149	77	286	708	310	*312	149	199
7.....	203	390	145	238	124	74	250	2,660	300	282	180	184
8.....	192	370	138	214	156	70	230	2,630	290	266	180	173
9.....	180	350	134	203	150	70	203	1,190	*274	250	222	163
10.....	173	345	173	199	140	70	184	880	270	246	170	156
11.....	163	380	159	184	130	70	173	682	262	238	149	153
12.....	156	502	149	322	120	70	159	589	250	230	139	146
13.....	153	452	142	355	110	72	166	520	238	222	133	*142
14.....	149	340	139	278	105	72	345	462	234	210	170	136
15.....	146	250	139	200	100	72	420	410	226	199	156	133
16.....	139	190	*139	170	109	*74	425	435	622	192	136	146
17.....	133	140	139	150	*106	74	957	520	514	184	130	153
18.....	130	*180	142	140	100	74	800	544	508	250	153	156
19.....	127	262	136	*130	96	76	526	496	365	192	192	177
20.....	*124	250	142	120	94	77	420	479	304	177	177	159
21.....	118	242	139	125	93	78	380	538	290	170	163	156
22.....	121	246	96	130	92	78	385	945	286	1,060	153	550
23.....	124	246	90	130	90	78	355	1,270	850	674	139	312
24.....	177	238	130	133	90	78	322	675	2,210	250	130	304
25.....	156	210	136	130	92	78	312	532	1,370	258	127	462
26.....	142	185	218	121	92	78	335	479	582	222	294	484
27.....	146	165	335	121	92	600	457	462	452	242	294	415
28.....	146	145	544	124	91	1,970	405	446	490	210	360	322
29.....	149	160	1,240	124	90	2,470	365	420	850	184	735	282
30.....	156	173	899	124	.....	2,240	435	385	508	170	2,620	262
31.....	156	.....	462	121	.....	850	.....	417	.....	159	771	.....

Upper Iowa River at Decorah, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	68.9	57.9	47.3	52.2	55.1	477	601	272	152	134	107	69.9
1956-57	49.6	60.1	49.4	41.8	60.4	150	89.6	92.4	158	362	167	169
1957-58	77.7	113	117	78.5	170	144	185	81.6	64.5	53.0	44.8	39.6
1958-59	37.2	48.0	40.2	25.7	25.2	621	667	165	237	205	178	247
1959-60	169	263	231	186	111	326	383	691	538	299	290	249

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.135	0.113	0.093	0.102	0.108	0.933	1.18	0.532	0.297	0.262	0.209	0.137
1956-57	.097	.118	.097	.082	.118	.294	.175	.181	.309	.708	.327	.331
1957-58	.152	.221	.229	.154	.333	.282	.362	.160	.126	.104	.088	.077
1958-59	.073	.094	.079	.050	.049	1.22	1.31	.323	.464	.401	.348	.483
1959-60	.331	.515	.452	.364	.217	.638	.750	1.35	1.05	.585	.568	.487

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.16	0.13	0.11	0.12	0.12	1.08	1.31	0.61	0.33	0.30	0.24	0.15
1956-57	.11	.13	.11	.09	.12	.34	.20	.21	.35	.82	.38	.37
1957-58	.18	.25	.26	.18	.35	.33	.40	.18	.14	.12	.10	.09
1958-59	.08	.10	.09	.06	.05	1.40	1.46	.37	.52	.46	.40	.54
1959-60	.38	.58	.52	.42	.23	.74	.84	1.56	1.18	.68	.65	.54

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								164	4.36
1956	Mar. 28, 1956	8.28	5,500	36	175	0.342	4.66	173	4.61
1957	July 16, 1957	8.98	8,000	26	121	.237	3.23	134	3.57
1958	Feb. 26, 1958	(1)6.67	1,200	35	96.7	.189	2.58	81.4	2.16
1959	Apr. 1, 1959	(2)8.32	5,400	22	208	.407	5.53	254	6.74
1960	March 30, 1960								
	July 22, 1960	8.43	5,880	70	312	.611	8.32		

- (1) Maximum gage height, 7.40 ft. Feb. 25, 1958 (backwater from ice).
 (2) Maximum gage height, 8.57 ft. Mar. 25, 1959 (backwater from ice).

Peak Discharge (base, 4,000 cfs)

- 1955-56: Mar. 28 (1 a.m.) 5,500 cfs (8.28 ft.); Apr. 2 (2 a.m.) 4,910 cfs (8.07 ft.).
 1956-57: July 16 (6 a.m.) 8,000 cfs (8.98 ft.).
 1957-58: No peak above base.
 1958-59: Apr. 1 (11 p.m.) 5,400 cfs (8.32 ft.).
 1959-60: Mar. 30 (12:30 a.m.) 5,880 cfs (8.43 ft.); July 22 (8:30 p.m.) 5,880 cfs (8.46 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

State-discharge relation affected by ice Nov. 16-19, Nov. 23 to Dec. 31, 1955; Jan. 1 to Mar. 20, Nov. 17, 18, 21-23, 26-29, Dec. 1, 5-31, 1956; Jan. 1 to Feb. 10, Feb. 12, Feb. 14 to Mar. 12, Nov. 10, 11, 18-20, 23-25, Nov. 29 to Dec. 13, Dec. 25-31, 1957; Jan. 1-20, Jan. 23 to Feb. 27, Nov. 25 to Dec. 31, 1958; Jan. 1 to Mar. 26, Nov. 14-17, 25-29, Dec. 6-9, 22, 23, 1959; Jan. 3-6, 15-21, Feb. 9-15, Feb. 18 to Mar. 27, 1960. No gage-height record May 5-30, June 1-9, 1959.

Paint Creek at Waterville, Iowa

LOCATION.—Lat. 43°12'35", long. 91°18'20", in NW¼NW¼ sec. 22, T. 97 N.,

R. 4 W., on right bank 20 ft. downstream from bridge on State Highway 373 and 0.5 miles northwest of Waterville.

DRAINAGE AREA.—42.8 square miles (revised in 1956).

RECORDS AVAILABLE.—October 1952 to September 1960.

GAGE.—Water-stage recorder and concrete control.

AVERAGE DISCHARGE.—8 years, 13.7 cfs.

EXTREMES.—1952-60: Maximum discharge, 2,840 cfs July 26, 1953 (gage height, 8.53 ft.), from rating curve extended above 1,200 cfs by logarithmic plotting; minimum daily, 1.1 cfs for several days in August and September 1958.

Flood in August, 1951, reached a stage of 17.35 ft., from floodmarks by local resident (discharge not determined). A higher stage may have occurred during the spring of 1949.

REMARKS.—Bankfull stage is about gage height, 11 or 12 ft.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	5.9	6.4	5.9	5.9	4.6	25	94	8.0	10	4.3	8.5	7.4
2.....	5.9	5.9	5.9	5.9	4.6	200	39	11	8.5	4.6	8.0	4.0
3.....	5.4	5.9	6.4	5.4	4.3	90	40	11	8.0	4.0	7.4	4.0
4.....	5.4	5.9	6.4	5.4	4.3	100	17	14	7.4	4.3	6.8	3.0
5.....	6.4	5.9	6.4	5.4	4.3	159	13	11	7.0	5.0	7.6	11
6.....	8.0	5.9	6.4	5.4	4.0	29	11	254	6.6	4.0	7.4	8.0
7.....	6.8	5.9	5.9	5.4	4.0	14	10	18	6.2	4.0	6.8	4.6
8.....	6.4	5.9	5.9	4.6	4.0	7.4	9.1	13	5.8	5.9	6.8	4.0
9.....	5.9	5.9	5.9	4.6	4.0	6.4	8.0	12	5.2	4.6	6.4	3.6
10.....	5.9	5.9	5.9	*4.6	4.0	5.8	6.8	11	4.8	3.6	5.4	4.0
11.....	5.9	6.4	5.9	4.6	4.0	5.4	6.8	9.7	4.3	3.2	5.0	4.0
12.....	5.9	*5.9	5.9	4.6	4.0	5.2	6.8	8.5	3.6	3.2	4.6	3.6
13.....	5.9	5.4	*5.0	4.6	4.0	5.0	*6.4	9.7	3.6	3.2	4.3	3.6
14.....	5.9	5.4	5.0	4.6	4.0	5.0	5.9	8.5	3.6	3.0	4.0	3.2
15.....	*5.9	5.4	5.0	4.5	*4.0	5.0	5.4	8.0	3.6	3.2	3.6	3.6
16.....	5.9	5.4	5.0	4.4	4.0	5.0	5.4	6.8	3.6	3.0	3.6	4.0
17.....	5.9	5.4	5.0	4.2	4.3	5.0	5.0	7.4	3.6	3.2	3.2	3.6
18.....	5.9	5.4	5.0	4.0	4.3	5.0	4.6	6.8	4.3	3.2	3.0	3.6
19.....	5.9	5.6	5.0	4.0	4.3	5.0	4.6	6.4	4.0	*3.6	3.0	3.6
20.....	5.9	5.8	5.0	4.0	4.3	5.4	4.3	6.4	3.6	3.6	3.2	3.6
21.....	5.9	5.8	5.0	4.0	4.3	5.9	4.3	6.4	4.0	3.6	3.2	3.6
22.....	5.9	5.9	5.0	4.0	4.3	*6.4	4.3	5.4	*4.0	3.6	3.2	3.6
23.....	6.4	5.9	5.0	4.0	4.3	9.1	4.3	5.4	4.0	3.2	3.2	3.2
24.....	5.9	5.9	4.6	4.2	4.3	13	4.3	*5.4	4.0	5.5	3.0	3.6
25.....	5.9	5.9	4.6	4.1	4.3	92	6.4	5.4	4.0	8.2	3.0	3.6
26.....	5.9	5.9	4.6	4.6	4.3	153	6.4	5.4	6.0	4.3	5.0	3.6
27.....	5.9	5.9	4.6	4.6	4.3	351	*15	5.4	6.1	3.6	*3.6	*3.6
28.....	5.9	5.9	4.6	4.6	4.3	440	8.0	6.4	4.3	3.6	3.6	3.2
29.....	5.9	5.9	5.0	4.6	5.0	55	9.1	100	4.3	3.6	5.0	3.2
30.....	6.4	5.4	5.0	4.6	.....	20	9.7	28	4.3	4.0	60	3.6
31.....	6.4	.....	5.4	4.6	.....	79	.....	13	.....	112	12	.....

Paint Creek at Waterville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	3.6	3.2	3.2	2.5	2.2	2.4	4.3	3.2	6.4	5.0	*12	8.5
2	3.6	3.6	3.2	2.5	2.2	2.3	4.0	3.0	5.0	5.0	5.9	7.4
3	3.6	3.2	3.2	2.5	2.2	2.3	4.0	2.7	4.3	5.4	5.4	7.4
4	3.6	3.2	3.2	2.5	2.2	2.2	4.0	3.0	4.3	6.4	5.0	7.4
5	3.6	3.2	3.6	2.7	2.2	2.2	4.0	3.2	10	4.6	5.0	6.4
6	3.6	3.6	3.0	2.7	2.2	2.2	3.6	3.2	8.0	4.6	4.3	5.0
7	3.6	3.2	3.0	3.0	2.2	2.2	3.6	3.2	5.9	4.3	4.3	4.3
8	3.6	3.2	3.0	3.0	2.2	2.2	3.6	3.2	5.4	4.3	4.0	4.0
9	3.6	3.2	3.0	2.7	5.0	2.2	3.2	3.2	5.4	4.6	4.0	4.0
10	3.6	3.2	3.0	2.4	11	2.2	3.2	3.2	57	4.3	4.3	4.3
11	4.0	3.2	3.0	2.3	3.5	2.2	3.2	3.2	56	4.3	4.0	5.4
12	3.6	3.2	3.0	2.2	5.0	2.2	3.0	3.2	20	158	3.2	8.3
13	4.0	*3.0	3.0	2.2	10	2.2	2.7	3.2	11	12	3.2	5.9
14	4.6	3.2	*3.0	2.2	8.0	2.2	2.7	4.3	11	6.4	4.0	5.9
15	4.0	11	3.0	2.2	4.0	2.2	2.7	3.6	11	5.9	3.2	10
16	3.6	5.4	3.0	2.2	3.0	2.2	2.7	3.6	171	108	3.0	6.4
17	3.2	4.6	3.0	2.2	2.7	2.2	2.7	3.6	289	18	3.0	*4.3
18	3.6	4.0	3.0	2.2	2.5	2.2	2.4	3.6	223	8.0	3.0	3.6
19	3.6	3.6	3.0	2.2	2.3	2.2	53	3.6	28	6.6	3.6	4.3
20	3.2	3.6	3.0	2.6	2.2	2.2	27	3.6	19	6.0	*3.0	8.0
21	3.2	3.5	3.0	100	2.2	2.4	8.0	3.6	15	33	2.7	5.0
22	3.6	3.4	3.0	*20	2.2	*12	5.4	3.6	12	22	2.7	5.0
23	3.2	3.2	2.8	5.0	2.2	166	4.3	*3.6	10	8.0	*9.2	4.3
24	3.2	3.2	2.8	4.0	16	37	*3.6	3.0	9.7	7.4	7.8	4.3
25	*3.6	3.2	2.8	3.4	*30	6.8	3.6	4.9	9.1	6.8	4.0	4.3
26	3.6	3.2	2.8	3.0	8.0	4.6	3.6	15	*9.7	*6.4	4.0	4.0
27	3.2	3.2	2.8	2.7	3.2	4.3	3.6	6.4	8.0	5.9	3.6	4.0
28	3.2	3.2	2.8	2.6	2.6	4.3	3.6	6.4	7.4	5.9	4.3	3.6
29	3.2	3.2	3.0	2.5	.....	4.3	3.6	11	6.4	6.4	5.4	4.0
30	3.6	3.2	3.0	2.4	.....	4.3	3.6	14	5.0	5.0	80	4.0
31	3.6	.....	3.0	2.3	.....	4.3	.....	8.0	.....	105	14	.....
1957-58												
1	*3.2	2.2	2.7	2.6	2.4	7.4	3.6	2.7	3.6	2.2	1.7	1.1
2	3.2	2.4	2.7	2.5	2.3	6.5	4.3	2.7	2.7	2.2	1.7	1.1
3	3.2	2.7	2.7	2.4	2.3	5.8	4.3	3.2	2.4	2.2	1.9	1.2
4	3.0	2.7	2.7	2.3	2.3	5.4	3.6	3.0	2.7	3.2	4.3	1.3
5	3.0	2.4	2.7	2.4	2.3	5.0	11	2.7	2.7	4.0	3.2	1.3
6	3.2	2.2	2.7	2.7	2.4	4.7	14	2.4	1.9	2.7	2.4	1.5
7	3.2	2.4	3.0	2.7	2.4	4.5	7.4	2.4	2.2	2.4	2.2	1.8
8	3.2	2.4	3.0	2.6	2.4	4.2	6.4	2.4	2.2	2.2	1.7	1.7
9	3.2	2.2	2.7	2.4	2.4	4.0	5.4	2.4	2.2	1.9	1.7	1.6
10	3.2	2.2	2.5	2.4	2.4	4.0	5.0	2.4	2.7	2.2	1.7	1.5
11	3.2	2.2	2.3	2.4	2.4	4.6	4.6	2.4	1.9	2.2	1.7	1.5
12	3.2	2.2	2.5	2.4	2.4	4.6	4.3	2.4	1.9	2.2	1.3	1.4
13	3.2	2.2	2.7	2.7	2.4	4.6	3.6	2.4	1.9	1.9	1.3	1.4
14	3.2	2.7	2.7	2.7	2.4	4.6	3.6	2.4	1.9	2.4	1.5	1.4
15	3.6	2.7	2.7	2.7	2.4	4.3	*2.7	2.4	1.9	2.2	2.4	1.6
16	*4.3	3.6	2.7	2.7	2.4	4.0	2.4	2.4	1.9	1.9	1.5	*1.9
17	2.7	3.6	*3.0	2.7	2.4	4.0	2.2	2.4	*2.2	1.9	1.5	1.9
18	2.2	4.3	4.6	2.7	2.4	*3.6	2.2	2.4	2.2	1.9	1.5	1.9
19	2.2	4.0	9.7	2.7	*2.4	3.2	2.2	2.4	2.2	1.9	*1.5	1.9
20	2.2	*3.6	8.0	2.7	2.4	3.0	2.2	*2.4	2.2	1.9	1.3	1.9
21	2.2	3.6	6.5	*2.7	2.7	3.0	2.2	2.2	2.2	1.9	1.3	1.9
22	2.4	3.2	5.0	2.7	2.7	3.0	2.2	2.4	2.4	1.9	1.1	1.9
23	3.0	3.0	6.5	2.7	40	3.2	2.4	2.2	2.7	*1.7	1.1	1.9
24	3.2	3.0	5.4	2.7	299	3.6	3.2	2.4	3.0	1.9	1.3	2.4
25	3.0	3.0	5.0	2.7	79	4.3	3.0	2.2	4.0	1.9	1.3	1.9
26	2.4	3.0	4.6	2.7	42	4.6	2.7	2.2	4.3	1.7	1.3	1.7
27	2.4	3.0	4.0	2.7	24	4.6	2.7	2.2	3.0	1.7	1.3	1.9
28	2.4	3.0	3.6	2.7	12	4.6	2.7	2.2	2.2	1.5	1.2	1.9
29	2.4	3.0	3.2	2.7	.....	4.6	2.7	2.2	1.9	1.7	1.2	2.2
30	2.4	3.0	2.9	2.7	.....	4.3	2.7	2.6	2.2	1.9	1.1	2.4
31	2.4	.....	2.8	2.7	.....	4.0	.....	3.1	.....	2.2	1.1	.....

Paint Creek at Waterville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	2.4	1.5	2.2	1.4	1.5	1.5	460	2.2	15	32	3.2	3.0
2.....	2.7	1.7	2.2	1.3	1.5	1.5	357	1.9	11	20	3.0	8.0
3.....	2.7	1.7	2.2	1.3	1.5	1.4	238	1.9	9.1	14	109	5.8
4.....	2.7	1.5	1.8	1.3	1.5	1.3	137	1.9	7.4	13	9.1	4.6
5.....	2.4	1.7	1.7	1.3	1.5	1.5	60	1.7	6.8	13	5.9	3.8
6.....	2.2	1.7	1.6	1.3	1.5	1.7	26	2.7	5.4	10	4.3	3.0
7.....	1.9	1.7	1.5	1.4	1.5	1.6	17	2.7	5.0	9.1	4.3	2.5
8.....	1.9	1.7	1.5	1.4	1.5	1.5	12	2.4	4.6	61	4.0	2.2
9.....	1.9	1.5	1.5	1.4	1.5	1.4	8.5	2.4	4.3	*18	3.6	1.9
10.....	1.7	1.5	1.5	1.4	1.5	1.4	8.0	3.0	*4.0	12	3.2	1.7
11.....	1.7	1.5	1.6	1.4	1.5	*1.4	6.8	4.3	4.0	8.0	3.2	1.5
12.....	1.7	1.5	1.7	1.4	1.5	1.4	5.4	3.0	3.2	5.9	*3.6	1.3
13.....	1.7	1.7	1.8	*1.4	1.5	1.4	5.0	*2.2	3.2	5.4	3.2	1.3
14.....	1.7	1.7	1.9	1.3	1.5	1.6	*4.6	2.4	3.2	5.4	3.0	1.7
15.....	1.7	1.5	1.9	1.2	1.5	1.7	4.0	2.2	3.2	5.0	6.3	1.7
16.....	1.9	1.7	*1.9	1.2	1.5	1.4	3.6	1.9	3.2	5.0	8.0	*2.4
17.....	1.9	3.0	1.7	1.2	*1.5	1.3	4.0	1.7	3.0	4.6	4.3	1.7
18.....	1.7	*6.8	1.7	1.2	1.5	1.3	4.6	1.7	3.2	4.6	3.6	1.7
19.....	1.7	2.4	1.9	1.2	1.5	3.0	4.0	1.7	3.6	4.3	3.2	1.9
20.....	1.7	1.9	1.9	1.2	1.5	60	3.2	127	3.6	4.0	3.0	3.0
21.....	*1.7	1.9	1.7	1.2	1.5	100	3.0	18	3.0	4.0	21	3.0
22.....	1.5	1.9	1.7	1.2	1.5	54	2.7	14	2.7	4.0	61	3.0
23.....	1.7	2.2	1.9	1.2	1.5	76	2.4	5.9	2.4	4.0	10	12
24.....	1.7	2.2	1.9	1.2	1.5	*411	2.4	4.3	7.4	3.6	7.4	3.0
25.....	1.7	2.2	1.9	1.2	1.5	453	2.2	3.6	44	3.6	5.4	3.2
26.....	1.7	1.8	1.7	1.2	1.5	332	1.9	3.6	68	3.2	5.0	223
27.....	1.7	1.6	1.7	1.2	1.5	194	1.9	11	12	3.2	4.3	148
28.....	1.5	1.6	1.7	1.4	1.5	256	4.3	5.4	286	3.2	3.9	33
29.....	1.5	1.7	1.7	1.4	.....	380	4.0	13	39	3.6	3.5	17
30.....	1.5	1.9	1.7	1.4	.....	398	2.7	5.4	92	3.6	3.3	9.1
31.....	1.5	.....	1.5	1.5	.....	613	.....	191	.....	3.2	3.1	.....
1959-60												
1.....	6.7	3.1	4.9	8.8	5.0	5.0	10	18	18	14	8.5	8.0
2.....	6.6	2.8	*4.9	8.4	5.0	5.0	9.2	16	17	107	8.0	8.0
3.....	7.2	2.8	4.7	7.4	5.0	5.3	8.3	16	16	60	8.5	8.0
4.....	5.3	*32	4.7	6.1	4.9	5.0	7.6	15	16	18	9.1	8.0
5.....	5.4	52	4.7	5.9	5.0	4.9	7.2	15	15	15	9.1	8.0
6.....	5.4	24	4.1	*5.8	5.4	4.9	6.9	113	15	14	9.1	7.4
7.....	4.7	18	3.7	6.4	5.6	5.0	6.7	97	14	14	9.1	7.4
8.....	4.7	16	3.5	6.9	11	*5.1	6.4	71	*14	12	9.1	7.4
9.....	4.9	14	3.6	6.4	16	5.3	6.1	52	14	12	9.1	7.4
10.....	4.6	13	4.0	6.2	*8.5	5.3	5.9	46	15	12	*9.1	7.4
11.....	4.9	13	4.2	6.1	6.6	5.3	5.8	*39	15	12	8.0	7.4
12.....	3.7	11	4.3	138	5.2	5.1	5.6	36	15	*12	8.0	7.4
13.....	*3.5	9.0	4.3	24	5.0	5.3	*5.8	34	14	11	8.0	*7.4
14.....	3.1	7.7	4.3	13	5.0	4.9	6.1	31	13	12	11	6.8
15.....	3.0	6.8	4.3	9.0	5.2	5.0	5.9	29	13	12	9.7	6.8
16.....	2.8	6.0	4.3	7.0	5.4	5.3	7.2	48	14	12	8.5	9.7
17.....	2.6	5.2	4.0	7.0	5.6	5.1	28	47	13	12	8.5	10
18.....	2.6	5.6	3.9	7.0	5.8	5.1	22	37	13	12	22	10
19.....	2.8	6.2	4.0	6.2	5.4	5.4	17	32	13	12	27	11
20.....	2.7	6.6	4.1	5.8	5.2	5.8	16	35	13	12	34	8.0
21.....	2.6	6.7	4.0	5.4	5.4	6.1	15	38	14	12	11	8.0
22.....	2.6	6.7	3.8	5.2	5.6	6.1	14	35	13	86	9.7	10
23.....	3.3	6.7	3.7	5.4	5.6	6.1	13	30	23	32	8.5	8.5
24.....	5.9	6.4	4.1	5.6	5.6	5.8	13	26	16	13	8.0	11
25.....	3.9	5.1	4.1	5.4	5.4	5.4	12	23	14	12	8.0	12
26.....	3.5	4.5	26	5.4	5.4	5.8	12	24	13	12	8.0	8.5
27.....	3.9	4.1	22	5.4	5.3	789	11	25	13	10	8.0	8.0
28.....	3.4	3.8	27	5.4	5.4	322	11	23	21	9.7	7.4	8.0
29.....	3.2	4.0	17	5.2	5.1	92	12	21	16	9.7	8.0	8.0
30.....	3.0	4.5	11	5.2	.....	94	22	19	16	9.7	8.0	8.0
31.....	3.1	.....	10	5.2	.....	15	.....	17	.....	8.5	8.0	.....

Paint Creek at Waterville, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	6.05	5.80	5.36	4.65	4.23	61.7	12.5	20.2	5.08	7.48	9.09	4.16
1956-57.....	3.57	3.67	3.01	6.35	5.11	9.51	6.08	4.71	34.8	19.1	7.26	5.44
1957-58.....	2.90	2.86	3.80	2.62	19.6	4.38	4.05	2.46	2.45	2.12	1.65	1.70
1958-59.....	1.86	1.96	1.77	1.30	1.50	108	46.5	14.4	22.1	9.47	10.3	17.0
1959-60.....	4.05	10.2	7.01	11.3	6.02	46.8	11.0	35.7	15.0	19.7	10.5	8.38

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.141	0.136	0.125	0.109	0.099	1.44	0.292	0.472	0.119	0.175	0.212	0.097
1956-57.....	.083	.086	.070	.148	.119	.222	.142	.110	.813	.446	.170	.127
1957-58.....	.068	.067	.089	.061	.458	.102	.095	.057	.050	.050	.039	.040
1958-59.....	.043	.046	.041	.030	.035	2.52	1.09	.336	.516	.221	.241	.397
1959-60.....	.095	.238	.164	.264	.141	1.09	.257	.834	.350	.460	.245	.196

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.16	0.15	0.14	0.13	0.11	1.66	0.33	0.55	0.13	0.20	0.24	0.11
1956-57.....	.10	.10	.08	.17	.12	.26	.16	.13	.91	.52	.20	.14
1957-58.....	.08	.07	.10	.07	.48	.12	.11	.07	.06	.06	.04	.04
1958-59.....	.05	.05	.05	.04	.04	2.92	1.21	.39	.58	.26	.28	.44
1959-60.....	.11	.27	.19	.30	.15	1.26	.29	.96	.39	.53	.28	.22

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches	
	Date	Gage height in feet	Discharge							
1955.....								12.0	3.81	
1956.....	May 6, 1956.	6.68	1,210	3.0	12.3	0.287	3.91	11.7	3.74	
1957.....	June 17, 1957.	8.33	2,650	2.2	9.05	.211	2.89	8.99	2.86	
1958.....	Feb. 24, 1958.	6.40	1,030	1.1	4.10	.096	1.30	3.77	1.20	
1959.....	June 28, 1959.	8.40	2,710	1.2	19.8	.463	6.31	21.1	6.73	
1960.....	Mar. 27, 1960.	8.39	2,710	2.6	15.6	.364	4.95	.....	.....

Peak Discharge (base, 500 cfs)

- 1955-56: Mar. 27 (5 p.m.) 855 cfs (6.03 ft.); May 6 (1:30 a.m.) 1,210 cfs (6.68 ft.); Aug. 5 (4 a.m.) 544 cfs (5.37 ft.).
- 1956-57: Mar. 23 (5 p.m.) 523 cfs (5.32 ft.); June 10 (8:30 p.m.) 830 cfs (6.02 ft.); June 16 (4 a.m.) 1,280 cfs (6.82 ft.); June 17 (11:30 p.m.) 2,650 cfs (8:33 ft.); July 12 (12 m.) 1,000 cfs (6.37 ft.); July 31 (5 p.m.) 808 cfs (5.95 ft.).
- 1957-58: Feb. 24 (3:30 p.m.) 1,030 cfs (6.40 ft.).
- 1958-59: Mar. 24 (9:30 p.m.) 1,030 cfs (6.38 ft.); Mar. 31 (5 p.m.) 1,150 cfs (6.62 ft.); May 20 (9 a.m.) 650 cfs (5.58 ft.); May 31 (5 a.m.) 718 cfs (5.77 ft.); June 28 (8 a.m.) 2,710 cfs (8.40 ft.); Aug. 3 (8:30 a.m.) 523 cfs (5.29 ft.); Sept. 26 (3:30 p.m.) 1,790 cfs (7.48 ft.).
- 1959-60: Mar. 27 (3 p.m.) 2,710 cfs (8.39 ft.); July 2 (8:30 p.m.) 544 cfs (5.35 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Jan. 15-25, Mar. 1-4, 9-12, Nov. 21-23, 25, 27, 28, Dec. 6, 7, 23-28, 1956; Jan. 1-4, Jan. 10 to Feb. 2, Feb. 9-19, Feb. 28 to Mar. 3, Dec. 10-13, 23-25, 27-31, 1957; Jan. 1-4, Feb. 2-5, 11-17, 23, Mar. 2, 3, 6-8, Nov. 26-29, Dec. 4-13, 1958; Jan. 1 to Feb. 7, Feb. 19 to Mar. 3, Mar. 5-16, 19-22, Nov. 15-19, Nov. 26 to Dec. 1, Dec. 7-9, 30, 31, 1959; Jan. 1, 2, Jan. 15 to Feb. 9, Feb. 11-21, 1960. No gage-height record Nov. 16-22, Dec. 14-21, 1955; June 4-10, 1956; Jan. 5-11, Aug. 28 to Sept. 15, 1958; Aug. 27 to Sept. 8, 1959; May 18 to June 7, 1960.

Mississippi River at McGregor, Iowa

LOCATION.—Lat. 43°01'30", long. 91°10'20", in SE¼SE¼ sec. 22, T. 95 N., R. 3 W., on right bank in city park at north end of Main Street in McGregor, 2.6 miles upstream from Wisconsin River, 4.3 miles downstream from Yellow River, and at mile 633.4 upstream from Ohio River.

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

RECORDS AVAILABLE.—August 1936 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 605.30 ft. above mean sea level, adjustment of 1912. Prior to June 1, 1937, and since June 2, 1939, auxiliary water-stage recorder; June 1, 1937, to June 1, 1939, auxiliary staff gage 14.1 miles upstream in tail water of dam 9, at datum 5.30 ft. lower.

AVERAGE DISCHARGE.—24 years, 32,200 cfs.

EXTREMES.—1936-60: Maximum daily discharge, 197,500 cfs April 22, 1952; maximum gage height, 20.89 ft. Apr. 23, 1952; minimum daily discharge, 6,200 cfs Dec. 9, 1936; minimum gage height, -0.86 ft. Aug. 18, 1936.

Maximum stage known, about 21.0 ft. in June 1880.

REMARKS.—Stage-discharge relation affected by backwater from Wisconsin River and dam 10. Flow regulated by reservoirs and navigation dams.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1955-56													
1.....	18,400	17,500	19,300	15,600	14,700	14,000	37,400	52,200	38,200	50,500	16,700	24,100	
2.....	18,400	19,000	17,800	15,600	14,700	14,200	41,000	49,300	36,700	51,700	17,300	20,900	
3.....	19,500	19,500	17,700	15,600	14,700	15,000	51,300	44,600	37,200	50,700	19,300	16,200	
4.....	19,300	19,500	17,700	15,700	14,700	17,800	65,500	44,300	23,200	49,500	26,700	14,800	
5.....	19,800	20,300	17,100	15,700	14,700	21,000	74,600	44,600	25,400	43,400	33,600	18,200	
6.....	23,700	20,700	17,000	15,700	14,700	23,500	83,400	46,000	27,700	33,000	44,800	19,300	
7.....	23,700	19,400	17,400	15,800	14,700	24,500	92,900	44,900	29,200	27,400	49,700	17,100	
8.....	23,400	18,200	18,200	15,700	14,600	24,000	96,100	43,400	28,200	26,900	50,900	16,600	
9.....	22,100	18,400	18,700	13,700	14,600	24,200	99,700	40,500	27,100	26,500	50,500	17,000	
10.....	19,300	18,600	18,900	12,800	14,700	21,500	99,000	39,500	24,200	22,200	48,600	16,700	
11.....	18,400	18,800	19,200	12,900	14,700	18,500	99,900	38,300	22,400	21,000	47,500	16,800	
12.....	17,300	17,900	19,300	13,100	14,600	18,600	99,700	37,100	20,600	21,900	47,600	16,100	
13.....	17,300	18,500	19,300	13,200	14,600	18,000	102,000	35,600	20,600	23,100	46,100	*16,400	
14.....	17,400	19,400	19,300	13,300	14,600	17,200	104,000	33,200	20,400	24,300	41,700	16,100	
15.....	16,100	19,600	18,900	13,300	14,600	17,300	105,000	33,000	21,400	24,600	38,900	15,600	
16.....	14,800	20,300	16,000	14,400	14,400	16,400	105,000	*33,100	24,700	23,900	35,500	15,400	
17.....	14,300	*19,300	16,000	14,300	14,200	16,700	104,000	36,500	31,500	23,100	33,600	14,900	
18.....	14,400	18,500	16,000	14,300	14,400	16,800	*102,000	39,600	39,200	22,100	34,200	15,100	
19.....	*14,400	16,800	16,000	*14,200	14,500	16,900	101,000	39,600	37,800	22,700	34,300	12,900	
20.....	13,900	16,400	16,000	14,200	14,500	17,100	99,000	40,500	38,800	25,200	32,300	13,600	
21.....	13,900	15,300	16,000	14,200	14,500	17,200	94,300	40,500	39,900	28,400	*26,200	13,100	
22.....	14,500	14,900	16,000	14,200	14,600	18,600	90,300	42,000	41,100	29,500	23,400	13,100	
23.....	14,400	13,100	16,000	14,300	14,600	18,100	85,200	40,700	43,400	27,200	24,200	13,200	
24.....	14,400	14,400	16,000	14,300	14,600	17,900	81,600	34,600	46,300	23,700	24,100	13,100	
25.....	14,800	15,300	16,000	14,200	14,500	19,300	76,200	30,600	45,800	*22,500	23,700	13,200	
26.....	15,100	16,500	16,000	14,200	14,300	22,500	71,900	25,800	46,300	21,300	23,500	12,900	
27.....	15,900	15,800	15,700	15,200	14,100	25,100	70,100	23,500	*47,000	20,300	21,700	13,600	
28.....	16,000	15,800	15,500	14,900	14,000	28,600	62,900	24,500	47,100	18,500	21,900	13,900	
29.....	16,400	17,400	15,400	14,800	14,000	36,700	60,000	26,800	47,700	17,400	23,100	13,100	
30.....	16,500	18,600	15,500	14,800	39,200	57,500	32,400	47,600	15,300	25,600	13,400
31.....	16,700	15,600	14,700	38,400	36,300	15,400	26,400

Mississippi River at McGregor, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	17,240	17,790	17,050	14,480	14,520	21,120	83,750	37,850	34,220	27,520	32,700	15,540
1956-57	12,490	19,700	14,620	13,590	12,740	26,590	42,450	32,880	38,440	72,210	34,520	33,030
1957-58	22,620	26,970	19,710	16,170	15,510	25,050	40,740	21,030	26,170	32,210	12,860	18,850
1958-59	12,760	16,690	11,580	10,210	10,360	24,870	32,090	31,160	29,220	25,800	19,810	33,630
1959-60	32,730	22,790	19,450	20,780	14,590	19,320	60,150	75,300	51,870	24,740	15,600	28,770

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.255	0.264	0.253	0.215	0.215	0.313	1.24	0.561	0.507	0.408	0.484	0.230
1956-57	.185	.292	.217	.201	.189	.394	.629	.487	.569	1.07	.511	.489
1957-58	.335	.400	.292	.240	.230	.371	.604	.312	.388	.477	.191	.279
1958-59	.189	.247	.172	.151	.153	.368	.475	.462	.433	.382	.293	.498
1959-60	.485	.338	.288	.308	.216	.286	.891	1.12	.813	.367	.231	.426

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.29	0.29	0.29	0.25	0.23	0.36	1.38	0.65	0.57	0.47	0.56	0.26
1956-57	.21	.33	.25	.23	.20	.45	.70	.56	.64	1.23	.59	.55
1957-58	.39	.45	.34	.28	.24	.43	.67	.36	.43	.55	.22	.31
1958-59	.22	.28	.20	.17	.16	.42	.53	.53	.48	.44	.34	.56
1959-60	.56	.38	.33	.35	.23	.33	.99	1.29	.91	.42	.27	.48

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year	
	Maximum day		Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Discharge						
1955							26,400	5.29
1956	Apr. 15,							
	16, 1956	105,000	12,800	27,780	0.412	5.60	27,330	5.52
1957	July 8, 1957	95,800	10,200	29,530	.437	5.94	31,420	6.33
1958	Apr. 14, 1958	55,800	9,300	23,160	.343	4.67	20,790	4.19
1959	Apr. 3, 1959	72,300	8,640	21,540	.319	4.33	24,400	4.90
1960	June 4, 5, 1960	83,100	10,500	32,420	.480	6.51		

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 27 to Dec. 31, 1955; Jan. 1 to Mar. 25, Dec. 9-31, 1956; Jan. 1 to Feb. 21, Nov. 26 to Dec. 31, 1957; Jan. 1 to Mar. 9, Nov. 26 to Dec. 31, 1958; Jan. 1 to Mar. 29, Nov. 15-21, Nov. 25 to Dec. 3, Dec. 6-10, 31, 1959; Jan. 1 to Mar. 27, 1960.

Turkey River at Spillville, Iowa

LOCATION.—Lat. 43°12'30", long. 91°57'00", in SW ¼ NE ¼ sec. 19, T. 97 N., R. 9 W., on right bank 60 ft. downstream from highway bridge at the north edge of Spillville, 150 ft. downstream from old mill dam, and 3,000 ft. upstream from Wonder Creek.

DRAINAGE AREA.—177 square miles.

RECORDS AVAILABLE.—June 1956 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 1,034.77 ft. above mean sea level, datum of 1929.

EXTREMES.—1956-60: Maximum discharge, 3,220 cfs Mar. 30, 1960 (gage height, 10.70 ft.); maximum gage height, 11.48 ft. Mar. 29, 1959 (backwater from ice); minimum daily discharge, 4.4 cfs Feb. 1-3, 1959.

Flood in June, 1947, reached a stage of 18.4 ft., from floodmark (discharge, about 10,000 cfs).

REMARKS.—Bankfull stage is about gage height, 12 ft.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1955-56									
1	56	39	*242	26	16	31	22	36	26
2	52	34	115	26	17	33	22	36	24
3	49	32	86	25	18	105	24	36	25
4	47	32	70	25	19	62	25	33	24
5	46	31	64	47	20	41	35	*31	24
6	44	30	58	46	21	38	31	30	24
7	43	32	52	38	22	40	30	30	23
8	41	42	48	35	23	38	26	29	22
9	39	32	46	32	24	34	*28	27	21
10	38	28	42	33	25	*31	35	27	21
11	35	27	40	31	26	46	26	27	21
12	34	26	43	29	27	52	24	27	20
13	32	24	47	27	28	49	22	28	19
14	31	24	42	*26	29	41	22	33	19
15	31	24	39	27	30	35	25	34	20
					31		286	30	

Turkey River at Spillville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	22	22	19	13	14	27	40	23	167	40	40	43
2	20	22	19	13	14	28	38	21	117	39	38	40
3	19	21	19	12	14	30	34	20	91	44	36	57
4	19	21	18	12	14	31	34	20	74	43	33	50
5	19	22	17	11	14	30	35	20	73	40	32	39
6	18	22	16	11	14	28	34	19	67	36	31	36
7	18	21	16	11	14	26	33	18	65	34	30	32
8	18	20	15	11	14	25	31	18	61	34	29	30
9	18	20	16	11	25	24	30	19	60	34	31	29
10	18	20	17	11	60	24	30	25	65	31	31	28
11	19	20	18	11	56	25	30	26	102	31	30	33
12	19	19	18	10	48	25	29	24	*82	39	28	33
13	20	*20	18	10	59	26	27	28	76	35	35	29
14	23	20	16	10	54	27	26	31	65	41	38	30
15	24	30	14	10	40	28	*24	35	65	38	32	43
16	25	22	13	9.8	32	29	26	30	61	*734	30	*34
17	23	23	13	9.8	26	27	25	38	108	*392	28	31
18	20	23	*13	9.6	22	23	25	47	148	155	30	29
19	20	22	13	9.6	*20	*46	27	47	129	102	*26	33
20	20	18	14	12	19	27	32	*43	86	78	24	33
21	20	17	14	80	18	24	34	46	65	78	24	33
22	20	22	15	*26	18	23	35	42	57	*80	22	31
23	19	24	15	21	18	90	32	42	57	67	33	28
24	19	23	15	18	18	211	30	40	60	58	33	27
25	20	21	15	17	20	142	28	47	55	53	28	26
26	20	20	15	16	21	89	29	78	64	49	26	24
27	20	19	15	15	22	68	28	62	55	48	25	24
28	18	20	15	15	24	57	27	55	53	48	31	24
29	20	18	15	15	.....	53	26	147	48	47	36	24
30	24	19	14	14	.....	48	24	558	42	44	95	24
31	23	.....	14	14	.....	43	.....	273	.....	42	58	.....
1957-58												
1	23	22	31	22	24	150	26	35	23	23	12	11
2	22	38	32	21	24	120	32	34	21	26	12	13
3	22	31	33	20	24	95	33	36	24	31	11	10
4	22	26	33	19	24	84	36	34	25	52	10	9.5
5	20	25	34	17	24	72	52	32	24	43	19	13
6	20	24	32	17	23	62	132	32	22	41	17	32
7	20	23	30	16	21	56	155	31	21	35	16	15
8	27	20	27	16	19	50	112	31	24	28	14	15
9	28	19	26	16	17	46	100	30	24	26	12	12
10	24	17	24	16	16	43	73	30	22	23	11	8.9
11	23	19	22	16	15	39	48	28	20	22	45	11
12	23	21	21	17	13	38	41	27	19	21	27	12
13	22	23	21	17	12	36	49	26	18	20	18	12
14	23	24	20	18	11	36	*49	26	18	25	15	12
15	*29	26	20	19	10	38	48	25	18	69	15	14
16	28	38	*20	20	10	35	47	24	17	140	12	*12
17	25	38	20	21	10	*34	44	25	*22	58	11	12
18	24	45	20	22	10	32	43	24	20	35	*10	12
19	23	50	21	22	10	32	42	24	18	26	10	12
20	23	56	22	23	*10	30	41	*22	16	21	10	12
21	22	*46	23	*23	11	31	41	22	17	24	10	12
22	24	41	25	23	12	30	40	21	16	24	9.5	12
23	26	36	26	23	30	29	39	20	18	*21	10	10
24	26	31	28	24	200	29	42	20	18	21	12	14
25	24	32	30	25	380	29	41	20	23	20	11	13
26	24	34	31	25	310	28	42	20	20	15	10	12
27	24	35	31	25	250	28	41	19	20	14	12	10
28	23	35	29	25	190	28	40	19	18	14	13	10
29	23	34	28	25	.....	28	39	19	19	18	12	11
30	23	32	26	25	.....	27	36	18	19	16	12	9.5
31	22	.....	24	24	.....	26	.....	21	.....	15	12	.....

Turkey River at Spillville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	9.5	13	13	7.5	4.4	6.5	1,800	42	326	460	34	53
2.....	9.5	12	11	7.1	4.4	7.0	1,390	42	178	326	33	91
3.....	9.5	12	9.6	6.6	4.4	7.5	925	42	119	214	43	100
4.....	9.5	10	8.8	6.2	4.5	8.4	540	40	93	159	39	102
5.....	9.5	11	10	5.9	4.6	9.4	385	41	70	129	36	70
6.....	10	10	11	5.5	4.7	10	278	47	61	108	34	57
7.....	12	11	9.7	5.2	4.8	9.2	220	44	55	*91	32	48
8.....	13	12	9.0	5.0	4.8	8.8	178	42	50	100	32	43
9.....	12	10	8.6	5.0	4.9	8.4	150	41	46	144	31	40
10.....	10	10	8.2	5.1	5.0	8.0	132	44	*43	218	30	38
11.....	10	10	8.0	5.2	5.0	7.8	115	42	41	155	31	35
12.....	10	10	7.7	5.4	5.0	*7.6	102	39	38	115	30	34
13.....	10	11	7.5	*5.6	5.0	8.0	*91	34	35	97	28	32
14.....	11	11	7.4	5.7	5.0	8.6	98	*32	34	82	27	32
15.....	10	10	*7.3	5.9	4.9	8.4	88	30	33	73	36	30
16.....	11	10	7.3	6.0	4.8	8.4	82	28	31	67	32	28
17.....	11	*18	7.3	6.0	*4.7	8.4	81	26	29	65	39	27
18.....	9.5	27	7.4	6.0	4.6	9.0	79	28	28	65	31	26
19.....	8.9	24	7.5	5.9	4.5	10	78	32	28	62	27	28
20.....	*8.9	17	7.6	5.9	4.5	12	74	117	25	61	26	28
21.....	8.9	16	7.8	5.8	4.5	25	70	79	24	60	35	28
22.....	10	15	8.0	5.6	4.6	35	65	67	23	55	214	*104
23.....	10	16	8.2	5.4	4.7	60	61	55	23	52	123	214
24.....	12	16	8.4	5.2	4.9	120	57	47	27	48	*104	194
25.....	11	14	8.5	5.0	5.1	220	53	44	97	46	71	142
26.....	12	12	8.5	4.9	5.4	*390	53	50	*888	43	67	238
27.....	12	11	8.5	4.7	5.7	460	53	48	326	*41	132	460
28.....	13	10	8.4	4.6	6.0	800	50	41	203	39	203	337
29.....	13	12	8.2	4.6	.....	1,400	49	93	169	38	100	197
30.....	13	14	8.0	4.5	.....	1,750	44	67	291	38	70	146
31.....	13	.....	7.8	4.5	.....	1,850	.....	315	.....	35	60	.....
1959-60												
1.....	121	55	70	100	38	30	190	266	130	204	56	75
2.....	110	53	74	82	37	29	194	175	250	179	*54	65
3.....	107	52	77	70	36	28	224	143	190	213	56	59
4.....	102	120	74	86	41	27	152	*125	150	194	55	54
5.....	101	533	70	100	45	26	106	120	120	145	53	49
6.....	94	342	64	92	40	25	*89	730	100	*125	52	47
7.....	86	202	58	86	36	25	84	*2,040	90	115	52	44
8.....	84	177	54	82	34	24	79	690	*84	104	47	43
9.....	82	156	52	80	36	24	73	382	79	98	68	42
10.....	74	181	58	76	41	24	66	304	78	98	53	41
11.....	72	263	62	115	45	24	61	258	77	96	48	40
12.....	70	244	59	150	50	24	58	224	75	91	45	39
13.....	66	156	58	100	40	24	61	200	73	88	43	39
14.....	65	120	58	74	36	25	91	181	69	82	50	*37
15.....	64	100	56	58	35	26	112	164	65	78	45	37
16.....	59	86	*56	50	34	*26	192	171	116	73	43	40
17.....	58	76	58	44	*34	26	1,250	237	533	72	40	41
18.....	56	*90	56	40	34	26	690	294	179	75	49	44
19.....	52	110	56	*38	34	26	321	224	121	72	55	47
20.....	*49	130	55	37	34	27	258	213	110	64	53	45
21.....	49	104	53	39	34	27	230	278	130	60	49	43
22.....	49	92	50	40	33	27	200	424	231	62	45	200
23.....	50	92	47	41	33	27	175	258	878	109	42	339
24.....	60	96	48	41	33	28	160	194	1,890	78	40	173
25.....	58	91	49	40	33	28	150	177	454	72	40	581
26.....	60	82	72	39	32	28	190	173	287	73	84	290
27.....	62	74	141	38	31	400	179	168	235	106	86	160
28.....	61	67	550	38	31	900	127	162	881	82	68	121
29.....	60	60	484	38	31	617	136	158	632	69	107	107
30.....	58	65	194	38	.....	*1,580	304	152	275	64	181	100
31.....	56	.....	125	38	.....	342	.....	145	.....	60	192	.....

Turkey River at Spillville, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56									43.1	36.8	49.3	26.9
1956-57	20.2	21.0	15.6	15.1	26.1	45.3	30.1	62.6	77.3	85.3	33.6	32.6
1957-58	23.6	31.4	26.1	20.7	61.1	46.5	53.5	25.6	20.1	31.2	13.9	12.5
1958-59	10.7	13.2	8.52	5.53	4.84	235	248	56.1	114	106	59.0	100
1959-60	70.8	136	98.0	64.2	36.2	146	207	304	286	100	62.9	101

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56									0.244	0.208	0.279	0.152
1956-57	0.114	0.119	0.088	0.085	0.147	0.256	0.170	0.354	.437	.482	.190	.184
1957-58	.133	.177	.147	.117	.345	.263	.302	.145	.114	.176	.079	.071
1958-59	.060	.075	.048	.031	.027	1.33	1.40	.317	.644	.599	.333	.565
1959-60	.400	.768	.554	.363	.205	.825	1.17	1.72	1.62	.565	.355	.571

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56									0.27	0.24	0.32	0.17
1956-57	0.13	0.13	0.10	0.10	0.15	0.29	0.19	0.41	.49	.56	.22	.21
1957-58	.15	.20	.17	.13	.36	.30	.34	.17	.13	.20	.09	.08
1958-59	.07	.08	.06	.04	.03	1.53	1.56	.37	.72	.69	.38	.63
1959-60	.46	.85	.64	.42	.22	.95	1.30	1.98	1.80	.65	.41	.64

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1956(1)	July 31, 1956.	4.13	398	19					
1957	July 16, 1957.	6.73	1,230	9.6	38.8	0.219	2.98	40.9	3.14
1958	Feb. 24, 1958.	5.17	500	8.9	30.3	.171	2.32	26.2	2.01
1959	Mar. 30, 1959.	(2)9.12	2,100	4.4	80.3	.454	6.16	103	7.90
1960	Mar. 30, 1960.	10.70	3,220	24	134	.757	10.32		

(1) Period June 1, 1956 to Sept. 30, 1956.

(2) Maximum gage height, 11.48 ft. Mar. 29, 1959 (backwater from ice).

Peak Discharge (base, 1,700 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: No peak above base.

1958-59: Mar. 30 (10 p.m.) 2,100 cfs (9.12 ft.).

1959-60: Mar. 30 (5 a.m.) 3,220 cfs (10.70 ft.); May 7 (3 p.m.) 2,360 cfs (9.18 ft.); June 24 (9 a.m.) 2,860 cfs (10.12 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 21 to Dec. 31, 1956; Jan. 1 to Mar. 17, Nov. 9-11, Nov. 18 to Dec. 31, 1957; Jan. 1 to Mar. 10, Nov. 26 to Dec. 31, 1958; Jan. 1 to Mar. 29, Nov. 14-21, Nov. 26 to Dec. 2, Dec. 6-10, 22-24, 31, 1959; Jan. 1 to Mar. 28, 1960. No gage-height record Apr. 2-13, May 18 to June 8, Oct. 19, 1959; Apr. 21-25, May 27 to June 7, 1960.

Turkey River at Garber, Iowa

LOCATION.—Lat. 42°44'20", long. 91°15'45", NE¼SW¼ sec. 36, T. 92 N., R. 4 W., on left bank 10 ft. downstream from highway bridge at Garber, 800 ft. upstream from Wayman Creek, 2,000 ft. downstream from Elk Creek, and 1 mile downstream from Volga River.

DRAINAGE AREA.—1,545 square miles (revised in 1956).

RECORDS AVAILABLE.—August 1913 to November 1916, May 1919 to September 1927, April 1929 to September 1930, October 1932 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 635.34 ft. above mean sea level, adjustment of 1912. Prior to Feb. 7, 1935, chain gage at same site and datum.

AVERAGE DISCHARGE.—40 years (1913-1916, 1919-27, 1929-30, 1932-60), 851 cfs.

EXTREMES.—1913-16, 1919-27, 1929-30, 1932-60: Maximum discharge, 32,000 cfs Feb. 23, 1922 (gage height, 28.06 ft., from floodmark); minimum daily, 49 cfs Jan. 28, 29, 1940.

Maximum stage known since about 1890, that of Feb. 23, 1922.

REMARKS.—Records of water temperatures and suspended-sediment loads for the period October 1957 to September 1960 are published in reports of the U. S. Geological Survey. The left bank is overflowed about gage height, 15 ft.; the right bank is never overtopped.

REVISIONS (water years).—WSP 1308: 1922-25(M), 1927(M).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	150	168	94	110	130	540	2,350	*700	*504	304	1,500	382
2.....	138	165	105	108	130	1,800	2,960	725	410	280	1,170	280
3.....	150	160	115	110	130	1,600	3,320	775	390	331	850	236
4.....	142	158	120	118	130	1,300	*2,960	1,110	351	328	650	222
5.....	152	162	*120	125	130	940	2,350	1,460	325	301	725	633
6.....	682	150	118	125	130	1,100	1,400	1,460	304	280	592	344
7.....	442	152	114	120	130	740	1,080	1,370	295	380	504	322
8.....	348	158	110	118	130	500	932	1,080	286	1,020	418	325
9.....	259	150	104	116	130	390	825	960	274	850	*368	292
10.....	236	148	97	120	130	320	700	825	265	600	331	271
11.....	214	152	90	125	130	270	650	850	250	*408	304	250
12.....	201	148	92	128	126	280	582	750	239	348	283	*233
13.....	195	145	*100	130	124	*304	536	700	214	310	301	228
14.....	188	142	100	130	120	344	500	700	193	292	316	217
15.....	185	148	96	128	*120	307	460	725	201	274	286	209
16.....	172	*125	90	126	120	277	436	628	198	250	256	190
17.....	182	100	87	124	120	319	411	*552	214	270	253	195
18.....	180	115	90	*122	126	400	*363	508	275	354	256	188
19.....	170	135	98	120	130	334	372	468	596	490	253	190
20.....	*182	160	100	122	130	628	351	433	700	496	256	182
21.....	175	165	102	126	130	1,380	337	415	512	386	236	180
22.....	172	162	102	130	130	800	313	422	393	358	*214	175
23.....	170	152	102	130	130	905	304	393	657	325	206	165
24.....	190	132	102	130	175	587	283	354	650	280	201	170
25.....	180	120	105	130	300	1,290	298	337	415	319	185	158
26.....	170	110	108	130	240	2,220	298	322	*354	*310	182	155
27.....	170	100	112	130	205	3,580	531	319	386	256	170	155
28.....	168	88	118	130	200	10,300	650	536	448	233	162	150
29.....	170	78	124	130	190	7,500	1,060	569	390	228	178	145
30.....	175	88	125	130	190	4,160	800	950	341	225	1,100	140
31.....	172	.....	120	130	.....	2,690	.....	605	.....	843	926	.....

Turkey River at Garber, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	144	148	210	148	160	300	316	241	2,080	540	655	239
2	142	150	200	140	160	280	335	*223	1,430	500	316	233
3	140	150	200	140	160	286	307	215	1,100	456	278	202
4	140	150	190	130	160	316	319	202	895	476	258	192
5	136	152	180	130	160	335	319	185	820	456	241	185
6	131	155	170	130	160	295	304	208	795	438	231	188
7	127	157	160	130	160	272	298	188	670	410	228	178
8	132	157	150	120	*170	241	292	181	620	395	215	172
9	127	152	160	120	300	250	283	178	600	361	213	172
10	129	152	178	110	800	236	275	316	969	341	213	165
11	136	155	182	110	900	252	269	252	*2,670	322	200	176
12	131	155	190	110	700	236	266	241	1,760	368	213	185
13	138	152	200	100	780	258	252	260	1,550	546	195	188
14	266	159	180	100	840	266	258	272	*1,130	388	*205	188
15	213	*724	170	100	640	292	258	298	870	348	195	185
16	*188	563	160	100	500	252	252	292	3,150	1,240	190	190
17	167	354	150	100	390	236	*255	316	1,700	1,770	190	185
18	161	292	150	100	300	266	239	313	5,840	980	185	181
19	163	263	*155	102	245	272	244	348	*3,190	670	200	*172
20	148	250	160	110	*210	247	304	388	1,870	520	192	178
21	152	269	160	800	190	*228	319	*417	1,430	480	*190	183
22	150	181	170	1,000	180	255	325	520	1,130	1,560	174	178
23	148	205	172	*310	180	453	310	520	920	580	178	174
24	148	220	174	260	180	870	289	428	820	435	185	159
25	148	230	170	210	190	1,010	275	546	745	*371	185	150
26	161	210	170	190	210	670	344	492	950	313	198	*142
27	152	210	170	180	240	540	301	540	820	338	188	132
28	152	210	170	170	270	480	286	560	695	298	198	131
29	150	200	160	170	.....	424	292	600	670	351	220	118
30	152	210	160	170	.....	378	260	2,970	620	304	295	131
31	146	.....	150	170	.....	348	.....	3,090	.....	591	258	.....
1957-58												
1	*116	183	180	150	140	950	*205	260	*1,060	*132	210	114
2	125	181	190	138	140	720	226	244	540	136	185	123
3	119	181	200	125	135	580	236	244	344	136	167	121
4	119	202	170	115	130	*196	250	220	*310	176	157	107
5	119	208	190	105	130	424	366	239	278	213	198	112
6	119	202	190	103	120	402	620	226	247	213	*208	123
7	125	202	180	103	115	399	645	*220	228	220	185	119
8	123	200	170	103	110	385	770	218	1,060	195	163	140
9	127	168	180	103	105	364	670	205	774	178	176	129
10	127	150	120	103	103	351	560	190	425	167	152	110
11	129	160	160	105	100	328	500	190	348	161	403	109
12	132	192	145	110	96	361	460	190	289	157	352	109
13	127	192	140	118	95	420	417	174	298	138	821	100
14	144	192	140	122	94	388	388	174	266	226	403	96
15	*161	192	140	122	94	344	*368	174	244	1,110	349	*118
16	174	228	155	122	94	304	354	*170	247	1,120	255	109
17	170	210	*155	122	94	304	338	172	*241	605	223	107
18	170	263	170	122	*94	*247	319	161	210	468	198	105
19	165	*310	180	122	94	269	310	172	234	417	*178	107
20	157	236	200	122	94	260	301	155	183	344	176	96
21	174	195	195	122	94	258	292	144	170	301	805	100
22	167	175	190	125	94	252	286	165	150	*269	293	102
23	202	205	215	130	200	233	286	146	165	215	174	98
24	255	220	230	135	900	247	316	146	157	215	159	110
25	220	220	240	140	2,000	233	310	138	183	210	170	116
26	208	222	225	145	2,230	218	304	150	185	200	140	102
27	188	224	215	150	1,000	220	295	146	165	183	129	100
28	202	210	205	150	1,310	218	269	134	152	200	132	86
29	185	170	190	*150	.....	218	286	131	134	280	136	90
30	185	140	175	145	.....	208	260	119	146	316	127	96
31	181	.....	160	145	.....	223	.....	2,960	.....	252	107	.....

Turkey River at Garber, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	82	90	140	74	58	90	14,000	435	*4,070	6,050	242	562
2.....	82	97	130	74	56	120	11,800	403	2,330	3,980	233	*514
3.....	90	98	100	70	56	160	9,740	367	1,650	2,640	2,110	640
4.....	92	111	90	70	56	140	5,960	376	1,320	2,120	*970	635
5.....	82	88	100	68	56	120	4,700	334	1,070	1,710	581	571
6.....	82	93	110	66	56	110	3,280	376	960	1,380	467	547
7.....	83	113	100	64	56	100	2,400	*390	800	1,150	430	463
8.....	115	88	90	64	58	94	1,980	359	725	*1,040	376	408
9.....	373	95	80	66	58	90	1,650	342	*650	1,240	351	338
10.....	111	95	72	66	58	84	1,380	431	605	988	342	342
11.....	93	97	68	66	60	80	1,240	1,040	562	1,070	326	318
12.....	90	97	64	68	60	76	1,100	*620	510	960	*330	299
13.....	88	100	62	*70	60	76	1,020	500	449	780	322	274
14.....	100	113	60	72	62	80	*932	421	417	760	318	277
15.....	82	88	60	74	62	90	850	376	390	650	403	*270
16.....	82	97	*60	76	62	100	800	334	334	605	385	259
17.....	83	130	60	76	*62	110	775	281	351	566	376	252
18.....	83	*624	60	76	60	150	775	299	307	605	326	246
19.....	85	776	62	76	58	400	750	1,780	307	581	296	246
20.....	85	435	64	74	58	*5,600	700	3,670	296	524	281	246
21.....	*97	274	66	72	60	3,200	675	2,050	281	463	430	236
22.....	100	252	68	72	64	2,700	630	1,530	266	426	3,570	236
23.....	86	208	70	70	66	3,100	590	1,210	242	408	1,440	236
24.....	88	220	72	70	70	7,970	557	1,040	804	376	960	307
25.....	106	180	72	68	68	*11,100	533	960	3,120	322	800	538
26.....	90	140	74	66	68	*13,000	496	1,550	8,950	296	700	1,310
27.....	102	120	74	64	68	10,500	482	1,560	4,600	277	1,120	3,260
28.....	110	105	76	62	68	10,800	514	988	3,810	277	960	1,710
29.....	95	100	76	60	60	11,000	514	1,800	3,440	342	800	1,530
30.....	100	120	76	60	60	12,100	435	1,710	3,840	326	800	1,120
31.....	110	.....	76	58	.....	13,200	.....	3,220	.....	274	725	.....
1959-60												
1.....	905	380	*640	1,470	520	370	4,300	4,900	3,760	1,460	446	526
2.....	775	367	700	1,200	500	*350	3,120	3,120	4,900	1,190	418	450
3.....	750	*359	675	860	480	350	2,540	*2,540	2,620	1,070	446	395
4.....	700	1,780	650	950	500	340	2,220	2,110	2,070	990	504	366
5.....	725	3,710	650	1,100	510	330	1,790	1,930	1,760	962	430	330
6.....	700	3,200	560	1,200	500	320	1,520	7,550	1,320	*910	403	330
7.....	700	2,480	510	1,100	480	310	1,340	15,400	1,370	835	475	307
8.....	675	1,840	460	1,000	470	*295	1,220	11,800	*1,280	785	635	294
9.....	620	1,650	450	900	480	290	1,070	7,240	1,190	760	522	284
10.....	590	1,590	500	850	510	280	962	4,600	1,160	760	*660	278
11.....	557	1,530	528	800	600	280	910	3,660	1,160	735	492	259
12.....	514	1,500	538	4,000	560	280	*860	*3,030	1,100	*735	422	281
13.....	*505	1,590	519	*5,630	480	280	835	2,620	1,070	835	391	*262
14.....	486	1,260	491	2,050	440	280	835	2,380	1,020	685	391	262
15.....	472	1,020	486	1,400	460	280	910	2,070	1,580	635	418	262
16.....	444	900	491	1,000	430	290	1,130	3,170	*1,280	588	395	265
17.....	417	800	486	850	420	290	4,720	4,020	990	574	373	288
18.....	398	1,000	472	940	*420	300	8,320	2,700	1,340	566	530	317
19.....	385	1,200	453	1,100	410	300	5,000	2,620	1,280	552	600	685
20.....	359	1,500	444	1,000	410	310	3,300	2,540	1,130	522	1,010	418
21.....	351	1,200	444	900	410	310	2,780	3,300	1,250	496	735	362
22.....	338	1,020	430	820	400	310	2,300	2,860	1,160	475	556	446
23.....	440	878	403	760	400	310	2,000	2,700	1,190	1,100	462	517
24.....	453	840	435	720	390	310	1,720	2,460	1,520	835	410	735
25.....	449	800	426	680	390	290	1,550	2,300	3,300	810	384	962
26.....	449	700	557	610	380	280	1,930	2,000	2,380	785	369	860
27.....	426	640	1,320	600	380	1,500	2,070	1,930	1,490	760	362	1,070
28.....	363	560	2,260	590	370	7,000	1,680	1,930	2,380	660	373	760
29.....	403	500	3,360	560	370	14,600	1,550	1,930	1,580	566	588	635
30.....	394	560	2,960	550	.....	*17,900	3,300	1,760	2,140	513	*548	566
31.....	408	.....	1,910	520	.....	8,780	.....	1,580	.....	471	479	.....

Turkey River at Garber, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	209	138	105	124	146	1,552	948	710	369	384	440	233
1956-57	152	224	172	192	341	356	288	510	1,417	553	228	175
1957-58	159	201	180	125	389	349	374	270	314	295	243	108
1958-59	102	175	78.5	68.8	60.9	3,440	2,375	992	1,582	1,071	702	606
1959-60	521	1,245	813	1,185	451	1,862	2,259	3,703	1,732	762	491	459

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.135	0.089	0.068	0.080	0.091	1.00	0.614	0.460	0.239	0.249	0.285	0.151
1956-57 . . . . .	.098	.145	.111	.124	.221	.230	.186	.330	.917	.358	.118	.113
1957-58 . . . . .	.103	.130	.117	.081	.252	.226	.242	.175	.203	.191	.157	.070
1958-59 . . . . .	.066	.113	.051	.045	.039	2.23	1.54	.642	1.02	.693	.454	.392
1959-60 . . . . .	.337	.806	.526	.767	.292	1.21	1.46	2.40	1.12	.493	.318	.297

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.16	0.10	0.08	0.09	0.10	1.16	0.68	0.53	0.27	0.29	0.33	0.17
1956-57 . . . . .	.11	.16	.13	.14	.23	.27	.21	.38	1.02	.41	.17	.13
1957-58 . . . . .	.12	.15	.13	.09	.26	.26	.27	.20	.23	.22	.18	.08
1958-59 . . . . .	.08	.13	.06	.05	.04	2.57	1.72	.74	1.14	.80	.52	.44
1959-60 . . . . .	.39	.90	.61	.88	.31	1.39	1.63	2.76	1.25	.57	.37	.33

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year			
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches	
	Date	Gage height in feet	Discharge							
1955									484	4.26
1956	Mar. 28, 1956	17.00	12,300	78	448	0.290	3.96	456	4.02	
1957	June 18, 1957	14.20	7,320	100	383	.248	3.36	382	3.36	
1958	May 31, 1958	17.61	12,100	86	250	.162	2.19	234	2.06	
1959	Mar. 26, 1959	21.06	17,000	56	942	.610	8.29	1,128	9.91	
1960	Mar. 30, 1960	22.96	20,000	259	1,293	.837	11.39	.....	.....

Peak Discharge (base, 8,000 cfs)

- 1955-56: Mar. 28 (1 p.m.) 12,300 cfs (17.00 ft).
 1956-57: No peak above base.
 1957-58: May 31 (5 p.m.) 12,100 cfs (17.61 ft).
 1958-59: Mar. 26 (6:30 p.m.) 17,000 cfs (21.06 ft.); Apr. 1 (7:30 a.m.) 15,000 cfs (19.93 ft.); June 26 (9 a.m.) 11,400 cfs (17.35 ft).
 1959-60: Jan. 12 (11 p.m.) 15,200 cfs (20.02 ft.); Mar. 30 (5 a.m.) 20,000 cfs (22.96 ft.); Apr. 18 (8 a.m.) 8,820 cfs (15.52 ft.); May 6 (9 p.m.) 17,000 cfs (21.07 ft.); June 1 (5 p.m.) 8,700 cfs (15.40 ft).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 16-20, Nov. 25 to Dec. 31, 1955; Jan. 1 to Mar. 12, Nov. 23 to Dec. 31, 1956; Jan. 1 to Mar. 2, Nov. 9-11, Nov. 21 to Dec. 31, 1957; Jan. 1 to Feb. 25, Nov. 26 to Dec. 31, 1958; Jan. 1 to Mar. 23, Nov. 16-22, 24, Nov. 26 to Dec. 1, Dec. 6-10, 1959; Jan. 2-12, Jan. 15 to Mar. 28, 1960.

Little Maquoketa River near Durango, Iowa

LOCATION.—Lat. 42°33'25", long. 90°44'45", in NW¼ NE¼ sec. 5, T. 89 N., R. 2 E., on left bank 10 ft. upstream from highway bridge, 1½ miles east of Durango, 5 miles northwest of Dubuque, and 7.0 miles upstream from mouth.

DRAINAGE AREA.—130 square miles.

RECORDS AVAILABLE.—October 1934 to September 1960.

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

AVERAGE DISCHARGE.—26 years, 77.8 cfs.

EXTREMES.—1934-60: Maximum discharge, 23,000 cfs June 13, 1947 (gage height, 21.23 ft., from rating curve extended above 6,300 cfs on basis of slope-area measurements at gage heights 17.05, 19.82, 20.75 and 22.1 ft.; minimum daily, 5 cfs July 12, 13, 1936.

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

REMARKS.—Bankfull stage is about gage height, 15 ft.

REVISIONS (water years).—WSP 1508: 1935-38, 1939(M), 1940, 1943(M), 1946, 1948.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	10	15	9.6	12	11	480	18	*53	32	7.8	39	36
2	8.2	14	11	12	11	255	41	43	27	7.8	19	21
3	8.2	13	12	13	10	142	42	36	23	7.4	15	16
4	7.8	12	14	12	10	56	*34	37	21	8.2	13	15
5	17	12	*14	12	10	64	27	75	19	9.1	11	60
6	33	12	12	12	12	53	23	77	17	8.6	10	36
7	26	12	12	11	12	35	25	50	17	76	9.6	19
8	18	12	12	10	12	25	22	38	17	893	*9.1	14
9	14	12	11	10	12	23	21	187	14	44	9.1	12
10	12	13	9.6	10	12	21	19	123	13	*23	8.6	12
11	11	13	8.6	10	13	18	17	74	12	17	8.2	12
12	12	13	8.2	10	14	17	17	58	11	14	8.2	*11
13	13	13	8.2	9.6	14	16	16	48	10	13	9.1	11
14	12	12	*9.1	9.6	18	*19	15	42	9.1	11	9.6	11
15	12	12	8.2	10	*22	16	14	33	9.1	11	8.2	11
16	13	*12	7.4	11	24	15	15	30	9.6	11	7.8	11
17	13	10	7.4	*12	19	16	14	*30	11	10	7.8	11
18	13	11	7.4	11	14	16	13	25	12	16	9.1	11
19	14	12	8.2	11	13	16	*13	22	11	13	9.6	11
20	*13	12	9.1	10	12	16	13	20	11	17	9.1	11
21	13	12	9.6	9.6	11	16	13	20	9.6	13	8.2	9.6
22	13	12	9.6	11	16	13	29	51	11	11	*7.4	9.6
23	13	12	10	9.0	11	16	13	38	30	9.6	7.8	9.6
24	14	11	50	9.0	500	16	13	21	15	9.1	8.2	9.6
25	14	11	134	9.0	335	16	14	18	11	9.1	7.8	9.6
26	12	10	33	9.0	352	17	16	16	*12	*9.1	8.2	9.6
27	13	9.8	25	9.0	150	18	114	17	17	8.2	8.6	9.6
28	13	9.2	20	9.2	45	43	122	38	11	8.2	9.1	9.1
29	16	8.6	17	10	203	36	207	126	8.6	8.2	11	9.6
30	18	9.0	14	10	.....	23	86	81	8.2	8.2	174	10
31	18	.....	13	11	.....	19	.....	*40	.....	80	410	.....

Little Maquoketa River near Durango, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1.....	12	6.3	10	9.6	14	22	17	27	162	18	*110	24
2.....	11	6.3	11	8.6	14	17	23	*18	108	17	29	18
3.....	11	6.3	12	8.2	13	14	26	19	85	17	50	14
4.....	11	6.3	11	9.2	13	15	22	17	70	17	33	13
5.....	11	7.0	12	9.6	12	16	28	13	117	11	21	12
6.....	11	8.2	12	9.1	12	14	28	12	102	8.6	17	11
7.....	9.6	7.0	12	9.6	*12	13	22	15	60	12	16	11
8.....	11	6.3	9.1	9.6	12	12	21	13	56	39	14	11
9.....	9.6	6.0	8.2	9.6	150	13	19	18	81	38	13	10
10.....	9.6	6.3	9.1	8.6	160	13	17	81	67	22	13	10
11.....	9.6	6.3	10	8.6	58	14	18	170	158	18	13	12
12.....	9.6	6.6	9.0	8.6	102	16	17	56	73	82	12	20
13.....	8.6	6.6	8.6	8.0	197	17	15	53	92	54	12	17
14.....	8.6	9.0	8.6	7.6	153	17	14	74	*67	27	45	12
15.....	8.6	*128	11	6.9	68	22	14	*95	53	22	*14	12
16.....	8.6	22	11	6.0	36	17	14	60	260	269	12	12
17.....	*8.6	14	11	5.8	31	16	14	53	80	58	11	10
18.....	8.6	11	9.2	6.2	27	17	*14	48	64	27	12	*10
19.....	9.1	11	*9.1	7.0	19	20	14	42	50	21	14	*9.6
20.....	9.6	11	9.6	7.8	*17	17	19	38	42	18	12	11
21.....	9.6	14	10	1,040	17	*17	15	115	35	45	12	20
22.....	9.6	12	11	193	14	17	16	108	31	105	*10	17
23.....	9.6	11	14	33	13	22	22	*59	27	35	11	13
24.....	8.2	11	22	*29	107	26	20	45	26	21	13	11
25.....	9.1	11	19	22	144	22	22	48	26	*17	12	11
26.....	14	11	14	17	59	20	124	65	125	15	12	10
27.....	12	11	13	16	29	18	55	46	35	14	12	10
28.....	8.6	11	14	15	23	19	35	36	33	14	21	10
29.....	8.2	9.1	12	15	.....	19	28	38	26	17	25	10
30.....	8.2	10	12	14	.....	17	31	217	22	14	418	10
31.....	6.6	.....	12	14	.....	17	.....	494	.....	655	44	.....
1957-58												
1.....	10	11	15	12	10	36	*14	16	62	10	9.2	6.0
2.....	10	12	14	12	10	31	17	16	18	12	8.6	6.0
3.....	10	12	13	10	9.8	27	19	18	13	13	8.0	6.4
4.....	10	12	12	9.8	9.8	*25	20	17	12	252	7.6	7.2
5.....	9.8	12	13	9.8	10	22	167	16	*12	51	7.6	7.2
6.....	10	11	14	12	10	21	176	14	10	29	*8.6	8.6
7.....	10	12	13	12	9.8	23	102	*14	12	22	9.8	9.2
8.....	11	16	13	10	8.6	22	75	14	642	19	6.4	7.6
9.....	11	18	12	10	7.6	20	62	13	134	16	5.2	7.2
10.....	12	14	10	11	7.2	20	53	13	43	15	5.2	6.4
11.....	12	13	9.0	12	7.2	18	48	13	28	15	118	6.4
12.....	12	14	8.6	11	7.2	20	42	12	21	18	130	6.4
13.....	12	16	9.8	11	7.2	22	38	12	64	16	82	6.0
14.....	12	18	11	12	7.6	22	35	11	42	15	19	6.0
15.....	17	17	11	12	8.2	19	32	11	28	15	16	8.0
16.....	20	17	12	12	8.2	18	*30	11	24	13	12	8.0
17.....	*14	16	12	12	8.2	17	27	12	35	12	9.2	*8.0
18.....	11	23	*24	12	*8.2	16	26	13	*27	12	8.0	7.6
19.....	9.8	*60	46	12	6.8	*16	25	12	29	12	6.4	7.6
20.....	9.8	30	28	12	6.8	16	25	11	40	12	*269	7.2
21.....	9.8	24	20	13	6.8	16	25	*11	20	11	*74	7.2
22.....	9.8	20	19	*13	6.8	16	26	12	17	*10	22	7.2
23.....	21	19	18	12	250	16	24	13	16	9.8	15	7.2
24.....	27	20	16	12	664	15	26	12	16	9.8	13	13
25.....	18	18	19	12	151	14	24	12	18	9.8	11	15
26.....	13	16	17	12	98	14	20	12	16	9.2	9.2	12
27.....	12	17	13	12	86	14	19	12	14	9.2	8.0	12
28.....	11	16	15	12	52	14	19	11	12	9.8	7.6	9.8
29.....	11	16	14	12	.....	14	19	11	12	12	7.6	9.8
30.....	12	11	13	*12	.....	14	16	12	11	16	7.2	16
31.....	12	.....	12	11	.....	14	.....	41	.....	11	6.4	.....

Little Maquoketa River near Durango, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1....	15	11	9.8	10	10	110	*2,850	110	88	192	15	26
2....	16	10	11	10	10	250	460	80	74	83	13	*24
3....	19	11	13	9.0	10	150	330	70	64	62	36	21
4....	18	11	15	8.0	10	88	200	63	57	66	*33	18
5....	15	11	12	7.2	10	56	166	56	52	97	20	17
6....	19	11	9.8	7.2	10	33	122	62	48	55	18	16
7....	32	11	8.8	7.6	10	26	124	*50	43	45	24	15
8....	32	12	8.6	8.6	10	26	110	44	40	*41	20	14
9....	336	13	8.6	8.6	10	33	96	42	*36	39	17	13
10....	46	12	8.8	8.0	10	54	83	70	34	*34	16	13
11....	26	12	9.0	8.0	10	*83	74	148	37	32	*16	13
12....	16	12	9.2	8.0	10	87	68	*72	33	30	16	13
13....	16	12	9.4	8.6	10	65	62	59	28	60	16	13
14....	14	16	9.6	*9.8	10	58	58	54	26	72	223	13
15....	13	16	9.8	18	10	52	*54	52	27	32	286	13
16....	12	15	*10	15	9.8	40	50	46	26	26	47	*13
17....	12	24	10	14	9.8	31	52	43	25	76	35	13
18....	11	62	10	10	*9.8	27	72	40	23	52	26	12
19....	11	*26	10	9.8	9.8	1,400	55	*777	25	31	21	13
20....	11	18	10	9.8	9.8	*2,400	51	255	22	29	19	13
21....	11	15	9.5	11	10	859	47	183	21	23	47	13
22....	*16	14	9.5	12	10	372	44	121	20	20	114	13
23....	15	13	10	12	12	1,400	41	151	19	20	32	13
24....	12	16	10	11	13	1,870	42	105	59	21	22	13
25....	12	16	10	10	13	756	40	88	334	17	18	20
26....	12	14	9.5	11	14	2,010	36	241	53	16	27	44
27....	12	13	10	10	15	*779	40	141	37	20	294	110
28....	12	12	10	10	54	513	563	173	33	21	69	31
29....	12	11	10	10	.....	419	190	165	37	19	36	22
30....	12	10	10	10	.....	380	125	97	229	17	30	18
31....	11	.....	10	9.8	.....	475	.....	125	.....	16	28	.....
1959-60												
1....	16	60	*43	100	70	35	936	242	266	53	30	29
2....	17	53	42	80	66	*36	822	205	144	51	30	27
3....	22	*51	42	70	62	38	490	*173	108	52	36	26
4....	21	637	43	62	64	37	375	153	98	46	40	24
5....	91	534	42	*58	66	35	312	166	98	*45	31	23
6....	95	205	39	50	64	35	273	5,350	85	44	30	23
7....	125	146	36	58	60	38	235	2,820	*80	42	46	24
8....	61	125	32	56	64	*39	192	2,220	77	41	37	24
9....	51	121	30	55	*66	40	160	550	73	44	41	23
10....	43	105	28	55	49	39	143	362	79	62	40	23
11....	37	89	37	52	58	39	143	*286	80	52	*29	23
12....	33	80	37	4,530	62	38	127	233	82	*47	27	23
13....	31	78	35	1,380	54	39	119	205	84	56	26	24
14....	*30	65	33	270	50	37	*118	184	76	45	28	*24
15....	30	54	35	210	52	38	112	161	72	41	28	24
16....	28	47	34	170	54	37	125	204	85	40	26	27
17....	26	50	33	150	54	39	1,160	179	72	37	26	31
18....	25	54	30	135	50	41	505	144	64	37	26	187
19....	24	54	29	115	45	42	320	155	70	37	35	341
20....	23	53	30	105	45	40	262	161	66	35	43	46
21....	22	53	31	100	48	38	253	205	74	34	40	35
22....	22	55	26	94	48	39	179	150	66	34	31	36
23....	320	56	32	89	46	38	172	127	481	34	28	49
24....	215	57	33	90	45	37	155	160	108	32	27	160
25....	135	48	32	90	44	35	153	148	71	41	26	80
26....	105	43	52	85	43	37	183	121	61	61	25	44
27....	98	39	703	83	40	75	135	117	58	40	23	36
28....	79	36	496	79	39	450	122	111	56	35	27	32
29....	71	33	262	77	38	2,000	128	105	55	32	*88	31
30....	63	38	168	76	.....	3,460	388	97	52	31	41	31
31....	65	.....	131	74	.....	1,040	.....	87	.....	30	31	.....

Little Maquoketa River near Durango, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	14.1	11.7	17.2	10.4	65.3	50.2	34.3	49.8	16.0	44.9	28.7	14.9
1956-57.....	9.68	16.1	11.5	50.7	54.5	17.3	24.8	70.7	74.4	56.4	34.3	12.7
1957-58.....	12.6	17.7	15.4	11.6	53.0	19.1	41.7	13.8	48.3	22.5	29.9	8.41
1958-59.....	26.7	15.3	10.0	10.1	12.1	481	210	122	55.0	44.0	52.7	20.1
1959-60.....	65.3	104	86.3	281	53.3	258	293	503	98.0	42.3	33.6	51.0

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.108	0.090	0.132	0.080	0.502	0.386	0.264	0.383	0.123	0.345	0.221	0.115
1956-57.....	.074	.124	.088	.390	.419	.133	.191	.544	.572	.434	.264	.098
1957-58.....	.097	.136	.118	.089	.408	.147	.321	.106	.372	.173	.230	.065
1958-59.....	.205	.118	.077	.078	.093	3.70	1.62	.938	.423	.338	.405	.155
1959-60.....	.502	.800	.664	2.16	.410	1.98	2.25	3.87	.754	.325	.258	.392

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.13	0.10	0.15	0.09	0.54	0.44	0.29	0.44	0.14	0.40	0.25	0.13
1956-57.....	.09	.14	.10	.45	.44	.15	.21	.63	.64	.50	.30	.11
1957-58.....	.11	.15	.14	.10	.42	.17	.36	.12	.41	.20	.27	.07
1958-59.....	.24	.13	.09	.09	.10	4.26	1.81	1.08	.47	.39	.47	.17
1959-60.....	.58	.89	.77	2.49	.44	2.29	2.52	4.46	.84	.38	.30	.44

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches	
	Date	Gage height in feet	Discharge							
1955.....									37.8	3.94
1956.....	July 8, 1956.....	10.67	3,490	7.4	29.7	0.228	3.10	29.2	3.05	3.83
1957.....	July 31, 1957.....	11.93	4,330	5.8	36.0	.277	3.76	36.7	3.83	3.83
1958.....	Feb. 24, 1958.....	9.12	2,190	5.2	24.2	.186	2.52	24.8	2.58	2.58
1959.....	Apr. 1, 1959.....	15.95	8,200	7.2	89.0	.685	9.30	106	11.08	11.08
1960.....	Jan. 12, 1960.....	18.76	13,400	16	156	1.20	16.40			

Peak Discharge (base, 3,000 cfs)

1955-56: July 8 (3:30 a.m.) 3,490 cfs (10.67 ft.).

1956-57: Jan. 21 (6:30 p.m.) 4,260 cfs (11.83 ft.); July 31 (7 p.m.) 4,330 cfs (11.93 ft.).

1957-58: No peak above base.

1958-59: Mar. 19 about 5,400 cfs; Mar. 26 (6:30 p.m.) 4,900 cfs (13.13 ft.); Apr. 1 (7:30 a.m.) 8,200 cfs (15.95 ft.); May 19 (8 a.m.) 3,970 cfs (11.87 ft.).

1959-60: Jan. 12 (10 p.m.) 13,400 cfs (18.76 ft.); Mar. 30 (3 a.m.) 9,000 cfs (16.48 ft.); May 6 (5:30 p.m.) 10,700 cfs (17.48 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 26-30, Dec. 24, 1955; Jan. 18-30, Feb. 3-5, 24, 27, 28, Mar. 7-13, 15-18, Dec. 9, 12-14, 17, 18, 1956; Jan. 3, 4, 12-18, 23-29, Feb. 9, 10, Dec. 10, 11, 26-31, 1957; Feb. 15-18, 23, Nov. 28, 29, Dec. 7-31, 1958; Jan. 1-4, 15-17, Feb. 2-14, Mar. 1-3, 14-20, Nov. 15-17, 26-30, Dec. 7-10, 1959; Jan. 1-8, 14-22, Feb. 1 to Mar. 29, 1960.

Maquoketa River near Manchester, Iowa

LOCATION.—Lat. 42°27'25", long. 91°25'55", in NW¼NE¼ sec. 9, T. 88 N., R. 5 W., on left bank, 2 miles southeast of Manchester and 4.7 miles downstream from Honey and Prairie Creeks.

DRAINAGE AREA.—305 square miles (revised in 1956).

RECORDS AVAILABLE.—April 1933 to September 1960.

GAGE.—Water-stage recorder. Concrete control since June 1, 1935. Datum of gage is 895.06 ft. above mean sea level, adjustment of 1912.

AVERAGE DISCHARGE.—27 years, 187 cfs.

EXTREMES.—1933-60: Maximum discharge, 20,000 cfs June 13, 1947 (gage height, 21.36 ft., from floodmarks), from rating curve extended above 10,000 cfs by velocity-area studies; minimum daily, 6 cfs June 8, 29, 1934.

Maximum flood known at Manchester occurred June 15, 1925, stage unknown, discharge, 25,400 cfs (from determination of peak flow by Prof. F. A. Nagler, University of Iowa).

REMARKS.—Diurnal fluctuation at low stages caused by powerplant 2 miles above station. Banks not subject to being overflowed.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	31	40	37	33	41	113	59	123	205	42	68	84
2.....	40	50	44	38	40	112	72	140	118	48	50	55
3.....	63	44	43	35	39	79	83	104	48	53	46	
4.....	41	43	46	36	40	62	77	149	112	41	38	50
5.....	54	27	42	36	33	113	74	81	80	51	36	63
6.....	57	45	43	35	42	95	68	168	78	49	40	72
7.....	58	62	44	27	41	49	37	196	68	42	44	59
8.....	27	32	40	34	46	46	50	105	107	42	40	53
9.....	43	41	39	39	46	60	63	117	48	54	32	47
10.....	60	52	37	35	43	35	57	103	61	49	30	46
11.....	47	54	36	35	44	46	46	103	83	44	31	44
12.....	48	25	*42	35	34	*43	54	102	62	38	32	44
13.....	36	40	39	35	50	51	56	171	*57	46	41	42
14.....	55	*62	35	38	49	55	23	*104	*72	34	32	40
15.....	25	36	32	32	46	40	31	107	45	34	32	39
16.....	30	31	32	40	*47	58	*57	118	47	45	*39	38
17.....	*50	35	28	38	48	32	41	90	51	38	43	*36
18.....	51	53	34	40	37	45	29	100	65	47	32	36
19.....	33	30	39	37	38	59	31	90	83	46	29	36
20.....	34	45	32	*34	50	49	53	82	63	47	29	35
21.....	46	59	32	26	48	68	24	76	72	33	29	34
22.....	23	42	33	36	46	103	30	75	62	32	*30	35
23.....	29	43	39	44	44	101	43	72	43	*31	29	42
24.....	60	35	32	35	44	40	40	53	42	40	27	43
25.....	40	48	28	42	37	58	40	77	54	32	28	42
26.....	39	27	37	41	38	82	36	34	57	32	28	42
27.....	41	31	44	40	47	67	63	36	55	42	28	41
28.....	51	35	*40	41	54	98	66	606	*42	32	30	40
29.....	33	38	37	31	83	103	147	*484	58	32	30	41
30.....	46	39	35	41	.....	107	224	308	42	32	52	40
31.....	62	.....	36	41	.....	46	.....	267	.....	49	120	.....

Maquoketa River near Manchester, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1.....	39	36	39	29	44	66	59	52	464	162	92	54
2.....	39	36	39	28	44	38	58	37	281	99	62	47
3.....	37	36	39	30	44	50	54	61	219	84	47	58
4.....	36	36	39	29	46	63	64	36	195	76	58	42
5.....	36	37	40	29	37	53	66	36	172	72	73	43
6.....	38	38	40	28	40	54	64	53	140	61	47	44
7.....	33	38	37	28	44	45	76	50	130	76	39	39
8.....	34	36	35	27	56	44	78	34	90	82	55	33
9.....	32	35	34	27	154	36	54	36	109	84	45	33
10.....	34	34	37	25	691	41	50	81	173	70	38	42
11.....	34	36	33	24	259	56	52	141	*543	74	38	49
12.....	34	*36	30	23	145	48	46	119	491	62	50	60
13.....	34	34	28	22	241	51	27	111	269	34	52	48
14.....	40	39	29	22	336	42	40	118	210	43	49	42
15.....	*36	51	31	21	250	37	*59	149	188	66	45	48
16.....	35	46	31	20	146	38	45	148	*2,320	63	36	*50
17.....	35	42	*30	20	111	41	46	130	1,190	67	39	40
18.....	34	42	29	20	*96	*62	45	95	1,150	57	48	42
19.....	32	42	31	21	72	*51	48	103	913	71	*59	41
20.....	30	47	33	23	68	49	42	104	395	38	45	39
21.....	30	43	34	400	66	42	50	121	275	55	44	40
22.....	30	35	34	700	62	49	67	196	155	91	45	44
23.....	29	36	34	200	51	30	57	*166	177	59	47	46
24.....	29	37	35	120	61	54	47	119	200	56	37	38
25.....	32	41	35	80	93	71	47	105	161	*72	36	34
26.....	34	40	35	64	86	65	61	185	109	56	45	42
27.....	30	38	35	58	80	56	64	135	127	38	53	36
28.....	30	39	35	54	68	51	69	102	120	46	51	32
29.....	31	34	34	50	.....	50	79	110	96	72	50	36
30.....	34	38	33	46	.....	30	62	1,060	100	62	60	41
31.....	37	.....	32	45	.....	45	.....	1,300	.....	53	57	.....
1957-58												
1.....	36	43	27	23	30	104	24	24	1,830	28	49	27
2.....	37	43	62	22	30	116	42	47	488	60	32	30
3.....	37	47	61	22	30	44	72	25	191	58	30	35
4.....	36	47	68	28	30	97	74	29	174	30	28	37
5.....	32	44	74	37	35	90	77	86	117	31	29	49
6.....	36	41	51	40	28	90	158	68	106	42	28	26
7.....	44	41	25	35	27	86	136	26	93	99	51	25
8.....	36	48	25	39	27	26	159	24	30	30	57	32
9.....	33	36	67	43	27	26	112	50	253	43	28	33
10.....	40	37	57	50	27	86	122	25	231	27	28	43
11.....	37	39	25	31	25	41	73	24	138	27	28	25
12.....	30	44	22	40	26	42	76	64	99	28	30	46
13.....	39	99	24	46	27	46	30	26	151	34	30	28
14.....	*37	72	24	38	27	50	*114	38	111	59	34	35
15.....	55	33	24	39	27	54	90	24	33	30	73	*47
16.....	55	55	*88	40	27	52	59	52	*151	46	29	28
17.....	40	32	58	43	27	*55	65	25	92	49	32	41
18.....	40	101	64	42	27	50	58	23	69	48	*59	27
19.....	38	89	71	41	27	46	120	*49	71	44	30	45
20.....	38	81	79	*41	26	47	31	29	83	42	33	24
21.....	39	78	28	37	*26	53	42	29	27	39	72	30
22.....	54	*48	29	31	26	23	39	31	28	36	51	33
23.....	40	26	97	34	35	36	24	28	97	34	30	34
24.....	75	38	74	37	52	74	41	22	71	*33	30	40
25.....	50	72	28	37	90	44	51	22	55	55	41	27
26.....	35	83	51	37	240	37	24	57	32	29	29	29
27.....	44	45	88	36	140	39	24	23	39	30	30	23
28.....	46	25	35	35	90	52	96	31	24	30	34	22
29.....	44	23	26	33	.....	24	64	22	29	52	61	21
30.....	44	25	24	31	.....	32	41	26	79	29	29	21
31.....	43	.....	24	30	.....	79	.....	56	.....	29	26	.....

Maquoketa River near Manchester, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	19	30	30	24	19	45	1,400	113	363	3,500	99	82
2	19	30	30	23	19	56	1,120	69	278	1,220	63	70
3	19	31	34	22	19	75	690	66	222	571	127	68
4	20	30	34	22	19	45	461	106	108	398	107	71
5	22	32	29	21	19	31	340	117	121	604	101	34
6	29	31	27	21	19	33	323	116	196	*385	105	48
7	32	34	25	21	19	30	251	81	106	297	94	63
8	34	25	25	21	19	33	233	55	74	258	60	80
9	70	29	24	21	19	45	206	50	164	248	59	57
10	69	28	24	21	19	40	187	106	63	221	111	49
11	29	28	24	21	19	53	149	494	*63	192	100	37
12	30	28	24	*21	19	38	131	261	120	118	99	37
13	42	28	25	23	19	*50	*171	150	89	205	*90	32
14	22	30	26	25	25	49	150	*131	36	171	83	69
15	27	37	*26	22	30	44	138	134	76	100	64	*55
16	33	27	26	22	*28	41	132	87	83	134	66	54
17	56	*53	26	21	25	39	128	98	81	145	101	49
18	24	41	26	21	22	42	134	135	82	137	85	41
19	29	38	26	21	22	1,880	121	308	87	100	79	52
20	*29	38	27	21	22	1,480	130	760	69	148	71	34
21	30	50	27	21	22	1,700	123	1,480	30	126	71	88
22	30	27	27	21	22	1,360	113	616	93	116	51	60
23	29	35	27	21	22	1,610	102	419	77	113	35	58
24	41	35	27	20	22	2,920	108	321	76	109	83	47
25	22	45	27	19	22	*4,240	62	266	2,020	108	74	58
26	29	24	27	19	35	3,680	67	189	808	69	71	56
27	30	23	27	19	35	4,350	119	381	816	101	70	199
28	30	25	27	19	36	2,350	160	265	550	95	104	161
29	30	28	29	19	.....	1,460	137	332	1,120	135	100	80
30	30	29	24	19	.....	1,150	122	371	2,340	116	55	96
31	30	.....	26	19	.....	1,150	.....	350	.....	108	102	.....
1959-60												
1	90	86	126	278	160	100	3,500	1,750	443	171	153	151
2	105	97	*140	277	150	100	2,500	714	1,470	149	136	126
3	72	92	130	170	150	100	1,500	644	756	144	141	118
4	90	346	137	100	160	90	1,100	560	431	200	140	67
5	108	*1,540	127	130	170	70	800	430	438	166	139	126
6	112	1,260	107	*150	130	72	600	3,110	357	166	144	113
7	112	548	100	160	150	90	450	6,700	310	146	117	100
8	105	415	90	159	170	100	380	4,000	277	146	136	73
9	97	361	90	156	150	*95	340	2,000	*242	160	122	98
10	88	378	100	128	150	90	310	1,000	243	118	161	55
11	83	346	110	120	*160	96	280	700	374	208	*134	70
12	*76	291	112	1,500	150	67	260	*518	242	167	118	126
13	74	216	79	4,630	125	68	260	432	323	201	128	*84
14	71	202	131	1,160	140	106	270	382	290	*249	96	123
15	71	180	107	518	150	101	*286	359	269	203	125	72
16	71	170	109	400	130	106	307	607	190	150	116	57
17	68	100	114	370	120	102	2,200	3,210	238	102	159	104
18	62	170	122	290	130	104	2,820	910	279	196	155	81
19	62	165	112	240	110	70	1,050	708	312	134	160	195
20	61	162	71	230	90	67	630	741	262	126	218	149
21	59	153	128	220	110	107	524	1,020	293	118	272	124
22	61	157	108	210	120	100	440	860	294	124	254	123
23	138	164	103	200	110	96	337	596	288	100	156	164
24	77	173	108	190	110	97	314	448	290	158	158	272
25	94	162	55	180	105	91	282	437	235	185	144	459
26	112	147	164	170	110	65	536	405	204	376	140	390
27	108	130	832	160	76	72	609	390	193	595	124	252
28	124	110	1,640	160	80	160	386	406	176	382	85	188
29	100	100	1,120	150	100	1,450	314	360	178	217	201	182
30	115	110	595	150	.....	9,400	920	351	168	214	178	170
31	66	.....	400	150	.....	5,400	.....	317	.....	143	165	.....

Maquoketa River near Manchester, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	43.7	41.5	37.3	36.5	44.7	66.9	59.0	143	71.2	41.0	38.8	45.5
1956-57	33.8	38.6	34.2	74.6	125	48.6	55.9	171	373	67.8	49.7	42.8
1957-58	41.6	51.2	48.4	36.1	44.9	56.2	71.3	35.6	166	40.4	37.8	32.1
1958-59	31.6	32.3	26.9	21.0	22.8	972	257	272	347	334	83.2	66.2
1959-60	88.1	284	241	423	130	607	817	1,131	336	191	151	147

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.143	0.136	0.122	0.120	0.147	0.219	0.193	0.469	0.233	0.134	0.127	0.149
1956-57	.111	.127	.112	.245	.410	.159	.183	.561	1.22	.222	.163	.140
1957-58	.136	.168	.159	.118	.147	.184	.234	.117	.544	.132	.124	.105
1958-59	.104	.106	.088	.069	.075	3.19	843	.892	1.14	1.10	.273	.217
1959-60	.289	.931	.790	1.39	.426	1.99	2.68	3.71	1.10	.626	.495	.482

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.17	0.15	0.14	0.14	0.16	0.25	0.22	0.54	0.26	0.16	0.15	0.17
1956-57	.13	.14	.13	.28	.43	.18	.20	.65	1.36	.26	.19	.16
1957-58	.16	.19	.18	.14	.15	.21	.26	.13	.61	.15	.14	.12
1958-59	.12	.12	.10	.08	.08	3.67	.94	1.03	1.27	1.26	.31	.24
1959-60	.33	1.04	.91	1.60	.46	2.30	2.99	4.28	1.23	.72	.57	.54

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year		
	Momentary Maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								94.8	4.20
1956	May 28, 1956	8.21	2,060	23	55.8	0.183	2.51	54.5	2.45
1957	June 16, 1957	10.62	4,160	20	92.2	.302	4.11	95.1	4.24
1958	June 1, 1958	8.87	2,620	21	55.0	.180	2.44	50.7	2.25
1959	Mar. 27, 1959	12.27	5,990	19	207	.679	9.22	251	11.16
1960	Mar. 30, 1960	16.48	11,600	55	380	1.25	16.97		

Peak Discharge (base, 2,200 cfs)

- 1955-56: No peak above base.
- 1956-57: May 30 (10 p.m.) 2,540 cfs (8.84 ft.); June 16 (1:30 p.m.) 4,160 cfs (10.62 ft.).
- 1957-58: June 1 (11 a.m.) 2,620 cfs (8.87 ft.).
- 1958-59: Mar. 20 (7:30 p.m.) 3,050 cfs (9.38 ft.); Mar. 25 (12:30 a.m.) 5,000 cfs (11.42 ft.); Mar. 27 (2 a.m.) 5,990 cfs (12.27 ft.); June 25 (4:30 a.m.) 3,230 cfs (9.57 ft.); July 1 (1 a.m.) 4,260 cfs (10.73 ft.).
- 1959-60: Jan. 13 (4 a.m.) 7,090 cfs (13.30 ft.); Mar. 30 (10:30 a.m.) 11,600 cfs (16.48 ft.); Apr. 18 (2 a.m.) 3,650 cfs (10.16 ft.); May 1 (5:30 a.m.) 2,390 cfs (8.85 ft.); May 7 (7 p.m.) 7,740 cfs (13.85 ft.); May 17 (4 a.m.) 6,100 cfs (12.50 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.
 Stage-discharge relation affected by ice Nov. 16, 17, 26-28, Dec. 11-31, 1955; Jan. 1-20, Jan. 23 to Feb. 4, Feb. 6, 7, 27, 28, Nov. 21, 22, Dec. 11-31, 1956; Jan. 1 to Feb. 6, Nov. 29; Dec. 11-13, 29, 31, 1957; Jan. 1, 3, 7, Jan. 20 to Feb. 28, Nov. 27-29, Dec. 7-31, 1958; Jan. 1 to Mar. 9, Mar. 16-18, Nov. 15-19, 27-30, Dec. 7-10, 1959; Jan. 3-7, 11, 12, Jan. 16 to Mar. 1, Mar. 28, 1960.

No gage-height record Mar. 31 to Apr. 14, May 8-11, 1960.

Bear Creek near Monmouth, Iowa

LOCATION.—Lat. 42°02'30", long. 90°53'00", in NE¼SE¼ sec. 31, T. 84 N., R. 1 E., on right bank 15 ft. downstream from highway bridge, 1.6 miles upstream from Rat Run, 2.8 miles south of Monmouth, and 8.2 miles upstream from mouth.

DRAINAGE AREA.—61.3 square miles.

RECORDS AVAILABLE.—October 1957 to September 1960.

GAGE.—Water-stage recorder and concrete control. Datum of gage is 728.80 ft. above mean sea level, datum of 1929.

EXTREMES.—1957-60: Maximum discharge, 2,440 cfs Jan. 12, 1960 (gage height, 11.56 ft.; minimum daily, 1.8 cfs Dec. 8-12, 1958.

Maximum flood known, about 21.5 ft. in June 1944, from floodmark, from information by local residents (discharge not determined).

REMARKS.—Bankfull stage is about gage height, 11 ft.

Daily Discharge, in Cubic Feet per Second, for Water Year 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58												
1.....	2.8	3.4	6.5	4.5	4.0	23	7.6	9.8	108	5.3	3.5	2.7
2.....	2.7	3.7	6.8	4.2	3.8	19	8.1	9.5	15	5.5	3.4	2.7
3.....	2.6	3.8	6.1	3.9	3.5	18	8.6	10	11	5.7	3.4	2.6
4.....	2.6	3.7	5.3	3.7	3.4	16	9.2	9.5	9.2	6.5	3.3	2.7
5.....	2.5	3.5	5.9	3.5	3.8	14	37	8.6	8.1	7.0	3.5	3.7
6.....	2.5	3.4	7.0	3.7	3.6	15	60	8.1	6.8	6.6	3.5	5.1
7.....	2.5	3.8	6.5	3.5	3.1	17	33	7.9	5.9	6.2	3.3	3.5
8.....	2.6	4.7	6.1	3.5	2.5	15	27	7.9	26	6.0	3.1	3.0
9.....	2.6	3.5	5.5	3.5	2.4	11	22	7.6	108	6.0	2.8	2.7
10.....	2.5	3.3	4.9	3.8	2.5	12	20	7.2	21	6.0	2.8	2.5
11.....	2.5	3.5	2.7	4.2	2.5	11	16	6.8	11	6.0	2.7	2.4
12.....	2.5	3.7	3.3	4.2	2.5	12	15	6.3	9.2	6.6	23	2.4
13.....	2.5	4.3	3.5	4.5	2.4	11	18	5.9	*239	7.0	8.6	2.4
14.....	2.6	4.9	4.1	4.8	2.4	11	19	5.7	*55	7.0	4.1	2.3
15.....	5.1	4.9	4.7	5.2	2.4	10	17	5.9	22	12	15	2.8
16.....	6.8	4.7	5.1	5.3	2.4	9.8	15	6.5	17	9.0	8.0	4.3
17.....	*4.9	4.1	5.3	5.2	2.4	9.5	*13	7.6	15	8.0	5.0	3.0
18.....	3.8	11	6.8	5.2	*2.5	9.2	12	11	12	6.4	3.5	*2.8
19.....	3.3	23	*9.2	5.2	2.5	9.2	12	8.1	*11	5.8	2.8	2.7
20.....	3.1	18	27	5.2	2.5	*8.9	12	6.1	11	5.2	6.7	2.6
21.....	3.1	14	13	5.0	2.7	8.3	12	5.5	9.8	4.8	*81	2.3
22.....	3.1	11	11	4.7	2.9	8.6	13	*5.5	9.2	*4.5	12	2.2
23.....	4.7	*9.5	9.2	*4.7	6.0	8.3	12	5.3	10	4.1	7.2	2.2
24.....	6.5	10	8.1	4.7	180	8.1	28	5.3	9.5	3.8	5.7	2.6
25.....	5.3	8.6	10	4.6	200	7.9	15	4.9	7.9	3.7	4.5	3.1
26.....	4.5	8.3	8.0	4.6	101	7.9	13	4.7	7.2	5.0	4.1	2.7
27.....	4.0	8.9	7.4	4.6	58	7.9	12	4.5	6.8	3.8	3.7	2.2
28.....	3.7	8.1	7.4	4.6	40	7.9	12	4.5	6.3	3.6	3.5	2.2
29.....	3.7	7.2	7.6	4.6	.....	7.6	11	4.9	5.9	3.7	3.4	2.2
30.....	3.7	4.5	6.0	4.6	.....	7.6	10	4.1	5.5	3.6	3.3	2.2
31.....	3.5	.....	5.0	4.3	.....	7.9	.....	41	.....	3.5	2.8	.....

Bear Creek near Monmouth, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1....	2.1	2.4	2.3	2.7	2.2	510	126	49	31	526	10	12
2....	2.1	2.7	2.7	2.6	2.2	402	102	41	23	122	9.6	11
3....	2.2	2.6	3.2	2.5	2.2	229	96	34	20	82	35	11
4....	2.2	2.7	3.4	2.3	2.2	30	59	30	18	63	22	9.6
5....	2.1	2.3	2.7	2.2	2.2	14	49	25	16	73	12	8.6
6....	2.1	2.7	2.2	2.1	2.2	13	38	24	15	53	127	8.2
7....	3.3	3.0	1.9	2.0	2.2	13	34	20	14	44	74	7.7
8....	7.7	2.7	1.8	2.0	2.2	12	31	20	13	48	30	7.2
9....	20	2.7	1.8	2.0	2.3	17	29	20	*12	92	22	6.7
10....	16	2.7	1.8	2.0	2.4	*65	25	27	13	*41	20	6.9
11....	5.5	2.7	1.8	2.2	2.4	168	24	34	13	34	*17	5.5
12....	3.7	2.7	1.8	2.3	2.4	190	22	*27	12	29	16	5.7
13....	3.3	2.7	2.0	2.4	2.4	144	21	22	11	26	15	5.7
14....	3.2	3.1	2.0	3.2	3.0	252	20	20	9.6	34	14	5.7
15....	3.0	4.0	2.0	*4.5	5.4	56	*20	20	9.3	21	71	5.5
16....	2.7	5.0	1.9	3.6	4.8	23	17	19	9.0	20	35	5.5
17....	2.6	13	*2.0	3.2	4.2	17	18	17	8.2	19	45	*5.7
18....	2.6	12	2.2	2.9	3.7	20	33	17	7.9	20	38	5.5
19....	2.5	9.6	2.4	2.7	*3.4	*300	24	21	7.9	17	22	6.0
20....	2.6	*5.7	2.4	2.5	3.5	*1,260	21	20	7.7	16	19	6.5
21....	2.7	4.5	2.4	2.4	4.4	*368	22	20	6.9	15	17	6.0
22....	3.2	3.8	2.4	2.4	4.3	116	20	21	7.4	14	40	5.5
23....	*3.4	3.7	2.5	2.4	160	151	20	24	7.2	14	27	17
24....	3.0	3.6	2.5	2.4	140	182	19	20	14	14	17	13
25....	2.7	3.6	2.5	2.4	120	114	17	17	477	13	14	12
26....	2.8	3.0	2.5	2.4	100	258	16	16	73	12	13	25
27....	2.8	2.6	2.6	2.4	480	237	21	73	38	11	12	75
28....	2.7	2.8	2.7	2.4	650	81	214	25	27	11	11	23
29....	2.6	2.7	2.8	2.4	.....	56	102	81	67	12	11	15
30....	3.0	2.3	2.8	2.4	.....	51	63	41	*530	12	14	13
31....	2.8	.....	2.8	2.3	.....	55	.....	41	.....	11	22	.....
1959-60												
1....	12	38	*29	73	33	22	465	92	137	35	20	14
2....	14	33	26	68	32	21	420	73	349	33	20	13
3....	14	*30	25	40	31	21	195	62	92	33	20	13
4....	14	244	25	*27	33	21	150	54	187	31	46	12
5....	88	173	24	40	36	20	144	52	689	29	24	11
6....	92	110	21	41	35	16	128	384	122	27	20	11
7....	128	84	15	38	32	*19	118	732	*90	26	60	11
8....	73	73	21	35	38	19	94	272	73	25	54	11
9....	54	68	20	31	*45	19	73	178	63	50	*31	10
10....	44	62	20	31	11	18	65	*140	178	172	30	10
11....	35	54	22	31	20	18	65	114	137	65	24	9.8
12....	30	49	23	*1,200	25	18	*62	96	94	*54	20	9.8
13....	29	48	22	795	35	18	57	86	82	124	18	9.6
14....	26	41	21	182	40	18	54	77	72	58	17	*9.6
15....	25	35	22	405	37	19	52	68	66	49	15	11
16....	*22	34	22	142	33	18	60	70	72	44	14	12
17....	21	19	22	100	30	18	311	73	55	39	13	13
18....	20	35	21	72	28	20	226	62	224	37	13	15
19....	20	35	20	60	26	22	136	60	424	33	37	24
20....	20	33	20	54	25	21	108	62	90	30	64	12
21....	18	33	20	50	24	20	102	73	86	29	29	10
22....	17	33	14	47	24	21	81	66	81	27	23	10
23....	90	33	9.6	45	24	20	70	57	70	25	20	27
24....	86	37	23	42	23	20	63	52	65	24	18	106
25....	58	33	26	40	23	16	58	54	55	78	17	30
26....	52	29	27	38	23	21	60	52	48	83	16	15
27....	54	23	183	37	22	27	54	52	44	49	15	14
28....	46	20	250	36	22	84	51	52	41	30	35	12
29....	44	19	144	35	22	548	51	48	38	25	18	12
30....	38	35	104	34	.....	1,480	86	45	37	23	15	12
31....	38	.....	84	34	.....	728	.....	41	.....	21	15	.....

Bear Creek near Monmouth, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58.....	3.51	6.97	7.26	4.45	23.2	11.3	17.3	7.94	26.6	5.74	7.85	2.76
1958-59.....	3.97	3.99	2.35	2.52	61.3	178	44.1	28.6	50.6	49.0	27.5	11.7
1959-60.....	42.6	53.1	42.8	126	28.7	109	122	110	129	45.4	25.2	16.3

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58.....	0.057	0.114	0.118	0.073	0.378	0.184	0.282	0.130	0.434	0.094	0.128	0.045
1958-59.....	.065	.065	.038	.041	1.00	2.90	.719	.467	.825	.799	.449	.191
1959-60.....	.695	.866	.698	2.06	.468	1.78	1.99	1.79	2.10	.741	.411	.266

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58.....	0.07	0.13	0.14	0.08	0.39	0.21	0.32	0.15	0.48	0.11	0.15	0.05
1958-59.....	.07	.07	.04	.05	1.04	3.34	.80	.54	.92	.92	.52	.21
1959-60.....	.80	.97	.80	2.37	.50	2.05	2.22	2.06	2.34	.85	.47	.30

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1958....	Feb. 24, 1958.	(1)8.82	700	2.2	10.3	0.168	2.28	9.65	2.12
1959....	Mar. 20, 1959.	11.5	2,120	1.8	38.5	.628	8.52	49.3	10.91
1960....	Jan. 12, 1960..	11.56	2,440	9.6	70.9	1.16	15.73	.....	.....

(1) Backwater from ice.

Peak Discharge (base, 800 cfs)

1957-58: No peak above base.

1958-59: Feb. 28, about 1,200 cfs; Mar. 20 (2 a.m.) 2,120 cfs (11.5 ft.); July 1 (7 a.m.) 920 cfs (8.65 ft.).

1959-60: Jan. 12 (9:30 p.m.) 2,440 cfs (11.56 ft.); Mar. 30 (11 a.m.) 2,080 cfs (10.95 ft.); May 7 (4 a.m.) 1,660 cfs (10.27 ft.); June 2 (4 a.m.) 832 cfs (8.36 ft.); June 5 (9:30 a.m.) 1,540 cfs (10.07 ft.); June 19 (4:30 a.m.) 1,130 cfs (9.19 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Dec. 26-31, 1957; Jan. 1 to Feb. 25, Nov. 26 to Dec. 1, Dec. 8-12, 1958; Jan. 1-8, Jan. 14 to Mar. 1, Mar. 4, 5, 16, 17, 19, Nov. 15, 16, 18-21, 26-29, Dec. 8, 1959; Jan. 3-12, Jan. 17 to Feb. 7, Feb. 12 to Mar. 5, Mar. 7-19, 26, 27, 1960. No gage-height record Apr. 6-16, July 5-21, 25-28, 30, 31, Aug. 15-18, 1958; Aug. 18, 22-28, 31, Sept. 2, 3, 5, 7-13, 15, 1960.

Maquoketa River near Maquoketa, Iowa

LOCATION.—Lat. 42°05'05", long. 90°37'55", in SW ¼ NE ¼ sec. 17, T. 84 N., R. 3 E., on right bank 500 ft. upstream from bridge on State Highway 62 (relocated), 1,200 ft. upstream from Prairie Creek, 2.0 miles northeast of Maquoketa, and 2.2 miles downstream from North Fork.

DRAINAGE AREA.—1,553 square miles (revised in 1956).

RECORDS AVAILABLE.—September 1913 to September 1960. Prior to October 1939, published as "below North Fork Maquoketa River, near Maquoketa".

GAGE.—Water-stage recorder. Datum of gage is 636.52 ft. above mean sea level, adjustment of 1912. Prior to July 14, 1924, chain gage, and July 14, 1924, to Dec. 8, 1934, water-stage recorder at site 40 ft. downstream at same datum.

AVERAGE DISCHARGE.—47 years, 939 cfs.

EXTREMES.—1913-60: Maximum discharge, 48,000 cfs June 27, 1944 (gage height, 24.70 ft.); minimum daily, 105 cfs Feb. 11-20, 1936.

A flood, probably in 1903, reached a stage of 23.5 ft. (discharge, 43,000 cfs).

REMARKS.—Diurnal fluctuation caused by powerplant 4 miles above station. Bankfull stage is about gage height, 14 ft.

REVISIONS (water years).—WSP 1508: 1914-17, 1919-25, 1926 (M), 1929, 1943.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	353	295	230	200	210	2,300	350	647	1,030	326	982	1,130
2.....	256	272	240	205	210	2,500	756	667	980	320	512	672
3.....	286	264	240	210	200	1,500	966	*591	785	320	363	510
4.....	305	267	236	205	200	1,100	551	541	788	281	355	409
5.....	300	282	230	202	200	820	*438	831	584	248	299	401
6.....	384	256	225	210	210	640	426	1,050	530	268	288	444
7.....	393	266	*220	205	210	505	375	800	499	298	268	410
8.....	296	272	230	190	240	430	347	517	487	1,360	250	360
9.....	314	252	210	215	220	410	311	655	447	474	265	300
10.....	302	268	195	210	220	350	316	837	406	*379	*250	291
11.....	296	282	190	207	285	325	313	932	390	320	234	278
12.....	266	286	195	202	310	300	*312	696	357	282	254	*248
13.....	270	263	170	200	325	286	294	876	350	280	247	256
14.....	259	250	*160	210	*340	286	305	827	336	273	241	255
15.....	248	260	155	200	330	*300	262	618	352	282	225	252
16.....	236	240	150	210	310	305	292	626	368	254	242	253
17.....	270	190	150	*220	290	308	279	*554	306	263	304	230
18.....	271	*178	150	220	280	280	247	522	308	333	269	246
19.....	*259	210	160	220	280	264	*245	464	1,270	432	258	213
20.....	250	275	165	220	280	264	245	416	1,020	448	235	189
21.....	*240	314	170	210	*280	239	238	388	550	409	228	191
22.....	248	336	175	200	260	241	232	382	488	313	226	218
23.....	225	296	180	210	280	253	238	421	481	300	*182	211
24.....	254	231	190	210	1,000	302	220	371	1,130	293	226	209
25.....	260	230	205	210	4,500	303	239	344	1,050	264	208	201
26.....	242	223	225	200	3,500	271	246	337	530	249	212	190
27.....	242	200	220	200	2,700	272	407	362	469	*292	221	188
28.....	256	166	210	210	2,400	306	660	2,570	*425	343	210	195
29.....	304	180	205	200	2,100	443	853	2,200	361	319	191	203
30.....	285	204	200	210	.....	361	931	3,920	343	281	316	175
31.....	298	.....	200	210	.....	326	.....	*1,730	.....	346	5,290	.....

Maquoketa River near Maquoketa, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	208	214	247	250	290	457	267	280	3,940	404	488	526
2	205	224	235	300	290	406	276	275	2,020	398	304	384
3	185	223	264	300	290	350	275	*264	1,390	377	357	331
4	189	213	289	300	290	321	333	261	1,150	476	549	252
5	185	225	290	290	260	320	333	252	927	435	530	221
6	210	243	300	280	*300	309	352	247	805	352	337	267
7	194	230	290	270	320	311	332	249	745	342	300	218
8	182	226	249	270	420	277	308	236	716	347	258	207
9	196	233	152	310	1,400	262	276	254	684	334	255	243
10	188	240	263	350	1,600	270	279	329	639	317	249	213
11	193	232	247	330	1,100	258	304	327	633	305	250	226
12	217	231	252	310	1,000	285	295	445	1,240	319	248	240
13	230	215	300	300	1,300	279	282	496	1,250	341	214	246
14	211	227	290	290	1,620	323	271	419	*1,160	377	444	252
15	218	*471	280	285	1,440	279	266	447	995	348	*342	250
16	221	378	270	280	1,110	275	253	576	899	336	300	234
17	206	359	290	280	797	274	260	540	1,830	318	272	210
18	*206	318	310	280	593	287	*261	510	*2,480	314	244	196
19	218	292	*300	270	539	285	270	494	1,630	310	230	*204
20	221	271	310	270	*451	274	303	462	1,670	295	212	206
21	214	281	320	1,100	544	*283	297	410	1,160	282	217	210
22	218	237	340	3,500	553	294	305	594	933	396	*222	219
23	202	232	340	1,400	485	267	314	*724	837	462	207	224
24	199	259	340	*680	458	260	296	552	718	373	206	202
25	219	269	320	560	638	246	320	572	542	349	214	194
26	267	271	310	480	688	269	623	561	644	*322	241	183
27	241	264	300	400	629	268	405	518	586	312	212	181
28	232	262	290	360	478	273	372	447	542	278	262	182
29	248	248	290	320	.....	299	338	542	482	288	280	183
30	213	246	280	310	.....	270	298	501	509	290	1,660	193
31	211	.....	280	300	.....	265	.....	2,670	.....	293	1,130	.....
1957-58												
1	173	199	155	155	170	785	246	221	728	238	231	161
2	171	197	175	150	170	646	*251	252	437	226	213	169
3	178	229	190	150	170	*555	248	285	998	252	215	174
4	180	235	201	170	170	507	262	262	816	270	192	170
5	174	207	192	190	180	451	380	253	619	418	197	170
6	188	240	237	205	165	450	654	*235	372	444	204	217
7	184	267	280	205	155	434	641	235	297	312	203	184
8	186	254	258	205	150	395	526	239	396	286	213	199
9	156	210	239	205	150	396	465	242	868	250	214	198
10	150	178	220	205	150	350	496	243	*561	258	209	176
11	153	202	200	205	145	315	521	239	499	311	183	168
12	170	199	180	205	140	281	454	224	520	245	207	169
13	167	226	170	205	140	289	422	204	2,040	246	403	169
14	187	220	170	205	140	293	390	197	1,440	1,190	254	172
15	228	213	210	210	140	292	342	198	894	1,940	286	170
16	384	205	250	215	140	283	313	209	438	717	237	178
17	*381	192	253	220	*140	272	*205	223	460	511	182	192
18	369	239	*278	220	140	263	358	249	448	460	180	*191
19	297	322	324	220	140	242	357	206	*496	331	165	183
20	279	366	480	220	140	*264	355	176	520	354	199	178
21	240	348	405	230	140	257	318	176	431	308	*528	174
22	226	303	*225	155	266	295	*195	295	*294	317	175	175
23	260	*292	354	200	170	263	299	184	322	280	251	178
24	261	261	278	220	2,000	254	388	167	317	277	253	187
25	260	275	274	220	3,400	235	326	185	306	263	199	217
26	253	238	296	220	2,320	223	271	188	295	245	194	208
27	*255	247	237	*210	1,660	232	273	176	291	264	183	219
28	238	217	210	205	1,140	247	279	148	289	231	182	164
29	232	205	180	195	.....	232	253	145	292	253	184	175
30	215	175	170	180	.....	252	245	182	245	269	197	176
31	211	.....	155	170	.....	250	.....	243	.....	245	176	.....

Maquoketa River near Maquoketa, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	172	175	200	190	130	4,300	4,280	828	1,080	7,100	468	478
2	171	158	220	190	130	4,800	6,160	687	1,010	6,700	450	428
3	150	194	230	190	130	4,380	3,400	645	868	4,040	759	*426
4	147	175	250	190	130	2,380	2,450	625	810	1,960	590	391
5	152	186	240	180	130	1,200	1,960	576	754	1,840	516	386
6	160	166	220	180	130	665	1,470	578	653	1,780	594	354
7	192	161	200	170	130	605	1,290	486	614	*1,500	794	240
8	249	191	190	170	130	625	1,190	*475	534	1,390	660	523
9	956	152	180	170	130	685	1,080	471	*487	1,780	540	328
10	446	199	170	170	140	*1,070	978	483	477	1,500	500	304
11	442	174	160	170	140	1,900	898	691	568	1,170	*450	314
12	292	174	150	170	140	1,840	852	*1,010	534	901	391	314
13	271	174	150	170	150	1,500	785	1,070	508	1,000	420	307
14	234	190	150	170	160	2,140	774	748	407	892	424	284
15	220	219	150	*170	170	1,420	*720	746	390	786	630	270
16	204	166	150	170	180	920	647	659	360	800	1,190	277
17	197	362	*150	170	170	705	616	601	375	756	839	*277
18	193	346	150	170	*160	645	689	561	346	726	629	284
19	185	237	150	170	150	3,420	660	551	348	686	548	301
20	171	*261	150	170	140	*17,000	688	918	358	766	475	318
21	179	225	150	170	140	17,600	617	1,070	330	552	456	277
22	200	213	150	160	140	8,260	629	1,620	367	584	964	166
23	*204	152	160	150	1,000	5,600	568	1,390	325	605	764	933
24	200	244	160	140	2,500	8,890	576	1,170	312	566	629	308
25	192	213	170	130	1,800	9,280	572	1,070	1,540	534	481	319
26	186	170	170	130	1,400	8,480	486	856	3,960	502	424	447
27	191	130	180	130	3,000	*11,300	525	1,160	2,020	488	428	770
28	186	150	180	130	3,500	7,950	1,370	918	1,610	458	414	763
29	182	180	180	130	.....	5,140	1,140	1,220	1,390	454	534	480
30	176	190	180	130	.....	3,550	945	1,160	1,140	479	470	455
31	156	.....	190	130	.....	2,970	.....	1,070	.....	454	491	.....
1959-60												
1	452	554	*638	1,500	1,000	*500	18,100	2,590	1,260	934	659	564
2	496	681	702	1,300	920	520	12,300	*3,400	5,150	930	707	564
3	407	*607	727	1,000	920	520	6,670	2,590	3,560	938	712	528
4	283	930	691	900	920	500	4,530	2,040	2,570	950	679	528
5	1,000	1,560	650	700	940	480	3,720	1,920	1,120	*837	714	510
6	785	2,640	603	*740	960	470	3,240	4,930	2,360	774	640	492
7	1,050	2,710	538	800	980	470	2,930	17,100	*1,860	829	720	444
8	1,050	1,860	450	820	1,000	470	2,570	15,300	*1,680	816	856	510
9	910	1,510	500	890	*1,050	470	2,230	9,560	1,460	550	*656	462
10	735	1,460	566	700	700	480	1,980	*4,880	1,460	1,220	687	439
11	591	1,360	635	720	660	500	1,740	3,880	1,980	1,220	648	445
12	546	1,250	667	9,000	760	500	*1,620	3,160	1,620	*1,040	583	448
13	510	1,020	622	21,900	900	500	1,510	2,780	1,560	1,110	611	417
14	490	920	615	15,000	1,000	500	1,460	2,570	1,460	1,040	583	375
15	486	800	498	10,100	940	500	1,260	2,360	1,400	974	602	*420
16	*515	700	636	3,000	900	500	1,210	2,100	1,620	966	564	416
17	473	580	644	2,300	840	520	2,260	2,040	1,520	930	489	600
18	357	500	537	1,900	790	540	4,790	4,120	1,400	849	640	746
19	517	540	528	1,600	700	600	5,830	2,780	2,860	726	583	1,290
20	330	780	518	1,300	640	600	3,480	2,360	1,740	749	978	877
21	415	800	567	1,200	660	580	2,860	2,360	1,570	736	974	822
22	383	825	464	1,200	680	574	2,360	2,570	1,410	687	698	594
23	519	841	402	1,200	680	596	2,040	2,360	1,420	694	602	586
24	1,170	786	468	1,100	680	581	1,920	2,040	1,320	670	650	1,050
25	1,160	758	599	1,100	660	575	1,680	1,920	1,400	720	564	1,090
26	1,160	700	583	1,100	640	547	1,560	1,740	1,270	1,290	564	718
27	828	600	1,400	1,100	600	602	1,680	1,680	1,120	807	546	738
28	722	450	3,320	1,100	580	820	1,620	1,620	1,050	934	528	798
29	686	470	3,240	1,100	550	3,920	1,740	1,560	1,070	996	*602	718
30	649	540	3,000	1,050	.....	*20,000	1,920	1,510	1,000	996	619	700
31	629	.....	1,980	1,050	.....	21,600	.....	1,400	.....	833	610	.....

Maquoketa River near Maquoketa, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	280	250	196	207	764	542	396	861	581	350	447	311
1956-57.....	210	261	285	491	711	293	312	499	1,125	345	362	237
1957-58.....	226	239	243	201	501	338	364	212	567	393	227	182
1958-59.....	234	198	177	162	584	4,555	1,300	842	916	1,411	578	391
1959-60.....	654	991	903	2,851	801	1,953	3,427	3,646	1,842	893	654	630

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.180	0.161	0.126	0.133	0.492	0.349	0.255	0.554	0.374	0.225	0.288	0.200
1956-57.....	.135	.168	.184	.316	.458	.189	.201	.321	.724	.222	.233	.153
1957-58.....	.146	.154	.156	.129	.323	.218	.234	.137	.365	.253	.146	.117
1958-59.....	.151	.127	.114	.104	.376	2.93	.837	.542	.590	.909	.372	.252
1959-60.....	.421	.638	.581	1.84	.516	1.26	2.21	2.35	1.19	.575	.421	.406

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.21	0.18	0.15	0.15	0.53	0.40	0.28	0.64	0.42	0.26	0.33	0.22
1956-57.....	.16	.19	.21	.36	.48	.22	.22	.37	.81	.26	.27	.17
1957-58.....	.17	.17	.18	.15	.34	.25	.26	.16	.41	.29	.17	.13
1958-59.....	.17	.14	.13	.12	.39	3.38	.93	.63	.66	1.05	.43	.28
1959-60.....	.49	.71	.67	2.12	.56	1.45	2.46	2.71	1.32	.66	.49	.45

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955.....								531	4.65
1956.....	Aug. 30, 1956	(111.70)	8,170	150	431	0.278	3.77	433	3.79
1957.....	May 31, 1957	(28.73)	5,140	152	425	.274	3.72	421	3.68
1958.....	Feb. 24, 1958	10.8	5,000	140	306	.197	2.68	298	2.60
1959.....	Mar. 21, 1959	17.58	19,200	130	951	.612	8.31	1,114	9.74
1960.....	Jan. 13, Mar. 30, 1960	18.91	23,700	283	1,607	1.03	14.00		

(1) Maximum gage height, 12.98 ft., Feb. 25, 1956 (backwater from ice).

(2) Maximum gage height, 12.2 ft., Jan. 22, 1957 (ice jam).

Peak Discharge (base, 7,500)

1955-56: Aug. 30 (7 a.m.) 8,170 cfs (11.70 ft.).

1956-57: No peak above base.

1957-58: No peak above base.

1958-59: Mar. 21 (2 a.m.) 19,200 cfs (17.58 ft.); Mar. 27 (7 a.m.) 12,800 cfs (14.88 ft.); Apr. 2 (2 a.m.) 8,500 cfs (12.03 ft.); July 1 (4 p.m.) 7,730 cfs (11.33 ft.).

1959-60: Jan. 13 (10 a.m.) 23,700 cfs (18.91 ft.); Mar. 30 (9 p.m.) 23,700 cfs (18.91 ft.); May 7 (1 p.m.) 18,600 cfs (17.12 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 16-20, Nov. 25 to Dec. 31, 1955; Jan. 1 to Mar. 12, Dec. 13-31, 1956; Jan. 1 to Feb. 13, Nov. 29 to Dec. 3, Dec. 10-16, 28-31, 1957; Jan. 1 to Feb. 25, Nov. 26 to Dec. 31, 1958; Jan. 1 to Feb. 28, Nov. 14-21, 26-30; Dec. 8-9, 1959; Jan. 1-12, Jan. 16 to Mar. 21, 1960.

Mississippi River at Clinton, Iowa

LOCATION.—Lat. 41°46'50", long. 90°15'07", in NW¼ sec. 34, T. 81 N., R. 6 E., on right bank at foot of Eighth Avenue in Camanche, 5.0 miles upstream from Wapsipinicon River, 6.4 miles downstream from Clinton, 10.6 miles downstream from dam 13, and at mile 511.8 upstream from Ohio River.

DRAINAGE AREA.—85,600 square miles approximately, at Fulton-Lyons Bridge (formerly U. S. Highway 30) where discharge measurements are made.

RECORDS AVAILABLE.—June to August 1873 (fragmentary), October 1873 to September 1960 (October 1932 to September 1939, published as "at Le Claire").

GAGE.—Water-stage recorder. Datum of gage is 562.68 ft. above mean sea level, datum of 1929. June 1873, to May 31, 1934, staff gage in stone well and June 1, 1934, to Sept. 30, 1939, water-stage recorder 14.8 miles downstream at Le Claire, at datum 0.07 ft. lower (revised). Oct. 1, 1939, to Sept. 30, 1955, water-stage recorder at 10.6 miles upstream at dam 13, at datum 5.48 ft. higher. Auxiliary water-stage recorder at dam 13 since Oct. 1, 1958. Present gage used as auxiliary gage Oct. 1, 1939, to Sept. 30, 1955.

AVERAGE DISCHARGE.—87 years, 47,100 cfs.

EXTREMES.—1873-1960: Maximum daily discharge, 250,000 cfs June 25, 1880; maximum gage height, 14.5 ft. June 25, 1880, site and datum then in use; minimum daily discharge, 6,500 cfs Dec. 25-27, 1933.

REMARKS.—Flow regulated by reservoirs and navigation dams.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	24,000	26,100	22,100	21,900	22,500	22,500	44,000	75,600	42,400	47,100	26,900	42,400
2.....	21,800	25,400	22,200	21,800	22,500	26,100	44,000	70,800	39,400	53,400	30,600	31,300
3.....	21,000	25,400	21,800	21,800	22,300	26,100	50,200	67,600	39,400	55,000	30,600	27,600
4.....	20,300	24,000	21,700	21,800	22,300	29,100	55,000	61,300	40,900	51,800	32,800	26,900
5.....	20,300	22,500	21,700	21,800	22,200	30,600	61,300	58,100	35,000	51,800	33,500	24,700
6.....	24,000	24,000	21,700	21,900	22,200	29,800	67,600	56,500	*33,500	50,200	38,000	26,100
7.....	26,900	24,700	21,900	22,000	21,900	30,600	75,600	58,100	33,500	44,000	40,900	25,400
8.....	26,100	25,400	24,700	22,000	21,900	33,500	83,600	*58,100	32,800	51,800	44,000	24,700
9.....	25,400	25,400	24,100	22,100	21,900	32,000	88,400	58,100	32,000	48,700	47,100	24,000
10.....	25,400	*24,700	24,300	22,300	22,000	31,300	98,000	62,900	32,800	34,300	48,700	24,000
11.....	23,200	24,700	24,300	22,100	22,000	33,500	*103,000	61,500	32,800	29,100	48,700	*24,000
12.....	21,800	24,700	24,400	20,700	22,000	30,600	108,000	62,900	30,600	27,600	48,700	23,200
13.....	21,800	24,700	24,300	19,700	22,100	27,600	*109,000	58,100	30,600	29,100	45,500	24,000
14.....	21,000	24,000	24,900	19,500	22,000	29,100	111,000	53,400	29,100	31,300	45,500	23,200
15.....	20,300	23,200	*26,400	19,400	22,300	29,100	112,000	55,000	26,900	31,300	45,500	23,200
16.....	18,800	22,500	27,400	19,500	22,400	*27,600	116,000	53,400	28,300	32,800	44,000	21,800
17.....	18,000	23,200	27,200	19,600	22,500	25,400	120,000	48,700	31,300	33,500	39,400	20,300
18.....	17,800	23,200	25,600	19,600	22,500	24,700	125,000	48,700	35,000	33,500	38,000	19,600
19.....	18,800	*22,500	25,000	19,900	22,500	24,000	125,000	51,200	39,400	34,300	38,000	18,700
20.....	18,800	22,500	24,000	20,000	22,600	22,500	*127,000	48,700	40,900	36,500	35,700	18,300
21.....	*19,600	21,800	23,000	20,100	22,300	23,200	125,000	47,100	40,900	36,500	33,500	17,100
22.....	19,600	21,000	22,100	20,200	22,400	26,100	124,000	48,700	44,000	38,000	31,300	16,500
23.....	20,300	21,400	21,500	20,300	22,800	27,600	117,000	*51,800	45,500	38,000	28,300	16,900
24.....	*20,300	21,800	21,200	20,500	24,200	27,600	111,000	51,800	47,100	34,300	*28,300	18,400
25.....	21,000	22,000	21,200	20,400	26,900	26,100	103,000	45,500	47,100	30,600	28,300	18,800
26.....	21,800	22,000	21,500	20,300	29,100	27,600	98,000	40,900	44,000	27,600	28,300	18,800
27.....	24,000	22,400	23,500	20,100	27,600	31,300	94,800	39,400	45,500	*27,600	28,300	18,800
28.....	23,200	20,200	23,700	20,100	26,900	34,300	91,600	36,500	45,500	28,300	29,800	18,000
29.....	25,400	16,900	23,200	20,200	24,700	45,500	90,000	39,400	45,500	27,600	30,600	17,800
30.....	24,700	17,200	22,500	20,500	.....	48,700	83,600	39,400	45,500	26,900	30,600	19,600
31.....	25,400	.....	21,300	20,800	.....	47,100	.....	42,400	.....	24,000	42,400	.....

Mississippi River at Clinton, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	20,300	20,200	24,000	20,300	16,200	28,300	47,100	51,800	55,000	61,300	53,400	35,000
2	20,300	20,200	21,800	19,600	16,200	27,600	50,200	50,200	56,500	62,900	55,000	34,300
3	20,300	20,700	22,500	19,600	16,400	26,100	48,700	48,700	55,000	69,200	53,400	33,500
4	18,000	21,600	23,200	20,300	16,200	21,800	48,700	48,700	53,400	72,400	48,700	33,500
5	18,000	22,600	23,200	20,300	17,100	21,000	50,200	48,700	51,800	77,200	45,500	35,000
6	18,000	24,000	22,500	20,100	17,100	21,800	55,000	47,100	50,200	80,400	45,500	35,000
7	17,400	26,100	21,000	20,300	17,200	23,200	58,100	45,500	50,200	83,600	42,400	35,000
8	16,600	26,100	18,500	22,000	17,300	23,200	55,000	40,900	45,500	90,000	39,400	36,500
9	15,500	26,100	16,600	23,000	17,400	23,200	55,000	35,000	39,400	91,600	35,500	38,000
10	14,900	25,400	16,100	19,400	18,500	23,200	51,800	38,000	38,000	91,600	34,300	36,500
11	14,300	25,400	17,800	19,500	18,500	26,100	50,200	38,000	39,400	91,600	34,300	36,500
12	13,400	25,400	20,300	20,000	18,500	30,600	48,700	36,500	42,400	93,200	*34,300	38,000
13	14,200	25,400	19,800	20,100	18,600	30,600	47,100	36,500	39,400	99,600	35,000	39,400
14	13,900	24,700	20,500	20,300	19,400	27,600	45,500	33,500	42,400	103,000	34,300	40,900
15	13,700	29,800	20,500	20,900	19,400	28,300	42,400	32,000	*45,500	96,400	35,700	39,400
16	14,000	*32,000	20,400	22,200	20,400	30,600	40,900	34,300	44,000	88,400	36,500	*39,400
17	16,200	30,600	20,400	21,600	21,100	34,300	38,000	34,300	40,900	88,400	36,500	36,500
18	*17,400	27,600	20,800	21,000	21,600	39,400	36,500	38,000	45,500	90,000	36,500	32,800
19	17,300	26,900	20,500	20,200	20,600	39,400	*36,500	38,000	45,500	85,200	39,400	29,800
20	17,200	27,600	*20,400	19,700	19,200	40,900	36,500	38,000	47,100	78,800	39,400	*31,300
21	18,000	29,100	20,100	19,500	*21,000	39,400	42,400	38,000	45,500	75,600	39,400	32,800
22	18,900	29,100	20,300	19,900	20,300	*39,400	47,100	38,000	45,500	77,200	36,500	33,500
23	18,200	28,300	20,900	19,600	19,600	39,400	50,200	39,400	47,100	80,400	*32,800	32,800
24	18,400	26,900	20,600	22,100	21,000	39,400	50,200	*40,900	51,800	74,000	29,100	32,000
25	19,000	24,000	20,600	22,000	22,500	42,400	50,200	40,900	51,800	80,400	29,800	32,000
26	18,800	24,000	20,600	21,000	22,500	44,000	50,200	40,900	51,800	*61,300	31,300	31,300
27	18,400	23,200	22,300	19,400	23,200	45,500	50,200	45,500	51,800	55,000	32,000	32,000
28	19,600	24,000	22,500	17,400	25,400	47,100	51,800	45,500	56,500	51,800	35,000	30,600
29	19,600	25,400	22,500	17,000	.....	45,500	53,400	44,000	61,300	48,700	36,500	29,800
30	20,300	25,400	21,800	16,900	.....	45,500	*51,800	44,000	61,300	50,200	36,500	28,300
31	20,100	.....	21,000	16,600	.....	45,500	.....	50,200	.....	51,800	36,500	.....
1957-58												
1	27,600	26,100	27,500	24,500	22,000	45,000	34,300	45,500	27,600	16,800	19,600	17,100
2	28,300	26,100	27,000	24,500	22,000	45,500	32,800	42,400	33,500	*16,900	18,000	15,800
3	29,100	26,900	26,500	24,000	22,000	45,500	32,000	39,400	26,100	22,500	17,700	16,800
4	28,300	29,800	26,000	23,500	22,000	44,000	*34,300	38,000	26,100	28,300	17,500	16,800
5	27,600	32,000	24,500	22,500	21,500	40,000	38,000	36,500	28,300	39,400	16,600	17,800
6	27,600	32,000	23,000	21,500	21,500	36,500	45,500	*38,000	35,000	45,500	16,400	19,600
7	26,900	31,300	21,500	20,500	21,500	34,000	50,200	39,400	42,400	50,200	*20,300	21,800
8	26,100	32,800	20,500	20,500	21,000	34,000	47,100	36,500	48,700	48,700	22,500	25,400
9	22,500	34,300	22,500	20,000	20,000	35,000	50,200	35,000	55,000	45,500	22,500	29,100
10	24,700	32,800	24,000	20,000	19,000	36,000	53,400	30,600	55,000	44,000	19,600	29,800
11	26,900	31,300	25,000	20,500	19,000	36,500	58,100	30,600	56,500	47,100	18,000	27,600
12	26,900	31,300	26,000	20,500	19,000	32,000	59,700	30,600	56,500	48,700	17,200	26,900
13	26,900	29,800	27,000	20,500	18,500	30,600	61,300	29,100	55,000	50,200	17,200	21,800
14	27,600	30,600	27,500	20,500	18,500	29,100	62,900	29,100	51,800	51,800	17,100	21,800
15	28,300	32,000	27,500	20,500	18,000	27,600	64,500	29,800	40,900	51,800	17,500	24,000
16	28,300	32,800	27,000	20,000	17,000	27,600	64,500	32,000	35,000	53,400	18,000	28,300
17	27,600	33,500	27,000	20,000	17,000	26,900	64,500	29,800	29,100	50,200	18,800	29,800
18	*27,600	*35,000	27,000	20,000	17,000	27,600	*61,300	29,100	24,700	47,100	18,700	29,800
19	26,900	39,400	27,500	20,000	17,000	28,300	55,000	27,600	23,200	45,500	15,200	*28,300
20	24,700	40,900	28,000	20,000	17,000	29,800	51,800	26,900	26,900	42,400	14,500	26,100
21	24,000	40,900	28,000	20,500	17,000	*28,300	48,700	25,400	28,300	*39,400	16,800	24,700
22	23,200	40,900	28,000	20,500	17,000	27,600	47,100	24,000	27,600	34,300	*19,600	24,700
23	24,700	38,000	28,000	20,500	17,000	27,600	45,500	*22,500	26,100	29,100	19,600	23,200
24	28,300	36,500	27,500	20,500	17,500	27,600	42,400	21,000	24,700	26,900	17,500	23,200
25	29,100	35,000	27,500	21,000	20,500	26,900	42,400	20,300	22,500	23,200	15,000	21,800
26	28,300	34,300	26,000	22,000	28,000	26,900	42,400	20,300	23,200	21,800	13,100	21,800
27	27,600	30,600	25,500	23,000	34,000	25,400	44,000	19,600	22,500	21,800	11,500	21,000
28	26,900	28,000	24,000	23,000	43,000	25,400	47,100	18,100	21,000	22,500	13,000	21,800
29	24,700	26,500	23,000	22,500	.....	26,900	47,100	18,700	16,500	21,800	13,700	20,300
30	25,400	27,500	22,500	22,000	.....	30,600	47,100	19,600	16,200	21,800	15,900	18,500
31	26,100	.....	23,500	21,500	.....	33,500	.....	21,800	.....	21,000	17,800	.....

Mississippi River at Clinton, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	18,400	18,700	14,500	15,300	15,000	24,000	96,000	29,600	56,300	51,300	17,700	49,700
2.....	17,100	18,500	14,000	15,700	15,000	24,500	106,000	26,500	57,900	45,600	17,900	49,600
3.....	16,100	18,600	14,000	15,900	15,000	24,000	112,000	26,160	56,100	44,200	19,600	*51,300
4.....	15,600	*18,400	14,500	15,900	14,800	23,000	104,000	26,300	48,300	35,500	31,200	53,800
5.....	14,600	19,000	15,000	15,800	14,400	22,000	103,000	26,200	45,300	31,300	37,200	55,100
6.....	15,300	17,900	15,500	15,700	14,200	23,500	101,000	28,100	45,600	*31,600	*27,700	55,100
7.....	15,500	18,000	15,900	15,500	13,800	23,000	96,700	30,100	45,300	31,300	20,200	49,700
8.....	15,500	18,000	16,000	15,200	13,400	21,900	91,700	34,100	*46,400	*28,900	18,000	42,600
9.....	20,000	17,900	16,000	15,000	13,500	*21,000	79,100	39,100	46,700	32,200	16,600	38,900
10.....	21,800	19,000	16,100	14,800	13,600	21,100	60,900	48,100	46,500	32,900	*15,900	37,700
11.....	19,500	18,300	16,500	14,400	13,600	21,800	47,800	*59,000	46,700	35,700	15,800	36,300
12.....	17,200	18,600	16,800	14,200	13,600	22,000	44,600	59,100	46,000	40,900	16,500	33,000
13.....	17,200	19,800	17,000	14,000	13,600	21,800	45,000	58,600	43,800	48,100	15,700	31,300
14.....	17,000	21,100	17,000	14,000	13,600	20,400	45,000	57,900	39,900	51,100	16,400	28,500
15.....	17,200	21,900	17,000	13,900	13,800	21,200	41,100	56,200	35,400	52,400	16,700	24,900
16.....	17,300	22,500	17,200	*14,000	13,800	21,000	*34,000	49,900	31,600	52,100	19,400	23,400
17.....	17,200	24,600	17,000	14,000	14,200	21,000	33,600	44,800	25,600	46,300	20,100	24,400
18.....	17,300	29,500	16,900	14,000	14,600	21,100	34,500	42,000	24,100	39,500	21,700	*24,100
19.....	17,500	30,200	16,800	13,800	14,900	22,900	36,000	43,000	24,100	31,200	22,700	23,100
20.....	18,000	30,000	16,400	13,800	15,000	43,200	36,100	45,900	22,700	28,000	22,500	21,900
21.....	17,300	*30,700	16,000	13,800	15,000	67,400	35,500	50,300	21,800	27,200	20,600	21,800
22.....	18,000	30,600	15,600	13,900	15,000	66,400	38,700	53,000	20,700	25,300	18,100	23,100
23.....	18,400	39,700	15,400	13,900	18,000	49,900	38,800	43,200	20,300	23,500	22,300	30,800
24.....	18,400	39,000	15,200	14,000	22,000	53,700	37,300	37,600	20,100	23,700	28,900	37,800
25.....	19,100	31,200	15,000	14,000	21,500	64,000	37,000	34,300	21,400	22,700	33,000	43,800
26.....	19,200	31,500	15,000	14,100	20,400	77,100	37,400	33,100	32,500	22,200	37,100	49,500
27.....	19,100	39,500	15,000	14,100	20,000	85,100	37,200	33,500	47,600	21,900	39,200	57,800
28.....	19,700	26,000	14,900	14,200	21,000	87,800	40,600	38,200	50,800	21,200	44,800	63,900
29.....	19,200	21,500	14,800	14,500	.....	80,200	37,700	42,500	50,800	21,400	54,700	61,800
30.....	19,500	17,000	14,900	14,700	.....	81,200	32,900	47,700	51,600	20,000	57,700	65,600
31.....	19,400	.....	15,000	14,800	.....	92,400	.....	51,700	.....	18,800	51,500	.....
1959-60												
1.....	66,500	59,800	25,000	60,700	27,000	26,000	134,000	90,500	96,400	64,600	26,500	45,000
2.....	66,200	*61,600	27,500	60,800	27,000	26,000	134,000	92,100	95,500	61,700	22,200	45,300
3.....	65,500	63,000	29,500	60,200	27,600	26,000	126,000	94,200	96,900	61,300	21,200	48,200
4.....	66,100	65,800	32,000	38,000	28,000	25,500	101,000	96,600	97,200	62,300	21,600	48,800
5.....	74,000	66,700	35,800	33,000	28,500	24,500	85,700	95,300	96,400	63,000	21,400	49,200
6.....	80,100	67,100	37,300	30,000	28,500	24,500	*85,900	97,200	*95,000	*63,000	21,300	*49,200
7.....	82,900	67,400	36,800	35,000	28,500	25,600	82,700	123,000	93,400	60,600	23,100	48,400
8.....	79,700	65,200	34,000	36,000	28,000	25,000	81,600	138,000	93,400	53,900	*23,500	46,500
9.....	70,500	57,800	32,500	36,500	27,500	25,600	79,200	*141,000	93,100	48,400	25,000	45,400
10.....	60,600	52,500	31,500	36,000	26,500	25,000	74,500	136,000	*93,300	35,900	26,400	41,900
11.....	55,200	50,700	30,500	35,000	26,500	25,000	*68,600	127,000	91,700	*33,600	27,000	38,200
12.....	51,400	46,400	30,000	46,600	27,500	24,500	69,600	123,000	89,400	36,500	27,000	37,400
13.....	42,800	43,600	29,200	78,600	28,000	24,000	71,700	124,000	85,600	36,500	25,500	37,100
14.....	40,000	43,400	28,700	107,000	28,000	24,000	77,000	131,000	81,200	35,900	22,900	34,300
15.....	*40,700	41,900	28,200	79,300	26,500	24,500	78,100	138,000	75,900	32,600	22,500	31,700
16.....	41,800	37,000	28,700	47,000	25,500	25,000	78,900	145,000	66,900	29,800	22,900	*27,700
17.....	41,700	30,000	27,600	45,000	24,000	25,000	85,400	149,000	56,100	29,500	24,200	27,900
18.....	40,100	24,000	27,400	46,000	23,500	26,000	93,000	151,000	53,000	29,700	24,600	29,500
19.....	37,000	24,500	27,400	39,000	23,500	26,000	100,000	149,000	52,900	30,100	23,200	34,100
20.....	33,200	25,500	27,900	33,000	24,000	26,000	102,000	145,000	54,300	31,400	23,100	37,200
21.....	31,700	27,000	28,700	32,500	24,000	26,500	101,000	137,000	55,600	31,600	23,300	31,300
22.....	31,700	29,500	29,700	33,500	24,000	27,000	100,000	125,000	55,400	31,800	23,900	29,400
23.....	34,800	34,000	31,100	33,000	24,000	29,500	98,700	110,000	49,700	30,200	24,000	29,500
24.....	42,700	35,800	31,900	31,500	23,500	26,500	98,300	99,800	48,400	26,800	23,900	33,800
25.....	43,500	37,200	30,400	30,500	23,000	26,000	98,300	97,100	49,000	25,900	22,400	37,900
26.....	42,700	35,500	29,800	28,500	23,000	25,500	98,600	96,400	50,400	25,000	20,800	36,500
27.....	47,800	32,000	30,000	27,500	23,000	25,000	97,300	97,800	52,100	23,200	21,500	34,300
28.....	54,500	28,500	38,100	27,500	23,500	31,000	94,700	98,500	54,500	22,200	21,900	33,500
29.....	56,000	25,500	43,500	27,000	24,000	49,500	88,800	100,000	56,600	23,600	25,700	33,400
30.....	57,400	*23,500	50,300	27,000	.....	73,800	89,400	99,700	61,000	25,200	36,300	33,300
31.....	59,000	.....	58,200	26,500	.....	123,000	.....	97,900	.....	26,700	44,300	.....

Mississippi River at Clinton, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	21,960	22,980	23,370	20,740	23,160	30,030	95,390	53,340	37,910	36,980	36,830	22,470
1956-57.....	17,430	25,590	20,770	20,070	19,370	33,560	47,990	41,320	48,380	76,950	38,430	34,380
1957-58.....	26,730	32,630	25,680	21,320	20,880	32,200	49,170	29,260	33,580	36,440	17,300	23,180
1958-59.....	17,830	23,300	15,710	14,550	15,580	40,950	57,340	41,790	39,060	33,480	26,370	40,440
1959-60.....	52,830	43,410	32,550	42,180	25,710	31,060	92,470	117,600	73,010	38,460	24,620	37,860

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.257	0.268	0.273	0.242	0.271	0.351	1.11	0.623	0.443	0.432	0.430	0.262
1956-57.....	.204	.299	.243	.234	.226	.392	.561	.483	.565	.899	.449	.402
1957-58.....	.312	.381	.300	.249	.244	.376	.574	.342	.392	.426	.202	.271
1958-59.....	.208	.272	.184	.170	.182	.478	.670	.488	.456	.391	.308	.472
1959-60.....	.617	.507	.380	.493	.300	.363	1.08	1.37	.853	.449	.288	.442

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.30	0.30	0.31	0.28	0.29	0.40	1.24	0.72	0.49	0.50	0.50	0.29
1956-57.....	.23	.33	.28	.27	.24	.45	.63	.56	.63	1.04	.52	.45
1957-58.....	.36	.43	.35	.29	.25	.43	.64	.39	.44	.49	.23	.30
1958-59.....	.24	.30	.21	.20	.19	.55	.75	.56	.51	.45	.36	.53
1959-60.....	.71	.57	.44	.57	.32	.42	1.21	1.58	.95	.52	.33	.49

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year	
	Maximum day		Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Discharge						
1955.....							35,830	5.68
1956.....	Apr. 20, 1956.	127,000	16,500	35,400	0.414	5.62	35,010	5.55
1957.....	July 14, 1957.	103,000	13,400	35,440	.414	5.63	37,230	5.93
1958.....	Apr. 15-17, 1958.....	64,500	11,500	29,040	.339	4.60	26,670	4.21
1959.....	Apr. 3, 1959.	112,000	13,400	30,550	.357	4.85	36,610	5.82
1960.....	May 18, 1960.	151,000	20,800	51,000	.596	8.11		

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 22 to Dec. 31, 1955; Jan. 1 to Feb. 24, Dec. 13-27, 1956; Nov. 28 to Dec. 31, 1957; Jan. 1 to Mar. 10; Nov. 28 to Dec. 31, 1958; Jan. 1 to Mar. 7, Mar. 12-16, Nov. 16-22, Nov. 26 to Dec. 4, Dec. 8-11, 1959; Jan. 4-11, Jan. 16 to Mar. 28, 1960.

Stage-discharge relation indefinite Oct. 19-28, Oct. 31 to Nov. 5, 1956; Jan. 6 to Feb. 20, 1957.

Wapsipinicon River near Elma, Iowa

LOCATION.—Lat. 43° 14' 35", long. 92° 31' 50", in NW ¼ NW ¼ sec. 8, T. 97 N., R. 14 W., on right bank 10 ft. downstream from highway bridge, 0.2 mile downstream from unnamed creek and 4.9 miles west of Elma.

DRAINAGE AREA.—95.2 square miles.

RECORDS AVAILABLE.—October 1958 to September 1960 .

GAGE.—Water-stage recorder. Datum of gage is 1,131.46 ft. above mean sea level, datum of 1929.

EXTREMES.—1958-60: Maximum discharge, 2,980 cfs June 24, 1960 (gage height, 13.44 ft.); minimum daily, 1.9 cfs Feb. 4-8, 1959.

REMARKS.—Bankfull stage is about gage height, 8 ft.

Daily Discharge, in Cubic Feet per Second, for Water Year 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	4.0	5.4	3.0	3.7	2.0	2.2	780	8.9	134	90	4.5	11
2.....	4.0	5.4	4.0	3.5	2.0	2.4	645	8.9	56	80	5.0	33
3.....	4.0	5.6	4.8	3.3	2.0	2.7	399	8.9	30	38	6.0	33
4.....	4.0	5.6	5.4	3.2	1.9	3.0	252	8.9	20	22	6.6	21
5.....	4.0	5.2	5.0	3.1	1.9	2.9	180	8.9	15	16	6.0	16
6.....	10	5.0	4.7	3.0	1.9	2.8	120	11	12	12	4.8	12
7.....	10	5.0	4.5	*2.9	1.9	2.7	82	10	10	*10	4.7	9.6
8.....	*10	5.2	4.3	2.8	1.9	2.6	78	9.8	11	50	4.7	8.4
9.....	10	5.6	4.1	2.8	2.0	2.6	53	9.6	9.6	73	4.7	7.5
10.....	10	5.8	3.9	2.7	2.0	2.5	38	10	8.7	24	4.7	6.6
11.....	5.6	5.8	3.7	2.7	2.0	2.7	32	12	8.0	15	4.5	6.2
12.....	5.6	5.8	3.6	2.6	2.0	2.9	27	11	8.0	12	4.2	6.0
13.....	5.6	5.8	3.5	2.5	2.0	3.2	25	9.6	7.3	9.8	4.3	6.0
14.....	5.6	6.0	3.4	2.5	2.0	3.2	22	9.1	7.0	8.2	4.2	5.8
15.....	5.6	6.2	3.3	2.4	2.0	3.1	20	8.7	7.5	7.3	5.4	5.6
16.....	4.8	6.2	3.4	2.4	2.0	3.0	19	8.4	7.0	6.8	5.4	5.2
17.....	*4.8	8.0	3.5	2.4	2.0	3.5	20	8.2	6.4	6.6	5.0	5.4
18.....	4.8	11	3.6	2.4	2.0	4.0	29	8.4	6.2	6.4	4.5	5.4
19.....	5.4	11	3.8	2.3	2.0	4.7	28	8.9	6.2	6.0	4.2	5.8
20.....	5.8	8.2	4.0	2.3	2.0	6.0	22	12	6.4	5.6	4.2	6.4
21.....	5.8	6.8	4.2	2.3	2.0	7.4	19	10	6.0	5.4	4.2	7.0
22.....	5.2	6.0	4.4	2.2	2.0	12	16	9.6	5.8	5.2	9.6	62
23.....	5.2	5.8	4.6	2.2	2.0	20	14	11	5.6	5.0	24	*124
24.....	5.4	5.6	4.8	2.2	2.0	70	14	11	5.8	5.0	252	75
25.....	5.6	4.8	4.9	2.2	*2.0	200	13	9.4	21	5.4	*102	60
26.....	5.8	4.3	4.9	2.1	2.0	350	12	8.7	26	5.4	52	128
27.....	6.0	3.8	4.7	2.1	2.1	*380	11	8.2	*58	4.8	60	141
28.....	6.0	*3.6	4.6	2.1	2.1	500	11	8.4	40	*4.7	27	130
29.....	*5.6	3.3	4.3	*2.1	.....	600	*10	*13	23	5.0	25	68
30.....	5.4	3.1	4.1	2.1	.....	700	.....	9.4	15	5.8	18	43
31.....	5.4	.....	3.9	2.0	.....	815	.....	90	.....	5.0	13	.....

Wapsipinicon River near Elma, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1959-60												
1.....	32	25	25	40	9.2	6.8	82	54	22	50	7.0	41
2.....	27	24	25	25	9.4	6.6	117	42	20	42	*7.0	26
3.....	28	23	25	20	9.6	6.6	120	37	18	60	7.5	20
4.....	28	58	24	15	9.8	6.6	70	*35	16	85	6.8	16
5.....	26	102	23	18	10	6.6	50	35	15	53	6.6	14
6.....	23	93	22	23	11	6.5	*44	257	14	36	6.4	12
7.....	20	74	22	21	11	6.4	38	*765	13	*26	7.3	11
8.....	18	62	21	19	11	6.4	32	356	12	23	8.7	10
9.....	17	56	20	17	10	6.4	25	99	*11	21	8.7	9.8
10.....	17	82	20	16	10	6.5	22	70	11	21	8.2	9.4
11.....	16	108	20	16	9.8	6.6	21	54	11	21	7.3	9.1
12.....	14	80	20	17	9.4	6.6	20	44	11	20	6.6	8.9
13.....	14	58	20	18	9.0	6.6	35	38	11	20	6.2	8.4
14.....	13	40	21	18	8.8	6.8	82	32	10	18	6.0	*8.4
15.....	13	28	21	17	8.6	6.9	63	28	9.6	16	5.8	8.2
16.....	13	21	*21	15	8.4	*7.0	81	33	38	15	6.6	9.4
17.....	11	18	21	14	*8.2	7.2	183	63	96	14	6.8	10
18.....	12	*17	21	12	8.0	7.4	105	48	49	13	8.9	11
19.....	11	17	21	*11	7.8	7.6	63	50	27	13	11	12
20.....	*10	18	22	11	7.6	7.8	56	56	24	12	12	11
21.....	10	19	23	10	7.5	8.0	65	70	40	11	11	12
22.....	11	20	25	10	7.4	8.2	63	171	58	11	8.7	34
23.....	13	22	21	9.8	7.2	8.4	50	114	446	10	7.0	24
24.....	20	30	19	9.6	7.2	8.6	45	60	1,820	9.8	6.8	44
25.....	21	29	19	9.4	7.0	8.6	67	44	340	9.4	7.7	96
26.....	23	27	25	9.2	7.0	8.8	117	38	82	9.8	14	85
27.....	26	25	80	9.0	6.8	100	85	34	56	9.4	70	43
28.....	27	24	282	9.0	6.8	450	55	32	158	8.7	28	30
29.....	28	24	225	9.0	6.8	600	65	30	299	8.2	140	24
30.....	27	24	105	9.0	.....	*441	75	26	75	7.7	*507	22
31.....	26	.....	60	9.0	.....	148	.....	23	.....	7.3	85	.....

Wapsipinicon River near Elma, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59.....	5.97	5.83	4.16	2.55	1.99	120	100	12.4	20.9	17.9	22.1	34.8
1959-60.....	19.2	41.6	42.5	15.0	8.63	62.2	66.5	91.5	127	22.0	33.4	22.7

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59.....	0.063	0.061	0.044	0.027	0.021	1.26	1.05	0.130	0.220	0.188	0.232	0.366
1959-60.....	.202	.437	.446	.158	.091	.653	.699	.961	1.33	.231	.351	.238

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59.....	0.07	0.07	0.05	0.03	0.02	1.45	1.17	0.15	0.24	0.22	0.27	0.41
1959-60.....	.23	.49	.52	.18	.10	.75	.78	1.11	1.49	.27	.40	.27

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches	
	Date	Gage height in feet	Discharge							
1959....	Mar. 30, 1959.	11.54	902	1.9	29.1	0.306	4.15	36.5	5.20	
1960....	June 24, 1960.	13.44	2,980	5.8	46.0	.483	6.59	.....	.....

(1) Maximum gage-height, 11.58 ft. Mar. 26, 1959 (backwater from ice).

Peak Discharge (base, 600 cfs)

1958-59: Mar. 30 (10 p.m.) 902 cfs (11.44 ft.)

1959-60: Mar. 29 about 700 cfs; May 7 (9:30 p.m.) 798 cfs (11.26 ft.);
June 24 (6 a.m.) 2,980 cfs (13.44 ft.); Aug. 30 (9 a.m.) 682 cfs (11.02 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 25 to Dec. 31, 1958, Jan. 1 to Mar. 30, Nov. 7-9, Nov. 12 to Dec. 27, Dec. 31, 1959; Jan. 1 to Mar. 29, 1960. No gage-height record Oct. 1-15, 1958.

Wapsipinicon River at Independence, Iowa

LOCATION.—Lat. 42°27'50", long. 91°53'40", in SE¼ sec. 4, T. 88 N., R. 9. W., on right bank at Sixth Street in Independence, 1,800 ft. downstream from Interstate Power Company's hydroelectric plant, 4¼ miles downstream from Otter Creek, and 10¼ miles upstream from Pine Creek.

DRAINAGE AREA.—1,048 square miles (revised in 1956).

RECORDS AVAILABLE.—July 1933 to September 1960.

GAGE.—Water-stage recorder and concrete control. Datum of gage is 882.85 ft. above mean sea level, datum of 1929. Prior to May 24, 1941, staff gage in tailrace of powerplant 1,800 ft. upstream at datum 80.00 ft. lower.

AVERAGE DISCHARGE.—27 years, 501 cfs.

EXTREMES.—1933-60: Maximum discharge, 21,500 cfs June 14, 1947 (gage height, 18.74 ft.); minimum, about 7 cfs many times in period 1933-34. Maximum stage since at least 1901, that of June 14, 1947.

REMARKS.—Diurnal fluctuation on a few days caused by powerplant above station. Bankfull stage is about gage height, 13 ft.

REVISIONS (water years).—WSP 1508: 1938-39, 1940(M), 1947.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	27	44	45	18	18	29	1,820	380	264	36	140	74
2.....	27	44	51	18	17	139	2,100	396	211	152	156	98
3.....	73	42	38	18	18	53	1,670	571	42	74	203	93
4.....	56	70	27	18	17	59	1,450	463	244	36	256	120
5.....	46	42	44	18	17	281	1,320	597	202	122	138	251
6.....	60	42	52	18	17	246	1,360	818	155	116	352	230
7.....	130	70	45	18	18	262	1,340	997	122	108	270	146
8.....	178	39	39	18	18	225	1,220	748	134	39	290	134
9.....	32	68	34	18	18	159	1,070	718	133	126	279	34
10.....	237	60	29	18	18	162	580	614	34	98	192	39
11.....	145	62	29	18	18	44	505	559	123	104	123	208
12.....	71	66	*29	18	18	*170	511	491	106	144	42	39
13.....	66	42	29	18	18	122	312	452	91	112	208	39
14.....	70	*60	29	18	18	143	248	*482	60	100	47	270
15.....	69	50	29	18	18	102	149	458	76	39	152	138
16.....	36	60	23	18	*18	74	*362	442	76	102	39	42
17.....	*69	54	20	18	18	84	296	427	27	36	*39	*82
18.....	63	46	20	18	18	39	264	361	56	36	36	82
19.....	64	54	48	18	18	146	246	328	106	34	36	76
20.....	62	39	31	*18	18	145	242	209	74	120	184	77
21.....	54	50	18	18	18	224	246	356	92	80	98	70
22.....	61	47	18	18	18	309	56	296	108	36	34	81
23.....	32	60	18	18	18	514	243	278	126	*80	70	39
24.....	67	39	18	18	19	391	202	66	32	36	34	39
25.....	68	48	18	18	21	246	170	310	212	146	34	36
26.....	75	56	18	18	23	248	130	260	207	50	34	36
27.....	44	39	18	18	25	462	197	50	136	78	34	39
28.....	44	56	18	18	27	792	236	255	*34	116	36	80
29.....	68	51	18	18	27	990	280	248	99	39	36	74
30.....	42	56	18	18	.....	1,110	636	63	122	114	48	34
31.....	68	.....	18	18	.....	1,370	.....	316	.....	122	42	.....

Wapsipinicon River at Independence, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	32	63	102	39	95	227	349	196	580	386	141	53
2	32	64	12	98	63	215	210	150	622	217	136	111
3	29	69	125	90	32	66	300	110	862	148	118	111
4	29	38	99	65	98	272	278	116	555	50	175	93
5	23	65	125	66	36	170	265	44	455	296	203	86
6	21	86	108	34	94	264	264	146	395	226	164	86
7	20	86	124	67	64	231	82	42	338	36	151	78
8	21	60	83	34	63	192	310	148	310	280	138	66
9	18	60	34	66	68	150	279	118	284	218	131	66
10	16	62	83	51	56	56	238	136	386	126	34	66
11	16	37	70	58	262	195	220	168	*342	130	36	86
12	16	*32	80	32	210	196	182	42	348	57	36	82
13	16	95	80	32	211	172	178	234	457	118	36	82
14	17	69	90	52	232	186	69	217	812	34	36	108
15	113	160	88	51	228	222	*191	202	778	158	47	78
16	85	92	34	52	259	156	176	182	1,440	147	49	*161
17	95	151	*66	44	70	47	169	182	982	155	36	144
18	101	34	80	32	*300	*252	134	228	1,990	146	36	131
19	73	228	62	32	260	152	137	59	2,460	140	*142	39
20	71	154	65	32	184	160	132	*280	1,260	124	34	90
21	36	135	60	*61	148	182	47	355	925	29	32	100
22	66	37	70	154	146	140	238	427	794	*136	32	39
23	66	123	36	200	114	155	198	351	606	140	34	143
24	*64	60	68	165	47	62	172	320	576	114	32	138
25	27	33	39	140	188	295	172	288	432	96	29	39
26	67	85	100	130	167	314	195	140	388	32	32	39
27	75	93	72	47	178	357	210	304	359	92	34	39
28	52	94	96	174	193	350	59	180	345	36	156	90
29	82	35	92	142	.....	315	303	280	246	166	137	39
30	71	103	39	98	.....	300	198	678	234	139	135	78
31	64	.....	92	94	.....	180	.....	664	.....	130	34	.....
1957-58												
1	74	117	32	39	84	612	124	175	758	70	120	63
2	78	140	124	180	32	657	154	169	820	82	115	59
3	61	34	134	156	112	738	164	180	334	78	102	66
4	56	138	138	150	115	612	180	169	310	107	86	66
5	54	124	142	53	110	472	239	164	284	164	111	86
6	36	121	148	171	32	388	345	164	227	221	129	107
7	39	122	160	154	110	302	464	159	203	258	175	129
8	39	120	82	146	82	282	630	154	203	284	185	143
9	34	124	188	76	36	185	684	149	215	239	215	154
10	34	34	138	141	56	368	630	143	245	185	203	129
11	56	36	138	138	58	324	540	138	191	169	185	107
12	36	144	135	44	58	154	455	255	164	143	169	98
13	36	134	134	146	54	226	402	56	215	120	150	82
14	*36	130	129	132	59	276	*352	59	209	154	338	82
15	39	126	34	124	64	203	324	53	185	215	540	*86
16	72	136	128	39	34	345	304	53	*159	498	514	82
17	126	39	126	47	64	*282	278	53	133	675	388	82
18	96	187	*132	50	69	148	264	56	124	666	*297	82
19	70	160	65	59	60	94	239	*59	111	594	245	82
20	39	155	234	*173	*56	156	227	59	98	489	215	82
21	68	148	315	144	38	145	203	59	86	388	203	78
22	36	*130	58	142	44	165	197	66	78	310	169	63
23	112	47	316	137	29	86	185	63	78	258	154	66
24	144	133	306	134	144	274	209	66	82	*233	138	82
25	120	216	104	126	483	124	203	66	89	245	115	78
26	125	170	336	39	594	134	203	56	86	203	111	74
27	39	190	320	125	639	136	203	59	86	191	98	74
28	116	138	184	120	720	88	203	53	82	175	98	66
29	45	290	170	114	.....	74	191	53	82	154	89	66
30	36	294	324	104	.....	107	180	53	74	143	86	63
31	138	.....	312	106	.....	115	.....	75	.....	129	74	.....

Wapsipinicon River at Independence, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	56	59	89	58	31	28	7,710	297	1,150	7,860	203	290
2.....	56	59	86	58	31	33	6,720	271	1,210	5,200	191	252
3.....	56	59	89	57	31	40	5,460	252	1,530	3,510	203	215
4.....	56	59	93	55	31	46	4,290	245	1,710	3,270	191	215
5.....	53	74	86	53	31	50	3,510	258	1,890	2,970	175	284
6.....	53	56	70	51	31	50	2,790	310	1,590	*2,130	175	278
7.....	56	53	66	48	31	47	2,370	271	987	1,530	169	233
8.....	70	66	66	48	31	46	1,890	245	702	1,020	149	197
9.....	107	63	63	48	31	43	1,350	245	380	860	143	180
10.....	89	50	59	48	31	41	1,050	681	98	702	138	149
11.....	70	56	59	48	31	38	860	544	*297	621	129	133
12.....	66	53	59	*48	31	*38	740	472	310	567	124	124
13.....	66	56	56	48	30	42	*693	448	271	298	*111	120
14.....	66	205	56	48	30	45	639	*187	352	420	107	*110
15.....	66	111	*53	48	29	48	576	180	233	366	120	102
16.....	66	44	53	48	29	49	532	245	209	359	124	98
17.....	63	*47	53	48	*29	50	506	233	191	345	124	98
18.....	56	175	53	48	29	52	498	221	175	310	115	93
19.....	56	498	53	48	29	221	498	693	169	297	107	98
20.....	*53	432	56	45	29	801	489	632	154	317	98	93
21.....	59	331	56	45	28	1,410	523	481	154	310	124	93
22.....	59	264	56	45	29	1,470	301	729	149	284	164	89
23.....	59	227	56	42	29	1,650	93	1,110	120	258	239	89
24.....	63	191	56	39	29	2,610	317	1,230	124	227	373	86
25.....	63	160	56	37	29	*5,740	345	1,280	1,100	180	366	111
26.....	56	120	56	34	29	7,860	297	1,060	2,010	180	331	221
27.....	59	89	56	32	29	11,100	304	830	2,490	180	297	540
28.....	59	110	56	31	29	10,600	373	702	2,490	175	317	585
29.....	63	100	59	31	.....	10,100	373	502	4,160	191	352	523
30.....	63	93	59	31	.....	9,660	345	630	6,160	221	366	514
31.....	59	.....	59	31	.....	8,760	.....	747	.....	227	331	.....
1959-60												
1.....	540	233	388	1,200	290	155	7,280	3,150	639	729	107	180
2.....	558	215	*402	1,000	284	159	5,880	2,850	612	498	102	191
3.....	523	221	380	780	278	154	4,160	2,610	549	489	102	221
4.....	464	388	380	560	278	143	2,850	2,310	506	455	115	252
5.....	448	*840	373	390	284	140	2,010	1,770	472	373	111	215
6.....	448	1,080	352	*390	284	135	1,590	2,130	432	331	102	169
7.....	440	1,050	297	400	284	130	1,330	7,560	380	304	120	138
8.....	418	1,120	280	470	290	129	1,050	7,860	352	284	111	124
9.....	373	1,140	260	500	300	*124	954	4,680	*317	284	129	107
10.....	345	1,160	270	489	310	120	820	4,160	227	310	129	98
11.....	310	1,060	280	432	*300	120	765	3,770	284	278	*107	93
12.....	*278	954	304	720	290	115	702	*3,030	359	297	98	*89
13.....	*264	910	297	1,890	280	115	684	2,250	440	506	93	86
14.....	245	756	290	1,590	278	115	711	1,650	242	*373	129	86
15.....	239	612	290	1,090	252	115	*765	1,150	278	297	133	86
16.....	239	520	284	640	239	115	921	976	317	258	111	89
17.....	215	402	297	520	233	115	2,670	1,160	304	233	98	82
18.....	203	425	284	560	215	115	5,600	1,050	297	215	191	86
19.....	197	480	278	540	203	120	5,880	1,080	338	203	185	120
20.....	185	506	278	498	197	124	4,420	1,150	410	175	180	138
21.....	180	489	284	472	185	129	3,770	1,300	498	164	175	133
22.....	180	480	245	455	169	129	2,970	1,270	523	169	185	164
23.....	209	489	185	425	169	133	2,130	1,140	532	197	180	221
24.....	203	523	233	402	164	138	1,590	1,020	514	203	164	324
25.....	169	440	264	373	160	133	1,270	1,010	464	233	138	464
26.....	191	370	324	352	155	133	1,300	1,050	425	278	133	418
27.....	203	320	657	331	155	149	1,470	910	532	191	115	352
28.....	203	300	1,320	317	155	290	1,650	860	684	175	120	352
29.....	221	280	1,530	310	155	2,430	1,650	783	720	149	164	359
30.....	227	330	1,590	297	.....	.....	13,000	2,190	720	774	129	185
31.....	233	.....	1,470	297	.....	.....	10,800	.....	711	.....	115	180

Wapsipinicon River at Independence, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	71.1	51.9	28.7	18.0	19.0	301	649	420	117	84.9	119	93.3
1956-57	48.8	83.4	76.6	78.5	145	201	198	225	685	139	82.8	85.4
1957-58	67.4	136	171	113	144	267	299	101	200	253	188	85.9
1958-59	62.6	132	62.7	45.1	29.9	2,347	1,548	524	1,082	1,141	199	207
1959-60	295	603	463	603	736	968	2,368	2,165	447	287	135	192

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.068	0.050	0.027	0.017	0.018	0.287	0.619	0.401	0.112	0.081	0.114	0.089
1956-57	.047	.080	.073	.075	.138	.192	.189	.215	.654	.133	.079	.081
1957-58	.064	.130	.163	.108	.137	.255	.285	.096	.191	.241	.179	.082
1958-59	.060	.126	.060	.043	.029	2.24	1.48	.500	1.03	1.09	.190	.198
1959-60	.281	.575	.442	.575	.725	.924	2.26	2.07	.427	.274	.129	.183

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.08	0.06	0.03	0.02	0.02	0.33	0.69	0.46	0.12	0.09	0.13	0.10
1956-57	.05	.09	.08	.09	.14	.22	.21	.25	.73	.15	.09	.09
1957-58	.07	.14	.19	.12	.14	.29	.32	.11	.21	.28	.21	.09
1958-59	.07	.14	.07	.05	.03	2.58	1.65	.58	1.15	1.26	.22	.22
1959-60	.32	.64	.51	.66	.24	1.07	2.52	2.38	.48	.32	.15	.20

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								230	2.99
1956	Apr. 2, 1956	6.77	2,100	17	164	0.156	2.13	169	2.18
1957	June 19, 1957	7.79	3,270	12	170	.162	2.19	184	2.37
1958	June 1, 1958	6.07	1,210	29	169	.161	2.17	159	2.05
1959	Mar. 27, 1959	13.67	11,800	28	618	.590	8.02	711	9.21
1960	Mar. 30, 1960	15.63	15,200	82	731	.698	9.49		

Peak Discharge (base, 2,000 cfs)

1955-56: Apr. 2 (11 a.m.) 2,100 cfs (6.77 ft.).

1956-57: June 19 (6 a.m.) 3,270 cfs (7.79 ft.).

1957-58: No peak above base.

1958-59: Mar. 27 (6 p.m.) 11,800 cfs (13.67 ft.); July 1 (7 a.m.) 8,460 cfs (11.57 ft.).

1959-60: Jan. 13 (2:30 p.m.) 2,490 cfs (7.14 ft.); Mar. 30 (3:30 p.m.) 15,200 cfs (15.63 ft.); Apr. 19 (12:30 a.m.) 6,300 cfs (10.14 ft.); May 1 (8 a.m.) 3,270 cfs (7.84 ft.); May 7 (9 p.m.) 9,210 cfs (12.07 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 15-17, 28, Dec. 3, 1955; Jan. 21-26, 28, 29, Feb. 24-26, Nov. 21, Dec. 10-13, 18, 1956; Jan. 8-13, 23-26, 1957; Nov. 25, 26, 28, 29, 1958; Jan. 1 to Mar. 18, Nov. 16, 26-30, Dec. 8-11, 1959; Jan. 1-9, 16-18, Feb. 9-13, Feb. 25 to Mar. 1, Mar. 5-7, 13, 16, 1960.

Wapsipinicon River near De Witt, Iowa

LOCATION.—Lat. $41^{\circ}45'55''$, long. $90^{\circ}32'00''$, in SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec 6, T. 80 N., R. 4 E., on left bank 15 ft. downstream from bridge on U. S. highway 61, 3 miles south of De Witt, 6.2 miles upstream from Brophy Creek, and 15.1 miles upstream from mouth.

DRAINAGE AREA.—2,330 square miles (revised in 1956, includes that of Silver Creek).

RECORDS AVAILABLE.—June 1934 to September 1960.

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

AVERAGE DISCHARGE.—26 years, 1,304 cfs.

EXTREMES.—1934-60: Maximum discharge, 26,000 cfs June 27, 1944 (gage height, 12.07 ft.); minimum daily, 70 cfs Jan. 17-24, 1940.

REMARKS.—Bankfull stage is about gage height, 9 ft.

REVISIONS (water years).—WSP 1308: 1937(M); WSP 1708: 1951, 1952(M).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	307	202	135	110	108	930	728	950	1,650	318	288	1,010
2.....	229	196	145	110	108	820	920	865	1,290	297	443	476
3.....	188	185	155	110	108	720	1,550	865	1,040	273	366	332
4.....	177	182	160	110	110	640	1,610	920	950	267	287	304
5.....	199	188	155	110	110	635	1,610	1,350	865	267	260	297
6.....	226	185	145	110	113	625	1,730	1,600	782	257	247	347
7.....	235	182	140	110	117	540	1,610	1,290	700	358	214	293
8.....	208	179	*135	110	119	450	1,500	1,076	684	686	257	273
9.....	194	179	130	110	120	400	1,430	1,130	656	362	257	276
10.....	182	188	122	109	120	420	1,430	1,580	610	270	*254	293
11.....	177	194	115	108	120	410	*1,360	2,130	565	254	280	*290
12.....	185	191	110	107	124	400	*1,320	1,770	518	244	315	270
13.....	205	191	106	106	*124	400	1,130	1,430	496	223	614	251
14.....	196	185	102	104	145	390	950	*1,430	460	217	429	229
15.....	214	191	*98	103	170	*393	865	1,360	432	217	311	223
16.....	226	183	94	*102	153	385	810	1,220	621	211	287	232
17.....	208	175	92	100	145	381	700	1,130	436	214	290	205
18.....	191	160	90	98	140	381	625	*1,010	473	217	650	202
19.....	*185	150	90	95	138	381	580	950	752	320	656	232
20.....	182	*140	90	92	133	358	595	892	565	283	347	223
21.....	*170	150	90	90	130	347	565	838	428	235	267	199
22.....	174	170	90	90	129	332	540	782	400	226	235	188
23.....	171	165	90	90	130	318	522	728	452	191	*214	182
24.....	177	155	90	90	420	336	504	700	358	179	202	177
25.....	179	145	92	90	1,700	351	500	689	321	182	208	174
26.....	177	135	94	90	1,500	397	472	630	*336	182	205	168
27.....	174	125	96	91	1,300	472	908	610	436	*171	188	166
28.....	179	120	100	93	1,200	492	920	1,160	370	177	182	155
29.....	208	120	103	98	1,100	460	1,130	1,990	*325	179	177	148
30.....	205	125	108	103	.....	452	1,010	3,590	336	194	182	145
31.....	208	.....	109	108	.....	540	.....	*2,280	.....	202	557	.....

Wapsipinicon River near De Witt, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	141	158	240	150	360	495	486	430	850	892	414	755
2	136	155	230	150	360	505	*490	406	1,890	838	*283	482
3	134	150	220	160	360	477	500	*398	1,970	755	434	394
4	141	155	210	170	360	434	482	398	1,810	728	410	350
5	136	160	200	170	360	438	530	386	1,460	728	398	309
6	131	175	190	170	360	464	515	366	1,290	656	347	283
7	126	158	170	170	370	450	505	347	1,260	590	327	283
8	124	158	160	170	430	450	505	305	1,160	540	309	276
9	121	155	150	170	900	434	486	312	1,070	540	316	269
10	121	155	160	170	1,300	410	472	347	980	540	363	258
11	121	158	170	180	1,200	438	426	354	1,070	500	347	255
12	124	163	170	180	1,000	482	446	362	1,100	460	294	265
13	*126	166	170	180	960	446	454	705	1,010	460	280	255
14	126	169	160	180	880	410	450	950	*980	460	283	241
15	128	214	160	180	800	406	430	865	980	450	294	241
16	124	*198	160	180	720	418	414	755	892	400	272	234
17	124	198	160	180	660	402	418	689	1,040	370	250	221
18	124	192	150	180	620	418	394	700	1,330	350	230	221
19	*124	189	150	180	580	472	*382	684	2,130	330	210	218
20	128	198	*150	190	560	477	386	635	2,660	320	200	*234
21	144	190	150	330	*550	442	386	625	2,770	320	190	287
22	150	180	150	1,200	530	*434	410	768	2,660	500	*195	269
23	160	180	150	950	520	430	635	728	2,770	540	195	251
24	158	180	160	780	520	414	580	*782	2,130	350	231	221
25	155	220	160	*640	500	422	510	865	1,650	300	227	208
26	178	250	160	530	500	402	482	980	1,430	*283	221	205
27	175	260	160	470	500	394	486	865	1,260	283	214	192
28	166	260	160	420	500	374	468	782	1,160	280	238	198
29	160	260	160	390	.....	406	454	728	1,070	276	810	205
30	158	250	160	370	.....	446	438	672	950	269	989	192
31	158	.....	150	360	.....	477	.....	678	.....	284	1,260	.....
1957-58												
1	178	238	260	340	250	1,810	442	477	422	386	398	262
2	169	238	280	310	240	1,540	438	472	390	386	378	248
3	169	244	300	290	230	*1,400	430	464	324	378	354	241
4	163	224	310	270	220	1,320	434	482	280	414	331	238
5	158	231	320	260	210	1,290	530	*459	378	438	320	241
6	160	255	340	250	200	1,220	1,070	430	605	422	324	244
7	163	258	360	240	200	1,320	1,130	418	525	386	386	227
8	160	269	360	240	190	1,260	1,040	414	533	358	312	224
9	158	260	340	230	190	1,160	980	402	1,400	350	294	221
10	155	250	260	230	180	1,040	950	390	*1,650	362	280	214
11	152	265	220	230	180	980	920	378	950	382	280	214
12	150	269	250	230	180	920	920	362	755	398	290	214
13	147	280	300	230	180	892	950	350	2,710	402	316	218
14	144	290	350	230	180	865	950	339	5,100	626	362	214
15	166	280	360	240	180	865	920	327	2,440	535	406	221
16	202	258	370	240	180	838	865	343	1,540	625	378	214
17	*205	265	380	240	*180	755	*755	350	1,190	520	390	221
18	195	331	398	250	180	700	728	366	980	450	362	*214
19	183	*520	*530	250	180	646	694	327	*865	430	398	*202
20	175	530	889	250	180	*605	672	298	782	486	438	192
21	166	490	1,100	250	180	625	645	283	689	*570	446	189
22	183	430	1,050	260	190	595	640	*272	610	615	*565	180
23	227	426	1,000	*270	200	545	620	262	565	610	662	175
24	244	422	920	280	230	530	605	251	535	575	515	178
25	238	406	840	290	1,000	530	600	241	510	535	438	175
26	224	402	728	300	2,000	525	560	238	482	486	386	175
27	221	382	728	*300	3,460	505	535	227	468	464	354	172
28	221	362	667	300	2,470	505	520	227	442	438	*327	163
29	238	350	585	290	.....	495	515	221	422	418	309	160
30	244	270	540	270	.....	454	495	221	402	426	294	160
31	251	.....	362	260	.....	*446	.....	248	.....	422	280	.....

Wapsipinicon River near De Witt, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	158	155	205	169	100	3,700	*9,800	2,100	*2,220	4,240	650	462
2	158	158	220	169	100	3,200	10,200	1,720	1,690	4,380	650	498
3	155	160	240	168	100	2,990	10,600	1,480	1,550	4,660	885	498
4	155	158	250	162	100	2,130	10,600	1,330	1,620	5,250	1,210	480
5	152	152	220	154	100	1,540	10,200	1,180	1,620	5,900	835	442
6	152	152	205	148	100	910	9,400	1,060	1,690	6,950	785	407
7	158	150	187	140	102	800	8,600	985	1,830	*7,800	1,150	383
8	175	155	175	135	105	910	7,800	*910	*1,940	7,500	1,060	368
9	244	158	162	132	110	1,180	6,950	885	2,020	6,700	860	377
10	280	152	155	132	118	*1,730	5,900	910	1,760	5,400	*760	374
11	214	152	150	132	125	2,560	4,800	*1,120	1,420	4,380	670	362
12	205	152	145	132	133	2,470	3,740	1,480	1,150	2,900	610	347
13	198	158	140	132	150	1,850	2,900	1,550	910	2,300	570	331
14	192	158	138	133	200	2,800	2,380	1,480	760	1,900	532	320
15	189	163	137	*133	310	2,800	2,020	1,240	735	1,660	515	313
16	178	169	136	133	320	1,300	*1,800	1,120	690	1,450	532	313
17	166	198	*135	132	275	1,040	1,660	1,010	650	1,240	630	*303
18	160	588	135	133	223	940	1,660	885	610	2,390	630	298
19	160	402	136	133	*197	2,760	1,620	985	570	1,690	570	289
20	155	*339	138	133	180	6,500	1,520	1,120	550	1,300	515	284
21	152	287	139	121	170	*6,950	1,450	1,420	532	1,150	480	280
22	169	262	142	120	170	6,700	1,360	1,150	550	1,040	462	280
23	*169	312	144	120	980	6,700	1,300	1,360	590	985	438	298
24	166	378	148	114	3,000	5,900	1,240	1,330	532	935	424	286
25	158	382	149	108	*3,900	5,400	1,210	1,300	550	885	407	310
26	158	290	150	100	4,500	5,550	1,060	1,420	922	810	417	377
27	158	275	150	100	4,900	5,900	1,150	1,520	2,300	785	417	710
28	155	170	152	100	4,200	6,100	4,520	1,800	2,810	735	462	550
29	155	190	155	100	.....	6,500	4,520	2,630	2,380	690	480	445
30	155	190	160	100	.....	7,200	2,760	2,540	3,300	735	480	445
31	155	.....	165	100	.....	8,200	.....	2,810	.....	760	462	.....
1959-60												
1	554	830	950	3,000	1,500	*760	11,800	4,130	2,440	1,450	770	481
2	611	*810	1,050	2,600	1,500	760	14,200	*4,270	3,710	1,510	710	474
3	630	790	1,180	2,100	1,510	740	16,300	4,430	4,270	1,570	690	459
4	630	970	1,220	1,800	1,450	730	*18,300	4,770	3,230	1,510	790	456
5	1,050	1,630	1,200	1,400	1,450	720	16,900	5,150	5,350	1,400	730	438
6	1,570	1,870	1,100	1,200	1,510	700	13,400	5,800	6,550	1,350	690	420
7	2,290	2,220	1,090	*1,100	1,510	*700	10,800	7,800	*4,950	1,300	730	420
8	1,810	2,440	900	1,150	*1,450	680	9,100	8,400	3,030	1,220	790	441
9	1,450	2,290	800	1,250	1,500	680	7,250	8,850	*2,290	1,200	*830	438
10	1,200	2,150	800	1,300	1,200	660	5,150	*12,200	2,080	1,350	830	413
11	1,050	2,010	1,010	1,400	910	660	3,850	12,200	2,680	*1,810	730	395
12	950	2,010	1,120	3,700	1,510	660	*3,130	10,500	3,350	1,570	650	363
13	890	1,940	1,120	7,000	1,500	660	2,680	9,900	4,130	2,010	611	342
14	850	1,870	1,050	8,200	1,400	660	2,940	9,100	3,230	2,080	592	339
15	*790	1,750	1,010	9,100	1,300	660	2,940	7,600	2,520	1,510	554	*342
16	770	1,500	1,010	10,200	1,200	660	2,680	6,800	2,440	1,400	518	342
17	710	1,300	990	7,000	1,100	680	5,680	6,050	2,080	1,250	518	405
18	690	1,000	970	4,000	1,050	700	6,800	4,590	1,940	1,150	499	405
19	650	1,050	970	3,200	1,000	710	6,050	3,990	2,150	1,080	592	380
20	630	1,200	950	2,500	950	720	5,800	4,130	2,520	990	730	366
21	592	1,300	950	1,900	900	720	6,180	3,990	2,680	930	730	377
22	592	1,450	950	1,800	900	720	6,800	3,710	2,220	870	670	346
23	611	1,450	950	1,800	900	740	7,250	3,470	2,010	830	650	356
24	790	1,510	890	1,750	900	740	7,600	3,350	1,940	790	611	391
25	1,010	1,510	910	1,700	880	740	7,250	3,470	1,810	790	573	536
26	990	1,400	970	1,700	860	740	6,800	3,350	1,690	1,150	554	592
27	1,010	1,250	1,570	1,650	820	900	5,080	3,130	1,630	1,120	518	573
28	970	1,000	2,850	1,600	800	1,000	4,270	3,030	1,570	970	495	690
29	890	800	3,710	1,600	800	3,000	3,590	2,850	1,450	910	481	750
30	850	*820	3,710	1,600	.....	10,000	3,710	2,680	1,450	890	*485	730
31	830	.....	3,470	1,500	.....	14,200	.....	2,440	.....	830	488	.....

Wapsipinicon River near De Witt, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	198	168	112	102	349	470	1,004	1,256	610	254	313	265
1956-57	139	188	169	319	616	438	467	609	1,493	471	356	276
1957-58	187	323	506	262	487	877	718	340	965	461	373	207
1958-59	174	226	163	130	892	3,716	4,491	1,414	1,348	2,887	631	381
1959-60	933	1,471	1,333	2,961	1,181	1,529	7,496	5,682	2,780	1,251	639	449

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.085	0.072	0.048	0.044	0.150	0.202	0.431	0.539	0.262	0.109	0.134	0.114
1956-57	.060	.081	.073	.137	.264	.188	.200	.261	.641	.202	.153	.118
1957-58	.080	.139	.217	.112	.209	.376	.308	.146	.411	.198	.160	.089
1958-59	.075	.097	.070	.056	.383	1.59	1.93	.607	.579	1.24	.271	.164
1959-60	.400	.631	.572	1.27	.507	.656	3.22	2.44	1.19	.537	.274	.193

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.10	0.08	0.06	0.05	0.16	0.23	0.48	0.62	0.29	0.13	0.15	0.13
1956-57	.07	.09	.08	.16	.28	.22	.22	.30	.71	.23	.18	.13
1957-58	.09	.15	.25	.13	.22	.43	.31	.17	.46	.23	.18	.10
1958-59	.09	.11	.08	.06	.40	1.84	2.15	.70	.65	1.43	.31	.18
1959-60	.46	.70	.66	1.47	.55	.76	3.59	2.81	1.33	.62	.32	.21

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								665	3.87
1956	May 30, 1956	8.09	3,720	90	425	0.182	2.48	426	2.48
1957	June 21, 23, 1957	7.31	2,770	121	459	.197	2.67	503	2.92
1958	June 14, 1958	9.27	5,620	144	475	.204	2.75	436	2.54
1959	Apr. 4, 1959	11.17	10,600	100	1,372	.589	8.00	1,638	9.54
1960	Apr. 4, 1960	11.71	18,300	339	2,307	.990	13.48		

Peak Discharge (base, 4,500 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: June 14 (about 7 a.m.) 5,620 cfs (9.27 ft.)

1958-59: Feb. 27, about 5,400 cfs; Mar. 21 (11 a.m.) 6,950 cfs (10.23 ft.); Apr. 4 (7 a.m.) 10,600 cfs (11.17 ft.); Apr. 28 (4 p.m.) 5,250 cfs (9.27 ft.); July 7 (4 p.m.) 8,200 cfs (10.56 ft.).

1959-60: Jan. 16 (5 p.m.) 10,800 cfs (10.88 ft.); Apr. 4 (8:30 p.m.) 18,300 cfs (11.71 ft.); Apr. 24 (3 p.m.) 7,600 cfs (10.24 ft.); May 10 (7:30 p.m.) 12,600 cfs (11.16 ft.); June 6 (9 a.m.) 6,800 cfs (10.02 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 17 to Dec. 31, 1955; Jan. 1 to Mar. 3, Mar. 7-14, Nov. 21 to Dec. 31, 1956; Jan. 1 to Feb. 28, Nov. 9, 10, Nov. 29 to Dec. 17, 1957; Jan. 1 to Feb. 26, Nov. 26 to Dec. 31, 1958; Jan. 1 to Mar. 3, Mar. 6-9, 16-18, Nov. 16-20, Nov. 27 to Dec. 2, Dec. 6-10, 1959; Jan. 1-14, Jan. 17 to Feb. 2, Feb. 9, 10, Feb. 13 to Mar. 30, 1960. No gage-height record July 8-25, 1957.

West Branch Iowa River near Klemme, Iowa

LOCATION.—Lat. 42°57'50", long. 93°42'20", in NE¼NW¼ sec. 17, T. 94 N., R. 24 W., on downstream side of highway bridge, 6 miles southwest of Klemme and 12.4 miles upstream from confluence with East Fork Iowa River.

DRAINAGE AREA.—112 square miles (revised in 1956).

RECORDS AVAILABLE.—April 1948 to September 1958 (discontinued). Previously published as West Fork Iowa River near Klemme.

GAGE.—Wire-weight gage read once-daily, more often at high stages. Datum of gage is 1,180.83 ft. above mean sea level, datum of 1929. Prior to June 13, 1948, at datum 1.00 ft. higher.

AVERAGE DISCHARGE.—10 years, 38.2 cfs.

EXTREMES.—1948-58: Maximum discharge, 1,920 cfs June 21, 1954 (gage height, 14.97 ft., from floodmark); no flow for part of day Jan. 12, 1950.

REMARKS.—High banks are never overtopped.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	3.0	3.0	*0.6	0.5	0.3	15	48	22	11	14	101	3.0
2.....	3.3	*2.8	.7	.5	.3	*39	49	35	10	80	69	2.7
3.....	4.1	3.0	.8	.5	.3	66	39	*39	10	63	37	2.6
4.....	4.7	3.3	.9	.5	.3	45	32	65	9.8	40	24	3.6
5.....	5.0	3.6	.9	.5	.3	31	26	59	9.5	26	20	*6.6
6.....	5.5	3.4	.9	.5	.3	25	21	43	9.3	16	19	5.7
7.....	*3.9	3.2	.9	.5	.3	20	24	37	*9.0	12	16	4.8
8.....	3.6	3.3	.8	.5	.3	16	20	34	7.9	12	14	4.5
9.....	3.5	3.5	.7	.5	.3	13	17	31	7.0	11	13	4.1
10.....	3.3	3.9	.7	.5	.3	10	14	28	6.2	9.8	*11	3.3
11.....	3.1	4.0	.6	.5	.4	9.2	13	26	5.7	9.3	9.8	2.8
12.....	3.2	3.7	.6	.5	.4	8.5	13	22	5.0	7.7	8.8	2.5
13.....	3.3	3.4	.5	.5	.4	7.8	12	19	5.0	6.6	8.3	2.6
14.....	3.2	3.2	.5	.5	.4	7.0	12	16	4.8	6.4	7.0	2.6
15.....	3.1	3.2	.5	.5	.4	6.8	11	14	4.8	6.2	6.4	2.7
16.....	3.2	3.4	.5	.5	.4	8.0	11	13	4.8	5.5	5.9	2.8
17.....	3.3	3.2	.4	.4	.4	10	10	13	4.7	4.2	5.3	2.8
18.....	3.4	3.1	.4	.4	.4	13	9.0	13	4.7	3.8	5.0	2.6
19.....	3.6	3.0	.4	.4	.4	17	8.3	12	5.2	*4.5	4.5	2.4
20.....	3.7	3.0	.4	.4	.4	26	7.7	12	5.2	11	3.9	2.8
21.....	3.7	3.1	.4	.4	.4	36	7.0	12	5.2	9.5	3.5	3.1
22.....	3.8	3.3	.4	.4	.4	48	6.6	12	5.0	8.8	2.8	3.3
23.....	3.8	3.5	.4	.4	.4	45	6.4	11	5.0	7.9	2.6	3.2
24.....	3.9	3.5	.4	.4	.4	41	6.6	11	5.0	7.0	2.5	3.3
25.....	3.9	3.0	.4	.4	.4	60	6.2	10	5.0	6.2	2.4	3.6
26.....	3.9	2.2	.4	.4	.7	90	6.2	9.5	5.2	4.8	2.5	3.5
27.....	3.9	1.6	.5	.4	1.5	*130	6.2	9.3	5.0	4.2	2.7	3.6
28.....	3.8	1.2	.5	.4	2.5	117	6.1	12	4.8	4.1	4.4	3.8
29.....	3.7	1.0	.5	.3	4.5	100	8.3	24	4.8	3.9	3.9	4.1
30.....	3.5	.8	.5	.3	.....	78	16	25	5.0	4.2	3.6	4.1
31.....	3.2	.....	.5	.3	.....	62	.....	18	.....	19	3.5	.....

West Branch Iowa River near Klemme, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	3.5	*2.5	2.5	1.7	0.3	1.6	16	5.3	115	19	5.3	5.2
2	2.5	2.5	3.0	1.7	.3	1.7	14	5.0	87	18	5.2	5.0
3	*2.5	2.4	3.5	1.6	.3	1.8	12	4.8	66	18	5.0	4.8
4	1.7	2.2	4.0	1.5	.3	1.9	11	5.0	51	19	4.7	4.4
5	1.8	2.1	*3.5	1.4	.3	2.0	*9.3	4.8	32	18	4.4	4.1
6	1.8	2.1	3.0	1.3	.4	2.1	9.8	4.8	*22	17	3.9	*3.8
7	1.9	2.0	2.6	1.2	.4	*2.3	11	5.0	21	16	3.8	3.6
8	1.8	2.0	2.3	1.1	.5	2.4	10	5.0	21	13	*3.9	3.5
9	1.8	1.9	2.1	1.0	.6	2.6	9.8	*5.9	21	11	3.9	3.3
10	1.9	1.8	2.0	*.9	.7	2.8	9.5	7.9	20	7.7	4.2	3.5
11	2.0	1.8	1.8	.8	.7	3.0	9.3	11	18	*7.5	4.5	3.5
12	2.1	1.7	1.7	.8	.7	3.2	9.0	12	16	6.1	4.7	3.3
13	2.1	1.6	1.7	.7	.8	3.5	8.8	14	16	7.5	6.1	3.5
14	2.5	1.5	1.6	.7	.8	3.0	8.6	22	20	8.1	5.9	3.6
15	4.5	1.4	1.6	.6	.8	2.8	8.6	41	17	8.6	5.3	3.6
16	3.6	1.4	1.6	.6	.8	2.9	8.6	35	18	8.3	5.0	3.5
17	3.0	1.5	1.6	.5	.8	3.1	8.6	36	20	8.1	4.8	3.3
18	2.6	1.5	1.6	.5	.8	3.5	8.1	39	19	7.7	4.5	3.2
19	2.5	1.4	1.6	.5	.8	4.0	7.7	46	18	7.2	4.7	3.2
20	2.4	1.2	1.7	.5	.8	8.0	7.5	63	22	7.0	4.5	3.2
21	2.2	1.1	1.7	.5	.9	15	7.2	139	29	6.8	4.5	3.3
22	2.1	1.1	1.7	.5	1.0	25	7.0	131	42	6.6	4.4	3.5
23	2.0	1.5	1.8	.4	1.0	50	6.6	86	39	6.2	4.7	3.6
24	2.0	1.6	1.9	.4	1.1	80	6.2	86	35	5.9	5.0	3.5
25	2.0	1.7	1.9	.3	1.2	100	6.2	81	33	5.7	5.2	3.3
26	2.4	1.8	1.9	.3	1.3	70	6.4	77	76	5.7	5.3	3.3
27	2.2	1.9	1.9	.3	1.4	50	6.4	101	60	5.5	6.1	3.3
28	2.1	2.0	1.8	.3	1.5	25	6.1	115	50	5.5	6.6	3.3
29	2.0	2.1	1.8	.3	.....	20	5.7	174	42	5.3	6.1	3.2
30	2.0	2.2	1.8	.3	.....	18	5.5	240	27	5.3	5.7	3.2
31	2.0	.....	1.8	.3	.....	17	.....	159	.....	5.3	5.2	.....
1957-58												
1	3.0	3.2	4.3	2.1	2.9	30	6.4	6.6	49	11	4.8	0.5
2	3.1	3.4	3.8	2.0	2.9	20	7.5	6.8	51	11	4.7	.5
3	*2.8	3.6	3.3	2.0	2.9	22	8.6	7.2	58	10	4.2	.5
4	2.7	3.9	2.9	1.9	2.9	14	9.8	8.3	*211	10	3.9	.5
5	2.6	4.0	*3.1	1.8	2.8	11	11	*8.8	200	9.6	3.6	.5
6	2.5	3.8	3.3	1.7	*2.8	*9.4	15	7.9	115	9.4	*3.5	.4
7	2.4	*3.5	3.6	1.6	2.7	8.6	16	7.5	81	9.0	3.2	.4
8	2.7	2.6	3.1	1.6	2.5	8.2	16	7.0	48	8.6	3.1	*.4
9	2.8	1.8	2.7	1.5	2.4	7.6	15	6.8	44	8.0	2.8	.4
10	3.1	2.1	2.1	*1.5	2.3	7.4	*15	6.4	41	*7.6	2.5	.4
11	3.2	2.6	1.8	1.5	2.1	7.4	14	6.1	37	7.8	2.2	.4
12	3.6	3.0	2.5	1.5	2.0	7.8	12	5.5	35	8.3	2.2	.4
13	3.5	3.1	2.8	1.6	1.9	7.8	11	5.3	27	8.4	2.0	.4
14	3.3	3.2	3.0	1.6	1.8	7.4	11	5.3	20	20	1.9	.6
15	3.1	3.3	3.1	1.7	1.7	7.0	10	5.0	16	50	1.8	.8
16	3.1	3.9	3.2	1.9	1.6	7.4	9.5	5.2	15	32	1.5	.5
17	3.1	4.1	3.4	2.0	1.6	7.4	9.0	5.7	14	22	1.4	.4
18	3.0	3.3	3.6	2.1	1.5	7.4	8.3	6.2	13	17	1.3	.4
19	2.8	2.5	3.7	2.2	1.5	7.0	8.1	5.7	12	14	1.0	.5
20	2.8	3.3	3.8	2.4	1.5	7.0	7.7	5.2	11	12	1.0	.6
21	2.8	3.7	3.9	2.5	1.5	7.0	7.0	4.4	11	11	.9	.8
22	3.0	4.0	4.0	2.6	1.5	7.4	6.4	3.9	11	9.3	.8	.9
23	3.2	3.6	4.1	2.6	5.0	7.9	6.6	3.8	18	8.3	.8	1.0
24	3.4	4.0	4.1	2.6	17	8.3	7.7	3.6	30	7.3	.8	.8
25	3.6	4.2	3.8	2.6	40	8.2	8.6	3.5	27	6.6	1.0	.6
26	3.4	4.5	3.5	2.6	60	7.4	8.3	13	23	6.2	1.1	.5
27	3.1	4.9	3.2	2.7	48	6.2	7.9	135	20	5.8	.9	.4
28	3.0	4.4	2.9	2.8	40	6.1	7.5	78	17	5.5	.8	.3
29	3.0	3.5	2.6	2.9	.....	5.9	7.0	56	15	5.2	.6	.2
30	3.0	3.0	2.4	2.9	.....	6.1	6.8	52	12	5.0	.6	.2
31	3.1	.....	2.2	2.9	.....	6.2	.....	48	.....	4.8	.5	.....

West Branch Iowa River near Klemme, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	3.68	2.98	0.57	0.44	0.63	38.7	15.8	22.8	6.32	13.8	13.7	3.45
1956-57.....	2.31	1.78	2.09	.76	.76	17.0	8.68	56.8	35.8	9.57	4.94	3.62
1957-58.....	3.03	3.47	3.22	2.13	9.19	9.31	9.82	17.1	42.7	11.6	1.98	.51

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.033	0.027	0.0051	0.0039	0.0056	0.316	0.141	0.204	0.056	0.123	0.122	0.031
1956-57.....	.021	.016	.019	.0068	.0068	.151	.077	.507	.320	.085	.044	.032
1957-58.....	.027	.031	.029	.019	.082	.083	.088	.153	.381	.104	.018	.0016

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.04	0.03	0.006	0.005	0.006	0.40	0.16	0.23	0.06	0.14	0.14	0.03
1956-57.....	.02	.02	.02	.0068	.007	.18	.09	.58	.36	.10	.05	.04
1957-58.....	.03	.03	.03	.02	.09	.10	.10	.18	.43	.12	.02	.005

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955.....								21.8	2.64
1956.....	Mar. 27, 1956	4.40	130	0.3	10.3	0.092	1.25	10.2	1.23
1957.....	May 30, 1957	5.15	272	.3	12.1	.108	1.48	12.4	1.50
1958.....	June 4, 1958	5.35	256	.2	9.46	.084	1.16	.....	.....

Peak Discharge (base, 500 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: No peak above base.

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Oct. 18 to Dec. 31, 1955; Jan. 1 to Apr. 6, Nov. 16 to Dec. 31, 1956; Jan. 1 to Mar. 28, Nov. 9, 10, Nov. 18 to Dec. 31, 1957; Jan. 1 to Mar. 26, 1958. No gage-height record Oct. 24 to Nov. 6, 1957; June 18-29, July 3-9, 11-28, Aug. 31 to Sept. 7, Sept. 9-17, 1958.

East Branch Iowa River near Klemme, Iowa

LOCATION.—Lat. 43°00'30", long. 93°37'35", in NE¼NW¼ sec. 36, T. 95 N., R. 24 W., on left bank 15 ft. downstream from highway bridge, 1.0 mile west of Klemme and 15.4 miles upstream from confluence with West Branch Iowa River.

DRAINAGE AREA.—133 square miles (revised in 1956).

RECORDS AVAILABLE.—April 1948 to September 1960. Prior to October 1958, published as East Fork Iowa River near Klemme.

GAGE.—Water-stage recorder. Datum of gage is 1,179.02 ft. above mean sea level, datum of 1929. Prior to Oct. 1, 1955, wire-weight gage at site 0.6 mile upstream at datum 1.11 ft. higher.

AVERAGE DISCHARGE.—12 years, 39.7 cfs.

EXTREMES.—1948-60: Maximum discharge, 5,960 cfs June 19, 1954 (gage height, 11.2 ft. from floodmark, site and datum then in use); minimum daily, 0.2 cfs Feb. 22-26, 1959.

Maximum stage known, that of June 19, 1954. Flood of June 1944 reached a stage of about 10 ft. from information by local residents, former site and datum.

REMARKS.—Bankfull stage is about gage height, 8 ft.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-50												
1.....	5.6	5.0	*1.5	2.0	1.3	18	50	12	8.2	21	81	6.6
2.....	5.6	4.9	1.7	2.0	*1.3	*53	43	17	7.0	82	47	5.9
3.....	5.3	*4.9	1.9	2.0	1.2	70	36	*25	7.0	40	30	6.2
4.....	6.2	4.0	2.1	2.0	1.2	48	31	40	7.8	25	22	0.2
5.....	8.2	5.4	2.2	2.0	1.3	34	26	34	7.0	24	33	*9.3
6.....	9.3	4.0	2.2	2.0	1.3	25	21	30	7.4	18	50	7.8
7.....	*6.2	4.6	2.2	1.9	1.3	18	18	25	*9.3	18	36	6.2
8.....	5.0	5.0	2.2	*1.9	1.3	14	15	19	7.4	52	27	6.2
9.....	5.0	5.6	2.2	1.9	1.3	13	17	19	6.6	32	*21	5.0
10.....	5.0	6.0	2.2	1.9	1.3	11	19	17	5.9	18	17	6.2
11.....	4.0	5.9	2.2	1.9	1.4	9.6	17	21	5.9	14	17	5.6
12.....	4.3	5.2	2.1	1.9	1.4	8.5	16	18	5.0	12	15	5.6
13.....	4.1	4.6	2.1	1.9	1.4	7.6	14	18	5.0	11	15	5.0
14.....	4.1	4.6	2.0	1.9	1.4	7.8	14	16	5.9	8.8	12	5.3
15.....	*4.1	5.4	1.9	1.9	1.4	8.2	12	14	6.2	8.2	11	5.3
16.....	4.4	5.0	1.8	1.9	1.4	9.0	12	11	6.6	7.8	11	5.6
17.....	4.7	4.2	1.7	1.9	1.4	10	11	12	6.6	7.0	13	5.6
18.....	5.0	4.1	1.7	1.9	1.4	12	11	10	7.0	7.8	13	5.3
19.....	4.6	4.7	1.7	1.9	1.4	17	11	9.3	7.8	*9.8	11	5.6
20.....	5.0	5.2	1.7	1.7	1.4	27	10	8.2	7.8	8.8	9.8	5.0
21.....	4.9	5.6	1.7	1.6	1.4	33	11	9.8	7.0	8.8	8.8	5.0
22.....	4.8	5.8	1.7	1.6	1.4	*46	10	9.3	8.8	8.2	8.2	5.6
23.....	5.0	5.2	1.7	1.6	1.4	41	9.8	8.2	8.2	7.4	8.2	5.3
24.....	5.2	5.6	1.7	1.6	1.4	40	8.8	7.1	7.0	6.6	7.0	5.3
25.....	5.0	5.2	1.8	1.6	1.4	75	10	7.0	5.9	6.6	6.2	5.0
26.....	4.9	4.7	1.8	1.6	1.5	*120	9.3	7.8	9.3	6.2	6.0	5.6
27.....	4.9	3.8	1.9	1.6	2.0	90	12	7.8	8.8	6.6	6.2	5.3
28.....	5.2	2.8	2.0	1.6	3.0	130	12	9.3	5.9	6.6	7.0	5.0
29.....	5.2	2.0	2.0	1.5	5.4	160	12	14	4.6	7.0	7.8	6.2
30.....	5.1	1.7	2.0	1.5	.....	80	11	12	5.3	6.2	6.6	5.3
31.....	5.1	.....	2.0	1.4	.....	64	.....	9.3	.....	38	6.2	.....

East Branch Iowa River near Klemme, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	5.6	*5.0	5.0	3.7	1.6	6.6	15	3.7	66	32	8.8	6.2
2	5.9	5.3	5.4	3.4	1.6	6.2	13	4.0	44	27	8.8	6.6
3	*5.0	5.3	5.6	3.4	1.6	6.1	12	4.0	32	28	8.8	6.2
4	5.9	5.9	5.6	3.4	1.6	5.8	*11	3.4	25	30	8.2	5.9
5	4.6	6.6	5.6	3.1	1.7	5.6	11	3.4	22	26	7.4	*5.6
6	5.6	5.9	5.4	2.8	1.8	*5.6	9.8	3.4	*19	22	7.0	5.9
7	4.6	5.6	5.1	2.5	2.0	5.5	10	2.3	17	18	6.6	5.6
8	5.3	5.6	4.7	2.2	2.2	5.4	7.8	3.2	15	18	*7.8	4.6
9	5.0	4.6	4.3	1.9	2.4	5.4	7.8	*5.9	14	16	8.2	5.0
10	4.6	4.6	4.3	*1.7	2.7	5.5	7.0	5.0	13	*14	7.8	5.9
11	4.3	5.3	3.9	1.6	3.0	6.5	8.8	4.6	12	13	7.0	6.6
12	4.6	4.6	3.6	1.6	3.4	8.0	7.8	4.6	9.8	14	7.0	5.9
13	5.0	4.3	3.5	1.6	3.8	9.8	7.0	6.2	8.8	17	8.8	5.6
14	7.4	5.6	3.5	1.6	4.2	9.0	6.6	15	12	15	9.8	6.2
15	6.6	5.0	3.7	1.6	4.0	8.0	5.6	35	11	14	7.8	5.9
16	5.9	4.5	3.7	1.6	3.5	8.3	7.0	21	12	14	7.0	5.3
17	5.3	5.0	3.6	1.6	3.1	8.7	6.2	19	12	13	6.6	4.3
18	5.0	5.9	3.5	1.6	3.0	9.0	5.6	22	14	12	7.0	4.6
19	5.0	7.0	3.5	1.6	2.9	9.4	5.6	18	11	12	6.6	5.9
20	5.0	4.2	3.6	1.6	2.9	11	6.2	14	55	12	6.6	5.3
21	4.6	3.5	3.7	1.8	2.9	17	6.2	92	57	14	6.6	5.6
22	4.6	3.0	4.0	1.7	2.9	30	5.3	103	96	21	6.2	5.3
23	5.0	4.0	4.0	1.6	2.9	50	5.0	47	148	21	11	5.3
24	4.3	5.0	4.0	1.6	4.5	70	5.0	29	79	14	9.3	5.0
25	5.0	5.0	4.0	1.6	9.0	52	5.3	34	56	11	6.2	5.6
26	5.6	4.8	4.0	1.6	8.5	38	6.6	92	100	11	6.6	5.3
27	4.3	4.8	3.9	1.6	7.8	27	5.6	57	119	11	6.2	4.3
28	4.3	4.6	3.8	1.6	7.1	23	4.6	36	73	11	8.8	4.3
29	5.0	4.5	3.8	1.6	.....	18	4.0	41	52	11	9.8	4.3
30	5.0	4.8	3.9	1.6	.....	15	4.0	137	40	9.8	9.8	5.0
31	5.3	.....	4.1	1.6	.....	16	.....	104	.....	8.8	7.4	.....
1957-58												
1	5.1	5.5	6.2	3.6	2.9	32	8.4	10	32	14	6.4	4.0
2	*4.7	9.4	8.2	3.4	2.8	27	12	8.9	21	12	11	3.7
3	4.7	7.4	7.0	3.2	2.6	22	12	10	30	11	8.9	4.3
4	5.1	5.9	6.2	3.1	2.5	20	14	9.4	*298	14	9.4	4.0
5	4.7	5.9	*5.7	3.0	2.5	18	24	*7.9	224	12	7.9	3.7
6	4.7	4.7	5.8	2.9	*2.4	*16	32	7.4	111	9.9	*6.9	4.7
7	5.1	*5.1	6.1	2.8	2.3	15	25	6.9	77	9.9	6.4	4.3
8	6.9	4.1	6.2	2.8	2.2	15	23	7.9	61	8.9	5.5	*3.4
9	6.4	2.7	5.4	*2.7	2.1	16	21	6.4	53	9.9	4.7	3.7
10	5.9	3.1	3.5	2.7	2.1	14	*21	5.5	46	*9.4	4.7	3.7
11	5.9	4.0	4.0	2.7	2.0	12	19	7.9	35	9.9	5.5	3.1
12	5.5	5.1	4.4	2.7	1.9	10	17	5.1	29	8.4	5.1	3.1
13	5.5	6.4	4.9	2.7	1.9	10	16	6.4	26	6.9	4.3	2.6
14	5.5	5.9	5.6	2.7	1.8	12	14	7.4	21	9.4	5.5	3.7
15	6.4	6.4	5.8	2.8	1.7	10	13	7.9	18	10	6.9	5.9
16	7.4	8.9	6.0	2.8	1.7	11	11	6.4	16	7.9	5.9	4.0
17	6.4	7.9	6.2	2.9	1.6	11	12	9.4	17	7.9	5.9	3.7
18	5.1	4.0	3.4	3.0	1.6	10	10	10	14	7.9	5.5	3.1
19	5.1	8.2	6.6	3.0	1.5	9.6	9.9	6.9	13	7.4	5.5	3.1
20	5.5	7.4	6.8	3.0	1.5	9.2	9.4	6.4	12	6.9	5.9	3.4
21	5.5	8.0	7.1	3.1	1.5	8.9	9.4	5.5	11	6.9	5.5	3.7
22	6.9	8.8	7.3	3.1	1.5	11	9.4	8.4	11	6.4	5.1	2.8
23	9.9	9.1	7.6	3.1	4.5	12	11	5.9	14	6.4	5.1	3.1
24	7.4	9.5	7.0	3.1	15	12	14	6.4	36	7.4	5.9	3.7
25	5.9	9.8	6.4	3.1	60	10	14	7.4	34	9.9	4.7	4.0
26	5.9	10	5.8	3.1	54	9.4	13	22	25	6.9	5.5	3.4
27	5.1	10	5.3	3.1	47	8.9	12	230	20	7.4	4.7	3.4
28	5.1	8.4	4.9	3.1	41	8.4	12	92	16	7.4	5.5	3.1
29	5.5	6.6	4.5	3.1	.....	8.4	9.9	36	16	8.4	4.3	3.1
30	5.1	5.0	4.1	3.0	.....	7.9	8.4	23	13	7.4	4.7	3.4
31	4.3	.....	3.9	3.0	.....	7.9	.....	33	.....	6.4	4.7	.....

East Branch Iowa River near Klemme, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	2.8	3.4	*1.1	0.6	0.3	0.3	65	5.9	802	53	6.4	5.5
2	2.3	3.4	1.0	.6	.3	.3	62	8.4	454	53	6.4	11
3	2.6	3.7	1.2	.5	.3	.3	90	*8.9	261	41	9.4	19
4	2.8	*3.7	1.3	.5	.3	.4	80	*8.9	152	33	6.9	12
5	2.6	3.4	1.2	.5	.3	.4	70	10	*101	25	6.4	7.9
6	*2.6	3.1	1.2	*.4	.3	.3	59	31	77	*19	6.9	5.9
7	3.1	2.8	1.1	.4	.3	.3	60	19	61	15	6.4	5.1
8	3.7	3.7	1.0	.4	.3	.3	41	14	50	17	5.5	4.0
9	3.4	4.0	1.0	.4	.3	.4	29	12	43	17	5.5	4.3
10	2.6	2.8	.9	.4	.3	.4	29	12	35	13	5.1	4.3
11	2.8	3.4	.9	.4	.3	.5	24	12	35	13	5.1	3.7
12	2.8	3.1	.8	.4	*.3	.5	24	11	32	11	5.9	3.7
13	3.1	2.6	.8	.4	.3	.6	21	9.9	26	9.4	4.7	3.7
14	3.1	3.4	.7	.4	.3	.7	21	8.9	23	8.9	6.4	3.7
15	3.4	3.1	.7	.4	.3	.8	22	7.9	23	8.9	7.4	4.3
16	3.4	3.1	.7	.4	.3	.7	22	7.4	21	8.9	5.5	4.3
17	3.1	3.4	.7	.4	.3	.6	25	6.4	19	9.4	5.1	4.7
18	2.8	3.7	.7	.4	.3	.6	23	6.4	19	9.9	4.3	4.3
19	2.6	5.1	.8	.4	.3	.9	21	6.9	19	8.9	4.3	5.1
20	2.8	4.3	.9	.3	.3	1.4	18	14	17	7.4	4.0	5.1
21	3.7	3.4	1.0	.3	.3	2.0	16	*721	17	7.4	4.0	*5.9
22	3.7	3.1	1.1	.3	.2	3.0	14	802	16	7.4	9.9	10
23	3.7	3.7	1.2	.3	.2	4.5	14	491	14	7.9	11	8.4
24	3.7	2.8	1.3	.3	.2	*11	14	319	15	7.4	*12	5.5
25	4.0	2.5	1.3	.3	.2	140	14	205	14	6.9	9.4	6.4
26	3.7	1.4	1.2	.3	.2	115	12	*132	14	6.4	8.4	9.9
27	3.7	1.8	1.1	.3	.3	100	13	101	15	*6.9	6.9	11
28	3.4	1.5	1.0	.3	.3	120	11	89	17	6.4	7.4	9.9
29	3.4	1.3	.9	.3	.....	110	9.4	241	14	6.9	6.4	9.4
30	3.4	1.2	.8	.3	.....	*75	8.9	205	30	6.9	6.4	8.9
31	3.4	.....	.7	.3	.....	68	.....	701	.....	6.4	5.5	.....
1959-60												
1	8.4	6.9	11	32	7.4	4.9	172	33	34	13	*4.3	4.3
2	8.4	6.9	13	23	7.6	4.8	137	29	29	12	4.7	3.7
3	8.4	6.9	13	17	7.8	4.7	108	24	25	12	4.7	3.1
4	7.9	10	13	12	8.0	4.6	85	22	24	9.9	4.3	3.1
5	7.9	6.6	12	13	8.0	4.5	68	*29	20	8.9	4.3	2.8
6	7.9	7.6	12	14	8.0	4.4	58	55	18	8.4	5.9	2.3
7	7.9	9.0	11	15	8.2	4.4	*48	83	16	*7.4	5.1	2.3
8	7.9	10	10	15	8.4	4.3	40	69	16	6.9	4.3	2.8
9	7.9	11	9.4	15	8.8	4.3	29	54	14	6.9	4.0	2.8
10	7.4	12	9.2	14	8.5	4.3	29	44	*16	7.4	4.0	2.3
11	6.4	12	9.2	14	8.2	4.3	30	36	15	6.9	4.0	2.8
12	6.9	12	9.2	13	7.9	4.3	21	30	15	7.4	4.0	2.6
13	6.9	11	9.0	13	7.7	4.4	21	28	15	7.4	5.1	2.8
14	5.9	10	9.0	13	7.5	4.4	25	25	13	5.9	5.1	2.6
15	5.9	9.4	9.2	13	7.3	4.5	25	23	12	5.9	3.4	*3.2
16	6.9	*8.7	10	12	7.2	4.6	29	26	21	5.9	3.4	4.0
17	5.9	8.2	*11	12	7.0	*4.6	38	27	30	5.9	4.3	4.3
18	5.9	7.8	12	*12	*6.7	4.7	37	29	29	6.4	7.9	4.7
19	*5.5	8.4	11	11	6.5	4.8	34	73	25	5.9	8.9	4.7
20	6.4	9.0	9.4	10	6.4	4.9	34	93	25	5.5	10	3.1
21	5.1	9.5	9.0	9.6	6.1	5.0	30	118	25	5.1	7.4	4.0
22	6.4	10	9.2	9.0	6.0	5.1	29	142	24	5.1	6.4	12
23	7.4	11	9.4	8.5	5.8	5.1	29	106	26	5.1	6.4	8.4
24	7.4	11	9.0	8.2	5.7	5.2	29	83	27	4.7	5.9	11
25	5.5	10	9.6	7.9	5.6	5.3	29	73	24	4.3	6.4	9.9
26	6.9	9.2	16	7.7	5.4	5.4	69	65	21	4.7	12	6.9
27	7.4	8.4	28	7.6	5.2	5.0	50	58	19	4.3	5.9	5.9
28	6.4	8.0	67	7.5	5.1	800	38	52	17	5.1	8.9	5.5
29	7.4	8.6	74	7.4	5.0	920	42	46	17	5.5	20	5.5
30	7.4	9.6	60	7.4	.....	594	42	40	14	6.4	10	5.1
31	6.9	.....	45	7.4	.....	291	.....	35	.....	5.1	6.9	.....

East Branch Iowa River near Klemme, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	5.21	4.72	1.92	1.79	1.58	40.0	17.0	15.4	7.00	17.2	18.6	5.85
1956-57	5.14	4.99	4.20	2.00	3.52	16.2	7.41	31.3	41.5	16.5	7.79	5.44
1957-58	5.75	6.77	5.84	2.98	9.50	13.1	14.6	20.1	45.0	8.85	5.92	3.63
1958-59	3.17	3.06	.98	.38	.28	24.5	31.1	136	81.3	14.8	6.61	6.90
1959-60	6.99	9.29	17.7	12.3	7.00	89.6	48.5	53.2	20.9	6.82	6.38	4.62

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.039	0.035	0.014	0.013	0.012	0.201	0.128	0.116	0.053	0.129	0.140	0.044
1956-57	.039	.038	.032	.015	.026	.122	.056	.235	.312	.124	.059	.041
1957-58	.043	.051	.044	.022	.071	.098	.110	.151	.338	.067	.045	.027
1958-59	.024	.023	.0074	.0029	.0021	.184	.234	1.02	.611	.111	.050	.052
1959-60	.053	.070	.133	.092	.053	.674	.365	.400	.157	.051	.048	.035

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.05	0.04	0.02	0.02	0.01	0.35	0.14	0.13	0.06	0.15	0.16	0.05
1956-57	.04	.04	.04	.02	.03	.14	.06	.27	.35	.14	.07	.05
1957-58	.05	.06	.05	.03	.07	.11	.12	.17	.38	.08	.05	.03
1958-59	.03	.03	.008	.003	.002	.21	.26	1.18	.68	.13	.06	.06
1959-60	.06	.08	.15	.11	.06	.78	.41	.46	.18	.06	.06	.04

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								18.5	1.93
1956	Mar. 26, 1956	(1) 9.91	150	1.2	11.4	0.086	1.18	11.6	1.19
1957	June 23, 1957	4.75	176	1.6	12.2	.092	1.25	12.5	1.29
1958	June 4, 1958	6.08	355	1.5	11.8	.089	1.20	10.9	1.11
1959	May 21, 1959	8.25	1,100	.2	25.9	.195	2.65	28.2	2.88
1960	Mar. 28, 1960	(2) 8.25	1,100	2.3	23.7	.178	2.45		

(1) Maximum gage height, 5.78 feet Mar. 21, 1956 (backwater from ice).

(2) Maximum gage height, 8:59 feet Mar. 28, 1960 (backwater from ice).

Peak Discharge (base, 500 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: No peak above base.

1958-59: May 21 (6 p.m.) 1,100 cfs (8:25 ft.); May 31 (8:30 p.m.) 1,020 cfs (8.12 ft.).

1959-60: Mar. 28 (11 p.m.) 1,100 cfs (8:25 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 3 to Dec. 31, 1955; Jan. 1 to Mar. 30, Apr. 2-4, 7-9, Nov. 15, 16, Nov. 20 to Dec. 31, 1956; Jan. 1 to Mar. 26, Nov. 8-11, Nov. 18 to Dec. 31, 1957; Jan. 1 to Mar. 20, Nov. 25 to Dec. 31, 1958; Jan. 1 to Apr. 5, Nov. 5 to Dec. 25, Dec. 30, 31, 1959; Jan. 1 to Mar. 28, 1960.

Iowa River near Rowan, Iowa

LOCATION.—Lat. 42°45'35", long. 93°37'15", in NW¼ NE¼ sec. 25, T. 92 N., R. 24 W., on left bank 10 ft. downstream from highway bridge, 3.8 miles northwest of Rowan, and 9.4 miles downstream from confluence of East and West Branches.

DRAINAGE AREA.—429 square miles (revised in 1956).

RECORDS AVAILABLE.—October 1940 to September 1960.

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

AVERAGE DISCHARGE.—20 years, 165 cfs.

EXTREMES.—1940-60: Maximum discharge, 8,460 cfs June 21, 1954 (gage height, 14.88 ft.); minimum daily, 2.9 cfs Jan. 21-23, 1959.

REMARKS.—Records of water temperatures and suspended-sediment loads for the period October 1957 to September 1960 are published in reports of the Geological Survey. Bankful stage is about gage height, 10 ft.

REVISIONS (water years).—WSP 1308: 1942-43 (M)

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	16	18	*9.6	6.6	7.5	18	140	42	31	17	28	20
2	15	17	11	6.6	*7.5	28	120	50	27	35	139	20
3	14	*15	12	6.8	7.5	*47	115	*60	26	150	122	20
4	14	17	13	7.2	7.5	70	105	80	28	64	79	21
5	20	18	12	7.2	7.5	90	93	98	28	53	66	*23
6	37	16	11	7.2	8.0	74	75	103	*28	43	57	29
7	*30	13	10	7.2	8.0	98	67	89	28	39	92	21
8	24	15	9.4	*7.2	8.0	62	47	76	26	42	79	18
9	21	17	9.0	7.2	8.0	54	57	65	25	90	55	16
10	18	20	8.4	7.2	8.0	46	68	65	22	68	*43	15
11	18	20	7.6	7.2	7.6	39	56	56	21	47	37	15
12	18	20	7.2	7.2	7.6	31	52	58	19	37	34	16
13	18	20	7.6	7.2	7.6	27	49	60	18	30	32	15
14	18	20	7.8	7.0	7.6	25	43	57	18	27	32	15
15	18	16	7.6	6.8	7.6	24	42	50	17	23	32	15
16	18	13	7.4	6.4	7.6	28	40	46	17	22	33	14
17	17	14	7.2	6.4	7.6	35	37	39	17	21	35	14
18	18	16	7.1	6.4	7.6	42	37	38	17	*20	37	14
19	18	17	7.0	6.4	7.6	54	34	35	18	20	33	14
20	18	18	7.0	6.4	7.6	76	33	33	18	22	30	13
21	18	19	7.0	7.0	7.6	102	33	32	18	23	27	13
22	19	20	7.0	7.0	7.6	94	32	31	18	26	25	13
23	19	20	7.0	7.0	7.6	84	32	29	17	23	23	12
24	20	20	7.0	7.0	7.6	80	31	28	17	20	22	13
25	21	20	7.0	7.0	7.6	110	30	26	18	18	22	13
26	22	18	7.2	7.0	7.6	170	32	24	18	17	21	12
27	22	15	7.4	7.5	7.6	*250	34	23	18	16	21	12
28	19	13	7.4	7.5	9.0	260	37	30	19	16	22	12
29	19	11	7.2	7.5	11	200	40	37	22	17	22	11
30	18	10	7.0	7.5	.....	160	40	45	18	16	24	12
31	18	.....	6.8	7.5	.....	150	.....	37	.....	18	21	.....

Iowa River near Rowan, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	13	16	17	14	6.0	17	54	19	353	101	24	23
2	12	*17	18	13	6.0	16	53	18	231	85	23	21
3	11	15	19	14	6.0	15	49	17	159	83	22	19
4	*11	16	19	14	6.2	14	45	17	119	89	22	18
5	12	19	*20	13	6.0	14	*44	17	93	93	21	18
6	11	19	19	12	7.2	14	41	17	*75	80	20	*17
7	12	19	18	11	8.0	*14	42	17	63	67	18	17
8	12	18	16	10	8.8	14	40	16	57	70	*18	17
9	12	17	15	9.2	9.6	14	37	*15	54	62	18	16
10	12	16	16	*8.6	11	14	35	19	135	51	19	16
11	12	15	15	7.2	12	18	32	22	285	*45	19	19
12	12	15	13	6.4	14	24	29	23	157	42	19	19
13	12	21	12	6.2	15	28	31	25	103	42	18	18
14	20	17	13	6.1	16	22	30	36	202	40	20	19
15	24	15	14	6.0	17	23	32	48	224	39	22	19
16	23	15	14	6.0	15	25	29	67	390	37	22	18
17	20	16	13	6.0	14	27	28	74	390	35	19	18
18	18	16	13	6.0	13	27	29	64	261	33	18	16
19	18	15	13	6.0	12	27	28	60	202	30	18	14
20	15	15	14	6.2	11	27	25	58	174	29	18	16
21	15	13	14	6.6	11	35	26	95	134	32	17	17
22	15	12	15	7.0	11	58	27	224	224	39	16	17
23	15	15	15	6.6	11	115	24	231	216	33	19	16
24	15	17	15	6.3	13	157	22	138	254	40	20	15
25	15	17	15	6.0	23	168	22	101	202	35	22	15
26	15	16	15	6.0	21	147	24	117	202	30	19	14
27	16	16	15	6.0	19	122	26	188	224	30	20	14
28	17	16	15	6.0	18	92	25	151	231	30	26	13
29	16	15	15	6.0	.....	75	22	124	171	30	28	13
30	15	16	15	6.0	.....	62	20	339	125	29	31	12
31	15	.....	15	6.0	.....	58	.....	480	.....	27	26	.....
1957-58												
1	13	19	35	16	17	100	32	34	335	39	23	9.3
2	13	22	30	15	16	80	32	33	195	45	22	8.8
3	*13	22	26	14	16	90	*34	34	*134	39	21	*7.9
4	13	*24	25	14	15	60	41	34	171	39	23	7.6
5	13	22	*29	14	15	50	51	33	423	40	*21	8.5
6	13	21	31	14	*14	*43	84	32	518	39	21	9.9
7	13	20	27	13	13	41	108	*30	335	34	19	9.3
8	15	15	27	13	12	40	94	29	231	32	18	8.2
9	16	10	22	13	12	35	83	29	188	31	16	7.9
10	17	12	17	*13	11	31	71	28	161	29	14	7.6
11	17	15	14	13	11	34	65	25	134	*33	14	7.4
12	16	18	17	14	10	33	61	24	109	36	14	7.6
13	16	20	21	14	9.6	35	59	22	96	36	13	8.5
14	16	22	21	15	9.2	35	54	21	80	127	13	9.9
15	16	23	21	15	8.8	30	50	21	69	177	22	10
16	17	28	21	15	8.4	32	47	22	59	129	16	11
17	17	26	23	16	8.2	32	42	24	52	89	14	11
18	17	20	25	16	8.0	32	40	23	49	64	13	10
19	16	14	27	16	8.0	31	38	22	45	56	12	10
20	16	17	29	16	8.0	30	37	22	40	50	12	8.5
21	15	20	31	16	7.8	30	36	19	37	44	11	6.6
22	17	23	32	16	7.8	32	34	18	36	39	11	6.4
23	22	21	33	16	20	35	35	18	36	36	10	7.1
24	22	22	35	16	80	37	37	17	69	33	10	8.2
25	23	23	30	16	130	38	42	13	129	31	10	8.2
26	21	24	25	16	200	38	42	18	105	29	10	10
27	19	27	25	17	160	36	41	357	80	29	10	12
28	18	25	20	17	130	34	40	460	62	28	9.6	10
29	18	22	18	18	.....	31	40	260	49	30	9.9	9.0
30	18	19	16	18	.....	31	39	111	43	26	10	8.5
31	18	.....	16	17	.....	31	.....	140	.....	25	10	.....

Iowa River near Rowan, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	8.8	10	7.6	4.9	3.1	5.4	254	37	1,360	224	20	28
2.....	8.5	10	*8.0	4.5	3.0	5.6	238	39	1,480	209	23	71
3.....	8.2	10	8.4	4.2	*3.0	5.8	224	31	*1,300	184	26	86
4.....	7.9	10	8.8	3.9	3.0	6.2	209	32	900	140	25	48
5.....	8.5	10	9.0	3.7	3.0	6.6	175	41	511	115	25	42
6.....	9.3	12	8.8	3.7	3.1	7.2	163	54	318	109	*22	35
7.....	*11	*18	8.4	3.7	3.1	*7.9	120	*70	254	88	21	28
8.....	12	14	7.6	3.9	3.0	8.8	111	62	209	*68	19	24
9.....	11	12	7.2	*4.0	3.0	9.5	*89	50	174	63	19	*20
10.....	9.3	13	6.4	4.1	3.0	10	66	45	147	66	19	18
11.....	9.0	12	6.0	4.2	3.0	11	59	48	133	69	19	17
12.....	9.3	12	5.2	4.2	3.1	12	54	46	116	59	19	16
13.....	8.8	12	4.9	4.3	3.2	13	50	41	103	50	19	15
14.....	8.2	11	4.6	4.2	3.3	15	45	37	87	43	19	15
15.....	10	11	4.5	4.0	3.4	14	44	34	76	38	20	15
16.....	8.8	12	4.5	3.8	3.5	13	43	32	71	38	22	15
17.....	8.8	14	4.5	3.6	3.5	12	47	32	68	36	23	15
18.....	9.0	15	4.6	3.4	3.5	15	54	27	61	35	20	16
19.....	9.3	14	4.8	3.2	3.5	20	55	26	61	33	18	18
20.....	9.6	14	5.2	3.0	3.5	25	52	32	57	33	16	19
21.....	9.3	14	5.4	2.9	3.6	30	50	94	52	26	15	19
22.....	8.5	14	5.8	2.9	3.8	26	44	*698	47	19	47	26
23.....	7.1	14	6.2	2.9	4.0	100	42	1,200	44	19	54	40
24.....	7.6	14	6.4	3.0	4.2	300	39	1,420	45	19	52	35
25.....	8.5	13	6.4	3.1	4.5	500	40	1,020	43	19	109	29
26.....	9.0	9.0	6.4	3.2	4.8	450	39	900	39	22	98	30
27.....	9.0	9.1	6.4	3.2	5.0	400	37	532	41	22	70	56
28.....	9.6	9.2	6.4	3.2	5.3	492	36	370	65	21	54	104
29.....	10	9.0	6.0	3.2	.....	381	36	597	58	22	40	97
30.....	9.9	8.6	5.6	3.2	.....	362	35	780	173	21	33	74
31.....	11	.....	5.2	3.1	.....	301	.....	990	.....	20	27	.....
1959-60												
1.....	60	45	*63	220	70	24	1,200	157	150	42	*15	29
2.....	54	44	68	170	70	23	840	138	135	39	14	22
3.....	52	42	70	140	70	22	618	122	119	37	14	19
4.....	53	*45	72	110	70	*22	460	109	107	37	*14	17
5.....	58	62	70	92	70	21	372	*116	97	36	13	15
6.....	56	45	64	100	70	21	301	152	88	*34	14	*14
7.....	49	52	58	*115	72	21	246	261	82	32	15	13
8.....	*44	58	54	130	82	21	*209	285	76	30	15	13
9.....	46	63	50	130	*99	22	175	238	71	29	15	13
10.....	43	70	47	125	76	23	142	202	*69	29	15	13
11.....	42	76	46	120	60	23	138	167	70	29	15	12
12.....	40	82	46	110	54	23	133	144	68	26	14	12
13.....	37	84	46	105	48	23	119	130	67	28	14	12
14.....	37	80	46	105	45	23	122	117	63	25	16	12
15.....	35	74	48	105	43	23	129	108	61	22	16	12
16.....	34	66	49	104	41	23	151	111	62	22	15	12
17.....	33	63	51	103	40	24	261	115	64	20	16	12
18.....	32	60	49	102	38	24	246	122	87	22	22	17
19.....	32	61	49	100	37	24	209	185	92	22	30	19
20.....	32	62	48	95	35	25	187	301	80	20	25	18
21.....	33	64	48	93	34	26	173	335	74	17	22	16
22.....	34	66	47	90	33	26	155	362	74	18	19	19
23.....	34	70	47	87	32	27	139	372	75	19	18	23
24.....	35	70	44	85	30	28	133	309	78	19	16	33
25.....	37	66	43	80	29	28	126	301	67	18	15	36
26.....	38	57	50	78	28	28	151	293	59	18	14	28
27.....	41	52	73	77	27	80	184	261	53	18	13	24
28.....	42	50	174	75	25	700	159	231	50	18	18	20
29.....	42	54	309	72	25	1,600	147	209	49	14	44	17
30.....	44	58	300	70	.....	2,300	152	187	46	14	39	16
31.....	45	.....	250	70	.....	1,840	.....	166	.....	14	39	.....

Iowa River near Rowan, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	19.5	16.9	8.29	7.01	7.82	83.8	55.0	49.7	21.1	34.8	43.4	15.7
1956-57.....	14.9	16.2	15.3	8.05	12.2	47.8	32.4	91.5	190	48.6	20.7	16.8
1957-58.....	16.6	20.5	24.8	15.2	34.5	40.9	50.3	63.8	136	48.8	14.6	8.83
1958-59.....	9.19	12.0	6.30	3.63	3.54	115	85.0	304	270	62.3	32.7	35.7
1959-60.....	41.7	61.4	80.0	105	50.1	230	259	203	77.8	24.8	18.8	17.9

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.045	0.039	0.019	0.016	0.018	0.195	0.128	0.116	0.049	0.081	0.101	0.037
1956-57.....	.035	.038	.036	.019	.028	.111	.076	.213	.443	.113	.048	.039
1957-58.....	.039	.048	.058	.035	.080	.095	.117	.149	.317	.114	.034	.021
1958-59.....	.021	.028	.015	.0085	.0083	.268	.198	.709	.629	.145	.076	.083
1959-60.....	.097	.143	.186	.245	.117	.536	.604	.473	.181	.058	.044	.042

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.05	0.04	0.02	0.02	0.02	0.23	0.14	0.13	0.05	0.09	0.12	0.04
1956-57.....	.04	.04	.04	.02	.03	.13	.08	.25	.49	.13	.06	.04
1957-58.....	.04	.05	.07	.04	.08	.11	.13	.17	.35	.13	.04	.02
1958-59.....	.02	.03	.02	.01	.009	.31	.22	.82	.70	.17	.09	.09
1959-60.....	.11	.16	.21	.28	.13	.62	.67	.55	.20	.07	.05	.05

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955.....								58.9	1.85
1956.....	Mar. 28, 1956	(1)5.7	300	6.4	30.4	0.071	0.95	30.6	.96
1957.....	May 31, 1957	6.43	492	6.0	42.9	.100	1.35	44.2	1.39
1958.....	May 27, 1958	6.77	530	6.4	39.4	.092	1.23	36.5	1.14
1959.....	June 2, 1959	10.07	1,540	2.9	78.6	.183	2.49	91.7	2.90
1960.....	Mar. 30, 1960	(2)12.11	2,900	12	97.7	.228	3.10		

(1) Maximum gage height, 6.14 feet Mar. 22, 1956 (backwater from ice).

(2) Backwater from ice.

Peak Discharge (base, 1,200 cfs)

1955-56: No peaks above base.

1956-57: No peaks above base. *

1957-58: No peaks above base.

1958-59: May 24 (5 a.m.-9 a.m.) 1,420 cfs (9.87 ft.); June 2 (10 a.m.-2 p.m.) 1,540 cfs (10.07 ft.).

1959-60: Mar. 30 about 2,900 cfs.

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Oct. 30 to Dec. 31, 1955; Jan. 1 to Apr. 2, Nov. 16, 17, Nov. 20 to Dec. 2, Dec. 6-31, 1956; Jan. 1 to Mar. 19, Nov. 8-11, Nov. 18 to Dec. 31, 1957; Jan. 1 to Mar. 21, Nov. 25 to Dec. 31, 1958; Jan. 1 to Mar. 27, Nov. 6 to Dec. 16, Dec. 19, 30, 31, 1959; Jan. 1 to Mar. 30, 1960. No gage-height record May 26 to June 3, Aug. 14 to Sept. 5, 1956.

Upper Pine Lake at Eldora, Iowa

LOCATION.—Lat. 42°22'30", long. 93°04'00", in NW ¼ SE ¼ sec. 4, T. 87 N., R. 19 W., on concrete pier set in bed of lake at Pine Lake State Park at Eldora.

DRAINAGE AREA.—14.9 square miles.

RECORDS AVAILABLE.—June 1936 to September 1960.

GAGE.—Staff gage read once or twice daily, except during winter period. Datum of gage is 933.41 ft. above mean sea level, datum of 1929 and 1.0 ft. below crest of dam forming lake.

EXTREMES.—1936-60: Maximum gage height observed, 8.06 ft. June 2, 1942, from floodmark; minimum, below staff gage (-2.50 ft.) several times since 1947 when lake has been drained.

Daily Gage Height, in Feet, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	-1.20		-0.92			-0.60				-0.76		-1.22
2	-1.22	-0.90	-0.92					-0.84	0.26	-0.70		-1.24
3	-1.22	-0.92	-0.92						.20	.82	-1.30	-1.20
4	-1.22	-0.92	-0.94					-1.68	.14	.90	-1.32	-1.22
5	-1.22	-0.92	-0.94					.42	.08	.96	-1.38	1.59
6	-72	-92	-94				-1.02		.04	-1.00	-1.42	1.36
7	-70	-92	-96				-1.58		.00	-1.00	-1.42	1.12
8	-76	-92						.18	.04	.92	-1.44	1.04
9	-70	-92							.10	.96	-1.48	1.02
10	-70	-94	-98				-1.56	.06	.14	-1.00	-1.48	1.00
11	-72	-94								-1.06	-1.44	1.00
12	-74	-94	-1.06				-1.54	.38		-1.10	-1.46	.98
13	-76	-94						.50	.32	-1.14	-1.40	.98
14	-78	-94					-1.50			-1.20	-1.42	
15	-80	-94	-1.14					.50	.40		-1.46	.96
16	-82	-92					-1.50		.46	-1.26	-1.50	
17	-82		-1.20					.48	.50		-1.52	.94
18							-1.50		.54	-1.28	-1.44	
19			-1.36					.46	.60	-1.30	-1.46	.90
20	-84							.44	.66	-1.32	-1.48	.88
21	-86						-1.50	.44	.70	-1.34	-1.50	.86
22	-88							.42	.76	-1.38	-1.52	.84
23	-88						-1.50	.40	.80	-1.42	-1.54	
24	-88							.36	.84	-1.46	-1.56	
25	-88						-1.50	.34	.90	-1.50	-1.58	
26	-88							.28	.64	-1.56	-1.62	
27	-89			-0.98				-1.44		-1.60	-1.64	.80
28	-88	-90						-1.36	.24	-1.64	-1.30	
29	-88	-90					-1.85	-1.14	.32	.64	-1.60	-1.33
30	-90	-91	-1.20				-1.85	-1.05		.76	-1.30	.64
31	-90							.29		-1.36		

Upper Pine Lake at Eldora, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1956-57													
1		0.61		0.27	0.30		1.00	0.96	0.94	1.10	0.94	1.06	1.10
2		.57		.27		0.95	1.00		.90	1.06	.92	1.04	1.08
3		.55	0.25	.27	.30			.98	.88	1.04	2.04	1.12	1.06
4		.53	.26	.27		.93			.86	1.04	1.22	1.10	1.04
5		.51	.27		.30			1.02		1.02	1.12	1.08	1.04
6		.49	.27	.28				.98	.84	1.02	1.06	1.06	1.04
7		.47				.95	.98		.84	1.02	1.04	1.04	1.02
8		.45	.25	.27	.32	.93		.96		1.02	1.02	1.02	1.02
9			.25			.99			.81	1.02	1.00	1.00	1.00
10		.41	.23	.27	.34			.94	.85	1.02	.98	.98	1.00
11		.39	.23		.36				.86	1.02	.99	.96	1.06
12		.37	.23	.27	.36	1.05		.94		1.02	.98	.96	
13		.35	.23					.92	1.03	1.02	.96	1.06	1.06
14		.41	.23	.29	.34	1.05			1.10	1.02	.94	1.45	1.04
15		.47	.23	.29			1.00	.92	1.06	1.00	.92	1.10	1.04
16		.47	.23		.32	1.05			1.06	1.12	.90	1.08	1.04
17		.45	.23	.27				.92	1.04	1.06	.88	1.06	1.04
18		.44	.23			1.03	1.00		1.02	1.08	.84	1.06	1.02
19		.39	.21	.27	.32		1.02		1.02	1.02	.82	1.04	1.02
20		.37	.21			1.01	1.02	.96	1.02	1.00	.78	1.02	1.02
21		.37	.25	.27			1.04		1.06	.98	.94	1.02	1.02
22		.35			1.16		1.04	.96	1.06	.98	.94	1.00	1.00
23			.27			.99	1.04		1.04	.96	.94	1.00	1.00
24		.35	.27	.29	1.04			.96	1.04	.96		1.00	.98
25		.33	.27			1.13	1.00	.96	1.06	1.00	.94	.98	.98
26			.27	.29	.98			1.04	1.06	1.00	.94	.98	.96
27		.31				1.05	.96	.98	1.04	1.00	.94	1.16	.96
28		.31	.27	.31						.98	1.32	1.23	.94
29		.29		.31	.98		.96	.98	1.02	.98	1.14		.94
30		.29	.27					.96	1.61	.98	1.02	1.16	.92
31		.27		.31	.96				1.16		1.06	1.14	
1957-58													
1		0.90	0.96		1.06	1.02	1.09	1.07	1.05	1.09	1.03	1.09	1.11
2		.90	1.08	1.04	1.04			1.11	1.05	1.05	1.10	1.07	1.11
3		.91		1.06	1.04	1.02	1.07		1.05	1.95	1.11	1.07	1.11
4		.88	1.04	1.04	1.04		1.07	1.19	1.05	1.19	1.36	1.07	1.09
5		.86	1.02	1.04	1.02	1.02	1.07	1.33	1.05	1.12	1.19	1.07	1.33
6		.86	1.00	1.04	1.02	1.00	1.07		1.05	1.07	1.13	1.23	1.39
7			1.01	1.02	1.02	1.02	1.07	1.25	1.03	1.05	1.09	1.17	1.17
8		.90	1.00	1.02	1.02	1.02	1.07	1.19	1.03	2.02	1.07	1.15	1.17
9		.88	1.00		1.02			1.19	1.03	1.35	1.07	1.13	
10		.88		1.02	1.03	1.02	1.05	1.16	1.03	1.21	1.09	1.11	1.15
11		.86	.98		1.02		1.05	1.15	1.03	1.19	1.17	1.09	1.13
12		.86	1.02	1.02			1.05	1.13	1.03	1.17	1.17	1.07	1.11
13		.84	1.02		1.04	1.00			1.03	1.68	1.13	1.05	1.11
14		.84	1.02	1.02	1.04		1.07	1.11	1.03	1.33	2.36	1.05	
15		.94	1.00		1.06	1.00	1.05	1.11	1.03	1.15	1.64	2.37	1.25
16		.96	1.06	1.00	1.08			1.11	1.03	1.11	1.33	1.43	1.21
17		.96		1.00	1.08	1.00	1.05	1.11	1.03	1.09	1.27	1.17	1.19
18		.96		1.16	1.06		1.05	1.09	1.05	1.09	1.23	1.13	1.17
19		.96	1.06	1.18		1.00	1.05	1.09	1.05	1.07	1.27	1.11	1.15
20			1.10	1.20	1.06		1.03		1.03	1.07	1.23	1.21	1.13
21		.96		1.18	1.04	1.00	1.03		1.03	1.05	1.21	1.17	1.13
22		1.00			1.04	1.06	1.03	1.07	1.03	1.05	1.19	1.15	1.11
23		1.04	1.10	1.12	1.04	1.27		1.07	1.01	1.03	1.17	1.13	1.11
24		1.02		1.12	1.02	1.63	1.05	1.07	1.01	1.13	1.17	1.13	1.09
25		1.00			1.02	1.23	1.05	1.05	1.01	1.07	1.25	1.13	1.07
26		.98	1.06	1.10			1.05	1.03	1.01	1.05	1.23	1.13	1.07
27		.98	1.04	1.08	1.02		1.05		1.07	1.03	1.23	1.13	1.05
28		.96		1.08	1.02	1.09	1.05	1.05	1.07	1.03	1.23	1.13	1.05
29		.96	1.02				1.05	1.05	1.05	1.03	1.25	1.13	1.05
30		.96	1.02	1.06	1.02		1.05	1.05	1.07	1.03	1.23	1.13	1.06
31		.96		1.06			1.07		1.17		1.13	1.13	

Upper Pine Lake at Eldora, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	1.05	1.03	1.08				1.20	1.08	1.24	1.26	1.02	0.94
2		1.03	1.07	1.07	1.03	1.77	1.22	1.08	1.18	1.18	1.04	.96
3	1.03	1.03	1.07	1.07		1.47	1.20	1.10	1.12	1.14	1.10	.96
4	1.03	1.03	1.07			1.35	1.20	1.08	1.10	1.12	1.06	.94
5	1.03	1.03	1.05	1.07	1.03			1.16	1.10	1.10	1.04	.94
6	1.03	1.03	1.05	1.07			1.14	1.12	1.10	1.08	1.02	.92
7	1.05	1.03		1.07	1.03		1.10	1.10	1.04	1.08	1.00	.90
8	1.05	1.03	1.05	1.05			1.08	1.08	1.04	1.08	.98	.88
9		1.03		1.05		1.09	1.06	1.06	1.04	1.12	.98	.84
10	1.07	1.03	1.05	1.05	1.05	1.15	1.06	1.08	1.04	1.10	.96	.82
11	1.05	1.03				1.51	1.04	1.10	1.04	1.08	.96	.78
12	1.05	1.03	1.05	1.05	1.05	1.65		1.08	1.04	1.04	.96	.76
13	1.05	1.03	1.05	1.05		1.63	1.10	1.08	1.04	1.02	.94	.74
14	1.05	1.03		1.05	1.07	1.47	1.08	1.06	1.02	1.00	.94	.72
15	1.05	1.03	1.05	1.05			1.06	1.06	1.00	.98	1.04	.70
16			1.05	1.05	1.05		1.04	1.04	1.00	.96	1.02	.68
17	1.03	1.25	1.05	1.05			1.04	1.04	.98	.96	1.00	.68
18	1.03	1.23	1.05		1.05		1.04	1.04	.98	.94	.98	.66
19	1.03	1.21		1.05		1.49		1.04	.98	.94	.96	.68
20	1.03	1.17	1.05	1.05		2.27	1.06	1.30	.98	.94		.68
21	1.03	1.15		1.03	1.05	1.47	1.08	1.18	.98	.92	.94	.83
22	1.03	1.13	1.07	1.03			1.06	1.14	.98	.92	.94	.84
23	1.03		1.07	1.03	1.07	1.87	1.04	1.14	.98	.92	1.04	.84
24	1.03	1.13	1.07	1.03		1.57	1.04	1.10	.99	.92	1.02	.84
25	1.03	1.13			1.09	1.37	1.02	1.10	.98	.90	.98	.96
26	1.03	1.13	1.09	1.03	1.10	3.02		1.08	.98	.90	.96	1.04
27	1.03		1.09		1.11	1.36	1.02	1.08	.98	.90	.97	1.04
28		1.11		1.03	1.11	1.30	1.08	1.10	1.17	.88	.96	1.04
29	1.04	1.11	1.09				1.08	1.19	1.20	1.20	.94	1.02
30	1.03		1.08	1.13		1.20	1.08	1.23	1.34	1.10	.94	1.02
31	1.03		1.09	1.03		1.18		1.39		1.06	.91	
1959-60												
1	1.04		1.12			1.10	1.72	1.24	1.18	1.16	1.02	1.04
2	1.07	1.04	1.12	1.22		1.10	1.46	1.24	1.16	1.15	1.00	1.02
3	1.06	1.02	1.14			1.10		1.10	1.16	1.15	1.00	1.02
4	1.04	1.26	1.14	1.16		1.10	1.35	1.10	1.14	1.15	1.03	1.02
5	1.06	1.42	1.14	1.16	1.10	1.10	1.32	1.32	1.14	1.14	1.04	1.02
6	1.06	1.32		1.14	1.10		1.28	2.06	1.14	1.14	1.06	1.02
7	1.06	1.18	1.12	1.14		1.10	1.26	1.60	1.14	1.12	1.06	1.02
8	1.06	1.18	1.12	1.14	1.12		1.24	1.34	1.14	1.10	1.06	1.06
9	1.06	1.20	1.12	1.14	1.12	1.12	1.20	1.26	1.14	1.18	1.06	1.04
10	1.06	1.20	1.12					1.26	1.36	1.16	1.06	1.02
11	1.06	1.18	1.12	1.14	1.14	1.12	1.18	1.26	1.16	1.14	1.06	1.02
12	1.04	1.18	1.12	1.36	1.14	1.12	1.16	1.26	1.16	1.14	1.06	1.00
13	1.04	1.16		1.41	1.14			1.24	1.14	1.12	1.06	1.02
14		1.14	1.12	1.22		1.12		1.22	1.12	1.12	1.06	1.02
15	1.04	1.14	1.12		1.14		1.16	1.22	1.12	1.12	1.04	1.02
16	1.04	1.12	1.12		1.14	1.12	1.86	1.29	1.14	1.10	1.04	1.12
17	1.04	1.12	1.14		1.16		1.85	1.26	1.12	1.10	1.04	1.08
18	1.04	1.11	1.12		1.16	1.14	1.46	1.28	1.14	1.10	1.14	1.08
19	1.02	1.10	1.12	1.10	1.16	1.14	1.32	1.28	1.16	1.08	1.14	1.06
20	1.02	1.12		1.10	1.14		1.26	1.28	1.26	1.08	1.14	1.06
21	1.02	1.14	1.12	1.10		1.14	1.24	1.28	1.18	1.08	1.12	1.04
22	1.02	1.14	1.14	1.12	1.14		1.24	1.26	1.16	1.06	1.10	1.22
23	1.02	1.14	1.14	1.12	1.12	1.14	1.22	1.24	1.16	1.06	1.08	1.12
24	1.04	1.12	1.14		1.12			1.26	1.15	1.06	1.06	1.12
25	1.04	1.14		1.12	1.12		1.20	1.32	1.15	1.06	1.06	1.10
26	1.04		1.16	1.12	1.12	1.14	1.16	1.28	1.15	1.06	1.09	1.10
27	1.04	1.12		1.12	1.12		1.16	1.26	1.16	1.04	1.06	1.10
28	1.04	1.12	1.32	1.12		1.34	1.16	1.22	1.16	1.04	1.06	1.10
29	1.04		1.30		1.12	2.12	1.16	1.20	1.16	1.02	1.13	1.10
30	1.04	1.12	1.26			2.97	1.35	1.20	1.16	1.02	1.06	1.10
31	1.04		1.24			1.78		1.20		1.02	1.04	

Lower Pine Lake at Eldora, Iowa

LOCATION.—Lat. 42°22'05", long. 93°04'40", in NW¼NW¼ sec. 9, T. 87 N., R. 19 W., on abutment of highway bridge at spillway in Pine Lake State Park at Eldora.

DRAINAGE AREA.—15.9 square miles above outlet (revised in 1956).

RECORDS AVAILABLE.—June 1936 to September 1960.

GAGE.—Staff gage read once daily. Datum of gage is 969.37 ft. above mean sea level, datum of 1929 and 2.0 ft. below crest of spillway of dam forming lake.

EXTREMES.—1936-60: Maximum gage height observed, 7.59 ft. June 2, 1942, from floodmark; minimum observed, below staff gage (0.00 ft.) when lake was drained in 1950, 1951, and 1952.

Daily Gage Height, in Feet, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	2.08		1.98		1.88	2.08	2.04	1.88	1.88	1.82		1.96
2.....	2.08	1.80	1.98	2.00		2.04	2.04	1.90	1.88	1.82		1.96
3.....	2.08	1.78	1.98		1.90	2.04	2.02	1.90	1.88	1.84	1.96	1.96
4.....	2.08	1.76	1.98	1.98	1.90		2.02	1.88	1.88	1.88	1.96	1.96
5.....	2.08	1.76	1.98	1.94		2.06	2.00	1.88	1.88	1.88	1.96	2.41
6.....	2.26	1.76	1.98	1.94			1.98	1.88	1.88	1.88	1.96	2.20
7.....	2.26	1.76	1.98	1.96	1.84	2.06	1.98	1.88	1.90	1.88	1.96	2.10
8.....	2.22	1.78			1.94		1.98	1.88	1.90	1.94	1.94	2.06
9.....	2.22	1.78		1.94	1.96		1.96	1.88	1.90	1.98	1.94	2.00
10.....	2.20	1.78	1.98		1.96	2.06	1.96	1.90	1.90	1.96	1.96	1.96
11.....	2.18	1.80		1.92	1.98		1.96	1.90	1.90	1.94	1.96	1.96
12.....	2.16	1.80	1.98			2.04	1.96	1.92	1.88	1.92	1.98	1.96
13.....	2.14	1.82		1.90	1.98		1.94	1.94	1.88	1.92	2.00	1.96
14.....	2.12	1.84		1.88		2.02	1.94		1.88	1.90	1.98	
15.....	2.12	1.86	1.98		2.00	2.02	1.94	1.92	1.86	1.90	1.98	1.96
16.....	2.10	1.86					1.92	1.92	1.86	1.90	1.96	1.96
17.....	2.10	1.88	1.98	1.86	2.00	2.02	1.92	1.92	1.86		1.96	1.96
18.....		1.88			2.00		1.92	1.92	1.86	1.90	1.98	1.96
19.....		1.90	1.98	1.84		2.02	1.90	1.92	1.86	1.92	1.96	1.96
20.....	2.08	1.90			2.00		1.90	1.90	1.86	1.92	1.96	1.96
21.....	2.08		2.00	1.84		2.02	1.90	1.90	1.86	1.92	1.94	1.98
22.....	2.08	1.90						1.88	1.86	1.92	1.92	1.98
23.....	2.08	1.92	2.00		2.00	2.02	1.90	1.86	1.86	1.92	1.90	1.96
24.....	2.10		2.00	1.84		2.02	1.90	1.84	1.80	1.90	1.90	1.96
25.....	2.10	1.92			2.02	2.04	1.90	1.82	1.72	1.90	1.88	1.94
26.....	2.10	1.94	2.00	1.84	2.02	2.04	1.90	1.80	1.96	1.90	1.88	1.94
27.....	2.09	1.96		1.86		2.06	1.94	1.78	1.92	1.90	1.88	1.94
28.....	2.00	1.96		1.88	2.04	2.04	1.96	1.86	1.90	1.90	1.96	1.92
29.....	1.96	1.96	2.00			2.02	1.94	1.86	1.87	1.90	1.96	1.90
30.....	1.90	1.96		1.88		2.02	1.92		1.84		1.98	1.90
31.....	1.80		2.00			2.02		1.89		2.00	2.41	

Lower Pine Lake at Eldora, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	1.88	2.00	1.96	1.96		2.02	1.98	1.94	2.16	1.90	2.04	2.10
2	1.88		1.98	1.96	1.96	2.02	2.00	1.92	2.10	1.88	2.02	2.08
3	1.88	2.00	1.98	1.96			2.00	1.92	2.08	2.65	2.02	2.04
4	1.88	2.01	1.98	1.96	1.96	2.00	2.02	1.90	2.06	2.30	2.00	2.00
5	1.86	2.02	1.98	1.96	1.96	2.00	1.98		2.06	2.08	1.98	1.98
6	1.86	2.02	1.97			2.00	2.00	1.90	2.04	2.06	1.98	1.99
7	1.86	2.00	1.96	1.96	1.98	1.98		1.90	2.02	2.04	1.96	1.96
8	1.84	1.98	1.94	1.98	1.97	1.98	2.00		2.00	2.00	1.94	1.96
9		1.98	1.94		2.02	1.98	2.00	1.86	2.00	1.98	1.92	1.96
10	1.84	1.98	1.94	1.96			1.98	1.90	1.98	1.94	1.90	1.94
11	1.84	1.98	1.94	1.97		1.98	1.98	1.90	1.98	1.93	1.90	2.02
12	1.82	1.98	1.96	1.94	2.06	1.98	1.98		1.98	1.88	1.88	
13	1.82	2.00	1.96		2.06		1.98	2.04	1.96	1.86	1.94	2.00
14	1.88	2.00	1.98	1.96	2.06	1.98		2.10	1.96	1.84	2.38	1.98
15	1.92	2.00	1.98		2.08	2.00	1.96	2.06	1.94	1.82	2.12	1.98
16	1.92	2.00		1.96	2.08	2.00		2.04	2.12	1.82	2.06	1.98
17	1.94	2.00	1.98				1.96	2.04	2.10	1.80	2.04	1.98
18	1.94	2.00	1.96	1.96	2.04	2.02		2.02	2.12	1.76	2.02	1.96
19	1.96	2.00	1.96	1.96	2.02	2.02	1.98	2.02	2.06	1.74	2.00	1.96
20	1.96	2.00	1.96		2.00	2.04	1.98	2.02	2.02	1.72	1.96	1.96
21	1.96	2.00	1.96	2.02	2.00	2.04		2.04	2.00	1.78	1.96	1.96
22	1.96		1.96	2.20	2.00	2.04	1.96	2.04	1.96	1.83	1.94	1.94
23		1.98		2.10	2.00	2.04	1.96	2.04	1.94	1.82	1.94	1.94
24	1.98	1.98	1.96	2.04			1.94	2.04	1.94		1.92	1.94
25	1.98	1.98		2.02	2.10	2.00	1.94	2.06	1.92	1.78	1.92	1.92
26		1.98	1.96	2.00	2.06	2.00	2.04	2.06	1.92	1.78	1.90	1.92
27	1.96	1.98	1.96		2.04	2.00	2.00	2.04	1.92	1.76	2.06	1.92
28	1.96	1.98	1.96		2.04	2.00			1.92	2.10	2.21	1.90
29	1.96	1.96	1.96	2.00		1.98	1.98	2.04	1.92	2.14		1.90
30	1.96	1.96				1.98	1.96	2.65	1.92	2.06	2.14	1.88
31	1.98		1.96	1.98		1.98		2.24		2.06	2.10	
1957-58												
1	1.86	1.94		2.04	2.04	2.08	2.00	2.00	2.10	1.96	2.06	2.00
2	1.86	2.04	2.04	2.02	2.02		2.08	2.00	2.06	2.04	2.06	2.00
3	1.86		2.04	2.02	2.02	2.06	2.10	2.00	2.54	2.02	2.06	2.00
4	1.84	2.00	2.04	2.02	2.02	2.06	2.12	2.00	2.20	2.26	2.06	1.98
5	1.84	2.00	2.04	2.02	2.02	2.06	2.18	1.98	2.11	2.16	2.06	2.14
6	1.84	2.00	2.03	2.02	2.01	2.05	2.20	1.98	2.08	2.10	2.10	2.23
7		2.00	2.04	2.02	2.00	2.04	2.20	1.98	2.08	2.06	2.08	2.16
8	1.86	1.98	2.04	2.02	2.00	2.04	2.16	1.98	2.59	2.06	2.06	2.14
9	1.86	1.98	2.04	2.02			2.12	1.98	2.36	2.04	2.04	
10	1.84		2.04	2.01	2.00	2.00	2.11	1.98	2.10	2.04	2.02	2.12
11	1.84	1.96		2.00	2.00	2.00	2.10	1.98	2.08	2.16	2.00	2.10
12	1.84	1.98	2.00		2.00	2.00	2.10	1.98	2.08	2.14	1.98	2.08
13	1.84	1.98	2.00	2.04	1.98	2.02		1.98	2.35	2.10	1.98	2.08
14	1.84	1.98	2.00	2.04	1.98	2.02	2.08	1.98	2.18	2.91	1.98	2.10
15	1.90	1.98		2.06	1.98	2.02	2.08	1.98	2.10	2.63	2.91	2.10
16	1.90	2.02	2.00	2.08			2.08	1.98	2.10	2.20	2.24	2.10
17	1.86		2.00	2.08	1.98	2.02	2.08	1.98	2.08	2.16	2.12	2.08
18	1.84		2.08	2.06		2.02	2.06	1.98	2.06	2.14	2.08	2.08
19	1.84	2.06	2.10		1.98	2.00	2.06	1.98	2.04	2.12	2.04	2.08
20		2.06	2.14	2.06		2.00		1.96	2.02	2.10	2.16	2.08
21	1.84	2.06	2.14	2.04	1.98	1.98		1.96	2.00	2.10	2.08	2.08
22	1.88	2.04		2.04	2.00	1.98	2.04	1.96	2.00	2.08	2.06	2.06
23	1.96	2.04	2.10	2.04	2.06		2.04	1.96	1.98	2.08	2.04	2.06
24	1.96	2.04	2.10	2.04	2.40	2.00	2.04	1.96	2.06	2.12	2.04	2.06
25	1.94	2.04		2.04	2.20	2.02	2.04	1.94	2.04	2.10	2.04	2.04
26	1.94	2.04	2.08		2.12	2.04	2.02	1.94	2.00	2.10	2.04	2.04
27	1.94	2.06	2.06	2.04	2.10	2.04		1.96	2.00	2.08	2.03	2.02
28	1.94		2.06	2.04	2.08	2.06	2.02	1.96	1.98	2.08	2.02	2.02
29	1.94	2.06				2.06	2.02	1.96	1.98	2.08	2.02	2.00
30	1.94	2.06	2.06	2.04			2.02	1.98	1.96	2.08	2.00	1.98
31	1.94		2.04			2.00		2.04		2.06	2.00	

Lower Pine Lake at Eldora, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	1.94	1.96	2.02				2.16	2.00	2.20	2.12	1.98	1.86
2		1.96	2.04	1.98	1.86	2.40	2.16	1.98	2.12	2.10	2.00	1.90
3	1.94	1.96	2.04	1.98	1.86	2.30	2.16	2.00	2.10	2.08	2.02	1.90
4	1.94	1.96	2.02		1.86	2.22	2.14	2.00	2.08	2.06	2.02	1.88
5	1.94	1.98	2.02	1.98	1.84			2.08	2.08	2.04	2.00	1.88
6	1.94	1.98	2.00	1.98	1.84		2.10	2.04	2.08	2.02	1.96	1.86
7	1.96	1.98		1.98	1.84	2.00	2.08	2.04	2.04	2.00	1.94	1.86
8	1.96	1.98	2.00	1.96			2.06	2.04	2.02	1.98	1.90	1.84
9		1.98		1.96		1.98	2.04	2.04	2.02	2.02	1.90	1.84
10	2.04	1.98	2.00	1.96	1.84	2.04	2.04	2.06	2.00	2.02	1.88	1.82
11	2.02	1.98				2.32	2.02	2.06	2.00	2.00	1.86	1.82
12	2.02	1.98	2.00	1.96	1.84	2.42		2.04	1.98	1.98	1.84	1.80
13	2.00	1.98	2.00	1.96		2.38	2.04	2.04	1.96	1.98	1.84	1.80
14	2.00	1.98		1.96	1.84	2.20	2.02	2.04	1.96	1.96	1.82	1.78
15	2.00	1.98	1.98	1.96			2.00	2.02	1.94	1.94	1.90	1.78
16			1.98	1.96	1.84	2.08	2.00	2.02	1.92	1.92	1.94	1.78
17	1.98	2.16	1.98	1.96			2.00	2.02	1.90	1.92	1.92	1.78
18	1.98	2.16	1.96		1.84	2.02	2.00	2.00	1.90	1.90	1.90	1.78
19	1.98	2.12	1.96	1.94		2.32		2.00	1.90	1.88	1.90	1.84
20	1.98	2.10	1.96	1.94	1.82	2.90	2.10	2.20	1.88	1.86		1.82
21	1.98	2.08		1.92	1.82	2.36		2.16	1.88	1.84	1.90	1.90
22	1.98	2.06	1.96	1.92			2.04	2.10	1.86	1.82	1.88	1.92
23	1.98		1.96	1.92	1.80	2.48	2.04	2.10	1.84	1.80	1.96	1.92
24	1.98	2.06	1.96	1.90	1.78	2.36	2.02	2.08	1.81	1.80	1.94	1.90
25	1.98	2.06			1.78	2.28	2.00	2.08	1.80	1.78	1.94	2.00
26	1.98	2.06	1.98	1.90	1.77	3.66		2.06	1.78	1.78	1.92	2.00
27	1.98		1.98	1.90	1.74	2.29	1.96	2.04	1.78	1.76	1.90	2.00
28		2.06		1.90	1.72	2.18	2.00	2.04	1.91	1.76	1.90	2.00
29	1.96	2.06	1.98	1.90			2.00	2.11	2.10	2.01	1.90	1.98
30	1.96		1.97	1.89		2.16	2.00	2.14	2.18	2.02	1.88	1.98
31	1.96		1.98	1.88		2.14		2.26		2.00	1.86	
1959-60												
1	1.98		2.04			2.04	2.49	2.22	2.16	2.10	1.90	2.00
2	2.00	1.98	2.04	2.10		2.04	2.38	2.28	2.14	2.08	1.88	1.98
3	2.00	1.96	2.04			2.04		2.18	2.14	2.08	1.86	1.96
4	1.98	2.08	2.04	2.08		2.04	2.33	2.16	2.12	2.08	1.86	1.96
5	2.00	2.18	2.04	2.08	2.02	2.04	2.22	2.22	2.12	2.06	1.84	1.96
6	2.00	2.14		2.06	2.02		2.22	2.80	2.12	2.04	1.84	1.96
7	2.00	2.10	2.04	2.06		2.04	2.20	2.50	2.10	2.04	1.86	1.94
8	2.00	2.10	2.04	2.04	2.02		2.18	2.30	2.10	2.04	1.88	1.94
9	2.00	2.10	2.04	2.04	2.02	2.06	2.14	2.22	2.10	2.10	1.88	1.92
10	2.00	2.08	2.04	2.04	2.04			2.20	2.28	2.10	1.88	1.90
11	2.00	2.08	2.04	2.04	2.04	2.06	2.12	2.20	2.20	2.10	1.86	1.90
12	1.98	2.08	2.04	2.14	2.04	2.06	2.12	2.20	2.18	2.10	1.86	1.88
13	1.98	2.06		2.26	2.04			2.18	2.18	2.11	1.88	1.88
14		2.06	2.04	2.14		2.04		2.16	2.18	2.11	1.88	1.86
15	1.98	2.04	2.04	2.12	2.04	2.04	2.10	2.16	2.16	2.10	1.88	1.86
16	1.96	2.04	2.04	2.12	2.04	2.04	2.50	2.24	2.18	2.06	1.88	2.00
17	1.96	2.04	2.04		2.04	2.04	2.65	2.22	2.14	2.06	1.88	2.04
18	1.96	2.03	2.04	2.10	2.04	2.04	2.38	2.22	2.10	2.04	2.00	2.04
19	1.96	2.04	2.04	2.10	2.04	2.04	2.28	2.26	2.10	2.02	2.02	2.02
20	1.96	2.04		2.08	2.04		2.22	2.26	2.20	2.02	2.02	2.02
21	1.96	2.06	2.04	2.08		2.04	2.20	2.26	2.18	2.01	2.02	2.02
22	1.96	2.06	2.04	2.06	2.04		2.20	2.22	2.15	2.00	2.00	2.17
23	1.96	2.06	2.04	2.04	2.04	2.04	2.20	2.20	2.16	1.99	1.98	2.10
24	1.98	2.06	2.04		2.04			2.26	2.14	1.99	1.96	2.12
25	1.98	2.08		2.04	2.04	2.04	2.16	2.28	2.10	1.98	1.96	2.12
26	1.98		2.06	2.04	2.04	2.04	2.14	2.27	2.10	1.98	2.03	2.10
27	1.98	2.06		2.04	2.04		2.12	2.20	2.10	1.96	2.00	2.10
28	1.98	2.04	2.16	2.04		2.08	2.12	2.18	2.09	1.94	2.00	2.08
29	1.98		2.14		2.04	2.64	2.10	2.16	2.09	1.94	2.08	2.06
30	1.98	2.04	2.12			3.50	2.26	2.16	2.10	1.94	2.04	2.06
31	1.98		2.10			2.66		2.16		1.92	2.02	

Iowa River at Marshalltown, Iowa

LOCATION.—Lat. 42°04'05", long. 92°54'05", in NW¼SW¼ sec. 24, T. 84 N., R. 18 W., on right bank in city park in Marshalltown, 300 ft. upstream from Burnett Creek, 0.2 mile downstream from bridge on State Highway 14, 2.0 miles upstream from Linn Creek, and at mile 189. Records include flow of Burnett Creek.

DRAINAGE AREA.—1,564 square miles, including that of Burnett Creek.

RECORDS AVAILABLE.—October 1902 to September 1903, October 1914 to September 1927, October 1932 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 853.10 ft. above mean sea level, datum of 1929. Oct. 25, 1902, to Aug. 8, 1903, staff gage at site 1 mile upstream at different datum. May 21, 1915, to Sept. 30, 1927, and Feb. 1, 1933, to May 8, 1934, chain gage, and May 9 to Sept. 1, 1934, staff gage, 1,000 ft. upstream at present datum. Sept. 2-20, 1934, staff gage at site 1,000 ft. downstream at different datum.

AVERAGE DISCHARGE.—42 years (1902-3, 1914-27, 1932-60), 711 cfs.

EXTREMES.—1902-3, 1914-27, 1932-60: Maximum discharge, 42,000 cfs June 4, 1918 (gage height, 17.74 ft. from floodmark); from rating curve extended above 19,000 cfs on basis of velocity-area study; minimum daily, 9 cfs Jan. 9-10, 1940.

REMARKS.—Bankfull stage at about gage height, 12 ft. Highway overflow occurs at about gage height, 15 ft.

REVISIONS (water years).—WSP 1558: 1915-18, 1919(M), 1920, 1921-23(M), 1924-27, 1933, 1934(M), 1936, 1938, 1947(M).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	48	82	41	33	29	110	384	152	130	29	110	106
2.....	47	75	43	34	28	168	398	172	175	28	96	79
3.....	44	74	44	35	28	250	377	213	147	26	66	61
4.....	44	72	45	36	28	260	394	194	126	30	48	159
5.....	53	74	44	37	27	250	330	233	111	36	40	309
6.....	95	77	44	38	26	220	272	242	108	29	95	1,230
7.....	475	72	43	38	26	195	258	255	106	85	106	508
8.....	545	69	43	38	25	172	246	255	103	132	98	324
9.....	360	71	42	37	26	200	215	248	93	163	90	229
10.....	244	72	41	37	28	180	194	244	85	106	72	196
11.....	209	69	40	36	29	180	188	301	75	85	210	161
12.....	166	72	39	34	30	170	172	311	74	74	235	147
13.....	149	72	38	32	30	158	172	1,290	67	101	1,320	121
14.....	130	72	38	31	31	154	163	490	77	98	364	110
15.....	121	75	37	31	31	140	166	327	66	74	174	101
16.....	111	42	36	33	31	128	159	253	58	59	123	90
17.....	108	48	35	34	31	115	152	231	48	58	108	82
18.....	95	54	34	34	31	135	147	203	41	47	103	79
19.....	104	58	33	34	31	180	137	183	38	90	103	74
20.....	80	60	32	34	31	200	132	172	36	147	104	66
21.....	75	58	31	34	32	250	125	161	35	91	85	61
22.....	77	52	31	33	32	300	120	165	41	72	69	56
23.....	79	44	31	33	32	340	111	199	32	55	59	52
24.....	79	36	31	32	32	390	116	145	29	34	58	48
25.....	80	47	32	32	32	400	123	132	28	30	46	44
26.....	75	52	32	32	32	440	104	125	38	61	42	41
27.....	*55	43	33	*31	*33	475	116	101	90	35	41	40
28.....	67	37	33	30	44	528	157	106	52	35	34	*35
29.....	74	33	34	30	52	458	179	121	*44	38	35	32
30.....	74	*36	*34	30	.....	*458	*163	172	36	28	*229	34
31.....	80	.....	34	36	.....	408	.....	*132	.....	*41	203	.....

Iowa River at Marshalltown, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	34	35	58	65	59	205	225	126	2,550	447	*225	130
2	30	35	60	48	56	160	189	*121	1,190	*439	211	120
3	29	36	62	49	56	118	178	101	*1,130	2,350	186	104
4	26	38	62	44	56	140	189	69	950	5,490	209	94
5	24	42	62	40	53	140	198	84	*675	1,660	169	87
6	24	45	50	38	52	123	189	83	628	1,130	148	83
7	24	46	29	34	51	69	193	86	600	890	126	75
8	30	48	50	32	50	69	185	86	546	750	126	77
9	28	49	52	32	129	76	164	*91	495	605	114	74
10	22	49	52	31	306	90	147	140	515	503	109	74
11	22	47	51	30	274	101	144	172	592	439	106	104
12	29	46	48	29	262	125	132	196	628	383	98	118
13	50	45	46	28	340	151	133	334	628	350	93	130
14	64	50	44	28	301	153	121	512	980	319	204	113
15	50	54	44	26	250	*126	118	700	775	296	256	107
16	56	50	43	26	200	180	117	650	*5,830	291	138	101
17	47	90	41	26	180	160	115	552	5,050	262	114	92
18	47	82	35	26	164	210	115	504	4,010	240	100	88
19	56	74	30	27	142	280	115	464	2,400	*221	100	80
20	52	66	31	30	113	298	128	432	1,940	204	95	130
21	42	58	30	210	106	295	125	444	*1,620	368	88	113
22	53	25	36	429	94	325	110	548	1,220	902	78	95
23	55	56	44	350	90	316	162	508	1,010	463	86	84
24	*55	64	46	160	80	286	115	432	830	319	96	79
25	51	62	47	120	112	292	106	448	830	268	82	79
26	47	60	45	100	178	301	140	600	725	240	75	73
27	49	58	45	90	172	295	170	675	650	235	109	*68
28	45	56	47	82	*180	*328	178	508	587	972	676	66
29	42	*56	54	74	.....	259	172	436	507	471	350	68
30	*38	56	57	67	.....	250	128	*3,570	475	310	*210	75
31	35	.....	*65	*60	.....	.....	210	3,740	.....	242	174	.....
1957-58												
1	80	96	170	155	130	960	230	*288	719	377	*618	230
2	80	106	*270	*195	120	800	250	288	472	516	560	213
3	78	113	270	215	*120	650	270	282	1,170	596	490	208
4	77	120	265	220	120	580	310	282	2,130	1,800	440	194
5	76	128	265	230	120	510	420	275	1,500	2,160	423	343
6	74	130	265	230	120	460	700	260	1,280	1,680	418	1,040
7	73	128	245	230	120	430	1,400	250	1,160	1,280	361	689
8	72	122	215	230	120	380	1,200	245	2,180	1,000	327	503
9	71	118	160	225	120	340	1,100	245	*3,190	820	306	414
10	74	118	112	220	118	320	960	235	*1,730	695	272	342
11	76	120	130	205	113	*305	840	225	1,200	829	244	299
12	75	123	150	195	100	295	740	210	1,200	1,320	230	269
13	74	130	170	190	90	290	660	205	4,380	960	200	233
14	72	137	185	190	82	290	600	190	2,870	925	194	227
15	75	140	210	195	76	285	550	185	1,500	2,240	2,140	342
16	82	146	230	205	73	280	520	185	1,160	2,000	2,210	357
17	100	153	250	210	70	280	470	220	960	1,780	1,080	288
18	100	161	270	220	68	270	444	205	820	1,780	755	288
19	94	170	300	230	67	270	414	195	725	1,540	545	285
20	88	170	350	235	67	270	414	185	630	1,500	653	227
21	84	170	400	235	68	260	373	175	550	1,240	1,160	241
22	80	173	370	230	70	260	373	170	512	1,000	890	210
23	84	183	340	220	300	260	342	160	498	855	695	202
24	95	196	310	205	2,200	260	361	155	490	788	545	285
25	120	200	280	195	2,000	250	342	150	540	1,280	449	213
26	120	210	250	185	1,720	250	313	145	498	1,080	393	194
27	105	218	225	170	1,500	250	313	145	462	855	*361	166
28	97	230	195	160	1,300	250	342	142	472	1,000	327	166
29	93	200	170	150	.....	250	320	*219	449	855	299	154
30	92	100	130	140	.....	250	302	414	*389	788	272	*147
31	*91	.....	97	135	.....	*245	.....	677	.....	743	263	.....

Iowa River at Marshalltown, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	154	116	*115	92	48	1,000	1,870	426	*2,500	1,750	163	223
2	136	116	130	87	47	1,500	1,750	411	2,690	1,710	153	232
3	136	119	140	80	47	2,150	1,530	422	2,500	1,500	177	280
4	138	117	140	75	46	1,320	1,280	422	2,280	1,180	206	675
5	134	118	110	72	46	619	1,120	470	2,110	972	172	765
6	121	123	100	76	45	190	1,000	550	1,830	815	150	618
7	132	129	95	79	45	170	945	530	1,500	675	140	450
8	145	145	92	82	45	160	806	498	1,150	572	128	359
9	350	143	88	84	45	220	815	490	890	550	123	283
10	210	140	86	86	46	500	740	572	790	490	120	226
11	169	145	81	86	46	1,000	690	740	675	450	110	186
12	159	149	84	86	47	2,100	675	675	618	407	120	150
13	157	159	84	84	48	2,590	640	595	550	*370	100	145
14	152	161	85	79	50	4,280	595	550	506	327	105	123
15	145	157	86	73	50	1,460	530	506	482	289	110	116
16	140	157	86	68	50	700	510	486	458	286	150	100
17	134	417	87	62	49	620	510	434	426	280	130	95
18	127	689	88	57	48	580	486	430	411	273	115	95
19	125	389	90	53	48	2,060	482	466	*381	283	105	111
20	125	313	88	51	47	*8,600	510	454	327	229	95	109
21	125	269	87	49	48	8,420	550	690	313	211	92	121
22	123	250	87	50	49	4,070	640	1,000	303	206	100	80
23	123	238	88	52	52	3,690	675	972	286	191	133	109
24	123	224	90	54	54	4,290	595	918	*248	172	128	118
25	121	219	93	56	56	3,490	550	1,060	238	140	186	121
26	121	110	98	56	60	5,520	494	1,180	220	133	226	197
27	123	115	102	55	*72	8,850	474	1,280	232	128	145	223
28	121	130	108	53	300	*5,220	572	1,320	276	121	*186	280
29	117	120	110	51	.....	3,290	530	1,390	506	172	206	306
30	*116	100	100	50	.....	2,500	*482	1,460	1,250	*327	242	300
31	116	.....	*95	49	.....	2,030	.....	1,950	.....	232	245	.....
1959-60												
1	289	172	*400	830	*350	210	16,800	2,330	1,380	*510	156	369
2	286	163	465	720	335	205	11,500	1,930	1,270	468	150	313
3	*286	166	430	480	350	200	8,850	1,620	1,180	434	148	265
4	310	280	385	290	325	200	6,710	1,480	1,180	408	148	224
5	317	510	370	310	290	195	5,520	1,660	1,150	377	131	187
6	348	550	355	450	325	190	4,260	6,200	1,060	369	148	165
7	338	640	300	580	340	190	*3,310	9,400	1,000	344	156	152
8	317	595	275	640	330	185	2,570	7,100	888	324	156	152
9	296	550	310	560	360	180	2,090	5,070	832	389	197	141
10	267	530	355	460	330	180	1,690	3,490	860	545	159	133
11	254	572	366	450	310	180	1,550	2,810	942	510	141	135
12	226	550	355	840	310	180	1,410	2,250	860	486	129	117
13	194	550	334	1,400	320	180	1,300	1,850	860	460	123	112
14	208	420	306	918	330	180	1,240	1,620	832	442	119	107
15	203	310	313	550	330	180	1,120	1,440	778	429	121	110
16	180	330	317	620	330	185	1,460	1,730	778	396	121	137
17	158	285	324	530	330	180	5,210	1,690	778	359	116	195
18	153	325	289	490	310	180	6,170	1,580	725	334	325	197
19	153	422	313	510	295	190	4,140	1,730	832	310	421	216
20	150	498	300	520	285	200	2,970	1,810	1,030	284	256	235
21	145	474	303	490	285	195	2,330	2,410	970	277	224	290
22	148	438	283	460	270	205	1,810	2,810	860	247	203	454
23	150	434	334	430	250	210	1,580	2,250	805	238	177	675
24	163	450	264	400	250	210	1,400	1,970	725	227	*154	630
25	172	430	310	380	245	205	1,380	2,410	675	219	154	1,430
26	166	450	327	430	240	220	1,550	4,640	615	219	661	1,180
27	158	375	370	480	230	240	*1,690	*3,220	580	221	334	888
28	153	345	572	440	225	600	1,480	2,490	555	*210	277	725
29	158	325	*815	410	*220	2,300	1,410	2,010	540	185	600	630
30	*161	340	890	365	.....	6,000	2,090	1,730	530	177	635	575
31	166	.....	870	390	.....	*17,700	.....	1,520	.....	165	482	.....

Iowa River at Marshalltown, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	130	59.9	37.0	33.6	31.0	258	199	243	73.0	65.1	147	159
1956-57.....	40.5	52.6	47.3	78.4	146	198	150	562	1,352	712	160	92.7
1957-58.....	85.5	150	234	202	399	356	529	232	1,195	1,170	585	297
1958-59.....	143	193	97.3	67.3	58.4	2,683	771	753	901	498	147	240
1959-60.....	215	416	394	543	300	1,028	3,553	2,782	869	341	236	371

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.083	0.038	0.024	0.021	0.020	0.165	0.127	0.155	0.047	0.042	0.094	0.102
1956-57.....	.026	.034	.030	.050	.093	.127	.096	.359	.864	.455	.102	.059
1957-58.....	.055	.096	.150	.129	.255	.228	.338	.148	.764	.748	.374	.190
1958-59.....	.091	.123	.062	.043	.037	1.72	.493	.481	.576	.318	.094	.153
1959-60.....	.137	.266	.252	.347	.192	.657	2.27	1.78	.556	.218	.151	.237

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.10	0.04	0.03	0.02	0.02	0.19	0.14	0.18	0.05	0.05	0.11	0.11
1956-57.....	.03	.04	.03	.06	.10	.15	.11	.41	.96	.52	.12	.07
1957-58.....	.06	.11	.17	.15	.27	.26	.38	.17	.85	.86	.43	.21
1958-59.....	.11	.14	.07	.05	.04	1.98	.55	.56	.64	.37	.11	.17
1959-60.....	.16	.30	.29	.40	.21	.76	2.53	2.05	.62	.25	.17	.26

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955.....								259	2.24
1956.....	May 13, 1956.	9.89	2,160	25	120	0.077	1.04	113	.97
1957.....	June 16, 1957.	15.24	7,800	22	299	.191	2.60	327	2.84
1958.....	June 13, 1958.	14.11	5,500	67	452	.289	3.92	449	3.90
1959.....	Mar. 27, 1959.	15.57	10,000	45	550	.352	4.79	600	5.22
1960.....	Mar. 31, 1960.	17.51	21,500	107	920	.588	8.00		

Peak Discharge (base, 5,000 cfs)

1955-56: No peaks above base.

1956-57: May 30 (10:30 p.m.) 5,220 cfs (13.93 ft.); June 16 (10 p.m.) 7,800 cfs (15.24 ft.); July 4 (9:30 p.m.) 6,300 cfs (14.42 ft.).

1957-58: June 13 (3 p.m.) 5,550 cfs (14.11 ft.).

1958-59: Mar. 20 (7:30 p.m.) 9,700 cfs (15.48 ft.); Mar. 27 (8:30 a.m.) 10,000 cfs (15.57 ft.).

1959-60: Mar. 31 (6:30 p.m.) 21,500 cfs (17.51 ft.); Apr. 18 (4 a.m.) 6,340 cfs (14.12 ft.); May 7 (2 p.m.) 10,300 cfs (15.66 ft.); May 26 (8 a.m.) 5,070 cfs (13.77 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 16 to Dec. 31, 1955; Jan. 1 to Mar. 25, Nov. 24 to Dec. 6, Dec. 9-12, 16-18, 1956; Jan. 12-18, Nov. 30 to Dec. 31, 1957; Jan. 1 to Feb. 28, Nov. 26 to Dec. 31, 1958; Jan. 1 to Mar. 3, Mar. 6-12, 16-18, Nov. 14-18, Nov. 24 to Dec. 10, Dec. 31, 1959; Jan. 1-13, Jan. 15 to Mar. 30, 1960. Stage-discharge relation indefinite Oct. 26 to Nov. 20, 1956; Oct. 1 to Nov. 29, 1957; Mar. 1 to May 28, 1958; Aug. 10-22, 1959. No gage-height record Jan. 23-29, Feb. 15-17, 21-23, Mar. 8-10, 17, 18, 1957.

Timber Creek near Marshalltown, Iowa

LOCATION.—Lat. 42°00'25", long. 92°51'30", in SE¼SW¼ sec. 8, T. 83 N., R. 17 S., on left bank 20 ft. downstream from bridge on U. S. Highway 30, 2.7 miles upstream from mouth and 3.0 miles southeast of Marshalltown.

DRAINAGE AREA.—118 square miles.

RECORDS AVAILABLE.—October 1949 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 849.44 ft. above mean sea level, datum of 1929.

AVERAGE DISCHARGE.—11 years, 48.5 cfs.

EXTREMES.—1949-60: Maximum discharge, 4,940 cfs June 18, 1950 (gage height, 15.77 ft.); no flow July 24-26, Oct. 4-12, 1956.

Flood in June 1947 reached a stage of 16.8 ft. (discharge not determined).

REMARKS.—Bankfull stage is about gage height, 12 ft. Records for October 1949 to September 1955, not previously published in Water Supply Bulletins No. 3 or No. 6, are given herein.

Daily Discharge, in Cubic Feet per Second, for Water Year 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1949-50												
1.....	2.1	2.3	2.4	1.5	2.7	700	10	7.0	14	29	5.9	1.6
2.....	2.1	2.3	2.3	1.6	2.6	500	10	6.1	55	27	4.4	1.4
3.....	2.1	2.3	2.2	1.6	2.5	400	9.8	5.7	35	26	*3.7	1.3
4.....	2.1	2.3	2.1	1.5	2.4	500	9.2	197	15	24	3.3	1.1
5.....	2.1	2.3	1.8	1.4	2.3	3,120	8.6	357	12	22	3.3	1.1
6.....	1.7	2.3	1.5	1.3	1.5	2,530	7.8	50	11	19	3.2	1.1
7.....	1.7	2.3	1.2	1.3	30	1,450	7.6	17	10	17	3.0	1.1
8.....	1.7	2.3	*1.0	1.2	500	150	7.6	17	*9.4	16	2.9	1.1
9.....	1.7	2.3	1.1	1.2	864	60	9.0	395	39	14	2.8	1.1
10.....	1.7	2.3	1.3	1.2	1,040	35	15	92	20	14	2.6	1.1
11.....	1.5	2.5	6.0	1.2	977	30	12	48	11	*13	3.0	2.2
12.....	1.5	5.8	6.4	1.2	198	26	9.2	38	12	12	2.9	2.3
13.....	1.5	13	3.0	6.9	125	25	7.4	35	15	14	3.0	1.4
14.....	1.5	6.4	2.5	100	40	30	7.4	30	30	12	2.6	1.2
15.....	1.5	3.8	2.3	80	22	70	7.4	24	97	9.8	2.6	1.2
16.....	10	3.4	2.3	40	13	45	6.6	22	16	9.6	*2.4	1.1
17.....	10	3.1	2.4	15	9.0	37	6.6	21	11	9.8	2.2	1.0
18.....	10	2.9	2.5	6.9	6.8	33	6.8	20	*2,510	9.2	1.9	1.0
19.....	10	2.7	2.5	5.0	5.2	28	*6.6	18	741	9.0	1.6	1.1
20.....	10	2.5	2.3	4.0	4.1	27	6.3	18	173	9.2	1.4	1.1
21.....	8.5	2.4	2.0	3.5	3.4	32	5.5	142	106	8.4	1.2	1.1
22.....	8.5	2.3	1.9	3.3	2.8	300	5.4	38	81	8.0	1.5	1.3
23.....	8.5	2.3	1.8	3.1	*2.4	400	6.1	26	71	7.2	1.6	1.1
24.....	8.5	2.4	1.7	3.4	2.1	*70	6.3	**2	466	7.2	1.4	1.1
25.....	8.5	2.5	1.6	3.6	2.0	35	7.0	57	352	7.0	1.2	1.1
26.....	2.6	2.5	1.5	3.4	1.9	25	7.0	38	71	6.3	1.2	1.0
27.....	2.6	2.5	1.4	3.2	1.9	19	5.7	22	53	5.7	1.6	1.0
28.....	2.6	2.5	1.3	3.4	150	16	5.4	21	44	5.4	2.0	1.0
29.....	2.6	2.5	1.3	3.6	.....	13	5.7	20	38	4.9	2.0	1.0
30.....	2.6	2.5	1.3	3.1	.....	*12	6.8	16	32	5.4	1.9	1.0
31.....	2.6	.....	1.4	2.9	.....	11	.....	14	.....	6.1	1.8	.....

Timber Creek near Marshalltown, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1951 and 1952

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1.....	1.0	*0.6	1.1	0.5	0.7	30	187	108	399	49	34	32
2.....		*.4	1.0	.5	.7	25	154	217	972	46	37	32
3.....	.9	.4	1.0	.5	.7	39	137	120	388	487	42	30
4.....	.8	.5	.9	.5	.7	50	188	100	201	338	34	28
5.....	.8	.5	.9	.5	.7	40	131	87	144	124	32	27
6.....	.8	.6	*.9	.5	.7	30	147	81	128	97	30	27
7.....	.9	.7	.8	.5	.7	25	288	74	159	83	28	24
8.....	1.0	.8	.8	.5	.7	22	166	*68	*308	233	26	24
9.....	1.1	1.0	.8	.5	.7	20	126	67	156	550	24	36
10.....	1.1	1.1	.8	.5	.7	18	105	287	122	147	23	133
11.....	1.0	1.3	.8	.4	34	17	117	206	107	262	22	43
12.....	.9	1.5	.8	.4	100	17	236	135	97	203	21	36
13.....	.8	1.3	.8	.4	30	17	229	110	85	137	25	40
14.....	.8	1.2	.8	.4	*7.2	15	152	95	77	113	28	28
15.....	.8	*1.1	.8	.5	6.0	14	118	84	86	96	120	25
16.....	.8	1.1	.8	*.8	8.0	13	100	79	201	94	49	23
17.....	.7	1.2	.7	1.4	60	13	90	90	101	84	34	22
18.....	.7	1.5	.7	2.0	580	13	86	170	80	*80	30	20
19.....	.6	1.6	.6	2.5	660	14	75	96	194	74	27	19
20.....	.6	1.8	*.0	1.5	*300	15	68	98	359	78	52	19
21.....	.6	1.6	.6	1.2	230	15	79	75	115	84	62	18
22.....	.6	1.5	.6	1.0	210	16	91	73	106	71	*35	18
23.....	.6	1.4	.5	.9	200	17	73	68	92	59	30	18
24.....	.6	1.3	.5	.8	190	18	74	61	82	53	28	17
25.....	.6	1.3	.5	.8	350	19	158	57	70	51	509	18
26.....	.6	1.3	.5	.8	150	21	143	123	91	48	183	*17
27.....	.6	1.3	.5	.7	70	100	111	75	70	44	71	17
28.....	.6	1.2	.5	.7	45	933	110	64	63	40	63	15
29.....	.6	1.2	.5	.7	.....	776	106	59	56	40	49	16
30.....	.6	1.1	.5	.7	.....	347	103	56	54	37	41	16
31.....	.6	.....	.5	.7	.....	245	.....	106	.....	37	36	.....
1951-52												
1.....	17	35	44	22	230	34	194	80	77	68	18	9.0
2.....	16	30	46	21	180	35	150	76	75	75	18	10
3.....	16	29	52	21	150	30	130	74	71	206	33	*8.8
4.....	31	30	*46	20	110	20	117	71	67	66	48	8.2
5.....	42	31	42	20	85	22	108	64	67	58	21	7.4
6.....	22	31	42	20	59	30	101	68	61	53	19	7.0
7.....	26	30	37	20	*56	35	94	66	56	60	18	6.4
8.....	24	31	34	19	52	40	91	68	61	64	18	6.0
9.....	22	32	35	19	56	54	87	77	93	52	20	5.6
10.....	20	32	33	19	56	1,640	*90	78	55	46	16	5.2
11.....	20	33	30	19	50	1,280	85	67	52	42	16	4.9
12.....	19	121	25	19	45	*326	86	64	49	38	15	4.9
13.....	18	153	22	19	43	713	115	60	119	36	14	5.0
14.....	17	105	20	30	41	257	136	58	441	58	15	5.8
15.....	17	81	19	120	39	159	143	*56	111	90	14	7.2
16.....	18	72	21	100	37	126	116	62	79	*47	14	4.5
17.....	22	50	25	110	36	119	108	67	68	41	12	3.7
18.....	25	52	27	90	35	180	103	57	*59	41	12	3.5
19.....	26	50	29	350	34	337	98	55	54	38	11	3.3
20.....	23	46	30	250	34	187	91	54	181	34	11	3.1
21.....	93	42	30	200	34	149	86	55	197	32	12	3.0
22.....	396	38	29	160	38	154	96	179	117	29	11	2.9
23.....	97	35	30	130	45	129	126	587	93	27	9.8	2.9
24.....	85	37	28	100	45	121	147	194	162	26	9.6	2.8
25.....	66	39	27	84	46	117	115	148	96	25	9.2	2.8
26.....	58	39	26	75	50	119	107	122	74	23	9.6	2.8
27.....	56	40	25	68	51	118	100	119	155	22	9.6	2.7
28.....	52	44	24	66	47	128	92	115	112	21	8.8	2.6
29.....	48	47	23	64	44	136	87	96	82	20	9.8	2.5
30.....	46	47	23	70	.....	129	82	92	71	19	10	2.5
31.....	42	.....	22	80	.....	268	.....	85	.....	18	9.0	.....

Timber Creek near Marshalltown, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1953 and 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1952-53												
1	2.5	3.1	5.8	4.0	6.8	35	*97	143	38	24	12	3.8
2	*2.5	3.1	6.0	3.9	6.6	31	76	108	37	*25	12	3.7
3	2.5	3.1	6.2	3.8	*6.4	29	70	92	36	22	13	3.6
4	2.5	3.1	6.4	3.8	6.4	26	61	83	37	22	13	3.5
5	2.5	3.1	6.6	3.8	12	24	54	76	69	21	12	3.3
6	2.9	3.1	6.6	3.8	70	23	50	74	40	21	12	3.2
7	2.9	3.1	7.2	3.8	90	22	46	68	36	19	12	3.1
8	2.9	3.1	7.8	*3.8	120	25	43	61	315	18	11	2.9
9	2.9	3.1	8.4	3.9	80	42	46	56	70	17	9.6	2.8
10	2.9	3.1	9.0	4.0	200	109	58	53	50	17	9.2	2.7
11	3.3	3.1	9.2	4.1	600	54	50	49	77	16	8.6	2.6
12	3.3	3.1	8.0	4.4	200	42	46	44	49	16	9.0	2.5
13	3.3	3.1	7.0	4.6	90	36	42	42	41	17	8.8	2.4
14	3.3	3.1	6.4	5.0	50	42	40	42	40	17	7.4	2.3
15	3.3	3.1	6.0	300	35	54	46	41	36	21	7.0	2.2
16	3.3	7.0	5.6	150	28	34	47	40	34	16	6.6	*2.1
17	3.3	40	5.6	90	24	33	44	39	32	16	6.6	2.0
18	3.3	45	5.4	50	21	*31	39	38	30	17	6.3	1.9
19	3.3	19	8.0	30	35	28	38	35	28	15	5.9	1.9
20	3.3	13	14	25	2,000	27	37	37	26	14	5.7	1.8
21	3.3	11	12	20	800	33	35	146	25	14	5.4	1.8
22	*3.3	11	10	15	150	40	34	267	25	62	5.2	1.8
23	3.3	11	8.4	13	120	67	32	104	24	20	5.2	2.0
24	3.3	11	7.0	12	140	55	69	164	24	14	5.1	2.1
25	3.3	11	6.0	11	90	42	176	96	181	13	4.7	1.9
26	3.3	18	5.5	10	70	36	100	68	64	24	4.6	1.8
27	3.3	20	5.0	9.2	52	34	*82	58	34	62	4.3	1.7
28	3.3	9.0	4.6	8.8	41	32	74	*54	36	19	4.1	1.7
29	3.3	5.0	4.4	8.2	.....	30	67	52	29	16	4.0	1.6
30	3.3	5.4	4.2	7.6	.....	76	102	48	26	15	4.1	1.6
31	3.3	.....	4.1	7.2	.....	103	.....	41	.....	13	4.0	.....
1953-54												
1	1.6	1.4	3.2	.4	.5	4.6	5.6	32	*417	26	8.8	17
2	1.6	1.4	3.2	.4	.5	4.6	6.0	106	149	24	8.6	16
3	1.6	1.4	3.2	.4	.5	4.6	5.6	148	293	24	8.4	16
4	1.6	1.4	3.2	.4	.5	4.6	5.4	49	164	23	13	16
5	1.6	1.4	3.2	.4	.5	4.6	30	36	105	22	16	16
6	1.7	1.4	3.2	.4	.8	4.9	101	28	94	20	10	16
7	1.7	1.4	3.2	.4	.8	4.9	18	22	71	19	8.4	16
8	1.7	1.4	3.2	.4	.8	4.9	12	22	57	18	8.0	17
9	1.7	1.4	3.2	.4	.8	4.9	9.4	20	52	17	7.6	15
10	1.7	1.4	3.2	.4	.8	4.9	8.8	19	*1,230	15	7.4	13
11	1.7	1.9	3.2	.4	2.0	4.9	8.2	17	279	14	7.0	11
12	1.7	1.9	3.2	.4	2.0	4.9	7.6	16	115	13	6.8	10
13	1.7	1.9	3.2	*.4	2.0	4.9	7.2	15	84	12	6.6	8.4
14	*1.7	1.9	3.2	.4	2.0	4.9	7.0	14	119	*12	6.6	7.8
15	1.7	1.9	*3.2	.4	2.0	4.9	24	14	114	11	6.4	7.2
16	1.7	1.9	1.8	.4	5.6	4.9	28	13	639	10	*6.3	6.4
17	1.7	1.9	1.8	.4	5.6	4.9	11	12	202	10	7.2	6.0
18	1.7	1.9	1.8	.4	5.6	4.9	9.0	12	92	11	14	5.5
19	1.7	*1.9	1.8	.4	5.6	4.9	8.0	12	74	11	11	5.2
20	1.7	1.9	1.8	.4	5.6	4.9	8.2	12	66	12	7.0	4.9
21	1.6	2.7	.9	.4	5.6	4.9	10	12	190	12	6.0	4.6
22	1.6	2.7	.9	.4	5.6	4.9	*10	11	218	11	5.8	4.4
23	1.6	2.7	.9	.4	5.6	4.9	8.6	12	76	11	5.7	4.1
24	1.6	2.7	.9	.4	*5.6	4.9	8.2	12	75	11	5.8	*3.9
25	1.6	2.7	.9	.4	5.6	*13	15	12	79	10	8.0	3.7
26	1.5	2.7	.5	.4	4.5	9.0	34	12	61	9.4	80	3.6
27	1.5	2.7	.5	.4	4.5	6.0	58	*14	42	9.4	340	3.5
28	1.5	2.7	.5	.4	4.5	6.1	24	57	35	9.8	150	11
29	1.5	2.7	.5	.4	.....	6.4	18	35	32	9.6	56	140
30	1.5	2.7	.5	.4	.....	5.8	25	20	29	9.0	23	15
31	1.5	.....	.5	.4	.....	5.4	.....	73	.....	9.0	20	.....

Timber Creek near Marshalltown, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1955 and 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1954-55												
1	32	38	20	20	12	160	27	40	25	8.3	3.2	1.4
2	68	34	20	21	*12	220	27	40	24	7.2	3.0	1.4
3	50	35	18	24	12	180	27	37	23	5.5	3.2	1.4
4	40	34	18	27	11	100	30	38	26	6.6	2.9	1.2
5	50	33	18	30	11	70	*37	34	23	11	2.8	1.2
6	68	32	18	30	11	56	32	34	21	19	7.2	1.2
7	52	31	18	26	11	36	29	34	21	9.5	4.0	1.2
8	45	30	18	23	11	47	28	32	20	6.4	2.6	1.2
9	40	29	17	20	11	49	27	64	*19	7.9	2.4	1.2
10	273	28	17	18	11	44	26	122	18	536	*2.4	1.8
11	168	27	17	*17	11	40	26	66	20	127	2.3	1.8
12	96	26	17	16	11	34	29	58	19	32	2.2	2.0
13	70	25	17	16	11	32	32	52	18	21	2.0	3.6
14	82	24	17	15	11	77	50	48	17	17	2.0	2.2
15	70	24	*17	14	11	62	40	45	16	15	2.0	1.6
16	60	24	17	14	11	39	36	43	14	14	2.0	1.4
17	56	*23	17	13	12	33	33	41	14	12	2.0	1.2
18	52	*23	17	13	100	32	31	*39	13	12	2.0	.9
19	49	23	17	12	1,200	32	102	38	13	10	2.0	1.6
20	47	23	17	12	800	31	64	36	12	*9.2	2.0	2.3
21	45	23	19	12	350	36	45	34	10	8.6	2.0	*3.0
22	43	22	19	12	150	33	40	34	9.2	14	2.0	2.8
23	42	22	19	12	150	31	39	34	8.8	7.7	2.0	2.3
24	41	22	19	11	150	29	66	32	8.6	6.6	3.3	2.0
25	41	21	20	11	120	27	66	32	8.6	6.1	4.2	1.8
26	43	19	21	11	120	27	59	33	8.3	5.9	2.5	2.0
27	*45	20	22	11	120	27	*53	37	7.2	5.2	1.6	3.3
28	43	21	20	11	130	28	48	61	6.8	4.4	1.4	3.9
29	42	19	19	11	.....	30	43	45	*6.8	4.2	1.4	2.6
30	41	19	19	11	.....	28	41	30	8.6	3.9	1.6	2.0
31	40	.....	19	12	.....	28	.....	27	.....	3.4	1.6	.....
1955-56												
1	1.8	1.6	.6	.5	.3	20	3.3	5.9	3.4	.2	5.4	1.6
2	1.6	*1.6	.7	.5	.3	15	8.3	6.3	2.6	.3	5.2	.6
3	1.6	1.6	.8	.5	.3	10	5.7	6.8	2.0	.3	2.0	.2
4	1.6	1.4	1.0	.5	.3	6.0	3.9	5.7	1.8	.5	1.1	39
5	1.8	1.4	1.0	.5	.3	4.5	3.4	5.7	1.6	.5	.6	32
6	3.7	1.6	1.0	.5	.3	4.0	3.2	6.3	*1.4	.5	.4	18
7	2.9	1.6	1.0	.5	.3	4.0	2.6	5.5	3.0	.4	*.2	8.3
8	1.8	1.6	.9	.5	.3	4.0	2.0	3.7	6.1	.8	.3	3.3
9	1.4	1.4	.8	*.5	.3	4.0	2.2	*3.3	2.5	.6	.3	2.0
10	1.4	1.4	.6	.5	.3	4.0	2.2	3.4	1.6	.1	.2	1.4
11	1.6	1.8	.6	.5	.4	4.0	1.8	10	1.4	.1	.2	1.2
12	1.4	1.6	.6	.5	.5	3.6	2.0	6.4	1.1	.3	.5	1.1
13	1.2	1.8	.5	.5	.6	4.2	1.8	92	.9	.2	.7	1.0
14	1.2	1.4	.4	.5	*.6	3.6	2.0	35	.4	.1	.5	1.0
15	1.2	1.6	.4	.5	.6	3.4	1.8	9.0	.6	.1	.4	.8
16	1.2	1.2	.4	.4	.6	3.3	1.8	5.9	.6	1.2	.5	.7
17	1.1	1.0	.4	.4	.6	3.2	1.8	4.4	.6	.2	.7	.7
18	1.1	1.1	.4	.4	.6	3.3	1.6	3.3	1.4	*2.2	1.4	.7
19	1.0	1.2	.4	.3	.6	3.4	*1.4	2.6	.8	2.4	2.0	.8
20	1.0	1.3	.5	.3	.6	3.5	1.2	2.4	.6	.9	1.2	.7
21	1.1	1.4	.5	.3	.7	3.5	1.2	2.3	.4	.4	.7	.7
22	1.1	1.5	.5	.3	.7	*3.5	1.2	2.8	.5	.2	.5	.7
23	1.0	1.5	.5	.3	.7	3.5	1.2	3.3	.6	.1	.2	.7
24	1.0	1.3	.5	.3	.8	4.0	1.2	2.2	.5	0	.1	.5
25	1.2	1.1	.5	.3	10	4.7	1.4	1.8	.2	0	.2	.4
26	1.2	.9	.5	.3	20	6.3	1.4	1.8	.4	0	.2	.4
27	1.2	.8	.5	.3	35	5.9	2.2	1.6	*.4	1.9	.1	.4
28	1.1	.7	.5	.3	28	5.2	3.7	18	.4	5.6	.1	.3
29	1.1	.6	.5	.3	20	4.0	9.0	34	*.2	4.7	.2	.2
30	1.4	*.6	.5	.3	.....	3.3	8.8	28	.1	2.0	1.7	.3
31	1.4	.....	.5	.3	.....	3.6	.....	12	.....	*5.0	8.3	.....

Timber Creek near Marshalltown, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	0.2	1.0	1.1	1.1	1.1	4.0	7.0	4.4	43	*15	71	7.2
2	.2	.9	1.2	1.1	1.1	4.0	9.5	3.7	30	*14	22	6.6
3	.1	.8	1.3	1.0	1.1	4.0	10	3.2	23	1,740	18	6.1
4	0	1.0	1.3	1.0	1.1	4.0	8.8	2.8	19	1,870	15	5.7
5	0	1.1	1.3	.9	1.1	4.0	12	2.4	16	346	13	5.5
6	0	1.2	.9	.9	1.2	4.0	11	2.4	14	109	12	5.4
7	0	1.6	.6	.9	1.3	3.6	8.3	2.3	16	74	11	5.5
8	0	1.2	.5	.8	1.4	3.6	7.7	2.0	20	53	10	5.4
9	0	1.1	.5	.8	.50	3.6	6.1	2.0	15	41	9.8	5.2
10	0	1.0	.5	.8	450	4.0	5.4	58	18	34	9.8	5.0
11	0	1.1	.5	.8	200	5.5	5.2	57	64	28	9.2	*9.6
12	0	1.1	.5	.8	220	7.8	4.4	24	20	25	8.6	11
13	.5	1.2	.5	.7	300	5.4	4.4	67	22	22	8.6	7.2
14	10	1.1	.5	.7	150	4.7	3.4	121	18	21	13	6.1
15	5.7	1.2	.5	.7	90	4.3	3.4	54	14	18	8.6	8.3
16	6.1	1.4	.5	.7	60	4.1	3.4	34	*234	17	7.5	5.9
17	3.2	1.4	.5	.7	35	3.9	3.4	30	543	15	7.2	4.0
18	*1.6	1.4	.5	.7	20	7.9	3.4	23	*1,420	14	7.2	3.6
19	1.0	1.4	.5	.7	10	18	3.4	20	132	13	7.2	3.6
20	1.1	1.6	.5	.7	*6.0	11	3.0	18	80	11	7.0	3.6
21	.9	1.5	.5	.90	5.0	7.5	2.6	17	54	23	6.4	4.4
22	.8	1.4	.5	250	5.0	6.3	2.9	25	42	*253	6.3	4.2
23	.8	1.2	.6	*20	5.0	5.5	2.9	*14	34	*47	6.1	3.3
24	.8	1.1	.7	5.0	6.0	5.0	*2.6	11	28	24	7.9	2.6
25	.8	1.2	.9	2.5	9.0	4.5	2.9	9.8	28	19	6.4	2.6
26	.8	1.3	.9	2.0	8.0	4.5	4.9	11	32	17	6.1	*2.6
27	1.2	1.3	.9	1.5	*6.0	4.5	15	10	23	18	9.3	2.6
28	.9	1.2	1.1	1.4	5.0	*7.7	11	8.1	25	119	73	2.5
29	.7	1.1	1.1	1.3	.....	9.2	*6.8	8.3	20	36	24	2.5
30	*.7	1.1	1.1	*1.2	.....	9.2	5.2	283	16	29	*11	2.5
31	.9	.....	*1.1	1.2	.....	7.5	.....	*103	.....	*50	8.6	.....
1957-58												
1	2.6	4.5	12	4.7	6.7	38	16	16	175	8.9	*15	5.0
2	2.6	5.7	*13	*5.0	6.4	33	22	17	24	22	14	5.0
3	2.6	7.5	11	4.3	*6.2	30	20	20	17	27	13	4.7
4	2.6	6.5	9.4	4.1	5.8	28	25	18	15	126	12	7.2
5	2.8	5.7	9.0	4.1	5.4	26	51	16	12	57	11	70
6	3.0	5.2	12	4.5	5.2	26	88	15	10	36	11	146
7	3.3	5.2	11	4.8	4.8	26	81	15	11	*29	10	68
8	4.0	5.0	10	5.2	4.6	23	65	15	71	25	9.4	28
9	3.8	4.2	8.8	5.8	4.3	19	56	15	129	22	8.6	20
10	4.7	3.8	7.2	6.2	3.9	20	50	14	*24	20	8.3	16
11	4.5	4.3	6.0	6.6	3.6	21	44	13	14	41	8.0	13
12	4.0	4.7	5.0	7.6	3.3	26	41	12	24	44	7.8	12
13	3.8	5.9	4.5	10	3.0	31	38	11	404	24	7.2	13
14	4.0	7.2	4.5	14	3.0	30	36	11	161	27	7.0	10
15	7.2	7.0	5.2	17	3.0	26	33	11	48	28	17	15
16	*8.3	8.9	7.2	18	3.0	21	30	12	34	19	12	13
17	6.3	9.4	9.4	*16	3.0	19	28	17	30	17	7.5	11
18	4.7	7.4	17	15	3.0	20	*28	15	25	17	6.8	10
19	4.3	8.6	35	13	3.0	20	26	12	22	21	6.3	9.2
20	4.2	8.0	21	12	3.0	*20	25	10	20	32	7.2	8.6
21	4.0	*7.0	13	11	3.0	18	24	10	16	21	*17	8.6
22	4.3	8.0	14	10	3.0	19	24	10	16	*17	9.4	8.0
23	8.8	10	12	9.6	5.0	19	24	*9.7	19	15	6.8	7.5
24	21	8.8	9.6	9.2	600	17	28	9.2	23	42	6.5	8.6
25	11	8.4	7.6	8.8	*200	17	21	9.2	19	62	6.5	9.4
26	6.3	9.7	9.6	8.4	100	17	20	8.6	15	22	6.3	*7.2
27	5.0	12	12	8.0	68	17	20	8.0	13	19	*6.5	7.0
28	4.7	15	9.4	7.8	*46	17	20	7.5	12	27	6.5	6.3
29	4.7	11	7.0	7.4	.....	17	19	*7.0	11	16	6.1	5.9
30	4.7	8.0	5.0	7.2	.....	16	*17	6.5	*10	17	5.9	*5.4
31	*4.5	.....	4.0	7.0	.....	*16	.....	126	.....	17	5.4	.....

Timber Creek near Marshalltown, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1....	5.0	4.6	*5.5	5.5	3.0	692	156	96	*221	162	13	4.4
2....	5.3	4.6	6.0	5.6	3.0	505	128	86	176	84	14	5.3
3....	5.0	4.8	7.1	5.4	3.0	281	104	90	151	68	17	6.6
4....	5.3	6.6	7.9	5.1	3.0	80	81	80	132	62	14	4.4
5....	5.0	3.4	5.8	4.9	2.9	39	70	90	118	58	13	3.8
6....	4.8	3.8	3.8	4.8	2.9	70	58	101	106	49	13	3.8
7....	5.3	4.2	3.8	4.8	2.8	53	55	85	97	45	12	4.0
8....	5.8	5.0	4.3	4.9	2.8	35	52	77	84	47	11	4.0
9....	6.6	7.9	5.2	4.9	2.7	41	47	84	82	54	11	3.8
10....	8.5	4.4	5.9	4.8	2.7	52	43	227	76	40	10	3.8
11....	5.8	4.2	6.3	4.6	2.7	299	43	*341	*73	39	9.7	3.6
12....	5.0	4.0	6.4	4.5	2.7	491	44	176	68	35	9.1	3.6
13....	4.8	4.0	6.1	4.5	3.0	573	40	151	60	33	*7.9	3.8
14....	5.0	4.4	5.9	4.5	3.0	712	37	128	58	30	7.3	3.8
15....	5.0	4.6	5.6	4.5	2.8	160	34	114	55	29	14	3.8
16....	5.0	4.8	5.4	4.5	2.7	84	33	104	52	30	16	4.2
17....	5.3	28	5.4	4.3	2.6	70	34	95	47	29	12	4.2
18....	5.3	123	5.7	4.1	2.5	64	39	130	44	33	9.7	4.2
19....	5.3	27	6.1	4.0	2.4	600	34	*1,450	47	27	7.9	5.5
20....	5.5	16	6.6	3.8	2.4	2,210	44	*251	43	24	6.8	5.8
21....	5.5	11	7.2	3.6	2.7	*540	58	351	42	22	6.6	6.0
22....	5.5	9.7	7.5	3.5	3.5	160	92	215	38	22	5.8	5.3
23....	5.3	8.8	7.5	3.3	16	314	96	215	35	21	7.1	4.8
24....	5.3	7.9	7.3	3.2	70	264	79	176	*34	19	8.8	4.2
25....	5.5	7.3	7.1	3.2	60	141	67	156	33	19	6.6	5.8
26....	5.5	6.2	6.8	3.1	250	650	57	141	30	18	4.8	4.1
27....	5.5	5.6	6.8	3.1	*680	566	57	118	32	16	*4.4	4.5
28....	5.5	5.3	6.6	3.0	886	*161	269	114	33	17	4.4	8.8
29....	5.8	5.0	6.4	3.0	.....	104	146	161	32	18	4.4	4.6
30....	*5.0	4.8	*6.0	3.0	.....	97	*114	262	108	*18	4.8	3.8
31....	4.4	.....	5.0	*3.0	.....	98	.....	495	.....	14	4.4	.....
1959-60												
1....	3.4	6.0	15	37	50	27	845	156	156	*65	29	12
2....	3.6	5.3	17	30	49	27	605	132	146	58	28	11
3....	*3.8	4.6	17	25	47	27	373	114	132	54	28	12
4....	4.2	72	15	23	46	27	323	105	128	50	28	9.4
5....	14	92	12	20	45	27	269	119	123	49	28	9.1
6....	13	41	10	19	44	27	227	1,790	110	52	29	8.2
7....	7.9	34	9.0	21	43	27	*182	1,580	106	47	29	7.6
8....	5.8	28	11	24	47	27	156	477	100	45	25	7.3
9....	4.8	29	12	22	54	27	132	360	95	105	27	7.1
10....	4.4	26	13	21	40	27	128	287	96	125	23	7.6
11....	4.0	23	16	20	37	28	123	257	94	*84	20	7.1
12....	3.6	20	16	1,000	36	29	106	215	98	116	20	6.8
13....	3.6	17	14	1,320	35	29	104	198	99	114	19	6.8
14....	3.6	19	13	239	37	30	98	182	91	76	18	6.8
15....	3.6	16	13	322	38	30	91	166	83	68	17	*7.9
16....	3.6	13	12	176	36	30	316	431	80	63	18	8.2
17....	3.6	10	*12	120	34	30	825	310	77	58	20	11
18....	3.8	11	13	90	32	30	373	198	82	54	28	11
19....	3.4	*12	11	80	31	30	245	193	266	51	22	25
20....	3.4	14	11	90	30	29	198	245	99	48	18	9.7
21....	3.4	18	11	*86	31	29	176	233	96	45	16	9.1
22....	3.4	20	8.8	80	32	29	151	198	90	43	15	18
23....	4.2	22	11	73	32	29	132	166	83	41	*14	20
24....	6.3	24	11	70	32	28	123	210	75	41	13	242
25....	6.8	18	14	66	31	28	118	515	70	55	13	59
26....	5.8	14	20	62	30	28	114	*740	68	60	13	30
27....	5.3	12	32	60	29	70	*103	299	65	40	12	23
28....	4.8	10	66	58	28	.....	1,400	98	245	63	*37	20
29....	*7.1	9.4	53	56	*27	1,000	102	215	63	34	39	20
30....	4.2	11	35	54	.....	*2,770	227	188	64	33	19	20
31....	4.4	.....	36	52	.....	*1,120	.....	171	.....	32	15	.....

Timber Creek near Marshalltown, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1949-50	4.34	3.12	2.14	10.0	144	346	7.75	59.2	172	12.5	2.45	1.21
1950-51	.76	1.11	.71	.78	116	95.3	132	103	172	127	58.9	27.9
1951-52	47.7	49.4	30.5	77.6	63.0	232	109	100	102	47.6	15.2	4.90
1952-53	3.11	9.43	6.98	26.6	184	41.8	60.0	74.8	53.0	20.7	7.69	2.41
1953-54	1.63	2.00	2.08	.40	3.07	5.41	17.7	28.7	175	14.0	28.2	14.1
1954-55	62.4	25.8	18.3	16.3	128	54.8	41.1	43.2	15.3	30.9	2.51	1.92
1955-56	1.43	1.32	.60	.41	4.30	5.11	2.84	10.7	1.27	1.03	1.16	3.99
1956-57	1.26	1.21	.76	12.7	58.9	5.90	6.00	33.3	93.0	165	14.2	5.01
1957-58	5.24	7.42	10.4	8.78	39.6	22.4	34.0	16.0	47.4	29.6	9.10	18.6
1958-59	5.40	11.4	6.10	4.16	72.2	330	73.7	205	73.6	38.1	9.37	7.19
1959-60	5.06	21.7	18.1	142	37.3	197	235	345	99.9	59.5	21.1	21.8

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1949-50	0.037	0.026	0.018	0.084	1.22	2.93	0.066	0.502	1.46	0.106	0.021	0.010
1950-51	.0064	.0094	.0060	.0066	.983	.808	1.12	.873	1.46	1.08	.499	.236
1951-52	.404	.419	.258	.658	.534	1.97	.924	.847	.864	.403	.129	.042
1952-53	.026	.080	.059	.225	1.56	.354	.508	.634	.449	.175	.065	.020
1953-54	.014	.017	.018	.0034	.026	.046	.150	.243	1.48	.119	.239	.119
1954-55	.529	.219	.155	.138	1.08	.464	.348	.366	.130	.262	.021	.016
1955-56	.012	.011	.0051	.0035	.036	.043	.024	.091	.011	.0087	.0098	.034
1956-57	.011	.010	.0064	.108	.499	.050	.051	.282	.788	1.40	.120	.042
1957-58	.044	.063	.088	.074	.336	.190	.288	.136	.402	.251	.077	.158
1958-59	.046	.097	.052	.035	.612	2.80	625	1.74	.624	.323	.079	.061
1959-60	.043	.184	.153	1.20	.316	1.67	1.99	2.92	.847	.504	.179	.185

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1949-50	0.04	0.03	0.02	0.10	1.27	3.38	0.07	0.58	1.62	0.12	0.02	0.01
1950-51	.007	.01	.007	.008	1.02	.93	1.24	1.01	1.63	1.24	.58	.26
1951-52	.47	.47	.30	.76	.58	2.27	1.03	.98	.96	.46	.15	.05
1952-53	.03	.09	.07	.26	1.62	.41	.57	.73	.50	.20	.08	.02
1953-54	.02	.02	.02	.004	.03	.05	.17	.28	1.66	.14	.28	.13
1954-55	.61	.24	.18	.16	1.13	.54	.39	.42	.14	.30	.62	.02
1955-56	.01	.01	.006	.004	.04	.05	.03	.10	.01	.01	.01	.04
1956-57	.01	.01	.007	.12	.52	.06	.06	.33	.88	1.61	.14	.05
1957-58	.05	.07	.10	.09	.35	.22	.32	.16	.45	.29	.09	.18
1958-59	.05	.11	.06	.04	.64	3.22	.70	2.00	.70	.37	.09	.07
1959-60	.05	.21	.18	1.39	.34	1.92	2.23	3.37	.94	.58	.21	.21

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950	June 18, 1950	15.77	4,940	1.0	63.2	0.536	7.26	62.6	7.19
1951	June 1, 1951	11.52	1,390	.4	69.0	.585	7.94	79.5	9.16
1952	Mar. 10, 1952	13.87	2,770	2.5	73.4	.622	8.48	64.4	7.43
1953	Feb. 20, 1953	15.09	4,030	1.6	39.8	.337	4.58	38.6	4.45
1954	June 10, 1954	13.47	2,450	.4	24.2	.205	2.80	32.7	3.77
1955	Feb. 19, 1955	13.45	1,500	.9	36.1	.306	4.15	27.4	3.15
1956	May 13, 1956	14.35	150	0	2.84	.024	.32	2.83	.32
1957	July 3, 1957	15.38	4,420	0	33.0	.280	3.80	34.6	3.99
1958	Feb. 24, 1958	10.56	800	2.6	20.5	.174	2.37	20.5	2.37
1959	Mar. 20, 1959	14.59	3,420	2.4	70.0	.593	8.05	71.8	8.27
1960	Mar. 30, 1960	14.57	3,420	3.4	101	.856	11.63	.....	.....

†Maximum gage height, 5.45 ft. Feb. 27, 1956 (backwater from ice).

Peak Discharge (base, 700 cfs)

1949-50: Feb. 9 (12 p.m.) 1,520 cfs (11.92 ft.); Feb. 10 (12 p.m.) 1,690 cfs (12.30 ft.); Feb. 28 about 830 cfs; Mar. 5 (12 p.m.) 4,030 cfs (15.10 ft.); Mar. 22 about 1,000 cfs; May 9 (6 a.m.) 805

Timber Creek near Marshalltown, Iowa—Continued

Peak Discharge—Continued

- cfs (9.10 ft.); June 18 (1:30 p.m.) 4,940 cfs (15.77 ft.); June 24 (8 a.m.) 734 cfs (8.74 ft.).
- 1950-51: Feb. 19 about 1,000 cfs; Mar. 28 (8 p.m.) 1,160 cfs (10.70 ft.); June 1 (12 p.m.) 1,390 cfs (11.52 ft.); July 3 (10:00 a.m.) 751 cfs (8.79 ft.); July 9 (7 a.m.) 990 cfs (9.99 ft.); Aug. 25 (6 a.m.) 845 cfs (9.32 ft.).
- 1951-52: Mar. 10 (11 p.m.) 2,770 cfs (13.87 ft.); Mar. 13 (12 M.) 925 cfs (9.73 ft.); May 23 (8 a.m.) 905 cfs (9.59 ft.).
- 1952-53: Jan. 15 about 900 cfs; Feb. 11 about 1,000 cfs; Feb. 20 (6 p.m.) 4,030 cfs (15.09 ft.).
- 1953-54: June 1 (6 a.m.) 717 cfs (8.55 ft.); June 10 (2 p.m.) 2,450 cfs (13.47 ft.); June 16 (3:30 p.m.) 865 cfs (9.45 ft.).
- 1954-55: Feb. 19 about 1,500 cfs; July 10 (6 p.m.) 845 cfs (9.30 ft.).
- 1955-56: No peak above base.
- 1956-57: Jan. 21 about 850 cfs; Feb. 9 about 900 cfs; June 18 (5 a.m.) 3,030 cfs (14.23 ft.); July 3 (7:30 p.m.) 4,420 cfs (15.38 ft.).
- 1957-58: Feb. 24 about 800 cfs.
- 1958-59: Feb. 28 (11:30 p.m.) 1,190 cfs (10.83 ft.); Mar. 14 (3 a.m.) 1,040 cfs (10.22 ft.); Mar. 20 (2 a.m.) 3,420 cfs (14.59 ft.); Mar. 26 (time unknown) about 1,200 cfs; May 19 (10 a.m.) 3,120 cfs (14.32 ft.); May 31 (2 p.m.) 865 cfs (9.42 ft.).
- 1959-60: Jan. 13 (5:30 a.m.) 2,850 cfs (14.0 ft.); Mar. 30 (11 a.m.) 3,420 cfs (14.57 ft.); Apr. 17 (1:30 p.m.) 1,120 cfs (10.47 ft.); May 6 (11:30 p.m.) 3,220 cfs (14.40 ft.); May 26 (3:30 a.m.) 1,740 cfs (12.36 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage discharge relation affected by ice Nov. 17 to Dec. 31, 1949; Jan. 1 to Feb. 8, Feb. 13 to Mar. 4, Mar. 8 to Apr. 1, Nov. 25 to Dec. 31, 1950; Jan. 1 to Mar. 27, Nov. 1-10, 17-26, Dec. 10-31, 1951; Jan. 1 to Feb. 25, Mar. 1-8, Nov. 26 to Dec. 31, 1952; Jan. 1 to Mar. 9, Nov. 26 to Dec. 31, 1953; Jan. 1 to Mar. 12, Dec. 1-31, 1954; Jan. 1 to Mar. 6, Mar. 21-27, Nov. 16 to Dec. 31, 1955; Jan. 1 to Mar. 8, Mar. 20-24, 29, Nov. 21 to Dec. 7, Dec. 9-31, 1956; Jan. 1 to Mar. 8, Mar. 15, 16, 25, 26, Nov. 10, 18-25, Nov. 29 to Dec. 1, Dec. 5-31, 1957; Jan. 1 to Mar. 3, Mar. 9, 10, 17, 18, Nov. 26-30, Dec. 6-23, 29, 30, 1958; Jan. 1 to Feb. 27, Mar. 5-10, 15-19, 21, 22, Nov. 7, 13-20, Nov. 26 to Dec. 9, Dec. 15-20, 23, 24, 30, 31, 1959; Jan. 1-12, Jan. 17 to Feb. 9, Feb. 11 to Mar. 29, 1960. Stage-discharge relation indefinite Sept. 20 to Nov. 24, 1950; Sept. 6 to Nov. 25, 1952; Sept. 3 to Nov. 25, 1953; Mar. 13 to Apr. 5, July 26 to Oct. 9, Oct. 12 to Nov. 30, 1954. No gage-height record Oct. 1 to Nov. 15, 1949.

Richland Creek near Haven, Iowa

LOCATION.—Lat. 41°53'55", long. 92°28'35", in SE¼ NE¼ sec. 21, T. 82 N., R. 14 W., on right bank 5 ft. upstream from highway bridge, 0.5 mile north of Haven, and 3.0 miles upstream from mouth.

DRAINAGE AREA.—56.1 square miles.

RECORDS AVAILABLE.—October 1949 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 798.69 ft. above mean sea level, datum of 1929.

AVERAGE DISCHARGE.—11 years, 24.7 cfs.

EXTREMES.—1949-60: Maximum discharge, 3,650 cfs Mar. 30, 1960, (gage height, 12.39 ft.); minimum daily, 0.1 cfs on several days in 1949, 1953-54, 1956.

Flood in June 1918 reached a stage of 14.3 ft. (present gage datum); discharge not determined.

REMARKS.—Bankfull stage is about gage height, 9 ft. Records for October 1949 to September 1955, not previously published in Water Supply Bulletin No. 3 or No. 6, are given herein.

Daily Discharge, in Cubic Feet per Second, for Water Year 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1949-50												
1.....	0.1	0.3	0.2	0.3	0.4	80	5.0	5.0	9.2	17	2.1	0.8
2.....	.1	.3	.2	.3	.4	60	4.2	3.8	8.6	14	1.8	.8
3.....	.1	.3	.2	.3	.4	50	4.2	3.8	14	12	1.7	.7
4.....	.1	.3	.2	.3	.4	100	5.0	17	7.5	11	*1.5	.7
5.....	.1	.3	.2	.3	.4	1,000	3.8	10	5.4	8.6	1.3	.7
6.....	1.8	.3	.2	.3	.4	1,370	2.8	5.9	*4.2	7.7	1.0	.7
7.....	1.8	.3	.2	.3	.4	721	2.5	3.1	5.9	6.2	1.0	.7
8.....	1.8	.3	.1	.3	60	60	3.1	21	4.2	5.3	1.0	.6
9.....	1.8	.2	.1	.3	200	25	7.5	248	3.1	4.2	.9	.6
10.....	1.8	.3	.1	.3	413	15	36	87	2.0	4.7	.9	.6
11.....	.2	0.9	1.0	.3	348	14	19	56	.8	*5.6	.9	.6
12.....	.2	2.5	9.0	.3	40	13	10	42	1.2	4.2	.8	.6
13.....	.2	4.5	1.5	25	20	13	8.0	28	12	4.2	.8	.6
14.....	.2	1.5	.3	30	15	15	7.5	16	16	4.2	.9	.6
15.....	.2	.5	.2	7.0	9.8	25	7.0	12	117	4.2	1.0	.6
16.....	3.7	.3	1.0	4.0	8.2	20	6.4	9.8	14	4.2	*1.3	.8
17.....	3.7	.3	.8	2.0	7.4	16	6.4	7.5	5.9	4.2	.9	.8
18.....	3.7	.2	.3	1.0	6.6	13	*5.9	5.9	*1,100	4.2	.8	.7
19.....	3.7	.3	.6	*.6	6.0	11	4.6	4.6	251	4.2	.8	.6
20.....	3.7	.2	.7	.5	5.6	10	3.4	3.4	79	4.2	.7	.6
21.....	2.8	.2	.7	.4	5.2	10	3.1	2.8	54	4.2	.8	.5
22.....	2.8	.2	.7	.4	4.9	50	2.8	2.5	42	4.2	.8	.4
23.....	2.8	.2	.7	.4	4.6	30	2.5	2.3	36	3.8	.8	.4
24.....	2.8	.2	.7	.4	4.4	15	6.4	3.3	203	3.8	.7	.4
25.....	2.8	.2	.7	.4	4.2	10	13	*44	66	3.8	.8	.4
26.....	.4	.2	.7	.4	4.1	6.0	8.0	20	39	3.8	.9	.4
27.....	.4	.2	.6	.4	4.0	4.5	4.6	17	30	3.8	.9	.3
28.....	.4	.6	.5	.4	15	3.3	4.2	19	26	3.8	.9	.4
29.....	.4	.3	.4	.4	.....	3.1	5.0	16	24	3.3	.9	*.5
30.....	.4	.2	.3	.4	.....	*3.1	5.9	14	23	2.7	.9	.4
31.....	.4	.....	.3	.4	.....	5.0	.....	12	.....	2.4	.9	.....

Richland Creek near Haven, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1951 and 1952

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-51												
1	0.5	0.2	0.3	0.3	0.4	19	70	40	73	15	12	8.6
2	.4	*.2	.7	.2	.4	22	66	48	123	15	16	9.2
3	.4	.2	4.0	.2	.4	26	62	40	210	52	18	8.6
4	.4	.2	1.5	.2	.4	29	80	36	*84	24	16	8.0
5	.4	.3	*.6	.2	.4	25	70	33	67	16	15	7.5
6	.5	.3	.4	.2	.4	15	81	32	58	15	15	8.0
7	.4	.3	.3	.2	.4	11	129	29	68	12	14	5.9
8	.4	.2	.3	.2	.4	9.7	70	*28	120	229	14	6.4
9	.4	.3	.3	.2	.4	8.8	54	28	64	463	14	24
10	.4	.3	.3	.2	.4	8.0	48	104	50	101	13	18
11	.4	.4	.4	.2	25	7.8	48	80	44	129	11	7.5
12	.4	.4	.4	.2	100	7.2	83	54	39	56	9.8	5.4
13	.4	.4	.4	.2	*2.7	7.0	84	44	34	54	14	6.4
14	.4	.4	.4	.2	2.4	6.8	64	37	29	47	22	4.6
15	.3	.3	.4	.2	2.2	6.6	51	32	34	44	52	3.8
16	.3	.4	.4	.2	2.1	6.5	45	29	192	38	23	3.4
17	.3	*.4	.3	.2	100	6.4	42	35	46	*34	16	3.8
18	.3	.4	.3	*15	495	6.4	39	127	36	56	13	3.1
19	.3	.4	.3	12	384	6.4	34	58	38	33	11	3.1
20	.3	.4	*.3	11	268	6.4	32	127	43	39	37	3.1
21	.2	.3	.3	9.4	110	6.4	37	49	70	60	35	2.5
22	.2	.3	.3	4.5	94	6.4	39	43	53	36	14	4.2
23	.2	.3	.3	2.0	90	6.4	32	37	37	33	*8.6	4.2
24	.2	.3	.2	1.0	120	6.4	34	32	37	32	7.0	3.8
25	.2	.3	.2	.6	200	6.6	79	33	27	28	79	4.6
26	.2	.3	.2	.5	120	7.0	65	225	26	20	35	4.6
27	.2	.3	.2	.5	64	50	58	75	26	20	20	*4.2
28	.2	.3	.2	.5	35	326	54	51	21	18	29	4.2
29	.3	.3	.2	.4	.....	288	49	44	16	15	14	5.9
30	.2	.3	.3	.4	.....	132	45	37	15	14	13	8.6
31	.2	.....	.3	.4	.....	86	.....	80	.....	12	9.8	.....
1951-52												
1	9.2	14	17	6.4	90	9.0	77	40	41	37	5.9	4.2
2	8.6	11	18	6.2	80	8.0	68	41	40	49	4.6	4.2
3	8.6	12	21	6.0	70	7.0	62	42	39	112	5.4	3.8
4	9.8	13	*16	5.8	80	8.4	60	39	40	38	5.4	*3.8
5	12	13	15	5.4	56	10	57	35	39	32	5.0	2.0
6	16	13	16	5.2	40	12	53	33	34	27	4.6	2.0
7	28	13	14	5.2	35	13	51	40	32	25	6.4	2.0
8	20	14	13	5.0	*35	13	50	38	46	26	5.4	2.0
9	17	15	14	5.0	33	14	*50	40	72	24	5.9	1.8
10	17	17	12	5.0	31	480	50	40	35	20	5.4	2.5
11	17	18	10	5.0	28	412	48	37	31	18	6.4	2.5
12	16	62	7.4	5.0	25	201	50	34	28	17	6.4	2.5
13	17	87	6.6	5.0	22	*255	61	32	38	15	6.4	2.3
14	17	63	6.0	5.0	21	110	66	31	287	28	6.4	34
15	18	43	6.4	5.2	20	80	63	*28	60	22	5.0	2.3
16	20	38	6.6	5.4	16	70	58	34	47	19	5.0	2.0
17	35	34	7.0	5.6	15	68	54	33	40	18	3.4	2.0
18	32	30	7.2	5.8	13	105	53	28	*34	19	3.4	2.0
19	31	25	7.6	200	12	160	50	28	31	18	3.8	1.4
20	25	*23	7.8	140	11	90	48	26	107	17	3.4	1.4
21	54	23	7.8	88	10	78	46	27	80	16	3.4	1.4
22	63	22	7.8	60	11	90	59	108	56	14	3.4	1.4
23	38	17	7.7	45	11	80	62	279	48	13	3.4	1.4
24	34	14	7.6	39	12	73	62	86	117	12	2.0	1.4
25	31	19	7.6	*34	13	72	56	70	50	11	2.0	*1.4
26	26	20	7.4	30	13	74	52	62	41	10	1.6	1.4
27	25	18	7.2	27	12	72	49	59	98	9.8	1.8	1.6
28	24	19	7.0	25	11	76	47	56	51	9.2	1.6	1.4
29	22	18	7.0	25	10	76	44	51	42	*8.6	1.8	1.4
30	21	17	6.8	26	.....	71	42	48	37	7.5	2.3	1.4
31	18	.....	6.6	30	.....	85	.....	46	.....	5.9	4.2	.....

Richland Creek near Haven, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1953 and 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1952-53												
1	*1.1	1.4	2.7	1.9	3.6	20	*70	89	16	28	1.4	0.8
2	1.1	1.4	2.8	1.9	3.5	18	60	69	14	*17	1.4	1.2
3	1.1	1.4	2.9	1.8	*3.4	16	56	62	14	12	1.4	1.7
4	1.1	1.4	3.0	1.8	3.3	15	47	58	14	12	1.4	4.6
5	1.2	1.4	3.1	1.8	80	14	40	54	14	9.8	1.4	2.8
6	1.3	1.4	3.2	1.9	229	12	40	56	14	9.8	1.2	1.2
7	1.3	1.4	3.3	1.9	207	11	37	54	20	8.6	1.4	1.2
8	1.3	1.4	3.5	*1.9	196	13	34	51	105	7.5	1.4	.8
9	1.3	1.4	3.8	1.9	143	17	35	46	21	7.0	1.2	2.0
10	1.3	1.4	4.3	2.0	185	40	39	41	20	5.9	1.2	1.6
11	1.4	1.4	4.5	2.0	228	25	34	51	160	5.4	1.0	1.0
12	1.4	1.4	4.0	2.1	30	*15	31	43	41	5.9	1.0	1.0
13	1.4	1.4	3.5	2.1	22	15	28	32	35	5.4	1.0	.8
14	1.4	1.4	3.1	2.2	25	50	27	28	29	4.6	.7	.7
15	1.4	1.4	2.9	150	18	44	32	27	24	5.0	.7	*.7
16	1.4	1.8	2.7	100	13	26	29	26	21	5.4	.8	.7
17	1.4	19	2.7	58	11	25	26	28	16	5.4	.8	.6
18	1.4	22	2.6	35	10	22	24	28	15	4.6	.7	.5
19	1.4	11	3.0	20	50	19	24	25	14	3.1	.7	.5
20	1.4	6.8	6.0	14	1,390	*17	24	24	12	2.8	.7	.4
21	1.4	6.0	5.4	10	172	22	22	49	9.8	2.5	.7	.4
22	*1.4	5.2	4.8	8.2	45	71	21	132	10	2.0	.6	.4
23	1.4	4.9	4.1	7.0	37	129	*18	48	10	1.8	.7	.4
24	1.4	4.8	3.6	6.2	33	27	32	84	9.2	2.0	.7	.3
25	1.4	5.8	3.0	5.6	30	19	89	48	28	2.0	.4	.4
26	1.5	8.8	2.7	5.2	26	17	61	41	14	1.1	.3	.4
27	1.5	5.0	2.4	4.8	24	14	52	*32	267	2.5	.4	.4
28	1.5	3.5	2.2	4.5	22	12	50	29	77	1.6	*.7	.4
29	1.5	2.5	2.1	4.2	.....	14	49	27	48	1.4	.8	.2
30	1.5	2.5	2.1	4.0	.....	48	74	24	39	1.4	.8	.1
31	1.5	.....	2.0	3.8	.....	31	.....	18	.....	1.6	1.1	.....
1953-54												
1	.1	.7	.8	.1	.1	.6	1.1	51	136	5.0	.4	10
2	.1	.5	1.1	.1	.2	.6	1.1	88	57	4.6	.3	8.6
3	.2	.5	1.2	.1	.2	.6	.7	52	*136	5.0	.2	7.0
4	.3	.5	1.4	.1	.2	.5	.5	31	64	5.0	.6	6.4
5	.3	.5	1.2	.1	.2	.5	3.2	24	48	4.6	2.0	4.6
6	.3	.5	1.4	.1	.2	.5	120	18	41	4.2	2.8	3.8
7	.4	.5	1.2	.1	.2	.6	9.8	14	35	3.1	.6	18
8	.5	.5	1.1	.1	.2	.6	4.2	13	29	2.8	.8	6.4
9	.4	.5	1.1	.1	.2	.7	2.3	11	26	2.5	.8	5.9
10	.5	.5	1.0	.1	.2	.7	1.8	10	24	2.3	.5	7.5
11	.6	.5	1.0	.1	.2	.7	1.4	8.6	21	1.8	.3	4.6
12	.4	.5	.8	.1	.3	.6	1.0	7.5	18	1.6	.3	3.8
13	.5	.6	.7	*.1	.3	.6	.7	7.5	15	1.2	.2	3.4
14	.4	.6	.6	.1	.3	.6	.8	7.0	15	*1.0	.4	3.8
15	*.4	.6	*.5	.1	.3	.6	15	5.9	13	.8	.5	3.4
16	.5	.5	.4	.1	.4	1.0	18	5.4	21	.7	.3	3.4
17	.4	*.5	.4	.1	.4	2.0	5.0	5.0	14	.7	*1.0	4.6
18	.4	.5	.3	.1	.4	2.5	3.1	4.2	12	.8	1.2	3.8
19	.4	.6	.3	.1	.4	4.2	2.0	3.8	10	1.0	1.1	3.1
20	.5	1.1	.3	.1	.5	2.5	6.0	3.1	10	1.2	.7	2.8
21	.4	1.6	.2	.1	.5	1.1	97	3.1	26	1.2	.2	2.5
22	.5	.8	.2	.1	.5	1.0	*15	5.1	43	1.4	.7	*2.3
23	.5	.7	.2	.1	.6	*1.0	8.6	3.8	17	1.6	.8	2.5
24	.5	.7	.2	.1	*1.0	1.4	7.5	2.5	13	1.1	14	2.8
25	.5	.7	.2	.1	1.0	5.4	10	2.3	10	.8	24	3.1
26	.6	.7	.2	.1	1.1	2.0	16	2.5	9.2	.7	456	3.1
27	.6	.7	.1	.1	1.0	.8	32	*7.0	8.6	.5	389	3.1
28	.7	.7	.1	.1	.7	.8	11	13	7.5	.5	78	5.4
29	.6	.7	.1	.1	.....	.5	8.6	7.5	7.0	.5	33	229
30	.7	.6	.1	.1	.....	.5	57	3.8	5.9	.4	20	90
31	.6	.....	.1	.1	.....	.7	.....	45	.....	.4	14	.....

Richland Creek near Haven, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1955 and 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1954-55												
1	96	26	9.2	8.6	5.2	42	13	26	12	4.2	1.0	0.5
2	116	22	9.4	8.3	*5.2	65	12	25	12	3.4	1.0	.5
3	56	24	8.8	8.0	5.2	39	10	21	12	2.5	.8	.5
4	42	24	8.0	10	5.2	*34	*13	21	18	2.5	.8	.6
5	86	20	7.2	13	5.2	22	14	18	12	5.0	1.1	.4
6	88	21	6.0	13	5.2	15	13	16	10	5.4	1.8	.4
7	59	21	6.6	13	5.2	13	12	15	*10	3.8	1.2	.3
8	51	20	6.4	11	5.2	22	12	14	10	2.8	1.0	.3
9	47	19	5.8	9.6	5.4	22	11	31	9.2	4.2	.8	.3
10	216	18	5.6	8.8	5.4	17	10	55	9.2	134	*.8	.3
11	131	18	5.4	7.5	5.4	16	12	33	10	18	.8	.4
12	70	18	5.3	*6.2	5.4	14	14	29	10	7.0	.7	.8
13	58	18	5.2	5.4	5.4	13	28	29	10	4.6	.7	1.1
14	59	16	5.2	6.0	5.6	20	32	26	8.6	3.4	.7	.8
15	51	15	*5.0	6.2	5.8	21	22	22	8.0	3.4	.7	.6
16	46	14	5.0	6.2	6.2	14	18	22	7.5	3.8	.7	.4
17	42	14	5.0	6.2	6.6	13	14	20	7.0	2.8	.7	.4
18	38	*13	4.2	6.0	20	13	14	19	7.0	2.8	.5	.4
19	37	13	4.7	5.8	746	14	71	18	31	2.5	.5	.7
20	35	13	5.0	5.7	490	14	38	*17	9.8	2.3	.5	*1.1
21	34	13	5.2	5.6	70	27	24	17	6.4	*2.3	.5	1.4
22	31	11	5.4	5.5	50	14	19	15	5.4	2.3	.6	1.0
23	27	12	5.4	5.4	45	16	33	16	5.4	2.5	.5	.7
24	25	11	6.2	5.4	45	15	128	14	5.0	2.0	.5	.5
25	24	10	7.4	5.2	45	13	60	15	5.0	2.0	.7	.4
26	32	10	9.8	5.2	50	11	48	18	4.6	1.8	.7	.5
27	*37	13	12	5.0	42	13	*41	19	4.2	1.6	.8	3.4
28	27	13	9.2	5.0	38	15	38	18	*3.4	1.2	.6	1.8
29	26	8.6	8.8	5.0	.....	16	31	25	3.8	1.1	.6	2.3
30	26	9.0	8.6	5.0	.....	15	29	14	5.0	1.0	.7	1.2
31	26	.....	8.6	5.0	.....	14	.....	14	.....	1.0	.6	.....
1955-56												
1	.3	*.6	.4	.3	.2	5.0	.7	2.0	.7	.1	*205	1.4
2	.2	.7	.4	.3	.2	4.5	.7	1.8	.5	.1	20	.4
3	.2	.7	.4	.3	.2	3.5	1.6	1.8	.4	.1	5.9	.2
4	.2	.7	.5	.3	.2	2.5	.8	1.8	.3	.2	2.5	54
5	.3	.8	.5	*.3	.2	1.0	.5	1.8	*.3	.2	1.6	9.2
6	.7	.7	.5	.3	.2	.6	.5	1.6	.2	.1	1.1	1.6
7	1.7	.8	.5	.3	.2	.6	.5	1.1	.4	.1	*.8	.7
8	.7	.7	.5	.3	.2	.6	.5	*.8	.4	.2	1.0	.4
9	.4	.7	.4	.3	.2	.5	.4	.7	.3	.2	.8	.2
10	.3	.8	.4	.3	.2	.5	.5	.8	.2	.1	31	.2
11	.2	1.0	.3	.3	.3	.5	.4	1.1	.2	.1	44	.2
12	.2	1.1	.2	.3	.5	.4	.4	1.7	.2	.1	4.2	.2
13	.3	1.0	.2	.3	.6	.4	.4	13	.2	.1	1.6	.2
14	.3	1.0	.2	.3	*.7	.4	.4	1.6	.2	.1	1.1	.2
15	.3	1.0	.2	.3	.7	.4	.4	.7	.2	.1	.6	.2
16	.3	.8	.2	.3	.7	.4	*.4	.4	.2	.2	.7	.2
17	.3	.6	.2	.2	.6	.5	.5	.3	.2	*.1	.7	.2
18	.3	.6	.2	.2	.5	.5	.4	.2	.2	16	1.4	.2
19	.3	.6	.2	.2	.4	.6	.5	.2	.2	73	1.6	.2
20	.3	.7	.2	.2	.3	.6	.5	.2	.2	1.6	1.1	.1
21	.3	.7	.2	.2	.3	.5	.6	.3	.2	.5	.6	.1
22	.3	*.7	.3	.2	.3	.5	.3	.2	.4	.5	.1	.1
23	.3	.6	.3	.2	.3	.5	.5	.4	.2	.2	.4	.1
24	.3	.6	.3	.2	.4	.5	.4	.4	.2	.2	.3	.1
25	.4	.5	.3	.2	.6	.7	.4	.3	.2	.1	.5	.1
26	.4	.5	.3	.2	2.5	1.1	.5	.3	*.2	.1	.4	.1
27	.4	.5	.3	.2	10	*1.2	.7	.3	.2	.1	.3	.1
28	.3	.4	.3	.2	9.0	1.2	2.5	.4	.2	8.7	.3	.1
29	.4	.4	.3	.2	7.0	1.0	4.6	4.4	*.2	1.6	*.3	.1
30	.5	.4	.3	.2	.....	.7	3.8	21.	.1	.3	9.1	.2
31	.6	.....	.3	.2	.....	.6	.....	1.6	.....	*147	*33	.....

Richland Creek near Haven, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1.....	*0.2	0.5	0.4	0.2	0.6	1.2	*1.8	0.7	42	*3.8	93	6.4
2.....	.1	.5	.4	.2	.6	1.0	2.5	.7	26	3.8	16	5.4
3.....	.1	.5	.4	.2	.6	.7	2.0	.5	*18	160	10	*4.6
4.....	.2	.5	.4	*.2	.6	.7	2.0	.4	14	296	8.0	3.8
5.....	.2	.5	.4	.2	.6	.8	3.1	.4	10	55	*6.4	3.4
6.....	.1	.6	.4	.2	.6	.7	2.3	.4	8.6	26	5.9	3.4
7.....	.1	.5	.4	.2	.6	.5	1.8	.4	11	17	5.4	3.8
8.....	.1	.4	.3	.2	.6	.5	1.6	.3	12	14	4.6	3.1
9.....	.1	.4	.2	.2	100	.4	1.1	12	11	9.8	4.2	2.8
10.....	.1	.4	.2	.2	137	.5	1.0	174	9.2	8.6	3.8	2.5
11.....	.2	.5	.2	.2	15	1.6	1.1	59	9.2	7.5	3.8	*4.2
12.....	.2	.4	.2	.2	6.0	2.3	.8	22	7.5	7.0	3.4	5.4
13.....	.2	.4	.2	.2	4.5	1.6	.8	99	7.5	5.9	2.8	3.4
14.....	.2	.4	.2	.2	4.0	2.3	.8	75	6.4	5.9	23	4.2
15.....	.5	.7	.2	.2	3.0	1.2	.8	33	4.6	5.0	5.4	9.2
16.....	.4	.5	.2	.2	2.1	1.2	1.0	21	34	4.6	3.4	3.4
17.....	.3	.5	.2	.2	2.0	2.0	1.0	18	37	4.2	2.8	2.3
18.....	*.3	.5	.2	.2	2.0	4.2	1.1	12	201	3.8	2.8	2.0
19.....	.3	.5	.2	.2	1.1	5.9	1.2	10	32	3.1	2.8	2.0
20.....	.2	.5	.2	.2	1.0	4.6	.8	28	20	2.8	2.3	2.0
21.....	.3	.5	.2	100	1.1	2.8	.7	41	14	14	2.0	3.1
22.....	.2	.4	.2	50	.8	2.0	.8	*11	10	42	1.8	2.5
23.....	.2	.4	.2	*10	.8	1.6	1.0	8.0	8.6	*5.9	1.8	1.8
24.....	.2	.4	.2	4.5	1.4	1.4	1.0	5.9	7.5	3.1	4.9	1.8
25.....	.3	.5	.2	2.0	3.4	1.1	.8	5.9	7.5	2.5	2.3	1.8
26.....	.3	.5	.2	.8	2.8	1.1	*1.4	5.4	10	2.3	2.0	1.8
27.....	.3	.4	.2	.7	*1.2	*1.8	3.8	4.2	7.5	2.5	4.2	*1.8
28.....	.3	.4	.2	.7	1.1	3.1	2.3	3.4	8.0	245	196	1.8
29.....	.3	.4	.2	.7	.....	3.1	1.1	6.0	5.9	49	35	1.8
30.....	.5	.4	.2	*.7	.....	2.3	*1.0	168	4.6	20	15	1.8
31.....	*.5	.....	.2	.0	.....	1.6	.....	*226	.....	21	8.0	.....
1957-58												
1.....	2.0	*2.4	7.0	1.7	2.3	14	8.6	6.4	92	*3.4	8.0	3.1
2.....	2.3	9.2	*6.4	1.8	2.1	13	14	8.0	9.8	23	8.0	3.1
3.....	2.5	5.0	4.2	*1.4	*2.0	*11	*9.8	14	6.4	14	8.0	221
4.....	3.1	2.8	2.8	1.4	1.9	9.8	14	10	*5.9	196	*7.5	*379
5.....	3.1	2.5	4.2	1.6	1.8	9.8	25	9.2	4.2	32	53	*543
6.....	3.1	2.5	8.6	1.7	1.7	9.8	43	9.2	3.4	20	13	443
7.....	3.4	2.5	4.6	1.9	1.6	9.8	40	8.0	4.2	14	8.0	64
8.....	3.8	2.4	3.2	2.1	1.5	8.0	33	8.6	20	*13	7.5	39
9.....	3.4	2.2	2.2	2.2	1.4	8.6	28	7.0	38	11	7.0	31
10.....	3.1	2.5	2.5	2.4	1.3	9.8	26	5.9	9.2	9.8	6.4	25
11.....	2.8	3.1	1.3	2.7	1.2	9.8	21	4.6	4.6	20	5.9	21
12.....	2.5	3.8	1.6	2.8	1.1	12	19	3.4	5.9	36	6.4	18
13.....	2.5	5.4	2.0	3.4	1.0	16	17	2.8	276	13	5.9	18
14.....	2.5	6.4	2.3	6.6	1.0	15	15	2.8	33	269	5.9	16
15.....	3.4	5.9	5.4	7.4	1.0	12	14	2.8	19	35	65	21
16.....	*3.8	18	7.5	*8.6	1.0	7.5	13	3.1	13	18	14	16
17.....	2.8	4.6	6.4	5.8	1.0	8.6	*11	4.6	10	14	7.5	14
18.....	3.1	4.8	9.2	5.2	1.0	9.2	10	3.8	8.6	13	7.0	13
19.....	3.1	4.5	11	4.8	1.0	8.0	10	3.8	7.5	15	5.9	11
20.....	3.1	7.2	7.0	4.5	1.0	*8.0	9.8	3.1	7.0	16	6.1	11
21.....	3.4	*6.4	4.5	4.2	1.0	7.0	9.2	3.1	5.4	14	*20	11
22.....	3.8	7.4	5.2	3.9	1.0	7.0	8.6	*3.8	5.0	*12	7.0	9.2
23.....	8.1	5.0	5.8	3.7	2.0	8.0	10	2.5	6.4	9.8	5.0	9.2
24.....	8.6	3.7	3.0	3.5	210	7.0	17	1.8	9.8	13	5.0	10
25.....	3.1	3.7	3.0	3.3	*85	7.0	9.2	1.8	7.0	153	4.2	9.2
26.....	2.0	3.7	4.5	3.1	24	7.5	8.6	1.8	5.0	17	4.2	8.0
27.....	1.6	7.0	5.0	2.9	25	7.5	9.2	2.3	4.6	13	4.2	8.0
28.....	1.6	8.4	3.8	2.8	20	7.5	9.8	1.8	4.2	10	*4.2	8.0
29.....	1.8	5.5	3.1	2.7	.....	7.5	7.5	1.1	4.2	8.6	3.8	8.0
30.....	1.8	2.1	2.0	2.6	.....	7.5	*6.4	1.0	3.8	13	3.8	8.0
31.....	*1.8	.....	1.4	2.4	.....	8.0	.....	46	.....	10	3.1	.....

Richland Creek near Haven, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	7.6	5.7	12	6.6	3.1	180	313	91	*80	150	9.3	5.2
2.....	*8.2	6.2	13	6.0	*2.8	109	92	78	73	69	10	6.2
3.....	8.2	6.2	14	5.4	2.7	*56	102	99	66	56	11	3.6
4.....	8.2	6.2	14	5.0	2.7	20	76	78	59	50	9.3	2.9
5.....	8.2	7.6	11	4.6	2.7	10	70	77	54	48	8.8	2.9
6.....	8.2	7.6	8.6	5.1	2.7	8.0	70	98	50	38	10	3.3
7.....	8.8	8.8	6.6	5.4	2.9	12	59	70	46	35	9.3	2.9
8.....	11	11	7.6	5.4	3.0	10	48	63	41	34	8.2	3.6
9.....	21	11	8.8	5.3	3.1	8.0	47	102	39	37	7.6	3.3
10.....	7.1	10	9.3	5.2	2.9	26	46	144	37	30	7.1	4.0
11.....	5.2	9.3	9.3	5.0	2.6	150	44	*126	*36	28	6.6	4.0
12.....	5.2	9.3	9.3	4.9	2.6	260	39	77	33	26	6.2	4.0
13.....	4.8	9.3	8.2	4.8	3.3	350	39	69	30	25	*5.2	4.0
14.....	4.8	11	7.6	4.7	4.5	400	39	59	28	22	6.4	4.0
15.....	4.8	11	7.6	4.6	6.0	110	35	58	26	21	18	4.0
16.....	4.8	11	7.6	4.6	7.0	50	34	54	24	22	11	4.4
17.....	4.8	216	7.6	4.6	5.4	39	34	50	23	22	9.3	5.7
18.....	4.8	*598	*8.2	4.5	4.1	35	46	57	22	26	6.6	6.6
19.....	4.8	53	8.8	4.5	3.0	156	38	83	21	19	5.7	7.1
20.....	4.4	40	7.6	4.4	3.1	730	52	148	20	17	5.2	7.1
21.....	5.2	32	7.1	4.1	3.5	*192	67	357	19	16	4.8	6.6
22.....	4.8	28	7.1	3.9	5.6	112	90	122	18	16	4.4	5.7
23.....	4.8	25	7.1	3.7	*250	222	70	124	17	16	4.8	5.7
24.....	5.2	*22	7.1	3.6	250	162	60	91	*16	*13	5.7	5.2
25.....	5.2	22	7.6	3.6	205	81	54	81	15	13	*4.0	8.2
26.....	5.7	15	8.2	3.5	*402	606	46	76	13	12	3.6	105
27.....	5.7	13	8.2	3.5	422	299	186	64	14	11	3.6	62
28.....	5.7	11	8.2	3.5	348	92	*800	63	13	12	3.3	8.8
29.....	5.2	9.2	*7.1	3.6	.....	67	154	83	15	14	3.3	*5.2
30.....	*5.2	10	5.2	3.7	.....	*83	*106	120	287	11	3.3	4.4
31.....	5.7	.....	5.8	3.4	.....	78	.....	132	.....	10	4.8	.....
1959-60												
1.....	4.0	14	19	25	34	25	*458	83	63	29	13	5.6
2.....	8.2	18	21	18	33	24	305	68	60	24	13	5.3
3.....	9.3	23	21	14	32	23	199	61	53	23	12	5.0
4.....	6.2	281	20	13	31	24	192	56	52	20	12	4.6
5.....	34	81	17	12	30	23	137	69	49	20	12	4.6
6.....	19	63	14	13	29	23	110	461	45	21	13	4.3
7.....	14	50	11	14	28	23	90	288	44	19	13	4.6
8.....	11	42	10	14	34	23	78	171	41	18	11	4.3
9.....	10	42	13	13	35	23	70	140	40	120	11	4.8
10.....	8.8	38	15	13	25	24	62	124	43	64	9.9	5.0
11.....	8.2	29	*17	13	30	25	58	112	41	41	9.6	5.0
12.....	7.6	28	17	1,000	34	25	54	99	44	*44	9.3	5.0
13.....	7.6	26	15	853	32	25	50	94	43	50	8.6	5.0
14.....	8.2	23	*16	200	31	25	47	87	39	36	7.9	4.8
15.....	7.6	20	17	210	30	25	47	77	36	33	7.9	*4.1
16.....	7.1	17	17	120	30	24	64	111	36	30	7.9	4.8
17.....	7.1	16	16	60	29	24	178	99	34	27	7.6	4.6
18.....	6.6	19	13	56	29	25	174	84	52	26	11	4.1
19.....	6.6	*25	15	60	28	25	108	92	60	24	12	5.6
20.....	6.6	26	16	62	28	25	77	97	*38	22	8.2	4.1
21.....	6.6	23	16	58	28	25	66	84	38	21	7.9	3.9
22.....	6.2	30	15	*46	28	25	63	77	36	20	7.3	7.6
23.....	7.6	40	15	45	27	25	57	70	33	20	*6.4	7.0
24.....	8.8	41	15	42	*26	25	59	*88	30	21	6.4	88
25.....	6.6	31	22	41	26	25	59	138	28	24	5.9	19
26.....	*7.1	24	47	40	25	28	*58	207	27	*22	5.9	10
27.....	7.1	20	77	38	25	60	54	109	27	18	5.6	*7.9
28.....	8.8	16	70	37	25	250	54	95	26	16	5.9	7.6
29.....	9.3	15	48	36	24	703	57	87	26	15	11	7.6
30.....	13	17	39	35	.....	2,130	120	77	27	14	7.0	7.9
31.....	15	.....	29	34	.....	469	.....	68	.....	13	6.2	.....

Richland Creek near Haven, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1949-50	1.46	0.56	0.76	2.52	42.5	122	6.93	24.0	73.5	5.60	1.01	0.58
1950-51	.32	.31	.48	1.99	79.2	37.5	58.1	56.4	59.3	56.8	20.0	6.51
1951-52	23.6	24.8	9.97	27.9	28.8	95.9	54.9	51.3	58.0	22.5	4.23	3.16
1952-53	1.36	4.35	3.29	15.1	116	27.0	40.2	45.9	37.7	5.97	.93	.91
1953-54	.45	.64	.60	.10	.42	1.17	15.3	15.0	29.7	1.90	33.7	15.3
1954-55	56.1	15.9	6.76	7.15	61.9	19.7	27.8	21.4	9.05	7.65	.76	.80
1955-56	.39	.70	.32	.25	1.30	1.05	.85	2.04	.25	8.13	12.0	2.38
1956-57	.24	.47	.25	5.64	10.5	1.80	1.42	33.9	20.2	34.0	15.6	3.24
1957-58	3.13	5.02	4.54	3.39	14.1	9.39	15.9	6.07	21.1	34.1	10.3	66.6
1958-59	6.56	41.2	8.56	4.54	69.9	152	98.5	96.6	41.2	29.6	8.84	10.2
1959-60	9.48	37.9	23.0	104	29.2	137	107	115	40.4	28.9	9.21	8.72

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1949-50	0.026	0.010	0.013	0.045	0.758	2.17	0.124	0.428	1.31	0.100	0.018	0.010
1950-51	.0057	.0055	.0086	.035	1.41	.668	1.04	1.01	1.06	1.01	.357	.116
1951-52	.421	.442	.178	.497	.513	1.71	.979	.914	1.03	.401	.075	.056
1952-53	.024	.078	.059	.269	2.07	.481	.717	.818	.672	.106	.017	.016
1953-54	.0080	.011	.011	.0018	.0075	.021	.273	.267	.529	.034	.601	.273
1954-55	1.00	.283	.120	.127	1.10	.351	.496	.381	.161	.136	.014	.014
1955-56	.0070	.012	.0057	.0045	.023	.019	.015	.036	.0045	.145	.214	.042
1956-57	.0043	.0084	.0045	.101	.187	.032	.025	.604	.360	.604	.278	.058
1957-58	.056	.089	.081	.060	.251	.167	.283	.108	.376	.608	.184	1.19
1958-59	.117	.734	.153	.081	1.25	2.71	1.76	1.72	.734	.528	.158	.182
1959-60	.169	.676	.410	1.85	5.20	2.44	1.91	2.05	.720	.515	.164	.155

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1949-50	0.03	0.01	0.02	0.05	0.79	2.50	0.14	0.49	1.46	0.12	0.02	0.01
1950-51	.007	.006	.01	.04	1.47	.77	1.16	1.16	1.18	1.17	.41	.13
1951-52	.48	.49	.20	.57	.55	1.97	1.09	1.05	1.15	.46	.09	.06
1952-53	.03	.09	.07	.31	2.15	.56	.80	.94	.75	.12	.02	.02
1953-54	.009	.01	.01	.002	.008	.02	.31	.31	.59	.04	.69	.30
1954-55	1.15	.32	.14	.15	1.15	.41	.55	.44	.18	.16	.02	.02
1955-56	.008	.01	.006	.005	.02	.02	.02	.04	.005	.17	.25	.05
1956-57	.005	.009	.005	.12	.20	.04	.03	.70	.40	.70	.32	.06
1957-58	.06	.10	.09	.07	.26	.19	.32	.12	.42	.70	.21	1.33
1958-59	.13	.82	.18	.09	1.30	3.12	1.96	1.98	.82	.61	.18	.20
1959-60	.19	.75	.47	2.14	.56	2.82	2.12	2.37	.80	.59	.19	.17

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches	
	Date	Gage height in feet	Discharge							
1950	June 18, 1950	10.92	2,560	0.1	23.3	0.415	5.64	23.1	5.60	
1951	July 8, 1951	7.68	935	.2	31.0	.553	7.51	35.8	8.66	
1952	Mar. 10, 1952	7.50	870	1.4	33.8	.602	8.16	29.7	7.18	
1953	Feb. 20, 1953	10.22	2,100	.1	24.2	.431	5.86	23.6	5.70	
1954	Aug. 26, 1954	8.32	1,170	.1	9.54	.170	2.30	16.0	3.88	
1955	Feb. 19, 1955	8.56	1,290	.3	19.3	.344	4.69	12.8	3.10	
1956	Aug. 1, 1956	4.88	364	.1	2.49	.044	.60	2.46	.60	
1957	May 31, 1957	5.87	509	.1	10.6	.189	2.59	11.6	2.82	
1958	Sept. 3, 1958	9.18	1,580	1.0	16.0	.285	3.87	19.6	4.75	
1959	Apr. 28, 1959	9.54	1,730	2.6	47.1	.840	11.39	48.3	11.67	
1960	Mar. 30, 1960	12.39	3,650	3.9	54.4	.970	13.17	.....	.....

Peak Discharge (base, 500 cfs)

1949-50: Feb. 11 (3 a.m.) 780 cfs (7.18 ft.); Mar. 5 (12 p.m.) 2,100 cfs

Richland Creek near Haven, Iowa—Continued

Peak Discharge—Continued

- (10.24 ft.); Mar. 6 (12 p.m.) 2,090 cfs (10:10 ft.); June 18 (2:30 p.m.) 2,560 cfs (10.92 ft.).
- 1950-51: Feb. 18 (5:30 a.m.) 655 cfs (6.70 ft.); July 8 (6:30 p.m.) 935 cfs (7.68 ft.).
- 1951-52: Mar. 10 (9:30 p.m.) 870 cfs (7:50 ft.); May 23 (6:30 a.m.) 509 cfs (5.90 ft.).
- 1952-53: Feb. 20 (11:30 a.m.) 2,100 cfs (10.22 ft.); June 11 (8 a.m.) 541 cfs (6.14 ft.); June 27 (4:30 a.m.) 935 cfs (7.67 ft.).
- 1953-54: Aug. 26 (1:30 a.m.) 1,170 cfs (8:32 ft.); Aug. 27 (5 a.m.) 705 cfs (6.94 ft.).
- 1954-55: Feb. 19 (10:30 a.m.) 1,290 cfs (8:56 ft.).
- 1955-56: No peak above base.
- 1956-57: May 31 (4:30 a.m.) 509 cfs (5.87 ft.).
- 1957-58: July 14, (7 a.m.) 1,530 cfs (9.10 ft.); Sept. 3 (7 p.m.) 1,580 cfs (9.18 ft.); Sept. 5 (6:30 a.m.) 935 cfs (7.68 ft.).
- 1958-59: Nov. 18 (6 a.m.) 1,250 cfs (8.50 ft.); Feb. 28 (3 a.m.) 582 cfs (6.35 ft.); Mar. 20 (7:30 a.m.) 1,480 cfs (8.98 ft.); Mar. 26 (2 p.m.) 1,010 cfs (7.93 ft.); Apr. 28 (5 a.m.) 1,730 cfs (9.54 ft.); May 21 (9 a.m.) 593 cfs (6.28 ft.); June 30 (8 p.m.) 604 cfs (6.40 ft.).
- 1959-60: Jan. 12 (5:30 p.m.) 2,220 cfs (10.37 ft.); Mar. 30 (5:30 a.m.) 3,650 cfs (12.39 ft.); May 6 (9 a.m.) 900 cfs (7.65 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Dec. 8-31, 1949; Jan. 1 to Feb. 9, Feb. 12 to Mar. 5, Mar. 8-28, Nov. 21, to Dec. 31, 1950; Jan. 1 to Feb. 17, Feb. 21 to Mar. 27, Nov. 1-9, 17-23, 28-30, Dec. 11-31, 1951; Jan. 1 to Mar. 10, Nov. 26 to Dec. 31, 1952; Jan. 1 to Feb. 5, Feb. 12-19, Feb. 22 to Mar. 11, Nov. 29, 30, Dec. 13-31, 1953; Jan. 1 to Feb. 22, Feb. 28 to Mar. 16, Nov. 30 to Dec. 31, 1954; Jan. 1 to Feb. 18, Feb. 18, Feb. 21-27, Mar. 23-28, Nov. 16 to Dec. 31, 1955; Jan. 1 to Feb. 14, Feb. 17, 18, 20, Feb. 25 to Mar. 14, Dec. 2-31, 1956; Jan. 1, 5-9, Jan. 13 to Feb. 9, Feb. 11-16, Nov. 8, 9, 18-20, 23-26, 28-30, Dec. 8-12, 18-31, 1957; Jan. 1, Jan. 6 to Feb. 2, Feb. 4-25, Nov. 26 to Dec. 9, Dec. 30, 31, 1958; Jan. 1 to Feb. 23, Mar. 5-9, Nov. 26 to Dec. 1, Dec. 19-25, 31, 1959; Jan. 1-12, Jan. 14 to Mar. 28, 1960. No gage-height record Oct. 1 to Nov. 15, 1949; Aug. 23 to Sept. 18, 1955; Mar. 10-18, June 5-10, 14-23, 1959; Apr. 6-15, 1960. Stage-discharge relation indefinite Aug. 1-8, 1951; Oct. 5 to Nov. 25, 1952.

Salt Creek near Elberon, Iowa

LOCATION.—Lat. 41°57'45", long. 92°18'55", in NW¼NW¼ sec. 36, T. 83 N., R. 13 W., near center of span on downstream side of bridge on U. S. Highway 30, 1.2 miles northwest of Irving, 2.5 miles south of Elberon, and 9.0 miles upstream from mouth.

DRAINAGE AREA.—201 square miles (revised in 1956).

RECORDS AVAILABLE.—October 1945 to September 1960.

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

AVERAGE DISCHARGE.—15 years, 110 cfs.

EXTREMES.—1945-60: Maximum discharge observed, 35,000 cfs June 13, 1947 (gage height, 17.6 ft.); from rating curve extended above 17,000 cfs by logarithmic plotting; minimum daily, 2.4 cfs Jan. 16-29, 1954.

Flood of June 16, 1944 reached a stage of 19.9 ft., from floodmark at downstream side of bridge (discharge 30,000 cfs, estimated).

REMARKS.—Bankfull stage is about gage height, 9.5 ft.

REVISIONS (water years).—WSP 1558: 1946.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	9.0	9.0	3.2	4.4	4.0	*56	19	26	34	5.9	1,420	105
2.....	9.0	*8.5	3.9	4.4	4.0	45	405	26	29	5.5	151	53
3.....	8.5	*8.0	5.2	*4.4	4.0	36	156	23	26	*5.5	97	36
4.....	8.5	8.0	6.6	4.4	3.6	30	51	20	24	5.9	68	109
5.....	9.8	9.0	6.8	4.4	3.4	25	23	50	*22	6.3	49	173
6.....	*42	8.5	6.6	4.4	3.4	20	17	88	19	5.9	36	150
7.....	23	8.0	6.4	4.4	3.4	17	14	49	23	11	*26	73
8.....	15	8.0	6.2	4.0	3.4	14	11	*36	21	25	22	49
9.....	12	8.5	6.2	4.0	3.3	12	13	57	17	9.8	19	40
10.....	11	9.8	6.2	4.0	3.3	16	12	84	15	5.5	75	35
11.....	9.4	9.4	6.2	4.0	3.3	14	11	121	13	5.5	64	30
12.....	9.4	9.0	6.3	4.0	3.3	13	10	78	13	5.9	46	26
13.....	9.0	8.5	6.3	4.0	3.2	11	9.8	779	12	5.1	768	23
14.....	9.0	8.5	6.3	4.0	3.2	10	9.4	184	11	4.3	106	21
15.....	9.0	9.0	5.8	4.0	6.4	9.4	8.5	122	9.8	4.3	56	20
16.....	9.0	7.8	5.0	4.0	15	8.6	8.5	94	10	54	42	18
17.....	9.0	6.3	4.5	3.6	9.2	8.0	*8.0	73	10	*13	34	16
18.....	9.0	5.3	4.4	3.0	6.2	7.1	7.6	55	9.8	54	34	16
19.....	9.0	6.7	4.4	2.5	5.3	6.7	7.2	44	9.4	258	30	16
20.....	8.5	7.7	4.1	2.5	5.3	*6.7	6.7	36	58	27	24	14
21.....	8.5	8.9	4.4	2.5	5.3	6.6	6.7	33	21	13	21	14
22.....	8.0	9.0	4.4	2.5	5.3	6.6	6.7	31	14	8.5	19	13
23.....	8.5	7.4	4.4	2.6	5.3	6.3	6.3	91	12	6.3	17	12
24.....	9.0	6.1	4.4	2.9	12	6.0	5.9	31	10	5.5	15	11
25.....	9.0	5.5	4.4	3.2	25	6.0	6.3	23	9.0	4.3	14	11
26.....	9.0	4.9	4.4	3.4	50	7.9	6.7	20	*15	3.5	13	11
27.....	8.5	4.4	4.4	*3.6	100	9.8	12	19	13	2.7	12	10
28.....	9.0	3.6	4.4	3.8	88	14	26	22	7.6	17	11	9.8
29.....	9.0	*3.1	4.4	3.9	73	12	71	79	6.7	6.7	12	9.8
30.....	9.4	*2.6	4.4	3.9	.....	*9.8	*54	225	6.3	2.7	*169	11
31.....	9.4	.....	4.4	4.0	.....	11	.....	*49	.....	*1,290	818	.....

Salt Creek near Elberon, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1....	10	*9.8	8.5	7.6	11	13	*14	18	355	56	120	40
2....	9.4	9.4	9.0	7.0	11	12	26	14	240	*52	43	32
3....	9.4	9.4	8.5	*6.7	11	11	23	12	192	54	27	*27
4....	8.5	9.0	8.5	6.4	13	11	29	11	158	65	38	24
5....	8.5	9.4	8.5	6.0	14	13	54	11	*134	48	25	22
6....	8.0	9.8	6.3	5.8	16	12	44	11	123	43	21	21
7....	7.2	9.8	5.6	5.6	18	9.4	36	11	129	40	19	21
8....	7.2	8.5	5.2	5.3	21	9.4	31	9.8	131	37	18	20
9....	6.7	8.5	5.2	5.1	25	9.4	26	14	142	33	15	18
10....	7.2	8.5	6.7	4.8	*500	9.4	25	226	134	31	14	18
11....	8.0	8.5	*7.0	4.5	280	12	23	250	126	30	14	25
12....	7.6	8.0	7.4	4.4	200	13	19	158	115	29	14	*36
13....	7.6	8.0	6.8	4.2	500	13	20	296	100	28	14	26
14....	64	9.4	6.2	4.0	160	12	19	238	92	29	41	20
15....	30	14	6.0	3.9	120	8.0	19	214	81	26	25	26
16....	*19	8.0	6.0	3.8	90	7.6	18	140	1,010	25	13	21
17....	14	7.6	6.0	3.8	70	16	17	117	660	24	13	17
18....	11	8.0	6.0	4.0	52	19	16	96	1,400	23	13	14
19....	9.8	7.6	6.0	4.3	39	31	17	83	384	21	13	14
20....	9.8	8.0	6.2	5.0	30	24	18	79	216	20	13	14
21....	9.4	7.6	6.4	5.0	24	23	15	398	164	19	12	17
22....	9.4	6.8	6.6	700	19	21	15	*148	134	36	12	18
23....	9.0	7.6	6.8	90	17	19	23	89	110	*39	26	13
24....	9.0	7.6	7.0	40	21	17	20	72	96	27	70	13
25....	9.4	8.5	7.2	17	36	16	*17	69	92	23	16	13
26....	9.4	7.6	7.2	13	26	19	21	70	89	21	14	12
27....	9.0	7.0	7.2	12	17	*18	44	55	78	21	14	12
28....	8.5	6.8	7.4	11	*15	18	34	46	80	30	837	12
29....	8.5	6.8	7.6	11	.....	18	*25	42	69	32	*302	12
30....	9.0	7.4	8.0	11	.....	16	21	*1,150	61	22	83	12
31....	9.8	.....	8.2	*11	.....	14	.....	1,660	.....	*21	52	.....
1957-58												
1....	13	17	27	11	19	65	29	*34	92	*28	98	55
2....	*13	39	32	10	18	54	41	34	40	54	92	54
3....	12	33	*32	*15	18	49	43	38	32	44	84	210
4....	12	26	*31	19	17	44	*52	32	*35	321	*78	529
5....	12	23	33	23	*16	40	72	30	29	119	617	702
6....	13	21	35	26	16	41	148	29	25	74	185	1,570
7....	14	21	30	26	15	*40	142	27	25	*62	138	465
8....	14	22	26	26	15	36	115	29	178	54	95	212
9....	14	19	24	26	14	33	98	27	580	49	84	170
10....	14	15	21	28	13	38	89	25	95	45	78	141
11....	14	16	18	30	12	34	80	25	58	81	73	121
12....	16	17	16	32	12	43	73	24	61	82	70	109
13....	14	18	21	34	11	52	68	21	883	52	67	98
14....	14	19	23	36	11	52	63	21	698	1,570	64	92
15....	21	18	27	38	10	43	60	21	180	*4,400	1,570	109
16....	23	60	30	*35	10	36	57	197	122	*1,090	1,130	95
17....	*17	43	35	33	10	33	*52	205	98	*292	215	84
18....	14	36	43	31	10	36	49	89	84	*230	153	80
19....	13	32	70	29	10	32	48	49	74	210	175	77
20....	13	*72	48	28	10	32	45	38	69	235	121	74
21....	14	53	37	27	10	*30	44	34	56	180	*178	72
22....	15	40	32	26	10	32	42	*32	52	*153	95	68
23....	23	47	29	25	40	31	42	29	52	133	84	66
24....	55	40	27	25	800	29	53	26	52	473	79	68
25....	29	36	26	25	400	28	42	26	47	583	*74	65
26....	20	35	28	25	*186	27	38	23	42	149	73	61
27....	18	40	31	24	126	27	39	30	38	141	70	59
28....	17	43	32	23	88	27	38	25	36	121	68	58
29....	17	32	25	22	.....	27	38	21	32	106	64	*57
30....	*17	22	19	20	.....	27	35	21	30	162	62	56
31....	17	.....	14	19	.....	28	.....	56	.....	109	58	.....

Salt Creek near Elberon, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	53	34	44	28	21	1,300	794	164	258	367	33	20
2.....	52	34	50	28	21	1,070	457	153	203	164	33	22
3.....	52	34	53	28	21	*599	397	239	180	123	47	18
4.....	51	34	50	28	20	123	284	175	158	107	40	17
5.....	49	34	45	28	20	83	239	170	148	106	36	17
6.....	48	32	38	27	20	72	197	180	138	86	34	16
7.....	50	32	30	26	19	25	180	148	130	78	32	15
8.....	51	32	27	25	19	19	158	133	118	107	31	15
9.....	59	33	28	25	18	20	148	138	110	165	30	14
10.....	46	32	29	25	18	44	138	432	104	87	29	13
11.....	43	33	30	25	18	179	130	324	99	76	27	13
12.....	43	32	32	25	18	489	125	*233	*92	69	26	14
13.....	43	32	33	25	19	577	117	197	82	70	*24	14
14.....	41	33	33	25	30	977	110	180	78	62	82	14
15.....	40	33	32	26	25	492	104	170	77	58	100	14
16.....	40	33	31	26	24	278	98	158	74	58	49	14
17.....	38	232	30	26	22	148	100	153	68	56	39	14
18.....	36	807	29	25	21	118	123	148	65	71	31	14
19.....	36	157	30	24	20	1,240	109	583	66	61	26	17
20.....	37	102	30	23	20	4,330	118	626	61	51	25	19
21.....	36	88	31	22	19	*2,170	138	900	58	48	23	15
22.....	36	79	32	22	19	518	170	457	*55	44	22	14
23.....	36	73	33	21	74	722	153	473	48	*44	21	13
24.....	34	*69	34	21	200	*799	138	352	50	40	*22	13
25.....	34	66	34	21	280	402	123	304	40	37	21	18
26.....	34	53	33	21	430	1,560	110	*278	34	35	20	148
27.....	*34	48	32	21	740	2,470	*143	239	41	34	19	317
28.....	34	44	32	21	1,300	485	442	239	47	35	20	58
29.....	33	40	31	21	.....	324	252	271	69	43	20	34
30.....	33	37	*30	21	.....	310	186	290	395	36	19	*26
31.....	34	.....	29	*21	.....	338	.....	297	.....	34	19	.....
1959-60												
1.....	24	32	66	110	124	77	1,930	398	207	90	47	29
2.....	32	30	64	86	124	76	1,550	320	201	85	46	25
3.....	44	29	61	52	120	75	775	285	189	81	44	24
4.....	34	495	60	58	117	74	540	252	189	76	42	22
5.....	96	531	53	68	114	74	560	281	278	75	39	21
6.....	84	233	48	82	112	74	500	2,210	201	79	42	20
7.....	58	158	43	88	110	75	*433	2,620	189	73	44	20
8.....	48	138	38	76	140	76	374	775	177	71	38	19
9.....	40	133	46	68	170	78	320	520	171	140	55	19
10.....	36	124	50	60	110	80	278	433	166	171	48	18
11.....	30	101	56	54	108	82	258	390	171	*111	38	18
12.....	28	91	53	1,000	105	84	238	350	166	121	36	17
13.....	27	87	49	2,700	103	84	226	328	160	150	34	18
14.....	26	64	*48	580	100	85	219	306	145	112	51	18
15.....	26	56	49	720	98	85	213	278	135	101	35	19
16.....	24	48	48	420	96	84	232	299	130	94	32	*19
17.....	24	*42	46	210	94	82	1,300	278	121	90	31	22
18.....	22	48	41	170	92	81	1,000	264	116	84	44	25
19.....	23	56	46	*150	88	79	461	264	121	80	44	27
20.....	22	62	45	180	82	76	366	271	*112	76	36	19
21.....	21	70	44	170	84	80	343	264	116	72	38	18
22.....	21	74	36	160	86	78	313	252	112	69	32	38
23.....	38	79	37	152	*87	74	292	232	109	69	*30	36
24.....	41	80	39	148	88	73	278	*226	104	66	29	371
25.....	35	62	47	143	86	73	278	252	96	61	28	154
26.....	32	56	70	140	84	72	*299	358	93	*92	27	76
27.....	*32	48	180	135	81	92	264	271	90	66	26	*55
28.....	31	39	310	130	80	550	252	245	90	60	26	42
29.....	30	43	215	128	78	1,300	252	232	90	56	69	38
30.....	30	52	164	126	.....	4,500	490	219	89	53	42	36
31.....	32	.....	125	124	.....	2,530	.....	213	.....	50	33	.....

Salt Creek near Elberon, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	10.8	7.30	5.14	3.70	15.9	14.9	33.6	86.1	16.7	60.6	138	37.9
1956-57.....	11.7	8.43	6.94	34.5	94.9	15.0	24.3	187	230	32.4	62.9	19.7
1957-58.....	17.2	31.8	29.7	25.7	68.8	37.0	61.2	42.5	130	368	197	189
1958-59.....	41.6	80.7	34.0	24.2	124	719	199	284	105	79.1	32.3	32.3
1959-60.....	35.2	105	73.5	274	102	355	494	448	144	86.3	38.9	42.8

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.054	0.036	0.026	0.018	0.079	0.074	0.167	0.428	0.083	0.301	0.687	0.189
1956-57.....	.058	.042	.035	.172	.472	.075	.121	.930	1.14	.161	.313	.098
1957-58.....	.086	.158	.148	.128	.342	.184	.304	.211	.647	1.83	.980	.940
1958-59.....	.207	.401	.169	.120	.617	3.58	.990	1.41	.522	.394	.161	.161
1959-60.....	.175	.522	.366	1.36	.507	1.77	2.46	2.23	.716	.429	.194	.213

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.06	0.04	0.03	0.02	0.09	0.09	0.19	0.49	0.09	0.35	0.79	0.21
1956-57.....	.07	.05	.04	.20	.49	.09	.13	1.07	1.28	.19	.36	.11
1957-58.....	.10	.18	.17	.15	.36	.21	.34	.24	.72	2.11	1.13	1.05
1958-59.....	.24	.45	.20	.14	.64	4.12	1.11	1.63	.58	.45	.19	.18
1959-60.....	.20	.58	.42	1.57	.55	2.04	2.74	2.57	.80	.49	.22	.24

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955.....								47.5	3.20
1956.....	Aug. 1, 1956..	13.82	3,610	2.5	36.1	0.180	2.45	36.5	2.48
1957.....	May 31, 1957..	13.93	2,810	3.8	60.3	.300	4.08	64.6	4.37
1958.....	July 15, 1958..	16.12	6,600	10	100	.498	6.76	106	7.20
1959.....	Mar. 20, 1959..	15.6	6,580	13	147	.731	9.93	152	10.24
1960.....	Jan. 13, 1960..	16.16	6,400	17	184	.915	12.42		

Peak Discharge (base, 1,500 cfs)

- 1955-56: May 13 (11 a.m.) 1,640 cfs (12.50 ft.); Aug. 1 (3 a.m.) 3,610 cfs (13.82 ft.).
- 1956-57: May 31 (4 a.m.) 2,810 cfs (13.93 ft.); June 17 (1 a.m.) 1,790 cfs (12.77 ft.); June 18 (4 p.m.) 1,860 cfs (12.94 ft.).
- 1957-58: July 15 (3 a.m.) 6,600 cfs (16.12 ft.); Aug. 16 (3 a.m.) 2,020 cfs (13.75 ft.); Sept. 6 (1 p.m.) 1,770 cfs (13.44 ft.).
- 1958-59: Feb. 28 about 1,500 cfs; Mar. 20 (5 a.m.) 6,580 cfs (15.6 ft.); Mar. 27 (2:30 a.m.) 4,470 cfs (14.75 ft.).
- 1959-60: Jan. 13 about 6,400 cfs; Mar. 30 about 5,700 cfs; Apr. 17 (time unknown) about 2,250 cfs; May 7 (12:30 a.m.) 5,200 cfs (15.60 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 16 to Dec. 31, 1955; Jan. 1 to Mar. 29, Nov. 21, 22, 26-30, Dec. 7-31, 1956; Jan. 1 to Feb. 18, Mar. 1-3, Nov. 9-11, 18, 19, Nov. 21 to Dec. 31, 1957; Jan. 1 to Feb. 25, Nov. 27 to Dec. 31, 1958; Jan. 1 to Mar. 1, Nov. 15-20, 26-30, Dec. 7-10, 23, 24, 31, 1959; Jan. 1 to Mar. 30, 1960.

Walnut Creek near Hartwick, Iowa

LOCATION.—Lat. 41°50'10", long. 92°23'20", in SE¼SW¼ sec. 8, T. 81 N., R. 13 W., on left bank 5 ft. upstream from highway bridge, 1.2 miles downstream from North Walnut Creek, 4.0 miles northwest of Hartwick, and 6.5 miles upstream from mouth.

DRAINAGE AREA.—70.9 square miles.

RECORDS AVAILABLE.—October 1949 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 786.59 ft. above mean sea level, datum of 1929.

AVERAGE DISCHARGE.—11 years, 33.6 cfs.

EXTREMES.—1949-60: Maximum discharge, 4,930 cfs Sept. 3, 1958, (gage height, 15.67 ft.), from rating curve extended above 2,600 cfs on basis of contracted-opening and flow-over-embankment measurement at peak flow; no flow at times for most years.

Flood in June 1947 reached a stage of 17.7 ft., from information by local residents (discharge not determined).

REMARKS.—Bankfull stage is about gage height, 12 ft.

Records for October 1949 to September 1955, not previously published in Water Supply Bulletin No. 3 or No. 6, are given herein.

Daily Discharge, in Cubic Feet per Second, for Water Year 1950

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1949-50												
1.....	1.1	2.0	2.6	1.8	2.8	160	5.4	6.2	8.0	28	4.7	0.5
2.....	1.1	2.0	2.5	1.9	2.6	200	5.4	5.4	13	25	3.5	.3
3.....	1.1	2.0	2.5	1.8	2.5	180	6.0	5.4	11	23	2.4	.3
4.....	1.1	2.0	2.5	1.7	2.4	500	7.2	20	7.7	21	*2.4	.2
5.....	1.1	2.0	2.4	1.5	2.4	1,000	5.7	10	7.2	22	2.9	.2
6.....	4.1	2.0	2.4	1.5	10	900	5.0	7.0	*6.0	18	2.2	.2
7.....	4.1	2.0	2.4	1.4	70	660	5.0	5.7	4.7	16	1.8	.2
8.....	4.1	2.0	2.3	1.4	110	50	4.4	23	4.4	14	2.0	.2
9.....	4.1	2.0	2.1	1.3	140	25	9.3	275	6.0	13	7.4	.2
10.....	4.1	2.0	2.5	1.3	160	22	20	70	4.4	*13	2.7	.2
11.....	1.2	2.1	30	1.3	100	20	14	47	3.8	12	3.3	.5
12.....	1.2	7.6	12	1.3	50	19	8.8	35	7.7	11	2.9	.4
13.....	1.2	11	5.0	50	27	19	6.4	36	8.0	11	2.9	.3
14.....	1.2	4.9	3.0	30	20	30	7.0	30	6.5	9.0	2.7	.3
15.....	1.2	4.0	2.6	20	12	60	6.7	26	83	8.5	3.8	.3
16.....	4.5	3.5	2.5	15	11	45	6.2	23	12	8.8	*1.6	.3
17.....	4.5	3.1	2.6	10	9.4	32	5.4	21	8.3	10	1.0	.2
18.....	4.5	2.9	2.7	8.0	8.6	24	*5.7	19	*1,690	8.3	.9	.4
19.....	4.5	2.7	2.8	6.4	7.8	19	5.0	18	319	12	.8	.7
20.....	4.5	2.5	3.0	5.4	7.2	19	4.0	20	104	10	.8	1.3
21.....	*4.3	2.5	2.6	4.7	6.6	25	3.3	23	73	8.5	.7	2.2
22.....	4.3	2.3	2.3	4.5	6.2	*80	3.8	21	58	7.7	1.0	1.6
23.....	4.3	2.4	2.0	4.7	5.8	72	5.2	18	47	7.2	1.0	.6
24.....	4.3	2.5	1.8	4.7	5.6	18	8.8	17	1,700	7.5	.7	.2
25.....	4.3	2.6	1.7	4.6	5.4	14	16	*68	161	6.7	.5	.2
26.....	2.4	2.6	1.6	4.5	5.2	15	8.8	16	88	6.7	.6	.2
27.....	2.4	2.6	1.6	4.6	5.2	12	7.0	16	60	6.2	3.1	.2
28.....	2.4	2.6	1.5	5.2	25	7.7	6.4	16	50	6.0	1.5	*.3
29.....	2.4	2.6	1.5	4.1	.....	5.2	7.5	13	39	5.4	.9	1.6
30.....	2.4	2.6	1.5	3.3	.....	*5.7	8.0	12	33	4.7	.8	1.0
31.....	2.4	.....	1.6	3.0	.....	6.0	.....	9.6	.....	5.0	.7	.....

Walnut Creek near Hartwick, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1951 and 1952

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr	May	June	July	Aug.	Sept.
1950-51												
1.....	0.7	0.2	0.2	0.1	0.3	32	98	68	70	32	18	8.8
2.....	.3	.2	18	.1	2	25	81	84	293	32	20	8.8
3.....	.2	.2	1.0	.1	2	40	98	63	438	94	20	8.8
4.....	.2	.2	*.3	.1	2	32	112	54	*129	46	16	8.0
5.....	.2	.2	.2	.1	2	27	82	49	101	38	15	8.0
6.....	.3	.4	.2	.1	2	19	121	46	91	37	15	7.5
7.....	.3	.4	.2	.1	2	16	173	41	145	35	14	7.0
8.....	1.8	.6	.2	.1	2	13	88	*37	180	251	13	7.0
9.....	.6	1.0	.2	.1	2	12	65	40	101	524	12	11
10.....	.3	.6	.2	.1	2	11	53	249	78	91	12	15
11.....	.2	.2	.3	.1	35	10	68	129	75	303	11	8.0
12.....	.2	.2	.3	.1	150	9.6	137	84	65	94	10	7.0
13.....	.2	.2	.3	.1	70	9.2	118	66	58	78	11	6.7
14.....	.2	*.3	.3	.1	60	8.6	78	54	51	64	13	6.4
15.....	.2	1.2	.3	.1	64	8.2	60	47	201	56	24	6.2
16.....	.3	1.3	.3	.1	52	7.8	51	44	155	*51	14	6.0
17.....	.3	.5	.2	.1	150	7.6	46	45	74	46	12	6.0
18.....	.3	.5	.2	*2.0	450	7.4	43	62	62	76	11	6.0
19.....	.3	.5	.2	35	350	7.4	36	199	59	48	9.8	5.4
20.....	.3	.4	.2	20	210	7.5	33	131	54	54	22	5.4
21.....	.3	.3	*.2	12	150	8.0	45	58	117	49	17	4.7
22.....	.3	.5	.2	9.0	170	9.0	41	54	87	39	11	6.4
23.....	.3	.4	.1	9.0	100	10	34	44	73	34	*9.8	5.2
24.....	.3	.2	.1	7.0	250	15	38	38	90	31	9.3	5.2
25.....	.2	.1	.1	4.5	400	23	129	92	66	28	72	5.4
26.....	.3	.1	.1	3.5	150	35	81	437	59	27	18	5.0
27.....	.2	.1	.1	2.5	50	150	283	101	57	25	14	*3.3
28.....	.3	.1	.1	1.6	32	615	142	72	52	23	13	3.1
29.....	.3	.1	.1	1.0	.....	369	91	61	43	21	12	3.5
30.....	*.2	.1	.1	.7	.....	149	74	52	36	21	11	3.8
31.....	.3	.....	.1	.5	.....	115	.....	102	.....	20	9.3	.....
1951-52												
1.....	4.2	21	35	16	200	18	112	47	49	36	6.0	4.2
2.....	3.8	18	36	16	150	15	91	49	47	34	6.2	*3.5
3.....	3.8	19	*38	16	130	13	81	53	45	62	9.8	2.4
4.....	3.1	20	34	15	140	11	75	51	43	30	9.3	2.0
5.....	2.9	18	34	15	80	15	70	44	41	26	7.0	2.2
6.....	3.5	17	33	15	60	23	66	40	38	24	6.4	2.4
7.....	9.6	17	30	15	52	22	63	62	35	22	6.2	2.4
8.....	4.7	17	29	15	*44	22	61	52	105	24	6.4	2.4
9.....	4.2	17	30	15	40	34	*62	65	57	21	6.7	2.2
10.....	3.8	17	27	15	37	1,110	59	63	38	19	5.4	2.2
11.....	3.5	18	24	14	35	544	58	56	38	19	6.4	2.0
12.....	3.3	126	22	14	31	320	61	51	38	17	5.7	2.0
13.....	3.3	134	19	14	29	*456	94	48	111	16	5.0	1.6
14.....	2.9	91	15	14	27	141	101	46	293	17	5.0	4.0
15.....	2.7	64	17	120	26	94	84	43	66	21	5.4	2.0
16.....	8.3	56	19	80	25	74	73	*56	52	18	5.4	2.2
17.....	25	49	21	150	25	78	69	48	45	16	4.2	1.5
18.....	15	45	22	120	24	207	66	43	41	17	3.8	1.5
19.....	13	42	23	400	23	208	61	42	*34	15	3.5	1.5
20.....	12	*40	23	220	23	122	58	40	126	14	3.5	1.6
21.....	138	38	23	170	23	101	56	41	99	12	5.0	1.3
22.....	111	36	23	150	23	173	88	147	57	12	3.5	1.8
23.....	40	35	22	110	23	141	97	387	50	11	3.1	1.5
24.....	36	37	22	170	23	133	84	129	46	11	2.9	1.8
25.....	31	38	21	120	22	133	72	104	40	9.8	2.9	1.6
26.....	28	36	20	90	22	129	66	98	36	8.8	2.9	1.5
27.....	27	35	20	70	21	133	60	94	119	8.5	3.1	1.5
28.....	26	35	19	58	21	137	55	72	46	8.3	3.5	1.2
29.....	26	35	18	52	20	133	51	63	38	*7.7	7.7	1.3
30.....	26	34	17	52	.....	112	49	59	35	7.0	3.3	1.3
31.....	22	.....	17	100	.....	149	.....	55	.....	6.4	2.4	.....

Walnut Creek near Hartwick, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1953 and 1954

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1952-53												
1	*0.7	1.2	6.0	2.0	5.0	9.0	*138	110	32	*23	2.0	0.1
2	.3	1.0	6.0	1.9	5.0	9.0	96	83	32	21	2.9	.1
3	.3	.9	6.0	1.8	*4.1	9.4	86	70	30	17	2.4	.2
4	.2	.8	6.0	1.7	4.0	10	69	61	28	16	2.2	1.6
5	.8	.7	5.8	1.6	100	10	60	60	40	18	2.2	.6
6	.9	.6	5.7	*1.6	180	11	54	61	28	24	2.2	.4
7	.8	.6	5.7	1.5	200	11	47	52	25	14	2.4	.4
8	.8	.7	7.2	1.5	150	11	44	46	124	13	1.8	.3
9	.9	.8	11	1.5	120	54	44	42	36	12	1.0	.9
10	.9	.7	9.0	1.5	130	48	48	86	30	11	.8	.8
11	.8	.6	7.0	1.5	130	28	42	65	252	10	5.0	.4
12	.8	1.0	6.0	1.6	30	*26	37	43	50	11	4.7	.2
13	1.0	1.2	4.5	1.7	35	20	34	39	38	11	1.4	.2
14	.9	1.6	3.5	1.8	38	116	34	38	32	10	1.2	.2
15	.9	1.6	3.3	200	28	85	40	36	27	8.8	1.0	*.2
16	.8	2.4	3.2	30	20	42	35	34	25	7.4	1.0	.1
17	.9	40	3.2	34	15	36	32	33	22	7.1	.9	.2
18	1.0	10	3.2	25	13	38	28	30	20	6.8	.8	.1
19	.9	4.0	5.0	20	45	30	28	28	18	5.3	.8	.1
20	.9	2.4	7.0	15	1,200	25	26	30	15	5.0	.8	.1
21	1.0	2.2	6.0	12	50	26	25	102	13	4.7	.6	.1
22	1.2	2.2	5.2	11	40	43	23	281	14	4.4	.6	.1
23	*.8	2.0	4.5	9.0	30	200	*21	80	12	3.9	.5	.1
24	1.2	2.7	3.8	8.0	24	83	44	258	12	3.9	.6	.1
25	.9	9.9	3.3	7.0	20	60	73	96	24	3.9	.6	.1
26	1.0	12	3.0	6.5	15	49	55	67	13	3.6	.5	.2
27	.8	8.0	2.7	6.0	12	43	48	*55	339	3.2	.3	.1
28	.9	6.0	2.5	6.0	9.2	37	44	49	92	2.9	*.3	.1
29	.7	5.4	2.3	5.0	.....	32	43	45	40	2.5	.1	.1
30	.7	5.6	2.2	5.0	.....	166	94	42	30	2.2	.1	.1
31	1.0	.....	2.1	5.0	.....	150	.....	36	.....	2.0	.1	.....
1953-54												
1	.1	1.7	.4	.1	.2	.2	2.4	48	290	2.4	0	18
2	.1	.2	.8	.1	.2	.2	4.2	124	125	2.4	0	15
3	.1	.3	1.6	.1	.2	.1	2.0	54	*234	2.2	0	12
4	.1	.4	1.4	.1	.2	.1	.6	30	88	2.4	.4	10
5	.1	.4	.8	.1	.3	.1	2.4	21	59	2.2	4.8	8.2
6	.1	.3	1.4	.1	.4	.2	52	17	47	2.0	1.1	6.8
7	.1	.2	1.0	.1	.4	.1	4.7	15	36	1.7	.5	6.3
8	*.1	.3	1.2	.1	.4	.6	1.8	13	28	1.8	1.1	5.5
9	.1	.4	1.3	.1	.4	1.5	1.2	10	25	1.7	.9	9.1
10	.2	.6	.4	.1	.4	2.0	1.0	9.8	23	1.5	.5	8.8
11	.2	.9	.3	.1	.4	2.2	.8	8.0	20	1.1	.3	5.8
12	.2	.9	.3	.1	.4	1.5	.4	7.1	16	.8	.4	4.8
13	.2	1.0	.2	*.1	.5	1.0	.4	6.5	15	*.6	.2	5.1
15	.2	.9	.2	.1	.7	.5	.5	5.6	15	.5	.8	4.8
15	.2	.5	*.2	.1	6.0	.9	43	5.3	12	.3	.9	4.6
16	.2	.4	.2	.1	5.0	1.4	16	4.7	13	.3	2.0	4.6
17	.2	*.4	.2	.1	4.5	1.8	5.0	3.6	11	.3	*1.4	6.3
18	.2	.4	.2	.1	4.2	4.2	2.4	3.6	9.8	.4	3.7	4.6
19	.2	.5	.1	.1	4.0	6.8	1.8	3.4	8.2	5	1.1	3.9
20	.2	1.2	.1	.1	2.5	2.2	5.3	2.9	8.5	.8	.2	3.7
21	.2	1.2	.1	.1	1.8	.8	21	2.9	19	1.5	0	3.1
22	.2	.8	.1	.1	1.2	.8	*6.5	6.2	30	1.4	.6	2.9
23	.3	.6	.1	.1	1.0	*.8	3.4	4.7	9.1	.8	1.5	2.9
24	.6	.6	.1	.1	*.9	1.4	2.4	2.6	7.1	.6	54	2.9
25	.5	.6	.1	.1	2.2	10	5.3	*2.0	5.8	.4	7.1	2.9
26	.8	.5	.1	.1	.4	2.9	9.4	2.9	4.8	.2	718	2.7
27	.8	.3	.1	.1	.1	1.4	13	7.7	4.2	.2	*678	2.7
28	.8	.3	.1	.1	.2	1.4	5.0	25	3.7	.1	94	5.1
29	.8	.4	.1	1	.....	1.0	3.9	7.4	3.5	.1	44	398
30	.8	.4	.1	.2	.....	.6	40	3.9	2.9	.1	29	117
31	.8	.....	.1	.2	.....	2.0	.....	82	.....	0	21	.....

Walnut Creek near Hartwick, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1955 and 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1954-55												
1.....	102	16	6.2	12	8.6	30	16	40	13	3.3	0.8	0
2.....	134	14	6.2	11	*8.5	33	15	36	12	2.5	.8	0
3.....	59	15	6.0	12	8.4	35	16	31	10	2.2	.9	0
4.....	39	14	6.0	15	8.4	27	15	30	9.1	2.0	.9	0
5.....	146	15	6.2	18	8.1	24	*14	27	7.7	3.3	1.1	0
6.....	95	14	6.6	21	8.1	23	12	25	7.7	3.1	1.4	0
7.....	62	15	6.6	20	8.0	28	12	22	*9.4	2.7	.9	0
8.....	54	14	7.2	18	8.0	36	11	21	8.8	2.2	.5	0
9.....	47	14	7.2	16	8.0	25	11	50	7.7	3.3	.6	0
10.....	263	14	7.0	14	7.8	23	10	78	7.7	202	.5	0
11.....	116	13	6.8	13	7.0	21	12	44	8.5	19	.6	0
12.....	69	13	6.4	*13	7.0	20	17	39	8.0	8.0	*.2	0
13.....	52	14	6.2	12	7.2	16	54	36	8.0	6.0	.2	0
14.....	47	12	*6.0	12	7.4	32	56	32	7.1	5.3	.1	0
15.....	41	11	6.3	12	7.6	28	38	27	6.3	4.8	.1	0
16.....	36	12	6.0	11	10	20	31	26	5.8	5.1	.1	0
17.....	28	11	6.3	10	25	18	27	24	5.5	4.2	.1	0
18.....	23	*11	5.3	10	60	19	25	22	4.6	3.7	.1	0
19.....	24	9.8	6.2	10	600	18	121	*22	25	3.5	.1	.4
20.....	22	9.8	6.8	9.4	400	19	64	20	8.8	2.9	0	*1.5
21.....	22	10	6.8	9.2	150	26	45	19	5.8	*2.0	0	1.2
22.....	18	9.8	6.8	9.0	80	24	39	18	4.6	1.8	.2	7.1
23.....	18	10	7.0	9.0	60	22	103	18	5.1	1.8	0	14
24.....	14	8.8	7.0	9.0	56	21	344	18	4.4	1.5	.3	.1
25.....	14	8.8	8.0	8.8	56	19	*121	18	4.9	1.5	1.1	0
26.....	*22	8.2	11	8.8	90	18	88	21	4.2	1.5	.3	0
27.....	22	9.4	16	8.8	60	19	71	19	3.7	1.4	0	15
28.....	18	8.8	13	8.8	*32	20	58	19	*3.1	1.4	0	2.0
29.....	16	5.8	15	8.8	.....	18	48	20	3.3	1.7	0	38
30.....	15	6.2	14	8.6	.....	17	43	20	3.5	2.2	0	3.3
31.....	14	.....	13	8.6	.....	17	.....	19	.....	1.1	0	.....
1955-56												
1.....	.5	*.3	.2	.1	0	12	.9	4.4	.4	0	*374	4.7
2.....	.1	.3	.3	.1	0	8.0	5.1	4.4	.3	0	.46	1.4
3.....	.1	.2	.3	0	0	6.0	9.4	3.5	.1	0	.19	.2
4.....	0	.1	.3	0	0	4.5	2.9	3.3	.1	.1	.13	87
5.....	.2	.2	.3	*0	0	4.3	1.2	4.8	*.1	.1	.11	17
6.....	5.8	.3	.2	0	0	*4.0	1.2	2.4	.1	0	4.2	5.0
7.....	.8	.2	.2	0	0	3.6	1.1	1.1	.2	.2	2.6	1.4
8.....	.4	.1	.2	0	0	3.3	.5	*.5	.3	.3	2.0	.3
9.....	.2	.1	.2	0	0	3.2	.9	.4	.1	.1	*1.2	.1
10.....	.1	.4	.2	0	0	4.5	1.1	2.2	0	0	62	.1
11.....	.4	.4	.2	0	0	4.3	.9	4.8	.1	0	62	.1
12.....	.6	.5	.2	0	0	4.0	1.2	2.2	.1	.1	14	0
13.....	.1	.3	.2	0	0	3.7	2.0	3.1	.1	.1	9.1	0
14.....	0	.2	.1	0	*0	3.5	3.5	1.7	0	.1	4.4	0
15.....	0	.2	.1	0	0	3.4	.4	.9	.1	.1	3.2	0
16.....	0	.3	.1	0	.1	3.3	*.2	.4	14	9.5	3.2	0
17.....	0	.1	.1	0	.1	3.2	.1	.4	1.5	*.1	2.9	0
18.....	0	.2	.1	0	.1	3.2	.1	.3	0	.7	14	0
19.....	0	.2	.1	0	.1	3.1	.1	.2	2.8	5.2	6.2	0
20.....	.1	.1	.1	0	.1	3.1	.1	.1	2.4	15	2.4	0
21.....	0	.8	.1	0	.1	3.0	.1	.2	0	2.9	1.4	0
22.....	.3	*1.1	.1	0	.1	3.0	.1	.4	0	.1	.9	0
23.....	.1	.9	.2	0	.5	2.7	.1	.5	0	.1	.6	0
24.....	0	.3	.2	0	1.5	2.5	.1	.3	0	.5	.5	0
25.....	0	.2	.2	0	6.0	1.8	.2	.2	0	.1	.4	0
26.....	.1	.2	.2	0	45	*1.4	.6	.4	*0	0	.4	0
27.....	.2	.2	.2	0	30	1.1	2.0	.4	0	0	.2	0
28.....	.5	.2	.2	0	25	3.7	8.5	1.2	0	2.9	.1	0
29.....	.8	.1	.2	0	20	.9	14	1.5	*0	23	*.2	0
30.....	.2	.1	.1	0	.....	.6	6.8	13	0	17	1.0	0
31.....	.4	.....	.1	0	.....	.6	.....	1.4	.....	448	*24	.....

Walnut Creek near Hartwick, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	*0	0	0	0.3	0.3	0.5	*2.4	0.2	37	*2.6	38	2.6
2	0	0	.1	.1	.3	.5	5.6	.4	26	2.6	11	2.0
3	0	0	.1	.1	.3	.5	2.0	*.3	22	21	5.6	*1.2
4	0	0	.2	*.1	.3	.6	5.9	.2	19	187	3.6	.8
5	0	.1	.3	0	.3	.9	5.9	.1	17	28	*2.4	.6
6	0	.1	.2	.1	.5	.9	1.8	.1	14	12	2.0	1.4
7	0	.1	.1	.1	1.0	.4	1.4	.1	22	8.8	1.6	1.8
8	0	.1	0	.1	3.0	.2	.6	.1	18	7.7	1.0	.9
9	0	.1	0	.1	120	.4	.2	.2	18	6.2	1.0	.4
10	0	.1	.1	.1	39	.5	.1	.1	85	16	4.4	.4
11	0	.1	*.1	.1	20	2.2	.1	35	15	3.9	.8	*1.8
12	0	.1	0	.1	25	2.2	0	15	15	3.9	.6	4.4
13	0	.1	0	.1	35	1.6	0	38	22	3.9	.4	1.2
14	0	4.2	0	.1	20	1.4	0	74	13	3.6	.3	.8
15	0	5.1	0	.1	9.0	.4	0	28	9.8	3.4	.2	3.4
16	0	.3	0	.1	5.0	.5	0	17	9.4	2.9	.2	1.6
17	0	.1	0	.1	3.0	1.8	0	15	27	2.2	.2	.5
18	*0	.1	0	.1	2.0	6.2	0	11	109	1.6	.3	.3
19	0	.1	0	.1	1.5	6.8	.1	10	19	1.6	.3	.2
20	0	.2	0	.1	1.1	3.6	0	10	15	1.4	.2	.2
21	0	.6	1.5	220	.9	2.9	0	184	12	1.0	.2	2.0
22	0	.1	10	30	.7	1.8	0	*37	10	5.0	.1	1.8
23	0	0	3.0	*5.0	.7	1.0	0	12	6.8	*7.2	.1	.6
24	0	.1	1.0	2.0	1.3	.8	0	5.6	6.2	.8	.3	.4
25	0	.2	.3	1.0	1.5	.3	0	5.3	7.1	.4	.2	.4
26	0	.1	.3	.6	1.0	.9	*2.7	4.4	9.1	.4	.2	.3
27	0	.1	.3	.5	*.5	*3.4	.8	2.2	6.5	.4	.9	*.3
28	0	.1	.4	.4	.4	6.5	.6	1.4	7.4	184	110	.3
29	0	0	.5	.3	.....	3.9	.4	1.0	4.7	28	19	.3
30	.1	0	.5	*.3	.....	2.4	.2	257	3.6	12	6.8	.3
31	*0	.....	.4	.3	.....	1.6	.....	*137	.....	9.4	3.9	.....
1957-58												
1	.3	*1.0	2.0	.3	1.4	11	6.4	4.3	64	*2.3	15	2.9
2	.3	5.8	3.5	*.3	1.3	8.7	10	5.6	5.9	45	13	2.9
3	.3	2.4	2.9	*.3	1.3	*7.6	*8.3	5.8	4.0	9.0	11	689
4	.3	1.7	*2.2	.3	*1.2	6.8	10	4.3	*3.4	352	9.0	*1,750
5	.3	1.4	2.1	.3	1.1	5.6	18	3.4	2.6	58	*192	*578
6	.3	1.3	2.9	.4	1.1	6.2	39	3.3	2.1	28	33	698
7	.3	1.3	2.4	.5	1.0	6.0	35	3.2	2.4	19	18	188
8	.4	1.5	2.0	.7	.9	5.8	26	3.3	3.6	*15	13	124
9	.4	.9	2.0	.9	.9	6.4	21	2.9	24	12	10	111
10	.4	.9	1.6	1.3	.8	7.0	18	2.7	7.4	9.2	9.0	83
11	.4	1.1	1.0	1.8	.7	8.0	16	2.3	4.2	50	7.0	62
12	.4	1.5	.7	2.5	.7	8.6	14	2.2	4.6	17	7.4	54
13	.4	2.2	.5	3.3	.6	10	12	1.8	441	6.6	8.1	44
14	.4	2.3	.6	4.5	.5	9.5	12	2.0	55	*536	5.9	35
15	1.8	1.8	.9	5.8	.5	8.8	10	2.1	28	*48	124	47
16	*2.4	2.0	1.9	*6.6	.5	8.0	9.7	2.2	17	16	15	33
17	1.2	2.4	3.0	5.6	.5	7.2	*8.7	3.4	13	12	8.3	30
18	.9	2.7	5.0	4.6	.5	6.8	8.3	2.7	10	10	6.3	27
19	.7	3.0	4.3	3.7	.5	6.4	8.3	1.9	8.3	14	5.6	24
20	.7	4.5	3.3	3.3	.5	*6.6	7.2	1.7	7.2	22	6.3	22
21	.7	*3.4	2.6	2.9	.5	5.9	7.2	1.7	6.1	16	*7.6	23
22	.8	2.9	2.0	2.6	1.0	6.1	6.3	*2.3	5.4	*12	4.2	18
23	4.2	2.8	1.6	2.3	95	6.3	6.8	2.4	5.4	9.7	3.8	18
24	7.2	2.6	1.3	2.1	*320	5.8	8.7	1.8	7.6	8.5	4.2	29
25	1.7	2.3	1.4	2.0	98	5.6	5.6	1.8	5.6	114	4.0	17
26	1.1	2.8	1.6	1.8	42	5.8	5.6	1.7	3.8	25	4.0	14
27	.9	3.5	1.0	1.7	28	5.8	5.4	2.7	3.4	23	4.2	12
28	1.0	3.5	.8	1.6	18	6.4	5.2	2.0	3.2	17	*4.0	11
29	1.1	3.1	.6	1.5	.....	6.8	4.8	1.4	2.8	13	3.6	11
30	1.1	2.6	.4	1.5	.....	6.4	*4.3	1.3	2.4	53	3.7	9.4
31	1.0	.....	.3	1.4	.....	5.6	.....	114	.....	21	3.2	.....

Walnut Creek near Hartwick, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	8.1	7.6	8.5	6.5	3.2	122	504	117	93	248	10	5.0
2	*8.1	7.4	10	6.0	*3.1	78	140	114	*81	102	11	5.4
3	7.9	7.2	12	5.6	3.0	*39	120	140	70	81	12	4.3
4	7.6	7.0	11	5.3	2.9	22	100	108	60	72	11	4.2
5	6.8	6.6	8.0	5.2	2.9	10	92	99	55	58	9.5	3.8
6	6.6	6.1	7.0	5.3	2.8	15	80	111	51	48	11	3.7
7	9.4	6.4	5.2	5.4	2.9	23	72	87	46	43	9.2	3.6
8	58	7.0	6.0	5.5	3.0	33	66	81	42	44	8.8	3.4
9	268	6.6	7.0	5.6	3.1	48	60	114	38	42	8.6	3.4
10	43	6.1	6.6	5.7	3.0	80	56	204	37	35	7.9	3.4
11	30	6.1	6.1	5.7	2.8	180	53	187	*34	32	7.4	3.2
12	25	5.9	5.7	5.6	2.8	300	50	*108	31	28	7.0	3.2
13	23	6.3	5.4	5.6	8.0	380	47	96	28	29	*6.2	3.1
14	20	7.0	5.2	5.5	18	450	46	78	27	25	58	3.1
15	18	7.0	5.2	5.4	31	160	45	70	26	24	52	3.0
16	17	6.6	5.3	5.3	24	74	41	66	25	25	14	3.0
17	15	219	5.4	5.2	18	60	66	61	22	27	14	3.0
18	14	*158	*5.6	5.0	15	54	64	75	21	28	9.2	3.4
19	13	40	5.9	4.9	8.0	995	56	132	21	21	8.3	4.3
20	13	32	6.0	4.7	5.0	1,500	67	154	20	19	6.6	3.8
21	12	27	6.0	4.6	6.0	*402	120	639	19	18	5.6	3.2
22	11	26	6.0	4.5	17	174	126	87	18	18	5.8	3.1
23	11	22	6.0	4.4	*500	358	102	99	17	17	5.6	3.2
24	10	*18	6.0	4.2	*140	224	84	123	17	*15	6.7	2.9
25	9.7	17	6.8	4.1	260	142	72	111	*16	14	*5.5	5.2
26	9.4	11	7.4	3.9	500	527	62	95	15	13	4.8	48
27	9.2	13	7.8	3.8	350	271	297	78	14	13	4.7	45
28	8.5	10	8.0	3.6	253	154	*812	70	14	13	4.7	*7.5
29	8.1	8.2	*7.9	3.5	.....	129	206	108	16	16	4.8	5.6
30	*7.6	7.0	7.4	3.4	.....	*143	*150	170	688	12	4.5	5.1
31	7.6	.....	7.0	3.3	.....	158	.....	114	.....	12	4.6	.....
1959-60												
1	4.8	8.4	32	50	46	35	780	102	82	29	14	4.1
2	8.6	7.2	35	45	45	35	458	87	70	24	13	3.9
3	7.7	7.7	35	38	44	35	248	74	62	21	13	4.0
4	6.4	762	34	33	43	35	258	68	65	19	14	3.8
5	24	274	31	30	42	35	208	81	58	20	12	3.6
6	17	143	26	34	40	35	*180	1,140	53	40	13	3.5
7	13	114	24	40	40	35	141	418	50	20	14	3.5
8	9.9	102	21	38	47	35	117	243	47	19	11	3.5
9	8.1	90	23	35	58	35	99	184	46	187	9.2	3.5
10	7.0	84	28	34	17	36	94	158	51	87	9.2	3.4
11	6.4	78	*30	32	49	38	92	145	49	54	7.8	3.4
12	6.2	75	28	*2,240	56	37	82	125	52	*95	7.6	3.3
13	6.2	72	25	845	55	36	80	117	51	65	7.4	3.3
14	6.0	58	25	387	52	36	77	110	46	44	6.9	3.3
15	5.8	46	24	438	50	36	74	99	42	38	6.4	*3.6
16	5.8	35	23	160	48	36	74	149	44	34	6.2	4.4
17	5.6	30	*23	120	44	36	210	154	44	31	6.9	4.4
18	5.5	35	21	90	42	36	141	117	114	28	11	4.5
19	5.5	*40	21	92	41	36	113	117	103	27	12	5.6
20	5.2	41	22	95	42	36	99	149	*51	24	7.4	4.5
21	5.2	39	22	82	43	35	89	113	44	23	6.5	5.0
22	5.4	44	21	*72	42	35	75	102	40	22	6.5	6.0
23	12	50	20	69	40	34	68	92	37	22	*5.6	7.9
24	17	51	20	66	*39	33	65	110	34	21	5.6	45
25	9.9	45	23	62	38	34	68	158	30	21	5.0	9.4
26	*9.5	36	44	60	37	36	*69	*153	29	22	4.7	6.5
27	8.3	30	123	58	36	78	58	113	27	*18	4.6	5.1
28	7.5	26	126	54	36	300	56	102	26	17	4.6	*4.5
29	7.0	24	93	52	36	1,000	61	92	26	16	9.5	4.8
30	6.8	28	72	50	.....	2,410	184	83	26	16	11	4.6
31	9.5	.....	60	48	.....	871	.....	76	.....	15	4.4	.....

Walnut Creek near Hartwick, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1949-50	2.92	2.99	3.55	6.80	29.3	137	7.25	30.1	154	11.8	2.07	0.51
1950-51	.34	.38	.79	3.55	103	58.3	86.6	87.2	105	76.4	15.8	6.62
1951-52	20.8	40.2	24.3	78.1	48.2	161	71.4	72.5	63.6	18.4	5.08	2.02
1952-53	.83	4.29	4.90	13.8	94.7	48.9	49.7	69.6	49.8	9.31	1.35	.28
1953-54	.31	.59	.43	.11	1.40	1.64	8.59	17.4	39.1	1.01	53.8	22.9
1954-55	53.3	11.6	7.91	11.8	64.2	23.1	51.2	27.8	7.44	9.90	.38	2.75
1955-56	.39	.29	.18	.006	4.44	3.53	2.18	1.95	.76	17.0	22.1	3.91
1956-57	.003	.41	.63	8.47	10.5	1.86	1.03	31.8	17.9	18.3	6.85	1.11
1957-58	1.08	2.37	1.88	2.21	22.1	7.02	11.9	6.26	26.2	51.4	18.2	159
1958-59	23.1	23.8	6.88	4.91	78.2	236	129	126	55.4	38.5	10.9	6.74
1959-60	8.48	82.5	37.3	179	43.0	180	147	162	50.0	36.1	8.71	5.86

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1949-50	0.041	0.042	0.050	0.096	0.413	1.93	0.102	0.425	2.17	0.166	0.029	0.0072
1950-51	.0048	.0054	.011	.050	1.45	.827	1.22	1.23	1.48	1.08	.223	.093
1951-52	.293	.567	.343	1.10	.680	2.27	1.01	1.02	.897	.260	.072	.028
1952-53	.012	.061	.069	.195	1.34	.690	.701	.982	.702	.131	.019	.0039
1953-54	.0044	.0083	.0061	.0016	.020	.023	.121	.245	.551	.014	.759	.323
1954-55	.752	1.64	1.12	1.16	.906	.326	.722	.392	.105	.140	.0054	.039
1955-56	.0055	.0041	.0025	.00008	.063	.050	.031	.028	.011	.240	.312	.055
1956-57	.000042	.0058	.0089	.119	.148	.026	.015	.449	.252	.258	.097	.016
1957-58	.015	.033	.027	.031	.312	.099	.168	.088	.370	.725	.257	2.24
1958-59	.326	.336	.097	.069	1.10	3.33	1.82	1.78	.781	.543	.154	.095
1959-60	.120	1.16	.526	2.52	.606	2.54	2.07	2.28	.705	.509	.123	.083

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1949-50	0.05	0.05	0.06	0.11	0.43	2.23	0.11	0.49	2.43	0.19	0.03	0.008
1950-51	.005	.006	.01	.06	1.52	.95	1.36	1.42	1.66	1.24	.26	.10
1951-52	.34	.63	.39	1.27	.73	2.62	1.12	1.18	1.00	.30	.08	.03
1952-53	.01	.07	.08	.22	1.39	.80	.78	1.13	.78	.15	.02	.004
1953-54	.005	.009	.007	.002	.02	.03	.14	.28	.62	.02	.87	.36
1954-55	.87	1.18	1.19	.94	.38	.81	.45	.12	.16	.006	.04	.04
1955-56	.006	.005	.003	.0001	.07	.06	.03	.03	.01	.28	.36	.06
1956-57	.00005	.006	.010	.14	.15	.03	.02	.52	.28	.30	.11	.02
1957-58	.02	.04	.03	.04	.32	.11	.19	.10	.41	.84	.30	2.50
1958-59	.38	.38	.11	.08	1.15	3.83	2.02	2.04	.87	.63	.18	.11
1959-60	.14	1.30	.61	2.91	.65	2.93	2.32	2.64	.79	.59	.14	.09

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1950	June 24, 1950	15.12	3,600	0.2	32.3	0.456	6.19	31.6	6.05
1951	June 3, 1951								
	9, 1951	13.27	1,450	.1	44.9	.633	8.59	51.9	9.93
1952	Mar. 10, 1952	13.90	1,820	1.2	50.6	.714	9.69	44.3	8.49
1953	Feb. 20, 1953	14.50	2,000	.1	28.5	.402	5.43	27.7	5.30
1954	Aug. 26-27, 1954	13.31	1,450	0	12.3	.173	2.36	18.3	3.52
1955	Apr. 23, 1955	11.57	952	0	22.3	.315	4.28	16.2	3.11
1956	July 31, 1956	12.27	895	0	4.76	.097	.91	4.78	.92
1957	May 30, 1957	(110.97)	684	0	8.25	.116	1.59	8.61	1.66
1958	Sept. 3, 1958	15.67	4,930	.3	25.6	.361	4.90	29.6	5.68
1959	Mar. 20, 1959	14.88	3,230	2.8	61.5	.897	11.78	67.6	12.96
1960	Jan. 12, 1960	15.04	3,500	3.3	78.6	1.11	15.11	.....	.....

(1) Maximum gage height, 12.02 Ft. Jan. 21, 1957 (backwater from ice).

Walnut Creek near Hartwick, Iowa—Continued

Peak Discharge (base, 900 cfs)

- 1949-50: Mar. 5 about 1,700 cfs; Mar. 6 about 2,000 cfs; June 18 (10:30 a.m.) 3,500 cfs (15.07 ft.); June 24 (7 a.m.) 3,600 cfs (15.12 ft.).
- 1950-51: Apr. 27 (7:30 p.m.) 974 cfs (11.67 ft.); May 26 (4:30 a.m.) 930 cfs (11.54 ft.); June 3 (12:30 a.m.) 1,450 cfs (13.27 ft.); July 9 (3 a.m.) 1,450 cfs (13.27 ft.); July 11 (12:30 p.m.) 908 cfs (11.36 ft.).
- 1951-52: Jan. 19 about 900 cfs; Mar. 10 (7:30 p.m.) 1,820 cfs (13.90 ft.); Mar. 13 (1 a.m.) 1,060 cfs (12.08 ft.) May 23 (2:30 a.m.) 996 cfs (11.77 ft.).
- 1952-53: Feb. 20, about 2,000 cfs.
- 1953-54: June 1 (1:30 a.m.) 952 cfs (11.64 ft.); Aug. 26 (9 a.m.) 1,450 cfs (13.29 ft.); Aug. 27 (12:30 p.m.) 1,450 cfs (13.31 ft.); Sept. 29 (8 a.m.) 1,020 cfs (11.94 ft.).
- 1954-55: Feb. 19 about 900 cfs; Apr. 23 (1:30 a.m.) 952 cfs (11.57 ft.).
- 1955-56: No peak above base.
- 1956-57: No peak above base.
- 1957-58: June 13 (1:30 p.m.) 970 cfs (12.70 ft.); July 14 (1 p.m.) 1,290 cfs (13.45 ft.); Sept. 3 (12 p.m.) 4,930 cfs (15.67 ft.); Sept. 5 (2:30 p.m.) 955 cfs (12.64 ft.); Sept. 6 (8 a.m.) 1,270 cfs (13.41 ft.).
- 1958-59: Feb. 26 about 1,000 cfs; Mar. 20 (12:30 a.m.) 3,230 cfs (14.88 ft.); Mar. 26 (2 p.m.) 1,120 cfs (12.27 ft.); Apr. 1 (7 a.m.) 1,020 cfs (11.91 ft.); Apr. 27 (11:30 p.m.) 1,950 cfs (14.07 ft.); May 21 (9 a.m.) 1,680 cfs (13.74 ft.); June 30 (8:30 p.m.) 2,180 cfs (14.24 ft.).
- 1959-60: Nov. 4 (10:30 a.m.) 1,410 cfs (13.21 ft.); Jan. 12 (10:30 p.m.) 3,500 cfs (15.04 ft.); Jan. 14 (12 p.m.) 1,450 cfs (13.01 ft.); Mar. 29 about 3,000 cfs; Mar. 21 (8 p.m.) 1,360 cfs (12.73 ft.); May 6 (4:30 p.m.) 2,640 cfs (14.56 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 15 to Dec. 31, 1949; Jan. 1 to Mar. 22, Nov. 29, to Dec. 7, Dec. 23-31, 1950; Jan. 1 to Feb. 6, Feb. 11 to Mar. 27, Nov. 2-11, Nov. 18 to Dec. 1, Dec. 10-31, 1951; Jan. 1 to Mar. 7, Nov. 26 to Dec. 6, Dec. 10-31, 1952; Jan. 1 to Mar. 9, Dec. 9, 10, 12-14, 16-24, 28-31, 1953; Jan. 1 to Feb. 23, Feb. 28 to Mar. 4, Mar. 6-15, Nov. 30 to Dec. 13, Dec. 19-31, 1954; Jan. 1 to Mar. 7, Mar. 21-30, Nov. 22, 25-29, Dec. 1-31, 1955; Jan. 1 to Mar. 23, Dec. 5-7, 10-25, 27-31, 1956; Jan. 1, 3, 10, 11, Jan. 20 to Mar. 2, Nov. 9-11, 16, 18-30, Dec. 2-31, 1957; Jan. 1 to Feb. 23, Mar. 5-18, Nov. 26 to Dec. 31, 1958; Jan. 1 to Feb. 27, Mar. 5-18, Nov. 9, 10, 14-19, Nov. 27 to Dec. 1, Dec. 6-9, 23, 24, 1959; Jan. 1-11, Jan. 16 to Feb. 9, Feb. 11 to March 29, 1960. No gage height record Oct. 1 to Nov. 14, 1949; May 15-24, 1950; Apr. 2-9, 1959.

Iowa River near Belle Plaine, Iowa

LOCATION.—Lat. $41^{\circ}51'30''$, long. $92^{\circ}16'50''$, in SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 5, T. 81 N., R. 12 W., on right bank 5 ft. downstream from bridge on State Highway 212, 1.0 mile downstream from Salt Creek, 1.1 miles downstream from Walnut Creek and 2.7 miles south of Belle Plaine.

DRAINAGE AREA.—2,455 square miles (revised in 1956).

RECORDS AVAILABLE.—September 1939 to September 1959 (discontinued).

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

AVERAGE DISCHARGE.—20 years, 1,156 cfs.

EXTREMES.—1939-59: Maximum discharge, 34,000 cfs June 14, 1947 (gage height, 17.07 ft.); minimum daily, 19 cfs Jan. 6, 1940.

Maximum discharge since at least 1902, 43,000 cfs June 5, 1918 (gage height, 17.85 ft., from information by Corps of Engineers).

REMARKS.—Bankfull stage is about gage height, 13 ft.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	91	91	52	47	37	350	442	234	308	73	*2,190	588
2	83	89	*54	47	36	350	915	216	239	65	692	350
3	76	*91	58	*48	37	360	865	213	216	*57	353	234
4	68	96	58	51	36	290	537	237	*226	57	286	322
5	68	91	58	52	35	350	458	261	206	57	229	397
6	* 86	89	58	54	35	310	427	308	190	52	190	489
7	128	86	60	54	35	270	382	*311	182	52	164	473
8	130	86	60	54	35	300	347	297	174	57	161	790
9	308	86	59	54	35	210	325	297	172	96	*180	554
10	350	86	57	52	37	220	303	325	164	133	198	427
11	303	89	56	50	39	230	269	347	154	156	449	350
12	258	89	55	47	41	250	247	353	143	130	289	305
13	229	91	54	45	43	220	234	753	130	104	660	266
14	195	89	53	43	44	175	216	2,320	120	91	698	239
15	180	91	52	43	44	155	208	1,120	117	91	760	213
16	161	95	50	47	44	170	206	622	120	*122	458	203
17	148	70	49	49	45	190	*195	489	117	161	325	185
18	141	70	48	50	45	190	180	412	104	107	261	169
19	135	80	47	50	46	180	177	368	102	338	224	156
20	130	94	46	48	46	*219	174	345	104	226	193	143
21	122	92	45	47	46	314	159	291	120	151	167	133
22	120	88	45	45	46	397	146	261	102	164	156	128
23	107	76	45	42	*47	473	133	280	89	138	138	125
24	102	88	45	41	50	473	128	283	81	109	125	120
25	102	80	45	38	100	442	122	258	*78	94	112	107
26	102	86	45	40	320	442	125	224	76	78	94	96
27	99	73	46	40	420	442	135	203	73	60	83	91
28	99	56	46	39	350	442	156	190	68	107	70	81
29	89	*47	47	38	330	489	198	195	81	208	*70	76
30	89	50	46	37	.....	*473	*245	490	91	104	68	76
31	*89	.....	48	*37	.....	458	.....	*382	.....	1,150	801	.....

Iowa River near Belle Plaine, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	72	*58	84	73	120	304	284	227	4,590	870	*1,020	520
2	67	60	90	72	120	262	*281	200	4,070	810	1,040	436
3	*65	60	92	71	116	270	295	194	2,740	790	712	385
4	62	65	92	*67	115	*267	292	190	*1,990	*2,230	608	*339
5	62	79	90	66	114	262	290	187	1,700	3,300	520	307
6	58	77	88	66	114	259	295	182	1,390	3,970	469	287
7	60	77	84	68	115	235	281	170	1,240	5,090	436	270
8	65	84	95	68	115	222	270	170	1,180	2,420	388	262
9	58	89	92	66	450	204	256	168	1,110	1,440	363	248
10	50	89	88	62	740	185	243	583	1,040	1,160	345	238
11	53	89	*85	60	900	190	233	975	952	975	330	238
12	55	79	84	58	840	194	222	660	930	870	312	265
13	55	74	80	56	860	204	212	770	890	790	298	295
14	70	86	80	55	900	200	207	1,060	850	730	312	278
15	154	96	80	54	800	192	210	1,110	910	678	307	284
16	*134	89	83	54	720	192	204	1,130	1,440	625	351	292
17	120	79	84	54	620	170	202	1,160	3,600	590	345	254
18	98	70	82	54	530	212	197	1,040	*4,370	572	324	235
19	82	113	80	54	470	222	197	910	5,400	520	276	222
20	70	132	78	54	410	240	185	830	6,580	486	262	214
21	72	110	80	200	360	278	180	1,270	6,140	452	246	217
22	79	100	80	700	310	307	185	998	3,700	486	230	248
23	74	90	76	730	270	307	182	642	2,230	1,390	220	235
24	72	100	76	350	290	315	170	870	1,740	*1,090	282	217
25	77	93	78	250	310	321	185	790	1,340	695	227	212
26	74	88	80	190	280	*307	*187	750	1,240	572	217	194
27	84	84	80	160	260	298	204	730	1,160	503	214	185
28	89	80	78	150	250	301	238	870	1,110	850	987	185
29	79	80	77	140	.....	304	*246	830	1,040	2,650	2,060	180
30	70	80	76	130	.....	312	243	*1,600	930	1,480	1,080	173
31	62	.....	74	*120	.....	290	.....	4,510	.....	952	660	.....
1957-58												
1	163	187	310	190	240	1,240	420	469	1,020	*590	1,130	538
2	*156	202	380	220	240	1,040	420	469	1,030	625	1,020	503
3	154	230	380	250	240	890	*436	469	*695	712	930	881
4	149	233	*380	280	*235	810	469	452	739	1,620	*850	5,210
5	144	248	385	305	225	712	520	452	1,640	1,850	1,440	2,560
6	142	251	385	*315	215	690	718	*436	1,440	2,400	1,230	5,110
7	139	246	385	315	205	*625	1,250	404	1,290	2,060	975	4,250
8	137	243	365	315	195	590	1,700	404	1,180	1,700	810	2,270
9	137	238	315	315	195	555	1,590	404	2,400	*1,340	712	1,590
10	146	220	265	305	190	538	1,440	388	2,930	1,160	660	1,290
11	151	212	200	285	175	520	1,240	372	2,400	1,090	608	1,060
12	146	207	210	270	160	520	1,130	354	1,590	1,290	572	930
13	146	225	240	265	150	520	1,020	330	2,710	1,540	538	830
14	137	225	260	265	140	520	930	312	4,020	*3,640	503	770
15	146	230	280	265	130	520	870	307	3,680	*5,900	1,720	750
16	163	265	305	270	120	503	810	307	3,580	6,520	3,970	770
17	200	287	340	285	115	486	770	565	2,210	4,020	3,890	770
18	202	287	405	305	110	469	730	369	1,640	2,770	2,090	730
19	180	310	470	320	110	452	695	348	1,340	2,540	1,490	678
20	168	287	530	330	110	452	660	321	1,180	2,400	1,160	660
21	158	280	640	330	110	436	642	301	1,040	2,200	1,160	625
22	154	270	600	310	110	436	608	287	930	1,880	1,440	590
23	163	290	530	300	200	436	590	295	870	1,590	1,240	555
24	222	305	490	285	1,000	436	590	278	820	1,440	1,090	555
25	246	320	440	275	3,000	436	572	256	740	2,200	*930	555
26	240	330	390	260	2,550	436	555	243	680	1,940	830	520
27	212	345	335	250	2,280	420	520	238	660	1,590	750	503
28	200	370	300	250	1,590	420	503	238	600	1,390	695	469
29	190	300	250	245	.....	420	503	233	560	1,340	660	*436
30	*185	215	220	240	.....	420	486	235	540	1,340	608	436
31	187	.....	145	240	.....	420	.....	371	.....	1,240	572	.....

Iowa River near Belle Plaine, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Year 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	404	262	280	245	120	4,300	6,350	1,640	3,380	3,320	452	287
2	388	262	320	230	120	4,700	5,400	1,340	3,540	2,530	404	301
3	388	259	300	210	120	*4,370	4,700	1,490	3,620	2,470	388	301
4	379	256	270	190	120	3,300	3,700	1,390	3,540	2,230	385	284
5	369	254	270	160	115	2,850	2,950	1,290	3,300	1,890	376	336
6	357	248	280	170	115	1,900	2,530	1,290	3,020	1,590	382	572
7	366	243	295	185	110	1,350	2,230	1,340	2,770	1,340	369	608
8	382	240	290	190	110	960	2,050	1,240	2,410	1,180	348	538
9	678	240	285	195	110	730	1,890	1,200	1,990	1,240	339	452
10	404	238	265	195	110	678	1,790	1,880	1,700	1,040	324	388
11	436	235	255	190	115	850	1,640	2,200	1,490	930	310	339
12	382	230	245	185	120	1,930	1,440	2,200	1,340	850	295	304
13	354	227	235	180	120	2,950	1,390	1,880	1,200	810	284	278
14	345	227	230	170	125	4,370	1,290	1,590	1,110	730	290	259
15	333	230	220	160	130	4,480	1,240	1,440	1,020	678	719	243
16	330	235	205	150	130	4,070	1,160	1,340	975	642	366	235
17	318	358	195	145	125	2,560	1,130	1,240	910	625	333	225
18	310	2,580	185	140	120	1,640	1,240	1,160	850	730	321	217
19	304	1,500	180	130	120	2,730	1,130	2,010	810	642	295	217
20	298	930	175	125	115	8,900	1,160	3,880	770	572	270	214
21	295	712	170	120	110	9,850	1,290	4,820	730	555	254	220
22	290	698	170	115	110	11,600	1,490	3,880	*695	503	243	212
23	287	555	170	115	400	*12,600	1,490	3,160	660	*486	230	210
24	278	520	170	120	1,000	9,200	1,490	2,890	625	469	*230	197
25	276	*486	175	120	800	6,830	1,390	*2,470	608	436	238	207
26	273	452	190	125	1,700	6,830	1,240	2,350	572	420	240	290
27	*273	385	215	*125	2,700	9,850	*1,310	2,230	555	388	256	1,060
28	273	330	240	125	3,700	7,600	4,320	2,230	520	385	278	555
29	273	250	*260	125	.....	9,200	2,650	2,470	520	404	262	*404
30	267	220	265	125	.....	7,800	1,990	2,770	1,680	379	256	382
31	265	.....	260	125	.....	6,350	.....	2,950	.....	404	265	.....

Iowa River near Belle Plaine, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	142	82.8	51.2	46.1	86.3	317	288	416	138	148	350	262
1956-57	75.5	85.0	82.8	140	411	252	229	831	2,253	1,291	498	264
1957-58	170	262	359	279	512	559	780	352	1,538	2,062	1,170	1,246
1958-59	341	459	234	158	460	5,075	2,169	2,105	1,564	996	323	344

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.058	0.034	0.021	0.019	0.035	0.129	0.117	0.169	0.056	0.060	0.143	0.107
1956-57	.031	.035	.034	.057	.167	.103	.093	.338	.918	.526	.203	.108
1957-58	.069	.107	.146	.114	.209	.228	.318	.143	.626	.840	.477	.508
1958-59	.139	.187	.095	.064	.187	2.07	.884	.857	.637	.406	.132	.140

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.07	0.04	0.02	0.02	0.04	0.15	0.13	0.20	0.06	0.07	0.16	0.12
1956-57	.04	.04	.04	.07	.17	.12	.10	.39	1.02	.61	.23	.12
1957-58	.08	.12	.17	.13	.22	.26	.35	.17	.70	.97	.55	.57
1958-59	.16	.21	.11	.07	.20	2.38	.99	.99	.71	.47	.15	.16

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								463	2.57
1956	May 14, 1956	10.37	2,590	35	195	0.079	1.08	192	1.07
1957	June 20, 1957	14.21	6,950	50	534	218	2.95	580	3.20
1958	July 16, 1958	14.45	7,200	110	774	315	4.29	794	4.40
1959	Mar. 23, 1959	15.37	14,100	110	1,192	486	6.60		

Peak Discharge (base, 5,500 cfs)

1955-56: No peak above base.

1956-57: June 20 (9 p.m.) 6,950 cfs (14.21 ft.).

1957-58: July 16 (1 a.m.) 7,200 cfs (14.45 ft.); Sept. 4 (9:30 a.m.) 6,080 cfs (13.94 ft.).

1958-59: Mar. 23 (2 a.m.) 14,100 cfs (15.37 ft.); Mar 27 (4 p.m.) 11,300 cfs (15.02 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 16 to Dec. 31, 1955; Jan. 1 to Mar. 16, Nov. 21 to Dec. 6, Dec. 8-31, 1956; Jan. 1 to Feb. 28, Nov. 21 to Dec. 31, 1957; Jan. 1 to Feb. 26, Nov. 28 to Dec. 31, 1958, Jan. 1 to Mar. 1, Mar. 6-8, 1959. No gage height record June 24-30, 1958.

Bear Creek at Ladora, Iowa

LOCATION.—Lat. 41°45'00", long. 92°11'00", in SW¼SW¼ sec. 7, T. 80 N., R. 11 W., on right bank 10 ft. downstream from highway bridge, a quarter of a mile south of Ladora, and 2½ miles upstream from Little Bear Creek.

DRAINAGE AREA.—189 square miles (revised in 1956).

RECORDS AVAILABLE.—October 1945 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 759.28 ft. above mean sea level, datum of 1929. Prior to June 26, 1946, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—15 years, 105 cfs.

EXTREMES.—1945-60: Maximum discharge, 10,500 cfs Mar. 30, 1960 (gage height, 14.60 ft.); no flow Jan. 22 to Feb. 8, 1956.

REMARKS.—Bankfull stage is about gage height, 10 ft. Road is overflowed at gage height, 14 ft.

REVISIONS (water years).—WSP 1308: 1947(M).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	10	*2.0	*0.2	0.3	0	20	4.8	6.8	1.0	0.2	407	2.8
2.....	4.8	2.0	.3	.3	0	*11	4.8	*4.2	.6	.2	95	2.8
3.....	3.5	*2.0	.4	*.3	0	9.0	9.6	3.5	.4	*.7	22	2.8
4.....	3.1	2.0	.5	.3	0	7.6	7.5	3.5	.4	.4	13	4.7
5.....	*3.3	2.0	.5	.3	0	6.8	6.2	3.3	*.4	.4	9.5	4.7
6.....	2.9	2.0	.5	.3	0	6.2	3.5	3.3	.4	114	7.9	3.6
7.....	2.6	2.0	.4	.3	0	5.6	3.5	3.1	.7	*583	6.7	3.2
8.....	2.6	2.0	.4	.3	0	8.0	3.1	*2.4	*.8	44	6.3	3.2
9.....	2.4	2.2	.4	.3	.1	11	2.7	2.3	.8	18	*5.7	2.5
10.....	2.3	2.2	.4	.3	.1	13	2.7	2.3	.8	12	5.5	1.6
11.....	2.2	2.2	.4	.3	.1	12	2.4	2.6	.6	7.7	5.1	1.4
12.....	2.2	2.3	.4	.3	.2	11	2.4	2.7	.5	6.7	33	.9
13.....	1.9	2.2	.4	.3	.2	10	2.2	2.6	.5	5.9	50	.7
14.....	1.9	2.2	.4	.3	.2	9.1	2.2	2.3	.5	5.1	8.7	.6
15.....	1.9	2.2	.3	.3	.2	8.3	2.2	1.8	.5	4.2	5.7	.7
16.....	1.9	1.9	.2	.2	.2	7.8	*2.2	1.6	.5	3.8	5.3	.5
17.....	1.9	1.6	.2	.2	.2	7.2	2.2	1.5	.5	*2.5	4.7	.3
18.....	1.9	1.4	.2	.2	.2	6.5	1.8	1.3	.6	*44	39	.3
19.....	1.9	1.1	.2	.1	.2	6.0	1.8	1.0	.6	322	22	.9
20.....	1.9	1.4	.2	.1	.2	*5.6	1.6	1.0	35	58	7.1	.5
21.....	1.8	1.7	.2	.1	.3	6.2	1.4	1.0	37	20	5.3	.2
22.....	1.8	2.0	.3	0	.3	5.5	1.5	1.1	1.9	12	4.2	.1
23.....	1.8	2.3	.3	0	.3	6.2	1.5	1.6	.8	9.7	3.6	.1
24.....	1.9	1.8	.3	0	.5	2.6	1.5	1.0	.9	8.1	3.0	.1
25.....	1.8	1.4	.3	0	3.5	5.1	1.5	.9	*.3	6.9	2.5	.2
26.....	1.8	.9	.3	0	11	5.1	2.4	.9	.4	6.3	2.5	.1
27.....	1.8	.6	.3	0	31	4.8	2.7	.9	.6	5.9	2.0	.1
28.....	1.9	.4	.3	0	50	*6.8	6.2	.9	.3	6.5	2.0	.1
29.....	1.9	.3	.3	0	34	6.2	24	5.1	.2	5.7	2.0	.1
30.....	3.1	*.2	.3	0	.....	5.1	13	1.9	.2	6.1	*4.7	.4
31.....	2.3	.....	.3	*0	.....	5.1	.....	1.2	.....	*66	*4.2	.....

Bear Creek at Ladora, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1.....	0.4	*1.0	2.0	1.0	1.3	4.9	7.6	2.9	210	13	170	12
2.....	.2	1.0	2.0	1.0	1.3	6.1	*9.1	*2.5	97	*13	38	10
3.....	.1	1.0	1.8	.9	1.3	5.5	11	2.0	73	28	24	8.5
4.....	.1	1.0	1.8	.9	*1.4	*4.6	14	2.0	59	836	20	*7.9
5.....	.1	1.6	1.8	.8	1.4	4.6	18	1.8	49	191	17	7.0
6.....	.1	1.6	1.5	.8	1.4	4.6	15	1.8	*44	49	16	8.5
7.....	.1	1.6	1.2	.8	1.5	4.6	10	1.8	54	34	16	11
8.....	.1	1.6	1.1	.8	1.7	4.3	8.2	1.5	65	28	14	8.5
9.....	.1	1.6	1.0	.8	100	4.6	6.4	1.6	49	23	14	7.0
10.....	.1	1.6	1.0	.8	52	4.3	6.4	11	46	20	13	*6.1
11.....	.3	1.6	*1.1	.8	25	4.3	5.2	68	42	18	12	7.9
12.....	.3	1.6	1.2	.8	16	4.9	5.2	26	52	16	12	12
13.....	.3	1.6	1.1	.7	14	4.9	3.7	29	66	14	12	9.1
14.....	.8	1.3	1.0	.7	13	4.9	3.4	132	48	14	12	7.9
15.....	.6	4.6	.9	.7	12	4.9	3.4	48	38	13	16	12
16.....	.6	3.4	.8	.7	11	5.2	2.9	36	33	12	11	11
17.....	.4	2.9	.8	.8	10	4.6	2.9	*29	35	12	9.7	7.9
18.....	.4	2.9	.8	.8	9.0	4.6	2.9	22	302	11	9.7	7.0
19.....	.5	2.5	.8	.8	8.0	12	2.9	19	*65	10	9.1	6.4
20.....	2.1	2.5	.8	.9	7.2	12	2.9	17	43	9.4	8.5	6.4
21.....	.7	2.4	.8	150	6.6	8.2	2.5	249	34	9.4	8.2	22
22.....	1.0	2.2	.9	230	6.4	7.0	5.8	*207	29	15	8.5	12
23.....	.7	2.1	.9	40	6.8	5.5	6.7	50	25	17	8.2	7.3
24.....	.7	2.5	.9	8.0	6.6	5.2	3.7	32	22	*10	8.8	6.4
25.....	.7	2.6	.9	3.5	8.5	4.6	2.9	25	22	8.2	8.2	5.8
26.....	.8	2.5	.9	2.5	7.6	4.6	12	43	24	7.3	7.9	5.5
27.....	.5	2.2	1.0	2.0	7.0	*4.6	*11	20	21	7.6	9.1	*5.2
28.....	.5	2.1	1.0	1.7	4.3	5.8	9.4	17	22	1,040	28	5.2
29.....	.5	2.0	1.0	1.5	.....	11	7.0	15	17	224	76	5.2
30.....	.7	2.0	1.1	1.4	.....	9.7	4.3	*1,610	15	76	18	5.2
31.....	.7	.....	1.1	1.4	.....	9.1	.....	719	.....	*49	14	.....
1957-58												
1.....	5.0	13	18	4.5	7.7	39	20	17	498	12	82	16
2.....	5.0	24	22	5.2	7.4	34	24	17	53	49	63	15
3.....	4.7	16	25	4.7	7.1	*28	*25	19	35	42	53	634
4.....	4.7	*12	25	4.1	6.8	26	28	18	*29	464	46	*4,260
5.....	4.7	11	22	3.6	*6.5	26	31	16	23	152	*536	1,830
6.....	4.4	9.0	*23	*4.3	6.2	25	45	15	19	90	139	1,100
7.....	4.7	9.4	20	5.6	5.9	31	57	14	18	68	81	384
8.....	5.0	8.9	18	7.4	5.4	28	52	15	80	*57	61	232
9.....	4.7	7.4	16	8.7	5.1	25	51	14	240	*50	50	196
10.....	4.4	6.0	13	9.8	4.7	33	45	13	89	45	44	355
11.....	5.0	6.6	12	10	4.2	31	40	13	31	48	40	156
12.....	5.0	6.6	10	11	3.8	32	38	12	26	67	37	128
13.....	5.0	8.6	9.0	11	3.5	35	35	11	*965	42	37	109
14.....	4.7	9.4	11	12	3.2	33	34	11	228	107	34	96
15.....	*6.2	8.2	13	12	3.0	31	32	12	85	54	119	100
16.....	13	7.8	16	*13	3.0	29	31	153	62	40	52	89
17.....	7.8	9.8	20	13	3.0	28	*29	49	52	37	36	79
18.....	4.7	15	25	13	3.0	29	28	26	41	37	31	72
19.....	4.4	25	31	12	3.0	*26	28	18	37	39	29	67
20.....	4.1	*29	20	12	3.0	25	28	16	32	47	31	63
21.....	3.8	22	15	11	3.0	24	26	*14	27	*38	49	63
22.....	3.8	27	13	10	3.0	24	24	13	24	35	*31	56
23.....	7.4	28	12	9.6	7.0	23	24	13	22	32	27	53
24.....	34	22	11	9.4	*740	22	26	11	24	31	26	67
25.....	17	23	9.9	9.2	210	21	20	10	38	254	24	57
26.....	13	21	13	9.1	105	21	18	9.4	21	65	23	49
27.....	12	19	11	9.0	75	21	19	9.4	18	61	23	46
28.....	10	18	8.3	8.8	55	21	19	8.2	16	49	*21	44
29.....	8.6	16	6.7	8.6	.....	20	18	7.4	15	40	19	43
30.....	9.4	13	5.0	8.3	.....	20	*17	7.4	13	630	18	42
31.....	8.6	.....	3.6	8.0	.....	20	.....	218	.....	135	17	.....

Bear Creek at Ladora, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	44	28	41	27	12	425	1,440	*278	285	1,320	40	13
2.....	*38	28	46	29	*12	285	595	240	*240	324	39	16
3.....	37	28	50	28	12	219	420	315	212	233	42	12
4.....	35	26	48	27	12	108	308	248	191	198	39	10
5.....	33	26	41	26	12	74	270	226	178	184	36	9.5
6.....	32	25	32	25	12	92	212	226	162	144	38	8.6
7.....	40	24	26	24	12	115	198	198	150	126	36	7.7
8.....	58	25	24	23	11	90	191	170	139	118	34	6.9
9.....	*543	24	24	23	11	76	161	164	132	111	34	6.9
10.....	134	24	26	24	11	138	146	336	126	97	32	6.0
11.....	91	23	27	24	11	326	139	349	*119	91	30	6.0
12.....	77	23	29	24	11	475	134	*233	111	82	30	6.0
13.....	69	23	30	24	11	560	124	205	98	77	*29	6.0
14.....	62	23	30	24	35	920	116	171	91	71	27	6.0
15.....	56	24	29	23	31	510	110	158	87	67	66	6.4
16.....	50	24	27	23	28	310	104	145	85	67	43	6.4
17.....	46	93	26	22	26	190	114	136	76	76	37	7.3
18.....	42	*678	25	21	24	150	178	153	72	504	30	7.3
19.....	42	121	26	19	22	1,740	142	*650	73	103	26	10
20.....	41	85	28	18	21	3,780	178	*352	67	82	24	12
21.....	37	69	29	17	20	*1,170	248	*1,860	64	73	22	7.7
22.....	36	52	31	16	20	468	248	600	61	94	20	6.0
23.....	35	56	32	15	300	784	308	450	55	73	18	6.0
24.....	34	*51	32	15	260	663	255	358	51	*59	*17	5.1
25.....	33	48	32	15	220	411	219	308	*48	54	17	7.7
26.....	32	46	32	15	*640	1,180	184	278	45	49	15	48
27.....	32	43	31	14	*1,090	667	178	233	46	47	13	236
28.....	30	40	30	14	778	358	*1,530	212	48	47	13	40
29.....	29	37	*27	14	.....	292	480	292	48	74	13	*22
30.....	*28	35	26	13	.....	*292	340	502	923	48	13	16
31.....	28	.....	25	13	.....	315	.....	349	.....	42	12	.....
1959-60												
1.....	14	31	92	164	*155	93	3,620	328	264	82	44	17
2.....	14	28	86	158	152	92	2,060	274	224	68	43	16
3.....	22	28	82	128	148	91	940	238	189	58	44	15
4.....	17	1,050	78	103	145	91	852	212	386	50	46	14
5.....	56	691	75	118	147	91	715	204	306	53	41	13
6.....	117	300	71	140	145	91	*598	2,560	200	57	40	13
7.....	77	219	62	154	133	92	473	1,980	174	46	42	12
8.....	51	184	56	130	147	92	384	852	158	41	39	12
9.....	40	178	64	115	200	94	306	570	144	301	36	12
10.....	34	158	73	105	160	96	285	473	170	385	33	12
11.....	28	133	80	100	140	98	285	420	204	153	32	12
12.....	27	126	79	*3,000	130	100	236	372	202	*273	30	11
13.....	25	122	72	3,500	125	100	222	317	226	568	27	11
14.....	24	103	71	870	135	100	298	285	171	238	25	11
15.....	22	84	71	1,000	135	100	196	248	148	185	24	*12
16.....	20	74	69	450	130	100	189	350	145	155	24	13
17.....	18	68	*68	340	126	99	458	339	132	137	22	13
18.....	20	80	63	260	120	98	420	262	279	124	49	14
19.....	18	92	67	220	118	94	306	264	264	110	53	15
20.....	17	*103	65	200	117	86	274	274	236	96	32	12
21.....	15	115	65	220	117	90	262	285	*189	88	30	12
22.....	15	107	64	260	116	87	220	242	157	81	26	12
23.....	39	116	60	220	113	85	202	212	142	80	*23	26
24.....	56	121	64	210	*112	82	172	202	116	137	21	88
25.....	39	111	66	196	108	81	*174	460	103	70	20	71
26.....	*34	94	104	185	104	82	193	*1,000	96	80	18	24
27.....	32	82	270	180	100	120	164	460	82	*66	17	18
28.....	29	67	384	170	97	*1,260	155	361	75	58	17	*16
29.....	28	80	278	166	96	4,300	164	317	76	54	34	16
30.....	26	94	219	162	.....	*9,480	399	274	74	51	26	16
31.....	30	.....	184	158	.....	*4,710	.....	240	.....	46	18	.....

Bear Creek at Ladora, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	2.55	1.68	0.33	0.17	4.59	7.75	4.17	2.25	2.94	44.7	25.7	1.34
1956-57	.49	2.04	1.13	14.8	12.2	5.99	6.88	111	56.7	91.2	20.9	8.46
1957-58	7.57	15.1	15.4	8.96	48.4	26.8	30.4	25.8	95.5	94.2	60.6	350
1958-59	62.1	61.7	31.0	20.6	131	554	309	335	136	153	28.5	18.8
1959-60	32.2	161	103	432	130	719	504	480	178	129	31.5	18.6

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.013	0.0089	0.0017	0.00090	0.024	0.041	0.022	0.012	0.016	0.237	0.136	0.0071
1956-57	.0026	.011	.0060	.078	.065	.032	.036	.587	.300	.483	.111	.045
1957-58	.040	.080	.031	.047	.256	.142	.161	.137	.505	.498	.321	1.85
1958-59	.329	.326	.164	.109	.693	2.93	1.63	1.77	.720	.810	.151	.099
1959-60	.170	.852	.545	2.29	.688	3.80	2.67	2.54	.942	.683	.167	.098

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.02	0.01	0.002	0.001	0.03	0.05	0.02	0.01	0.02	0.27	0.16	0.008
1956-57	.003	.01	.007	.09	.07	.04	.04	.68	.33	.56	.13	.05
1957-58	.05	.09	.09	.05	.27	.16	.18	.16	.56	.57	.37	2.07
1958-59	.38	.36	.19	.13	.72	3.38	1.82	2.05	.80	.93	.17	.11
1959-60	.20	.95	.63	2.63	.74	4.38	2.98	2.93	1.05	.79	.19	.11

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								34.6	2.49
1956	July 7, 1956	9.60	2,950	0	8.26	0.044	0.60	8.18	.59
1957	May 30, 1957	11.43	4,600	0.1	27.9	.148	2.01	30.8	2.22
1958	Sept. 4, 1958	13.78	5,290	3.0	64.4	.341	4.62	74.2	5.32
1959	Mar. 20, 1959	13.06	4,670	5.1	154	.815	11.04	166	11.89
1960	Mar. 30, 1960	14.60	10,500	11	244	1.29	17.58		

Peak Discharge (base, 1,500 cfs)

- 1955-56: July 7 (12:30 a.m.) 2,950 cfs (9.60 ft.).
- 1956-57: May 30 (10 p.m.) 4,600 cfs (11.43 ft.); July 4 (3:30 p.m.) 1,520 cfs (7.42 ft.); July 28 (6 p.m.) 2,440 cfs (8.93 ft.).
- 1957-58: Feb. 23 about 1,600 cfs; June 1 (1 a.m.) 1,500 cfs (7.93 ft.); June 13 (2 p.m.) 2,130 cfs (9.22 ft.); Sept. 4 (2:30 p.m.) 5,290 cfs (13.78 ft.); Sept. 5 (2:30 p.m.) 3,230 cfs (11.08 ft.); Sept. 6 (11 a.m.) 1,510 cfs (7.92 ft.).
- 1958-59: Feb. 27 (1 a.m.) 1,720 cfs (8.24 ft.); Mar. 20 (6 a.m.) 4,670 cfs (13.06 ft.); Mar. 26 (7 p.m.) 1,800 cfs (8.40 ft.); Apr. 1 (11 a.m.) 2,200 cfs (9.15 ft.); Apr. 28 (6 a.m.) 2,150 cfs (8.82 ft.); May 21 (9 a.m.) 3,480 cfs (11.39 ft.); July 1 (12:30 a.m.) 3,270 cfs (11.08 ft.); July 18 (2:30 a.m.) 1,580 cfs (7.89 ft.).
- 1959-60: Nov. 4 (1 p.m.) 1,850 cfs (8.51 ft.); Jan. 12 (9 p.m.) 4,950 cfs (13.50 ft.); Jan. 15 about 2,000 cfs; Mar. 30 (12:30 p.m.) 10,500 cfs (14.60 ft.); May 6 (9 p.m.) 5,940 cfs (12.10); May 26 (4 a.m.) 2,160 cfs (7.95 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.
 Stage-discharge relation affected by ice Nov. 16 to Dec. 31, 1955; Jan. 1 to Mar. 20, Nov. 21 to Dec. 31, 1956; Jan. 1 to Feb. 24, Nov. 8-11, 18, 19, 22-30, Dec. 10-31, 1957; Jan. 1 to Feb. 25, Nov. 26 to Dec. 31, 1958; Jan. 1 to Feb. 26, Mar. 5-9, 13-18, Nov. 15-20, Nov. 26 to Dec. 10, Dec. 23, 1959; Jan. 3-12, 15, Jan. 18 to Feb. 1, Feb. 9 to Mar. 27, 1960.

Iowa River at Marengo, Iowa

LOCATION.—Lat. $41^{\circ}48'35''$, long. $92^{\circ}04'20''$, in NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 24, T. 81 N., R. 11 W., on right bank at downstream side of abandoned highway bridge, 0.7 mile downstream from Bear Creek, 0.8 mile north of Marengo, and 4.9 miles upstream from Hilton Creek.

DRAINAGE AREA.—2,794 square miles.

RECORDS AVAILABLE.—October 1956 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 725.06 ft. above mean sea level, datum of 1929.

EXTREMES.—1956-60: Maximum discharge, 30,800 cfs Mar. 31, 1960 (gage height, 19.21 ft.); minimum daily, 54 cfs (estimated) Oct. 11, 12, 1956.

REMARKS.—Bankfull stage is about gage height, 11 ft. Levees in vicinity of gage overtopped about gage height, 22 ft.

Daily Discharge, in Cubic Feet per Second, for Water Year 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	76	62	88	73	155	300	329	255	*4,480	1,120	1,280	610
2	74	62	92	72	150	280	*329	235	4,480	1,010	1,260	493
3	70	64	93	*71	140	320	332	*210	*3,910	962	930	429
4	66	75	94	72	*135	315	345	200	2,510	1,990	722	*380
5	62	85	*94	72	135	*304	345	195	*2,000	*3,460	*610	344
6	61	78	92	72	135	292	342	190	1,640	3,540	545	323
7	65	78	90	70	135	278	329	183	*1,420	4,030	474	305
8	72	86	100	70	135	255	316	*179	1,320	*4,030	440	290
9	64	90	94	70	800	246	302	176	1,240	2,000	404	276
10	56	90	91	66	780	234	285	252	*1,170	1,470	377	*257
11	54	90	88	63	860	226	280	782	1,080	1,240	356	260
12	54	82	86	61	840	234	273	718	1,030	1,100	341	273
13	60	78	82	60	860	242	268	615	1,030	985	323	305
14	90	88	80	60	860	240	257	940	962	895	311	302
15	170	98	84	60	800	228	251	1,050	940	828	332	293
16	140	92	85	60	700	222	249	1,010	1,080	785	317	308
17	125	82	84	60	600	218	246	1,050	2,810	725	368	287
18	105	78	82	60	450	220	240	1,010	4,120	685	323	260
19	90	120	79	60	400	262	236	895	*4,300	650	296	250
20	74	150	80	60	350	280	236	805	4,750	615	276	237
21	75	120	81	300	300	302	226	*1,160	6,120	580	262	260
22	85	110	81	800	280	326	222	*1,540	6,860	668	250	247
23	76	96	77	700	310	342	224	872	4,010	980	247	257
24	74	110	78	800	290	353	222	*805	2,300	*1,370	262	234
25	80	98	80	520	280	365	216	785	1,820	918	268	217
26	77	95	82	380	310	*359	214	745	1,640	725	230	207
27	88	90	81	300	350	345	*222	685	1,580	650	230	200
28	94	86	80	250	325	340	230	725	1,420	1,310	515	187
29	86	84	78	210	.....	342	242	785	1,320	2,400	1,840	190
30	76	84	76	180	.....	351	251	2,000	1,220	2,120	1,460	183
31	65	.....	74	160	.....	337	.....	*4,320	.....	1,200	835	.....

Iowa River at Marengo, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1958 and 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58												
1	*174	*207	300	200	250	1,700	432	521	1,460	655	1,400	588
2	*169	227	350	230	250	1,340	446	*513	*1,260	678	1,260	545
3	167	242	380	270	245	*1,160	*464	509	*980	835	1,160	962
4	163	242	390	300	240	1,030	501	509	768	1,540	1,060	*8,800
5	161	244	*395	330	*230	930	545	485	1,310	2,000	*1,640	*9,540
6	157	254	395	*345	220	858	678	471	1,700	2,300	1,920	7,500
7	157	252	390	320	210	790	1,060	450	1,400	2,300	1,200	6,480
8	155	252	370	360	205	745	1,700	432	1,310	1,940	1,060	5,190
9	155	244	340	360	200	700	1,820	429	2,230	*1,580	905	2,790
10	155	234	280	350	200	678	1,640	422	*3,140	1,280	812	2,370
11	161	227	200	320	190	632	1,430	404	2,860	1,200	745	1,760
12	163	220	220	310	180	632	1,280	387	2,000	1,340	700	1,460
13	161	232	250	300	170	632	1,180	365	*3,060	1,580	655	1,280
14	161	237	280	300	155	632	1,080	341	*3,940	2,800	632	1,160
15	*167	237	310	*300	145	632	1,000	329	*3,860	*4,680	1,480	1,080
16	172	242	340	310	135	610	*930	390	3,780	*5,240	2,940	1,080
17	192	284	370	320	125	565	880	678	3,240	*6,660	3,860	1,030
18	212	311	420	340	120	545	835	471	*1,970	5,180	3,100	*980
19	202	338	480	350	120	*525	790	408	*1,600	3,220	1,940	905
20	187	*311	560	370	120	513	745	365	*1,370	2,860	*1,430	858
21	176	308	660	390	120	501	722	*338	1,200	*2,580	1,260	812
22	172	296	722	320	130	478	678	332	1,080	2,300	1,490	745
23	187	308	632	350	170	468	655	320	980	1,940	1,430	700
24	232	344	545	330	1,000	460	655	323	955	1,820	1,260	*700
25	257	344	525	310	3,200	450	655	287	930	2,300	*1,080	678
26	254	362	474	290	3,000	446	632	270	858	2,370	955	632
27	237	384	410	280	*2,720	440	588	265	835	2,000	858	588
28	220	390	360	270	2,440	440	565	260	768	1,700	790	565
29	212	350	310	260	.....	436	545	250	722	1,520	745	*525
30	202	230	270	250	.....	436	545	242	700	2,120	700	505
31	200	.....	230	250	.....	432	.....	310	.....	1,700	632	.....
1958-59												
1	478	311	340	280	140	4,500	9,040	2,450	3,860	5,610	508	288
2	457	311	370	260	140	*5,000	*7,900	2,030	4,100	3,620	508	304
3	450	308	360	240	140	5,610	6,490	2,240	*4,100	3,080	473	307
4	443	305	330	230	140	4,960	5,470	2,100	4,020	2,800	456	291
5	422	299	320	200	130	3,460	4,280	1,830	3,940	2,450	440	284
6	408	290	330	190	130	1,960	3,460	1,770	3,620	2,030	440	423
7	422	287	330	210	130	1,430	3,010	1,830	3,300	1,650	440	595
8	446	284	330	220	130	1,100	2,730	1,710	3,010	1,480	416	*578
9	1,430	284	320	220	130	900	2,520	1,650	2,520	1,480	400	490
10	700	282	300	220	130	900	2,310	2,240	*2,100	1,280	380	440
11	588	276	280	220	130	1,100	2,170	2,730	1,770	1,160	352	400
12	545	273	280	210	140	2,310	1,960	2,590	1,600	1,040	*339	345
13	485	270	270	210	150	3,540	1,830	*2,380	1,430	972	316	304
14	460	270	260	200	180	4,840	1,770	2,030	1,280	905	300	281
15	436	273	250	180	200	4,600	1,650	1,830	1,160	845	582	256
16	418	273	240	170	210	4,960	1,540	1,650	1,080	785	490	227
17	408	311	230	165	200	4,600	1,480	1,540	1,020	765	380	217
18	394	2,100	*215	160	180	2,800	1,710	1,480	950	1,540	358	*208
19	380	2,270	205	150	160	4,190	1,540	2,480	885	845	323	208
20	374	1,260	200	145	150	11,600	1,600	3,860	865	745	300	211
21	368	930	190	140	140	*13,200	1,770	6,290	805	686	272	214
22	362	790	190	*135	150	11,200	2,170	6,100	*765	667	259	208
23	350	700	190	135	500	14,000	2,170	4,960	725	*686	256	208
24	347	*655	190	140	1,000	13,600	2,030	4,020	686	595	*249	204
25	335	*610	190	145	1,600	9,940	1,890	3,300	648	560	246	*217
26	329	545	210	150	2,500	9,340	1,710	3,010	612	542	246	332
27	*326	468	250	*150	4,000	9,940	*1,650	2,870	595	508	246	1,220
28	323	410	280	150	4,700	10,900	5,160	2,730	578	*490	256	*825
29	320	350	300	150	.....	9,040	4,960	3,010	578	560	268	560
30	317	300	*300	145	.....	10,300	3,150	3,780	2,350	490	275	473
31	311	.....	300	140	.....	9,040	.....	3,860	.....	473	281	.....

Iowa River at Marengo, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Year 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1959-60												
1	473	361	900	1,400	1,300	750	20,500	4,100	5,000	1,250	565	645
2	473	355	1,100	1,200	1,260	700	18,400	4,200	*4,100	1,200	545	565
3	490	352	1,000	880	1,200	660	20,500	*4,200	3,310	1,120	525	508
4	508	2,120	905	580	1,150	640	17,200	3,730	3,150	1,050	508	455
5	578	*3,740	860	680	1,100	620	13,100	3,310	3,070	1,000	490	410
6	805	1,980	792	920	1,100	600	10,500	5,280	2,700	1,000	472	374
7	765	1,680	748	1,100	1,050	580	8,900	11,900	2,420	950	472	343
8	595	1,500	*792	1,250	1,050	560	7,900	12,700	*2,280	905	472	322
9	525	1,450	718	1,050	1,150	540	7,320	13,100	2,160	1,050	448	290
10	480	1,400	685	920	1,000	540	6,620	*13,100	2,040	1,860	*455	277
11	456	1,300	725	880	940	540	5,880	*11,100	2,160	1,560	472	268
12	440	1,250	748	*5,700	920	530	4,800	9,400	2,100	1,740	441	253
13	413	1,250	725	12,300	900	520	4,000	8,100	2,280	*2,160	413	*247
14	400	1,150	*705	*13,100	840	520	3,550	6,960	2,040	1,680	402	241
15	384	940	685	10,200	800	520	3,310	5,740	*1,980	1,400	420	247
16	374	840	685	7,000	800	520	3,070	4,600	1,920	1,220	378	244
17	364	700	665	4,700	800	530	3,640	4,500	1,800	1,150	364	241
18	352	800	645	3,000	860	550	5,120	4,500	1,800	1,080	396	250
19	342	940	645	2,200	920	570	5,880	4,600	2,560	975	416	280
20	326	1,150	645	2,000	940	580	6,300	4,300	2,040	928	448	312
21	316	1,120	645	2,100	940	590	6,960	4,400	*1,980	882	525	301
22	316	1,100	625	2,400	920	600	6,780	4,200	1,980	838	472	318
23	377	*1,120	625	2,500	*870	600	6,020	4,200	1,860	815	427	392
24	413	1,120	625	2,400	840	610	4,700	*4,400	1,680	882	*396	585
25	406	1,050	605	2,300	820	610	*3,300	4,700	1,560	815	378	1,620
26	*390	940	705	2,200	820	620	3,070	*5,240	1,450	*838	350	1,300
27	377	840	1,180	2,050	820	640	2,990	5,240	1,350	882	336	*1,500
28	364	760	1,860	1,850	810	2,000	2,990	5,240	*1,300	748	472	1,250
29	*355	760	1,740	1,700	800	6,960	2,990	5,360	1,250	685	508	1,020
30	345	800	1,620	1,500	.....	17,500	3,470	5,740	1,250	645	545	905
31	358	.....	1,560	1,400	.....	*29,000	.....	5,740	.....	605	625	.....

Iowa River at Marengo, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57.....	80.8	90.0	81.7	191	424	289	260	818	2,486	1,453	538	289
1957-58.....	185	278	392	312	621	672	856	390	1,742	2,330	1,326	2,094
1958-59.....	446	543	269	183	630	6,286	3,037	2,785	1,832	1,334	357	371
1959-60.....	437	1,162	877	3,015	956	2,300	7,328	6,254	2,219	1,094	456	532

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57.....	0.029	0.032	0.030	0.068	0.152	0.103	0.096	0.293	0.890	0.520	0.193	0.103
1957-58.....	.066	.099	.140	.112	.222	.241	.306	.140	.623	.834	.475	.749
1958-59.....	.160	.194	.096	.0665	.225	2.25	1.09	.997	.656	.477	.128	.133
1959-60.....	.156	.416	.314	1.08	.342	.823	2.62	2.24	.794	.392	.163	.190

Monthly Runoff, in Inches

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57.....	0.03	0.04	0.03	0.08	0.16	0.12	0.11	0.34	0.99	0.60	0.22	0.12
1957-58.....	.08	.11	.16	.13	.23	.28	.34	.16	.70	.96	.55	.84
1958-59.....	.18	.22	.11	.08	.23	2.59	1.21	1.15	.73	.55	.15	.15
1959-60.....	.18	.46	.36	1.24	.37	.95	2.93	2.58	.89	.45	.19	.21

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1957.....	June 22, 1957	14.82	7,060	54	584	0.209	2.84	634	3.09
1958.....	Sept. 4, 1958	16.34	11,000	120	932	.334	4.54	966	4.70
1959.....	Mar. 24, 1959	16.92	15,400	130	1,514	.542	7.35	1,616	7.84
1960.....	Mar. 31, 1960	19.21	30,800	241	2,220	.795	10.81	.....	.....

Peak Discharge (base, 6,000 cfs)

- 1956-57: June 22 (5 a.m.) 7,060 cfs (14.82 ft.).
- 1957-58: July 17 (3:30 p.m.) 7,060 cfs (14.77 ft.); Sept. 4 (12 p.m.) 11,000 cfs (16.34 ft.).
- 1958-59: Mar. 21 (3:30 a.m.) 14,000 cfs (16.62 ft.); Mar. 24 (2 a.m.) 15,400 cfs (16.92 ft.); May 21 (4 p.m.) 7,390 cfs (14.58 ft.); July 1 (6:30 a.m.) 6,490 cfs (14.18 ft.).
- 1959-60: Jan. 14 (9 a.m.) 14,000 cfs (16.89 ft.); Mar. 31 (9 a.m.) 30,800 cfs (19.21 ft.); Apr. 21 (11 p.m.) 6,960 cfs (14.44 ft.); May 10 (1 a.m.) 13,500 cfs (16.03 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Jan. 1 to Mar. 4, Nov. 29 to Dec. 21, Dec. 27-31, 1957; Jan. 1 to Feb. 26, Nov. 28 to Dec. 31, 1958; Jan. 1 to Mar. 2, Mar. 8-11, Nov. 15-22, Nov. 26 to Dec. 2, 1959; Jan. 1-12, Jan. 16 to Mar. 28, 1960. No gage-height record Oct. 1 to Dec. 31, 1956; Jan. 1, 2, 1957.

Lake Macbride near Solon, Iowa

LOCATION.—Lat. 41°47'40", long. 91°34'20", in SW¼NW¼ sec. 29, T. 81 N., R. 6 W., in Macbride State Park, 200 ft. north of dam forming lake and 4.0 miles west of Solon.

DRAINAGE AREA.—27.0 square miles above outlet (revised in 1956).

RECORDS AVAILABLE.—October 1936 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 675.54 ft. above mean sea level, adjustment of 1912, and 36.83 ft. below crest of spillway of dam forming lake. Prior to Mar. 31, 1949, tape-float gage and Apr. 1, 1949, to Apr. 10, 1957, water-stage recorder, at site 0.5 mile upstream at same datum.

EXTREMES.—Maximum gage height during year, 38.50 ft. Mar. 29; minimum, 32.98 ft. Oct. 3.

1936-60: Maximum gage height, that of Nov. 29, 1960; minimum observed, lake drained Oct. 18, 1956, for remedial works in connection with Corps of Engineers Coralville Dam. Lake dry for period in 1956 and 1957.

Daily Gage Height, in Feet, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	6.48	6.19	5.82			8.16	8.07	8.16	8.05	7.71	8.39	
2	6.46	6.17	5.82			8.16	8.21	8.15	8.03	7.68	8.24	
3	6.44	6.15	5.81			8.15	8.16	8.13	8.01	7.65	8.18	
4	6.44	6.14	6.82			8.14	8.10	8.10	7.99	7.62	8.17	
5	6.46	6.13				8.14	8.08	8.22	7.96	7.60	8.15	8.17
6	6.52	6.11				8.11	8.07	8.23	7.94	7.57	8.15	8.15
7	6.53	6.10		5.30		8.09	8.06	8.16	7.94	7.55	8.15	8.15
8	6.51	6.07		5.29		8.07	8.05	8.11	7.94	7.53	8.15	8.14
9	6.49	6.06		5.28		8.06	8.05	8.18	7.93	7.49	8.15	8.13
10	6.47	6.06		5.28		8.05	8.04	8.24	7.91	7.45	8.15	8.10
11	6.45	6.05		5.27		8.05	8.03	8.21	7.87	7.41	8.13	8.06
12	6.45	6.04		5.26		8.04	8.03	8.18	7.84	7.38	8.12	8.04
13	6.42	6.04		5.25		8.04	8.02	8.14	7.82	7.35	8.34	8.03
14	6.40	6.02		5.24		8.03	8.02	8.11	7.78	7.31	8.18	8.02
15	6.38	6.01		5.23		8.03	8.01	8.09	7.75	7.29	8.15	8.01
16	6.36	6.01		5.23		8.03	8.00	8.07	7.72	7.31	8.20	7.99
17	6.33	5.99		5.23		8.03	7.99	8.06	7.69	7.28	8.17	7.97
18	6.31	5.96		5.22		8.04	7.97	8.05	7.66	7.26	8.28	7.95
19	6.29	5.96		5.22		8.04	7.96	8.04	7.67	7.28	8.22	7.93
20	6.28	5.95		5.21		8.03	7.94	8.02	7.99	7.32	8.16	7.91
21	6.26	5.94		5.21		8.03	7.93	8.02	8.02	7.32	8.15	7.89
22	6.24	5.94		5.21		8.03	7.92	8.01	8.00	7.29		7.87
23	6.23	5.94		5.21		8.03	7.90	8.03	7.96	7.26		7.84
24	6.22	5.93		5.19		8.03	7.89	8.02	7.93	7.22		7.82
25	6.20	5.91		5.18		8.03	7.89	8.00	7.89	7.19		7.80
26	6.19	5.90		5.16		8.03	7.96	7.98	7.87	7.16		7.78
27	6.18	5.90		5.16		8.03	8.30	7.97	7.85	7.13		7.75
28	6.19	5.88		5.15		8.06	8.26	7.98	7.82	7.11		7.73
29	6.20	5.85		5.15		8.07	8.25	8.06	7.77	7.08		7.70
30	6.20	5.84				8.06	8.19	8.12	7.74	7.05		7.68
31	6.20					8.06		8.08		8.01		

Lake MacBride near Solon, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	7.66											
2	7.64											
3	7.62											
4	7.57											
5	7.54											
6	7.52											
7	7.48											
8	7.46											
9	7.43											
10	7.40											
11	7.40											
12	7.38											
13	7.37											
14	7.37											
15	7.36											
16	7.36											
17	7.34											
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												
31												
1957-58												
1							8.89	9.59	9.58	11.40	11.61	11.63
2							8.91	9.59	9.58	11.42	11.61	11.62
3							8.95	9.59	9.58	11.43	11.61	11.67
4							9.02	9.60	9.58	11.53	11.61	12.48
5							9.09	9.60	9.58	11.57	11.64	12.80
6								9.16	9.60	9.58	11.57	11.64
7								9.22	9.60	9.57	11.57	11.66
8								9.26	9.61	9.58	11.56	11.69
9								9.30	9.61	9.63	11.53	11.69
10								9.32	9.60	9.66	11.52	11.68
11								9.35	9.60	9.68	11.52	11.68
12								9.36	9.59	9.73	11.52	11.71
13								9.37	9.59	10.55	11.52	11.76
14							8.57	9.38	9.59	11.12	11.57	11.74
15							8.58	9.40	9.59	11.26	11.62	11.79
16							8.60	9.41	9.58	11.35	11.62	11.79
17							8.62	9.42	9.58	11.41	11.63	11.78
18							8.63	9.43	9.58	11.43	11.63	11.78
19							8.66	9.44	9.58	11.43	11.63	11.75
20							8.68	9.44	9.58	11.44	11.64	11.75
21							8.72	9.47	9.58	11.43	11.65	11.75
22							8.75	9.49	9.58	11.41	11.65	11.74
23							8.78	9.55	9.58	11.40	11.65	11.73
24							8.78	9.57	9.58	11.42	11.65	11.70
25							8.79	9.59	9.58	11.44	11.64	11.68
26							8.81	9.59	9.58	11.45	11.63	11.66
27							8.81	9.59	9.58	11.45	11.62	11.65
28							8.82	9.59	9.58	11.43	11.61	11.65
29							8.83	9.59	9.58	11.43	11.61	11.64
30							8.85	9.59	9.58	11.41	11.61	11.63
31							8.87	9.58	9.58	11.61	11.63	11.68

Lake MacBride near Solon, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	13.68	14.36	14.69	14.78	15.05	21.71	29.48	31.79	33.22	33.44	33.25	33.18
2	13.68	14.36	14.70	14.79	15.05	21.77	29.71	31.83	33.24	33.46	33.24	33.18
3	13.68	14.36	14.71	14.79	15.06	21.90	29.74	31.87	33.27	33.46	33.26	33.17
4	13.68	14.36	14.71	14.80	15.06	22.01	29.85	31.89	33.28	33.47	33.26	33.14
5	13.68	14.37	14.71	14.80	15.06	22.08	29.90	31.92	33.29	33.48	33.26	33.12
6	13.68	14.38	14.71	14.82	15.06	22.14	29.90	31.94	33.30	33.47	33.33	33.11
7	13.69	14.37	14.72	14.85	15.06	22.19	29.91	31.90	33.31	33.46	33.35	33.09
8	13.70	14.36	14.72	14.86	15.06	22.31	29.97	31.90	33.31	33.46	33.34	33.08
9	14.00	14.35	14.72	14.87	15.06	22.40	30.04	31.88	33.30	33.46	33.33	33.07
10	14.21	14.34	14.73	14.88	15.08	22.43	30.06	31.93	33.28	33.45	33.32	33.05
11	14.22	14.34	14.73	14.89	15.12	22.51	30.06	32.07	33.27	33.43	33.31	33.04
12	14.25	14.34	14.73	14.90	15.17	22.56	30.08	32.13	33.27	33.41	33.30	33.02
13	14.35	14.34	14.73	14.91	15.19	22.72	30.09	32.14	33.23	33.41	33.29	33.00
14	14.36	14.34	14.74	14.92	15.40	23.32	30.10	32.12	33.20	33.40	33.28	32.99
15	14.36	14.34	14.74	14.93	15.63	23.57	30.10	32.12	33.20	33.37	33.32	32.95
16	14.36	14.34	14.74	14.94	15.70	23.76	30.11	32.14	33.20	33.36	33.35	32.96
17	14.36	14.43	14.74	14.95	15.78	23.93	30.15	32.15	33.19	33.35	33.39	32.96
18	14.36	14.57	14.74	14.96	15.86	23.96	30.18	32.17	33.17	33.39	33.39	32.94
19	14.36	14.62	14.74	14.97	15.95	24.80	30.20	32.31	33.15	33.37	33.36	32.93
20	14.37	14.65	14.74	14.98	16.05	27.58	30.24	32.37	33.14	33.35	33.36	32.96
21	14.38	14.66	14.74	14.99	16.17	27.93	30.27	32.49	33.18	33.34	33.34	32.98
22	14.38	14.66	14.74	15.00	16.43	28.07	30.31	32.54	33.23	33.34	33.34	32.98
23	14.38	14.68	14.74	15.00	17.20	28.21	30.37	32.54	33.24	33.35	33.32	33.00
24	14.38	14.72	14.74	15.01	18.42	28.37	30.39	32.54	33.25	33.33	33.31	33.01
25	14.38	14.70	14.72	15.01	18.74	28.48	30.40	32.59	33.24	33.31	33.30	33.05
26	14.38	14.69	14.71	15.02	19.26	28.67	30.40	32.65	33.21	33.30	33.28	33.07
27	14.36	14.68	14.72	15.03	20.46	28.94	30.43	32.72	33.19	33.28	33.26	33.15
28	14.36	14.69	14.75	15.03	21.37	29.08	31.30	32.75	33.19	33.26	33.24	33.21
29	14.36	14.69	14.76	15.04	.....	29.17	31.62	32.85	33.20	33.27	33.21	33.18
30	14.36	14.69	14.76	15.04	.....	29.22	31.72	33.01	33.27	33.26	33.20	33.17
31	14.36	.....	14.77	15.05	.....	29.26	.....	33.18	.....	33.26	33.19	.....
1959-60												
1	33.11	33.51	34.33	35.63	36.82	36.78	37.36	36.95	36.87	36.82	36.68	36.45
2	33.00	33.54	34.36	35.66	36.82	36.77	37.25	36.94	36.89	36.83	36.68	36.44
3	32.98	33.54	34.37	35.67	36.81	36.78	37.13	36.92	36.88	36.85	36.69	36.42
4	33.02	33.70	34.38	35.66	36.82	36.75	37.08	36.90	36.94	36.81	36.67	36.41
5	33.15	33.85	34.38	35.67	36.83	36.75	37.05	36.90	37.21	36.80	36.65	36.40
6	33.26	33.95	34.38	35.70	36.83	36.74	37.02	37.39	37.07	36.79	36.65	36.39
7	33.39	34.00	34.38	35.75	36.82	36.76	36.99	37.58	36.97	36.78	36.66	36.36
8	33.43	34.04	34.40	35.77	36.85	36.77	36.93	37.26	36.91	36.78	36.65	36.35
9	33.44	34.07	34.41	35.78	36.88	36.79	36.89	37.10	36.88	36.89	36.66	36.31
10	33.44	34.09	34.42	35.80	36.90	36.78	36.89	37.02	36.86	37.04	36.64	36.28
11	33.44	34.07	34.45	35.82	36.86	36.80	36.91	36.98	36.86	36.97	36.62	36.26
12	33.44	34.08	34.47	36.83	36.84	36.78	36.91	36.96	36.90	36.96	36.61	36.22
13	33.44	34.11	34.47	37.45	36.84	36.79	36.92	36.96	36.92	36.95	36.60	36.20
14	33.44	34.10	34.49	37.25	36.84	36.77	36.92	36.96	36.92	36.90	36.59	36.17
15	33.44	34.10	34.52	37.25	36.85	36.78	36.90	36.95	36.92	36.86	36.56	36.20
16	33.44	34.11	34.52	37.10	36.85	36.80	36.96	36.96	36.90	36.85	36.55	36.21
17	33.44	34.08	34.53	37.02	36.83	36.81	37.26	36.95	36.86	36.84	36.55	36.22
18	33.44	34.11	34.53	37.00	36.82	36.80	37.24	36.91	36.87	36.83	36.55	36.23
19	33.44	34.14	34.52	36.93	36.81	36.80	37.12	36.90	36.90	36.82	36.54	36.23
20	33.44	34.15	34.53	36.89	36.81	36.79	37.06	36.93	36.86	36.80	36.54	36.20
21	33.44	34.17	34.54	36.86	36.84	36.79	37.02	36.91	36.84	36.80	36.53	36.20
22	33.44	34.20	34.58	36.85	36.82	36.78	37.00	36.90	36.85	36.80	36.53	36.20
23	33.44	34.22	34.64	36.82	36.83	36.77	36.98	36.90	36.86	36.79	36.51	36.23
24	33.44	34.25	34.65	36.83	36.84	36.78	36.95	36.92	36.84	36.77	36.49	36.45
25	33.44	34.25	34.68	36.83	36.83	36.75	36.90	36.97	36.83	36.77	36.48	36.50
26	33.44	34.27	34.76	36.83	36.83	36.79	36.91	36.94	36.83	36.76	36.46	36.50
27	33.44	34.27	35.04	36.83	36.81	36.85	36.87	36.90	36.83	36.75	36.45	36.49
28	33.46	34.29	35.34	36.83	36.82	37.04	36.86	36.90	36.86	36.74	36.43	36.47
29	33.48	34.29	35.47	36.83	36.80	37.71	36.85	36.90	36.82	36.73	36.45	36.46
30	33.50	34.32	35.53	36.83	.....	38.13	36.93	36.88	36.82	36.71	36.45	36.46
31	33.51	.....	35.58	36.83	.....	37.57	.....	36.87	.....	36.69	36.45	.....

Coralville Reservoir near Coralville, Iowa

LOCATION.—Lat. 41°43'20", long. 91°31'30", in SW¼ NE¼ sec. 22, T. 80 N., R. 6. W., at outlet works at left end of Coralville Dam, 4.0 miles north-east of Coralville and at mile 83.3.

DRAINAGE AREA.—3,115 square miles.

RECORDS AVAILABLE.—October 1958 to September 1960.

GAGE.—Water stage recorder and staff gage. Datum of gage is at mean sea level, datum of 1929 (levels by Corps of Engineers).

EXTREMES.—1958-60: Maximum contents, 368,000 acre-ft. Apr. 8, 1960 (elevation, 706.77 ft.); minimum, 3,800 acre-ft. Mar. 10, 1959 (elevation, 658.77 ft.).

REMARKS.—Records furnished by Corps of Engineers. Reservoir is formed by earth-fill dam; completed in 1957. Storage began in September 1958. Capacity, 492,000 acre-ft. between elevations 650 (sill of outlet conduit) and 712 ft. (crest of spillway). No dead storage. Figures given herein represent total contents based on a flat pool condition. Water is stored for flood control and conservation.

Contents, in Acre-Feet, at 8 a.m., for Water Year 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept
1	11,700	11,700	11,500	11,500	9,100	8,300	190,000	37,100	17,400	11,900	16,300	37,900
2	11,700	11,700	11,500	11,700	8,700	9,700	204,000	37,500	18,000	13,100	17,100	38,700
3	11,700	11,700	11,700	11,700	8,300	11,700	212,000	36,900	17,300	14,100	18,000	38,700
4	11,700	11,700	12,100	11,700	7,900	11,300	208,000	32,700	17,300	14,500	19,200	39,100
5	11,700	11,700	12,300	11,700	7,900	11,500	203,000	29,400	17,300	12,900	20,200	39,500
6	11,700	11,700	12,300	11,700	7,700	8,500	194,000	25,800	17,300	12,500	21,200	40,100
7	11,700	11,700	12,100	11,700	7,700	6,200	184,000	22,800	16,900	11,300	22,600	40,500
8	11,900	11,700	11,700	11,500	7,600	4,400	171,000	19,200	15,900	9,500	23,600	41,300
9	13,100	11,900	11,500	11,500	7,500	4,200	158,000	16,100	14,700	7,100	24,600	42,400
10	13,100	11,900	11,300	11,400	7,500	3,900	144,000	13,100	12,900	6,000	25,000	43,400
11	11,900	11,900	11,300	11,400	7,500	4,400	130,000	12,900	10,700	6,700	26,000	44,000
12	11,500	12,100	11,300	11,300	7,500	4,000	114,000	12,900	8,300	6,100	26,600	44,800
13	11,900	12,100	11,300	11,100	7,500	5,400	101,000	11,300	7,900	6,100	27,200	45,200
14	12,300	12,100	11,300	11,100	7,800	8,900	86,300	9,500	7,500	6,100	27,400	45,800
15	12,300	12,300	11,300	11,300	8,200	10,100	72,000	7,500	6,700	6,300	28,800	46,200
16	12,300	12,300	11,300	11,500	8,500	10,900	60,100	6,400	6,300	6,500	29,400	46,200
17	12,300	12,300	11,300	11,600	8,500	9,700	48,800	6,100	6,100	6,300	31,100	46,600
18	12,100	12,500	11,100	11,800	8,300	9,700	36,700	6,700	6,100	6,300	31,900	46,600
19	11,900	11,900	11,100	11,900	7,700	9,300	23,600	6,700	6,100	7,100	32,500	47,200
20	11,900	11,900	11,100	11,900	7,100	14,300	15,100	6,900	6,000	7,900	33,300	47,200
21	11,900	11,900	11,100	11,900	6,900	23,000	11,700	8,700	6,000	7,500	33,900	47,200
22	11,700	11,500	11,500	11,900	7,100	44,800	11,100	11,100	6,100	7,900	34,300	47,600
23	11,700	11,100	11,500	11,700	7,100	76,800	11,100	13,300	6,300	9,100	34,700	48,000
24	11,700	11,100	11,700	11,400	10,900	96,200	11,700	15,500	6,100	10,300	35,100	48,000
25	11,700	11,100	11,700	11,000	9,900	114,000	11,900	18,000	6,000	11,100	35,500	48,600
26	11,900	11,700	11,700	10,700	9,300	130,000	11,700	20,000	6,300	11,700	35,900	49,200
27	11,700	12,100	11,900	10,300	8,500	141,000	11,100	18,600	7,100	12,300	35,900	50,000
28	11,700	12,300	11,700	10,100	8,500	147,000	15,100	16,300	6,300	12,900	36,300	51,600
29	11,700	12,300	11,500	9,900	.....	153,000	27,000	14,900	6,100	13,500	36,700	53,600
30	11,700	11,900	11,300	9,500	.....	160,000	33,700	14,300	6,700	14,500	37,100	53,600
31	11,700	.....	11,300	9,300	.....	172,000	.....	15,100	.....	15,500	37,500	.....

Coralville Reservoir near Coralville, Iowa—Continued

Contents, in Acre-Feet, at 12 p.m. (October 1 to November 15, at 8 a.m.),
for Water Year 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	53,600	53,400	54,000	61,300	40,300	16,300	176,000	172,000	216,000	116,000	139,000	54,700
2	53,600	53,400	54,700	60,300	34,700	15,900	228,000	165,000	219,000	116,000	139,000	54,900
3	53,600	52,800	55,700	59,100	30,500	15,700	277,000	156,000	216,000	116,000	139,000	54,900
4	53,600	54,500	56,700	56,900	27,200	15,700	323,000	147,000	216,000	116,000	139,000	54,900
5	54,700	56,300	56,900	53,600	24,800	15,500	347,000	138,000	217,000	116,000	139,000	54,700
6	54,900	57,900	56,900	51,600	22,800	15,500	359,000	139,000	214,000	116,000	139,000	54,500
7	56,300	56,700	55,700	50,600	21,000	15,300	365,000	146,000	206,000	116,000	139,000	54,500
8	56,300	54,100	55,300	51,200	20,000	15,300	367,000	169,000	197,000	116,000	139,000	54,300
9	54,700	53,400	54,700	52,600	19,800	15,500	363,000	198,000	189,000	120,000	139,000	54,100
10	54,100	53,400	54,100	53,400	18,800	15,300	359,000	225,000	180,000	123,000	139,000	53,900
11	55,100	53,400	54,000	54,900	16,900	15,300	354,000	244,000	173,000	126,000	138,000	53,600
12	54,700	52,600	53,800	65,700	17,100	15,300	347,000	253,000	168,000	131,000	138,000	53,200
13	55,100	53,400	53,400	77,400	17,500	15,300	338,000	260,000	173,000	137,000	138,000	53,000
14	55,100	53,800	53,200	101,000	17,900	15,300	327,000	261,000	174,000	139,000	135,000	53,000
15	55,100	53,400	53,400	132,000	18,800	15,500	314,000	262,000	167,000	140,000	127,000	53,200
16	55,100	52,800	53,600	149,000	19,400	15,500	303,000	263,000	158,000	140,000	120,000	53,600
17	54,700	53,600	53,600	159,000	19,600	15,700	300,000	259,000	149,000	139,000	111,000	54,000
18	54,700	52,400	53,600	162,000	19,800	15,900	291,000	255,000	141,000	139,000	103,000	54,300
19	54,100	52,400	53,600	159,000	19,600	15,900	282,000	251,000	136,000	139,000	94,400	54,500
20	54,100	53,400	53,400	147,000	19,000	16,100	276,000	248,000	130,000	139,000	86,600	54,500
21	53,600	54,700	53,400	139,000	18,200	16,300	269,000	244,000	124,000	139,000	80,900	54,700
22	53,600	55,500	53,000	129,000	17,500	16,700	264,000	240,000	119,000	139,000	75,600	55,100
23	54,700	56,500	53,400	120,000	17,100	17,100	259,000	235,000	118,000	140,000	71,000	55,500
24	55,700	57,500	53,400	109,000	16,900	17,500	252,000	232,000	117,000	140,000	66,400	56,500
25	54,900	58,100	53,400	100,000	17,100	17,700	244,000	229,000	116,000	140,000	62,300	57,700
26	54,700	58,300	54,500	91,000	17,100	17,900	228,000	226,000	116,000	140,000	60,100	59,900
27	54,900	57,900	58,900	80,900	17,100	18,800	217,000	223,000	115,000	140,000	58,500	60,500
28	54,500	57,100	62,100	72,200	16,900	21,000	204,000	221,000	115,000	140,000	57,000	61,100
29	54,100	55,900	63,100	63,700	16,700	29,800	191,000	218,000	115,000	140,000	56,000	61,700
30	54,000	54,900	62,900	53,800	.....	48,800	182,000	216,000	116,000	140,000	54,800	60,900
31	53,600	.....	62,300	45,400	.....	90,200	.....	214,000	.....	140,000	54,500	.....

Rapid Creek near Iowa City, Iowa

LOCATION.—Lat. 41°42'00", long. 91°29'05", in NE¼ NE¼ sec. 36, T. 80 N., R. 6 W., on left bank 80 ft. upstream from bridge on State Highway 1, 3 miles northeast of Iowa City, and 4.0 miles upstream from mouth.

DRAINAGE AREA.—24.6 square miles (revised in 1956).

RECORDS AVAILABLE.—October 1937 to September 1960.

GAGE.—Water-stage recorder and concrete control with sharp-crested weir. Datum of gage is 673.72 ft. above sea level, datum of 1929.

AVERAGE DISCHARGE.—23 years, 12.5 cfs.

EXTREMES.—1937-60: Maximum discharge, 3,890 cfs May 20, 1944; maximum gage height, 13.05 ft. Feb. 20, 1953; no flow at times during most years. Bankfull stage is about gage height, 9 ft.

REVISIONS (water years).—WSP 1558: 1941(M), 1943-44(M), 1946. WSP 1708: 1951(P), 1952.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	0	0	*0	0	0	1.0	0.1	*1.2	*0	0	84	12
2.....	0	0	0	0	0	.5	4.5	.7	0	0	9.2	6.4
3.....	*0	0	0	0	0	1.1	2.6	.5	0	0	4.8	4.3
4.....	0	0	0	*0	0	1.3	.6	.5	0	0	2.6	3.8
5.....	0	0	0	0	0	1.5	.4	8.8	0	*0	1.6	6.5
6.....	0	0	0	0	0	1.8	.2	3.8	0	2.4	1.0	3.2
7.....	0	0	0	0	0	1.5	.2	1.7	0	.7	.7	2.0
8.....	0	0	0	0	0	.4	.1	.9	0	0	.6	1.7
9.....	0	0	0	0	0	.3	.1	32	0	0	.5	1.3
10.....	0	0	0	0	0	.2	.1	3.7	0	0	6.1	1.2
11.....	0	0	0	0	0	.2	.1	5.8	0	0	4.6	.9
12.....	0	0	0	0	0	.2	.1	2.8	0	0	93	.8
13.....	0	0	0	0	25	.1	.1	1.6	0	0	104	.7
14.....	0	0	0	0	1.0	.1	.1	.9	0	0	6.4	.5
15.....	0	0	0	0	.3	.1	.1	.5	0	0	3.3	.4
16.....	0	0	0	0	0	.1	.1	.4	0	27	2.2	.3
17.....	0	0	0	0	0	.1	0	.2	0	.9	61	.3
18.....	0	0	0	0	0	.1	0	.2	0	*278	136	.2
19.....	0	0	0	0	0	.1	0	.1	.2	*95	12	.2
20.....	0	0	0	0	0	.1	0	.1	6.2	47	5.8	.1
21.....	0	0	0	0	0	.1	0	0	0	2.9	3.8	.1
22.....	0	0	0	0	0	.2	0	0	0	1.3	2.5	.1
23.....	0	0	0	0	0	.2	0	0	0	.6	1.8	0
24.....	0	0	0	0	*100	.2	0	0	0	.4	1.2	0
25.....	0	0	0	0	10	.2	0	0	0	.2	.8	0
26.....	0	0	0	0	.5	.2	1.0	0	0	.1	.6	0
27.....	0	0	0	0	.3	.2	10	0	0	.1	.5	0
28.....	0	0	0	0	.1	.2	8.2	0	0	.1	.4	0
29.....	0	0	0	0	0	.2	5.8	0	0	0	.3	0
30.....	0	0	0	*0	.....	.2	3.0	0	0	0	*346	0
31.....	0	.....	0	0	.....	*.2	.....	0	.....	*271	257	.....

Rapid Creek near Iowa City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1.....	0	0	0	0.1	0.1	0.4	1.2	*1.3	1.5	*0	0	0.1
2.....	0	0	.1	0	*.1	.2	1.9	1.0	1.0	0	*0	0
3.....	0	0	.1	*0	.1	.2	1.7	.7	*.6	0	0	0
4.....	0	0	.1	.1	.1	*.3	2.8	.6	.5	0	0	0
5.....	0	0	.1	0	.1	.4	3.8	.5	.4	0	0	0
6.....	0	0	.1	0	.2	.1	3.6	.4	.3	0	0	0
7.....	0	0	.1	.1	.7	.1	3.2	.3	.8	0	0	0
8.....	0	0	.1	.1	8.0	.1	2.8	.4	1.2	0	0	0
9.....	*0	0	.1	.1	20	.1	2.5	.5	1.9	0	0	0
10.....	0	0	.1	0	2.0	.2	2.0	2.2	.7	0	0	0
11.....	0	0	.1	0	1.0	*2.1	1.7	1.9	4.0	0	0	0
12.....	0	0	0	0	2.0	2.6	1.3	1.5	1.8	0	0	0
13.....	0	0	0	0	.7	1.5	.9	1.6	6.5	0	0	0
14.....	0	5.8	0	0	.6	1.3	.9	9.8	2.5	0	0	0
15.....	0	5.2	0	0	.6	1.2	.9	5.8	1.5	0	0	0
16.....	0	.6	0	0	.5	.8	.8	4.1	.8	0	0	0
17.....	0	.3	.1	0	.4	.6	.9	3.5	.7	0	0	0
18.....	0	.2	0	0	.4	1.5	.7	2.9	.8	0	0	0
19.....	0	.1	0	.1	.4	3.8	1.6	2.5	.5	0	0	0
20.....	0	.1	*0	1.0	*.4	2.5	1.7	2.9	.2	0	0	1.8
21.....	0	.1	.1	40	.5	2.4	.8	3.2	.1	0	0	.1
22.....	0	0	.1	10	.5	2.1	3.1	6.6	.1	0	0	0
23.....	0	0	.2	3.0	.4	1.8	5.2	3.2	0	0	.4	0
24.....	0	0	.3	*1.0	.9	1.5	3.5	1.9	0	0	.9	0
25.....	0	0	.2	.5	2.0	1.3	3.2	4.5	0	0	0	0
26.....	0	0	.1	.2	*.9	1.4	3.2	4.0	0	0	0	0
27.....	0	0	.1	.1	.6	1.7	3.8	1.9	0	0	0	0
28.....	0	0	0	0	.6	1.4	2.5	1.5	.1	0	*61	0
29.....	0	0	.1	0	.....	*1.3	1.9	1.2	0	0	3.8	0
30.....	0	0	.1	0	.....	1.2	1.6	1.2	0	0	3.2	0
31.....	0	.....	.2	.1	.....	1.0	.....	4.4	.....	0	.7	.....
1957-58												
1.....	0	*0	0.1	0.1	0.3	10	1.5	0.6	11	0.1	0	*0
2.....	*0	0	.1	.1	.3	7.0	1.7	*.6	2.2	.2	0	0
3.....	0	0	0	**1	.3	6.2	1.9	.7	1.2	.3	0	17
4.....	0	0	0	.1	.2	5.2	2.9	1.3	1.1	1.1	0	26
5.....	0	0	0	.1	.2	5.0	4.8	.9	.7	1.0	5.0	22
6.....	0	0	*.1	.2	.2	6.2	6.8	.5	*.5	.3	1.4	9.2
7.....	0	0	.1	.2	.2	9.2	*5.6	.5	.3	.1	1.0	3.3
8.....	0	0	.1	.2	.1	6.2	4.6	.5	10	.1	.4	1.4
9.....	0	0	.1	.3	.1	5.0	4.6	.5	3.0	0	0	.8
10.....	0	0	.1	.4	.1	4.4	4.1	.4	2.4	0	0	.6
11.....	0	0	0	.5	0	4.3	3.6	.3	1.7	0	0	.4
12.....	0	0	0	.6	0	4.1	3.0	.2	3.6	0	7.4	.2
13.....	0	0	0	.7	0	4.1	2.8	.2	*100	0	1.2	.1
14.....	0	0	0	*.7	0	4.0	2.5	.1	15	*41	.8	.1
15.....	.5	0	0	.7	0	3.5	2.4	.1	8.0	5.8	14	.2
16.....	.2	0	0	.6	0	3.2	2.1	19	5.2	1.5	2.0	.1
17.....	0	0	0	.6	0	2.8	1.8	7.2	4.0	.7	.5	.1
18.....	0	17	.1	.5	0	3.2	1.7	6.3	3.2	.8	.2	.1
19.....	0	8.3	.7	.4	0	2.5	1.6	2.9	2.4	.7	.1	.1
20.....	0	2.4	*26	.5	0	2.6	1.7	2.0	2.0	.8	0	0
21.....	0	1.3	8.0	.5	0	2.4	2.0	1.6	1.5	.6	.1	0
22.....	0	.8	3.8	.5	0	2.4	2.2	16	1.2	.4	.1	0
23.....	0	.6	2.8	.5	50	2.2	1.9	2.6	1.2	.3	0	0
24.....	0	.5	1.6	.5	*130	2.0	2.6	1.4	1.5	.2	0	0
25.....	0	.4	4.3	.5	123	1.9	1.5	.9	1.5	.1	0	0
26.....	0	.3	3.2	.4	18	1.7	1.0	.8	.9	.1	0	0
27.....	0	.3	1.0	.4	20	1.7	.9	.6	.5	0	0	0
28.....	0	.3	.5	*.4	*18	1.7	1.0	.6	.3	.1	0	0
29.....	0	.2	.4	.4	.....	1.6	1.0	.4	.2	0	0	0
30.....	0	.1	.2	.4	.....	1.9	.7	.3	.1	.7	0	0
31.....	0	.....	.2	.4	.....	1.5	.....	19	.....	.1	0	.....

Rapid Creek near Iowa City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	0	0.4	0.3	0.1	0.2	35	67	24	*24	*5.2	0.7	0.7
2	0	.4	.4	.1	.2	20	*32	20	19	3.6	.4	*2.6
3	0	.4	.6	.1	.1	10	26	16	15	2.8	2.0	.6
4	0	.4	*.9	.1	.1	*7.0	18	13	12	3.4	1.2	.2
5	0	.3	.5	.1	.1	3.5	15	11	10	2.9	1.0	.1
6	0	.3	.1	.1	.1	1.6	12	10	8.4	1.8	54	.1
7	.1	.2	.1	.1	.1	2.2	11	8.4	6.8	1.4	4.0	0
8	34	.3	.1	.1	.1	3.0	9.2	7.7	6.0	1.2	2.0	0
9	294	.3	.1	.1	.1	10	8.2	8.2	5.2	1.2	1.5	0
10	9.0	.3	.1	.1	10	50	7.0	46	7.6	.8	1.1	0
11	*5.0	.3	.1	.1	15	30	6.2	44	8.6	.9	.8	0
12	3.3	.3	.1	*.1	11	20	5.8	17	4.8	.7	.5	0
13	2.4	.3	.1	.1	25	80	5.2	13	4.0	.6	.4	0
14	1.8	.4	.1	.4	90	160	5.0	11	3.5	.4	.3	0
15	1.4	.6	.1	2.5	35	35	4.6	9.8	3.3	.3	9.7	0
16	1.2	.8	.1	1.0	*14	20	4.3	8.4	3.2	.2	34	0
17	1.0	*8.8	.1	.4	8.0	10	14	7.5	2.4	5.6	7.2	0
18	1.0	6.7	.1	.1	3.5	*5.0	14	9.2	2.4	99	2.9	0
19	.8	3.5	.1	.1	2.5	*900	9.8	*62	2.1	3.8	1.9	0
20	.7	2.6	.1	.1	2.1	250	17	21	1.9	1.7	1.2	0
21	1.0	2.0	.1	.1	1.9	45	19	56	2.6	1.0	.8	0
22	1.7	1.7	.1	.1	35	34	17	20	4.2	19	.6	0
23	1.2	1.6	.1	.1	*500	45	14	16	2.1	7.0	.5	0
24	.8	1.4	.1	.1	200	33	12	13	1.7	1.8	.4	0
25	.6	1.3	.1	.1	230	25	9.8	11	1.5	1.0	.2	.2
26	.6	.9	.1	.1	480	89	8.2	16	1.2	.7	.2	24
27	.5	.6	.2	.1	*400	34	119	10	1.0	.5	.2	21
28	.5	.5	.3	.2	100	20	242	21	1.2	.4	.1	2.5
29	.5	.4	.3	.2	.....	16	*55	28	2.4	.3	.1	.7
30	.4	.3	.2	*.2	.....	18	*34	168	14	8.4	.1	.4
31	.4	.....	.1	.2	.....	19	.....	38	.....	*1.9	.1	.....
1959-60												
1	*0.3	6.0	9.3	25	12	5.0	150	40	96	*8.7	3.8	*0.3
2	.3	6.0	*8.6	20	*11	5.0	100	26	*42	8.0	3.8	.2
3	.4	6.0	8.0	16	11	4.9	80	20	26	9.2	3.6	.1
4	2.1	51	7.4	13	11	4.6	60	19	310	6.6	3.6	.1
5	114	36	7.0	15	12	4.5	50	18	394	6.0	*3.3	.1
6	100	26	7.0	19	14	4.5	*38	*408	54	30	3.5	.1
7	37	21	6.4	17	12	4.5	32	150	40	10	4.5	.1
8	21	18	6.0	15	14	4.5	28	90	32	8.4	3.0	0
9	14	17	5.8	12	16	4.5	23	68	27	92	2.9	0
10	11	15	5.8	11	7.5	*4.5	22	53	24	34	2.4	0
11	8.0	12	8.4	*10	17	4.7	22	43	24	20	2.1	0
12	6.4	12	8.0	*500	16	4.8	19	36	43	242	2.0	0
13	5.8	11	6.6	200	14	5.0	18	*31	55	55	1.9	0
14	5.0	10	6.4	104	13	5.0	18	28	36	29	1.6	0
15	4.6	9.2	6.8	114	12	5.2	18	24	29	22	1.5	.1
16	4.2	8.6	6.6	55	12	5.4	24	44	26	19	1.4	.5
17	3.8	8.0	6.4	39	12	5.6	100	33	21	16	1.2	.9
18	3.6	7.6	6.0	30	10	5.8	80	26	21	14	1.2	.7
19	3.5	8.2	5.8	23	9.0	5.8	67	26	21	12	1.3	.6
20	3.2	9.0	5.8	30	8.0	5.6	48	27	18	10	1.5	.3
21	2.9	8.7	5.8	27	7.0	5.6	41	31	18	9.5	1.5	.3
22	2.9	10	5.0	25	7.0	5.6	34	26	16	8.4	1.1	.2
23	14	13	8.0	23	7.0	5.8	30	22	16	7.7	1.0	.6
24	6.8	18	9.5	19	7.0	5.8	26	74	12	7.0	.8	28
25	5.8	16	7.7	17	7.0	5.4	24	59	11	7.7	.7	2.9
26	8.0	13	22	15	6.4	5.4	22	36	10	8.0	.4	1.0
27	10	11	102	15	5.4	13	19	31	9.2	6.2	.4	.5
28	8.2	9.8	80	14	5.0	150	18	28	9.8	5.6	.3	.4
29	7.5	9.0	60	13	5.0	450	30	24	9.0	5.2	1.0	.5
30	*6.2	10	40	13	.....	290	56	22	8.7	4.6	.9	.5
31	6.1	.....	30	12	.....	200	.....	19	.....	4.1	.4	.....

Rapid Creek near Iowa City, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0	0	0	0	4.73	0.416	1.25	2.14	0.213	23.5	37.2	1.57
1956-57	0	.41	.09	1.82	1.60	1.20	2.19	2.52	.92	0	2.26	.07
1957-58	.023	1.08	1.73	.40	12.9	3.86	2.55	2.87	6.21	1.84	1.10	2.72
1958-59	11.7	1.28	.19	.24	77.3	65.5	27.4	25.6	6.07	5.79	4.20	1.77
1959-60	13.8	13.9	16.4	47.1	10.4	39.9	43.2	51.0	48.6	23.4	1.89	1.30

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0	0	0	0	.192	0.017	0.051	0.087	0.0087	0.955	1.51	0.064
1956-57	0	.017	.0037	.074	.065	.049	.089	.102	.037	0	.092	.0028
1957-58	.00093	.044	.070	.016	.524	.157	.104	.117	.252	.075	.045	.111
1958-59	.476	.052	.0077	.0097	3.14	2.66	1.11	1.04	.247	.235	.171	.072
1959-60	.561	.565	.667	1.91	.423	1.62	1.76	2.07	1.98	.951	.077	.053

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0	0	0	0	0.21	0.02	0.06	0.10	0.01	1.10	1.75	0.07
1956-57	0	.02	.004	.09	.07	.06	.10	.12	.04	0	.11	.003
1957-58	.001	.05	.08	.02	.55	.18	.12	.13	.28	.09	.05	.12
1958-59	.55	.06	.009	.01	3.27	3.07	1.24	1.20	.28	.27	.20	.08
1959-60	.64	.63	.77	2.21	.45	1.87	1.96	2.39	2.21	1.10	.09	.06

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								6.42	3.54
1956	Aug. 30, 1956	12.48	3,000	0	5.98	0.243	3.32	6.02	3.34
1957	Aug. 28, 1957	7.60	326	0	1.09	.044	.62	1.28	.72
1958	June 13, 1958	(1)9.15	509	0	3.03	.123	1.67	3.91	2.16
1959	Mar. 19, 1959	(2)12.51	2,300	0	18.5	.752	10.24	21.1	11.66
1960	Mar. 29, 1960	12.04	2,340	0	26.0	1.06	14.38		

- (1) Maximum gage height, 10.02 ft. Feb. 24, 1959 (backwater from ice).
 (2) Backwater from ice.

Peak Discharge (base, 500 cfs)

1955-56: July 18 (6:30 p.m.) 2,620 cfs (12.27 ft.); July 31 (8:30 p.m.) 1,080 cfs (10.68 ft.); Aug. 12 (8 p.m.) 815 cfs (10.07 ft.); Aug. 30 (9:30 p.m.) 3,000 cfs (12.48 ft.).
 1956-57: No peak above base.
 1957-58: June 13 (8 a.m.) 509 cfs (9.15 ft.).
 1958-59: Oct. 9 (1 a.m.) 1,980 cfs (11.74 ft.); Feb. 23 about 600 cfs; Feb. 26, about 500 cfs; Mar. 19 about 2,300 cfs; Apr. 27 (10:30 p.m.) 850 cfs (10:15 ft.); May 19 (9 a.m.) 537 cfs (8.76 ft.); May 30 (6 a.m.) 655 cfs; (9.50 ft.); July 18 (1 a.m.) 815 cfs (10.08 ft.).
 1959-60: Jan. 12 about 950 cfs; Mar. 29 (7 p.m.) 2,340 cfs (12.04 ft.); May 6 (3:30 p.m.) 1,730 cfs (11.70 ft.); June 4 (10:30 p.m.) 2,090 cfs (11.87 ft.); July 12 (5 p.m.) 1,450 cfs (11.22 ft.).

Notes to Tables of Daily Discharge

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

Stage-discharge relation affected by ice Feb. 13-16, Feb. 24 to Mar. 23, Nov. 21-28, Dec. 1, 5, 18, 22-31, 1956; Jan. 1, Jan. 11 to Mar. 9, Dec. 20, 26-31, 1957; Jan. 1 to Feb. 24, 26, 27, Nov. 28 to Dec. 4, Dec. 6-31, 1958; Jan. 1 to Mar. 19, Nov. 15-19, Nov. 27 to Dec. 10, Dec. 22, 23, 28-31, 1959; Jan. 1-13, Jan. 18 to Feb. 9, Feb. 12 to Mar. 29. No gage height record Mar. 20-26, 1959; Mar. 30 to Apr. 5, Apr. 27 to May 2, 1960.

Clear Creek near Coralville, Iowa

LOCATION.—Lat. 41°40'35", long. 91°35'55", in NW¼SW¼ sec. 6, T. 79 N., R. 6 W., on left bank about 50 ft. upstream from highway bridge, 1.2 miles west of Coralville, and 2.2 miles above the mouth.

DRAINAGE AREA.—98.1 square miles.

RECORDS AVAILABLE.—October 1952 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 648.43 ft. above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to Jan. 7, 1957, wire-weight gage at present site and datum.

AVERAGE DISCHARGE.—8 years, 37.9 cfs.

EXTREMES.—1952-60: Maximum discharge, 3,060 cfs Jan. 13, 1960 (gage-height, 11.79 ft.); minimum daily, 0.1 cfs July 1, 1956.

REMARKS.—Bankfull is about gage height, 11 ft. Records for October 1952 to September 1955, not previously published in Water-Supply Bulletin No. 6, are given herein.

Daily Discharge, in Cubic Feet per Second, for Water Year 1953

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1952-53												
1	1.2	0.8	18	13	9	36	277	164	51	34	4.4	0.4
2	1.2	.8	16	12	9	34	164	137	46	30	5.2	.5
3	1.2	.8	14	11	9	30	111	113	44	49	3.7	.3
4	1.5	.8	12	11	9	27	91	96	40	110	5.7	1.8
5	1.5	.8	11	10	25	21	74	83	38	56	3.3	.9
6	1.5	.8	11	9	450	22	74	84	35	118	3.3	.9
7	1.5	.8	11	9	600	20	71	72	45	25	2.9	.9
8	1.2	.8	12	9	430	19	67	61	164	19	2.4	.7
9	1.2	.8	13	9	200	17	69	51	89	16	2.0	.9
10	1.2	.8	14	9	135	27	69	48	49	14	2.6	.7
11	1.6	.8	14	9	110	64	61	48	41	13	2.2	.9
12	1.6	.8	14	9	92	88	59	39	54	12	2.6	1.0
13	1.6	.8	12	14	80	48	51	35	38	12	2.4	1.0
14	1.6	.8	13	25	76	55	48	34	33	15	2.2	1.1
15	1.6	.8	14	110	72	136	48	33	30	12	1.1	1.1
16	1.4	.8	16	70	72	88	51	30	26	10	2.2	.9
17	1.4	356	14	28	74	58	46	30	23	9.4	1.3	.5
18	1.4	175	13	74	76	70	46	30	21	9.0	.7	.3
19	1.4	102	17	54	90	66	44	26	19	8.0	1.3	1.5
20	1.4	33	22	45	1,000	59	42	25	17	8.4	1.1	.7
21	1.4	25	21	36	870	57	41	41	15	9.7	.7	.3
22	1.4	23	20	30	150	57	40	149	13	7.3	.7	.3
23	1.4	22	22	26	90	193	37	159	12	6.0	.9	.4
24	1.4	19	25	23	60	128	38	159	11	5.4	.9	.5
25	1.4	27	20	20	50	95	84	614	12	4.9	.7	.5
26	1.0	31	19	18	45	88	80	176	15	4.7	.7	.4
27	1.0	32	18	17	40	70	68	115	76	4.7	.4	.3
28	1.0	27	17	15	38	63	48	97	320	4.3	.5	.3
29	1.0	21	16	14	.....	60	55	85	101	4.0	.7	.3
30	1.0	19	15	12	.....	129	148	74	48	3.7	.7	.3
31	1.0	.....	14	11	.....	250	.....	61	.....	3.7	.7	.....

Clear Creek near Coralville, Iowa—Continued

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

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54												
1.....	0.3	3.7	1.6	0.3	0.4	5.6	4.0	188	106	2.2	1.4	3.7
2.....	.4	3.7	1.6	.3	.4	5.0	4.0	86	90	2.2	1.5	3.3
3.....	.7	3.7	1.6	.3	.5	4.5	3.7	73	120	2.0	2.6	2.9
4.....	1.0	3.7	1.3	.3	.6	4.0	3.5	33	93	2.0	9.7	2.1
5.....	.9	3.6	1.1	.3	.7	3.5	3.3	20	46	2.0	2.9	1.7
6.....	.7	3.5	1.0	.3	.8	3.3	8.4	17	33	1.8	2.2	1.5
7.....	1.1	3.4	.9	.3	1.0	3.5	16	13	28	1.8	1.8	1.3
8.....	1.1	3.3	.8	.3	1.2	3.7	5.7	11	19	1.5	2.4	1.5
9.....	1.1	3.3	.8	.3	1.3	4.5	4.0	9.8	15	1.5	2.4	1.5
10.....	1.3	3.3	.7	.3	1.5	5.2	3.7	8.4	13	1.8	2.0	1.5
11.....	1.1	3.3	.6	.3	1.6	5.4	3.5	7.3	12	1.5	2.9	5.0
12.....	.7	3.7	.6	.3	1.8	5.0	3.3	7.0	10	1.3	3.1	4.0
13.....	1.1	3.7	.5	.3	2.0	4.2	3.3	6.5	11	*1.5	3.0	2.9
14.....	1.5	3.7	.5	.3	2.2	3.8	3.1	6.0	8.7	1.3	3.0	1.5
15.....	.7	3.7	.5	*.4	2.4	3.5	8.7	5.4	8.4	1.3	3.0	.9
16.....	*1.1	3.7	.4	.4	2.6	3.3	7.3	5.0	7.7	1.3	3.0	1.3
17.....	1.4	3.7	*.4	.4	3.0	4.0	5.0	4.4	7.7	1.1	3.5	2.0
18.....	1.9	3.7	.4	.4	3.2	4.2	4.0	4.2	6.5	1.6	3.7	1.8
19.....	2.4	3.7	.4	.4	3.5	4.7	3.5	4.0	5.4	1.5	2.9	1.6
20.....	3.3	4.4	.4	.4	4.0	4.7	7.7	4.0	6.0	1.3	2.9	1.4
21.....	3.5	4.7	.3	.4	4.3	4.0	14	4.2	5.2	2.9	2.0	1.3
22.....	4.0	5.0	.3	.4	4.6	3.1	8.7	3.7	21	2.2	3.1	.7
23.....	3.5	4.0	.3	.4	5.0	*2.9	*6.2	3.5	13	1.8	2.9	1.1
24.....	4.0	3.5	.3	.4	5.4	2.9	5.7	3.7	5.2	1.5	2.9	1.1
25.....	4.0	3.2	.3	.4	5.8	14	4.7	*4.0	4.4	1.4	67	.5
26.....	4.2	2.8	.3	.4	*6.0	6.7	6.7	3.7	3.7	1.3	*197	.5
27.....	3.5	2.5	.3	.4	6.2	4.2	74	4.0	3.2	1.1	20	*.7
28.....	3.7	2.1	.3	.4	6.2	4.7	20	13	2.9	2.6	14	5.4
29.....	3.7	1.9	.3	.4	.....	3.3	9.7	13	2.9	2.0	10	20
30.....	3.7	*1.7	.3	.4	.....	3.8	13	6.0	2.4	1.5	8.0	5.2
31.....	3.7	.....	.3	.4	.....	4.0	.....	150	.....	1.5	5.7	.....
1954-55												
1.....	2.9	3.3	1.5	1.9	2.5	70	20	44	12	4.9	1.3	0.8
2.....	10	2.9	1.5	1.9	2.5	58	18	39	11	3.5	1.8	.7
3.....	4.0	2.9	1.5	1.9	*2.6	47	17	*34	10	2.7	1.3	.8
4.....	11	2.9	3.1	2.4	2.6	37	15	71	9.0	2.2	1.5	.9
5.....	26	3.1	2.0	2.8	2.6	30	17	43	8.4	1.3	1.3	.6
6.....	17	2.9	2.0	5.0	2.6	25	15	28	7.7	.9	173	.6
7.....	9.7	2.9	1.1	4.6	2.6	40	*14	19	8.0	2.6	22	.5
8.....	5.2	2.9	1.5	4.1	2.6	33	12	21	7.7	89	8.0	.5
9.....	3.7	2.6	1.8	3.9	2.6	26	11	24	7.3	122	*4.1	.5
10.....	274	2.4	1.8	3.6	2.5	*26	10	170	6.2	76	3.9	.5
11.....	84	2.4	1.8	3.4	2.5	24	11	90	7.0	38	3.1	.7
12.....	21	2.2	1.8	3.3	2.5	21	15	61	8.2	13	2.5	1.0
13.....	13	2.2	1.8	*3.1	2.5	20	14	53	7.7	8.7	2.5	1.2
14.....	27	2.1	*1.8	2.9	2.5	20	27	45	*6.5	6.2	2.3	1.7
15.....	16	2.0	1.3	2.8	2.5	26	19	36	5.7	4.7	2.2	1.0
16.....	12	*2.2	1.5	2.7	2.8	22	16	31	4.7	4.9	2.2	.8
17.....	9.0	2.4	1.6	2.6	3.0	17	14	28	4.2	4.1	1.8	.7
18.....	6.7	2.4	1.6	2.6	10	17	12	25	3.3	*3.5	1.8	.6
19.....	6.0	2.2	1.6	2.6	150	18	12	23	13	3.1	1.8	.6
20.....	4.9	2.2	1.6	2.6	230	20	42	21	15	2.9	1.8	.8
21.....	5.4	3.1	1.6	2.5	400	21	24	19	5.7	2.4	1.6	1.0
22.....	4.2	2.2	1.6	2.5	200	11	19	19	4.0	2.4	1.5	2.0
23.....	4.0	2.0	1.6	2.5	90	18	17	22	3.3	3.7	1.2	1.0
24.....	3.5	2.0	1.6	2.5	60	19	365	20	3.1	1.8	1.4	.8
25.....	*3.7	1.9	1.8	2.5	50	21	214	55	4.2	1.8	1.5	.7
26.....	3.7	1.8	1.9	2.5	50	21	132	*23	3.0	*1.8	1.2	*.8
27.....	3.7	1.6	2.1	2.5	200	21	101	23	2.2	1.8	1.0	2.7
28.....	3.7	1.3	2.1	2.5	100	21	84	19	1.5	1.8	.8	1.2
29.....	3.3	1.1	2.0	2.5	.....	24	62	17	9.4	1.5	.7	4.5
30.....	4.4	1.5	2.0	2.5	.....	26	50	15	6.2	1.5	1.3	28
31.....	3.8	.....	1.9	2.5	.....	25	.....	13	.....	1.4	1.2	.....

Clear Creek near Coralville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1956 and 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	3.9	1.2	0.3	0.9	0.3	45	5.2	5.5	1.7	0.1	352	71
2	1.4	1.0	.4	.9	.3	30	5.5	2.7	1.5	.4	112	26
3	1.0	1.0	.5	.9	.3	23	8.0	2.0	1.0	.4	*24	14
4	.7	1.3	.5	*.9	.3	15	5.5	1.7	.7	.5	10	*10
5	1.3	1.3	.6	.9	.3	*10	7.6	2.2	.6	.6	5.0	13
6	.7	1.2	.7	.9	.3	7.0	4.3	2.9	.7	*45	2.6	14
7	1.0	1.2	.7	.9	.3	7.0	3.3	1.7	1.5	*26	1.9	6.5
8	.8	1.2	.7	.9	.3	7.0	3.3	1.0	1.5	22	1.2	5.4
9	.7	1.3	.6	.9	.4	10	3.3	8.8	1.7	6.0	.7	4.6
10	.7	1.3	.5	.9	.5	10	3.3	30	1.7	3.3	.3	2.8
11	.5	1.3	.5	.9	.6	10	2.7	12	.7	2.2	3.1	2.8
12	1.2	1.7	.4	.9	.7	9.0	5.7	7.6	.6	1.7	109	2.2
13	.8	1.0	.4	.9	.8	8.0	1.8	5.7	.6	1.5	86	2.2
14	1.0	1.0	.4	.9	1.0	7.4	2.9	4.1	.5	.8	25	2.6
15	.8	1.0	.3	.9	1.2	7.0	2.0	3.3	.6	1.5	6.8	2.1
16	.8	.9	.3	.8	1.4	7.0	2.0	2.5	.5	2.2	**75	1.6
17	.7	.8	.3	.6	1.6	7.0	2.0	2.4	.5	1.7	72	1.3
18	1.0	.7	.3	.5	2.0	7.0	1.8	1.8	.7	*62	348	1.2
19	1.0	.7	.3	.4	2.4	*6.0	1.8	1.7	.4	*63	186	1.2
20	1.2	.8	.3	.3	*2.7	2.2	1.5	1.5	.6	50	25	1.3
21	.8	.9	.3	.3	3.2	3.9	1.2	1.2	2.5	22	14	1.0
22	.8	1.0	.3	.3	3.8	4.7	1.2	1.2	1.0	12	7.9	1.2
23	.8	*1.1	.4	.3	4.5	9.3	1.3	*1.3	.5	5.8	5.8	.9
24	1.3	.9	.5	.3	100	5.2	1.3	1.5	.3	2.1	4.4	.8
25	1.3	.7	.7	.3	150	8.0	1.5	1.5	.2	.7	3.6	.7
26	1.0	.5	.9	.3	90	7.0	2.0	1.2	.8	.5	1.9	.8
27	*1.0	.4	.9	.3	100	6.3	*3.3	1.2	.6	.2	1.3	.7
28	1.2	.4	.9	.3	80	8.3	12	2.5	.4	.3	1.3	.7
29	.7	.3	.9	.3	70	7.0	18	1.3	*.2	.2	1.2	.7
30	1.5	.3	.9	.3	.....	6.8	9.3	1.8	.2	.7	*204	.7
31	1.0	.....	.9	.3	.....	5.2	.....	1.8	.....	*290	426	.....
1956-57												
1	0.7	1.6	1.5	1.5	2.2	7.2	6.5	6.1	4.4	2.6	13	1.0
2	.9	1.3	1.7	1.5	2.2	5.4	7.6	5.4	3.8	*2.1	106	.7
3	.7	1.3	1.8	1.5	2.2	4.1	9.4	*5.1	3.1	*2.1	14	.7
4	.9	1.2	1.8	1.5	*2.2	3.2	12	4.6	3.1	2.8	6.5	.6
5	1.0	*1.3	1.8	1.5	2.2	*2.6	18	5.8	2.6	8.7	3.6	.6
6	1.0	1.3	1.6	1.5	2.2	2.8	21	3.6	2.2	7.2	2.6	.7
7	1.0	1.3	1.5	*1.4	2.2	3.6	19	3.3	*2.8	2.8	1.9	.7
8	1.3	1.0	1.4	1.4	3.5	2.6	16	3.1	3.6	1.7	1.2	.7
9	1.3	1.2	1.4	1.3	100	2.2	14	3.6	4.6	1.5	*1.0	*.7
10	1.5	1.2	*1.4	1.3	60	2.4	13	13	4.1	1.2	.9	*.6
11	1.7	1.3	1.4	1.2	40	20	12	14	42	1.3	.9	1.0
12	1.9	1.3	1.3	1.2	30	9.8	11	12	22	1.5	.8	.9
13	1.3	1.0	1.2	1.2	26	6.5	11	11	61	1.3	.8	1.0
14	1.3	1.5	1.1	1.2	22	5.8	9.4	13	19	1.7	.7	.7
15	1.7	4.1	1.1	1.2	20	5.4	9.0	19	14	1.2	.7	.7
19	1.9	14	1.1	1.2	17	4.6	8.6	18	11	1.0	.7	.7
17	1.9	7.0	1.1	1.3	16	4.1	8.6	14	8.3	1.0	.7	.7
18	1.7	3.8	1.1	1.4	15	5.4	8.6	11	14	1.0	.8	.7
19	1.9	1.9	1.1	1.5	15	10	9.0	9.8	15	1.0	.8	.7
20	1.9	1.7	1.1	1.7	15	9.8	11	8.6	7.9	1.2	.7	5.2
21	1.5	1.6	1.1	*50	15	*7.6	9.4	*10	5.4	1.0	.7	.9
22	1.9	1.5	1.1	200	15	6.1	10	9.8	4.4	1.7	.7	.7
23	1.9	1.4	1.2	60	15	9.4	14	7.9	3.6	5.0	.9	.7
24	3.6	1.6	1.2	10	15	5.1	13	6.1	3.6	4.4	1.2	.7
25	1.5	1.7	1.3	6.0	15	4.9	10	6.5	3.3	1.9	.7	.7
26	2.4	1.6	1.3	4.0	19	5.1	9.8	5.8	3.6	*1.0	.7	.7
27	2.2	1.5	1.4	2.6	18	5.8	9.8	4.6	3.6	1.0	1.2	.6
28	1.9	1.5	1.4	2.4	16	6.1	9.4	3.8	4.4	1.0	*12	.7
29	1.9	1.5	1.4	2.3	.....	*7.2	7.9	3.3	4.1	1.0	12	.7
30	2.1	1.5	1.5	2.2	.....	7.6	7.2	2.8	3.1	.9	5.4	.7
31	2.1	.....	1.5	2.2	.....	6.5	.....	3.3	.....	.9	1.0	.....

Clear Creek near Coralville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1958 and 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58												
1	*0.4	0.8	1.9	0.6	1.5	25	4.6	*4.2	147	5.1	37	3.3
2	.4	1.3	1.7	.7	1.5	18	4.8	4.0	26	6.0	22	3.3
3	.4	.9	1.6	.7	1.5	15	5.3	4.2	*12	7.6	16	41
4	.4	*.8	1.8	.6	1.5	13	6.2	4.4	8.4	23	15	*488
5	.4	.9	1.8	.6	1.5	11	6.9	4.0	6.4	12	19	845
6	.4	.8	1.8	.6	1.5	11	7.6	3.7	*5.3	7.4	*21	420
7	.4	.9	1.8	*.5	*1.4	13	8.7	3.5	4.0	5.3	16	96
8	.4	1.9	1.8	.6	1.2	13	7.9	3.5	42	*4.4	13	55
9	.4	1.6	*1.7	.7	1.0	11	6.7	3.3	*297	4.0	11	43
10	.4	1.6	1.5	.8	.9	9.6	6.7	3.3	174	*4.2	9.6	*41
11	.4	1.8	1.4	.8	.7	9.8	6.2	3.1	*37	4.4	8.7	39
12	.4	1.9	1.2	.8	.7	8.7	6.0	3.0	132	6.4	9.0	29
13	.4	2.5	1.2	.9	.6	8.2	5.7	2.5	528	5.3	9.0	24
14	*.4	2.3	1.3	1.0	.6	7.9	6.0	2.0	321	*505	8.2	22
15	1.5	1.9	1.5	*1.0	.6	7.4	6.0	2.5	63	398	89	20
16	.4	2.0	1.8	1.1	.6	7.2	*5.1	8.7	42	75	32	18
17	.2	2.0	2.3	1.3	.6	6.4	4.8	59	32	45	13	*17
18	.2	13	2.9	1.5	.6	6.4	4.8	13	25	38	8.2	16
19	.2	13	3.7	1.6	.6	*6.2	4.6	*6.9	20	32	6.9	14
20	.3	11	5.0	1.8	.6	6.0	4.4	5.1	17	32	*6.4	13
21	.3	5.4	4.1	2.0	*.6	5.5	4.8	3.7	15	27	6.9	12
22	.6	*4.0	3.2	2.2	.6	5.7	5.3	19	13	20	6.0	11
23	1.2	3.5	2.6	2.1	5.0	5.5	5.5	7.6	11	*17	5.3	11
24	1.2	3.0	2.0	1.9	150	5.3	28	4.0	12	15	5.1	12
25	.8	2.7	2.2	1.8	300	5.1	14	3.7	*13	13	4.8	15
26	.8	2.5	2.4	1.7	128	4.8	7.2	3.3	11	11	4.6	11
27	.8	2.3	2.7	1.6	50	5.1	5.7	3.1	9.0	11	4.0	8.7
28	.7	2.2	2.0	1.6	*36	4.6	5.5	3.1	7.6	17	3.7	8.2
29	.8	2.1	1.3	1.5	.....	4.4	5.1	3.0	6.2	10	3.7	8.2
30	.8	2.0	1.8	1.5	.....	4.4	4.4	3.1	5.5	196	3.5	7.2
31	.8	.....	.5	1.5	.....	*4.6	.....	21	.....	139	3.3	.....
1958-59												
1	6.7	10	*8.2	4.2	5.6	280	369	140	164	*440	18	7.0
2	6.2	10	9.0	3.9	5.6	150	325	111	121	259	14	8.8
3	*5.7	10	9.6	3.6	5.6	92	204	100	95	82	22	7.0
4	5.7	*9.8	10	3.4	*5.6	60	138	84	*79	67	26	4.5
5	5.5	8.7	6.8	3.2	5.6	45	111	69	68	57	14	4.1
6	5.1	8.4	4.9	*3.0	5.6	35	84	61	59	47	69	3.5
7	9.0	8.2	3.9	3.0	5.6	28	76	*53	51	41	21	3.1
8	36	8.2	3.6	3.0	5.6	25	*70	48	45	37	13	-2.9
9	*512	8.4	3.5	3.2	5.6	27	64	50	41	36	11	2.9
10	*236	8.4	3.5	3.4	12	*35	55	134	*39	32	9.9	2.6
11	54	7.9	3.6	3.6	22	58	50	*600	38	29	8.8	2.7
12	39	7.6	3.7	4.0	40	84	45	187	34	26	7.9	2.7
13	32	7.6	3.9	4.4	90	110	41	111	30	25	7.3	2.6
14	*28	7.9	4.1	5.0	250	180	37	*78	28	22	*8.1	2.6
15	24	8.7	4.3	6.0	210	100	34	68	27	21	49	2.7
16	22	10	4.4	8.0	130	50	31	57	27	20	51	2.4
17	20	34	*4.5	10	78	41	42	52	24	24	40	2.6
18	18	82	4.5	8.0	45	35	96	49	22	49	30	2.6
19	17	31	4.6	5.8	22	*.749	53	326	22	26	13	2.9
20	16	24	4.6	5.0	15	*1,920	86	207	21	21	10	3.1
21	18	21	4.6	4.5	140	1,140	121	372	85	18	8.8	3.1
22	21	19	4.7	4.3	280	439	117	188	236	19	7.6	2.9
23	16	18	4.8	4.2	*500	*374	88	124	38	*38	7.0	3.1
24	15	17	4.9	4.2	*850	453	68	95	30	20	7.6	2.6
25	14	17	5.2	4.2	660	250	56	78	26	15	6.1	4.3
26	13	14	5.2	4.5	760	692	43	98	22	14	5.6	9.9
27	13	11	5.0	5.0	1,300	571	74	86	21	13	5.0	54
28	12	9.0	5.0	5.6	960	212	*920	70	20	12	*5.0	*21
29	12	6.5	4.8	6.2	.....	157	456	199	22	12	5.0	9.1
30	11	7.4	4.7	6.2	.....	136	184	470	156	142	4.5	6.7
31	11	.....	4.5	6.0	.....	164	.....	329	.....	34	4.5	.....

Clear Creek near Coralville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Year 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1959-60												
1.....	5 6	30	41	100	66	*30	1,420	155	318	46	31	7.0
2.....	5 2	28	38	96	64	31	1,100	106	*668	41	28	6.7
3.....	5 4	27	37	70	*62	30	383	83	184	43	28	6.4
4.....	7 6	216	37	51	60	30	304	68	239	34	27	6.4
5.....	64	301	33	60	*65	*30	270	65	579	38	27	5.2
6.....	124	159	31	74	*68	30	232	329	184	144	27	5.2
7.....	140	109	30	*68	58	32	204	510	147	44	27	5.2
8.....	45	90	28	*55	47	32	*170	246	118	37	24	4.3
9.....	33	85	26	*52	102	32	133	200	*96	501	22	4.8
10.....	26	75	30	*56	86	32	115	170	87	797	21	5.0
11.....	22	64	36	*50	72	31	112	145	86	212	*19	4.3
12.....	19	58	40	*1,000	64	31	88	*122	176	*485	19	4.5
13.....	18	60	34	*2,050	62	31	80	107	254	983	18	4.1
14.....	17	50	32	*407	62	31	75	93	170	624	16	*4.1
15.....	16	45	33	*475	*64	31	70	77	135	*159	15	5.2
16.....	15	48	33	*250	64	33	124	126	115	131	14	7.3
17.....	14	41	31	200	*64	33	395	124	*98	109	14	7.0
18.....	13	40	*28	*140	62	33	278	85	110	96	14	7.3
19.....	13	45	28	*92	50	36	196	84	177	84	14	6.7
20.....	13	*48	28	*120	35	33	175	107	92	71	14	5.9
21.....	13	52	28	110	36	34	184	96	*86	64	13	5.0
22.....	13	56	24	*100	36	35	135	83	79	58	*11	4.8
23.....	133	63	30	*95	36	35	121	*76	70	53	11	7.3
24.....	67	70	34	90	36	35	107	124	61	49	11	45
25.....	40	59	30	84	34	34	100	201	56	49	10	16
26.....	36	50	74	80	33	40	98	125	52	54	9.5	9.1
27.....	39	40	342	*76	32	50	85	112	50	*44	8.5	6.1
28.....	34	37	395	*74	31	140	*73	100	48	39	7.6	*5.4
29.....	32	40	232	*68	30	500	83	91	*46	37	11	5.4
30.....	*29	44	180	*68	.....	1,300	196	83	42	35	12	5.6
31.....	31	.....	120	68	.....	1,840	.....	71	.....	32	7.9	.....

Clear Creek near Coralville, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1952-53	1.33	30.8	15.7	24.6	177	70.3	73.4	95.8	50.9	20.6	1.94	0.69
1953-54	2.11	3.46	.63	.35	2.79	4.49	8.95	23.3	23.7	1.69	12.7	2.66
1954-55	19.6	2.32	1.75	2.85	56.6	26.6	46.7	37.1	6.84	13.4	8.18	1.94
1955-56	1.05	.95	.54	.63	21.4	9.88	4.15	3.79	.83	21.1	68.3	6.47
1956-57	1.63	2.19	1.35	11.9	18.7	6.09	11.2	8.00	9.59	2.09	6.31	.88
1957-58	.55	3.09	2.05	1.21	24.6	8.67	6.82	7.05	68.1	54.7	13.6	78.4
1958-59	40.4	15.0	5.12	4.79	229	280	138	151	56.4	54.8	16.4	6.33
1959-60	34.9	72.0	69.1	206	54.5	151	237	134	154	168	17.1	7.41

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1952-53	0.014	0.314	0.160	0.251	1.80	0.717	0.748	0.977	0.519	0.210	0.020	0.0070
1953-54	.022	.035	.0064	.0036	.028	.046	.091	.238	.242	.017	.129	.027
1954-55	.200	.024	.018	.029	.577	.271	.476	.378	.070	.137	.083	.026
1955-56	.011	.0097	.0055	.0064	.218	.101	.042	.039	.0085	.215	.696	.060
1956-57	.017	.022	.014	.121	.191	.062	.114	.082	.098	.021	.064	.0090
1957-58	.0056	.031	.021	.012	.251	.088	.070	.072	.694	.558	.139	.799
1958-59	.412	.153	.052	.049	2.33	2.85	1.41	1.54	.575	.559	.167	.065
1959-60	.356	.734	.704	2.10	.556	1.54	2.42	1.37	1.57	1.71	.174	.076

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1952-53	0.02	0.35	0.19	0.28	1.88	0.83	0.83	1.13	0.58	0.24	0.02	0.008
1953-54	.02	.04	.007	.004	.03	.05	.10	.27	.27	.02	.15	.03
1954-55	.23	.03	.02	.03	.60	.31	.53	.44	.08	.16	.10	.02
1955-56	.01	.01	.006	.007	.23	.12	.05	.04	.009	.25	.80	.07
1956-57	.02	.02	.02	.14	.20	.07	.13	.09	.11	.02	.07	.01
1957-58	.007	.04	.02	.01	.26	.10	.08	.08	.77	.64	.16	.89
1958-59	.48	.17	.06	.06	2.43	3.30	1.57	1.78	.64	.64	.19	.07
1959-60	.41	.82	.81	2.42	.60	1.77	2.69	1.58	1.75	1.97	.20	.08

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1953	Feb. 20, 1953	11.18	1,800	0.3	45.9	0.468	6.36	42.5	5.87
1954	Aug. 26, 1954	8.10	730	.3	7.24	.074	.99	8.72	1.20
1955	Feb. 21, 1955	9.70	850	.5	18.4	.188	2.55	16.6	2.30
1956	Aug. 30, 1956	9.52	900	.1	11.6	.118	1.60	11.8	1.64
1957	Jan. 22, 1957	(16.28)	300	.6	6.57	.067	.90	6.61	.91
1958	Sept. 5, 1958	9.69	1,020	.2	22.2	.226	3.06	26.8	3.70
1959	Mar. 20, 1959	11.68	2,880	2.4	82.3	.839	11.39	92.0	12.72
1960	Jan. 13, 1960	11.79	3,060	4.1	109	1.11	15.10	.....	.....

(1) Maximum gage-height 6.49 ft. occurred Feb. 9, 1957 (backwater from ice).

Peak Discharge (base, 1,000 cfs)

1952-53: Feb. 20, about 1,800 cfs (11.18 ft.); May 25 (12m) 1,010 cfs (9.3 ft.).

1953-54: No peak above base.

1954-55: No peak above base.

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: Sept. 5 (6 p.m.) 1,020 cfs (9.69 ft.).

1958-59: Feb. 27 about 1,500 cfs; Mar. 20 (4 p.m.) 2,880 cfs (11.68 ft.);

Clear Creek near Coralville, Iowa—Continued

Mar. 26 (3 p.m.) 1,040 cfs (10.22 ft.); Apr. 28 (7 a.m.) 1,040 cfs (10.25 ft.).

1959-60: Jan. 13 (9 a.m.) 3,060 cfs (11.79 ft.); Mar. 31 (2 a.m.) 2,740 cfs (11.63 ft.); June 2 (3 a.m.) 1,150 cfs (10.08 ft.); June 4 (11 p.m.) 1,120 cfs (10.06 ft.); July 9 (8:30 p.m.) 1,240 cfs (10.27 ft.); July 14 (1:30 a.m.) 1,840 cfs (10.90 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 28 to Dec. 31, 1952; Jan. 1 to Mar. 10, Nov. 27 to Dec. 31, 1953; Jan. 1 to Mar. 15, Nov. 27, 28, Dec. 10-13, 16-31, 1954; Jan. 1 to Mar. 7, 24-28, Nov. 15 to Dec. 31, 1955; Jan. 1 to Mar. 18, Nov. 20 to Dec. 31, 1956; Jan. 1 to Feb. 28, Mar. 2, 3, Nov. 21 to Dec. 31, 1957; Jan. 1 to Feb. 25, Nov. 26 to Dec. 31, 1958; Jan. 1 to Mar. 18, Nov. 14-21, Nov. 26 to Dec. 10, Dec. 21-25, 31, 1959; Jan. 1-12, Jan. 16 to Feb. 5, Feb. 10 to Mar. 30, 1960. No gage-height record Oct. 1 to Dec. 31, 1952; Jan. 1 to Apr. 21, June 15-22, Nov. 21-26, 1953.

Iowa River at Iowa City, Iowa

LOCATION.—Lat. 41°39'25", long. 91°32'25", in SE¼SE¼ sec. 9, T. 79 N., R. 6 W., on right bank 25 ft. downstream from University of Iowa Hydraulics Laboratory in Iowa City, 175 ft. downstream from university dam, 0.9 mile upstream from Ralston Creek, 3.6 miles downstream from Clear Creek, and at mile 74.2.

DRAINAGE AREA.—3,271 square miles (revised in 1956).

RECORDS AVAILABLE.—June 1903 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 39.00 ft. above Iowa City datum, and 627.27 ft. above mean sea level, datum of 1929. June 1, 1903, to July 21, 1906, chain gage 1,200 ft. upstream at datum 3.05 ft. higher. Nov. 29, 1907, to Oct. 29, 1913, staff gage 200 ft. upstream at different datum. Oct. 30, 1913, to Nov. 18, 1921, chain gage 2,600 ft. downstream at datum 0.2 ft. higher. Nov. 19, 1921, to Sept. 30, 1922, water-stage recorder at present site at datum 1.0 ft. higher. Oct. 1, 1930, to Sept. 30, 1934, at present site at Iowa City datum.

AVERAGE DISCHARGE.—57 years, 1,500 cfs.

EXTREMES.—1903-60: Maximum discharge, 42,500 cfs June 8, 1918 (gage-height, 19.6 ft., from graph based on gage readings, site and datum then in use); minimum daily, 29 cfs Oct. 21, 22, 1916 (regulated).

Flood of July 17, 1881, reached a stage of 21.1 ft., from floodmarks at site and datum in use 1913-21; from information by local resident (discharge, 51,000 cfs).

Maximum stage known since at least 1850, about 3 ft. higher than that of July 17, 1881, occurred in June 1851 (discharge 70,000 cfs, estimated).

REMARKS.—Diurnal fluctuation at low stages caused by powerplants above station. Flow regulated by Coralville Reservoir (capacity, 492,000 acre-ft.) beginning Sept. 17, 1958. Records of chemical analyses for the periods September 1906 to September 1907, January 1944 to September 1954; suspended-sediment loads for the period October 1943 to September 1960; and water temperatures for the period January 1944 to September 1960 are published in reports of the U. S. Geological Survey. Bankfull stage is about gage height, 18 ft.

REVISIONS (water years).—WSP 1558: 1851(M), 1881(M), 1914-16, 1917(M), 1918, 1919-21(M), 1924.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	263	148	*65	62	47	343	525	256	*416	78	1,690	910
2	112	145	65	61	48	378	703	320	512	78	1,550	486
3	254	126	62	65	48	355	702	326	381	84	*1,790	639
4	101	*128	62	73	47	265	1,020	*384	258	78	1,330	488
5	115	124	65	72	48	482	972	364	394	*80	777	364
6	126	126	70	*70	50	503	706	433	190	198	446	404
7	130	124	79	68	38	407	590	392	249	152	396	*376
8	128	126	78	69	*44	160	458	270	328	202	274	450
9	114	118	76	69	56	208	482	732	210	462	265	472
10	*124	115	73	65	32	322	434	686	184	174	260	522
11	152	114	70	63	51	290	327	522	231	179	239	576
12	414	110	72	62	51	213	434	534	178	76	412	485
13	380	112	70	61	63	201	166	508	179	185	1,140	434
14	324	108	68	53	91	240	330	454	211	74	732	331
15	191	110	65	53	96	213	291	1,120	181	140	657	258
16	346	112	65	63	98	204	306	*1,760	168	75	781	274
17	284	103	62	66	82	266	268	1,160	170	150	984	303
18	142	78	61	66	66	252	250	834	122	392	1,260	187
19	214	60	60	66	68	292	240	656	132	766	854	230
20	200	60	60	63	79	285	222	570	368	588	586	180
21	192	80	58	60	91	211	236	518	222	382	384	165
22	178	190	58	61	82	180	238	412	131	397	316	168
23	159	88	58	58	88	312	177	338	118	339	260	145
24	163	90	58	54	*544	277	156	316	120	176	226	158
25	161	105	58	47	800	450	175	282	129	135	253	156
26	140	112	58	50	426	518	224	355	244	235	182	167
27	144	112	58	51	*539	484	352	334	90	85	182	88
28	159	91	61	50	296	472	364	291	76	77	170	152
29	150	75	62	44	335	*495	414	326	176	192	96	72
30	148	66	61	*45	485	300	307	90	72	609	144	
31	156		63	45		495		334		1,280	2,100	

Iowa River at Iowa City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	78	80	110	105	230	426	420	269	1,720	1,340	1,700	920
2	72	90	134	100	212	400	476	310	1,990	1,230	1,510	800
3	79	98	132	100	202	416	440	250	2,180	1,120	1,340	682
4	132	103	139	100	192	375	389	385	2,650	1,090	1,200	591
5	79	103	242	105	*188	437	451	263	2,480	1,200	922	*462
6	98	101	128	105	182	431	468	142	*2,530	2,370	759	476
7	81	112	105	*98	*178	398	426	256	2,210	2,930	*675	356
8	58	108	92	92	182	*364	309	241	2,450	3,280	575	388
9	57	105	92	88	530	265	356	182	2,690	*3,460	*510	369
10	65	105	98	82	681	317	450	330	2,610	3,190	462	412
11	188	112	100	76	627	*353	342	246	2,130	2,210	378	296
12	60	115	100	72	693	320	344	252	1,550	1,510	458	325
13	58	115	100	70	795	302	308	674	1,350	1,260	400	308
14	60	122	100	70	955	357	359	780	1,230	1,090	350	316
15	61	178	100	70	988	300	288	779	1,160	988	330	360
16	90	169	102	70	1,090	305	262	1,020	1,020	890	320	336
17	132	147	105	70	1,090	238	306	*1,060	1,040	825	320	340
18	64	121	105	70	955	290	271	1,060	1,560	765	330	342
19	215	124	106	70	825	382	340	1,120	2,610	693	386	254
20	200	115	103	70	705	339	274	1,060	*3,460	515	364	348
21	200	176	100	230	570	330	270	1,010	3,640	545	314	320
22	170	98	100	762	485	343	281	1,020	3,660	603	310	260
23	170	86	105	474	440	359	292	1,410	4,400	609	290	286
24	*175	96	110	704	404	376	318	*1,300	*4,600	633	287	316
25	178	119	110	753	492	406	340	1,020	4,500	1,120	252	311
26	165	115	115	675	494	399	285	955	3,460	1,090	257	215
27	149	105	120	550	450	407	328	874	2,370	825	300	295
28	143	100	120	436	348	449	223	825	1,890	681	564	222
29	98	100	120	342	.....	*442	252	764	1,660	639	716	338
30	65	100	115	280	.....	398	258	795	1,480	1,480	1,500	94
31	156	.....	110	248	.....	374	.....	1,020	.....	2,050	1,300	.....
1957-58												
1	296	233	301	145	280	2,530	548	560	442	765	2,210	922
2	196	251	301	160	287	2,530	458	550	465	765	2,050	795
3	*309	242	310	220	284	2,050	462	535	735	765	1,810	*677
4	94	236	312	267	284	1,620	476	520	858	890	1,580	2,580
5	224	*398	350	274	274	*1,340	467	498	795	1,080	1,400	4,200
6	242	126	464	303	264	1,200	570	515	765	1,700	1,370	4,600
7	100	308	495	326	242	1,120	597	420	1,020	1,890	*1,510	4,600
8	232	290	476	350	236	1,020	*690	525	1,160	2,130	1,510	*4,500
9	196	214	348	*354	233	988	988	*446	1,440	2,130	1,440	4,500
10	134	318	300	334	*239	890	1,260	458	1,480	1,970	1,340	4,700
11	138	208	230	307	221	825	1,400	460	*1,510	*1,700	1,200	4,500
12	243	336	175	303	202	795	1,400	436	1,800	1,480	1,060	4,600
13	198	292	*280	294	185	729	1,370	376	2,570	1,440	955	4,500
14	110	280	307	287	170	681	1,300	401	2,370	2,390	890	4,480
15	284	234	287	287	160	675	1,230	414	2,450	3,160	988	3,190
16	234	260	297	290	150	693	1,120	368	2,610	3,460	922	1,610
17	120	212	338	297	143	675	1,060	482	2,850	3,460	1,230	717
18	302	411	372	322	141	657	988	373	3,370	3,550	1,730	414
19	91	485	386	364	147	621	922	498	3,280	3,550	2,370	633
20	269	383	550	400	139	597	890	474	3,090	3,460	2,690	645
21	250	404	520	408	153	565	858	444	3,460	3,550	2,770	645
22	165	401	603	382	151	545	795	456	3,280	3,460	2,230	645
23	186	350	825	354	178	530	795	406	3,010	3,280	1,160	585
24	207	399	699	364	747	627	795	354	2,050	3,100	1,960	711
25	205	326	693	338	1,370	436	741	351	1,340	2,850	1,920	858
26	216	386	478	322	1,810	495	687	356	1,060	2,770	1,550	858
27	233	390	578	314	1,890	480	675	348	988	2,690	1,160	747
28	346	383	300	303	2,210	500	651	256	922	2,610	1,060	693
29	172	407	390	297	.....	449	560	326	890	2,450	1,060	639
30	308	198	300	297	.....	462	565	266	795	2,620	1,200	603
31	185	.....	240	294	.....	428	.....	350	.....	2,370	1,370	.....

Iowa River at Iowa City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	585	424	*455	260	287	3,820	4,000	*3,820	*4,300	2,830	137	214
2	*565	362	368	260	292	4,200	4,990	3,730	4,300	*4,600	170	114
3	452	493	330	260	289	5,000	*7,950	3,640	4,200	4,100	223	*124
4	522	335	330	250	*252	5,000	9,120	3,640	4,200	4,100	104	128
5	495	*364	350	204	223	4,800	9,120	3,640	4,200	3,600	109	180
6	490	442	360	257	197	3,460	9,120	3,640	4,200	2,930	414	91
7	470	314	380	*257	197	2,770	*9,120	3,640	4,100	2,930	110	124
8	622	340	385	251	228	2,530	9,120	3,550	4,000	2,350	107	206
9	2,120	336	355	258	174	2,290	9,120	3,640	3,820	2,370	168	88
10	2,340	417	340	252	223	1,970	9,120	3,280	3,640	1,570	107	154
11	1,720	366	330	280	273	2,650	9,120	3,730	3,280	1,680	200	107
12	756	244	316	221	305	1,970	9,250	4,400	2,630	1,430	167	164
13	642	*344	316	213	308	2,290	9,250	3,910	1,780	1,270	100	89
14	640	406	310	265	527	3,640	8,990	3,550	1,790	1,000	226	202
15	621	360	305	169	507	4,000	8,080	3,010	1,600	988	145	92
16	746	283	300	212	428	4,400	7,060	2,290	1,450	988	347	104
17	699	526	300	202	507	4,600	6,700	1,930	1,200	1,030	195	122
18	663	756	276	205	540	4,600	6,700	1,810	1,230	1,220	150	124
19	639	1,730	252	202	527	5,970	6,150	2,530	1,120	1,020	206	177
20	603	2,130	202	205	424	*7,300	4,950	2,610	1,020	1,060	144	112
21	592	1,360	237	245	428	3,310	2,990	3,460	1,010	897	152	229
22	618	1,190	294	292	475	1,340	2,290	3,640	1,260	656	182	81
23	466	940	242	319	1,000	2,360	2,210	3,910	988	408	107	104
24	532	420	213	319	1,800	4,780	2,210	4,100	955	272	141	124
25	480	535	252	316	2,900	5,770	2,210	4,400	825	380	156	178
26	374	453	259	316	4,000	6,820	2,210	4,600	621	328	189	132
27	510	432	268	312	*5,140	8,080	2,500	4,500	705	340	139	301
28	480	455	412	312	4,400	7,560	3,270	4,200	795	264	122	154
29	444	466	370	316	.....	7,430	2,390	4,100	795	226	192	492
30	470	471	310	318	.....	6,820	3,370	4,800	988	*334	107	508
31	478	.....	285	311	.....	3,820	.....	4,500	.....	136	158	.....
1959-60												
1	*502	633	988	2,370	4,300	1,060	2,920	8,660	6,900	*1,480	752	*608
2	480	*565	*795	2,290	3,640	1,060	2,560	*8,550	5,790	1,480	644	612
3	484	543	795	2,210	3,370	988	1,720	8,660	*5,500	1,380	581	612
4	462	1,370	890	2,210	*2,850	922	3,130	8,660	7,120	1,250	581	612
5	723	3,160	1,020	1,850	2,610	825	7,090	8,660	5,700	1,200	581	612
6	1,000	3,280	1,060	1,300	2,290	825	*9,580	8,770	4,780	1,300	581	581
7	1,340	3,280	1,060	1,090	2,290	*825	9,700	5,590	6,690	1,160	572	516
8	1,400	2,770	1,060	*825	2,050	795	9,580	2,240	6,690	902	568	430
9	1,120	2,050	1,060	825	1,850	795	9,580	*1,340	6,690	1,600	*572	*445
10	645	1,770	1,060	825	1,770	765	9,580	1,300	6,690	2,000	558	426
11	416	1,740	1,060	825	1,810	795	9,580	2,920	6,690	1,250	545	417
12	570	1,550	1,060	4,040	1,400	765	9,580	6,490	5,790	1,800	541	509
13	449	1,340	1,060	5,850	890	765	*9,580	6,690	1,520	2,640	554	279
14	459	1,300	922	1,540	890	765	9,700	6,690	2,080	2,240	1,730	268
15	495	1,300	795	1,580	922	765	9,580	6,690	5,790	1,840	*4,060	204
16	581	1,160	795	1,930	1,260	687	9,790	6,790	6,590	2,000	4,060	222
17	493	858	795	3,640	1,400	669	9,100	*6,790	6,590	2,000	*4,420	314
18	473	645	765	5,550	1,400	669	8,660	6,690	6,490	1,760	*4,870	274
19	450	875	765	6,940	1,400	681	9,700	6,690	5,790	1,430	4,780	264
20	553	580	765	*7,060	1,370	681	9,700	6,690	5,500	1,160	4,690	262
21	480	609	795	6,940	1,370	687	9,820	6,690	5,500	970	3,800	283
22	415	795	795	6,940	1,370	693	9,820	6,690	5,230	910	*2,920	216
23	600	1,020	795	7,060	1,300	693	9,820	6,590	3,160	895	2,850	462
24	711	1,160	795	6,940	1,090	699	9,820	6,690	2,480	850	2,780	598
25	693	1,160	795	6,940	1,090	693	9,820	6,900	2,320	850	2,320	436
26	693	1,200	890	6,820	1,090	747	9,820	6,690	2,160	858	1,680	670
27	693	1,160	1,400	6,940	1,090	795	9,820	6,690	2,000	850	1,080	1,000
28	723	1,160	1,810	6,580	1,090	1,370	9,820	6,690	1,840	850	1,080	1,120
29	669	1,120	2,290	5,770	1,120	4,680	9,820	6,590	1,600	850	1,080	1,120
30	657	1,160	2,370	5,880	.....	5,950	9,580	6,590	1,480	843	1,080	1,300
31	663	.....	2,370	5,440	.....	3,400	.....	6,590	.....	836	808	.....

Iowa River at Iowa City, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	189	109	64.5	59.8	152	332	402	519	216	245	681	326
1956-57	116	114	113	230	542	364	341	699	2,409	1,362	625	378
1957-58	209	312	403	308	457	895	844	427	1,762	2,370	1,539	2,145
1958-59	706	590	313	260	959	4,347	6,089	3,619	2,233	1,545	167	167
1959-60	648	1,377	1,086	4,097	1,737	1,178	8,612	6,418	4,772	1,337	1,862	522

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.058	0.033	0.020	0.018	0.046	0.101	0.123	0.159	0.066	0.075	0.208	0.100
1956-57	.035	.035	.035	.070	.166	.111	.104	.214	.736	.416	.191	.116
1957-58	.064	.095	.123	.094	.140	.274	.258	.131	.539	.725	.470	.656
1958-59	.216	.180	.096	.079	.293	1.33	1.86	1.11	.683	.472	.051	.051
1959-60	.198	.421	.332	1.25	.531	.360	2.63	1.96	1.46	.409	.569	.160

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.07	0.04	0.02	0.02	0.05	0.12	0.14	0.18	0.07	0.09	0.24	0.11
1956-57	.04	.04	.04	.08	.17	.13	.12	.25	.82	.48	.22	.13
1957-58	.07	.11	.14	.11	.15	.32	.29	.15	.60	.84	.54	.73
1958-59	.25	.20	.11	.09	.31	1.53	2.08	1.28	.76	.54	.06	.06
1959-60	.23	.47	.38	1.44	.57	.42	2.94	2.26	1.63	.47	.66	.18

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								668	2.78
1956	Aug. 31, 1956	3.95	3,100	32	275	0.084	1.15	274	1.14
1957	June 25, 1957	5.70	4,700	57	606	.185	2.52	655	2.72
1958	Sept. 7, 1958	5.95	5,000	91	974	.298	4.05	1,031	4.29
1959	Apr. 14, 1959	10.40	9,380	81	1,750	.535	7.27	1,876	7.79
1960	Apr. 16, 1960	11.28	10,700	204	2,799	.856	11.65		

Peak Discharge (base, 6,000 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: No peak above base.

1958-59: Peaks regulated by Coralville Reservoir.

1959-60: Peaks regulated by Coralville Reservoir.

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 26-29, Dec. 7-18, 21-31, 1956; Jan. 1-20, Dec. 10, 11, 30, 31, 1957; Jan. 1-3, Dec. 3-7, 11, 14-17, 29-31, 1958; Jan. 1-4, Feb. 23-25, 1959. No. gage-height record Dec. 18-28, 1955.

Ralston Creek at Iowa City, Iowa

LOCATION.—Lat. 41°39'50", long. 91°30'45", in SE¼NW¼ sec. 11, T. 79 N., R. 6 W., on left bank 10 ft. upstream from bridge on State Highway 1, at east edge of Iowa City, and 2.2 miles upstream from mouth.

DRAINAGE AREA.—3.01 square miles.

RECORDS AVAILABLE.—September 1924 to September 1960.

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

AVERAGE DISCHARGE.—36 years, 1.46 cfs.

EXTREMES.—1924-60: Maximum discharge, 1,690 cfs July 18, 1956 (gage height, 9.06 ft.); no flows at times during most years.

REMARKS.—Records of suspended-sediment loads for the period April 1952 to September 1960 are published in reports of U. S. Geological Survey. Banks are not overtopped.

REVISIONS (water years).—WSP 1508: 1933, 1935-37, 1940(M), 1941(M), 1942, 1943(M), 1948-51, 1952(P), 1953, 1954(M), 1955.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	0	*0	*0	0	*0	**0.11	*0	*0	0	0	14	0.38
2.....	0	0	0	0	0	.07	0	0	0	0	.29	.16
3.....	*0	0	0	0	0	0	.11	0	0	0	.11	.08
4.....	0	0	0	0	0	0	*0	0	*0	0	.04	.09
5.....	0	0	0	0	0	*0	0	.01	0	0	.01	.79
6.....	0	0	0	0	0	0	*0	.03	0	*3.9	0	.10
7.....	0	0	0	0	0	0	0	0	0	.12	0	.07
8.....	0	0	0	0	0	0	0	0	0	0	0	.03
9.....	0	0	0	*0	0	0	0	*1.2	0	0	0	.02
10.....	0	0	0	0	0	0	*0	.09	0	0	0	.01
11.....	0	0	0	0	0	0	0	.06	0	0	0	0
12.....	0	0	0	0	0	0	0	.01	0	0	.87	0
13.....	0	0	0	0	3.1	0	0	.09	0	0	.27	0
14.....	0	0	0	0	.52	0	0	.19	0	0	.01	0
15.....	0	0	0	0	.05	*0	0	0	0	0	0	0
16.....	0	0	0	0	0	0	0	0	0	0	0	0
17.....	0	0	0	0	0	0	0	0	0	0	*12	0
18.....	0	0	0	0	.01	0	0	0	0	*77	14	0
19.....	0	0	0	0	.01	0	0	0	0	1.3	.27	0
20.....	0	0	0	0	.01	*0	0	0	0	.17	.09	0
21.....	0	0	0	0	.01	0	0	0	0	.01	.03	0
22.....	0	0	0	0	0	0	0	0	0	0	0	0
23.....	0	0	0	0	.23	0	0	0	0	0	0	0
24.....	0	0	0	0	*13	0	0	0	0	0	0	0
25.....	0	0	0	0	.46	0	0	0	0	.20	0	0
26.....	0	0	0	0	*.05	**0	0	0	0	0	0	0
27.....	0	0	0	0	.02	0	0	0	0	0	0	0
28.....	0	0	0	0	.01	0	.04	0	0	0	0	0
29.....	0	0	0	0	.04	*0	.13	0	0	0	0	0
30.....	0	0	0	0	.....	0	.02	0	0	0	*63	0
31.....	0	.....	0	0	.....	0	.....	0	.....	*42	94	.....

Ralston Creek at Iowa City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	*0	0	0	0	0	0	0.02	0.05	0.02	*0	0	0
2	0	0	0	*0	*0	0	.09	.03	0	0	*0	0
3	0	0	*0	0	0	0	.09	.01	*0	0	0	0
4	0	0	0	0	0	*0	.41	0	0	0	0	0
5	0	*0	0	0	0	0	.27	0	0	0	0	0
6	0	0	0	0	0	0	.14	0	0	0	0	0
7	0	0	0	0	.30	0	.09	0	.07	0	0	0
8	0	0	0	0	3.0	0	.06	0	.05	0	0	0
9	0	0	0	0	1.5	0	.04	.01	.04	0	0	*0
10	0	0	0	0	.30	0	.05	.51	.01	0	0	0
11	0	0	0	0	.10	.14	.04	.12	.02	0	0	0
12	0	0	0	0	.22	.08	.01	.18	.03	0	0	0
13	0	0	0	0	.08	.05	.01	.32	.13	0	0	0
14	0	.74	0	0	.03	.03	.01	.5	.05	0	0	0
15	0	.01	0	0	.02	.02	.01	.14	.02	0	0	0
16	0	0	0	0	0	0	.01	.05	.01	0	0	0
17	0	0	0	0	0	0	.01	.05	.01	0	0	0
18	0	0	0	0	0	.22	.01	.05	0	0	0	0
19	0	0	0	0	0	.26	.11	.05	0	0	0	0
20	0	0	0	0	0	.09	.02	.05	0	0	0	.34
21	0	0	0	*8.0	0	.05	0	1.7	0	0	0	0
22	0	0	0	.20	0	.04	.60	.36	0	0	0	0
23	0	0	0	.01	0	.02	.26	.15	0	0	0	0
24	0	0	0	0	.03	.01	.12	.05	0	0	0	0
25	0	0	0	0	.12	.02	.10	.22	0	0	0	0
26	0	0	0	0	.01	.02	.16	.08	0	0	0	0
27	0	0	0	0	0	.07	.43	.04	0	0	0	0
28	0	0	0	0	0	.05	.23	.02	0	0	*3.9	0
29	0	0	0	0	.....	.03	.12	.01	0	0	.01	0
30	0	0	0	0	.....	.01	.07	.10	0	0	0	0
31	0	.....	0	0	.....	.01	.....	.10	.....	0	0	.....
1957-58												
1	0	*0	0	0	0	0.43	0.11	0	0.29	0	0.08	*0
2	*0	0	0	0	0	.27	.27	0	.02	0	.05	0
3	0	0	0	*0	0	.20	.06	0	.01	0	.04	1.7
4	0	0	0	0	0	.18	.10	.04	0	0	.04	2.3
5	0	0	0	0	0	.18	.38	0	0	.01	1.2	17
6	0	0	0	0	0	.36	.26	0	0	0	.12	1.1
7	0	0	0	0	0	.43	.10	0	0	*0	.60	.36
8	0	0	0	0	0	.27	.08	0	5.6	0	.26	.21
9	0	0	0	0	0	.21	.07	0	2.0	0	.08	.15
10	0	0	0	0	0	.13	.05	0	.38	0	.04	.11
11	0	0	0	0	0	.12	.05	0	.07	0	.03	.07
12	0	0	0	0	0	.10	.03	0	1.8	0	.54	.07
13	0	0	0	0	0	.11	.03	0	*17	2.6	.31	.06
14	0	0	0	0	0	.09	.02	0	.48	*42	.04	.05
15	.81	0	0	0	0	.09	.02	0	.24	.85	4.3	.09
16	0	0	0	0	0	.07	.01	0	.14	.29	.20	.06
17	0	0	0	0	0	.06	.01	.04	.09	.26	.11	.04
18	0	3.0	0	0	0	.06	.01	.08	.06	.27	.06	.04
19	0	.24	0	0	0	.05	.01	0	.05	.32	.04	.03
20	0	.02	*1.8	0	0	.05	.01	0	.05	.21	.07	.02
21	0	0	.10	0	0	.04	.04	0	.02	.09	.15	.02
22	0	0	.06	0	0	.05	.04	2.5	.01	.05	.01	.01
23	.15	0	.04	0	4.4	.04	.06	.05	.02	.02	0	.01
24	.06	0	0	0	*27	.03	.06	.01	.08	.02	.01	.03
25	0	0	.98	0	6.5	.03	.01	0	.03	.02	0	.02
26	0	0	.24	0	2.1	.03	0	0	.01	.02	0	.01
27	0	0	.05	0	2.5	.05	0	0	0	.07	0	.01
28	0	0	.02	*0	.98	.05	0	0	0	.03	0	.01
29	0	*0	0	0	.....	.03	0	0	0	.02	0	0
30	0	0	0	0	.....	.04	0	0	0	4.3	0	0
31	0	.....	0	0	.....	.04	.....	3.4	.....	.14	0	.....

Ralston Creek at Iowa City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	0	0.05	0.05	0.02	0.01	3.0	6.4	1.9	*3.0	*0.57	0.13	0.36
2	0	.05	.07	.01	.01	1.3	*3.5	1.6	2.1	.30	.11	.82
3	0	.05	.11	.01	.01	.60	2.5	1.2	1.5	.22	.33	*.09
4	0	.05	*.11	.01	.01	*.30	1.6	.93	1.0	.62	.15	.06
5	0	.03	.05	.01	.01	.09	1.2	.84	.91	.34	.11	.05
6	0	.03	.04	.01	.01	.20	.93	.84	.70	.16	12	.03
7	.06	.03	.02	.01	.01	.50	.93	.72	.62	.13	.66	.02
8	13	.03	.02	.02	.02	.90	.72	.57	.57	.12	.41	.01
9	38	.03	.01	.03	.15	2.0	.69	.65	.55	.13	.31	.01
10	*.72	.02	.01	.05	.60	8.0	.63	9.1	2.0	.09	.21	.01
11	.41	.02	.01	.02	2.0	5.0	.57	3.6	1.7	.08	.15	.01
12	.29	.02	.01	.02	4.0	2.5	.50	1.4	.55	.05	.11	0
13	.23	.03	.01	.04	7.0	12	.45	1.0	.40	.06	.08	0
14	.18	.18	.01	.13	13	12	.41	.88	.31	.05	.16	0
15	.14	.40	.01	.35	3.0	6.0	.38	.80	.31	.05	3.3	0
16	.13	.09	.01	.07	*.90	2.5	.34	.66	.24	.04	8.9	0
17	.11	3.5	.01	.01	.50	.90	2.5	.57	.19	2.2	1.2	0
18	.08	.61	.01	.02	.32	*2.5	1.2	.93	.19	16	.50	0
19	.08	.31	.01	.02	.25	.94	.84	28	.19	.32	.34	.01
20	.07	.21	.01	.02	.20	21	3.7	3.8	.16	.18	.26	.02
21	.12	.18	.02	.01	.17	5.0	2.4	19	1.6	.16	.19	.01
22	.20	.16	.01	.01	3.0	3.1	1.8	3.0	.45	3.8	.16	.01
23	.09	.15	.04	.01	*100	3.7	1.3	2.2	.19	.48	.14	.03
24	.06	.13	.03	.01	.25	3.4	1.1	1.5	.16	.20	.13	.02
25	.06	.15	.02	.01	.40	2.3	.80	1.3	.13	.12	.09	.11
26	.06	.10	.03	.02	.58	8.4	.66	3.7	.11	.10	.09	1.6
27	.06	.07	.04	.02	*25	3.8	31	1.2	.10	.07	.08	1.9
28	.05	.06	.05	.02	10	1.9	42	4.3	.90	.06	.08	.14
29	.05	.05	.04	.02	.....	1.4	5.8	3.6	.86	.05	.07	.07
30	.04	.04	.03	*.02	.....	2.3	*3.2	35	3.1	4.1	.07	.05
31	.05	.....	.02	.02	.....	1.9	.....	5.0	.....	*.27	.06	.....
1959-60												
1	0.05	0.69	0.87	2.4	1.1	0.72	15	2.6	21	*0.88	0.41	*0.06
2	*.06	.55	.88	2.3	*1.1	.76	11	2.0	*6.8	1.1	.38	.05
3	.07	.60	*.93	1.4	1.0	.76	8.4	1.7	3.4	1.4	.36	.04
4	.85	9.2	.93	1.1	1.1	.72	7.1	1.6	53	.69	.36	.04
5	20	4.2	.88	.95	1.4	.69	5.2	2.5	20	.92	*.32	.03
6	23	2.4	.80	1.3	1.4	.72	3.8	*44	7.1	.72	.43	.03
7	4.2	1.9	.63	1.2	1.1	.68	*3.2	12	4.7	.55	.69	.03
8	2.2	1.3	.56	.93	2.0	.70	2.4	7.4	3.8	.52	.48	.02
9	1.5	1.1	.52	.98	1.6	.76	2.0	5.2	2.8	25	.38	.02
10	1.2	1.0	.54	.98	2.3	*.72	1.9	4.0	2.6	4.7	.33	.02
11	.84	1.0	.98	*4.4	2.1	.69	1.9	3.2	3.7	2.6	.29	.02
12	.76	1.0	.93	.75	1.8	.69	1.7	2.6	10	32	.25	.02
13	.69	1.0	.76	11	1.6	.69	1.7	*2.3	6.4	8.0	.23	.02
14	.66	.93	.72	12	1.5	.69	2.0	1.9	4.0	3.8	.21	.02
15	.55	.86	.76	10	1.5	.69	1.9	1.7	3.4	2.6	.20	.06
16	.50	.80	.72	5.8	1.4	.72	21	6.4	3.0	2.0	.18	.12
17	.41	.63	.66	3.8	1.1	.76	26	3.4	2.0	1.8	.17	.15
18	.37	.88	.57	3.2	1.0	.76	10	2.4	3.2	1.5	.16	.12
19	.34	.84	.60	3.0	.88	.76	7.1	2.4	2.3	1.2	.15	.07
20	.31	.84	.63	2.8	.92	.72	5.8	2.8	2.0	1.2	.20	.05
21	.30	.93	.57	2.8	.86	.76	4.2	2.6	1.9	1.2	.17	.04
22	.29	1.3	.55	2.7	.84	.80	3.2	2.0	1.7	1.0	.15	.04
23	1.8	1.7	1.0	2.5	.82	.84	2.6	1.7	1.4	.93	.13	.32
24	.66	2.4	.93	2.3	.82	.80	2.3	5.4	1.2	.84	.11	6.5
25	.57	1.5	.98	2.1	.82	.76	2.2	3.6	1.1	.88	.10	.46
26	.84	1.2	.98	1.6	.82	.82	1.8	2.8	.98	.88	.08	.13
27	.93	1.0	26	1.5	.80	4.0	1.5	2.4	.93	.63	.07	.09
28	.72	.88	11	1.3	.80	15	1.5	2.2	.93	.60	.20	.07
29	.69	.80	6.4	1.2	.76	50	1.9	1.8	.88	.55	.40	.09
30	*.60	.86	3.8	1.3	.....	30	6.6	1.6	.88	.45	.14	.11
31	.80	.....	2.6	1.2	.....	20	.....	1.3	.....	.41	.08	.....

Ralston Creek at Iowa City, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0	0	0	0	0.604	0.006	0.010	0.054	0	4.02	3.69	0.058
1956-57.....	0	.025	0	.265	.205	.039	.120	.161	.015	0	.126	.011
1957-58.....	.033	.109	.203	0	1.55	.125	.063	.197	.948	1.66	.270	.786
1958-59.....	1.75	.228	.031	.034	10.5	6.85	4.00	4.51	.826	1.00	.986	.181
1959-60.....	2.15	1.48	2.25	5.32	1.22	4.46	5.56	4.50	5.90	3.28	.252	.295

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0	0	0	0	0.201	0.0020	0.0033	0.018	0	1.34	1.23	0.019
1956-57.....	0	.0083	0	.088	.068	.013	.040	.053	.0050	0	.042	.0037
1957-58.....	.011	.036	.067	0	.515	.042	.021	.065	.315	.551	.090	.261
1958-59.....	.581	.076	.010	.011	3.49	2.28	1.33	1.50	.274	.332	.328	.060
1959-60.....	.714	.492	.748	1.77	.405	1.48	1.85	1.50	1.96	1.09	.084	.098

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0	0	0	0	0.22	0.002	0.004	0.02	0	1.54	1.41	0.02
1956-57.....	0	.009	0	.10	.07	.02	.04	.06	.006	0	.05	.004
1957-58.....	.01	.04	.08	0	.54	.05	.02	.08	.35	.64	.10	.29
1958-59.....	.67	.08	.01	.01	3.62	2.63	1.48	1.73	.31	.38	.38	.07
1959-60.....	.82	.55	.86	2.04	.44	1.71	2.06	1.72	2.19	1.25	.10	.11

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955.....								0.748	3.38
1956.....	July 18, 1956..	9.06	1,690	0	0.712	0.237	3.22	.714	3.22
1957.....	Jan. 21, 1957..	(12) 16	40	0	.080	.027	.36	.107	.48
1958.....	July 14, 1958..	4.60	296	0	.488	.162	2.20	.629	2.83
1959.....	Oct. 8, 1958..	7.03	755	0	2.52	.837	11.37	2.85	12.84
1960.....	June 4, 1960..	6.30	558	.02	3.06	1.02	13.85		

(1) Maximum gage-height 2.35 ft. Feb. 8, 1957 (backwater from ice).

Peak Discharge (base, 200 cfs)

1955-56: July 18 (6 p.m.) 1,690 cfs (9.06 ft.); July 31 (7:30 a.m.) 416 cfs (5.55 ft.); Aug. 30 (8:30 p.m.) 770 cfs (7.11 ft.).

1955-56: No peak above base.

1957-58: June 13 (7 a.m.) 226 cfs (3.79 ft.); July 14 (12 m) 296 cfs (4.60 ft.).

1958-59: Oct. 8 (12 p.m.) 755 cfs (7.03 ft.); Mar. 19 (3 p.m.) 362 cfs (5.06 ft.); Apr. 27 (10:30 p.m.) 206 cfs (3.60 ft.); May 19 (7:30 a.m.) 328 cfs (4.82 ft.); May 30 (5 a.m.) 276 cfs (4.30 ft.); July 18 (1 a.m.) 206 cfs (3.61 ft.).

1959-60: Jan. 12 (12:30 a.m.) 201 cfs (3.54 ft.); June 1 (6 p.m.) 221 cfs (3.77 ft.); June 4 (9 p.m.) 558 cfs (6.30 ft.); July 12 (4 p.m.) 241 cfs (3.93 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

**Field estimate made on this day.

Stage-discharge relation affected by ice Jan. 21-23, Feb. 7-15, 24-26, Mar. 11-14, 1957; Nov. 28 to Dec. 2, Dec. 6-31, 1958; Jan. 1 to Mar. 19, Mar. 21-24, Nov. 15, 16, Nov. 28 to Dec. 1, Dec. 8-10, 1959; Jan. 4, 5, 22-25, Feb. 10-13, 20-26, Mar. 6-8, 16, 26-29, 1960. No gage-height record Jan. 27 to Feb. 6, Feb. 16-23, Feb. 27 to Mar. 10, 1957. Backwater from debris June 2-7, 1959; Mar. 10 to Apr. 7, Aug. 9 to Sept. 23, 1960.

English River at Kalona, Iowa

LOCATION.—Lat. 41°28'10", long. 91°43'00", in SE¼SE¼ sec. 13, T. 77 N., R. 8 W., on right bank 30 ft. upstream from bridge on State Highway 1, 1 mile south of Kalona, 4.5 miles downstream from Smith Creek, and 14.5 miles upstream from mouth.

DRAINAGE AREA.—573 square miles (revised in 1956).

RECORDS AVAILABLE.—September 1939 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 633.45 ft. above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to Dec. 27, 1939, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—21 years, 309 cfs.

EXTREMES.—1939-60: Maximum discharge, 18,500 cfs Mar. 31, 1960 (gage height, 19.89 ft.); minimum daily, 1.1 cfs Jan. 20-27, 1956.

Flood in June 1930 reached a stage of 19.9 ft., from floodmark, from information by local residents (discharge, 18,500 cfs).

REMARKS.—Bankfull stage is about gage height, 14 ft.

REVISIONS (water years).—WSP 1558: 1940(M), 1941.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	13	*2.0	2.2	2.8	*1.5	92	7.5	8.7	2.8	4.2	984	495
2.....	14	3.2	2.6	3.2	1.5	74	8.1	*14	2.2	*3.8	*684	133
3.....	14	2.2	3.2	2.6	1.5	60	8.7	13	2.0	3.5	170	80
4.....	*9.4	2.6	2.8	2.6	1.5	50	8.1	10	2.0	10	80	71
5.....	8.1	2.2	*2.8	2.6	1.7	*42	8.1	8.1	2.2	8.7	50	74
6.....	6.5	2.6	2.6	*2.2	1.8	31	7.5	9.4	1.8	477	36	*79
7.....	6.5	2.2	2.6	2.6	2.0	23	7.5	9.4	2.8	1,960	28	55
8.....	6.0	2.2	2.2	2.6	2.3	18	7.0	7.5	2.6	524	23	45
9.....	5.5	2.2	2.0	2.6	2.5	15	6.5	12	2.0	128	20	37
10.....	5.0	2.6	2.0	2.6	2.8	14	6.0	82	2.2	87	26	34
11.....	5.0	2.6	2.0	2.6	3.0	12	5.5	30	1.8	68	101	29
12.....	5.0	2.6	2.0	2.6	2.7	11	5.5	13	1.8	55	29	28
13.....	4.6	2.6	2.0	2.6	8.0	10	5.0	10	*1.5	47	*80	28
14.....	4.2	2.2	2.0	2.5	25	11	4.6	10	1.2	39	188	23
15.....	3.8	2.6	2.0	2.3	21	11	4.6	7.0	1.8	36	80	19
16.....	3.8	2.4	1.9	2.0	15	11	4.6	5.0	1.8	32	66	17
17.....	3.2	2.0	1.7	1.7	12	10	4.6	4.6	1.5	29	76	14
18.....	3.2	2.0	1.6	1.5	11	11	4.2	3.8	1.5	81	780	14
19.....	2.2	2.0	1.5	1.3	15	11	3.8	3.5	7.4	224	1,120	12
20.....	2.6	2.2	1.5	1.1	35	10	3.5	3.2	319	302	319	10
21.....	2.0	2.5	1.5	1.1	28	10	3.5	*3.2	*380	355	110	9.4
22.....	2.0	2.2	1.5	1.1	21	10	3.2	3.2	167	160	66	9.4
23.....	2.0	2.2	1.7	1.1	16	10	2.8	3.5	94	100	48	7.5
24.....	1.8	2.2	1.9	1.1	70	10	3.2	3.2	23	66	38	6.5
25.....	1.5	2.2	2.1	1.1	250	9.4	2.6	2.8	14	50	30	6.5
26.....	1.5	2.6	2.3	1.1	195	9.4	*2.2	2.8	11	40	25	6.5
27.....	*1.5	2.2	2.6	1.1	140	10	3.2	2.8	8.1	36	21	5.0
28.....	2.0	3.2	2.6	1.2	125	*11	7.5	2.8	6.5	34	19	5.0
29.....	2.0	*2.8	2.6	1.3	115	10	6.0	*3.2	6.0	30	18	5.0
30.....	2.0	2.0	2.8	1.4	.....	9.4	5.5	3.2	6.0	26	95	4.2
31.....	2.0	.....	3.2	1.5	.....	8.7	.....	3.2	.....	280	2,000	.....

English River at Kalona, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1....	2.5	2.0	5.2	4.1	5.4	14	26	28	292	28	546	53
2....	2.2	2.2	4.8	4.1	5.2	12	32	22	156	23	262	39
3....	*2.8	2.0	*4.7	4.0	5.0	11	37	18	98	22	130	27
4....	3.9	2.0	4.6	*3.9	5.0	10	64	15	78	559	84	22
5....	3.5	2.0	4.5	3.2	5.0	9.8	138	12	65	*1,550	53	19
6....	3.5	2.0	4.0	2.9	*5.0	*9.8	134	12	58	377	37	16
7....	4.8	*2.0	3.7	2.6	5.8	8.5	99	11	58	146	29	15
8....	2.5	2.8	3.6	2.3	8.0	7.3	66	11	70	84	*24	14
9....	2.5	3.9	3.5	2.0	100	7.3	*47	*8.5	89	82	19	*14
10....	2.5	9.1	*3.4	1.8	370	6.8	37	10	118	76	17	14
11....	3.2	5.2	3.3	1.7	300	29	32	23	*375	56	15	15
12....	2.8	3.5	3.3	1.6	160	47	26	42	128	42	14	16
13....	2.8	2.5	3.6	1.6	110	22	23	143	512	33	12	20
14....	3.2	24	2.6	1.6	80	15	21	529	266	30	11	25
15....	3.5	78	2.6	1.6	60	12	16	392	134	25	9.8	20
16....	3.5	33	2.6	1.7	47	9.8	15	216	91	17	9.1	18
17....	3.9	25	2.5	1.7	36	7.3	14	138	70	16	8.5	28
18....	4.8	15	2.4	1.7	30	8.5	14	114	108	15	8.5	19
19....	5.2	11	2.4	1.7	26	14	15	94	188	14	7.9	14
20....	5.2	9.8	2.4	1.7	23	18	17	81	101	13	7.9	52
21....	6.8	9.4	2.5	30	20	17	15	104	74	14	6.8	32
22....	7.3	8.6	2.6	70	17	*17	20	317	68	27	5.8	44
23....	9.8	7.9	2.7	300	17	16	60	194	58	42	6.2	56
24....	10	6.8	2.8	160	20	13	59	101	49	42	298	31
25....	9.8	6.8	2.9	100	21	14	45	80	47	23	435	21
26....	5.2	5.8	3.0	30	22	14	39	66	47	14	74	18
27....	2.0	5.3	3.1	15	18	13	40	58	54	14	40	15
28....	3.5	5.0	3.3	10	16	16	49	*50	68	13	53	12
29....	2.5	4.8	3.5	8.0	.....	19	39	42	66	1,180	331	9.1
30....	1.3	4.7	3.6	7.0	.....	21	34	85	46	*270	217	8.5
31....	1.7	.....	3.9	6.0	.....	21	.....	834	.....	162	81	.....
1957-58												
1....	6.8	17	27	15	18	323	54	29	1,160	22	300	63
2....	6.8	19	24	20	18	216	56	26	396	24	177	60
3....	6.2	68	23	17	18	166	64	34	137	43	144	58
4....	*5.8	59	23	14	17	*140	68	154	81	90	125	352
5....	5.8	45	25	12	17	125	78	121	63	211	120	422
6....	4.8	*35	*27	13	16	125	82	*86	*49	136	*822	1,300
7....	4.8	29	32	*14	*16	130	*92	65	40	93	366	574
8....	4.8	28	31	15	15	142	92	53	284	71	175	235
9....	5.8	27	28	16	15	134	84	49	*1,040	58	132	164
10....	5.2	20	25	17	15	121	78	47	351	*49	112	265
11....	5.8	20	23	17	14	117	73	39	171	46	100	207
12....	5.2	24	21	17	12	112	71	35	158	88	177	127
13....	6.2	26	20	17	11	112	65	29	743	110	296	105
14....	6.2	26	17	18	10	110	60	26	1,110	102	119	90
15....	7.3	31	18	19	9.0	101	58	25	278	141	372	*83
16....	13	29	18	21	8.5	94	*56	26	164	229	1,350	90
17....	18	27	21	23	8.0	86	53	192	132	211	394	83
18....	25	69	31	27	8.0	*82	50	162	110	141	168	74
19....	21	208	*37	30	8.0	79	49	68	96	213	*127	66
20....	17	168	189	31	8.0	76	47	50	88	745	110	60
21....	10	112	95	31	*8.0	73	49	*39	81	606	156	57
22....	13	76	75	30	8.5	68	49	33	73	264	310	55
23....	17	64	60	28	11	88	49	29	61	*159	162	54
24....	18	59	54	28	300	66	66	26	61	129	119	52
25....	80	54	50	26	2,000	65	86	23	63	146	107	66
26....	47	50	60	25	1,650	62	71	22	55	289	98	61
27....	27	46	62	23	978	59	52	21	43	134	91	52
28....	25	42	46	22	535	59	46	19	36	258	88	44
29....	24	40	34	20	.....	58	43	17	29	193	83	42
30....	21	33	20	19	.....	56	40	16	24	540	76	42
31....	18	.....	12	19	.....	56	.....	585	.....	941	71	.....

English River at Kalona, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	38	33	29	15	11	2,050	1,550	780	2,850	1,740	201	64
2	34	33	26	15	11	785	2,700	*570	1,380	1,420	107	139
3	33	33	29	14	11	448	2,100	570	780	525	88	78
4	33	33	32	13	10	278	975	675	600	375	85	43
5	32	33	25	13	10	278	675	465	465	350	80	33
6	30	33	21	12	10	180	525	375	388	270	85	28
7	33	30	18	12	10	140	425	325	325	193	83	24
8	71	29	14	12	10	120	400	275	*278	169	68	22
9	303	30	12	12	10	110	350	255	238	209	62	19
10	480	32	13	12	56	130	318	473	213	262	59	17
11	120	29	15	12	150	206	290	765	203	153	55	*16
12	88	27	16	12	110	332	268	465	181	130	50	15
13	78	27	15	12	200	550	248	338	161	113	46	14
14	69	28	15	12	800	1,430	225	285	143	101	43	14
15	63	33	15	12	1,200	1,390	209	250	134	92	115	15
16	58	39	15	12	880	520	195	225	126	88	221	14
17	55	*44	*14	12	620	370	187	211	118	96	388	14
18	50	204	14	12	460	330	325	266	109	1,890	103	14
19	48	204	*13	12	350	2,260	375	1,250	101	1,540	65	15
20	46	120	13	12	280	*6,960	465	1,780	101	476	50	16
21	*49	96	13	11	220	8,240	1,040	1,960	109	209	42	17
22	50	91	13	11	300	5,250	1,040	2,550	276	163	37	20
23	44	85	13	11	*2,100	2,400	840	1,830	107	403	33	28
24	42	81	14	11	1,900	2,200	600	870	92	207	31	24
25	40	78	15	11	*3,210	1,620	450	*660	83	134	31	24
26	38	52	16	*11	2,740	1,810	362	555	*74	111	31	33
27	38	35	17	11	3,030	*2,500	425	510	68	*98	28	570
28	38	37	17	11	*2,910	1,500	*2,650	375	64	88	*26	*555
29	36	39	17	11	.....	888	2,950	1,750	78	90	24	143
30	34	32	17	11	.....	705	1,420	3,480	1,070	270	22	80
31	33	.....	16	11	.....	825	.....	3,170	.....	242	22	.....
1959-60												
1	60	145	190	614	350	210	13,600	1,020	489	800	136	47
2	50	145	250	550	330	200	7,900	683	1,760	890	127	37
3	45	137	278	466	320	195	5,310	550	860	642	120	32
4	49	755	270	275	310	195	2,870	466	550	525	112	30
5	488	2,550	238	310	300	190	1,580	420	1,120	364	104	27
6	748	2,150	207	350	290	190	1,330	1,450	601	332	104	26
7	*1,210	1,040	190	320	290	190	1,080	3,510	454	290	118	24
8	525	645	175	305	290	185	830	5,500	397	260	120	23
9	242	555	170	280	420	185	669	3,330	*353	1,060	104	22
10	179	510	195	270	620	185	575	1,330	321	2,970	88	21
11	151	425	215	270	540	190	550	950	375	1,560	77	21
12	126	350	242	2,600	470	190	*513	800	1,720	*1,760	71	*20
13	115	338	229	*7,000	420	200	466	*697	2,730	*4,260	66	19
14	107	298	*208	*9,100	390	200	466	628	*2,080	*5,400	63	19
15	101	215	204	6,340	370	200	466	550	1,360	3,330	57	20
16	94	190	206	4,500	360	200	466	614	800	1,190	52	22
17	85	180	199	2,080	360	200	1,440	1,190	642	683	50	24
18	78	220	191	1,000	350	195	1,520	755	538	562	50	27
19	73	240	183	*580	350	195	920	628	1,800	466	68	30
20	71	265	183	530	340	200	711	655	3,030	397	82	30
21	68	*275	184	510	330	205	683	800	*2,450	342	124	31
22	65	288	183	500	320	205	575	655	1,190	310	*110	31
23	136	450	198	620	310	210	489	575	830	280	74	27
24	325	540	290	580	300	210	431	562	655	300	54	54
25	315	465	270	530	280	210	*397	950	525	*270	45	96
26	207	362	442	480	*260	210	364	1,050	466	270	*41	101
27	171	292	1,830	450	240	250	332	*1,190	420	237	38	57
28	153	220	2,790	420	230	1,200	310	800	386	199	35	38
29	141	170	2,160	400	220	3,570	310	642	*375	179	38	31
30	*132	150	1,300	380	.....	*9,840	614	562	386	163	66	*30
31	132	.....	800	360	.....	*16,500	.....	489	.....	150	65	.....

English River at Kalona, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	4.71	2.38	2.19	1.93	38.9	20.5	5.35	9.62	35.9	171	239	45.4
1956-57	4.15	10.1	3.32	25.3	51.9	14.8	42.4	124	121	162	92.0	23.6
1957-58	15.7	51.6	39.6	20.8	205	106	62.7	69.2	239	209	227	167
1958-59	71.1	56.7	17.2	12.0	772	1,508	819	913	364	394	76.8	70.3
1959-60	208	486	473	1,386	343	1,178	1,606	1,097	989	982	79.3	33.9

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.0082	0.0042	0.0038	0.0034	0.068	0.036	0.0093	0.017	0.063	0.298	0.417	0.079
1956-57	.0072	.018	.0058	.044	.096	.026	.074	.216	.211	.283	.161	.041
1957-58	.027	.090	.069	.036	.358	.185	.109	.121	.417	.365	.396	.291
1958-59	.124	.099	.030	.021	1.35	2.63	1.43	1.59	.635	.688	.131	.123
1959-60	.263	.848	.825	2.42	.599	2.06	2.80	1.91	1.73	1.71	.138	.059

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.009	0.005	0.004	0.004	0.07	0.04	0.01	0.02	0.07	0.34	0.48	0.09
1956-57	.008	.02	.007	.05	.10	.03	.08	.25	.24	.33	.19	.05
1957-58	.03	.10	.08	.04	.37	.21	.12	.14	.47	.42	.46	.32
1958-59	.14	.11	.03	.02	1.40	3.03	1.60	1.84	.71	.79	.15	.14
1959-60	.42	.95	.95	2.79	.65	2.37	3.13	2.21	1.93	1.98	.16	.07

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								132	3.12
1956	Aug. 31, 1956	10.78	2,730	1.1	48.4	0.084	1.14	49.1	1.16
1957	July 5, 1957	9.17	2,000	1.3	56.5	.099	1.36	64.0	1.53
1958	May 31, 1958	(1)9.75	2,200	4.8	117	.204	2.76	120	2.83
1959	Mar. 21, 1959	17.12	8,960	10	421	.735	9.96	507	12.00
1960	Mar. 31, 1960	19.89	18,500	19	740	1.29	17.61		

(1) Maximum gage-height, 11.12 ft. Feb. 25 (backwater from ice).

Peak Discharge (base, 2,800 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: No peak above base.

1958-59: Feb. 23, about 3,300 cfs; Feb. 25 (8 p.m.) 3,590 cfs (12.23 ft.); Mar. 21 (12:30 a.m.) 8,960 cfs (17.12 ft.); Apr. 29 (1 p.m.) 3,170 cfs (11.19 ft.); May 30 (11 a.m.) 4,000 cfs (12.54 ft.).

1959-60: Dec. 27 (12 p.m.) 3,030 cfs (11.32 ft.); Jan. 14 (11 a.m.) 9,700 cfs (17.59 ft.); Mar. 31 (11:30 a.m.) 18,500 cfs (19.89 ft.); May 8 (10 a.m.) 6,010 cfs (15.14 ft.); June 21 (2 a.m.) 3,390 cfs (11.94 ft.); July 10 (11 a.m.) 3,150 cfs (11.53 ft.); July 14 (1 p.m.) 5,900 cfs (15.01 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 16-21, 30, Dec. 1, 14-26, 1955; Jan. 11 to Mar. 3, Mar. 6-12, Nov. 21, 22, 27-30, Dec. 3-31, 1956; Jan. 1-3, 6-8, Jan. 10 to Mar. 4, Nov. 23, 25, 26, 30, Dec. 3, 4, 9-12, 21-31, 1957; Jan. 1 to Feb. 25, Nov. 26 to Dec. 31, 1958; Jan. 1 to Feb. 24, Mar. 5-9, 16-18, Nov. 15-21, Nov. 28 to Dec. 2, Dec. 7-11, 1959; Jan. 4-13, Jan. 18 to Mar. 28, 1960.

Iowa River near Lone Tree, Iowa

LOCATION.—Lat. 41°25'35", long. 91°28'20", in NW¼ NE¼ sec. 6, T. 76 N., R. 5 W., on left bank 10 ft. downstream from highway bridge, 5 miles southwest of Lone Tree, and 6 miles downstream from English River.

DRAINAGE AREA.—4,293 square miles.

RECORDS AVAILABLE.—October 1956 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 588.16 ft. above mean sea level, datum of 1929. Prior to Dec. 28, 1956, wire-weight gage at same site and datum.

EXTREMES.—1956-60: Maximum discharge, 28,100 cfs Apr. 1, 1960 (gage height, 17.90 ft.); minimum daily, 75 cfs Dec. 8, 1956.

Flood of May 25, 1944, reached a stage of 19.94 ft., from information by Corps of Engineers.

REMARKS.—Bankfull stage is about gage height, 14 ft. Flow regulated by Coralville Reservoir (capacity, 492,000 acre-ft.) since Sept. 17, 1958.

Daily Discharge, in Cubic Feet per Second, for Water Year 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	133	97	154	107	260	393	428	310	1,720	1,480	2,080	1,520
2	126	107	145	103	240	436	404	310	2,000	1,340	2,160	1,050
3	130	109	130	100	225	440	468	299	2,240	1,230	1,760	792
4	*113	101	*120	100	215	440	484	280	2,320	1,400	1,440	690
5	109	107	130	100	205	428	507	340	2,620	2,570	1,170	592
6	107	107	130	100	*205	*432	592	283	2,720	2,440	930	*525
7	107	*109	130	110	205	452	561	236	2,520	2,920	820	498
8	105	111	75	*110	210	408	*534	261	2,240	3,220	*710	408
9	97	115	110	105	800	368	460	*290	2,720	3,430	665	424
10	82	109	*150	98	1,000	376	412	290	*2,720	*3,540	615	412
11	85	107	115	94	920	386	*498	351	2,820	2,920	570	452
12	87	105	110	92	900	396	432	323	2,350	2,000	507	*379
13	107	107	118	90	960	376	396	515	1,680	1,480	543	368
14	87	109	120	88	1,100	340	376	984	1,760	1,230	444	368
15	82	140	120	88	1,200	365	400	1,400	1,400	*1,110	440	372
16	82	218	130	88	1,300	340	362	1,260	1,200	1,020	436	386
17	84	195	130	88	1,200	334	344	1,300	1,080	960	448	386
18	133	179	130	90	1,300	299	337	1,260	1,140	875	412	386
19	164	149	125	90	1,150	340	320	1,230	2,020	820	448	379
20	174	140	120	90	1,000	*376	354	1,230	3,120	715	416	408
21	179	135	120	100	900	354	320	1,170	3,540	665	416	468
22	181	113	120	300	765	351	323	1,370	3,650	715	382	379
23	176	120	120	900	665	358	354	1,480	3,870	690	396	344
24	164	124	125	820	552	379	379	*1,680	4,420	715	372	358
25	151	128	130	800	468	400	372	1,370	*4,550	765	693	362
26	171	85	135	840	507	408	365	1,140	4,090	1,110	534	351
27	146	89	140	680	525	396	337	1,080	2,920	960	416	290
28	133	149	140	460	476	404	368	1,080	2,160	792	390	330
29	135	140	140	380	.....	420	323	1,080	1,880	1,000	690	283
30	128	140	130	330	.....	408	320	1,050	1,680	1,400	1,050	344
31	84	.....	115	300	.....	393	.....	1,200	.....	2,000	1,640	.....

Iowa River near Lone Tree, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1958 and 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58												
1	179	221	400	210	350	2,920	592	665	4,130	902	3,120	1,170
2	310	277	310	250	350	2,920	665	665	1,820	875	2,520	902
3	242	280	*350	300	350	2,520	640	665	960	875	2,240	820
4	*316	313	360	350	340	*2,080	665	740	960	902	2,000	1,380
5	176	296	380	360	320	1,680	690	*715	*960	1,050	1,880	4,640
6	239	*386	404	360	*310	1,400	690	690	875	1,440	*2,000	6,050
7	248	218	531	350	300	1,340	765	640	902	1,840	2,240	6,190
8	161	327	507	*330	290	1,340	792	570	1,420	2,080	2,000	5,070
9	236	316	440	330	290	1,200	*902	615	3,280	2,240	1,800	4,940
10	203	270	310	310	280	1,140	1,170	543	3,120	*2,160	1,640	4,940
11	179	323	250	305	270	1,050	1,400	548	2,240	*1,920	1,480	5,210
12	168	270	310	305	250	1,020	1,520	*566	2,080	1,680	1,530	4,810
13	230	344	390	310	230	960	1,520	516	3,350	1,600	2,280	4,680
14	192	316	400	*320	210	930	*1,440	484	5,070	1,800	1,340	4,550
15	224	299	400	330	195	875	1,370	494	4,040	3,540	1,340	4,310
16	299	270	420	340	185	875	1,260	522	3,120	3,650	2,150	2,820
17	221	290	450	350	180	875	1,200	960	3,020	3,650	2,000	1,340
18	*174	365	500	380	180	*818	1,140	960	3,320	3,650	1,800	*820
19	277	592	592	410	175	820	1,080	640	3,320	3,870	*2,210	665
20	149	690	*792	450	*175	720	1,020	615	3,320	4,200	2,700	765
21	242	538	875	470	175	792	960	592	3,330	4,310	2,820	740
22	245	484	715	460	185	765	930	538	3,430	3,980	2,920	715
23	230	432	820	440	200	740	902	530	*3,220	3,540	2,000	715
24	248	404	875	420	760	740	875	525	2,770	*3,320	1,480	690
25	239	416	848	410	1,700	765	902	484	1,960	3,120	2,390	765
26	286	379	680	390	2,800	640	848	464	1,400	3,020	1,800	875
27	277	424	540	390	*3,980	665	820	456	1,230	2,920	1,480	792
28	274	416	490	380	2,920	665	792	440	1,110	2,820	1,170	740
29	330	416	420	370		640	765	428	1,020	2,820	1,140	665
30	233	260	340	360		640	715	420	960	3,320	1,110	640
31	323		290	350		640		892		3,870	1,300	
1958-59												
1	615	460	640	370	330	9,700	5,920	5,440	9,400	2,980	610	274
2	592	396	640	340	330	6,180	7,900	4,980	7,340	6,420	474	524
3	566	424	520	330	300	5,920	9,550	4,740	5,680	5,320	434	385
4	484	424	480	330	270	5,800	9,860	4,740	5,200	4,860	479	263
5	534	368	450	330	250	5,550	10,200	4,520	5,090	4,630	349	225
6	502	396	450	330	240	4,740	10,200	4,400	4,860	3,760	401	260
7	516	404	540	320	240	3,560	10,000	4,290	4,740	3,360	635	162
8	516	372	540	310	240	3,260	10,000	4,180	*4,630	3,360	305	182
9	1,370	365	500	310	250	2,980	9,860	4,070	4,400	3,360	257	260
10	3,220	362	450	310	320	2,710	9,860	4,400	4,480	2,620	302	150
11	2,260	386	410	310	370	2,800	9,860	4,630	3,960	1,960	237	197
12	1,280	382	390	310	410	3,070	9,860	5,550	3,560	1,960	*302	164
13	765	334	370	300	460	3,360	9,860	4,860	2,620	1,700	267	206
14	690	351	360	280	700	5,550	9,860	4,400	2,360	1,480	197	136
15	640	379	*350	260	1,400	7,060	9,700	3,960	2,200	1,340	612	234
16	690	368	350	230	1,200	5,550	8,800	3,260	2,000	1,310	760	147
17	715	682	370	230	920	5,680	7,620	2,800	1,840	1,280	1,280	150
18	665	960	390	230	780	5,550	7,480	2,620	1,590	2,920	735	167
19	640	1,600	*380	*240	720	7,760	7,480	3,760	1,590	3,360	405	173
20	615	2,420	350	250	620	11,900	6,800	5,550	1,560	2,120	405	218
21	592	*2,000	330	250	580	14,600	5,680	5,920	1,450	1,590	291	153
22	615	1,560	340	280	700	13,000	4,290	6,680	*2,360	1,210	277	257
23	592	1,300	350	330	2,500	*8,630	3,860	6,550	1,620	1,060	302	150
24	*464	1,080	330	330	6,000	7,480	3,560	5,440	1,420	1,030	*225	147
25	520	902	310	330	9,000	8,650	3,360	5,320	1,310	790	240	194
26	480	792	330	330	10,000	8,650	3,160	5,320	1,150	710	250	260
27	436	690	360	330	*11,100	10,500	*3,160	5,440	1,030	645	284	253
28	520	600	420	330	10,300	11,300	7,480	*4,980	1,120	635	225	1,070
29	476	620	500	*330		9,700	7,340	5,920	1,210	502	215	542
30	452	640	500	330		*8,950	6,680	8,350	2,710	546	270	660
31	448		410	330		7,200		10,200		*1,060	185	

Iowa River near Lone Tree, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Year 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1959-60												
1	551	850	1,500	3,500	5,540	1,550	*27,300	11,100	7,220	2,350	1,160	845
2	*565	820	1,300	3,310	4,640	1,500	20,400	10,400	8,750	2,680	1,010	764
3	556	790	1,200	3,100	4,420	1,450	14,100	9,540	*7,740	2,430	928	737
4	551	910	1,200	2,700	3,700	1,300	9,540	9,380	6,980	2,190	872	710
5	2,080	4,970	1,350	2,600	3,300	1,250	9,060	9,380	9,880	1,910	845	710
6	2,440	6,380	1,400	2,400	3,000	1,200	10,100	10,100	7,600	1,870	845	710
7	3,760	5,080	*1,400	2,200	2,900	1,180	11,100	12,700	6,740	1,830	872	650
8	2,710	4,310	1,400	2,000	*2,850	1,140	11,500	11,000	7,220	1,640	845	542
9	2,000	3,310	1,400	1,900	2,700	1,140	11,300	*8,300	7,100	1,910	*845	560
10	1,380	2,770	1,400	1,900	2,500	1,140	11,100	5,190	7,100	6,380	818	551
11	1,000	2,600	1,460	1,900	2,400	1,100	*10,800	3,500	7,100	5,190	791	516
12	790	2,430	1,540	6,140	2,300	1,100	10,800	4,970	8,900	3,040	764	*490
13	880	2,110	1,500	10,800	2,000	1,100	10,600	6,740	8,020	*7,100	737	498
14	710	1,950	1,460	14,400	1,800	1,080	11,000	7,470	*5,080	*7,470	737	412
15	710	1,750	1,260	*14,600	1,750	1,080	11,000	7,600	6,260	7,740	2,830	330
16	660	*1,830	1,190	10,800	1,750	1,080	10,800	*7,600	7,470	5,420	*3,800	305
17	710	1,450	*1,190	8,020	2,000	1,080	12,300	8,160	7,470	3,220	3,900	348
18	685	1,200	1,160	6,200	2,050	1,080	13,200	8,300	7,220	2,860	4,420	352
19	630	1,100	1,130	6,500	2,050	1,100	11,900	*7,740	7,600	2,430	*4,530	337
20	585	1,100	1,130	6,900	1,950	1,100	11,300	7,740	*8,750	2,110	4,530	344
21	635	1,100	1,130	7,100	1,900	1,100	11,300	7,740	8,750	1,790	4,420	352
22	590	1,200	1,130	*7,100	1,950	1,100	11,100	7,740	7,740	1,600	*3,130	326
23	585	1,570	1,160	7,000	1,950	1,100	11,000	*7,470	5,540	1,500	2,860	319
24	1,090	1,990	1,320	7,000	1,700	1,100	10,800	7,340	3,700	1,460	2,770	600
25	1,120	2,030	1,360	7,000	1,550	1,100	10,800	8,160	3,310	1,430	2,680	791
26	1,060	1,910	1,430	7,000	*1,550	1,120	10,800	8,160	3,040	1,430	1,950	*570
27	1,000	1,790	3,230	6,800	1,550	1,200	10,600	*8,160	2,770	1,400	1,430	818
28	940	1,600	6,140	6,600	1,550	2,000	*10,400	7,880	2,600	*1,290	1,190	1,010
29	*910	1,600	6,020	6,500	1,550	6,000	10,400	7,600	*2,350	1,260	1,190	1,040
30	*850	1,550	4,970	6,380	.....	13,000	10,800	7,340	2,190	1,220	1,160	1,040
31	850	.....	3,900	6,260	.....	22,900	.....	7,220	.....	1,160	1,160	.....

Iowa River near Lone Tree, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57	124	125	126	253	695	387	404	853	2,505	1,533	775	477
1957-58	237	361	497	358	641	1,138	968	599	2,391	2,615	1,932	2,447
1958-59	757	731	423	304	2,162	7,011	7,611	5,073	3,139	2,254	394	272
1959-60	1,083	2,135	1,883	6,020	2,443	2,435	11,910	8,120	6,406	2,816	1,936	586

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57	0.029	0.029	0.029	0.059	0.162	0.090	0.094	0.199	0.584	0.357	0.181	0.111
1957-58	.055	.081	.116	.083	.149	.265	.225	.140	.557	.609	.450	.570
1958-59	.176	.171	.099	.071	.504	1.63	1.78	1.18	.731	.525	.092	.063
1959-60	.252	.497	.439	1.40	.569	.567	2.77	1.89	1.49	.656	.451	.137

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57	0.03	0.03	0.03	0.07	0.17	0.10	0.11	0.23	0.65	0.41	0.21	0.12
1957-58	.06	.09	.13	.10	.16	.31	.25	.16	.62	.70	.52	.64
1958-59	.20	.19	.11	.08	.52	1.88	1.99	1.36	.82	.61	.11	.07
1959-60	.29	.55	.51	1.62	.61	.65	3.09	2.18	1.66	.76	.52	.15

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1957	June 25, 1957	9.14	4,550	75	686	0.160	2.16	746	2.35
1958	Sept. 7, 1958	(1)10.63	6,610	149	1,183	.276	3.74	1,251	3.96
1959	Mar. 21, 1959	15.97	16,600	136	2,512	.585	7.94	2,779	8.79
1960	Apr. 1, 1960	17.90	28,100	305	3,975	.926	12.59	.....	.....

(1) Maximum gage-height, 11.47 ft. Feb. 26, 1958 (backwater from ice).

Peak Discharge (base, 7,000 cfs)

1956-57: No peak above base.

1957-58: No peak above base.

1958-59: Peak discharges affected by storage in Coralville Reservoir.

1959-60: Peak discharges affected by storage in Coralville Reservoir.

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Dec. 9, 10, 12, 14-31, 1956; Jan. 3 to Feb. 21, Nov. 30 to Dec. 5, Dec. 9-18, 26-31, 1957; Jan. 1 to Feb. 26, Nov. 28 to Dec. 31, 1958; Jan. 1 to Feb. 26, Nov. 17-22, Nov. 28 to Dec. 7, 1959; Jan. 3-11, 18-28, Feb. 5 to Mar. 30, 1960.

Little Cedar River near Ionia, Iowa

LOCATION.—Lat. 43°02'00", long. 92°30'10", in SW¼ NE¼ sec. 21, T. 95 N., R. 14 W., on left bank 12 ft. downstream from highway bridge, 2.5 miles west of Ionia, and 7.0 miles upstream from mouth.

DRAINAGE AREA.—306 square miles (revised in 1956).

RECORDS AVAILABLE.—October 1954 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 973.23 ft. above mean sea level, datum of 1929.

AVERAGE DISCHARGE.—6 years, 72.3 cfs.

EXTREMES.—1954-60: Maximum discharge, 2,790 cfs June 25, 1960 (gage height, 9.19 ft.); minimum daily, 3.0 cfs Feb. 4-9, 1959.

Flood of June 22, 1954 reached a stage of 11.37 ft. (discharge 4,600 cfs).

REMARKS.—High banks are never overtopped.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	18	*19	8.5	5.8	*6.1	14	528	*79	54	24	300	89
2.....	18	18	9.3	6.0	6.1	22	890	102	48	24	165	65
3.....	17	16	11	6.0	6.2	35	760	164	41	55	122	52
4.....	*17	17	11	5.9	6.2	60	510	236	36	55	84	*46
5.....	22	18	11	*5.8	6.1	68	346	241	*32	47	65	90
6.....	26	18	10	5.8	6.6	40	244	186	30	36	54	114
7.....	23	12	10	5.8	6.7	32	181	162	32	32	*50	106
8.....	21	13	9.7	5.9	6.8	23	145	130	28	54	43	79
9.....	19	14	9.2	6.0	6.8	35	126	114	28	30	38	62
10.....	19	21	8.6	6.1	6.7	32	114	99	26	24	35	54
11.....	18	21	7.9	6.1	6.4	25	100	95	24	22	32	51
12.....	18	19	7.3	6.1	6.6	22	91	95	24	21	32	48
13.....	16	19	6.9	6.1	6.8	14	86	97	28	19	36	46
14.....	16	11	6.6	6.1	6.9	17	81	86	26	18	35	42
15.....	18	15	6.3	6.1	6.9	15	72	79	23	17	32	40
16.....	18	7.1	6.1	5.8	7.0	16	68	70	22	16	34	37
17.....	16	8.3	6.0	5.7	7.0	17	64	68	21	*17	32	35
18.....	16	9.5	5.6	5.6	7.0	18	60	64	51	19	30	32
19.....	16	11	5.5	5.5	7.0	20	58	62	112	23	28	32
20.....	18	13	6.3	5.5	7.0	27	55	60	48	24	26	30
21.....	17	15	6.4	5.7	7.0	31	52	62	35	24	23	28
22.....	17	16	6.4	5.8	7.0	30	50	60	35	22	21	28
23.....	18	17	6.4	5.9	7.0	28	48	58	28	22	20	26
24.....	18	16	6.4	6.0	7.0	30	47	54	26	22	18	26
25.....	18	16	6.0	6.0	6.9	34	46	51	23	19	18	24
26.....	18	15	6.0	6.0	6.8	64	46	50	30	18	17	24
27.....	18	14	6.2	6.0	8.3	250	55	48	28	15	16	23
28.....	18	12	6.5	6.0	9.8	*598	60	50	28	14	30	22
29.....	18	9.4	6.7	6.0	*11	480	65	50	26	14	165	20
30.....	18	*8.0	6.6	6.1	.....	685	72	52	24	16	264	20
31.....	18	.....	6.4	6.1	.....	528	.....	52	.....	54	148	.....

Little Cedar River near Ionia, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	20	28	23	21	10	58	71	32	192	65	66	41
2	*20	26	24	20	10	52	65	30	134	59	55	48
3	19	26	24	19	10	49	*59	28	106	62	50	42
4	19	24	*26	18	10	46	58	26	89	60	46	*37
5	18	26	30	17	11	*45	56	26	*89	52	41	34
6	18	26	25	16	12	40	55	24	77	52	37	32
7	18	26	21	15	13	38	54	24	72	48	*34	30
8	17	24	20	14	13	36	52	*24	66	43	32	28
9	17	24	20	*13	14	35	50	22	65	*38	32	26
10	17	24	20	13	15	35	48	24	110	36	32	26
11	18	24	20	12	17	36	48	26	263	34	30	30
12	18	23	19	11	20	38	43	26	114	34	30	30
13	19	23	17	10	22	41	44	26	89	84	32	28
14	21	24	17	10	24	44	43	32	81	86	36	32
15	24	26	17	10	26	40	41	35	72	91	36	32
16	30	19	18	10	28	35	41	36	153	68	36	28
17	30	22	19	10	31	35	40	43	215	56	36	26
18	30	28	18	10	23	36	40	51	235	109	32	26
19	28	28	17	10	21	37	41	54	114	139	32	28
20	26	20	17	11	20	41	47	51	91	86	30	26
21	24	13	18	12	19	46	50	55	81	71	28	28
22	24	14	19	13	18	52	48	62	79	82	26	26
23	23	17	19	11	17	63	46	104	129	607	35	26
24	23	19	19	12	25	162	43	99	179	580	35	24
25	24	21	19	11	45	352	40	86	128	236	32	24
26	24	22	20	10	90	328	42	72	102	134	28	23
27	23	22	21	10	75	176	42	82	204	95	28	22
28	23	22	22	10	64	134	41	82	139	93	32	22
29	24	23	21	10	.....	110	37	145	102	84	38	21
30	28	22	21	10	.....	91	34	624	81	70	36	20
31	*28	.....	22	10	.....	79	.....	338	.....	102	40	.....
1957-58												
1	*19	30	40	27	20	160	37	48	26	109	19	13
2	19	30	40	25	20	100	41	46	24	42	18	13
3	19	32	38	24	20	67	44	43	*28	28	17	14
4	19	35	*35	22	20	65	56	42	42	44	16	13
5	19	37	34	21	*20	*60	110	41	34	32	*93	17
6	18	*38	35	20	18	54	159	*40	28	26	54	21
7	19	36	35	20	17	51	184	38	28	21	72	22
8	23	32	33	*20	15	56	162	37	32	19	68	26
9	24	25	32	19	14	47	*122	36	34	*19	66	21
10	24	14	*25	19	13	46	102	36	30	18	52	17
11	23	21	18	20	12	46	93	34	26	18	40	14
12	24	34	20	21	12	52	86	30	28	17	32	13
13	26	32	21	22	11	52	81	28	24	16	28	12
14	26	30	23	23	11	54	76	28	22	53	28	14
15	30	32	24	24	11	52	72	28	22	239	26	19
16	28	38	26	24	11	44	70	26	20	91	24	15
17	30	44	27	24	10	41	66	28	19	66	23	14
18	32	93	29	24	10	48	62	32	20	51	21	14
19	30	75	32	23	10	43	60	28	21	41	20	14
20	32	57	34	23	10	40	59	26	18	35	18	13
21	32	57	36	22	10	40	58	24	17	32	18	13
22	32	46	38	22	10	38	56	24	18	28	16	11
23	32	40	41	23	10	38	55	24	19	26	16	11
24	32	40	41	24	15	40	56	24	21	26	16	15
25	35	42	46	25	100	41	59	26	24	24	14	13
26	37	42	43	25	180	41	62	24	23	22	*14	13
27	38	50	39	25	230	40	62	22	20	23	14	13
28	36	50	36	25	190	38	58	21	18	21	14	13
29	34	40	34	24	.....	37	54	20	18	23	14	13
30	34	32	31	23	.....	37	51	20	17	21	15	11
31	32	.....	29	22	.....	36	.....	23	.....	21	14	.....

Little Cedar River near Ionia, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	18.3	14.6	7.51	5.91	7.02	107	171	92.8	33.9	26.4	65.0	46.4
1956-57	22.4	22.9	20.4	12.5	25.1	77.7	47.3	77.1	122	111	35.9	28.9
1957-58	27.7	40.1	32.7	22.7	36.8	51.7	77.1	30.5	24.0	40.4	29.0	14.8
1958-59	13.0	15.7	8.32	4.20	3.40	274	218	97.5	104	81.8	52.8	87.2
1959-60	68.6	101	95.3	62.3	35.5	167	218	277	230	78.1	96.0	105

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.060	0.048	0.025	0.019	0.023	0.350	0.559	0.303	0.111	0.086	0.212	0.152
1956-57	.073	.075	.067	.041	.082	.254	.155	.252	.399	.363	.117	.094
1957-58	.091	.131	.107	.074	.120	.169	.252	.100	.078	.132	.095	.048
1958-59	.042	.051	.027	.014	.011	.895	.712	.319	.340	.267	.173	.285
1959-60	.224	.330	.311	.204	.116	.546	.712	.905	.752	.255	.314	.343

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.07	0.05	0.03	0.02	0.02	0.40	0.62	0.35	0.12	0.10	0.24	0.17
1956-57	.08	.08	.08	.05	.09	.29	.17	.29	.44	.42	.14	.11
1957-58	.10	.15	.12	.09	.13	.19	.28	.12	.09	.15	.11	.05
1958-59	.05	.06	.03	.02	.01	1.03	.79	.37	.38	.31	.20	.32
1959-60	.26	.37	.36	.23	.13	.63	.79	1.04	.84	.29	.36	.38

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								67.5	2.99
1956	Apr. 2, 1956	6.78	1,160	5.5	49.6	0.162	2.19	51.8	2.28
1957	July 23, 1957	6.19	890	10	50.4	.165	2.24	53.4	2.37
1958	July 15, 1958	(1) 5.3	632	10	35.6	.116	1.58	30.3	1.35
1959	May 20, 31, 1959	(2) 7.30	1,830	3.0	80.3	.262	3.57	99.5	4.42
1960	June 25, 1960	9.19	2,790	23	128	.418	5.68		

(1) Maximum gage-height, 6.41 ft. Feb. 26, 1958 (backwater from ice).

(2) Maximum gage-height, 7.63 ft. Mar. 26, 1959.

Peak Discharge (base, 1,200 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: No peak above base.

1958-59: Mar. 26 (7 p.m.) 1,710 cfs (7.63 ft.); May 20 (9:30 a.m.) 1,830 cfs (7.30 ft.); May 31 (4 a.m.) 1,830 cfs (7.27 ft.).

1959-60: Mar. 30 (1 a.m.) 2,650 cfs (8.42 ft.); May 7 (1 a.m.) 1,530 cfs (6.89 ft.); June 25 (5 a.m.) 2,790 cfs (9.19 ft.); Aug. 30 (8:30 p.m.) 1,340 cfs (6.95 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 3, 4, 7, 8, 14-18, Nov. 22 to Dec. 31, 1955; Jan. 1 to Mar. 27, Nov. 20-29, Dec. 6-31, 1956; Jan. 1 to Mar. 21, Nov. 8-11, Nov. 16 to Dec. 31, 1957; Jan. 1 to Feb. 26, Nov. 27 to Dec. 31, 1958; Jan. 1 to Mar. 24, Nov. 16-24, Dec. 3, 4, 30, 31, 1959; Jan. 1-6, 14-17, Jan. 19 to Feb. 1, Feb. 11-14, Feb. 18 to Mar. 28, 1960. No gage-height record Feb. 27 to Mar. 4, 1958.

Cedar River at Janesville, Iowa

LOCATION.—Lat. 42°39'00", long. 92°27'50", in NE¼SW¼ sec. 35, T. 91 N., R. 14 W., on left bank 300 ft. downstream from highway bridge at Janesville and 3.3 miles upstream from West Fork Cedar River.

DRAINAGE AREA.—1,661 square miles (revised in 1956).

RECORDS AVAILABLE.—October 1904 to September 1906, October 1914 to September 1927, October 1932 to September 1942, October 1945 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 868.46 ft. above mean sea level, datum of 1929. Prior to July 26, 1919, chain gage 1,000 ft. downstream at datum 4.0 ft. lower. July 26, 1919, to Sept. 30, 1927, and Nov. 14, 1932, to Sept. 30, 1942, chain gage and Apr. 26, 1946, to Nov. 10, 1949, wire-weight gage at highway bridge 300 ft. upstream at same datum.

AVERAGE DISCHARGE.—40 years (1904-6, 1914-27, 1932-42, 1945-60), 692 cfs.

EXTREMES.—1905-6, 1914-27, 1932-42, 1945-60: Maximum discharge, 33,300 cfs Apr. 1, 1933 (gage height, 16.0 ft., from graph based on gage readings, site then in use); minimum daily, 28 cfs Oct. 21, 1922.

Flood of Mar. 17, 1945, reached a stage of 16.2 ft., from floodmark at site 300 ft. upstream (discharge, 34,300 cfs). Flood of Mar. 16, 1929, reached a stage of about that of Apr. 1, 1933 (from information by city of Waterloo).

REMARKS.—Diurnal fluctuation during low water caused by powerplant at Waverly, 10 miles above station. Bankfull stage is about gage height, 11 ft.

REVISIONS (water years).—WSP 1558: 1906(M), 1915-16(M), 1917, 1918-19(M), 1920-27, 1933-37(M), 1940-42(M).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	151	*142	115	98	97	135	1,490	334	445	186	288	522
2.....	136	176	135	110	94	170	1,480	418	724	181	728	480
3.....	*154	160	150	105	99	210	2,110	472	606	289	570	300
4.....	174	184	145	*92	91	250	3,050	504	378	789	544	258
5.....	239	173	130	100	95	240	3,290	646	*415	579	390	406
6.....	336	180	115	103	99	190	1,720	765	282	694	*320	*396
7.....	278	190	106	86	95	125	1,490	734	286	430	340	430
8.....	212	155	103	93	98	145	1,210	794	271	380	292	371
9.....	179	162	102	104	106	170	832	646	252	300	266	326
10.....	234	188	102	87	103	165	830	620	222	176	254	254
11.....	168	176	102	93	98	135	671	544	191	208	246	254
12.....	212	164	115	96	98	160	532	542	214	252	235	254
13.....	221	178	92	96	105	155	574	570	218	256	212	220
14.....	144	168	102	91	98	160	532	331	190	174	194	290
15.....	129	172	92	86	86	155	537	493	214	159	228	284
16.....	151	130	101	80	92	165	352	396	194	164	233	268
17.....	192	100	110	77	97	185	567	418	214	*168	248	239
18.....	136	170	92	74	100	205	494	400	185	211	312	146
19.....	161	155	102	79	105	217	387	342	190	187	278	185
20.....	158	160	91	80	105	296	321	346	288	223	190	174
21.....	122	175	97	76	95	456	305	225	280	182	158	150
22.....	174	190	92	74	88	352	376	334	221	192	213	203
23.....	158	190	102	82	93	310	224	309	146	174	226	202
24.....	162	170	100	75	107	248	250	262	204	150	158	185
25.....	174	195	101	82	99	260	256	254	186	166	152	116
26.....	168	190	104	98	103	289	280	270	176	210	175	167
27.....	173	180	107	94	88	466	312	302	202	175	164	184
28.....	162	175	100	91	*93	1,310	306	292	221	158	152	176
29.....	178	*180	92	91	100	*1,920	423	301	188	158	196	152
30.....	236	120	87	95	.....	1,830	*532	322	168	156	484	166
31.....	185	.....	102	*91	.....	1,590	.....	261	.....	174	594	.....

Cedar River at Janesville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	187	204	105	110	120	420	316	206	1,550	454	526	230
2	*123	176	150	130	120	350	*332	196	1,030	491	368	237
3	125	162	*170	140	120	400	312	191	718	398	275	148
4	117	199	150	130	120	320	260	180	*744	493	156	*313
5	133	207	170	140	120	*280	330	217	433	326	178	302
6	150	190	140	140	130	240	264	230	445	334	*260	291
7	200	210	110	120	140	210	378	*137	628	280	380	261
8	147	154	120	*100	160	210	300	130	666	261	236	253
9	217	184	160	86	190	220	200	144	593	*328	176	229
10	122	127	160	90	240	224	215	150	376	256	157	147
11	114	142	130	92	280	220	263	178	466	244	168	169
12	134	162	110	90	310	176	249	186	780	220	178	213
13	134	156	130	84	350	345	260	202	552	234	153	196
14	150	196	150	84	400	314	230	162	512	274	203	228
15	163	237	150	84	350	346	249	262	462	302	201	212
16	152	221	140	86	310	272	170	222	470	536	186	220
17	183	174	130	90	280	276	196	221	587	409	226	153
18	199	188	130	96	250	296	226	334	800	326	258	186
19	222	182	150	105	230	458	214	424	608	788	220	199
20	205	160	160	120	210	412	220	324	556	996	227	202
21	195	140	150	140	200	339	304	386	436	586	242	225
22	207	150	170	160	200	314	194	322	406	473	178	242
23	167	150	150	140	200	276	190	516	450	575	243	178
24	140	150	120	135	220	278	199	618	393	792	215	258
25	130	140	150	130	250	408	210	749	605	1,350	226	406
26	140	220	150	125	280	1,110	232	752	660	886	206	426
27	138	250	140	125	320	1,210	233	597	674	659	165	365
28	212	200	150	120	370	810	252	588	706	490	228	230
29	188	230	140	120	.....	644	216	916	704	402	254	134
30	*141	170	150	120	.....	551	196	1,360	672	469	269	114
31	135	.....	130	120	.....	392	.....	1,850	.....	416	242	.....
1957-58												
1	*122	168	210	160	140	750	196	342	257	135	154	134
2	56	190	230	180	150	700	218	362	188	159	150	104
3	130	248	*220	170	155	640	222	330	*154	260	156	182
4	132	218	230	170	*155	*710	226	370	220	255	*118	153
5	106	*196	210	190	155	600	333	292	245	230	160	176
6	86	194	210	190	150	450	558	*250	240	220	234	179
7	91	260	200	*150	145	370	592	305	202	175	278	190
8	120	209	220	170	140	350	*812	322	369	*142	256	154
9	79	230	200	160	135	330	932	289	343	149	278	179
10	120	184	160	150	130	300	840	272	288	168	272	172
11	204	158	140	150	130	276	682	335	255	146	204	144
12	148	134	130	150	125	293	600	270	245	144	309	134
13	104	209	150	160	125	280	538	178	235	168	255	96
14	146	196	170	170	120	298	396	193	206	156	169	140
15	141	219	180	190	120	306	495	228	216	240	189	130
16	204	212	190	180	160	307	374	221	198	354	193	163
17	189	224	153	190	105	259	402	198	143	348	210	144
18	168	208	163	180	110	204	473	224	159	359	162	134
19	156	170	268	200	110	260	391	204	188	284	136	138
20	113	210	268	200	110	256	388	172	167	262	168	127
21	172	200	253	150	120	218	254	178	135	216	144	144
22	114	240	266	160	160	238	306	149	143	192	140	136
23	145	220	195	170	130	214	326	171	155	231	119	112
24	202	230	285	160	350	241	398	159	147	212	154	134
25	244	230	260	150	1,000	175	480	220	175	184	154	135
26	170	220	230	180	900	227	276	204	184	140	*120	146
27	186	240	220	200	900	232	314	150	155	168	128	128
28	174	250	230	180	800	223	272	153	151	148	128	141
29	154	250	210	160	.....	218	512	132	171	152	120	128
30	214	170	190	170	.....	222	423	157	159	150	140	98
31	137	.....	170	160	.....	223	.....	240	.....	143	146	.....

Cedar River at Janesville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	*129	124	80	115	65	80	4,430	312	3,050	3,530	280	737
2	134	100	95	100	55	84	4,690	324	2,750	2,810	222	719
3	130	70	110	90	64	120	4,690	216	2,280	2,330	318	728
4	132	150	130	110	64	200	3,410	216	1,570	2,220	482	622
5	154	141	110	90	64	160	2,390	245	1,260	1,300	276	598
6	100	124	105	*65	64	130	1,940	330	880	1,240	306	510
7	107	150	95	95	45	110	1,620	382	670	1,060	264	470
8	132	171	85	90	64	100	1,320	343	646	911	278	432
9	67	117	80	90	54	84	1,150	177	646	726	200	418
10	175	82	80	94	46	80	999	300	518	702	238	360
11	135	158	85	92	56	130	880	369	462	712	338	390
12	115	118	90	80	60	200	719	440	448	820	314	342
13	97	120	88	94	58	300	662	402	440	800	292	312
14	137	147	86	100	58	500	606	376	316	746	271	333
15	134	166	82	90	58	370	508	362	352	638	290	316
16	117	116	80	90	56	280	494	294	357	582	206	340
17	136	120	80	100	61	220	478	264	312	494	176	250
18	110	258	84	80	52	180	478	245	288	462	290	324
19	145	285	90	84	58	300	356	350	385	329	288	260
20	98	216	105	75	64	560	418	388	226	368	284	220
21	105	170	100	76	66	800	550	1,350	234	445	346	220
22	116	189	90	70	68	1,100	590	719	241	422	344	395
23	136	140	76	67	70	1,600	606	478	*287	402	385	313
24	142	112	100	80	54	*2,300	510	357	292	418	694	432
25	194	135	130	86	64	3,500	410	448	3,500	342	2,600	728
26	104	*120	115	60	*70	4,550	312	526	860	264	*2,220	1,010
27	88	100	105	70	76	*5,760	336	*486	911	232	2,300	988
28	*106	90	105	*94	80	5,210	402	410	2,350	*377	1,290	1,020
29	182	80	90	74	.....	4,300	*388	455	3,650	592	1,010	1,230
30	136	74	70	86	.....	3,780	362	820	3,170	542	800	1,410
31	124	.....	100	76	.....	3,530	.....	1,060	.....	404	773	.....
1959-60												
1	*1,190	402	440	1,620	360	270	4,300	1,560	1,150	1,320	300	1,130
2	999	432	500	1,000	390	300	2,330	1,180	1,020	1,090	418	800
3	860	494	470	700	440	320	1,780	*1,060	1,010	977	*369	662
4	746	526	420	560	450	250	1,620	966	1,310	870	207	440
5	702	702	380	500	430	270	*1,620	890	977	800	330	425
6	719	977	330	450	400	270	1,140	1,500	870	*791	276	395
7	670	782	390	520	370	260	977	3,530	*800	900	276	350
8	670	662	450	680	360	260	890	3,780	710	810	526	369
9	622	678	400	800	430	260	1,080	3,650	686	710	258	410
10	598	773	460	740	370	270	764	2,570	654	598	312	282
11	502	773	470	660	340	280	646	1,720	582	614	369	235
12	502	737	448	700	320	280	486	1,400	510	646	330	270
13	566	660	395	720	360	260	425	1,230	534	598	245	*336
14	510	580	395	660	300	230	432	1,090	590	686	245	250
15	455	520	*440	620	270	*260	942	880	582	670	240	188
16	425	480	376	580	350	280	2,280	922	598	710	318	314
17	425	440	330	560	370	280	3,170	1,030	694	737	300	336
18	425	480	376	540	310	275	3,290	955	590	710	362	312
19	410	520	376	520	280	270	1,670	944	622	773	395	350
20	448	560	382	*500	310	260	1,500	955	800	670	312	280
21	418	580	402	490	290	230	1,260	1,110	966	478	270	305
22	336	590	360	480	310	240	1,090	1,330	880	425	376	382
23	369	590	330	460	330	200	1,020	2,810	850	440	388	455
24	410	*582	350	440	360	230	966	5,210	1,120	343	294	510
25	418	540	330	420	340	210	900	4,690	3,170	410	395	526
26	395	500	312	420	*320	250	1,030	2,280	4,950	486	318	686
27	418	450	455	430	310	300	1,560	1,890	2,930	382	312	728
28	*388	410	755	440	280	1,500	1,240	1,500	1,780	395	288	670
29	455	370	1,160	430	250	4,950	1,140	1,560	1,310	388	614	614
30	418	500	1,560	410	.....	12,000	1,560	1,450	1,130	376	624	542
31	486	.....	1,840	380	.....	*7,810	.....	1,350	.....	240	1,300	.....

Cedar River at Janesville, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	182	168	106	89.6	97.5	409	858	434	266	255	292	259
1956-57	160	181	142	115	231	397	247	418	626	485	232	232
1957-58	146	210	207	171	249	335	441	235	203	203	179	142
1958-59	130	138	94.2	85.9	61.2	1,310	1,226	434	1,112	881	598	548
1959-60	547	576	519	595	345	1,075	1,437	1,838	1,146	647	373	452

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.110	0.101	0.064	0.054	0.059	0.246	0.517	0.261	0.160	0.154	0.176	0.156
1956-57	.096	.109	.085	.069	.139	.239	.149	.252	.377	.292	.140	.140
1957-58	.088	.126	.125	.103	.150	.202	.266	.141	.122	.122	.108	.085
1958-59	.078	.083	.057	.052	.037	.789	.738	.261	.669	.530	.360	.330
1959-60	.329	.347	.312	.358	.208	.647	.865	1.11	.690	.390	.225	.272

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.13	0.11	0.07	0.06	0.06	0.28	0.58	0.30	0.18	0.18	0.20	0.17
1956-57	.11	.12	.10	.08	.14	.28	.17	.29	.42	.34	.16	.16
1957-58	.10	.14	.14	.12	.16	.23	.30	.16	.14	.14	.12	.10
1958-59	.09	.09	.07	.06	.04	.91	.82	.30	.75	.61	.41	.37
1959-60	.38	.39	.36	.41	.22	.75	.97	1.28	.77	.45	.26	.30

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955	Apr. 5, 1956	4.46	3,530	74	284	0.171	2.32	380	3.10
1956	May 31, 1957	3.10	1,890	84	289	.174	2.37	287	2.34
1957	Feb. 25, 1958	2.73	1,100	56	226	.136	1.85	296	2.42
1958	Mar. 27, 1959	6.78	6,620	45	553	.333	4.52	209	1.72
1959	Mar. 30, 1960	10.46	13,200	188	797	.480	6.54	661	5.40
1960									

Peak Discharge (base, 4,000 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: No peak above base.

1958-59: Mar. 27 (1 a.m.) 6,620 cfs (6.78 ft.); Apr. 3 (1 a.m.) 4,950 cfs (5.64 ft.); June 25 (10 a.m.) 5,210 cfs (5.83 ft.).

1959-60: Mar. 30 (4 p.m.) 13,200 cfs (10.46 ft.); May 24 (11 p.m.) 6,040 cfs (6.38 ft.); June 26 (2 p.m.) 5,080 cfs (5.71 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 6, 7, Nov. 15 to Dec. 31, 1955; Jan. 1 to Mar. 18, Nov. 20 to Dec. 31, 1956; Jan. 1 to Mar. 9, Nov. 9, Nov. 19 to Dec. 16, Dec. 25-31, 1957; Jan. 1 to Mar. 9, Nov. 25 to Dec. 31, 1958; Jan. 1 to Mar. 26, Nov. 13-21, Nov. 25 to Dec. 10, Dec. 22, 24, 25, 1959; Jan. 2 to Mar. 28, 1960.

West Fork Cedar River at Finchford, Iowa

LOCATION.—Lat. $42^{\circ}37'50''$, long. $92^{\circ}32'25''$, in SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 6, T. 90 N., R. 14 W., on left bank 100 ft. downstream from highway bridge in Finchford and 3.2 miles upstream from Shell Rock River.

DRAINAGE AREA.—846 square miles (revised in 1956).

RECORDS AVAILABLE.—October 1945 to September 1960. Prior to October 1955, published as West Fork Shell Rock River.

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

AVERAGE DISCHARGE.—15 years, 349 cfs.

EXTREMES.—1945-60: Maximum discharge, 31,900 cfs June 27, 1951 (gage height, 17.28 ft., from floodmarks); minimum daily, 5.9 cfs Feb. 26, 27, 1959.

Flood of March 1929 reached a stage of about 14 ft., from information by local resident (discharge, 12,800 cfs, estimated).

REMARKS.—Bankfull stage is about gage height, 12 ft.

REVISIONS (water years).—WSP 1558: 1946(M), 1947.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	30	47	28	13	10	13	300	108	118	33	33	25
2	28	46	31	13	10	45	295	115	112	33	33	24
3	*28	43	33	*12	9.8	120	338	132	98	33	33	*22
4	27	43	34	12	10	170	375	152	*91	35	32	23
5	33	42	35	11	9.8	144	338	172	84	35	33	34
6	56	43	35	10	9.9	84	285	190	81	34	*35	30
7	112	43	34	9.8	9.8	77	252	208	80	32	39	31
8	163	43	34	9.5	9.9	71	226	206	75	37	39	33
9	115	42	32	9.3	10	66	206	194	71	35	35	34
10	92	41	30	9.2	10	61	192	182	67	34	34	33
11	81	41	28	9.1	10	57	182	172	61	34	35	32
12	68	40	26	9.0	10	53	172	166	59	35	37	31
13	64	39	25	9.0	10	49	163	172	55	34	40	28
14	60	38	24	9.0	10	46	156	163	51	32	40	26
15	57	42	23	9.0	10	45	150	159	50	28	36	25
16	55	44	23	9.0	11	50	144	152	47	*26	33	22
17	52	42	23	8.6	11	59	140	142	46	25	31	21
18	52	42	22	8.4	11	70	132	133	46	24	31	21
19	51	43	20	8.0	12	90	126	125	45	35	28	20
20	50	45	18	8.0	12	120	118	118	43	40	25	18
21	47	44	18	8.0	12	230	115	112	42	36	24	18
22	46	46	17	8.0	12	430	108	108	40	35	22	18
23	46	45	16	8.0	13	380	106	106	39	34	21	17
24	46	40	15	8.0	13	350	103	103	36	33	19	16
25	46	36	15	8.0	13	312	102	98	35	31	18	15
26	46	35	15	8.2	13	305	102	94	42	27	17	15
27	45	33	15	8.5	*13	362	104	91	39	25	15	14
28	43	*30	14	8.9	13	460	106	91	36	25	18	14
29	45	28	14	9.2	13	*590	110	94	35	24	21	14
30	45	26	13	9.7	.....	445	*108	98	34	23	27	14
31	*46	.....	13	*10	.....	338	.....	106	.....	37	23	.....

West Fork Cedar River at Finchford, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	14	25	26	25	11	130	110	55	608	165	66	59
2	*14	28	27	22	11	130	*108	54	490	154	57	55
3	13	30	*28	20	11	120	103	52	*338	150	54	51
4	13	28	31	19	11	110	108	51	252	149	52	*47
5	13	30	33	18	12	*100	104	50	210	147	50	45
6	13	28	30	17	13	92	103	47	180	142	*46	42
7	12	28	25	16	13	88	102	*45	159	133	45	41
8	12	28	24	*15	14	84	98	43	145	125	42	39
9	12	28	23	14	16	82	94	43	133	*118	41	35
10	14	28	22	13	17	80	92	48	126	114	40	35
11	14	30	21	12	21	80	91	48	132	108	39	40
12	14	28	21	12	23	86	88	50	165	103	37	41
13	14	27	21	11	26	90	84	51	170	100	43	41
14	19	28	21	11	30	94	81	51	149	96	48	42
15	18	29	21	11	34	94	80	56	137	108	42	45
16	18	22	21	11	40	87	77	60	156	98	43	42
17	18	27	21	11	60	80	75	73	266	90	41	42
18	20	31	21	11	70	83	71	77	732	81	39	40
19	22	32	20	12	50	90	71	80	1,000	78	36	41
20	22	27	20	13	45	95	71	82	748	74	35	40
21	22	16	20	15	40	104	68	84	490	71	33	40
22	22	18	21	18	39	109	68	82	430	68	31	39
23	21	20	21	20	38	114	67	94	362	66	34	37
24	21	21	22	16	38	157	64	112	300	68	34	37
25	22	22	22	14	64	200	61	125	262	78	33	35
26	23	22	23	12	96	212	67	125	236	68	31	34
27	22	22	24	11	110	178	67	116	216	67	37	33
28	21	23	24	11	130	150	63	110	200	81	46	32
29	22	24	25	11	.....	137	60	121	188	81	47	31
30	*27	25	25	11	.....	126	57	138	178	74	52	30
31	26	.....	25	11	.....	118	.....	259	.....	67	55	.....
1957-58												
1	*28	47	74	76	63	450	77	145	135	90	138	57
2	27	48	94	72	62	350	83	142	192	92	130	54
3	27	31	*91	68	60	280	88	135	*320	90	128	50
4	26	25	88	65	*57	*240	105	130	300	135	*128	47
5	26	*22	88	62	54	235	152	125	415	140	138	59
6	25	21	90	59	51	200	300	120	400	165	130	60
7	25	20	90	*58	47	182	388	*113	338	162	135	59
8	27	19	88	57	42	170	*460	110	285	*142	120	54
9	30	15	78	56	38	155	430	105	258	128	108	48
10	30	20	68	56	36	145	362	98	242	115	98	46
11	32	22	54	57	34	135	325	94	232	113	90	45
12	36	20	56	58	32	125	300	88	212	105	81	41
13	35	22	60	60	31	123	272	83	205	98	77	32
14	33	*20	65	62	30	120	255	77	188	178	77	31
15	42	51	69	64	29	120	240	74	185	208	81	29
16	41	61	72	66	29	120	225	70	172	350	76	25
17	42	66	75	66	28	113	212	68	158	625	81	24
18	42	72	82	65	28	105	200	67	145	625	81	24
19	42	64	87	64	28	100	195	65	132	475	72	24
20	43	70	92	64	28	98	188	65	123	375	68	24
21	42	74	97	64	28	94	180	62	113	325	68	23
22	42	78	101	65	28	88	172	57	105	278	125	23
23	46	70	107	66	28	85	170	54	98	242	110	22
24	47	76	111	67	78	83	170	51	100	212	90	24
25	47	84	113	67	175	81	162	50	100	195	81	22
26	48	92	110	67	270	79	168	47	123	180	*72	21
27	48	98	105	68	450	77	162	46	130	168	68	21
28	47	98	96	68	580	77	160	47	128	155	63	21
29	47	82	90	67	.....	76	158	98	115	155	60	20
30	47	62	84	66	.....	76	150	168	100	150	59	*20
31	46	.....	80	64	.....	76	.....	150	.....	150	59	.....

West Fork Cedar River at Finchford, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1958-59													
1.....	19	20	14	12	7.1	6.3	1,840	158	1,120	1,760	212	285	
2.....	19	21	16	12	6.9	6.6	1,560	150	1,800	2,020	188	305	
3.....	19	21	19	12	6.7	30	1,360	150	2,360	1,880	180	730	
4.....	18	21	22	11	6.6	98	1,160	145	2,240	1,320	182	1,000	
5.....	18	21	23	*11	6.5	200	980	142	1,640	940	175	960	
6.....	19	21	20	11	6.4	220	782	145	1,040	695	162	677	
7.....	19	21	18	10	6.2	60	677	135	765	520	150	490	
8.....	20	22	16	10	6.1	44	608	125	625	430	135	388	
9.....	22	22	14	10	6.1	35	520	120	520	375	125	325	
10.....	18	22	13	10	6.1	31	475	123	430	362	118	272	
11.....	19	22	13	10	6.1	28	430	130	375	338	115	235	
12.....	20	22	13	10	6.1	80	388	132	338	308	113	210	
13.....	20	22	12	10	6.3	160	375	130	310	280	108	188	
14.....	19	22	12	9.8	6.4	250	362	110	282	260	100	172	
15.....	19	22	12	9.6	6.5	180	338	98	258	242	105	162	
16.....	18	22	12	9.4	6.6	140	322	92	235	230	100	150	
17.....	18	32	12	9.2	6.7	110	310	85	222	218	94	145	
18.....	19	34	12	9.1	6.7	92	295	79	208	215	88	138	
19.....	19	32	12	8.9	6.7	80	288	77	195	198	83	138	
20.....	19	30	13	8.8	6.6	230	280	128	172	188	76	142	
21.....	19	28	13	8.6	6.4	560	270	324	160	180	74	168	
22.....	18	28	13	8.5	6.4	1,100	252	748	152	168	118	150	
23.....	19	28	13	8.3	6.2	1,880	245	625	*145	158	427	148	
24.....	19	27	13	8.1	6.1	*2,740	232	572	140	150	880	145	
25.....	19	19	13	7.9	6.0	3,200	220	505	212	140	960	135	
26.....	19	*13	13	7.8	*5.9	3,760	202	415	549	132	*608	205	
27.....	20	15	13	7.6	5.9	*4,120	192	*362	400	123	400	260	
28.....	*20	15	13	7.5	6.0	4,480	*185	312	312	*115	338	388	
29.....	20	13	13	7.4	.....	3,760	178	300	695	160	288	445
30.....	20	11	13	*7.3	.....	2,820	170	338	1,360	292	250	400
31.....	21	.....	12	7.2	.....	2,180	.....	590	.....	272	285	.....
1959-60													
1.....	*362	165	450	540	170	134	*6,300	1,480	625	225	100	285	
2.....	325	170	370	370	165	132	4,000	*1,480	555	218	100	250	
3.....	310	165	330	270	165	130	2,660	1,280	520	210	*98	220	
4.....	318	198	320	220	165	128	*2,120	1,080	475	205	94	195	
5.....	338	362	310	190	170	125	1,840	940	430	*195	90	175	
6.....	338	590	270	250	175	125	1,600	1,200	400	188	88	162	
7.....	325	660	250	300	180	125	1,360	2,500	*375	180	105	150	
8.....	298	608	278	350	180	125	1,160	3,100	350	170	123	138	
9.....	292	572	290	350	175	125	980	2,820	338	168	128	130	
10.....	212	608	292	350	170	122	840	2,020	325	175	110	120	
11.....	185	608	288	320	165	122	730	1,560	322	185	105	113	
12.....	172	560	282	300	160	122	660	1,240	315	188	100	*105	
13.....	165	500	275	330	160	122	608	1,000	308	188	94	98	
14.....	158	430	268	310	160	122	572	840	302	190	96	96	
15.....	150	370	265	290	165	*122	555	730	295	175	105	94	
16.....	148	320	*260	260	165	122	608	712	295	165	105	100	
17.....	142	280	260	240	165	120	1,280	820	292	160	100	113	
18.....	138	330	260	230	160	120	1,720	920	290	152	120	135	
19.....	135	380	252	220	155	120	1,640	880	285	148	172	145	
20.....	130	410	252	210	160	125	1,440	960	282	140	170	158	
21.....	125	430	252	*205	165	125	1,120	1,120	282	138	168	160	
22.....	125	440	252	200	165	125	920	1,120	295	130	165	158	
23.....	125	450	250	195	160	125	748	1,200	310	123	148	220	
24.....	130	*445	248	190	156	125	642	1,240	322	118	132	288	
25.....	130	400	245	185	*152	130	590	1,160	300	125	160	538	
26.....	138	350	258	180	148	135	642	1,040	292	130	185	572	
27.....	140	300	322	180	142	150	1,640	980	272	128	212	590	
28.....	*140	270	490	176	136	250	2,500	900	255	123	232	475	
29.....	*142	250	660	172	134	1,500	1,720	800	242	115	220	388	
30.....	148	350	730	172	9,100	1,480	748	232	113	150	338
31.....	155	.....	712	170	.....	9,400	.....	677	.....	108	315	.....

West Fork Cedar River at Finchford, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	57.3	40.4	23.3	9.37	11.1	184	178	137	58.6	31.7	29.3	22.9
1956-57	18.0	25.8	23.5	14.3	38.7	113	81.8	80.1	305	101	42.9	40.4
1957-58	37.6	51.7	85.6	64.0	87.3	144	217	90.5	192	216	93.3	35.0
1958-59	19.2	22.3	14.2	9.35	6.37	1,051	517	243	642	473	233	319
1959-60	198	399	330	257	162	763	1,489	1,243	339	161	138	224

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.068	0.048	0.028	0.011	0.013	0.217	0.210	0.162	0.069	0.037	0.035	0.027
1956-57	.021	.030	.028	.017	.046	.134	.097	.085	.361	.119	.051	.048
1957-58	.044	.061	.101	.076	.103	.170	.257	.107	.227	.255	.110	.041
1958-59	.023	.026	.017	.011	.0075	1.25	.611	.287	.759	.559	.275	.377
1959-60	.234	.472	.390	.304	.191	.902	1.76	1.47	.401	.190	.163	.265

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.08	0.05	0.03	0.01	0.01	0.25	0.24	0.19	0.08	0.04	0.04	0.03
1956-57	.02	.03	.03	.02	.05	.15	.11	.11	.40	.14	.06	.05
1957-58	.05	.07	.12	.09	.11	.20	.29	.12	.25	.29	.13	.05
1958-59	.03	.03	.02	.01	.008	1.44	.68	.33	.85	.64	.32	.42
1959-60	.27	.53	.45	.35	.21	1.04	1.96	1.69	.45	.22	.19	.29

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								120	1.92
1956	Mar. 29, 1956	5.61	642	8.0	65.5	0.077	1.05	61.0	.97
1957	June 19, 1957	6.82	1,040	11	73.6	.087	1.17	82.6	1.33
1958	July 17, 1958	(115.95)	712	15	109	.129	1.77	99.4	1.61
1959	Mar. 28, 1959	12.07	4,740	5.9	298	.352	4.78	371	5.95
1960	Mar. 30, 1960	14.00	10,600	88	475	.561	7.65		

(1) Maximum gage-height, 6.87 ft. Feb. 28, 1958 (backwater from ice).

Peak Discharge (base, 2,500 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: No peak above base.

1958-59: Mar. 28 (4 p.m.) 4,740 cfs (12.07 ft.).

1959-60: Mar. 30 (10 a.m.) 10,600 cfs (14.00 ft.); Apr. 28 (8 a.m.) 2,660 cfs (10.19 ft.); May 8 (8 p.m.) 3,400 cfs (10.97 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 11-16, Nov. 20 to Dec. 31, 1955; Jan. 1 to Mar. 24, Nov. 14 to Dec. 31, 1956; Jan. 1 to Mar. 20, Nov. 18 to Dec. 31, 1957; Jan. 1 to Mar. 6, Nov. 25 to Dec. 31, 1958; Jan. 1 to Mar. 22, Nov. 12-23, Nov. 25 to Dec. 7, 1959; Jan. 1 to Mar. 29, 1960.

Shell Rock River near Northwood, Iowa

LOCATION.—Lat. 43°24'50", long. 93°13'10", in NW¼NW¼ sec. 9, T. 99 N., R. 20 W., on right bank 50 ft. downstream from highway bridge, 2 miles south of Northwood, and 4.1 miles upstream from Elk Creek.

DRAINAGE AREA.—300 square miles (revised in 1956).

RECORDS AVAILABLE.—October 1945 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 1,176.48 ft. above mean sea level, datum of 1929. Prior to May 17, 1956, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—15 years, 114 cfs.

EXTREMES.—1945-60: Maximum discharge, 2,430 cfs Apr. 10, 1951 (gage height, 9.55 ft., from graph based on gage readings); maximum gage height, 11.38 ft. Apr. 7, 1951 (ice jam); minimum daily, 0.3 cfs Feb. 17-26, 1959.

REMARKS.—Bankfull stage is about gage height, 10 ft.

REVISIONS (water years).—WSP 1308: 1948 (M).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	12	19	10	14	*17	*22	800	134	86	98	118	32
2.....	13	*16	13	14	17	28	750	*169	69	41	101	30
3.....	13	17	15	15	17	35	570	215	60	30	90	24
4.....	13	15	17	15	16	46	390	260	56	26	79	*22
5.....	*16	20	17	16	15	58	345	242	56	26	83	24
6.....	18	18	16	*17	16	78	330	235	*54	24	79	22
7.....	17	15	17	16	17	92	309	225	46	23	76	21
8.....	17	17	16	16	18	78	290	200	51	26	*72	21
9.....	16	19	15	16	18	67	268	165	45	26	70	22
10.....	16	20	15	16	17	60	250	167	40	24	69	22
11.....	14	20	14	16	17	52	228	152	36	21	64	22
12.....	14	19	12	16	18	45	200	150	34	20	72	22
13.....	14	20	12	16	18	39	187	156	32	19	88	21
14.....	14	21	13	16	18	36	167	160	30	17	86	20
15.....	14	17	12	16	18	33	155	138	30	17	77	21
16.....	14	15	11	14	18	33	146	146	32	15	70	20
17.....	14	19	10	14	18	35	142	97	36	15	64	20
18.....	14	18	10	14	18	38	150	93	48	*15	57	20
19.....	14	20	10	14	18	43	108	76	41	17	51	19
20.....	14	21	11	14	18	54	97	60	39	24	44	18
21.....	14	23	12	14	18	66	79	50	36	39	35	17
22.....	14	24	13	14	18	90	76	43	34	36	30	17
23.....	19	24	13	14	18	82	74	43	40	30	26	17
24.....	17	23	13	14	18	78	69	39	37	28	23	16
25.....	20	20	12	15	18	77	53	35	32	28	21	16
26.....	19	17	13	15	18	84	57	28	60	26	19	16
27.....	18	14	14	16	19	105	90	28	57	24	17	15
28.....	16	12	16	16	19	*160	92	32	57	24	24	15
29.....	17	9.8	16	17	20	400	110	43	50	24	32	15
30.....	17	*8.0	15	17	.....	550	134	74	44	28	34	15
31.....	17	.....	14	17	.....	730	.....	83	.....	92	35	.....

Shell Rock River near Northwood, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	15	24	20	18	7.0	40	43	24	240	130	70	41
2	15	24	21	17	7.0	35	40	23	205	120	65	39
3	*15	23	22	16	7.0	32	*36	20	174	130	60	40
4	14	22	23	15	8.0	30	34	20	152	130	59	41
5	15	28	*20	15	8.5	27	37	19	*140	120	57	*34
6	13	26	19	14	9.0	*26	39	19	120	100	46	28
7	14	28	17	13	9.2	24	44	19	110	92	*36	26
8	14	35	16	12	10	23	39	*17	100	80	28	24
9	13	30	16	*11	11	23	35	23	100	74	32	23
10	13	23	17	10	12	23	39	26	130	*67	32	24
11	14	20	17	9.0	14	26	37	24	150	59	32	24
12	13	22	16	8.0	16	33	48	24	130	65	30	23
13	14	26	15	8.0	17	40	43	30	110	69	42	24
14	15	20	15	8.0	19	60	34	62	120	70	79	26
15	20	22	15	7.5	21	80	30	99	110	67	72	24
16	21	24	16	7.0	19	60	26	90	100	81	67	26
17	20	24	16	7.0	17	50	28	86	92	110	62	24
18	20	19	16	7.0	16	70	30	90	88	99	57	20
19	20	15	15	7.0	14	50	32	90	86	84	53	20
20	20	12	15	8.0	14	45	32	93	90	79	48	23
21	21	14	15	10	13	35	39	118	170	97	44	28
22	21	15	15	10	12	35	34	138	250	148	39	26
23	20	16	15	9.0	12	45	32	128	300	146	43	24
24	20	17	16	8.2	30	70	30	114	210	124	43	24
25	18	17	16	8.0	70	100	30	134	200	112	41	20
26	19	17	17	8.0	60	90	35	202	240	106	32	20
27	24	18	18	8.0	55	75	34	220	270	105	34	20
28	22	19	18	8.0	45	60	30	221	230	99	34	19
29	20	19	18	7.5	.....	54	26	526	190	90	36	18
30	20	19	18	7.0	.....	48	24	375	160	83	43	17
31	*20	.....	19	7.0	.....	46	.....	295	.....	76	43	.....
1957-58												
1	17	26	34	25	23	92	46	116	24	15	10	5.9
2	*17	41	44	24	22	82	59	108	24	16	11	6.7
3	17	51	39	22	21	72	76	106	28	17	10	5.9
4	16	54	36	21	20	64	99	108	*37	19	10	5.6
5	15	41	*34	20	*19	*61	196	*101	34	17	13	7.1
6	15	*40	33	19	17	57	327	90	34	17	*12	9.2
7	15	35	33	18	16	54	327	86	30	15	20	7.1
8	19	27	32	18	15	52	295	83	30	15	21	6.7
9	20	21	32	*18	14	50	280	79	32	*15	19	*5.6
10	20	17	32	19	13	49	*268	67	30	15	15	5.6
11	20	21	18	19	12	49	250	62	32	15	14	5.3
12	19	25	20	21	12	52	238	56	30	14	12	5.3
13	19	28	23	22	11	54	220	43	26	14	11	5.9
14	18	28	24	23	10	56	196	37	26	32	10	6.7
15	20	32	25	24	10	54	176	40	23	32	10	8.8
16	19	48	27	25	9.6	49	163	37	22	24	9.2	7.5
17	20	60	28	25	9.5	43	150	36	21	20	8.0	7.5
18	21	40	30	25	9.4	42	144	39	20	16	7.5	8.4
19	20	29	32	24	9.4	42	130	48	18	13	7.1	8.0
20	17	20	34	24	9.4	42	126	40	17	12	6.3	8.0
21	18	30	36	24	9.4	42	116	30	16	12	5.9	8.0
22	22	27	38	25	9.4	42	120	28	16	11	5.9	8.0
23	30	25	40	26	10	45	118	28	20	10	5.9	8.8
24	35	30	43	27	18	49	146	24	22	10	5.9	10
25	40	33	45	27	35	48	167	22	22	9.6	6.3	11
26	34	37	42	27	60	47	146	22	24	9.2	6.3	12
27	28	40	38	27	120	46	134	20	21	8.8	5.9	12
28	26	40	35	26	105	46	130	20	20	8.4	5.6	11
29	24	33	32	26	.....	46	152	19	17	12	5.6	11
30	24	28	30	25	.....	46	134	20	18	11	5.3	9.6
31	28	.....	28	24	.....	45	.....	23	.....	10	5.3	.....

Shell Rock River near Northwood, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	11	11	3.8	2.7	0.5	1.3	220	53	562	330	37	132
2	15	10	*3.4	2.4	.5	1.6	280	39	495	321	35	138
3	10	10	4.5	2.1	*.5	*1.7	351	41	420	292	32	128
4	8.8	*9.6	5.0	1.9	.5	1.7	417	46	*381	268	29	114
5	8.8	8.8	4.7	1.7	.5	1.7	381	*70	339	245	27	93
6	10	8.0	4.2	1.6	.5	1.8	342	106	306	230	25	72
7	*10	8.4	3.8	*1.5	.4	1.8	298	148	270	215	23	62
8	10	8.8	3.6	1.4	.4	1.9	270	134	232	*202	21	60
9	20	8.4	3.5	1.3	.4	2.0	238	126	198	215	19	46
10	23	8.4	3.3	1.2	.4	2.1	210	120	174	210	18	44
11	35	8.0	3.2	1.1	.4	2.3	189	128	154	195	16	43
12	26	8.0	3.0	1.1	*.4	2.5	171	126	138	180	15	32
13	17	8.4	2.8	1.0	.4	2.7	156	120	128	165	14	28
14	15	8.0	2.7	1.0	.4	3.0	144	120	105	150	13	26
15	15	8.4	2.5	1.0	.4	3.0	126	103	92	135	14	24
16	15	8.4	2.6	.9	.4	2.9	112	90	70	120	15	23
17	15	11	2.7	.9	.3	2.8	128	81	60	105	14	22
18	16	10	3.0	.8	.3	3.4	178	74	56	105	12	21
19	15	9.2	3.3	.8	.3	4.0	178	67	51	110	11	24
20	13	9.2	3.6	.8	.3	5.0	154	72	45	115	10	26
21	11	8.4	3.9	.8	.3	7.2	140	182	43	110	15	28
22	10	8.4	4.2	.7	.3	12	126	242	37	106	150	69
23	12	7.5	4.5	.7	.3	22	116	235	34	97	350	*77
24	12	7.0	4.6	.7	.3	*45	108	245	32	72	320	79
25	15	8.4	4.7	.7	.3	*80	97	245	61	65	*258	95
26	17	4.1	4.8	.6	.3	70	97	252	156	60	222	138
27	17	4.6	4.8	.6	.8	60	83	280	165	56	200	210
28	14	4.9	4.6	.6	1.0	80	70	258	228	*53	185	225
29	12	4.8	4.3	.6		110	77	345	218	48	171	228
30	11	4.3	3.8	.6		135	65	375	270	44	154	230
31	11		3.3	.6		*170		615		40	144	
1959-60												
1	225	120	88	110	42	28	510	198	465	435	*43	20
2	230	124	90	90	42	28	510	171	405	390	36	19
3	235	114	88	76	42	27	495	160	348	348	36	17
4	238	112	86	66	43	27	450	150	292	309	37	16
5	222	116	82	80	44	27	420	*178	252	270	32	15
6	205	105	80	94	45	27	393	295	210	238	30	14
7	193	100	78	102	46	27	*360	321	180	*205	44	14
8	187	110	76	108	47	27	324	282	155	178	56	14
9	185	115	76	110	46	28	292	242	*140	160	48	15
10	178	120	74	110	44	28	270	232	124	156	44	15
11	160	110	72	110	42	28	220	205	124	150	37	14
12	163	104	71	106	40	28	212	176	120	148	32	14
13	138	94	70	104	38	28	265	154	106	160	30	17
14	128	90	72	100	37	29	312	138	97	158	28	15
15	120	94	*75	96	36	29	300	126	86	146	24	*14
16	110	94	78	92	*34	*30	303	128	187	140	23	14
17	114	90	80	88	33	30	318	136	215	136	20	15
18	101	86	80	84	32	30	312	144	182	132	22	28
19	90	*87	82	80	32	31	275	189	171	124	21	40
20	*84	90	82	*76	31	31	252	250	196	112	24	32
21	81	94	76	70	30	31	250	450	232	99	23	26
22	74	96	70	62	30	31	238	580	295	93	21	28
23	79	96	66	56	30	32	218	580	600	93	20	32
24	114	92	66	52	29	32	210	598	755	84	20	44
25	130	86	72	50	29	32	218	615	695	76	21	56
26	108	80	80	48	29	33	222	655	635	105	28	48
27	108	74	90	46	29	150	208	675	580	97	23	44
28	116	74	240	45	29	500	191	655	545	81	23	41
29	106	80	230	44	29	700	189	615	510	69	30	43
30	106	86	200	43		600	202	580	480	62	28	44
31	114		150	42		545		528		56	22	

Shell Rock River near Northwood, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	15.5	18.0	13.5	15.3	17.7	109	224	121	45.6	29.1	58.3	20.1
1956-57.....	17.5	21.3	17.2	9.94	19.7	46.9	34.7	109	159	97.2	47.1	25.7
1957-58.....	21.7	33.7	32.8	23.2	23.2	52.2	171	52.8	24.5	15.0	9.68	7.94
1958-59.....	14.5	8.08	3.76	1.11	.42	27.1	184	166	184	150	82.9	84.6
1959-60.....	143	97.8	94.2	78.7	36.6	105	298	336	313	162	30.0	25.6

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.052	0.060	0.045	0.051	0.059	0.363	0.747	0.403	0.152	0.097	0.194	0.067
1956-57.....	.058	.071	.057	.033	.066	.156	.116	.363	.530	.324	.157	.086
1957-58.....	.072	.112	.109	.077	.077	.174	.570	.176	.082	.050	.032	.026
1958-59.....	.048	.027	.013	.0037	.0014	.000	.613	.553	.613	.500	.276	.282
1959-60.....	.477	.326	.314	.262	.122	.350	.993	1.12	1.04	.540	.100	.085

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.06	0.07	0.05	0.06	0.06	0.42	0.83	0.46	0.17	0.11	0.22	0.07
1956-57.....	.07	.08	.07	.04	.07	.18	.13	.42	.59	.37	.18	.10
1957-58.....	.08	.13	.13	.09	.08	.20	.64	.20	.09	.06	.04	.03
1958-59.....	.06	.03	.01	.004	.001	.10	.68	.64	.68	.58	.32	.31
1959-60.....	.55	.36	.36	.30	.13	.40	1.11	1.29	1.16	.62	.12	.10

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955.....								68.3	2.48
1956.....	Apr. 1, 1956.	7.37	800	8.0	57.2	0.191	2.58	58.0	2.62
1957.....	May 29, 1957.	6.44	655	7.0	50.5	.168	2.30	53.2	2.42
1958.....	Apr. 6, 1958.	5.54	348	5.3	38.9	.130	1.77	33.7	1.53
1959.....	May 31, 1959.	(1)6.58	655	.3	75.7	.252	3.42	102	4.58
1960.....	Mar. 30, 1960.	7.76	800	14	143	.477	6.50	.....	.....

(1) Maximum gage-height 6.80 ft. Mar. 26, 1959 (backwater from ice).

Peak Discharge (base, 700 cfs)

1955-56: Apr. 1, about 800 cfs.

1956-57: No peak above base.

1957-58: No peak above base.

1958-59: No peak above base.

1959-60: Mar. 30, about 800 cfs; June 23 (10 a.m.) 775 cfs (6.70 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 7-9, Nov. 13 to Dec. 31, 1955; Jan. 1 to Apr. 3, Nov. 16, 17, Nov. 21 to Dec. 31, 1956; Jan. 1 to Mar. 30, Nov. 8-12, Nov. 18 to Dec. 31, 1957; Jan. 1 to Mar. 26, Nov. 24 to Dec. 31, 1958; Jan. 1 to Apr. 2, Nov. 6 to Dec. 31, 1959; Jan. 1 to Mar. 30, 1960. No gage-height record June 6 to July 9, 1957; July 6, 7, 9-21, July 30 to Aug. 24, 1959.

Winnebago River at Mason City, Iowa

LOCATION.—Lat. 43°10'00", long. 93°11'40", in NE¼NW¼ sec. 3, T. 96 N., R. 20 W., on right bank 650 ft. upstream from Thirteenth Street bridge in Mason City and 1.0 mile upstream from Willow Creek.

DRAINAGE AREA.—526 square miles (revised in 1956).

RECORDS AVAILABLE.—October 1932 to September 1960. Monthly discharge only for some periods, published in WSP 1308. Prior to October 1959, published as Lime Creek at Mason City.

GAGE.—Water-stage recorder. Concrete control since Nov. 6, 1934. Datum of gage is 1,069.59 ft. above mean sea level, datum of 1929. Prior to Oct. 15, 1934, wire-weight gage at datum 6.47 ft. lower. Oct. 15, to Nov. 6, 1934, staff gage at different datum, and Nov. 7, 1934, to Mar. 22, 1935, staff gage at present datum.

AVERAGE DISCHARGE.—28 years, 201 cfs.

EXTREMES.—1932-60: Maximum discharge, 10,800 cfs Mar. 30, 1933 (gage height, 15.7 ft., present datum); minimum daily, 2.5 cfs Dec. 29-31, 1933, Aug. 5, 1934.

REMARKS.—Bankfull stage is about gage height, 12 feet.

REVISIONS (water years).—WSP 1558: 1933-37, 1943(M), 1945, 1948.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	26	22	14	11	*14	19	1,190	*168	135	277	1,000	55
2	26	*21	15	12	14	25	1,020	212	135	466	760	50
3	26	20	17	13	14	31	710	274	125	235	594	47
4	28	22	19	14	14	87	509	381	107	148	452	*47
5	*35	25	18	*13	13	112	394	374	91	115	388	71
6	35	21	17	*15	14	160	329	355	*82	96	316	62
7	32	15	18	13	15	54	274	310	78	84	235	53
8	28	20	17	12	15	40	226	252	67	80	*197	49
9	28	22	16	12	15	62	188	221	58	73	184	46
10	29	27	14	13	15	61	207	188	55	64	138	47
11	26	26	12	13	14	43	188	176	50	57	118	47
12	22	26	10	13	15	36	176	168	46	55	110	47
13	19	28	11	13	15	34	145	160	42	52	115	44
14	19	18	12	13	15	31	138	145	39	41	128	42
15	21	32	11	13	15	28	125	132	36	42	132	40
16	22	16	10	12	15	27	112	122	35	40	229	39
17	23	21	9.2	12	16	29	118	112	35	37	290	39
18	25	19	8.7	12	15	31	107	112	45	*37	188	37
19	23	22	9.2	12	15	34	104	88	102	51	138	37
20	23	24	10	12	15	46	104	84	152	99	115	36
21	22	26	11	13	16	77	88	82	115	110	99	35
22	21	28	11	13	15	148	80	78	86	145	86	32
23	23	27	11	13	15	132	82	69	67	132	78	30
24	24	25	11	13	16	132	78	64	57	99	67	40
25	23	24	10	13	16	156	71	60	50	78	60	20
26	22	22	11	13	15	390	69	55	59	65	55	30
27	22	19	13	14	16	860	82	52	64	57	55	30
28	23	14	14	14	16	*1,120	88	58	112	50	62	28
29	23	13	14	14	*17	955	112	75	112	49	58	26
30	22	*14	13	14	.....	910	145	82	88	56	58	25
31	22	.....	12	14	.....	932	.....	125	.....	625	64	.....

Winnebago River at Mason City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	24	*27	31	29	13	47	82	42	527	176	60	44
2	26	28	34	26	13	37	78	39	407	160	55	42
3	*26	27	36	26	13	37	71	36	336	160	53	43
4	25	27	*39	25	14	34	*73	32	257	193	47	34
5	24	31	43	22	14	32	73	31	*202	164	46	*27
6	26	32	32	21	15	*29	64	32	176	141	43	40
7	22	32	28	21	15	27	69	31	164	128	*40	40
8	24	29	26	20	17	26	71	*32	156	112	36	32
9	23	29	27	18	18	26	71	35	152	99	37	27
10	23	27	25	*15	18	26	67	42	176	*88	34	28
11	21	26	28	14	22	30	67	40	230	82	32	39
12	25	26	25	14	26	36	77	39	168	80	29	22
13	30	27	23	13	31	43	62	44	148	65	40	30
14	31	29	23	13	30	62	64	155	172	62	55	31
15	34	32	24	13	35	34	62	440	156	65	55	34
16	34	22	24	13	28	39	57	348	152	62	55	30
17	34	28	25	13	26	43	55	290	145	60	53	30
18	32	34	24	13	26	44	55	274	135	49	55	28
19	34	35	24	13	24	52	57	226	128	55	53	31
20	30	35	24	13	23	49	58	197	138	60	50	31
21	27	23	26	17	22	62	55	546	141	64	46	36
22	28	17	26	15	20	67	55	633	291	135	43	34
23	28	26	25	14	19	205	55	407	414	107	53	34
24	27	26	25	14	28	594	46	284	310	107	58	32
25	30	27	25	14	112	329	42	252	252	112	50	31
26	30	25	27	13	72	221	53	485	336	107	57	29
27	27	26	28	13	50	176	52	459	388	107	43	28
28	27	27	30	13	52	152	49	336	316	99	46	26
29	28	27	29	13	.....	128	47	440	252	99	62	26
30	29	28	28	13	.....	102	44	980	207	91	58	26
31	28	.....	31	13	.....	86	.....	760	.....	75	47	.....
1957-58												
1	26	30	57	38	40	193	60	104	65	43	36	14
2	*27	46	62	36	42	135	73	102	58	42	39	15
3	22	46	53	32	40	107	91	102	107	78	42	16
4	21	43	*50	30	40	104	128	102	*754	193	39	18
5	43	43	50	29	*39	91	246	104	650	184	*40	15
6	21	*42	52	28	36	*78	348	*102	355	172	36	16
7	22	49	50	27	30	91	290	93	280	145	34	14
8	26	39	50	*26	29	82	240	88	184	132	32	12
9	26	15	47	26	26	75	*202	84	160	*99	29	*14
10	26	28	40	28	24	78	172	78	135	86	26	15
11	25	30	26	28	22	73	164	69	112	78	27	17
12	26	36	31	29	19	82	141	64	96	71	27	14
13	26	42	36	30	20	84	132	55	88	62	22	12
14	26	40	39	34	19	86	125	53	75	62	27	16
15	27	40	40	36	18	82	118	50	65	78	24	19
16	29	52	43	37	18	69	110	49	60	88	14	20
17	26	53	43	37	17	60	102	50	58	80	22	22
18	25	46	46	37	17	67	96	50	58	73	20	16
19	25	23	50	36	18	69	91	47	55	65	21	18
20	25	36	53	36	19	64	88	43	40	58	19	18
21	24	43	55	36	19	62	88	42	47	53	19	19
22	29	40	57	36	19	67	86	43	47	50	17	18
23	36	37	62	37	23	73	84	40	50	47	17	23
24	36	39	67	39	104	75	107	36	53	34	17	18
25	34	46	71	42	244	73	122	34	65	40	17	22
26	31	53	58	42	316	71	132	35	62	47	20	21
27	31	60	55	43	348	71	132	49	57	43	17	17
28	29	60	52	42	296	71	132	57	49	42	18	19
29	29	57	48	42	.....	62	115	49	46	39	18	18
30	29	38	45	42	.....	58	107	43	44	36	18	18
31	27	.....	41	40	.....	58	.....	65	.....	35	17	.....

Winnebago River at Mason City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	13	18	*13	14	7.9	9.5	460	67	1,840	490	41	330
2	12	17	12	13	*7.2	12	400	65	1,680	410	41	675
3	13	16	15	12	7.2	*9.5	370	63	1,400	335	46	608
4	14	17	16	11	7.6	9.5	286	63	1,100	291	48	472
5	11	*21	14	10	7.6	10	251	*67	*855	268	42	380
6	*12	17	12	9.5	7.6	10	216	99	630	*246	39	300
7	29	17	12	*10	7.6	10	200	117	486	221	37	242
8	24	19	12	10	7.6	11	188	140	385	221	36	200
9	20	18	12	10	7.6	12	168	147	315	251	35	172
10	22	16	12	9.5	7.6	12	150	147	264	246	37	147
11	19	18	12	9.5	7.6	13	133	136	221	192	37	130
12	20	18	12	9.5	*7.6	14	123	130	200	165	37	117
13	18	21	12	10	6.8	16	117	126	172	143	35	107
14	18	24	11	10	6.8	17	107	120	165	126	39	99
15	16	15	10	10	6.6	16	99	110	158	110	38	89
16	16	16	10	10	6.5	15	94	104	136	82	39	84
17	16	24	10	10	6.8	14	110	96	120	86	55	82
18	16	30	11	10	7.2	15	140	84	110	82	39	79
19	17	24	13	9.5	6.6	21	154	79	110	84	28	84
20	14	24	14	9.5	7.0	26	161	91	99	86	24	89
21	14	24	14	9.5	7.2	31	150	*2,240	92	77	32	92
22	17	24	14	9.5	7.6	30	130	*2,140	86	71	138	*150
23	18	25	15	9.1	8.3	88	117	1,780	82	63	1,390	154
24	16	21	16	8.7	7.6	250	104	1,560	79	48	*1,560	150
25	14	25	15	8.7	7.9	*855	96	1,250	94	45	1,350	172
26	16	13	15	8.3	7.9	652	86	1,080	123	49	1,300	282
27	17	14	16	8.3	9.1	554	84	950	130	*48	1,200	486
28	18	15	16	8.3	9.5	720	84	698	150	45	742	495
29	18	15	16	8.3	.....	698	77	1,150	192	51	608	490
30	17	14	16	7.9	.....	*742	69	975	335	46	486	440
31	17	.....	15	7.9	.....	540	.....	2,200	.....	43	385	.....
1959-60												
1	410	212	196	345	75	43	925	273	305	282	*57	96
2	400	204	188	291	75	42	900	255	278	268	54	73
3	415	204	192	184	75	43	698	238	246	246	53	59
4	400	221	200	143	75	41	558	212	216	221	49	53
5	375	246	184	238	79	38	472	*229	188	200	48	48
6	345	208	165	286	79	37	425	355	165	180	48	42
7	320	188	150	291	77	37	*370	410	150	*158	56	39
8	296	238	158	242	84	38	325	350	136	136	51	38
9	282	255	161	216	99	38	264	300	123	133	49	38
10	268	278	150	200	92	38	238	260	*114	123	49	37
11	251	310	158	184	77	38	225	229	110	117	49	38
12	229	300	154	184	75	38	208	204	110	117	48	39
13	216	251	150	184	71	38	216	188	110	110	43	39
14	212	165	150	188	65	38	*264	165	104	104	42	38
15	204	184	*161	176	63	39	296	147	102	99	42	*36
16	192	225	172	165	*67	39	315	154	326	92	41	50
17	180	*158	180	161	65	*41	380	168	380	82	43	37
18	165	204	165	*147	63	41	340	176	360	120	48	39
19	*165	204	165	123	57	41	315	300	335	126	51	38
20	158	196	161	110	56	42	310	350	360	96	40	32
21	147	196	161	104	56	43	305	513	375	79	49	67
22	147	200	130	94	53	43	282	585	335	69	46	120
23	158	221	147	86	54	45	268	495	468	71	42	94
24	168	234	130	79	70	45	264	445	518	71	39	136
25	168	216	150	77	49	45	286	420	440	79	43	165
26	192	176	196	73	49	46	390	450	380	204	49	126
27	225	150	300	73	46	503	330	415	340	150	45	99
28	234	154	720	71	48	1,780	291	385	320	107	183	84
29	229	172	698	71	46	1,250	305	360	315	84	554	75
30	221	200	562	71	.....	1,500	305	340	300	69	255	69
31	212	.....	445	73	.....	1,100	.....	325	.....	61	143	.....

Winnabago River at Mason City, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	24.6	22.0	12.9	12.9	15.0	220	242	156	77.5	117	212	41.0
1956-57	27.7	27.8	27.9	16.4	28.4	92.7	61.0	258	234	102	48.1	32.2
1957-58	26.9	41.7	49.3	34.9	67.9	81.0	137	63.9	131	76.0	24.9	17.1
1958-59	16.8	19.3	13.3	9.73	7.50	175	164	583	394	152	321	247
1959-60	245	212	226	159	66.9	232	369	313	267	131	78.0	64.8

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.047	0.042	0.025	0.025	0.029	0.418	0.460	0.297	0.147	0.222	0.403	0.078
1956-57	.053	.053	.053	.031	.054	.176	.116	.490	.445	.194	.091	.061
1957-58	.051	.079	.094	.066	.129	.154	.260	.121	.249	.144	.047	.033
1958-59	.032	.037	.025	.018	.014	.333	.312	1.11	.749	.289	.610	.470
1959-60	.466	.403	.430	.302	.127	.441	.702	.595	.508	.249	.148	.123

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.05	0.05	0.03	0.03	0.03	0.48	0.51	0.34	0.16	0.26	0.46	0.09
1956-57	.06	.06	.06	.04	.06	.20	.13	.56	.50	.2	.11	.07
1957-58	.06	.09	.11	.08	.13	.18	.29	.14	.28	.17	.05	.04
1958-59	.04	.04	.03	.02	.01	.38	.35	1.28	.83	.33	.70	.52
1959-60	.54	.45	.49	.35	.14	.51	.78	.69	.57	.29	.17	.14

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								153	3.95
1956	Apr. 1, 1956	4.15	1,360	8.7	96.4	0.183	2.49	98.5	2.54
1957	May 30, 1957	3.58	1,090	13	80.0	.152	2.07	82.9	2.15
1958	June 4, 1958	3.83	955	12	62.4	.119	1.62	56.7	1.47
1959	May 21, 1959	7.33	3,040	6.5	176	.335	4.53	230	5.90
1960	Mar. 28 1960	(1)5.98	2,320	32	197	.375	5.12	.....	.....

(1) Maximum gage height, 6.22 ft. March 31, 1960 (backwater from ice).

Peak Discharge (base, 2,000 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: No peak above base.

1958-59: May 21 (5 p.m.) 3,040 cfs (7.33 ft.); May 31 (5 p.m.) 2,560 cfs (6.40 ft.).

1959-60: Mar. 28 (1:30 a.m.) 2,320 cfs (5.98 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 25-29, Dec. 10, 12-14, 17-20, 31, 1955; Jan. 1-3, 15-21, Dec. 7, 13-20, 23-25, 1956; Jan. 7-18, Jan. 23 to Feb. 1, Dec. 10-13, 27-31, 1957; Jan. 1-3, 6, Feb. 13-18, Dec. 5, 8, 14, 29, 1958; Jan. 2-4, Feb. 15, 19-21, Mar. 16, Apr. 1, 2, 1959; Mar. 30, 31, 1960.

Clear Lake at Clear Lake, Iowa

LOCATION.—Lat. 43°08'01", long. 93°22'57", in SE¼NE¼ sec. 13, T. 96 N., R. 22 W., at the public bathing beach in town of Clear Lake.

DRAINAGE AREA.—22.6 square miles.

RECORDS AVAILABLE.—May 1933 to September 1960. (No winter records prior to 1956).

GAGE.—Water-stage recorder. Datum of gage is 1,222.24 ft. above mean sea level, datum of 1929, and 4.60 ft. below crest of spillway of dam at outlet. Prior to July 14, 1936, staff gage in wooden well at State fish hatchery at same datum. July 14, 1936, to Apr. 20, 1944, staff gage at Clear Lake State Park at same datum. Apr. 21, 1944 to Nov. 7, 1951, staff gage three-quarters of a mile west of State fish hatchery at same datum. Nov. 8, 1951 to Nov. 23, 1958, staff or Kinnison tape gage in wooden well at State fish hatchery at same datum. Nov. 24, 1958 to June 24, 1959, wire-weight gage on bridge two miles west of fish hatchery at same datum.

EXTREMES.—1933-60: Maximum gage height observed, 5.94 ft. July 3, 1951; minimum observed, 1.16 ft. Dec. 20, 22-24, 1958.

Daily Gage Height, in Feet, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	3.77		3.50			4.16	3.80	3.86			3.53	
2		3.60	3.51		3.42	4.26	3.81			3.47	3.57	
3	3.76	3.59		3.52	3.42	4.24					3.53	
4	3.74	3.58			3.41		3.87					3.26
5	3.87	3.58		3.52	3.41	3.79	3.86			3.44		
6	3.85		3.52				3.87		3.81		3.54	3.26
7			3.52		3.42	3.65				3.46		3.57
8			3.52		3.42	3.63					3.56	
9			3.52							3.46		
10	3.81	3.54	3.53								3.52	
11		3.54								3.44	3.51	
12	3.79		3.53						3.67	3.44		
13	3.76		3.53			3.69			3.66	3.42	3.50	
14		3.52	3.53			3.69			3.66	3.40	3.49	
15	3.71		3.53			3.69			3.62			
16		3.55	3.53			3.69			3.60		3.46	
17	3.69		3.53							3.37		3.48
18	3.68									3.40	3.47	
19	3.68	3.52	3.53			3.69			3.56	3.46		
20	3.67		3.53						3.56			
21	3.65	3.52	3.52			3.74						
22	3.66	3.52	3.52			3.74						
23		3.52	3.52			3.74			3.57	3.40		
24	3.67	3.52	3.52							3.41		3.10
25	3.67	3.52								3.41		
26	3.65	3.52				3.75				3.41		
27	3.65		3.51		3.76	3.76			3.44			
28	3.64	3.51	3.51			3.80			3.45	3.41		
29	3.62	3.51	3.51		4.10	3.81			3.43			
30		3.51	3.52			3.80			3.44	3.43		
31			3.52							3.60		

Clear Lake at Clear Lake, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1		2.85								3.15	2.86	
2							2.88			3.15	2.85	
3	2.99		2.79						3.04	3.19	2.82	
4							2.96		3.04			2.67
5							2.89		3.02	3.16		2.67
6	2.89					2.98		2.70	3.01	3.13		
7						2.98			3.01		2.74	
8	2.87					2.98	2.90	2.65		3.10		
9						2.98	2.89	2.67		3.08		
10							2.90	2.64	3.01	3.08	2.69	2.64
11						3.00	2.89	2.64	3.01	3.06		2.68
12	2.86					3.00	2.88		2.99	3.08	2.72	
13						3.06	2.87			3.06	2.73	2.64
14						3.13					2.71	2.66
15						3.16	2.86		3.04		2.70	2.66
16	2.94						2.86	2.79				
17							2.85	2.90	3.08	2.99	2.67	2.67
18						3.22	2.88	2.87		2.99		2.67
19						3.20	2.89			2.97	2.64	
20						3.23	3.10	2.87	3.17			2.60
21						3.25		3.04			2.61	
22						3.23	2.84		3.23	2.97	2.61	2.60
23						2.94	2.89	2.97				2.58
24							2.88	2.95	3.14			
25						2.93	2.85	2.95	3.17	2.93		
26						2.92	2.85		3.13	2.91	2.63	2.52
27						2.93		3.02		2.91		
28						2.93		3.04	3.18			
29						2.92	2.83		3.17	2.88		
30										2.88		
31								3.09		2.87		
1957-58												
1					2.98						2.48	
2	2.45		2.59		2.95		2.68			2.38	2.40	
3	2.43		2.60	2.64		2.62	2.67	2.60	2.54	2.28		
4	2.41	2.45	2.58	2.61		2.63			2.58	2.30		
5			2.58		2.89	2.63		2.58	2.56			
6			2.58	2.60	2.86	2.64		2.58				
7	2.38	2.48	2.57	2.60	2.83			2.56		2.35		
8	2.39		2.62			2.65		2.54		2.40		
9	2.38		2.57	2.60				2.50	2.62	2.35		
10	2.38		2.57	2.59		2.65	2.72			2.29		
11	2.37	2.44	2.57		2.58	2.65			2.60	2.29		
12		2.44	2.58		2.50	2.66		2.50	2.59			
13		2.44	2.63	2.78	2.46	2.67		2.50	2.56			
14	2.37	2.44			2.43	2.65		2.50		2.35		
15	2.37	2.44								2.35		
16			2.60	2.97					2.54	2.30		
17			2.58	2.98		2.65			2.55	2.29		
18			2.58			2.65			2.55	2.29		
19		2.49	2.58		2.25	2.64			2.55			
20		2.55	2.58		2.15	2.65						
21		2.59	2.58	3.04								
22			2.58	3.07	2.15	2.66			2.51	2.25		
23			3.04	2.11						2.24		
24			2.58	3.01	2.27			2.48		2.22		
25			2.57	3.00	2.59	2.65		2.47		2.20		
26		2.60				2.65			2.54	2.28		
27		2.58	2.58			2.64			2.50			
28		2.58	2.58	2.96	3.08							
29		2.58	2.59	2.97	2.73	2.64		2.40	2.49	2.30		
30			2.59	2.99		2.65		2.40		2.25		
31	2.44		2.59	3.00		2.65		2.40	2.48	2.28		
			2.61	3.00		2.64				2.28		

Clear Lake at Clear Lake, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1			1.22					1.57	2.29	2.04	1.69	1.81
2			1.21	1.21	1.20	1.31			2.30	2.03	1.70	1.94
3			1.22	1.21	1.20	1.35	1.65		2.28	2.01	1.69	1.90
4			1.22	1.21	1.20	1.37		1.56	2.27	2.00	1.69	1.85
5			1.22	1.21	1.20			1.56		1.99	1.68	1.84
6			1.22	1.21	1.20			1.57		1.97	1.68	1.84
7				1.20			1.69			1.96	1.64	1.83
8			1.21	1.19				1.57	2.23	1.99	1.61	1.82
9			1.21	1.18	1.22					2.00	1.61	1.80
10			1.21	1.18	1.27					1.98	1.61	1.74
11			1.21		1.28				2.21	1.95	1.60	1.72
12			1.20	1.19	1.28			1.56		1.94	1.60	1.70
13			1.20	1.19	1.28			1.56	2.20	1.92	1.58	1.69
14				1.20	1.28		1.67	1.56		1.90	1.59	1.68
15	1.42		1.19	1.19			1.67	1.56	2.16	1.89	1.01	1.64
16			1.19	1.19	1.32		1.67	1.56		1.88	1.61	1.62
17			1.18	1.19	1.31				2.05	1.87	1.59	1.63
18			1.18		1.32			1.55		1.86	1.58	1.62
19			1.17	1.18	1.32				2.03	1.88	1.57	1.64
20			1.16	1.18	1.30					1.87	1.57	1.68
21					1.30		1.69	1.92		1.85	1.56	1.68
22			1.16					1.95	1.91	1.84	1.82	1.81
23			1.16		1.32			1.96		1.83	1.89	1.82
24		1.27	1.16	1.19	1.33				1.91	1.79	1.88	1.80
25		1.24			1.32			2.02	1.91	1.77	1.87	1.84
26		1.23	1.22	1.20	1.32			2.02	1.91	1.76	1.85	1.90
27			1.22	1.20	1.32			2.05	1.93	1.73	1.85	1.90
28		1.23		1.20				2.05	1.94	1.73	1.83	1.90
29		1.22	1.22	1.21				2.07	1.92	1.72	1.83	1.89
30			1.22	1.21		1.65	1.57		1.99	1.71	1.81	1.87
31			1.21	1.21		1.67				1.70	1.79	
1959-60												
1	1.85	1.80	1.91	2.08	2.08	2.10	2.29	2.37	2.59	2.49	2.11	2.10
2	1.88	1.78	1.91	2.10	2.08	2.10	2.31	2.37	2.58	2.49	2.10	2.09
3	1.89	1.77	1.91	2.10	2.08	2.11	2.31	2.37	2.55	2.49	2.09	2.07
4	1.88	1.77	1.91	2.09	2.09	2.11	2.32	2.37	2.53	2.46	2.07	2.05
5	1.87	1.88	1.91	2.09	2.11	2.10	2.32	2.38	2.51	2.44	2.06	2.04
6	1.87	1.89	1.91	2.09	2.11	2.10	2.33	2.39	2.49	2.42	2.06	2.02
7	1.87	1.88	1.91	2.09	2.11	2.11	2.33	2.45	2.46	2.40	2.08	2.01
8	1.95	1.88	1.91	2.09	2.11	2.11	2.34	2.42	2.44	2.38	2.05	1.97
9	1.88	1.87	1.91	2.09	2.11	2.13	2.30	2.40	2.42	2.37	2.03	1.94
10	1.87	1.88	1.91	2.09	2.11	2.14	2.30	2.38	2.41	2.37	2.00	1.92
11	1.88	1.87	1.91	2.09	2.10	2.15	2.33	2.38	2.39	2.37	1.99	1.89
12	1.81	1.86	1.91	2.09	2.10	2.15	2.29	2.38	2.38	2.37	1.98	1.87
13	1.80	1.89	1.91	2.09	2.09	2.16	2.33	2.38	2.37	2.35	1.97	1.85
14	1.80	1.89	1.91	2.09	2.08	2.16	2.32	2.37	2.38	2.33	1.94	1.84
15	1.80	1.89	1.91	2.10	2.08	2.16	2.32	2.36	2.40	2.32	1.92	1.82
16	1.80	1.89	1.92	2.10	2.08	2.17	2.30	2.38	2.49	2.30	1.88	1.82
17	1.79	1.88	1.92	2.10	2.08	2.17	2.34	2.39	2.50	2.28	1.91	1.83
18	1.77	1.87	1.92	2.10	2.08	2.17	2.33	2.40	2.50	2.33	1.95	1.84
19	1.77	1.88	1.92	2.10	2.08	2.17	2.33	2.48	2.48	2.32	1.97	1.85
20	1.73	1.88	1.93	2.09	2.08	2.17	2.33	2.49	2.47	2.30	2.00	1.85
21	1.73	1.88	1.93	2.09	2.10	2.17	2.33	2.58	2.51	2.28	1.99	1.87
22	1.77	1.88	1.94	2.09	2.10	2.16	2.33	2.60	2.52	2.25	1.98	1.95
23	1.82	1.88	1.95	2.09	2.10	2.16	2.33	2.60	2.59	2.23	1.96	1.96
24	1.82	1.89	1.95	2.09	2.10	2.16	2.31	2.58	2.56	2.22	1.96	2.03
25	1.77	1.89	1.96	2.09	2.10	2.16	2.34	2.59	2.56	2.23	1.97	2.04
26	1.78	1.91	1.97	2.09	2.10	2.16	2.40	2.63	2.54	2.26	1.98	2.03
27	1.79	1.91	2.00	2.09	2.10	2.17	2.38	2.62	2.53	2.25	1.97	2.01
28	1.78	1.91	2.07	2.09	2.10	2.21	2.36	2.59	2.53	2.22	2.02	2.01
29	1.77	1.90	2.08	2.08	2.10	2.24	2.40	2.60	2.52	2.21	2.11	1.99
30	1.77	1.91	2.08	2.08		2.28	2.39	2.60	2.49	2.16	2.11	1.98
31	1.80		2.08	2.08		2.28		2.60		2.14	2.11	

Shell Rock River at Shell Rock, Iowa

LOCATION.—Lat. 42°42'50", long. 92°34'55", in NW¼NE¼ sec. 11, T. 91 N., R. 15 W., on right bank 400 ft. upstream from bridge on State Highway 3 in Shell Rock and 11 miles upstream from mouth.

DRAINAGE AREA.—1,746 square miles (revised in 1956).

RECORDS AVAILABLE.—June 1953 to September 1960.

GAGE.—Water-stage recorder. Rock fill dam since Oct. 19, 1957. Datum of gage is 885.34 ft. above mean sea level, datum of 1929.

AVERAGE DISCHARGE.—7 years, 476 cfs.

EXTREMES.—1953-60: Maximum discharge, 21,300 cfs June 22, 1954 (gage height, 14.00 ft.); minimum daily, 39 cfs Feb. 4-9, 1959.

Flood of 1856 reached a stage of 17.7 ft. at bridge 400 ft. downstream, from information furnished by Corps of Engineers (discharge about 45,000 cfs).

REMARKS.—Diurnal fluctuation at low stages caused by powerplant at Greene. Records of water temperatures for the period June 1953 to September 1960 are published in reports of U. S. Geological Survey. Bankfull stage is about gage height, 10 ft.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	147	*151	82	96	93	150	1,620	*387	303	215	860	195
2.....	140	129	90	88	91	205	2,270	550	332	232	1,470	164
3.....	96	136	100	83	107	270	2,340	590	305	400	1,180	*126
4.....	*152	142	95	96	110	240	1,740	738	*299	710	958	160
5.....	128	131	100	*91	102	190	1,350	930	335	610	820	231
6.....	224	140	97	86	102	155	1,100	902	312	430	642	233
7.....	200	104	105	93	99	135	958	848	232	300	*620	235
8.....	181	145	110	87	107	155	848	792	265	249	475	210
9.....	156	140	105	82	107	185	765	710	267	236	458	172
10.....	102	124	71	91	107	175	694	638	170	244	369	130
11.....	163	127	81	91	107	150	666	560	205	206	356	191
12.....	138	113	85	88	107	180	628	540	241	194	277	162
13.....	136	150	83	88	110	177	575	551	172	165	285	164
14.....	133	96	85	92	108	173	535	489	188	171	344	155
15.....	133	182	90	92	102	168	495	475	122	159	342	162
16.....	136	117	82	95	98	160	460	445	183	*105	370	180
17.....	94	105	77	91	102	158	441	387	122	164	277	96
18.....	131	94	82	88	107	238	410	387	144	141	434	147
19.....	129	85	90	91	107	188	392	356	190	133	396	144
20.....	128	113	74	88	107	204	378	344	159	151	316	141
21.....	128	113	80	93	102	287	356	308	200	172	266	130
22.....	124	140	83	91	94	309	340	327	265	270	274	126
23.....	130	120	91	90	98	291	312	258	231	210	217	131
24.....	99	110	96	90	107	383	284	255	214	296	201	88
25.....	142	100	90	91	113	334	201	253	119	208	193	135
26.....	131	120	85	92	113	373	219	244	196	247	195	127
27.....	133	105	91	95	110	651	290	220	171	199	116	123
28.....	134	135	91	98	107	*1,560	279	159	204	166	220	118
29.....	171	*120	94	102	*116	*1,740	315	248	165	156	229	117
30.....	140	96	97	105	.....	1,560	364	318	208	122	193	127
31.....	94	.....	88	*98	.....	1,440	.....	270	.....	198	257	.....

Shell Rock River at Shell Rock, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	82	154	125	110	89	278	317	174	1,620	560	281	254
2	*89	110	121	105	92	177	291	181	1,290	540	236	142
3	104	118	95	105	93	208	*269	166	1,100	520	234	182
4	98	119	*140	108	90	172	247	163	*908	640	214	*245
5	98	91	135	95	*87	*211	251	143	737	550	132	175
6	107	121	115	90	95	174	263	90	699	470	*201	169
7	115	127	105	88	97	178	263	*139	640	420	196	173
8	84	142	96	*93	96	149	161	130	453	380	170	169
9	103	143	100	140	101	151	276	128	451	*350	169	103
10	107	160	102	160	114	164	264	133	497	320	166	187
11	109	159	110	90	116	130	246	143	898	310	164	181
12	108	94	100	82	141	214	234	142	670	307	126	175
13	107	87	92	75	155	189	232	93	552	280	189	166
14	113	163	90	80	180	207	230	174	516	266	171	157
15	86	185	94	65	170	208	158	236	480	201	198	174
16	167	133	92	76	190	276	250	433	450	276	215	97
17	134	148	89	76	180	282	232	603	420	340	226	170
18	166	147	90	72	126	249	303	550	400	166	224	159
19	164	97	90	70	140	278	162	486	400	258	150	155
20	160	121	94	70	135	255	164	464	430	260	231	144
21	163	110	104	90	130	218	195	432	450	254	193	142
22	95	100	110	105	130	222	161	882	800	244	185	153
23	144	105	110	120	123	250	238	1,100	1,100	294	200	100
24	91	105	96	90	136	376	209	84	1,000	350	216	135
25	81	126	96	90	161	1,060	206	683	800	337	225	121
26	162	95	92	100	244	884	204	563	1,000	314	151	138
27	165	105	110	90	364	661	194	947	1,100	318	251	132
28	125	110	110	85	326	575	188	986	900	361	211	131
29	93	110	105	86	.....	330	138	847	740	253	201	149
30	152	120	100	94	.....	322	225	1,940	640	327	219	89
31	*155	.....	95	87	.....	337	.....	2,130	.....	257	235	.....
1957-58												
1	*123	155	235	160	150	641	305	443	225	190	120	74
2	123	190	150	165	150	526	255	422	173	175	110	58
3	143	190	*270	175	145	433	277	407	*270	160	95	112
4	144	195	245	190	*140	381	317	391	716	205	95	115
5	140	*230	210	180	140	.....	556	360	*1,480	190	*140	142
6	145	175	245	145	140	320	876	*390	1,140	310	235	97
7	84	135	200	185	130	316	1,140	350	834	300	222	70
8	122	180	195	*150	135	263	1,010	330	648	*300	185	65
9	132	180	175	165	135	287	*869	315	526	270	160	76
10	131	160	160	135	130	286	799	295	459	250	167	107
11	136	140	140	150	125	242	736	285	396	225	85	102
12	135	160	165	160	120	286	694	195	345	210	221	93
13	146	240	180	175	115	293	660	270	311	215	236	84
14	83	*185	190	170	110	284	654	210	203	100	149	97
15	155	205	210	170	105	308	597	205	150	260	180	97
16	163	205	190	180	100	318	560	175	150	210	149	104
17	155	200	170	190	100	245	531	165	180	245	155	107
18	159	140	210	190	100	296	503	200	195	270	80	107
19	160	200	260	190	100	239	497	110	195	270	109	84
20	85	245	270	175	100	251	465	235	210	225	119	121
21	100	185	270	165	110	248	396	165	200	125	110	124
22	170	150	240	170	125	233	427	170	185	245	86	86
23	155	180	200	175	170	255	386	185	90	175	80	121
24	180	190	285	185	230	211	401	180	210	165	103	100
25	190	240	260	160	609	284	417	190	210	155	75	107
26	175	245	230	160	827	282	470	80	175	130	*67	110
27	185	270	220	135	687	277	492	210	190	215	84	100
28	145	360	230	170	674	280	492	120	180	65	78	115
29	230	215	210	165	.....	271	475	105	175	180	86	74
30	175	115	190	160	.....	272	448	210	95	135	81	100
31	180	.....	180	155	.....	193	.....	180	.....	125	97	.....

Shell Rock River at Shell Rock, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	*100	90	68	54	41	70	1,890	301	5,240	1,890	203	914
2.....	96	90	78	54	40	90	1,710	296	3,880	1,890	232	1,690
3.....	90	80	84	54	40	120	1,540	291	3,040	1,600	259	1,770
4.....	100	90	80	52	39	150	1,380	282	2,610	1,330	254	1,430
5.....	100	84	74	50	39	100	1,230	273	2,190	1,140	237	1,140
6.....	82	84	70	*49	39	80	1,140	291	1,830	994	228	970
7.....	87	90	64	47	39	70	986	301	1,540	876	216	820
8.....	110	92	58	46	39	76	890	381	1,330	792	212	694
9.....	120	94	52	45	39	80	806	448	1,100	736	204	597
10.....	110	84	47	44	40	80	701	454	922	750	176	526
11.....	110	90	44	44	41	80	634	492	806	750	216	475
12.....	96	82	42	44	43	200	584	433	715	648	193	443
13.....	96	90	42	44	45	350	578	422	628	591	188	422
14.....	105	92	42	44	47	520	520	407	560	501	162	417
15.....	105	86	42	44	49	400	514	391	554	486	208	391
16.....	80	105	43	44	49	300	355	376	537	448	178	360
17.....	90	135	44	44	49	250	391	345	351	422	145	360
18.....	92	200	45	45	48	200	433	340	396	401	183	286
19.....	96	160	47	45	47	170	470	320	396	381	165	263
20.....	82	130	48	45	46	*350	548	955	381	371	167	330
21.....	92	120	50	45	46	910	520	725	360	371	168	371
22.....	95	110	52	45	46	1,200	486	2,640	350	350	1,090	371
23.....	94	110	52	45	46	1,500	465	2,850	*320	301	1,770	776
24.....	94	105	54	44	47	2,000	438	2,610	330	320	2,790	764
25.....	90	96	56	44	*48	3,000	422	2,370	834	296	2,550	628
26.....	85	*85	56	44	49	*4,170	376	2,010	497	277	2,130	687
27.....	80	76	56	43	52	*6,570	386	1,770	648	237	*1,830	1,180
28.....	*76	70	56	42	58	3,900	*371	*1,770	1,123	282	1,650	1,540
29.....	76	64	56	42	.....	2,920	335	1,770	1,010	*631	1,430	1,430
30.....	76	60	56	*41	.....	2,850	316	2,250	1,650	514	1,230	*1,330
31.....	90	.....	56	41	.....	2,490	.....	3,110	.....	311	1,100	.....
1959-60												
1.....	1,210	578	750	1,100	322	268	2,800	1,400	1,400	1,130	340	638
2.....	1,130	596	668	800	363	240	2,370	1,250	1,250	1,070	434	462
3.....	1,140	584	650	560	336	220	2,230	*1,150	1,160	1,040	*304	412
4.....	1,130	650	644	428	345	200	1,970	1,030	1,060	964	268	363
5.....	1,150	996	620	396	363	223	*1,670	884	972	876	268	322
6.....	1,080	964	510	524	354	227	1,500	1,740	892	*806	264	309
7.....	1,010	785	400	828	358	190	1,350	3,840	813	736	286	304
8.....	932	680	430	860	340	255	1,250	3,580	*764	674	296	278
9.....	884	868	470	799	390	231	1,110	1,850	715	662	423	354
10.....	836	916	500	729	360	215	996	1,500	687	626	406	204
11.....	799	948	512	687	350	208	980	1,300	650	644	318	190
12.....	757	1,040	494	680	350	223	868	1,160	632	632	162	110
13.....	715	980	498	662	354	235	844	1,040	632	584	201	*235
14.....	680	715	530	620	345	198	860	972	608	506	278	204
15.....	638	500	512	602	318	*227	996	884	608	456	255	219
16.....	614	540	*524	590	310	227	1,120	892	484	512	268	235
17.....	584	462	530	506	300	219	1,790	924	814	494	255	223
18.....	548	*572	536	536	290	223	1,790	916	1,100	467	296	255
19.....	530	680	512	472	273	235	1,450	972	996	489	340	255
20.....	500	750	500	*445	286	239	1,300	1,400	980	518	322	273
21.....	484	715	530	412	268	215	1,200	1,790	1,220	484	372	304
22.....	472	668	494	396	247	247	1,160	2,730	1,350	445	340	368
23.....	467	757	450	390	314	247	1,100	2,510	1,300	412	327	668
24.....	484	785	450	372	286	255	1,030	2,100	2,440	350	282	668
25.....	484	694	467	372	273	247	1,040	1,910	2,300	386	282	980
26.....	536	580	484	390	*264	260	3,200	1,910	1,790	412	296	1,100
27.....	566	510	668	372	264	472	2,100	2,100	1,620	489	336	844
28.....	590	450	1,220	354	264	5,700	1,500	1,910	1,450	602	332	668
29.....	*620	412	2,160	350	201	8,900	1,400	1,730	1,300	524	574	566
30.....	620	560	1,070	354	.....	8,000	1,620	1,620	1,220	467	1,400	530
31.....	602	.....	1,450	350	.....	*4,340	.....	1,450	.....	340	884	.....

Shell Rock River at Shell Rock, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	138	123	89.4	91.7	105	406	721	467	217	241	439	154
1956-57	120	124	103	93.1	146	303	226	520	738	346	199	156
1957-58	147	195	213	168	211	302	557	243	351	203	128	98.3
1958-59	93.4	98.1	55.3	45.6	44.7	1,137	714	1,022	1,204	675	702	779
1959-60	735	698	682	546	313	1,077	1,486	1,595	1,108	606	368	418

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.079	0.070	0.051	0.053	0.060	0.233	0.413	0.267	0.124	0.138	0.251	0.088
1956-57	.069	.071	.059	.053	.084	.174	.129	.298	.423	.198	.114	.089
1957-58	.084	.112	.122	.096	.121	.173	.319	.139	.201	.116	.073	.056
1958-59	.053	.055	.032	.026	.026	.651	.409	.585	.690	.387	.402	.446
1959-60	.421	.400	.391	.313	.179	.617	.851	.914	.635	.347	.211	.239

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.09	0.08	0.06	0.06	0.06	0.27	0.46	0.31	0.14	0.16	0.29	0.10
1956-57	.08	.08	.07	.06	.09	.20	.14	.34	.47	.23	.13	.10
1957-58	.10	.12	.14	.11	.13	.20	.36	.16	.22	.13	.08	.06
1958-59	.06	.06	.04	.03	.03	.75	.46	.67	.77	.45	.46	.50
1959-60	.49	.45	.45	.36	.19	.71	.95	1.05	.71	.40	.24	.27

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								413	3.21
1956	Apr. 2, 1956	6.50	2,800	71	266	0.152	2.08	266	2.08
1957	May 31, 1957	5.74	2,200	65	257	.147	1.99	274	2.12
1958	June 4, 1958	7.99	1,650	58	234	.134	1.81	208	1.61
1959	Mar. 27, 1959	11.03	7,630	39	550	.315	4.28	707	5.51
1960	Mar. 30, 1960	11.54	10,100	110	804	.460	6.27		

Peak Discharge (base, 4,000 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: No peak above base.

1958-59: Mar. 27 (5 a.m.) 7,630 cfs (11.03 ft.); June 1 (1 p.m.) 5,480 cfs (10.19 ft.).

1959-60: Mar. 30 (2 a.m.) 10,100 cfs (11.54 ft.); May 7 (7 a.m.) 4,040 cfs (9.17 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 17, 18, Nov. 23 to Dec. 11, Dec. 14-19, 25, 29, 30, 1955; Jan. 6-9, Mar. 15, Nov. 21-23, 26-29, Dec. 6-9, 11-13, 15, 16, 18, 25, 27-30, 1956; Jan. 1-3, 6, 9-27, 29, 30, Feb. 13-17, 19-22, Nov. 9-12, 19, Nov. 25 to Dec. 1, Dec. 15 to Dec. 31, 1957; Jan. 1 to Feb. 24, Nov. 30 to Dec. 31, 1958; Jan. 1 to Mar. 13, Mar. 20-25, Nov. 15, 16, 26-28, Dec. 6-9, 1959; Jan. 1-3, Feb. 10-12, 16-18, Mar. 2-4, 1960. No gage-height record Jan. 10 to Mar. 14, 1956; June 16 to July 11, 1957. Stage-discharge relation indefinite Oct. 19-21, Nov. 1, 2, Dec. 7-14, 1957; May 26, 31, Aug. 4, 11, 18, 25, Oct. 1 to Nov. 29, 1958; Mar. 14-19, 1959.

Beaver Creek at New Hartford, Iowa

LOCATION.—Lat. 42°34'20", long. 92°36'55", in SE¼SE¼ sec. 28, T. 90 N., R. 15 W., on downstream side of center bridge pier of highway bridge, a quarter of a mile north of New Hartford, and 8 miles upstream from mouth.

DRAINAGE AREA.—347 square miles (revised in 1956).

RECORDS AVAILABLE.—October 1945 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 881.30 ft. above mean sea level, datum of 1929. Prior to July 14, 1959, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—15 years, 158 cfs.

EXTREMES.—1945-60: Maximum discharge, 18,000 cfs June 13, 1947 (gage height, 13.5 ft., from graph based on gage readings) from rating curve extended above 7,300 cfs by logarithmic plotting; minimum daily, 2.3 cfs Jan. 20-24, 1956.

REMARKS.—Bankfull stage is about gage height, 8 ft.

REVISIONS (water years).—WSP 1558: 1948-49. WSP 1728: 1947(M).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	8.4	14	7.7	4.0	3.0	9.0	94	47	27	5.0	11	7.3
2.....	8.4	14	8.8	3.8	3.0	30	77	52	23	5.0	16	7.3
3.....	*8.0	14	10	*3.6	3.0	70	75	72	22	5.0	11	*7.5
4.....	8.0	13	11	3.4	3.0	90	73	74	*20	5.0	10	21
5.....	8.4	13	11	3.1	3.0	75	67	78	20	6.2	8.9	21
6.....	35	14	11	3.0	3.0	58	63	77	20	6.2	*7.6	60
7.....	116	14	11	3.0	3.0	46	56	74	21	6.2	6.9	79
8.....	70	14	11	3.0	3.1	37	46	64	15	6.9	6.6	57
9.....	44	14	10	3.0	3.1	31	56	56	15	5.0	6.2	41
10.....	30	14	9.5	3.0	3.2	29	52	54	15	5.0	6.6	40
11.....	24	14	9.2	3.0	3.4	27	47	54	13	4.7	6.6	16
12.....	22	13	8.8	3.0	3.5	25	46	54	13	4.7	6.6	15
13.....	20	12	8.5	3.0	3.8	24	44	52	13	3.7	16	13
14.....	20	11	8.0	3.0	3.9	22	42	51	13	3.7	22	13
15.....	20	10	7.6	3.0	4.0	20	38	51	13	3.7	22	13
16.....	18	9.4	7.3	2.9	4.0	22	37	43	10	*3.7	8.9	11
17.....	18	11	6.9	2.7	4.0	27	36	40	10	3.5	8.4	8.4
18.....	18	12	6.6	2.6	4.0	40	35	37	8.9	3.5	8.4	8.4
19.....	17	14	6.3	2.4	4.0	74	33	32	8.4	3.5	8.4	8.0
20.....	16	14	6.0	2.3	4.0	150	30	29	6.9	4.0	7.3	7.3
21.....	16	14	5.8	2.3	4.1	200	29	28	6.6	4.0	6.9	7.3
22.....	14	15	5.5	2.3	4.2	180	29	27	6.6	4.0	6.2	6.9
23.....	14	17	5.4	2.3	4.4	160	28	26	6.6	4.0	4.8	6.2
24.....	14	18	5.2	2.3	4.5	135	28	23	6.2	4.2	4.8	6.2
25.....	14	16	5.0	2.4	4.7	118	26	23	6.2	3.7	4.2	5.9
26.....	14	13	4.8	2.5	4.8	105	25	22	8.4	3.7	4.0	5.5
27.....	13	10	4.7	2.6	*4.9	106	36	21	7.6	3.5	3.5	5.5
28.....	13	*8.2	4.6	2.8	5.2	155	41	28	6.9	3.2	5.2	4.7
29.....	14	7.5	4.5	2.9	5.7	163	44	34	6.6	3.2	5.5	4.7
30.....	14	7.1	4.4	*3.0	.....	*98	*46	32	5.0	3.0	8.4	4.7
31.....	*14	.....	4.2	.....	.....	88	.....	29	.....	8.0	7.3	.....

Beaver Creek at New Hartford, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	*4.5	7.8	11	10	4.9	54	37	25	560	50	92	23
2	4.9	7.8	12	10	5.0	54	*39	25	281	50	70	23
3	4.9	7.8	*12	10	5.2	54	39	23	*183	49	50	*19
4	4.2	7.1	13	9.2	5.4	*50	45	22	*138	47	40	19
5	4.2	7.1	13	9.0	5.8	48	45	21	113	45	31	18
6	4.2	7.8	12	8.6	6.2	45	42	*20	104	42	*26	17
7	4.2	8.6	10	8.0	6.6	41	42	19	111	39	24	16
8	3.5	8.6	9.6	*7.6	7.0	39	42	18	115	*37	22	15
9	3.5	8.6	9.2	7.2	7.6	37	42	17	113	35	21	15
10	3.5	8.6	9.0	6.6	8.4	36	41	17	108	33	20	15
11	3.5	8.6	8.6	6.0	9.4	38	41	20	104	32	19	15
12	3.9	8.6	8.4	5.6	10	41	41	25	102	31	18	15
13	5.2	8.6	8.4	5.2	11	44	37	28	104	30	17	16
14	5.2	8.8	8.4	5.0	13	46	34	29	102	32	17	16
15	4.5	9.0	8.4	4.8	15	44	32	29	102	31	16	17
16	5.2	7.6	8.4	4.8	20	40	30	30	115	30	16	17
17	6.7	9.0	8.4	4.8	25	38	30	43	115	29	15	16
18	6.7	10	8.4	4.8	32	41	30	47	108	29	15	17
19	5.9	10	8.4	5.2	23	43	29	43	104	28	15	16
20	5.2	9.1	8.4	6.0	19	45	28	37	94	28	14	15
21	5.2	8.0	8.6	7.0	17	46	28	36	88	27	14	14
22	4.9	8.4	8.7	8.0	16	48	27	40	80	26	14	13
23	4.9	9.0	8.8	7.4	16	49	27	58	74	25	14	13
24	4.9	9.2	9.0	6.6	21	50	27	70	68	25	14	13
25	4.2	9.4	9.3	6.0	35	50	27	74	62	24	14	12
26	4.9	9.8	9.5	5.4	45	50	29	102	58	23	14	12
27	4.9	10	9.8	5.2	51	48	29	123	56	22	14	12
28	4.9	10	10	4.9	52	45	28	208	54	22	16	11
29	7.1	10	10	4.9	.....	42	27	458	52	25	18	11
30	*7.1	11	10	4.9	.....	42	25	585	50	106	20	9.8
31	7.8	.....	10	4.9	.....	41	.....	*975	.....	115	22	.....
1957-58												
1	*9.8	24	33	34	25	175	37	52	68	35	86	49
2	9.8	24	*39	33	25	128	33	51	*77	40	77	44
3	9.8	25	41	32	*24	97	33	50	61	43	71	43
4	11	*25	42	31	23	*84	38	48	182	101	*64	42
5	11	25	42	29	22	81	126	46	299	219	101	51
6	11	25	42	28	21	77	315	45	233	174	168	103
7	12	26	40	*27	19	76	*422	*44	127	145	103	144
8	12	28	37	27	18	72	402	44	79	*127	81	103
9	12	27	35	27	17	72	340	44	288	94	69	81
10	12	27	27	27	15	67	268	38	224	77	61	64
11	13	27	23	27	14	64	219	35	144	71	58	56
12	14	28	25	27	14	59	206	33	106	71	52	52
13	15	30	27	28	13	52	180	31	121	67	50	47
14	17	32	29	29	12	44	168	31	150	64	43	42
15	19	32	31	29	12	38	168	31	186	292	105	49
16	19	32	31	29	12	37	162	30	150	*1,210	425	59
17	20	33	33	28	12	36	156	31	115	885	366	56
18	20	34	37	28	12	36	150	30	102	*465	323	50
19	20	32	43	28	12	35	145	26	86	307	143	46
20	21	34	54	28	12	35	141	24	75	247	108	44
21	21	36	66	28	12	34	130	22	68	226	117	42
22	21	36	70	28	13	33	117	20	58	186	156	40
23	22	35	70	29	20	32	103	20	58	156	116	39
24	22	36	68	29	70	32	92	22	58	134	86	40
25	22	38	60	29	120	32	81	21	56	123	81	38
26	23	39	52	29	200	31	71	22	55	103	*74	36
27	23	40	47	28	307	31	64	37	53	99	67	33
28	24	38	42	28	193	31	58	34	52	97	59	32
29	24	35	39	27	.....	31	55	28	40	99	59	31
30	23	30	37	27	.....	31	53	30	38	95	55	*30
31	23	.....	35	26	.....	31	.....	40	.....	97	52	.....

Beaver Creek at New Hartford, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	29	20	14	9.1	5.7	10	520	72	665	1,360	240	87
2	29	20	17	8.9	5.6	28	490	71	510	865	174	144
3	25	19	19	8.7	5.5	250	450	69	340	480	193	299
4	26	19	20	8.4	5.3	720	550	67	247	323	212	200
5	26	19	18	*8.2	5.2	840	530	71	193	247	162	136
6	25	19	17	7.9	5.2	270	299	69	156	206	128	106
7	25	19	15	7.6	5.1	180	226	67	123	168	118	90
8	25	19	13	7.5	5.1	140	206	71	119	145	104	77
9	24	18	11	7.5	5.0	125	193	72	101	145	90	69
10	24	18	10	7.5	5.0	120	193	71	90	128	81	62
11	25	18	9.4	7.5	5.0	180	180	88	94	106	72	56
12	25	18	9.2	7.4	5.0	300	174	84	88	95	66	53
13	25	18	9.0	7.4	5.1	500	162	81	76	84	60	52
14	24	18	8.8	7.1	5.3	1,000	156	69	63	82	54	49
15	24	16	8.8	7.0	5.4	1,120	145	66	66	73	58	47
16	24	16	8.8	7.0	5.4	560	134	64	52	70	66	47
17	24	25	8.8	6.7	5.4	410	141	62	51	66	66	46
18	23	69	8.9	6.6	5.4	370	132	59	49	74	58	45
19	23	66	9.0	6.6	5.3	320	121	160	49	70	50	48
20	23	56	9.1	6.5	5.2	*1,500	121	357	48	60	46	50
21	22	42	9.3	6.5	5.2	*4,500	119	366	48	54	42	55
22	21	35	9.4	6.4	5.2	2,270	115	307	*44	52	228	58
23	21	34	9.6	6.4	5.2	1,680	107	162	38	49	895	79
24	21	31	9.7	6.3	5.2	1,920	97	117	40	45	600	69
25	21	29	9.8	6.2	5.3	1,920	95	174	58	43	291	68
26	21	*12	9.9	6.2	*5.4	3,580	91	168	44	41	*200	109
27	21	15	9.9	6.2	5.8	4,110	88	*132	42	41	156	162
28	*20	14	9.8	6.1	6.6	*1,650	*84	103	89	*39	144	174
29	20	12	9.7	6.0	.....	835	81	121	150	384	117	145
30	20	10	9.6	*5.9	.....	665	76	174	954	*1,040	99	123
31	20	.....	9.3	5.8	.....	560	.....	357	.....	573	94	.....
1959-60												
1	*111	70	180	230	100	77	2,640	778	315	128	46	212
2	106	67	170	180	100	74	1,720	*640	291	124	44	126
3	114	65	160	140	98	72	1,400	602	261	120	43	107
4	131	96	150	115	98	69	*1,060	550	240	113	*42	94
5	135	473	140	100	100	67	980	460	226	*105	40	85
6	156	678	126	120	100	66	880	839	*212	101	41	77
7	162	460	120	140	98	64	740	3,280	193	94	52	72
8	145	332	112	160	98	62	615	2,320	186	90	55	67
9	134	315	130	155	97	60	510	1,220	174	85	50	62
10	116	340	135	150	95	60	450	865	174	106	44	58
11	104	332	132	145	93	59	412	715	180	99	41	55
12	98	284	125	170	91	59	384	602	174	96	39	*52
13	91	254	120	210	93	59	357	520	174	97	38	49
14	86	215	116	250	96	*58	357	470	162	93	37	47
15	84	185	117	200	100	58	332	412	162	85	36	44
16	79	165	*117	170	97	58	393	422	162	80	35	50
17	75	140	117	160	93	58	1,310	560	156	74	35	77
18	71	160	111	145	90	58	1,920	490	150	70	67	94
19	69	180	110	135	87	58	1,300	550	293	67	174	138
20	69	190	111	125	84	59	835	652	375	65	103	168
21	67	200	109	*120	81	59	652	665	340	62	104	131
22	65	200	106	116	80	60	530	580	268	61	78	298
23	66	*206	106	112	84	60	450	510	226	58	63	652
24	71	200	106	112	90	61	384	460	200	56	52	480
25	76	180	102	110	*88	62	375	440	174	58	167	740
26	76	160	115	108	86	63	412	615	156	58	276	910
27	*77	145	186	108	83	64	530	560	145	55	200	480
28	77	130	357	106	81	90	422	480	140	53	126	340
29	76	120	480	106	80	600	375	422	138	50	162	291
30	73	145	366	104	.....	*7,000	602	384	133	48	323	261
31	72	.....	290	102	.....	6,450	.....	340	.....	46	226	.....

Beaver Creek at New Hartford, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	22.0	12.8	7.43	2.88	3.84	77.9	46.0	44.6	12.5	4.47	8.59	17.1
1956-57	4.98	8.80	9.64	6.57	17.6	44.8	34.0	105	117	37.6	23.6	15.4
1957-58	17.3	31.1	41.8	28.5	45.3	55.3	151	34.2	114	198	112	52.9
1958-59	23.4	24.8	11.3	7.07	5.32	1,053	203	128	156	233	160	93.5
1959-60	91.6	223	159	142	91.8	510	778	726	206	89.5	91.6	211

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.063	0.037	0.021	0.0083	0.011	0.224	0.133	0.129	0.036	0.013	0.025	0.049
1956-57	0.14	0.25	0.28	0.19	0.51	1.29	0.98	3.03	3.37	1.08	0.68	0.44
1957-58	0.50	0.90	1.20	0.82	1.31	1.59	4.35	0.99	3.29	5.71	3.23	1.52
1958-59	0.97	0.71	0.33	0.20	0.15	3.03	5.55	3.69	4.50	6.71	4.61	2.69
1959-60	2.73	6.43	4.58	4.09	2.65	1.47	2.24	2.09	5.94	2.32	2.64	6.08

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.07	0.04	0.02	0.01	0.01	0.26	0.15	0.15	0.04	0.01	0.03	0.05
1956-57	0.02	0.03	0.03	0.02	0.05	0.15	0.11	0.35	0.38	0.13	0.08	0.05
1957-58	0.06	0.10	0.14	0.09	0.14	0.18	0.49	0.11	0.37	0.66	0.37	0.17
1958-59	0.08	0.08	0.04	0.02	0.02	3.50	0.65	0.43	0.50	0.77	0.53	0.30
1959-60	0.31	0.72	0.53	0.47	0.29	1.70	2.50	2.41	6.6	2.7	3.0	6.8

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								48.4	1.89
1956	Mar. 21, 1956	3.80	200	2.3	21.8	0.063	0.84	20.2	0.79
1957	May 31, 1957	7.65	1,160	3.5	35.5	1.02	1.40	41.1	1.62
1958	July 16, 1958	8.68	1,560	9.8	73.6	2.12	2.88	71.0	2.78
1959	Mar. 21, 1959	11.32	6,250	5.0	177	5.10	6.92	212	8.28
1960	Mar. 30, 1960	12.40	11,200	35	276	7.95	10.84		

Peak Discharge (base, 1,400 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: July 16 (5 p.m.) 1,560 cfs (8.68 ft.).

1958-59: Mar. 15 about 1,500 cfs; Mar. 21 (11 a.m.) 6,250 cfs (11.32 ft.); Mar. 27 (12 m.) 4,400 cfs (10.5 ft.).

1959-60: Mar. 30 (5 p.m.) 11,200 cfs (12.40 ft.); Apr. 18 (8:30 a.m.) 2,060 cfs (8.89 ft.); May 7 (3 p.m.) 3,670 cfs (10.10 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 14-18, Nov. 23 to Dec. 31, 1955; Jan. 1 to Mar. 24, Nov. 14 to Dec. 31, 1956; Jan. 1 to Mar. 24, Nov. 19 to Dec. 31, 1957; Jan. 1 to Feb. 26, Nov. 26 to Dec. 31, 1958; Jan. 1 to Mar. 20, Nov. 14-20, Nov. 24 to Dec. 3, Dec. 7-10, 31, 1959; Jan. 1 to Mar. 29, 1960. No gage-height record June 22 to July 15, Aug. 2-5, 7-31, Sept. 5-14, 1957; Mar. 16-31, May 1-6, 1958.

Blackhawk Creek at Hudson, Iowa

LOCATION.—Lat. 42°24'30", long. 92°27'45", in SW ¼ NE ¼ sec. 27, T. 88 N., R. 14 W., on left bank 35 ft. downstream from bridge on State Highway 58 and 0.2 mile northwest of Chicago Great Western Railway tracks in the west edge of Hudson.

DRAINAGE AREA.—303 square miles (revised in 1956).

RECORDS AVAILABLE.—April 1952 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 865.03 ft. above mean level, datum of 1929.

AVERAGE DISCHARGE.—8 years, 106 cfs.

EXTREMES.—1952-60: Maximum discharge, 9,000 cfs Mar. 31, 1960 (gage height, 16.93 ft., backwater from ice); minimum daily, 1.9 cfs Jan. 21-23, July 30, 1956.

REMARKS.—Bankfull stage is about gage height, 15 ft.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	9.9	10	4.9	3.0	2.1	13	28	41	20	5.7	219	118
2.....	9.9	10	6.2	2.9	2.1	26	30	44	20	5.0	95	55
3.....	*9.6	9.9	6.7	*2.8	2.1	58	36	58	16	4.8	48	*34
4.....	9.6	9.6	7.0	2.7	2.1	70	30	50	*15	4.6	29	26
5.....	9.2	9.6	7.2	2.6	2.1	56	25	46	14	4.3	20	109
6.....	12	9.2	7.1	2.5	2.1	45	22	64	14	4.3	*16	383
7.....	16	8.8	7.0	2.5	2.1	37	20	55	12	3.7	14	230
8.....	14	7.2	6.8	2.5	2.2	31	16	42	12	3.7	13	123
9.....	12	7.2	6.6	2.5	2.2	28	20	34	12	3.7	12	80
10.....	11	7.2	6.4	2.5	2.3	26	18	37	12	3.5	12	58
11.....	9.9	7.2	6.1	2.5	2.5	24	16	67	11	3.2	11	45
12.....	9.9	7.2	5.9	2.5	2.6	22	16	74	10	3.2	11	35
13.....	8.5	7.4	5.6	2.5	2.8	21	15	52	9.2	3.0	12	30
14.....	6.9	7.2	5.4	2.5	2.9	19	14	49	9.2	2.8	14	26
15.....	5.7	7.2	5.2	2.5	3.1	18	14	36	8.5	2.8	11	24
16.....	8.8	6.6	5.0	2.5	3.2	21	14	28	8.5	*2.5	9.2	21
17.....	8.1	5.8	4.8	2.4	3.2	24	15	25	8.5	2.2	8.1	18
18.....	8.8	6.4	4.6	2.2	3.2	28	14	21	8.1	2.0	8.1	17
19.....	8.8	7.2	4.5	2.1	3.3	35	15	18	8.1	1.8	7.8	16
20.....	8.5	8.2	4.3	2.0	3.3	58	15	14	7.8	6.4	7.2	16
21.....	8.5	8.3	4.2	1.9	3.4	85	11	13	7.8	6.2	6.0	15
22.....	8.1	8.0	4.0	1.9	3.5	74	9.2	13	7.2	5.0	5.5	15
23.....	8.5	7.6	3.9	1.9	3.6	62	8.1	13	6.9	4.3	4.3	13
24.....	8.1	7.9	3.8	2.0	3.7	50	7.4	14	6.9	3.9	3.5	12
25.....	7.4	7.5	3.7	2.0	3.9	42	7.4	13	6.9	2.8	2.8	11
26.....	7.4	6.6	3.5	2.1	4.1	40	7.8	12	7.2	2.5	2.8	11
27.....	7.2	5.7	3.4	2.1	*4.4	44	20	12	7.2	2.3	2.6	10
28.....	6.9	*5.0	3.3	2.1	5.0	53	34	14	6.7	2.3	2.8	9.6
29.....	7.2	4.1	3.2	2.1	5.8	32	62	36	6.2	2.2	3.2	9.9
30.....	9.2	3.7	3.1	*2.1	.....	*28	*55	60	5.7	1.9	12	10
31.....	*11	.....	3.1	2.1	.....	32	.....	26	.....	*168	211	.....

Blackhawk Creek at Hudson, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	*9.6	9.6	11	10	15	45	*21	20	509	70	137	340
2	9.6	9.6	11	10	15	39	24	17	308	65	244	194
3	9.3	9.3	*12	10	15	36	25	15	*222	69	110	*135
4	9.0	9.3	12	10	16	*34	28	14	*173	294	218	107
5	9.0	9.3	13	9.8	17	32	35	14	136	148	*104	85
6	8.2	9.6	12	9.6	19	31	41	*14	113	97	63	76
7	7.9	9.6	11	*9.4	21	31	38	12	93	70	46	69
8	5.8	9.9	10	8.6	25	31	35	12	82	*60	37	62
9	4.8	9.9	9.4	8.0	30	32	30	12	73	50	32	57
10	3.7	9.9	9.0	7.6	60	33	27	20	66	42	28	52
11	3.3	9.9	8.6	7.2	93	34	26	30	62	38	26	53
12	3.5	9.6	8.2	6.8	100	35	22	33	56	35	24	53
13	3.3	9.6	8.0	6.6	150	36	22	38	51	35	24	50
14	6.0	9.0	8.0	6.3	200	37	21	54	47	33	*461	46
15	20	8.2	8.0	6.1	130	24	20	69	42	29	*703	48
16	17	7.6	8.0	6.0	80	25	19	70	1,120	27	252	45
17	17	7.8	8.0	6.0	64	27	17	64	1,720	25	132	40
18	12	8.2	8.0	6.0	52	34	16	58	1,900	22	90	38
19	17	8.2	8.0	6.0	46	38	16	52	805	20	69	37
20	17	7.8	8.2	6.0	42	35	16	47	424	18	54	35
21	17	7.0	8.2	20	40	45	16	45	300	23	45	37
22	16	7.6	8.2	150	37	54	15	46	230	67	38	35
23	12	8.0	8.4	70	37	40	14	41	187	78	33	32
24	12	8.0	8.6	30	39	32	14	35	160	36	32	31
25	11	8.0	8.7	20	45	30	14	30	143	25	27	30
26	11	8.5	9.0	18	70	27	20	29	136	22	24	27
27	11	9.0	9.2	16	73	25	30	26	118	27	26	27
28	10	9.5	9.4	15	56	24	35	23	109	95	102	27
29	*10	10	9.6	15	.....	22	27	111	95	432	362	27
30	9.9	11	9.8	15	.....	21	24	*2,000	81	180	444	*27
31	9.9	.....	10	15	.....	20	.....	*1,650	.....	92	638	.....
1957-58												
1	26	41	77	63	39	155	56	-71	92	70	135	53
2	26	48	*85	61	37	121	66	69	*108	78	121	52
3	26	67	91	59	*36	*98	78	73	72	90	111	50
4	26	*67	91	57	35	87	94	68	117	332	*100	48
5	27	62	89	56	34	80	176	64	126	598	398	54
6	27	57	83	*55	32	76	422	61	80	376	552	126
7	26	55	77	54	30	71	*472	*59	67	*258	349	160
8	25	54	70	53	29	68	348	58	170	199	210	115
9	26	31	62	53	27	60	282	57	696	166	166	89
10	26	40	51	53	25	67	240	53	696	140	150	75
11	26	46	38	54	23	61	210	50	270	130	121	65
12	25	44	52	55	22	65	188	47	188	140	108	59
13	26	46	59	57	20	69	166	44	569	135	96	55
14	26	48	60	62	19	72	155	43	1,120	492	90	52
15	28	48	63	67	18	68	140	44	892	*1,060	288	65
16	35	52	69	68	18	60	130	43	348	*2,170	466	75
17	34	56	78	67	18	56	121	45	270	1,180	223	65
18	29	55	90	65	18	59	111	45	222	*472	155	60
19	26	50	108	62	18	57	107	41	188	362	126	55
20	27	52	145	59	18	54	103	37	160	314	109	53
21	26	57	157	56	20	53	98	36	140	270	104	51
22	27	61	160	54	22	52	92	36	126	234	93	47
23	32	71	160	52	41	52	90	34	126	204	84	46
24	109	78	155	51	72	52	108	33	116	182	82	50
25	97	85	150	50	140	51	109	33	112	166	76	47
26	71	86	121	50	300	51	100	31	102	150	*72	42
27	60	87	106	49	246	51	94	32	94	155	69	40
28	54	90	93	48	188	51	91	32	87	172	67	40
29	50	76	80	46	.....	52	84	30	80	199	64	39
30	47	59	72	43	.....	53	76	29	75	182	61	38
31	44	.....	66	41	.....	54	.....	40	.....	155	57	.....

Blackhawk Creek at Hudson, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	36	32	27	22	15	70	489	111	188	524	126	27
2	*35	32	31	22	14	300	524	102	160	352	85	27
3	34	31	36	21	14	700	422	102	130	240	89	26
4	34	31	37	21	14	800	321	100	116	182	102	26
5	32	31	35	*20	14	400	276	98	102	150	80	26
6	32	30	31	20	13	170	240	107	94	126	74	26
7	32	29	27	19	13	115	222	121	86	105	69	24
8	35	30	25	18	13	100	210	114	79	138	56	24
9	95	31	23	18	13	90	188	107	74	282	50	23
10	101	30	22	18	13	85	177	116	67	188	45	22
11	63	29	21	18	13	85	166	160	61	135	41	22
12	53	29	21	18	14	90	160	177	57	108	38	22
13	48	29	21	18	14	350	155	150	52	92	35	22
14	45	29	21	18	14	780	150	130	49	81	34	22
15	42	29	22	17	14	450	135	121	47	79	44	22
16	41	29	22	17	15	300	130	110	46	67	56	22
17	40	17	23	17	16	250	121	102	45	63	47	23
18	39	246	23	17	16	210	121	96	45	60	38	22
19	38	188	24	17	16	250	116	104	46	54	33	23
20	37	116	24	16	16	*3,500	116	112	44	51	32	21
21	37	95	24	16	16	*4,000	121	135	42	47	31	26
22	36	84	24	16	15	2,350	130	155	40	44	30	23
23	35	76	24	16	15	1,700	129	166	37	41	50	22
24	34	70	25	16	*15	2,100	121	188	*35	39	71	22
25	34	*66	25	16	15	1,740	112	160	39	37	*49	22
26	34	30	25	15	15	1,690	105	*140	37	35	37	37
27	34	40	25	15	16	*5,920	101	121	35	36	34	53
28	33	40	24	*15	22	*1,630	*126	109	80	*32	32	53
29	32	38	24	15	.....	636	140	116	185	35	31	42
30	32	33	23	15	.....	489	126	126	380	208	31	*37
31	32	.....	23	15	.....	455	.....	145	.....	324	31	.....
1959-60												
1	30	23	65	150	84	54	*4,400	776	290	154	48	54
2	32	20	66	115	84	53	2,050	*640	270	145	47	45
3	34	19	66	94	84	52	1,850	560	251	140	45	36
4	33	38	69	80	84	51	*1,130	472	238	127	*44	30
5	41	150	56	66	84	50	896	404	238	*119	45	28
6	45	232	48	72	86	50	800	688	*215	115	46	27
7	47	150	43	82	88	50	660	1,900	204	111	45	26
8	43	105	54	92	90	49	560	2,210	194	104	44	25
9	39	111	52	100	80	49	455	1,100	189	111	42	24
10	35	115	54	96	72	48	412	704	194	154	41	21
11	32	111	57	92	64	48	396	600	226	145	39	22
12	30	97	57	150	66	48	359	523	215	136	38	*22
13	28	76	52	700	68	49	336	472	210	169	35	20
14	28	64	48	920	70	*49	322	438	204	140	37	21
15	27	58	*49	310	72	49	310	396	189	123	35	23
16	27	62	49	205	72	49	336	404	184	115	34	26
17	26	*64	47	180	70	49	1,240	540	174	104	33	31
18	25	62	39	160	66	50	2,710	455	219	100	45	32
19	24	60	44	*150	62	50	1,650	455	872	94	40	45
20	24	62	46	140	58	51	848	455	728	86	38	39
21	23	66	44	130	56	52	640	438	421	81	34	37
22	20	70	33	120	56	52	523	430	329	76	33	73
23	20	76	33	112	60	53	455	374	290	73	32	123
24	24	86	49	106	66	53	421	359	251	70	30	111
25	25	78	56	102	*65	53	396	438	220	68	29	226
26	26	70	68	96	64	54	412	489	199	72	70	184
27	*25	63	111	92	60	60	389	455	184	67	54	119
28	26	59	258	90	58	80	352	396	174	62	44	94
29	29	55	310	88	56	300	344	366	169	59	56	82
30	24	62	244	86	.....	1,800	523	336	159	55	86	76
31	24	.....	189	84	.....	*7,500	.....	310	.....	51	66	.....

Blackhawk Creek at Hudson, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	9.25	7.45	5.05	2.34	3.07	38.8	20.5	34.9	10.2	9.38	26.9	52.7
1956-57	10.4	8.95	9.38	17.4	56.7	32.5	23.6	155	319	75.0	149	61.1
1957-58	37.4	59.0	92.2	55.5	55.2	67.0	154	46.4	250	349	158	62.2
1958-59	41.5	55.0	25.2	17.5	14.8	1,026	188	126	83.3	128	51.9	27.0
1959-60	29.4	78.8	79.2	163	70.5	357	892	599	263	104	43.7	57.4

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.031	0.025	0.017	0.008	0.010	0.128	0.068	0.115	0.034	0.031	0.089	0.174
1956-57	.034	.030	.031	.057	.187	.107	.078	.512	1.05	.248	.492	.212
1957-58	.123	.195	.304	.183	.182	.221	.508	.153	.825	1.15	.521	.205
1958-59	.137	.182	.083	.058	.049	3.39	.620	.416	.275	.422	.171	.089
1959-60	.097	.260	.261	.538	.233	1.18	2.94	1.98	.868	.343	.144	.189

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.04	0.03	0.02	0.009	0.01	0.15	0.08	0.13	0.04	0.04	0.10	0.19
1956-57	.04	.03	.04	.07	.19	.12	.09	.59	1.17	.29	.57	.24
1957-58	.14	.22	.35	.21	.19	.25	.57	.18	.92	1.33	.60	.23
1958-59	.16	.20	.10	.07	.05	3.90	.69	.48	.31	.49	.20	.10
1959-60	.11	.29	.30	.62	.25	1.36	3.29	2.28	.97	.40	.17	.21

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								52.4	2.37
1956	Sept. 6, 1956	9.03	421	1.9	18.4	0.061	0.84	19.0	.86
1957	May 30, 1957	14.57	2,490	3.3	76.6	.253	3.44	90.0	4.04
1958	July 16, 1958	14.57	2,450	18	116	.383	5.19	110	4.91
1959	Mar. 27, 1959	(1)16.48	8,750	13	150	.495	6.75	156	6.99
1960	Mar. 31, 1960	16.93	9,000	19	228	.752	10.25		

(1) Maximum gage height, 16.56 ft. Mar. 20, 1959 (backwater from ice).

Peak Discharge (base, 1,200 cfs)

1955-56: No peak above base.

1956-57: May 30 (10 p.m.) 2,490 cfs (14.57 ft.); June 18 (6:30 p.m.) 2,100 cfs (13.92 ft.).

1957-58: June 15 (2 a.m.) 1,330 cfs (12.58 ft.); July 16 (3 p.m.) 2,450 cfs (14.57 ft.).

1958-59: Mar. 20 about 7,250 cfs; Mar. 24 (6:30 p.m.) 2,580 cfs (14.69 ft.); Mar. 27 (6 a.m.) 8,750 cfs (16.48 ft.).

1959-60: Jan. 14 (2 a.m.) 1,520 cfs (12.77 ft.); Mar. 31 (3 a.m.) about 9,000 cfs (16.93 ft.); Apr. 18 (11 a.m.) 2,960 cfs (14.97 ft.); May 8 (2 a.m.) 2,710 cfs (14.75 ft.).

Notes on Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 16 to Dec. 31, 1955; Jan. 1 to Mar. 27, Nov. 15-17, Nov. 20 to Dec. 31, 1956; Jan. 1 to Mar. 13, Nov. 9-11, 20-26, Nov. 29 to Dec. 21, Dec. 28-31, 1957; Jan. 1 to Feb. 26, Nov. 26 to Dec. 31, 1958; Jan. 1 to Mar. 24, Nov. 7, 8, 13-21, 26-30, Dec. 5-9, 1959; Jan. 1-13, Jan. 16 to Mar. 31, 1960. No gage-height record Aug. 26 to Sept. 3, 1960.

Cedar River at Waterloo, Iowa

LOCATION.—Lat. 42°29'40", long. 92°20'00", in NW¼ NW¼ sec. 25, T. 89 N., R. 13 W., on left bank at foot of East Seventh Street, 0.3 mile upstream from Eleventh Avenue Bridge in Waterloo, and 1 mile downstream from Blackhawk Creek.

DRAINAGE AREA.—5,146 square miles (revised in 1956).

RECORDS AVAILABLE.—October 1940 to September 1960.

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

AVERAGE DISCHARGE.—20 years, 2,425 cfs.

EXTREMES.—1940-60: Maximum discharge, 56,400 cfs Apr. 9, 1951 (gage height, 18.83 ft.); minimum daily, 152 cfs Jan. 28, 1959.

Flood of Mar. 16, 1929, reached a stage of about 20 ft. determined by Corps of Engineers, from information by city of Waterloo (discharge, 65,000 cfs). Flood of Apr. 2, 1933, reached a stage about 0.5 ft. lower than Mar. 16, 1929, from information by city of Waterloo (discharge, 61,000 cfs).

REMARKS.—Slight diurnal fluctuation at low flow caused by powerplant above station. Bankfull stage is about gage height, 18 ft.

REVISIONS. (water years).—WSP 1558: 1950.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	385	*375	300	285	249	365	3,610	*905	742	500	770	1,000
2.....	396	420	295	305	276	442	3,910	1,180	1,240	591	1,810	770
3.....	442	442	345	315	267	604	4,800	1,420	1,240	578	2,100	728
4.....	*355	431	431	*267	285	700	5,440	1,540	1,040	1,360	1,640	578
5.....	488	442	365	258	267	815	5,600	1,920	*905	1,220	1,560	815
6.....	578	442	335	276	276	710	4,480	2,170	905	1,130	630	875
7.....	742	513	305	258	295	470	3,180	2,190	815	971	*1,090	*971
8.....	742	420	305	249	285	365	2,830	2,170	800	770	1,070	875
9.....	658	442	276	295	305	530	2,240	1,990	937	830	971	728
10.....	644	442	305	285	315	540	2,010	1,860	800	552	845	714
11.....	477	477	295	240	305	425	1,860	1,750	658	578	714	513
12.....	539	396	295	249	305	470	1,640	1,620	591	539	756	552
13.....	500	431	270	276	300	513	1,560	1,770	658	565	770	552
14.....	454	500	250	285	280	539	1,440	1,540	578	539	672	513
15.....	385	431	240	258	265	477	1,380	1,360	578	431	756	513
16.....	431	370	225	240	260	477	1,300	1,380	526	466	742	552
17.....	477	249	250	225	280	513	1,130	1,240	552	*355	672	565
18.....	396	454	235	210	305	591	1,280	1,260	526	466	672	375
19.....	420	408	225	230	315	700	1,130	1,180	488	477	845	408
20.....	442	375	250	215	315	686	1,040	1,170	578	500	785	408
21.....	408	466	230	205	295	1,240	954	1,130	630	513	604	385
22.....	385	455	230	220	267	1,440	937	1,000	658	477	552	375
23.....	442	430	250	230	285	1,150	875	1,020	565	604	604	396
24.....	454	375	265	220	335	950	742	937	526	539	488	431
25.....	375	466	295	220	305	870	800	875	539	591	385	325
26.....	454	431	276	250	315	1,170	700	830	526	526	477	335
27.....	466	360	260	295	315	1,340	905	800	565	552	539	345
28.....	454	320	250	295	*276	2,310	954	800	539	385	375	396
29.....	385	*310	235	267	315	4,220	1,020	756	565	442	466	325
30.....	454	305	225	*285	.....	*4,160	1,070	890	488	552	686	335
31.....	565	.....	250	276	.....	3,820	.....	954	.....	630	890	.....

Cedar River at Waterloo, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1956-57													
1		*385	365	385	310	305	1,220	*1,060	658	6,240	1,700	988	1,040
2		325	431	396	300	325	1,040	937	604	4,480	1,440	1,130	890
3		295	385	*488	340	315	845	890	578	3,150	1,380	742	*658
4		305	375	442	375	335	*971	905	539	*2,600	1,300	714	630
5		285	431	466	350	315	830	875	526	2,140	1,580	*686	770
6		325	396	450	365	315	845	860	*513	1,810	1,170	539	686
7		295	420	310	*365	345	658	875	442	1,810	1,200	700	644
8		375	408	270	310	365	644	905	408	1,790	*1,020	700	630
9		335	385	300	270	420	617	728	420	1,620	951	552	591
10		335	408	400	230	552	714	728	442	1,520	905	488	477
11		315	396	410	250	565	742	770	431	1,460	890	488	526
12		305	408	320	250	658	672	728	466	1,900	845	477	565
13		345	375	280	250	815	800	728	488	1,810	742	466	565
14		385	385	310	240	860	890	714	500	1,580	756	630	552
15		375	565	340	230	980	860	700	500	1,460	800	988	591
16		355	500	360	230	900	800	617	700	1,990	875	875	552
17		396	477	360	230	700	815	617	905	3,180	988	728	466
18		408	454	310	230	720	890	672	1,090	4,320	875	714	488
19		477	466	310	240	600	954	742	1,170	3,970	799	672	513
20		442	454	350	260	620	1,000	617	1,110	2,760	1,280	552	526
21		454	420	385	350	620	954	617	1,130	2,260	1,200	658	526
22		454	285	365	500	539	890	686	1,090	1,940	1,020	539	526
23		375	345	420	490	513	890	591	1,620	1,680	971	552	513
24		375	385	380	440	552	860	658	1,810	1,900	1,070	630	431
25		355	396	340	400	658	1,320	686	1,810	2,010	1,580	578	565
26		325	385	385	350	686	2,120	686	1,720	2,010	1,560	604	630
27		375	408	385	330	905	2,460	686	1,700	1,900	1,200	539	658
28		408	500	420	310	1,130	2,050	686	1,880	1,920	1,150	700	591
29		*477	442	400	310	.....	1,600	686	2,100	2,010	1,240	860	454
30		365	365	408	310	.....	1,340	578	3,250	1,810	1,170	920	*431
31		335	.....	420	300	.....	1,170	.....	6,560	.....	1,040	1,150	.....
1957-58													
1		355	488	430	460	466	2,360	714	1,130	815	604	770	488
2		365	565	*714	510	513	2,140	800	1,110	*890	686	785	466
3		345	526	672	540	*526	*1,920	830	1,070	890	756	728	442
4		396	*617	604	578	500	1,600	815	1,070	971	1,130	700	513
5		385	552	686	591	513	1,460	1,000	1,150	1,790	1,320	*815	604
6		365	617	756	*570	500	1,130	1,790	954	2,260	1,400	1,180	658
7		355	604	756	500	488	1,170	2,700	*1,000	1,770	*1,280	1,300	686
8		345	658	700	500	410	1,070	*3,020	988	1,660	1,020	988	686
9		345	477	600	500	400	1,020	2,890	1,000	2,030	937	860	604
10		345	552	500	488	400	1,110	2,650	905	2,120	845	845	578
11		385	578	370	477	390	860	2,360	937	1,700	860	770	565
12		442	454	320	500	375	905	1,970	1,000	1,360	785	658	539
13		385	477	430	539	396	937	1,860	830	1,540	756	785	488
14		385	604	539	526	396	937	1,770	785	1,770	875	714	466
15		431	578	526	552	375	954	1,640	714	2,100	1,340	686	526
16		466	604	617	591	345	954	1,500	770	1,520	2,220	988	488
17		488	658	578	617	310	954	1,440	728	1,150	3,820	1,110	526
18		454	700	644	617	330	830	1,420	714	954	2,860	988	488
19		454	375	756	610	345	890	1,320	785	954	1,940	700	488
20		420	513	954	580	355	845	1,240	552	890	1,560	728	466
21		408	610	937	520	355	800	1,280	658	785	1,380	672	466
22		408	600	920	480	385	728	1,060	644	770	1,130	658	466
23		539	570	954	450	454	815	1,150	591	785	1,130	672	442
24		526	714	845	530	800	845	1,200	617	714	1,060	591	477
25		604	728	770	604	1,360	700	1,240	591	770	988	617	466
26		578	672	690	565	2,760	770	1,110	672	756	860	565	466
27		526	785	610	617	2,730	800	1,110	552	756	860	*526	454
28		513	770	670	539	2,580	815	1,300	578	714	875	513	431
29		477	630	610	526	.....	770	1,110	552	700	785	513	454
30		565	470	570	552	.....	785	1,320	591	700	890	513	396
31		513	.....	510	526	.....	742	.....	815	.....	830	488	.....

Cedar River at Waterloo, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	*370	360	260	310	190	265	9,230	1,240	6,750	7,520	1,680	2,510
2	414	381	300	310	190	520	8,920	1,180	9,540	7,990	1,270	2,360
3	403	349	330	310	190	1,200	8,610	1,170	8,610	6,900	1,200	3,440
4	392	318	370	310	192	1,800	7,520	1,060	7,680	5,990	1,420	3,560
5	381	414	350	300	192	1,000	5,840	1,060	5,990	4,490	1,340	3,190
6	414	370	320	*286	192	600	4,640	1,030	4,790	3,780	1,120	2,750
7	370	360	300	244	192	450	4,060	1,200	3,780	3,170	1,100	2,290
8	403	414	270	286	181	410	3,610	1,220	3,170	2,800	1,010	2,000
9	458	414	230	296	181	460	3,280	1,150	2,830	2,630	998	1,780
10	516	338	230	286	175	410	2,930	1,270	2,460	2,480	886	1,580
11	480	338	240	286	170	425	2,650	1,420	2,180	2,320	966	1,440
12	425	403	260	286	170	528	2,440	1,600	1,960	2,150	1,100	1,360
13	425	370	260	276	170	902	2,290	1,520	1,800	2,130	982	1,250
14	403	370	250	276	181	2,020	2,150	1,460	1,660	1,980	934	1,220
15	458	381	250	280	181	2,300	2,020	1,400	1,540	1,740	934	1,170
16	447	425	244	270	180	2,000	1,890	1,220	1,500	1,640	950	1,120
17	381	540	244	260	170	1,300	1,680	1,310	1,400	1,420	870	1,120
18	381	600	244	250	170	1,000	1,600	1,220	1,220	1,380	800	1,030
19	370	758	286	230	160	1,340	1,600	1,340	1,180	1,330	886	982
20	414	678	296	223	181	4,000	1,680	1,380	1,180	1,180	856	966
21	370	564	318	210	192	9,400	1,740	2,990	1,050	1,270	918	1,030
22	381	504	307	200	202	9,400	1,780	3,470	1,030	1,250	1,010	1,080
23	436	504	276	192	212	8,920	1,780	4,610	*950	1,200	2,530	1,170
24	425	447	276	212	*202	10,500	1,680	4,340	1,030	1,080	3,670	1,500
25	414	*458	360	244	192	12,000	1,440	4,060	3,500	1,100	5,240	1,700
26	414	338	381	250	192	*13,300	1,360	*3,670	2,750	1,050	*5,390	2,040
27	349	276	370	230	223	19,500	1,420	3,280	2,180	870	5,090	2,290
28	318	300	381	*152	244	*22,700	1,400	2,960	3,090	918	4,340	2,800
29	*349	280	370	160	.....	15,700	*1,290	2,860	5,390	*1,520	3,330	3,140
30	403	270	300	180	.....	11,400	1,270	3,250	6,600	2,410	2,900	3,280
31	360	.....	300	200	.....	10,200	.....	4,060	.....	2,510	2,650	.....
1959-60												
1	3,090	1,440	1,910	4,200	1,220	800	31,900	6,290	4,340	3,280	934	2,580
2	*2,860	1,380	2,220	3,530	1,240	950	18,600	5,810	3,920	3,040	1,120	2,090
3	2,630	1,460	2,240	2,410	1,290	934	12,000	*5,240	3,700	2,830	1,200	1,660
4	2,510	1,660	2,150	1,800	1,290	870	9,230	4,640	3,530	2,650	*856	1,420
5	2,530	2,070	1,800	1,600	1,340	772	*8,140	4,200	3,420	*2,460	902	1,220
6	2,530	3,220	1,500	1,400	1,330	800	6,900	5,390	3,120	2,390	934	1,130
7	2,410	3,190	1,200	1,780	1,340	800	5,840	10,500	*2,880	2,270	982	1,100
8	2,340	2,780	1,700	2,290	1,330	772	*4,940	16,400	2,650	2,220	1,150	1,010
9	2,150	2,630	1,660	2,460	1,300	814	4,490	13,900	2,510	2,040	1,170	998
10	2,040	2,860	1,700	2,320	1,200	828	4,060	9,850	2,460	1,980	982	950
11	1,870	2,880	1,680	2,070	1,150	812	3,470	7,060	2,320	1,960	1,080	828
12	1,740	2,880	1,660	2,410	1,100	812	3,010	5,600	2,240	2,000	982	744
13	1,740	2,960	1,560	3,040	1,150	856	2,960	4,940	2,220	1,960	814	*800
14	1,680	2,100	1,520	3,470	1,200	*786	2,800	4,400	2,320	1,870	870	886
15	1,620	1,700	*1,580	2,070	1,250	704	2,880	4,060	1,980	1,760	800	772
16	1,520	1,500	1,520	1,850	1,240	856	4,340	3,920	2,150	1,740	856	772
17	1,460	1,400	1,460	1,750	1,150	812	7,220	4,060	2,020	1,760	934	918
18	1,440	*1,520	1,480	1,800	1,100	812	11,100	4,200	2,560	1,740	1,060	1,060
19	1,380	1,890	1,480	1,680	1,050	886	10,500	4,060	3,140	1,760	1,130	1,100
20	1,380	2,270	1,480	*1,550	1,000	902	7,060	4,340	3,580	1,700	1,180	1,080
21	1,310	2,270	1,460	1,500	940	902	5,540	4,940	3,420	1,560	1,100	1,060
22	1,290	2,320	1,560	1,420	856	886	4,790	5,600	3,530	1,340	1,100	1,270
23	1,240	2,360	1,400	1,350	1,030	918	4,200	6,750	3,330	1,340	1,150	1,580
24	1,170	2,460	1,360	1,320	1,130	902	3,920	8,140	3,420	1,240	1,060	2,180
25	1,290	2,100	1,380	1,300	1,080	902	3,750	9,230	5,240	1,240	1,030	2,270
26	1,330	1,800	1,380	1,320	*1,050	902	4,200	7,520	6,600	1,330	1,220	3,010
27	1,360	1,550	1,680	1,350	982	1,050	6,140	6,440	6,290	1,270	1,220	3,170
28	*1,340	1,300	2,460	1,380	968	3,310	6,140	5,990	4,490	1,340	1,240	2,580
29	1,380	1,200	3,920	1,310	828	10,200	5,600	5,390	3,750	1,380	1,310	2,270
30	1,440	1,340	4,640	1,270	.....	25,500	5,540	5,090	3,330	1,250	2,150	1,960
31	1,440	.....	4,640	1,310	.....	*45,100	.....	4,790	.....	1,170	2,800	.....

Cedar River at Waterloo, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	477	413	276	258	292	1,084	2,027	1,342	692	620	837	555
1956-57.....	366	414	373	313	593	1,047	741	1,198	2,368	1,119	695	590
1957-58.....	438	592	653	540	706	1,052	1,520	808	1,219	1,219	756	509
1958-59.....	404	417	296	252	188	5,353	3,127	2,098	3,293	2,587	1,880	1,905
1959-60.....	1,791	2,083	1,915	1,945	1,144	3,460	7,045	6,421	3,349	1,867	1,139	1,482

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	pr.	May	June	July	Aug.	Sept.
1955-56.....	0.093	0.080	0.054	0.050	0.057	0.211	0.394	0.261	0.134	0.120	0.163	0.108
1956-57.....	.071	.080	.072	.061	.115	.203	.144	.233	.460	.217	.135	.115
1957-58.....	.085	.115	.127	.105	.137	.204	.295	.157	.237	.237	.147	.099
1958-59.....	.079	.081	.058	.049	.037	1.04	.608	.408	.640	.503	.365	.370
1959-60.....	.348	.405	.372	.378	.222	.672	1.37	1.25	.651	.363	.221	.288

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.11	0.09	0.06	0.06	0.06	0.24	0.44	0.30	0.15	0.14	0.19	0.12
1956-57.....	.08	.09	.08	.07	.12	.23	.16	.27	.51	.25	.16	.13
1957-58.....	.10	.13	.15	.12	.14	.24	.33	.18	.26	.27	.17	.11
1958-59.....	.09	.09	.07	.06	.04	1.20	.68	.47	.71	.58	.42	.41
1959-60.....	.40	.45	.43	.44	.24	0.78	1.53	1.44	.73	.42	.26	.32

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955.....								1,104	2.90
1956.....	Apr. 4, 1956..	7.09	5,920	205	740	0.144	1.96	739	1.95
1957.....	May 31, 1957..	7.65	7,680	230	818	.159	2.15	862	2.28
1958.....	July 17, 1958..	6.67	4,320	310	834	.162	2.20	787	2.07
1959.....	Mar. 28, 1959..	13.15	24,700	152	1,826	.355	4.82	2,218	5.85
1960.....	Mar. 31, 1960..	18.10	48,100	704	2,805	.545	7.44		

Peak Discharge (base, 13,000 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: No peak above base.

1958-59: Mar. 28 (2:30 a.m.) 24,700 cfs (13.15 ft.).

1959-60: Mar. 31 (10 a.m.) 48,100 cfs (18.10 ft.); May 8 (3:30 p.m.) 17,000 cfs (10.82 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 16, 22, 23, Nov. 27 to Dec. 2, Dec. 13-24, 27-31, 1955; Jan. 16-26, Feb. 13-17, Mar. 6-12, 23-25, Dec. 6-20, 24, 25, 29, 1956; Jan. 1-3, 5, 8-31, Feb. 15-21, Nov. 21-23, Nov. 28 to Dec. 1, Dec. 9-13, 25-31, 1957; Jan. 1-3, 6, 7, 19-24, Feb. 8-11, 17, 18, Nov. 28 to Dec. 15, Dec. 30, 31, 1958; Jan. 1-5, 15-19, 21, 22, 26, 27, Jan. 30 to Feb. 3, Feb. 10, 16-19, Mar. 2-5, 7-10, 15-18, 20-22, Nov. 14-17, 25-29, Dec. 5-7, 1959; Jan. 4-5, 16-27, Feb. 9-14, 17-21, 1960.

Cedar River at Cedar Rapids, Iowa

LOCATION.—Lat. 41°58'20", long. 91°40'05", in SE¼ NW¼ sec. 28, T. 83 N., R. 7 W., on right bank 500 ft. upstream from Eighth Avenue Bridge in Cedar Rapids, 2.7 miles upstream from Prairie Creek, and at mile 109.0.

DRAINAGE AREA.—6,510 square miles (revised in 1956).

RECORDS AVAILABLE.—October 1902 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 700.33 ft. above mean sea level, datum of 1929. Prior to Aug. 20, 1920, staff gage at same site and datum.

AVERAGE DISCHARGE.—58 years, 3,021 cfs.

EXTREMES.—1902-60: Maximum discharge, 64,000 cfs Mar. 18, 1929 (gage height, 20.0 ft.); minimum, 53 cfs Jan. 6, 1950, caused by construction operations upstream; minimum daily, 212 cfs Dec. 10, 1949.

Flood of June 1851 reached a stage of about 20 ft. (discharge, 65,000 cfs, estimated).

REMARKS. Bankfull stage is about gage height, 10 ft. Diurnal fluctuation at low stages caused by powerplant half a mile above station. Records of chemical analysis for the periods September 1906 to September 1907, January 1944 to September 1954; suspended-sediment loads for the period October 1943 to September 1954; and water temperatures, are published in reports of the U. S. Geological Survey.

REVISIONS (water years).—WSP 1308: 1904, 1906-13, 1915, 1917, 1919-24, 1928, 1930. WSP 1558: 1915-18(M), 1920(M), 1922(M), 1924, 1929, 1933, 1942.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1.....	606	550	328	350	*330	450	3,780	*1,450	1,370	660	4,000	1,540
2.....	614	618	*385	350	330	540	4,340	1,420	1,310	509	3,000	1,660
3.....	*344	555	465	370	330	660	3,920	1,340	1,160	536	2,100	1,520
4.....	524	518	445	*340	340	860	4,240	1,500	1,410	696	1,750	*1,280
5.....	584	556	465	330	350	*1,120	4,690	1,810	1,370	569	1,550	1,190
6.....	583	547	420	320	355	1,120	5,220	2,070	*1,280	1,020	1,450	1,120
7.....	650	529	390	320	360	1,150	5,040	2,200	1,220	1,210	1,400	1,240
8.....	708	512	370	330	370	600	3,820	2,280	1,120	*1,110	*1,500	1,280
9.....	819	566	340	340	380	730	3,160	2,350	1,090	1,050	1,200	*1,280
10.....	845	544	340	350	380	800	2,740	2,820	952	780	1,150	1,240
11.....	793	556	344	340	390	800	2,320	2,690	908	819	1,090	1,100
12.....	768	568	344	330	370	680	2,150	2,350	867	720	1,010	1,000
13.....	684	568	344	330	360	606	1,970	3,280	818	602	1,280	950
14.....	652	498	352	325	350	917	1,830	3,160	750	591	1,090	900
15.....	660	527	340	320	330	766	1,740	2,740	771	623	1,040	850
16.....	637	566	330	300	330	679	1,610	2,220	789	660	1,050	800
17.....	532	384	310	290	350	663	1,520	1,890	720	484	938	760
18.....	527	344	310	280	380	672	1,400	1,700	703	552	952	730
19.....	561	410	305	280	390	642	1,320	1,570	714	722	884	710
20.....	570	510	300	280	380	772	1,340	1,500	644	637	780	690
21.....	534	684	300	280	350	822	1,260	1,400	598	614	730	650
22.....	568	720	310	280	350	822	1,160	1,380	800	626	690	626
23.....	556	648	330	280	370	1,180	1,110	1,390	710	556	670	568
24.....	498	468	350	290	400	1,360	1,090	1,240	819	525	672	525
25.....	534	590	370	320	400	1,390	1,080	1,180	684	661	684	545
26.....	566	535	370	350	380	1,280	952	1,110	697	636	660	580
27.....	544	517	350	360	370	1,240	1,160	1,090	668	654	525	550
28.....	562	384	330	360	400	1,310	1,200	1,090	608	780	535	475
29.....	591	312	310	350	430	*1,550	1,550	1,820	666	568	768	535
30.....	591	320	300	340	.....	2,500	1,520	2,040	626	505	837	545
31.....	*544	.....	330	330	.....	3,540	.....	1,620	.....	2,200	1,470	.....

Cedar River at Cedar Rapids, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	530	540	540	440	430	1,080	1,550	872	7,510	2,300	1,910	1,480
2	510	*500	627	390	450	1,190	1,450	767	7,510	2,200	1,780	1,480
3	520	490	616	352	475	1,240	1,310	771	6,430	2,010	1,470	1,290
4	520	540	572	328	500	1,170	1,300	758	4,830	1,880	1,600	1,150
5	470	540	780	378	*446	*1,070	1,300	728	3,860	1,760	1,350	*973
6	480	500	550	400	450	1,100	1,250	714	3,200	1,730	1,140	914
7	441	530	490	423	450	1,000	1,160	680	*2,850	1,750	*1,010	998
8	*450	520	344	432	460	942	1,140	660	2,680	1,590	922	860
9	441	510	320	*380	540	876	*1,000	660	2,500	1,480	939	897
10	450	520	304	350	700	804	1,120	868	2,640	1,380	940	788
11	480	530	304	330	800	828	1,280	1,280	2,460	*1,300	820	890
12	490	530	387	330	950	876	856	1,310	2,300	1,430	724	845
13	480	500	480	320	1,100	888	914	1,370	2,240	1,250	739	827
14	510	561	432	310	1,250	840	953	1,350	2,410	1,220	768	804
15	540	696	336	310	1,400	876	953	1,520	2,220	1,090	720	828
16	594	520	387	310	1,500	974	908	1,390	3,240	1,060	910	809
17	561	605	460	320	1,100	1,010	974	1,300	7,510	1,080	1,210	794
18	520	627	470	320	1,000	956	900	1,300	8,420	1,140	1,270	745
19	520	594	440	330	1,000	1,070	911	1,380	8,980	1,240	1,030	690
20	540	594	430	350	900	1,080	930	1,440	9,340	1,100	958	702
21	572	470	430	500	900	1,100	974	1,800	6,970	1,050	906	780
22	583	387	441	700	780	1,160	884	2,220	4,330	1,430	791	804
23	530	344	480	750	700	1,140	882	1,900	3,330	1,570	838	727
24	530	360	500	620	680	1,080	866	1,660	2,880	1,320	887	683
25	540	480	510	560	680	1,070	832	1,910	2,490	1,270	810	684
26	520	470	510	510	800	1,060	931	2,030	2,620	1,330	827	632
27	500	441	510	470	900	1,330	996	2,010	2,650	1,580	810	676
28	460	530	500	450	1,010	1,600	998	1,890	2,560	1,930	1,240	756
29	460	396	490	430	.....	1,690	921	1,880	2,420	1,670	1,060	780
30	500	369	510	420	.....	1,750	906	3,930	2,380	1,450	1,240	756
31	550	.....	490	420	.....	1,690	.....	8,420	.....	1,530	1,410	.....
1957-58												
1	604	686	540	500	620	4,250	1,020	1,430	870	945	1,160	770
2	592	746	770	460	620	3,690	945	1,580	*970	982	1,160	686
3	*558	716	820	560	610	3,330	1,100	1,480	970	945	1,080	*870
4	535	758	795	720	580	2,900	1,080	1,370	1,050	1,090	1,020	1,700
5	513	*746	*820	840	560	2,500	1,210	1,390	1,030	1,120	1,130	1,120
6	513	758	920	880	600	*2,150	1,300	1,300	1,130	1,500	1,240	1,240
7	546	770	1,030	820	570	1,900	1,720	*1,340	1,990	1,810	1,450	1,390
8	502	808	1,090	780	540	1,750	*2,580	1,240	2,340	1,790	*1,700	1,390
9	513	660	980	*740	520	1,570	3,430	1,220	2,720	1,640	1,580	1,300
10	480	758	780	720	500	1,500	3,620	1,210	3,030	1,410	1,290	1,130
11	491	722	540	700	480	1,430	3,560	1,190	3,000	*1,320	1,120	1,020
12	480	698	341	680	460	1,460	3,150	1,060	2,910	1,220	1,130	945
13	502	758	372	660	*450	1,290	2,830	1,060	3,660	1,210	1,160	895
14	535	710	604	660	440	1,290	2,580	1,120	4,420	1,240	970	845
15	638	674	808	660	430	1,290	2,420	995	3,890	2,240	1,030	808
16	604	758	845	680	420	1,270	2,260	1,010	3,720	2,260	1,030	795
17	592	795	845	730	410	1,270	2,160	1,050	3,560	3,030	1,130	734
18	581	958	895	770	410	1,260	1,900	1,090	2,560	4,150	1,740	780
19	638	1,020	995	810	410	1,220	1,900	970	2,020	4,580	2,260	770
20	604	908	1,090	780	420	1,180	1,850	895	1,700	3,620	1,970	746
21	592	850	1,210	740	420	1,150	1,720	920	1,580	2,770	1,320	734
22	570	780	1,520	700	450	1,150	1,680	845	1,410	2,320	1,290	686
23	638	840	1,390	640	500	1,100	1,620	832	1,270	2,040	1,430	650
24	674	945	1,270	600	800	1,030	1,520	845	1,240	1,740	1,370	710
25	770	932	1,150	650	1,250	1,060	1,540	782	1,190	1,660	1,240	686
26	746	958	1,050	700	1,850	1,080	1,540	758	1,120	1,580	1,050	674
27	770	995	920	740	2,800	1,020	1,580	758	1,120	1,500	995	650
28	770	940	820	700	3,660	982	1,500	820	1,090	1,340	932	627
29	734	760	730	670	.....	1,030	1,450	674	1,050	1,320	820	616
30	710	580	650	650	.....	1,050	1,520	722	982	1,270	895	592
31	686	.....	604	630	.....	1,050	.....	870	.....	1,220	832	.....

Cedar River at Cedar Rapids, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	535	558	370	420	310	3,300	17,300	2,370	4,740	8,650	2,530	3,210
2	*581	502	*394	400	310	3,590	14,300	2,160	5,370	8,650	2,530	2,970
3	570	524	524	380	310	4,080	12,500	2,140	7,430	8,650	2,110	2,800
4	570	*469	627	380	*310	4,250	11,400	2,060	*8,650	8,650	1,720	2,910
5	546	513	580	370	300	4,420	10,400	1,970	9,000	7,950	1,620	3,660
6	502	436	500	*370	300	3,530	9,000	1,850	8,300	6,920	1,790	3,660
7	616	502	383	360	300	2,020	7,260	*1,880	6,920	5,400	1,790	3,330
8	627	535	341	350	290	1,520	*5,900	1,770	5,570	4,910	1,520	2,860
9	674	524	320	350	280	1,260	5,240	1,810	4,740	5,240	1,410	2,470
10	662	480	320	360	280	1,190	4,580	2,240	4,020	4,420	1,320	2,210
11	627	535	330	360	270	1,410	4,250	2,800	3,590	3,820	1,260	1,970
12	674	480	350	350	260	*1,540	3,890	2,470	3,120	3,400	1,150	1,770
13	698	469	360	330	260	2,060	3,590	2,370	2,800	3,150	1,190	1,660
14	604	513	370	340	260	3,590	3,240	2,340	2,500	2,890	*1,210	1,520
15	592	558	370	350	250	3,990	3,000	2,240	2,320	2,750	1,620	1,430
16	592	513	360	350	250	3,990	2,830	2,060	2,160	2,580	1,500	1,360
17	581	592	340	340	250	4,220	2,770	1,940	1,990	2,450	1,390	1,320
18	616	602	330	330	250	3,890	2,720	1,770	1,880	2,860	1,240	1,260
19	546	1,090	340	320	250	4,250	2,500	2,020	1,790	2,260	1,120	1,260
20	524	1,300	360	300	250	12,200	2,450	2,290	1,620	1,970	1,050	1,240
21	558	1,190	380	280	250	16,600	2,450	2,690	1,600	1,810	1,050	*1,180
22	570	1,050	400	270	250	13,200	2,470	2,890	1,560	1,640	1,090	1,150
23	558	958	380	260	400	15,400	2,660	4,120	1,410	1,700	1,100	1,160
24	524	820	394	250	660	16,900	2,500	4,740	1,360	1,620	1,220	1,210
25	535	832	414	250	500	15,400	2,500	5,400	1,340	1,500	2,560	1,360
26	592	650	414	400	700	15,800	2,320	5,240	1,810	1,430	3,850	1,900
27	558	372	394	330	1,200	18,000	2,240	4,910	3,790	1,340	5,080	2,640
28	570	400	404	270	3,000	19,900	2,890	4,580	2,860	1,320	5,240	3,030
29	513	400	420	260	.....	22,100	2,890	4,250	2,830	1,350	5,240	2,890
30	502	390	450	290	.....	*25,500	2,610	4,420	5,740	1,370	4,420	3,180
31	469	.....	450	310	.....	21,700	.....	4,180	.....	1,850	3,660	.....
1959-60												
1	3,220	1,810	1,810	5,400	3,300	1,660	40,700	8,800	6,420	4,420	1,680	2,390
2	3,310	1,780	2,220	5,000	3,250	1,600	*52,800	8,600	6,250	4,100	1,550	2,780
3	3,170	1,700	*2,930	4,100	3,200	1,560	46,100	8,400	5,570	3,950	1,370	2,580
4	3,040	2,800	3,450	2,700	3,150	1,540	*30,400	7,650	5,240	3,800	1,620	2,160
5	3,220	5,570	3,280	2,150	3,050	1,520	20,400	6,950	5,910	3,530	1,640	1,870
6	3,650	*4,740	2,800	1,650	2,900	1,500	14,800	13,200	5,400	3,360	1,290	1,830
7	3,800	4,260	2,200	1,300	2,700	1,500	11,600	30,000	4,740	3,120	1,370	1,370
8	3,280	4,580	1,800	*1,800	2,500	1,500	*9,800	21,200	4,420	3,010	1,370	1,390
9	2,960	4,260	2,000	2,400	2,300	1,500	8,200	17,200	4,100	3,420	1,460	1,350
10	2,760	3,950	2,200	2,800	2,100	1,500	7,130	18,400	3,800	4,100	1,620	1,270
11	2,580	3,800	2,530	3,150	1,950	1,520	6,420	18,000	3,950	3,560	1,550	1,260
12	2,390	3,800	2,440	5,400	*1,800	1,520	5,740	14,400	3,950	3,450	1,390	1,120
13	2,200	3,800	2,200	16,800	1,700	1,520	5,080	10,800	3,800	3,650	1,400	1,090
14	2,040	3,650	2,110	15,600	1,850	1,500	4,740	8,200	3,620	4,100	1,320	1,020
15	2,040	2,900	2,000	11,000	2,000	1,500	4,580	7,130	3,530	3,530	1,180	1,030
16	1,980	2,500	1,980	8,000	2,050	1,500	4,580	6,600	3,500	3,090	1,180	1,090
17	1,890	1,800	2,000	6,000	2,100	1,500	7,130	6,420	3,250	2,800	1,160	1,050
18	1,780	1,400	1,960	4,800	2,000	1,520	11,600	6,250	3,200	2,730	1,240	1,050
19	*1,720	1,600	1,910	4,000	1,900	1,540	13,200	6,420	4,740	2,660	1,320	1,210
20	1,660	2,100	1,890	3,300	1,800	1,560	14,000	6,250	5,400	2,480	1,400	1,290
21	1,620	2,650	1,890	2,800	1,750	1,580	14,000	6,250	5,080	2,440	1,460	1,300
22	1,680	3,250	1,850	2,500	1,700	1,600	10,800	6,420	*5,080	2,320	1,460	1,340
23	1,810	3,800	1,720	2,300	1,700	1,600	8,000	*6,780	4,740	2,130	1,370	1,530
24	1,810	3,950	2,110	2,500	1,750	1,580	6,780	7,480	4,580	2,020	1,350	1,780
25	1,680	3,500	1,810	2,700	1,780	1,540	6,080	8,600	4,420	1,980	1,390	2,580
26	1,660	2,800	1,910	2,900	1,780	1,500	5,910	9,600	4,910	1,930	1,290	3,060
27	1,680	2,550	2,910	3,050	1,780	1,580	5,740	10,400	6,080	2,220	1,290	3,040
28	1,740	2,250	4,100	3,150	1,760	1,750	*6,420	9,600	6,780	*2,090	1,470	3,420
29	1,740	2,000	4,100	3,200	1,740	4,000	7,480	8,400	6,420	1,910	1,620	3,310
30	1,740	1,600	4,260	3,250	.....	12,000	8,000	7,480	5,080	1,890	1,680	2,880
31	1,740	.....	5,080	3,300	.....	25,000	.....	6,780	.....	1,850	1,720	.....

Cedar River at Cedar Rapids, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	605	520	351	323	366	1,039	2,341	1,862	895	738	1,208	915
1956-57	509	506	472	417	798	1,114	1,045	1,638	4,195	1,482	1,094	868
1957-58	603	801	877	696	778	1,619	1,943	1,059	1,986	1,834	1,243	885
1958-59	577	627	399	332	446	8,735	5,155	2,902	3,767	3,694	2,114	2,152
1959-60	2,309	3,038	2,498	4,484	2,184	2,719	13,270	10,280	4,799	2,953	1,426	1,815

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.093	0.080	0.054	0.050	0.056	0.160	0.360	0.286	0.137	0.113	0.186	0.141
1956-57	.078	.078	.073	.064	.123	.171	.161	.252	.644	.228	.168	.133
1957-58	.093	.123	.135	.107	.120	.249	.298	.163	.305	.282	.191	.136
1958-59	.089	.096	.061	.051	.069	1.34	.792	.446	.579	.567	.325	.331
1959-60	.355	.467	.384	.689	.335	.418	2.04	1.58	.737	.454	.219	.279

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.11	0.09	0.06	0.06	0.06	0.18	0.40	0.33	0.15	0.13	0.21	0.16
1956-57	.09	.09	.08	.07	.13	.20	.18	.29	.72	.26	.19	.14
1957-58	.11	.14	.16	.12	.12	.29	.33	.19	.34	.32	.22	.15
1958-59	.10	.11	.07	.06	.07	1.55	.88	.51	.65	.65	.37	.37
1959-60	.41	.52	.44	.79	.36	.48	2.27	1.82	.82	.52	.25	.31

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								1,431	2.99
1956	Apr. 6, 1956	4.69	5,400	280	931	0.143	1.94	932	1.94
1957	June 20, 1957	6.00	9,900	304	1,176	.181	2.45	1,243	2.60
1958	June 13, 1958	4.58	5,240	311	1,195	.184	2.49	1,138	2.36
1959	Mar. 30, 1959	9.77	25,800	250	2,580	.398	5.39	3,112	6.48
1960	Apr. 2, 1960	16.75	55,100	1,020	4,311	.662	8.99		

Peak Discharge (base, 12,000 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: No peak above base.

1958-59: Mar. 21 (1:30 a.m.) 21,000 cfs (8.75 ft.); Mar. 30 (1:30 p.m.) 25,800 cfs (9.77 ft.).

1959-60: Jan. 13 (1 a.m.) 20,400 cfs (8.60 ft.); Apr. 2 (3 p.m.) 55,100 cfs (16.75 ft.); Apr. 21 (4 a.m.) 14,400 cfs (7.09 ft.); May 7 (9:30 a.m.) 32,400 cfs (11.59 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Dec. 7-10, 15-19, 1955; Mar. 8-12, Nov. 21, Dec. 17-21, 1956; Jan. 1, 2, 6, Jan. 9 to Feb. 4, Feb. 9-27, Nov. 9, 21-23, Nov. 28 to Dec. 1, Dec. 9-11, 25-29, 1957; Jan. 1 to Feb. 27, Nov. 28 to Dec. 1, Dec. 5, 6, 9-23, 29-31, 1958; Jan. 1 to Mar. 1, Nov. 15-21, 25-30, Dec. 6-10, 1959; Jan. 2-9, 11, 12, Jan. 15 to Mar. 31, 1960. No gage-height record Dec. 20-31, 1955; Jan. 1 to Mar. 2, Aug. 1-8, Sept. 11-21, 1956; Mar. 4-10, 1958.

Cedar River near Conesville, Iowa

LOCATION.—Lat. 41°24'30", long. 91°17'15", in SW¼SW¼ sec. 2, T. 76 N., R. 4 W., on left bank 150 ft. downstream from highway bridge, 3½ miles northeast of Conesville, 5.2 miles downstream from Wapsipinonoc Creek, and at mile 10.5.

DRAINAGE AREA.—7,785 square miles (revised in 1956).

RECORDS AVAILABLE.—September 1939 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 581.95 ft. above mean sea level, datum of 1929. Prior to Feb. 2, 1940, and Apr. 11, 1952, to July 1, 1954, wire-weight gage, and Feb. 2, 1940, to Apr. 10, 1952, water-stage recorder at same site and datum.

AVERAGE DISCHARGE.—21 years, 3,837 cfs.

EXTREMES.—1939-60: Maximum discharge, 60,000 cfs June 18, 1947; maximum gage-height, 15.60 ft. Apr. 4, 1960; minimum daily discharge, 250 cfs Nov. 28, 1955, result of freezeup.

Maximum stage known since at least 1900, 15.8 ft. in March 1929, from information by local residents to Corps of Engineers.

REMARKS.—Bankfull stage is about gage height, 11 feet. Road overflow west of gage occurs at about gage height, 15.5 feet.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	1,030	728	560	430	450	1,410	2,760	2,150	2,440	728	3,060	3,320
2.....	819	*695	540	460	450	1,150	3,560	1,960	1,900	720	4,370	2,080
3.....	736	678	520	480	*450	1,350	5,220	*1,900	1,680	720	2,840	1,790
4.....	728	720	540	460	450	1,200	4,360	1,790	1,570	*653	2,220	1,790
5.....	720	720	560	450	440	1,060	4,360	1,790	1,410	637	1,900	1,790
6.....	711	678	560	*440	440	1,000	4,360	2,600	1,520	720	1,960	*1,680
7.....	*736	686	520	440	440	1,100	4,860	2,600	1,520	686	2,020	1,460
8.....	728	695	490	440	430	1,250	5,040	2,520	1,460	952	1,900	1,360
9.....	703	686	460	450	*430	1,160	4,520	2,680	1,410	1,130	1,790	1,360
10.....	761	686	450	460	430	1,080	3,720	2,920	1,310	1,070	*1,740	1,360
11.....	811	686	440	450	450	980	3,320	3,320	1,250	1,030	1,570	1,360
12.....	877	711	440	440	460	1,000	2,920	3,800	*1,140	877	1,460	1,310
13.....	861	686	440	430	460	1,030	2,600	3,240	1,070	844	2,090	1,200
14.....	828	695	440	430	460	977	2,440	3,400	1,020	794	2,220	1,140
15.....	761	678	440	410	580	*894	2,290	4,040	969	703	1,740	1,040
16.....	711	560	430	400	500	1,000	2,080	3,560	927	662	1,520	1,000
17.....	728	470	410	380	500	960	1,960	*3,080	927	678	1,460	944
18.....	703	400	400	360	520	902	1,840	2,520	927	745	1,900	927
19.....	628	470	350	350	550	877	1,740	2,220	927	*1,410	2,660	894
20.....	604	550	370	350	580	861	1,680	2,020	927	*1,170	1,520	861
21.....	620	600	370	350	*600	852	1,620	1,840	969	919	1,160	886
22.....	620	600	380	350	610	919	1,570	1,790	894	794	1,050	844
23.....	612	540	400	350	620	960	1,520	1,680	828	770	1,040	786
24.....	645	590	440	370	630	977	1,410	1,680	852	736	1,010	778
25.....	*628	630	460	410	1,500	1,220	1,360	1,620	828	703	1,050	745
26.....	579	480	450	440	3,000	*1,410	*1,360	1,460	886	670	819	728
27.....	587	350	430	450	1,960	1,410	1,460	1,410	844	720	786	720
28.....	645	*250	410	450	1,740	1,410	1,680	*2,440	828	753	770	720
29.....	678	330	390	450	1,310	1,410	1,840	2,420	770	753	711	686
30.....	686	*440	390	450	.....	1,460	1,960	2,800	728	819	819	645
31.....	728	.....	410	450	.....	1,740	.....	2,680	.....	1,070	2,060	.....

Cedar River near Conesville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	637	579	546	580	540	1,020	1,840	1,050	6,820	2,820	1,610	2,320
2	645	612	579	600	540	1,100	1,620	1,010	8,700	2,750	1,800	2,000
3	653	662	604	540	550	1,180	1,620	969	8,470	2,680	2,190	1,860
4	620	612	753	500	570	1,250	1,520	911	7,800	2,680	1,930	1,740
5	604	570	753	450	590	1,260	1,460	894	6,560	2,390	1,670	1,550
6	595	*612	686	420	*650	1,220	1,460	877	5,160	2,320	1,740	*1,420
7	579	628	660	410	620	*1,160	1,419	844	4,410	2,190	1,530	1,280
8	562	620	640	460	580	1,150	*1,360	828	3,880	2,190	*1,340	1,200
9	546	604	600	480	560	1,100	1,310	811	3,540	2,120	1,230	1,180
10	529	612	500	480	590	1,050	1,250	*841	*3,380	*1,930	1,150	1,110
11	529	579	400	465	620	1,080	1,190	877	3,540	1,800	1,140	1,110
12	529	595	370	450	760	1,060	1,210	1,060	3,380	1,610	1,110	1,090
13	554	595	370	430	900	1,040	1,260	1,460	3,060	1,510	1,030	*1,100
14	562	612	460	410	1,050	1,090	1,080	1,740	2,900	1,470	960	1,060
15	570	670	520	390	1,200	1,070	1,040	1,900	2,820	*1,450	950	1,030
16	570	720	480	*380	1,400	1,040	1,050	1,960	2,900	1,390	940	1,010
17	587	753	450	380	1,600	1,030	1,100	1,960	2,750	1,290	901	990
18	645	628	450	380	1,700	1,120	1,050	1,840	5,540	1,240	1,000	980
19	637	645	540	380	1,550	1,170	1,110	1,680	8,240	1,230	1,240	960
20	612	695	550	380	1,400	*1,190	1,070	1,620	8,950	1,280	1,290	960
21	579	678	540	415	1,250	1,210	1,050	1,680	9,700	1,320	1,130	1,040
22	604	600	520	500	1,150	1,210	1,110	2,080	8,950	1,250	1,050	980
23	637	500	510	700	1,050	1,230	1,250	3,000	6,160	1,290	980	990
24	637	480	510	820	1,000	1,250	1,230	3,000	4,680	1,610	980	990
25	637	521	530	900	940	1,240	1,150	2,600	3,880	1,610	960	940
26	670	562	550	900	900	1,240	1,110	2,360	3,460	1,430	970	892
27	670	505	580	770	860	1,220	1,060	*2,600	3,300	1,390	910	883
28	637	529	600	680	920	1,220	1,090	2,600	3,220	1,470	1,040	847
29	604	384	600	640	.....	1,410	1,130	2,520	3,140	1,800	2,470	856
30	562	384	590	590	.....	1,790	1,120	2,440	2,980	2,000	3,350	901
31	554	.....	580	560	.....	1,960	.....	2,640	.....	1,800	4,460	.....
1957-58												
1	930	820	720	700	880	4,040	1,410	1,680	1,790	1,360	1,740	1,160
2	920	811	700	640	870	4,860	1,460	1,740	1,460	1,310	1,680	1,100
3	856	811	880	740	860	4,690	1,460	1,740	1,250	1,310	1,570	1,070
4	*811	838	1,050	920	860	4,040	1,410	1,840	1,250	1,310	1,520	1,040
5	784	838	1,100	1,060	860	3,800	1,520	*1,680	*1,240	1,310	1,520	1,570
6	757	*847	*1,090	1,050	*800	*3,560	1,740	1,570	1,260	1,360	1,620	2,360
7	730	*856	1,030	1,030	760	3,080	1,900	1,520	1,250	1,360	*1,680	2,290
8	712	901	1,100	*1,010	740	2,840	*1,900	1,460	1,310	1,680	1,740	2,290
9	739	910	1,190	960	710	2,520	*2,290	1,460	2,680	1,840	1,740	2,290
10	703	901	980	920	680	2,360	3,000	1,360	3,480	*1,840	1,840	1,900
11	694	856	720	900	660	2,220	3,560	1,310	3,720	1,790	1,790	1,680
12	685	856	520	880	640	*2,080	3,720	1,310	3,480	1,620	1,620	1,460
13	667	874	430	860	620	2,020	3,640	*1,250	4,080	1,570	2,680	1,310
14	658	865	550	880	*600	1,960	3,320	1,170	7,380	2,900	2,290	1,200
15	712	883	660	910	580	1,840	3,080	1,150	5,960	3,480	1,960	1,160
16	784	865	800	960	560	1,840	*2,840	1,230	5,040	2,440	1,790	1,100
17	829	829	940	1,000	560	1,840	2,680	1,410	4,360	3,160	1,680	1,060
18	775	940	1,100	1,040	560	1,790	2,520	1,310	4,200	3,720	1,680	*1,020
19	739	1,160	1,350	1,080	560	1,790	2,440	1,310	3,800	4,200	1,620	960
20	721	1,390	1,600	1,100	560	1,740	2,220	1,260	3,000	4,690	2,080	960
21	748	1,380	2,000	1,090	560	1,740	2,220	1,160	2,520	4,520	2,440	944
22	757	1,240	1,600	1,020	560	1,680	2,220	1,080	2,220	3,800	*2,150	902
23	784	1,180	1,500	940	640	1,620	2,080	1,090	2,020	3,160	1,740	894
24	784	1,140	1,600	860	920	1,570	2,020	1,000	1,900	2,760	1,680	902
25	784	1,160	1,600	840	1,600	1,570	1,020	969	1,790	2,360	1,740	869
26	802	1,160	1,600	880	5,400	1,520	1,840	977	1,680	2,150	1,680	877
27	838	1,160	1,400	910	5,000	1,520	1,790	936	1,570	2,290	1,570	844
28	847	1,170	1,200	920	4,520	1,520	1,790	894	1,520	2,080	1,410	811
29	856	1,070	1,000	920	.....	1,460	1,790	877	1,410	1,900	1,360	794
30	865	850	880	910	.....	1,410	1,740	886	1,410	2,080	1,260	778
31	838	.....	780	900	.....	1,460	.....	977	.....	1,960	1,180	.....

Cedar River near Conesville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1958-59													
1		753	637	510	580	460	10,400	26,100	5,220	7,170	7,590	2,020	4,040
2		720	628	600	580	450	8,240	25,200	4,520	6,360	12,000	2,440	3,720
3		678	653	710	560	440	*6,160	23,000	4,010	6,560	12,000	2,840	3,400
4		678	653	720	540	420	5,040	20,000	3,720	7,590	10,700	2,840	3,160
5		662	612	680	520	400	4,680	16,500	3,480	8,950	10,200	2,600	3,000
6		653	628	600	500	400	4,300	14,200	3,320	9,700	9,450	2,290	3,320
7		678	620	540	480	400	3,800	12,300	3,080	9,700	8,240	3,000	3,640
8		695	587	470	470	400	3,100	10,200	2,920	8,470	6,960	2,840	3,560
9		936	587	450	460	400	2,600	8,470	2,840	6,960	6,160	2,440	3,240
10	1,410	628	430	450	420	2,800	7,380	2,920	5,960	6,160	2,020	2,840	
11	1,080	620	430	440	440	3,100	6,760	3,800	5,400	5,760	1,840	2,520	
12	952	595	440	440	460	3,400	6,160	6,160	4,690	5,040	1,680	2,290	
13	869	620	460	440	500	3,880	5,580	4,520	4,200	4,360	1,620	2,150	
14	852	628	480	460	800	5,760	5,220	3,800	3,720	4,040	1,520	1,960	
15	852	612	*500	480	1,300	7,380	4,860	3,560	3,400	3,800	1,570	1,840	
16	811	620	500	480	1,100	6,160	4,520	3,320	3,160	3,560	2,220	1,740	
17	770	944	490	480	1,000	5,040	4,360	3,160	2,920	3,400	2,360	1,620	
18	745	1,840	460	480	850	4,860	4,360	3,000	2,680	3,880	2,080	1,570	
19	720	1,310	450	480	750	8,160	4,360	3,240	2,520	4,360	1,840	1,520	
20	720	*1,140	460	460	660	15,500	4,200	3,200	2,440	3,260	1,740	1,520	
21	703	1,360	500	450	620	19,000	4,040	4,200	2,290	3,000	1,570	1,460	
22	720	1,460	540	430	680	19,500	4,040	4,200	*2,220	2,600	1,460	1,410	
23	711	1,410	540	410	2,000	*21,200	3,960	4,200	2,600	3,160	1,460	1,410	
24	*703	1,310	540	400	7,500	18,000	3,960	4,520	2,150	2,520	*1,460	1,360	
25	695	1,210	540	400	6,800	18,000	3,880	5,220	1,900	2,220	1,460	1,360	
26	678	1,120	540	410	5,600	19,500	3,720	5,960	1,960	2,080	1,620	1,570	
27	670	1,000	580	420	6,800	19,500	*3,560	6,360	2,080	1,960	2,760	1,790	
28	686	840	600	430	9,000	20,000	5,960	*6,160	2,840	1,900	3,880	2,440	
29	678	700	600	*450	.....	21,200	7,800	6,960	3,720	1,790	4,690	3,000
30	678	560	600	460	.....	22,400	6,300	7,380	4,040	*1,960	4,860	3,000
31	662	.....	600	460	.....	23,700	.....	8,240	.....	1,840	4,690	.....
1959-60													
1	*3,000	2,080	2,300	6,160	3,500	2,150	26,100	10,200	9,200	6,760	2,440	1,960	
2	3,240	2,080	2,000	6,000	3,500	*2,100	34,900	11,000	10,400	5,960	2,360	2,080	
3	3,400	2,080	2,200	5,000	3,400	2,000	45,400	11,000	9,200	5,400	2,220	2,760	
4	3,480	2,150	2,600	4,300	3,400	1,950	*56,400	10,200	8,020	5,220	2,020	3,160	
5	4,040	3,680	3,560	3,500	3,300	1,900	48,600	9,700	13,400	4,860	2,020	2,920	
6	5,040	6,560	3,720	3,100	3,200	1,850	31,300	9,700	15,000	4,690	2,150	2,520	
7	6,560	7,590	3,320	2,750	3,000	1,800	23,700	12,300	9,200	4,360	2,080	*2,290	
8	6,360	6,160	2,700	2,400	2,800	1,800	19,500	18,500	7,380	4,200	1,840	2,150	
9	5,040	5,580	2,400	2,100	2,500	1,800	15,500	27,000	6,560	4,040	1,790	1,790	
10	4,360	5,400	2,100	2,400	2,300	1,850	12,000	26,100	5,960	4,860	2,080	1,680	
11	3,960	5,040	2,300	2,900	2,100	1,850	10,200	22,400	5,960	*6,160	1,960	1,620	
12	3,560	4,690	2,680	5,000	2,300	1,850	8,950	21,800	7,380	5,580	2,020	1,570	
13	3,320	4,690	2,920	11,000	2,450	1,900	8,020	21,200	8,240	6,760	1,900	1,520	
14	3,160	4,520	2,680	15,000	2,550	1,900	7,800	19,000	6,960	5,960	1,840	1,410	
15	2,920	4,200	2,520	21,800	2,650	1,850	7,800	13,800	5,960	6,960	1,790	1,410	
16	2,760	*3,880	2,440	24,400	2,700	1,800	6,960	11,000	5,580	5,400	1,680	1,360	
17	2,680	3,200	*2,360	20,600	2,650	1,800	9,200	10,200	5,220	4,690	1,570	1,410	
18	2,600	2,800	2,290	10,700	2,600	1,800	13,000	9,450	4,860	4,200	1,570	1,460	
19	2,440	2,400	2,290	5,600	2,500	1,800	14,200	8,950	4,690	3,880	1,570	1,360	
20	2,290	2,300	2,220	4,500	2,450	1,850	15,500	8,950	5,400	3,720	1,680	1,360	
21	2,220	2,520	2,220	3,900	2,350	1,900	16,500	9,200	*6,760	3,480	1,740	1,460	
22	2,150	2,920	2,150	3,400	2,250	1,950	17,000	8,700	6,560	3,400	1,790	1,520	
23	*2,150	3,320	2,220	2,900	2,200	2,000	16,500	*8,700	6,560	3,320	1,790	1,570	
24	2,440	4,040	2,150	2,650	2,250	2,000	12,600	8,700	6,160	3,080	1,790	1,740	
25	2,600	4,520	2,290	2,900	2,300	2,000	9,700	10,200	5,760	2,920	*1,680	2,080	
26	2,360	4,000	2,360	3,050	2,300	2,000	8,470	11,000	5,580	3,480	1,680	*2,290	
27	2,220	3,500	2,840	3,200	2,250	2,000	7,800	11,300	5,580	3,160	1,680	3,160	
28	2,150	3,100	5,760	3,350	2,220	2,100	*7,380	12,700	6,560	*3,000	1,570	3,400	
29	*2,150	2,750	7,380	3,500	2,200	5,000	7,500	13,000	7,590	2,920	1,680	3,640	
30	2,150	2,500	6,760	3,600	.....	18,300	8,950	11,400	7,800	2,680	1,900	3,960
31	2,080	.....	6,160	3,600	.....	26,100	.....	10,200	.....	2,440	1,900	.....

Cedar River near Conesville, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	717	590	449	420	739	1,129	2,714	2,449	1,158	827	1,717	1,207
1956-57	599	592	549	530	929	1,204	1,244	1,699	5,076	1,784	1,453	1,176
1957-58	778	985	1,086	930	1,183	2,322	2,252	1,278	2,668	2,365	1,744	1,253
1958-59	768	871	536	468	1,823	10,850	8,700	4,443	4,612	5,010	2,378	2,382
1959-60	3,190	3,808	3,029	6,299	2,627	3,321	17,580	13,150	7,316	4,437	1,864	2,087

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.092	0.076	0.058	0.051	0.095	0.145	0.349	0.315	0.149	0.106	0.221	0.155
1956-57	.077	.076	.071	.068	.119	.155	.160	.218	.652	.229	.187	.151
1957-58	.100	.127	.139	.119	.152	.298	.289	.164	.343	.304	.224	.161
1958-59	.099	.112	.069	.060	.234	1.39	1.12	.571	.592	.647	.305	.306
1959-60	.410	.489	.389	.809	.337	.427	2.26	1.69	.940	.570	.239	.268

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.11	0.08	0.07	0.06	0.10	0.17	0.39	0.36	0.17	0.12	0.25	0.17
1956-57	.09	.08	.08	.08	.12	.18	.18	.25	.73	.26	.22	.17
1957-58	.12	.14	.16	.14	.16	.34	.32	.19	.38	.35	.26	.18
1958-59	.11	.12	.08	.07	.24	1.61	1.25	.66	.66	.75	.35	.34
1959-60	.47	.55	.45	.93	.36	.49	2.52	1.95	1.05	.66	.28	.30

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								1,973	3.43
1956	Apr. 3, 1956	7.90	5,580	250	1,176	0.151	2.05	1,175	2.04
1957	June 21, 1957	9.89	9,950	370	1,400	.180	2.44	1,493	2.61
1958	June 14, 1958	9.01	7,800	430	1,571	.202	2.71	1,514	2.63
1959	Apr. 1, 1959	13.45	26,100	400	3,581	.460	6.24	4,240	7.40
1960	Apr. 4, 1960	15.60	58,800	1,360	5,721	.735	10.01		

Peak Discharge (base, 11,000 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: No peak above base.

1958-59: Mar. 1 (11:30 a.m.) 11,200 cfs (10.43 ft.); Apr. 1 (6 p.m.) 26,100 cfs (13.45 ft.); July 2 (12 p.m.) 13,000 cfs (10.95 ft.).

1959-60: Jan. 16 (12:30 p.m.) 24,400 cfs (13.22 ft.); Apr. 4 (2 p.m.) 58,800 cfs (15.60 ft.); Apr. 22 (12 p.m.) 17,000 cfs (12.23 ft.); May 2 (4 p.m.) 11,200 cfs (10.66 ft.); May 9 (5 p.m.) 29,000 cfs (13.90 ft.); May 29 (5 a.m.) 13,000 cfs (11.14 ft.); June 6 (1 a.m.) 18,500 cfs (12.45 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 16 to Dec. 31, 1955; Jan. 1 to Feb. 26, Mar. 2-12, Nov. 22-24, Dec. 7-31, 1956; Jan. 1 to Mar. 2, Nov. 29 to Dec. 3, Dec. 10-31, 1957; Jan. 1 to Feb. 27, Nov. 27 to Dec. 31, 1958; Jan. 1 to Feb. 28, Mar. 6-12, Nov. 17-20, Nov. 26 to Dec. 4, Dec. 8-11, 1959; Jan. 2-14, Jan. 19 to Mar. 29, 1960.

Iowa River at Wapello, Iowa

LOCATION.—Lat. 41°10'40", long. 91°10'55", in NW¼SE¼ sec. 27, T. 74 N., R. 3 W., on right bank 30 ft. downstream from bridge on State Highway 99 at east edge of Wapello, 13.0 miles downstream from Cedar River, and at mile 15.4.

DRAINAGE AREA.—12,499 square miles (revised in 1956).

RECORDS AVAILABLE.—October 1914 to September 1960.

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

AVERAGE DISCHARGE.—46 years, 6,055 cfs.

EXTREMES.—1914-60: Maximum discharge, 94,000 cfs June 18, 1947 (gage height, 16.14 ft.); maximum gage height, 17.02 ft. Apr. 5, 1960, before levees broke downstream from gage; minimum daily discharge, 300 cfs Nov. 28, 1955, result of freezeup.

REMARKS.—High flows regulated by Coralville Reservoir (capacity 492,000 acre-ft.) since Sept. 17, 1958. Bankfull stage is about gage-height, 10 ft. Levees protect lowlands in the vicinity.

REVISIONS (water years).—WSP 1558: 1918, 1923-25(M) 1929. WSP 1708: 1955(P).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	1,500	960	800	550	480	2,340	2,660	2,660	3,000	887	3,880	7,620
2.....	1,240	*941	800	580	*480	2,210	3,670	2,600	2,720	887	7,290	5,530
3.....	1,090	869	780	600	480	2,030	4,880	*2,400	2,400	860	6,460	3,220
4.....	1,000	869	780	600	480	2,030	5,640	2,340	2,150	*896	4,880	2,790
5.....	1,100	914	780	*600	480	1,790	5,070	2,210	1,970	860	4,160	*2,860
6.....	960	878	780	590	470	1,560	5,450	2,460	1,850	815	3,140	2,600
7.....	*932	851	720	580	470	*1,730	5,450	3,140	1,970	1,310	2,920	2,340
8.....	970	860	680	580	460	1,850	5,640	3,000	1,850	3,670	2,660	2,090
9.....	950	869	630	580	460	1,790	5,450	3,070	1,730	3,000	2,460	2,030
10.....	950	860	590	580	470	1,620	4,690	3,300	1,670	2,210	2,210	2,090
11.....	990	887	580	570	490	1,450	4,160	4,080	1,560	1,790	2,030	2,090
12.....	1,050	905	580	560	500	1,560	3,740	4,420	1,450	1,450	2,030	2,150
13.....	1,130	914	570	550	500	1,500	3,300	4,160	1,330	1,290	2,270	2,030
14.....	1,220	887	*560	520	500	1,450	3,140	3,740	1,280	1,190	*3,250	1,910
15.....	1,190	905	560	500	500	1,330	2,720	4,420	1,190	1,150	3,070	1,670
16.....	1,110	869	550	470	600	1,300	2,660	4,420	1,180	990	2,660	1,560
17.....	1,030	550	540	450	660	1,400	2,460	4,880	1,230	1,000	2,270	1,450
18.....	1,090	470	530	430	620	1,320	2,340	*4,240	*1,150	1,030	2,790	1,400
19.....	1,030	650	520	400	620	1,320	2,210	3,440	1,120	*1,310	4,890	1,400
20.....	896	941	510	400	640	1,280	2,090	3,000	1,140	2,600	5,270	1,310
21.....	914	869	510	400	680	1,280	1,970	2,720	1,190	2,460	3,000	1,300
22.....	923	815	510	400	720	1,250	2,030	*2,460	1,730	2,030	2,150	1,230
23.....	914	779	520	400	720	1,300	1,910	2,340	1,350	1,730	1,730	1,130
24.....	896	800	540	400	960	1,310	*1,850	2,210	1,240	1,400	*1,670	1,040
25.....	905	750	550	410	2,000	1,460	1,730	2,150	1,110	1,240	1,500	1,000
26.....	896	550	570	450	5,000	*1,670	1,670	2,090	1,060	1,090	1,350	941
27.....	860	450	570	490	3,900	1,970	1,670	2,090	1,090	990	1,280	905
28.....	905	*300	550	490	2,920	2,030	2,270	*2,150	1,090	1,110	1,210	896
29.....	950	450	530	490	2,720	1,970	2,400	3,420	970	1,010	1,170	824
30.....	941	620	510	490	.....	2,030	2,530	2,720	878	1,020	1,100	833
31.....	950	.....	520	490	.....	2,090	.....	3,440	.....	1,160	1,630	.....

Iowa River at Wapello, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	743	725	640	760	950	1,970	2,860	1,500	5,440	4,780	3,900	5,070
2	770	788	640	760	900	1,850	2,790	1,450	10,700	4,330	3,900	3,740
3	761	824	720	780	840	1,790	2,790	1,450	11,200	4,160	4,330	3,070
4	716	788	820	700	800	1,910	2,860	1,350	11,000	4,160	3,990	2,660
5	672	788	900	640	760	1,970	2,660	1,280	10,400	4,330	3,370	2,460
6	680	779	1,010	620	760	1,970	2,530	1,330	8,800	5,070	3,000	*2,210
7	648	797	1,050	600	760	1,910	2,530	1,250	8,020	4,590	2,790	2,030
8	608	806	1,080	640	760	1,850	2,400	1,160	7,090	5,070	2,400	1,790
9	592	788	1,070	660	1,400	1,850	2,270	1,180	6,670	5,260	2,210	1,670
10	*552	806	1,050	660	1,800	1,730	2,090	1,250	6,670	5,260	2,030	1,620
11	544	815	720	640	2,200	1,790	1,970	1,260	6,670	5,070	1,910	1,560
12	544	815	620	600	2,100	1,790	1,970	1,400	6,670	4,240	1,850	1,620
13	656	824	580	580	2,100	1,670	1,910	1,670	5,640	3,440	1,730	1,500
14	640	851	580	560	2,300	1,670	1,790	2,340	5,070	3,000	1,670	1,500
15	616	932	600	560	2,600	1,560	1,620	3,070	*4,600	2,790	1,500	1,450
16	608	*1,000	640	540	3,000	1,670	1,560	3,370	4,420	*2,660	1,500	1,400
17	616	1,130	700	540	3,500	1,620	*1,620	3,440	4,160	2,460	1,450	1,400
18	672	1,130	700	540	3,600	1,730	*1,560	3,370	4,880	2,270	1,450	1,350
19	779	980	680	540	3,440	1,790	1,500	3,220	9,070	2,210	1,620	1,330
20	779	1,010	*630	540	3,300	1,850	1,500	3,070	11,800	2,090	1,850	1,350
21	797	1,040	660	540	*2,920	*1,910	1,500	3,070	13,600	2,090	1,730	1,450
22	788	1,100	700	680	2,720	1,910	1,560	3,140	13,900	2,090	*1,620	1,450
23	788	1,000	720	1,300	2,460	1,910	1,670	3,900	11,800	2,090	1,560	1,310
24	806	820	740	1,600	2,270	1,970	1,790	*4,600	10,200	2,090	1,500	1,290
25	869	800	770	1,800	2,270	2,150	1,730	4,500	9,340	2,340	1,500	1,260
26	887	820	800	1,700	*1,970	2,090	1,670	3,740	8,800	*2,400	1,790	1,210
27	878	840	820	1,550	1,790	2,090	1,620	3,440	7,540	2,530	1,620	1,160
28	869	900	840	1,400	1,910	*2,030	1,560	*3,440	6,460	2,400	1,970	1,090
29	824	779	840	1,250	.....	2,150	1,560	3,370	5,640	2,340	2,240	1,100
30	806	700	860	1,100	.....	2,460	1,560	3,220	5,260	3,070	3,220	1,090
31	761	.....	780	1,050	.....	2,790	.....	3,140	.....	3,440	5,890	.....
1957-58												
1	1,170	1,220	1,140	1,000	1,210	7,280	1,900	2,460	3,660	*2,580	6,400	2,780
2	1,050	1,120	1,230	900	1,180	7,060	1,840	2,390	5,170	2,520	4,960	2,520
3	1,100	1,130	1,300	1,170	1,160	7,970	1,960	2,390	2,980	2,390	4,500	2,200
4	969	1,150	1,340	1,500	1,130	6,620	1,900	2,580	2,320	2,520	4,050	2,080
5	1,000	1,220	1,500	1,690	1,110	5,820	1,960	2,650	2,320	2,520	3,750	3,440
6	861	1,210	1,600	1,700	1,090	5,290	2,140	2,390	2,260	2,720	3,750	7,060
7	888	1,320	1,600	1,700	1,070	4,650	2,460	2,320	2,200	3,190	4,050	8,200
8	879	1,190	1,660	1,630	1,030	4,350	*2,650	2,200	2,260	3,540	4,050	7,740
9	798	1,100	1,560	1,540	1,010	4,050	2,780	2,140	5,050	3,900	3,900	7,280
10	870	1,180	1,300	1,480	960	3,750	3,470	2,080	6,620	4,050	3,750	6,840
11	834	1,230	1,150	1,420	920	3,470	4,350	1,960	7,970	4,050	*3,750	6,840
12	807	1,250	940	1,400	900	*3,330	4,800	1,960	5,820	3,750	3,470	6,620
13	798	1,240	700	1,360	*870	3,190	4,960	1,900	6,000	3,470	4,650	6,000
14	852	1,280	890	1,370	860	3,050	4,650	1,780	10,200	6,030	4,960	6,000
15	924	1,260	1,080	1,400	840	2,910	4,500	*1,720	11,400	7,060	3,750	6,000
16	1,000	1,250	*1,250	1,470	820	2,780	4,200	1,780	*8,660	6,620	3,750	5,060
17	*1,060	1,180	1,500	1,530	810	2,720	4,050	2,020	7,740	6,400	4,200	*3,400
18	1,040	1,310	1,620	1,600	800	2,650	3,750	2,650	7,060	3,750	2,320	2,320
19	942	1,660	2,000	1,670	*790	2,580	3,610	2,390	7,510	8,580	3,610	1,900
20	1,000	2,020	2,520	1,690	790	2,520	3,470	2,140	6,840	11,400	4,350	1,720
21	870	2,140	3,330	1,630	790	2,460	3,330	2,080	6,000	9,900	*4,960	1,840
22	1,020	*1,960	2,840	1,520	800	2,390	3,260	*1,960	5,820	8,660	5,120	1,720
23	1,130	1,780	2,300	1,420	800	2,260	3,190	1,900	5,460	7,510	4,800	1,780
24	1,120	1,660	2,490	1,300	1,100	*2,200	*3,050	1,840	5,290	6,620	3,540	2,020
25	1,080	1,600	2,580	1,260	2,500	2,200	2,980	1,720	4,500	*6,000	3,610	1,720
26	1,100	1,660	2,500	1,320	5,200	2,080	2,910	1,660	3,610	5,460	4,050	1,780
27	1,150	1,600	2,100	1,320	10,000	1,960	2,720	1,600	3,190	5,460	3,540	1,840
28	1,190	1,660	1,800	*1,270	8,660	2,020	2,650	1,550	2,980	5,290	3,050	1,660
29	1,200	1,480	1,580	1,250	.....	1,960	2,580	1,500	2,780	5,120	2,780	1,600
30	1,240	1,230	1,360	1,230	.....	1,900	2,580	1,500	2,650	6,400	2,720	1,550
31	1,150	.....	1,130	1,220	.....	1,900	.....	1,550	.....	7,510	2,720	.....

Iowa River at Wapello, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	1,440	1,250	1,100	1,050	760	21,900	32,800	12,300	18,700	9,600	3,020	4,450
2	1,400	1,240	1,200	1,020	760	19,500	35,000	10,500	16,200	15,000	2,900	4,150
3	1,350	1,180	1,500	1,000	740	14,200	35,500	9,400	13,200	18,700	3,260	4,000
4	1,270	1,220	1,500	960	720	*12,300	33,900	8,900	12,600	16,900	3,380	3,500
5	1,220	1,190	1,200	920	700	11,700	30,800	8,430	13,500	15,800	3,500	3,260
6	1,250	1,120	1,000	900	680	11,100	27,300	8,200	14,200	14,200	3,020	3,140
7	1,260	1,140	940	880	660	9,150	24,900	7,740	14,500	12,500	3,140	3,500
8	1,300	1,150	900	840	660	7,970	22,700	7,510	13,900	11,100	3,500	3,720
9	1,350	1,100	840	840	660	6,840	20,200	7,280	12,300	11,400	3,020	3,500
10	4,220	1,100	800	820	700	6,840	18,700	7,280	10,500	9,600	2,660	3,260
11	4,500	1,120	820	820	800	7,280	17,600	8,660	9,650	8,620	2,550	2,900
12	3,330	1,120	840	820	1,000	7,970	16,900	10,800	8,660	7,570	2,380	2,720
13	2,260	1,120	900	820	1,500	8,200	16,200	10,800	7,510	6,760	2,330	2,550
14	1,840	1,110	940	880	2,100	11,100	15,800	8,900	6,600	5,960	2,220	2,440
15	1,720	1,120	940	890	3,000	16,200	15,500	8,200	*5,410	5,420	2,110	2,280
16	1,660	1,130	*920	900	3,500	14,800	14,500	7,280	5,120	5,070	2,600	2,220
17	1,660	1,390	900	880	3,000	12,000	13,200	6,400	4,800	4,750	3,140	*2,110
18	1,660	3,750	900	860	2,500	11,100	12,600	*5,820	4,500	5,600	3,380	2,060
19	1,550	3,050	900	830	2,000	14,500	12,600	7,740	4,200	8,620	2,780	2,000
20	1,550	*3,190	900	800	1,800	21,900	12,600	9,500	4,050	*6,260	2,380	1,940
21	1,500	3,610	920	760	1,600	29,200	11,700	11,400	3,750	5,240	2,280	2,000
22	1,550	3,260	980	720	1,500	36,100	9,900	11,700	5,420	4,450	2,060	1,890
23	1,500	3,050	1,000	700	4,500	*36,100	8,660	11,400	*5,420	4,000	2,000	2,110
24	*1,440	2,720	1,000	690	11,000	31,300	8,200	10,800	4,300	4,300	2,000	1,850
25	1,290	2,390	1,000	690	16,000	26,800	7,970	10,500	3,860	3,380	*1,940	1,890
26	1,310	2,020	1,050	700	14,000	27,300	7,510	11,100	3,500	3,140	1,940	2,160
27	1,280	1,780	1,050	720	13,000	29,200	7,280	*11,700	3,500	2,960	2,440	2,720
28	1,280	1,600	1,050	740	17,000	30,800	*10,300	11,700	3,500	2,840	3,380	2,660
29	1,340	1,400	1,100	*760	.....	32,300	17,200	12,000	4,900	*2,780	4,300	3,720
30	1,300	1,150	1,100	760	.....	32,300	14,800	15,500	7,160	2,900	4,750	3,500
31	1,260	.....	1,050	760	.....	32,800	.....	17,600	.....	3,020	4,900	.....
1959-60												
1	*3,500	3,380	3,700	10,100	8,400	3,300	53,700	21,400	16,900	9,280	4,050	3,230
2	3,500	3,260	3,350	10,100	7,800	*3,100	58,800	22,600	18,000	8,620	3,770	2,900
3	3,860	3,266	3,700	9,000	7,200	3,050	62,000	22,200	19,500	8,200	3,630	3,100
4	4,000	3,260	4,100	7,100	7,000	3,000	*66,900	21,000	15,800	7,600	3,360	3,490
5	6,820	4,600	4,750	6,000	6,800	3,000	*66,900	20,600	21,400	7,040	3,300	3,490
6	10,500	11,200	5,240	5,200	6,600	3,000	56,800	20,600	25,900	6,680	3,300	3,300
7	14,500	13,300	5,070	4,700	6,400	2,950	*16,600	23,800	21,400	6,340	3,360	3,040
8	11,100	11,400	4,750	4,200	6,300	2,950	38,800	27,600	15,800	*6,020	2,230	2,900
9	8,850	9,600	4,000	3,900	6,200	2,950	32,700	31,800	14,500	5,860	3,040	2,580
10	7,160	8,620	3,600	3,600	5,100	2,950	28,100	39,400	13,900	8,770	3,040	2,460
11	5,780	7,990	3,800	3,900	4,300	3,000	24,200	34,200	18,000	11,700	3,160	2,400
12	4,900	7,570	4,450	8,400	4,600	3,000	21,800	28,500	21,800	9,740	3,040	2,280
13	4,450	7,160	4,600	22,700	4,900	3,050	20,200	29,900	*25,900	10,600	3,040	2,220
14	4,150	6,760	4,600	28,700	5,100	*3,100	21,800	29,900	18,000	13,900	2,840	2,160
15	4,000	6,360	*4,300	37,800	5,200	3,100	22,600	26,400	12,800	13,300	3,190	2,040
16	3,720	5,800	*4,000	43,000	5,300	3,050	20,200	21,000	13,300	12,500	5,380	1,920
17	3,500	5,000	4,000	39,400	5,300	3,000	21,800	19,100	13,300	8,840	5,540	1,920
18	3,380	4,400	3,860	29,700	5,200	3,000	26,800	18,700	12,800	7,400	5,700	1,980
19	3,260	4,000	3,860	17,600	5,100	3,000	28,100	17,200	13,100	6,680	6,180	1,980
20	3,260	*3,800	3,720	14,000	4,800	3,000	27,600	16,900	13,300	6,180	6,180	1,920
21	3,020	3,860	3,720	12,500	4,600	3,050	28,100	17,200	15,100	5,700	6,340	1,920
22	3,020	4,150	3,720	11,000	4,300	3,100	28,500	16,900	*15,500	5,220	5,860	1,980
23	2,900	4,750	3,860	10,200	4,100	3,150	29,000	16,500	13,600	5,070	4,920	2,040
24	3,140	5,600	4,000	10,000	4,000	3,200	28,100	16,200	11,200	5,070	4,770	2,100
25	4,000	6,560	4,000	10,000	3,900	3,200	23,800	17,600	9,740	4,620	*4,620	2,640
26	*3,860	6,560	4,300	10,100	3,800	3,200	20,600	19,500	9,060	4,770	4,330	2,900
27	3,720	6,160	4,900	10,100	3,600	3,500	*19,500	19,800	8,400	*5,070	3,770	*3,040
28	3,500	5,420	10,800	10,000	3,550	5,400	18,700	20,600	8,840	4,620	3,230	3,910
29	*3,380	4,500	14,200	10,000	3,500	10,000	18,400	21,000	9,500	4,470	3,040	4,190
30	3,380	4,100	13,600	9,600	.....	27,600	19,800	20,200	9,740	4,330	*3,160	4,470
31	3,380	.....	11,100	9,000	.....	40,000	.....	18,400	.....	4,050	3,300	.....

Iowa River at Wapello, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	1,016	774	604	503	1,034	1,652	3,248	3,089	1,522	1,433	2,851	2,008
1956-57	718	872	773	853	2,006	1,916	1,967	2,550	8,050	3,362	2,358	1,773
1957-58	1,003	1,410	1,675	1,418	1,757	3,528	3,155	2,025	5,218	5,428	4,009	3,790
1958-59	1,672	1,759	1,008	830	3,816	19,060	17,700	9,905	8,168	7,708	2,879	2,807
1959-60	4,887	6,079	5,215	13,600	5,274	5,353	32,700	22,470	15,200	7,363	4,054	2,683

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.081	0.062	0.048	0.040	0.083	0.132	0.260	0.247	0.122	0.115	0.228	0.161
1956-57	.057	.070	.062	.068	.160	.153	.157	.204	.644	.269	.189	.142
1957-58	.080	.113	.134	.113	.141	.282	.252	.162	.417	.434	.321	.303
1958-59	.134	.141	.081	.066	.305	1.52	1.42	.792	.653	.617	.230	.225
1959-60	.391	.486	.417	1.09	.422	.428	2.62	1.80	1.22	.589	.324	.215

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.09	0.07	0.06	0.05	0.09	0.15	0.29	0.28	0.14	0.13	0.26	0.18
1956-57	.07	.08	.07	.08	.17	.18	.18	.24	.72	.31	.22	.16
1957-58	.09	.13	.15	.13	.15	.33	.28	.19	.47	.50	.37	.34
1958-59	.15	.16	.09	.08	.32	1.76	1.59	.91	.73	.71	.27	.25
1959-60	.45	.54	.48	1.25	.46	.49	2.92	2.07	1.36	.68	.37	.24

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								3,039	3.29
1956	Sept. 1, 1956	4.18	9,340	300	1,645	0.132	1.79	1,642	1.79
1957	June 22, 1957	5.89	14,200	540	2,259	.181	2.48	2,404	2.63
1958	Feb. 27, 1958	6.48	13,000	700	2,871	.230	3.13	2,900	3.16
1959	Mar. 22, 1959	11.52	37,200	660	6,456	.517	7.02	7,441	8.09
1960	Apr. 5, 1960	17.02	69,000	1,920	10,390	.831	11.31		

Peak Discharge (base, 20,000 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: No peak above base.

1958-59: Mar. 1 (11 p.m.) 23,100 cfs (8.68 ft.); Mar. 22 (9 p.m.) 37,200 cfs (11.52 ft.); Apr. 3 (2 a.m.) 36,600 cfs (11.35 ft.).

1959-60: Jan. 16 (2:30 p.m.) 43,600 cfs (12.63 ft.); Apr. 5 (2 a.m.) 69,000 cfs (17.02 ft.); Apr. 23 (5 p.m.) 29,000 cfs (10.10 ft.); May 10 (3:30 p.m.) 40,500 cfs (12.42 ft.); June 6 (8 p.m.) 27,600 cfs (9.76 ft.); June 13 (8 a.m.) 26,800 cfs (9.60 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 17-19, Nov. 24 to Dec. 31, 1955; Jan. 1 to Feb. 26, Nov. 22-28, Nov. 30 to Dec. 5, Dec. 8-31, 1956; Jan. 1 to Feb. 18, Nov. 9, 10, Nov. 29 to Dec. 3, Dec. 9-19, 24-31, 1957; Jan. 1 to Feb. 27, Nov. 28 to Dec. 31, 1958; Jan. 1 to Feb. 28, Nov. 16-20, Nov. 29 to Dec. 4, Dec. 9-11, 1959; Jan 3-12, Jan. 20 to Mar. 29, 1960.

Skunk River near Ames, Iowa

LOCATION.—Lat. 42°04'05", long. 93°37'05", in NW¼SW¼ sec. 23, T. 84 N., R. 24 W., on left bank 2½ miles north of Ames, 3½ miles downstream from Keigley Branch, and 5.2 miles upstream from Squaw Creek.

DRAINAGE AREA.—315 square miles (revised in 1956).

RECORDS AVAILABLE.—July 1920 to September 1927, October 1932 to September 1960.

GAGE.—Water-stage recorder. Concrete control since July 21, 1934. Datum of gage is 893.6 ft. above mean sea level, datum of 1929 (Iowa Highway Commission benchmark). Prior to Aug. 25, 1921, staff gage at same site and datum.

AVERAGE DISCHARGE.—35 years (1920-27, 1932-60), 127 cfs.

EXTREMES.—1920-27, 1932-60: Maximum discharge, 8,630 cfs June 10, 1954; maximum gage height, 13.90 ft. May 20, 1944; no flow at times in 1934, 1937, 1953-57.

REMARKS.—Several diversions for irrigation above station. Bankfull stage is about gage height, 11 feet.

REVISIONS (water years).—WSP 1308: 1925(M), 1934-35(M), 1937(M), 1939(M), 1947-50(M).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	0.6	0.1	0.1	0.1	0	*4.5	14	7.3	6.7	0.4	0	0
2	.2	.1	.1	.1	0	2.5	15	11	4.7	.4	0	0
3	*.2	.1	.2	.1	0	1.5	14	12	3.8	.3	0	2.1
4	.2	.1	.2	.1	0	.9	12	11	3.1	.3	0	*74
5	.4	.1	.2	*.1	0	.6	10	14	2.4	.2	0	125
6	.6	.1	.2	.1	0	.3	9.4	14	2.3	.2	*0	278
7	.6	.1	.2	.1	0	.2	8.5	15	4.2	.1	0	120
8	.7	.1	.2	.1	0	.1	7.7	13	3.3	*.1	0	63
9	.6	.2	.1	.1	0	0	7.7	11	1.9	.1	0	39
10	.4	.2	.1	.1	0	0	6.7	12	1.1	.1	0	26
11	.3	.2	0	.1	0	0	6.4	19	.9	.1	0	17
12	.2	.2	0	.1	0	0	6.4	23	.6	.1	0	12
13	.1	.2	0	.1	0	0	6.0	162	.4	0	18	9.0
14	.1	.2	0	.1	0	0	5.4	72	1.0	0	18	7.0
15	.1	.2	0	.1	0	0	5.0	34	1.5	0	6.6	6.0
16	.1	.1	0	0	0	0	5.4	21	1.8	0	3.3	5.0
17	.1	.1	0	0	0	0	5.0	16	1.0	0	1.8	3.6
18	.1	.1	0	0	0	.1	4.2	12	.8	0	1.7	2.9
19	.1	.1	0	0	0	3.0	3.8	9.4	.8	0	1.2	2.4
20	.1	.1	0	0	0	5.0	3.6	8.0	.7	0	.8	1.6
21	.1	.2	0	0	0	16	3.6	7.3	.6	0	.3	1.2
22	.1	.2	0	0	0	36	2.6	8.0	.6	0	.6	1.8
23	.1	.2	0	0	0	33	2.4	10	.4	0	.3	1.5
24	.1	.2	0	0	.1	30	2.4	6.4	.3	0	0	2.0
25	.1	.2	0	0	.4	25	2.4	5.0	.1	0	0	3.3
26	.1	.2	0	0	.9	*33	2.4	4.2	.2	0	0	2.6
27	.1	.1	0	0	2.0	25	4.2	4.0	.4	0	0	2.7
28	.1	*.1	0	0	2.5	20	7.0	*3.6	.5	0	0	2.0
29	.1	.1	0	0	3.0	17	9.0	33	.6	0	0	.6
30	*.1	.1	0	*0		15	*8.0	33	.5	0	0	3.0
31	*.1		0	0		14		11		0	0	

Skunk River near Ames, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	0.3	3.4	9.4	9.2	5.0	34	*27	21	360	76	48	21
2	.5	3.3	12	7.0	5.0	27	28	19	230	73	38	23
3	*.6	3.3	*12	6.4	5.1	26	27	18	*118	688	31	*18
4	.6	5.6	13	5.8	*5.3	*26	27	14	101	1,700	25	14
5	.6	9.0	15	5.4	5.5	22	*28	12	88	950	*21	12
6	.3	8.4	11	5.0	5.7	17	28	*11	76	530	19	11
7	.1	6.6	10	4.7	6.0	13	27	9.4	78	311	17	10
8	.1	5.2	9.4	4.3	6.2	10	26	8.5	71	223	14	9.0
9	0	4.0	8.8	3.9	13	9.6	23	16	65	*178	13	8.5
10	0	3.5	8.2	3.7	35	9.1	20	35	63	139	11	8.0
11	0	3.3	7.8	3.5	70	12	19	32	63	115	10	12
12	0	3.2	7.2	3.2	150	14	18	36	58	97	10	56
13	0	3.2	6.8	3.0	130	17	15	200	55	82	9.0	56
14	.4	4.0	7.2	2.9	80	22	15	900	254	73	9.4	44
15	2.8	7.3	7.2	2.8	60	16	15	500	509	67	8.5	32
16	2.2	18	7.2	2.8	45	9.0	15	400	2,550	58	7.3	27
17	1.3	23	6.4	3.0	35	18	15	300	*1,720	50	7.3	20
18	.8	19	6.4	2.9	28	45	14	260	1,130	42	6.4	18
19	.8	15	7.0	3.6	23	110	13	230	689	36	7.0	15
20	.7	13	7.0	5.0	19	120	14	200	469	36	6.4	16
21	.6	11	7.0	11	18	92	12	450	316	60	7.0	14
22	.6	9.0	7.7	43	18	71	11	330	251	90	6.0	12
23	1.0	8.0	8.5	30	18	62	11	230	243	71	6.4	11
24	1.1	6.7	9.0	35	19	53	10	150	178	51	6.4	9.4
25	1.0	7.3	8.5	35	25	50	9.4	160	167	39	5.4	8.5
26	1.7	8.0	8.0	20	29	44	26	280	157	38	6.4	7.7
27	1.2	8.0	8.0	14	39	39	40	200	130	82	32	7.0
28	2.3	7.7	9.4	9.0	38	38	39	150	118	105	60	6.4
29	1.9	6.7	10	6.0	.....	34	32	110	99	99	36	5.7
30	4.2	7.0	11	5.2	.....	31	26	400	86	76	36	*6.7
31	3.8	.....	11	5.0	.....	28	.....	600	.....	60	27	.....
1957-58												
1	7.0	18	145	53	30	154	84	69	44	56	275	18
2	7.3	55	*122	64	30	120	92	69	*46	1,600	223	16
3	6.4	69	99	72	*29	*105	94	71	213	957	192	14
4	6.4	*65	76	74	28	97	112	63	211	2,550	*154	14
5	6.4	60	101	72	25	94	192	58	170	1,430	130	48
6	6.0	51	101	*66	21	92	398	58	112	920	120	99
7	7.7	50	84	56	19	101	*491	55	146	*728	103	74
8	14	45	60	48	18	97	360	*58	458	579	92	51
9	15	31	45	47	16	88	288	56	316	464	80	42
10	11	27	32	47	16	92	251	51	167	360	76	34
11	8.5	29	25	47	15	84	215	45	223	733	65	28
12	8.0	32	40	48	15	90	188	40	188	662	69	25
13	7.7	39	60	50	14	101	170	36	810	452	74	21
14	8.5	40	63	54	14	110	154	69	728	370	60	26
15	12	42	65	60	14	105	145	74	458	700	50	46
16	13	60	76	56	14	90	130	55	311	628	42	39
17	12	108	90	52	14	82	122	71	247	425	38	*40
18	10	90	101	50	14	84	115	142	188	330	32	34
19	10	64	133	48	14	76	110	90	154	392	28	31
20	9.9	82	157	47	14	74	105	65	122	672	48	28
21	9.4	94	157	38	14	73	99	55	105	480	132	26
22	12	82	160	44	14	76	94	53	99	360	71	22
23	18	123	181	43	60	76	90	46	99	284	55	20
24	20	115	184	41	250	76	94	44	97	239	46	26
25	18	103	188	39	450	76	86	40	101	420	38	21
26	20	105	142	37	381	78	82	34	92	480	34	18
27	17	110	122	35	320	78	82	33	84	535	32	17
28	17	122	104	33	239	78	86	29	74	557	29	15
29	17	102	82	32	.....	80	80	26	69	350	26	14
30	17	70	66	31	.....	80	73	26	63	436	25	14
31	16	.....	58	31	.....	80	.....	38	.....	365	22	.....

Skunk River near Ames, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	12	9.0	4.0	3.8	1.7	100	302	101	1,250	920	25	36
2.....	11	9.0	5.4	3.3	1.7	120	316	92	755	662	22	239
3.....	11	9.0	6.7	3.0	1.7	300	271	92	557	452	31	650
4.....	11	8.5	5.0	2.7	1.7	150	215	86	414	325	45	320
5.....	10	8.0	4.1	2.5	1.7	70	184	94	325	255	33	192
6.....	9.9	7.3	3.6	2.3	1.7	76	151	118	271	195	27	136
7.....	9.9	7.3	3.4	2.2	1.6	82	151	120	231	154	25	110
8.....	11	7.7	3.2	2.1	1.6	78	145	110	195	130	18	82
9.....	14	8.0	3.2	2.1	1.6	130	128	118	170	115	16	65
10.....	11	8.5	3.2	2.1	1.6	230	115	164	151	99	14	*48
11.....	10	8.0	3.1	2.1	1.6	440	108	203	136	88	13	36
12.....	9.4	8.0	3.1	2.1	1.6	550	101	211	122	76	*12	29
13.....	9.0	7.7	3.1	2.2	1.6	545	94	181	105	*69	10	25
14.....	9.4	7.7	3.0	2.2	1.6	540	92	151	99	63	9.0	20
15.....	9.0	8.5	3.0	2.2	1.6	255	86	128	90	53	33	18
16.....	9.0	8.5	3.0	2.2	1.6	*135	80	118	82	48	27	16
17.....	9.0	12	*3.0	2.1	1.6	125	80	105	*74	55	17	17
18.....	9.0	*20	3.0	2.1	*1.6	120	84	103	69	113	13	17
19.....	9.0	18	3.0	2.1	1.6	500	80	105	67	130	10	26
20.....	9.4	17	3.0	2.1	1.6	1,400	97	*260	63	84	8.5	22
21.....	8.5	13	3.1	2.0	1.6	900	125	684	60	60	6.7	17
22.....	8.5	11	3.1	2.0	1.5	*562	*211	508	53	46	6.7	18
23.....	8.5	11	3.1	1.9	1.5	535	215	381	48	39	67	22
24.....	8.5	9.9	3.3	1.9	1.5	524	181	320	40	33	86	19
25.....	8.5	9.9	3.6	1.8	1.6	452	145	267	38	27	48	27
26.....	8.5	4.9	3.9	1.8	2.0	728	120	223	33	22	27	38
27.....	*9.0	5.6	4.3	1.8	3.0	1,010	118	178	40	19	18	79
28.....	9.0	5.8	4.6	*1.7	20	618	139	188	77	17	16	108
29.....	8.5	5.8	4.9	1.7	.....	414	130	574	590	28	31	86
30.....	8.5	4.8	4.7	1.7	.....	316	118	950	810	46	23	71
31.....	8.5	.....	4.3	1.7	.....	288	.....	1,370	.....	36	33	.....
1959-60												
1.....	63	29	118	175	*72	40	2,850	634	392	125	45	97
2.....	67	28	*103	150	72	*39	2,480	513	350	115	*40	74
3.....	73	*28	99	130	71	38	2,060	398	311	105	36	56
4.....	78	56	97	115	68	38	1,590	*325	284	92	31	48
5.....	90	273	80	132	68	37	*1,280	311	251	86	31	39
6.....	*86	370	64	150	70	37	1,100	980	223	*80	32	31
7.....	82	259	58	136	72	36	892	1,520	*199	73	46	*27
8.....	76	215	74	*120	75	35	728	1,130	188	69	39	22
9.....	71	203	78	112	76	35	606	810	174	92	38	25
10.....	63	223	74	108	66	35	496	650	195	247	27	18
11.....	58	219	80	97	56	34	442	557	192	255	23	18
12.....	51	188	76	115	61	34	381	480	192	1,040	20	14
13.....	48	164	71	157	67	33	335	436	211	892	18	13
14.....	46	103	67	157	73	33	293	392	199	755	18	12
15.....	46	80	71	62	70	33	271	340	181	540	25	14
16.....	45	94	69	80	67	32	320	376	188	386	25	22
17.....	40	72	67	100	65	32	728	414	170	298	29	31
18.....	38	98	62	94	61	32	980	392	157	235	92	38
19.....	38	110	62	90	58	32	728	524	398	195	75	74
20.....	36	102	63	85	55	32	546	700	546	154	73	65
21.....	34	100	63	81	53	33	436	640	392	130	51	50
22.....	32	115	62	78	51	34	355	562	320	112	34	48
23.....	34	122	65	75	49	35	302	491	275	99	23	55
24.....	36	145	53	72	47	36	271	474	223	115	21	200
25.....	36	135	65	71	45	38	540	892	188	92	40	311
26.....	34	108	71	70	43	40	552	1,220	167	128	88	211
27.....	33	80	110	70	41	60	430	892	148	101	46	148
28.....	31	66	251	70	41	400	355	865	139	80	47	118
29.....	28	82	350	70	40	*2,000	335	601	139	71	329	103
30.....	28	103	320	70	.....	5,300	640	518	133	63	259	90
31.....	29	.....	220	71	.....	4,060	.....	436	.....	51	139	.....

Skunk River near Ames, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.22	0.14	0.05	0.05	0.31	9.12	6.67	20.1	1.57	0.08	1.70	27.1
1956-57	1.02	8.02	8.94	9.72	33.4	36.1	21.0	203	350	203	17.6	17.3
1957-58	11.9	69.4	101	48.9	75.1	89.9	156	55.5	206	629	79.4	30.7
1958-59	9.60	9.31	3.71	2.18	2.33	397	146	268	234	144	24.9	86.3
1959-60	50.0	132	102	102	60.4	411	777	628	238	222	59.4	69.1

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.00070	0.00044	0.00016	0.00016	0.00098	0.029	0.021	0.064	0.0050	0.00025	0.0054	0.086
1956-57	.0032	.025	.028	.031	.106	.115	.067	.644	1.11	.644	.056	.055
1957-58	.038	.220	.321	.155	.238	.285	.495	.176	.654	2.00	.252	.097
1958-59	.030	.030	.012	.0069	.0074	1.26	.463	.851	.743	.457	.079	.274
1959-60	.159	.419	.324	.324	.192	1.30	2.47	1.99	.756	.705	.189	.219

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.0008	0.0005	0.0002	0.0002	0.001	0.03	0.02	0.07	0.006	0.0003	0.006	0.10
1956-57	.004	.03	.03	.04	.11	.13	.07	.74	1.24	.74	.06	.06
1957-58	.01	.25	.37	.18	.25	.33	.55	.20	.73	2.30	.29	.11
1958-59	.04	.03	.01	.008	.008	1.45	.52	.98	.83	.53	.09	.31
1959-60	.18	.47	.37	.37	.21	1.50	2.75	2.30	.84	.81	.22	.24

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								52.5	2.25
1956	Sept. 4, 1956	3.49	376	0	5.58	0.018	0.24	7.05	3.0
1957	June 16, 1957	8.28	3,540	0	75.8	.241	3.25	89.6	3.85
1958	July 4, 1958	7.85	3,150	6.0	130	.413	5.60	117	5.02
1959	May 31, 1959	5.83	1,720	1.5	111	.352	4.81	133	5.75
1960	Mar. 30, 1960	10.33	6,210	12	238	.756	10.26		

Peak Discharge (base, 1,500 cfs)

1955-56: No peak above base.

1956-57: June 16 (4.30 a.m.) 3,540 cfs (8.28 ft.); July 4 (6 a.m.) 2,200 cfs (6.52 ft.).

1957-58: July 2 (5 a.m.) 2,270 cfs (6.55 ft.); July 4 (6 a.m.) 3,150 cfs (7.85 ft.); July 11 (12 m) 1,720 cfs (5.78 ft.).

1958-59: Mar. 20 (time unknown) 1,590 cfs (5.60 ft.); May 31 (4.30 a.m.) 1,720 cfs (5.83 ft.).

1959-60: Mar. 30 (4 p.m.) 6,210 cfs (10.33 ft.); May 7 (7 a.m.) 1,590 cfs (5.59 ft.).

Notes to Tables of Daily Discharge

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

Stage-discharge relation affected by ice Nov. 21, 22, Dec. 7-18, 1956; Jan. 1-25, Jan. 28 to Feb. 23, Mar. 9-10, Nov. 9-11, 18-22, 29, 30, Dec. 4, 8-13, 27-31, 1957; Jan. 1 to Feb. 25, Nov. 26 to Dec. 31, 1958; Jan. 1 to Mar. 9, Nov. 14-21, 25-29; Dec. 5-8, 31, 1959; Jan. 1-8, Jan. 15 to Mar. 29, 1960. No gage-height record Dec. 12-31, 1955; Jan. 1 to Mar. 31, June 28 to July 7, Nov. 1-14, 1956; Mar. 6, 7, 11-20, May 9 to June 2, 1957; Mar. 10-21, 1959.

Skunk River below Squaw Creek, near Ames, Iowa

LOCATION.—Lat. 42°00'30", long. 93°35'40", in NE¼NW¼ sec. 13, T. 83 N., R. 24 W., on right bank 15 ft. downstream from highway bridge, a quarter of a mile downstream from Squaw Creek, 1 mile downstream from bridge on U. S. Highway 30, and 2 miles southeast of Ames.

DRAINAGE AREA.—556 square miles (revised in 1956).

RECORDS AVAILABLE.—October 1952 to September 1960.

GAGE.—Water-stage recorder and concrete control. Datum of gage is 867.10 ft. above mean sea level, datum of 1929.

AVERAGE DISCHARGE.—8 years, 198 cfs.

EXTREMES.—1952-60: Maximum discharge, 9,260 cfs Mar. 30, 1960 (gage height, 13.20 ft.); no flow for many days during 1953-57.

Flood of May 19, 1944, reached a stage of 13 ft., from floodmarks (discharge, 10,000 cfs).

REMARKS.—Bankfull stage is about gage height, 12 ft.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	0.8	0.4	0.2	0	0	*0	11	6.4	12	.....	0	0
2	.8	.6	.2	0	0	0	11	8.0	6.4	.....	0	0
3	*.7	.6	.2	0	0	0	10	9.3	4.4	.....	0	0
4	.7	.6	.2	0	0	0	8.6	9.3	2.9	.....	0	*34
5	.7	.6	.2	0	0	0	6.9	12	2.2	.....	0	55
6	.7	.4	.2	0	0	0	6.4	12	1.8	.....	*0	362
7	.7	.4	.2	0	0	0	5.8	11	32	.....	0	145
8	.6	.4	.2	0	0	0	4.4	8.6	6.6	*	0	54
9	.6	.4	.2	0	0	0	4.0	7.4	2.0	.....	0	25
10	.6	.4	.2	0	0	0	3.6	7.4	.8	.....	0	16
11	.4	.4	.2	0	0	0	3.6	11	.6	.....	0	11
12	.4	.4	.2	0	0	0	3.2	17	.6	.....	0	8.0
13	.4	.4	.2	0	0	0	2.2	280	.4	.....	0	7.4
14	.4	.4	.2	0	0	0	2.0	162	.4	.....	.5	5.8
15	.4	.4	.1	0	0	0	1.5	58	.4	.....	.5	4.0
16	.4	.3	.1	0	0	0	1.5	34	.4	.....	0	2.9
17	.4	.3	0	0	0	0	1.3	21	.2	.....	0	1.5
18	.4	.3	0	0	0	0	1.0	15	.2	.....	0	1.0
19	.4	.3	0	0	0	3.6	8	10	.1	.....	0	.7
20	.4	.4	0	0	0	5.1	.7	8.0	.1	.....	0	.6
21	.4	.4	0	0	0	17	.4	7.4	0	.....	0	.4
22	.4	.4	0	0	0	33	.2	6.4	.1	.....	0	.2
23	.4	.3	0	0	0	31	.2	8.6	0	.....	0	0
24	.4	.3	0	0	0	27	.2	5.4	0	.....	0	0
25	.4	.2	0	0	0	22	.2	4.4	0	.....	0	0
26	.3	.2	0	0	0	*28	.2	3.6	0	.....	0	0
27	.3	.3	0	0	0	36	1.2	2.9	0	.....	0	0
28	.4	*.2	0	0	0	27	5.0	*2.6	0	.....	0	0
29	.4	.2	0	0	0	18	5.8	68	0	.....	0	0
30	.4	.2	0	0	0	13	*5.8	117	0	.....	0	0
31	*.4	.....	0	0	0	9.3	.....	27	.....	.....	0	.....

Skunk River below Squaw Creek, near Ames, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	0	0	3.0	6.9	3.5	54	*36	29	405	100	123	43
2	0	0	4.0	5.2	3.5	46	32	25	238	91	98	57
3	0	0	*5.0	4.9	3.5	40	29	20	*167	717	86	*38
4	0	0	7.0	4.6	*3.5	*36	34	17	123	3,260	69	30
5	0	0	10	4.2	3.6	29	36	14	91	2,360	*62	24
6	0	0	4.9	3.8	3.8	24	32	12	62	1,060	56	25
7	0	0	4.8	3.5	4.1	20	30	12	77	655	49	20
8	0	.8	4.4	3.2	4.5	16	29	10	52	450	45	18
9	0	.8	4.1	2.9	15	15	24	14	43	*306	45	16
10	0	.7	3.9	2.7	60	15	21	40	45	222	36	18
11	0	.7	3.8	2.5	150	20	18	36	41	174	32	32
12	0	.4	3.6	2.4	300	30	15	40	29	148	30	90
13	0	.4	3.4	2.3	240	34	14	24	23	132	27	93
14	0	.4	3.7	2.2	180	47	13	1,160	558	116	38	73
15	0	.6	3.9	2.2	140	36	14	927	926	112	24	62
16	0	.3	3.9	2.2	100	36	14	*532	*5,790	100	17	54
17	0	13	3.6	2.2	78	36	12	405	*4,310	86	17	43
18	0	10	3.4	2.3	60	102	12	327	2,330	75	17	34
19	0	8.6	3.2	2.9	50	222	14	253	1,270	66	16	34
20	0	6.0	3.0	4.0	37	229	14	224	816	85	16	32
21	0	4.2	2.9	10	31	169	12	480	550	100	16	36
22	0	6.0	3.2	56	31	137	11	366	312	109	13	25
23	0	5.8	3.7	40	31	96	12	236	420	105	15	24
24	0	3.6	4.3	54	34	77	12	164	280	80	12	22
25	0	2.9	4.8	58	40	71	9.3	178	281	69	10	20
26	0	1.5	5.6	18	54	62	96	303	351	73	12	16
27	0	2.6	6.4	9.0	64	52	69	231	222	574	73	14
28	0	2.9	10	5.0	64	47	54	158	174	515	100	13
29	0	* 2.2	12	4.0	.....	54	45	116	137	306	69	11
30	0	2.6	14	3.6	.....	43	36	372	109	193	64	*12
31	0	.....	12	3.5	.....	34	.....	672	.....	139	56	.....
1957-58												
1	11	50	234	90	66	275	130	105	64	96	450	38
2	9.3	96	*188	106	64	212	132	102	*62	4,600	405	39
3	9.3	120	188	114	*61	*178	135	107	300	2,880	333	41
4	8.6	*110	151	110	58	169	153	100	420	*7,800	*280	34
5	8.6	100	174	102	54	171	236	93	267	3,880	236	80
6	6.9	92	146	*91	51	167	585	91	174	2,190	205	146
7	9.3	86	139	85	48	186	*708	91	188	*1,480	183	109
8	35	77	112	82	45	181	550	*93	792	1,080	164	82
9	30	60	82	80	41	160	450	91	1,270	820	146	86
10	24	48	60	79	39	160	381	84	625	638	130	66
11	16	50	45	80	35	153	327	80	405	1,280	118	54
12	15	54	70	82	32	153	283	73	312	1,590	109	51
13	14	64	96	86	31	174	255	69	1,590	1,880	114	27
14	14	70	114	94	30	190	238	80	1,580	655	98	72
15	29	72	126	114	29	183	219	107	860	1,030	91	91
16	27	90	140	104	29	160	200	84	602	900	84	84
17	21	120	160	98	29	144	183	84	465	620	75	*73
18	17	180	180	93	29	148	171	160	360	480	73	66
19	16	115	215	90	29	130	160	123	289	632	69	60
20	14	130	270	86	29	128	153	86	231	1,180	107	56
21	15	160	270	80	29	123	146	75	193	800	146	52
22	29	145	286	86	29	121	139	71	176	602	107	51
23	38	170	303	82	60	118	135	62	169	480	89	22
24	54	162	306	80	450	121	142	58	171	405	80	45
25	52	155	303	78	700	121	125	54	167	515	75	39
26	49	150	246	75	638	121	118	51	153	585	69	35
27	49	175	210	73	532	118	120	49	135	827	64	30
28	43	200	170	72	405	118	130	43	125	820	60	27
29	43	224	140	71	.....	125	116	41	115	515	56	26
30	41	118	118	70	.....	130	107	39	105	622	49	26
31	39	.....	104	69	.....	118	.....	64	.....	585	43	.....

Skunk River below Squaw Creek, near Ames, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	19	11	5.4	4.5	0.3	300	515	205	3,190	1,020	55	69
2	19	12	5.4	3.6	.3	850	550	183	1,640	1,000	58	236
3	19	12	7.4	3.0	.3	*1,060	450	188	1,110	690	60	708
4	19	12	*10	2.6	.3	400	354	171	800	515	73	366
5	19	12	7.4	2.2	.2	140	292	214	620	405	58	219
6	19	11	5.4	2.0	.2	150	243	267	515	324	51	155
7	19	11	4.0	2.0	.2	170	234	258	435	270	47	116
8	19	11	3.2	1.8	.2	150	224	231	384	238	41	89
9	19	11	2.7	1.5	.2	480	200	250	351	212	38	71
10	19	12	2.3	1.2	.2	1,100	176	354	318	186	32	*54
11	15	12	2.1	1.0	.6	1,200	160	480	297	171	27	45
12	15	11	2.0	1.2	.6	1,250	144	465	265	151	*20	39
13	15	11	1.9	1.8	.6	1,250	142	375	231	*135	16	32
14	15	11	1.9	1.8	.6	1,300	142	300	207	123	12	30
15	15	12	1.8	1.2	.6	450	130	255	195	112	43	25
16	15	12	1.8	.7	.6	*250	123	229	183	105	43	24
17	15	18	*1.8	.8	.4	240	123	207	*162	116	27	22
18	15	*36	1.8	.7	*.2	230	125	207	151	171	17	25
19	15	30	2.0	.6	.2	1,270	123	210	*146	210	16	45
20	*15	25	2.0	.6	.2	3,500	158	*310	142	137	12	34
21	17	22	2.1	.4	.2	1,840	214	1,130	135	105	8.0	27
22	14	20	2.2	.4	.2	*940	*150	940	130	93	6.4	25
23	12	18	1.8	.4	.3	800	465	708	123	84	71	29
24	12	16	2.6	.3	.4	708	366	602	116	73	91	25
25	12	16	3.2	.3	.7	620	283	498	109	64	64	43
26	14	7.4	3.6	.3	*1.0	*1,420	224	420	105	56	43	51
27	*15	8.0	4.4	.3	*10	2,050	224	336	114	51	29	70
28	14	8.6	4.9	*.3	100	1,080	292	354	162	49	21	105
29	14	8.0	5.4	.3	.....	708	278	1,180	663	77	38	93
30	12	5.8	4.4	.3	.....	550	238	2,190	840	91	34	77
31	11	.....	5.4	.3	.....	498	.....	4,270	.....	73	41	.....
1959-60												
1	66	36	*149	250	*103	70	5,800	1,100	655	241	75	175
2	83	35	135	180	105	*69	4,780	950	595	216	68	135
3	81	*33	126	140	105	67	3,450	855	325	197	*58	105
4	85	77	120	130	105	66	2,680	*715	480	168	50	83
5	107	300	110	140	105	65	*2,160	675	440	156	46	70
6	*103	456	94	155	108	64	1,760	2,380	410	*146	54	60
7	105	321	84	170	110	63	1,370	4,520	*378	133	79	*52
8	85	265	98	*155	112	62	1,060	3,310	357	126	70	48
9	79	249	110	148	116	61	855	1,980	338	199	60	40
10	72	276	106	144	105	60	735	1,370	346	456	48	33
11	66	268	115	140	96	59	675	1,110	357	456	38	29
12	60	231	110	206	102	58	578	895	369	1,520	35	26
13	56	201	105	282	110	58	542	795	387	1,760	31	24
14	54	119	100	282	125	58	473	715	369	1,270	28	24
15	51	94	105	115	120	57	439	655	343	855	28	26
16	52	120	100	140	115	57	611	635	352	595	29	46
17	48	90	98	160	110	57	1,100	715	326	456	38	50
18	44	120	97	154	106	56	1,700	655	304	369	114	58
19	42	160	96	146	102	56	1,350	795	456	318	98	101
20	44	155	96	138	96	56	1,000	1,070	735	265	140	94
21	42	150	95	130	92	57	780	1,140	525	231	83	75
22	40	170	94	124	88	59	660	1,110	456	206	62	70
23	42	185	93	118	84	60	540	895	384	185	44	83
24	42	187	85	114	80	62	480	775	324	189	35	259
25	42	165	100	108	77	65	940	1,000	279	156	133	473
26	40	140	120	106	74	68	980	2,160	254	194	177	321
27	38	103	151	105	72	100	850	1,760	228	168	94	233
28	38	79	354	104	71	800	740	1,270	260	135	101	192
29	36	79	542	103	70	*3,800	680	1,020	293	119	537	168
30	36	126	473	103	.....	8,540	1,150	875	271	98	416	144
31	36	.....	320	103	.....	*7,680	.....	735	.....	81	246	.....

Skunk River below Squaw Creek, near Ames, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56 . . .	0.49	0.37	0.10	0	0	8.71	3.62	31.0	2.49	0	0.03	24.5
1956-57 . . .	0	2.57	5.34	10.6	63.9	62.2	26.6	246	674	406	43.3	34.3
1957-58 . . .	25.4	115	172	87.2	132	153	231	81.0	412	1,338	139	56.9
1958-59 . . .	15.7	14.1	3.62	1.24	4.28	868	255	580	461	229	38.5	98.3
1959-60 . . .	58.6	166	148	148	98.8	726	1,365	1,246	393	376	100	110

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56 . . .	0.00088	0.00067	0.00018	0	0	0.016	0.0065	0.056	0.0045	0	0.00054	0.014
1956-57 . . .	0	.0046	.0096	.019	.115	.112	.048	.442	1.21	.730	.078	.062
1957-58 . . .	.046	.207	.309	.157	.237	.275	.415	.146	.741	2.41	.250	.102
1958-59 . . .	.028	.025	.0065	.0022	.0077	1.56	.459	1.04	.829	.412	.069	.177
1959-60 . . .	.105	.299	.266	.266	.178	1.31	2.46	2.24	.707	.676	.180	.198

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56 . . .	0.001	0.0007	0.0002	0	0	0.02	0.007	0.06	0.005	0	0.00007	0.05
1956-57 . . .	0	.0005	.01	.02	.12	.13	.05	.51	1.35	.84	.09	.07
1957-58 . . .	.05	.23	.36	.18	.25	.32	.46	.17	.83	2.77	.29	.11
1958-59 . . .	.03	.03	.008	.003	.008	1.80	.51	1.20	.93	.48	.08	.20
1959-60 . . .	.12	.33	.31	.31	.19	1.51	2.74	2.58	.79	.78	.21	.22

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955 . . .								101	2.46
1956 . . .	May 13, 1956	(13.05)	638	0	5.95	0.011	0.14	6.54	.16
1957 . . .	June 16, 1957	11.58	6,360	0	131	.236	3.20	157	3.82
1958 . . .	July 4, 1958	12.82	8,550	6.9	247	.444	6.02	223	5.45
1959 . . .	May 31, 1959	10.57	5,520	2	216	.388	5.28	244	5.97
1960 . . .	Mar. 30, 1960	13.20	9,260	24	412	.741	10.09		

(1) Maximum gage-height, 3.08 ft. Sept. 6, 1956.

Peak Discharge (base, 2,500 cfs)

1955-56: No peak above base.

1956-57: June 16 (8 a.m.) 6,360 cfs (11.58 ft.); July 4 (12:30 p.m.) 3,950 cfs (8.54 ft.).

1957-58: June 8 (9:30 p.m.) 2,610 cfs (6.95 ft.); June 13 (7:30 p.m.) 2,610 cfs (6.93 ft.); July 2 (4:30 p.m.) 6,120 cfs (11.13 ft.); July 4 (1 p.m.) 8,550 cfs (12.82 ft.).

1958-59: Mar. 20 (8 a.m.) 3,860 cfs (8.69 ft.); May 31 (9 a.m.) 5,520 cfs (10.57 ft.).

1959-60: Mar. 30 (10:30 p.m.) 9,260 cfs (13.20 ft.); May 7 (9 a.m.) 4,600 cfs (9.47 ft.).

Notes to Tables of Daily Discharge

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

Stage-discharge relation affected by ice Nov. 20, 22, Nov. 30 to Dec. 4, Dec. 7-20, 22-26, 31, 1956; Jan. 2 to Mar. 7, Mar. 9-11, Nov. 8-11, 19-22, Dec. 8-21, 27-31, 1957; Jan. 1 to Feb. 25, 1958; Feb. 26 to Mar. 18, Nov. 15-22, 26, Dec. 4-8, 31, 1959; Jan. 1-11, Jan. 15 to Mar. 29, 1960. No gage-height record Nov. 3-7, 12-18, 23, 25-28, 1957; Mar. 30, Apr. 1, 25, 27, June 28-30, Sept. 26 to Oct. 20, Nov. 6-16, Dec. 7-16, 21, 1958; Jan. 1, 3, 4, 13, 15, 18, 22-27, Jan. 29 to Feb. 6, Feb. 8-10, 12, 14, 15, 17, 19, 21, 22, 25, Dec. 9-26, 1959; Apr. 17 to May 2, June 4-6, 1960.

Indian Creek near Mingo, Iowa

LOCATION.—Lat. $41^{\circ}48'20''$, long. $93^{\circ}18'25''$, in NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 28, T. 81 N., R. 21 W., on right bank 30 ft. downstream from bridge on State Highway 117, 0.7 mile downstream from Wolf Creek, 2.2 miles upstream from Byers Branch, and $3\frac{3}{4}$ miles northwest of Mingo.

DRAINAGE AREA.—276 square miles.

RECORDS AVAILABLE.—May 1958 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 810.47 ft. above mean sea level, datum of 1929.

EXTREMES.—1958-60: Maximum discharge, 5,860 cfs May 7, 1960 (gage height, 15.07 ft.); minimum daily, 2.2 cfs Sept. 13-15, 1959.

Flood of May 20, 1944, reached a stage of 21.4 ft., from information by local residents (discharge not determined).

REMARKS.—bankfull stage is about gage height, 10 ft.

Daily Discharge, in Cubic Feet per Second, for Period May to September 1958

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1		60	46	160	41	16		*352	242	26	149
2		*38	586	136	39	17		266	*198	22	122
3		26	*1,520	120	36	18		212	178	*21	103
4		161	*1,810	*107	38	19		172	205	18	95
5		166	2,200	97	63	20		144	307	44	88
6		90	1,010	86	300	21		117	*266	109	86
7		94	662	80	226	22	39	108	212	105	79
8		110	460	68	149	23	34	104	178	91	73
9		446	352	59	*243	24	27	100	154	81	74
10		378	290	52	138	25	23	87	226	73	68
11		198	*258	46	154	26	21	72	205	66	63
12		160	600	44	83	27	18	66	178	61	57
13		*957	390	40	72	28	16	61	198	57	53
14		*1,160	448	35	80	29	14	57	160	51	49
15		572	316	30	129	30	13	51	198	48	45
						31	44		192	44	.....

Indian Creek Near Mingo, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	40		*12	11	4.0	200	400	172	1,440	430	21	6.0
2.....	34	14	15	9.2	3.3	540	420	160	790	316	18	20
3.....	29	*13	18	8.4	3.0	500	342	172	526	226	28	70
4.....	25	13	22	8.0	2.8	250	274	172	410	185	36	42
5.....	21	12	19	7.6	2.7	120	242	219	324	172	22	22
6.....	*21	11	15	7.6	2.7	66	198	298	274	*138	15	12
7.....	21	11	13	7.5	2.6	86	185	282	242	114	12	8.0
8.....	25	12	11	7.4	2.6	72	166	242	*205	100	11	5.6
9.....	35	11	9.6	7.4	2.5	*100	149	242	185	93	9.8	4.1
10.....	35	11	8.8	7.3	*2.5	350	144	339	172	76	*8.7	3.2
11.....	26	11	8.5	7.2	2.4	600	132	*588	160	66	8.1	2.6
12.....	23	11	8.3	7.1	2.4	640	126	440	149	56	7.0	2.3
13.....	21	11	8.1	7.0	2.3	720	*119	361	137	49	6.0	2.2
14.....	20	11	8.0	6.8	2.3	680	115	307	126	41	6.0	*2.2
15.....	18	11	7.8	*6.7	2.3	320	112	266	120	36	8.7	2.2
16.....	17	12	7.6	6.6	2.3	150	104	242	117	34	17	2.4
17.....	16	70	7.6	6.6	2.3	130	105	219	106	50	15	2.4
18.....	15	119	7.7	6.5	2.3	120	101	219	96	61	9.2	3.0
19.....	15	79	7.8	6.5	2.3	1,030	97	654	95	61	6.5	6.0
20.....	15	60	8.3	6.4	2.3	2,590	131	298	92	50	4.9	7.0
21.....	15	47	8.8	6.0	2.3	1,240	160	342	87	39	4.1	5.4
22.....	15	38	9.2	5.4	2.3	575	258	324	80	31	3.6	4.3
23.....	14	35	9.6	5.0	40	526	316	333	71	27	9.0	3.5
24.....	14	31	10	4.6	30	440	266	307	68	24	16	3.3
25.....	14	27	11	4.5	45	370	226	282	65	20	10	3.5
26.....	13	23	12	4.5	70	*948	185	250	61	18	7.0	6.5
27.....	13	15	13	4.5	85	1,240	178	212	62	15	5.2	13
28.....	14	21	13	4.5	100	625	226	192	72	15	4.0	16
29.....	13	17	13	4.5	430	226	274	95	21	3.1	1.6	
30.....	14	14	12	4.5	.....	352	198	695	350	39	2.5	15
31.....	14	.....	12	4.5	.....	316	.....	1,940	.....	29	3.7	.....
1959-60												
1.....	14	10	31	78	68	33	*2,520	638	318	208	41	86
2.....	14	*9.8	35	68	68	33	*1,770	480	292	182	38	60
3.....	15	9.8	33	62	66	32	1,180	400	260	161	36	45
4.....	19	35	29	56	65	32	910	343	245	137	*34	34
5.....	23	100	26	66	64	32	750	334	230	121	33	28
6.....	25	120	23	62	63	31	612	2,780	*198	120	38	24
7.....	25	104	22	58	63	*31	500	5,380	185	103	34	21
8.....	22	82	21	*55	*64	30	420	2,440	176	96	30	19
9.....	20	88	22	52	86	30	352	*1,280	167	324	30	19
10.....	18	91	25	50	100	30	318	910	161	326	34	18
11.....	15	85	28	52	90	30	*309	725	168	*582	28	17
12.....	*14	79	27	450	80	31	268	562	186	3,040	26	*16
13.....	11	66	26	500	72	32	260	470	182	*1,000	25	16
14.....	11	37	25	270	64	33	238	390	184	538	24	16
15.....	11	42	24	300	60	33	222	334	176	390	34	16
16.....	11	35	23	180	55	33	230	562	170	318	28	19
17.....	11	30	22	150	50	33	1,180	480	160	362	27	24
18.....	11	35	22	120	47	33	1,490	410	149	280	72	24
19.....	10	40	21	94	47	33	910	440	178	220	59	22
20.....	9.2	45	21	110	46	32	638	420	184	180	43	22
21.....	8.7	48	21	120	46	32	470	725	182	150	44	22
22.....	8.7	50	21	116	46	33	390	675	179	130	36	25
23.....	9.8	50	21	110	44	34	334	490	178	105	30	31
24.....	11	48	22	100	42	35	309	522	155	90	27	60
25.....	10	42	24	94	40	35	326	1,210	135	80	26	120
26.....	10	36	35	88	37	38	334	1,280	124	70	290	200
27.....	11	28	50	85	35	45	309	850	119	62	160	137
28.....	10	24	70	80	34	740	284	600	228	56	92	103
29.....	9.8	22	110	76	33	*2,800	275	490	385	52	140	90
30.....	9.8	*26	100	74	.....	*5,220	539	410	230	48	208	81
31.....	9.8	.....	88	70	.....	4,740	.....	352	.....	44	126	.....

Indian Creek Near Mingo, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58									220	460	67.0	160
1958-59	20.2	26.2	11.2	6.49	15.2	527	197	356	226	84.9	10.9	10.4
1959-60	13.5	50.6	34.5	124	57.8	464	622	883	196	309	61.1	47.2

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58									0.797	1.67	0.243	0.362
1958-59	0.073	0.095	0.041	0.024	0.055	1.91	0.714	1.29	.819	.308	.039	.038
1959-60	.049	.18	.125	.449	.209	1.68	2.25	3.20	.710	1.12	.221	.171

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58									0.89	1.92	0.28	0.40
1958-59	0.08	0.11	0.05	0.03	0.06	2.20	0.80	1.49	.91	.35	.05	.04
1959-60	.06	.20	.14	.52	.23	1.94	2.51	3.69	.79	1.29	.26	.19

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1958	July 5, 1958	13.03	†2,800	13					
1959	Mar. 20, 1959	13.50	3,400	2.2	125	0.453	6.17	129	6.33
1960	May 7, 1960	15.07	5,860	8.7	210	.870	11.82		

†Maximum for period May to September.

Peak Discharge (base 1,500 cfs)

May to September 1958: June 13 (6 p.m.) 1,700 cfs (11.50 ft.); July 3 (7:30 a.m.) 1,920 cfs (12.03 ft.); July 5 (1 p.m.) 2,800 cfs (13.03 ft.).

1958-59: Mar. 20 (2:30 a.m.) 3,400 cfs (13.50 ft.); Mar. 27 (4:30 a.m.) 1,560 cfs (11.17 ft.); May 31 (9 a.m.) 2,420 cfs (12.85 ft.).

1959-60: Mar. 30 (9 p.m.) 5,700 cfs (15.05 ft.); Apr. 18 (1:30 a.m.) 1,820 cfs (11.56 ft.); May 7 (9:30 a.m.) 5,860 cfs (15.07 ft.); July 12 (2 p.m.) 3,680 cfs (13.74 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 25 to Dec. 31, 1958; Jan. 1 to Mar. 18, Nov. 8, 9, Nov. 13 to Dec. 31, 1959; Jan. 1 to Mar. 28, 1960. No gage-height record Aug. 3-9, Aug. 21 to Sept. 13, 1959; July 18 to Aug. 3, 1960.

Skunk River near Oskaloosa, Iowa

LOCATION.—Lat. 41°21'15", long. 92°39'30", in NW¼SW¼ sec. 25, T. 76 N., R. 16 W., on right bank 300 ft. upstream from bridge on U. S. Highway 63 and 4 miles north of Oskaloosa.

DRAINAGE AREA.—1,639 square miles (revised in 1956).

RECORDS AVAILABLE.—October 1945 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 685.50 ft. above mean sea level, datum of 1929. Prior to Nov. 21, 1947, wire-weight gage at site 300 ft. downstream at same datum.

AVERAGE DISCHARGE.—15 years, 755 cfs.

EXTREMES.—1945-60: Maximum discharge, 20,000 cfs June 15, 1947 (gage height, 21.26 ft., from floodmarks); minimum daily, 1.8 cfs Oct. 11-13, 1956.

Flood of May 1944 reached a stage of 25.8 ft., from floodmarks (discharge, 37,000 cfs, from rating curve extended above 18,000 cfs on basis of velocity-area study).

REMARKS.—Bankfull stage is about gage height, 15 feet.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	72	24	9.6	8.0	4.9	210	55	62	240	14	56	18
2	44	25	11	7.6	4.9	170	55	57	125	15	143	16
3	35	25	12	7.2	5.0	150	54	59	86	15	85	14
4	32	26	12	6.8	5.2	120	54	64	75	15	40	18
5	31	25	11	6.6	5.2	100	53	59	56	14	28	24
6	31	24	10	6.2	5.0	84	53	54	48	13	22	29
7	30	25	9.4	5.8	5.0	74	53	54	48	14	19	39
8	28	24	8.8	5.2	5.0	64	52	50	50	15	40	47
9	28	24	8.4	4.9	5.0	56	46	50	62	24	21	72
10	27	24	8.0	5.2	5.0	52	44	49	53	28	17	94
11	26	25	7.0	5.2	5.0	48	43	52	42	15	14	73
12	25	26	*6.4	5.2	5.0	45	42	53	36	11	13	57
13	25	25	6.0	5.0	*5.2	42	40	56	33	9.8	*390	45
14	25	24	5.6	5.0	16	37	39	*82	30	8.0	*290	36
15	24	24	5.4	5.0	62	*30	38	254	27	7.0	91	32
16	24	14	5.2	5.0	54	27	37	194	28	21	56	28
17	23	*16	4.9	5.0	48	35	*35	129	32	17	85	24
18	22	18	4.6	4.9	38	32	35	97	*26	13	244	22
19	22	19	4.5	4.8	32	29	34	82	54	18	152	20
20	22	20	4.5	4.8	29	27	34	68	41	25	52	*18
21	*22	21	4.6	*4.8	26	26	33	60	68	16	33	17
22	22	21	5.2	4.8	23	30	32	60	36	9.6	28	16
23	23	21	5.8	4.8	20	35	32	59	27	*6.1	*24	14
24	22	20	6.6	4.6	250	43	31	54	23	4.9	22	13
25	23	19	7.2	4.4	210	49	32	48	21	4.2	20	11
26	23	18	7.8	4.4	180	59	33	45	19	3.6	19	8.0
27	23	17	8.2	4.4	270	60	34	48	19	3.0	18	7.5
28	24	15	8.6	4.5	300	62	38	50	19	20	25	6.5
29	25	13	8.8	4.7	260	61	46	54	19	444	28	7.0
30	26	8.8	8.6	4.8	.....	56	55	75	16	105	20	7.5
31	26	.....	8.4	4.8	.....	55	.....	123	.....	44	30	.....

Skunk River Near Oskaloosa, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	7.8	10	12	10	20	66	128	135	704	507	490	143
2	6.8	11	13	10	19	62	137	122	860	440	383	131
3	4.6	11	14	10	19	60	164	108	614	2,140	320	119
4	3.8	11	14	9.4	19	62	166	98	473	2,430	275	114
5	3.2	12	15	9.0	19	58	150	94	402	3,730	244	110
6	2.8	15	14	8.4	19	54	145	87	347	3,770	219	108
7	2.3	18	13	8.0	19	52	137	80	318	2,430	200	108
8	2.0	17	12	7.6	22	50	126	74	332	1,700	188	103
9	2.0	16	11	7.0	250	46	114	70	335	1,300	175	98
10	2.0	16	11	6.4	300	52	105	173	289	1,100	159	92
11	1.8	16	12	6.0	280	66	102	507	*329	920	151	95
12	1.8	16	12	5.8	310	63	95	320	341	780	149	103
13	1.8	*15	12	5.6	220	58	94	546	843	686	131	105
14	4.6	17	11	5.4	190	54	86	723	402	578	124	110
15	*12	18	10	5.2	180	52	*81	1,260	320	507	121	157
16	21	16	9.4	5.2	190	52	78	1,480	709	456	117	*135
17	18	15	*8.2	5.2	150	56	78	1,100	3,680	402	117	112
18	15	16	7.4	5.1	*140	68	78	860	*4,700	356	114	105
19	14	16	7.0	5.1	130	*80	77	723	4,600	323	*105	100
20	13	15	6.8	5.1	115	103	73	*632	3,160	295	103	94
21	12	15	6.6	9.0	105	122	69	742	1,980	267	100	164
22	12	14	6.8	110	98	173	71	668	1,480	*244	100	100
23	11	14	7.0	150	92	170	74	650	1,220	224	97	87
24	8.8	15	7.2	200	86	155	73	542	1,020	207	97	80
25	9.4	15	7.6	140	80	151	73	456	900	188	95	77
26	11	15	8.0	90	76	131	92	405	780	173	100	73
27	12	14	8.6	54	73	126	87	421	704	155	115	69
28	12	13	9.2	36	70	130	133	440	704	1,170	238	64
29	11	12	9.7	30	.....	130	170	405	632	2,400	214	62
30	12	12	10	24	.....	130	151	888	560	840	198	60
31	11	.....	10	21	.....	126	.....	1,000	.....	632	175	.....
1957-58												
1	60	100	210	170	135	820	257	246	1,080	283	1,160	166
2	58	122	250	200	135	655	265	239	453	874	940	156
3	57	117	275	210	130	550	278	249	265	3,230	800	154
4	56	121	240	210	125	485	288	249	224	*4,760	725	205
5	55	154	220	205	120	455	304	231	289	4,860	725	662
6	54	162	230	195	115	455	343	224	500	5,280	602	460
7	52	162	230	180	110	455	440	217	410	5,540	532	672
8	51	162	220	170	105	425	638	212	343	3,720	485	550
9	52	152	190	155	100	425	638	212	340	2,400	440	396
10	55	130	165	150	94	425	585	205	931	1,900	410	496
11	62	122	150	150	86	396	515	198	1,040	1,600	368	425
12	63	130	170	145	76	382	485	186	725	1,540	354	309
13	61	140	230	145	66	368	440	175	672	2,350	330	262
14	*58	142	220	145	62	368	410	170	1,930	1,800	304	234
15	65	138	235	150	60	382	396	166	2,350	1,650	314	*229
16	75	140	245	160	60	382	382	164	1,470	1,470	301	262
17	76	142	255	170	60	368	360	226	1,080	1,560	267	304
18	69	*170	265	185	60	*351	343	214	880	1,290	*246	291
19	65	190	280	180	60	340	332	*200	*780	1,400	226	267
20	63	188	*290	175	60	330	317	249	655	1,340	360	246
21	62	179	310	170	60	311	*306	244	558	1,750	550	234
22	60	170	330	165	60	301	293	202	485	1,560	410	219
23	85	180	360	*165	180	293	291	177	455	*1,290	348	205
24	140	180	385	165	800	285	296	166	440	1,080	293	205
25	122	210	390	165	1,300	280	283	156	425	1,040	254	198
26	108	210	380	160	1,800	272	270	146	396	980	229	179
27	100	220	480	155	2,200	270	259	138	368	1,040	214	166
28	98	230	600	150	1,120	267	257	132	346	980	207	158
29	98	210	450	145	.....	265	252	124	319	1,240	198	150
30	100	180	340	140	.....	262	254	121	301	1,320	188	142
31	98	.....	210	140	.....	259	.....	260	.....	1,240	177	.....

Skunk River Near Oskaloosa, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	134	93	103	48	27	2,890	3,500	*1,420	5,280	5,540	280	117
2	130	91	113	46	27	2,500	3,800	1,240	6,120	4,920	265	170
3	130	91	122	44	27	2,150	3,200	1,290	5,680	2,900	254	156
4	128	90	130	41	27	1,800	2,300	1,240	3,730	2,150	246	207
5	122	90	90	38	27	1,120	1,820	1,120	2,680	1,700	673	440
6	119	85	66	37	27	820	1,500	1,340	2,200	1,420	440	324
7	124	84	53	35	26	650	1,300	1,380	1,850	1,200	293	257
8	126	84	47	35	27	590	1,160	1,290	1,600	1,120	259	210
9	286	85	43	35	30	485	1,040	1,160	1,420	1,240	241	181
10	338	84	41	35	36	450	960	1,820	1,290	940	226	162
11	168	82	42	35	70	780	900	2,740	1,160	800	214	148
12	148	80	43	36	175	1,600	840	2,350	1,080	725	202	134
13	132	78	46	36	350	2,350	780	1,950	980	672	188	122
14	126	78	48	35	780	*4,210	742	1,600	880	620	177	115
15	122	84	51	34	570	3,120	708	1,420	800	558	246	106
16	121	90	52	33	425	1,560	672	1,240	760	532	257	101
17	117	*266	52	32	340	1,240	655	1,120	708	500	212	98
18	115	1,340	52	31	300	1,080	690	1,080	655	1,010	205	98
19	112	484	*50	31	265	2,740	690	1,660	602	655	177	103
20	108	309	49	30	250	*7,340	1,950	2,300	585	550	160	124
21	*106	257	48	30	290	8,300	2,500	4,010	550	532	150	115
22	105	226	47	29	650	6,800	2,300	2,960	515	455	138	106
23	105	210	47	29	1,550	4,210	2,000	2,570	485	425	128	101
24	105	193	47	28	2,900	3,010	1,680	2,250	440	382	184	94
25	105	181	47	28	3,850	2,460	1,420	*2,000	425	346	186	98
26	101	163	48	*28	4,550	*2,900	1,340	1,750	*396	317	164	412
27	101	144	49	28	3,900	4,290	1,200	1,520	368	*293	154	1,460
28	98	128	50	28	3,300	4,290	*3,350	1,470	368	288	*138	*340
29	94	110	50	28	.....	3,120	2,520	2,460	382	368	128	241
30	94	94	50	27	.....	2,460	1,750	3,350	2,320	309	121	226
31	93	.....	49	27	.....	2,150	.....	4,130	.....	285	112	.....
1959-60												
1	222	164	480	655	660	410	11,700	2,730	2,080	4,130	542	614
2	214	154	560	540	640	410	12,500	2,880	2,130	2,280	524	490
3	207	150	660	500	620	400	14,500	2,480	1,930	1,700	490	414
4	205	1,050	602	450	600	400	13,900	2,030	1,740	1,380	456	356
5	368	1,290	396	620	580	380	11,400	1,610	1,840	1,220	440	315
6	440	725	337	580	580	380	9,100	3,340	1,480	1,100	1,220	283
7	368	725	290	540	560	380	7,520	5,960	1,340	1,020	712	259
8	311	690	260	500	640	380	5,540	6,620	1,220	960	560	244
9	278	655	290	470	800	370	3,660	6,800	1,180	1,100	507	232
10	254	620	310	430	620	370	2,930	7,900	1,140	2,480	490	219
11	234	568	322	420	532	380	2,530	8,900	1,140	1,980	440	212
12	217	568	332	2,800	840	380	*2,280	7,700	1,430	2,740	411	198
13	205	568	311	*6,800	780	390	2,080	4,920	1,790	4,960	390	188
14	200	460	*298	6,440	720	400	1,930	3,230	1,340	4,290	370	186
15	188	410	298	3,810	720	400	1,790	2,630	1,300	3,130	350	188
16	181	370	293	2,350	760	400	1,700	2,800	1,220	2,430	340	186
17	173	330	285	1,700	740	400	2,240	3,560	1,220	1,930	374	198
18	166	310	272	1,420	720	390	3,880	2,730	1,100	1,660	440	219
19	162	*370	265	1,160	700	380	4,050	2,530	1,060	1,430	542	265
20	156	450	262	1,000	680	380	3,640	2,680	*1,100	1,260	440	207
21	154	520	262	1,300	640	380	2,930	2,730	1,300	1,140	389	207
22	154	600	265	1,300	600	390	2,430	2,930	1,260	1,060	386	219
23	200	620	285	1,200	*560	400	1,930	2,680	1,140	960	*350	349
24	188	520	275	1,100	540	400	1,610	2,430	1,060	900	315	740
25	170	460	267	1,000	500	400	*1,660	4,130	960	*860	292	1,020
26	*156	396	309	940	460	400	1,980	*4,960	860	820	275	742
27	152	330	440	880	440	500	1,980	4,960	800	780	350	761
28	150	300	742	820	430	1,500	1,560	4,380	1,990	723	490	614
29	148	340	708	780	420	4,500	1,430	3,470	5,960	704	542	*542
30	146	400	780	740	.....	*9,500	1,930	2,880	3,290	632	596	490
31	160	.....	760	700	.....	*10,900	.....	2,430	.....	578	780	.....

Skunk River Near Oskaloosa, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	27.6	21.0	7.55	5.30	64.9	63.5	42.1	74.2	48.6	31.4	68.5	27.8
1956-57.....	8.47	14.5	10.2	32.4	118	89.0	107	510	1,129	1,011	175	103
1957-58.....	73.5	162	284	167	334	383	359	197	684	2,012	418	287
1958-59.....	129	182	58.9	33.5	886	2,691	1,642	1,911	1,544	1,089	220	219
1959-60.....	211	504	394	1,418	624	1,195	4,610	3,936	1,580	1,688	478	372

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.017	0.013	0.0046	0.0032	0.040	0.039	0.026	0.045	0.030	0.019	0.042	0.017
1956-57.....	.0052	.0089	.0062	.020	.072	.054	.065	.312	.691	.618	.107	.063
1957-58.....	.045	.099	.174	.102	.204	.234	.220	.120	.418	1.23	.256	.176
1958-59.....	.079	.111	.036	.020	.512	1.65	1.00	1.17	.944	.666	.135	.134
1959-60.....	.129	.308	.241	.867	.382	.731	2.82	2.41	.966	1.03	.292	.228

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.02	0.01	0.005	0.004	0.04	0.04	0.03	0.05	0.03	0.02	0.05	0.02
1956-57.....	.006	.01	.007	.02	.07	.06	.07	.36	.77	.71	.12	.07
1957-58.....	.05	.11	.20	.12	.21	.27	.25	.14	.47	1.42	.29	.20
1958-59.....	.09	.12	.04	.02	.56	1.90	1.12	1.35	1.05	0.77	.16	.15
1959-60.....	.15	.34	.28	1.00	.41	.84	3.15	2.78	1.08	1.19	.34	.25

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955.....	.....	.....	.....	.....	.....	.....	.....	339	2.81
1956.....	Aug. 13, 1956	7.90	782	3.0	40.1	0.025	0.32	38.2	.31
1957.....	June 18, 1957	15.06	4,860	1.8	276	.169	2.27	317	2.61
1958.....	July 7, 1958	15.76	5,680	51	448	.274	3.73	436	3.62
1959.....	Mar. 21, 1959	16.87	8,500	26	884	.541	7.33	945	7.85
1960.....	Apr. 3, 1960	20.56	14,800	146	1,418	.867	11.81	.....	.....

Peak Discharge (base, 4,000 cfs)

- 1955-56: No peak above base.
 1956-57: June 18 (9 a.m.) 4,860 cfs (15.06 ft.); July 6 (6 a.m.) 4,130 cfs (14.32 ft.).
 1957-58: July 7 (4:30 p.m.) 5,680 cfs (15.76 ft.).
 1958-59: Feb. 26, about 5,500 cfs; Mar. 14 (3 p.m.) 4,760 cfs (14.4 ft.); Mar. 21 (time unknown) 8,500 cfs (16.87 ft.); Mar. 28 (time unknown) 4,660 cfs; May 21 (1 p.m.) 4,960 cfs (15.15 ft.); June 2 (time unknown) 6,280 cfs (16.2 ft.); July 2 (1 a.m.) 5,960 cfs (16.03 ft.).
 1959-60: Jan. 14 (6:30 a.m.) 7,340 cfs (16.84 ft.); Apr. 3 (6 p.m.) 14,800 cfs (20.56 ft.); Apr. 19 (4 p.m.) 4,130 cfs (14.58 ft.); May 11 (8 p.m.) 8,900 cfs (17.94 ft.); May 26 (4 p.m.) 5,160 cfs (15.72 ft.); June 28 (8 p.m.) 6,800 cfs (16.64 ft.); July 1 (7 a.m.) 4,760 cfs (15.14 ft.); July 13 (4 p.m.) 5,060 cfs (15.38 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 16 to Dec. 31, 1955; Jan. 1 to Mar. 24, Nov. 20 to Dec. 31, 1956; Jan. 1 to Mar. 18, Nov. 22 to Dec. 31, 1957; Jan. 1 to Feb. 27, Nov. 26 to Dec. 31, 1958; Jan. 1 to Mar. 11, Nov. 14-24, Nov. 27 to Dec. 3, Dec. 7-10, 1959; Jan. 2-12, Jan. 20 to Feb. 8, Feb. 12 to Mar. 29, 1960. No gage-height record Mar. 28 to Apr. 7, Apr. 20-27, 1959; Apr. 26 to May 5, 1960.

Lake Keomah near Oskaloosa, Iowa

LOCATION.—Lat. 41°16'45", long. 92°32'15", in SE¼SW¼ 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.

DRAINAGE AREA.—1.22 square miles.

RECORDS AVAILABLE.—June 1936 to September 1960.

GAGE.—Staff gage read once daily. Datum of gage is 6.12 ft. below spillway of dam forming lake. Prior to Aug. 30, 1943, staff gage at various locations in the immediate vicinity at same datum.

EXTREMES.—1936-60: Maximum gage height observed, 8.30 ft. May 6, 1960; minimum observed, 3.50 ft. Nov. 24 to Dec. 3, 1936.

1936-60: Maximum gage height observed, that of May 6, 1960; minimum observed, 3.50 ft. Nov. 24 to Dec. 3, 1936.

Daily Gage Height, in Feet, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	5.48	5.22				5.44	5.46	5.12	4.78	4.36	4.20	5.24
2	5.46	5.22				5.44	5.46	5.12	4.76	4.36	4.49	5.20
3	5.44	5.20				5.46	5.42	5.12	4.74	4.38	4.50	5.18
4	5.44	5.20				5.46	5.42	5.10	4.72	4.40	4.50	5.22
5	5.44	5.18					5.42	5.10	4.70	4.40	4.48	5.20
6	5.44	5.18					5.40	5.10	4.68	4.38	4.46	5.18
7	5.42	5.16					5.40	5.08	4.74	4.36	4.44	5.15
8	5.42	5.16					5.38	5.08	4.72	4.32	4.46	5.14
9	5.40	5.14					5.38	5.08	4.70	4.30	5.25	5.12
10	5.40	5.14					5.38	5.06	4.68	4.28	5.24	5.10
11	5.38	5.14					5.38	5.08	4.66	4.26	5.24	5.08
12	5.38	5.14	5.06				5.36	5.06	4.64	4.24	5.22	5.06
13	5.36	5.14			5.05		5.36	5.06	4.62	4.22	5.20	5.04
14	5.36	5.14					5.36	5.05	4.60	4.20	5.18	5.02
15	5.34	5.12				5.45	5.34	3.04	4.60	4.18	5.18	5.00
16	5.34	5.12				5.48	5.33	5.00	4.60	4.22	5.18	4.98
17	5.32					5.46	5.32	4.96	4.60	4.20	5.16	4.96
18	5.30	5.11				5.46	5.30	4.94	4.59	4.26	5.38	4.96
19	5.28					5.46	5.28	4.94	4.60	4.30	5.36	4.94
20	5.28					5.46	5.26	4.92	4.60	4.28	5.32	4.93
21	5.27			5.06		5.46	5.26	4.90	4.58	4.26	5.30	4.90
22	5.26					5.46	5.22	4.88	4.56	4.24	5.28	4.90
23	5.26					5.46	5.22	4.86	4.54	4.23	5.27	4.88
24	5.26				5.26	5.46	5.20	4.84	4.52	4.20	5.24	4.86
25	5.24	5.10				5.46	5.20	4.82	4.50	4.20	5.22	4.84
26	5.24	5.10			5.40	5.46	5.20	4.80	4.48	4.18	5.18	4.82
27	5.22	5.10				5.46	5.18	4.80	4.46	4.18	5.16	4.80
28	5.24					5.46	5.18	4.80	4.42	4.16	5.22	4.78
29	5.24					5.46	5.16	4.84	4.38	4.14	5.24	4.76
30	5.24					5.46	5.14	4.82	4.36	4.14	5.24	4.74
31	5.22					5.46		4.80		4.12	5.26	

Lake Keomah near Oskaloosa, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	4.76	4.46				4.44	4.80	5.36	5.60	5.38	6.32	5.96
2	4.74	4.46				4.42	4.82	5.34	5.60	5.36	6.30	5.96
3	4.72	4.46				4.42	5.06	5.32	5.58	6.85	6.26	5.94
4	4.72	4.46				4.40	5.14	5.30	5.58	6.44	6.24	5.92
5	4.70	4.46				4.40	5.22	5.26	5.56	6.36	6.22	5.90
6	4.68	4.44				4.40	5.22	5.24	5.54	6.34	6.18	5.88
7	4.66	4.44				4.38	5.24	5.22	5.54	6.22	6.16	5.94
8	4.64	4.44					5.26	5.20	5.56	6.30	6.14	5.94
9	4.62	4.42					5.26	5.22	5.56	6.28	6.14	5.92
10	4.60	4.42					5.26	5.38	5.56	6.26	6.12	5.90
11	4.60	4.42				4.52	5.28	5.40	5.57	6.24	6.10	5.98
12	4.58	4.38				4.52	5.28	5.46	5.58	6.22	6.08	5.96
13	4.58	4.38				4.52	5.28	5.56	5.58	6.20	6.06	5.94
14	4.58	4.38			4.45	4.52	5.26	5.60	5.60	6.18	6.08	5.96
15	4.60	4.38				4.50	5.27	5.62	5.58	6.16	6.06	5.96
16	4.59	4.38				4.50	5.26	5.64	5.56	6.14	6.04	5.95
17	4.58	4.38	4.36			4.50	5.26	5.64	5.54	6.12	6.02	5.94
18	4.58	4.36			4.45	4.54	5.28	5.64	5.58	6.10	6.00	5.94
19	4.57	4.36				4.56	5.30	5.64	5.58	6.08	5.99	5.94
20	4.56	4.36				4.55	5.30	5.65	5.56	6.04	5.98	5.96
21	4.56	4.36				4.54	5.30	5.72	5.53	6.02	5.96	5.98
22	4.56	4.38				4.54	5.37	5.72	5.50	6.15	5.94	5.98
23	4.54	4.38				4.54	5.38	5.72	5.46	6.14	5.92	5.96
24	4.52	4.38		4.41		4.56	5.36	5.70	5.44	6.12	5.92	5.94
25	4.52	4.38				4.68	5.40	5.70	5.42	6.10	6.02	5.92
26	4.50				4.48	4.68	5.42	5.68	5.40	6.08	5.96	5.92
27	4.50				4.46	4.68	5.40	5.66	5.42	6.10	5.98	5.90
28	4.48				4.46	4.72	5.41	5.64	5.42	6.11	6.02	5.88
29	4.48					4.72	5.40	5.64	5.40	6.09	6.02	5.86
30	4.46					4.72	5.38	5.62	5.38	6.40	6.00	5.84
31	4.46					4.72		5.62		6.36	5.98	
1957-58												
1	5.84	5.72				6.36	6.24	6.12	6.07	5.96	6.36	6.18
2	5.82	5.82				6.34	6.24	6.10	6.06	6.06	6.34	6.16
3	5.82	5.82				6.34	6.26	6.34	6.04	6.06	6.32	6.18
4	5.80	5.82	5.99			6.32	6.26	6.42	6.02	6.22	6.30	6.18
5	5.80	5.80	5.99			6.34	6.30	6.40	6.00	6.22	6.38	6.58
6	5.78	5.80	5.99			6.34	6.30	6.34	6.00	6.20	6.38	6.52
7	5.76	5.80	5.99			6.31	6.30	6.34	5.98	6.20	6.36	6.44
8	5.76	5.82	6.01			6.30	6.30	6.32	6.06	6.18	6.34	6.40
9	5.74	5.80	6.01			6.32	6.28	6.30	6.10	6.16	6.32	6.44
10	5.74	5.80	5.99			6.32	6.28	6.28	6.10	6.14	6.30	6.40
11	5.72	5.80	5.99			6.30	6.26	6.26	6.06	6.12	6.28	6.34
12	5.72	5.80	5.99			6.30	6.26	6.24	6.08	6.12	6.24	6.30
13	5.70	5.84	5.97			6.30	6.24	6.20	6.10	6.10	6.40	6.28
14	5.68	5.84	5.97			6.30	6.24	6.18	6.08	6.10	6.38	6.24
15	5.76	5.84	5.97			6.28	6.24	6.18	6.08	6.10	6.48	6.26
16	5.76	5.84	5.97			6.28	6.24	6.18	6.08	6.08	6.42	6.26
17	5.74	5.84	5.97			6.28	6.22	6.22	6.06	6.08	6.38	6.24
18	5.72	5.94	6.02			6.28	6.22	6.20	6.04	6.08	6.34	6.24
19	5.72	6.04	6.05			6.28	6.22	6.18	6.06	6.71	6.32	6.24
20	5.72	6.04	6.08			6.26	6.24	6.16	6.06	6.44	6.46	6.22
21	5.72	6.02	6.09			6.26	6.26	6.16	6.02	6.38	6.42	6.22
22	5.70	6.02	6.09		6.32	6.26	6.24	6.14	6.00	6.34	6.36	6.22
23	5.82	6.02	6.09	6.30	6.46	6.26	6.26	6.12	6.02	6.34	6.34	6.26
24	5.82	6.02	6.09		6.60	6.24	6.26	6.10	6.02	6.32	6.30	6.34
25	5.80	6.02	6.17		6.46	6.24	6.24	6.08	6.00	6.30	6.28	6.32
26	5.80	6.02	6.18		6.42	6.24	6.22	6.06	5.98	6.28	6.28	6.32
27	5.78	6.02	6.17		6.40	6.24	6.22	6.04	5.96	6.30	6.28	6.30
28	5.76	6.00	6.17		6.38	6.24	6.20	6.02	5.94	6.28	6.26	6.30
29	5.76	6.00	6.17			6.24	6.18	6.02	5.92	6.26	6.24	6.28
30	5.74	6.00	6.17			6.24	6.14	6.00	5.90	6.30	6.24	6.28
31	5.72					6.22		6.03		6.42	6.20	

Lake Keomah near Oskaloosa, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	6.26	6.18					6.71	6.41	6.49	6.59	6.09	5.99
2	6.26	6.18					6.53	6.43	6.45	6.43	6.09	5.97
3	6.24	6.18					6.47	6.45	6.41	6.43	6.05	5.95
4	6.24	6.16					6.45	6.43	6.41	6.43	6.09	5.93
5	6.24	6.16					6.43	6.41	6.39	6.43	6.13	5.91
6	6.32	6.14					6.41	6.41	6.39	6.41	6.13	5.91
7	6.36	6.14					6.41	6.37	6.39	6.41	6.15	5.89
8	6.36	6.14					6.39	6.35		6.39	6.15	5.89
9	6.34	6.12					6.39	6.37	6.39	6.39	6.15	5.87
10	6.34	6.12					6.39	6.37	6.39	6.37	6.13	5.87
11	6.32	6.12					6.37	6.39	6.37	6.37	6.13	5.83
12	6.32	6.12					6.37	6.37	6.37	6.37	6.13	5.81
13	6.32	6.12					6.37	6.35	6.35	6.35	6.11	5.77
14	6.32	6.12					6.37	6.35	6.31	6.33	6.11	5.73
15	6.32	6.10					6.35	6.33	6.29	6.31	6.15	5.71
16	6.30	6.10					6.35	6.33	6.29	6.27	6.15	5.69
17	6.30	6.41					6.45	6.31	6.27	6.25	6.15	5.62
18	6.30	6.52					6.45	6.37	6.27	6.23	6.13	5.60
19	6.30	6.52	6.48			7.09	6.63	6.41	6.27	6.21	6.11	5.60
20	6.28	6.52				6.65	6.63	6.49	6.25	6.19	6.09	5.60
21	6.28	6.52				6.53	6.57	6.51	6.23	6.17	6.07	5.58
22	6.26	6.52				6.49	6.51	6.45	6.23	6.15	6.05	5.56
23	6.26	6.52				6.47	6.47	6.43	6.23	6.13	6.05	5.56
24	6.26	6.52			6.88	6.45	6.45	6.39	6.21	6.13	6.03	5.54
25	6.24	6.52				6.45	6.43	6.39	6.17	6.11	6.01	5.66
26	6.24			6.48	6.54	6.59	6.43	6.37	6.21	6.11	5.99	5.80
27	6.22					6.51	6.67	6.37	6.21	6.05	5.97	6.30
28	6.22					6.45	6.57	6.59	6.23	6.09	5.95	6.31
29	6.22					6.43	6.51	6.61	6.23	6.15	5.93	6.30
30	6.20					6.47	6.43	6.96	6.59	6.13	5.93	6.30
31	6.20					6.45		6.65		6.11	5.91	
1959-60												
1	6.30	6.40	6.38	6.46	6.44	6.46	6.52	6.44	6.50	6.48	6.32	6.06
2	6.30	6.40	6.38	6.44	6.44	6.48	6.52	6.44	6.48	6.48	6.30	6.04
3	6.30	6.48	6.36	6.44	6.44	6.48	6.52	6.44	6.46	6.46	6.28	6.04
4	6.30	6.54	6.36	6.42	6.44	6.48	6.52	6.44	6.46	6.44	6.28	6.04
5	6.40	6.54	6.36	6.40	6.44	6.48	6.50	6.44	6.44	6.44	6.26	6.04
6	6.46	6.54	6.36	6.40	6.44	6.48	6.50	8.30	6.44	6.44	6.38	6.02
7	6.50	6.50	6.36	6.40	6.44	6.48	6.48	6.70	6.44	6.44	6.36	6.02
8	6.46	6.48	6.34	6.40	6.44	6.48	6.48	6.60	6.44	6.44	6.34	6.00
9	6.40	6.44	6.34	6.40	6.44	6.48	6.48	6.50	6.44	6.44	6.30	6.00
10	6.38	6.42	6.32	6.40	6.44	6.48	6.48	6.48	6.44	6.52	6.28	6.00
11	6.30	6.40	6.32	6.40	6.44	6.48	6.46	6.46	6.44	6.50	6.26	5.98
12	6.30	6.40	6.32	6.68	6.44	6.48	6.44	6.44	6.44	6.58	6.24	5.96
13	6.30	6.42	6.32	6.68	6.44	6.48	6.42	6.44	6.44	6.50	6.22	5.94
14	6.30	6.44	6.36	6.68	6.44	6.48	6.42	6.44	6.44	6.48	6.20	5.92
15	6.28	6.44	6.34	6.68	6.44	6.48	6.42	6.44	6.44	6.46	6.18	5.90
16	6.28	6.44	6.34	6.68	6.44	6.48	6.46	6.50	6.44	6.44	6.16	5.88
17	6.28	6.42	6.34	6.68	6.44	6.48	6.50	6.48	6.44	6.44	6.16	5.86
18	6.28	6.42	6.34	6.60	6.44	6.48	6.50	6.46	6.44	6.44	6.14	5.86
19	6.28	6.40	6.34	6.54	6.44	6.48	6.50	6.44	6.44	6.44	6.28	5.88
20	6.34	6.40	6.34	6.50	6.44	6.48	6.50	6.44	6.44	6.44	6.28	5.90
21	6.34	6.40	6.34	6.48	6.44	6.48	6.50	6.44	6.44	6.44	6.26	5.92
22	6.36	6.40	6.34	6.48	6.44	6.48	6.50	6.44	6.44	6.44	6.21	5.94
23	6.40	6.40	6.34	6.48	6.44	6.48	6.50	6.41	6.44	6.44	6.22	5.96
24	6.40	6.40	6.34	6.48	6.44	6.48	6.47	6.58	6.44	6.44	6.18	5.98
25	6.40	6.40	6.34	6.48	6.44	6.48	6.44	6.64	6.44	6.40	6.15	5.98
26	6.42	6.40	6.34	6.48	6.46	6.48	6.44	6.62	6.44	6.40	6.12	5.98
27	6.42	6.40	6.34	6.46	6.46	6.48	6.44	6.60	6.44	6.38	6.09	5.98
28	6.42	6.40	6.34	6.46	6.46	6.48	6.44	6.58	7.30	6.36	6.06	5.98
29	6.42	6.40	6.34	6.44	6.46	6.48	6.44	6.56	6.52	6.34	6.06	5.96
30	6.40	6.38	6.34	6.44		6.50	6.44	6.54	6.50	6.32	6.06	5.98
31	6.40		6.34	6.44		6.50		6.52		6.32	6.06	

North Skunk River near Sigourney, Iowa

LOCATION.—Lat. 41°18'05", long. 92°12'10", in NE¼SE¼ sec. 14, T. 75 N., R. 12 W., on right bank 20 ft. downstream from bridge on State Highway 149, 2½ miles south of Sigourney, and 16.2 miles upstream from mouth.

DRAINAGE AREA.—730 square miles (Revised in 1956).

RECORDS AVAILABLE.—October 1945 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 651.53 ft. above mean sea level, datum of 1929. Prior to June 10, 1953, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—15 years, 379 cfs.

EXTREMES.—1945-60: Maximum discharge, 27,500 cfs Mar. 31, 1960 (gage height, 25.33 ft.); minimum daily, 0.1 cfs Oct. 7 to Nov. 15, 1956.

Flood of May 1944 reached a stage of 22.8 ft., from floodmark (discharge, 14,500 cfs).

REMARKS.—Bankfull stage is about gage height, 17 feet.

REVISIONS (water years).—WSP 1558: 1946-47(M).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	192	7.7	3.0	2.8	2.3	200	18	14	11	9.1	70	62
2.....	68	7.0	3.3	3.3	2.5	160	17	14	9.8	9.1	98	9.8
3.....	25	6.8	4.0	3.1	2.8	140	16	19	7.4	9.1	51	4.8
4.....	14	6.6	4.2	3.0	3.3	110	15	23	8.0	10	64	4.0
5.....	9.8	6.4	3.7	3.0	3.1	82	14	20	14	9.4	53	3.7
6.....	7.0	6.2	3.5	3.1	3.0	66	16	18	9.4	8.8	33	3.3
7.....	6.4	6.0	3.5	2.5	2.8	51	17	19	8.0	8.0	22	2.8
8.....	5.6	6.4	3.3	2.2	2.8	41	16	18	6.8	7.4	74	2.5
9.....	5.6	7.7	2.6	2.5	2.8	33	15	16	6.4	6.6	23	2.2
10.....	6.3	8.8	2.3	2.5	3.5	28	14	19	6.0	6.6	13	2.8
11.....	4.0	8.8	2.2	2.3	4.4	24	13	13	5.2	6.4	9.4	5.2
12.....	4.8	7.0	2.0	2.2	4.4	20	11	12	4.2	5.8	7.7	5.2
13.....	4.8	6.8	2.0	2.0	*16	23	10	11	6.8	5.4	7.4	4.2
14.....	4.2	6.4	1.9	2.2	4.9	26	8.8	*8.8	6.6	5.0	128	3.3
15.....	4.0	6.4	1.8	2.3	30	*23	8.8	9.1	6.6	4.6	266	2.5
16.....	3.8	6.0	*1.7	2.2	19	19	*8.8	16	8.4	4.8	80	2.2
17.....	3.5	5.8	1.6	2.2	10	20	8.4	42	24	4.6	34	1.4
18.....	5.0	*6.4	1.5	2.3	6.6	24	7.4	29	*17	41	410	.8
19.....	4.6	6.8	1.4	2.5	9.4	19	7.0	19	12	326	357	.7
20.....	4.6	6.6	1.4	2.5	19	20	6.8	14	534	180	334	*.8
21.....	*4.0	7.0	1.4	*2.5	16	20	6.4	11	149	19	142	.8
22.....	3.7	7.4	1.6	2.5	9.8	20	6.4	10	305	79	44	.8
23.....	4.0	6.4	2.0	2.2	7.0	23	6.4	9.8	100	*35	*26	.7
24.....	4.4	4.6	2.5	2.0	55	23	6.4	8.4	39	21	19	.7
25.....	5.4	4.4	3.0	1.9	400	23	6.4	6.8	26	18	15	.6
26.....	5.4	4.2	3.0	2.0	360	20	6.6	6.2	25	13	12	.6
27.....	4.6	3.8	3.0	2.0	310	20	7.4	7.0	21	11	10	.6
28.....	5.0	3.4	3.1	2.2	275	23	8.8	7.7	17	10	9.4	.6
29.....	6.8	3.1	3.5	2.3	250	20	16	8.4	13	8.8	8.8	.4
30.....	7.4	2.7	3.1	2.5	.....	19	16	9.4	10	7.7	21	.4
31.....	6.6	.....	2.8	2.3	.....	18	.....	8.0	.....	15	451	.....

North Skunk River near Sigourney, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1.....	0.3	0.1	5.0	3.8	7.2	39	53	38	1,160	53	528	65
2.....	.3	.1	5.2	3.7	6.6	31	68	26	359	45	539	45
3.....	.3	.1	5.4	3.5	6.4	25	102	19	184	789	340	35
4.....	.2	.1	5.6	3.3	6.2	25	169	15	142	1,770	142	28
5.....	.2	.1	6.0	3.1	6.0	27	172	12	97	1,980	98	25
6.....	.2	.1	5.8	2.9	5.8	23	119	9.8	77	2,190	79	25
7.....	.1	.1	5.0	2.7	5.6	16	90	8.2	69	3,000	64	25
8.....	.1	.1	4.4	2.5	6.2	15	66	6.7	64	2,720	55	23
9.....	.1	.1	4.0	2.3	90	16	49	7.7	73	7,511	50	23
10.....	.1	.1	4.4	2.2	72	13	38	47	201	302	44	27
11.....	.1	.1	4.5	2.1	170	45	34	46	*208	222	40	26
12.....	.1	.1	4.0	2.0	400	52	29	109	94	179	37	29
13.....	.1	*.1	3.7	2.0	350	24	23	360	198	147	35	26
14.....	.1	.1	3.3	1.9	200	17	20	617	499	126	34	27
15.....	**1	.1	3.0	1.9	110	17	*18	726	263	111	31	39
16.....	.1	2.6	2.7	1.9	80	15	16	390	130	98	29	*40
17.....	.1	22	*2.6	1.9	90	14	17	198	85	88	29	56
18.....	.1	10	2.5	1.9	*82	*16	17	135	111	79	28	42
19.....	.1	6.8	2.5	1.9	60	18	15	112	972	73	*26	28
20.....	.1	6.0	2.6	1.9	46	16	13	*91	*912	64	25	23
21.....	.1	5.8	2.6	4.5	40	17	13	126	248	62	23	26
22.....	.1	5.6	2.7	10	36	29	24	356	150	*82	23	34
23.....	.1	5.6	2.9	8.0	35	36	24	484	114	112	25	70
24.....	.1	5.4	3.0	10	34	28	20	195	91	68	49	37
25.....	.1	5.2	3.2	200	35	28	18	114	75	91	27	24
26.....	.1	5.0	3.4	75	32	26	19	75	65	62	47	18
27.....	.1	5.0	3.6	35	30	25	28	58	62	49	46	15
28.....	.1	5.2	3.8	20	30	25	46	52	73	45	164	13
29.....	.1	4.8	4.0	13	.....	30	46	46	65	1,130	114	12
30.....	.1	4.8	4.0	10	.....	36	38	44	63	*1,050	257	12
31.....	.1	.....	4.0	8.0	.....	42	.....	541	.....	308	129	.....
1957-58												
1.....	9.8	22	31	23	23	390	70	54	359	36	400	53
2.....	9.3	50	28	26	22	275	74	54	880	49	300	51
3.....	8.8	56	26	23	22	211	76	64	423	60	200	46
4.....	7.7	63	30	20	22	174	88	118	149	268	160	46
5.....	8.2	52	40	17	21	160	94	123	98	671	130	1,030
6.....	8.8	36	46	17	20	160	107	82	77	660	502	462
7.....	9.3	30	45	17	20	169	130	65	63	257	448	858
8.....	8.2	26	41	17	19	193	160	59	66	163	143	666
9.....	8.2	24	36	18	18	176	153	55	372	123	90	360
10.....	8.8	22	32	19	18	149	133	53	141	102	70	222
11.....	7.2	23	30	21	17	160	121	51	95	89	60	160
12.....	7.7	27	28	23	15	155	112	46	111	94	60	166
13.....	7.2	31	26	25	14	143	107	42	160	111	517	111
14.....	*8.2	35	24	27	13	149	97	39	187	181	697	86
15.....	13	38	23	29	12	143	90	36	1,000	174	826	*85
16.....	16	36	25	31	11	132	86	41	337	319	737	86
17.....	15	35	26	33	10	119	82	340	168	320	249	95
18.....	14	*73	34	36	10	*108	80	185	119	230	*132	100
19.....	29	187	53	39	10	102	75	*88	80	804	100	75
20.....	20	139	*90	40	10	102	70	71	101	1,560	94	70
21.....	18	93	95	39	10	97	*71	55	*97	659	294	80
22.....	15	73	119	38	10	91	71	45	71	275	955	69
23.....	16	63	88	*36	30	88	68	40	62	177	346	86
24.....	18	53	70	34	350	84	77	36	59	*125	190	164
25.....	86	50	66	32	*1,350	82	97	36	58	161	145	77
26.....	118	52	72	30	1,550	79	74	34	58	144	105	79
27.....	60	50	70	28	1,470	76	68	31	55	112	79	68
28.....	41	49	56	27	638	74	61	29	49	250	75	59
29.....	30	45	41	26	.....	73	56	27	42	200	69	53
30.....	24	36	31	25	.....	71	55	27	37	250	63	52
31.....	21	.....	20	24	.....	70	.....	99	.....	600	58	.....

North Skunk River near Sigourney, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	48	33	66	28	18	2,300	2,140	1,780	3,140	1,020	275	173
2	43	32	72	26	18	1,600	2,370	*880	2,450	1,770	150	128
3	41	33	76	25	18	1,000	2,490	858	1,220	1,980	128	66
4	38	31	80	23	18	740	1,660	858	880	1,540	119	48
5	37	27	58	22	18	520	902	770	748	660	341	44
6	36	27	44	22	18	390	726	638	638	517	704	37
7	53	28	37	21	18	300	616	682	550	410	222	35
8	93	27	31	21	18	220	561	649	484	340	136	32
9	64	27	28	21	18	170	506	539	420	582	115	29
10	163	25	25	21	56	150	440	605	380	587	100	25
11	347	25	25	21	120	293	400	1,120	350	320	91	22
12	121	25	26	21	96	517	370	1,350	320	257	84	22
13	82	25	28	21	140	922	340	1,200	293	257	76	21
14	68	25	29	21	600	1,680	320	770	266	248	69	20
15	62	27	30	22	800	1,950	293	627	230	209	135	19
16	58	26	31	22	600	1,300	266	550	214	177	161	18
17	60	*63	31	21	460	600	266	484	200	160	192	62
18	52	212	30	21	350	500	400	506	185	378	121	115
19	50	1,190	*28	21	270	2,080	473	929	169	1,410	91	119
20	48	903	27	20	200	*3,490	792	1,660	156	857	81	122
21	*46	275	26	20	150	3,390	1,250	2,530	153	320	68	81
22	46	196	26	20	350	6,160	1,220	2,300	144	239	60	44
23	45	163	27	19	1,500	5,820	1,120	*2,300	136	206	55	46
24	42	143	27	19	2,500	3,850	902	2,490	125	195	46	32
25	41	129	28	19	2,100	2,410	748	*1,890	116	174	56	32
26	39	115	29	*19	2,600	*2,160	605	968	*109	144	55	151
27	39	82	30	19	3,100	2,070	528	814	101	*128	54	1,150
28	34	64	30	19	2,800	2,130	1,730	869	94	116	*50	*902
29	33	70	31	19	.....	2,190	2,010	2,820	111	121	41	294
30	33	60	31	18	.....	1,200	2,130	*4,100	792	422	40	*125
31	33	.....	30	18	.....	1,010	.....	3,880	.....	1,220	38	.....
1959-60												
1	79	130	250	682	470	210	*18,890	1,230	819	2,050	162	103
2	73	130	300	540	450	200	8,690	1,060	1,280	1,900	151	86
3	79	125	370	450	430	200	5,560	796	1,200	1,560	143	76
4	100	432	302	380	410	200	4,480	666	729	729	134	71
5	320	1,830	266	440	400	200	3,460	603	750	540	143	70
6	629	1,860	239	420	390	200	2,000	1,760	1,230	464	1,290	66
7	1,200	1,360	204	390	380	190	1,380	4,420	687	409	561	63
8	524	726	190	360	380	190	1,130	4,660	561	373	296	61
9	257	627	180	340	540	190	956	5,590	483	539	205	60
10	184	583	200	330	620	190	829	4,350	445	1,470	165	56
11	143	517	222	360	590	190	756	2,720	502	1,720	147	55
12	118	440	266	2,000	400	200	*714	1,280	1,470	1,640	136	54
13	102	410	257	3,500	430	200	664	1,030	2,120	3,920	128	54
14	93	350	*222	6,120	420	200	660	911	1,870	3,190	120	54
15	86	290	209	10,800	410	200	647	819	1,000	1,900	114	55
16	80	250	208	5,930	410	200	666	1,130	729	773	108	56
17	73	240	204	3,500	400	200	1,130	1,580	624	603	122	56
18	65	260	192	1,800	400	200	1,500	1,560	582	502	208	59
19	62	290	180	*900	390	190	1,720	1,130	521	445	175	64
20	61	*310	176	700	380	190	1,200	1,180	*1,310	400	213	73
21	59	350	176	700	360	200	957	1,260	1,560	355	153	75
22	55	400	180	800	350	200	865	1,180	888	321	*116	66
23	133	440	266	840	*330	210	729	1,030	687	296	104	65
24	293	440	311	800	300	210	645	1,060	561	270	98	74
25	284	430	284	720	290	210	*603	1,930	464	*262	92	186
26	*198	360	390	680	270	210	561	*2,020	409	253	86	373
27	164	300	1,240	620	250	230	603	2,080	373	245	83	190
28	135	250	2,130	580	230	700	540	2,290	550	221	80	117
29	121	220	1,650	540	220	3,000	502	1,840	2,120	205	91	*94
30	111	200	1,180	520	.....	*6,000	819	1,100	2,260	190	123	82
31	116	.....	880	500	.....	*23,200	.....	911	.....	175	123	.....

North Skunk River near Sigourney, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	14.2	6.12	2.58	2.42	64.8	43.8	11.2	14.4	47.2	29.2	93.3	4.35
1956-57	.13	3.38	3.85	14.3	74.0	25.4	46.8	163	230	568	102	30.6
1957-58	21.7	52.3	46.5	27.1	205	137	90.1	68.5	186	298	268	187
1958-59	64.4	137	36.0	21.0	677	1,713	952	1,368	506	547	128	134
1959-60	194	485	430	1,524	387	1,236	2,126	1,780	960	901	189	87.1

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.019	0.0084	0.0035	0.0033	0.089	0.060	0.015	0.020	0.065	0.040	0.128	0.0060
1956-57	.00018	.0016	.0053	.020	.101	.035	.064	.223	.315	.778	.140	.042
1957-58	.030	.072	.064	.037	.281	.188	.123	.094	.255	.408	.367	.256
1958-59	.088	.188	.049	.029	.927	2.35	1.30	1.87	.693	.749	.175	.184
1959-60	.266	.664	.589	2.09	.530	1.69	2.91	2.44	1.32	1.23	.259	.119

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.02	0.009	0.004	0.004	0.10	0.07	0.02	0.02	0.07	0.05	0.15	0.007
1956-57	.0002	.005	.006	.02	.11	.04	.07	.26	.35	.90	.16	.05
1957-58	.03	.08	.07	.04	.29	.22	.14	.11	.28	.47	.42	.29
1958-59	.10	.21	.06	.03	.97	2.71	1.46	2.16	.77	.86	.20	.20
1959-60	0.31	0.74	0.68	2.41	.57	1.95	3.25	2.81	1.47	1.42	.30	.13

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								144	2.67
1956	June 20, 1956	(17.98	880	0.4	27.7	0.038	0.52	26.4	.50
1957	July 8, 1957	15.81	3,490	.1	106	.145	1.97	115	2.14
1958	Feb. 27, 1958	(2)12.26	2,040	7.2	132	.181	2.44	141	2.63
1959	Mar. 22, 1959	19.83	7,270	18	523	.716	9.73	596	11.09
1960	Mar. 31, 1960	25.33	27,500	54	860	1.18	16.04		

Peak Discharge (base, 2,500 cfs)

1955-56: No peak above base.

1956-57: July 8 (4 a.m.) 3,490 cfs (15.81 ft.).

1957-58: No peak above base.

1958-59: Feb. 24, about 2,700 cfs; Feb. 27 about 3,300 cfs; Mar. 22 (8:30 p.m.) 7,270 cfs (19.83 ft.); Apr. 1 (10:30 p.m.) 2,860 cfs (14.50 ft.); May 21 (6:30 p.m.) 2,650 cfs (14.0 ft.); May 30 (5 p.m.) 4,500 cfs (17.37 ft.).

1959-60: Jan. 15 (9 a.m.) 11,500 cfs (21.56 ft.); Mar. 31 (7 p.m.) 27,500 cfs (25.33 ft.); May 9 (8 a.m.) 5,810 cfs (18.76 ft.); July 13 (5 p.m.) 4,420 cfs (17.29 ft.); Aug. 6 (3 a.m.) 2,650 cfs (14.39 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 26 to Dec. 1, Dec. 14, 15, 17-19, 1955; Feb. 13-15, Feb. 24 to Mar. 11, Nov. 21, 25, Dec. 8-31, 1956; Jan. 1 to Mar. 3, Nov. 29 to Dec. 3, Dec. 8-15, 25-31, 1957; Jan. 1 to Feb. 27, Nov. 27 to Dec. 31, 1958; Jan. 1 to Mar. 10, Mar. 16-18, Nov. 14-22, Nov. 27 to Dec. 2, Dec. 8-10, 1959; Jan. 2-13, Jan. 17 to Mar. 30, 1960. No gage-height record Nov. 9-17, 1957; July 28 to Aug. 5, 1958.

Big Creek near Mount Pleasant, Iowa

LOCATION.—Lat. 41°00'50", long. 91°34'45", in NW¼NW¼ sec. 29, T. 72 N., R. 6 W., on left bank 12 ft. downstream from highway bridge, 100 ft. downstream from Lynn Creek, 0.7 mile downstream from Brandywine Creek, and 3.4 miles northwest of Mount Pleasant.

DRAINAGE AREA.—106 square miles.

RECORDS AVAILABLE.—October 1955 to September 1960.

GAGE.—Water-stage recorder and concrete control. Datum of gage is 630.53 ft. above mean sea level, datum of 1929.

AVERAGE DISCHARGE.—5 years, 48.6 cfs.

EXTREMES.—1955-60: Maximum discharge 4,420 cfs Mar. 29, 1960 (gage-height, 15.30 ft.); no flow on many days most years.

Flood of August 3, 1948, reached a stage of about 27 ft., from flood-marks by local residents (discharge not determined).

REMARKS.—Bankfull stage is about gage height, 14 feet.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	0.1	*0	0	0	0	6.0	0.1	2.0	0	0.7	126	0
2.....	.4	0	0	0	*0	3.0	.1	*1.6	0	1.0	17	0
3.....	.9	0	0	0	0	1.5	.1	1.2	0	1.0	9.2	0
4.....	1.2	0	0	0	0	.8	.1	1.0	0	.8	3.3	0
5.....	1.8	0	0	*0	0	.5	.1	1.0	0	*.7	1.4	0
6.....	20	0	0	0	0	.2	.1	1.0	0	60	.7	0
7.....	6.3	0	0	0	0	*.1	.1	.9	0	76	.3	0
8.....	2.3	0	0	0	0	.1	0	.7	0	134	.1	0
9.....	1.0	0	0	0	.1	.1	0	.7	0	20.8	15	0
10.....	.8	0	0	0	.2	.1	0	.6	0	5.8	.5	0
11.....	.5	0	0	0	.4	.1	0	.5	0	2.4	.1	0
12.....	.2	0	0	0	.6	.1	0	.4	0	1.4	1.8	0
13.....	.1	0	0	0	8.4	.1	0	.2	0	1.0	*207	0
14.....	.1	0	0	0	161	.1	0	.1	0	.6	53	0
15.....	.1	0	0	0	100	.1	0	0	0	.3	14	0
16.....	0	0	0	0	74	.2	0	0	0	.1	6.2	0
17.....	0	0	0	0	60	.2	0	0	0	0	3.6	0
18.....	0	0	0	0	49	.2	0	0	.1	13	5.1	0
19.....	0	0	0	0	39	.2	0	0	1.8	12	7.6	0
20.....	0	0	0	0	31	.2	0	0	*105	2.9	2.2	0
21.....	0	0	0	0	29	.2	0	0	*17	5.1	.7	0
22.....	0	0	0	0	25	.2	0	0	30	.6	.1	0
23.....	0	0	0	0	20	.3	0	0	9.8	0	0	0
24.....	0	0	0	0	250	.3	0	0	6.7	0	0	0
25.....	0	0	0	0	75	.3	0	0	2.6	0	0	0
26.....	0	0	0	0	35	.2	0	0	1.6	0	0	0
27.....	0	0	0	0	19	*.3	0	0	1.0	0	0	0
28.....	0	0	0	0	14	.5	.1	0	.8	2.6	0	0
29.....	0	*0	0	0	10	.3	4.8	*0	.6	1.0	0	0
30.....	0	0	0	0	.....	.1	4.4	0	.4	.9	0	0
31.....	0	.....	0	0	.....	.1	.....	0	.....	.1	*0	.....

Big Creek near Mount Pleasant, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	0	0	0	0	0	0.3	19	7.2	2.4	0.4	0	0.3
2	0	0	0	0	0	.2	21	5.8	1.4	.1	0	.1
3	0	0	0	0	0	.1	160	3.8	1.4	.1	0	0
4	0	0	0	0	0	.1	114	2.7	.7	.2	0	0
5	*0	0	0	0	0	.1	57	2.4	.4	.5	0	0
6	0	0	0	0	0	.1	28	2.0	.3	.1	0	0
7	0	0	0	0	1.2	.1	26	1.4	.7	.1	0	0
8	0	0	0	0	3.0	.1	30	.8	1.4	0	0	0
9	0	0	0	0	27	.1	20	1.4	.8	0	0	0
10	0	0	0	0	20	.1	13	4.1	.5	0	0	0
11	0	0	0	0	6.2	.1	9.8	5.3	.8	0	0	0
12	0	0	0	0	3.0	.1	6.7	10	.8	0	0	0
13	0	0	0	0	1.6	.1	5.1	14	27	0	0	0
14	0	0	0	0	1.4	.1	4.1	22	20	0	0	0
15	0	0	0	0	1.2	.1	3.3	21	*19	0	0	0
16	0	*0	0	0	1.0	.1	3.6	13	9.8	0	0	0
17	0	0	0	0	.8	.1	10	9.8	5.3	0	0	*0
18	0	0	0	0	.6	.1	*14	8.1	19	0	0	0
19	0	0	0	0	.2	.1	12	7.6	19	0	0	0
20	0	0	*0	0	*.1	*.3	8.1	6.2	8.6	0	0	0
21	0	0	0	0	.1	.4	5.4	12	4.5	0	0	3.0
22	0	0	0	8.7	.1	.3	56	7.6	2.4	0	*0	3.4
23	0	0	0	1.6	.1	.3	49	*5.8	1.4	1.2	0	1.1
24	0	0	0	.3	.1	.2	29	4.5	.5	0	0	.8
25	0	0	0	.1	.1	.4	19	7.1	.4	0	0	.4
26	0	0	0	0	.1	.9	15	9.2	9.5	*0	0	.1
27	0	0	0	*0	.2	1.9	14	9.2	4.1	0	0	0
28	0	0	0	0	.5	3.8	12	4.9	3.0	0	96	0
29	0	0	0	0	.....	7.6	11	3.4	1.7	0	7.1	0
30	0	0	0	0	.....	15	8.1	2.4	.8	4.2	.3	0
31	0	.....	0	0	.....	18	.....	3.0	.....	.2	.2	.....
1957-58												
1	0	0.7	0.5	6.4	1.9	89	6.3	10	391	152	683	2.8
2	0	2.3	.6	5.2	1.7	74	7.1	9.6	114	220	133	2.1
3	0	1.1	.6	4.1	1.6	60	7.6	9.6	54	52	82	2.4
4	0	.6	.4	3.6	1.5	50	9.0	26	38	50	52	3.3
5	0	.4	.4	3.1	1.4	50	11	52	28	53	37	1.5
6	0	.....	.6	3.4	1.3	64	14	36	20	21	30	1.3
7	0	.9	.7	4.1	1.3	63	13	27	16	18	25	.9
8	0	1.8	.5	5.1	1.2	57	8.5	23	81	14	34	.8
9	0	1.1	.3	6.3	1.2	49	6.3	20	822	11	29	.8
10	0	.7	.2	7.6	1.1	38	.....	14	321	10	18	1.7
11	0	.5	.2	7.6	1.1	32	5.9	11	313	71	13	1.9
12	0	.4	.1	8.0	1.0	28	5.9	9.0	401	70	10	1.7
13	0	.5	.1	9.6	1.0	28	5.6	6.7	*819	43	9.0	1.9
14	0	.6	.1	11	.9	26	5.3	5.9	321	251	8.0	1.7
15	.3	.4	.2	13	.9	22	5.0	5.9	143	79	21	21
16	.6	.4	*.2	11	.8	20	5.0	5.9	*99	41	11	6.3
17	*.1	3.3	.3	9.0	.8	18	4.6	7.1	74	31	7.1	*11
18	.1	86	2.5	7.1	.8	16	4.6	79	53	42	5.9	5.9
19	.1	57	14	6.7	.8	14	4.6	30	42	400	4.6	3.3
20	.1	21	*168	*7.6	*.8	14	5.9	14	35	347	4.0	2.8
21	.1	*9.0	91	6.4	1.1	11	6.3	11	26	127	*3.8	3.7
22	.2	5.3	44	5.4	2.0	11	7.1	11	23	83	3.1	3.4
23	6.0	3.6	30	4.6	30	11	32	*9.6	21	50	2.8	28
24	23	3.1	18	4.0	500	*9.0	*129	7.1	21	35	3.1	111
25	14	2.1	104	3.6	900	8.0	49	5.9	18	*27	3.1	26
26	3.2	1.7	61	3.3	600	7.6	31	5.0	13	20	3.1	13
27	.6	1.5	34	3.0	238	7.6	25	4.4	11	46	3.1	7.1
28	.2	1.3	21	2.8	138	7.1	22	3.8	9.0	81	3.1	5.0
29	.2	.9	15	2.5	.....	7.1	18	3.3	8.0	30	3.1	4.4
30	.2	.6	11	2.3	.....	7.1	11	2.8	7.1	*520	5.6	5.0
31	.2	.....	8.3	2.1	.....	6.7	.....	147	.....	*263	7.1	.....

Big Creek near Mount Pleasant, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	4.2	1.7	4.8	3.1	13	100	218	90	106	866	9.0	4.4
2	3.6	1.6	5.4	2.9	9.0	62	212	72	72	315	4.2	3.6
3	3.4	1.6	7.6	2.6	6.0	45	137	59	56	133	3.6	2.2
4	3.2	1.6	8.6	2.4	4.6	26	78	50	45	83	3.9	1.2
5	3.2	1.6	5.7	2.2	3.7	18	64	42	35	94	5.0	.9
6	2.4	1.6	3.4	2.0	3.4	13	48	37	30	53	11	1.4
7	4.8	1.5	2.2	2.2	4.5	8.1	43	27	25	34	13	1.2
8	13	1.5	2.4	2.4	3.0	9.0	42	25	20	37	5.4	1.2
9	7.2	1.5	2.5	2.2	100	50	48	27	19	192	3.6	1.4
10	5.0	1.5	2.5	2.0	450	300	46	118	17	53	2.7	1.8
11	3.9	1.5	2.5	2.0	300	679	43	298	17	30	2.4	1.4
12	3.3	1.5	2.4	2.2	250	514	40	120	16	20	1.8	.9
13	2.9	1.5	2.1	2.4	600	334	35	77	10	16	1.4	.5
14	2.6	1.5	1.8	6.0	700	369	31	57	9.0	11	1.6	.4
15	2.4	1.6	1.4	7.0	500	530	29	48	8.6	9.5	1.8	.2
16	2.2	1.6	*1.2	5.0	350	210	26	40	6.4	8.6	4.2	.1
17	2.0	167	1.4	3.2	220	130	37	35	4.8	8.1	3.2	.1
18	1.9	228	1.4	2.2	150	200	64	111	5.0	7.6	0.9	0
19	1.8	60	1.9	2.2	96	309	157	*289	5.7	6.0	.6	.1
20	1.8	*40	2.3	1.8	64	196	478	160	5.0	4.8	.4	0
21	2.9	23	2.9	2.0	56	110	333	378	6.4	3.6	.5	0
22	3.9	19	2.9	2.4	200	70	209	177	230	3.4	.5	1.1
23	*2.7	15	3.2	3.9	*950	60	144	110	*38	3.2	.4	129
24	2.2	12	3.4	3.2	450	*53	102	78	19	2.7	.3	20
25	2.1	10	3.4	2.9	220	43	77	66	15	2.2	.1	89
26	2.0	8.6	3.4	2.7	*270	153	65	59	14	1.8	*0	229
27	1.9	6.4	3.6	2.4	230	207	130	*46	8.6	1.6	0	242
28	1.8	5.5	3.9	*2.2	170	125	460	40	8.6	2.2	0	43
29	1.7	4.8	4.2	4.0	.....	84	*246	*80	9.5	*2.0	0	20
30	1.7	4.2	3.4	25	.....	77	145	315	170	150	0	12
31	1.7	.....	3.2	18	.....	90	.....	190	.....	40	1.9	.....
1959-60												
1	*8.6	36	18	110	46	22	585	99	110	54	6.0	2.0
2	7.2	33	20	106	46	25	423	75	288	47	5.4	2.2
3	8.1	32	19	66	46	24	279	63	113	49	4.8	2.0
4	85	40	20	56	52	23	234	53	169	35	4.5	1.6
5	*1,390	38	18	48	62	22	200	50	931	31	4.5	1.0
6	*1,220	25	13	45	70	22	163	320	261	29	132	.7
7	*997	20	14	48	64	22	*116	279	136	25	250	.5
8	432	20	11	50	86	23	91	166	95	22	35	.4
9	297	22	10	47	110	24	67	115	70	33	20	.4
10	216	23	10	43	140	24	57	89	251	33	10	.4
11	152	20	20	41	130	25	59	70	842	26	7.6	.4
12	115	19	31	500	110	25	49	57	1,850	143	6.0	.4
13	91	19	25	*688	86	25	49	56	1,050	119	5.4	.3
14	71	17	22	505	66	25	1,010	50	405	35	4.8	.3
15	63	15	20	650	52	26	686	43	261	26	3.6	.3
16	52	13	*20	315	49	26	632	214	187	22	3.2	.3
17	40	*12	20	196	40	27	1,280	279	126	19	2.9	.3
18	36	10	18	110	32	28	507	152	101	17	2.7	.3
19	35	15	16	80	25	29	288	115	234	15	3.9	.6
20	31	17	17	94	28	28	205	297	145	11	4.2	.7
21	25	20	19	*70	32	27	150	243	157	10	2.9	.7
22	25	29	20	60	29	27	113	225	*116	9.0	2.2	.6
23	27	38	144	56	30	27	88	142	713	8.1	1.6	.5
24	36	33	182	53	29	26	74	*209	243	8.1	1.0	.5
25	30	26	122	52	*27	24	70	565	134	113	*1.0	.5
26	26	22	102	50	26	26	60	360	98	110	1.4	.5
27	25	17	308	48	25	350	*47	207	78	*20	1.6	*.4
28	*20	15	414	47	25	1,404	46	145	74	14	1.6	.4
29	18	13	324	46	25	*2,850	49	110	61	10	1.6	.4
30	19	15	214	46	.....	*2,390	172	88	54	10	1.6	.4
31	31	.....	139	50	.....	746	.....	71	.....	7.2	2.0	.....

Big Creek near Mount Pleasant, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	1.15	0	0	0	34.5	0.54	0.33	0.38	5.91	11.1	15.3	0
1956-57	0	0	0	.35	2.45	1.65	26.1	7.02	5.50	.23	3.34	.31
1957-58	1.59	6.97	20.3	5.79	86.9	29.2	15.7	19.8	145	105	40.6	9.39
1958-59	3.21	20.9	3.26	4.09	229	167	126	107	34.4	71.1	2.69	26.9
1959-60	182	22.5	75.8	141	54.8	271	262	162	312	35.8	17.3	0.67

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.011	0	0	0	0.325	0.0051	0.0031	0.0036	0.056	0.105	0.144	0
1956-57	0	0	0	.0033	.023	.016	.246	.066	.053	.0022	.032	.0029
1957-58	.015	.066	.192	.055	.820	.275	.148	.187	1.37	.991	.383	.089
1958-59	.030	.197	.031	.039	2.16	1.58	1.19	1.01	.325	.671	.025	.254
1959-60	1.72	.212	.715	1.33	.517	2.56	2.47	1.53	2.94	.338	.163	.0063

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.01	0	0	0	0.35	0.006	0.004	0.004	0.06	0.12	0.17	0
1956-57	0	0	0	.004	.02	.02	.27	.08	.06	.002	.04	.003
1957-58	.02	.07	.22	.06	.85	.32	.17	.21	1.52	1.14	.44	.10
1958-59	.03	.22	.04	.04	2.25	1.82	1.33	1.17	.36	.77	.03	.28
1959-60	1.97	.24	.82	1.54	.56	2.94	2.75	1.76	3.28	.39	.19	.007

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1956	Feb. 24, 1956	6.52	590	0	5.66	0.053	0.72	5.56	0.71
1957	Apr. 3, 1957	4.33	264	0	3.89	.037	.50	6.32	.81
1958	Feb. 24, 1958	9.38	1,600	0	40.1	.378	5.12	39.9	5.10
1959	Feb. 23, 1959	(1)10.67	1,150	0	65.1	.611	8.34	89.5	11.08
1960	Mar. 29, 1960	15.30	4,460	.3	128	1.21	16.45	.....	.....

(1) Maximum gage-height, 10.77 ft. Feb. 10, 1959 (ice jam).

Peak Discharge (base, 900 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: Feb. 24 (8 p.m.) 1,600 cfs (9.38 ft.); June 9 (2 a.m.) 1,540 cfs (9.24 ft.); June 13 (11 a.m.) 1,320 cfs (8.49 ft.); July 19 (9:30 p.m.) 1,000 cfs (7.30 ft.); Aug. 1 (7 a.m.) 1,250 cfs (8.32 ft.).

1958-59: Feb. 10, about 900 cfs; Feb. 23, about 1,150 cfs; July 1 (4:30 a.m.) 994 cfs (7.41 ft.).

1959-60: Oct. 5 (5 a.m.) 2,310 cfs (11.37 ft.); Oct. 6 (7 p.m.) 2,080 cfs (10.83 ft.); Mar. 29 (11 p.m.) 4,460 cfs (15.30 ft.); Apr. 14 (6:30 p.m.) 1,470 cfs (8.96 ft.); Apr. 17 (12:30 a.m.) 2,190 cfs (11.12 ft.); June 5 (2 a.m.) 1,500 cfs (9.11 ft.); June 12 (4 a.m.) 2,950 cfs (12.89 ft.); June 23 (5 a.m.) 1,100 cfs (7.75 ft.).

Notes to Tables of Daily Discharge

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

Stage-discharge relation affected by ice Dec. 9-12, 26-31, 1957; Jan. 1-8, Jan. 21 to Feb. 26, Nov. 28-30, Dec. 9-14, 18-20, 1958; Jan. 1-5, 14-16, Jan. 28 to Mar. 1, Mar. 5, 6, 9, 10, 16-18, Nov. 16, Nov. 26 to Dec. 1, Dec. 7-10, 16, 1959; Jan. 3-12, 18-27, Feb. 5 to Mar. 28, 1960. No gage-height record Oct. 9-15, 1955; Feb. 9-12, Feb. 16 to Mar. 26, Apr. 4-28, May 14-16, June 18, 19, 1956; Feb. 21-26, Mar. 4-18, 1957.

Skunk River at Augusta, Iowa

LOCATION.—Lat. 40°45'10", long. 91°16'30", in NE¼ NE¼ sec. 26, T. 69 N., R. 4 W., on left bank 300 ft. upstream from bridge on State Highway 394 (revised) at Augusta, 2 miles upstream from Long Creek and at mile 12.5.

DRAINAGE AREA.—4,303 square miles (revised in 1956).

RECORDS AVAILABLE.—September to November 1913, October 1914 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 521.69 ft. above mean sea level, adjustment of 1912. Sept. 30 to Nov. 15, 1913, staff gage at site 400 ft. upstream at datum about 0.7 ft. higher. May 27, 1915, to Jan. 14, 1935, chain gage at site 400 ft. upstream at present datum.

AVERAGE DISCHARGE.—46 years (1914-60), 2,177 cfs.

EXTREMES.—1913, 1914-60: Maximum discharge, 51,000 cfs April 3, 1960 (gage height, 25.00 ft.); minimum daily, 7 cfs Aug. 27 to Sept. 1, 1934. Flood of June 1, 1903, reached a stage of about 21 ft. (discharge, about 45,000 cfs).

REMARKS.—Bankfull stage is about gage height, 15 ft.

REVISIONS. (water years).—WSP 1308: 1915(M), 1919-27(M), 1932-34(M), 1936, 1937-38(M), 1942(M).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	3,010	*62	37	34	25	680	165	123	74	104	141	69
2.....	1,800	62	37	40	*25	620	155	142	71	181	1,760	49
3.....	820	37	44	35	25	560	146	*138	74	134	1,580	495
4.....	547	22	44	34	20	520	146	119	79	248	910	374
5.....	461	41	39	*39	20	500	138	104	139	*210	520	*184
6.....	1,010	55	40	39	20	461	130	101	188	138	384	140
7.....	656	55	44	21	22	*442	123	104	151	170	305	110
8.....	305	55	48	37	22	370	111	101	130	679	242	150
9.....	220	53	40	35	22	329	104	98	111	592	198	210
10.....	174	53	42	34	50	282	104	98	85	474	210	270
11.....	146	53	39	32	45	240	104	98	71	359	232	190
12.....	134	53	*37	30	31	210	104	107	62	174	276	140
13.....	115	53	36	30	46	193	101	101	55	92	1,180	110
14.....	98	51	34	31	70	170	95	95	51	60	*1,240	86
15.....	92	55	32	31	115	160	92	85	55	44	860	78
16.....	92	45	36	18	150	155	92	79	67	37	608	70
17.....	85	38	36	22	130	155	85	74	64	32	435	60
18.....	79	62	35	26	100	160	82	67	*98	50	403	54
19.....	79	53	35	27	86	155	76	64	142	104	397	49
20.....	71	48	35	26	74	142	74	146	2,630	165	365	46
21.....	71	51	35	22	64	138	74	193	1,280	188	903	43
22.....	71	55	35	21	56	146	71	165	1,360	335	860	40
23.....	71	58	35	21	52	146	71	*134	1,040	423	592	38
24.....	71	58	35	21	220	142	*69	107	540	288	410	34
25.....	71	55	35	21	640	138	67	92	410	170	242	28
26.....	67	51	35	21	1,700	134	67	92	317	111	155	25
27.....	67	44	35	21	1,100	*126	71	92	204	105	115	22
28.....	71	25	35	22	900	138	76	85	142	358	92	21
29.....	76	*42	34	23	780	204	149	*104	146	393	79	19
30.....	76	37	20	23	.....	179	174	95	151	144	76	18
31.....	69	.....	31	25	.....	179	.....	85	.....	71	186	.....

Skunk River at Augusta, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	18	16	30	25	50	181	374	553	672	940	2,980	624
2	18	15	34	25	47	150	388	420	888	920	2,160	546
3	18	15	28	24	47	150	845	362	1,990	738	2,260	414
4	18	15	28	23	47	168	2,650	313	1,430	704	1,550	331
5	16	16	30	22	47	150	3,570	262	1,100	2,840	1,090	273
6	16	16	30	20	47	139	2,380	230	880	5,010	792	235
7	15	16	26	19	53	135	1,500	195	756	5,130	648	220
8	14	15	12	18	58	135	1,160	172	640	5,250	546	215
9	13	15	14	17	78	131	850	168	664	5,370	476	200
10	12	16	20	16	120	120	664	210	731	5,370	427	186
11	12	16	24	15	512	128	539	251	696	2,870	388	186
12	13	16	22	15	890	142	469	210	1,090	1,770	374	190
13	16	16	15	14	910	172	381	685	2,320	1,320	349	182
14	16	18	18	14	511	295	337	1,590	*2,600	1,080	325	181
15	16	*25	22	14	374	246	278	2,320	2,700	960	343	168
16	16	20	24	14	532	195	251	2,100	1,770	*830	313	168
17	15	20	24	14	400	155	608	1,880	1,420	729	284	159
18	14	22	20	14	360	135	*518	2,040	792	656	262	*159
19	14	23	18	14	319	135	*420	2,040	1,240	600	251	195
20	14	29	*18	15	230	135	355	*1,600	2,980	546	235	262
21	14	26	15	30	*278	*135	307	1,340	3,450	504	*230	313
22	14	22	12	150	260	139	497	1,340	3,810	850	210	251
23	14	26	12	350	230	135	970	1,600	3,930	1,000	205	225
24	14	30	12	450	205	131	1,010	1,940	3,690	656	225	177
25	16	32	16	520	210	177	672	1,660	2,260	*672	220	168
26	22	30	15	350	256	230	511	1,380	1,550	560	251	200
27	18	23	20	200	230	284	420	980	1,370	497	278	177
28	18	24	23	100	195	368	368	774	1,190	476	340	142
29	16	16	24	68	.....	414	797	656	1,050	2,130	1,050	128
30	14	25	25	60	.....	388	890	592	970	4,650	608	113
31	16	.....	25	51	.....	368	.....	830	.....	5,370	830	.....
1957-58												
1	108	161	230	250	280	5,510	503	434	1,990	496	11,900	503
2	104	164	250	370	270	3,530	510	414	2,760	2,160	10,000	440
3	96	164	260	414	260	2,600	518	420	2,210	1,340	5,950	454
4	93	164	210	434	250	2,040	525	440	2,040	1,250	3,200	461
5	88	172	219	401	240	1,740	562	1,240	1,210	1,890	2,320	447
6	82	201	273	357	230	1,640	622	2,480	756	3,310	1,940	375
7	79	206	345	310	220	1,690	645	1,490	562	*3,640	2,160	1,660
8	77	228	363	288	205	1,540	638	991	510	3,640	2,600	1,540
9	77	273	310	288	195	1,440	*660	796	4,650	3,640	2,540	1,440
10	74	257	270	304	185	1,340	748	692	6,120	4,080	1,740	1,340
11	70	243	235	310	175	1,160	901	615	4,520	4,520	*1,240	1,040
12	67	224	200	304	170	1,060	892	555	3,380	5,290	1,240	829
13	65	224	180	294	*165	1,000	829	496	5,920	4,410	1,610	772
14	67	214	185	304	155	*964	772	454	6,220	2,980	3,200	756
15	79	210	201	315	150	910	732	*420	3,800	5,620	2,480	652
16	*134	201	219	321	150	874	692	388	*2,540	5,180	5,780	708
17	185	193	*233	333	150	838	638	369	3,530	4,080	6,060	*600
18	124	434	639	345	150	820	608	447	2,760	2,980	2,790	578
19	101	2,210	1,040	351	*150	796	585	865	1,940	3,240	1,390	548
20	96	1,390	3,710	*363	150	764	585	700	1,540	8,590	1,030	548
21	96	*937	5,650	327	150	*724	555	540	1,270	*10,500	*856	540
22	101	700	2,360	290	150	692	548	*434	1,130	8,200	796	496
23	206	518	1,200	340	160	668	*614	382	991	4,850	1,040	510
24	468	427	892	350	600	645	1,040	382	847	3,200	1,540	1,440
25	570	369	1,510	350	1,500	615	946	363	772	2,480	1,080	1,590
26	252	351	2,540	340	5,000	585	764	315	700	2,160	812	910
27	189	345	1,690	330	6,500	562	692	288	652	2,040	708	796
28	176	321	1,080	320	7,720	555	585	267	600	2,210	638	578
29	257	290	820	310	.....	532	525	248	555	2,210	585	475
30	214	260	600	300	.....	525	475	238	510	7,050	548	427
31	176	.....	390	290	.....	518	.....	520	.....	11,300	562	.....

Skunk River at Augusta, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	401	233	270	170	100	8,320	8,080	7,050	12,900	8,200	5,180	440
2	357	233	304	160	100	7,490	8,800	6,170	11,800	6,720	2,540	856
3	333	224	369	155	100	6,500	9,160	4,850	9,880	5,840	1,230	2,380
4	327	224	427	160	100	*5,180	8,200	3,750	9,040	5,620	874	1,290
5	327	219	300	155	100	3,970	7,600	3,530	7,720	5,620	1,010	660
6	299	214	220	150	100	3,100	6,390	3,200	6,940	5,840	2,650	475
7	315	201	180	140	100	2,400	4,630	2,760	6,720	4,740	4,080	375
8	382	201	160	135	100	2,100	3,860	2,650	6,280	3,090	2,980	434
9	375	201	150	130	120	2,040	3,530	2,760	5,070	3,310	1,340	503
10	394	201	130	130	800	3,310	3,090	2,700	3,640	5,180	856	420
11	420	197	130	125	3,500	6,720	2,760	6,240	2,760	3,420	708	357
12	369	193	135	120	3,000	7,600	2,480	6,940	2,480	2,320	615	315
13	676	193	140	120	3,000	7,160	2,260	5,730	2,160	1,740	548	288
14	555	197	145	115	5,000	9,040	2,100	5,180	1,940	1,540	518	262
15	420	233	150	115	7,000	11,800	1,940	4,410	*1,790	1,390	475	238
16	357	294	153	115	5,800	10,400	1,790	3,530	1,590	1,240	475	228
17	321	356	*153	115	4,500	8,200	1,790	2,980	1,440	1,130	668	228
18	299	7,120	152	120	3,600	6,940	2,320	*3,090	1,340	1,070	964	214
19	283	*4,620	150	120	3,000	7,160	2,980	4,300	1,240	1,290	910	206
20	273	2,210	150	125	2,400	10,900	5,400	5,950	1,160	1,940	692	210
21	273	2,430	150	120	2,000	12,100	6,500	6,610	1,100	2,480	540	278
22	288	1,690	150	120	1,760	12,100	6,280	6,610	1,690	1,790	440	288
23	*283	1,040	150	115	3,000	9,880	5,400	7,160	1,640	1,260	382	2,470
24	267	820	155	115	8,000	*9,280	4,630	6,720	*1,340	1,030	351	2,870
25	257	716	160	115	11,000	10,500	4,190	6,280	1,030	919	*339	1,060
26	257	630	165	115	13,000	12,700	4,960	6,280	910	847	315	1,910
27	257	562	170	110	10,900	14,600	5,730	*5,620	838	732	299	3,640
28	248	470	175	*110	10,000	13,400	*6,500	4,300	772	708	369	2,600
29	243	360	180	110	10,100	8,920	4,300	740	*660	375	3,530	
30	238	230	190	105	8,200	8,320	10,900	3,030	660	327	*2,320	
31	233		180	103		7,840		14,200		4,300	505	
1959-60												
1	1,180	708	800	4,520	3,700	1,200	*31,900	6,460	8,150	10,900	1,240	712
2	772	748	1,000	3,640	3,600	1,200	*41,600	6,220	7,760	11,300	1,100	768
3	638	772	1,100	3,000	3,500	1,100	*50,100	5,260	6,980	9,380	1,020	856
4	638	780	1,300	2,300	3,400	1,100	45,400	4,900	5,980	9,240	952	808
5	9,620	796	1,400	2,200	3,200	1,000	34,500	4,560	6,460	7,760	889	688
6	14,000	1,640	1,200	2,100	3,300	1,000	25,800	5,500	5,260	4,900	8,820	608
7	*15,700	3,860	1,100	1,900	3,300	1,000	20,000	12,500	4,450	3,250	8,280	553
8	11,800	3,640	1,000	1,800	3,000	1,000	16,000	14,300	4,010	2,650	5,860	511
9	7,720	2,650	900	1,700	3,300	1,000	13,000	15,200	3,050	2,350	3,150	462
10	4,520	2,040	860	1,700	3,500	1,000	11,000	16,300	2,750	4,120	1,780	434
11	2,870	1,890	860	1,900	3,200	1,000	9,000	12,800	4,230	5,500	1,280	414
12	1,690	1,740	1,100	7,000	2,800	1,000	8,000	12,800	9,240	5,980	1,090	400
13	1,490	1,640	1,290	17,700	2,500	1,000	*6,980	12,400	15,600	14,200	961	368
14	1,250	1,490	1,440	*18,400	2,400	1,000	9,240	11,100	16,300	12,200	872	355
15	1,110	1,200	1,340	19,500	2,500	*1,000	17,100	10,500	15,400	8,820	816	349
16	1,010	860	*1,180	20,700	2,600	1,050	14,200	11,100	9,100	8,410	760	349
17	910	*600	1,110	20,100	2,600	1,050	15,600	12,800	5,140	7,760	720	362
18	812	520	1,070	19,400	2,600	1,100	16,100	10,500	3,900	6,590	696	362
19	740	520	1,030	17,100	2,500	1,100	13,700	7,890	4,010	5,140	672	362
20	708	1,000	982	13,400	2,300	1,100	9,660	7,630	7,240	3,570	848	368
21	660	1,200	946	7,890	2,200	1,100	7,760	8,540	5,740	2,850	970	381
22	630	1,400	928	5,860	2,000	1,000	7,110	8,680	*5,740	2,400	970	394
23	622	1,490	1,060	4,500	1,900	1,300	6,980	6,980	*8,280	2,100	898	400
24	645	1,640	2,260	4,100	1,800	1,300	6,720	*5,860	7,500	1,920	*744	374
25	740	1,640	2,870	4,000	*1,650	1,300	5,860	10,900	4,010	2,150	656	400
26	1,080	1,500	2,160	4,100	1,500	1,300	4,780	13,700	3,350	2,350	624	518
27	1,050	1,300	2,430	4,200	1,400	2,000	*4,010	13,000	2,650	*2,200	576	*776
28	*892	900	10,000	4,200	1,300	7,000	3,680	10,400	2,950	1,640	539	1,110
29	788	700	12,100	4,100	1,200	*21,000	3,790	8,540	7,760	1,380	518	979
30	732	600	10,400	4,100		27,000	4,340	8,540	9,380	1,380	511	898
31	700		6,500	4,000		28,800		8,540		1,280	640	

Skunk River at Augusta, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	348	49.4	36.6	27.8	228	264	104	106	333	214	515	107
1956-57	15.5	20.5	21.2	86.6	268	191	833	987	1,688	1,968	661	233
1957-58	148	402	913	329	917	1,254	664	603	2,233	4,146	2,591	781
1958-59	333	890	187	126	3,647	8,008	5,020	5,379	3,699	2,794	1,082	1,045
1959-60	2,830	1,382	2,378	7,455	2,578	3,681	15,460	9,819	6,746	5,344	1,595	544

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.081	0.011	0.0085	0.0065	0.053	0.061	0.024	0.025	0.077	0.050	0.120	0.025
1956-57	.0036	.0048	.0049	.020	.062	.044	.194	.229	.392	.457	.154	.054
1957-58	.034	.093	.212	.076	.213	.291	.154	.140	.519	.964	.602	.182
1958-59	.077	.207	.043	.029	.848	1.88	1.17	1.25	.860	.649	.251	.243
1959-60	.658	.321	.553	1.73	.599	.855	3.59	2.28	1.57	1.24	.371	.126

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.09	0.01	0.01	0.007	0.06	0.07	0.03	0.03	0.09	0.06	0.14	0.03
1956-57	.004	.005	.006	.02	.06	.05	.22	.26	.44	.53	.18	.06
1957-58	.04	.10	.24	.09	.22	.34	.17	.16	.58	1.11	.69	.20
1958-59	.09	.23	.05	.03	.88	2.17	1.30	1.44	.96	.75	.29	.27
1959-60	.76	.36	.64	2.00	.65	.99	4.01	2.63	1.75	1.43	.43	.14

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								1,187	3.74
1956	June 20, 1956	(1)5.47	4,050	18	195	0.045	0.63	163	.53
1957	July 31, 1957	7.05	5,850	12	582	.135	1.84	701	2.20
1958	Aug. 1, 1958	(2)13.12	12,800	65	1,251	0.291	3.94	1,248	3.93
1959	Feb. 26, 1959	(3)	15,000	100	2,684	.624	8.46	3,123	9.85
1960	Apr. 3, 1960	25.00	51,000	349	4,936	1.16	15.79		

- (1) Maximum gage height, 6.62 ft. Feb. 26, 1956 (backwater from ice).
 (2) Maximum gage height, 15.45 ft. Feb. 27, 1958 (backwater from ice).
 (3) Maximum gage height, 17.18 ft. Feb. 25, 1959 (ice jam).

Peak Discharge (base, 12,500 cfs)

1955-56: No peak above base.
 1956-57: No peak above base.
 1957-58: Aug. 1 (9 p.m.) 12,800 cfs (13.12 ft.).
 1958-59: Feb. 26 about 15,000 cfs; Mar. 22 (11:30 a.m.) 12,600 cfs (12.96 ft.); Mar. 27 (5 p.m.) 14,800 cfs (14.72 ft.); May 31 (12 m) 14,300 cfs (14.30 ft.).
 1959-60: Oct. 7 (6 a.m.) 16,200 cfs (15.80 ft.); Jan. 16 (6 p.m.) 20,900 cfs (17.29 ft.); Apr. 3 (12 m) 51,000 cfs (25.00 ft.); Apr. 15 (1:30 p.m.) 17,500 cfs (15.49 ft.); May 10 (1:30 p.m.) 16,800 cfs (15.11 ft.); May 26 (2 a.m.) 14,000 cfs (13.63 ft.); June 15 (3 a.m.) 16,400 cfs (14.92 ft.); July 13 (11 p.m.) 15,200 cfs (14.17 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.
 Stage discharge relation affected by ice Nov. 16, Dec. 12-24, 1955; Feb. 10 to Mar. 5, Mar. 8, 11, 12, Nov. 21, 23-25, 28, Dec. 11, 12, 16, 17, 21, 26-31, 1956; Feb. 17, 18, 22, 23, Nov. 29 to Dec. 3, Dec. 9-13, 30, 31, 1957; Jan. 1, 2, Jan. 22 to Feb. 27, Nov. 28 to Dec. 1, Dec. 5-31, 1958; Jan. 1 to Feb. 26, Mar. 6, 7, Nov. 15-22, Nov. 26 to Dec. 12, 1959; Jan. 3-12, Jan. 23 to Mar. 28, 1960. No gage-height record Sept. 6-23, 1956; Jan. 1 to Feb. 6, 1957. Backwater from Mississippi River Apr. 7-12, 1960.

Mississippi River at Keokuk, Iowa

LOCATION.—Lat. 40°23'35", long. 91°22'25", in SE¼SW¼ sec. 30, T. 65 N., R. 4 W., near right bank in tailwater at downstream end of new lock below dam and powerplant of Union Electric Co. at Keokuk, 2.8 miles upstream from Des Moines River and at mile 364.2 upstream from Ohio River.

DRAINAGE AREA.—119,000 square miles, approximately.

RECORDS AVAILABLE.—January 1878 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 477.41 ft. above mean sea level, datum of 1929 (levels by Corps of Engineers); 477.83 ft. above mean sea level, adjustment of 1912; 477.34 ft. above mean gulf level; and 484.65 ft. above Memphis datum. Jan. 1, 1878, to May 1913, staff gage at Galland (formerly Nashville), 8 miles upstream; zero of gage was set to low-water mark of 1864, or 496.94 ft. above mean sea level, adjustment of 1912.

AVERAGE DISCHARGE.—82 years, 60,980 cfs.

EXTREMES.—1878-1960: Maximum daily discharge, 314,000 cfs May 18, 1888 (gage height, 12.0 ft., site and datum then in use; 19.6 ft., present site and datum); minimum daily, 5,000 cfs Dec. 27, 1933.

Flood of June 6, 1851, reached a stage of 21.0 ft., present site and datum; estimated as 13.5 ft. at Galland (discharge, 360,000 cfs).

REMARKS.—Flow regulated by powerplant above station since 1913, and reservoirs and navigation dams above station since about 1935. Records for May 1913 to September 1937 adjusted for change in contents in Keokuk Reservoir, those after September 1937 unadjusted.

COOPERATION.—Records furnished by Union Electric Co., formerly Mississippi River Power Co.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	35,300	31,000	23,800	24,600	25,100	42,700	60,300	96,400	59,800	51,800	30,800	49,700
2	31,400	31,500	25,600	24,300	24,000	40,900	56,000	88,500	59,500	56,400	39,000	58,400
3	28,500	29,400	27,700	26,600	23,900	36,000	57,900	84,700	54,400	62,700	41,100	38,700
4	25,800	28,800	25,300	26,700	22,500	37,300	60,600	81,900	50,100	64,200	38,000	34,400
5	29,500	28,000	25,200	25,900	22,000	40,200	72,300	72,400	49,000	60,700	36,800	33,400
6	33,600	26,000	24,400	25,200	25,400	43,100	81,400	70,000	46,500	59,900	42,700	33,700
7	36,100	28,700	25,300	22,700	26,200	45,400	83,000	70,100	39,200	54,400	47,100	30,500
8	39,700	28,700	25,500	21,100	25,800	41,600	92,500	68,400	42,200	58,500	50,600	29,300
9	34,200	28,300	27,600	25,800	24,900	41,700	98,700	72,200	40,200	74,800	51,800	25,800
10	33,900	28,200	26,800	27,000	24,100	41,400	101,300	70,700	39,200	61,400	53,900	28,200
11	30,300	27,700	26,600	26,400	22,100	40,000	106,000	73,600	41,500	43,700	53,800	27,800
12	26,700	28,500	26,700	25,500	19,800	43,400	111,000	76,600	40,500	37,000	52,100	28,100
13	24,900	29,000	27,000	24,600	24,300	40,700	113,400	79,000	36,500	36,200	63,100	28,200
14	25,000	30,200	28,100	21,700	26,100	35,500	115,200	77,400	31,200	35,000	60,700	26,800
15	23,800	30,300	27,500	20,200	26,000	35,200	118,100	70,600	31,200	34,100	54,400	27,100
16	23,300	28,000	27,000	22,300	25,300	36,700	117,500	66,600	27,500	37,600	51,400	26,300
17	25,000	27,300	27,300	24,900	26,300	33,700	116,100	65,400	26,800	37,600	53,800	28,300
18	23,900	28,000	28,100	25,200	24,200	32,500	*121,000	65,300	33,600	36,800	49,300	25,900
19	22,800	26,500	29,700	25,700	23,600	35,200	124,300	65,300	41,500	37,400	43,200	24,900
20	21,800	22,700	30,100	24,500	26,000	34,000	128,600	63,700	48,300	38,800	47,000	24,200
21	22,000	25,300	29,900	23,300	26,100	29,500	131,100	63,700	54,000	37,100	45,400	21,900
22	20,800	24,800	29,300	22,500	23,800	28,100	131,500	61,400	53,900	42,900	40,100	19,600
23	19,800	23,700	28,200	26,600	24,400	28,200	128,900	60,100	54,000	45,900	34,800	19,000
24	22,300	22,000	27,000	26,600	24,700	31,000	127,000	57,100	54,300	44,800	31,400	22,000
25	21,900	23,200	26,700	25,500	28,700	28,800	121,200	58,200	54,400	40,500	29,400	21,300
26	22,800	22,900	25,700	24,600	23,300	33,900	116,000	56,100	55,400	37,800	28,600	21,300
27	25,200	22,600	28,100	23,700	35,200	35,000	106,800	52,100	54,400	34,600	30,100	*20,200
28	25,700	24,800	28,100	22,500	34,700	40,300	107,000	51,000	54,400	28,800	29,400	20,300
29	28,300	24,000	29,800	21,200	38,300	44,000	102,100	50,700	54,000	29,900	30,400	19,100
30	26,200	22,400	29,200	24,900	.....	56,500	99,100	53,500	51,000	30,100	32,100	18,300
31	29,500	.....	26,600	24,900	.....	60,400	.....	60,700	.....	27,700	40,500	.....

Mississippi River at Keokuk, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	20,100	22,200	24,900	24,600	22,100	32,700	57,000	59,300	63,500	77,800	62,500	45,900
2	19,100	22,200	24,700	24,700	21,300	33,100	60,100	58,900	68,300	75,300	64,500	42,200
3	18,700	22,100	26,300	22,900	18,400	34,600	65,100	60,000	74,800	71,500	66,800	40,300
4	18,000	22,000	25,000	24,000	20,400	35,200	67,600	54,400	74,300	76,600	67,300	42,300
5	18,000	22,600	25,700	21,200	22,300	32,900	65,900	54,100	70,600	82,600	60,400	44,200
6	17,000	23,600	28,100	20,000	22,100	29,600	61,800	51,600	70,000	87,900	56,100	45,500
7	17,500	25,200	28,000	25,700	21,200	28,400	69,300	50,600	69,000	91,100	51,300	44,500
8	18,600	27,100	27,900	27,700	20,400	27,700	73,100	49,300	68,500	93,300	49,100	42,000
9	18,000	27,100	24,400	27,000	19,200	25,900	71,600	46,300	62,200	95,500	49,700	44,100
10	17,300	26,800	23,300	20,200	21,700	27,500	69,200	45,000	53,800	101,400	41,700	44,500
11	16,500	26,700	24,000	18,500	26,500	29,100	65,400	43,000	55,400	100,100	36,700	43,400
12	15,600	26,700	24,000	25,700	29,700	29,800	60,700	37,600	60,000	91,100	47,300	42,500
13	13,800	26,800	19,600	19,600	32,000	28,100	55,800	40,200	51,300	100,500	40,400	45,100
14	13,900	26,800	23,200	23,700	33,100	28,600	57,600	46,800	59,700	101,000	40,200	43,300
15	14,800	30,100	26,200	24,700	31,100	27,700	51,300	42,700	59,600	106,000	40,200	43,800
16	15,500	30,700	25,000	25,000	26,300	29,500	52,200	42,200	57,600	105,800	37,600	43,900
17	16,300	33,000	25,300	25,100	24,400	32,300	51,200	43,600	60,000	97,100	38,400	43,800
18	16,300	32,500	24,000	25,300	30,600	37,000	49,500	44,700	59,600	90,700	38,400	39,900
19	18,200	29,700	21,400	22,900	31,700	48,300	45,100	45,100	58,500	92,100	42,000	36,100
20	18,000	29,800	25,200	22,200	28,200	49,600	44,900	46,400	62,000	91,600	40,200	33,900
21	17,900	28,000	23,900	24,700	28,500	49,500	46,500	46,400	67,400	84,500	43,400	35,600
22	18,200	27,300	23,400	27,400	26,200	49,600	55,000	47,800	69,800	85,200	42,700	36,000
23	18,200	31,500	24,600	29,800	25,300	46,600	52,900	47,700	71,100	89,500	38,600	37,300
24	19,000	30,100	27,000	28,100	24,200	46,500	57,600	49,800	68,000	84,500	33,900	37,700
25	19,600	29,500	23,000	32,900	25,900	51,400	56,100	53,100	67,800	85,500	33,100	37,100
26	19,800	28,600	26,400	30,000	28,200	53,900	59,000	54,600	72,500	74,300	33,500	37,800
27	19,300	28,300	27,600	27,400	29,500	51,900	60,400	54,500	71,800	69,300	33,100	35,900
28	20,900	26,400	27,000	27,600	32,500	52,800	58,900	54,700	73,200	69,300	35,700	33,400
29	23,500	26,800	24,700	26,000	.....	52,900	57,500	60,500	70,200	62,300	40,200	32,200
30	22,100	26,800	24,200	24,200	.....	54,600	59,000	57,900	75,000	63,100	39,400	33,000
31	22,600	26,800	26,500	23,900	.....	56,800	.....	60,600	.....	63,500	43,000	.....
1957-58												
1	34,000	27,300	28,900	17,800	26,200	67,500	41,000	47,100	31,400	19,000	54,000	20,900
2	33,300	27,300	31,900	19,100	23,800	69,100	40,100	49,100	45,200	19,500	45,500	23,700
3	31,900	27,900	33,700	23,200	26,500	66,900	42,700	48,100	50,500	33,100	36,600	23,800
4	30,100	31,400	31,200	26,200	27,500	68,700	40,200	47,700	34,500	38,100	30,600	22,600
5	28,800	32,700	29,200	28,000	27,200	68,000	40,300	46,800	31,700	44,600	26,900	20,300
6	27,400	33,500	26,800	31,200	27,200	68,500	44,500	46,700	35,700	59,500	25,000	20,400
7	30,100	33,100	27,000	32,500	25,600	71,600	53,500	44,200	44,100	60,900	26,300	25,700
8	29,100	34,000	26,400	32,300	23,500	66,500	57,900	44,200	46,400	63,800	31,700	35,100
9	27,700	33,100	29,200	31,100	22,800	56,800	62,900	41,800	61,900	62,000	30,700	38,200
10	24,300	32,500	30,300	28,700	26,700	52,500	64,500	37,200	81,200	61,300	26,200	40,100
11	24,600	34,300	25,200	25,700	26,000	52,200	61,400	33,100	87,900	55,300	25,500	40,100
12	25,900	36,700	21,500	25,400	24,800	50,300	68,000	35,000	89,600	57,700	24,500	37,100
13	27,400	36,100	22,300	28,800	22,600	50,400	70,800	33,900	99,000	61,700	25,000	31,300
14	30,500	35,800	24,600	29,500	22,000	41,800	71,900	31,800	89,100	59,500	26,800	29,000
15	30,400	34,500	25,400	29,500	20,400	35,800	71,600	31,600	87,100	73,200	27,300	29,600
16	30,400	33,100	28,500	29,100	19,700	35,600	68,700	30,200	73,400	64,500	27,600	32,800
17	30,600	35,200	32,400	27,800	22,900	40,800	69,600	30,900	62,500	60,200	30,600	34,500
18	27,800	39,000	36,400	25,000	23,000	41,500	68,000	34,300	50,200	62,100	30,200	35,600
19	26,000	43,200	42,200	24,300	23,400	39,700	67,400	36,800	45,800	61,700	25,600	33,900
20	25,600	46,000	45,900	27,400	23,000	37,800	64,500	34,400	43,800	68,800	22,100	31,600
21	26,700	46,400	50,300	28,400	22,600	37,700	53,700	31,900	41,900	71,000	19,900	26,200
22	27,000	46,500	47,400	23,900	20,600	37,400	54,200	29,900	39,600	61,700	25,200	25,800
23	31,500	43,800	45,000	24,000	18,800	37,900	52,900	27,100	41,000	52,300	25,700	25,400
24	33,400	43,000	40,500	26,700	24,700	39,800	53,300	24,900	35,200	43,200	22,100	26,500
25	30,700	42,000	39,500	24,500	30,900	38,800	48,500	23,500	33,500	35,400	21,600	27,600
26	28,600	41,900	45,800	24,200	41,400	36,900	47,500	22,900	28,000	28,900	20,200	28,700
27	26,800	41,600	44,500	28,200	52,200	34,900	47,900	22,100	28,700	29,900	19,700	26,800
28	29,400	36,000	41,400	28,800	67,500	33,200	49,800	21,400	26,700	30,300	16,600	23,200
29	28,500	34,200	38,500	29,800	.....	31,900	48,100	20,100	24,900	30,500	17,300	24,000
30	28,000	31,400	39,200	29,400	.....	30,700	47,600	18,300	22,600	37,700	15,800	22,500
31	27,400	.....	34,300	29,400	.....	36,900	.....	19,500	.....	48,700	17,200	.....

Mississippi River at Keokuk, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	21,500	23,800	20,700	20,600	16,700	77,200	150,500	82,800	95,000	79,500	31,100	56,500
2.....	21,100	22,800	19,400	20,400	17,300	81,200	159,200	73,400	91,300	89,200	25,100	54,500
3.....	18,100	23,200	18,700	19,900	17,000	75,000	166,700	59,600	87,800	75,600	24,400	55,700
4.....	15,500	21,300	19,400	17,500	17,500	70,000	173,500	56,900	83,400	71,000	31,400	57,700
5.....	15,800	20,900	18,400	20,500	17,400	69,000	182,000	56,900	76,300	70,300	48,900	57,100
6.....	15,100	20,100	14,400	20,600	17,400	60,500	180,400	53,700	71,600	61,200	74,800	55,700
7.....	15,300	20,700	15,500	20,600	17,700	54,400	176,500	52,400	69,000*	60,400	47,700	55,300
8.....	17,100	19,700	17,800	21,100	16,800	53,800	172,300	53,000	71,600	57,100	27,500	50,300
9.....	18,100	18,600	18,700	20,100	17,200	53,700	166,000	56,600	70,200	54,800	25,800	46,200
10.....	24,600	20,900	19,300	18,200	26,200	55,700	155,600	59,000	66,600	58,300	24,000	44,400
11.....	29,100	20,000	20,600	18,400	26,900	57,500	138,200	67,300	65,600	60,800	22,800	43,100
12.....	30,400	21,700	21,600	19,200	29,100	58,500	114,600	88,900	61,800	57,100	23,300	39,100
13.....	24,900	21,900	21,400	18,900	27,500	58,500	99,500	87,500	61,900	56,600	23,900	37,200
14.....	20,900	21,900	22,700	19,500	33,300	59,200	91,500	84,600	56,800	66,200	22,100	34,900
15.....	21,100	23,800	22,800	19,000	39,900	58,800	90,700	81,400	50,200	66,800	19,200	32,900
16.....	20,900	26,100	23,200	18,600	37,900	62,000	85,000	81,100	46,900	66,800	21,000	30,400
17.....	20,100	29,700	22,800	17,200	35,800	68,200	71,500	71,200	40,500	63,500	27,500	28,600
18.....	20,800	35,900	21,800	16,400	32,600	59,600	72,100	60,200	35,600	60,000	32,000	26,500
19.....	19,600	42,700	21,700	18,300	31,200	56,000	75,500	70,500	29,500	56,400	32,200	24,700
20.....	20,900	39,800	21,000	19,100	27,200	60,400	77,700	73,200	39,000	47,900	30,500	23,900
21.....	20,900	40,200	21,300	18,200	23,700	96,900	77,400	76,100	30,800	41,400	27,500	23,000
22.....	21,200	39,200	22,200	19,300	21,800	123,100	73,900	83,200	30,400	38,000	25,200	23,900
23.....	22,400	36,900	22,300	18,300	25,000	134,000	69,600	82,700	29,600	35,900	23,300	32,900
24.....	22,000	39,600	21,300	17,400	40,700	128,100	69,100	73,400	29,100	32,900	32,000	46,200
25.....	21,900	39,300	20,300	18,400	50,400	120,500	67,400	63,100	27,100	31,700	40,100	50,100
26.....	21,500	36,500	21,600	18,000	58,800	123,100	66,900	60,000	28,000	29,600	43,900	54,700
27.....	22,900	34,800	19,400	17,600	72,200	134,000	71,100	54,100	43,500	28,600	41,300	64,600
28.....	22,700	32,900	19,200	17,000	71,900	141,300	68,200	57,100	59,400	27,200	42,100	88,200
29.....	24,400	29,800	20,700	16,400	.....	147,000	87,000	61,300	60,200	26,200	49,500	82,600
30.....	24,300	25,500	20,800	16,600	.....	147,000	91,900	79,100	67,100	24,900	51,500	80,000
31.....	24,600	.....	21,000	15,900	.....	147,200	.....	92,700	.....	28,800	59,500	.....
1959-60												
1.....	76,200	73,700	39,800	90,400	61,500	40,800	211,400	139,700	152,000	95,400	37,400	51,700
2.....	79,000	74,100	40,900	91,200	60,100	40,500	228,800	137,000	152,100	88,000	34,400	54,500
3.....	78,600	71,000	43,200	92,600	60,300	40,000	269,600	135,900	147,000	88,900	28,200	56,200
4.....	81,400	74,000	46,200	76,600	59,800	40,400	289,500	136,500	143,500	83,900	29,900	57,100
5.....	97,200	77,900	49,400	52,300	58,700	38,800	284,000	136,800	145,300	82,000	32,200	60,200
6.....	125,000	82,400	49,200	37,000	57,800	36,400	254,000	140,400	149,100	85,300	37,700	58,500
7.....	138,800	88,500	49,400	43,300	58,000	36,500	230,700	149,300	148,700	81,000	42,800	60,400
8.....	136,200	95,400	50,600	52,200	56,400	36,300	214,500	156,200	145,300	77,000	42,900	59,700
9.....	123,900	89,800	47,800	53,900	60,000	35,600	196,300	170,800	137,900	72,600	37,300	55,200
10.....	112,500	82,400	47,100	56,300	57,700	35,500	177,800	188,500	129,700	71,200	37,000	52,500
11.....	90,300	73,800	48,200	61,800	44,500	35,500	163,200	204,900	129,800	65,500	38,200	48,900
12.....	77,600	71,100	46,000	81,900	46,100	34,800	148,000	210,200	139,000	63,200	37,400	45,600
13.....	73,800	71,400	49,600	124,000	44,300	34,100	132,000	207,400	150,500	71,800	35,500	44,300
14.....	65,000	61,700	41,400	137,200	46,800	36,100	127,800	201,300	153,700	70,600	33,400	44,000
15.....	53,800	55,000	39,800	158,000	46,500	35,000	137,200	197,600	144,800	68,000	37,100	42,700
16.....	52,800	59,600	39,200	175,500	45,600	35,900	147,300	198,800	127,100	64,100	34,200	38,700
17.....	56,100	53,200	38,400	176,800	45,600	35,100	150,800	203,700	114,700	56,700	34,900	34,100
18.....	54,100	40,600	39,400	169,000	45,200	35,400	152,000	201,300	95,500	53,600	35,500	31,200
19.....	53,500	33,400	36,400	139,700	45,500	33,900	155,200	201,200	86,700	53,800	36,300	35,500
20.....	50,600	40,000	35,600	108,600	45,600	35,000	161,000	200,700	86,600	47,900	35,300	40,500
21.....	45,700	42,100	37,100	80,500	44,800	36,500	167,500	201,600	89,700	46,800	37,100	52,000
22.....	42,600	44,900	39,600	50,200	42,200	35,800	172,200	205,600	90,500	44,200	42,000	47,600
23.....	40,900	48,400	40,500	50,000	39,700	36,600	171,400	196,200	105,000	43,900	41,100	36,800
24.....	40,500	53,400	42,200	54,300	40,800	36,300	169,900	184,400	94,200	42,500	39,700	34,100
25.....	56,600	53,600	42,400	55,700	41,500	37,600	165,800	181,000	76,500	41,000	38,400	39,300
26.....	57,000	56,000	42,900	58,800	40,700	37,300	160,600	173,100	71,600	41,600	35,500	40,400
27.....	57,000	59,100	44,600	61,300	40,800	39,000	154,600	168,900	72,400	43,300	33,500	49,500
28.....	59,400	49,700	50,200	62,200	40,900	53,200	149,700	161,600	71,600	39,200	28,800	49,700
29.....	71,500	37,200	77,700	60,900	40,400	82,400	145,400	156,200	85,000	31,600	31,200	47,800
30.....	71,200	36,300	86,000	61,300	.....	131,500	145,700	154,300	85,100	31,500	35,800	47,400
31.....	70,200	.....	89,600	61,500	.....	189,500	.....	152,600	.....	34,000	47,900	.....

Mississippi River at Keokuk, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	27,100	26,750	27,220	24,430	25,750	38,480	103,500	67,850	45,950	44,580	43,090	27,760
1956-57	18,140	27,230	25,110	24,630	25,820	39,160	58,780	49,980	65,430	86,030	44,550	40,240
1957-58	28,840	36,450	34,370	27,090	27,270	47,680	55,770	33,760	50,410	50,200	26,550	28,770
1958-59	21,280	28,290	20,390	18,620	30,970	86,920	111,400	69,450	55,660	52,220	34,010	46,700
1959-60	73,840	61,660	47,140	84,710	48,890	46,680	181,100	176,000	117,400	60,650	36,410	47,500

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.228	0.225	0.229	0.205	0.216	0.323	0.870	0.570	0.386	0.375	0.362	0.233
1956-57 . . . . .	.152	.229	.211	.207	.217	.329	.494	.420	.550	.723	.374	.338
1957-58 . . . . .	.242	.306	.289	.228	.229	.401	.469	.284	.424	.422	.223	.242
1958-59 . . . . .	.179	.238	.171	.156	.260	.730	.936	.584	.468	.439	.286	.392
1959-60 . . . . .	.621	.518	.396	.712	.411	.392	1.52	1.48	.987	.510	.306	.399

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.26	0.25	0.26	0.24	0.23	0.37	0.97	0.66	0.43	0.43	0.42	0.26
1956-57 . . . . .	.18	.26	.24	.24	.23	.38	.55	.48	.61	.83	.43	.38
1957-58 . . . . .	.28	.34	.33	.26	.24	.46	.52	.33	.47	.49	.26	.27
1958-59 . . . . .	.21	.27	.20	.18	.27	.84	1.04	.67	.52	.51	.33	.44
1959-60 . . . . .	.72	.58	.46	.82	.44	.45	1.70	1.71	1.10	.59	.35	.45

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year	
	Maximum day		Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Discharge						
1955							47,300	5.41
1956	Apr. 22, 1956	131,500	18,300	41,860	0.352	4.78	40,960	4.69
1957	July 15, 1957	106,000	13,800	42,160	.354	4.81	44,620	5.08
1958	June 13, 1958	99,000	15,800	37,280	.313	4.25	34,790	3.98
1959	Apr. 5, 1959	182,000	14,400	47,990	.403	5.48	57,470	6.56
1960	Apr. 4, 1960	289,500	28,200	81,790	.687	9.37	.....	.....

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

West Fork Des Moines River at Estherville, Iowa

LOCATION.—Lat. 43°24'00", long. 94°50'40", in SW ¼ SE ¼ sec. 10, T. 99 N., R. 34 W., on right bank of city park, 1,200 ft. downstream from bridge on State Highway 9 at Estherville and 2.5 miles upstream from Brown Creek.

DRAINAGE AREA.—1,372 square miles (revised in 1956).

RECORDS AVAILABLE.—October 1951 to September 1960.

GAGE.—Water-stage recorder and concrete control. Datum of gage is 1,247.55 ft. above mean sea level, datum of 1929.

AVERAGE DISCHARGE.—9 years, 206 cfs.

EXTREMES.—1951-60: Maximum discharge, 10,800 cfs June 8, 1953 (gage-height, 15.53 ft.); minimum daily, 0.2, cfs Sept. 21, 22, 28, Oct. 19, 1958.

REMARKS.—Diurnal fluctuation at low flow caused by powerplant 0.3 miles above station which discharges an average daily flow of about 0.5 cfs into river from subterranean wells. Bankfull stage is about gage height, 7 ft.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	1.2	4.1	1.4	1.1	1.2	*1.8	139	31	148	29	247	9.0
2.....	.9	*2.8	*1.6	1.1	1.1	2.2	176	*37	91	25	123	8.2
3.....	1.2	1.8	1.6	1.2	*1.1	8.2	222	55	61	20	108	8.2
4.....	1.6	2.0	1.6	1.1	1.0	16	227	87	52	20	98	9.9
5.....	3.0	2.0	1.8	1.1	.9	28	185	70	48	18	73	*9.0
6.....	*2.8	1.8	2.0	1.1	1.0	49	143	60	44	17	64	9.0
7.....	2.4	2.0	2.0	*1.0	1.2	16	98	54	*38	26	58	7.7
8.....	1.4	2.0	1.8	.9	1.3	26	95	48	30	25	54	7.3
9.....	1.4	2.4	1.8	1.1	1.4	21	71	45	28	26	*63	6.2
10.....	1.4	2.8	1.4	1.2	1.3	18	58	44	26	30	52	6.2
11.....	1.6	3.0	1.1	1.2	1.2	9.0	58	71	20	29	44	5.4
12.....	1.6	3.0	1.4	1.2	1.2	7.7	55	73	18	23	49	5.1
13.....	1.2	3.2	1.4	1.2	1.3	7.7	48	58	17	21	168	5.8
14.....	2.0	2.8	1.2	1.2	1.4	7.7	45	55	17	19	154	5.1
15.....	2.2	3.0	1.2	1.1	1.4	8.2	41	52	16	18	87	3.8
16.....	1.4	3.0	1.1	1.1	1.3	8.6	37	46	15	17	61	2.8
17.....	2.0	2.8	1.1	1.0	1.3	9.0	37	37	15	15	46	2.8
18.....	3.0	2.6	.8	.9	1.2	9.9	30	38	16	18	35	2.4
19.....	1.2	2.8	.9	.8	1.1	11	27	31	16	*39	29	2.2
20.....	2.4	3.0	.9	.8	1.2	14	27	28	17	55	25	2.2
21.....	6.2	3.5	1.0	.8	1.4	35	25	28	19	33	21	1.8
22.....	4.1	3.8	1.1	.8	1.3	61	24	27	18	26	19	2.0
23.....	2.8	3.2	1.1	.9	1.1	60	22	27	22	25	16	1.1
24.....	4.1	3.2	1.1	1.0	1.2	66	20	28	103	22	13	1.4
25.....	3.5	3.0	1.0	1.2	1.1	102	20	28	104	18	12	1.8
26.....	3.2	3.0	1.1	1.3	.9	*219	20	25	84	16	10	1.1
27.....	3.0	2.6	1.4	1.2	1.0	269	21	22	60	15	9.4	1.1
28.....	4.1	2.4	1.4	1.3	1.0	208	20	23	41	14	9.0	.8
29.....	4.8	2.4	1.4	1.2	1.2	154	22	24	29	12	9.0	1.2
30.....	3.8	1.8	1.1	1.1	.....	143	27	100	26	17	9.9	.6
31.....	3.8	.....	1.1	1.2	.....	117	.....	283	.....	189	10	.....

West Fork Des Moines River at Estherville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	1.2	*9.0	14	9.3	1.4	5.4	580	64	416	456	356	222
2	1.0	9.9	15	8.8	1.2	5.8	392	61	300	416	312	219
3	1.4	6.5	17	8.4	1.0	7.3	*289	58	252	412	275	211
4	*1.2	11	17	7.5	1.2	7.3	236	57	*222	432	244	206
5	1.0	26	*17	6.8	1.2	7.3	203	54	190	496	213	200
6	1.0	42	11	6.1	1.1	7.3	171	50	157	432	190	*195
6	.7	38	9.4	5.6	*1.2	*8.2	152	45	150	408	168	190
8	1.6	27	9.4	5.0	1.4	9.0	136	42	148	412	*166	188
9	2.2	20	8.6	4.5	1.6	9.0	134	*39	139	381	183	180
10	3.5	19	9.0	4.1	2.2	9.0	136	37	132	*321	154	178
11	3.2	18	9.9	3.7	3.5	12	136	33	123	292	145	173
12	3.0	15	9.4	3.3	4.4	15	128	30	110	272	139	164
13	3.2	13	9.0	3.0	5.1	20	113	35	104	252	136	157
14	1.8	12	9.0	2.7	4.8	23	96	54	95	230	136	152
15	1.4	16	9.4	2.5	4.1	5.4	98	87	86	211	128	143
16	1.1	11	9.4	2.4	4.1	5.8	96	78	171	200	115	136
17	1.6	13	8.8	2.2	4.1	6.9	93	68	386	190	104	128
18	1.6	15	8.2	2.1	4.1	8.2	93	66	416	178	96	121
19	1.4	22	7.6	2.0	4.1	7.7	91	75	278	166	89	125
20	1.8	18	7.6	2.0	4.1	11	87	77	269	157	84	121
21	1.4	12	8.0	2.6	4.1	16	91	202	275	157	80	117
22	2.2	10	8.4	2.6	3.8	21	93	244	448	178	75	117
23	2.2	13	8.4	2.5	3.5	50	95	185	955	183	82	110
24	2.6	14	8.0	2.5	3.5	187	86	157	1,150	200	119	108
25	2.6	15	8.0	2.2	5.8	444	75	161	1,020	300	123	100
26	3.0	15	8.2	1.9	6.5	600	84	198	910	381	121	96
27	2.6	15	8.8	1.7	6.9	685	80	150	820	452	132	91
28	1.8	14	8.9	1.8	5.8	662	78	123	730	508	159	86
29	2.8	14	9.0	1.6	.....	540	73	663	629	500	188	80
30	4.4	13	9.0	1.5	.....	620	70	820	620	452	213	78
31	8.6	.....	9.2	1.5	.....	752	.....	480	.....	408	224	.....
1957-58												
1	77	89	91	52	28	110	134	222	42	37	6.9	0.5
2	*71	98	125	46	27	96	143	208	39	31	6.2	.7
3	64	110	108	42	26	89	145	198	52	28	5.4	1.2
4	58	123	*110	39	*25	80	154	200	73	28	4.8	1.8
5	55	125	104	37	24	70	198	198	70	27	4.4	2.6
6	54	*141	104	37	23	*64	333	*185	*60	26	4.1	1.2
7	54	154	98	33	22	60	389	176	52	25	*19	0.6
8	57	159	95	*31	21	54	327	166	54	24	18	1.1
9	55	80	95	32	20	50	*318	161	60	*28	13	0.9
10	54	86	95	32	20	52	309	154	63	29	11	*.8
11	49	96	54	32	18	54	303	150	61	31	9.4	.4
12	49	113	60	34	18	50	297	141	66	30	7.7	.6
13	49	123	66	37	18	54	294	130	64	23	6.5	.4
14	46	128	70	38	18	58	289	121	64	20	5.8	1.1
15	58	145	75	38	17	57	283	121	63	18	5.1	.5
16	78	154	78	39	16	57	278	110	58	17	3.8	.6
17	123	154	80	41	17	52	272	106	60	16	3.2	.7
18	143	110	82	41	16	57	266	104	58	15	3.2	.7
19	132	60	84	41	15	55	255	100	57	14	4.1	.6
20	106	74	87	41	15	55	247	108	55	12	3.8	.5
21	98	104	89	38	16	55	238	100	52	11	2.6	.2
22	104	98	89	35	16	61	233	87	50	11	3.0	.2
23	108	90	91	33	18	71	230	82	57	9.4	2.6	.4
24	110	110	93	32	29	75	280	80	55	8.6	2.0	.5
25	106	134	95	32	38	77	280	68	52	8.2	2.0	.6
26	100	143	89	31	77	82	269	64	55	8.6	1.8	.9
27	96	154	84	30	108	87	261	55	57	8.2	1.1	.4
28	93	128	78	30	136	91	252	54	50	8.6	1.2	.2
29	93	96	70	30	.....	98	247	49	48	9.0	1.8	.6
30	93	49	64	30	.....	96	233	44	41	8.2	1.0	*.7
31	89	.....	57	29	.....	89	.....	42	.....	7.7	.7	.....

West Fork Des Moines River at Estherville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1....	0.7	1.8	1.8	1.0	0.5	1.0	30	9.4	*2,160	48	2.8	11
2....	1.0	.7	*1.8	.9	.7	1.8	25	14	660	39	3.8	31
3....	.6	.9	2.0	.9	*.6	.9	27	14	444	35	3.2	19
4....	.9	*1.0	2.2	.8	.7	*1.0	15	11	359	29	2.6	28
5....	.7		2.2	.8	.7	1.0	13	*23	327	25	2.2	22
6....	.8	1.2	1.4	.8	.6	.9	25	50	292	21	2.0	18
7....	*.7	1.4	1.0	.8	.7	1.1	20	84	255	20	2.2	16
8....	.7	1.4	1.1	*.8	.4	1.0	17	70	208	*19	1.6	14
9....	.8	1.6	1.1	.8	.6	1.4	18	50	176	16	1.0	12
10....	.8	1.8	1.1	.8	.6	4.4	15	48	150	13	1.4	11
11....	1.4	1.6	1.0	.6	.6	5.8	12	41	134	11	2.6	11
12....	.3	1.6	1.0	.8	.7	6.5	12	37	113	11	1.8	9.0
13....	.5	1.8	.9	.8	.8	7.3	11	34	93	11	1.6	6.9
14....	.5	2.0	.9	.9	.8	6.5	10	27	78	9.9	3.8	5.8
15....	1.0	2.0	1.0	.9	.8	4.8	10	24	60	9.0	4.1	5.8
16....	.8	1.8	1.0	.9	.8	4.4	9.9	22	52	8.2	4.1	5.1
17....	1.2	2.2	1.0	.9	.9	3.5	10	18	44	6.9	3.8	6.2
18....	.7	2.0	1.1	.7	.9	4.4	10	15	38	5.8	3.5	5.8
19....	.2	1.8	1.2	.8	.8	2.2	10	13	35	5.4	2.8	6.2
20....	.6	1.8	1.4	.8	.8	2.2	10	14	31	4.8	2.4	5.8
21....	.5	1.8	1.2	.9	.8	2.1	10	56	28	4.1	1.8	6.2
22....	.5	2.0	1.6	.9	.8	3.3	9.9	77	23	3.8	3.2	101
23....	.7	1.8	2.0	.9	.9	4.5	9.9	48	21	3.2	3.2	188
24....	1.0	2.0	1.8	.6	.9	4.5	9.4	35	38	2.8	6.2	*75
25....	1.2	1.8	1.6	.5	1.0	4.6	9.4	28	49	2.6	9.0	39
26....	.9	1.6	2.0	.7	1.0	2.7	8.2	23	52	2.4	14	29
27....	1.2	1.8	1.8	.7	1.0	2.0	8.2	19	57	*2.6	10	22
28....	1.2	2.0	1.4	.8	1.1	3.4	9.0	22	64	2.0	8.2	18
29....	1.6	1.9	1.3	.9	.....	4.1	9.4	84	54	1.8	6.2	15
30....	2.4	1.8	1.2	.9	.....	4.6	9.9	106	52	2.2	4.4	12
31....	2.4	.....	1.1	.7	.....	*35	.....	1,850	.....	2.4	*5.4	.....
1959-60												
1....	11	40	50	190	38	20	2,810	1,020	1,120	264	114	195
2....	14	49	53	170	39	20	*2,960	925	1,140	244	104	174
3....	15	51	53	120	39	20	3,260	850	1,090	241	99	155
4....	22	56	53	80	39	20	3,780	825	1,020	229	95	141
5....	22	60	51	110	39	18	4,040	775	1,225	214	94	126
6....	21	39	49	130	39	18	3,700	800	850	206	95	110
7....	19	56	47	140	38	18	3,330	825	775	198	82	95
8....	17	53	46	125	39	18	3,080	825	700	195	88	135
9....	15	53	43	110	43	18	2,860	775	650	184	80	364
10....	16	71	40	98	43	17	2,710	725	650	184	*74	552
11....	17	88	42	94	31	17	2,560	700	650	180	68	485
12....	17	50	43	88	32	17	2,420	650	600	220	62	404
13....	16	39	39	87	33	17	2,560	610	562	247	57	340
14....	15	63	*39	86	30	16	2,760	575	526	217	63	292
15....	14	72	40	83	*28	16	2,610	530	498	220	32	254
16....	13	69	43	81	30	17	2,380	620	508	271	28	244
17....	12	57	45	76	30	17	2,170	*925	498	332	33	235
18....	12	53	46	72	28	16	2,050	850	498	372	45	257
19....	12	53	45	67	27	17	1,980	975	480	356	40	292
20....	12	*54	46	*62	25	17	*1,900	1,090	476	320	47	*278
21....	*13	56	46	57	25	18	1,870	1,870	*462	*285	53	384
22....	13	58	45	50	24	*17	1,760	2,050	449	268	47	352
23....	13	63	45	45	24	17	1,660	1,600	508	310	39	420
24....	12	64	43	40	23	17	1,500	1,340	508	254	36	516
25....	8.9	58	43	39	23	18	1,420	1,200	432	229	42	562
26....	24	54	56	37	22	20	1,340	1,300	384	214	120	575
27....	26	56	85	37	22	301	1,300	1,250	348	192	235	566
28....	21	53	170	36	21	*1,280	1,200	1,200	324	170	203	544
29....	18	47	285	36	21	*1,730	1,160	1,120	302	150	187	521
30....	23	46	260	36	.....	.....	2,330	1,090	285	145	206	503
31....	31	.....	220	37	.....	.....	2,810	.....	1,090	.....	212	.....

West Fork Des Moines River at Estherville, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56,	2.56	2.73	1.32	1.08	1.18	55.3	68.0	52.7	41.3	28.3	57.3	4.37
1956-57,	2.23	16.5	10.0	3.69	3.42	154	143	145	386	324	100	146
1957-58,	81.4	114	85.8	35.9	30.1	69.5	259	122	56.3	18.6	5.33	74
1958-59, . . . . .	.92	1.66	1.39	.81	.77	16.0	13.4	95.7	205	12.2	4.03	25.2
1959-60,	16.6	56.0	71.3	81.3	30.9	287	2,341	1,001	607	234	89.7	336

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56,	0.0019	0.0020	0.00096	0.00079	0.00086	0.040	0.050	0.038	0.030	0.021	0.042	0.0032
1956-57, . . . . .	.0016	.012	.0073	.0027	.0025	.112	.104	.106	.281	.236	.117	.106
1957-58, . . . . .	.059	.083	.063	.026	.022	.051	.189	.089	.041	.014	.0039	.00054
1958-59, . . . . .	.00067	.0012	.0010	.00059	.00056	.012	.0098	.070	.149	.0089	.0029	.018
1959-60, . . . . .	.012	.041	.052	.059	.023	.209	1.71	.730	.442	.171	.065	.245

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56,	0.002	0.002	0.001	0.0009	0.0009	0.05	0.06	0.04	0.03	0.02	0.05	0.004
1956-57, . . . . .	.002	.01	.008	.003	.003	.13	.12	.12	.31	.27	.13	.12
1957-58, . . . . .	.07	.09	.07	.03	.02	.06	.21	.10	.05	.02	.004	.0006
1958-59, . . . . .	.0008	.001	.001	.0007	.0006	.01	.01	.08	.17	.01	.003	.02
1959-60, . . . . .	.01	.05	.06	.07	.02	.24	1.90	.84	.49	.20	.08	.27

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								65.8	0.65
1956	Apr. 4, 1956	3.42	370	0.6	26.5	0.019	0.26	28.3	.28
1957	June 24, 1957	5.33	1,200	.7	125	.091	1.23	146	1.44
1958	Apr. 7, 1958	3.51	404	.2	73.2	.053	.72	49.9	.50
1959	June 1, 1959	10.04	3,040	.2	31.4	.023	.31	43.1	.42
1960	Apr. 5, 1960	10.79	4,040	8.9	427	.311	4.23		

Peak Discharge (base, 2,000 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: No peak above base.

1958-59: June 1 (1 a.m.) 3,040 cfs (10.04 ft.).

1959-60: Apr. 5 (6 a.m.) 4,040 cfs (10.79 ft.); May 22 (2 a.m.) 2,250 cfs (7.80 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Dec. 19-21, 1955; Jan. 17-23, 25-28, Feb. 7-10, 13-17, 20-24, Dec. 17-31, 1956; Jan. 1 to Feb. 1, Nov. 9-11, 18-20, 23, 24, Dec. 11-13, 28-31, 1957; Jan. 1-3, Jan. 27 to Feb. 8, Nov. 26-29, Dec. 12, 13, 29, 1958; Jan. 2, 3, 5, 9, Feb. 19, 20, 1959. No gage-height record Dec. 31, 1959; Jan. 1-19, 1960.

East Fork Des Moines River near Burt, Iowa

LOCATION.—Lat. 43°12'35", long. 94°10'40", in NW¼NE¼ sec. 20, T. 97 N., R. 28 W., on right bank 30 ft. downstream from highway bridge, 0.8 mile upstream from Buffalo Creek, 2.5 miles northeast of Burt, and 5.3 miles downstream from Mud Creek.

DRAINAGE AREA.—462 square miles (revised in 1956).

RECORDS AVAILABLE.—October 1951 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 1,109.92 ft. above mean sea level, datum of 1929.

AVERAGE DISCHARGE.—9 years, 92.2 cfs.

EXTREMES.—1951-60: Maximum discharge, 3,870 cfs June 21, 1954 (gage height, 12.67 ft.); no flow Jan. 24 to Mar. 3, 1959.

REMARKS.—Bankfull stage is about gage height, 10 ft.

REVISIONS (water years).—WSP 1708: 1955.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	0.5	0.8	0.9	0.8	0.8	0.8	110	14	60	70	138	14
2.....	.5	.8	*1.1	.8	.8	*.8	86	*15	37	85	220	12
3.....	.5	*.8	1.2	.8	*.8	1.0	72	22	25	76	220	11
4.....	.6	.9	1.2	.8	.8	1.2	59	36	16	49	120	9.2
5.....	*.7	.9	1.1	.8	.8	1.5	48	43	11	34	71	*8.7
6.....	5.3	.9	.9	.8	.8	1.8	40	48	8.0	26	53	8.3
7.....	1.7	.6	.8	*.8	.8	2.3	33	49	*5.6	23	40	7.1
8.....	.9	.7	.7	.8	.8	3.3	30	49	4.6	22	35	5.6
9.....	.7	1.0	.7	.8	.8	4.1	25	47	3.9	20	*29	5.3
10.....	.6	1.0	.6	.8	.8	4.6	22	46	3.3	25	23	4.4
11.....	.6	1.0	.5	.8	.8	4.1	20	45	2.8	23	19	3.5
12.....	.6	1.0	.6	.8	.8	3.7	18	45	2.5	20	15	2.6
13.....	.6	.9	.6	.8	.8	3.1	15	44	*2.2	16	16	1.7
14.....	.6	.8	.6	.8	.8	2.8	13	44	1.7	11	15	1.3
15.....	.6	.8	.6	.8	.8	2.5	12	43	1.3	9.6	14	1.5
16.....	.7	.6	.6	.7	.8	2.6	11	41	3.8	7.5	13	1.0
17.....	.7	.8	.6	.7	.8	3.0	9.5	38	7.9	5.6	16	.4
18.....	.7	.8	.6	.7	.8	3.8	8.7	37	9.6	4.4	19	.3
19.....	.7	.8	.7	.7	.8	5.8	7.8	34	20	*5.6	16	.2
20.....	.6	.9	.7	.7	.8	7.6	7.0	32	12	15	15	.2
21.....	.5	1.0	.8	.7	.8	10	6.4	31	6.7	29	16	.3
22.....	.5	1.1	.8	.7	.8	40	6.0	29	4.4	56	18	.2
23.....	.6	.8	.9	.7	.8	140	6.0	26	4.1	38	20	.2
24.....	.7	1.0	.9	.7	.8	170	6.5	25	2.4	22	20	.2
25.....	.8	1.1	.8	.8	.8	180	7.2	23	1.7	14	20	.3
26.....	.7	1.0	.9	.8	.8	170	8.0	20	27	8.7	19	.3
27.....	.7	.7	.9	.8	.8	170	8.8	19	138	6.0	18	.2
28.....	.7	.6	.9	.8	.8	190	9.6	18	158	4.1	18	.2
29.....	.8	.6	.9	.8	.8	190	11	18	124	2.9	18	.5
30.....	.9	.7	.9	.8	.....	165	12	64	67	9.9	16	.6
31.....	.9	.....	.8	.8	.....	135	.....	100	.....	73	15	.....

East Fork Des Moines River near Burt, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	0.5	3.8	3.2	2.8	0.3	1.5	70	19	392	108	76	11
2	.9	3.5	3.4	2.6	.2	1.6	54	18	378	99	56	9.6
3	.7	2.9	3.6	2.4	.2	1.7	*43	16	336	96	38	7.9
4	*.7	4.1	3.6	2.2	.2	2.0	35	15	*294	90	28	5.6
5	.6	14	2.3	2.0	.2	2.0	30	13	280	87	20	4.4
6	.5	11	*2.9	1.8	.2	2.0	22	12	268	90	16	*3.8
7	.6	6.7	2.7	1.6	*.3	*2.0	38	10	262	88	12	3.5
8	.9	4.7	2.5	1.5	.3	2.1	53	*10	250	77	*8.7	3.2
9	.9	3.5	2.4	*1.4	.3	2.2	55	10	238	72	8.3	2.6
10	1.0	3.2	2.4	1.3	.4	2.2	52	9.6	214	74	7.1	2.6
11	1.2	3.2	2.5	1.2	.6	2.6	52	7.9	190	*73	5.3	2.6
12	1.2	2.9	2.3	1.1	.8	3.0	46	6.7	163	67	4.1	2.2
13	1.2	2.9	2.2	1.0	.9	3.5	44	7.5	153	60	11	1.7
14	1.5	2.6	2.1	.9	.9	3.8	40	15	138	58	11	2.4
15	2.2	1.9	2.1	.8	.8	1.9	41	18	120	56	6.3	2.4
16	2.4	1.7	2.1	.8	.9	1.8	41	19	111	53	4.1	1.9
17	2.4	2.2	2.1	.7	.9	2.0	38	26	113	49	3.8	1.3
18	2.2	3.8	2.1	.7	.9	2.1	34	30	102	44	4.1	1.0
19	1.9	3.2	2.0	.6	.9	2.4	33	29	124	41	3.2	1.5
20	1.9	2.6	1.9	.6	.9	2.8	35	26	128	37	2.6	3.8
21	1.9	2.2	2.0	.6	.9	5.0	32	45	128	48	2.2	3.5
22	1.9	1.8	2.1	.7	.9	11	29	68	128	73	1.7	1.9
23	1.9	1.8	2.1	.7	.9	20	28	76	124	65	8.3	1.9
24	1.9	2.5	2.0	.6	.9	36	30	78	120	55	7.9	1.7
25	2.2	2.6	2.0	.6	1.1	76	28	59	133	43	5.3	1.3
26	3.2	2.5	2.2	.5	1.5	170	26	60	143	35	3.2	1.0
27	3.2	2.8	2.4	.4	1.6	150	22	53	148	29	2.4	1.0
28	2.6	3.0	2.6	.4	1.5	155	21	50	143	27	4.4	.9
29	2.9	3.1	2.6	.3	.....	165	22	68	128	34	6.0	.9
30	3.8	3.1	2.6	.3	.....	120	22	150	115	38	6.3	1.0
31	3.8	.....	2.7	.3	.....	100	.....	345	.....	64	16	.....
1957-58												
1	1.0	2.5	12	3.1	3.3	23	5.9	99	13	8.8	5.0	1.0
2	*.9	6.9	15	2.6	3.3	19	9.2	87	10	38	4.1	.8
3	.9	7.6	14	2.3	3.3	16	11	80	100	110	3.9	.6
4	.9	5.6	*12	2.1	*3.2	14	14	72	350	140	3.1	.6
5	1.0	4.7	11	2.0	3.1	12	44	67	*280	160	2.7	.6
6	1.1	*3.6	11	1.9	3.0	*11	147	*66	240	130	2.9	2.5
7	2.3	5.9	11	1.8	2.9	10	172	61	197	113	*2.7	1.3
8	2.7	6.6	11	*1.8	2.8	9.2	172	56	134	80	2.5	.9
9	2.1	4.0	11	1.7	2.7	8.4	*129	52	98	*96	4.1	*.6
10	1.8	4.7	8.6	1.7	2.5	7.8	105	48	72	167	2.1	.6
11	1.6	5.3	7.2	1.7	2.3	7.2	93	45	56	138	1.8	.4
12	1.8	5.6	6.4	1.8	2.2	7.0	86	40	45	86	1.1	.3
13	1.8	6.2	7.6	1.9	2.1	7.0	83	36	41	59	1.0	.3
14	1.9	6.2	8.2	2.1	2.0	7.0	77	38	35	46	1.0	.9
15	2.5	6.9	8.6	2.3	2.0	7.0	74	35	31	41	1.0	1.4
16	3.1	14	8.8	2.5	2.0	6.8	67	33	27	35	1.0	1.3
17	3.1	15	9.0	2.7	2.0	6.2	62	36	25	29	1.0	1.0
18	2.7	10	9.2	2.9	2.0	5.8	58	38	24	26	.9	.9
19	2.7	13	9.4	3.1	2.0	5.8	55	40	23	22	.8	.8
20	2.7	16	9.6	3.3	2.0	6.0	56	40	20	19	.6	.9
21	3.1	14	9.6	3.4	2.0	6.2	53	40	17	17	.6	1.1
22	4.1	13	9.6	3.5	2.0	6.4	51	34	16	14	.6	1.0
23	7.2	15	9.6	3.5	3.0	6.9	49	28	17	13	.6	.9
24	7.4	12	9.6	3.5	7.0	6.9	71	24	17	11	.8	1.1
25	9.2	11	9.4	3.6	18	7.2	105	22	18	11	.9	1.1
26	3.4	13	8.6	3.6	40	8.4	129	19	19	10	1.3	.9
27	2.9	16	7.4	3.6	33	8.8	138	16	16	7.6	1.1	.6
28	3.1	13	6.4	3.6	28	8.4	125	14	13	6.6	1.0	.6
29	2.7	10	5.2	3.5	.....	7.2	109	12	11	6.6	.9	.6
30	2.7	8.0	4.4	3.5	.....	7.2	101	10	9.6	6.9	.9	.6
31	2.5	.....	3.7	3.4	.....	6.9	.....	12	.....	5.6	.9	.....

East Fork Des Moines River near Burt, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	0.6	0.6	1.0	0.6	0	0	39	4.1	590	73	1.9	7.6
2.....	.8	.5	*1.0	.6	0	0	35	4.1	638	84	2.9	7.6
3.....	.6	.5	.9	.6	*0	*0	32	5.6	590	72	4.4	22
4.....	.6	.5	.8	.5	0	.1	29	5.3	540	60	4.4	46
5.....	.6	*.5	.8	.5	0	.5	26	*11	*329	47	3.4	16
6.....	.8	.5	.6	.5	0	.5	24	16	187	40	2.7	4.1
7.....	*1.4	.5	.6	*.4	0	.5	22	17	162	34	4.1	3.6
8.....	1.1	.5	.6	.4	0	.7	20	15	147	*31	2.5	3.1
9.....	1.0	.6	.5	.3	0	1.0	18	14	138	26	1.9	2.9
10.....	1.0	.6	.5	.3	0	2.0	17	34	125	21	1.8	2.5
11.....	1.0	.7	.5	.3	0	3.5	16	36	113	17	2.1	2.1
12.....	1.0	.8	.5	.2	0	4.0	14	29	157	16	2.5	2.1
13.....	.8	.9	.5	.2	*0	4.5	12	22	197	13	3.4	1.9
14.....	.8	1.0	.5	.2	0	5.0	11	17	187	11	6.2	1.6
15.....	.8	1.1	.5	.2	0	4.5	11	14	147	9.6	9.2	1.1
16.....	.8	1.1	.5	.1	0	4.0	9.6	13	113	8.0	5.9	1.1
17.....	.7	.9	.5	.1	0	3.5	19	11	89	9.6	3.9	1.8
18.....	.7	.9	.6	.1	0	6.0	26	9.2	79	11	2.9	1.9
19.....	.7	1.0	.6	.1	0	12	19	8.8	71	9.2	3.1	2.5
20.....	.7	1.0	.6	.1	0	50	16	15	64	8.0	1.6	3.9
21.....	.6	1.0	.6	.1	0	48	13	276	59	6.2	1.3	4.4
22.....	.6	1.0	.7	.1	0	46	10	*600	53	5.3	13	7.2
23.....	.5	1.0	.8	.1	0	110	9.2	*662	48	4.7	74	*10
24.....	.5	1.0	.9	0	0	*105	8.8	590	45	3.6	121	7.6
25.....	.5	.9	.9	0	0	100	8.0	357	41	3.4	103	13
26.....	.7	.7	.9	0	0	86	6.6	*202	37	3.1	*62	18
27.....	.7	.8	.9	0	0	70	6.9	134	37	*2.5	38	45
28.....	.7	.9	.7	0	0	94	6.6	109	37	2.9	26	71
29.....	.6	1.0	.7	0	0	90	5.9	121	37	2.5	19	46
30.....	.6	1.0	.6	0	0	64	5.0	138	50	2.3	13	27
31.....	.6	.....	.6	0	0	*43	.....	375	.....	2.1	10	.....
1959-60												
1.....	17	22	44	150	24	11	860	265	1,050	197	26	8.1
2.....	17	24	46	110	25	11	*860	254	980	192	23	6.2
3.....	24	23	47	75	25	11	795	222	920	183	20	5.0
4.....	30	25	47	90	26	10	720	197	840	170	17	4.1
5.....	35	27	47	108	26	10	695	178	795	160	16	3.1
6.....	32	19	46	120	26	10	670	197	735	143	18	2.6
7.....	30	25	45	115	27	10	610	207	682	135	18	2.4
8.....	28	24	43	105	27	10	530	207	620	123	17	2.6
9.....	28	24	42	95	25	10	467	188	560	115	*17	2.6
10.....	28	35	41	88	23	10	398	165	493	111	15	3.1
11.....	28	43	40	80	21	9.8	344	152	435	108	14	2.6
12.....	26	31	40	75	19	9.8	318	143	405	115	12	2.0
13.....	25	25	39	70	18	9.8	282	131	383	108	12	2.0
14.....	23	35	39	67	17	9.8	287	115	356	99	10	1.8
15.....	23	40	*39	63	16	9.6	318	104	330	92	10	2.0
16.....	23	37	38	59	*15	9.0	330	104	496	86	8.1	2.4
17.....	19	35	38	56	14	9.6	318	*123	560	76	8.1	2.4
18.....	18	34	38	53	14	9.6	311	188	580	73	8.5	4.1
19.....	17	*34	38	49	13	9.6	311	299	540	70	8.1	7.0
20.....	16	35	38	*45	13	9.8	*287	460	451	66	7.3	*6.2
21.....	*14	36	38	41	13	9.8	260	1,200	363	59	6.6	7.2
22.....	14	37	39	37	12	*9.8	243	2,120	*305	*53	5.2	31
23.....	14	38	39	33	12	9.8	238	2,040	48	4.6	4.6	37
24.....	14	39	40	31	12	9.8	222	2,040	270	45	4.4	53
25.....	12	40	45	28	12	10	227	*1,720	299	44	4.4	43
26.....	12	38	56	27	11	11	330	1,650	276	42	4.6	37
27.....	16	36	85	26	11	100	318	1,530	248	40	3.8	35
28.....	19	36	130	25	11	300	287	1,410	238	37	6.6	31
29.....	25	38	240	25	11	700	270	1,310	227	34	9.3	28
30.....	23	41	210	25	.....	840	270	1,200	212	29	8.1	26
31.....	22	.....	180	24	.....	795	.....	1,100	.....	26	6.6	.....

East Fork Des Moines River near Burt, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.85	0.85	0.80	0.77	0.80	52.3	24.3	36.9	25.7	26.2	42.1	3.38
1956-57	1.76	3.66	2.44	1.08	.73	34.0	37.2	44.2	185	62.3	12.6	3.00
1957-58	2.80	9.18	9.16	2.71	6.56	8.93	81.7	41.9	65.8	53.3	1.71	.87
1958-59	.75	.80	.67	.21	0	30.9	16.5	125	170	20.6	17.8	12.8
1959-60	21.7	32.5	62.5	64.4	17.9	96.6	413	684	497	92.9	11.3	13.4

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.0018	0.0018	0.0017	0.0017	0.0017	0.113	0.053	0.080	0.056	0.057	0.091	0.0073
1956-57	.0038	.0079	.0053	.0023	.0016	.074	.081	.095	.400	.135	.027	.0065
1957-58	.0061	.020	.020	.0059	.014	.019	.177	.091	.142	.115	.0037	.0019
1958-59	.0016	.0017	.0015	.00045	0	.067	.036	.271	.368	.045	.039	.028
1959-60	.047	.070	.135	.139	.039	.209	.894	1.48	1.08	.201	.024	.029

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.002	0.002	0.002	0.002	0.002	0.13	0.06	0.09	0.06	0.07	0.11	0.008
1956-57	.004	.009	.006	.003	.002	.08	.09	.11	.45	.16	.03	.007
1957-58	.007	.02	.02	.007	.01	.02	.20	.10	.16	.13	.004	.002
1958-59	.002	.002	.002	.0005	0	.08	.04	.31	.41	.05	.04	.03
1959-60	.05	.08	.16	.16	.04	.24	1.00	1.71	1.20	.23	.03	.03

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								53.1	1.56
1956	Aug. 3, 1956	(1)6.71	244	0.2	18.1	0.039	0.54	18.5	.55
1957	June 1, 1957	7.97	392	2	32.3	.070	.95	33.5	.98
1958	June 4, 1958	9.52	365	3	23.7	.051	.68	22.1	.64
1959	May 23, 1959	10.13	675	0	33.1	.072	.97	42.7	1.25
1960	May 22, 1960	11.72	2,120	1.8	167	.361	4.93		

(1) Maximum gage height, 8.25 ft. Mar. 28, 1956 (backwater from ice).

Peak Discharge (base, 500 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: No peak above base.

1958-59: May 23 (10 a.m.) 675 cfs (10.13 ft.); June 2 (3 a.m.) 662 cfs (10.08 ft.).

1959-60: Apr. 1 (4 p.m.) 880 cfs (10.29 ft.); May 22 (1:30 p.m.) 2,120 cfs (11.72 ft.); June 18 (4 p.m.) 580 cfs (9.52 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 16 to Dec. 31, 1955; Jan. 1 to Mar. 31, Nov. 21 to Dec. 31, 1956; Jan. 1 to Mar. 30, Nov. 9, Nov. 18 to Dec. 31, 1957; Jan. 1 to Mar. 22, Nov. 25 to Dec. 31, 1958; Jan. 1 to Apr. 9, Nov. 5 to Dec. 31, 1959; Jan. 1 to Mar. 30, 1960. No gage-height record Oct. 10 to Nov. 15, 1955, Apr. 1 to May 1, May 31 to June 6, June 8-12, 1956.

East Fork Des Moines River at Dakota City, Iowa

LOCATION.—Lat. 42°43'25", long. 94°11'30", in NW¼SE¼ sec. 6, T. 91 N., R. 28 W., on right bank 50 ft. upstream from old mill dam, in city park at east edge of Dakota City, 500 ft. upstream from highway bridge, 0.6 mile downstream from bridge on State Highway 3, and 3.6 miles upstream from confluence with West Fork Des Moines River.

DRAINAGE AREA.—1,308 square miles (revised in 1956).

RECORDS AVAILABLE.—March 1940 to September 1960. Prior to October 1954, published as "near Hardy."

GAGE.—Water-stage recorder. Datum of gage is 1,038.71 ft. above mean sea level, datum of 1929. Prior to Oct. 1, 1954, wire-weight gage at site 8 miles upstream at different datum.

AVERAGE DISCHARGE.—20 years, 447 cfs.

EXTREMES.—1940-60: Maximum discharge, 18,800 cfs June 21, 1954 (gage height, 16.95 ft., from floodmark, site and datum then in use); minimum daily, 5.0 cfs Sept. 23, 1948.

Flood of June 21, 1954, reached a stage of 24.02 ft. (discharge, 17,400 cfs), at present site.

REMARKS.—Bankfull stage is about gage height, 20 ft.

REVISIONS (water years).—WSP 1508: 1944, 1945-47(M).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	18	16	12	16	16	27	477	61	144	240	41	29
2.....	15	*16	15	16	16	30	412	*69	256	250	109	27
3.....	12	16	16	16	16	*35	324	73	188	184	324	24
4.....	11	18	19	*16	16	40	284	79	130	181	380	26
5.....	15	18	19	16	15	50	250	111	103	188	404	*41
6.....	*36	18	16	16	15	59	220	140	94	149	324	27
7.....	31	16	16	18	15	40	191	172	75	119	*233	22
8.....	20	10	16	16	15	65	172	162	56	106	184	20
9.....	16	20	14	16	15	90	146	146	47	*103	149	19
10.....	14	21	12	16	15	100	122	133	42	86	122	19
11.....	12	19	10	16	15	90	111	125	38	77	103	18
12.....	13	19	10	16	15	84	111	116	32	77	91	16
13.....	13	16	12	16	16	71	98	122	28	73	79	16
14.....	12	13	12	16	16	59	91	116	24	65	69	14
15.....	12	16	12	16	16	56	82	111	22	56	65	13
16.....	13	9.3	12	15	16	49	73	103	20	49	67	12
17.....	14	12	12	14	16	54	69	94	18	41	71	11
18.....	14	14	12	14	17	71	61	82	16	38	69	11
19.....	14	16	13	14	16	98	58	75	16	34	67	12
20.....	12	19	15	14	16	162	54	65	16	31	89	12
21.....	10	21	16	14	16	200	51	63	20	27	89	13
22.....	10	22	16	14	16	235	49	58	55	23	77	12
23.....	12	16	18	14	16	265	46	54	101	56	61	11
24.....	13	18	18	15	15	315	42	47	75	136	52	9.3
25.....	15	21	16	16	15	390	42	44	54	125	47	8.5
26.....	14	20	18	16	15	500	42	42	56	91	42	8.0
27.....	14	14	19	16	16	*540	44	39	51	65	39	7.0
28.....	14	12	19	16	17	450	49	39	56	51	35	6.0
29.....	14	12	19	16	18	400	49	*218	118	42	34	7.5
30.....	18	12	20	16	.....	429	54	243	226	36	32	8.5
31.....	18	.....	18	*16	.....	446	.....	101	.....	38	31	.....

East Fork Des Moines River at Dakota City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	9.3	20	20	19	14	31	226	48	898	213	74	29
2	11	24	21	18	14	28	*188	46	844	194	64	31
3	10	18	22	18	14	24	151	44	790	188	83	30
4	11	23	22	18	14	26	134	43	688	178	85	30
5	*8.5	36	22	17	14	*26	126	40	*592	172	70	*27
6	7.5	39	*15	16	*14	22	113	37	495	156	*55	24
7	13	38	21	16	16	20	96	34	425	151	43	18
8	10	35	19	15	18	19	87	*34	388	204	37	18
9	7.5	31	18	15	19	20	79	34	364	148	31	18
10	7.0	29	19	15	19	23	85	37	340	*131	28	20
11	7.0	28	21	15	22	27	96	53	317	118	26	20
12	8.5	27	19	15	27	29	96	81	294	108	24	19
13	8.5	24	18	14	29	35	92	68	370	121	22	19
14	12	24	18	14	28	28	87	70	640	106	21	24
15	15	23	17	14	25	13	83	70	416	96	21	21
16	15	21	17	14	25	29	81	118	344	87	21	19
17	15	23	17	14	21	35	77	207	294	85	22	18
18	15	22	17	14	20	32	74	175	260	79	27	17
19	15	22	17	14	19	38	74	148	240	72	24	18
20	15	20	18	16	18	34	72	137	226	68	22	19
21	16	18	20	19	17	46	68	279	213	64	23	19
22	16	18	21	19	17	82	64	348	220	60	20	18
23	14	20	21	17	16	116	62	404	213	55	23	18
24	13	21	21	16	21	175	60	420	204	101	22	18
25	13	22	18	15	31	270	60	340	200	116	20	17
26	19	21	18	15	34	344	66	280	200	96	18	15
27	20	20	19	15	31	388	66	240	210	85	24	15
28	13	21	22	15	31	321	62	287	253	74	32	15
29	13	19	22	15	.....	270	57	362	260	64	32	14
30	16	19	23	15	.....	260	51	898	243	57	43	15
31	19	.....	24	14	.....	246	.....	871	.....	94	36	.....
1957-58												
1	*14	24	44	24	24	260	46	223	79	74	59	14
2	*13	29	48	23	23	210	50	207	77	72	55	13
3	13	28	*43	22	23	175	53	197	87	68	51	12
4	12	28	38	21	22	137	64	191	126	83	48	11
5	13	*28	38	20	*22	*113	87	178	*220	253	43	12
6	14	27	42	19	21	110	148	168	592	364	42	13
7	13	26	38	18	20	82	236	*156	790	380	*40	11
8	18	23	36	18	19	68	332	148	898	360	*38	*10
9	16	18	34	*17	18	74	*360	142	952	294	38	11
10	13	20	31	17	17	74	344	134	871	*240	34	10
11	13	24	26	17	17	66	298	126	541	257	30	9.6
12	16	23	24	17	16	66	260	116	360	309	29	9.6
13	16	27	27	18	16	60	236	108	294	298	27	9.0
14	15	32	30	19	16	57	216	108	246	762	26	11
15	16	36	33	20	15	57	204	108	216	1,240	27	14
16	17	36	36	22	15	50	191	101	200	817	27	15
17	18	34	37	23	15	37	178	103	178	495	24	14
18	18	21	38	24	15	43	168	108	162	352	21	13
19	16	25	40	24	15	46	159	116	137	287	21	12
20	17	38	40	24	15	44	151	101	118	240	20	11
21	18	35	43	24	15	44	145	96	108	204	19	11
22	18	36	42	24	15	44	137	94	108	175	18	11
23	24	42	44	24	20	44	140	92	103	151	18	11
24	21	36	41	24	40	43	148	90	101	134	18	11
25	21	33	38	24	90	43	148	81	99	124	18	11
26	20	38	35	25	140	44	162	72	94	106	18	11
27	20	48	32	25	200	44	197	66	94	92	17	9.0
28	21	42	30	25	294	44	240	60	106	83	17	8.4
29	21	39	28	25	.....	44	250	57	101	72	17	7.9
30	22	24	26	24	.....	44	240	53	90	68	16	7.9
31	23	.....	25	24	.....	44	.....	66	.....	62	15	.....

East Fork Des Moines River at Dakota City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	7.9	14	*12	12	8.4	12	307	48	2,770	351	32	138
2	9.0	14	13	11	*8.4	*13	272	45	2,540	475	42	129
3	9.0	13	14	10	8.4	13	232	50	2,120	501	64	108
4	8.4	*14	15	9.4	8.4	13	206	*47	*2,050	453	60	92
5	8.4	14	13	8.8	8.4	13	190	52	2,050	383	44	129
6	*8.4	14	10	*8.6	8.4	13	158	140	2,050	*315	39	219
7	9.0	14	10	8.4	8.4	14	138	212	1,770	265	35	200
8	9.0	15	10	8.4	9.0	14	121	174	1,410	226	32	135
9	7.9	14	10	8.2	9.5	16	108	158	882	206	32	101
10	16	14	10	8.2	10	21	94	164	645	177	30	80
11	14	14	10	8.2	11	30	82	184	538	161	28	70
12	14	14	10	8.4	11	40	76	203	466	149	27	60
13	13	14	9.6	8.6	*11	50	72	203	407	132	25	55
14	14	14	9.0	9.0	11	54	66	184	399	116	30	50
15	14	14	9.0	9.2	11	50	60	158	423	103	41	47
16	13	14	9.0	9.4	11	30	57	135	411	94	42	44
17	11	16	9.0	9.4	11	21	60	119	363	87	39	44
18	12	18	10	9.2	11	38	74	108	307	80	34	44
19	11	16	11	9.2	11	*72	96	98	268	74	30	44
20	12	18	12	9.2	*11	130	103	111	236	72	28	45
21	11	19	12	9.0	11	125	101	1,800	219	70	27	*47
22	12	16	12	8.8	11	120	96	*6,420	200	68	60	64
23	14	16	12	8.8	11	250	87	*4,580	180	64	398	68
24	14	16	13	8.6	12	380	78	3,770	168	57	695	55
25	14	13	14	8.6	12	540	72	3,590	155	50	695	79
26	14	9.8	14	8.4	12	700	66	3,170	144	45	695	111
27	14	11	14	8.4	12	680	62	2,610	138	41	*542	144
28	14	12	14	8.4	12	645	58	2,190	141	*38	383	180
29	14	12	15	8.4	12	*407	55	2,330	144	36	257	284
30	14	10	14	8.4	12	*339	52	2,260	196	35	203	335
31	17	13	8.4	8.4	12	295	2,260	2,260	196	34	164	.....
1959-60												
1	307	138	205	640	118	70	2,640	501	2,400	*529	70	68
2	250	141	200	540	120	69	*3,010	501	2,190	470	64	57
3	216	141	196	400	122	67	2,690	488	2,000	436	62	45
4	203	152	192	260	125	66	2,330	457	1,800	411	*57	39
5	206	161	190	340	125	65	2,050	423	1,700	391	57	35
6	212	120	185	410	125	65	1,910	407	1,580	359	58	32
7	212	150	180	440	125	64	1,700	387	1,460	327	57	30
8	206	146	180	390	128	63	1,470	391	1,350	303	53	*28
9	190	144	176	350	130	62	1,260	395	1,250	287	50	28
10	177	164	174	320	135	61	1,080	387	1,170	268	48	27
11	164	193	171	300	130	60	910	363	1,080	254	47	25
12	155	219	171	285	110	60	772	327	1,010	250	44	18
13	146	160	168	280	112	60	670	303	950	261	42	14
14	144	135	164	270	115	60	625	287	900	250	41	14
15	138	200	164	265	112	60	581	265	850	229	39	19
16	135	*265	164	255	110	60	585	243	800	212	36	22
17	129	232	158	245	105	60	630	232	1,530	196	39	22
18	124	209	*146	230	*101	60	645	*236	1,840	184	44	27
19	*116	193	168	210	97	60	640	268	1,740	*168	45	27
20	116	187	155	190	94	60	*625	423	1,660	152	53	*26
21	108	193	149	175	90	60	605	1,200	*1,660	146	45	27
22	103	203	146	*160	87	61	571	1,740	1,600	138	39	30
23	101	216	146	147	85	*61	529	1,980	1,470	124	36	41
24	101	229	144	135	82	62	506	2,120	1,200	116	35	60
25	98	220	146	126	79	64	497	3,000	938	106	35	68
26	101	200	168	122	77	66	475	4,040	772	101	36	85
27	101	180	206	110	74	220	466	3,950	720	98	34	97
28	103	185	359	118	73	1,700	519	3,950	670	92	48	78
29	106	205	720	116	72	3,000	557	3,250	610	85	64	70
30	108	210	855	116	.....	3,800	524	2,930	566	82	116	64
31	121	.....	760	116	.....	2,850	.....	2,640	.....	74	89	.....

East Fork Des Moines River at Dakota City, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	15.2	16.3	15.3	15.5	15.8	177	129	100	71.9	91.5	115	16.0
1956-57	12.7	24.2	19.6	15.7	21.0	98.6	91.1	202	381	114	35.8	20.1
1957-58	17.1	30.7	35.7	21.8	42.1	74.5	186	118	272	275	28.7	11.1
1958-59	12.0	14.2	11.7	8.94	10.4	166	110	1,212	793	160	157	107
1959-60	152	183	236	260	105	426	1,068	1,221	1,316	229	51.1	40.8

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.012	0.012	0.012	0.012	0.012	0.135	0.099	0.076	0.055	0.070	0.088	0.012
1956-57	.010	.019	.015	.012	.016	.075	.070	.154	.291	.087	.027	.015
1957-58	.013	.023	.027	.017	.032	.057	.142	.090	.208	.210	.022	.0085
1958-59	.0092	.011	.0089	.0068	.0080	.127	.084	.927	.606	.122	.120	.082
1959-60	.116	.140	.180	.199	.080	.326	.817	.933	1.01	.175	.039	.031

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.01	0.01	0.01	0.01	0.01	0.16	0.11	0.09	0.06	0.08	0.10	0.01
1956-57	.01	.02	.02	.01	.02	.09	.08	.18	.33	.10	.03	.02
1957-58	.02	.03	.03	.02	.03	.07	.16	.10	.23	.24	.03	.01
1958-59	.01	.01	.01	.008	.008	.15	.09	1.07	.68	.14	.14	.09
1959-60	.13	.16	.21	.23	.09	.38	.91	1.08	1.12	.20	.05	.03

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								203	2.10
1956	Mar. 27, 1956	(1) 9.60	640	6.0	65.3	0.050	0.66	66.1	.68
1957	May 30, 1957	10.31	1,060	7.0	86.4	.066	.91	88.7	.94
1958	July 14, 1958	10.78	1,360	7.9	92.8	.071	.97	89.0	.92
1959	May 22, 1959	16.97	6,860	7.9	232	.177	2.41	276	2.88
1960	Mar. 29, 1960	17.49	4,300	14	440	.336	4.50		

(1) Maximum gage height, 9.84 ft. Mar. 26, 1956 (ice jam).

Peak Discharge (base, 1,500 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: No peak above base.

1958-59: May 22 (9:30 a.m.) 6,860 cfs (16.97 ft.).

1959-60: Mar. 29 (4 p.m.) about 4,300 cfs (17.49 ft.); May 26 (7 p.m.) 4,130 cfs (14.28 ft.); June 18 (11 a.m.) 1,910 cfs (11.48 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Jan. 16 to Mar. 11, Mar. 21-29, Dec. 12-20, 25-27, 1956; Jan. 1-5, 7-19, Jan. 22 to Feb. 10, Feb. 14-23, Mar. 7-9, Nov. 9-11, 18-21, 24-26, Dec. 9-15, 24-31, 1957; Jan. 1 to Feb. 27, Mar. 6-12, 17, 18, Nov. 27 to Dec. 1, Dec. 8-23, 1958; Jan. 2 to Mar. 27, Nov. 6-8, 13-15, Nov. 25 to Dec. 9, Dec. 31, 1959; Jan. 1 to Mar. 30, 1960. No gage-height record June 3-16, 1960.

Lizard Creek near Clare, Iowa¹

LOCATION.—Lat. 42°32'40", long. 94°20'45", in NE¼NE¼ sec. 11, T. 89 N., R. 30 W., on right bank 20 ft. downstream from highway bridge, 3 miles south of Clare, 8 miles northwest of Fort Dodge and 8.9 miles upstream from confluence with South Lizard Creek.

DRAINAGE AREA.—257 square miles.

RECORDS AVAILABLE.—March 1940 to September 1960. Prior to October 1954, published as North Lizard Creek near Clare.

GAGE.—Water-stage recorder. Concrete control since Oct. 11, 1956. Datum of gage is 1,079.30 ft. above mean sea level, datum of 1929. Prior to May 6, 1953, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—20 years, 90.3 cfs.

EXTREMES.—1940-60: Maximum discharge, 10,000 cfs June 23, 1947 (gage height, 16.0 ft., from floodmark), from rating curve extended above 4,500 cfs by logarithmic plotting; no flow Sept. 30, 1943, Aug. 27-29, 1956.

REMARKS.—Bankfull stage is about gage height, 14 ft.

REVISIONS (water years).—WSP 1508: 1940, 1942, 1944-56(M), 1947-48.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	1.5	*1.1	0.9	0.3	0.3	3.0	11	4.6	45	0.8	0.6	0.1
2.....	1.2	1.2	1.0	.3	.3	*16	11	9.1	23	.7	.8	.1
3.....	1.0	1.2	1.1	*.3	.3	19	12	*8.6	15	.6	.7	.1
4.....	1.0	1.5	1.5	.3	.3	21	9.7	10	11	1.1	.4	.1
5.....	30	1.5	1.5	.3	.3	25	8.6	8.0	8.6	3.8	.2	*2.8
6.....	20	1.1	1.2	.3	.3	28	6.7	7.6	7.6	2.5	.3	3.8
7.....	*11	1.1	1.1	.3	.3	24	5.5	11	6.3	2.8	*.3	1.1
8.....	5.1	1.1	1.1	.3	.3	20	4.2	9.1	12	3.5	.2	.6
9.....	3.8	1.1	1.0	.3	.3	17	4.2	7.2	11	2.2	.2	.4
10.....	3.8	1.2	1.0	.3	.3	15	3.3	5.9	7.6	*1.7	.1	.3
11.....	2.8	1.7	.9	.3	.3	13	2.8	8.0	4.6	1.5	.2	.2
12.....	1.5	2.2	.9	.3	.3	11	3.0	7.6	2.8	2.2	.2	.2
13.....	1.5	3.5	.9	.3	.3	10	3.0	9.1	2.0	1.2	.2	.2
14.....	1.1	2.5	.9	.3	.3	9.4	3.0	8.6	1.1	1.0	.2	.1
15.....	1.1	2.8	.6	.3	.3	9.0	3.0	10	.8	.9	.1	.1
16.....	1.1	2.2	.4	.3	.3	10	2.2	8.6	.6	.7	.1	.1
17.....	1.1	1.1	.3	.3	.3	13	2.2	5.9	.5	.6	.1	.1
18.....	1.1	1.1	.3	.3	.3	15	2.2	5.5	.4	.8	.3	.1
19.....	1.1	1.1	.4	.3	.3	19	1.5	5.1	.4	1.0	.2	.1
20.....	1.1	1.5	.4	.3	.3	23	1.2	4.6	.1	.8	.2	.1
21.....	1.1	2.0	.5	.3	.3	29	1.1	3.8	.5	.7	.1	.1
22.....	1.0	2.2	.5	.3	.3	37	.9	3.5	.8	.4	.1	.1
23.....	1.1	2.2	.5	.3	.3	47	1.0	3.3	.6	.3	.1	.1
24.....	1.1	1.7	.5	.3	.3	56	.9	3.0	.4	.2	.1	.1
25.....	1.1	2.0	.5	.3	.3	46	.8	2.8	.2	.2	.1	.1
26.....	1.1	2.0	.4	.3	.3	27	.9	2.0	1.1	.1	.1	.1
27.....	1.1	1.7	.4	.3	.3	*23	1.2	1.5	3.0	.1	0	.1
28.....	1.1	1.1	.4	.3	.3	18	2.0	1.5	1.1	.1	0	.1
29.....	1.1	*1.0	.4	.3	.3	8.6	2.2	1.7	1.1	.1	0	.1
30.....	1.1	.9	.3	.3	.3	15	2.5	*3.5	1.2	.1	.1	.1
31.....	1.1	.3	.3	*.3	.3	8.6	.99	.1	1.1	.1	.1	.1

¹Published as "North Lizard Creek," 1955.

Lizard Creek near Clare, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	0.1	0.5	1.0	1.6	0.3	5.7	36	4.2	52	7.9	4.8	18
2	.2	.5	1.6	1.0	.3	6.0	*28	3.1	40	7.9	3.6	19
3	.1	.4	1.6	1.0	.3	5.3	25	2.3	32	12	2.6	15
4	**1	1.3	*1.9	1.0	.3	4.7	24	1.9	25	15	1.9	*14
5	.1	1.9	2.6	.6	*.3	*4.5	22	1.6	*20	13	1.6	13
6	.1	2.6	2.3	.5	.3	4.5	21	1.3	19	11	*1.6	12
7	.1	1.3	1.6	.5	.4	4.6	16	*1.0	17	10	1.0	11
8	.1	1.3	1.1	.4	8.0	5.1	19	8	14	21	.8	9.3
9	.1	4.2	.8	.4	10	5.9	16	8	14	106	.8	7.9
10	.1	3.6	.8	.4	10	6.6	15	1.3	13	*50	.6	7.9
11	.1	2.6	.8	.4	8.0	8.6	13	1.6	12	28	.5	7.9
12	.2	1.9	.6	.4	7.0	7.9	13	1.9	11	11	.5	7.2
13	.4	1.6	.6	.3	6.2	13	12	3.1	12	13	.5	*5.3
14	.6	1.3	.6	.3	5.4	14	12	11	30	12	1.0	11
15	1.0	1.6	.6	.3	4.8	6.6	10	12	21	16	1.6	12
16	.8	1.3	.8	.3	4.1	6.6	9.3	15	23	15	1.0	9.3
17	.8	1.3	.8	.3	3.6	8.6	14	18	13	15	.8	7.2
18	.8	1.6	.6	.3	3.1	6.6	9.3	12	17	12	1.0	5.9
19	.6	1.3	.5	.3	2.7	8.6	7.9	12	14	8.6	1.3	6.6
20	.6	3.6	.5	.3	2.5	6.6	7.9	12	13	6.6	1.9	5.9
21	.6	2.6	.5	.4	2.3	19	5.9	176	12	5.9	2.3	5.9
22	.8	2.0	.6	.6	2.2	30	5.9	140	18	7.2	1.6	5.3
23	.8	1.6	.8	1.0	2.1	40	5.9	50	16	5.9	1.9	4.8
24	.6	1.6	.8	.7	2.1	63	4.8	32	15	4.8	4.2	4.2
25	.6	1.9	.6	.5	2.5	44	3.6	31	19	4.8	3.1	4.2
26	.8	1.6	.5	.4	3.2	27	6.6	31	16	4.2	2.3	4.2
27	.8	1.3	.6	.3	4.3	28	7.2	23	12	6.6	4.8	3.6
28	.6	1.6	1.0	.3	5.2	35	6.6	22	12	6.6	11	3.1
29	.6	1.3	1.0	.3	.....	56	7.2	52	9.3	6.6	14	3.1
30	.8	1.0	1.6	.3	.....	50	5.9	80	7.9	5.9	15	3.1
31	.6	.....	1.6	.3	.....	46	.....	50	.....	4.8	14	.....
1957-58												
1	*2.6	9.5	33	16	8.4	58	36	56	260	30	22	4.8
2	*3.1	14	36	15	8.2	39	38	54	176	27	20	4.8
3	3.1	15	*31	14	8.0	36	47	50	*890	26	18	4.2
4	3.1	17	29	13	7.6	30	77	45	980	29	16	3.6
5	3.1	*18	29	13	7.4	*30	106	*39	620	30	14	*3.1
6	3.1	18	27	12	*7.1	32	187	38	368	27	*24	4.2
7	4.2	17	24	12	6.8	28	181	36	263	23	24	3.6
8	7.2	16	23	11	6.5	25	*149	36	218	*22	18	3.6
9	7.9	12	21	*11	6.2	23	127	36	218	34	15	3.1
10	6.6	10	18	11	5.9	22	111	33	176	38	13	3.1
11	6.6	12	13	11	5.6	20	94	31	144	208	12	3.1
12	6.6	13	16	11	5.4	21	83	30	125	320	11	3.1
13	5.9	12	20	11	5.2	22	77	27	109	164	9.5	3.1
14	5.9	12	22	11	5.0	23	69	31	96	343	9.5	2.6
15	5.9	13	22	11	4.8	23	63	29	83	450	8.7	3.6
16	5.9	22	21	10	4.7	18	59	29	73	245	10	4.8
17	5.3	23	22	9.8	4.6	15	54	27	67	158	10	5.3
18	5.3	30	26	9.4	4.6	22	50	23	69	122	8.7	3.6
19	5.3	27	31	9.2	4.5	18	45	23	71	109	7.9	2.6
20	5.3	24	34	9.0	4.5	18	44	21	59	102	7.9	2.6
21	5.3	26	36	8.8	4.5	20	42	18	52	85	10	2.6
22	6.6	27	38	8.6	4.5	18	39	16	52	71	7.9	2.6
23	8.7	28	38	8.5	4.0	18	39	15	54	59	7.2	2.6
24	8.7	29	34	8.4	130	18	42	15	61	50	7.9	3.1
25	8.7	30	30	8.2	115	20	52	15	65	44	7.2	3.1
26	8.7	31	27	8.2	100	21	59	18	63	39	7.2	2.6
27	9.5	33	26	8.4	118	20	61	21	52	34	6.6	3.1
28	9.5	31	24	8.5	94	20	63	17	44	29	6.6	2.6
29	9.5	26	22	8.5	.....	24	63	16	38	26	6.6	2.6
30	8.7	23	20	8.5	.....	36	58	16	33	26	5.9	2.3
31	8.7	.....	18	8.4	.....	36	.....	121	.....	24	5.3	.....

Lizard Creek near Clare, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	1.9	3.1	1.6	0.8	0.1	1.0	*45	30	1,350	293	7.9	13
2.....	2.3	3.1	1.9	.8	.1	2.0	42	38	740	221	14	17
3.....	2.3	3.1	*2.6	.7	.1	10	38	39	468	171	50	22
4.....	2.6	2.6	1.6	.7	*.1	7.0	31	40	*350	137	44	15
5.....	2.3	2.3	1.3	.6	.1	3.5	26	49	278	109	24	11
6.....	2.3	*2.2	.9	.6	.1	2.0	24	111	218	87	20	9.5
7.....	2.3	1.9	.9	.5	.1	1.4	21	*171	171	73	15	7.2
8.....	*2.3	2.6	.8	.5	.1	1.3	20	146	141	61	12	6.6
9.....	2.3	2.6	.8	.5	.1	*1.3	17	118	118	54	11	5.3
10.....	1.9	2.6	.8	.4	.1	5.0	15	113	102	45	10	4.2
11.....	2.6	2.6	.8	.4	.1	20	14	132	91	40	9.5	*4.2
12.....	3.6	2.6	.8	*.4	.1	40	14	127	81	36	8.7	3.6
13.....	4.8	2.6	.8	.4	*.1	90	13	100	67	91	*7.2	3.6
14.....	3.6	2.6	.8	.4	.1	80	11	83	59	77	7.9	3.6
15.....	3.6	2.6	.8	.3	.1	70	10	75	54	47	14	3.6
16.....	3.6	2.6	.8	.3	.1	50	10	65	50	36	18	4.2
17.....	3.1	4.2	.8	.3	.1	30	14	59	45	*30	12	5.3
18.....	3.1	4.8	.8	.3	.1	60	18	52	45	27	9.5	5.9
19.....	3.6	4.2	.9	.3	.1	*100	22	49	42	26	7.9	6.6
20.....	3.6	4.8	.9	.3	.1	170	27	59	38	22	7.2	8.7
21.....	3.1	4.2	.9	.2	.1	150	45	98	34	18	7.2	12
22.....	2.6	3.6	.9	.2	.1	130	91	151	31	16	158	9.5
23.....	3.1	3.1	.9	.2	.1	140	98	184	29	15	184	17
24.....	3.1	3.1	.9	.2	.1	110	77	166	27	13	69	13
25.....	3.6	2.7	.9	.2	.2	80	59	149	27	11	38	21
26.....	3.6	1.5	1.0	.2	.2	*92	49	132	24	10	26	20
27.....	3.6	2.0	1.0	.2	.3	104	42	109	23	9.5	18	68
28.....	3.6	2.3	1.0	.2	.5	100	39	106	52	9.5	15	42
29.....	2.6	2.3	1.0	1.....	.....	73	34	484	95	8.7	13	27
30.....	2.6	1.6	.9	.1	.....	60	29	620	359	8.7	12	21
31.....	2.6	.....	.9	.1	.....	50	.....	1,220	.....	7.9	10	.....
1959-60												
1.....	20	9.5	27	90	22	13	700	44	154	*125	13	18
2.....	20	8.7	*26	64	22	12	720	42	137	104	12	13
3.....	21	8.7	25	50	22	*12	660	42	118	91	11	11
4.....	23	*13	25	40	*23	12	520	40	106	77	*10	9.4
5.....	*22	26	26	52	23	12	*432	*42	94	69	12	8.6
6.....	21	17	27	58	23	12	359	59	83	59	14	7.8
7.....	20	25	27	62	24	12	287	75	77	54	20	7.4
8.....	17	23	26	56	24	12	230	75	*71	49	14	*7.2
9.....	17	27	26	*51	25	11	181	71	65	49	13	7.2
10.....	16	31	25	48	24	11	149	63	63	52	11	7.9
11.....	16	40	25	45	23	11	137	54	61	47	9.5	7.2
12.....	13	45	25	43	22	11	118	49	58	83	8.7	6.6
13.....	12	29	26	40	22	11	113	45	58	171	7.9	5.9
14.....	12	23	30	38	21	11	106	44	56	149	7.2	5.9
15.....	12	27	30	36	21	11	106	40	52	109	6.6	6.2
16.....	11	30	30	34	20	11	106	39	83	87	6.6	6.2
17.....	11	28	30	32	19	11	118	39	485	73	7.9	6.0
18.....	10	26	27	30	18	11	106	40	520	65	14	6.0
19.....	10	27	27	28	18	12	98	45	353	58	12	8.4
20.....	9.5	26	27	26	17	12	96	63	254	*49	9.4	*11
21.....	9.5	29	27	25	16	12	87	234	*198	44	8.0	7.9
22.....	9.5	30	24	24	16	12	77	468	161	40	7.2	6.6
23.....	10	33	24	24	15	*12	71	418	144	38	6.2	8.7
24.....	12	38	21	23	15	13	67	329	120	34	6.6	15
25.....	13	34	27	23	14	13	61	344	102	30	8.0	20
26.....	11	30	31	22	14	14	56	560	91	26	9.0	14
27.....	9.5	27	47	22	13	75	49	468	87	24	7.2	11
28.....	9.5	25	179	22	13	1,300	49	329	124	21	5.4	9.5
29.....	8.7	26	245	22	13	*3,140	50	254	203	18	17	8.7
30.....	8.7	27	203	22	.....	2,340	49	209	164	17	56	8.7
31.....	10	.....	120	22	.....	960	.....	176	.....	15	30	.....

Lizard Creek near Clare, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	3.35	1.62	0.71	0.30	0.30	20.5	3.79	9.02	5.69	1.09	0.21	0.39
1956-57	.47	1.74	1.01	.51	3.62	18.6	12.8	25.8	18.5	14.8	3.34	8.23
1957-58	6.28	20.6	26.2	10.4	26.0	25.0	73.8	31.7	186	96.6	11.5	3.32
1958-59	2.96	2.87	1.02	.37	.13	59.1	33.2	164	174	58.4	27.7	13.7
1959-60	13.7	26.3	47.9	37.9	19.4	262	199	155	145	62.2	12.3	9.23

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.013	0.0063	0.0028	0.0012	0.0012	0.080	0.015	0.035	0.022	0.0042	0.00082	0.0015
1956-57	.0018	.0068	.0039	.0020	.014	.072	.050	.100	.072	.058	.013	.032
1957-58	.024	.080	.102	.040	.101	.097	.287	.123	.724	.376	.045	.013
1958-59	.012	.011	.0040	.0014	.00051	.230	.129	.638	.677	.227	.108	.053
1959-60	.053	.102	.186	.147	.075	1.02	.774	.603	.564	.242	.048	.036

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.02	0.007	0.003	0.001	0.001	0.09	0.02	0.04	0.02	0.005	0.0009	0.002
1956-57	.002	.008	.005	.002	.01	.08	.06	.12	.08	.07	.01	.04
1957-58	.03	.09	.12	.05	.11	.11	.32	.14	.81	.43	.05	.01
1958-59	.01	.01	.005	.002	.0005	.27	.14	.73	.75	.26	.12	.06
1959-60	.06	.11	.21	.17	.08	1.18	.89	.69	.63	.28	.06	.04

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								36.4	1.93
1956	May 31, 1956	3.74	147		0	3.95	0.015	0.21	3.74
1957	May 21, 1957	4.75	399		.1	9.15	.036	.49	13.3
1958	June 3, 1958	7.71	1,740	2.3	42.9		.167	2.27	39.1
1959	June 1, 1959	7.67	1,740		45.0		.175	2.36	51.8
1960	Mar. 29, 1960	10.01	3,650	5.4	82.6		.321	4.37	.....

Peak Discharge (base, 800 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: June 3 (11 a.m.) 1,740 cfs (7.71 ft.); July 14 (3:30 p.m.) 860 cfs (5.97 ft.).

1958-59: June 1 (1:30 a.m.) 1,740 cfs (7.67 ft.).

1959-60: Mar. 29 (5 p.m.) 3,650 cfs (10.01 ft.); June 18 (6:30 p.m.) 820 cfs (5.86 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

**Field estimate made on this day.

Stage-discharge relation affected by ice Dec. 20-31, 1955; Jan. 1-23, Feb. 1 to Mar. 25, Nov. 22, Dec. 8, 1956; Jan. 7 to Mar. 8, Nov. 9-10, 19-23, Nov. 28 to Dec. 1, Dec. 10-13, 25-31, 1957; Jan. 1 to Feb. 26, Mar. 6-8, 10, 11, Nov. 25-27, Dec. 4-31, 1958; Jan. 1 to Mar. 26, Nov. 6-8, 13-17, Nov. 26 to Dec. 12, Dec. 31, 1959; Jan. 1 to Mar. 28, 1960. No gage-height record Aug. 19 to Sept. 7, Sept. 14-20, 1960.

Des Moines River at Fort Dodge, Iowa

LOCATION.—Lat. 42°30'25", long. 94°12'00", in NW¼SW¼ sec. 19, T. 89 N., R. 28 W., on right bank 400 ft. upstream from Soldier Creek, 1,800 ft. downstream from Illinois Central Railroad bridge, and 2,000 ft. downstream from Lizard Creek.

DRAINAGE AREA.—4,190 square miles (revised in 1956).

RECORDS AVAILABLE.—April 1905 to July 1906 (no winter records), October 1913 to September 1927 (published as "at Kalo"), October 1946 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 969.38 ft. above mean sea level, datum of 1929. Apr. 22, 1905, to July 19, 1906, chain gage at bridge, 3,000 ft. downstream, at different datum. Oct. 18, 1913 to Oct. 20, 1921, June 20 to Sept. 30, 1927, chain gage, and Oct. 21, 1921, to June 19, 1927, water-stage recorder, at site 7 miles downstream at Kalo, at different datum. Oct. 1, 1946, to Dec. 7, 1949, wire-weight gage at bridge 1,800 ft. upstream from present site, at present datum.

AVERAGE DISCHARGE.—28 years (1913-27, 1946-60), 1,272 cfs.

EXTREMES.—1905-6, 1913-27, 1946-60: Maximum discharge, 35,400 cfs June 21, 1954; maximum gage height, 19.62 ft. (revised), from floodmark, June 23, 1947: Minimum daily discharge, 14 cfs Nov. 3, 1955.
Maximum stage known, that of June 23, 1947 (discharge, 34,000 cfs).

REMARKS.—Diurnal fluctuation at low flow caused by powerplant above station. Bankfull stage is about gage height, 17 ft.

REVISIONS.—(water years).—WSP 1308: 1924, 1925 (M).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	48	142	56	45	44	50	864	*169	354	320	82	80
2.....	28	*152	51	42	44	*60	912	204	511	398	150	63
3.....	42	14	45	*47	44	90	829	254	502	246	486	60
4.....	37	17	55	38	43	110	763	298	466	225	562	74
5.....	86	19	46	47	42	160	686	286	818	234	563	*112
6.....	217	38	68	46	42	155	664	415	362	224	517	144
7.....	*100	74	44	37	41	150	620	409	337	261	406	73
8.....	120	43	46	49	41	165	493	365	223	214	*335	52
9.....	64	68	51	45	41	190	457	370	237	174	246	71
10.....	46	70	47	43	41	165	404	354	209	*124	212	57
11.....	66	100	42	35	42	150	430	329	172	157	177	56
12.....	36	44	39	49	42	130	313	337	96	196	198	64
13.....	59	116	46	36	43	140	313	388	119	108	199	41
14.....	45	65	36	48	44	140	321	354	87	145	133	60
15.....	65	82	39	40	45	160	305	370	86	102	152	50
16.....	63	57	43	50	45	155	244	313	67	86	199	87
17.....	58	44	38	45	45	140	329	281	70	96	225	70
18.....	36	53	36	43	45	130	189	297	63	116	232	52
19.....	44	62	42	40	45	180	223	280	82	82	158	46
20.....	68	71	46	43	45	250	184	216	94	76	172	52
21.....	61	74	46	47	45	350	202	209	46	106	124	44
22.....	70	83	35	46	45	450	189	189	64	76	164	42
23.....	43	89	44	44	45	500	172	223	155	54	131	96
24.....	66	77	33	44	45	550	144	144	110	80	102	64
25.....	78	72	45	44	45	640	161	195	95	205	92	90
26.....	54	76	44	43	45	600	149	195	374	172	105	58
27.....	56	68	43	42	45	*936	189	149	143	96	86	52
28.....	100	48	38	43	45	1,030	167	155	178	77	86	43
29.....	88	*53	44	43	45	1,000	176	337	177	84	64	36
30.....	76	46	39	43	.....	774	236	*763	293	54	90	30
31.....	46	.....	42	*43	.....	763	.....	439	.....	120	88	.....

Des Moines River at Fort Dodge, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	28	30	89	64	29	92	998	154	2,330	958	609	284
2	28	38	103	60	29	190	*1,010	176	1,910	848	562	308
3	26	76	68	35	30	35	883	186	1,520	855	471	343
4	*35	60	*46	76	28	70	730	155	1,300	826	484	*326
5	30	135	100	41	29	*90	624	146	*1,070	780	384	268
6	30	208	74	20	*26	115	501	148	926	714	374	280
7	28	113	26	45	29	62	454	*138	818	684	*316	266
8	26	107	22	*63	32	75	366	153	716	934	268	239
9	31	64	22	40	43	75	344	144	670	812	270	280
10	28	86	40	40	56	75	336	135	626	*739	249	230
11	28	132	64	84	36	230	332	142	586	688	258	281
12	28	108	20	35	90	185	306	158	556	598	232	244
13	46	52	45	74	76	130	302	189	532	554	234	236
14	52	80	47	45	56	260	296	210	1,520	521	212	312
15	48	86	39	45	37	245	282	238	920	452	202	326
16	41	66	72	45	105	76	260	194	823	453	196	262
17	32	60	40	39	35	88	262	404	668	432	178	182
18	36	50	33	36	56	96	250	356	614	346	202	208
19	36	80	31	40	36	169	252	338	664	340	189	212
20	30	82	40	37	60	96	244	280	736	340	180	212
21	30	72	52	40	68	146	218	888	628	555	180	208
22	30	94	60	38	35	274	185	1,010	668	545	162	224
23	30	64	40	32	60	298	212	824	594	356	203	230
24	32	66	40	34	70	382	206	826	568	334	164	175
25	32	52	48	31	80	492	222	802	860	351	150	188
26	32	61	47	31	66	610	242	680	1,200	350	147	184
27	40	76	48	31	90	901	228	564	1,240	398	233	162
28	32	56	106	33	105	1,250	204	568	1,250	443	312	170
29	32	43	31	30	.....	1,310	206	938	1,170	591	372	154
30	*30	75	50	29	.....	1,200	206	2,250	1,100	532	313	144
31	30	.....	60	30	.....	1,050	.....	2,300	.....	602	285	.....
1957-58												
1	*164	198	250	200	124	694	252	748	856	380	311	70
2	146	240	230	118	125	458	306	688	570	397	278	50
3	126	244	*292	270	110	482	302	652	4,150	384	257	66
4	114	216	304	250	150	446	419	616	*4,110	352	200	64
5	120	*243	283	200	112	*391	668	*606	*2,580	425	234	72
6	120	240	288	100	*121	360	948	552	1,850	760	*237	68
7	128	238	308	*230	124	324	1,070	575	1,630	760	326	52
8	148	246	250	120	112	365	*1,120	528	1,570	*712	273	68
9	132	190	230	229	106	192	1,200	521	1,700	918	251	52
10	140	181	240	147	96	351	1,160	498	1,440	547	126	49
11	134	222	165	172	108	364	1,060	464	1,020	2,000	188	*52
12	100	298	180	186	88	298	902	436	772	2,850	141	55
13	122	224	206	101	92	309	890	448	635	1,780	83	52
14	103	236	218	192	98	305	794	442	567	4,400	155	58
15	140	276	197	212	68	212	720	458	495	6,000	124	80
16	180	331	222	176	76	234	733	444	492	3,400	168	58
17	84	302	230	175	62	196	668	459	480	1,900	108	75
18	118	340	242	144	72	236	625	402	387	1,910	98	60
19	144	287	256	189	70	262	619	379	525	1,750	132	60
20	138	238	266	138	70	210	601	333	638	1,500	124	60
21	224	316	273	152	60	236	599	277	530	1,120	106	72
22	198	294	304	160	58	205	517	307	748	796	114	52
23	208	299	250	126	110	201	520	285	798	700	116	58
24	196	276	280	158	250	192	612	287	658	525	94	44
25	184	290	260	180	450	253	598	264	848	485	88	63
26	184	300	210	172	600	208	608	218	730	442	114	44
27	172	370	260	136	684	195	726	218	658	348	88	55
28	200	374	270	167	748	234	794	227	464	300	86	42
29	171	407	200	98	.....	258	800	178	564	270	86	55
30	182	204	180	162	.....	232	782	216	429	357	78	40
31	160	.....	170	124	.....	266	.....	656	.....	285	80	.....

Des Moines River at Fort Dodge, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	38	38	32	36	35	41	*711	180	8,170	*2,280	120	244
2.....	40	36	68	50	35	62	657	183	7,280	2,020	186	252
3.....	40	36	62	34	35	70	464	301	6,260	1,590	290	216
4.....	38	53	*34	32	*35	41	476	210	5,780	1,280	296	212
5.....	36	28	35	31	35	62	438	276	*4,660	1,030	251	123
6.....	38	28	50	31	34	41	394	492	3,930	802	204	217
7.....	72	*30	32	31	34	41	390	*784	3,420	706	156	318
8.....	*63	30	32	31	33	62	304	686	2,860	619	168	234
9.....	36	74	32	31	33	*41	288	680	2,000	538	98	183
10.....	34	57	54	31	*33	80	266	758	1,510	466	90	150
11.....	55	56	32	31	33	150	248	657	1,340	426	150	125
12.....	38	30	52	*30	33	240	266	739	1,140	394	138	158
13.....	55	51	31	30	33	370	202	622	988	394	*86	120
14.....	46	60	30	31	33	450	190	572	910	415	116	*100
15.....	38	32	29	52	33	300	196	500	837	384	145	91
16.....	59	74	29	32	33	250	182	464	852	321	104	120
17.....	40	70	29	32	34	150	188	403	774	*285	140	100
18.....	38	122	30	32	34	170	244	336	672	286	157	130
19.....	36	80	52	32	34	700	284	342	602	242	145	174
20.....	40	80	34	32	*34	1,100	349	416	532	164	94	104
21.....	40	78	54	32	35	940	362	2,690	535	267	99	159
22.....	56	86	34	32	35	860	484	*8,220	458	176	258	218
23.....	40	56	34	32	36	1,000	463	*7,810	422	178	677	174
24.....	38	58	56	32	37	1,100	452	6,430	414	232	884	130
25.....	38	70	56	33	38	*1,000	312	5,460	406	182	814	486
26.....	38	50	34	33	38	1,460	310	4,510	318	63	784	520
27.....	38	54	34	33	*38	1,340	277	*3,490	383	112	704	436
28.....	38	50	54	34	60	1,150	248	2,940	846	176	517	456
29.....	38	35	58	35	.....	1,020	260	4,210	938	116	403	413
30.....	40	33	40	35	.....	744	186	4,980	2,190	114	283	482
31.....	40	.....	38	35	.....	744	.....	7,890	.....	126	248	.....
1959-60												
1.....	475	141	412	1,400	380	180	10,500	2,210	5,090	1,580	336	343
2.....	428	219	396	1,000	370	185	*9,790	2,120	4,650	1,420	308	409
3.....	384	266	*374	700	350	*185	9,070	1,960	4,430	1,300	320	322
4.....	347	*328	370	450	*320	185	8,380	1,850	3,990	1,220	291	276
5.....	341	209	364	380	300	180	7,920	1,780	3,770	1,120	*259	253
6.....	302	285	328	580	290	178	7,460	*1,870	3,330	1,020	319	237
7.....	383	270	290	780	280	175	7,000	1,890	3,010	*903	326	222
8.....	351	284	320	1,000	280	175	*6,540	1,810	2,800	846	268	*259
9.....	*277	336	370	*950	275	175	6,310	1,780	*2,500	813	211	214
10.....	307	412	384	900	270	170	6,080	1,690	2,340	802	263	156
11.....	230	434	330	850	270	170	5,640	1,530	2,150	758	226	306
12.....	256	436	316	800	265	168	5,090	1,420	1,940	1,460	233	472
13.....	305	415	390	720	260	168	4,760	1,230	1,830	*1,830	210	456
14.....	288	350	340	600	260	168	4,430	1,220	1,650	1,620	163	440
15.....	247	220	370	480	260	165	4,210	1,120	1,690	1,200	178	388
16.....	215	270	390	460	255	165	4,100	1,060	1,890	1,010	166	351
17.....	306	320	370	480	250	170	4,320	981	4,430	929	282	306
18.....	146	340	360	510	240	160	4,320	1,180	5,420	835	188	376
19.....	226	360	350	540	230	155	4,100	1,630	4,980	813	246	379
20.....	247	370	350	520	230	150	3,880	1,870	*4,100	*780	252	*348
21.....	183	309	310	540	215	145	3,550	3,660	3,550	758	178	357
22.....	260	347	350	470	210	140	3,330	5,640	3,330	714	178	393
23.....	223	466	380	500	205	135	3,120	6,540	3,010	590	190	498
24.....	223	448	330	520	205	135	3,120	7,000	2,600	600	143	570
25.....	121	469	310	480	200	140	2,800	8,150	2,290	590	188	561
26.....	171	410	330	460	190	160	2,700	9,760	2,040	507	132	600
27.....	213	360	390	440	185	270	2,500	9,300	1,850	480	165	670
28.....	208	300	750	420	120	*4,500	2,420	8,150	1,830	448	156	650
29.....	227	400	400	170	*13,700	2,440	7,230	2,020	456	534	703	703
30.....	199	502	1,700	410	.....	14,000	2,340	6,310	1,940	400	534	692
31.....	244	.....	1,550	390	.....	12,000	.....	5,640	.....	365	557	.....

Des Moines River at Fort Dodge, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	66.6	67.2	44.2	43.5	43.8	338	378	300	220	152	211	64.1
1956-57	32.8	79.1	51.7	42.7	53.3	334	372	506	959	578	277	238
1957-58	151	271	242	167	177	296	722	431	1,096	1,250	157	58.2
1958-59	42.7	54.5	41.0	33.5	35.5	509	336	2,201	2,048	529	284	228
1959-60	269	346	487	617	253	1,573	5,073	3,535	3,015	909	257	407

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.016	0.016	0.011	0.010	0.010	0.081	0.090	0.072	0.053	0.036	0.050	0.015
1956-57	.0078	.019	.012	.010	.013	.080	.089	.121	.229	.138	.066	.057
1957-58	.036	.065	.058	.040	.042	.071	.172	.103	.262	.298	.037	.014
1958-59	.010	.013	.0098	.0080	.0085	.121	.080	.525	.489	.126	.068	.054
1959-60	.064	.083	.116	.147	.060	.375	1.21	.844	.720	.217	.061	.097

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.02	0.02	0.01	0.01	0.01	0.09	0.10	0.08	0.06	0.04	0.06	0.02
1956-57	.009	.02	.01	.01	.01	.09	.10	.14	.26	.16	.08	.06
1957-58	.04	.07	.07	.05	.04	.08	.19	.12	.29	.34	.04	.02
1958-59	.01	.01	.01	.009	.009	.14	.09	.61	.55	.15	.08	.06
1959-60	.07	.09	.13	.17	.07	.43	1.35	.97	.80	.25	.07	.11

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								555	1.79
1956	Mar. 28, 1956	4.07	3,400	14	161	0.038	0.52	160	.51
1957	May 30, 1957	5.42	4,400	20	294	.070	.95	336	1.09
1958	July 14, 1958	7.07	7,450	40	419	.100	1.35	375	1.20
1959	May 22, 1959	9.17	9,680	28	531	.127	1.73	612	1.99
1960	Mar. 29, 1960	11.28	16,200	120	1,392	.332	4.51		

Peak Discharge (base, 6,000 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: June 3 (10 a.m.) 6,100 cfs (7.22 ft.); July 14 (7 p.m.) 7,450 cfs (7.97 ft.).

1958-59: May 22 (3 p.m.) 9,680 cfs (9.17 ft.); May 31 (5 p.m.) 8,730 cfs (8.67 ft.).

1959-60: Mar. 29 (9 p.m.) 16,200 cfs (11.28 ft.); May 26 (10 a.m.) 10,700 cfs (8.81 ft.); June 18 (8 a.m.) 6,770 cfs (7.01 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 19, Nov. 28 to Dec. 4, Dec. 9-31, 1955; Jan. 1-21, Nov. 28, 29, Dec. 6, 8-14, 16-26, 30, 31, 1956; Jan. 1 to Mar. 6, Nov. 18, 25, Dec. 1, 2, 8-12, 24-31, 1957; Jan. 1, 3-8, 22, Feb. 4, 9-26, Nov. 25-30, Dec. 4-31, 1958; Jan. 1 to Mar. 25, Nov. 6, 7, 14-20, 26-29, Dec. 4, 7-9, 1959; Jan. 1 to Mar. 28, 1960. No gage height record Jan. 22 to Mar. 26, 1956; Mar. 7-15, 1957.

Boone River near Webster City, Iowa

LOCATION.—Lat. 42°26'00", long. 93°48'15", in NW ¼ SE ¼ sec. 18, T. 88 N., R. 25 W., on right bank 10 ft. upstream from bridge on State Highway 60, 2 miles south of Webster City, and 4.5 miles downstream from White Fox Creek.

DRAINAGE AREA.—844 square miles (revised in 1956).

RECORDS AVAILABLE.—March 1940 to September 1960.

GAGE.—Water-stage recorder. Concrete control since Sept. 24, 1956. Datum of gage is 989.57 ft. above mean sea level, datum of 1929. Prior to June 26, 1940, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—20 years, 329 cfs.

EXTREMES.—1940-60: Maximum discharge, 20,300 cfs June 22, 1954 (gage height, 18.55 ft.); minimum daily, 1.6 cfs Sept. 30, Oct. 1, 1956.

Maximum stage known since 1896, 19.1 ft. about June 10, 1918, from floodmarks, from information by local resident (discharge, 21,500 cfs). Flood of June 18, 1932, reached a stage of 16.0 ft. (discharge, 15,000 cfs).

REMARKS.—Bankfull stage is about gage height, 11 ft.

REVISIONS (water years).—WSP 1308: 1940(M).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1955-56													
1	13	*17	13	7.6	7.0	15	139	40	234	16	14	4.5	
2	12	17	13	7.6	7.0	*38	129	*64	137	16	16	3.5	
3	11	17	14	*7.6	7.0	42	120	71	96	15	15	3.5	
4	11	15	14	7.6	7.0	48	101	78	76	69	14	*4.5	
5	15	16	13	7.4	7.0	50	87	88	62	106	17	57	
6		*499	14	11	7.3	7.0	45	81	98	57	93	21	34
7	143	14	8.6	7.2	7.0	30	76	113	62	84	*20	23	
8	71	13	7.5	7.1	7.4	22	64	99	57	64	20	17	
9	52	14	6.8	7.0	7.6	18	62	88	50	*44	18	17	
10	45	18	6.2	7.0	7.6	21	52	86	44	39	25	14	
11	33	18	5.6	7.0	7.6	33	50	80	38	99	28	12	
12	26	20	5.6	7.0	7.6	27	54	76	34	80	23	9.6	
13	22	17	6.4	7.0	7.6	22	48	80	31	54	20	7.6	
14	18	16	6.4	7.0	7.6	19	45	77	31	39	16	6.4	
15	18	17	6.4	7.0	7.6	18	42	74	29	32	13	5.5	
16	17	15	6.4	6.0	7.6	23	38	70	29	28	13	4.5	
17	16	13	6.4	6.0	7.6	30	38	62	28	22	13	3.8	
18	16	12	6.4	6.0	7.6	60	34	52	28	21	16	3.8	
19	16	13	6.6	6.0	7.6	80	32	48	25	59	15	3.9	
20	16	14	6.8	7.0	7.6	100	31	40	23	29	13	4.0	
21	14	17	7.2	7.0	7.6	130	31	40	22	26	11	4.1	
22	14	18	7.6	7.0	7.6	170	29	38	20	45	9.6	3.6	
23	15	19	8.0	7.0	7.6	200	28	38	19	30	9.6	3.2	
24	14	21	8.0	7.0	7.6	216	27	34	18	31	9.0	2.7	
25	15	16	7.6	7.0	7.6	232	27	33	18	27	6.0	2.4	
26	15	19	7.8	7.0	7.6	*229	27	31	54	21	6.6	2.4	
27	16	16	8.0	7.0	7.6	248	32	31	59	17	6.6	2.4	
28	16	*16	8.4	7.0	7.6	260	34	31	33	14	6.0	2.1	
29	14	14	8.6	7.0	7.6	143	32	*28	26	11	5.0	1.8	
30	16	12	8.6	*7.0	.....	118	32	655	19	10	9.0	1.6
31	14	.....	8.2	7.0	.....	124	.....	511	.....	15	7.8	.....

Boone River near Webster City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	1.6	9.7	12	13	8.2	45	70	17	335	134	23	37
2	2.1	8.8	12	12	7.6	40	*64	16	291	112	19	35
3	2.4	8.8	14	12	7.1	41	57	15	*211	134	28	29
4	*2.4	15	*16	12	6.9	42	57	14	152	118	20	26
5	2.7	24	19	12	*6.9	37	55	12	116	95	16	*23
6	2.4	23	16	11	7.9	*32	50	12	114	85	12	20
7	2.1	22	15	11	9.9	29	45	*14	110	79	*12	17
8	1.8	19	13	10	13	26	42	12	85	85	11	12
9	2.1	16	13	10	20	24	38	12	73	*71	9.7	12
10	2.7	12	12	9.8	30	24	37	17	66	83	8.8	14
11	3.0	12	12	9.6	35	32	35	19	68	79	8.0	17
12	3.4	12	12	9.5	45	35	34	19	127	64	8.0	16
13	5.9	12	12	9.4	26	43	31	24	89	54	8.8	16
14	9.7	12	12	9.3	22	52	29	52	475	52	11	20
15	15	14	12	9.3	21	35	26	59	890	54	8.8	20
16	12	14	11	9.2	21	24	28	57	2,480	47	6.5	24
17	15	12	11	9.2	20	38	28	75	1,720	38	5.9	22
18	12	12	12	9.2	18	73	28	85	990	34	7.2	17
19	9.7	12	13	9.2	18	75	26	81	645	29	7.2	16
20	9.7	13	13	9.3	16	83	24	73	450	29	8.0	16
21	8.0	13	12	15	16	103	23	122	335	29	8.0	16
22	7.2	14	12	30	15	103	22	246	338	32	8.0	15
23	7.2	13	12	20	14	194	22	301	270	31	9.7	14
24	6.5	13	12	19	16	294	24	329	209	37	12	12
25	8.0	13	12	12	22	267	19	214	203	40	14	12
26	9.7	14	12	9.0	27	249	22	174	192	35	12	11
27	8.0	15	13	9.0	31	164	22	140	167	40	24	11
28	8.0	14	13	9.0	37	125	19	127	170	35	47	9.7
29	*12	13	14	9.0	.....	108	17	150	192	29	43	8.8
30	15	12	14	9.0	.....	89	17	222	167	28	47	*8.8
31	11	.....	14	8.9	.....	77	.....	472	.....	26	50	.....
57-58												
1	8.8	22	59	23	24	192	55	87	594	110	143	22
2	9.7	29	*66	20	24	125	59	87	533	290	129	19
3	8.8	26	59	20	24	106	61	87	*1,030	472	116	17
4	8.8	*28	49	21	23	*97	79	77	1,880	790	101	17
5	8.8	24	52	23	*22	79	138	75	1,020	600	91	20
6	8.8	22	54	23	22	75	285	71	600	468	*89	26
7	9.7	20	50	*22	21	70	360	*73	444	*356	81	26
8	22	19	48	21	20	65	*342	73	426	273	71	22
9	16	16	41	20	18	61	294	68	447	223	66	16
10	15	15	25	20	17	60	252	62	394	192	59	14
11	12	16	20	20	17	58	217	59	306	200	54	14
12	12	17	31	20	16	58	190	54	258	366	52	14
13	11	22	36	22	15	58	170	48	267	518	47	12
14	11	20	39	24	15	58	155	47	234	631	43	20
15	12	31	40	25	14	58	140	45	211	4,340	45	26
16	14	43	42	26	14	51	127	40	180	3,530	50	24
17	12	55	43	26	14	45	120	40	160	2,040	61	*22
18	12	50	48	26	14	49	112	138	150	1,410	54	17
19	12	40	57	25	14	52	106	138	134	1,080	45	16
20	12	31	64	24	14	54	97	101	116	915	47	14
21	14	37	68	20	14	52	93	77	101	740	47	14
22	17	43	70	23	14	52	91	66	93	578	42	14
23	22	52	79	24	30	52	89	57	103	479	37	14
24	19	55	77	25	150	50	95	48	116	412	35	15
25	19	54	73	25	130	48	93	45	129	360	32	14
26	19	55	68	25	177	48	91	40	138	356	29	12
27	16	64	70	25	209	48	95	37	145	300	28	11
28	15	64	64	25	288	50	103	35	148	243	29	11
29	16	58	52	25	.....	48	101	50	138	198	28	9.7
30	17	52	41	25	.....	48	97	85	120	180	24	9.7
31	17	.....	30	25	.....	50	.....	96	.....	162	23	.....

Boone River near Webster City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	8.6	13	9.2	9.2	5.2	45	600	79	3,120	1,460	25	76
2	6.4	13	8.2	8.6	5.2	55	538	75	2,760	1,030	35	416
3	8.6	13	10	8.0	5.0	80	461	77	2,580	758	52	204
4	9.4	15	11	7.4	5.0	65	381	77	1,560	579	49	107
5	9.4	15	11	7.0	5.0	56	317	92	1,000	450	45	71
6	7.8	13	10	6.8	5.0	50	259	113	712	346	40	56
7	40	13	9.6	6.6	5.0	45	225	131	558	280	34	45
8	113	13	9.2	6.6	5.2	42	207	138	457	239	28	39
9	49	15	8.8	6.6	5.2	40	185	136	384	200	25	34
10	34	15	8.7	6.6	5.2	60	163	147	330	168	23	*27
11	25	15	8.6	6.6	5.2	200	147	143	292	147	20	25
11	19	15	8.4	6.8	5.2	320	136	136	256	131	*19	22
13	17	15	8.4	7.0	5.2	350	129	127	220	*124	13	20
14	16	16	8.4	7.2	5.2	560	118	113	194	104	15	19
15	15	17	8.4	7.2	5.2	500	111	104	178	92	17	17
16	15	17	8.6	7.2	5.2	190	104	96	161	83	16	16
17	16	23	9.0	7.0	5.2	110	109	90	147	81	15	17
18	16	30	*9.2	6.8	5.2	87	113	83	*134	79	13	19
19	15	*25	9.4	6.8	*5.2	*423	115	81	124	69	16	27
20	16	25	9.4	6.6	5.2	*1,520	138	*109	118	61	16	22
21	16	19	9.4	6.4	5.2	1,210	152	115	113	56	16	34
22	15	17	9.4	6.2	5.4	1,000	*182	222	104	50	54	30
23	17	19	9.4	6.0	5.6	1,300	173	*2,400	94	47	224	30
24	16	17	9.6	5.8	5.8	1,600	154	2,940	87	44	154	34
25	15	15	10	5.8	6.0	1,740	134	1,470	81	39	87	49
26	15	8.0	10	5.6	12	1,630	115	885	75	34	90	69
27	*13	9.0	11	5.4	20	1,800	109	645	79	32	170	85
28	15	9.6	11	*5.3	35	1,330	104	518	438	32	94	131
29	15	9.8	11	5.3	.....	940	94	1,030	538	32	69	159
30	13	9.8	10	5.2	.....	780	85	1,660	1,060	28	75	147
31	13	.....	10	5.2	.....	645	.....	2,730	.....	27	61	.....
1959-60												
1	120	47	134	320	*81	40	3,400	310	518	150	22	45
2	109	45	*127	230	81	39	2,320	304	457	136	20	42
3	98	45	127	185	82	*38	1,740	518	410	124	*19	39
4	92	*71	131	160	82	37	1,390	417	370	111	19	32
5	161	90	127	200	82	37	*1,180	*367	333	102	19	25
6	*87	90	122	250	82	36	1,000	830	307	94	23	20
7	85	110	118	280	82	36	830	1,180	280	*85	25	*19
8	83	105	114	250	84	36	690	885	*259	79	22	17
9	77	120	109	*230	86	35	558	690	241	109	27	16
10	71	134	107	205	88	35	469	579	230	115	23	13
11	67	154	109	188	85	35	417	480	230	107	19	12
12	61	166	107	178	70	35	367	420	225	268	16	11
13	59	120	104	170	72	35	343	377	217	210	15	11
14	57	88	104	163	76	35	326	343	204	145	17	11
15	56	104	104	155	73	35	323	310	225	120	25	12
16	54	115	102	150	9	35	406	350	247	100	20	16
17	50	108	104	142	66	36	885	381	239	87	23	15
18	49	104	94	135	63	36	780	402	277	77	39	25
19	49	100	101	130	60	36	645	668	476	*69	50	*22
20	47	102	100	122	58	36	538	830	*384	63	39	20
21	49	104	94	110	55	37	469	885	317	56	28	17
22	47	113	92	104	52	37	410	805	259	50	27	16
23	47	131	96	96	50	38	363	690	241	45	25	19
24	47	161	85	91	48	39	333	780	217	44	22	35
25	44	150	94	87	46	40	314	1,490	200	42	23	42
26	44	140	113	84	44	41	304	1,460	178	42	20	45
27	49	125	163	82	43	150	298	1,210	163	37	16	42
28	47	120	286	82	42	1,000	292	970	159	35	70	35
29	47	130	457	81	41	5,000	289	805	168	32	170	32
30	45	138	500	80	.....	*8,680	301	668	166	28	85	28
31	47	.....	440	80	.....	6,740	.....	579	.....	23	56	.....

Boone River near Webster City, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	39.8	15.9	8.33	6.98	7.45	90.7	54.1	95.3	48.6	40.5	14.1	8.85
1956-57	7.04	13.9	13.0	11.5	19.2	84.0	33.7	106	391	59.3	16.6	17.6
1957-58	13.8	36.0	52.1	23.2	49.1	65.1	144	67.9	354	736	58.0	16.7
1958-59	20.0	15.6	9.49	6.61	7.07	606	195	541	598	223	51.9	68.2
1959-60	63.7	113	151	155	67.0	727	733	677	273	89.8	33.0	24.5

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.047	0.019	0.0099	0.0083	0.0088	0.107	0.064	0.113	0.058	0.048	0.017	0.010
1956-57	.0083	.016	.015	.014	.023	.100	.040	.126	.463	.070	.020	.021
1957-58	.015	.043	.062	.027	.058	.077	.171	.080	.419	.872	.069	.020
1958-59	.024	.018	.011	.0078	.0084	.718	.231	.641	.709	.264	.061	.081
1959-60	.075	.134	.179	.184	.079	.861	.868	.802	.323	.106	.039	.029

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.05	0.02	0.01	0.01	0.01	0.12	0.07	0.13	0.06	0.06	0.02	0.01
1956-57	.01	.02	.02	.02	.02	.11	.04	.14	.52	.08	.02	.02
1957-58	.02	.05	.07	.03	.06	.09	.19	.09	.47	1.01	.08	.02
1958-59	.03	.02	.01	.009	.009	.83	.26	.74	.79	.30	.07	.09
1959-60	.09	.15	.21	.21	.09	.99	.97	.92	.36	.12	.05	.03

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								126	2.02
1956	May 30, 1956	4.32	890	1.6	36.1	0.043	0.57	33.5	.54
1957	June 16, 1957	7.52	3,230	1.6	64.2	.076	1.02	69.9	1.11
1958	July 15, 1958	9.47	5,300	8.8	135	.160	2.10	130	2.10
1959	May 24, 1959	7.50	3,300	5.0	196	.232	3.16	220	3.55
1960	Mar. 29, 1960	12.10	8,960	11.0	260	.308	4.19		

Peak Discharge (base, 2,200 cfs)

1955-56: No peak above base.

1956-57: June 3 (9 p.m.) 3,230 cfs (7.52 ft.).

1957-58: June 3 (9 p.m.) 2,270 cfs (6.38 ft.); July 15 (4:30 p.m.) 5,300 cfs. (9.47 ft.).

1958-59: May 24 (4 a.m.) 3,300 cfs (7.50 ft.); June 1 (1:30 a.m.) 3,210 cfs (7.40 ft.).

1959-60: Mar. 29 (9:30 p.m.) 8,960 cfs (12.10 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 16-20, Nov. 24 to Dec. 31, 1955; Jan. 1 to Mar. 23, Nov. 20-30, Dec. 6-31, 1956; Jan. 1 to Feb. 27, Mar. 2, 3, 8, 9, Nov. 18-21, Nov. 29 to Dec. 1, Dec. 4, 9-14, 25-31, 1957; Jan. 1 to Feb. 25, Mar. 7-16, 18, Nov. 26 to Dec. 31, 1958; Jan. 1 to Mar. 17, Nov. 6-8, 13-18, 25-30, Dec. 6-9, 30, 31, 1959; Jan. 1-11, Jan. 15 to Mar. 29, 1960.

Des Moines River near Boone, Iowa

LOCATION.—Lat. 42°04'40", long. 93°55'55", in NE¼NE¼ sec. 24, T. 84 N., R. 27 W., on left bank 30 ft. upstream from Boone Water Department dam, 2 miles northwest of Boone, and 2.2 miles upstream from Bluff Creek.

DRAINAGE AREA.—5,511 square miles (revised in 1956).

RECORDS AVAILABLE.—April 1920 to September 1960 in reports of Geological Survey, December 1904 to April 1920 (fragmentary gage heights during high-water periods only) in reports of U. S. Weather Bureau.

GAGE.—Water-stage recorder. Concrete control since Oct. 20, 1932. Datum of gage is 871.52 ft. above mean sea level, adjustment of 1912. Prior to May 1, 1920, chain gage at site 2.5 miles downstream at datum 7.87 ft. lower. Apr. 9, 1920, to Sept. 13, 1924, chain gage 1.3 miles upstream at datum 1.65 ft. lower. Oct. 9, 1924, to Jan. 10, 1933, chain gage 0.3 mile upstream at datum 6.69 ft. lower. Jan. 11, 1933, to Sept. 30, 1934, staff gage at present site at datum 0.41 ft. lower. Oct. 1, 1934, to Feb. 6, 1935, staff gage at present site and datum.

AVERAGE DISCHARGE.—40 years, 1,557 cfs.

EXTREMES.—1920-60: Maximum discharge, 57,400 cfs June 22, 1954 (gage height, 25.35 ft., from graph based on hourly gage readings); no flow for short time on Jan. 9, 25, 1938, caused by manipulation of gates in control dam; minimum daily discharge, 17 cfs Jan. 28, 1940 (unaffected by gate operation).

Maximum discharge since at least 1904, that of June 22, 1954.

Flood of May 30, 1903, reached a stage of 25.4 ft., from high-water mark, site and datum then in use (discharge, 43,000 cfs).

REMARKS.—Slight diurnal fluctuation at low flow caused by powerplants above station. Bankfull stage is about gage height, 7 ft.

REVISIONS (water years).—WSP 1508: 1903(M), 1918(M), 1925-27, 1934. WSP 1708: 1955.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	70	*91	60	55	*56	*75	930	*252	1,010	252	132	112
2.....	65	91	60	55	57	75	990	252	728	356	166	112
3.....	65	96	65	55	58	93	1,090	301	527	385	158	118
4.....	60	166	62	55	58	145	1,010	328	693	415	218	132
5.....	*60	96	75	*60	58	220	890	328	576	314	560	217
6.....	65	75	75	55	54	265	818	385	890	356	*625	*314
7.....	496	65	75	46	54	218	782	446	608	370	608	252
8.....	370	60	65	65	58	217	728	510	510	462	576	166
9.....	196	70	55	55	55	264	642	510	385	*431	478	112
10.....	158	80	55	55	55	288	527	510	301	276	385	101
11.....	125	80	65	55	58	225	510	510	276	218	328	85
12.....	112	85	46	55	54	150	462	415	217	252	328	80
13.....	91	107	55	55	56	120	431	642	196	276	264	80
14.....	91	96	46	60	54	196	385	462	149	252	252	80
15.....	85	107	54	55	54	196	370	462	140	206	218	75
16.....	85	85	51	55	58	252	342	400	132	185	206	60
17.....	85	60	46	55	53	218	301	385	125	158	196	60
18.....	91	70	55	55	50	206	288	328	118	132	252	60
19.....	85	80	46	55	58	185	301	288	125	185	276	70
20.....	85	85	53	50	58	328	217	276	118	185	252	55
21.....	80	91	50	53	60	527	240	252	118	166	206	46
22.....	80	112	51	55	54	592	218	240	132	140	185	46
23.....	91	96	53	55	60	676	217	218	101	149	166	46
24.....	91	80	55	46	60	676	196	217	101	149	176	46
25.....	96	101	46	60	56	746	185	206	140	125	149	42
26.....	85	96	55	55	64	930	176	196	149	206	125	60
27.....	80	85	55	60	66	890	196	196	276	240	118	60
28.....	96	65	55	55	67	*1,090	218	*176	415	206	118	55
29.....	91	60	46	55	68	1,200	217	206	252	166	125	46
30.....	91	*60	55	55	.....	1,090	206	217	252	132	132	42
31.....	96	.....	55	55	.....	890	.....	1,100	.....	132	112	.....

Des Moines River near Boone, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	38	54	34	43	43	180	1,220	243	2,520	1,480	710	401
2	38	*54	48	60	43	144	1,110	171	2,380	1,260	644	401
3	*38	48	*112	69	43	136	1,110	200	2,140	1,630	611	*370
4	38	66	112	66	43	162	1,090	210	1,840	2,040	578	356
5	34	98	144	63	*44	144	*930	200	1,580	1,510	578	385
6	29	144	84	62	44	*128	818	171	*1,370	1,240	529	370
7	29	171	66	60	45	128	710	171	1,240	1,070	*481	356
8	29	200	73	58	54	112	628	162	1,130	1,050	401	328
9	29	136	78	54	66	113	545	180	900	1,070	342	289
10	34	120	91	54	78	180	481	*210	950	1,050	301	301
11	25	105	66	52	91	180	449	200	872	990	277	385
12	29	112	54	50	105	153	417	228	800	*930	265	370
13	38	120	50	50	120	180	433	301	836	890	243	328
14	54	153	54	48	91	200	401	356	1,620	872	254	301
15	60	120	57	47	153	164	370	370	3,030	800	254	342
16	84	91	58	45	91	254	370	370	6,950	782	232	370
17	84	105	58	45	91	190	370	385	5,480	545	254	370
18	84	91	52	45	86	232	342	433	3,350	545	254	289
19	66	84	64	45	81	277	328	578	2,340	513	243	265
20	60	91	66	45	73	289	328	529	1,840	465	243	243
21	54	66	66	45	80	277	314	529	1,650	465	254	289
22	48	66	66	45	73	289	301	812	1,530	449	232	254
23	48	91	64	44	82	370	265	1,510	1,390	611	210	254
24	48	91	62	46	105	497	254	1,300	1,260	497	210	254
25	48	112	60	46	120	660	265	1,200	1,110	417	221	243
26	48	91	54	46	120	694	289	1,170	1,370	370	190	232
27	43	84	60	47	105	818	301	1,010	1,650	385	254	210
28	43	91	68	46	162	970	301	854	1,690	513	277	210
29	54	60	72	43	.....	1,260	277	818	1,530	578	433	190
30	60	38	78	43	.....	1,350	254	1,600	1,530	644	433	190
31	54	.....	105	43	.....	1,280	.....	2,520	.....	677	465	.....
1957-58												
1	171	254	330	260	205	903	356	1,010	612	611	644	136
2	190	277	400	325	190	810	417	970	*1,650	1,750	594	128
3	*180	301	385	380	190	830	481	930	1,530	1,030	545	120
4	190	342	342	460	185	770	545	910	6,030	1,460	*497	120
5	162	301	*433	400	180	680	728	836	6,250	1,720	433	144
6	162	301	513	350	180	720	1,150	800	3,850	1,530	401	144
7	171	*301	401	370	*175	*710	1,530	764	2,740	1,390	417	141
8	200	301	356	280	160	594	1,630	*764	2,540	1,260	385	128
9	221	265	342	230	150	562	1,630	728	2,740	1,130	417	112
10	232	277	300	*190	140	497	1,630	710	2,520	1,050	356	112
11	200	254	220	185	130	433	*1,580	694	2,180	*1,370	301	98
12	190	243	250	195	122	529	1,480	628	1,860	1,600	254	91
13	190	314	270	205	116	497	1,370	594	1,860	2,120	254	84
14	162	328	301	210	112	497	1,240	578	1,720	2,000	221	105
15	180	277	314	220	107	497	1,170	644	1,460	3,700	190	136
16	171	356	314	230	102	433	1,110	513	1,240	8,900	221	136
17	221	400	328	235	98	385	1,050	562	1,090	6,530	190	*128
18	200	470	370	240	94	328	970	562	1,030	4,000	210	98
19	153	520	385	250	91	328	990	594	930	3,020	180	105
20	171	450	417	260	88	356	930	628	872	2,540	210	98
21	162	380	449	265	85	301	890	594	746	2,250	232	91
22	210	342	481	270	83	301	854	513	728	2,000	232	84
23	328	370	497	270	98	314	872	481	800	1,650	190	91
24	277	385	465	270	200	314	818	481	970	1,480	180	91
25	254	410	420	265	400	328	890	449	970	1,240	171	78
26	243	440	380	260	800	328	836	401	970	1,050	162	84
27	221	475	350	255	890	356	890	370	950	1,050	153	78
28	221	500	315	240	950	342	990	342	836	872	144	66
29	232	520	290	235	.....	342	1,050	314	728	782	144	60
30	243	300	265	225	.....	356	1,050	314	660	746	144	66
31	232	.....	220	220	.....	356	.....	356	.....	710	144	.....

Des Moines River near Boone, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	56	68	54	56	34	95	1,780	460	12,600	4,340	174	460
2	62	68	60	52	34	90	1,690	415	12,800	4,210	184	505
3	56	68	70	49	33	150	1,460	430	11,400	3,330	248	684
4	56	68	70	47	33	110	1,190	445	9,460	2,520	360	552
5	50	68	60	46	33	100	1,100	475	7,500	2,110	445	400
6	50	62	52	44	33	95	995	535	5,770	1,780	335	322
7	56	68	47	42	34	110	911	650	4,860	1,460	298	260
8	82	68	43	41	35	120	814	995	4,080	1,260	260	335
9	155	62	54	41	36	140	738	995	3,330	1,100	204	*335
10	146	62	54	42	36	190	650	1,040	2,570	1,020	194	310
11	120	62	51	43	36	270	601	1,100	2,080	871	*155	237
12	89	82	49	44	36	370	508	1,040	1,860	795	146	204
13	75	82	47	44	37	500	552	1,040	1,610	719	164	204
14	82	82	46	43	37	700	505	953	1,460	*650	164	194
15	75	68	45	41	38	640	460	852	1,330	618	137	164
16	75	75	45	39	39	700	445	776	1,260	618	146	155
17	68	96	*45	38	39	450	445	719	*1,190	508	174	164
18	68	*104	45	38	*39	350	430	667	1,100	552	137	184
19	62	128	45	39	39	800	490	634	1,020	490	174	184
20	62	137	46	39	40	2,900	568	*932	932	445	174	215
21	62	146	48	39	43	3,680	667	1,240	852	348	146	204
22	62	120	50	39	45	*2,920	*852	2,930	776	372	128	184
23	68	104	54	39	46	3,820	1,020	8,060	757	348	335	248
24	68	112	58	38	48	4,080	995	10,000	667	285	911	260
25	75	112	61	38	53	3,330	871	*9,040	634	285	1,080	237
26	68	68	64	37	58	3,820	757	*6,810	618	272	974	335
27	68	52	66	36	75	4,600	650	5,510	601	248	953	684
28	*68	62	68	*36	95	3,680	650	4,600	852	184	953	601
29	68	70	70	35	.....	2,830	584	5,120	2,110	237	757	584
30	68	50	66	35	.....	2,200	535	7,080	2,260	174	650	568
31	68	.....	62	35	.....	1,920	.....	9,460	.....	174	490	.....
1959-60												
1	634	260	*800	1,600	*500	260	*21,200	3,010	6,680	2,140	505	667
2	650	285	814	1,250	490	*250	16,600	2,830	6,030	1,800	*490	568
3	618	*237	650	900	480	245	14,200	2,740	5,580	1,610	460	445
4	552	372	601	550	470	240	*12,300	2,790	4,990	1,500	430	385
5	520	430	520	470	460	240	10,900	*3,100	4,600	1,400	400	385
6	490	568	460	640	460	235	9,740	4,600	4,210	*1,280	415	372
7	*568	490	390	940	450	230	8,900	5,120	*3,950	1,190	475	*310
8	415	490	445	1,200	445	230	8,200	4,600	3,080	1,120	430	285
9	490	430	584	1,150	445	230	7,500	3,820	3,400	1,240	400	285
10	445	475	505	1,100	475	225	6,810	3,330	3,180	1,430	360	260
11	430	568	584	1,080	430	225	6,290	3,010	2,900	1,260	335	248
12	372	618	505	1,060	440	220	5,770	2,650	2,620	1,750	322	285
13	322	580	490	1,000	450	220	5,380	2,380	2,440	2,830	215	348
14	400	450	430	995	460	220	4,990	2,170	2,290	2,720	285	490
15	372	280	490	814	460	220	4,600	2,080	2,140	2,230	285	505
16	348	340	535	620	450	220	4,470	2,030	*2,110	1,750	260	505
17	335	430	505	640	440	225	5,380	2,030	2,440	1,460	348	475
18	335	568	490	700	420	225	6,290	2,030	4,860	1,330	348	475
19	310	505	475	750	410	230	5,640	2,410	6,030	1,150	385	460
20	248	568	475	680	390	235	5,120	3,180	5,510	1,080	385	475
21	298	535	430	700	380	240	4,600	3,680	4,730	1,020	400	445
22	298	552	490	730	370	248	4,210	5,510	4,210	974	322	430
23	298	505	568	750	360	248	3,950	6,940	3,820	932	272	460
24	298	568	475	750	350	285	3,820	7,640	3,470	852	260	520
25	285	650	415	740	330	285	4,210	8,760	3,010	757	226	684
26	285	570	445	720	310	310	3,540	10,300	2,520	700	164	667
27	215	480	460	700	290	272	3,260	11,600	2,260	719	215	684
28	248	410	757	680	280	450	3,100	11,400	2,140	634	285	738
29	285	550	1,150	650	270	5,000	3,100	10,000	2,410	618	335	757
30	285	670	1,920	590	.....	24,000	3,260	8,620	2,320	584	650	776
31	310	.....	2,060	550	.....	27,900	.....	7,500	.....	552	667	.....

Des Moines River near Boone, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	113	86.4	56.1	55.2	57.6	427	469	362	325	241	261	94.3
1956-57	47.2	98.4	70.2	50.2	83.3	387	509	613	1,929	850	351	305
1957-58	205	355	358	266	226	484	1,038	614	1,769	2,017	284	105
1958-59	73.8	82.5	54.7	41.1	42.3	1,476	799	2,742	3,278	1,045	376	332
1959-60	386	481	643	832	413	2,060	6,911	4,809	3,678	1,310	365	480

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.021	0.016	0.010	0.010	0.010	0.077	0.085	0.066	0.059	0.044	0.047	0.017
1956-57	.009	.018	.013	.009	.015	.070	.092	.111	.350	.154	.064	.055
1957-58	.037	.061	.065	.048	.041	.088	.188	.111	.321	.366	.052	.019
1958-59	.013	.015	.0099	.0075	.0077	.268	.145	.498	.595	.190	.068	.060
1959-60	.070	.087	.117	.151	.075	.374	1.25	.889	.667	.238	.066	.087

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.02	0.02	0.01	0.01	0.01	0.09	0.10	0.08	0.07	0.05	0.05	0.02
1956-57	.01	.02	.01	.01	.02	.08	.10	.13	.39	.18	.07	.06
1957-58	.04	.07	.07	.06	.04	.10	.21	.13	.36	.42	.06	.02
1958-59	.02	.02	.01	.009	.008	.31	.16	.57	.66	.22	.08	.07
1959-60	.08	.10	.13	.17	.08	.43	1.40	1.02	.74	.27	.08	.10

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								758	1.85
1956	May 31, 1956	1.11	1,550	42	213	0.039	0.53	209	.52
1957	June 16, 1957	5.35	8,300	25	441	.080	1.08	500	1.22
1958	July 16, 1958	6.22	9,500	60	645	.117	1.58	586	1.45
1959	June 1, 1959	8.91	13,200	33	866	.157	2.14	975	2.40
1960	Mar. 31, 1960	17.08	29,800	164	1,868	.339	4.60		

Peak Discharge (base, 7,500 cfs)

1955-56: No peak above base.

1956-57: June 16 (2:30 p.m.) 8,300 cfs (5.35 ft.).

1957-58: June 4 (5:30 p.m.) 7,700 cfs (4.95 ft.); July 16 (3 p.m.) 9,500 cfs (6.22 ft.).

1958-59: May 24 (7 p.m.) 10,200 cfs (6.91 ft.); June 1 (9 p.m.) 13,200 cfs (8.91 ft.).

1959-60: Mar. 31 (2:30 a.m.) 29,800 cfs (17.08 ft.); May 27 (7 p.m.) 11,800 cfs (8.00 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge affected by ice Nov. 30, Dec. 3-10, 1955; Jan. 20, 21, Feb. 1-17, 19-29, Mar. 3-6, 11, 12, Dec. 8, 13, 15-19, 23-25, 27-29, 1956; Jan. 2, 3, 5-8, 11-30, Feb. 1-7, 18-23, Nov. 17-21, Nov. 24 to Dec. 2, Dec. 10-13, 25-31, 1957; Jan. 1 to Feb. 25, Mar. 1-6, Nov. 27 to Dec. 31, 1958; Jan. 1 to Mar. 20, Nov. 13-17, Nov. 26 to Dec. 1, Dec. 5-7, 1959; Jan. 1-11, Jan. 16 to Feb. 7, Feb. 12 to Mar. 21, Mar. 28-30, 1960.

Des Moines River at Des Moines, Iowa

LOCATION.—Lat. 41°36'45", long. 93°37'15", in NE¼NE¼ sec. 34, T. 79 N., R. 24 W., on right bank 5 ft. upstream from Second Avenue Bridge in Des Moines, 1.8 miles upstream from Center Street dam, 2.8 miles upstream from Raccoon River, and 4.5 miles downstream from Beaver Creek.

DRAINAGE AREA.—6,245 square miles (revised in 1956).

RECORDS AVAILABLE.—October 1902 to August 1903, October 1914 to February 1915 (gage heights and discharge measurements only); May 1905 to July 1906, March 1915 to September 1960 in reports of U. S. Geological Survey. Monthly discharge only for some periods, published in WSP 1308. Gage-height records collected at Locust or Walnut Street bridges, 1893-94, 1897-1941, and at present site, 1942-60 are contained in reports of U. S. Weather Bureau.

GAGE.—Water-stage recorder and concrete multiple-arch control dam. Datum of gage is 773.68 ft. above mean sea level, datum of 1929, and at city datum. Prior to Aug. 21, 1941, staff, chain, or recording gages at several sites within 3 miles of present site at various datums.

AVERAGE DISCHARGE.—45 years, 1,979 cfs.

EXTREMES.—1902-3, 1905-6, 1914-60: Maximum discharge, 60,200 cfs June 24, 1954 (gage height, 30.16 ft.).

1915-60: Minimum unregulated discharge, 24 cfs Jan. 29, 30, 1940; operation of sluice gates in control dam at times has caused brief periods of no flow.

REMARKS.—Records of chemical analyses for the period November 1954 to June 1955, water temperatures and suspended-sediment loads for the period November 1954 to September 1960 are published in reports of U. S. Geological Survey. Bankfull stage is about gage height, 23 ft.

REVISIONS (water years).—WSP 1308: 1915-19, 1921, 1923, 1933, 1943 (M).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	68	92	*60	60	64	82	922	275	*755	202	135	122
2.....	72	92	61	60	64	95	907	295	1,080	186	135	110
3.....	*72	92	62	60	*64	105	1,000	336	740	219	135	98
4.....	68	92	62	60	64	125	1,070	*305	560	275	150	194
5.....	68	*92	62	60	64	165	1,020	336	560	305	128	237
6.....	68	128	62	61	63	237	907	369	560	285	219	228
7.....	65	98	62	*62	62	179	830	380	654	285	424	228
8.....	78	81	63	62	60	128	755	413	830	325	510	*275
9.....	336	76	62	62	60	210	710	485	560	305	498	228
10.....	255	68	59	62	60	295	641	522	435	369	*448	172
11.....	235	65	58	62	62	228	548	560	347	*325	380	135
12.....	205	68	58	62	63	210	485	560	275	245	325	122
13.....	170	72	58	62	64	190	448	510	245	219	305	98
14.....	150	72	58	62	64	240	424	695	219	265	275	81
15.....	130	87	57	60	64	200	358	641	194	369	228	81
16.....	110	63	55	60	65	200	347	587	172	228	237	76
17.....	100	58	53	60	66	250	336	498	165	179	202	72
18.....	98	72	50	60	66	300	325	460	142	172	219	72
19.....	98	81	50	60	68	260	305	424	142	157	194	68
20.....	96	76	50	60	68	215	305	380	135	135	228	68
21.....	92	81	50	60	68	250	305	*369	135	165	237	81
22.....	92	98	50	60	68	380	255	336	110	165	228	76
23.....	96	87	52	60	68	448	245	305	104	150	186	68
24.....	100	65	56	60	72	628	255	315	98	135	172	63
25.....	100	92	58	60	72	755	255	295	87	135	157	65
26.....	100	76	58	60	72	860	237	295	104	135	157	63
27.....	94	65	59	60	72	938	237	285	122	116	150	63
28.....	100	56	60	60	*76	1,020	265	275	122	255	142	65
29.....	96	58	60	60	76	*1,050	985	275	255	194	128	65
30.....	94	58	60	62	.....	1,150	275	640	245	179	135	68
31.....	92	.....	60	64	.....	1,140	.....	907	.....	150	128	.....

Des Moines River at Des Moines, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1956-57													
1		*68	81	116	100	54	210	1,310	347	2,340	1,970	682	435
2		63	81	128	90	53	219	1,260	325	2,480	1,870	695	448
3		63	76	128	83	54	172	1,170	305	2,440	1,680	695	413
4		62	98	128	80	54	210	1,150	275	*2,200	1,620	654	369
5		62	98	157	78	55	228	1,150	275	1,910	2,600	614	347
6		60	98	128	76	56	228	1,000	275	1,720	2,160	574	347
7		58	98	68	74	66	186	892	275	1,550	1,760	560	358
8		58	122	74	72	74	135	770	255	1,400	1,460	498	347
9		57	150	80	69	90	150	641	275	1,260	1,310	460	325
10		57	172	98	66	100	150	600	380	1,170	1,260	402	305
11		56	150	88	64	110	179	510	413	1,050	1,300	358	336
12		56	135	76	62	122	202	460	413	969	*1,190	336	336
13		59	128	62	60	120	202	424	510	938	1,070	315	391
14		98	122	58	59	120	202	413	654	922	984	315	347
15		68	*135	56	58	155	202	*413	682	1,640	922	285	325
16		81	172	60	57	168	202	413	654	5,780	876	265	295
17		76	165	*57	56	170	194	402	641	*9,200	800	255	*347
18		76	135	54	56	180	255	402	587	8,720	710	255	347
19		76	135	60	56	*185	255	413	548	7,300	668	*237	325
20		76	135	66	56	176	*285	380	*628	5,040	628	228	275
21		76	110	72	56	158	305	347	888	3,640	574	245	265
22		72	60	77	64	140	295	347	785	2,900	574	255	245
23		68	76	83	*66	134	285	336	695	2,600	548	237	245
24		68	104	74	61	138	315	315	1,100	2,320	*695	219	237
25		72	116	68	57	144	391	275	1,350	2,000	668	210	237
26		68	110	78	58	150	510	380	1,370	1,890	535	210	210
27		65	122	89	60	138	600	668	1,330	2,000	498	285	210
28		63	128	84	57	175	682	498	1,190	2,180	628	295	202
29		63	104	92	56		785	413	1,020	2,220	668	315	194
30		68	116	102	54		1,050	380	907	2,100	682	336	179
31		72		110	54		1,280		1,280		654	424	
1957-58													
1		172	305	450	220	240	1,590	498	1,150	535	695	1,680	255
2		165	325	470	310	245	1,390	485	1,150	*522	2,980	1,550	*228
3		157	336	500	400	250	1,310	510	1,120	1,420	4,300	1,510	237
4		157	315	424	500	250	1,350	*574	1,050	1,760	6,870	*1,170	219
5		150	336	485	540	220	1,390	628	1,020	4,710	6,610	1,000	307
6		150	358	600	400	180	1,140	755	984	5,590	5,260	845	587
7		237	347	500	350	180	*1,000	1,070	*938	4,060	*4,160	755	587
8		202	336	420	380	195	1,050	1,550	907	3,220	3,000	725	413
9		202	305	360	310	205	922	1,740	860	3,320	2,280	682	369
10		194	270	300	280	175	860	1,760	860	3,320	1,830	641	358
11		194	310	245	270	160	815	1,760	800	3,110	2,140	614	305
12		202	347	285	270	150	740	1,660	770	2,700	4,600	535	245
13		186	315	310	280	135	725	1,570	725	2,960	3,740	485	245
14		172	315	380	300	125	770	1,440	695	3,110	3,840	472	275
15		*194	380	390	320	115	755	1,310	654	2,600	3,420	448	305
16		172	380	400	340	110	725	1,220	682	*2,060	*4,930	391	369
17		157	380	400	350	*105	695	*1,170	654	1,850	8,060	391	336
18		165	485	*440	350	98	654	1,080	641	1,780	6,840	*380	315
19		202	424	470	350	94	*614	1,020	*628	1,570	5,590	369	295
20		202	*370	500	340	92	535	1,000	641	1,240	6,150	413	275
21		172	460	550	*325	90	548	969	668	1,100	*5,260	725	265
22		179	470	580	320	94	560	922	600	984	4,160	574	255
23		237	424	640	310	115	498	892	600	938	3,220	485	245
24		305	510	560	300	250	498	892	548	892	2,600	435	255
25		369	560	520	290	700	498	860	548	1,030	2,140	391	245
26		325	587	460	280	1,100	485	907	535	1,030	1,820	347	228
27		315	587	500	280	1,400	498	892	483	984	1,620	347	210
28		315	587	450	270	1,700	510	922	460	1,020	1,620	315	202
29		275	587	370	260		498	1,070	448	907	1,350	305	202
30		255	336	280	250		498	1,150	424	815	2,160	295	179
31		255		250	220		498		644		2,200	265	

Des Moines River at Des Moines, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	179	135	*117	80	47	1,120	3,530	1,390	14,100	4,380	325	695
2	179	135	130	72	*47	1,400	3,320	1,240	*14,900	5,590	315	695
3	172	142	140	69	47	1,310	3,110	1,170	16,100	5,150	305	710
4	172	142	150	66	46	1,200	2,700	1,100	14,900	4,270	295	770
5	165	128	100	64	45	500	2,260	1,220	12,600	3,530	347	725
6	*172	128	90	62	45	230	1,990	1,330	9,920	3,000	*448	560
7	165	*135	100	60	47	*300	1,800	1,310	7,530	2,500	460	472
8	172	135	94	56	48	370	1,610	*1,370	6,150	2,160	420	*380
9	285	128	90	*56	50	510	*1,410	1,720	5,260	*1,910	380	358
10	210	128	85	56	50	710	1,310	2,210	4,380	1,680	315	380
11	210	122	80	56	50	1,530	1,210	2,400	3,640	1,570	295	369
12	228	128	75	56	50	2,100	1,080	2,400	3,110	1,310	255	358
13	210	128	72	60	50	2,160	1,030	2,200	2,700	1,220	228	305
14	186	142	70	68	50	2,220	1,000	2,000	2,140	1,080	228	265
15	172	142	68	60	50	1,650	938	1,850	2,220	984	275	265
16	165	150	68	55	52	3,700	876	1,640	1,990	938	305	228
17	157	297	68	50	51	3,300	830	1,510	1,850	1,030	237	219
18	157	245	70	50	51	2,320	800	1,480	1,780	938	237	228
19	157	219	74	47	51	1,950	830	1,570	1,640	830	228	255
20	150	202	78	45	51	4,060	1,050	1,460	1,510	725	202	285
21	157	219	82	46	60	4,930	1,260	2,800	1,390	654	228	255
22	142	219	84	47	74	5,040	1,680	3,640	1,260	587	210	275
23	142	219	86	48	120	4,160	2,040	4,380	1,150	522	210	245
24	135	194	88	50	230	4,160	2,060	7,950	1,140	510	612	228
25	135	194	90	50	210	4,600	1,910	9,680	1,000	460	668	315
26	135	128	96	50	270	5,150	1,700	9,920	954	424	969	380
27	142	113	104	50	420	6,610	1,910	8,240	938	413	1,020	325
28	142	133	108	50	700	6,610	1,990	6,840	954	391	954	574
29	142	130	108	50	.....	5,590	1,780	6,610	1,460	402	969	654
30	142	95	102	48	.....	4,490	1,550	8,240	3,740	391	892	628
31	135	.....	95	47	.....	3,840	.....	10,900	.....	347	770	.....
1959-60												
1	641	347	600	2,300	860	480	*35,000	4,790	8,960	4,140	*755	1,080
2	725	358	700	1,800	820	465	35,400	4,600	7,790	3,690	695	969
3	770	*347	780	1,400	790	450	27,800	4,320	6,950	3,240	611	845
4	755	500	790	1,100	760	440	21,100	4,050	6,350	2,860	587	710
5	785	760	740	800	730	430	16,800	4,050	5,950	2,600	574	574
6	740	760	620	550	730	420	14,100	8,190	5,360	*2,040	984	*560
7	641	730	500	600	720	415	12,600	*12,600	*5,170	1,890	830	560
8	*654	700	540	720	*720	400	11,100	10,200	4,790	1,800	770	472
9	600	680	580	1,000	710	400	9,680	8,240	4,300	2,363	682	435
10	560	660	640	1,500	680	400	8,720	6,550	4,000	3,220	654	402
11	560	650	640	1,900	680	400	8,240	5,550	3,700	3,000	641	369
12	510	660	620	2,100	680	400	7,570	4,980	3,500	2,900	600	325
13	485	680	600	2,300	680	400	6,950	4,410	3,300	3,220	574	347
14	448	620	580	2,100	700	400	6,350	3,850	3,000	3,840	472	347
15	448	600	570	1,800	730	400	*6,150	3,500	2,850	3,640	535	472
16	472	450	550	1,550	720	400	5,750	3,950	2,800	3,220	510	560
17	455	415	540	1,350	700	410	6,150	2,100	2,750	2,600	485	587
18	424	450	540	1,150	670	420	8,010	2,700	3,000	2,240	1,190	614
19	402	*610	540	1,050	650	430	8,480	3,000	5,170	1,990	1,370	560
20	391	660	540	1,150	640	440	7,570	3,250	6,150	1,800	1,070	548
21	347	680	540	1,200	630	440	6,550	3,850	5,950	1,640	938	560
22	336	670	530	1,200	620	440	5,950	4,980	5,170	1,550	860	535
23	380	640	520	1,150	620	440	5,550	6,150	4,700	1,460	740	587
24	336	700	520	1,130	600	445	5,170	7,350	4,410	1,370	654	755
25	347	785	520	1,100	600	450	5,170	10,200	4,140	1,240	817	1,140
26	347	670	530	1,050	570	440	5,360	13,600	3,780	1,190	1,120	1,080
27	347	620	560	1,000	540	430	4,980	14,600	3,420	1,070	785	1,030
28	336	540	700	970	500	1,200	4,600	14,100	3,240	1,030	757	969
29	305	480	1,000	930	500	3,800	4,320	13,600	3,510	922	1,370	984
30	325	*550	1,400	900	.....	*8,400	4,700	12,400	3,780	892	1,390	1,020
31	347	.....	1,800	900	.....	20,300	.....	10,400	.....	815	1,140	.....

Des Moines River at Des Moines, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	116	78.7	57.6	60.7	66.2	404	509	430	338	220	232	115
1956-57	67.3	118	86.2	65.0	119	341	604	666	2,796	1,083	378	308
1957-58	214	402	435	321	313	794	1,076	738	2,036	3,724	630	294
1958-59	168	158	92.3	55.6	110	2,831	1,686	3,605	4,757	1,610	438	413
1959-60	490	599	672	1,282	674	1,458	10,530	6,971	4,598	2,241	813	667

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.019	0.013	0.0092	0.010	0.011	0.065	0.082	0.069	0.054	0.035	0.037	0.018
1956-57	.011	.019	.014	.010	.019	.055	.097	.107	.448	.173	.061	.049
1957-58	.034	.064	.070	.051	.050	.127	.172	.118	.326	.596	.101	.047
1958-59	.027	.025	.015	.0089	.018	.454	.270	.577	.762	.258	.070	.066
1959-60	.078	.096	.108	.206	.108	.233	1.69	1.12	.736	.359	.130	.107

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.02	0.01	0.01	0.01	0.01	0.07	0.09	0.08	0.06	0.04	0.04	0.02
1956-57	.01	.02	.02	.01	.02	.05	.11	.12	.50	.20	.07	.06
1957-58	.04	.07	.08	.06	.05	.15	.19	.14	.36	.69	.12	.05
1958-59	.03	.03	.02	.01	.02	.52	.30	.67	.85	.30	.08	.07
1959-60	.09	.11	.12	.24	.12	.27	1.88	1.29	.82	.41	.15	.12

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								937	2.03
1956	May 30, 1956	13.44	1,420	50	219	0.035	0.46	221	0.47
1957	June 17, 1957	17.15	9,680	53	552	.088	1.20	617	1.34
1958	July 17, 1958	16.83	8,480	90	919	.147	2.00	866	1.89
1959	June 3, 1959	19.72	16,100	45	1,333	.213	2.90	1,445	3.14
1960	Apr. 1, 1960	25.25	36,200	305	2,577	.413	5.62		

Peak Discharge (base, 8,000 cfs)

1955-56: No peak above base.

1956-57: June 17 (7 p.m.) 9,680 cfs (17.15 ft.).

1957-58: July 4 (5 p.m.) 8,000 cfs (16.69 ft.); July 17 (5 p.m.) 8,480 cfs (16.83 ft.).

1958-59: May 26 (7 to 11 a.m.) 10,200 cfs (17.42 ft.); June 3 (10 a.m. to 2 p.m.) 16,100 cfs (19.72 ft.).

1959-60: Apr. 1 (6 p.m.) 36,200 cfs (25.25 ft.); Apr. 19 (6 a.m.) 8,720 cfs (16.75 ft.); May 7 (10 a.m.) 13,100 cfs (18.61 ft.); May 27 (2 a.m.) 14,600 cfs (19.25 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 29 to Dec. 5, 1955; Jan. 1 to Feb. 18, Mar. 1-4, 12-21, Dec. 8, 9, 11-31, 1956; Jan. 1 to Feb. 28, Nov. 10, 11, 20-22, Dec. 1-3, 7-10, 13-31, 1957; Jan. 1 to Feb. 28, Nov. 27 to Dec. 31, 1958; Jan. 1 to Mar. 8, Mar. 15-17, Nov. 15 to Dec. 31, 1959; Jan. 1 to Mar. 29, 1960. No gage-height record Oct. 11 to Nov. 1, 1955. Stage-discharge relation indefinite Dec. 11-26, 1955; Oct. 7-12, 1956; Nov. 4-14, 1959; May 14-21, June 9-18, 1960.

Big Cedar Creek near Varina, Iowa

LOCATION.—Lat. 42°41'21", long. 94°47'55", in NE¼NE¼ sec. 24, T. 91 N., R. 34 W., on left bank 5 ft. downstream from highway bridge, 3.1 miles upstream from drainage ditch 74, and 5.5 miles northeast of Varina.

DRAINAGE AREA.—80.0 square miles.

RECORDS AVAILABLE.—October 1959 to September 1960.

GAGE.—Water-stage recorder. Datum of gage 1,225.12 ft. above mean sea level, datum of 1929.

EXTREMES.—Maximum discharge during year, 1,020 cfs Mar. 27 (gage height 11.42 ft.) from rating curve extended above 450 cfs by logarithmic plotting; maximum gage height, 13.13 ft. Mar. 27 (ice jam); minimum daily discharge, 2.0 cfs Aug. 23.

REMARKS.—High banks are never overtopped.

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1959-60												
1.....	2.3	2.5	4.7	26	5.5	3.4	261	12	41	40	4.5	8.2
2.....	2.9	2.3	5.0	18	5.4	3.2	341	11	34	34	4.2	6.2
3.....	5.5	2.5	4.9	13	5.3	3.1	222	10	30	28	4.0	4.6
4.....	5.1	2.9	4.8	8.0	5.2	3.0	*177	10	27	24	3.7	4.0
5.....	4.5	4.0	4.0	9.4	5.2	3.0	135	11	23	21	6.9	3.6
6.....	3.7	2.1	4.3	11	5.2	2.9	*105	14	21	19	7.4	3.0
7.....	3.3	2.6	4.5	11	5.2	2.8	78	15	20	16	4.5	2.8
8.....	3.6	3.1	4.6	10	5.2	2.7	55	14	19	15	3.7	4.6
9.....	4.0	3.5	4.8	9.2	5.2	2.6	38	12	17	15	3.4	4.5
10.....	3.6	4.0	5.0	8.4	5.2	2.6	33	12	17	15	*3.3	3.4
11.....	3.2	4.5	5.2	7.8	5.2	2.6	30	10	16	14	3.2	3.0
12.....	2.9	5.0	5.1	7.2	5.3	2.5	26	9.8	16	44	2.9	2.5
13.....	2.9	2.4	4.9	6.8	5.3	2.5	27	9.5	16	48	2.8	2.5
14.....	2.8	2.7	*4.8	6.4	5.3	2.5	27	9.3	15	29	2.5	2.6
15.....	2.8	3.2	4.6	6.0	*5.2	2.5	27	8.4	14	22	2.4	2.6
16.....	2.6	3.7	4.4	5.6	5.1	2.4	28	*9.0	*370	17	2.3	2.4
17.....	2.4	4.1	4.2	5.6	4.9	2.4	29	8.4	303	15	2.9	2.3
18.....	2.4	4.6	4.1	5.6	4.8	2.4	*26	9.3	202	*14	4.5	3.2
19.....	2.4	5.2	4.0	5.8	4.7	2.4	24	13	126	12	3.7	*2.9
20.....	2.4	*5.7	4.0	5.8	4.6	2.4	24	92	*84	11	3.0	2.5
21.....	*2.4	6.2	4.0	*5.8	4.4	*2.4	20	315	62	10	2.5	2.4
22.....	2.6	7.0	4.0	6.0	4.2	2.4	18	233	52	9.5	2.4	2.3
23.....	2.9	6.4	4.0	6.1	4.1	2.5	17	135	44	8.8	2.0	2.9
24.....	2.5	5.8	4.1	6.2	4.0	2.5	16	117	36	8.2	2.1	5.5
25.....	2.4	5.2	4.3	6.2	3.9	2.7	16	182	31	7.6	2.8	6.4
26.....	2.4	4.7	7.6	6.1	3.7	3.0	14	192	28	7.4	3.2	5.3
27.....	2.1	4.3	24	6.0	3.6	100	13	122	26	6.6	2.5	4.5
28.....	2.1	4.0	105	5.9	3.5	826	13	84	58	6.2	17	4.0
29.....	2.1	4.2	81	5.8	3.5	614	14	66	90	5.7	98	3.7
30.....	2.3	4.5	50	5.7	.....	*110	13	52	52	5.3	29	3.6
31.....	2.4	.....	36	5.6	.....	244	.....	46	.....	4.8	13	.....

Big Cedar Creek near Varina, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1959-60.....	2.95	4.10	13.4	8.13	4.76	73.0	62.2	59.5	63.0	17.2	8.07	3.73

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1959-60.....	0.037	0.051	0.168	0.102	0.060	0.912	0.778	0.744	0.788	0.215	0.101	0.047

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1959-60.....	0.04	0.06	0.19	0.12	0.06	1.05	0.87	0.86	0.88	0.25	0.12	0.05

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year			
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches	
	Date	Gage height in feet	Discharge							
1960....	Mar. 27, 1960.	(1)11.42	1,020	2.0	26.7	0.334	4.55	.....	.....

(1) Maximum gage height, 13.13 ft. Mar. 27, 1960 (ice jam).

Peak Discharge (base, 400 cfs)

1959-60: Mar. 27 (12 p.m.) 1,020 cfs (11.42 ft.); June 16 (2 p.m.) 466 cfs (8.27 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 5 to Dec. 24, Dec. 30, 31, 1959; Jan. 1 to Mar. 27, 1960.

North Raccoon River near Sac City, Iowa

LOCATION.—Lat. 42°20'20", long. 94°59'10", in NE ¼ NW ¼ sec. 24, T. 87 N., R. 36 W., on right bank 15 ft. downstream from highway bridge, 0.2 mile upstream from Indian Creek and 4.5 miles south of Sac City.

DRAINAGE AREA.—713 square miles.

RECORDS AVAILABLE.—June 1958 to September 1960.

GAGE.—Water-stage recorder. Datum of gage 1,157.65 ft. above mean sea level (levels by Sac County Engineer).

EXTREMES.—1958-60: Maximum discharge, 9,020 cfs Mar. 30, 1960 (gage height, 16.73 ft.); minimum daily, 1.0 cfs Jan. 25 to Feb. 5, 1959.

Flood of June 21, 1954 reached a stage of 15.61 ft. from floodmark (discharge, 7,000 cfs).

REMARKS.—Bankfull stage is about gage height 14 ft.

Daily Discharge, in Cubic Feet per Second, for Period June to September 1958

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1958									
1.....	80	91	48	11	16.....	244	173	20	16
2.....	100	244	46	10	17.....	236	147	18	12
3.....	965	111	50	9.5	18.....	228	133	18	10
4.....	*4,200	110	44	8.5	19.....	212	153	17	9.0
5.....	*3,190	133	*38	8.5	20.....	176	155	16	8.5
6.....	*2,340	164	37	9.0	21.....	153	130	14	8.1
7.....	1,290	124	38	9.0	22.....	146	109	13	7.7
8.....	975	103	36	9.5	23.....	143	94	14	8.1
9.....	840	94	31	8.5	24.....	153	82	15	7.7
10.....	675	*95	28	7.7	25.....	171	73	16	7.7
11.....	536	199	25	7.3	26.....	151	64	14	7.3
12.....	431	600	25	6.9	27.....	128	58	13	6.5
13.....	390	380	23	6.9	28.....	112	53	12	6.1
14.....	340	252	22	12	29.....	103	47	12	5.8
15.....	285	205	21	*18	30.....	90	52	12	5.4
					31.....		54	11	.....

North Raccoon River near Sac City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	9.0	10	8.0	3.1	1.0	2.2	93	49	*4,380	489	18	20
2	5.4	10	7.8	2.7	1.0	6.0	84	44	3,560	548	22	94
3	4.7	9.5	7.4	2.4	1.0	45	76	58	2,560	380	252	129
4	4.4	10	6.8	2.2	1.0	28	66	73	1,330	285	364	81
5	4.3	8.5	6.2	2.0	1.0	20	56	199	870	228	167	51
6	8.1	8.1	5.4	1.8	1.1	15	47	616	675	177	100	35
7	4.7	8.1	4.8	1.7	1.1	14	*45	*940	524	140	71	28
8	5.0	9.0	4.3	1.6	1.1	13	42	645	434	124	56	*23
9	5.8	9.0	3.9	1.5	1.1	17	38	456	360	107	48	18
10	5.4	10	3.6	1.4	1.1	25	35	401	312	89	*42	15
11	5.4	10	3.5	1.4	1.1	35	31	694	276	79	35	13
12	6.1	9.5	3.4	1.3	1.2	60	30	615	244	71	30	13
13	6.5	9.5	3.4	1.3	1.2	110	28	412	212	65	28	14
14	8.1	9.0	3.4	1.3	1.2	84	27	330	184	57	34	15
15	7.3	9.0	*3.4	1.3	1.2	70	25	276	*170	52	40	17
16	6.5	9.5	3.4	1.2	*1.2	58	24	236	157	*49	37	19
17	5.8	*14	3.3	1.2	1.2	52	27	212	139	48	32	20
18	5.8	12	3.3	1.2	1.2	*49	32	*191	122	47	27	19
19	6.1	12	3.3	1.1	1.2	80	36	178	116	49	24	18
20	6.1	11	3.3	1.1	1.2	115	*54	169	107	44	21	17
21	6.1	10	3.4	1.1	1.2	200	74	174	102	38	18	29
22	6.5	10	3.6	1.1	1.2	190	125	423	93	36	19	27
23	6.5	10	3.8	1.1	1.2	*175	159	370	83	32	30	28
24	5.8	10	4.0	1.1	1.2	160	143	285	78	30	49	24
25	6.1	10	4.2	1.0	1.2	150	111	252	74	27	36	22
26	7.7	6.0	4.4	*1.0	1.2	173	89	212	68	24	29	24
27	7.7	6.6	4.5	1.0	1.3	112	77	184	65	23	25	24
28	7.7	7.2	4.5	1.0	1.6	114	69	186	104	21	22	24
29	*7.7	7.6	4.3	1.0	.....	120	63	1,800	96	19	21	22
30	7.7	8.0	4.0	1.0	.....	106	55	*1,920	272	20	20	20
31	8.1	.....	3.6	1.0	.....	99	.....	4,600	.....	19	18	.....
1959-60												
1	20	34	75	260	72	39	4,040	152	574	456	65	104
2	25	*35	77	200	68	38	3,640	150	478	360	60	77
3	28	35	74	160	*65	36	3,190	147	423	321	59	63
4	33	42	70	130	63	35	2,520	140	370	268	57	54
5	42	48	66	190	62	34	1,920	143	330	244	63	47
6	42	28	62	*190	62	33	1,470	166	294	220	105	40
7	38	33	62	180	61	33	1,170	181	268	198	75	35
8	*38	38	65	170	60	32	940	174	252	184	56	38
9	42	44	68	160	60	32	735	153	236	183	46	48
10	50	50	71	150	61	31	600	139	236	178	42	51
11	53	59	74	145	61	31	512	126	220	166	*40	44
12	46	64	74	135	61	31	423	117	212	205	38	41
13	40	30	74	125	62	30	380	111	212	423	40	38
14	34	33	74	115	62	30	380	109	205	360	36	37
15	34	37	73	110	61	30	360	102	191	276	32	41
16	36	40	72	102	60	29	350	*96	278	236	29	38
17	35	47	71	105	60	29	360	98	1,720	205	38	37
18	30	52	69	108	58	29	*330	106	1,870	*205	44	43
19	30	57	67	110	57	29	303	147	2,400	268	40	*44
20	33	63	66	110	56	28	294	285	*1,670	205	36	37
21	32	69	64	110	54	*28	268	1,290	1,010	166	31	33
22	34	79	63	110	52	29	252	1,980	780	146	29	32
23	33	76	62	108	50	29	228	1,720	675	126	27	40
24	35	74	60	108	48	30	212	1,170	524	115	26	47
25	34	70	60	104	46	32	198	1,780	423	107	30	55
26	33	66	65	99	44	35	191	2,770	370	97	37	66
27	30	62	106	93	43	76	174	2,280	321	93	31	56
28	33	58	348	90	41	2,500	167	1,720	303	86	34	50
29	35	65	750	85	*40	6,500	173	1,130	650	81	112	46
30	34	*68	480	81	.....	*8,000	166	840	720	73	340	44
31	35	.....	350	76	.....	5,300	.....	675	.....	67	169	.....

North Raccoon River near Sac City, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58.....									636	145	24.1	8.94
1958-59.....	6.39	9.44	4.39	1.43	1.16	80.6	62.0	557	592	110	56.0	30.1
1959-60.....	35.4	51.9	123	130	56.9	748	865	652	607	204	60.2	47.5

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58.....									0.892	0.203	0.034	0.013
1958-59.....	0.0090	0.013	0.0062	0.0020	0.0016	0.113	0.087	0.781	.830	.154	.079	.042
1959-60.....	.050	.073	.173	.182	.080	1.05	1.21	.914	.851	.286	.084	.067

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58.....									1.00	0.23	0.04	0.01
1958-59.....	0.01	0.01	0.007	0.002	0.002	0.13	0.10	0.90	.93	.18	.09	.05
1959-60.....	.06	.08	.20	.21	.09	1.21	1.35	1.05	.95	.33	.10	.07

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1958(1).....	June 4, 1958..	13.44	4,560	5.4					
1959.....	May 31, 1959..	14.51	5,200	1.0	126	0.177	2.41	142	2.72
1960.....	Mar. 30, 1960..	16.73	9,020	20	299	.419	5.70		

(1) Period June 1 to Sept. 30, 1958.

Peak Discharge (base, 2,000 cfs)

1957-58: June 4 (11 a.m.) 4,560 cfs (13.44 ft.).

1958-59: May 31 (5 p.m.) 5,200 cfs (14.51 ft.).

1959-60: Mar. 30 (1 a.m.) 9,020 cfs (16.73 ft.); May 22 (7 a.m.) 2,100 cfs (9.68 ft.); May 26 (8:30 a.m.) 2,840 cfs (10.94 ft.); June 19 (8:30 a.m.) 2,640 cfs (10.47 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 25 to Dec. 31, 1958; Jan. 1 to Mar. 25, Nov. 6 to Dec. 24, Dec. 30, 31, 1959; Jan. 1 to Mar. 29, 1960.

North Raccoon River near Jefferson, Iowa¹

LOCATION.—Lat. 41°59'20", long. 94°22'30", in SW¼ NW¼ sec. 20, T. 83 N., R. 30 W., on right bank 50 ft. downstream from bridge on State Highway 17, 2 miles south of Jefferson and 4.2 miles upstream from Hardin Creek.

DRAINAGE AREA.—1,619 square miles (revised in 1956).

RECORDS AVAILABLE.—March 1940 to September 1960. Prior to October 1955, published as Raccoon River near Jefferson.

GAGE.—Water-stage recorder. Datum of gage is 967.09 ft. above mean sea level, datum of 1929. Prior to Apr. 22, 1946, wire-weight gage at site 4 miles upstream at different datum. Apr. 22 to June 25, 1946, wire-weight gage, June 26, 1946 to Sept. 30, 1955, water-stage recorder, and Oct. 1, 1955 to Apr. 30, 1958, wire-weight gage, at present site and datum.

AVERAGE DISCHARGE.—20 years, 625 cfs.

EXTREMES.—1940-60: Maximum discharge, 29,100 cfs June 23, 1947 (gage height, 22.3 ft.); minimum daily, 0.6 cfs Oct. 5, 1956.

REMARKS.—Bankfull stage is about gage height, 12 ft.

REVISIONS (water years).—WSP 1508: 1940(M), 1950-51.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	21	19	16	15	*17	22	74	34	52	23	18	3.5
2.....	22	18	17	15	17	26	69	50	241	25	24	2.6
3.....	19	*20	18	15	17	30	68	*48	248	26	10	4.0
4.....	19	18	19	15	17	47	71	54	180	29	9.0	38
5.....	*18	17	19	*15	17	74	77	58	136	20	8.4	132
6.....	19	19	19	15	17	82	74	57	127	18	7.8	*58
7.....	22	18	19	15	17	58	64	52	123	33	6.6	43
8.....	25	22	18	15	17	49	56	48	121	28	*11	32
9.....	24	25	17	15	17	63	58	47	97	26	10	24
10.....	24	17	17	15	17	85	57	51	77	*25	8.4	22
11.....	23	22	16	15	17	73	51	58	66	24	7.8	16
12.....	20	20	16	15	17	63	47	66	54	24	8.4	16
13.....	22	21	15	15	17	57	43	435	48	19	10	16
14.....	20	24	15	15	17	57	41	249	44	17	9.0	13
15.....	16	19	15	15	17	60	42	132	38	18	8.6	11
16.....	16	17	15	15	17	73	34	99	38	17	10	9.6
17.....	18	15	15	14	17	65	33	82	36	16	20	9.0
18.....	19	17	14	14	17	58	31	72	31	14	48	7.8
19.....	20	19	14	14	17	56	33	66	28	16	24	4.5
20.....	18	21	13	15	17	74	34	57	27	13	19	6.0
21.....	15	24	13	15	17	95	32	56	24	14	17	6.6
22.....	14	27	13	15	17	68	34	43	25	13	13	7.2
23.....	16	32	14	16	17	95	31	42	28	14	12	6.6
24.....	19	27	14	16	17	92	30	38	22	13	9.0	7.2
25.....	18	21	15	16	18	97	33	35	17	11	7.8	3.5
26.....	19	17	15	16	20	77	31	36	25	11	9.0	4.5
27.....	20	16	15	16	20	88	33	33	29	12	6.6	2.6
28.....	20	15	15	16	21	*92	35	34	20	14	5.5	1.5
29.....	19	13	15	16	*21	64	38	56	18	11	7.2	1.8
30.....	20	*14	15	16	.....	90	35	*113	21	9.0	6.0	1.0
31.....	20	.....	15	16	.....	92	.....	58	.....	8.4	5.0	.....

¹Published as "Raccoon River," 1955.

North Raccoon River near Jefferson, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	1.2	15	34	31	13	45	123	30	320	360	88	70
2	*1.4	17	36	32	13	50	121	33	318	276	77	88
3	1.5	18	36	27	13	60	114	30	238	245	73	84
4	.7	30	29	25	13	70	*105	28	152	267	65	*74
5	.6	48	24	25	13	59	103	27	123	1,020	62	67
6	1.0	47	*21	24	13	54	95	29	*108	1,400	*54	70
7	1.4	54	24	23	13	50	92	25	95	800	51	61
8	.7	51	29	22	*15	*50	95	27	83	542	49	57
9	1.0	52	29	21	20	60	79	26	73	427	*46	58
10	1.0	49	29	20	40	69	73	*34	66	430	42	62
11	1.1	47	25	19	80	72	66	30	84	427	39	84
12	3.5	41	22	18	70	52	63	43	218	*336	38	61
13	1.8	38	21	17	58	55	58	100	128	273	36	54
14	22	37	21	17	50	59	55	142	*3,460	225	39	58
15	10	36	22	16	45	132	51	103	*4,370	208	40	59
16	4.0	35	23	16	41	52	55	88	6,900	190	38	63
17	5.8	32	22	16	40	58	59	83	*4,510	170	36	69
18	2.6	33	21	15	36	55	51	80	*2,080	159	34	62
19	1.8	28	20	15	33	86	49	79	1,340	142	33	58
20	3.2	27	20	15	30	83	47	82	940	126	32	54
21	2.6	25	21	20	28	77	43	164	740	118	34	55
22	3.7	23	22	24	27	70	40	660	720	114	37	57
23	5.0	21	23	23	26	74	39	620	680	163	36	55
24	2.6	25	23	19	27	72	41	420	508	161	32	52
25	5.4	28	23	17	30	70	36	300	427	128	30	47
26	10	28	24	15	32	120	43	242	402	98	33	44
27	11	25	26	14	35	123	41	195	455	95	54	42
28	10	25	27	14	39	111	39	155	542	111	47	39
29	12	28	29	13	.....	105	37	125	472	108	72	40
30	9.5	31	30	13	.....	108	35	114	408	126	80	36
31	18	.....	31	13	.....	103	.....	106	.....	103	76	.....
1957-58												
1	30	100	340	130	98	580	255	319	113	302	313	81
2	32	116	320	160	100	510	275	313	125	485	293	75
3	*29	181	360	170	102	440	300	302	272	2,160	263	71
4	28	202	380	165	102	*380	320	284	1,370	1,360	240	70
5	33	206	*335	155	100	365	350	263	3,020	1,020	*218	70
6	30	209	344	150	92	360	390	248	4,110	840	202	71
7	29	*216	275	135	*85	355	420	240	*4,500	714	188	70
8	56	200	230	130	81	350	450	238	3,140	610	173	63
9	100	170	200	120	78	325	480	*228	3,060	512	160	63
10	63	140	180	*112	74	300	*512	218	2,740	442	152	56
11	59	125	210	107	72	290	531	206	1,980	*410	140	56
12	57	148	240	105	68	290	442	195	1,510	460	131	52
13	56	152	270	102	65	300	407	179	1,410	930	123	53
14	51	158	290	100	62	300	384	173	1,260	1,140	118	62
15	53	160	300	102	60	300	359	173	1,260	862	111	*60
16	52	162	315	104	58	290	341	170	952	672	104	58
17	56	221	330	106	56	280	322	162	885	610	99	57
18	57	245	350	110	54	275	302	158	930	512	155	58
19	60	210	360	115	52	265	287	152	735	630	206	57
20	57	174	360	122	51	260	302	154	610	756	195	54
21	56	280	350	130	50	255	293	162	531	777	204	51
22	71	320	340	132	50	250	260	146	477	630	158	49
23	70	310	310	132	210	250	258	135	442	512	138	48
24	92	366	280	130	400	240	263	127	460	494	133	46
25	96	397	250	125	700	240	260	123	460	442	133	45
26	103	426	290	122	1,000	235	260	118	442	394	122	43
27	107	369	260	118	840	230	302	113	426	356	109	41
28	107	330	230	112	700	225	341	109	397	325	99	40
29	106	290	200	108	.....	225	347	104	362	290	95	39
30	107	250	160	100	.....	230	335	103	325	341	88	37
31	103	.....	100	95	.....	240	.....	106	.....	325	86	.....

North Raccoon River near Jefferson, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	36	37	29	19	12	100	531	322	6,750	1,110	75	68
2	36	37	32	18	12	200	531	299	8,800	1,620	75	70
3	35	37	35	17	12	450	494	397	*9,600	1,620	75	74
4	35	36	35	16	12	350	426	590	7,800	1,180	75	74
5	35	36	32	15	12	250	375	610	5,140	908	200	84
6	35	36	29	14	12	160	335	735	2,590	735	313	113
7	41	36	26	14	12	110	310	1,020	1,920	590	233	93
8	56	36	23	14	12	105	284	1,460	1,460	494	181	*75
9	63	36	21	14	12	100	263	1,460	1,180	442	140	67
10	53	35	20	14	12	160	250	1,260	998	397	*118	60
11	46	35	19	15	12	*230	238	1,210	885	362	96	56
12	41	36	19	15	12	400	225	1,140	777	325	86	52
13	38	37	18	15	12	*800	211	1,260	693	293	81	48
14	37	39	18	15	13	640	202	998	610	263	75	45
15	37	40	18	15	13	480	193	840	550	245	74	44
16	37	40	*18	16	*13	426	184	735	*494	*228	74	38
17	38	*45	18	16	13	*353	184	651	460	211	74	50
18	38	48	18	16	13	332	195	610	410	200	74	53
19	40	50	18	16	13	550	200	*570	381	181	70	58
20	37	49	18	15	13	756	*245	550	350	177	63	51
21	36	48	19	15	14	930	322	550	328	164	58	48
22	37	45	19	15	14	735	494	512	310	156	58	44
23	37	44	20	15	14	630	693	550	290	136	58	46
24	36	43	21	14	14	651	735	735	265	125	53	50
25	35	42	21	14	14	672	651	672	255	116	54	68
26	36	38	21	14	14	756	550	610	240	106	59	82
27	35	34	21	*14	14	908	477	550	223	96	53	75
28	*35	31	21	13	30	714	442	531	260	92	51	68
29	35	28	20	13	.....	735	391	798	505	86	40	75
30	35	25	20	13	.....	610	350	2,250	756	81	42	80
31	36	.....	20	13	.....	550	.....	*5,040	.....	77	50	.....
1959-60												
1	68	67	144	600	120	*100	15,200	451	1,920	1,120	*158	424
2	72	64	150	460	*117	97	10,400	*424	1,590	915	144	296
3	76	*61	140	390	112	95	8,120	388	1,340	728	140	224
4	80	150	120	280	110	93	*6,960	366	1,190	615	131	182
5	70	115	105	200	110	92	5,880	370	1,040	*538	129	155
6	64	90	108	260	110	91	4,450	2,220	915	481	158	*138
7	*60	105	114	*300	110	90	3,380	1,390	*795	435	256	127
8	60	120	120	320	110	89	2,650	1,020	728	395	226	118
9	68	135	130	330	112	88	2,160	840	660	395	180	113
10	74	145	134	300	114	87	1,690	728	615	388	162	108
11	80	155	138	280	116	86	1,440	638	576	392	147	106
12	74	145	140	250	118	85	1,220	557	576	417	138	104
13	70	130	140	230	122	84	1,060	500	557	432	129	101
14	65	110	140	210	125	84	915	473	538	615	122	99
15	63	94	138	190	128	83	865	443	500	840	115	96
16	62	110	134	170	128	83	818	435	500	682	111	93
17	61	130	130	175	130	82	915	402	500	557	113	91
18	60	150	126	182	130	82	965	399	1,060	492	198	101
19	60	160	124	188	130	82	915	489	1,800	443	224	122
20	61	156	122	192	128	82	840	538	2,280	420	216	108
21	64	152	120	196	128	82	772	890	2,520	*424	164	*101
22	65	146	118	200	126	83	705	1,860	*1,800	349	142	94
23	67	140	116	195	122	84	615	2,930	1,390	308	133	94
24	68	154	115	190	118	85	576	2,860	1,220	279	122	102
25	69	160	114	180	115	87	865	2,720	1,020	254	117	133
26	69	145	114	168	112	110	596	4,550	840	234	113	149
27	65	130	116	156	109	150	519	6,540	728	218	111	151
28	62	120	133	148	107	900	473	6,680	660	206	117	149
29	60	125	240	140	105	3,500	466	4,850	638	196	126	142
30	65	*132	638	132	.....	9,000	481	3,070	682	184	158	135
31	69	.....	818	125	.....	*17,600	.....	2,340	.....	173	296	.....

North Raccoon River near Jefferson, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	19.5	19.8	15.7	15.2	17.5	68.5	46.3	76.1	68.0	18.1	12.1	17.0
1956-57	5.04	33.1	25.4	19.3	31.9	74.3	65.0	136	1,032	302	48.5	59.3
1957-58	64.7	228	283	123	195	304	345	185	1,277	655	160	56.5
1958-59	38.9	38.6	22.2	14.9	13.4	479	366	952	1,843	413	91.3	63.6
1959-60	66.8	127	169	237	118	1,079	2,564	1,689	1,039	456	155	139

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.012	0.012	0.0097	0.0094	0.011	0.042	0.029	0.047	0.042	0.011	0.0075	0.011
1956-57	.0031	.020	.016	.012	.020	.046	.040	.084	.637	.187	.030	.037
1957-58	.040	.141	.175	.076	.120	.188	.213	.114	.789	.405	.099	.035
1958-59	.024	.024	.014	.0092	.0083	.296	.226	.588	1.14	.255	.056	.039
1959-60	.041	.078	.104	.146	.073	.666	1.58	1.04	.642	.282	.096	.086

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.01	0.01	0.01	0.01	0.01	0.05	0.03	0.05	0.05	0.01	0.009	0.01
1956-57	.004	.02	.02	.01	.02	.05	.04	.10	.71	.21	.03	.04
1957-58	.05	.16	.20	.09	.13	.22	.24	.13	.88	.47	.11	.04
1958-59	.03	.03	.02	.01	.009	.34	.25	.68	1.27	.29	.07	.04
1959-60	.05	.09	.12	.17	.08	.77	1.77	1.20	.72	.32	.11	.10

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								292	2.41
1956	May 13, 1956	5.4	650	1.0	32.8	0.020	0.26	33.5	.27
1957	June 16, 1957	13.49	7,800	.6	152	.094	1.25	195	1.62
1958	June 7, 1958	11.70	4,720	28	322	.199	2.72	282	2.39
1959	June 3, 1959	15.06	9,800	12	362	.224	3.04	384	3.22
1960	Mar. 31, 1960	19.43	18,600	60	653	.403	5.50		

Peak Discharge (base, 4,000 cfs)

1955-56: No peak above base.

1956-57: June 16 (6 a.m.) 7,800 cfs (13.49 ft.).

1957-58: June 7 (11 a.m.) 4,720 cfs (11.70 ft.).

1958-59: June 3 (5 a.m.) 9,800 cfs (15.06 ft.).

1959-60: Mar. 31 (12:30 p.m.) 18,600 cfs (19.43 ft.); May 28 (12:30 a.m.) 6,960 cfs (13.45 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 16 to Dec. 31, 1955; Jan. 1 to Mar. 20, Nov. 16, Nov. 20 to Dec. 31, 1956; Jan. 1 to Mar. 3, Mar. 6-9, Nov. 9-11, 19-22, Nov. 28 to Dec. 4, Dec. 7-31, 1957; Jan. 1 to Mar. 1, Nov. 26 to Dec. 31, 1958; Jan. 1 to Mar. 15, Nov. 6 to Dec. 27, 1959; Jan. 1 to Mar. 30, 1960. No gage-height record Oct. 9, Nov. 1, 8, 18, 1957; Mar. 2 to Apr. 9, 1958; Oct. 1-6, 8-23, Nov. 1, 2, 4, 5, 1959.

East Fork Hardin Creek near Churdan, Iowa

LOCATION.—Lat. 42°06'25", long. 94°22'10", in SE¼SW¼ sec. 5, T. 84 N., R. 30 W., on left bank 35 ft. upstream from highway bridge, 4.4 miles upstream from mouth, and 6.5 miles southeast of Churdan.

DRAINAGE AREA.—24.0 square miles (revised in 1956).

RECORDS AVAILABLE.—July 1952 to September 1960.

GAGE.—Water-stage recorder and concrete control. Datum of gage is 1,050.90 ft. above mean sea level, datum of 1929.

AVERAGE DISCHARGE.—8 years, 6.89 cfs.

EXTREMES.—1952-60: Maximum discharge, 413 cfs May 5, 1960 (gage height, 8.92 ft.), from rating curve extended above 180 cfs by logarithmic plotting; no flow at times each year.

REMARKS.—Small diversion for irrigation above station. Records of suspended sediment loads for the period July 1952 to September 1957 are published in reports of U. S. Geological Survey. High banks are never overtopped.

REVISIONS (water years).—WSP 1708: 1954, 1955(P), 1957(M).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	0	0	0	0	0	0	0.23	0.02	0.13	0.16	0	0
2.....	0	0	0	0	0	.20	.16	.56	.13	.16	0	0
3.....	0	0	0	0	0	.15	.23	.27	.11	.23	0	0
4.....	0	*0	0	0	0	.10	.19	*.16	.13	.40	0	0
5.....	0	0	0	0	0	.07	.19	.16	.11	.19	0	.75
6.....	*0	0	0	*0	0	.05	*.11	.13	.44	.11	0	.63
7.....	0	0	0	0	0	0	.11	.13	*.34	.23	0	.08
8.....	0	0	*0	0	*0	*0	.11	.08	*.10	.35	0	0
9.....	0	0	0	0	0	.01	.11	.08	4.7	.16	*0	0
10.....	0	0	0	0	0	.02	.08	.19	2.8	.04	0	*0
11.....	0	0	0	0	0	.04	.08	.40	1.9	.06	0	0
12.....	0	0	0	0	0	.04	.06	.33	1.4	*.13	0	0
13.....	0	0	0	0	0	.07	.04	63	1.0	.06	0	0
14.....	0	0	0	0	0	.10	.02	8.8	.87	.01	0	0
15.....	0	0	0	0	0	.15	.01	3.3	.63	0	0	0
16.....	0	0	0	0	0	.25	0	2.0	.63	0	0	0
17.....	0	0	0	0	0	.35	0	1.3	.50	0	0	0
18.....	0	0	0	0	0	.60	0	.87	.45	0	0	0
19.....	0	0	0	0	0	.50	0	.63	.40	0	0	0
20.....	0	0	0	0	0	.45	0	.56	.35	0	0	0
21.....	0	0	0	0	0	.55	0	.50	.27	0	0	0
22.....	0	0	0	0	0	.40	0	.45	.27	0	0	0
23.....	0	0	0	0	0	.40	0	.35	.23	0	0	0
24.....	0	0	0	0	0	.23	0	.27	.13	0	0	0
25.....	0	0	0	0	0	.23	0	.23	.11	0	0	0
26.....	0	0	0	0	0	.23	0	.23	1.4	0	0	0
27.....	0	0	0	0	0	.19	0	.27	.70	0	0	0
28.....	0	0	0	0	0	.16	0	.19	.35	0	0	0
29.....	0	0	0	0	0	.19	0	.23	.16	0	0	0
30.....	0	0	0	0	.....	.16	0	.56	.19	0	0	0
31.....	0	.....	0	0	.....	.19	.....	.23	.....	0	0	.....

East Fork Hardin Creek near Churdan, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	0	0	0.13	0.04	0	0.30	0.19	0.08	3.1	6.4	0.63	0.27
2	0	0	.23	.02	0	.25	.19	.06	2.2	5.8	.56	.95
3	0	0	.31	.03	0	.23	*.23	.06	1.9	5.5	.50	.50
4	0	0	.35	.01	.01	.31	.35	.06	*1.6	36	.45	.40
5	0	0	.45	0	.05	.27	.45	.06	1.4	20	.40	.31
6	0	.17	.23	0	.60	.19	.35	*.06	1.2	12	.35	.31
7	0	.19	*.08	0	*.80	.13	.35	.01	1.3	9.6	*.31	*.23
8	0	*.11	.02	0	.70	*.13	.27	.01	1.2	7.0	*.27	.16
9	0	.04	.03	*0	1.6	.11	.23	.04	1.2	5.5	.31	.11
10	0	.02	.05	0	2.0	.19	.23	.16	1.2	4.9	.31	.19
11	0	.01	.02	0	4.2	.27	.35	.23	1.4	*4.4	.27	.40
12	0	0	.01	0	2.8	.27	.27	3.5	1.3	3.9	.23	.40
13	0	0	0	0	1.7	.23	.27	7.6	6.3	2.9	.23	.27
14	0	0	0	0	1.2	.19	.23	5.8	*176	2.6	.27	.31
15	0	0	0	0	.70	.01	.27	3.9	*124	2.4	.23	.31
16	0	0	0	0	.50	.04	.19	2.8	*270	2.3	.16	.27
17	0	0	0	0	.35	.23	.23	3.1	150	1.9	.13	.31
18	*0	0	0	0	.30	1.5	.19	2.8	118	1.7	.16	.31
19	0	0	0	0	.24	2.4	.19	2.4	86	1.5	.13	.27
20	0	0	0	0	.18	1.6	.19	2.2	57	1.4	.16	.27
21	0	0	0	0	.15	1.3	.13	12	37	1.6	.27	.27
22	0	0	.03	0	1.0	1.0	.11	4.9	43	1.4	.16	.20
23	0	0	.05	0	5.2	1.2	.11	3.1	28	1.2	.16	.15
24	0	0	.02	0	3.9	.78	.11	2.4	19	1.0	.16	.10
25	0	0	.01	0	2.4	.45	.11	2.9	16	.95	.11	.08
26	0	0	.03	0	.50	.40	.23	2.6	13	.95	.06	.08
27	0	0	.05	0	.40	.35	.19	1.9	11	.95	.39	.06
28	0	.01	.04	0	.35	.31	.11	1.6	10	1.2	.56	.06
29	0	.03	.03	0	.....	.23	.08	1.6	8.4	.95	.78	.04
30	0	.08	.05	0	.....	.19	.08	2.6	7.0	.87	.63	.02
31	0	.....	.10	0	.....	.19	.....	9.0	.....	.78	.35	.....
1957-58												
1	0	1.9	5.5	2.8	1.4	12	5.5	3.9	1.4	7.0	16	0.8
2	0	1.6	5.2	3.2	1.6	9.2	5.5	3.9	1.2	147	14	.7
3	*0	1.9	4.9	3.2	1.6	7.8	5.8	3.7	1.4	108	11	.7
4	0	1.7	4.7	3.2	1.5	*7.4	5.8	3.1	3.1	126	8.4	.6
5	0	1.6	*4.7	3.0	1.5	7.8	7.4	3.1	2.2	66	*6.4	.7
6	0	1.5	4.2	2.6	*1.4	8.4	8.4	2.9	*1.9	41	5.5	.8
7	0	*1.5	3.7	2.9	1.4	11	7.0	3.3	1.9	29	4.9	.6
8	.4	1.3	3.5	3.2	1.3	8.4	7.4	3.3	18	22	4.2	.6
9	.4	.9	3.0	*2.9	1.3	7.4	7.0	*2.9	29	17	3.7	.6
10	.3	1.0	2.5	2.5	1.2	6.7	*6.7	2.8	8.1	*13	3.3	.5
11	.3	1.0	3.0	2.3	1.2	6.1	6.4	2.6	4.9	33	2.9	.5
12	.3	1.2	3.3	2.6	1.2	8.1	6.1	2.3	8.1	36	2.6	.4
13	.2	1.3	3.0	2.8	1.1	12	5.8	2.2	88	24	2.4	.4
14	.2	1.2	2.8	3.0	1.1	10	5.5	2.3	44	22	2.3	.7
15	.3	1.3	2.9	2.8	1.0	9.6	5.2	2.3	22	17	2.0	*.8
16	.4	3.5	3.7	2.5	1.0	8.1	4.9	2.3	36	10	1.9	.5
17	.4	4.2	4.2	2.3	1.0	6.7	4.9	2.3	82	8.1	1.7	.4
18	.4	3.8	6.1	2.2	1.0	6.1	4.7	2.0	39	6.7	1.5	.4
19	.4	4.2	7.4	2.2	1.0	5.5	4.4	1.7	21	101	1.5	.4
20	.4	4.0	7.0	2.2	1.0	5.5	4.2	1.7	15	107	1.7	.4
21	.4	3.9	6.7	2.5	1.0	5.5	4.4	1.7	11	61	1.7	.4
22	.6	4.2	7.4	2.4	1.0	5.5	3.9	1.7	10	46	1.3	.3
23	1.0	4.7	7.0	2.2	1.0	5.5	4.2	1.5	10	36	1.4	.3
24	1.2	4.2	7.0	2.0	2.5	5.5	3.9	1.6	11	28	1.4	.4
25	1.0	4.7	7.8	2.2	1.9	5.8	3.5	1.5	13	21	1.2	.4
26	1.0	4.7	6.4	1.9	1.7	5.8	3.9	1.5	11	19	1.0	.4
27	.9	4.9	6.4	1.7	2.1	5.5	4.2	1.5	9.6	17	1.0	.4
28	.8	4.6	5.2	1.8	1.8	5.5	4.7	1.3	9.6	14	1.0	.4
29	.8	4.1	4.6	1.9	.....	5.5	3.7	1.3	8.1	12	1.0	.3
30	.7	5.0	4.0	1.8	.....	5.2	3.9	1.4	7.0	16	1.0	.3
31	.7	.....	3.3	1.6	.....	5.2	.....	1.5	.....	18	.9	.....

East Fork Hardin Creek near Churdan, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	0.3	0.2	0	0	0	0.7	19	8.4	160	25	0.7	0.1
2	.3	.2	0	0	0	2.5	17	8.4	104	19	.9	.2
3	.3	.2	0	0	0	2.2	13	12	62	16	.8	.2
4	.3	.1	0	0	0	1.8	11	12	41	13	.6	.1
5	.3	.1	0	0	0	1.3	8.8	21	31	10	.6	0
6	.4	.1	0	0	0	.8	8.1	31	25	8.4	.5	0
7	.6	.1	0	0	0	.6	7.4	26	21	7.4	.4	0
8	.7	.1	0	0	0	.5	6.4	23	18	6.7	.4	*0
9	.5	.1	0	0	0	4.0	6.1	22	17	5.5	.4	0
10	.3	.1	0	0	0	9.0	5.8	22	15	5.2	*.4	0
11	.3	0	0	0	0	*14	5.2	20	14	4.7	.3	0
12	.4	.1	0	0	0	20	4.9	17	12	4.4	.2	0
13	.4	.1	0	0	0	*35	4.9	16	11	3.7	.2	0
14	.3	.1	0	0	0	25	4.7	15	10	3.5	.2	0
15	.3	.1	*0	0	0	16	4.4	14	*9.6	3.1	.3	0
16	.3	.1	0	0	*0	12	4.2	13	8.8	*2.9	.2	0
17	.3	*.2	0	0	0	10	4.2	12	7.8	2.8	.2	0
18	.2	.3	0	0	0	*9.4	3.7	*12	7.8	2.4	.1	0
19	.2	.2	0	0	0	60	4.2	10	6.7	2.2	.1	.1
20	.2	.1	0	0	0	50	*8.1	27	6.4	2.0	.1	0
21	.2	.1	0	0	0	20	20	39	6.4	1.9	0	0
22	.2	.1	0	0	0	17	30	24	5.8	1.7	0	.1
23	.2	.1	0	0	0	*15	23	23	5.5	1.6	0	0
24	.2	.1	0	0	0	12	18	22	5.2	1.5	0	.1
25	.2	.1	0	0	0	8.1	15	20	4.7	1.4	0	.3
26	.2	0	0	*0	0	54	14	18	4.4	1.3	0	.4
27	.2	0	0	0	.1	46	13	14	4.4	1.2	0	.2
28	*.2	0	0	0	.2	26	11	16	5.2	1.2	0	.1
29	.2	0	0	0	0	19	10	73	7.5	1.0	0	.1
30	.2	0	0	0	0	16	8.8	96	20	.9	0	.1
31	.2	0	0	0	0	15	15	*207	8	0	0	0
1959-60												
1	0.1	0.1	0	0.1	0.1	0.3	160	25	24	12	*1.5	0.8
2	.1	*0	.1	.1	.1	.3	*127	*19	21	11	1.4	.7
3	.1	0	.1	.1	*0	.3	78	16	18	8.7	1.3	.7
4	0	.4	.2	0	0	.3	*51	14	16	7.6	1.2	.6
5	0	.2	.2	0	0	.3	36	61	14	*7.0	6.2	.5
6	0	.1	.1	*0	.1	.2	30	210	*13	6.0	9.8	*.5
7	0	.1	0	0	.1	.2	19	166	12	5.8	5.0	.4
8	*.1	.2	0	0	.7	.2	14	136	11	5.5	3.8	.4
9	.1	.2	0	0	.2	.2	11	109	9.9	11	4.7	.4
10	0	.2	0	0	.1	.2	10	75	9.5	12	3.2	.4
11	.1	.2	.1	.1	0	.1	9.1	48	9.1	11	2.3	.3
12	.1	.2	.1	.3	0	.1	7.6	35	9.1	21	1.9	.3
13	.1	.1	.1	.3	0	.1	7.3	26	9.1	16	1.7	.3
14	.1	0	.1	.1	0	.1	6.7	20	9.5	13	1.5	.3
15	.1	0	.1	0	.1	.1	6.4	17	9.1	11	1.3	.3
16	0	0	.1	0	.3	0	6.7	15	9.1	9.5	1.3	.3
17	0	0	.1	0	.6	0	16	13	8.7	8.4	1.5	.3
18	0	0	.1	0	1.0	0	19	11	9.1	7.0	2.8	1.3
19	0	0	.1	0	1.5	0	15	10	8.7	6.0	2.2	.7
20	0	0	.1	0	1.1	0	13	34	9.1	5.5	2.0	.5
21	0	0	.1	0	1.0	0	9.9	47	8.7	5.0	1.7	.4
22	0	0	.1	0	.8	0	8.4	39	8.4	4.5	1.5	.4
23	.1	.1	.1	0	.7	0	7.3	30	7.6	4.2	1.3	.6
24	.1	.2	.1	0	.6	0	40	25	6.7	3.8	1.2	1.9
25	.1	.1	.1	0	.5	0	154	203	6.7	3.4	1.1	2.0
26	.1	0	.2	0	.5	.1	94	*172	6.4	3.0	.9	1.4
27	.2	0	.3	0	.4	40	59	124	6.0	2.6	.8	1.2
28	.2	0	.7	0	.4	200	36	72	14	2.3	1.0	1.1
29	.2	0	.4	.1	*.4	240	29	48	23	2.2	1.5	1.1
30	.2	*0	.2	.1	.....	*196	30	35	14	1.9	1.2	1.0
31	.2	.....	.1	.1	.....	160	.....	28	.....	1.7	1.0	.....

East Fork Hardin Creek near Churdan, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0	0	0	0	0	0.196	0.0577	2.79	3.60	0.0739	0	0.0487
1956-57	0	.022	.075	.003	1.14	.492	.216	2.57	40.0	4.82	.313	.254
1957-58	.44	2.82	4.87	2.46	4.89	7.24	5.30	2.29	17.6	39.6	3.57	.50
1958-59	.29	.10	0	0	.01	16.9	10.5	28.8	21.9	5.24	.25	.07
1959-60	.08	.08	.13	.05	.39	27.1	37.0	60.7	11.4	7.41	2.25	.70

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0	0	0	0	0	0.0082	0.0024	0.116	0.150	0.0031	0	0.0020
1956-57	0	.00092	.0031	.00013	.048	.021	.0090	.107	1.67	.201	.013	.011
1957-58	.018	.118	.203	.103	.204	.302	.221	.095	.733	1.65	.149	.021
1958-59	.012	.0042	0	0	.00042	.704	.438	1.20	.913	.218	.010	.0029
1959-60	.0033	.0033	.0054	.0021	.016	1.13	1.54	2.53	.475	.309	.094	.029

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0	0	0	0	0	0.009	0.003	0.13	0.17	0.004	0	0.002
1956-57	0	.001	.004	.0002	.05	.02	.01	.12	1.86	.23	.02	.01
1957-58	.02	.13	.23	.12	.21	.35	.25	.11	.82	1.90	.17	.02
1958-59	.01	.005	0	0	.0005	.81	.49	1.39	1.02	.25	.01	.003
1959-60	.004	.004	.006	.002	.02	1.30	1.72	2.92	.53	.36	.11	.03

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								5.67	3.23
1956	May 13, 1956	4.42	112	0	0.563	0.023	0.32	.571	.32
1957	June 16, 1957	8.82	371	0	4.11	.171	2.33	4.79	2.70
1958	July 19, 1958	6.10	186	0	7.67	.320	4.33	7.02	3.96
1959	May 31, 1959	7.36	288	0	7.05	.294	3.99	7.04	3.99
1960	May 5, 1960	8.92	413	0	12.3	.513	7.01		

Peak Discharge (base, 200 cfs)

1955-56: No peak above base.

1956-57: June 14 (4:30 a.m.) 216 cfs (6.57 ft.); June 16 (4 a.m.) 371 cfs (8.82 ft.).

1957-58: No peak above base.

1958-59: May 31 (2 a.m.) 288 cfs (7.36 ft.).

1959-60: Mar. 29 about 300 cfs; Apr. 24 (10:30 p.m.) 350 cfs (8.04 ft.); May 5 (9 p.m.) 413 cfs (8.92 ft.); May 25 (2:30 a.m.) 231 cfs (6.30 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Mar. 2-6, 9-21, Nov. 29, Dec. 9-11, 16, 17, 22-31, 1956; Jan. 1-9, Feb. 4-8, 14-22, Feb. 26 to Mar. 3, Nov. 9, 18-20, 28-30, Dec. 9-13, 29-31, 1957; Jan. 1 to Feb. 27, Nov. 26 to Dec. 31, 1958; Jan. 1 to Mar. 21, Nov. 23, 26, 27, Dec. 8-10, 30, 31, 1959; Jan. 1-10, Jan. 14, to Mar. 29, 1960.

Springbrook Lake near Guthrie Center, Iowa

LOCATION.—Lat. 41°46'35", long. 94°28'05", in NE¼NW¼ sec. 4, T 80 N., R. 31 W., in concrete pedestal near boat dock in Springbrook State Park, 7 miles northeast of Guthrie Center.

DRAINAGE AREA.—5.18 square miles.

RECORDS AVAILABLE.—June 1936 to September 1960.

GAGE.—Staff gage read once or twice daily. Datum of gage is 1085.04 ft. above mean sea level, datum of 1929, and 3.94 ft. below crest of spillway of dam forming lake.

EXTREMES.—1936-60: Maximum gage height observed, 7.00 ft. July 25, 1942, June 1, 1947; minimum observed, below staff gage when lake was drained Sept. 6-30, 1960.

Daily Gage Height, in Feet, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	4.16	4.16	4.16	4.08	4.12	4.10	4.08	4.12	4.08	4.08	4.80	4.08
2.....	4.16	4.16	4.16	4.08	4.12	4.10	4.08	4.10	4.06	4.06	4.22	4.08
3.....	4.16	4.16	4.20	4.08	4.12	4.10	4.08	4.07	4.06	4.06	4.10	4.06
4.....	4.16	4.16	4.20	4.08	4.12	4.10	4.08	4.08	4.06	4.46	4.10	4.64
5.....	4.16	4.16	4.20	4.08	4.12	4.10	4.08	4.08	4.06	4.10	4.08	4.62
6.....	4.16	4.16	4.20	4.08	4.12	4.10	4.08	4.08	4.06	4.08	4.08	4.28
7.....	4.16	4.16	4.20	4.08	4.12	4.10	4.08	4.06	4.88	4.14	4.08	4.12
8.....	4.16	4.16	4.20	4.08	4.12	4.10	4.08	4.06	4.12	4.14	4.61	4.08
9.....	4.16	4.16	4.20	4.08	4.12	4.10	4.08	4.06	4.08	4.08	4.20	4.08
10.....	4.16	4.16	4.20	4.08	4.12	4.10	4.08	4.06	4.08	4.06	4.10	4.08
11.....	4.16	4.16	4.20	4.08	4.12	4.12	4.08	4.06	4.06	4.07	4.10	4.06
12.....	4.16	4.16	4.20	4.08	4.12	4.12	4.08	4.06	4.06	4.10	4.10	4.06
13.....	4.16	4.16	4.20	4.08	4.14	4.12	4.08	4.12	4.06	4.08	4.08	4.06
14.....	4.16	4.16	4.20	4.08	4.12	4.10	4.08	4.08	4.04	4.08	4.08	4.06
15.....	4.16	4.16	4.20	4.14	4.12	4.10	4.06	4.06	4.04	4.08	4.08	4.06
16.....	4.16	4.16	4.20	4.14	4.12	4.10	4.06	4.06	4.04	4.08	4.16	4.06
17.....	4.16	4.16	4.20	4.14	4.12	4.08	4.06	4.06	4.04	4.06	4.12	4.06
18.....	4.16	4.16	4.20	4.14	4.12	4.08	4.06	4.06	4.04	4.06	4.14	4.06
19.....	4.16	4.16	4.20	4.14	4.12	4.08	4.06	4.06	4.04	4.72	4.10	4.06
20.....	4.16	4.16	4.20	4.14	4.12	4.08	4.06	4.04	4.06	4.24	4.08	4.06
21.....	4.16	4.16	4.20	4.14	4.12	4.08	4.08	4.04	4.06	4.10	4.08	4.06
22.....	4.16	4.16	4.18	4.14	4.10	4.08	4.06	4.04	4.06	4.08	4.08	4.06
23.....	4.16	4.16	4.14	4.14	4.10	4.08	4.06	4.04	4.06	4.08	4.08	4.06
24.....	4.16	4.16	4.08	4.12	4.10	4.08	4.06	4.04	4.06	4.08	4.08	4.06
25.....	4.16	4.16	4.08	4.12	4.10	4.08	4.06	4.04	4.06	4.08	4.08	4.06
26.....	4.16	4.16	4.08	4.12	4.10	4.08	4.06	4.04	4.08	4.08	4.08	4.06
27.....	4.16	4.16	4.08	4.12	4.10	4.08	4.10	4.04	4.06	4.08	4.08	4.06
28.....	4.16	4.16	4.08	4.12	4.10	4.08	4.12	4.04	4.06	4.70	4.08	4.06
29.....	4.16	4.16	4.08	4.12	4.11	4.08	4.08	4.08	4.04	4.20	4.08	4.06
30.....	4.06	4.19	4.08	4.12	.....	4.08	4.08	4.18	4.10	4.10	4.08	4.06
31.....	4.16	.....	4.08	4.12	.....	4.08	.....	4.06	.....	4.10	4.08	.....

Springbrook Lake near Guthrie Center, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	4.06	4.08	4.08	4.06	4.08	4.08	4.06	4.08	4.06	4.08	4.04	4.06
2	4.06	4.08	4.08	4.06	4.08	4.08	4.06	4.08	4.06	4.08	4.04	4.18
3	4.06	4.08	4.08	4.06	4.08	4.08	4.06	4.08	4.06	4.06	4.04	4.10
4	4.06	4.16	4.08	4.06	4.08	4.08	4.08	4.08	4.06	4.06	4.04	4.08
5	4.06	4.22	4.08	4.06	4.08	4.06	4.06	4.04	4.06	4.06	4.04	4.06
6	4.06	4.12	4.08	4.06	4.08	4.06	4.06	4.04	4.06	4.06	4.04	4.10
7	4.06	4.08	4.08	4.06	4.08	4.06	4.06	4.04	4.08	4.06	4.04	4.08
8	4.06	4.08	4.08	4.06	4.08	4.06	4.06	4.04	4.08	4.06	4.04	4.06
9	4.06	4.08	4.08	4.06	4.08	4.06	4.06	4.04	4.06	4.04	4.04	4.06
10	4.06	4.08	4.08	4.06	4.08	4.06	4.06	4.14	4.06	4.04	4.04	4.08
11	4.06	4.08	4.08	4.06	4.08	4.06	4.06	4.08	4.10	4.04	4.04	4.16
12	4.06	4.08	4.08	4.06	4.08	4.06	4.06	4.12	4.08	4.04	4.04	4.12
13	4.06	4.08	4.08	4.06	4.08	4.06	4.06	4.10	4.08	4.04	4.04	4.10
14	4.10	4.08	4.06	4.06	4.08	4.06	4.06	4.16	4.14	4.04	4.16	4.10
15	4.14	4.08	4.06	4.06	4.06	4.06	4.06	4.10	4.06	4.06	4.08	4.08
16	4.10	4.08	4.06	4.06	4.08	4.06	4.05	4.08	5.22	4.06	4.06	4.08
17	4.08	4.08	4.06	4.06	4.08	4.00	4.06	4.08	4.98	4.06	4.06	4.08
18	4.08	4.08	4.06	4.06	4.08	4.16	4.06	4.06	4.24	4.06	4.06	4.08
19	4.08	4.08	4.06	4.06	4.08	4.10	4.06	4.06	4.12	4.04	4.06	4.08
20	4.08	4.08	4.06	4.08	4.08	4.06	4.06	4.06	4.08	4.04	4.04	4.08
21	4.08	4.08	4.06	4.08	4.08	4.06	4.06	4.07	4.08	4.04	4.06	4.08
22	4.08	4.08	4.06	4.08	4.08	4.06	4.06	4.06	4.16	4.04	4.06	4.08
23	4.08	4.08	4.06	4.08	4.08	4.06	4.06	4.06	4.08	4.04	4.06	4.08
24	4.08	4.08	4.06	4.08	4.08	4.06	4.06	4.04	4.08	4.04	4.06	4.08
25	4.08	4.08	4.06	4.08	4.08	4.16	4.06	4.06	4.08	4.04	4.06	4.08
26	4.08	4.08	4.06	4.08	4.08	4.08	4.18	4.06	4.18	4.04	4.06	4.08
27	4.08	4.08	4.06	4.08	4.08	4.08	4.10	4.06	4.10	4.04	4.16	4.08
28	4.08	4.08	4.06	4.08	4.08	4.10	4.08	4.06	4.10	4.04	4.16	4.08
29	4.08	4.08	4.06	4.08	4.08	4.10	4.08	4.06	4.08	4.04	4.12	4.08
30	4.08	4.08	4.06	4.08	4.08	4.08	4.08	4.06	4.08	4.04	4.08	4.08
31	4.08	.....	4.06	4.08	.....	4.06	.....	4.06	.....	4.04	4.08	.....
1957-58												
1	4.08	4.08	4.10	4.08	4.06	4.10	4.04	4.04	4.06	4.04	4.10	4.06
2	4.08	4.14	4.10	4.08	4.06	4.08	4.04	4.04	4.04	5.88	4.10	4.06
3	4.08	4.10	4.10	4.08	4.06	4.06	4.04	4.04	4.04	5.61	4.08	4.06
4	4.08	4.10	4.10	4.08	4.06	4.04	4.08	4.04	4.04	5.70	4.08	4.06
5	4.08	4.10	4.10	4.08	4.06	4.04	4.08	4.04	4.04	4.56	4.08	4.08
6	4.12	4.10	4.10	4.08	4.06	4.06	4.06	4.04	4.04	4.50	4.06	4.24
7	4.12	4.10	4.10	4.08	4.06	4.06	4.04	4.04	4.04	4.44	4.06	4.10
8	4.18	4.10	4.10	4.08	4.06	4.08	4.04	4.08	4.04	4.16	4.06	4.08
9	4.12	4.10	4.10	4.08	4.06	4.06	4.02	4.06	4.04	4.10	4.06	4.06
10	4.08	4.10	4.10	4.08	4.06	4.04	4.02	4.04	4.04	4.06	4.06	4.06
11	4.08	4.10	4.10	4.08	4.06	4.04	4.02	4.04	4.04	4.06	4.06	4.06
12	4.08	4.14	4.10	4.08	4.06	4.04	4.02	4.04	4.10	4.04	4.06	4.06
13	4.08	4.12	4.10	4.08	4.06	4.04	4.02	4.04	4.16	4.04	4.06	4.06
14	4.08	4.10	4.10	4.08	4.06	4.04	4.02	4.04	4.06	4.04	4.06	4.06
15	4.12	4.14	4.10	4.08	4.06	4.04	4.02	4.04	4.06	4.04	4.06	4.06
16	4.10	4.14	4.10	4.08	4.06	4.04	4.02	4.04	4.06	4.06	4.06	4.04
17	4.08	4.14	4.12	4.08	4.06	4.04	4.02	4.04	4.05	4.06	4.06	4.04
18	4.08	4.14	4.10	4.08	4.06	4.04	4.02	4.04	4.06	4.06	4.06	4.04
19	4.08	4.14	4.10	4.08	4.06	4.04	4.04	4.04	4.06	5.02	4.04	4.04
20	4.08	4.12	4.10	4.08	4.06	4.04	4.04	4.04	4.06	4.30	4.08	4.04
21	4.08	4.09	4.10	4.08	4.12	4.04	4.04	4.04	4.04	4.10	4.08	4.04
22	4.10	4.10	4.10	4.08	4.18	4.04	4.04	4.04	4.06	4.09	4.08	4.04
23	4.14	4.10	4.08	4.08	4.38	4.04	4.06	4.04	4.08	4.08	4.08	4.04
24	4.10	4.10	4.08	4.08	4.60	4.04	4.06	4.04	4.08	4.10	4.08	4.04
25	4.08	4.10	4.08	4.08	4.18	4.04	4.04	4.04	4.06	4.10	4.06	4.04
26	4.08	4.10	4.08	4.08	4.16	4.04	4.04	4.04	4.06	4.08	4.06	4.04
27	4.08	4.10	4.08	4.08	4.20	4.04	4.04	4.04	4.04	4.08	4.06	4.04
28	4.08	4.10	4.08	4.08	4.12	4.04	4.06	4.04	4.04	4.08	4.06	4.04
29	4.08	4.10	4.08	4.06	.....	4.04	4.04	4.04	4.04	4.08	4.06	4.04
30	4.08	4.10	4.08	4.06	.....	4.04	4.04	4.04	4.04	4.18	4.06	4.04
31	4.08	.....	4.08	4.06	.....	4.04	.....	4.04	.....	4.12	4.06	.....

Springbrook Lake near Guthrie Center, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	4.04	4.06	4.08	4.06	4.06	4.14	4.12	4.06	4.12	4.20	4.10	4.08
2	4.04	4.08	4.08	4.06	4.06	4.10	4.12	4.06	4.10	4.12	4.12	4.12
3	4.04	4.08	4.08	4.06	4.06	4.08	4.10	4.08	4.10	4.12	4.10	4.10
4	4.04	4.08	4.08	4.06	4.06	4.08	4.08	4.06	4.10	4.12	4.10	4.06
5	4.04	4.08	4.08	4.06	4.06	4.08	4.08	4.14	4.10	4.10	4.18	4.06
6	4.04	4.08	4.08	4.06	4.06	4.08	4.08	4.12	4.10	4.08	4.14	4.06
7	4.14	4.08	4.08	4.06	4.08	4.14	4.08	4.08	4.10	4.08	4.12	4.06
8	4.08	4.08	4.08	4.06	4.08	4.14	4.08	4.08	4.10	4.08	4.12	4.06
9	4.06	4.08	4.08	4.06	4.08	4.08	4.06	4.12	4.10	4.08	4.10	4.06
10	4.06	4.08	4.08	4.06	4.08	4.08	4.06	4.14	4.10	4.08	4.10	4.06
11	4.06	4.08	4.08	4.06	4.08	4.08	4.06	4.14	4.10	4.08	4.09	4.06
12	4.06	4.08	4.08	4.04	4.08	4.14	4.06	4.12	4.10	4.08	4.08	4.06
13	4.06	4.08	4.08	4.04	4.08	4.36	4.06	4.10	4.10	4.08	4.08	4.06
14	4.06	4.08	4.08	4.04	4.08	4.18	4.06	4.08	4.10	4.08	4.06	4.06
15	4.06	4.08	4.08	4.04	4.08	4.18	4.06	4.08	4.10	4.06	4.10	4.06
16	4.06	4.08	4.08	4.06	4.08	4.14	4.06	4.08	4.08	.....	4.08	4.06
17	4.06	4.08	4.08	4.06	4.08	4.12	4.06	4.08	4.08	.....	4.08	4.06
18	4.06	4.10	4.08	4.06	4.08	4.18	4.08	4.08	4.08	.....	4.06	4.10
19	4.06	4.08	4.08	4.06	4.08	4.72	4.06	4.51	4.08	.....	4.06	4.10
20	4.06	4.08	4.08	4.06	4.08	4.30	4.10	4.14	4.08	.....	4.06	4.08
21	4.06	4.06	4.08	4.06	4.08	4.14	4.12	4.12	4.08	.....	4.06	4.08
22	4.06	4.06	4.06	4.06	4.08	4.10	4.16	4.10	4.12	.....	4.06	4.08
23	4.06	4.06	4.06	4.06	4.08	4.10	4.10	4.12	4.10	.....	4.08	4.08
24	4.06	4.06	4.06	4.04	4.08	4.10	4.10	4.10	4.10	.....	4.06	4.08
25	4.06	4.06	4.06	4.04	4.08	4.10	4.08	4.08	4.10	.....	4.06	4.10
26	4.06	4.08	4.06	4.04	4.12	4.42	4.06	4.08	4.10	.....	4.06	4.14
27	4.06	4.08	4.06	4.04	4.10	4.14	4.06	4.08	4.10	4.10	4.06	4.12
28	4.06	4.08	4.06	4.04	4.14	4.12	4.14	4.14	4.10	4.10	4.06	4.10
29	4.06	4.08	4.06	4.04	.....	4.08	4.10	4.78	4.10	4.12	4.08	4.10
30	4.06	4.08	4.06	4.06	.....	4.10	4.06	5.12	4.10	4.10	4.08	4.08
31	4.06	.....	4.06	4.06	.....	4.08	.....	4.54	.....	4.10	4.08	.....
1959-60												
1	4.08	4.08	4.08	4.10	4.10	4.12	4.22	4.10	4.10	4.46	4.07	4.10
2	4.12	4.08	4.08	4.10	4.10	4.12	4.18	4.08	4.10	4.16	4.06	4.10
3	4.10	4.08	4.08	4.10	4.10	4.12	4.16	4.06	4.10	4.12	4.06	4.08
4	4.10	4.18	4.08	4.08	4.10	4.12	4.12	4.06	4.08	4.12	4.06	4.08
5	4.14	4.14	4.08	4.08	4.10	4.12	4.10	4.06	4.08	4.10	4.06	4.08
6	4.12	4.12	4.08	4.08	4.10	4.12	4.08	4.24	4.06	4.10	4.20	.....
7	4.09	4.08	4.08	4.08	4.10	4.12	4.08	4.16	4.06	4.10	4.14	.....
8	4.12	4.08	4.08	4.08	4.10	4.12	4.06	4.14	4.06	4.08	4.10	.....
9	4.10	4.08	4.08	4.08	4.10	4.12	4.04	4.12	4.06	4.78	4.10	.....
10	4.10	4.08	4.08	4.10	4.10	4.12	4.04	4.10	4.06	4.32	4.10	.....
11	4.10	4.08	4.08	4.10	4.10	4.12	4.04	4.10	4.06	4.14	4.08	.....
12	4.08	4.08	4.08	4.12	4.14	4.12	4.04	4.08	4.08	4.12	4.08	.....
13	4.08	4.08	4.08	4.12	4.14	4.12	4.04	4.08	4.10	4.12	4.08	.....
14	4.08	4.08	4.10	4.12	4.14	4.12	4.04	4.08	4.10	4.10	4.08	.....
15	4.08	4.08	4.10	4.12	4.14	4.12	4.04	4.08	4.10	4.10	4.08	.....
16	4.08	4.08	4.10	4.12	4.14	4.12	4.04	4.20	4.12	4.08	4.08	.....
17	4.08	4.08	4.10	4.12	4.14	4.12	4.30	4.12	4.16	4.08	4.10	.....
18	4.08	4.08	4.10	4.12	4.14	4.12	4.24	4.14	4.10	4.08	4.74	.....
19	4.08	4.08	4.10	4.12	4.14	4.12	4.10	4.12	4.08	4.08	4.20	.....
20	4.08	4.08	4.10	4.12	4.14	4.12	4.06	4.12	4.08	4.08	4.10	.....
21	4.08	4.08	4.10	4.12	4.12	4.12	4.04	4.14	4.08	4.08	4.10	.....
22	4.08	4.08	4.10	4.12	4.12	4.12	4.04	4.12	4.06	4.08	4.10	.....
23	4.08	4.08	4.10	4.10	4.12	4.12	4.04	4.10	4.06	4.06	4.10	.....
24	4.08	4.08	4.10	4.10	4.12	4.12	4.04	4.30	4.06	4.06	4.10	.....
25	4.10	4.08	4.10	4.10	4.12	4.12	4.10	4.48	4.06	4.06	4.10	.....
26	4.10	4.08	4.10	4.10	4.12	4.18	4.10	4.46	4.06	4.06	4.10	.....
27	4.10	4.08	4.14	4.10	4.12	4.30	4.08	4.20	4.06	4.06	4.10	.....
28	4.08	4.08	4.12	4.10	4.12	4.50	4.06	4.12	4.06	4.06	4.08	.....
29	4.08	4.08	4.10	4.10	4.12	4.54	4.06	4.12	4.06	4.06	4.14	.....
30	4.08	4.08	4.10	4.10	.....	4.56	4.16	4.10	4.10	4.06	4.10	.....
31	4.08	.....	4.10	4.10	.....	4.26	.....	4.10	.....	4.06	4.10	.....

Middle Raccoon River at Panora, Iowa

LOCATION.—Lat. $41^{\circ}41'15''$, long. in $94^{\circ}22'15''$, NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 5, T. 79 N., R. 30 W., on left bank 15 ft. downstream from highway bridge, 0.2 mile southeast of Panora and 1.5 miles upstream from Andy's Branch.

DRAINAGE AREA.—440 square miles.

RECORDS AVAILABLE.—June 1958 to September 1960.

GAGE.—Water-stage recorder and concrete control. Datum of gage is 991.20 ft. above mean sea level, datum of 1929.

EXTREMES.—1958-60: Maximum discharge, 9,150 cfs July 2, 1958 (gage height, 11.87 ft.), from rating curve extended above 4,500 cfs by logarithmic plotting; minimum daily, 12 cfs Nov. 14, 1959.

Flood of June 10, 1953 reached a stage of 14.3 ft., from floodmark (discharge, about 14,000 cfs).

REMARKS.—City of Panora diverts approximately 100 acre-ft. per year above station. Bankfull stage is about gage height, 11 ft.

Daily Discharge, in Cubic Feet per Second, for Water Year 1958

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1957-58									
1		44	232	62	16		108	56	*64
2		*4,670	290	56	17		102	54	58
3		*3,060	254	50	18		96	48	54
4		2,570	166	46	19		1,000	*56	50
5		929	126	329	20		687	83	50
6		*562	108	356	21		542	421	50
7		380	96	96	22		*365	464	46
8		276	86	76	23		258	380	45
9		215	76	64	24		68	267	325
10		186	68	56	25		*64	211	262
11		170	60	50	26		60	162	170
12		154	56	48	27		66	158	123
13		151	58	46	28		56	154	102
14		185	60	54	29		52	126	88
15		130	58	68	30		46	194	80
					31		227	73	.....

Middle Raccoon River at Panora, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	36	33	23	18	15	450	315	232	2,000	*608	41	45
2	36	33	25	18	15	600	365	202	1,330	500	44	150
3	36	33	29	18	15	596	320	369	799	345	48	85
4	36	32	32	17	15	306	260	626	584	258	50	50
5	34	32	18	17	15	79	220	608	464	215	50	35
6	34	29	23	17	15	31	190	638	418	190	48	28
7	39	29	21	17	15	58	165	584	360	162	45	23
8	42	31	20	17	15	58	145	488	310	144	40	21
9	48	31	19	17	16	58	130	434	280	130	37	*18
10	42	29	19	17	16	93	110	518	254	117	34	16
11	34	29	18	17	16	*166	96	560	236	108	*31	17
12	38	29	18	17	16	350	84	434	223	99	28	19
13	39	29	18	17	16	700	74	396	219	93	27	19
14	36	29	18	18	17	965	68	355	182	*88	27	19
15	33	32	18	20	17	392	62	310	166	83	34	20
16	33	32	*18	20	17	186	60	285	*158	80	34	19
17	33	39	18	20	*17	*190	70	272	144	78	32	25
18	32	*44	18	18	17	194	90	370	123	84	31	31
19	32	44	19	16	17	804	86	*305	117	76	27	31
20	32	44	20	16	17	1,160	140	254	105	70	26	33
21	32	36	21	16	17	542	*285	305	102	64	25	32
22	32	34	23	16	17	295	446	232	190	60	25	26
23	32	33	25	16	18	254	560	223	114	60	29	23
24	32	32	26	16	20	254	476	219	90	54	31	21
25	34	31	26	16	26	219	370	198	86	51	30	32
26	31	17	27	16	90	470	300	186	73	48	28	42
27	32	16	28	*16	320	668	272	166	70	46	27	56
28	*32	26	29	16	450	554	345	208	114	46	27	40
29	*32	25	24	16	.....	375	330	701	345	56	27	31
30	31	20	20	15	.....	315	272	1,380	536	47	27	25
31	32	.....	19	15	.....	288	.....	1,340	.....	43	30	.....
1959-60												
1	22	28	*28	39	36	*33	4,410	219	280	680	*54	68
2	26	*26	28	52	*36	33	*3,350	*182	250	360	52	56
3	29	25	32	39	36	32	1,950	162	220	232	48	48
4	34	32	34	32	38	32	*1,270	148	210	182	46	44
5	40	42	26	28	39	32	1,000	198	190	*151	140	42
6	34	76	20	26	39	31	820	2,030	*182	137	320	*83
7	*28	39	26	*25	40	31	687	2,710	166	123	226	44
8	27	36	33	27	42	31	560	1,120	158	117	144	44
9	27	39	26	29	45	31	452	774	148	381	70	44
10	27	39	28	32	29	31	380	536	140	227	54	40
11	26	38	33	35	44	31	360	418	140	158	48	39
12	25	39	28	80	48	31	340	345	178	182	45	38
13	22	34	23	66	46	31	300	305	202	244	42	36
14	21	12	34	56	43	32	290	276	194	223	39	36
15	21	23	36	48	40	32	272	249	170	162	38	36
16	21	26	34	41	37	33	262	290	215	140	38	36
17	21	22	35	38	38	33	596	262	240	130	118	36
18	21	19	29	36	40	34	799	249	215	123	276	42
19	21	20	28	35	43	35	524	300	215	114	178	45
20	21	25	29	35	46	35	407	340	249	105	96	70
21	19	28	31	39	46	36	350	512	340	93	83	56
22	20	33	31	45	44	38	290	542	276	86	60	46
23	22	42	29	49	41	42	267	452	236	80	52	58
24	21	42	29	54	39	42	249	396	202	76	48	102
25	21	26	31	50	37	42	240	560	174	72	71	126
26	22	34	33	47	36	45	223	778	158	68	111	90
27	25	19	40	43	35	179	202	848	144	66	64	66
28	22	29	68	40	35	590	190	530	137	64	67	54
29	25	32	78	38	34	1,500	202	410	130	62	178	50
30	26	26	83	37	.....	3,000	280	360	418	60	137	48
31	27	.....	25	36	.....	*4,130	.....	310	.....	56	90	.....

Middle Raccoon River at Panora, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58.....										592	148	71.6
1958-59.....	34.7	31.1	21.9	17.0	44.9	376	224	432	340	132	33.5	34.4
1959-60.....	24.6	31.7	34.4	41.2	39.7	332	717	542	206	160	97.8	54.1

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58.....										1.35	0.336	0.18
1958-59.....	0.079	0.071	0.050	0.039	0.102	0.855	0.509	0.982	0.773	0.300	.076	.078
1959-60.....	.056	.072	.078	.094	.090	.755	1.63	1.23	.468	.364	.222	.123

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58.....										1.55	0.39	0.18
1958-59.....	0.09	0.08	0.06	0.04	0.11	0.99	0.57	1.13	0.86	.35	.09	.09
1959-60.....	.06	.08	.09	.11	.10	.87	1.82	1.42	.52	.42	.26	.14

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1958(1).....	July 2, 1958.....	11.87	9,150						
1959.....	June 1, 1959.....	7.50	2,480	15	144	0.327	4.46	144	4.46
1960.....	Mar. 31, 1960.....	9.68	5,320	12	190	.432	5.89		

(1) Period June 24 to Sept. 30, 1958.

Peak Discharge (base, 2,500 cfs)

1957-58: July 2 (5:30 a.m.) 9,150 cfs (11.87 ft.); July 3 (12 p.m.) 4,200 cfs (8.95 ft.); July 19 (12 m) 3,090 cfs (8.07 ft.).

1958-59: No peak above base.

1959-60: Mar. 31 (7 p.m.) 5,320 cfs (9.68 ft.); May 7 (5:30 a.m.) 3,740 cfs (8.33 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 26, 27, Dec. 9-21, 29-31, 1958; Jan. 1 to Feb. 11, Feb. 18-20, Feb. 26 to Mar. 2, Mar. 12, 13, 1959; Jan. 4-6, Feb. 14 to Mar. 20, 1960. No gage-height record Jan. 11 to Feb. 1, Mar. 29, 30, May 28 to June 5, 1960.

South Raccoon River at Redfield, Iowa

LOCATION.—Lat. $41^{\circ}34'45''$, long. $94^{\circ}11'00''$, in SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 3 T. 78 N., R. 29 W., on left bank 10 ft. upstream from highway bridge at Redfield, 0.8 mile downstream from bridge on State Highway 90, 1 mile downstream from Middle Raccoon River and 15.6 miles upstream from mouth.

DRAINAGE AREA.—988 square miles (revised in 1956).

RECORDS AVAILABLE.—March 1940 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 896.43 ft. above mean sea level, datum of 1929. Prior to June 12, 1946, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—20 years, 414 cfs.

EXTREMES.—1940-60: Maximum discharge, 35,000 cfs July 2, 1958 (gage height, 29.04 ft., from floodmark); minimum daily, 19 cfs July 27, 1940, Nov. 30, 1955.

REMARKS.—Bankfull stage is about gage height, 20 ft.

REVISIONS.—WSP 1508: 1940.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	48	32	22	35	30	90	56	67	142	46	565	56
2.....	30	32	26	35	*30	150	60	86	84	50	263	48
3.....	28	*32	31	36	30	140	61	82	65	40	142	45
4.....	*28	40	35	36	31	120	60	67	53	319	96	*2,370
5.....	30	42	31	36	32	108	58	*61	46	221	69	2,060
6.....	28	42	33	*35	33	98	58	60	56	92	555	*1,530
7.....	28	38	35	35	34	88	60	54	1,340	67	942	664
8.....	30	37	33	35	34	125	53	51	1,160	126	848	305
9.....	28	40	32	35	34	105	50	48	416	88	*387	205
10.....	28	42	30	35	34	88	50	51	172	54	116	151
11.....	28	43	31	35	34	112	48	53	106	*42	525	118
12.....	30	42	32	35	34	90	46	67	82	65	688	101
13.....	30	40	33	35	35	105	46	231	69	111	683	88
14.....	30	38	32	35	35	118	46	785	56	53	280	80
15.....	30	40	31	35	35	130	46	308	50	87	154	76
16.....	30	43	30	34	35	112	46	148	46	437	1,010	69
17.....	28	36	30	32	33	100	43	101	43	104	294	60
18.....	28	28	30	30	31	103	43	78	43	56	291	58
19.....	28	30	30	30	34	91	43	69	42	150	588	53
20.....	28	34	31	31	36	90	40	61	310	166	308	51
21.....	28	37	32	31	36	91	40	56	243	88	181	50
22.....	28	41	34	31	37	90	40	56	94	56	113	50
23.....	28	39	35	32	37	87	40	53	63	48	84	46
24.....	28	43	33	32	37	80	38	50	56	38	72	43
25.....	31	39	32	33	37	78	42	45	40	32	61	46
26.....	32	41	35	33	37	76	40	43	43	31	53	43
27.....	32	31	37	34	43	74	40	40	37	30	46	42
28.....	32	25	39	35	48	74	58	40	37	73	45	36
29.....	34	21	37	34	*53	80	38	36	496	45	36	36
30.....	32	*19	36	32	.....	58	70	298	48	187	53	36
31.....	31	.....	36	30	.....	56	.....	*322	.....	109	56	.....

South Raccoon River at Redfield, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1956-57													
1		36	51	94	91	39	142	470	132	270	344	74	104
2		*37	48	100	95	40	111	430	123	208	312	70	178
3		36	48	106	70	40	88	322	108	190	288	67	221
4		38	72	106	70	41	80	322	99	172	270	65	106
5		37	545	96	66	42	73	368	94	154	254	58	74
6		36	530	47	64	42	66	274	92	140	244	54	72
7		36	298	53	61	43	60	254	88	178	211	51	76
8		36	196	70	58	44	60	231	84	187	199	48	82
9		37	145	72	56	60	70	199	84	175	187	48	69
10		37	121	72	53	135	88	187	464	401	175	48	63
11		36	111	66	51	320	78	190	305	818	160	48	69
12		36	101	58	49	300	74	151	247	448	145	48	186
13		70	90	52	46	265	70	140	514	330	129	54	172
14		109	86	52	45	220	74	134	835	*1,130	132	90	113
15		86	86	53	43	180	56	132	685	*2,830	169	94	94
16		220	94	54	42	170	58	*129	551	7,380	408	105	*96
17		99	88	52	41	145	67	132	479	*10,400	348	74	88
18		63	84	*51	41	120	176	132	376	*5,720	184	67	76
19		56	80	51	40	105	*274	123	330	2,350	142	63	70
20		50	78	54	40	*84	211	118	294	1,510	123	*58	67
21		48	70	56	45	78	184	108	*557	1,140	116	63	69
22		46	64	58	*60	74	175	101	1,020	1,140	113	67	67
23		45	74	60	56	72	163	101	524	1,750	*111	63	63
24		42	83	60	48	88	154	99	336	885	111	56	58
25		43	90	60	42	105	100	99	302	685	99	51	58
26		40	90	64	40	125	130	414	344	660	92	46	54
27		38	78	69	40	150	165	390	240	585	88	128	51
28		38	78	74	39	166	227	215	205	575	106	199	50
29		61	86	80	39	.....	291	172	187	640	132	154	48
30		84	90	80	39	.....	364	148	717	430	96	210	48
31		60	.....	80	39	.....	398	.....	505	.....	84	215	.....
1957-58													
1		46	132	310	150	115	1,050	266	175	155	98	650	146
2		46	206	330	200	115	775	284	181	121	*18,600	650	135
3		45	332	310	250	118	628	284	190	110	*12,600	628	127
4		43	277	*290	220	120	564	321	187	105	12,500	466	121
5		43	213	310	190	122	542	372	175	184	3,590	380	1,820
6		80	190	320	180	*122	605	364	172	149	1,840	340	*13,500
7		272	181	290	170	122	574	336	172	118	1,190	313	973
8		198	178	250	160	120	538	306	190	105	869	298	530
9		291	150	220	150	115	484	295	193	105	*700	296	476
10		184	120	170	145	110	515	280	187	248	605	237	362
11		130	135	140	140	107	452	270	172	199	546	220	264
12		103	155	170	138	102	448	259	155	149	497	203	227
13		94	160	210	135	100	470	248	144	370	456	193	213
14		*94	169	230	133	97	492	241	135	650	643	*193	244
15		105	166	260	135	94	456	237	138	443	709	187	416
16		108	193	285	140	91	430	*227	181	280	394	166	*284
17		110	280	*310	144	89	384	213	172	*244	356	155	230
18		103	250	348	148	*87	*376	206	152	220	348	146	199
19		98	190	300	150	85	356	203	135	187	5,220	*138	181
20		87	230	340	152	83	348	203	*118	163	3,290	160	178
21		83	*305	300	158	81	332	196	113	141	1,620	580	178
22		94	320	280	*158	80	325	190	118	141	*1,050	675	163
23		160	330	280	158	350	317	196	113	158	775	506	146
24		237	340	250	155	1,700	302	216	108	146	650	456	190
25		210	340	250	150	1,450	291	213	105	127	725	389	169
26		172	340	240	145	1,200	288	193	101	116	528	298	146
27		149	350	230	135	1,300	284	181	98	110	587	234	132
28		141	380	220	130	1,450	284	193	94	105	484	199	130
29		135	360	180	120	.....	277	193	92	96	389	181	130
30		132	280	150	115	.....	273	181	92	87	862	169	124
31		127	.....	120	113	.....	266	.....	117	.....	775	158	.....

South Raccoon River at Redfield, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	118	96	58	54	45	1,200	800	587	3,210	1,500	96	124
2	118	98	62	50	45	1,680	825	510	2,580	975	105	497
3	118	98	70	47	45	1,350	725	990	1,680	725	121	223
4	118	96	80	46	45	700	592	1,120	1,280	574	116	141
5	113	92	66	45	45	364	502	1,740	1,020	484	118	92
6	108	85	58	45	45	260	438	1,400	875	412	116	68
7	132	85	54	45	47	172	398	1,180	750	352	101	66
8	169	87	60	45	50	181	389	1,000	650	329	98	59
9	155	89	57	46	52	259	352	950	592	295	85	*53
10	138	87	55	47	52	302	329	1,200	538	259	83	50
11	116	85	54	49	52	425	310	1,350	497	241	*76	48
12	110	85	53	51	52	825	295	1,000	479	237	70	48
13	110	87	52	53	54	1,450	280	875	452	220	64	50
14	*113	92	52	55	56	2,100	273	775	394	*199	68	52
15	110	94	52	56	56	975	259	675	368	187	161	52
16	110	94	*52	57	56	438	*241	628	*344	181	113	*50
17	105	118	52	56	*56	*412	255	378	325	187	85	53
18	101	*163	52	55	56	398	295	733	310	303	*74	62
19	101	141	53	53	56	2,090	284	*1,410	298	199	70	121
20	103	130	54	50	56	2,640	628	1,530	288	166	64	96
21	103	110	55	49	56	1,400	*750	1,280	277	155	62	79
22	98	98	57	47	56	750	975	950	364	*146	61	70
23	98	94	59	46	60	700	975	925	317	144	462	61
24	96	92	61	45	75	675	875	775	255	130	149	57
25	98	89	62	45	110	569	700	675	244	121	85	91
26	96	66	63	45	350	1,640	582	628	227	116	70	127
27	94	66	64	*45	1,600	1,740	1,110	564	227	108	64	163
28	*94	70	66	45	1,400	1,250	1,810	716	310	110	62	124
29	94	60	66	45	900	925	3,280	542	138	62	87	
30	94	54	64	45	775	700	3,840	1,620	113	68	74	
31	92	58	45	775	775	3,140	101	76	76	76	76	76
1959-60												
1	66	76	*86	110	124	*110	8,170	740	645	1,770	132	193
2	68	*74	90	130	*120	109	*6,190	591	591	965	*127	166
3	92	70	96	105	118	108	3,880	*528	532	600	121	146
4	89	184	86	82	116	107	2,680	474	524	456	118	132
5	130	193	78	72	114	106	2,120	524	478	*384	344	124
6	132	160	70	68	112	105	1,700	6,380	*434	364	1,770	*135
7	*98	138	80	*70	110	104	1,430	6,020	400	317	1,040	138
8	105	135	82	76	108	103	1,160	2,920	384	288	492	116
9	101	138	81	82	108	102	940	1,840	368	968	266	116
10	89	132	78	92	108	101	815	1,370	356	1,040	203	113
11	81	121	82	110	110	100	765	1,130	372	622	178	108
12	72	116	90	400	112	100	690	965	434	524	166	103
13	70	113	82	452	114	100	645	865	501	765	155	98
14	68	83	76	284	116	100	622	790	447	591	144	98
15	64	68	80	210	118	102	578	715	400	429	132	101
16	62	72	86	170	120	104	582	890	492	364	138	101
17	61	76	82	155	122	106	1,690	890	519	329	276	101
18	59	80	80	145	124	108	2,540	*940	429	302	1,490	121
19	59	84	78	135	128	110	1,460	1,020	424	291	668	121
20	*59	76	78	145	130	112	1,070	965	478	262	372	130
21	59	94	79	155	128	116	890	1,220	715	*237	262	*138
22	59	110	79	165	126	120	765	1,310	*564	220	213	132
23	61	135	83	168	122	125	690	1,040	465	206	187	155
24	61	149	81	168	120	130	622	990	392	193	175	420
25	55	90	83	165	118	135	622	1,700	344	181	213	356
26	62	82	87	158	116	140	586	2,330	317	172	259	223
27	64	72	98	150	114	1,500	524	1,980	295	163	196	169
28	66	80	273	144	113	*3,240	496	1,250	280	160	260	141
29	64	82	266	138	112	5,340	537	990	270	155	560	138
30	66	82	223	134	112	8,260	1,100	840	420	149	388	135
31	76	90	128	128	112	7,270	715	141	141	248	248	248

South Raccoon River at Redfield, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	30.1	36.2	32.4	34.0	35.5	96.5	50.0	115	169	115	310	287
1956-57.....	56.0	125	67.7	51.9	118	140	210	352	1,451	180	81.8	88.1
1957-58.....	127	242	257	154	347	443	246	144	184	2,371	317	738
1958-59.....	111	93.4	58.7	48.6	169	948	596	1,194	710	303	100	97.9
1959-60.....	74.8	106	99.5	154	117	918	1,552	1,449	442	439	364	149

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.030	0.037	0.033	0.034	0.036	0.098	0.051	0.116	0.171	0.116	0.314	0.290
1956-57.....	.057	.127	.069	.053	.119	.142	.213	.356	1.47	.182	.083	.089
1957-58.....	.129	.245	.260	.156	.351	.448	.249	.146	.186	2.40	.321	.747
1958-59.....	.112	.095	.059	.049	.171	.960	.603	1.21	.719	.307	.101	.099
1959-60.....	.076	.107	.101	.156	.118	.929	1.57	1.47	.447	.444	.368	.151

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.04	0.04	0.04	0.04	0.04	0.11	0.06	0.13	0.19	0.13	0.36	0.32
1956-57.....	.07	.14	.08	.06	.12	.16	.24	.41	1.64	.21	.10	.10
1957-58.....	.15	.27	.30	.18	.37	.52	.28	.17	.21	2.77	.37	.83
1958-59.....	.13	.11	.07	.06	.18	1.11	.67	1.39	.80	.35	.12	.11
1959-60.....	.09	.12	.12	.18	.13	1.07	1.75	1.69	.50	.51	.43	.17

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955.....								203	2.80
1956.....	Sept. 4, 1956.....	9.80	3,840	19	109	0.110	1.50	122	1.67
1957.....	June 17, 1957.....	17.80	12,700	36	242	.245	3.33	274	3.76
1958.....	July 2, 1958.....	29.04	35,000	43	466	.472	6.42	436	6.01
1959.....	May 30, 1959.....	10.95	5,420	45	371	.376	5.10	372	5.12
1960.....	Mar. 30, 1960.....	15.29	9,340	55	490	.496	6.76		
	May 7, 1960.....	15.31	9,340						

Peak Discharge (base, 5,000 cfs)

1955-56: No peak above base.

1956-57: June 17 (6 a.m.) 12,700 cfs (17.80 ft.).

1957-58: July 2 (4:30 p.m.) 35,000 cfs (29.04 ft.); July 4 (4 a.m.) 14,200 cfs (19.28 ft.); July 19 (6:30 p.m.) 9,580 cfs (15.80 ft.); Sept. 6 (5 a.m.) 25,500 cfs (25.12 ft.).

1958-59: May 30 (8 a.m.) 5,420 cfs (10.95 ft.).

1959-60: Mar. 30 (2:30 a.m.) 9,340 cfs (15.29 ft.); May 7 (2 a.m.) 9,340 cfs (15.31 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 15 to Dec. 31, 1955; Jan. 1 to Mar. 24, Nov. 21 to Dec. 2, Dec. 6-31, 1956; Jan. 1 to Feb. 27, Mar. 4-9, 15, 16, 25-27, Nov. 9-11, Nov. 18 to Dec. 31, 1957; Jan. 1 to Feb. 27, Nov. 26 to Dec. 31, 1958; Jan. 1 to Mar. 1, Mar. 6, Nov. 6, 15-21, Nov. 25 to Dec. 20, Dec. 31, 1959; Jan. 1-12, Jan. 15 to Mar. 27, 1960.

Raccoon River at Van Meter, Iowa

LOCATION.—Lat. 41°32'00", long. 93°57'10", in SW ¼ SW ¼ sec. 22, T. 76 N., R. 27 W., on right bank 100 ft. downstream from highway bridge, 0.3 mile northeast of Van Meter, 1.2 mile downstream from confluence of the North and South Raccoon Rivers, and 30 miles upstream from mouth.

DRAINAGE AREA.—3,441 square miles (revised in 1956).

RECORDS AVAILABLE.—April 1915 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 841.16 ft. above mean sea level, datum of 1929. Prior to Oct. 1, 1915, chain gage at same site at datum 2.00 ft. higher. Oct. 1, 1915, to May 30, 1923, chain gage; May 31, 1923, to Sept. 30, 1927, water-stage recorder; and Oct. 1, 1927, to Aug. 8, 1934, chain gage; all at same site and datum.

AVERAGE DISCHARGE.—45 years, 1,174 cfs.

EXTREMES.—1915-60: Maximum discharge, 41,200 cfs June 13, 1947; maximum gage height, 21.77 ft. July 3, 1958; minimum daily discharge, 10 cfs Jan. 22-31, 1940.

REMARKS.—Bankfull stage is about gage height, 13 ft.

REVISIONS (water years).—WSP 1508: 1915(M), 1916-17, 1918-23(M), 1925(M), 1926, 1933(M), 1939(M), 1947(M), 1949(M).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	88	60	*37	57	50	110	190	131	476	69	434	82
2	63	60	44	58	*50	140	186	148	269	79	493	69
3	57	63	52	59	50	160	182	162	196	72	261	60
4	*57	*63	60	59	50	175	168	148	237	125	162	2,070
5	63	69	70	60	52	180	165	*134	261	364	124	*2,070
6	63	69	58	*60	54	190	193	134	230	176	88	2,400
7	69	66	60	56	54	170	128	131	903	118	1,400	*1,040
8	69	60	58	59	54	220	155	121	1,800	124	743	476
9	63	63	56	54	54	180	148	114	980	151	966	299
10	66	72	55	54	54	190	141	121	476	108	237	226
11	72	76	56	54	54	200	138	134	308	*76	*376	182
12	66	79	56	54	54	195	134	138	230	76	492	158
13	57	76	56	54	54	190	128	165	190	148	1,140	134
14	54	76	56	54	54	180	124	945	155	118	340	121
15	54	72	55	54	54	175	111	1,140	134	79	211	108
16	51	88	54	52	54	190	108	504	118	328	822	98
17	54	74	53	49	54	180	105	286	108	294	675	92
18	54	66	52	45	52	175	98	211	98	133	411	79
19	54	58	50	43	54	170	131	172	108	127	506	72
20	57	53	47	43	58	170	88	145	272	230	482	69
21	60	60	49	44	60	180	85	128	350	165	303	63
22	60	64	51	45	61	200	82	118	241	121	204	63
23	63	64	53	45	62	210	66	108	134	85	151	60
24	63	60	55	45	63	215	66	98	95	63	121	54
25	60	66	57	45	63	215	72	92	79	54	101	48
26	60	70	58	45	64	218	76	88	79	45	85	51
27	63	74	59	45	68	218	82	85	69	39	79	48
28	69	64	60	45	76	215	111	82	63	51	76	45
29	72	52	60	48	*80	*207	155	82	57	272	69	42
30	66	44	59	50	.....	193	141	121	57	299	72	39
31	63	.....	58	50	.....	182	.....	*856	.....	155	76	.....

Raccoon River at Van Meter, Iowa—Continued

Daily Discharge, in Cubic Feet Per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1.....	38	66	140	134	58	211	728	286	686	1,520	282	243
2.....	*38	66	148	142	59	187	716	264	500	1,240	251	227
3.....	40	64	154	150	60	168	608	239	578	1,080	231	350
4.....	40	86	158	130	62	180	554	215	584	930	211	264
5.....	40	311	146	120	64	180	620	203	505	860	195	207
6.....	38	704	120	110	66	150	527	195	435	1,460	175	187
7.....	35	450	114	104	70	130	456	191	405	2,360	158	172
8.....	38	320	136	98	75	120	430	187	420	1,780	147	179
9.....	35	251	140	93	105	116	385	350	400	1,280	140	164
10.....	35	215	138	89	160	150	365	954	380	1,000	134	154
11.....	35	195	116	85	250	179	365	662	1,330	860	128	161
12.....	35	179	93	80	500	168	315	435	1,120	818	125	215
13.....	201	164	78	77	480	164	282	717	716	752	131	300
14.....	460	158	76	73	400	161	273	1,290	*900	662	168	235
15.....	110	*150	77	70	350	145	260	1,280	5,560	602	158	195
16.....	163	158	73	67	305	135	*255	1,080	10,000	608	158	*179
17.....	179	150	71	65	270	140	255	1,000	*17,800	812	164	175
18.....	92	140	*71	63	235	199	251	806	19,200	544	131	168
19.....	72	137	72	62	205	*405	251	710	12,400	435	134	161
20.....	64	132	77	61	*185	370	247	797	6,110	385	*122	154
21.....	58	120	86	60	160	345	231	*800	4,380	350	131	158
22.....	56	106	96	*74	150	325	219	1,370	3,500	330	125	150
23.....	51	120	102	92	145	325	215	1,280	4,270	*310	134	144
24.....	49	130	102	76	140	320	207	1,320	3,280	315	119	137
25.....	49	134	100	68	140	290	203	1,120	2,550	335	110	131
26.....	49	134	106	64	160	280	543	1,000	2,180	310	110	128
27.....	49	128	112	60	180	385	886	812	2,040	345	172	122
28.....	46	120	118	59	211	430	466	620	1,910	291	291	116
29.....	49	126	124	58	.....	505	365	532	2,180	360	282	113
30.....	92	136	124	58	.....	602	315	800	1,730	360	223	110
31.....	83	.....	126	58	.....	644	.....	1,240	.....	330	345	.....
1957-58												
1.....	110	260	640	370	255	2,950	652	634	396	760	1,780	325
2.....	107	310	700	460	260	2,220	670	628	289	12,700	1,600	307
3.....	104	415	720	520	265	1,780	696	604	264	*27,700	1,500	294
4.....	98	456	570	560	270	1,500	722	622	272	22,200	1,190	276
5.....	95	435	640	580	230	1,320	800	592	780	15,100	980	1,050
6.....	110	425	700	530	210	1,320	870	556	2,740	*6,920	884	*16,700
7.....	296	425	670	490	210	1,320	912	544	3,830	4,880	800	3,870
8.....	211	420	560	450	225	1,280	964	550	4,490	*3,810	742	1,240
9.....	340	390	450	400	230	1,240	1,020	562	3,830	3,080	683	*912
10.....	278	355	350	340	230	1,140	1,060	550	3,610	2,560	616	768
11.....	227	340	260	300	220	1,100	1,000	538	3,830	2,220	568	628
12.....	199	350	340	310	205	1,000	926	514	2,850	2,140	532	550
13.....	187	365	450	330	195	996	863	490	2,550	2,220	490	502
14.....	179	365	600	350	185	1,020	821	466	3,060	2,550	472	496
15.....	*187	370	650	355	175	1,020	780	448	2,650	3,500	448	742
16.....	183	375	670	360	170	1,010	*742	466	2,450	2,360	414	670
17.....	191	450	*680	355	160	972	702	484	*2,140	1,860	380	574
18.....	179	544	700	340	*150	*898	670	436	2,090	1,680	360	520
19.....	179	466	710	330	145	835	652	375	2,000	6,260	*340	478
20.....	172	380	700	320	140	800	634	*340	1,550	9,080	466	454
21.....	168	*638	690	355	135	761	616	316	1,240	5,080	972	448
22.....	175	660	670	*375	135	728	592	316	1,020	*3,940	1,370	419
23.....	215	620	680	340	200	716	586	312	964	2,950	912	386
24.....	291	680	590	355	1,000	696	598	294	912	2,360	768	408
25.....	300	710	630	310	1,600	676	598	280	891	2,270	676	380
26.....	268	730	600	290	2,250	664	580	268	856	1,860	604	335
27.....	290	770	550	290	2,950	664	562	251	828	1,820	520	307
28.....	255	820	510	290	3,610	670	580	239	787	1,550	460	284
29.....	251	720	460	280	.....	670	628	232	716	1,280	414	268
30.....	251	660	340	260	.....	664	640	232	640	1,730	380	260
31.....	251	.....	220	245	.....	652	.....	355	.....	2,090	350	.....

Raccoon River at Van Meter, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	243	174	115	106	78	2,600	2,360	1,550	10,600	4,160	272	209
2	228	188	*125	97	75	3,600	2,360	1,320	11,800	3,280	272	492
3	228	184	150	93	72	2,300	2,220	1,600	*12,200	3,390	294	439
4	228	*184	170	89	71	1,700	1,860	2,010	13,300	3,060	294	272
5	220	181	145	86	70	1,900	1,600	2,950	12,800	2,450	280	239
6	209	174	125	86	70	1,000	1,370	2,950	10,600	*1,960	294	292
7	*232	167	105	88	70	780	1,190	2,750	6,060	1,640	430	292
8	268	170	120	90	70	700	1,100	2,750	3,940	1,460	466	195
9	316	174	115	94	71	*650	1,010	3,170	*3,170	1,240	375	170
10	255	167	105	100	72	840	926	4,050	2,750	1,060	325	148
11	243	164	100	105	*73	1,150	877	4,050	2,450	940	*289	135
12	228	164	95	110	75	1,500	828	3,280	2,220	870	255	126
13	220	164	92	112	76	2,800	*787	2,950	2,000	800	232	120
14	217	174	90	*114	80	3,500	**748	*2,750	1,780	735	213	117
15	209	184	92	116	82	2,700	709	2,450	1,600	676	322	114
16	209	188	94	114	84	2,100	676	2,140	1,420	646	312	*108
17	202	239	97	112	84	1,500	670	1,910	1,280	634	232	111
18	195	284	100	110	81	1,240	702	1,860	1,100	702	206	120
19	188	239	104	108	84	2,880	709	2,850	1,060	622	195	157
20	192	264	108	104	84	5,720	1,100	2,930	988	538	184	202
21	195	243	110	100	84	4,490	1,500	3,720	940	502	178	164
22	188	228	112	96	84	3,500	1,960	2,750	912	466	167	145
23	188	217	116	93	200	2,650	2,360	2,750	956	442	320	152
24	184	213	118	90	350	2,320	2,450	2,450	828	408	478	126
25	181	206	120	89	310	2,140	2,220	2,360	754	380	206	183
26	184	180	120	87	630	3,570	1,860	2,180	728	355	167	209
27	178	160	120	85	1,000	4,600	2,550	1,910	709	330	148	251
28	181	160	122	84	2,000	4,270	4,050	1,910	748	325	145	235
29	181	140	122	82	.....	3,500	2,270	6,060	1,960	345	151	192
30	178	105	120	82	.....	2,750	1,820	8,420	4,580	325	192	170
31	178	.....	114	80	.....	2,450	.....	9,200	.....	298	198	.....
1959-60												
1	161	164	295	560	435	290	*26,400	2,220	4,380	3,610	415	604
2	164	154	315	580	420	280	30,500	1,960	3,720	2,950	380	676
3	181	*157	310	410	405	280	23,700	1,780	3,170	2,180	355	628
4	188	725	305	320	395	270	18,100	1,640	2,850	1,730	330	526
5	224	484	285	270	390	265	13,800	1,550	2,550	1,500	*340	454
6	255	350	250	310	385	260	11,000	7,320	*2,270	1,370	1,860	392
7	220	320	225	*370	380	260	8,920	*12,800	2,000	1,190	1,320	386
8	195	302	255	500	*375	255	6,890	8,220	1,820	1,060	905	330
9	213	325	280	590	370	*255	5,460	5,720	1,730	1,550	664	325
10	188	335	289	700	370	255	4,490	4,490	1,600	2,750	532	298
11	181	312	302	800	370	255	3,830	3,610	1,500	*1,860	448	280
12	*167	302	294	910	380	255	*3,390	3,060	1,600	1,550	392	*264
13	161	307	298	760	390	250	2,950	2,650	1,680	1,780	355	255
14	157	220	264	640	390	250	2,750	2,360	1,600	1,500	330	255
15	161	190	260	560	390	250	2,450	2,090	*1,460	1,550	307	255
16	161	230	255	500	390	255	2,320	2,140	1,500	1,600	289	260
17	157	255	255	445	385	260	3,390	2,270	1,550	1,460	490	251
18	154	285	245	420	380	260	5,720	2,040	1,460	1,240	2,180	280
19	151	305	260	410	375	265	4,270	2,360	1,820	1,100	1,320	289
20	145	310	255	395	370	265	3,390	2,360	2,550	1,010	940	289
21	145	315	255	385	360	270	2,850	2,750	3,390	933	780	320
22	145	310	260	375	350	270	2,550	3,280	3,610	850	628	355
23	148	300	264	370	340	275	2,270	3,830	2,850	780	514	370
24	145	305	239	385	330	275	2,040	5,200	2,320	730	448	931
25	138	235	243	415	320	275	1,960	6,140	2,000	690	817	787
26	141	220	264	435	315	275	2,550	9,650	1,780	640	872	610
27	145	190	316	455	305	600	2,320	8,780	1,600	600	490	532
28	145	180	586	465	295	3,000	1,960	8,780	1,420	560	650	484
29	148	240	604	470	295	5,000	1,860	9,500	1,320	520	1,460	454
30	148	*265	520	465	.....	9,000	2,650	8,640	1,550	480	856	448
31	161	.....	430	455	.....	*15,200	.....	6,110	.....	450	646	.....

Raccoon River at Van Meter, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	62.3	66.0	55.0	51.1	57.3	187	125	227	293	146	377	347
1956-57	78.0	178	109	83.9	187	262	393	735	3,602	762	174	180
1957-58	204	497	571	369	572	1,074	738	436	1,818	5,178	731	1,162
1958-59	211	189	114	96.8	221	2,506	1,561	3,097	3,877	1,130	261	190
1959-60	168	286	306	488	367	1,280	6,891	4,687	2,155	1,348	720	420

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.018	0.019	0.016	0.015	0.017	0.054	0.036	0.066	0.085	0.042	0.110	0.101
1956-57	.023	.052	.032	.024	.054	.076	.114	.214	1.05	.221	.051	.052
1957-58	.059	.144	.166	.107	.166	.312	.214	.127	.528	1.50	.212	.338
1958-59	.061	.055	.033	.028	.064	.728	.454	.900	1.13	.328	.076	.055
1959-60	.049	.083	.089	.142	.107	.372	2.00	1.36	.626	.392	.209	.122

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.02	0.02	0.02	0.02	0.02	0.06	0.04	0.08	0.09	0.05	0.13	0.11
1956-57	.03	.06	.04	.03	.06	.09	.13	.25	1.17	.26	.06	.06
1957-58	.07	.16	.19	.12	.17	.36	.24	.15	.59	1.73	.25	.38
1958-59	.07	.06	.04	.03	.07	.84	.51	1.04	1.26	.38	.09	.06
1959-60	.06	.09	.10	.16	.12	.43	2.23	1.57	0.70	.45	.24	.14

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								705	2.79
1956	Sept. 4, 1956	7.43	4,150	37	166	0.048	0.66	181	.73
1957	June 18, 1957	17.27	20,000	35	559	.162	2.24	635	2.53
1958	July 3, 1958	21.77	35,200	95	1,117	.325	4.41	1,054	4.16
1959	June 4, 1959	(1)13.22	13,500	70	1,125	.327	4.45	1,146	4.53
1960	Apr. 2, 1960	21.18	32,300	138	1,590	.462	6.29		

(1) Maximum gage height, 13.87 ft. Feb. 28 (backwater from ice).

Peak Discharge (base, 8,500 cfs)

1955-56: No peak above base.

1956-57: June 18 (7 a.m.) 20,000 cfs (17.27 ft.).

1957-58: July 3 (3 a.m.) 35,200 cfs (21.77 ft.); July 20 (3 a.m.) 13,300 cfs (13.73 ft.); Sept. 6 (4:30 p.m.) 20,900 cfs (17.76 ft.).

1958-59: June 4 (5 p.m.) 13,500 cfs (13.22 ft.).

1959-60: Apr. 2 (3 a.m.) 32,300 cfs (21.18 ft.); May 7 (7:30 a.m.) 14,800 cfs (14.62 ft.); May 26 (3 a.m.) 10,400 cfs (11.76 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 16 to Dec. 31, 1955; Jan. 1 to Mar. 25, Nov. 20 to Dec. 31, 1956; Jan. 1 to Feb. 27, Mar. 4-10, 15, 16, 25, 26, Nov. 20, Nov. 22 to Dec. 31, 1957; Jan. 1 to Feb. 27, Nov. 26 to Dec. 31, 1958; Jan. 1 to Mar. 16, Nov. 14 to Dec. 9, Dec. 15-18, 30, 31, 1959; Jan. 1 to Mar. 30, 1960. No gage-height record July 22 to Aug. 4, 1960.

Des Moines River Below Raccoon River, at Des Moines, Iowa

LOCATION.—Lat. 41°34'30", long. 93°35'40", in NE¼SE¼ sec. 10, T. 78 N., R. 24 W., near right bank on upstream side of East 14th Street Bridge, 0.8 mile downstream from Raccoon River and Scott Street Dam, and at mile 200.7.

DRAINAGE AREA.—9,879 square miles (revised in 1956).

RECORDS AVAILABLE.—April 1940 to September 1960.

GAGE.—Wire-weight gage read once daily. Datum of gage is 762.52 ft. (revised) above mean sea level, datum of 1929. Prior to October 1, 1951, and Oct. 1, 1953, to Sept. 30, 1959, water-stage recorder above Scott Street Dam, 0.8 mile upstream at datum 11.16 ft. (revised) higher.

AVERAGE DISCHARGE.—20 years, 3,755 cfs.

EXTREMES.—1940-60: Maximum discharge, 77,000 cfs June 26, 1947 (gage height, 20.8 ft. in gage well, 21.6 ft. from outside floodmark, site and datum then in use); minimum daily, 55 cfs Oct. 12, 1956.

Maximum stage known since at least 1893, that of June 26, 1947, site and datum then in use. Flood of May 31, 1903 reached a stage of 20.9 ft. (from flood profile) at Scott Street site and datum, by office of Des Moines City Engineer. Bankfull stage is about gage height, 26 ft.

REMARKS.—Water for municipal supply of Des Moines is taken from infiltration galleries on Raccoon River, about 3.5 miles above station. These galleries are 150 to 300 ft. from the river and generally about 30 ft. 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 2.3 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 on the Raccoon River can be regulated by pumpage into or release from reservoir of Des Moines Water Works (capacity 4,800 acre-ft.) on Raccoon River.

REVISIONS (water years).—WSP 1508: 1943(P).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1055-56												
1.....	171	140	*90	104	108	166	1,010	406	*1,370	236	243	153
2.....	153	153	92	108	108	215	1,010	406	1,400	215	520	144
3.....	126	153	95	108	*108	194	1,090	439	848	243	464	148
4.....	*122	*144	98	108	113	280	1,200	*417	624	322	340	384
5.....	124	153	98	108	113	330	1,140	464	624	428	243	2,800
6.....	124	187	98	111	113	420	1,010	492	641	492	313	2,840
7.....	124	162	98	104	113	334	958	492	709	406	1,150	1,810
8.....	122	135	98	*116	106	244	870	492	2,520	406	1,610	*1,060
9.....	450	118	98	108	106	430	848	548	1,900	395	1,550	641
10.....	373	113	96	104	106	480	726	562	1,090	450	*980	439
11.....	286	113	86	102	108	404	641	607	675	395	675	313
12.....	250	116	85	106	108	384	590	590	478	*304	846	268
13.....	201	126	88	108	111	400	534	548	406	250	1,070	222
14.....	171	126	90	104	111	450	520	801	331	295	1,010	176
15.....	153	135	85	102	113	400	464	1,900	268	313	576	148
16.....	153	113	83	96	113	396	439	1,310	222	304	520	130
17.....	135	83	82	98	113	450	417	870	201	428	1,250	118
18.....	130	116	80	100	116	480	395	658	171	351	743	113
19.....	130	124	78	98	116	450	395	562	171	534	658	108
20.....	132	118	85	100	130	400	395	492	166	250	743	100
21.....	130	132	85	100	116	470	362	464	314	351	658	102
22.....	130	166	81	100	116	607	295	395	373	277	492	98
23.....	140	158	77	98	122	675	268	362	259	215	395	90
24.....	132	116	74	98	126	826	259	340	180	144	322	86
25.....	135	132	85	98	118	870	268	340	130	132	268	85
26.....	135	122	94	98	122	980	259	331	140	124	236	82
27.....	135	113	98	98	124	1,030	268	322	135	118	194	74
28.....	158	72	104	102	*128	1,140	340	295	135	283	176	72
29.....	140	78	100	108	130	1,220	384	322	259	208	166	74
30.....	153	86	102	108	.....	*1,340	406	586	277	362	171	72
31.....	153	.....	102	108	.....	1,250	.....	1,010	.....	331	166	.....

Des Moines River Below Raccoon River, at Des Moines, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1956-57													
1		71	108	166	166	122	351	2,140	576	4,000	3,310	892	692
2		72	98	194	135	118	351	2,140	506	3,850	2,990	848	621
3		66	100	194	162	118	340	1,970	464	3,710	2,680	818	607
4		61	132	208	144	118	351	1,810	428	3,440	2,530	760	658
5		58	158	230	140	118	384	1,810	406	2,990	3,310	700	562
6		61	478	205	144	118	373	1,650	395	2,570	3,150	658	548
7		70	562	93	135	122	340	1,370	362	2,320	3,530	607	534
8		68	450	100	132	124	286	1,170	340	2,210	3,400	548	506
9		57	373	108	108	132	243	958	399	1,970	2,680	520	506
10		56	362	130	98	144	331	848	1,680	1,870	2,280	492	478
11		56	313	158	98	162	340	782	1,840	2,110	2,010	450	506
12		55	286	144	96	259	351	709	1,170	2,650	1,810	417	506
13		78	250	98	94	373	331	658	1,460	2,210	1,650	395	607
14		428	236	130	94	362	331	607	2,110	1,870	1,520	417	621
15		194	222	126	94	406	322	562	2,460	5,380	1,460	428	562
16		126	222	126	94	351	340	*562	2,180	14,100	1,400	406	506
17		166	229	*113	94	351	322	548	2,070	20,400	1,490	417	*506
18		153	208	113	94	340	428	534	1,810	*23,600	1,340	417	492
19		116	201	111	94	*304	478	534	1,580	21,500	1,120	*384	492
20		108	208	111	96	313	*658	520	*1,520	14,000	980	384	450
21		104	150	116	122	295	641	492	2,290	8,400	914	395	439
22		96	120	132	130	236	641	478	2,110	6,420	892	384	417
23		92	100	144	*132	215	590	450	2,390	6,240	848	384	417
24		86	125	144	135	229	641	439	2,720	5,940	*958	373	400
25		90	155	148	128	277	726	406	2,990	4,550	958	362	400
26		88	140	144	126	295	782	534	2,870	3,760	848	351	380
27		83	166	144	132	295	914	1,550	2,680	3,710	826	439	360
28		82	165	153	130	373	1,140	1,200	2,250	3,760	892	478	350
29		80	125	162	126		1,310	782	1,900	3,900	936	534	340
30		83	153	180	126		1,650	658	1,680	3,710	980	548	320
31		104		194	124		1,970		2,860		936	500	
1957-58													
1		305	535	1,100	396	510	5,000	1,240	1,420	1,080	1,300	4,000	632
2		285	608	1,200	578	480	4,100	1,270	1,390	740	12,700	3,560	578
3		270	666	1,250	1,000	480	3,420	1,300	1,450	1,470	*21,000	3,420	560
4		265	756	1,050	1,100	490	3,100	1,330	1,510	1,880	*36,500	2,760	545
5		255	775	1,150	1,300	500	2,920	1,420	1,420	4,750	31,800	2,340	677
6		265	775	1,250	1,200	490	2,520	1,580	1,300	6,880	20,000	2,020	7,860
7		500	756	1,350	1,150	480	2,380	1,940	1,300	7,160	11,000	1,770	12,300
8		440	680	1,100	1,050	460	2,380	2,490	1,180	6,350	7,790	1,580	*2,840
9		380	666	720	900	430	2,190	2,800	1,110	7,370	6,180	1,480	1,940
10		438	651	800	700	400	2,020	2,880	1,110	6,360	5,100	1,360	1,680
11		380	608	550	600	380	1,980	2,920	1,050	6,670	5,250	1,270	1,300
12		358	636	650	600	350	1,740	2,760	976	5,790	7,300	1,130	1,080
13		352	636	750	600	330	1,770	2,560	887	5,580	6,300	1,030	929
14		352	651	850	670	310	1,810	2,410	803	5,820	6,480	976	929
15		*383	699	995	760	300	1,770	2,190	824	5,460	6,880	929	1,080
16		*352	699	1,020	850	290	1,770	2,080	803	4,400	8,000	845	1,330
17		350	737	1,100	840	*280	1,810	*1,940	887	4,350	10,100	803	1,080
18		348	995	*1,230	840	265	1,810	1,840	950	*3,710	9,500	*761	950
19		358	870	1,320	820	245	*1,710	1,740	*908	3,420	9,400	722	866
20		352	*700	1,460	780	235	1,540	1,680	866	2,840	18,500	824	782
21		330	900	1,460	*730	225	1,480	1,610	887	2,490	*12,000	1,480	782
22		342	1,050	1,610	750	215	1,450	1,510	824	1,980	8,900	2,050	740
23		408	1,000	1,670	760	210	1,330	1,480	824	1,910	7,990	1,740	704
24		492	1,100	1,300	720	1,500	1,330	1,480	740	1,770	5,760	1,420	686
25		578	1,200	1,300	740	1,900	1,330	1,480	722	1,940	4,900	1,240	650
26		564	1,250	1,450	700	2,700	1,270	1,610	686	1,910	4,350	1,110	614
27		526	1,300	1,200	660	4,000	1,270	1,540	650	1,840	3,900	950	560
28		510	1,400	1,300	680	5,500	1,270	1,510	614	1,770	3,850	866	530
29		492	1,450	850	700		1,270	1,300	560	1,640	3,190	761	500
30		492	1,100	636	630		1,270	1,390	560	1,420	4,000	722	470
31		467		492	550		1,270		850		4,750	668	

Des Moines River Below Raccoon River, at Des Moines, Iowa—Continued
Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1958-59													
1		453	300	*252	185	110	5,000	6,440	2,740	24,300	10,200	659	1,070
2		436	300	260	170	110	4,000	6,320	2,340	26,100	9,400	640	1,070
3		420	324	292	158	110	2,300	5,900	2,260	*27,700	9,100	622	1,130
4		408	324	300	152	110	1,900	5,120	2,780	26,400	8,060	622	1,130
5		384	*312	230	150	108	1,300	4,340	3,310	24,600	6,740	659	1,030
6		372	300	200	148	110	940	3,650	4,720	20,900	5,480	770	900
7		*360	292	230	144	112	1,100	3,270	4,010	15,900	*4,450	810	750
8		436	292	235	140	116	1,350	3,000	3,960	10,000	3,850	930	550
9		696	292	225	135	112	1,140	2,650	4,620	*8,800	3,450	870	520
10		568	292	210	130	*110	1,350	2,370	6,260	7,500	2,960	714	560
11		552	284	195	130	108	2,080	2,190	7,780	6,260	2,700	*622	530
12		552	276	185	135	108	3,800	2,010	6,620	5,420	2,370	536	480
13		502	268	175	139	112	5,960	*1,900	5,720	4,890	2,150	420	420
14		470	284	170	143	116	8,500	1,740	*5,120	4,400	1,900	408	*360
15		436	300	165	*159	116	7,850	1,640	4,720	4,010	1,740	552	320
16		420	300	160	151	118	6,380	1,510	3,960	3,600	1,640	733	300
17		396	620	160	140	118	4,340	1,480	3,500	3,220	1,800	536	300
18		360	678	175	130	120	3,600	1,450	3,180	3,050	1,870	420	320
19		336	694	185	120	120	5,810	1,200	4,010	2,830	1,610	360	348
20		336	592	190	115	125	11,400	1,430	3,600	2,610	1,400	284	384
21		348	536	195	125	135	11,000	2,040	8,200	2,370	1,220	300	372
22		336	502	200	125	150	10,200	2,960	6,440	2,260	1,140	276	350
23		324	502	205	120	310	8,800	3,960	9,010	2,120	1,010	284	324
24		312	453	210	120	700	8,200	4,280	12,200	1,980	995	1,100	420
25		300	420	215	120	580	8,500	4,010	13,000	1,770	910	1,050	536
26		300	300	225	120	800	10,000	3,360	13,400	1,640	850	1,200	585
27		324	208	235	120	1,400	12,200	3,730	11,400	1,610	830	1,450	408
28		312	230	230	125	2,500	11,800	6,800	9,400	1,640	770	1,400	800
29		300	210	225	118	.....	10,200	4,620	11,800	2,410	790	1,450	890
30		300	173	215	114	.....	8,200	3,450	16,400	10,000	790	1,250	810
31		300	.....	205	110	.....	6,940	.....	20,400	.....	678	1,100	.....
1959-60													
1		719	455	*880	3,400	1,220	780	54,500	7,600	13,400	6,020	1,220	1,740
2		780	*455	980	2,750	1,220	760	65,600	7,450	11,300	6,710	1,100	1,580
3		812	450	1,080	2,200	1,200	730	61,200	6,700	10,100	5,240	1,040	1,480
4		876	733	1,220	1,750	1,180	710	47,200	6,300	9,630	3,890	*1,010	1,260
5		954	1,440	1,100	1,400	1,160	690	36,000	6,100	8,350	4,130	996	1,100
6		918	1,220	1,000	1,000	1,150	670	28,700	7,000	7,600	3,890	1,580	945
7		844	1,170	880	840	1,150	*650	23,800	23,000	*7,000	3,530	2,380	903
8		788	1,040	840	*1,050	1,140	650	20,200	20,500	6,710	3,170	1,680	861
9		772	1,040	920	1,450	1,140	650	18,200	14,200	6,710	3,650	1,340	784
10		740	1,010	1,030	1,900	1,100	660	14,400	*11,300	5,760	5,630	1,100	744
11		705	972	1,100	2,300	1,080	660	*12,800	9,470	5,500	5,370	1,100	699
12		670	990	1,020	3,410	1,080	650	12,100	7,900	5,240	*4,460	973	640
13		*649	1,040	970	3,770	1,100	650	10,500	6,430	5,370	4,200	889	*645
14		621	868	920	3,290	1,120	650	9,630	5,890	4,850	5,240	840	618
15		621	884	892	3,000	1,140	660	8,830	5,760	4,610	4,980	980	750
16		649	750	868	2,600	1,140	660	7,900	5,760	4,730	4,460	910	757
17		614	670	860	2,100	1,120	670	9,630	5,630	4,610	4,200	1,030	805
18		546	600	860	1,800	1,080	680	14,000	5,500	4,730	3,680	2,320	875
19		540	705	870	1,660	1,060	700	13,000	5,630	6,290	2,900	3,100	738
20		522	852	870	1,760	1,030	705	11,200	6,290	6,710	2,640	2,840	681
21		408	980	870	1,850	1,010	705	10,000	7,300	7,300	2,510	1,630	738
22		385	1,020	860	1,710	990	705	8,830	7,900	8,350	2,380	1,340	763
23		435	990	850	1,620	981	705	8,200	9,150	7,900	2,320	1,180	854
24		460	1,080	840	1,710	990	705	7,300	11,700	6,570	2,140	1,060	1,390
25		445	1,200	840	1,660	*960	719	7,150	17,800	5,760	1,960	2,020	2,080
26		416	1,070	840	1,660	920	780	7,450	23,500	5,370	1,790	3,680	1,140
27		430	1,010	880	1,660	860	972	7,300	24,100	4,980	1,680	1,390	973
28		435	920	1,110	1,580	840	4,850	6,850	23,200	4,850	1,580	875	1,220
29		412	820	1,530	1,480	820	10,300	6,710	23,000	4,850	1,440	2,380	1,340
30		445	750	2,100	1,480	.....	21,000	7,000	21,800	4,610	1,340	2,440	1,300
31		480	.....	2,610	1,440	.....	*34,000	.....	18,000	.....	1,300	1,900	.....

Des Moines River Below Raccoon River, at Des Moines, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	167	127	90.5	104	115	571	592	575	567	308	604	432
1956-57	100	220	146	120	238	589	962	1,629	6,338	1,762	511	493
1957-58	394	862	1,102	786	856	2,009	1,843	970	3,711	9,799	1,503	1,539
1958-59	398	356	211	135	316	6,005	3,294	6,995	8,676	2,996	743	599
1959-60	616	906	1,048	1,977	1,068	2,873	18,510	11,670	6,658	3,498	1,559	1,013

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.017	0.013	0.009	0.011	0.012	0.058	0.060	0.058	0.057	0.031	0.061	0.044
1956-57	.010	.022	.015	.012	.024	.060	.097	.165	.642	.178	.052	.050
1957-58	.040	.087	.112	.080	.087	.203	.187	.098	.376	.992	.152	.156
1958-59	.040	.036	.021	.014	.032	.608	.333	.708	.878	.303	.075	.061
1959-60	.062	.092	.106	.200	.108	.291	1.88	1.18	.674	.354	.158	.103

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.02	0.01	0.01	0.01	0.01	0.07	0.07	0.07	0.06	0.04	0.07	0.05
1956-57	.01	.02	.02	.01	.03	.07	.11	.19	.72	.21	.06	.06
1957-58	.05	.10	.13	.09	.09	.23	.21	.11	.42	1.14	.18	.17
1958-59	.05	.04	.02	.02	.03	.70	.37	.82	.98	.35	.09	.07
1959-60	.07	.10	.12	.23	.12	.34	2.09	1.36	.75	.41	.18	.11

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								1,722	2.39
1956	Sept. 5, 1956	5.71	3,850	72	355	0.036	0.49	362	.50
1957	June 19, 1957	11.60	25,700	55	1,089	.110	1.51	1,248	1.74
1958	July 4, 1958	14.96	39,000	210	2,126	.215	2.92	2,009	2.75
1959	June 3, 1959	12.82	27,700	108	2,572	.260	3.54	2,706	3.72
1960	Apr. 2, 1960	28.86	68,900	385	4,276	.433	5.88		

Peak Discharge (base, 12,000 cfs)

1955-56: No peaks above base.

1956-57: June 19 (6 a.m.) 25,700 cfs (11.60 ft.).

1957-58: July 4 (11 a.m.) 39,000 cfs (14.96 ft.); July 20 (4 p.m.) 19,100 cfs (9.34 ft.); Sept. 7 (1:30 p.m.) 16,000 cfs (8.00 ft.).

1958-59: Mar. 27 (8:30 a.m.) 13,000 cfs (7.31 ft.); May 26 (8 a.m.) 14,200 cfs (7.70 ft.); June 3 (12 m) 27,700 cfs (12.82 ft.); June 30 (12 p.m.) 12,200 cfs (7.13 ft.).

1959-60: Apr. 2 (6 p.m.) 68,900 cfs (28.86 ft.); Apr. 18 (7 p.m.) 15,500 cfs (18.35 ft.); May 7 (5 p.m.) 26,300 cfs (22.50 ft.); May 26 (10 p.m.) 25,300 cfs (22.20 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 29 to Dec. 8, Dec. 20-22, 1955; Feb. 28, 29, Mar. 4-6, 9, 10, 13-15, 17-21, Nov. 21-25, 28, 29, Dec. 5-8, 13, 14, 1956; Jan. 12-17, 25-29, Nov. 19 to Dec. 10, Dec. 24-29, 1957; Jan. 3 to Feb. 28, Nov. 28, 29, Dec. 31, 1958; Jan. 1-12, Jan. 17 to Mar. 6, Nov. 16-18, 28-30, Dec. 1, 2, 6-14, 1959; Jan. 8-10, 15-17, Feb. 3-20, Feb. 25 to Mar. 19, 1960. No gage-height record Nov. 21-26, Dec. 17-27, 1959; Jan. 1-7, 1960. Stage-discharge relation indefinite Sept. 25 to Oct. 9, 1957; Dec. 5-30, 1958.

North River near Norwalk, Iowa

LOCATION.—Lat. 41°26'55", long. 93°40'55", near center of sec. 25, T. 77 N., R. 25 W., near center of span on downstream side of bridge on State Highway 28, 1¾ miles south of Norwalk, 8 miles northeast of Indianola, 9 miles south of Des Moines, and 10.8 miles upstream from Middle Creek. Prior to Jan. 7, 1960, at site 2.1 miles downstream.

DRAINAGE AREA.—340 square miles. Prior to Jan. 7, 1960, 349 square miles.

RECORDS AVAILABLE.—February 1940 to September 1960.

GAGE.—Wire-weight gage read once daily. Prior to June 12, 1946, wire-weight gage, and June 12, 1946, to Jan. 6, 1960, water-stage recorder at site 2.1 miles downstream at datum 788.45 ft. above mean sea level, datum of 1929 (levels by Corps of Engineers).

AVERAGE DISCHARGE.—20 years, 170 cfs.

EXTREMES.—1940-60: Maximum discharge, 32,000 cfs June 13, 1947 (gage height, 25.3 ft. from floodmark, site and datum then in use), from rating curve extended above 9,100 cfs on basis of area-velocity studies; no flow for several days during each year 1954-58.

REMARKS.—Bankfull stage is about gage height, 19 ft.

REVISIONS (water years).—WSP 1508: 1946.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	119	0.1	0.2	0.3	0.8	15	2.8	1.4	42	0.1	0.8	5.5
2	26	.1	.3	.3	.8	11	2.8	2.8	11	.2	4.5	50
3	9.4	.1	.3	.3	.8	11	2.5	5.8	7.8	.2	21	21
4	5.0	.1	.4	.3	1.0	15	1.5	4.9	5.2	.2	23	9.8
5	2.0	.1	.5	.3	1.1	13	1.0	5.4	3.6	.2	36	12
6	1.6	.1	.4	.3	1.0	12	1.0	5.7	2.2	.1	18	208
7	1.0	.1	.4	.3	1.2	11	1.4	4.8	1.5	.2	77	112
8	.8	.1	.4	.3	1.4	9.4	1.8	3.8	1.2	.2	886	57
9	.6	.1	.4	.3	1.1	8.5	1.7	4.0	.7	.1	218	19
10	.4	.1	.4	.3	1.0	7.3	2.1	3.2	.5	.1	91	9.8
11	.4	.2	.4	.3	1.2	6.4	1.7	3.1	1.4	.1	54	5.3
12	.2	.5	.4	.3	1.4	5.6	1.6	9.9	.8	.1	34	3.1
13	.1	.4	.4	.3	1.7	*5.1	1.6	36	.6	0	39	2.1
14	.1	.4	*.4	.3	2.1	3.5	1.4	12	.5	.1	18	1.3
15	.1	.4	.3	.3	*2.5	3.9	1.2	6.0	.4	3.2	13	.8
16	.1	*.7	.2	.4	2.8	3.9	1.0	*2.5	.3	113	10	.6
17	.1	.7	.2	.4	2.5	4.2	.9	1.8	.3	13	16	.4
18	.1	.6	.2	.4	2.0	4.2	*.8	1.5	.2	49	95	2
19	*.1	.6	.3	*.5	1.0	4.3	.8	1.2	.2	209	73	*.1
20	.1	.6	.4	.5	1.0	5.0	.7	.9	*.2	36	86	.1
21	.1	.8	.4	.4	.9	4.3	.6	.7	15	9.1	80	0
22	.1	.7	.4	.4	.8	3.8	.6	.6	81	4.2	*29	0
23	.1	.6	.4	.4	1.0	4.5	.5	.6	52	1.8	15	0
24	.1	.6	.4	.4	3.5	5.0	.5	.5	11	*1.0	7.6	0
25	.1	.6	.4	.4	6.6	5.0	.5	.4	4.0	.9	4.5	0
26	.1	.5	.4	.5	10	4.5	.5	.4	1.7	.7	2.8	0
27	.1	.4	.4	.5	12	4.0	.6	.4	.9	.4	2.1	0
28	.1	.3	.4	.8	15	4.0	.6	.4	.5	.4	1.6	0
29	.1	.2	.4	.7	15	3.4	.8	1.1	.3	.4	1.4	0
30	.1	.2	.4	.6	.....	2.9	1.1	3.7	.1	.3	1.1	0
31	.1	.....	.3	.7	.....	2.8	.....	96	.....	.5	.9	.....

North River near Norwalk, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1....	0	1.5	4.5	6.0	11	7.4	128	68	242	16	0.5	0.3
2....	0	.9	5.8	5.2	8.0	7.2	219	48	105	13	.2	.6
3....	0	10	6.0	4.4	5.8	7.0	314	37	70	11	2	.5
4....	0	4.5	5.8	3.9	4.3	6.6	331	33	56	10	1.1	.5
5....	0	2.0	5.3	3.4	3.0	6.2	331	28	44	9.3	.6	.4
6....	0	1.2	3.1	2.9	2.9	5.4	312	24	36	9.0	.2	.4
7....	0	86	2.0	2.6	2.9	4.8	208	22	33	8.2	.2	.4
8....	0	94	3.2	2.3	3.1	4.5	132	21	33	7.8	.1	.7
9....	0	38	3.4	2.0	3.8	3.7	116	26	45	6.3	0	.5
10....	0	24	3.5	1.8	5.6	4.4	94	415	47	5.1	.1	.3
11....	0	18	3.3	1.6	6.6	6.4	77	*1,290	58	4.4	.1	.5
12....	0	13	2.9	1.5	7.6	6.8	80	537	64	3.5	.1	1.1
13....	7.0	9.6	2.6	1.4	8.4	6.9	61	344	*158	3.2	0	.5
14....	40	8.0	2.5	1.3	9.4	5.8	55	584	79	2.8	0	.3
15....	219	6.3	2.4	1.2	25	3.3	49	682	55	2.6	0	.2
16....	152	5.2	2.3	1.2	28	2.3	44	409	113	2.6	0	.2
17....	*36	4.6	2.3	1.1	24	3.0	*37	299	84	2.5	0	*.1
18....	20	4.6	*2.3	1.1	*19	*5.1	33	305	57	2.5	0	.1
19....	14	3.8	2.3	1.0	15	7.2	33	223	40	6.3	0	.1
20....	7.8	3.0	2.4	1.0	13	6.2	32	155	72	5.6	*0	0
21....	6.0	2.7	2.6	*2.2	11	22	29	408	37	4.1	0	.1
22....	2.8	2.5	2.9	4.0	9.2	34	27	*410	27	*2.7	0	.1
23....	2.5	3.2	3.1	2.7	8.6	22	28	158	22	1.9	.8	0
24....	4.2	3.6	3.4	1.7	8.2	16	26	102	20	1.2	.5	0
25....	7.4	3.6	3.6	1.5	8.0	16	26	80	18	1.0	.3	0
26....	1.8	3.6	4.0	1.4	7.8	15	40	88	17	1.2	.2	0
27....	1.5	3.3	4.4	1.4	7.6	16	186	85	17	1.9	.3	0
28....	5.0	3.1	5.0	1.4	7.5	23	506	55	20	2.6	.5	0
29....	8.0	3.3	5.4	2.5	.....	22	175	49	19	1.5	3.5	0
30....	4.0	3.6	5.9	20	.....	23	108	46	18	.8	2.0	0
31....	2.5	.....	6.2	15	.....	50	.....	443	.....	.6	.9	.....
1957-58												
1....	0	1.4	18	6.3	8.0	288	22	11	15	28	191	13
2....	0	1.6	17	5.4	7.9	142	21	11	77	*1,010	158	11
3....	0	1.2	16	4.7	7.7	89	22	11	69	1,530	138	9.3
4....	0	1.2	*16	4.0	7.5	75	25	11	30	2,380	122	6.6
5....	0	1.2	13	3.5	7.3	68	28	13	16	2,960	95	3.0
6....	0	8.0	13	3.1	*7.1	68	32	14	9.5	3,070	70	145
7....	0	7.3	11	2.8	6.6	80	48	13	5.6	956	64	*1,220
8....	0	4.4	9.2	2.5	6.1	86	51	12	2.7	246	127	*1,410
9....	0	2.1	7.6	2.6	5.6	80	38	9.8	2.1	146	146	980
10....	0	.8	9.2	2.9	5.0	68	30	9.3	1.5	111	74	190
11....	0	.7	11	3.2	4.5	62	26	9.3	1.2	108	51	118
12....	0	.8	10	3.6	4.0	68	25	9.5	5.7	98	43	86
13....	0	.9	8.6	4.1	3.6	56	23	9.2	29	83	38	70
14....	0	.9	7.2	4.9	3.5	51	21	7.5	26	70	*33	64
15....	0	.8	7.0	5.7	3.3	49	20	6.4	57	62	30	83
16....	*0	1.2	*7.0	7.8	3.2	45	20	6.7	58	47	28	126
17....	0	.9	6.9	11	3.1	*40	18	8.3	29	78	26	130
18....	0	1.2	7.5	18	3.0	36	*17	7.5	*24	86	24	78
19....	0	*1.2	9.3	16	*3.0	32	16	5.6	22	589	20	65
20....	0	3.1	18	*14	2.9	36	15	*1.9	28	1,410	*19	56
21....	0	4.5	21	13	3.5	34	16	2.3	9.3	1,960	26	51
22....	0	7.6	24	11	5.0	34	15	2.7	9.1	1,310	62	48
23....	0	7.2	22	9.9	17	31	15	5.5	8.3	*287	51	56
24....	.2	6.8	18	8.6	200	28	15	5.2	3.9	196	29	54
25....	1.1	6.6	16	7.6	540	28	16	3.8	3.2	162	20	48
26....	2.6	6.4	16	7.1	420	26	17	3.3	3.2	134	18	50
27....	3.4	9.3	13	6.7	316	24	19	2.5	3.3	111	18	44
28....	4.4	13	12	7.7	312	24	16	2.0	2.6	141	18	35
29....	5.1	15	10	8.0	.....	23	13	1.7	2.4	204	17	32
30....	2.5	17	8.7	8.1	.....	22	12	1.5	3.1	154	16	30
31....	1.7	.....	7.4	8.1	.....	22	.....	1.3	.....	186	15	.....

North River near Norwalk, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	27	18	9.3	10	6.0	350	443	241	2,490	*7,520	43	9.4
2	26	18	*10	9.4	6.0	270	407	196	1,130	*4,430	35	19
3	24	17	11	9.1	6.0	200	288	184	515	2,180	35	101
4	23	*18	12	8.5	6.0	150	210	241	375	692	37	116
5	23	*23	11	7.8	5.9	115	160	335	290	419	37	47
6	23	23	10	7.2	6.0	88	136	567	250	318	70	28
7	*22	23	9.8	6.5	6.8	72	119	431	215	*250	255	21
8	22	25	9.2	6.2	8.4	60	112	278	190	214	80	17
9	27	23	8.8	6.0	10	53	105	319	165	184	43	13
10	41	23	8.4	6.0	*13	50	92	806	*144	160	33	11
11	58	25	8.0	6.5	11	58	86	1,190	133	140	27	8.7
12	37	26	7.7	7.3	18	120	83	1,480	126	126	24	7.4
13	27	26	7.5	8.4	80	260	83	*581	122	112	*22	5.9
14	*24	27	7.4	*9.4	74	500	*77	362	102	98	20	4.8
15	24	27	7.4	11	52	460	72	288	86	89	21	*4.1
16	25	26	7.6	11	39	230	65	250	80	83	73	3.4
17	25	37	7.6	9.6	31	160	63	223	72	80	160	3.6
18	24	80	7.6	9.2	25	135	80	228	*63	640	*69	3.9
19	23	72	8.0	9.1	22	383	98	491	58	350	40	4.8
20	23	56	8.5	9.0	19	1,170	455	491	56	133	28	5.7
21	23	38	9.0	8.4	22	*1,390	720	*1,560	54	100	22	7.9
22	23	27	9.4	7.8	56	390	511	1,590	52	*74	18	16
23	23	22	10	7.4	150	232	340	1,526	56	64	15	24
24	22	19	10	7.2	600	250	268	373	47	58	14	18
25	23	18	11	7.0	530	241	223	308	42	53	12	14
26	21	16	11	6.7	480	608	188	250	38	45	23	22
27	19	14	11	6.5	540	1,260	164	228	35	38	24	81
28	20	12	11	6.3	470	678	250	214	32	35	15	92
29	19	10	11	6.2	.....	329	594	954	173	35	11	56
30	19	8.3	11	6.1	.....	259	340	1,620	1,770	48	9.0	32
31	18	.....	10	6.0	.....	288	.....	2,410	.....	66	8.5	.....
1959-60												
1	18	20	*34	120	118	108	3,670	1,110	198	66	5.0	120
2	14	18	39	140	118	106	*3,120	480	180	56	4.9	70
3	15	*19	45	120	116	104	2,740	378	142	44	4.8	39
4	13	96	49	96	118	102	1,340	319	136	41	4.8	40
5	26	822	49	80	120	102	820	265	156	51	*4.9	35
6	38	305	40	*68	124	100	666	592	145	48	25	33
7	48	168	36	60	130	100	558	2,200	*142	47	127	26
8	53	122	34	62	140	*99	510	2,040	124	44	73	19
9	39	122	32	66	160	98	390	720	115	52	66	30
10	28	130	35	70	270	98	297	*450	109	59	28	27
11	27	130	39	82	190	96	297	366	118	60	20	24
12	28	112	41	1,100	180	96	*275	319	118	*68	19	*22
13	*24	89	46	3,260	175	96	265	275	121	44	17	18
14	20	68	47	*3,940	170	96	265	265	127	43	19	18
15	17	58	43	2,810	165	96	250	270	127	37	33	18
16	16	47	44	800	160	96	260	684	145	31	21	18
17	15	41	46	400	150	98	587	435	194	31	68	18
18	15	38	48	300	145	102	702	319	168	29	959	25
19	16	38	40	220	140	104	612	286	136	27	824	31
20	*16	40	36	195	135	106	297	390	133	26	152	32
21	16	46	35	190	130	108	319	390	127	24	66	*33
22	16	54	38	180	125	108	270	330	127	22	53	41
23	16	64	43	170	120	110	230	319	127	20	37	53
24	16	72	53	155	118	110	198	420	103	19	35	179
25	19	74	54	145	*115	110	265	2,400	83	15	30	948
26	20	68	54	135	112	110	255	1,960	76	12	37	357
27	27	44	80	130	112	250	220	851	76	11	109	133
28	21	40	288	125	110	900	194	378	70	9.5	115	115
29	21	37	455	122	110	3,000	198	319	68	9.7	297	73
30	20	35	308	120	.....	5,100	943	275	66	6.1	275	70
31	20	.....	172	120	.....	*5,750	.....	250	.....	5.5	200	.....

North River near Norwalk, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	5.43	0.37	0.36	0.40	3.21	6.56	1.22	7.15	8.24	14.3	63.2	17.3
1956-57	17.5	12.4	3.69	3.25	9.80	11.9	129	241	56.9	4.88	.40	26
1957-58	.68	4.48	12.6	7.16	68.4	58.5	22.4	7.06	18.6	642	57.6	177
1958-59	25.1	26.6	9.39	7.83	118	349	228	620	299	608	42.7	26.6
1959-60	22.5	104	77.5	503	141	570	700	647	125	34.1	120	88.8

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.016	0.0011	0.0010	0.0011	0.0092	0.019	0.0035	0.020	0.024	0.041	0.181	0.050
1956-57	.050	.036	.011	.0093	.028	.034	.370	.691	.163	.014	.0011	.0074
1957-58	.0019	.013	.036	.021	.196	.168	.064	.020	.053	1.84	.165	.507
1958-59	.072	.076	.027	.022	.338	1.00	.653	1.78	.857	1.74	.122	.076
1959-60	.064	.298	.222	1.48	.415	1.68	2.06	1.90	.368	.100	.353	.261

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.02	0.001	0.001	0.001	0.01	0.02	0.004	0.02	0.03	0.05	0.21	0.06
1956-57	.06	.04	.01	.01	.03	.04	.41	.80	.18	.02	.001	.0008
1957-58	.002	.01	.04	.02	.20	.19	.07	.02	.06	2.12	.19	.57
1958-59	.08	.08	.03	.03	.35	1.15	.73	2.05	.95	2.01	.14	.08
1959-60	.07	.33	.26	1.70	.45	1.93	2.30	2.19	.41	.12	.41	.29

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								49.4	1.93
1956	Aug. 8, 1956	16.85	1,140	0	10.7	0.031	0.43	13.0	0.52
1957	May 11, 1957	18.26	1,410	0	41.1	.118	1.60	39.7	1.54
1958	July 6, 1958	20.77	3,180	0	90.3	.259	3.49	93.9	3.63
1959	July 1, 1959	22.60	9,460	3.4	198	.567	7.68	210	8.15
1960	Mar. 30, 1960	(1) 21.00	6,800	4.8	262	.771	10.46		

(1) Backwater from ice.

Peak Discharge (base, 1,500 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: July 6 (2 p.m.) 3,180 cfs (20.77 ft.); July 21 (11 p.m.) 2,200 cfs (20.20 ft.); Sept. 9 (3:30 a.m.) 1,530 cfs (19.34 ft.).

1958-59: Mar. 21 (12 m) 1,530 cfs (19.10 ft.); May 12 (1 p.m.) 1,620 cfs (19.26 ft.); May 22 (10 a.m.) 1,810 cfs (19.63 ft.); May 31 (12 p.m.) 2,660 cfs (20.33 ft.); July 1 (11 a.m.) 9,460 cfs (22.60 ft.).

1959-60: Jan. 13 (10 p.m.) 4,580 cfs (19.76 ft.); Mar. 30 about 6,800 cfs; May 7 (11 p.m.) 2,500 cfs (17.8 ft.); May 25 (9 a.m.) 2,600 cfs (17.97 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 26 to Dec. 31, 1955; Jan. 1 to Mar. 25, Nov. 21 to Dec. 31, 1956; Jan. 1 to Mar. 7, Mar. 15, 16, Nov. 21-27, Nov. 29 to Dec. 3, Dec. 8-12, 28-31, 1957; Jan. 1 to Feb. 26, Nov. 28 to Dec. 31, 1958; Jan. 1 to Mar. 18, Nov. 14 to Dec. 9, 12-18, 1959; Jan. 1-12, Jan. 16 to Mar. 30, 1960. No gage-height record Oct. 22-27, Nov. 2-10, 1955; July 7-12, Sept. 23, 28, Oct. 27 to Nov. 1, 1956; Sept. 1-6, 8-13, 1957.

Middle River near Indianola, Iowa

LOCATION.—Lat. 41°26'00", long. 99°33'20", in SW¼NW¼ sec. 31, T. 77 N., R. 23 W., on right bank 5 ft. downstream from bridge on U. S. Highways 65 and 69, 5 miles north of Indianola, 11.0 miles south of Des Moines, and 12.5 miles upstream from mouth.

DRAINAGE AREA.—506 square miles (revised in 1956).

RECORDS AVAILABLE.—March 1940 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 773.34 ft. above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to June 11, 1946, June 9, 1947, to Nov. 23, 1948, and Sept. 8, 1951, to Oct. 30, 1952, wire-weight gage at same site and datum. June 11, 1946, to June 8, 1947 (destroyed by flood), and Nov. 24, 1948, to Sept. 7, 1951, water-stage recorder at same site and datum.

AVERAGE DISCHARGE.—20 years, 248 cfs.

EXTREMES.—1940-60: Maximum discharge, 34,000 cfs June 13, 1947 (gage height, 26.40 ft. from floodmarks); minimum daily, 1.0 cfs Nov. 30, 1955, July 14, Oct. 5, 8-12, 1956.

REMARKS.—Bankfull stage is about gage height, 16 ft.

REVISIONS (water years).—WSP 1508: 1940(M), 1941, 1944, 1946, 1919 (M).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	126	3.8	1.2	2.3	1.8	54	8.0	5.3	106	2.0	7.7	14
2	45	3.2	1.4	2.3	1.9	50	10	7.4	40	2.2	93	5.6
3	27	3.5	1.6	2.3	2.0	43	10	6.0	19	2.6	98	2.5
4	18	3.8	1.8	2.3	2.0	38	7.7	4.8	11	2.6	51	293
5	15	3.8	1.8	2.3	2.1	33	6.6	5.0	8.0	2.0	39	1,360
6	11	3.2	1.8	2.2	2.2	29	6.0	5.0	6.6	1.6	17	576
7	9.2	3.2	1.8	2.1	2.2	25	5.6	4.8	5.6	3.2	980	600
8	7.4	3.0	1.7	2.0	2.2	22	5.0	4.5	4.5	2.0	668	466
9	6.0	3.2	1.6	2.0	2.3	19	4.8	4.8	59	1.6	505	172
10	5.6	3.5	1.5	2.2	2.3	17	4.5	4.2	51	1.2	272	74
11	5.0	3.8	1.4	2.2	2.3	25	4.2	6.3	20	1.2	101	43
12	4.8	3.8	1.4	2.2	2.3	17	4.0	5.0	11	1.5	66	27
13	4.5	3.0	1.4	2.2	2.3	*11	4.0	5.6	8.0	1.2	30	20
14	4.2	3.0	*1.4	2.2	2.3	9.0	3.8	4.0	5.6	1.0	19	14
15	4.0	*3.2	1.4	2.2	*2.3	7.7	3.5	3.2	4.8	3.3	12	10
16	4.0	3.2	1.4	2.1	2.3	7.0	3.8	*3.0	5.0	32	46	7.4
17	4.0	2.8	1.3	1.9	2.3	6.9	3.5	2.8	4.2	138	83	6.0
18	3.8	2.0	1.2	1.7	2.4	6.5	*3.0	2.6	4.0	31	1,130	4.0
19	3.5	2.2	1.2	*1.7	2.4	5.6	3.0	2.5	3.0	18	1,240	*3.2
20	*3.2	3.0	1.2	1.7	2.4	5.1	3.0	2.3	*3.2	41	231	3.0
21	3.2	2.7	1.3	1.7	2.5	7.8	3.2	3.5	17	26	110	2.5
22	3.2	2.4	1.5	1.7	2.5	9.1	2.6	3.8	52	20	*54	2.2
23	3.2	2.1	1.7	1.7	2.5	10	2.8	2.6	24	22	25	2.2
24	3.2	2.5	2.0	1.7	2.5	10	2.8	2.3	18	*13	14	2.0
25	3.2	2.4	2.0	1.7	3.5	11	3.0	1.9	14	8.4	9.6	2.0
26	3.2	2.1	2.0	1.7	14	11	3.2	2.2	12	5.6	7.0	1.8
27	3.0	1.8	2.0	1.7	23	11	3.5	2.0	7.7	3.8	5.0	1.6
28	3.8	1.6	2.0	1.7	31	11	5.6	2.2	5.0	4.8	4.2	1.5
29	4.0	1.3	2.0	1.7	40	9.2	7.7	5.6	3.8	4.8	8.4	1.4
30	3.8	1.0	2.1	1.7	.....	8.8	6.0	112	2.6	3.2	34	1.2
31	3.5	.....	2.2	1.7	.....	8.0	.....	85	.....	3.2	127	.....

Middle River near Indianola, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1.....	1.2	6.2	12	10	4.0	9.8	98	145	266	58	9.8	11
2.....	1.2	10	12	9.8	4.1	9.8	177	120	185	51	11	7.2
3.....	1.2	5.0	11	9.4	4.4	11	797	196	122	51	12	9.5
4.....	1.2	9.0	7.4	8.8	5.1	12	1,100	92	102	48	20	8.0
5.....	1.0	35	4.5	8.1	5.8	13	630	81	92	45	13	7.3
6.....	1.2	29	2.5	7.5	6.8	11	347	72	79	37	9.0	8.0
7.....	1.2	23	3.2	6.8	8.2	10	245	67	77	40	5.8	18
8.....	1.0	20	3.8	6.4	10	20	185	62	146	37	5.0	24
9.....	1.0	19	4.6	5.9	13	16	150	57	113	35	4.5	16
10.....	1.0	18	5.2	5.5	16	12	125	766	124	33	4.2	8.7
11.....	1.0	16	6.0	5.2	20	13	112	2,040	140	31	4.1	11
12.....	1.0	15	5.6	4.9	23	12	122	615	475	27	4.2	14
13.....	1.3	15	4.8	4.7	25	11	236	615	*265	23	6.8	30
14.....	3.9	10	4.5	4.5	23	10	142	988	188	21	19	12
15.....	8.6	9.8	4.7	4.4	21	11	105	735	255	21	10	9.6
16.....	92	9.6	4.5	4.3	20	14	92	465	197	25	7.2	8.1
17.....	*26	9.4	4.3	4.2	20	12	*89	392	124	29	6.0	7.8
18.....	12	9.2	*4.2	4.0	*19	*15	89	358	310	27	5.2	*7.8
19.....	5.6	9.0	4.1	4.0	18	16	86	285	206	21	4.8	6.6
20.....	2.8	8.8	4.1	3.9	18	15	79	226	188	17	4.6	6.3
21.....	7.0	7.0	4.5	*7.4	17	24	75	741	112	15	*5.6	6.6
22.....	15	5.2	4.9	17	16	29	75	*415	88	*14	5.2	6.0
23.....	6.2	6.0	5.4	13	15	21	70	245	77	12	4.6	5.2
24.....	12	7.0	5.8	7.6	14	19	68	183	71	11	3.9	3.6
25.....	20	8.0	5.8	5.4	12	33	68	162	64	11	2.8	3.6
26.....	10	8.4	5.8	4.8	12	42	158	194	59	11	3.4	2.8
27.....	4.4	8.6	6.3	4.3	11	20	1,140	153	86	14	6.6	2.6
28.....	5.4	9.0	7.1	4.0	10	22	582	138	74	22	9.8	2.6
29.....	7.9	9.8	7.9	4.0	.....	20	265	112	72	14	13	2.2
30.....	5.0	11	8.8	4.0	.....	20	181	107	63	12	25	2.0
31.....	3.2	.....	9.8	4.0	.....	45	.....	239	.....	10	19	.....
1957-58												
1.....	2.0	8.6	28	22	20	448	65	40	28	12	700	44
2.....	1.8	9.0	29	25	19	255	63	40	23	*4,300	305	42
3.....	1.7	9.0	*25	29	19	179	67	42	79	3,420	478	40
4.....	2.0	9.0	24	30	18	152	75	48	42	3,290	245	39
5.....	1.3	9.8	23	28	*17	143	82	76	28	2,540	165	39
6.....	1.3	14	22	26	15	172	116	48	22	740	140	44
7.....	5.4	15	24	26	14	201	108	41	19	347	152	*2,120
8.....	3.0	12	24	25	13	174	92	39	16	245	457	*6,960
9.....	2.0	9.8	19	24	11	150	78	38	15	183	558	*2,060
10.....	2.0	8.4	16	23	10	136	72	38	13	148	382	690
11.....	1.6	9.0	19	22	9.0	140	70	37	12	141	192	392
12.....	10	9.0	20	22	8.0	128	67	33	16	127	148	305
13.....	15	9.4	20	23	7.4	119	63	30	23	106	127	236
14.....	9.8	9.4	20	26	6.6	125	58	28	29	92	*118	203
15.....	10	9.4	19	32	6.1	124	56	26	33	81	104	208
16.....	*7.0	9.8	*19	34	6.0	113	54	26	47	174	96	376
17.....	6.0	9.8	20	34	6.0	*102	52	30	47	124	86	285
18.....	4.4	13	22	34	6.0	92	*50	40	*24	237	77	192
19.....	4.6	*17	24	33	*5.8	94	49	30	35	1,930	71	172
20.....	4.6	15	27	*32	5.8	92	46	*26	39	3,260	*67	152
21.....	5.0	16	28	28	5.8	88	46	25	26	1,430	78	143
22.....	6.0	15	26	26	5.8	88	45	23	26	528	64	143
23.....	9.8	17	25	24	35	82	48	19	23	*358	65	158
24.....	23	18	28	23	800	81	49	18	19	275	59	141
25.....	29	19	32	22	560	75	50	17	16	222	57	135
26.....	23	22	24	21	650	71	54	17	18	201	58	148
27.....	20	26	25	21	452	70	49	15	19	183	57	113
28.....	17	30	22	20	540	67	44	14	15	215	51	100
29.....	15	27	20	20	.....	65	42	14	2	245	50	95
30.....	12	25	18	20	.....	64	41	15	9.8	350	49	88
31.....	9.4	.....	17	20	.....	63	.....	18	.....	255	45	.....

Middle River near Indianola, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	84	41	25	16	12	760	1,120	305	1,480	7,540	51	33
2	79	40	*27	15	12	530	730	255	870	2,240	41	35
3	77	39	32	14	12	300	452	226	615	682	47	122
4	74	*39	31	13	13	210	325	322	490	465	64	98
5	72	38	28	12	13	160	265	1,310	404	358	164	71
6	71	38	25	12	13	175	221	1,280	358	295	823	48
7	*68	38	23	12	14	185	201	732	315	*245	876	38
8	68	38	21	12	14	145	190	428	285	226	179	30
9	68	35	19	12	14	101	179	463	*255	201	119	27
10	95	34	18	13	15	*86	170	2,180	236	172	92	24
11	86	34	17	13	*15	165	160	*2,220	213	155	79	23
17	77	36	16	14	17	265	155	970	201	143	68	21
13	68	35	15	14	150	380	150	555	194	135	*59	20
14	67	33	15	*15	350	780	*146	428	183	130	65	18
15	*64	34	15	15	250	528	138	347	160	125	260	*16
16	63	34	15	16	190	255	132	295	152	119	199	16
17	62	87	15	16	145	176	*132	255	140	170	160	18
18	58	265	16	16	115	165	140	275	128	208	*113	20
19	57	110	17	16	92	1,010	168	669	*120	140	79	21
20	54	75	17	16	78	2,220	1,490	840	116	128	65	20
21	51	65	18	15	70	1,280	1,160	*4,790	113	102	54	20
22	52	50	18	15	200	510	609	1,320	110	91	46	26
23	49	45	19	14	1,500	360	404	698	116	*84	42	26
24	46	42	19	14	1,000	300	325	515	153	81	39	21
25	44	41	19	13	560	347	265	416	114	67	37	23
26	37	31	19	13	720	1,680	219	358	100	59	35	183
27	42	26	19	12	850	2,010	194	305	92	51	41	354
28	44	21	19	12	800	985	675	324	88	49	39	104
29	40	19	19	12	.....	490	1,110	3,520	495	67	34	74
30	40	22	18	12	.....	464	452	5,600	5,930	57	32	60
31	40	.....	17	12	.....	502	.....	3,770	.....	70	34	.....
1959-60												
1	47	33	*33	100	150	113	4,140	1,110	220	152	28	112
2	42	35	41	76	154	110	3,250	528	205	148	26	75
3	44	*33	52	64	158	107	1,730	369	200	118	26	60
4	41	75	58	52	160	106	1,110	305	217	104	*24	50
5	145	68	53	48	168	105	935	295	226	91	27	40
6	133	304	49	*62	176	104	780	1,380	194	89	164	35
7	88	201	45	74	200	103	675	3,300	*174	77	72	32
8	67	114	64	86	280	*102	555	1,250	160	60	84	29
9	75	95	64	98	400	100	452	690	150	149	100	28
10	63	98	58	114	320	98	392	*515	143	185	71	27
11	51	91	52	130	270	97	358	452	143	127	47	25
12	50	79	56	3,660	250	98	*336	380	208	*245	38	24
13	*44	64	62	7,560	240	102	325	336	295	162	32	*24
14	41	58	67	2,060	235	105	315	315	245	112	29	24
15	38	51	65	700	230	110	315	285	206	108	77	23
16	35	47	68	370	220	112	295	1,970	204	88	30	24
17	33	45	64	260	*210	118	428	892	213	74	30	23
18	30	52	56	290	190	120	765	515	212	64	290	26
19	30	58	57	350	180	126	935	*540	174	59	622	27
20	*27	68	56	315	165	128	540	502	172	54	708	27
21	29	78	58	280	155	128	404	369	336	50	217	38
22	29	82	59	250	145	130	347	380	255	47	107	34
23	30	83	70	210	135	130	305	358	*204	45	79	265
24	30	76	78	190	*125	130	285	626	176	43	64	1,780
25	33	68	75	170	120	130	275	3,080	143	41	104	660
26	42	56	72	160	118	130	305	1,320	127	41	62	295
27	35	45	133	156	117	600	305	810	118	37	47	169
28	29	39	466	152	116	4,000	245	465	114	36	56	110
29	25	36	465	150	115	*8,390	245	340	112	34	780	88
30	25	33	285	150	.....	9,300	805	270	116	32	392	81
31	30	.....	153	150	.....	5,760	.....	240	.....	30	210	.....

Middle River near Indianola, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	11.2	2.80	1.62	1.96	5.72	17.3	4.81	10.1	17.9	13.0	196	124
1956-57	8.44	12.2	5.97	6.38	14.0	17.7	256	354	147	26.6	8.55	8.94
1957-58	8.54	14.3	22.9	25.6	117	128	61.7	30.7	25.8	831	171	529
1958-59	61.2	49.5	19.7	13.7	258	564	403	1,160	474	473	130	53.7
1959-60	47.0	75.5	97.9	596	190	1,000	738	780	189	87.2	150	142

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.022	0.0055	0.0032	0.0039	0.011	0.034	0.0095	0.020	0.035	0.026	0.387	0.245
1956-57	.017	.024	.012	.013	.028	.035	.506	.700	.291	.053	.017	.018
1957-58	.017	.028	.045	.051	.231	.253	.122	.061	.051	1.64	.338	1.05
1958-59	.121	.098	.039	.027	.510	1.11	.796	2.29	.937	.935	.257	.106
1959-60	.093	.149	.193	1.18	.375	1.98	1.46	1.54	.374	.172	.296	.281

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.03	0.006	0.004	0.004	0.01	0.04	0.01	0.02	0.04	0.03	0.45	0.27
1956-57	.02	.03	.01	.01	.03	.04	.57	.81	.32	.06	.02	.02
1957-58	.02	.03	.05	.06	.24	.29	.14	.07	.06	1.89	.39	1.17
1958-59	.14	.11	.04	.03	.53	1.29	.89	2.64	1.05	1.08	.30	.12
1959-60	.11	.17	.22	1.36	.40	2.28	1.63	1.78	.42	.20	.34	.31

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								59.7	1.61
1956	Aug. 18, 1956	11.48	2,650	1.0	34.0	0.067	0.91	34.9	.93
1957	May 11, 1957	12.90	3,350	1.0	72.3	.143	1.94	73.9	1.98
1958	Sept. 8, 1958	19.22	8,260	1.3	164	.324	4.41	171	4.60
1959	July 1, 1959	19.52	8,650	12	306	.605	8.22	314	8.43
1960	Mar. 30, 1960	20.43	9,900	23	342	.676	9.22		

Peak Discharge (base, 4,500 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: July 2 (5 p.m.) 6,090 cfs (17.54 ft.); Sept. 8 (7 p.m.) 8,260 cfs (19.22 ft.).

1958-59: May 21 (11:30 a.m.) 6,090 cfs (17.13 ft.); May 30 (time unknown) about 6,000 cfs; July 1 (2:30 a.m.) 8,650 cfs (19.52 ft.).

1959-60: Jan. 13 (3 p.m.) 8,520 cfs (19.44 ft.); Mar. 30 (3:30 a.m.) 9,900 cfs (20.43 ft.); May 25 (7 a.m.) 4,710 cfs (15.26 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 16 to Dec. 31, 1955; Jan. 1 to Mar. 22, Nov. 21 to Dec. 31, 1956; Jan. 1 to Mar. 11, Mar. 15, 21, 25, Nov. 10, Nov. 18 to Dec. 31, 1957; Jan. 1 to Feb. 26, Nov. 26 to Dec. 31, 1958; Jan. 1 to Mar. 8, Nov. 14 to Dec. 11, 1959; Jan. 1-11, Jan. 15 to Mar. 28, 1960. No gage-height record Sept. 7-14, Oct. 1-7, 21-26, Oct. 28 to Nov. 2, Nov. 4-9, 1956; Apr. 7-12, June 30 to July 5, July 7-12, 14-19, Aug. 4-9, 11-16, Sept. 1-6, 8-13, 1957; Sept. 6-11, 1959; May 29 to June 3, 1960.

Lake Ahquabi near Indianola, Iowa

LOCATION.—Lat. $41^{\circ}17'35''$, long. $93^{\circ}35'40''$, in SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 14, T. 75 N., R. 24 W., at Lake Ahquabi State Park, 5 miles southwest of Indianola.

DRAINAGE AREA.—4.93 square miles.

RECORDS AVAILABLE.—June 1936 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 862.77 ft. above mean sea level (Iowa State Highway Commission benchmark) and 6.50 ft. below crest of spillway of dam forming lake. Prior to June 26, 1952, staff gage 0.5 mile southeast at same datum.

EXTREMES.—1936-60: Maximum gage height observed, 9.95 ft. June 5, 1947; minimum, 2.64 ft. Mar. 10, 17, 1957.

Daily Gage Height, in Feet, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	4.47	4.20	4.03	.....	.....	.....	3.93	3.78	3.63	.....	.....	3.32
2.....	4.46	4.19	4.04	.....	.....	.....	3.98	3.95	3.82	3.62	.....	3.30
3.....	4.44	4.18	4.05	.....	.....	.....	3.98	3.98	3.81	3.61	.....	3.28
4.....	4.45	4.18	4.05	.....	.....	.....	3.98	3.98	3.81	3.60	.....	3.37
5.....	4.45	4.17	4.04	.....	.....	.....	3.98	3.97	3.81	3.60	.....	3.40
6.....	4.45	4.16	4.04	.....	.....	3.99	3.96	3.80	3.64	.....	.....	3.40
7.....	4.44	4.15	.....	.....	.....	4.01	3.94	3.80	3.65	.....	.....	3.38
8.....	4.42	4.13	.....	.....	.....	4.01	3.92	3.78	3.64	.....	.....	3.37
9.....	4.40	4.13	.....	.....	.....	4.01	3.91	3.78	3.63	.....	.....	3.35
10.....	4.38	4.13	.....	.....	.....	4.01	3.91	3.77	3.61	.....	.....	3.33
11.....	4.37	4.13	.....	.....	.....	4.00	3.90	3.78	3.60	.....	.....	3.32
12.....	4.37	4.12	.....	.....	.....	4.00	3.89	3.77	3.58	.....	.....	3.32
13.....	4.35	4.12	.....	.....	.....	4.00	3.88	3.76	3.57	.....	.....	3.31
14.....	4.33	4.11	.....	.....	.....	4.01	3.88	3.74	3.57	.....	.....	3.29
15.....	4.32	4.11	.....	.....	.....	4.00	3.86	3.73	.....	.....	3.07	3.28
16.....	4.31	4.10	.....	.....	.....	4.00	3.84	3.70	.....	.....	3.11	3.26
17.....	4.29	4.09	.....	.....	.....	4.00	3.83	3.67	.....	.....	3.12	3.24
18.....	4.28	4.09	.....	.....	.....	4.00	3.80	3.65	.....	.....	3.33	3.24
19.....	4.27	4.08	.....	.....	.....	3.99	3.79	3.64	.....	.....	3.39	3.26
20.....	4.26	4.08	.....	.....	.....	3.99	3.78	3.63	.....	.....	3.37	3.26
21.....	4.25	4.08	.....	.....	.....	3.99	3.77	3.62	.....	.....	3.36	3.24
22.....	4.25	4.08	.....	.....	.....	3.99	3.76	3.61	.....	.....	3.33	3.22
23.....	4.25	4.07	.....	.....	.....	3.99	3.74	3.60	.....	.....	3.32	3.21
24.....	4.24	4.06	.....	.....	.....	3.98	3.74	3.60	.....	.....	3.29	3.19
25.....	4.23	4.06	.....	.....	.....	3.98	3.73	3.60	.....	.....	3.27	3.18
26.....	4.22	4.05	.....	.....	.....	3.97	3.74	3.58	.....	.....	3.25	3.17
27.....	4.21	4.05	.....	.....	.....	3.97	3.73	3.59	.....	.....	3.23	.....
28.....	4.23	4.04	.....	.....	.....	3.96	3.76	3.59	.....	.....	3.24	.....
29.....	4.23	4.04	.....	.....	.....	3.95	3.80	3.60	.....	.....	3.29	.....
30.....	4.22	4.02	.....	.....	.....	3.94	3.79	3.67	.....	.....	3.29	.....
31.....	4.21	.....	.....	.....	.....	3.93	.....	3.65	.....	.....	3.34	.....

Lake Ahquabi near Indianola, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1		2.80	2.76	2.74	2.74	2.70	2.90	3.57	4.46	4.36	3.87	3.81
2		2.80	2.75	2.73	2.74	2.69	2.92	3.55	4.44	4.35	3.85	3.84
3		2.79	2.75	2.73	2.74	2.69	3.20	3.53	4.42	4.33	3.88	3.82
4		2.83	2.75	2.73	2.74	2.68	3.42	3.50	4.41	4.32	3.87	3.79
5		2.88	2.75	2.73	2.74	2.67	3.49	3.49	4.40	4.29	3.84	3.78
6		2.89	2.74	2.72	2.74	2.67	3.50	3.47	4.38	4.26	3.82	3.81
7		2.88	2.74	2.71	2.73	2.66	3.50	3.45	4.41	4.25	3.78	3.82
8	2.94	2.86	2.73	2.71	2.74	2.66	3.50	3.44	4.41	4.23	3.76	3.81
9	2.92	2.85	2.73	2.72	2.75	2.66	3.50	3.44	4.41	4.21	3.73	3.79
10	2.91	2.84	2.72	2.74	2.75	2.65	3.52	3.49	4.42	4.19	3.72	3.79
11	2.89	2.84	2.72	2.73	2.74	2.68	3.54	3.51	4.45	4.18	3.71	3.85
12	2.87	2.83	2.73	2.73	2.74	2.68	3.54	3.56	4.46	4.15	3.70	3.87
13	2.88	2.82	2.73	2.74	2.74	2.66	3.54	3.89	4.48	4.13	3.71	3.86
14	2.93	2.81	2.73	2.74	2.73	2.67	3.53	4.26	4.48	4.11	3.75	3.84
15	2.93	2.82	2.74	2.74	2.73	2.66	3.52	4.30	4.48	4.11	3.75	3.85
16	2.92	2.80	2.73	2.74	2.73	2.65	3.54	4.33	4.48	4.10	3.73	3.83
17	2.90	2.79	2.73	2.74	2.72	2.64	3.54	4.37	4.48	4.09	3.73	3.82
18	2.90	2.78	2.73	2.74	2.72	2.69	3.55	4.37	4.52	4.06	3.75	3.80
19	2.89	2.77	2.72	2.73	2.72	2.71	3.55	4.38	4.51	4.04	3.77	3.79
20	2.89	2.78	2.72	2.74	2.71	2.71	3.56	4.39	4.49	4.03	3.76	3.78
21	2.88	2.79	2.72	2.75	2.72	2.71	3.56	4.42	4.46	4.02	3.81	3.79
22	2.88	2.78	2.73	2.75	2.71	2.71	3.57	4.48	4.45	4.04	3.80	3.78
23	2.86	2.79	2.74	2.74	2.71	2.71	3.57	4.49	4.43	4.02	3.78	3.75
24	2.85	2.79	2.74	2.74	2.71	2.72	3.57	4.49	4.41	3.98	3.77	3.74
25	2.83	2.78	2.74	2.74	2.72	2.84	3.56	4.50	4.39	3.95	3.75	3.73
26	2.83	2.78	2.74	2.74	2.72	2.87	3.61	4.50	4.39	3.93	3.73	3.72
27	2.81	2.77	2.74	2.74	2.71	2.87	3.61	4.49	4.40	3.93	3.76	3.70
28	2.79	2.77	2.75	2.74	2.71	2.87	3.60	4.48	4.40	3.93	3.82	3.69
29	2.78	2.76	2.75	2.74	.....	2.88	3.59	4.47	4.39	3.92	3.84	3.67
30	2.79	2.76	2.75	2.73	.....	2.88	3.57	4.47	4.37	3.91	3.83	3.66
31	2.81	.....	2.75	2.74	.....	2.88	.....	4.47	.....	3.89	3.82	.....
1957-58												
1	3.65	3.64	3.64	3.70	3.72	4.17	4.32	4.26	4.29	4.16	6.65	6.24
2	3.64	3.67	3.64	3.69	3.72	4.19	4.32	4.27	4.28	5.42	6.63	6.23
3	3.63	3.66	3.64	3.68	3.72	4.19	4.33	4.31	4.27	5.83	6.61	6.21
4	3.62	3.66	3.64	3.67	3.71	4.20	4.35	4.40	4.26	6.18	6.59	6.20
5	3.60	3.65	3.63	3.67	3.71	4.23	4.37	4.41	4.24	6.22	6.57	6.21
6	3.59	3.64	3.64	3.67	3.71	4.29	4.40	4.40	4.23	6.22	6.57	6.24
7	3.60	3.64	3.64	3.67	3.71	4.31	4.40	4.40	4.21	6.21	6.57	6.24
8	3.60	3.64	3.65	3.66	3.70	4.34	4.40	4.41	4.21	6.20	6.58	6.22
9	3.59	3.62	3.64	3.66	3.70	4.35	4.39	4.41	4.20	6.18	6.57	6.21
10	3.58	3.60	3.64	3.66	3.69	4.36	4.39	4.40	4.19	6.17	6.56	6.20
11	3.57	3.59	3.62	3.66	3.69	4.36	4.38	4.39	4.16	6.16	6.54	6.18
12	3.56	3.59	3.62	3.66	3.69	4.36	4.38	4.38	4.16	6.14	6.53	6.16
13	3.55	3.61	3.62	3.66	3.69	4.36	4.37	4.37	4.17	6.13	6.51	6.15
14	3.55	3.62	3.61	3.66	3.70	4.37	4.37	4.36	4.16	6.11	6.49	6.14
15	3.63	3.63	3.61	3.66	3.70	4.37	4.37	4.35	4.14	6.10	6.47	6.17
16	3.63	3.62	3.61	3.66	3.70	4.37	4.36	4.35	4.14	6.09	6.45	6.17
17	3.62	3.61	3.61	3.66	3.70	4.36	4.35	4.42	4.17	6.07	6.43	6.17
18	3.61	3.68	3.65	3.66	3.70	4.36	4.34	4.41	4.16	6.07	6.42	6.16
19	3.60	3.69	3.66	3.66	3.69	4.36	4.34	4.39	4.19	6.00	6.40	6.15
20	3.60	3.68	3.67	3.68	3.69	4.36	4.34	4.37	4.19	6.82	6.39	6.14
21	3.59	3.67	3.66	3.69	3.69	4.36	4.33	4.37	4.18	6.71	6.39	6.18
22	3.59	3.67	3.65	3.68	3.69	4.35	4.32	4.36	4.17	6.66	6.36	6.17
23	3.65	3.66	3.66	3.68	3.76	4.35	4.34	4.34	4.18	6.63	6.36	6.18
24	3.69	3.66	3.66	3.68	3.89	4.34	4.33	4.32	4.17	6.61	6.34	6.20
25	3.67	3.66	3.69	3.69	3.94	4.34	4.32	4.32	4.15	6.60	6.33	6.18
26	3.66	3.66	3.70	3.70	3.97	4.34	4.32	4.29	4.13	6.58	6.32	6.17
27	3.65	3.66	3.70	3.70	4.06	4.33	4.31	4.28	4.12	6.58	6.30	6.15
28	3.64	3.66	3.69	3.70	4.14	4.33	4.31	4.26	4.10	6.57	6.29	6.14
29	3.64	3.65	3.69	3.70	.....	4.33	4.28	4.24	4.07	6.56	6.29	6.12
30	3.63	3.64	3.68	3.70	.....	4.33	4.27	4.24	4.06	6.73	6.28	6.10
31	3.63	.....	3.71	3.72	.....	4.32	.....	4.27	.....	6.70	6.25	.....

Lake Ahquabi near Indianola, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	6.07	5.75	5.82	5.75	5.79	6.63	6.83	6.62	6.75	6.97	6.56	6.52
2	6.05	5.74	5.82	5.76	5.79	6.62	6.73	6.60	6.70	6.74	6.56	6.54
3	6.04	5.73	5.82	5.75	5.80	6.61	6.66	6.64	6.67	6.66	6.55	6.51
4	6.03	5.72	5.82	5.75	5.80	6.60	6.62	6.62	6.64	6.65	6.61	6.49
5	6.01	5.70	5.81	5.74	5.80	6.63	6.60	6.89	6.62	6.63	6.66	6.48
6	5.99	5.69	5.80	5.74	5.79	6.64	6.59	6.80	6.61	6.60	6.86	6.45
7	6.00	5.67	5.79	5.74	5.79	6.60	6.58	6.71	6.60	6.57	6.72	6.44
8	5.99	5.67	5.80	5.74	5.80	6.59	6.58	6.66	6.58	6.56	6.66	6.42
9	5.98	5.66	5.80	5.74	5.82	6.60	6.57	6.71	6.57	6.57	6.63	6.41
10	5.96	5.65	5.79	5.74	5.86	6.60	6.57	6.84	6.56	6.55	6.62	6.37
11	5.94	5.63	5.79	5.74	5.85	6.61	6.57	6.86	6.54	6.53	6.60	6.35
12	5.93	5.63	5.79	5.74	5.86	6.63	6.56	6.73	6.53	6.47	6.58	6.34
13	5.91	5.63	5.79	5.74	5.99	6.66	6.56	6.67	6.50	6.42	6.57	6.32
14	5.90	5.63	5.78	5.74	6.14	6.72	6.55	6.65	6.48	6.40	6.59	6.31
15	5.90	5.65	5.77	5.74	6.17	6.70	6.51	6.64	6.45	6.39	6.67	6.30
16	5.90	5.66	5.77	5.73	6.19	6.65	6.53	6.62	6.44	6.39	6.67	6.27
17	5.89	5.67	5.77	5.73	6.19	6.63	6.57	6.62	6.42	6.39	6.65	6.26
18	5.88	5.92	5.76	5.72	6.19	6.64	6.60	6.67	6.40	6.44	6.64	6.28
19	5.87	5.91	5.76	5.73	6.17	6.86	6.78	6.74	6.39	6.43	6.62	6.30
20	5.85	5.90	5.76	5.73	6.16	6.82	7.04	6.70	6.38	6.41	6.61	6.30
21	5.85	5.90	5.76	5.76	6.15	6.71	6.83	7.13	6.36	6.39	6.60	6.30
22	5.84	5.89	5.75	5.77	6.21	6.66	6.76	6.80	6.35	6.39	6.58	6.30
23	5.83	5.89	5.75	5.76	6.08	6.65	6.68	6.73	6.33	6.37	6.57	6.29
24	5.82	5.88	5.75	5.76	6.72	6.65	6.66	6.69	6.31	6.36	6.56	6.29
25	5.81	5.87	5.75	5.76	6.69	6.67	6.64	6.65	6.28	6.34	6.54	6.32
26	5.79	5.86	5.74	5.75	6.70	6.96	6.62	6.63	6.26	6.33	6.51	6.92
27	5.78	5.85	5.74	5.75	6.68	6.79	6.63	6.63	6.24	6.32	6.49	6.86
28	5.77	5.85	5.75	5.75	6.65	6.69	6.74	6.83	6.23	6.36	6.52	6.71
29	5.76	5.84	5.74	5.77	.....	6.64	6.69	7.13	6.29	6.56	6.51	6.65
30	5.76	5.83	5.74	5.79	.....	6.66	6.65	7.05	7.24	6.57	6.51	6.64
31	5.75	.....	5.74	5.79	.....	6.68	.....	6.86	.....	6.57	6.52	.....
1959-60												
1	6.62	6.58	6.62	6.67	6.63	6.63	6.96	6.75	6.44	6.29	6.33	6.61
2	6.62	6.57	6.62	6.66	6.64	6.64	6.83	6.69	6.45	6.28	6.31	6.59
3	6.62	6.58	6.62	6.66	6.64	6.65	6.75	6.65	6.44	6.27	6.30	6.57
4	6.63	6.66	6.63	6.65	6.64	6.64	6.72	6.63	6.44	6.26	6.28	6.56
5	6.79	6.70	6.63	6.63	6.65	6.64	6.70	6.66	6.45	6.26	6.28	6.53
6	6.74	6.68	6.63	6.62	6.65	6.63	6.67	7.00	6.45	6.26	6.35	6.52
7	6.69	6.65	6.63	6.62	6.64	6.63	6.66	6.93	6.44	6.24	6.37	6.51
8	6.66	6.65	6.63	6.62	6.66	6.64	6.65	6.77	6.42	6.23	6.36	6.49
9	6.64	6.65	6.62	6.62	6.75	6.65	6.63	6.71	6.40	6.38	6.35	6.48
10	6.62	6.65	6.62	6.63	6.75	6.65	6.61	6.68	6.38	6.51	6.33	6.46
11	6.61	6.65	6.64	6.63	6.70	6.65	6.60	6.67	6.41	6.53	6.31	6.44
12	6.60	6.66	6.65	7.45	6.68	6.65	6.60	6.67	6.57	6.64	6.30	6.42
13	6.60	6.66	6.65	7.01	6.66	6.65	6.58	6.66	6.66	6.65	6.26	6.40
14	6.61	6.65	6.64	6.86	6.65	6.65	6.60	6.65	6.65	6.63	6.25	6.38
15	6.61	6.63	6.65	6.89	6.65	6.65	6.61	6.63	6.62	6.61	6.25	6.37
16	6.60	6.63	6.64	6.75	6.65	6.66	6.61	6.89	6.64	6.59	6.24	6.38
17	6.60	6.62	6.64	6.70	6.65	6.65	6.75	6.79	6.65	6.57	6.25	6.38
18	6.59	6.61	6.64	6.70	6.65	6.65	6.75	6.70	6.62	6.56	6.35	6.43
19	6.58	6.61	6.63	6.67	6.64	6.65	6.67	6.67	6.61	6.55	6.35	6.43
20	6.57	6.62	6.64	6.66	6.64	6.64	6.63	6.65	6.69	6.53	6.56	6.42
21	6.57	6.63	6.63	6.65	6.65	6.64	6.62	6.65	6.66	6.51	6.72	6.40
22	6.57	6.64	6.64	6.64	6.64	6.65	6.60	6.62	6.49	6.49	6.66	6.40
23	6.59	6.65	6.68	6.64	6.64	6.65	6.59	6.56	6.32	6.48	6.63	6.46
24	6.57	6.66	6.67	6.63	6.65	6.65	6.57	6.49	6.28	6.47	6.61	6.97
25	6.57	6.65	6.66	6.63	6.64	6.65	6.57	7.19	6.26	6.46	6.59	6.78
26	6.56	6.65	6.65	6.63	6.64	6.65	6.58	6.96	6.26	6.44	6.58	6.68
27	6.55	6.64	6.78	6.63	6.64	6.97	6.58	6.75	6.25	6.43	6.56	6.65
28	6.54	6.63	6.89	6.63	6.64	7.21	6.57	6.67	6.25	6.41	6.56	6.62
29	6.54	6.62	6.79	6.63	6.63	7.36	6.60	6.64	6.24	6.39	6.67	6.62
30	6.54	6.61	6.73	6.62	.....	7.14	6.80	6.47	6.26	6.37	6.65	6.61
31	6.57	.....	6.69	6.63	.....	6.92	.....	6.44	.....	6.35	6.62	.....

South River near Ackworth, Iowa

LOCATION.—Lat. 41°22'20", long. 93°25'45", in SW ¼ NE ¼ sec. 19, T. 76 N., R. 22 W., near center of span on downstream side of bridge on State Highway 92, 2 miles east of Ackworth, 4.5 miles downstream from Otter Creek, and 7 miles east of Indianola.

DRAINAGE AREA.—474 square miles (revised in 1956).

RECORDS AVAILABLE.—February 1940 to September 1960.

GAGE.—Wire-weight gage read once daily. Datum of gage is 761.91 ft. above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to June 12, 1946, wire-weight gage and June 13, 1946, to Apr. 13, 1960, water-stage recorder and wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—20 years, 229 cfs.

EXTREMES.—1940-60: Maximum discharge, 34,000 cfs June 5, 1947 (gage height, 24.60 ft.); no flow Sept. 19 to Oct. 13, 1956.

Flood in June 1930 reached a stage of 24.5 ft., from information by local residents (discharge, about 30,000 cfs).

REMARKS.—Bankfull stage is about gage height, 23.5 ft.

REVISIONS (water years).—WSP 1508: 1941, 1945(M), 1946.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	17	1.8	0.8	1.2	1.0	23	3.8	2.1	17	1.3	45	28
2.....	9.0	1.2	.8	1.2	1.0	18	3.8	3.0	4.4	1.1	95	6.6
3.....	5.4	1.3	.9	1.2	1.1	15	3.8	2.7	2.3	1.7	57	2.1
4.....	3.5	2.9	1.0	1.2	1.1	13	3.4	2.1	3.6	1.8	25	51
5.....	2.4	2.0	1.0	1.2	1.2	11	3.8	1.7	2.7	1.7	7.8	114
6.....	1.7	3.2	1.0	1.1	1.3	8.8	1.8	1.7	1.7	1.8	3.8	29
7.....	1.8	3.8	1.0	1.0	1.3	7.2	1.7	1.6	5.8	5.4	2.5	9.9
8.....	1.8	1.7	1.0	1.0	1.4	6.0	1.5	1.3	6.4	2.5	644	4.7
9.....	1.5	1.6	.9	1.1	1.5	5.0	1.4	1.2	1.8	1.8	139	2.7
10.....	1.3	3.2	.9	1.1	1.5	4.2	1.4	1.1	.9	1.3	490	.9
11.....	1.0	1.9	.8	1.2	1.6	3.8	1.4	1.1	.6	1.2	67	.7
12.....	1.1	1.6	.8	1.2	1.6	3.4	1.2	1.1	.5	1.1	13	5.4
13.....	1.0	7.2	*.7	1.2	1.7	3.1	1.1	1.2	.5	1.1	5.8	.1
14.....	1.0	2.0	.7	1.2	*1.7	*2.8	1.1	.8	.4	1.0	2.3	.1
15.....	.9	2.7	.7	1.1	1.7	3.1	1.0	*.9	.4	.7	1.1	.1
16.....	.9	*2.1	.7	1.0	1.8	2.7	1.0	.8	.4	5.4	56	.1
17.....	1.1	1.7	.7	.9	1.8	2.3	1.0	.7	3.9	23	65	.1
18.....	1.7	1.4	.6	.9	1.8	2.8	*.9	.7	18	11	1,410	.1
19.....	1.4	1.9	.6	*.9	1.7	3.5	.9	.9	*13	25	870	*0
20.....	*1.4	2.4	.6	.9	1.7	3.0	.8	.7	133	13	143	0
21.....	1.1	2.0	.6	.9	1.8	2.3	.8	.7	355	5.8	42	0
22.....	1.2	1.9	.7	.9	1.8	3.0	.8	.7	281	5.4	*16	0
23.....	1.3	1.7	.8	.9	1.8	3.0	.7	.7	37	3.0	7.5	0
24.....	1.0	1.5	1.0	.9	3.5	3.0	.7	.7	13	*2.1	4.7	0
25.....	1.9	1.2	1.1	1.0	7.4	3.4	.9	.7	8.0	1.5	3.2	0
26.....	1.6	1.0	1.1	1.0	14	3.0	1.8	.7	5.4	1.0	2.3	0
27.....	1.1	.8	1.1	1.0	27	2.9	1.1	.7	3.4	1.0	1.7	0
28.....	1.2	.6	1.1	1.0	40	2.9	1.6	.8	4.0	1.0	4.6	0
29.....	1.6	.7	1.1	1.0	31	2.5	3.0	.9	2.1	1.9	59	0
30.....	5.4	.7	1.2	1.0	.....	2.1	2.7	25 ⁹	1.6	1.1	12	0
31.....	2.7	.....	1.2	1.0	.....	3.8	.....	59	.....	1.0	117	.....

South River near Ackworth, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	0	0.9	2.0	1.3	0.4	2.0	24	23	3.6	6.1	0.5	0.8
2	0	.5	1.0	1.2	.4	2.0	128	15	3.2	3.8	.5	1.3
3	0	.6	1.0	1.1	.4	1.7	1,740	10	2.7	3.4	.6	1.1
4	0	1.0	1.0	1.0	.4	1.5	1,700	7.2	2.1	3.0	3.2	1.0
5	0	3.2	.9	.9	.4	1.9	523	4.7	1.8	2.7	2.4	1.0
6	0	2.0	.5	.8	.4	1.5	232	3.6	1.5	2.0	1.5	1.0
7	0	1.0	.7	.7	.4	1.9	129	2.5	1.9	1.9	1.0	1.4
8	0	1.0	.9	.7	.4	2.3	95	1.8	21	1.7	.7	1.6
9	0	.9	.9	.6	.8	1.7	70	1.2	19	1.6	.6	1.2
10	0	.9	1.0	.6	2.0	2.0	54	12	24	1.0	.6	1.0
11	0	.9	.9	.5	25	2.9	44	399	202	1.0	.6	1.2
12	0	.9	.8	.5	45	3.0	43	283	1,160	.9	.6	2.3
13	0	.8	.7	.5	50	2.5	34	1,350	*233	.9	1.7	1.6
14	1.1	.9	.7	.4	25	3.0	28	1,210	264	.9	6.4	1.1
15	.7	1.0	.8	.4	15	3.1	25	484	302	1.1	2.0	1.1
16	.7	.9	.8	.4	12	2.1	25	194	855	1.3	1.7	1.0
17	*.7	.9	.7	.4	10	1.7	*24	201	405	1.3	1.6	.9
18	.5	.9	.7	.4	*7.0	*2.5	26	190	448	1.1	1.3	*.9
19	.5	.8	*.7	.4	5.8	8.4	28	87	265	1.1	4.0	.8
20	.5	.8	.7	1.1	4.2	4.4	22	65	9.3	1.0	1.7	.7
21	.5	.7	.9	*2.8	3.1	1.9	17	140	31	.9	*1.6	.9
22	.5	.7	1.2	8.0	2.4	1.4	23	*204	22	*1.1	2.0	.7
23	.5	.8	1.5	4.5	1.8	1.3	15	82	17	1.0	1.9	.7
24	.6	.9	1.7	1.5	1.7	1.2	12	32	12	1.0	2.0	.7
25	1.0	1.1	2.0	.5	2.0	1.7	12	24	8.4	.9	1.2	.7
26	.5	2.0	2.1	.5	3.0	8.0	16	150	7.2	.9	1.4	.7
27	.4	1.0	2.1	.4	4.0	9.3	496	28	23	.9	1.7	.6
28	.5	1.0	2.0	.4	2.1	6.8	151	17	15	4.9	4.0	.7
29	.7	1.2	1.9	.4	.....	8.8	58	8.8	12	4.9	9.3	1.3
30	.4	1.3	1.7	.4	.....	9.3	41	5.8	9.3	.9	2.9	1.4
31	.7	.....	1.5	.4	.....	10	.....	6.1	.....	.6	1.5	.....
1957-58												
1	.6	1.3	1.6	2.3	1.7	137	8.8	6.4	17	50	390	4.7
2	.6	4.7	1.5	2.5	1.7	76	13	6.8	9.8	*3,280	462	4.9
3	.6	2.0	*1.5	2.6	1.6	49	13	8.4	7.2	*609	320	5.4
4	.6	1.5	1.7	2.7	1.6	41	20	48	7.2	1,830	110	5.0
5	.6	1.3	1.6	2.6	*1.6	37	26	185	6.1	920	69	5.0
6	.7	1.5	1.5	2.5	1.6	150	34	95	5.8	160	350	6.8
7	2.3	1.6	1.6	2.3	1.5	148	35	54	5.4	79	90	5.8
8	2.5	1.6	1.5	2.2	1.5	80	28	38	5.4	49	105	5.4
9	1.3	1.3	1.4	2.2	1.5	59	19	33	5.8	32	46	11
10	1.0	1.2	1.4	2.2	1.4	55	15	28	5.0	27	31	*8.0
11	1.0	1.4	1.6	2.2	1.4	49	13	20	5.0	26	21	8.0
12	1.0	1.8	1.9	2.1	1.4	43	12	17	4.7	31	21	13
13	1.1	2.0	2.0	2.1	1.4	33	9.8	12	7.5	20	*21	8.0
14	1.2	1.7	1.8	2.1	1.3	32	9.8	11	9.8	17	15	4.4
15	2.0	1.8	1.7	2.1	1.3	28	9.8	11	11	17	12	4.0
16	*2.0	2.0	*1.4	2.1	1.3	24	9.8	9.3	8.1	16	9.3	4.0
17	1.6	1.8	1.7	2.1	1.3	*22	9.3	19	42	16	6.4	4.7
18	1.5	*2.5	2.9	2.1	1.2	18	*9.3	48	21	46	11	5.8
19	1.4	3.5	6.4	2.1	*1.2	18	8.8	38	*40	2,050	8.0	5.0
20	1.1	3.0	2.7	*2.0	1.2	17	8.4	*20	9.8	1,340	*6.8	4.4
21	1.0	2.0	2.0	2.0	1.2	17	8.8	12	7.2	248	41	4.0
22	1.5	2.1	1.8	2.0	1.2	15	15	11	6.1	114	9.3	12
23	1.9	2.0	1.8	2.0	1.0	12	13	9.3	11	*71	5.4	3.8
24	9.3	1.7	2.1	1.9	100	11	14	8.4	6.1	55	5.4	4.7
25	2.9	1.6	2.6	1.9	500	8.8	12	7.2	5.8	48	5.4	3.0
26	2.1	1.7	3.4	1.9	145	8.8	11	6.8	5.0	38	5.4	8.8
27	2.5	1.9	4.0	1.8	214	8.4	8.8	5.4	4.7	31	5.1	4.4
28	1.9	1.6	3.8	1.8	253	8.4	8.4	5.4	4.4	30	4.9	2.9
29	1.7	1.4	3.1	1.8	.....	9.3	7.2	5.4	4.4	23	4.8	2.1
30	1.5	1.5	2.3	1.7	.....	8.4	7.2	5.8	4.4	1,230	4.7	2.1
31	1.4	.....	1.9	1.7	.....	8.8	.....	6.8	.....	*2,160	4.7	.....

South River near Ackworth, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	2.0	1.8	4.5	4.7	4.5	166	2,420	152	1,430	4,050	19	38
2.....	2.0	2.0	*4.3	4.5	4.5	153	1,450	130	537	416	14	110
3.....	1.6	1.2	4.0	4.4	4.5	114	460	179	300	166	12	47
4.....	1.2	*1.8	5.4	4.3	4.6	78	216	122	216	111	648	23
5.....	1.0	1.2	7.0	4.2	4.7	26	180	1,740	168	89	427	19
6.....	.6	1.0	5.5	4.1	4.9	30	150	1,300	145	72	1,800	16
7.....	1.0	.9	5.0	4.1	5.2	40	133	334	122	*59	4,210	13
8.....	*1.8	1.6	4.7	4.1	6.0	32	126	226	104	54	260	12
9.....	1.2	1.8	4.5	4.1	8.0	*28	111	279	92	53	120	12
10.....	.9	1.6	4.1	4.1	12	*56	99	1,540	*83	49	87	9.9
11.....	.8	1.6	3.9	4.3	*20	83	92	*3,280	75	39	72	8.6
12.....	.9	1.8	3.7	4.5	110	124	87	1,040	66	37	54	8.6
13.....	.9	1.8	3.6	4.6	400	292	86	334	58	34	*44	8.6
14.....	*.8	2.0	3.5	*4.8	500	725	*81	232	51	31	46	8.6
15.....	*1.0	2.4	3.5	5.0	300	266	*76	182	43	30	865	*8.2
16.....	2.8	2.0	3.6	5.2	190	173	67	150	40	30	682	7.8
17.....	1.2	103	3.7	5.2	150	173	69	130	*38	382	213	9.5
18.....	.7	430	3.8	5.2	120	172	177	229	32	114	147	12
19.....	.8	102	4.0	5.2	110	2,390	503	2,220	30	39	*86	12
20.....	1.4	33	4.2	5.0	100	2,870	4,940	*585	34	26	65	11
21.....	2.0	15	4.5	4.9	90	760	3,000	*9,090	30	*22	56	11
22.....	1.0	9.9	4.7	4.8	250	373	801	*8,920	28	20	50	9.9
23.....	1.2	8.6	4.8	4.7	1,700	360	490	1,200	26	20	47	9.9
24.....	1.2	7.4	4.9	4.7	900	334	262	672	25	18	44	8.2
25.....	1.2	6.3	5.0	4.6	600	284	216	490	26	16	34	9.9
26.....	1.2	6.0	5.0	4.6	700	3,570	163	373	26	16	19	3,030
27.....	1.6	5.4	5.0	4.5	734	2,780	166	293	24	14	39	3,660
28.....	2.0	5.0	5.0	4.5	263	693	696	2,050	22	76	39	1,150
29.....	1.8	5.2	5.0	4.5	.....	360	480	*11,000	210	254	38	164
30.....	2.0	4.8	5.0	4.5	.....	347	201	9,000	7,370	53	36	93
31.....	1.6	.....	4.8	4.5	.....	638	.....	3,340	.....	28	36	.....
1959-60												
1.....	67	59	*30	105	148	100	3,670	870	149	112	17	63
2.....	59	60	33	88	150	98	2,140	322	138	128	17	40
3.....	55	*52	42	76	154	98	1,090	184	141	72	16	32
4.....	54	292	52	68	158	97	835	136	131	45	16	26
5.....	925	604	47	61	160	96	730	119	112	39	16	22
6.....	739	200	35	58	164	95	545	3,150	88	45	92	19
7.....	262	108	28	*53	180	95	410	4,320	*68	31	76	19
8.....	165	98	30	60	260	*94	336	975	71	30	*43	14
9.....	130	112	32	72	450	94	246	485	67	104	40	12
10.....	111	111	37	88	360	94	209	*322	66	112	27	14
11.....	89	92	46	105	300	95	220	256	65	137	25	14
12.....	74	74	70	4,000	280	96	189	195	692	*587	22	13
13.....	*65	65	68	*12,000	260	98	*178	154	1,090	150	21	*12
14.....	61	60	55	2,810	250	100	187	119	308	78	35	12
15.....	60	55	52	3,610	240	104	226	119	174	52	110	13
16.....	55	50	50	740	220	106	213	1,400	218	43	26	12
17.....	50	45	45	280	205	110	496	958	218	33	24	18
18.....	47	50	39	190	*190	*115	1,110	348	119	30	170	17
19.....	46	55	40	220	175	118	455	*319	98	28	900	52
20.....	45	65	39	310	160	120	300	279	183	24	1,500	40
21.....	*44	70	38	280	145	122	180	266	1,160	22	500	23
22.....	44	76	43	250	130	124	180	240	395	17	170	32
23.....	47	84	87	215	120	126	149	228	*351	17	70	2,250
24.....	54	82	98	190	*110	128	134	1,670	1,770	16	44	7,630
25.....	54	74	77	175	110	130	124	7,730	366	18	170	3,120
26.....	50	60	78	165	106	130	114	2,080	136	19	43	470
27.....	41	52	400	155	105	1,500	96	625	106	18	43	216
28.....	40	45	2,150	150	104	*9,000	84	351	84	18	138	136
29.....	40	36	998	145	103	*15,300	174	282	67	16	1,610	101
30.....	39	31	392	145	.....	16,000	1,410	248	62	17	485	107
31.....	49	.....	155	145	.....	4,020	.....	174	.....	16	104	.....

South River near Ackworth, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	2.48	1.99	0.88	1.05	5.44	5.60	1.70	11.4	30.9	4.12	142	8.52
1956-57	.35	1.05	1.16	1.09	8.04	3.61	194	169	146	1.80	2.02	1.05
1957-58	1.69	1.90	2.20	2.12	44.8	39.7	13.9	25.5	9.76	473	71.0	5.70
1958-59	1.34	25.6	4.52	4.59	261	596	597	1,962	382	208	335	285
1959-60	118	97.2	174	871	190	1,568	548	933	290	66.9	212	485

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.0052	0.0042	0.0019	0.0022	0.011	0.012	0.0036	0.024	0.065	0.0087	0.300	0.018
1956-57	.00074	.0022	.0024	.0023	.017	.0076	.409	.357	.308	.0038	.0043	.0022
1957-58	.0036	.0040	.0016	.0045	.095	.084	.029	.054	.021	.998	.150	.012
1958-59	.0028	.054	.0095	.0097	.551	1.26	1.26	4.14	.806	.439	.707	.601
1959-60	.249	.205	.367	1.84	.401	3.31	1.16	1.97	.612	.141	.447	1.02

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.006	0.005	0.002	0.003	0.01	0.01	0.004	0.03	0.07	0.01	0.35	0.02
1956-57	.0009	.002	.003	.003	.02	.009	.46	.41	.34	.004	.005	.002
1957-58	.004	.004	.005	.005	.10	.10	.03	.06	.02	1.15	.17	.01
1958-59	.003	.06	.01	.01	.57	1.45	1.41	4.77	.90	.51	.82	.67
1959-60	.29	.23	.42	2.12	.43	3.81	1.29	2.27	.68	.16	.52	1.14

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								42.3	1.22
1956	Aug. 18, 1956	7.69	2,350	0	18.2	0.038	0.52	17.9	.51
1957	Apr. 3, 1957	9.01	3,130	0	44.0	.003	1.26	44.3	1.27
1958	July 2, 1958	14.43	6,040	.6	58.3	.123	1.66	60.4	1.72
1959	May 22, 1959	22.81	13,700	.6	390	.823	11.18	420	12.05
1960	Mar. 30, 1960	22.60	18,100	12	465	.981	13.36		

Peak Discharge (base, 5,000 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: July 2 (11 a.m.) 6,040 cfs (14.43 ft.); July 19 (3:30 p.m.) 5,590 cfs (13.88 ft.).

1958-59: Mar. 26 (7:30 p.m.) 5,150 cfs (12.5 ft.); Apr. 20 (10:30 p.m.) 5,500 cfs (13.03 ft.); May 22 (6 a.m.) 13,700 cfs (22.81 ft.); May 29 (8 a.m.) 11,700 cfs (19.35 ft.); June 30 (2 p.m.) 11,800 cfs (19.52 ft.); Aug. 7 (6:30 a.m.) 6,940 cfs (14.83 ft.); Sept. 26 (6 p.m.) 7,100 cfs (15.04 ft.).

1959-60: Jan. 13 (12 m) 13,000 cfs (21.26 ft.); Mar. 30 (9 a.m.) 18,100 cfs (22.60 ft.); May 6 (12 p.m.) 8,190 cfs (16.6 ft.); May 25 (4 a.m.) 11,300 cfs (19.7 ft.); Sept. 24 (1 p.m.) 9,450 cfs (18.0 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 17 to Dec. 31, 1955; Jan. 1 to Mar. 19, Nov. 20 to Dec. 31, 1956; Jan. 1 to Mar. 3, Mar. 7, 8, 15, Nov. 9, 10, 19-23, 29, 30, Dec. 3-15, 21-31, 1957; Jan. 1 to Feb. 25, Nov. 26 to Dec. 31, 1958; Jan. 1 to Feb. 26, Mar. 5-9, Nov. 13-21, Nov. 26 to Dec. 10, 1959; Jan. 1-12, Jan. 16 to Mar. 28, 1960. No gage-height record Aug. 25 to Sept. 2, 1958; Aug. 13-23, 1960.

Whitebreast Creek near Knoxville, Iowa

LOCATION.—Lat. 41°16'55", long. 92°51'30", in NW¼SE¼ sec. 19, T. 75 N., R. 20 W., on right bank 10 ft. downstream from bridge on State Highway 92, 2.2 miles west of Knoxville, 1.1 miles upstream from Butcher Creek, and 11.1 miles upstream from mouth.

DRAINAGE AREA.—380 square miles.

RECORDS AVAILABLE.—July 1945 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 734.73 ft. above mean sea level, datum of 1929 (Corps of Engineers benchmark). Prior to Feb. 18, 1949, wire-weight gage at same site and datum.

AVERAGE DISCHARGE. 15 years, 182 cfs.

EXTREMES.—1945-60: Maximum discharge, 14,000 cfs June 6, 1947 (gage height 19.6 ft., from floodmark); minimum daily, 0.2 cfs June 27, 1956.

REMARKS.—High banks are never overtopped.

REVISIONS (water years).—WSP 1508: 1946.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	5.0	1.4	0.7	0.8	1.2	20	1.7	3.0	16	0.5	89	2.1
2.....	2.3	1.4	.8	1.1	1.2	16	2.3	3.3	6.6	.6	168	1.4
3.....	1.4	1.4	.9	1.1	1.3	14	3.0	2.3	3.9	.7	69	1.2
4.....	1.4	1.2	.7	1.1	1.4	12	2.8	1.9	2.6	1.2	51	3.9
5.....	1.2	1.1	1.0	1.1	1.4	17	2.3	1.5	2.1	1.4	26	7.0
6.....	1.2	1.1	1.0	1.1	1.5	20	2.3	1.5	2.1	1.1	13	5.0
7.....	1.1	1.1	.8	1.1	1.6	5.0	2.1	1.4	2.1	1.1	7.4	3.3
8.....	1.0	1.1	.7	1.1	1.7	12	1.9	1.4	1.5	1.0	1,340	2.8
9.....	.7	1.2	.6	1.1	1.8	8.2	2.1	1.4	1.1	1.0	551	2.1
10.....	.7	1.1	.5	1.1	1.9	6.0	2.1	1.4	.8	.8	257	1.7
11.....	.8	1.1	.5	1.1	2.0	3.3	2.1	2.3	.8	.8	129	1.2
12.....	1.2	1.1	.7	1.1	2.0	3.3	2.1	1.5	.6	.8	49	1.1
13.....	1.0	.7	*1.0	1.1	2.1	3.0	2.1	1.4	.6	.7	25	1.1
14.....	1.0	.7	1.0	1.1	*2.1	*3.0	1.9	1.2	.6	.5	42	.7
15.....	1.0	1.0	.8	1.1	2.1	2.8	1.2	*1.2	.8	.7	53	.8
16.....	1.0	*1.0	.6	1.1	2.1	2.8	1.4	1.2	1.0	1.1	38	.7
17.....	1.2	1.1	.5	1.1	2.1	2.6	*1.4	1.1	.7	8.7	73	.7
18.....	1.2	1.1	.5	1.1	2.1	2.6	1.1	1.0	5.0	32	964	.6
19.....	1.2	1.2	.5	1.1	2.1	2.3	1.1	1.0	*8.9	140	244	*.4
20.....	*1.2	1.2	.5	*1.1	2.1	2.3	.7	.7	140	36	51	.4
21.....	1.1	1.4	.5	1.1	2.1	2.3	.5	1.1	59	8.9	28	.4
22.....	1.1	1.2	.5	1.1	2.1	2.6	.8	1.2	18	4.2	*16	.5
23.....	1.1	1.2	.5	1.1	2.1	2.6	.4	1.2	7.0	2.3	11	.4
24.....	1.1	1.1	.6	1.1	3.5	2.3	.4	1.2	4.6	*1.9	7.9	.5
25.....	1.2	1.0	.8	1.1	7.5	2.1	.8	1.2	2.2	1.1	5.7	.7
26.....	1.2	1.0	.7	1.1	11	1.9	1.0	1.0	.3	1.1	4.6	.7
27.....	1.1	.7	.6	1.1	23	1.7	1.1	1.7	.2	.4	3.3	.8
28.....	1.2	.6	.6	1.1	17	2.1	1.7	2.6	.6	.7	3.3	1.1
29.....	1.1	.6	.6	1.1	15	2.1	2.6	1.9	1.1	1.2	43	1.1
30.....	1.4	.6	.6	1.1	.....	1.9	3.0	309	.8	.7	9.4	3.4
31.....	1.4	.....	.6	1.1	.....	1.7	.....	73	.....	.8	3.9	.....

Whitebreast Creek near Knoxville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	2.3	0.7	0.7	0.9	0.5	2.0	89	38	14	15	5.5	1.6
2	.9	.7	.7	.6	.5	1.4	272	26	12	11	2.8	1.6
3	.7	.9	.7	.8	.5	1.2	1,390	18	9.3	11	2.0	1.0
4	.7	1.2	.7	.7	.5	1.4	*1,640	14	7.6	9.9	2.0	.9
5	.7	1.2	.9	.7	.6	1.2	1,070	11	7.6	8.2	2.8	1.0
6	.6	.7	.6	.6	.6	1.2	308	8.8	6.6	7.6	1.8	1.6
7	.7	.6	.6	.6	.6	1.4	154	7.6	8.2	7.6	1.2	1.4
8	.7	.5	.7	.5	.7	1.4	108	7.1	13	7.1	.9	1.4
9	.7	.6	.9	.5	1.0	1.4	82	6.6	21	5.5	.9	1.2
10	.7	.6	1.0	.4	2.0	1.4	66	147	64	4.0	.7	1.2
11	.7	.5	1.0	.4	5.2	28	60	230	942	3.9	7	2.5
12	.7	.5	.6	.4	40	7.4	49	192	970	3.7	6	2.0
13	.7	*.6	.5	.4	45	8.3	37	1,150	*357	3.0	.9	2.2
14	.9	.9	.6	.4	31	4.6	32	1,400	613	2.2	1.2	3.9
15	.7	1.0	.6	.4	19	3.8	28	420	341	3.6	10	3.5
16	*.9	.9	.7	.4	16	2.5	*24	190	199	4.4	8.2	5.0
17	.9	.9	.7	.4	15	2.0	26	208	122	4.9	4.2	4.6
18	.9	.7	*.6	.4	13	3.1	32	130	704	3.9	2.8	2.2
19	.9	.6	.9	.4	*8.2	*3.1	26	92	402	3.4	16	*1.6
20	.9	.5	1.2	1.0	4.2	2.8	24	*81	105	3.0	*8.2	1.8
21	.9	.6	1.2	3.0	3.1	2.5	20	*394	50	2.6	6.0	16
22	.9	.6	1.2	7.6	2.4	2.2	46	198	35	*2.2	3.8	11
23	.7	.6	1.2	2.0	1.8	2.2	51	107	24	1.6	2.8	4.2
24	.7	.6	1.2	1.4	2.0	1.6	32	57	20	1.6	2.2	2.5
25	.9	.7	1.2	.5	2.2	3.1	20	44	18	2.2	1.6	1.8
26	1.0	.6	1.2	.5	2.2	4.6	62	38	18	3.8	1.8	1.8
27	.7	.6	1.2	.5	2.2	3.4	218	30	39	10	2.8	1.6
28	.7	.6	1.4	.5	2.0	4.6	267	24	32	62	62	1.6
29	.7	.6	1.2	.5	.....	13	94	21	30	33	47	1.4
30	.7	.7	1.0	.5	.....	34	48	18	18	18	7.1	1.4
31	.7	.....	1.2	.5	.....	47	.....	15	.....	6.0	2.8	.....
1957-58												
1	1.2	2.5	2.0	4.1	2.5	280	21	15	9.3	104	1,520	5.0
2	1.0	3.4	*1.8	3.7	2.3	154	24	18	9.3	*5,900	510	4.6
3	1.0	3.1	1.6	3.4	2.1	105	28	22	6.0	*1,180	278	5.0
4	1.2	3.1	1.8	3.0	*2.0	84	32	259	4.6	6,480	126	4.6
5	1.4	3.4	2.0	2.7	1.9	81	62	444	4.2	1,360	209	8.2
6	1.6	3.4	2.0	2.6	1.7	236	86	242	3.1	552	417	9.9
7	49	3.4	2.0	2.8	1.6	186	92	106	2.5	156	113	8.2
8	36	3.1	1.9	3.1	1.5	148	62	74	2.5	89	113	5.5
9	6.0	2.8	1.7	3.4	1.4	110	44	60	3.1	82	54	234
10	2.5	2.5	1.5	3.8	1.3	92	36	48	4.2	81	39	47
11	1.6	2.5	1.7	4.4	1.2	75	32	37	3.8	186	32	22
12	1.2	2.8	1.8	4.4	1.1	69	28	30	7.1	124	28	*14
13	.6	3.4	1.7	4.4	1.0	62	24	24	9.3	120	*24	8.8
14	.9	3.4	1.5	3.7	.9	56	22	19	7.1	120	20	6.0
15	*2.8	3.4	1.4	4.3	.8	47	22	17	8.8	115	19	6.6
16	1.8	3.4	1.4	4.9	.8	42	21	17	6.6	112	15	7.6
17	3.4	3.4	1.6	5.2	.8	36	19	14	22	122	14	8.2
18	2.2	5.0	2.8	5.4	.8	36	18	14	17	160	*52	6.0
19	1.8	*14	*4.2	5.4	.8	*35	18	14	11	1,660	16	6.0
20	1.8	6.6	5.0	5.2	.8	34	18	*11	*8.2	1,320	13	5.0
21	1.8	4.6	4.2	5.0	*.8	30	24	8.4	5.0	618	169	11
22	2.2	3.4	3.8	*4.8	4.0	28	*26	7.5	3.8	160	58	11
23	3.8	3.0	3.8	4.5	35	28	28	6.6	2.8	*89	30	11
24	11	2.6	3.8	4.3	270	26	28	6.0	2.0	60	18	36
25	6.0	2.3	5.5	3.9	530	24	26	5.4	2.2	45	13	49
26	2.8	2.1	7.1	3.7	440	22	19	4.9	2.2	34	11	35
27	1.8	1.9	6.0	3.4	490	22	18	4.6	2.0	28	8.8	19
28	1.8	1.7	5.6	3.2	470	22	19	4.2	1.6	32	8.2	9.9
29	1.8	1.6	7.0	3.0	.....	22	18	2.5	1.0	82	8.8	6.0
30	2.0	1.8	4.5	2.8	.....	21	16	2.5	.9	1,360	6.6	3.4
31	2.2	.....	3.2	2.6	.....	21	.....	3.4	.....	*1,730	5.5	.....

Whitebreast Creek near Knoxville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	2.6	3.8	16	7.4	5.0	325	2,140	235	2,750	1,000	22	34
2	2.0	3.8	18	6.8	4.6	290	1,830	187	860	558	14	139
3	2.0	5.8	19	6.4	4.6	211	745	338	390	154	11	98
4	2.0	.8	*20	6.0	4.6	118	350	193	235	82	212	31
5	2.6	.6	21	5.6	4.7	60	248	1,220	171	64	306	18
6	2.0	.7	20	5.4	4.8	85	184	930	133	37	522	13
7	3.8	*.8	17	5.2	5.2	66	165	490	114	25	1,200	12
8	3.1	2.0	14	5.0	5.6	56	152	268	96	50	1,790	11
9	4.4	3.1	11	4.9	6.2	62	129	268	82	*70	986	9.6
10	*3.1	3.8	9.0	4.8	7.0	148	114	1,170	73	25	116	9.6
11	3.1	24	8.2	4.7	10	189	98	2,990	67	20	68	8.9
12	2.0	3.8	7.8	*4.7	35	*242	102	2,030	62	18	*48	8.2
13	6.4	1.1	7.8	4.7	*550	491	94	*950	*46	18	36	7.6
14	2.6	3.8	7.8	5.0	1,000	1,140	83	364	40	18	50	7.0
15	*3.1	4.4	7.8	5.4	700	878	75	268	34	18	1,420	7.0
16	3.8	7.0	8.0	6.0	400	610	*67	216	29	18	1,790	7.0
17	3.1	576	8.2	6.5	250	432	137	187	*29	19	967	*7.0
18	3.8	1,690	8.5	6.8	200	472	350	402	26	28	202	7.0
19	3.8	520	8.8	6.8	170	2,750	612	1,830	23	12	*96	8.9
20	4.4	145	9.0	7.0	150	3,030	4,080	895	21	9.6	62	10
21	5.0	80	9.0	7.0	140	1,380	2,670	5,260	19	9.6	46	13
22	5.0	60	9.2	7.0	400	550	1,100	*7,400	18	9.6	35	12
23	5.0	51	9.4	6.8	1,500	505	550	5,020	17	8.9	28	12
24	5.0	45	9.4	6.6	1,200	469	377	1,380	15	*8.9	24	33
25	5.0	41	9.4	6.4	850	432	288	595	14	9.6	22	41
26	5.0	35	9.4	6.2	760	3,570	216	432	14	8.9	19	957
27	5.8	30	9.4	6.0	660	2,870	211	308	13	8.2	16	2,540
28	5.8	23	9.0	5.8	500	1,790	1,170	1,330	13	9.6	15	2,030
29	5.8	19	8.8	5.6	.....	535	1,000	5,360	49	77	14	1,620
30	6.4	15	8.4	5.4	.....	550	364	5,480	1,090	41	12	201
31	6.4	.....	8.0	5.2	.....	715	.....	5,230	.....	22	12	.....
1959-60												
1	108	54	22	190	102	75	4,500	742	235	188	10	59
2	82	46	32	130	100	74	2,600	303	227	469	9.8	33
3	72	62	*41	92	100	74	1,400	191	346	150	9.0	23
4	67	971	45	72	102	74	760	153	142	76	9.0	17
5	803	*474	42	*60	104	75	520	170	104	52	12	13
6	1,520	248	32	49	106	75	324	3,320	81	43	132	11
7	867	133	24	42	108	74	255	6,550	74	38	104	11
8	300	100	23	38	110	74	215	2,680	*65	36	*74	9.4
9	182	114	27	49	300	74	180	547	57	155	29	8.2
10	129	98	32	64	440	*75	162	303	52	120	21	8.8
11	100	80	36	86	390	75	164	246	113	60	18	8.8
12	76	62	65	3,500	340	76	146	*204	370	683	17	8.0
13	65	57	64	5,430	250	78	144	178	1,100	168	16	7.1
14	59	47	52	*2,050	200	81	*166	154	600	*135	15	*6.6
15	*56	42	52	2,600	185	85	238	135	210	73	17	7.0
16	49	35	48	1,400	175	90	238	502	209	50	38	6.7
17	45	31	42	393	165	94	2,580	652	194	37	51	9.0
18	38	28	41	190	*150	*97	2,760	255	139	30	608	17
19	37	26	31	140	130	100	730	188	100	26	393	95
20	35	30	32	220	115	102	324	198	210	21	358	35
21	*31	40	34	195	105	103	264	194	900	19	564	16
22	29	59	36	170	98	104	209	183	521	18	84	14
23	38	70	65	155	*90	105	178	149	465	17	43	330
24	139	75	98	140	86	106	158	1,090	1,070	16	27	1,610
25	60	52	98	125	82	107	149	7,400	434	14	19	986
26	46	42	102	118	80	108	150	2,440	152	21	15	432
27	42	35	355	110	77	108	123	482	110	50	24	133
28	36	30	2,000	108	76	6,000	110	283	88	17	38	83
29	31	27	1,870	105	75	7,800	129	220	70	11	522	65
30	31	24	884	103	.....	*10,500	1,020	183	58	11	274	62
31	37	.....	270	102	.....	7,900	.....	146	.....	10	158	.....

Whitebreast Creek near Knoxville, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	1.28	1.06	0.67	1.09	4.11	5.85	1.67	13.8	9.72	8.19	141	1.59
1956-57	.82	.70	.91	.92	7.93	6.38	212	172	173	8.58	6.88	2.86
1957-58	5.04	3.45	3.09	3.91	81.0	72.1	31.0	49.7	5.77	783	127	20.4
1958-59	4.00	113	11.2	5.91	340	807	657	1,723	218	108	328	264
1959-60	168	106	213	588	153	1,115	697	982	283	90.8	120	137

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.0031	0.0028	0.0018	0.0029	0.011	0.015	0.0044	0.036	0.026	0.022	0.371	0.0042
1956-57	.0022	.0018	.0024	.0024	.021	.017	.558	.453	.455	.023	.018	.0075
1957-58	.013	.0091	.0081	.010	.213	.190	.082	.131	.015	2.06	.334	.054
1958-59	.011	.297	.029	.016	.895	2.12	1.73	4.53	.574	.284	.863	.695
1959-60	.442	.279	.561	1.55	.403	2.93	1.83	2.58	.745	.239	.316	.361

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.004	0.003	0.002	0.003	0.01	0.02	0.005	0.04	0.03	0.02	0.43	0.005
1956-57	.002	.002	.003	.003	.02	.02	.62	.62	.51	.03	.02	.008
1957-58	.02	.01	.009	.01	.22	.22	.09	.15	.02	2.37	.39	.06
1958-59	.01	.33	.03	.02	.93	2.45	1.93	5.23	.64	.33	.99	.77
1959-60	.51	.31	.65	1.78	.43	3.38	2.05	2.98	.83	.28	.36	.40

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								49.4	1.77
1956	Aug. 8, 1956	10.79	3,000	0.2	16.0	0.042	0.57	16.0	0.57
1957	May 13, 1957	10.42	2,760	.4	49.3	.130	1.76	50.1	1.79
1958	July 2, 1958	18.37	7,300	.6	99.9	.263	3.57	109	3.90
1959	May 22, 1959	17.75	7,800	.6	383	1.01	13.66	413	14.76
1960	Mar. 30, 1960	19.02	11,000	6.6	390	1.03	13.96		

Peak Discharge (base, 2,500 cfs)

- 1955-56: Aug. 8 (8:30 a.m.) 3,000 cfs (10.79 ft.).
 1956-57: May 13 (11 p.m.) 2,760 cfs (10.42 ft.).
 1957-58: July 2 (9:30 a.m.) 7,300 cfs (18.37 ft.); July 4 (3:30 a.m.) 7,020 cfs (18.24 ft.); July 19 (9:30 p.m.) 3,660 cfs (12.35 ft.).
 1958-59: Nov. 17 (about 12 p.m.) 2,630 cfs (8.9 ft.) Mar. 20, about 3,600 cfs; Mar. 26 (about 3 p.m.) 4,850 cfs (14.0 ft.); Apr. 1 about 2,600 cfs; Apr. 20 about 5,000 cfs, May 11 (about 6:30 a.m.) 3,680 cfs (11.5 ft.); May 22 (10 a.m.) 7,800 cfs (17.75 ft.); May 31 (12:30 a.m.) 6,660 cfs (16.64 ft.); July 1 (8 a.m.) 2,670 cfs (9.03 ft.); Sept. 26 (11:30 p.m.) 3,390 cfs (10.77 ft.).
 1959-60: Jan. 12 (11:30 p.m.) 7,100 cfs (17.10 ft.); Mar. 30 (5 p.m.) 11,000 cfs (19.02 ft.); Apr. 17 about 3,900 cfs; May 7 (time unknown) 7,000 cfs (17.0 ft.); May 25 about 8,000 cfs; Sept. 24 (4:30 p.m.) 2,760 cfs (9.93 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 29 to Dec. 3, Dec. 10, 11, 15-31, 1955; Jan. 1 to Mar. 10, Nov. 19-26, Dec. 6, 7, 12-15, 1956; Jan. 2 to Feb. 18, Feb. 22-24, Nov. 23-30, Dec. 8-11, 13-17, 27-31, 1957; Jan. 1 to Feb. 28, Nov. 26 to Dec. 31, 1958; Jan. 1 to Feb. 28, Mar. 5-9, Nov. 14-21, 25-29, Dec. 5-10, 31, 1959; Jan. 1-12, Jan. 18 to Mar. 28, 1960. No gage height record May 14-19, July 15-21, 1957; May 21-26, 1958; June 18-28, Sept. 6-16 1959; July 29 to Aug. 5, Sept. 6-13, 1960.

Des Moines River near Tracy, Iowa

LOCATION.—Lat. 41° 16' 55", long. 92° 51' 30", in NW ¼ SE ¼ sec. 19, T. 75 N., R. 17 W., near right bank on downstream side of Bellefontaine highway bridge, 0.8 miles east of Tracy, 3.0 miles upstream from Cedar Creek, and 6.5 miles downstream from English Creek.

DRAINAGE AREA.—12,479 square miles (revised in 1956).

RECORDS AVAILABLE.—March 1920 to September 1960.

GAGE.—Wire-weight gage read once daily. Datum of gage is 670.91 ft. (revised) above mean sea level, datum of 1929. Prior to Feb. 13, 1933, chain gage, Feb. 13, 1933, to June 26, 1940, wire-weight gage, and June 27, 1940, to June 29, 1952, water-stage recorder, all at same site and datum.

AVERAGE DISCHARGE.—40 years, 4,137 cfs.

EXTREMES.—1920-60: Maximum discharge, 155,000 cfs, June 14, 1947 (gage height, 26.5 ft.); minimum daily, 40 cfs Jan. 29 to Feb. 1, 1940. Maximum stage known since 1851, that of June 14, 1947. Flood of May 31, 1903, reached a stage of about 25 ft. (discharge, about 130,000 cfs).

Minimum daily discharge known since at least 1910, 40 cfs Jan. 29 to Feb. 1, 1940.

REMARKS.—Bankfull stage is about gage height, 20 ft.

REVISIONS (water years).—WSP 1508: (1920(M), 1922(M), 1933.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	1,220	220	130	150	160	360	1,210	458	860	309	436	350
2.....	1,220	220	140	150	160	530	1,190	474	1,200	387	566	314
3.....	665	205	145	150	160	450	1,040	450	1,500	338	611	304
4.....	422	190	150	155	160	360	1,080	458	1,380	332	701	326
5.....	362	190	150	155	160	330	1,090	474	1,080	326	683	380
6.....	320	195	145	155	160	429	1,140	443	910	374	539	1,390
7.....	287	200	145	155	155	374	1,110	450	910	387	422	2,540
8.....	230	200	140	155	150	340	1,040	450	880	539	1,020	2,840
9.....	220	245	135	150	150	450	970	490	920	458	3,840	1,790
10.....	220	235	135	150	150	320	900	506	2,320	466	3,920	1,260
11.....	326	220	130	145	150	380	880	548	1,790	429	2,540	910
12.....	394	205	130	150	145	450	800	557	1,250	482	1,440	692
13.....	338	190	*130	155	145	490	710	770	930	466	980	575
14.....	304	180	130	150	*145	*530	656	910	710	408	990	443
15.....	304	195	130	145	145	506	629	*674	611	387	1,090	401
16.....	265	145	130	145	145	548	602	960	522	380	1,080	356
17.....	255	*105	125	140	145	458	*602	1,550	474	408	760	314
18.....	220	145	120	140	150	490	498	1,200	*401	548	1,730	287
19.....	205	155	120	140	150	539	458	920	362	710	3,760	265
20.....	215	150	115	*140	155	593	458	730	362	740	3,680	250
21.....	*215	175	115	140	150	514	450	665	557	840	1,610	*230
22.....	215	195	115	140	150	474	443	584	602	656	1,150	215
23.....	205	165	115	140	190	514	429	557	840	*450	*920	205
24.....	200	180	120	140	300	602	374	506	647	394	740	200
25.....	205	190	120	140	360	620	362	436	548	332	593	180
26.....	210	165	130	140	350	760	362	422	415	270	522	170
27.....	205	150	140	145	480	810	350	401	362	250	422	175
28.....	220	105	145	150	440	920	350	387	338	245	401	157
29.....	215	92	150	155	410	1,000	380	356	282	270	490	157
30.....	255	115	150	155	.....	1,040	408	506	276	332	557	149
31.....	225	.....	150	155	.....	1,100	.....	900	.....	314	498	.....

Des Moines River near Tracy, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	153	135	290	185	140	351	1,460	1,380	1,950	4,450	1,210	656
2	149	142	350	175	140	378	1,950	1,160	3,920	4,000	1,050	680
3	142	153	310	175	140	370	2,920	1,010	3,920	3,830	1,050	738
4	139	172	380	165	140	370	6,920	860	3,590	3,440	1,020	697
5	139	215	250	160	140	362	6,520	772	3,360	3,210	981	697
6	139	302	230	160	140	356	4,090	705	3,060	3,060	922	721
7	139	202	210	155	143	346	2,990	664	2,850	3,440	971	672
8	139	356	195	150	148	351	2,360	649	2,570	3,670	825	641
9	135	498	190	135	150	350	2,080	588	2,570	3,920	790	634
10	106	527	180	125	160	351	1,760	721	2,570	3,210	738	596
11	89	588	165	120	170	351	1,570	2,310	2,570	2,780	697	603
12	89	426	155	115	190	324	1,400	5,290	*3,510	2,640	656	603
13	109	*378	145	110	210	368	1,270	4,000	4,540	2,360	641	634
14	139	346	160	110	250	368	1,210	7,910	3,750	2,080	618	580
15	*139	346	170	110	300	356	*1,050	5,980	3,440	2,020	603	721
16	408	312	180	110	450	356	1,010	4,900	3,960	1,820	596	*664
17	334	302	175	110	700	368	991	4,000	13,500	1,760	596	611
18	402	334	*170	112	610	378	932	3,670	*21,500	1,640	580	580
19	290	324	170	115	780	*351	932	3,210	23,200	1,760	*542	550
20	280	280	170	120	1 060	471	904	2,710	23,800	1,500	565	573
21	254	250	180	125	720	471	887	2,570	16,900	1,350	527	611
22	210	240	190	135	980	596	869	*3,060	9,820	1,230	512	535
23	188	370	195	145	1 200	634	971	3,830	7,110	*1,150	505	505
24	179	360	190	140	680	634	896	3,060	6,160	1,060	478	478
25	160	350	180	135	438	641	772	2,780	5,080	1,030	478	451
26	153	305	190	135	351	641	790	3,060	5,080	1,160	438	451
27	142	450	200	135	356	689	1,050	2,990	4,720	1,180	471	432
28	135	640	205	135	356	781	2,200	2,920	4,720	1,190	634	408
29	132	360	198	135	.....	860	2,780	2,640	4,540	2,220	755	408
30	132	205	193	140	.....	971	2,020	2,360	4,540	1,340	705	390
31	126	.....	193	140	.....	1,120	.....	2,220	.....	1,150	680	.....
1957-58												
1	356	558	1,100	500	610	7,310	1,310	1,700	834	1,700	9,160	971
2	324	573	*1,170	450	560	6,160	1,280	1,700	1,880	11,300	6,920	896
3	362	596	1,200	600	520	5,080	1,280	1,950	2,220	*27,000	5,260	878
4	346	634	1,230	800	*490	4,000	1,300	2,020	2,220	*30,000	5,080	869
5	340	603	1,340	940	520	3,590	1,420	2,220	1,950	32,200	4,180	932
6	334	654	1,100	1,050	540	3,440	1,640	2,500	2,720	31,800	3,670	904
7	329	721	1,230	1,080	540	3,590	1,760	2,080	6,160	32,200	3,140	5,630
8	324	764	1,360	1,100	520	3,280	1,950	1,880	6,720	18,200	2,710	12,900
9	471	746	1,100	1,000	480	3,060	2,360	1,820	6,720	11,400	2,640	9,380
10	542	738	900	920	460	2,850	2,850	1,640	6,720	8,300	2,500	6,160
11	464	713	660	880	460	2,710	2,990	1,640	6,520	6,920	2,990	*3,280
12	485	697	540	820	450	2,500	2,990	1,580	6,340	7,710	*1,950	2,290
13	458	713	640	780	430	2,290	2,990	1,540	6,160	8,940	1,880	1,760
14	*485	697	820	780	410	2,220	2,850	1,520	5,980	7,310	1,760	1,640
15	492	730	1,000	820	390	2,080	2,710	1,260	6,160	7,510	*1,580	1,540
16	478	713	1,200	900	370	2,150	2,500	1,180	5,620	7,510	1,470	1,460
17	492	721	1,400	960	350	2,020	2,360	1,200	4,720	8,500	1,360	1,340
18	492	*746	1,250	1,080	330	1,950	2,290	1,250	4,720	11,100	1,270	1,320
19	485	825	*1,160	1,100	320	*1,880	2,220	*1,270	4,360	11,900	*1,880	1,270
20	444	971	1,200	1,100	300	1,820	2,150	1,180	*3,750	20,400	1,390	1,480
21	408	913	1,240	1,040	290	1,820	*2,220	1,090	3,280	22,100	1,480	1,390
22	408	878	1,230	860	280	1,820	1,880	1,060	2,710	16,600	1,640	1,360
23	402	1,050	1,220	700	350	1,570	2,020	1,050	2,430	12,500	1,880	1,210
24	414	1,070	1,460	760	*1,500	1,510	1,880	951	2,290	*9,380	1,880	1,210
25	402	1,050	1,450	900	3,000	1,470	1,760	942	2,220	7,310	1,820	1,210
26	580	1,150	1,450	880	4,700	1,410	1,820	932	2,020	6,160	1,640	1,150
27	384	1,230	1,260	860	7,510	1,350	1,760	860	1,950	5,440	1,470	1,100
28	390	1,230	1,280	840	6,920	1,330	1,700	834	1,880	4,540	1,340	991
29	384	1,100	1,100	*810	.....	1,320	1,640	808	1,820	4,270	1,240	904
30	565	1,000	900	740	.....	1,280	1,700	755	1,760	5,260	1,120	834
31	558	.....	620	670	.....	1,300	.....	713	.....	8,720	1,060	.....

Des Moines River near Tracy, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	816	432	540	250	200	5,080	13,100	6,520	*31,400	29,000	1,150	1,250
2	852	414	570	220	200	6,520	14,800	5,440	30,000	30,000	1,100	1,640
3	764	485	480	200	200	6,160	11,100	5,080	29,300	20,700	1,100	1,390
4	721	471	*430	220	200	5,600	8,500	4,720	30,000	15,800	1,150	1,380
5	705	444	390	235	220	3,500	7,310	4,720	29,600	12,200	1,230	1,560
6	664	451	340	240	250	2,400	6,340	8,980	27,900	8,940	1,760	1,440
7	618	*471	380	240	270	1,850	5,440	8,940	24,100	7,510	4,470	1,190
8	641	478	400	235	290	1,600	5,260	7,310	17,700	6,520	6,920	1,030
9	641	478	400	230	300	1,800	4,360	7,110	12,500	*6,160	4,520	887
10	*634	478	380	220	320	2,000	4,360	8,500	10,500	5,440	1,760	790
11	790	471	360	215	330	2,220	3,670	11,100	8,940	4,720	1,480	730
12	716	464	330	*210	360	*2,780	3,440	17,200	7,710	4,180	*1,200	730
13	721	471	310	215	1,000	4,560	3,140	12,500	*6,920	3,590	1,110	697
14	705	458	290	215	3,500	8,720	3,060	9,380	6,160	3,360	991	664
15	649	458	280	220	5,400	10,500	2,850	*7,710	5,620	3,060	1,080	618
16	*641	438	270	220	3,700	8,940	2,710	6,920	*5,080	2,850	1,700	565
17	626	836	270	220	2,800	6,920	*2,570	6,160	4,720	3,200	2,800	535
18	603	3,390	270	215	3,300	5,440	2,710	5,800	4,360	4,720	1,850	*512
19	573	3,060	280	205	2,600	7,910	3,140	*7,710	4,270	3,590	1,300	505
20	535	2,080	280	200	2,000	18,300	7,870	9,820	3,750	*3,060	*1,110	527
21	498	1,000	270	200	1,650	19,100	15,300	14,300	3,510	2,780	960	558
22	535	843	270	205	1,350	14,800	10,900	*27,200	3,360	2,020	900	573
23	535	808	270	215	3,300	12,500	7,710	23,300	3,060	1,820	830	588
24	520	705	275	230	12,000	10,000	6,920	14,300	2,920	1,700	800	542
25	505	664	280	230	6,600	9,160	6,520	14,800	2,780	1,530	900	368
26	492	600	300	230	6,200	12,200	6,160	15,300	2,570	1,380	1,100	1,680
27	471	520	310	225	7,310	20,700	5,620	15,100	2,360	1,280	1,250	6,160
28	471	400	320	220	5,800	20,400	5,440	12,900	2,220	1,180	1,400	5,800
29	458	330	320	215	.....	16,400	11,100	22,700	2,740	1,270	1,350	3,920
30	458	520	310	205	.....	12,700	8,940	33,500	11,700	1,880	1,300	2,290
31	444	.....	280	200	.....	11,600	.....	38,400	.....	1,280	1,250	.....
1959-60												
1	1,500	705	980	3,200	3,100	1,350	60,700	13,400	22,700	6,920	1,820	3,920
2	1,320	738	1,150	2,700	3,000	1,300	67,200	13,400	18,500	8,500	1,700	3,060
3	1,230	730	*1,390	2,100	2,900	*1,250	72,100	10,900	14,600	9,160	1,580	2,500
4	1,300	790	1,360	1,700	2,850	1,200	*73,200	9,600	12,700	7,110	1,530	2,290
5	1,520	2,640	1,570	1,450	2,800	1,180	63,500	8,720	12,000	5,980	1,450	2,020
6	3,060	*3,060	1,470	1,550	2,750	1,180	49,600	11,600	10,700	5,260	1,950	1,820
7	4,000	2,990	1,340	1,350	2,750	1,180	40,600	31,800	9,600	5,080	2,710	1,580
8	2,290	2,020	1,240	1,850	2,750	1,180	33,900	36,400	8,940	4,450	3,670	1,450
9	1,700	1,760	1,190	1,800	2,750	1,180	27,600	30,900	*8,100	4,000	2,920	1,360
10	1,470	1,700	1,130	2,000	2,750	1,200	21,000	24,700	7,510	6,160	*2,500	1,260
11	1,260	1,610	1,100	2,250	2,800	1,220	17,700	15,300	7,510	7,310	2,080	1,160
12	1,200	1,640	1,280	3,710	2,850	1,260	16,100	12,000	8,100	7,510	1,760	1,110
13	1,060	1,570	1,410	28,900	2,900	1,300	14,800	*10,300	10,900	10,000	1,530	1,060
14	1,010	1,580	1,360	32,200	3,000	*1,380	13,900	9,160	*9,820	*7,110	1,350	1,010
15	*971	1,520	1,310	21,300	3,050	1,400	13,100	7,310	7,710	7,310	1,300	*1,000
16	896	1,100	1,280	15,800	3,050	1,400	12,500	*7,910	6,720	6,920	1,220	991
17	834	1,000	1,230	8,720	3,000	1,400	15,100	*13,600	6,720	6,340	1,580	1,100
18	816	970	1,180	6,160	3,000	1,420	20,200	9,600	6,340	5,440	1,640	1,220
19	816	1,150	1,210	4,300	2,900	1,420	19,600	7,710	6,160	4,900	4,180	1,300
20	790	1,350	1,160	3,500	2,750	1,420	19,400	8,100	7,910	4,270	5,800	1,380
21	764	1,600	1,130	3,100	2,650	1,450	15,600	8,300	9,820	3,830	7,310	1,260
22	*755	1,500	1,110	2,750	2,500	1,480	13,900	8,940	12,200	3,440	4,180	1,130
23	799	1,400	1,160	2,700	2,350	1,500	12,500	9,160	10,700	3,280	2,640	1,320
24	860	1,140	1,220	2,700	2,200	1,500	11,400	13,200	10,700	3,140	2,150	5,420
25	808	1,580	1,300	2,850	2,000	1,500	10,500	25,900	10,900	2,850	1,760	12,700
26	746	1,420	1,340	3,100	1,800	1,520	10,000	35,900	7,710	2,710	1,700	7,110
27	730	1,300	1,510	3,300	1,600	1,700	10,500	35,400	6,920	2,570	2,920	4,180
28	730	1,100	2,920	3,450	1,500	10,000	10,500	30,000	6,160	2,430	2,780	2,990
29	721	900	5,440	3,500	1,450	21,000	9,380	29,000	8,100	2,220	2,360	2,430
30	680	850	4,720	3,450	.....	48,200	9,380	27,200	6,720	2,020	6,340	2,220
31	689	.....	3,750	3,300	.....	*59,800	.....	25,000	.....	1,950	5,620	.....

Des Moines River near Tracy, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	334	177	133	148	202	557	699	619	808	427	1,248	594
1956-57	176	329	205	136	402	494	1,918	2,708	6,760	2,279	704	584
1957-58	432	826	1,123	862	1,200	2,586	2,053	1,391	3,828	13,040	2,521	2,275
1958-59	614	771	337	219	2,559	8,786	6,678	12,690	11,360	6,346	1,672	1,371
1959-60	1,204	1,448	1,643	5,895	2,612	5,660	26,180	17,430	9,740	5,196	2,711	2,445

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.027	0.014	0.011	0.012	0.016	0.045	0.056	0.050	0.065	0.031	0.100	0.048
1956-57	.014	.026	.016	.011	.032	.040	.154	.217	.542	.183	.056	.047
1957-58	.035	.066	.090	.069	.096	.207	.165	.111	.307	1.04	.202	.182
1958-59	.049	.062	.027	.018	.205	.704	.535	1.02	.910	.509	.134	.110
1959-60	.096	.116	.132	.472	.209	.454	2.10	1.40	.781	.416	.217	.196

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.03	0.02	0.01	0.01	0.02	0.05	0.06	0.05	0.07	0.04	0.12	0.05
1956-57	.02	.03	.02	.01	.03	.05	.17	.25	.60	.21	.07	.05
1957-58	.04	.07	.10	.08	.10	.24	.18	.13	.34	1.20	.23	.20
1958-59	.06	.07	.03	.02	.21	.81	.60	1.17	1.02	.59	.15	.12
1959-60	.11	.13	.15	.54	.23	.52	2.34	1.61	.87	.48	.25	.22

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								2,176	2.36
1956	Aug. 20, 1955	5.80	4,480	92	496	0.040	0.54	502	0.55
1957	June 20, 1957	13.58	24,100	89	1,386	0.111	1.51	1,529	1.65
1958	July 7, 1958	16.98	33,100	280	2,695	0.216	2.91	2,630	2.86
1959	May 31, 1959	17.92	38,900	200	4,459	0.357	4.85	4,676	5.08
1960	Apr. 4, 1960	23.00	75,500	680	6,836	0.518	7.45		

Peak Discharge (base, 20,000 cfs)

1955-56: No peak above base.

1956-57: June 20 (4 p.m.) 24,100 cfs (13.58 ft.).

1957-58: July 3 (8 a.m.) 28,200 cfs (16.64 ft.); July 7 (9:30 a.m.) 33,100 cfs (16.98 ft.); July 21 (8 a.m.) 22,900 cfs (14.12 ft.).

1958-59: Mar. 20 (11 p.m.) 21,300 cfs (13.20 ft.); Mar. 27 (6 p.m.) 22,900 cfs (13.85 ft.); May 22 (8 p.m.) 29,600 cfs (17.00 ft.); May 31 (3 p.m.) 38,900 cfs (17.92 ft.); July 2 (2 a.m.) 32,600 cfs (16.65 ft.).

1959-60: Jan. 14 (10 a.m.) 33,100 cfs (16.70 ft.); Apr. 4 (2 a.m.) 75,500 cfs (23.00 ft.); Apr. 18 (9 a.m.) 20,700 cfs (12.50 ft.); May 7 (11 p.m.) 38,400 cfs (17.80 ft.); May 26 (6 p.m.) 37,400 cfs (17.60 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 16 to Dec. 31, 1955; Jan. 1 to Mar. 5, Mar. 8-12, Nov. 21 to Dec. 31, 1956; Jan. 1 to Feb. 24, Mar. 3, 4, 9, Nov. 29 to Dec. 2, Dec. 9-18, 29-31, 1957; Jan. 1 to Feb. 26, Nov. 26 to Dec. 31, 1958; Jan. 1 to Feb. 26, Mar. 4, 7-10, Nov. 16-22, 27-30, Dec. 1, 1959; Jan. 1-11, Jan. 19 to Mar. 29, 1960. No gage height record Aug. 21-31, 1959.

Cedar Creek near Bussey, Iowa

LOCATION.—Lat. 41°13'10", long. 92°54'25", at corner common to secs. 10, 11, 14, 15, T. 74 N., R. 18 W., on left bank at downstream side of bridge on State Highway 156, 1.6 miles northwest of Bussey, and 8.9 miles upstream from mouth.

DRAINAGE AREA.—374 square miles (revised in 1956).

RECORDS AVAILABLE.—October 1947 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 682.15 ft. above mean sea level, datum of 1929 (levels by Corps of Engineers). Prior to Feb. 21, 1949, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—13 years, 183 cfs.

EXTREMES.—1947-60: Maximum discharge, 29,300 cfs May 9, 1950; maximum gage height, 28.06 ft. July 2, 1958; no flow Sept. 6-20, 1955, Oct. 11, 12, 1956.

Flood of June 1946 reached a stage of 28.45 ft. on upstream side and 28.05 ft. on downstream side of bridge from levels to floodmarks by Corps of Engineers (discharge, 31,500 cfs).

REMARKS.—Bankfull stage is about gage height, 18 ft. Road is overflowed west of bridge at gage height 26.0 ft., east of bridge at 27.5 ft.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	7.0	0.4	0.4	0.3	0.1	17	3.0	1.2	21	0.4	473	5.5
2.....	2.3	.4	.7	.3	.1	13	2.6	2.6	7.0	.6	1,190	4.3
3.....	.6	.4	1.2	.3	.1	11	1.5	.4	3.0	2.4	334	4.3
4.....	.6	.3	1.0	.3	.1	9.0	1.5	.4	1.3	210	55	3.8
5.....	.6	.3	.7	.3	.1	7.0	1.3	.4	.9	178	17	5.5
6.....	.4	.3	.6	.3	.1	6.4	1.0	.4	.4	29	8.8	5.2
7.....	.2	.3	.7	.2	.1	7.0	.9	.3	.4	10	5.5	4.1
8.....	.1	.3	.7	.1	.1	4.3	.8	.2	.2	4.9	1,400	3.5
9.....	.1	.3	.4	.2	.1	3.0	.7	.2	.2	2.3	3,250	2.6
10.....	.2	.3	.3	.2	.1	3.0	.7	.2	.1	1.0	737	2.3
11.....	.2	.3	.3	.2	.1	4.5	.6	.3	.2	.6	90	2.1
12.....	.4	.2	*.2	.2	.1	3.7	.6	.4	.4	.4	40	1.9
13.....	.3	.3	.4	.2	.2	3.0	.4	.4	.2	.4	702	1.5
14.....	.2	.3	.4	.2	*1.2	*2.8	.6	.3	.1	.3	348	.9
15.....	.3	.3	.4	.2	.2	2.8	.6	*.1	.1	.2	170	.9
16.....	.3	.4	.3	.2	.1	2.6	.6	.1	.4	.1	59	.9
17.....	.3	*.3	.2	.2	.1	2.8	*.4	.1	3.3	.1	78	.9
18.....	.3	.2	.2	.2	.1	3.5	.8	.3	6.9	11	1,220	.8
19.....	.2	.3	.2	.2	.1	3.8	.6	.4	*21	32	761	*.8
20.....	*.1	.3	.2	*.2	.1	3.0	.3	.2	183	5.2	96	.4
21.....	.2	.4	.2	.2	.1	2.6	.3	.2	91	8.5	40	.4
22.....	.1	.4	.2	.2	.1	2.3	.3	.2	15	8.5	*23	.7
23.....	.2	.4	.2	.2	.1	2.3	.2	.2	5.5	4.1	18	.6
24.....	.2	.4	.4	.1	1.2	2.3	.2	.2	2.6	*1.3	14	.7
25.....	.3	.4	.3	.1	9.0	2.3	.2	.2	1.0	.7	10	.8
26.....	.2	.4	.3	.1	20	2.3	.2	.2	.6	.2	8.8	.7
27.....	.2	.4	.2	.1	30	2.1	.2	.2	.3	.2	7.9	.7
28.....	.4	.3	.2	.2	25	2.3	.9	.2	.2	.2	7.9	.7
29.....	.4	.3	.2	.2	21	2.6	.9	.4	.1	.2	7.6	.8
30.....	.6	.2	.2	.1	.....	9.2	.9	70	.2	.1	7.0	.8
31.....	.6	.....	.2	.1	.....	5.5	.....	142	.....	.1	6.1	.....

Cedar Creek near Bussey, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	0.7	0.1	0.5	0.9	0.2	1.5	101	80	23	17	33	3.5
2	.7	.1	.6	.7	.2	1.2	222	61	18	13	21	3.5
3	.6	.1	.9	.6	.2	1.0	2 ³⁵⁰	48	16	58	16	3.5
4	.6	.2	1.0	.7	.2	1.0	*1,910	38	15	110	13	3.3
5	.3	.3	.8	.5	.2	1.2	*435	31	14	25	11	2.8
6	.3	.4	.5	.5	.2	1.3	222	29	12	15	9.2	3.5
7	.1	.4	.6	.5	.2	1.2	144	26	46	11	7.9	12
8	.1	.3	.7	.6	.2	.9	130	24	52	9.6	7.0	9.3
9	.1	.2	.8	.4	.3	1.0	100	23	35	8.2	6.7	4.9
10	.1	.2	.8	.2	.5	1.0	74	615	59	7.6	6.1	3.8
11	0	.4	.7	.1	1.5	8.6	79	216	210	7.3	5.5	6.2
12	0	.4	.5	.1	4.0	15	65	275	*217	7.0	5.2	8.5
13	.1	.3	.4	.1	15	7.9	51	487	177	7.0	5.8	9.6
14	.2	*.4	.5	.1	11	3.8	44	692	381	7.0	12	27
15	.1	2.6	.5	.1	8.0	3.0	38	234	347	6.7	6.4	150
16	*.1	1.0	.5	.1	5.0	2.3	*35	132	71	7.0	5.2	20
17	.2	.7	.5	.1	3.5	1.5	42	268	64	7.0	4.6	7.4
18	.1	.4	*.6	.1	2.5	1.7	59	167	422	7.0	4.6	6.7
19	.1	.7	.7	.2	*2.1	*2.6	48	102	66	7.0	4.3	*4.1
20	.1	.7	.9	.4	1.9	2.3	44	97	32	7.0	*4.3	34
21	.1	.6	1.0	1.5	1.9	2.1	34	*1,720	23	7.0	4.6	21
22	.1	.5	1.2	1.0	1.7	2.1	390	470	20	24	4.9	3.3
23	.1	.6	1.2	*.6	1.5	1.9	1,280	146	17	*34	3.8	1.2
24	.1	.6	1.2	.3	1.9	1.9	258	92	14	11	4.3	.8
25	.1	.7	1.1	.3	2.3	4.9	132	69	13	11	4.1	.8
26	.1	.6	1.2	.2	2.6	5.8	231	59	99	8.2	4.6	.6
27	.1	.5	1.2	.2	2.3	7.3	307	44	106	31	5.2	.4
28	.1	.5	1.2	.2	2.1	10	260	35	108	129	50	.4
29	.1	.5	1.2	.2	.....	18	261	30	44	2,530	15	.3
30	.1	.5	1.2	.2	.....	39	116	30	23	1,130	6.1	.6
31	.1	.....	1.2	.2	.....	59	.....	34	.....	83	4.1	.....
1957-58												
1	0.6	1.5	7.9	20	12	363	30	21	12	142	899	25
2	.7	4.3	7.0	18	12	226	34	21	12	*14,900	352	22
3	.7	5.5	*6.1	17	12	173	39	130	11	*6,860	236	20
4	.6	4.3	5.8	15	*12	140	42	902	10	3,880	169	19
5	.6	3.8	5.8	14	11	128	56	118	9.6	1,140	1,020	23
6	.6	3.0	6.1	14	11	254	68	260	8.2	374	1,790	24
7	.6	3.0	7.3	13	10	188	67	146	7.6	236	352	22
8	.8	4.3	7.3	12	9.2	135	55	116	7.9	171	719	20
9	.9	4.9	7.0	12	8.4	125	42	96	38	135	288	660
10	.8	3.5	6.2	12	7.5	105	37	72	113	118	188	1,540
11	.8	3.3	5.6	12	6.8	87	36	59	25	672	155	168
12	.7	3.3	5.2	12	6.4	77	33	52	18	654	141	*66
13	.8	4.1	4.8	13	5.8	73	30	44	331	153	*576	44
14	1.0	4.6	4.6	14	5.4	71	29	35	89	99	316	35
15	*3.0	4.6	4.6	15	5.0	61	28	32	33	80	164	39
16	2.1	5.8	4.9	16	5.0	56	28	31	20	77	108	75
17	2.8	4.9	5.2	17	5.0	53	28	30	16	71	71	40
18	2.3	23	9.9	17	5.0	50	25	28	14	146	65	31
19	2.1	*58	*16	16	5.0	*50	25	26	12	1,360	*53	27
20	2.1	52	19	15	5.0	48	26	22	*10	3,010	51	22
21	2.1	28	21	14	5.0	44	34	18	9.6	382	108	32
22	2.1	16	20	*14	5.0	44	*38	17	8.8	209	112	61
23	7.1	10	17	14	40	40	39	16	8.2	*140	61	39
24	19	8.7	14	13	500	38	63	14	7.6	105	52	1,470
25	13	8.0	16	13	1,300	35	78	13	7.3	93	48	436
26	3.5	7.5	62	12	1,000	34	36	11	7.0	68	44	110
27	2.1	7.0	50	12	850	33	28	11	6.7	228	40	71
28	1.7	6.5	36	12	852	31	27	9.9	6.1	320	38	54
29	1.7	6.0	30	12	.....	31	27	9.6	5.5	146	35	46
30	1.7	6.7	25	12	.....	30	24	9.2	5.2	1,580	31	44
31	1.7	.....	22	12	.....	30	.....	9.6	.....	2,240	28	.....

Cedar Creek near Bussey, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	43	17	25	15	15	725	3,750	150	700	1,280	36	4.2
2.....	36	17	28	14	14	475	3,280	120	400	300	14	23
3.....	32	19	35	13	13	338	700	290	270	91	9.2	7.0
4.....	32	19	*48	13	13	200	425	200	184	55	14	4.6
5.....	29	17	46	13	13	100	308	190	135	40	308	2.2
6.....	26	*16	35	13	13	150	232	900	112	30	456	2.2
7.....	28	15	24	13	13	110	198	400	92	25	260	3.0
8.....	180	15	21	13	16	90	187	240	78	*23	57	2.6
9.....	*83	15	20	14	25	130	167	220	68	30	32	2.6
10.....	82	15	19	14	60	200	153	700	65	41	23	2.2
11.....	43	15	18	15	150	325	137	1,800	60	23	17	2.2
12.....	33	14	18	*15	350	*438	132	250	*56	16	14	2.2
13.....	31	14	18	15	900	650	128	170	50	15	12	2.2
14.....	31	15	18	16	2,000	1,600	117	*113	43	14	9.2	2.3
15.....	29	19	18	17	900	1,160	106	107	40	14	11	3.2
16.....	*28	21	18	17	400	725	*99	106	36	12	31	2.3
17.....	27	654	18	17	*200	475	97	101	*34	22	29	*2.5
18.....	26	1,630	18	17	150	462	404	100	30	27	65	2.8
19.....	25	191	19	17	100	4,100	250	1,610	26	17	*24	5.4
20.....	25	89	19	17	73	5,260	4,000	*829	23	15	11	4.6
21.....	24	68	20	17	60	1,450	3,540	*5,870	19	*12	8.4	4.4
22.....	25	60	20	17	250	588	675	5,700	16	12	6.3	3.9
23.....	23	55	21	17	2,500	575	350	1,020	13	13	6.3	24
24.....	20	53	21	17	3,000	538	200	525	11	11	5.2	27
25.....	19	47	21	17	1,500	450	145	362	10	10	4.4	16
26.....	17	44	21	17	1,800	2,980	125	282	9.2	10	3.9	442
27.....	17	31	21	17	1,500	3,490	125	225	8.4	9.6	3.5	2,280
28.....	17	28	21	17	1,160	725	780	400	7.4	9.6	3.5	265
29.....	17	25	20	16	.....	475	620	4,000	50	14	3.2	68
30.....	17	25	18	16	.....	388	240	4,500	900	19	3.0	38
31.....	16	.....	16	15	.....	400	.....	2,500	.....	66	3.2	.....
1959-60												
1.....	28	53	17	98	100	88	3,100	1,030	252	315	8.5	16
2.....	25	50	*19	84	100	78	2,200	350	914	193	7.8	10
3.....	22	40	26	70	100	78	1,050	240	202	92	7.5	7.8
4.....	25	52	35	*60	105	77	990	182	133	64	7.2	6.2
5.....	400	*107	33	52	110	77	751	170	112	*51	8.9	5.4
6.....	942	86	25	46	115	77	500	3,360	95	54	100	4.8
7.....	1,230	56	23	43	120	77	350	11,600	88	47	77	4.3
8.....	223	44	22	40	115	77	272	2,060	*84	37	*92	4.8
9.....	114	49	21	47	340	77	214	612	73	42	31	3.8
10.....	80	51	21	62	500	77	176	400	66	72	16	3.6
11.....	61	47	28	73	300	*78	174	288	70	186	11	3.6
12.....	47	40	101	2,100	240	78	155	*218	779	133	8.9	3.4
13.....	40	36	111	4,940	210	80	143	182	2,200	82	7.5	3.4
14.....	38	28	65	1,170	190	84	*278	158	350	*49	7.2	*3.4
15.....	*35	26	55	3,080	180	88	625	137	180	34	6.2	3.6
16.....	32	24	53	989	170	94	407	1,880	146	28	5.6	3.8
17.....	29	22	47	350	160	98	3,660	4,550	132	25	6.8	4.3
18.....	26	20	40	175	*150	100	2,880	600	102	22	80	7.5
19.....	23	19	33	190	130	104	625	375	87	21	51	8.1
20.....	23	21	33	210	110	106	425	918	330	19	22	8.1
21.....	22	27	37	170	105	106	362	751	1,160	17	15	8.5
22.....	*21	41	40	150	102	108	275	650	265	15	17	7.2
23.....	107	62	73	130	*98	114	211	338	298	14	11	12
24.....	146	62	146	115	94	116	180	766	362	12	8.1	38
25.....	78	44	104	110	90	118	164	5,320	122	97	6.5	46
26.....	50	32	91	105	86	120	240	2,910	93	190	5.6	15
27.....	40	27	192	100	84	800	172	650	80	32	4.8	7.5
28.....	33	23	1,310	100	82	6,230	124	388	89	19	9.2	5.4
29.....	30	20	538	100	81	*12,600	157	298	98	15	318	4.3
30.....	30	18	300	100	.....	15,200	1,660	262	99	12	72	4.6
31.....	36	.....	120	100	.....	5,310	.....	198	.....	9.6	28	.....

Cedar Creek near Bussey, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56 . . .	0.58	0.33	0.39	0.20	3.79	4.81	0.79	7.19	12.2	16.5	361	1.97
1956-57 . . .	.18	.52	.84	.38	2.61	6.84	315	206	91.5	140	9.53	11.8
1957-58 . . .	2.59	10.2	14.8	14.0	168	92.0	38.4	109	29.0	1,284	268	176
1958-59 . . .	34.9	109	22.7	15.5	614	960	722	1,096	118	73.4	47.8	108
1959-60 . . .	130	40.9	121	489	151	1,371	751	1,350	302	64.5	34.1	8.81

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56 . . .	0.0016	0.00088	0.0010	0.00053	0.010	0.013	0.0021	0.019	0.033	0.044	0.965	0.0053
1956-57 . . .	.00018	.0014	.0022	.0010	.0070	.018	.842	.551	.245	.374	.025	.032
1957-58 . . .	.0069	.027	.040	.037	.449	.246	.103	.291	.078	3.43	.717	.471
1958-59 . . .	.093	.291	.061	.041	1.64	2.57	1.93	2.93	.316	.196	.128	.289
1959-60 . . .	.348	.109	.324	1.31	.404	3.67	2.01	3.61	.807	.172	.091	.024

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56 . . .	0.002	0.001	0.001	0.0006	0.01	0.01	0.002	0.02	0.04	0.05	1.11	0.006
1956-57 . . .	.00005	.0002	.003	.001	.007	.02	.94	.63	.27	.43	.03	.04
1957-58 . . .	.008	.03	.05	.04	.47	.28	.11	.34	.09	3.96	.83	.53
1958-59 . . .	.11	.32	.07	.05	1.71	2.96	2.15	3.38	.35	.23	.15	.32
1959-60 . . .	.40	.12	.37	1.51	.43	4.23	2.24	4.16	.90	.20	.11	.03

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30						Calendar year			
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches	
	Date	Gage height in feet	Discharge							
1955 . . .									60.0	2.17
1956 . . .	Aug. 9, 1956 . . .	17.20	3,980	0.1	34.6	0.093	1.25	34.6	1.25	1.25
1957 . . .	Apr. 3, 1957 . . .	17.37	4,060	0	65.5	.175	2.37	67.7	2.46	2.46
1958 . . .	July 2, 1958 . . .	28.06	29,000	.6	185	.495	6.74	197	7.15	7.15
1959 . . .	May 21, 1959 . . .	22.84	11,000	2.2	325	.869	11.80	336	12.19	12.19
1960 . . .	Mar. 30, 1960 . . .	25.71	18,800	3.4	404	1.08	14.70	.....	.....	.....

Peak Discharge (base, 3,500 cfs)

1955-56: Aug. 9 (5:30 p.m.) 3,980 cfs (17.20 ft.).

1956-57: Apr. 3 (11:30 p.m.) 4,060 cfs (17.37 ft.).

1957-58: July 3 (12 m) 29,000 cfs (28.06 ft.); July 4 (4 p.m.) 4,140 cfs (17.60 ft.); July 20 (7:30 a.m.) 4,560 cfs (18.63 ft.); July 30 (11 p.m.) 3,500 cfs (15.95 ft.); Aug. 6 (2:30 a.m.) 3,500 cfs (15.98 ft.).

1858-59: Feb. 23, about 3,500 cfs; Mar. 20 (8:30 a.m.) 6,090 cfs (20.25 ft.); Mar. 27 (2 a.m.) 4,860 cfs (18.92 ft.); Apr. 1 (10 p.m.) 5,650 cfs (19.78 ft.); Apr. 20 (11:30 p.m.) 5,360 cfs (19.48 ft.); May 21 (5:30 p.m.) 11,000 cfs (22.84 ft.); May 30, about 9,000 cfs.

1959-60. Jan. 13 (11 a.m.) 5,450 cfs (19.58 ft.); Jan. 15 (1 p.m.) 3,740 cfs (16.57 ft.); Mar. 30 (7 a.m.) 18,800 cfs (25.71 ft.); Apr. 18 (2 a.m.) 4,500 cfs (18.34 ft.); May 7 (3:30 a.m.) 16,000 cfs (25.00 ft.); May 17 (10:30 a.m.) 5,180 cfs (19.32 ft.); May 25 (3 p.m.) 6,630 cfs (20.62 ft.); June 13 (3 a.m.) 3,780 cfs (16.68 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Dec. 17-24, 29, 1955; Jan. 2, 6, 15, 16, 18, 19, 21-23, Feb. 25 to Mar. 12, Nov. 19 to Dec. 1, Dec. 6-8, 11-18, 23-25, 28, 30, 31, 1956; Jan. 1 to Feb. 18, Nov. 24-30, Dec. 9-13, 26-31, 1957; Jan. 1 to Feb. 27, Nov. 28 to Dec. 1, Dec. 5-31, 1958; Jan. 1 to Feb. 27, Mar. 5-10, Nov. 14-17, 27, 28, Dec. 5-8, 31, 1959; Jan. 1-6, 12, 1960. No gage-height record Apr. 23 to May 13, May 29-31, June 10, 11, 13-16, 18-23, 25-30, July 2, 4-7, 9, 1959.

Des Moines River at Ottumwa, Iowa

LOCATION.—Lat. 41°00'30", long. 92°24'40", in NW¼SW¼ sec. 30 T. 72 N., R. 13 W., near right bank 10 ft. downstream from Vine Street Bridge at Ottumwa, 6.3 miles upstream from Village Creek, 9.7 miles downstream from South Avery Creek, and at mile 92.6.

DRAINAGE AREA.—13,374 square miles (revised in 1956).

RECORDS AVAILABLE.—March 1917 to September 1960 (published as "at Eldon" October 1930 to March 1935).

GAGE.—Water-stage recorder. Datum of gage is 622.77 ft. above mean sea level, datum of 1929. Prior to Aug. 2, 1917, staff gage, and Aug. 2, 1917, to Sept. 30, 1930, chain gage, at Market Street Bridge half a mile upstream at datum 0.06 ft. higher. Oct. 1, 1930 to Mar. 31, 1935, chain gage at Eldon 15 miles downstream at different datum.

AVERAGE DISCHARGE.—43 years, 4,595 cfs.

EXTREMES.—1917-60: Maximum discharge, 135,000 cfs June 7, 1947 (gage height, 20.2 ft.); minimum daily, 30 cfs Jan. 27-29, 31, Feb. 2, 3, 5-7, 1940.

Maximum stage known since at least 1850, that of June 7, 1947. Flood of May 31, 1903, reached a stage of 19.4 ft., present site and datum or about 22 ft. at Market Street Bridge, from information by Corps of Engineers and U. S. Weather Bureau (discharge estimated as 140,000 cfs).

REMARKS.—Diurnal fluctuation at low flow caused by power plant above station prior to Dec. 12, 1958. Overbank sections protected by levees.

REVISIONS (water years).—WSP 1308: 1917-23(M), 1925-27(M), 1930, 1931(M).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	776	396	93	112	87	540	1,120	513	892	163	1,640	467
2	1,060	233	246	241	242	475	1,860	484	1,290	467	1,870	334
3	1,240	137	104	126	98	378	620	542	1,510	570	1,940	374
4	578	324	226	218	220	512	964	530	1,530	420	1,030	394
5	466	244	114	82	83	590	1,080	490	1,330	550	1,090	354
6	392	303	245	236	181	429	1,110	621	948	528	445	358
7	324	202	102	100	89	506	1,210	490	1,060	630	238	1,800
8	284	292	264	238	206	310	964	566	878	298	1,120	2,400
9	270	147	121	97	87	409	1,010	658	872	549	7,250	2,420
10	284	320	109	201	208	615	1,020	648	1,630	578	6,190	2,050
11	286	156	109	100	162	434	735	664	862	318	3,580	441
12	309	305	208	200	77	258	978	738	1,590	548	2,300	1,270
13	440	199	115	198	196	478	745	646	1,130	412	2,190	789
14	516	*264	104	199	237	634	675	830	810	440	1,740	749
15	1,100	122	170	71	124	608	684	884	450	443	1,040	496
16	232	264	*109	180	478	*326	612	790	716	397	1,760	435
17	47	268	105	*68	*75	650	540	1,270	705	415	1,070	*395
18	*44	578	98	214	219	496	561	*1,330	609	510	2,270	339
19	72	67	104	82	106	459	442	1,420	565	616	3,900	312
20	132	60	109	60	72	514	406	712	478	782	*4,010	285
21	150	87	104	140	236	564	*588	934	*710	762	3,040	270
22	163	104	104	74	126	518	371	768	1,130	766	1,240	285
23	163	472	226	86	260	508	562	624	88	657	1,090	262
24	170	235	88	246	312	502	234	622	636	402	1,040	248
25	392	93	72	98	367	580	402	578	623	470	700	248
26	526	286	216	87	354	675	456	462	456	*351	565	240
27	198	120	90	211	495	786	344	515	362	276	480	218
28	168	200	215	157	340	1,340	377	495	442	190	538	218
29	156	115	84	60	526	471	450	353	444	162	572	210
30	170	87	77	216	.....	958	372	590	143	282	658	197
31	290	.....	263	87	.....	1,050	.....	704	.....	371	658	.....

Des Moines River at Ottumwa, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	197	150	218	197	210	344	1,480	1,740	2,090	4,060	840	652
2	197	150	330	170	92	312	1,910	1,540	2,550	3,820	1,370	806
3	190	163	312	115	86	401	4,260	1,040	3,410	5,700	1,240	796
4	190	170	278	170	222	426	7,260	1,010	3,430	4,560	1,020	876
5	183	190	270	163	84	472	7,860	960	3,020	3,170	1,060	751
6	190	183	262	137	94	302	5,240	720	2,930	2,870	1,020	662
7	163	197	210	137	115	441	3,700	755	2,650	3,280	990	861
8	170	210	126	301	264	351	2,980	698	2,650	3,090	952	810
9	156	348	93	190	360	444	2,060	738	2,440	3,490	890	650
10	156	538	170	210	284	358	2,120	770	3,550	3,200	863	821
11	156	548	197	170	325	430	1,820	1,970	4,260	2,600	775	942
12	163	475	260	140	240	364	1,590	3,460	3,100	2,460	713	735
13	163	435	210	140	322	334	1,520	5,060	*3,830	2,410	888	950
14	176	*405	135	150	234	430	1,280	6,080	4,930	2,110	677	817
15	176	395	109	135	291	374	1,240	6,990	3,770	2,110	702	675
16	176	321	176	125	404	374	1,210	5,060	3,270	1,810	614	1,010
17	348	312	200	130	404	318	*904	4,430	5,610	1,730	666	758
18	*375	303	210	115	604	510	1,110	3,530	17,100	1,600	586	663
19	395	303	*165	109	588	406	1,090	3,270	20,400	1,550	614	*686
20	339	321	163	104	*488	*390	1,050	2,680	*21,000	1,620	558	573
21	321	303	170	110	639	542	1,020	4,200	18,800	1,270	*618	788
22	270	176	183	*115	394	508	828	*4,430	10,000	1,510	530	680
23	232	176	203	220	258	656	2,010	3,680	7,520	1,300	530	607
24	197	225	210	140	488	666	2,190	3,180	5,930	*1,220	548	427
25	203	312	218	110	594	684	1,120	2,860	5,930	1,200	550	563
26	183	255	210	206	463	884	1,030	2,540	5,430	976	500	450
27	163	183	210	100	186	714	1,450	2,860	4,300	2,310	642	522
28	163	232	143	104	508	950	1,740	2,750	4,180	1,700	616	471
29	163	183	64	223	937	2,870	2,430	4,060	3,780	694	433	433
30	163	170	137	110	1,010	2,640	2,470	4,060	4,180	678	481	481
31	170	190	100	1,320	2,200	1,990	832	832	832	832	832	832
1957-58												
1	362	624	1,400	344	700	7,520	1,570	1,860	1,100	2,010	10,800	1,160
2	343	723	1,350	503	640	6,710	1,560	2,190	1,620	9,560	8,600	882
3	541	667	1,250	515	560	5,560	1,590	2,180	1,950	28,300	6,450	1,150
4	156	750	1,250	800	540	4,430	1,670	4,560	1,440	*32,700	5,560	1,170
5	494	680	1,350	900	540	4,060	1,690	4,180	1,600	33,100	5,800	1,490
6	397	736	1,570	1,000	580	3,690	1,880	3,820	2,020	32,300	6,450	1,400
7	344	810	1,430	1,100	600	3,710	1,960	2,240	4,460	31,600	4,680	1,340
8	290	956	1,550	1,100	560	3,760	2,120	2,470	6,320	28,000	3,440	9,750
9	508	800	1,500	1,000	500	3,490	2,270	2,150	6,450	13,500	3,750	10,600
10	566	782	1,000	900	500	3,200	2,720	2,090	6,450	9,440	2,980	9,160
11	562	868	620	940	500	2,860	3,170	1,850	6,450	7,520	3,010	5,770
12	530	814	520	900	570	2,590	3,030	1,710	6,060	8,060	2,630	3,200
13	560	806	541	900	600	2,670	3,100	1,600	6,190	8,330	2,920	3,420
14	636	795	720	808	420	2,400	2,960	1,590	5,930	8,060	2,810	2,950
15	*542	854	818	964	340	2,430	2,770	1,430	5,800	7,250	3,190	1,760
16	536	730	1,210	937	400	2,390	2,650	1,380	5,680	7,250	3,130	*1,780
17	624	800	1,220	950	450	2,340	2,630	1,380	5,180	7,790	1,670	1,860
18	466	924	*1,260	1,130	290	2,290	2,340	1,370	4,560	10,000	1,690	2,050
19	411	1,260	1,680	1,160	330	2,140	2,420	1,470	4,180	13,000	1,630	1,910
20	492	*1,040	1,720	1,220	310	*2,070	2,270	1,350	3,910	30,000	*1,720	1,660
21	366	1,080	1,570	1,230	360	2,010	2,120	*1,240	*3,810	23,300	2,820	1,520
22	513	1,240	1,430	1,000	300	1,920	*2,190	1,240	3,160	*19,700	1,940	1,420
23	592	843	1,610	*860	450	1,840	2,150	1,270	2,630	13,500	1,990	1,920
24	468	1,240	1,610	703	1,000	1,770	2,030	1,270	2,610	10,600	2,170	2,650
25	572	1,240	2,160	940	2,700	1,700	2,050	1,080	2,410	8,600	2,250	2,930
26	640	1,240	1,600	800	5,200	1,650	1,930	1,290	2,310	6,710	2,000	1,380
27	640	1,260	1,550	900	7,000	1,650	1,910	1,100	2,070	6,060	1,560	1,320
28	725	1,480	1,500	940	8,330	1,550	1,880	1,110	2,270	5,930	1,570	1,300
29	559	1,300	1,300	900	1,590	1,740	1,110	1,110	2,060	5,430	1,460	1,270
30	654	1,200	1,100	820	1,580	1,930	1,010	2,070	8,360	1,380	798	798
31	602	800	740	1,550	1,130	1,130	10,100	1,290	1,290	1,290	1,290	1,290

Des Moines River at Ottumwa, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1958-59													
1		944	581	502	280	220	6,560	16,200	*7,600	*37,200	22,000	1,570	1,800
2		901	566	586	265	220	6,560	18,500	5,860	33,700	28,800	1,470	1,720
3		874	598	550	250	220	6,140	11,000	5,460	30,400	25,700	1,370	1,570
4		856	521	500	230	220	5,720	9,700	5,180	29,200	18,500	1,400	1,450
5		842	550	377	220	210	4,520	7,900	4,650	29,600	14,600	4,070	1,540
6		792	566	291	260	250	3,250	6,560	7,450	29,200	10,900	3,250	1,520
7		758	414	442	290	250	2,300	5,590	9,700	27,600	8,500	2,600	1,340
8		1,090	567	520	270	250	1,820	5,050	7,900	22,000	7,450	6,710	1,120
9		888	530	460	250	350	1,760	4,520	6,280	15,200	7,150	4,520	978
10		853	464	520	240	1,000	2,050	4,130	6,710	12,100	5,860	2,920	885
11		771	512	560	245	900	2,460	3,880	11,500	10,300	4,920	1,800	820
12		857	544	430	250	800	2,740	3,560	16,800	8,800	4,390	1,480	770
13		887	494	390	245	1,900	4,520	3,380	13,600	7,600	4,130	1,320	770
14		812	512	410	230	4,000	8,200	3,130	10,000	6,860	3,620	1,180	745
15		796	516	450	220	7,800	10,900	2,960	7,900	6,560	3,250	1,180	720
16		764	502	350	220	5,600	10,000	2,800	6,860	5,590	3,010	2,130	672
17		724	890	300	220	4,100	7,300	2,710	6,140	5,180	2,830	3,500	660
18		706	*3,720	*270	220	3,000	6,420	3,010	5,860	4,780	2,830	2,740	638
19		665	4,300	270	220	3,600	11,200	3,250	9,700	4,390	4,920	1,760	638
20		646	2,060	280	220	2,330	*18,800	8,800	11,200	4,330	3,500	1,420	603
21		636	1,350	300	220	1,820	21,600	16,800	12,700	4,000	3,010	1,180	614
22		*610	1,320	290	220	1,480	15,900	14,900	25,300	3,620	2,480	1,030	638
23		626	590	270	220	7,000	13,000	9,700	*31,600	3,380	2,170	937	885
24		589	1,060	270	265	9,400	10,900	7,300	20,900	3,130	1,990	898	695
25		584	779	290	300	*11,500	*9,400	6,860	14,000	*3,010	1,820	964	720
26		588	810	305	285	13,000	12,100	6,420	*14,900	2,850	1,700	1,140	1,860
27		574	396	320	*270	9,600	20,200	6,280	15,200	2,580	1,570	*1,260	6,710
28		604	648	335	260	7,300	21,300	9,400	13,600	2,410	*1,480	1,290	7,300
29		554	624	350	245		16,800	11,200	19,900	2,460	1,520	1,400	*4,920
30		578	163	335	230		13,600	11,200	30,400	4,580	3,460	1,370	3,250
31		484		310	220		11,800		36,700		2,520	1,380	
1959-60													
1		1,910	964	960	3,880	3,150	1,650	*70,500	14,300	25,700	7,300	1,930	4,390
2		1,500	978	1,200	3,200	3,000	1,500	67,700	14,000	21,600	9,100	1,840	3,250
3		1,380	992	1,500	2,600	3,550	1,400	67,000	11,500	17,200	9,400	1,740	2,670
4		1,590	1,030	1,620	2,200	3,200	1,380	69,100	9,700	14,600	7,900	1,660	2,330
5		3,900	2,360	1,700	1,800	3,650	1,350	*68,400	8,500	13,300	6,000	1,610	2,150
6		5,640	3,380	1,520	1,550	3,000	1,320	60,000	19,700	11,800	5,320	2,070	1,930
7		6,710	3,500	1,440	1,450	3,000	1,320	50,400	39,500	10,600	4,650	2,900	1,700
8		4,130	2,760	1,360	1,350	3,000	1,330	42,900	39,900	9,700	4,260	3,010	1,550
9		2,310	2,150	1,300	1,950	3,000	1,340	35,800	38,100	9,100	4,130	3,250	1,420
10		1,840	2,010	1,250	1,700	3,000	1,350	28,000	33,300	9,100	5,590	2,690	1,340
11		1,630	1,910	1,200	2,300	3,000	1,380	20,900	21,500	9,400	6,860	2,230	1,320
12		1,480	1,870	1,450	11,000	3,000	1,450	17,800	15,000	10,000	7,900	1,910	1,160
13		1,380	1,810	1,700	28,400	3,100	1,500	16,200	13,000	14,000	11,800	1,660	1,100
14		1,290	1,720	1,750	35,400	3,250	1,550	16,500	11,500	12,100	8,500	1,500	1,030
15		1,240	1,400	*1,720	33,300	3,350	1,580	14,600	10,300	8,500	7,000	1,350	992
16		1,180	1,200	1,610	22,000	3,300	1,600	13,600	13,600	7,300	7,000	1,300	1,060
17		1,090	1,050	1,570	13,600	3,200	1,600	15,900	16,800	6,710	6,280	1,380	1,100
18		1,090	940	1,480	8,800	3,100	1,600	20,200	15,500	6,420	5,590	1,540	1,180
19		1,060	*870	1,450	6,420	3,000	1,600	20,900	10,300	6,000	4,920	2,310	1,210
20		1,050	1,250	1,450	5,000	2,900	1,600	19,900	11,500	6,710	4,390	4,520	1,340
21		992	1,400	1,450	3,800	2,800	1,620	17,200	11,500	*10,600	3,880	5,050	1,320
22		978	1,590	1,420	3,000	2,700	1,650	14,600	11,200	12,400	3,620	5,720	1,200
23		1,100	1,930	1,660	2,700	2,600	1,680	12,700	11,500	11,200	3,250	*3,130	1,240
24		1,180	1,860	1,700	2,700	*2,500	1,700	11,500	14,000	10,600	3,010	2,350	1,500
25		1,180	1,780	1,680	2,700	2,350	1,720	10,600	29,600	11,200	2,940	1,950	9,170
26		*1,150	1,870	1,840	3,100	2,150	1,750	*10,000	*33,700	8,500	*3,130	1,780	10,000
27		1,010	1,500	2,370	3,400	2,000	2,100	10,300	38,100	7,000	2,830	2,310	5,590
28		964	1,100	4,130	3,550	1,900	10,000	10,000	36,300	6,730	2,540	3,750	3,750
29		1,060	920	6,280	3,650	1,800	30,000	9,100	32,000	9,700	2,270	2,560	*2,940
30		937	850	6,560	3,550		42,000	10,900	29,600	9,100	2,210	3,750	2,480
31		964		5,720	3,350		*65,600		27,200		2,050	6,000	

Des Moines River at Ottumwa, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	371	223	142	145	216	567	716	693	830	462	1,847	629
1956-57	209	278	195	150	330	537	2,286	2,777	6,207	2,538	767	697
1957-58	506	951	1,296	900	1,260	2,875	2,210	1,797	3,758	14,090	3,334	2,636
1958-59	737	910	382	245	3,512	9,349	7,654	12,950	12,070	6,793	1,975	1,618
1959-60	1,771	1,632	2,066	7,206	2,860	6,104	28,440	20,730	10,900	5,346	2,605	2,447

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.028	0.017	0.011	0.011	0.016	0.042	0.054	0.052	0.062	0.035	0.138	0.047
1956-57	.016	.021	.015	.011	.025	.040	.171	.208	.464	.190	.057	.052
1957-58	.038	.071	.097	.067	.094	.215	.185	.134	.281	1.05	.249	.197
1958-59	.055	.068	.029	.018	.263	.699	.572	.968	.902	.508	.148	.121
1959-60	.132	.122	.154	.539	.214	.456	2.13	1.55	.815	.400	.195	.183

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.03	0.02	0.01	0.01	0.02	0.05	0.06	0.06	0.07	0.04	0.16	0.05
1956-57	.02	.02	.02	.01	.03	.05	.19	.24	.51	.22	.07	.06
1957-58	.04	.08	.11	.08	.10	.25	.18	.15	.31	1.21	.29	.22
1958-59	.06	.08	.03	.02	.27	.81	.64	1.12	1.01	.59	.17	.13
1959-60	.15	.14	.18	.62	.23	.53	2.37	1.79	.91	.46	.22	.20

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								2,222	2.30
1956	Aug. 9, 1956	4.39	9,720	44	572	0.043	0.58	567	0.58
1957	June 18, 1957	8.09	22,000	64	1,413	.106	1.44	1,587	1.61
1958	July 4, 1958	10.86	33,500	156	2,988	.223	3.02	2,927	2.96
1959	June 1, 1959	12.12	38,600	163	4,853	.363	4.93	5,143	5.23
1960	Apr. 1, 1960	17.49	70,500	850	7,667	.573	7.80		

Peak Discharge (base, 21,000 cfs)

- 1955-56: No peak above base.
- 1956-57: June 18 (2:30 p.m.) 22,000 cfs (8.09 ft.).
- 1957-58: July 4 (2:30 p.m.) 33,500 cfs (10.86 ft.); July 20 (8:30 p.m.) 25,100 cfs (8.78 ft.).
- 1958-59: Mar. 21 (9 a.m.) 23,100 cfs (8.32 ft.); Mar. 28 (4 a.m.) 22,700 cfs (8.20 ft.); May 23 (5 p.m.) 32,900 cfs (10.76 ft.); June 1 (1 a.m.) 38,600 cfs (12.12 ft.); July 3 (1 a.m.) 29,600 cfs (10.05 ft.).
- 1959-60: Jan. 14 (9 p.m.) 36,300 cfs (11.55 ft.); Apr. 1 (2 a.m. to 1 p.m.) 70,500 cfs (17.49 ft.); Apr. 19 (2 a.m.) 22,400 cfs (8.10 ft.); May 7 (3 a.m.) 43,400 cfs (13.12 ft.); May 27 (2 to 5 p.m.) 38,600 cfs (12.10 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 27-29, Dec. 15, 17, 1955; Jan. 16, 21-23, Dec. 12-14, 17-19, 1956; Jan. 9-18, 21-25, 30, 31, Feb. 2, 3, 5-7, Nov. 29 to Dec. 4, Dec. 12, 28-31, 1957; Jan. 4-13, 22, 23, Jan. 25 to Feb. 27, Dec. 3, 4, Dec. 8-31, 1958; Jan. 1 to Feb. 19, Feb. 25-27, Mar. 7, Nov. 16-21, Nov. 27 to Dec. 14, 1959; Jan. 2-12, Jan. 20 to Mar. 30, 1960.

Lake Wapello near Drakesville, Iowa

LOCATION.—Lat. 40°49'20", long. 92°34'30", 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.—7.75 square miles above outlet (revised in 1956).

RECORDS AVAILABLE.—June 1936 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 90.0 ft. above datum assumed for this lake and 10.0 ft. below crest of spillway of dam forming lake. Prior to Nov. 26, 1941, staff gage at site 0.5 mile southwest at same datum.

EXTREMES.—1936-60: Maximum gage height observed, 12.70 ft. June 12, 1941; minimum, lake drained during September 1960.

REMARKS.—Water is diverted from lake for fish-rearing ponds below lake outlet.

Daily Gage Height, in Feet, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	8.82	8.58	8.39			8.46	8.50	8.22	7.92	7.61	7.49	7.99
2.....	8.81	8.58	8.39			8.45	8.50	8.22	7.90	7.66	8.11	7.96
3.....	8.80	8.58	8.39			8.45	8.53	8.21	7.88	7.73	8.19	7.95
4.....	8.79	8.57	8.40			8.45	8.52	8.20	7.87	7.76	8.18	7.97
5.....	8.79	8.56	8.40			8.45	8.49	8.19	7.85	7.75	8.17	7.97
6.....	8.80	8.55	8.40			8.45	8.47	8.19	7.85	7.74	8.15	7.95
7.....	8.81	8.54	8.40			8.45	8.46	8.18	7.86	7.72	8.14	7.93
8.....	8.82	8.53	8.40		8.34	8.45	8.44	8.16	7.84	7.74	8.18	7.92
9.....	8.83	8.52	8.39		8.39	8.45	8.42	8.16	7.82	7.70	8.23	7.90
10.....	8.82	8.51	8.39		8.39	8.44	8.41	8.15	7.80	7.67	8.21	7.88
11.....	8.81	8.51	8.38		8.39	8.43	8.40	8.15	7.79	7.66	8.20	7.87
12.....	8.81	8.50	8.38		8.39	8.41	8.39	8.15	7.76	7.64	8.20	7.86
13.....	8.80	8.49	8.38		8.39		8.38	8.14		7.63	8.24	7.85
14.....	8.78	8.48	8.38		8.39		8.37	8.12		7.61	8.25	7.84
15.....	8.76	8.49	8.37		8.39		8.35	8.09		7.59	8.23	7.82
16.....	8.74	8.49	8.37		8.39		8.33	8.07		7.59	8.23	7.81
17.....	8.72	8.47			8.40		8.31	8.04		7.57	8.23	7.79
18.....	8.70	8.46		8.32	8.40		8.29	8.03		7.55	8.22	7.77
19.....	8.69	8.46			8.40		8.27	8.01	7.84	7.56	8.19	7.75
20.....	8.68	8.46			8.40		8.24	7.98	7.84	7.57	8.17	7.73
21.....	8.67	8.46			8.39		8.23	7.97	7.83	7.55	8.15	7.71
22.....	8.66	8.46			8.39		8.21	7.97	7.81	7.53	8.13	7.68
23.....	8.65	8.46			8.39		8.20	7.95	7.79	7.51	8.11	7.66
24.....	8.64	8.45			8.42		8.18	7.93	7.77	7.49	8.09	7.65
25.....	8.63	8.44			8.44		8.17	7.91	7.75	7.46	8.07	7.63
26.....	8.62	8.44			8.45		8.15	7.89	7.73	7.45	8.06	7.62
27.....	8.61	8.43			8.45		8.16	7.89	7.71	7.43	8.04	7.60
28.....	8.62	8.42			8.45	8.52	8.18	7.89	7.68	7.42	8.01	7.59
29.....	8.61	8.41			8.45	8.54	8.23	7.90	7.66	7.42	8.00	7.57
30.....	8.60	8.40				8.51	8.23	7.93	7.63	7.40	8.02	7.55
31.....	8.59					8.50		7.94		7.38	8.01	

Lake Wapello near Drakesville, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1.....	7.54	7.26	7.08	7.06	7.10	7.01	7.10	7.81	7.79	7.76	8.00	7.54
2.....	7.52	7.26	7.08	7.05	7.10	7.00	7.13	7.79	7.76	7.75	8.00	7.54
3.....	7.51	7.25	7.07	7.05	7.10	6.99	7.33	7.77	7.75	7.82	7.99	7.50
4.....	7.50	7.25	7.07	7.04	7.09	6.98	7.44	7.75	7.74	7.86	7.96	7.48
5.....	7.48	7.25	7.08	7.04	7.09	6.98	7.47	7.73	7.73	7.83	7.93	7.45
6.....	7.46	7.25	7.07	7.04	7.08	6.97	7.46	7.72	7.71	7.81	7.91	7.53
7.....	7.44	7.24	7.06	7.04	7.08	6.95	7.51	7.72	7.78	7.79	7.88	7.64
8.....	7.41	7.21	7.06	7.03	7.08	6.95	7.55	7.70	7.78	7.77	7.86	7.62
9.....	7.38	7.20	7.06	7.04	7.09	6.94	7.55	7.70	7.79	7.74	7.84	7.60
10.....	7.36	7.19	7.07	7.07	7.09	6.93	7.55	7.72	7.80	7.72	7.83	7.60
11.....	7.34	7.18	7.06	7.07	7.08	6.99	7.56	7.72	7.88	7.71	7.81	7.64
12.....	7.33	7.16	7.06	7.07	7.08	7.00	7.55	7.74	7.95	7.69	7.80	7.65
13.....	7.34	7.16	7.07	7.06	7.08	6.99	7.55	7.78	7.95	7.66	7.79	7.63
14.....	7.38	7.17	7.06	7.07	7.07	6.99	7.53	7.83	7.97	7.64	7.77	7.62
15.....	7.38	7.16	7.06	7.07	7.07	6.96	7.53	7.82	7.96	7.62	7.75	7.63
16.....	7.38	7.14	7.06	7.07	7.07	6.94	7.54	7.81	7.95	7.61	7.72	7.62
17.....	7.37	7.13	7.06	7.07	7.06	6.93	7.57	7.82	7.95	7.58	7.72	7.60
18.....	7.37	7.12	7.06	7.07	7.06	6.95	7.57	7.82	7.98	7.57	7.70	7.58
19.....	7.36	7.11	7.05	7.06	7.05	6.95	7.58	7.82	7.97	7.54	7.69	7.58
20.....	7.35	7.13	7.05	7.06	7.05	6.94	7.59	7.81	7.94	7.53	7.66	7.58
21.....	7.35	7.14	7.05	7.08	7.05	6.93	7.58	7.84	7.93	7.51	7.66	7.58
22.....	7.34	7.13	7.06	7.09	7.04	6.92	7.59	7.85	7.90	7.52	7.64	7.57
23.....	7.33	7.13	7.07	7.08	7.03	6.92	7.60	7.86	7.87	7.50	7.62	7.55
24.....	7.31	7.12	7.07	7.08	7.04	6.95	7.61	7.85	7.83	7.48	7.62	7.53
25.....	7.31	7.12	7.07	7.08	7.04	7.08	7.62	7.85	7.81	7.45	7.60	7.51
26.....	7.31	7.11	7.07	7.08	7.03	7.10	7.62	7.84	7.81	7.43	7.59	7.50
27.....	7.30	7.10	7.07	7.09	7.03	7.10	7.62	7.82	7.81	7.45	7.57	7.47
28.....	7.28	7.09	7.08	7.09	7.02	7.10	7.78	7.80	7.81	7.50	7.58	7.46
29.....	7.27	7.08	7.08	7.09	.....	7.10	7.82	7.80	7.79	7.86	7.57	7.44
30.....	7.27	7.08	7.08	7.09	.....	7.10	7.82	7.79	7.78	8.02	7.56	7.44
31.....	7.27	.....	7.07	7.10	.....	7.09	.....	7.80	.....	8.02	7.55	.....
1957-58												
1.....	7.42	7.30	7.29	8.10	8.26	9.58	9.74	9.72	10.02	9.93	10.51	9.99
2.....	7.41	7.34	7.28	8.10	8.26	9.63	9.75	9.71	10.00	9.99	10.32	9.98
3.....	7.39	7.33	7.28	8.10	8.26	9.65	9.76	9.72	9.99	10.01	10.24	9.98
4.....	7.37	7.31	7.28	8.10	8.26	9.68	9.78	10.13	9.98	10.11	10.19	9.97
5.....	7.35	7.31	7.29	8.10	8.27	9.71	9.80	10.45	9.95	10.14	10.20	9.96
6.....	7.35	7.30	7.28	8.10	8.27	9.77	9.81	10.29	9.94	10.12	10.21	9.95
7.....	7.34	7.30	7.27	8.10	8.27	9.80	9.81	10.22	9.94	10.10	10.18	9.94
8.....	7.33	7.32	7.28	8.10	8.27	9.82	9.81	10.19	9.95	10.08	10.23	9.93
9.....	7.32	7.30	7.28	8.09	8.27	9.84	9.80	10.15	10.14	10.06	10.19	9.92
10.....	7.30	7.29	7.27	8.09	8.27	9.84	9.79	10.14	10.14	10.07	10.15	9.94
11.....	7.29	7.27	7.26	8.09	8.27	9.85	9.78	10.12	10.12	10.13	10.13	9.92
12.....	7.27	7.26	7.25	8.09	8.27	9.84	9.77	10.10	10.62	10.19	10.13	9.91
13.....	7.26	7.28	7.25	8.09	8.27	9.84	9.77	10.08	10.49	10.15	10.31	9.89
14.....	7.25	7.29	7.25	8.09	8.28	9.83	9.76	10.07	10.29	10.14	10.23	9.88
15.....	7.32	7.28	7.25	8.10	8.29	9.82	9.76	10.06	10.21	10.25	10.37	9.90
16.....	7.32	7.28	7.25	8.10	8.29	9.82	9.75	10.05	10.16	10.26	10.31	9.92
17.....	7.31	7.26	7.26	8.10	8.28	9.81	9.75	10.07	10.14	10.26	10.39	9.93
18.....	7.29	7.34	7.28	8.11	8.28	9.80	9.74	10.15	10.11	10.30	10.71	9.92
19.....	7.28	7.36	7.30	8.11	8.28	9.80	9.73	10.14	10.11	10.35	10.39	9.90
20.....	7.27	7.35	7.55	8.12	8.28	9.79	9.77	10.11	10.09	10.35	10.26	9.89
21.....	7.26	7.35	7.65	8.18	8.28	9.78	9.78	10.10	10.08	10.25	10.20	9.90
22.....	7.25	7.34	7.68	8.21	8.28	9.78	9.77	10.08	10.07	10.20	10.15	9.89
23.....	7.35	7.34	7.68	8.21	8.31	9.77	9.79	10.06	10.05	10.16	10.13	9.94
24.....	7.37	7.33	7.69	8.21	8.58	9.76	9.82	10.05	10.04	10.14	10.13	10.09
25.....	7.35	7.32	7.90	8.22	8.92	9.76	9.81	10.04	10.03	10.14	10.09	10.10
26.....	7.34	7.31	8.01	8.23	9.12	9.75	9.79	10.02	10.00	10.12	10.08	10.09
27.....	7.33	7.31	8.04	8.23	9.35	9.75	9.78	10.00	9.98	10.16	10.06	10.07
28.....	7.31	7.31	8.06	8.23	9.51	9.75	9.77	9.97	9.96	10.27	10.05	10.06
29.....	7.30	7.30	8.07	8.23	.....	9.74	9.75	9.96	9.95	10.23	10.03	10.05
30.....	7.30	7.29	8.07	8.24	.....	9.74	9.74	9.95	9.93	10.80	10.04	10.04
31.....	7.29	.....	8.10	8.26	.....	9.74	.....	9.98	.....	10.78	10.01	.....

Lake Wapello near Drakesville, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1959 and 1960

Day	Oct'	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	10.02	9.79	10.07	10.04	10.16	10.26	10.49	10.15	10.29	10.61	9.97	10.62
2	10.00	9.79	10.07	10.04	10.16	10.24	10.40	10.19	10.23	10.37	9.95	10.44
3	9.98	9.78	10.07	10.05	10.16	10.22	10.29	10.25	10.20	10.26	9.93	10.30
4	9.97	9.78	10.07	10.05	10.16	10.19	10.23	10.22	10.16	10.21	9.97	10.22
5	9.95	9.76	10.06	10.04	10.15	10.27	10.18	10.20	10.14	10.17	11.11	10.18
6	9.94	9.75	10.04	10.05	10.14	10.29	10.16	10.18	10.12	10.14	10.81	10.14
7	9.98	9.74	10.04	10.05	10.13	10.24	10.15	10.15	10.11	10.12	10.49	10.13
8	10.01	9.73	10.04	10.05	10.14	10.22	10.16	10.13	10.10	10.12	10.31	10.11
9	10.03	9.71	10.04	10.05	10.16	10.27	10.16	10.17	10.08	10.16	10.22	10.09
10	10.02	9.70	10.04	10.05	10.30	10.37	10.15	10.37	10.06	10.14	10.18	10.06
11	9.99	9.69	10.04	10.05	10.37	10.42	10.14	10.37	10.05	10.11	10.15	10.03
12	9.98	9.67	10.04	10.05	10.30	10.41	10.14	10.30	10.02	10.08	10.13	10.02
13	9.98	9.68	10.03	10.05	10.37	10.43	10.14	10.39	10.00	10.07	10.11	9.99
14	9.97	9.69	10.03	10.05	10.43	10.44	10.13	10.28	9.97	10.05	10.09	9.98
15	9.97	9.70	10.03	10.05	10.35	10.43	10.12	10.22	9.94	10.03	10.08	9.97
16	9.96	9.70	10.02	10.05	10.29	10.34	10.11	10.19	9.92	10.03	10.09	9.94
17	9.95	9.92	10.02	10.05	10.25	10.28	10.14	10.16	9.90	10.02	10.09	9.94
18	9.94	10.20	10.02	10.05	10.21	10.29	10.18	10.16	9.87	9.99	10.08	9.94
19	9.93	10.17	10.02	10.05	10.18	10.45	10.26	10.20	9.86	9.97	10.06	9.94
20	9.92	10.16	10.01	10.07	10.16	10.39	10.69	10.19	9.85	9.95	10.05	9.94
21	9.91	10.15	10.01	10.12	10.15	10.29	10.43	10.21	9.86	9.93	10.03	9.93
22	9.91	10.14	10.01	10.12	10.16	10.24	10.31	10.20	9.90	9.92	10.02	9.94
23	9.90	10.13	10.01	10.12	10.36	10.20	10.25	10.20	9.88	9.92	10.00	10.08
24	9.88	10.12	10.00	10.12	10.36	10.18	10.21	10.18	9.88	9.90	9.98	10.08
25	9.87	10.11	10.00	10.12	10.29	10.19	10.19	10.17	9.87	9.87	9.97	10.13
26	9.85	10.10	10.00	10.11	10.33	10.43	10.18	10.17	9.85	9.86	10.02	10.23
27	9.84	10.09	10.00	10.11	10.35	10.45	10.19	10.15	9.84	9.84	10.01	10.30
28	9.83	10.09	10.00	10.11	10.31	10.31	10.21	10.15	9.84	9.82	9.99	10.24
29	9.82	10.08	10.00	10.12	.....	10.24	10.19	10.37	9.86	9.81	9.98	10.19
30	9.81	10.08	10.00	10.14	.....	10.22	10.18	10.34	10.07	9.87	9.97	10.17
31	9.80	.....	10.02	10.15	.....	10.22	.....	10.33	.....	9.98	9.98	.....
1959-60												
1	10.14	10.10	10.04	10.20	10.15	10.14	10.53	10.37	10.18	10.63	9.78	8.42
2	10.13	10.09	10.04	10.19	10.15	10.14	10.42	10.27	10.18	10.40	9.76	8.25
3	10.13	10.09	10.04	10.16	10.16	10.15	10.31	10.23	10.16	10.29	9.74	8.07
4	10.24	10.10	10.04	10.15	10.17	10.15	10.26	10.20	10.15	10.24	9.72	7.90
5	11.08	10.11	10.04	10.13	10.19	10.14	10.23	10.20	10.13	10.20	9.70	7.72
6	10.78	10.10	10.04	10.12	10.21	10.13	10.20	11.44	10.11	10.18	9.78	7.53
7	10.56	10.09	10.04	10.11	10.20	10.13	10.19	11.01	10.10	10.15	9.85	7.35
8	10.36	10.08	10.04	10.11	10.22	10.14	10.17	10.46	10.07	10.14	9.85	7.17
9	10.27	10.08	10.03	10.11	10.30	10.18	10.15	10.30	10.05	10.15	9.83	6.98
10	10.23	10.09	10.03	10.10	10.34	10.17	10.15	10.22	10.21	10.18	9.80	6.80
11	10.18	10.07	10.06	10.12	10.27	10.17	10.14	10.18	10.49	10.16	9.79	6.61
12	10.15	10.06	10.09	10.67	10.24	10.16	10.13	10.16	10.75	10.15	9.77	6.42
13	10.14	10.07	10.09	10.62	10.21	10.16	10.15	10.14	10.55	10.15	9.75	6.22
14	10.13	10.07	10.10	10.47	10.19	10.15	10.39	10.13	10.39	10.12	9.73	6.03
15	10.13	10.07	10.10	10.57	10.18	10.16	10.38	10.13	10.28	10.10	9.70	5.86
16	10.12	10.06	10.10	10.37	10.17	10.21	10.35	10.73	10.24	10.09	9.68	.....
17	10.10	10.05	10.10	10.28	10.17	10.20	10.65	10.51	10.20	10.07	9.66	.....
18	10.09	10.05	10.10	10.26	10.16	10.18	10.49	10.33	10.17	10.06	9.66	.....
19	10.08	10.04	10.10	10.22	10.15	10.17	10.33	10.26	10.15	10.04	9.67	.....
20	10.07	10.04	10.10	10.20	10.15	10.16	10.26	10.28	10.24	10.01	9.68	.....
21	10.06	10.04	10.10	10.17	10.16	10.15	10.24	10.27	10.34	10.00	9.68	.....
22	10.06	10.05	10.11	10.15	10.16	10.15	10.21	10.27	10.27	9.98	9.66	.....
23	10.11	10.05	10.16	10.15	10.15	10.16	10.19	10.23	10.29	9.96	9.65	.....
24	10.13	10.06	10.18	10.14	10.17	10.17	10.17	10.32	10.25	9.94	9.63	.....
25	10.11	10.06	10.18	10.13	10.17	10.17	10.17	10.62	10.21	9.94	9.58	.....
26	10.10	10.06	10.19	10.13	10.16	10.17	10.15	10.56	10.19	9.91	9.42	.....
27	10.10	10.05	10.51	10.14	10.15	10.48	10.14	10.37	10.17	9.89	9.25	.....
28	10.08	10.05	10.57	10.14	10.15	11.03	10.13	10.29	10.27	9.88	9.08	.....
29	10.08	10.05	10.39	10.16	10.15	11.19	10.14	10.25	10.50	9.85	8.92	.....
30	10.08	10.05	10.30	10.15	.....	11.02	10.38	10.23	10.44	9.83	8.75	.....
31	10.10	.....	10.24	10.15	.....	10.60	.....	10.20	.....	9.80	8.58	.....

Des Moines River at Keosauqua, Iowa

LOCATION.—Lat. 40°43'45", long. 91°57'45", in SE¼SW¼ sec. 36, T. 69 N., R. 10 W., on right bank 10 ft. upstream from bridge on State Highway 1 at Keosauqua, 4.0 miles downstream from Chequest Creek, and at mile 50.6.

DRAINAGE AREA.—14,038 square miles (revised in 1956).

RECORDS AVAILABLE.—May 1903 to July 1906, April 1910 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 558.10 ft. above mean sea level, datum of 1912 (levels by Corps of Engineers). Prior to Dec. 24, 1933, chain gage at same site and datum.

AVERAGE DISCHARGE.—51 years (1903-5, 1911-60), 5,134 cfs.

EXTREMES.—1903-6, 1910-60: Maximum discharge, 146,000 cfs June 1, 1903 (gage height, 27.85 ft., from floodmark); minimum daily, 40 cfs Jan. 30, 1940.

Flood of June 1, 1851 reached a stage of 24 ft. (discharge not determined.)

REMARKS.—Bankfull stage is about gage height, 20 ft. Some diurnal fluctuation at medium and low stages caused by powerplant at Ottumwa.

REVISIONS (water years).—WSP 1508: 1903, 1905-6, 1915-18(M), 1922 (M), 1924-26(M), 1932-34(M), 1937, 1942(M).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	2,420	198	180	125	100	600	1,000	430	562	300	1,280	636
2.....	1,680	312	150	200	240	540	1,030	462	852	222	2,150	476
3.....	1,100	459	140	230	135	490	1,610	500	1,190	313	2,520	430
4.....	1,160	218	200	140	235	443	619	498	1,460	570	1,800	408
5.....	710	176	215	210	280	533	865	526	1,460	515	1,010	438
6.....	555	388	150	190	130	610	1,000	534	1,280	433	1,020	420
7.....	544	206	210	150	220	533	1,050	615	969	508	652	386
8.....	411	360	180	110	130	434	1,130	530	961	607	338	1,600
9.....	320	*190	210	205	210	610	970	519	812	440	5,780	2,200
10.....	316	314	130	155	150	365	970	680	805	403	9,280	2,090
11.....	295	204	200	210	205	586	940	607	1,530	523	5,980	1,740
12.....	322	346	120	150	135	*461	690	594	1,760	422	3,340	566
13.....	316	206	130	220	210	443	895	616	1,440	388	4,340	914
14.....	558	*378	155	180	300	443	703	616	1,040	478	2,960	734
15.....	620	*165	*205	220	140	632	624	730	767	396	1,870	633
16.....	968	230	110	205	350	632	656	748	538	436	1,280	484
17.....	*388	170	110	*195	*320	502	559	*705	828	412	1,670	*407
18.....	226	260	130	90	350	598	520	1,090	2,200	362	1,130	372
19.....	122	408	115	190	220	554	570	1,160	874	577	2,490	350
20.....	94	561	120	100	150	502	*440	1,190	507	567	*4,330	319
21.....	96	150	100	215	270	502	500	656	470	686	4,050	291
22.....	167	74	110	90	160	598	468	762	*675	674	2,750	284
23.....	184	80	135	100	170	564	402	681	1,150	675	1,260	284
24.....	204	150	165	225	350	533	500	529	319	642	1,050	270
25.....	197	402	205	100	470	554	415	537	244	446	982	257
26.....	209	210	250	145	440	554	288	514	550	*424	684	250
27.....	430	130	160	230	410	667	432	486	448	404	564	250
28.....	478	77	140	115	500	*910	580	478	410	312	536	237
29.....	230	105	210	110	650	1,410	396	504	360	316	541	231
30.....	209	145	140	235	.....	807	466	537	497	204	554	231
31.....	198	.....	200	155	.....	710	.....	657	.....	236	678	.....

Des Moines River at Keosauqua, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	225	219	170	115	100	360	1,280	2,750	2,190	4,150	1,860	764
2	219	213	230	98	215	380	1,490	1,730	2,000	4,150	862	702
3	213	194	304	135	94	392	2,830	1,510	2,740	4,900	1,300	743
4	219	188	312	105	98	407	7,200	1,070	3,640	1,970	1,200	687
5	213	200	312	156	175	400	9,440	1,000	3,430	4,360	964	843
6	213	200	201	150	90	541	7,760	958	3,140	3,080	1,010	807
7	200	213	238	135	110	434	5,030	684	3,190	2,850	970	830
8	206	213	101	140	130	434	*3,900	732	2,920	3,380	956	920
9	188	*219	97	110	200	443	3,200	710	2,740	3,190	904	788
10	182	244	95	74	300	474	2,080	817	2,440	3,600	870	590
11	176	480	135	110	275	430	2,260	873	6,290	3,140	830	774
12	166	512	182	165	300	471	1,930	1,980	5,520	2,520	750	754
13	171	452	182	150	230	449	1,640	4,810	4,280	2,370	732	724
14	188	*425	150	150	255	366	1,570	6,360	*5,240	2,270	855	690
15	194	416	110	155	230	412	1,260	8,040	5,660	1,960	626	784
16	200	380	107	140	290	449	1,270	6,640	4,020	1,910	606	669
17	200	357	140	130	350	380	*1,450	*5,520	3,430	*1,730	626	975
18	*219	319	175	135	450	442	1,010	4,680	12,000	1,600	658	*740
19	461	319	*194	120	600	434	1,150	3,780	20,300	1,480	589	650
20	443	327	175	110	*510	*477	1,080	3,540	21,000	1,420	597	794
21	425	334	170	110	480	415	1,020	3,030	21,300	1,490	*577	617
22	380	180	175	115	550	508	1,050	5,750	15,200	1,240	601	766
23	357	180	185	120	370	520	1,040	*4,660	9,440	1,470	584	686
24	319	200	200	150	250	702	2,310	3,790	7,480	*1,220	638	602
25	319	250	178	130	437	840	2,040	3,360	6,360	1,150	714	500
26	270	295	210	110	620	742	1,130	2,970	6,500	1,130	450	556
27	257	220	205	210	460	884	1,140	2,620	5,660	923	734	445
28	237	175	150	105	410	694	2,010	2,920	4,400	2,590	584	490
29	219	220	90	230	.....	925	2,450	2,830	4,400	2,870	688	489
30	213	176	64	120	.....	910	3,280	2,480	4,280	6,070	686	444
31	225	.....	160	105	.....	955	.....	2,540	.....	4,110	784	.....
1957-58												
1	456	588	1,310	640	710	8,880	1,410	1,730	1,300	2,020	14,200	1,270
2	497	668	1,500	410	640	8,320	1,460	1,680	1,070	3,080	11,600	1,110
3	396	705	1,300	460	600	6,920	1,470	1,890	1,490	22,100	8,320	858
4	410	634	1,200	520	570	5,660	1,500	3,310	1,760	32,000	6,220	1,110
5	466	626	*1,230	620	530	4,820	1,520	8,600	1,340	33,800	5,660	1,140
6	288	649	1,230	980	570	4,400	1,580	5,240	1,550	33,800	7,480	1,430
7	394	712	1,340	950	600	3,810	1,730	3,900	2,080	*33,000	6,780	1,340
8	408	842	1,270	1,080	640	4,120	1,760	2,400	5,520	32,000	4,540	3,060
9	342	914	1,310	1,170	560	3,680	*2,000	2,480	8,320	19,400	3,900	12,200
10	360	770	1,160	1,090	490	3,560	2,140	2,130	7,480	11,600	3,660	9,800
11	506	712	910	1,000	510	3,310	2,600	2,080	7,480	8,880	3,080	8,820
12	508	806	730	1,040	490	2,950	2,920	1,820	8,990	7,760	*3,080	4,840
13	492	786	600	960	460	*2,560	2,940	1,690	12,900	8,320	4,400	2,950
14	513	781	720	910	420	2,760	2,960	*1,560	9,000	8,880	3,780	2,260
15	684	747	820	880	400	2,280	2,820	1,560	6,500	7,760	4,320	2,150
16	*498	804	940	1,000	370	2,350	2,620	1,400	6,360	8,040	5,190	*1,780
17	516	724	1,620	1,100	350	2,340	2,480	1,430	*6,080	7,760	2,560	1,780
18	558	1,470	*1,360	1,110	330	2,260	2,350	1,590	5,520	9,100	3,320	1,880
19	452	1,380	1,360	1,210	310	2,240	2,170	1,400	4,960	12,700	2,440	1,960
20	436	*1,310	3,790	1,320	*300	2,050	2,270	1,450	4,400	20,100	*1,710	1,900
21	457	1,020	2,880	*980	300	*2,040	2,100	*1,270	4,150	*24,300	2,240	1,630
22	416	1,030	1,670	1,100	310	1,910	1,980	1,180	3,780	23,100	2,840	1,520
23	714	1,110	1,380	1,000	400	1,850	*2,160	1,160	3,200	16,800	1,930	1,710
24	886	806	1,490	860	1,800	1,800	2,860	1,160	2,740	13,200	1,970	3,700
25	542	1,130	1,930	800	4,500	1,700	2,130	1,160	2,590	10,600	2,160	3,270
26	559	1,130	2,320	970	6,000	1,610	1,980	986	2,390	8,320	2,160	2,810
27	570	1,150	1,660	940	8,600	1,550	1,810	1,150	2,230	7,060	1,880	1,470
28	610	1,150	1,470	*890	13,500	1,530	1,770	971	2,050	7,960	1,540	1,320
29	665	1,310	1,380	840	.....	1,420	1,740	974	2,160	6,780	1,480	1,280
30	576	1,140	1,200	810	.....	1,490	1,580	967	2,000	12,000	1,410	1,280
31	652	.....	940	770	.....	1,450	.....	930	.....	16,200	1,360	.....

Des Moines River at Keosauqua, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	817	561	440	320	205	7,760	16,200	9,720	40,900	16,600	2,520	4,020
2	970	569	400	290	200	7,480	21,700	7,200	37,100	27,400	1,650	4,150
3	910	575	600	270	200	7,200	18,500	6,500	32,500	29,100	1,470	2,350
4	893	589	660	260	200	6,780	11,900	5,800	30,300	20,600	1,970	1,750
5	875	552	580	240	200	6,220	9,160	5,380	29,900	15,800	5,240	1,510
6	878	564	620	240	210	4,700	7,760	5,240	29,900	11,900	13,900	1,590
7	923	569	297	240	250	3,390	6,640	9,440	25,100	9,160	8,880	1,550
8	941	491	400	240	300	2,590	5,940	9,440	25,100	7,480	4,280	1,410
9	1,250	582	580	240	430	2,700	5,520	7,480	17,900	7,480	6,920	1,270
10	942	556	440	240	800	3,800	4,960	7,200	12,900	6,500	4,150	1,100
11	942	465	530	250	1,100	4,680	4,400	9,480	10,600	5,520	2,810	986
12	830	539	470	250	900	4,680	4,150	16,200	9,160	4,500	1,870	895
13	893	534	430	240	2,100	5,100	3,780	17,200	8,040	4,150	1,550	850
14	892	502	480	220	4,000	8,320	3,540	12,600	7,060	3,780	1,380	850
15	840	622	430	210	7,800	12,900	3,320	9,440	6,360	3,430	1,280	835
16	820	602	360	210	7,000	13,200	3,200	7,760	*5,800	3,200	1,510	794
17	758	3,020	330	205	5,000	10,600	3,080	7,060	5,240	2,970	2,560	768
18	714	5,380	*315	205	3,200	8,320	3,430	6,360	4,680	2,790	3,540	742
19	688	*5,380	310	205	2,400	12,200	3,780	*10,300	4,280	3,540	2,700	703
20	622	4,150	310	210	2,000	21,000	7,760	11,900	4,020	4,280	1,870	690
21	692	2,020	310	210	1,670	25,100	16,800	11,900	3,900	3,320	1,550	667
22	*667	1,470	310	215	1,480	20,600	18,900	20,800	3,780	2,900	1,380	840
23	616	1,400	310	215	3,100	15,800	12,200	31,200	3,320	2,440	1,270	3,660
24	622	755	310	220	6,200	13,200	8,600	30,000	*3,080	2,200	1,080	1,590
25	610	1,000	320	220	11,500	*11,000	7,480	15,200	2,970	2,060	1,030	1,710
26	587	780	330	220	15,000	12,900	7,760	*14,800	2,860	1,870	*1,030	2,520
27	594	660	350	*220	11,900	21,700	7,480	15,500	2,670	1,750	1,160	5,660
28	593	580	370	220	10,000	25,100	8,600	16,500	2,460	*1,590	1,270	9,440
29	592	540	380	215	20,600	11,600	20,600	22,400	2,390	2,470	1,300	7,060
30	566	500	380	210	16,200	*12,600	35,300	2,950	2,810	1,380	*4,680	
31	578	.....	340	210	.....	13,900	.....	38,500	.....	7,760	1,890	.....
1959-60												
1	3,200	970	980	4,680	3,500	1,900	70,500	13,900	25,400	11,300	2,180	5,660
2	2,020	970	1,080	3,700	3,400	1,700	73,200	14,200	22,800	9,720	2,080	4,280
3	1,630	986	1,430	3,100	3,300	1,600	69,400	12,200	18,500	10,300	2,020	3,200
4	2,000	1,020	1,730	2,500	3,200	*1,500	69,900	10,000	15,200	9,160	1,950	2,760
5	14,800	1,100	1,870	2,000	3,200	1,400	72,700	8,880	13,200	7,480	1,870	2,480
6	13,500	2,700	1,770	1,600	3,200	1,400	*70,500	18,600	11,900	5,940	2,180	2,310
7	12,600	3,540	1,590	1,450	3,200	1,380	59,200	56,100	10,600	5,380	2,970	2,080
8	7,130	3,430	1,470	1,350	3,200	1,370	46,900	42,400	9,440	4,960	3,540	1,850
9	3,900	2,670	1,320	1,500	3,200	1,360	37,500	40,900	8,880	4,680	3,540	1,730
10	2,670	2,230	1,360	2,000	3,200	1,380	28,700	34,300	8,040	5,100	3,320	1,610
11	2,200	2,100	1,430	1,900	3,200	1,400	21,000	25,800	8,600	6,500	2,880	1,510
12	1,930	2,040	1,400	1,900	3,300	1,470	17,200	16,800	11,600	9,560	2,420	1,410
13	1,710	2,060	1,590	27,800	3,400	1,580	15,500	13,900	14,500	12,200	2,060	1,360
14	1,550	1,930	1,750	32,000	3,500	1,680	18,500	11,900	14,200	10,300	1,850	1,270
15	1,430	1,670	*1,730	39,000	3,550	1,700	16,200	10,300	11,000	7,480	1,690	1,230
16	1,380	1,300	1,610	26,900	3,550	*1,750	13,900	11,900	8,320	7,200	1,550	1,200
17	1,270	1,880	1,570	17,200	3,500	1,780	18,900	17,200	7,200	6,920	1,470	1,220
18	1,150	*1,000	1,450	10,300	3,400	1,800	22,100	18,200	6,920	6,220	1,710	1,230
19	1,110	1,220	1,400	5,800	3,200	1,800	21,300	11,600	6,640	5,660	1,710	1,410
20	1,100	1,100	1,380	4,400	3,100	1,800	19,200	10,600	6,500	4,960	3,400	1,470
21	1,050	1,360	1,400	3,100	2,900	1,830	17,500	11,900	*10,600	4,400	5,240	1,550
22	1,020	1,550	1,360	2,600	2,800	1,860	14,800	11,300	12,900	4,020	5,940	1,550
23	1,030	1,810	1,610	2,800	2,650	1,900	12,600	11,000	*16,800	3,780	4,960	1,450
24	1,270	2,040	2,120	3,000	2,550	1,950	11,300	11,300	12,200	3,540	*3,080	1,550
25	1,340	1,870	1,870	3,100	2,500	2,000	10,000	*29,900	11,900	3,320	2,440	2,830
26	1,250	1,890	1,830	3,500	2,350	2,000	*9,440	35,200	10,300	*3,430	2,100	11,300
27	*1,150	1,670	4,790	3,700	2,200	2,700	9,160	36,000	8,040	3,320	1,890	7,480
28	1,000	1,270	9,160	3,800	2,150	20,000	9,160	37,100	7,760	2,920	2,500	*4,540
29	970	1,100	6,360	3,900	2,050	41,900	9,160	33,000	14,500	2,700	3,320	3,390
30	955	900	7,480	3,900	.....	65,100	11,600	29,900	11,600	2,610	2,900	2,720
31	970	.....	6,360	3,700	.....	64,500	.....	27,000	.....	2,370	4,490	.....

Des Moines River at Keosauqua, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	507	212	160	168	263	591	710	635	899	448	2,222	606
1956-57	248	277	177	132	307	538	2,543	3,009	6,706	2,813	803	694
1957-58	510	920	1,429	916	1,616	3,149	2,094	1,976	4,381	15,080	4,104	2,788
1958-59	778	1,217	409	231	3,548	11,280	8,691	13,990	12,690	7,076	2,787	2,221
1959-60	2,912	1,682	2,397	7,654	3,050	7,661	29,900	21,740	11,870	6,046	2,750	2,651

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.036	0.017	0.011	0.012	0.019	0.042	0.051	0.045	0.064	0.032	0.158	0.043
1956-57	.018	.020	.013	.0094	.022	.038	.181	.219	.478	.200	.057	.049
1957-58	.036	.066	.101	.065	.115	.224	.149	.141	.312	1.07	.292	.199
1958-59	.055	.087	.029	.016	.253	.804	.619	.997	.904	.504	.199	.158
1959-60	.207	.120	.171	.545	.217	.546	2.13	1.55	.846	.431	.196	.189

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.04	0.02	0.01	0.01	0.02	0.05	0.06	0.05	0.07	0.04	0.18	0.05
1956-57	.02	.02	.01	.01	.02	.04	.20	.25	.53	.23	.07	.06
1957-58	.04	.07	.12	.08	.12	.26	.17	.16	.35	1.24	.34	.22
1958-59	.06	.10	.03	.02	.26	.93	.69	1.15	1.01	.58	.23	.18
1959-60	.24	.13	.20	.63	.23	.63	2.38	1.79	.94	.50	.23	.21

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1955								2,561	2.50
1956	Aug. 10, 1956	4.46	11,600	74	623	0.044	0.60	605	.58
1957	June 21, 1957	7.44	21,300	64	1,524	.109	1.46	1,705	1.64
1958	July 5, 1958	10.50	33,800	288	3,267	.233	3.17	3,229	3.13
1959	June 1, 1959	12.08	41,400	200	5,417	.386	5.24	5,805	5.62
1960	Apr. 2, 1960	18.34	73,800	880	8,354	.595	8.11		

Peak Discharge (base, 22,000 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: July 5 (12 M) 33,800 cfs (10.50 ft.); July 21 (9 a.m.) 24,700 cfs (8.33 ft.).

1958-59: Feb. 26, about 23,000 cfs; Mar. 21 (7 p.m.) 25,800 cfs (8.63 ft.); Mar. 28 (8 a.m.) 26,200 cfs (8.66 ft.); Apr. 2 (12:30 a.m.) 23,900 cfs (8.08 ft.); May 24 (6 a.m.) 34,300 cfs (10.60 ft.); June 1 (9 a.m.) 41,400 cfs (12.08 ft.); July 3 (7 a.m.) 29,900 cfs (9.58 ft.).

1959-60: Jan. 15 (11 a.m.) 40,900 cfs (12.0 ft.); Apr. 2 (6 a.m.) 73,800 cfs (18.34 ft.); Apr. 19 (10 a.m.) 22,400 cfs (7.66 ft.); May 7 (4 p.m.) 62,400 cfs (16.15 ft.); May 25 (7:30 p.m.) 39,000 cfs (11.56 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 15-17, 21-24, 26, 27, Nov. 29 to Dec. 31, 1955; Jan. 1 to Mar. 3, Nov. 22-29, Dec. 1, 2, 9, 10, 16-18, 20-31, 1956; Jan. 1-4, Jan. 6 to Feb. 24, Feb. 25 to Mar. 2, Nov. 29 to Dec. 2, Dec. 10-16, 25-31, 1957; Jan. 1 to Feb. 26, Nov. 26 to Dec. 6, Dec. 8-31, 1958; Jan. 1 to Feb. 26, Mar. 6-10, Nov. 16-22, 29, 30, Dec. 1, 1959; Jan. 2-11, Jan. 19 to Mar. 28, 1960. No gage height record July 9-27, 1959.

Sugar Creek near Keokuk, Iowa

LOCATION.—Lat. 40°26'45", long. 91°28'55", in SE¼NW¼ sec. 7, T. 65 N., R. 5 W., on left bank 10 ft. downstream from highway bridge, 4.1 miles upstream from mouth and 6 miles northwest of Keokuk.

DRAINAGE AREA.—105 square miles.

RECORDS AVAILABLE.—April 1922 to September 1931; August 1958 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 510.20 ft. above mean sea level, datum of 1929. Prior to June 25, 1923, chain gage and June 25, 1923, to Oct. 8, 1928, water-stage recorder at site 100 ft. upstream at same datum. Nov. 28, 1928, to Sept. 30, 1931, chain gage, at same site and datum. June 30, 1923, to June 27, 1927, heavy timber and riprap control.

AVERAGE DISCHARGE.—11 years (1922-31, 1958-60), 73.9 cfs.

EXTREMES.—1922-31, 1958-60: Maximum discharge, not determined, occurred Nov. 17, 1928; maximum discharge recorded, 6,620 cfs Oct. 1, 1927 (gage height, 13.85 ft.); no flow at times.

Maximum stage known, 20.6 ft. June 9, 1905, from floodmarks (discharge, 33,000 cfs, estimated on basis of area-velocity study).

REMARKS.—Bankfull stage is about gage height, 11 ft.

*Daily Discharge, in Cubic Feet per Second, for Period
August to September, 1958*

Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.
1		12	7		5.9	13		2.4	19		3.2	25		22
2		5.9	8		3.8	14		2.2	20		2.0	26		14
3		24	9		3.5	15		1.8	21		4.2	27		6.9
4		21	10		10	16		2.0	22		2.2	28		3.5
5		49	11		5.4	17		*3.2	23		18	29	5.4	2.9
6		11	12		2.9	18		3.5	24		138	30	6.4	4.2
												31	34	

Sugar Creek near Keokuk, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1..	2.6	1.2	3.9	0.8	0.5	60	151	43	123	18	1.1	206
2..	2.2	1.1	4.0	.7	.5	45	236	31	72	73	.6	*348
3..	1.8	1.3	4.0	.7	.5	35	117	24	48	24	.5	50
4..	1.7	2.0	3.5	.6	.5	28	68	20	34	10	506	22
5..	1.4	1.3	2.8	.6	.5	50	46	16	24	91	112	10
6..	1.3	1.6	1.9	.5	.5	120	36	14	18	32	*1,360	8.9
7..	15	1.2	1.3	.5	.5	100	30	11	16	12	923	7.4
8..	15	1.1	.9	.5	.5	180	30	10	13	5.0	109	5.9
9..	6.4	1.0	.7	.5	25	376	39	12	10	2.6	46	3.2
10..	3.2	1.0	.5	.6	600	680	39	14	9.9	2.0	38	2.2
11..	2.2	1.0	.4	.8	300	400	35	27	7.9	1.1	31	1.7
12..	2.0	1.3	.3	1.0	180	232	27	33	5.9	.9	25	1.6
13..	2.2	1.0	.2	1.4	350	110	24	24	4.6	.7	21	1.4
14..	1.8	2.2	.2	1.7	500	82	20	13	4.2	.6	18	1.3
15..	1.7	2.9	.2	2.0	250	119	16	9.4	3.5	.4	9.9	1.2
16..	1.6	2.6	.2	2.0	150	176	14	8.4	2.9	.5	9.4	1.1
17..	2.0	209	*.2	1.8	110	88	18	6.4	2.2	.4	11	1.3
18..	1.2	57	.2	1.5	92	62	97	7.4	2.2	1.8	7.9	1.7
19..	1.0	*68	.2	1.4	82	50	*1,150	533	1.8	1.0	6.4	1.3
20..	1.0	28	.2	1.2	72	46	*1,200	217	1.6	.4	5.4	1.1
21..	1.2	15	.3	1.1	70	39	361	48	1.3	.3	4.6	1.0
22..	1.8	9.9	.3	1.1	150	31	128	28	4.6	.2	3.5	.9
23..	*2.4	8.9	.4	1.0	220	27	86	23	3.5	20	3.2	61
24..	2.4	6.9	.4	.9	170	*22	62	20	*2.4	2.0	2.9	102
25..	1.6	5.9	.5	.9	90	21	44	16	1.7	.7	2.4	38
26..	1.4	4.8	.7	.8	*110	346	34	*15	1.4	.4	*1.8	356
27..	1.4	3.7	.8	.8	130	430	46	12	1.4	1.3	1.6	793
28..	1.4	3.2	.9	*.7	100	171	440	14	1.6	.6	1.4	*2,150
29..	1.1	3.0	.9	.7	.....	70	*200	61	1.4	*.3	1.3	756
30..	1.0	3.3	.9	.6	.....	79	66	829	20	32	1.2	*103
31..	1.3	.....	.9	.6	.....	149	.....	596	.....	7.9	2.9	.....
1959-60												
1..	54	14	9.0	42	23	8.4	256	91	41	1,240	1.9	0.8
2..	46	12	5.1	35	23	8.4	239	45	30	320	1.5	.7
3..	41	10	4.3	25	23	8.4	121	26	21	251	1.2	.6
4..	376	15	4.3	20	30	8.6	74	21	17	226	1.1	.6
5..	*2,500	14	5.5	18	150	8.8	84	17	14	56	1.0	.5
6..	2,680	14	5.1	17	264	9.0	70	435	12	32	20	.4
7..	1,370	13	3.9	19	129	9.2	*46	280	10	*24	102	.3
8..	296	12	3.0	21	100	9.8	36	97	9.0	18	64	.2
9..	99	14	2.5	23	330	10	29	50	7.5	22	43	.1
10..	62	18	2.2	25	364	11	25	35	6.5	76	23	0
11..	43	16	2.4	28	117	13	22	29	6.5	33	15	0
12..	32	11	4.7	400	60	13	19	23	180	1,490	12	0
13..	26	8.0	5.1	644	35	13	18	19	505	*3,160	9.0	0
14..	22	6.0	4.3	239	24	12	34	16	178	899	7.0	0
15..	19	5.2	8.5	682	20	12	178	13	81	129	5.1	0
16..	16	4.8	*6.5	227	17	12	646	540	41	86	4.7	.2
17..	15	4.4	5.5	80	15	12	1,890	424	24	68	3.9	.3
18..	13	*4.1	5.1	50	14	13	486	99	18	58	3.9	.4
19..	12	4.7	4.3	30	13	14	133	60	14	46	3.9	.6
20..	11	6.0	4.7	22	11	15	91	64	38	38	2.8	.4
21..	10	7.0	4.7	*19	11	15	90	110	180	32	2.8	.4
22..	9.5	9.0	4.3	18	10	16	60	187	*89	26	2.4	.3
23..	11	10	12	17	9.4	17	43	79	*2,410	22	1.7	.6
24..	12	11	30	17	9.0	17	34	*43	826	18	*1.5	.9
25..	10	11	34	17	*8.8	17	29	1,390	156	25	1.2	.5
26..	9.5	9.0	19	18	8.6	17	26	810	90	17	1.1	.4
27..	9.5	7.0	62	19	8.5	150	*21	175	67	*9.0	1.1	.2
28..	*9.0	5.0	349	21	8.4	*1,960	19	84	233	7.0	1.0	*0
29..	8.5	4.0	264	22	8.4	2,100	18	60	826	5.5	1.2	0
30..	8.0	5.0	120	23	.....	1,900	331	50	756	3.9	1.0	0
31..	11	.....	57	23	.....	623	.....	40	.....	2.8	.9	.....

Sugar Creek near Keokuk, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958.....												13.0
1958-59.....	2.72	15.0	1.06	0.97	131	143	162	88.2	14.8	11.1	105	168
1959-60.....	253	9.47	33.9	92.3	63.6	228	172	175	230	272	11.0	0.31

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958.....												0.124
1958-59.....	0.026	0.143	0.010	0.0092	1.28	1.36	1.54	0.840	0.141	0.106	1.00	1.60
1959-60.....	2.41	.090	.323	.879	.606	2.17	1.64	1.67	2.19	2.59	.105	.0030

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958.....												0.14
1958-59.....	0.03	0.16	0.01	0.01	1.33	1.57	1.72	0.97	0.16	0.12	1.16	1.78
1959-60.....	2.78	.10	.37	1.01	.65	2.50	1.83	1.92	2.44	2.99	.12	.003

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1959....	Sept. 28, 1959.	12.22	4,300	0.2	69.8	0.665	9.02	93.4	12.07
1960....	July 12, 1960..	12.87	6,120	0	129	1.23	16.71	.....	.....

Peak Discharge (base, 2,000 cfs)

1958-59: Apr. 19 (7:30 p.m.) 2,320 cfs (10.56 ft.); Aug. 6 (1 p.m.) 2,270 cfs (10.88 ft.); Sept. 27 (11:30 p.m.) 2,460 cfs (10.92 ft.); Sept. 28 (7 p.m.) 4,300 cfs (12.22 ft.).

1959-60: Oct. 6 (8 p.m.) 3,500 cfs (11.72 ft.); Mar. 20 (6 p.m.) 2,900 cfs (11.40 ft.); Apr. 17 (6 a.m.) 2,500 cfs (11.17 ft.); June 23 (1:30 p.m.) 3,200 cfs (11.54 ft.); July 1 (3 a.m.) 2,100 cfs (10.73 ft.); July 12 (9:30 p.m.) 6,120 cfs (12.87 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 26 to Dec. 31, 1958; Jan. 1 to Mar. 8, Nov. 12-30, Dec. 8-10, 1959; Jan. 3-12, Jan. 17 to Feb. 5, Feb. 12 to Mar. 27, 1960.

Fox River at Bloomfield, Iowa

LOCATION.—Lat. 40°46'10", long. 92°25'10", in SW¼SE¼ sec. 13, T. 69 N., R. 14 W., on left bank 15 ft. downstream from highway bridge, 1¼ miles north of Bloomfield, and 8.6 miles downstream from North Fox Creek.

DRAINAGE AREA.—87.7 square miles.

RECORDS AVAILABLE.—October 1957 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 755.57 ft. above mean sea level, datum of 1929.

EXTREMES.—1957-60: Maximum discharge, 8,600 cfs May 6, 1960 (gage height, 24.02 ft.), from rating curve extended above 3,400 cfs on basis of slope-area measurement of peak flow; no flow Oct. 1-14, 18-21, 1957, June 30, 1958.

Floods of June 9, 1905, and June 18, 1946, were the highest known, from information in local records (stage and discharge unknown).

Daily Discharge, in Cubic Feet per Second, for Water year 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58												
1.....	0	1.1	0.2	3.5	1.0	64	3.3	6.5	5.0	6.5	308	2.2
2.....	0	1.9	.2	2.0	.9	44	4.0	5.5	4.0	1.6	73	2.1
3.....	0	.8	.2	1.8	.9	34	4.5	5.0	1.9	3.4	32	2.1
4.....	0	.4	.1	1.8	.9	36	5.8	370	1.0	32	15	1.9
5.....	0	.3	.2	2.0	.9	34	8.0	252	.6	18	48	1.9
6.....	0	.2	.3	2.2	.9	57	11	45	.5	7.3	128	1.9
7.....	0	.4	.4	2.3	.9	35	9.5	27	.6	3.5	54	1.8
8.....	0	1.5	.3	2.1	.8	30	7.5	22	7.3	1.4	78	1.8
9.....	0	.7	.2	1.5	.8	30	6.0	18	134	.8	13	2.1
10.....	0	.4	.1	1.5	.8	30	4.5	14	32	1.2	8.6	84
11.....	0	.4	.1	1.9	.7	29	3.7	11	10	42	7.6	20
12.....	0	.3	.2	2.2	.7	26	3.3	9.0	817	11	298	9.2
13.....	0	.5	.5	2.6	.7	21	2.9	7.0	*74	4.7	*436	6.7
14.....	0	.4	1.2	3.0	.7	18	*2.6	5.6	34	3.3	53	5.0
15.....	.4	.4	2.2	3.1	.7	15	2.6	5.6	22	49	650	4.7
16.....	.2	.3	.5	3.2	.6	14	2.6	20	12	20	80	*6.2
17.....	*.1	.4	.6	3.2	.6	12	2.6	35	*7.3	13	100	7.6
18.....	0	25	1.9	3.1	.6	9.6	2.4	16	4.7	22	363	9.6
19.....	0	6.8	*1.4	2.5	.6	7.6	2.2	9.5	*4.2	119	34	8.0
20.....	0	1.2	118	1.9	*.6	6.2	2.8	6.5	3.7	78	*19	8.6
21.....	0	.6	31	1.6	.6	*5.2	3.5	*4.4	2.8	16	16	7.3
22.....	.1	.6	13	1.4	.6	4.7	4.0	4.4	1.8	*10	11	6.5
23.....	17	*.5	4.4	1.3	25	4.4	15	3.5	1.9	8.0	7.3	59
24.....	6.0	.6	4.0	*1.2	500	4.2	70	2.9	1.4	6.7	6.7	323
25.....	1.0	.4	86	1.2	300	4.4	28	1.8	.8	10	5.2	53
26.....	.4	.3	46	1.1	135	4.2	18	1.5	.6	7.6	4.2	33
27.....	.3	.3	33	1.1	220	3.7	14	1.4	.5	52	3.7	12
28.....	.2	.2	22	1.1	142	3.5	11	1.1	.6	33	3.3	7.3
29.....	.1	.1	14	1.0	.....	3.5	9.0	.9	.1	14	2.6	5.7
30.....	.1	.1	9.0	1.0	.....	3.3	7.5	1.0	0	*1,700	2.4	4.7
31.....	.1	.....	5.5	1.0	.....	3.3	.....	2.4	.....	*2,610	2.6	.....

Fox River at Bloomfield, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	3.7	1.5	5.0	2.1	1.1	40	637	15	96	801	9.6	1,230
2	2.9	1.6	5.0	1.8	1.0	30	150	46	31	55	4.4	522
3	2.6	1.6	5.0	1.6	1.0	23	82	49	22	18	3.7	55
4	2.4	1.6	5.0	1.4	1.0	20	68	20	15	9.2	649	24
5	2.3	1.5	4.2	1.3	1.0	40	50	19	9.9	5.7	*3,290	15
6	2.6	1.5	3.5	1.4	1.0	90	36	12	7.6	3.7	*2,470	11
7	5.5	1.5	2.9	1.6	1.0	70	31	8.9	7.6	2.8	234	9.3
8	11	1.5	2.4	1.7	6.0	90	31	7.3	6.7	2.2	46	7.1
9	6.2	1.5	2.0	1.9	50	120	39	8.6	5.7	1.8	28	22
10	8.3	1.2	1.7	2.1	500	230	34	131	4.4	1.5	17	10
11	5.2	1.2	1.5	2.3	350	300	32	46	3.9	1.2	12	5.8
12	4.0	1.2	1.5	2.5	250	330	30	26	3.7	1.1	9.3	4.9
13	2.9	1.4	1.4	2.6	450	383	28	27	3.5	.9	6.7	4.5
14	2.8	1.5	1.4	2.7	350	408	26	18	3.0	.9	4.5	4.2
15	2.4	1.8	1.4	2.7	250	267	24	16	2.3	1.0	4.2	4.2
16	1.9	2.1	1.4	2.7	190	110	22	15	1.9	1.0	25	4.2
17	1.6	728	*1.4	2.2	130	80	21	13	1.6	1.1	17	6.2
18	1.6	*313	1.4	1.7	100	230	24	13	1.4	1.1	12	8.4
19	1.5	50	1.4	1.2	88	601	192	25	1.5	1.1	9.0	7.1
20	1.4	*21	1.5	1.2	76	206	1,050	19	1.5	1.1	7.5	6.2
21	1.6	14	1.6	1.2	70	92	156	21	1.8	1.1	6.0	4.2
22	*1.8	11	1.8	1.2	230	70	68	27	2.9	1.1	5.2	4.9
23	1.8	8.6	1.9	1.2	800	60	44	20	1.6	1.1	4.5	134
24	1.6	7.6	2.1	1.2	160	48	39	16	1.4	1.1	3.8	54
25	1.5	7.0	2.3	1.2	*50	*50	36	14	*1.2	1.0	3.2	109
26	1.5	5.4	2.4	1.2	160	608	32	*12	1.2	1.0	2.6	619
27	1.5	4.5	2.5	*1.2	110	360	35	10	1.2	1.0	*2.4	384
28	1.5	3.6	2.5	1.3	56	95	50	66	1.2	*1.1	1.9	62
29	1.5	3.6	2.5	1.4	.....	72	29	463	1.8	1.0	1.5	*33
30	1.4	4.5	2.4	1.4	.....	64	*19	382	211	177	1.5	23
31	1.5	.....	2.3	1.2	.....	80	.....	179	.....	170	71	.....
1959-60												
1	21	12	5.0	31	31	15	620	100	13	419	2.1	.6
2	20	11	5.8	28	31	15	168	43	12	48	1.9	.6
3	19	9.3	7.0	24	31	15	88	34	9.3	40	1.5	.6
4	368	8.4	7.5	22	31	16	68	35	6.2	34	1.3	.9
5	*3,110	8.4	7.1	20	31	16	56	36	4.5	18	1.5	.9
6	*1,170	8.0	6.2	19	35	15	*48	*4,370	2.9	14	30	.9
7	399	8.0	5.0	21	40	15	39	1,630	2.6	13	15	1.0
8	91	7.1	4.1	23	50	15	36	400	1.7	12	6.7	1.3
9	50	8.4	3.5	25	70	16	31	81	1.5	10	3.5	.6
10	33	8.4	4.3	27	90	17	29	55	2.1	30	2.1	.6
11	22	8.9	6.0	35	110	18	28	42	4.2	20	1.3	.5
12	16	7.5	7.2	400	90	19	27	38	130	13	1.1	.5
13	15	6.7	8.6	500	61	19	26	32	100	11	1.1	.5
14	14	6.0	9.6	300	50	19	516	28	108	9.3	1.0	.5
15	12	5.2	*9.8	806	44	19	198	25	66	7.1	1.0	.6
16	11	4.8	9.3	80	39	19	275	188	47	6.2	1.0	1.0
17	9.3	4.4	9.3	54	34	19	1,070	88	43	5.0	1.3	.6
18	8.9	*4.0	8.0	45	29	19	280	47	42	4.0	1.1	.9
19	7.5	4.5	7.1	37	26	20	67	41	30	3.0	1.3	.9
20	7.1	5.2	7.1	*33	24	21	50	113	62	2.5	1.7	.6
21	6.7	6.6	8.0	30	22	21	35	125	*106	2.1	1.3	.6
22	6.7	9.0	8.4	28	20	21	30	140	100	1.8	1.0	.9
23	17	12	23	27	19	21	26	41	482	1.6	*.9	1.3
24	17	9.8	26	26	*18	20	24	242	78	1.5	.9	4.9
25	11	7.5	18	26	17	20	22	*1,200	31	6.7	.9	1.3
26	9.8	7.0	17	26	17	20	*21	252	15	*3.8	.9	.6
27	*9.8	6.0	828	27	16	200	23	109	8.4	2.1	.9	.5
28	8.4	5.0	373	28	16	1,500	17	41	313	1.9	1.0	*.5
29	8.4	4.0	174	29	16	*3,860	15	25	182	2.1	1.3	.6
30	8.0	4.5	90	30	.....	2,530	499	18	182	1.9	1.1	.9
31	10	.....	37	31	.....	467	.....	15	.....	1.9	1.0	.....

Fox River at Bloomfield, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58.....	0.84	1.57	12.8	1.95	47.8	19.3	9.06	29.5	39.5	158	92.4	23.3
1958-59.....	2.90	40.3	2.43	1.69	158	170	104	56.4	15.3	40.9	225	113
1959-60.....	178	7.25	56.1	91.5	38.3	291	148	311	72.8	24.1	2.86	.89

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58.....	0.0096	0.018	0.146	0.022	0.545	0.220	0.103	0.336	0.450	1.80	1.05	0.266
1958-59.....	.033	.460	.028	.019	1.80	1.94	1.19	.643	.174	.466	2.57	1.29
1959-60.....	2.03	.083	.640	1.04	.437	3.32	1.69	3.55	.830	.275	.033	.010

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58.....	0.01	0.02	0.17	0.03	0.57	0.25	0.12	0.39	0.50	2.08	1.21	0.30
1958-59.....	.04	.51	.03	.02	1.88	2.23	1.32	.74	.19	.51	2.95	1.44
1959-60.....	2.34	.09	.74	1.20	.47	3.83	1.88	4.09	.93	.32	.04	.01

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year	
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Mean	Runoff in inches
	Date	Gage height in feet	Discharge						
1958....	July 31, 1958..	19.18	3,970	0	36.5	0.416	5.65	38.9	6.03
1959....	Aug. 5, 1959..	21.62	5,660	.9	76.9	.877	11.89	93.6	14.48
1960....	May 6, 1960..	24.02	8,600	.5	103	1.17	15.94	.....	.....

Peak Discharge (base, 2,000 cfs)

1957-58: June 12 (9 a.m.) 2,930 cfs (17.15 ft.); July 31 (7:30 a.m.) 3,970 cfs (19.18 ft.).

1958-59: Aug. 5 (5 p.m.) 5,660 cfs (21.62 ft.); Sept. 1 (5 a.m.) 3,300 cfs (16.48 ft.).

1959-60: Oct. 5 (2:30 a.m.) 6,130 cfs (20.87 ft.); Mar. 29 (10:30 p.m.) 5,990 cfs (20.71 ft.); May 6 (8 p.m.) 8,600 cfs (24.02 ft.); May 25 (2 a.m.) 2,960 cfs (15.85 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 29, 30, Dec. 4-14, 28-31, 1957; Jan. 1 to Feb. 27, Nov. 26-30, Dec. 5-31, 1958; Jan. 1 to Mar. 11, Mar. 16-18, Nov. 14-22, Nov. 26 to Dec. 3, Dec. 7-14, 31, 1959; Jan. 1-14, Jan. 16 to Mar. 28, 1960. No gage height record Mar. 11-20, Apr. 3-13, Apr. 24 to May 3, May 7-20, 1958; Aug. 16-23, 1959; July 17-24, 1960.

MISSOURI RIVER BASIN

Rock River at Rock Rapids, Iowa

LOCATION.—Lat. $43^{\circ}26'13''$, long. $96^{\circ}09'58''$, in NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 33, T. 100 N., R. 45 W., on right bank at dam at north side of city park in Rock Rapids, a third of a mile upstream from Tom Creek and half a mile northeast of junction of U. S. Highways 75 and 9.

DRAINAGE AREA.—788 square miles.

RECORDS AVAILABLE.—August 1959 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 1,337.81 ft. above mean sea level (Iowa State Highway Commission bench mark).

EXTREMES.—1959-60: Maximum discharge 15,500 cfs Mar. 30, 1960 (gage height, 8.86 ft.); minimum daily, 6.0 cfs Aug. 20, 21, 1959.

REMARKS.—Bankfull stage is about gage height, 9 ft.

*Daily Discharge, in Cubic Feet per Second, for Period
August to September, 1959*

Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.
1.....		38	11.....		12	21.....	6.0	17
2.....		31	12.....		12	22.....	7.8	34
3.....		25	13.....		9.9	23.....	7.8	42
4.....		22	14.....		9.9	24.....	20	70
5.....		22	15.....		9.9	25.....	15	66
6.....		22	16.....		9.9	26.....	20	53
7.....		17	17.....		17	27.....	50	42
8.....		14	18.....	7.8	17	28.....	65	38
9.....	9.9		19.....	7.8	17	29.....	55	31
10.....	12		20.....	6.0	17	30.....	50	25
						31.....	42	.....

Rock River at Rock Rapids, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Year 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1959-60												
1....	25	34	28	48	7.5	9.0	4,760	157	*256	85	*25	45
2....	31	*34	28	42	*7.5	*9.0	8,440	130	224	80	22	38
3....	31	42	28	36	7.5	9.0	*5,110	*118	192	70	20	34
4....	28	42	*28	33	7.5	9.0	3,150	112	157	62	20	28
5....	25	28	28	*30	8.0	8.5	3,450	136	136	*62	25	25
6....	*25	35	28	27	8.0	8.5	2,130	248	124	53	25	*22
7....	25	25	28	27	8.0	8.5	1,550	320	112	49	25	22
8....	28	25	28	27	8.5	8.5	1,040	290	100	45	25	95
9....	31	25	28	27	9.0	8.0	666	216	100	45	25	157
10....	31	31	28	26	9.0	8.0	454	178	100	45	25	216
11....	28	28	28	25	9.0	8.0	350	157	95	42	28	150
12....	28	20	28	25	9.0	8.0	*370	136	95	42	28	100
13....	28	22	25	25	9.0	7.5	1,370	124	95	38	25	70
14....	25	30	28	24	9.0	7.5	1,850	112	90	42	25	62
15....	25	25	28	22	9.0	7.5	900	106	95	45	25	57
16....	22	22	31	20	9.0	7.5	574	171	143	45	25	49
17....	22	20	34	18	9.0	7.0	430	178	310	49	25	45
18....	22	20	28	16	9.0	7.0	360	150	264	85	25	49
19....	22	20	31	14	9.0	7.0	290	178	178	70	22	49
20....	20	22	34	13	9.0	7.0	256	216	157	62	22	42
21....	20	25	34	12	9.0	7.0	224	420	143	53	20	53
22....	22	25	34	11	9.0	7.0	200	490	130	42	20	66
23....	17	31	31	10	9.0	7.0	171	400	118	34	20	171
24....	17	34	31	9.0	9.0	7.0	157	300	106	31	22	200
25....	20	34	34	8.0	9.0	7.0	143	256	200	31	28	157
26....	20	28	53	7.5	9.0	7.0	130	478	164	28	38	130
27....	17	28	80	7.5	9.0	15	130	750	124	28	38	100
28....	17	28	90	7.5	9.0	250	130	736	112	27	80	90
29....	20	28	70	7.5	9.0	7,960	150	514	100	26	80	80
30....	22	28	60	7.5	.....	*11,900	150	370	95	26	62	75
31....	28	.....	55	7.5	.....	8,920	.....	310	.....	25	53	.....

Rock River at Rock Rapids, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59.....												25.4
1959-60.....	23.9	28.0	37.0	20.0	8.67	943	1,303	273	144	47.3	30.6	82.6

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59.....												0.032
1959-60.....	0.030	0.036	0.047	0.025	0.011	1.20	1.65	0.346	0.183	0.060	0.039	.105

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59.....												0.04
1959-60.....	0.04	0.04	0.05	0.03	0.01	1.38	1.84	0.40	0.20	0.07	0.04	.12

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59.....												1,510
1959-60.....	1,470	1,660	2,280	1,230	499	58,010	77,520	16,770	8,560	2,910	1,880	4,910

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30								Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet
	Date	Gage height in feet	Discharge								
1959.....											
1960.....	Mar. 30, 1960.	8.86	15,500	7.0	245	0.311	4.22	177,700			

Peak Discharge (base, 2,000 cfs)

1959-60: Mar. 30 (9:30 p.m.) 15,500 cfs (8.86 ft.); Apr. 2 (4 p.m.) 8,920 cfs (6.28 ft.); Apr. 14 (9 a.m.) 2,210 cfs (3.33 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 6, 13-16, Dec. 28-31, 1959; Jan. 1 to Mar. 28, 1960. No gage-height record Sept. 24-30, 1959.

Rock River near Rock Valley, Iowa

LOCATION.—Lat. 43°12'05", long. 96°20'15", in NE¼ NE¼ sec. 25, T. 97 N., R. 47 W., on downstream side of bridge on U. S. Highway 18, 1.8 miles west of Rock Valley and 16.4 miles upstream from mouth.

DRAINAGE AREA.—1,600 square miles (revised in 1956).

RECORDS AVAILABLE.—June 1948 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 1,216.00 ft. above mean sea level (Iowa State Highway Commission bench mark). Prior to Aug. 13, 1952, wire-weight gage (June 4, 1949, to Aug. 12, 1952, supplementary water-stage recorder operating above 6.2 ft. gage height) at same site and datum.

AVERAGE DISCHARGE.—12 years, 291 cfs (210,700 acre-ft. per year).

EXTREMES.—1948-60: Maximum discharge, 19,200 cfs June 21, 1954; maximum gage height recorded, 15.99 ft. June 8, 1953; no flow Feb. 20-23, Feb. 27 to Mar. 8, 1959.

Flood in 1897 reached a stage of 17.0 ft. (discharge not determined), from information by Iowa State Highway Commission.

REMARKS.—Bankfull stage is about gage height, 12 ft.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	3.2	21	5.4	3.0	1.2	3.5	334	*68	46	84	73	137
2.....	4.0	21	5.4	3.0	1.2	6.0	*342	75	42	*838	*95	147
3.....	*5.4	*10	4.4	3.0	1.2	8.0	393	97	38	357	95	79
4.....	5.4	22	3.6	*3.2	1.2	10	373	121	*42	217	75	60
5.....	5.9	23	3.6	3.2	1.2	12	345	137	44	*147	66	*50
6.....	6.9	19	3.8	3.2	1.2	*10	328	142	44	106	212	42
7.....	6.9	12	*3.8	3.2	*1.2	12	274	134	46	113	360	34
8.....	7.5	19	3.8	3.2	1.2	10	232	113	40	104	178	28
9.....	8.9	23	3.8	3.2	1.2	8.0	208	106	32	99	131	27
10.....	8.2	25	3.8	3.2	1.2	6.0	184	97	28	86	113	23
11.....	8.2	26	3.8	3.2	1.2	5.0	178	104	25	82	489	21
12.....	8.2	27	3.8	3.2	1.2	4.5	160	104	22	77	485	19
13.....	8.2	27	3.7	3.2	1.2	5.0	147	99	20	75	525	19
14.....	8.9	14	3.6	3.2	1.2	5.0	134	97	19	111	625	15
15.....	9.6	14	3.4	3.0	1.2	6.0	121	90	16	410	409	14
16.....	9.6	6.9	3.4	3.0	1.2	7.0	108	144	14	453	268	13
17.....	10	9.6	3.4	2.8	1.2	8.0	99	144	13	226	196	13
18.....	10	9.6	3.2	2.8	1.2	12	93	118	13	139	150	12
19.....	11	14	3.2	2.6	1.2	14	86	97	13	104	124	12
20.....	12	22	3.2	2.6	1.4	15	82	86	99	84	104	12
21.....	13	23	3.0	2.4	1.4	50	75	77	139	68	90	11
22.....	13	25	3.0	2.2	1.6	100	71	66	95	56	82	13
23.....	13	8.9	3.2	2.0	1.6	200	62	62	60	48	73	16
24.....	13	13	3.2	1.8	1.8	125	60	58	255	40	64	16
25.....	15	14	3.0	1.6	2.0	70	58	52	345	34	54	15
26.....	16	17	3.0	1.6	2.0	40	58	48	190	32	52	15
27.....	17	6.9	3.0	1.6	2.5	60	58	48	113	28	46	13
28.....	20	7.5	3.0	1.4	2.5	300	52	42	75	27	44	13
29.....	19	6.9	3.0	1.4	3.0	275	44	40	56	25	38	14
30.....	19	6.4	3.0	1.4	.....	185	68	36	44	25	36	15
31.....	20	.....	3.0	1.4	.....	220	.....	34	.....	121	38	.....

Rock River near Rock Valley, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	14	19	28	16	1.0	27	277	71	126	*328	*172	155
2	*14	*17	30	*16	1.0	22	*238	68	90	271	150	205
3	13	16	26	16	1.0	21	205	62	71	1,680	142	*286
4	13	19	*28	16	1.2	22	184	58	*60	1,640	126	274
5	12	25	20	16	*1.5	23	169	56	52	1,370	113	232
6	12	28	17	16	2.5	*23	152	*52	48	915	104	205
7	11	27	15	16	4.5	22	142	50	58	625	99	181
8	12	27	16	15	6.0	21	131	46	51	441	99	166
9	13	26	17	10	7.0	27	121	104	50	338	311	152
10	12	26	18	5.0	7.5	33	118	75	48	271	890	144
11	12	27	19	1.5	8.0	38	118	50	50	232	525	137
12	11	25	18	1.2	8.6	33	118	50	50	196	280	124
13	11	23	16	1.0	9.0	42	116	56	58	175	211	116
14	13	25	15	1.0	9.0	21	108	77	106	152	172	108
15	14	21	15	1.0	9.0	8.2	101	82	104	134	152	104
16	13	17	15	1.2	8.8	7.5	97	82	88	121	137	99
17	14	18	15	2.0	8.5	7.5	95	82	256	106	121	93
18	14	20	15	3.0	8.0	8.0	90	82	687	95	113	88
19	14	20	15	*4.5	7.0	8.5	101	77	2,960	90	104	93
20	14	16	15	6.0	6.0	10	99	82	2,160	93	108	95
21	14	13	15	6.0	5.5	12	101	106	1,140	222	178	99
22	15	14	15	4.0	5.0	14	270	104	1,930	840	160	95
23	15	20	15	2.5	4.5	26	235	129	1,070	1,400	400	93
24	14	27	15	1.5	6.0	433	169	111	1,020	966	453	88
25	13	23	16	1.0	13	2,560	134	104	750	525	401	84
26	17	22	17	1.0	23	1,500	116	101	565	361	292	77
27	19	28	18	1.0	25	965	101	93	825	331	241	71
28	17	26	18	1.0	28	728	90	97	890	277	226	68
29	17	23	18	1.0	.....	565	84	104	665	229	205	64
30	17	28	18	1.0	.....	425	77	104	449	253	190	62
31	19	.....	17	1.0	.....	334	.....	121	.....	214	169	.....
1957-58												
1	*62	*97	85	35	21	214	*97	*152	44	33	13	4.9
2	60	111	*113	30	21	190	90	144	44	32	12	*4.9
3	56	124	113	28	21	193	90	137	64	30	11	4.9
4	52	150	118	26	21	160	101	126	144	48	11	3.6
5	50	155	118	26	21	*111	150	172	397	46	*9.6	6.9
6	50	155	108	26	*21	73	280	178	283	50	8.9	6.9
7	54	147	95	*26	20	66	449	152	193	*38	8.9	6.4
8	60	137	90	26	20	73	421	139	152	44	8.2	5.4
9	58	95	98	26	20	75	345	126	126	60	8.2	4.0
10	64	110	70	26	20	71	301	116	*108	62	7.5	3.6
11	64	129	60	28	18	60	280	111	90	66	8.2	3.6
12	62	126	70	28	18	60	262	106	86	62	7.5	3.6
13	62	118	75	28	18	58	238	99	82	54	6.9	4.0
14	60	113	75	28	18	60	223	99	75	44	7.5	4.4
15	68	113	80	26	17	50	211	93	71	34	6.9	2.6
16	82	124	80	25	17	50	202	93	68	28	6.4	2.4
17	104	121	80	25	17	58	190	93	62	26	5.9	2.6
18	116	126	85	25	16	54	178	93	56	23	5.9	2.4
19	108	90	82	25	16	54	175	93	52	23	5.4	2.4
20	99	105	80	25	16	52	172	88	48	22	5.9	2.6
21	101	100	80	24	16	54	166	79	44	21	6.4	2.2
22	101	95	80	24	16	62	163	73	48	20	6.4	2.2
23	106	120	80	24	18	77	166	68	62	17	6.4	2.4
24	106	134	80	24	20	86	178	73	62	16	5.9	2.4
25	106	129	75	24	30	93	187	79	58	15	5.4	2.8
26	108	126	58	23	40	90	202	68	56	14	5.4	3.2
27	104	137	58	23	60	126	202	58	52	19	5.4	2.8
28	101	131	56	23	150	144	193	52	48	19	5.4	2.6
29	101	118	54	22	.....	137	175	50	42	15	5.4	2.2
30	99	70	50	22	.....	116	163	46	40	15	5.4	2.2
31	97	.....	40	22	.....	104	.....	48	.....	14	5.4	.....

Rock River near Rock Valley, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1....	2.7	5.0	6.0	1.6	0.8	0	56	22	*9,020	95	2.7	*71
2....	*1.8	3.8	*6.4	1.4	*.8	*0	53	17	4,260	87	240	64
3....	1.8	2.7	6.4	1.0	.8	0	50	20	1,560	77	541	54
4....	1.8	*2.7	6.4	.8	.7	0	48	29	1,080	71	*212	48
5....	1.8	2.7	6.0	.8	.7	0	44	*46	832	66	109	44
6....	1.8	5.0	5.5	*.8	.7	0	*42	73	640	58	95	38
7....	1.8	6.5	5.0	.8	.6	0	41	89	515	*54	93	34
8....	1.8	11	4.5	.8	.5	0	38	99	408	50	68	28
9....	1.8	11	4.0	.8	.4	.2	35	91	337	46	59	22
10....	2.7	11	3.5	.8	.3	.4	34	83	292	42	52	18
11....	1.8	12	3.0	.8	.3	1.0	32	73	286	40	44	17
12....	1.8	6.5	2.5	.8	.3	5.0	32	68	235	40	36	12
13....	1.8	8.0	2.0	1.0	.2	10	32	59	204	38	40	9.5
14....	2.7	8.0	2.0	1.0	.2	20	32	53	184	35	74	8.0
15....	2.7	9.5	1.5	.8	.2	30	30	50	166	34	109	5.0
16....	2.7	12	1.5	.8	.2	35	30	47	152	32	71	6.5
17....	2.7	16	1.7	.8	.2	40	34	44	137	29	56	17
18....	2.7	16	2.0	.8	.2	45	35	41	133	20	46	22
19....	2.7	16	2.2	.8	.1	50	35	38	127	14	38	23
20....	2.7	20	2.4	.8	0	50	36	75	119	16	34	22
21....	1.8	18	2.4	.8	0	60	36	413	113	16	29	17
22....	2.7	20	2.4	.8	0	70	35	265	107	14	44	17
23....	2.7	18	2.4	.8	0	80	32	131	105	11	32	53
24....	2.7	12	2.4	.8	.1	95	32	109	101	9.5	96	65
25....	2.7	8.0	2.4	.8	.1	100	29	97	101	9.5	103	65
26....	2.7	7.0	2.4	.8	.1	80	29	89	144	5.0	62	66
27....	2.7	6.0	2.4	.8	0	70	29	79	137	5.0	68	60
28....	2.7	5.5	2.4	.8	0	64	29	517	105	5.0	115	52
29....	2.7	5.5	2.2	.8	.....	62	28	1,350	97	2.7	139	46
30....	2.7	5.5	2.0	.8	.....	60	29	1,520	99	1.1	113	40
31....	3.8	.....	1.8	.8	.....	60	.....	4,880	.....	2.7	87	.....
1959-60												
1....	36	56	58	110	23	17	9,400	380	*612	199	*60	104
2....	40	*59	58	105	*23	*17	13,700	366	530	184	58	92
3....	44	64	58	100	23	17	12,500	*325	470	173	58	80
4....	41	70	*56	90	23	17	6,950	309	410	158	53	71
5....	*38	50	58	*80	23	17	4,130	300	352	*150	76	66
6....	36	28	56	75	22	16	3,260	365	322	140	82	*59
7....	35	50	53	75	22	16	1,740	455	294	132	68	56
8....	40	40	52	75	22	16	1,420	580	268	123	60	223
9....	44	64	52	75	22	16	1,080	470	252	117	58	276
10....	41	64	48	70	21	16	832	380	257	113	53	344
11....	40	64	48	65	20	16	700	325	268	113	51	330
12....	38	42	48	60	20	16	*690	300	260	219	48	242
13....	40	15	41	60	20	16	1,830	265	255	240	46	190
14....	40	45	41	55	20	16	2,650	213	240	197	43	158
15....	38	58	47	55	20	16	1,740	210	228	152	42	140
16....	36	60	50	50	20	16	1,080	273	268	134	*40	125
17....	34	58	48	46	20	15	855	400	395	123	39	119
18....	32	58	44	42	19	15	735	450	560	221	44	302
19....	30	54	50	38	19	15	665	630	455	223	49	440
20....	29	53	53	34	19	15	595	660	395	188	49	315
21....	29	56	53	30	19	15	530	1,180	352	158	43	397
22....	34	59	54	26	18	15	485	1,260	315	136	39	530
23....	38	60	53	25	18	15	455	1,050	294	119	40	485
24....	38	60	50	24	18	15	425	790	265	106	58	500
25....	36	62	53	24	18	16	395	665	265	96	58	440
26....	35	59	65	24	17	18	366	950	286	92	97	395
27....	35	56	89	24	17	300	352	1,230	250	85	99	352
28....	35	58	123	23	17	*7,150	352	1,200	252	79	134	304
29....	38	58	150	23	17	*13,300	366	975	294	72	152	270
30....	44	58	130	23	.....	14,100	380	735	225	68	142	245
31....	53	.....	120	23	.....	14,500	.....	682	.....	65	123	.....

Rock River near Rock Valley, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	10.8	16.5	3.53	2.57	1.47	57.8	161	88.3	67.6	142	174	30.6
1956-57.....	14.0	22.2	17.9	5.98	8.04	258	139	81.8	549	480	227	129
1957-58.....	81.3	120	80.2	25.6	26.0	92.6	208	100	91.9	32.6	7.35	3.57
1958-59.....	2.39	9.70	3.22	.86	.30	35.1	35.9	341	727	33.1	93.8	34.8
1959-60.....	37.6	51.6	63.4	52.5	20.0	1,605	2,355	593	330	141	66.5	255

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.0068	0.010	0.0022	0.0016	0.00092	0.036	0.101	0.035	0.042	0.089	0.109	0.019
1956-57.....	.0088	.014	.011	.0037	.0050	.161	.087	.051	.343	.300	.142	.081
1957-58.....	.051	.075	.050	.016	.016	.058	.130	.062	.057	.020	.0046	.0022
1958-59.....	.0015	.0061	.0020	.00034	.00019	.022	.022	.213	.454	.021	.059	.022
1959-60.....	.024	.034	.040	.033	.012	1.00	1.47	.371	.206	.088	.042	.159

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.008	0.010	0.003	0.002	0.001	0.04	0.11	0.06	0.05	0.10	0.13	0.02
1956-57.....	.01	.02	.01	.004	.005	.19	.10	.06	.38	.35	.16	.09
1957-58.....	.06	.08	.06	.02	.02	.07	.15	.07	.06	.02	.005	.002
1958-59.....	.002	.007	.002	.0006	.0002	.03	.03	.25	.51	.02	.07	.02
1959-60.....	.03	.04	.03	.04	.01	1.16	1.64	.43	.23	.10	.05	.18

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	666	979	217	158	84	3,550	9,570	5,430	4,020	8,760	10,690	1,820
1956-57.....	859	1,320	1,100	368	446	15,840	8,250	5,030	32,690	29,540	13,970	7,650
1957-58.....	5,090	7,150	4,930	1,570	1,440	5,690	12,400	6,160	5,470	2,000	452	212
1958-59.....	147	577	198	53	17	2,160	2,140	20,960	43,230	2,030	5,770	2,070
1959-60.....	2,310	3,250	3,900	3,230	1,150	98,710	140,100	36,440	19,610	8,680	4,090	15,170

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30							Calendar year			
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet
	Date	Gage height in feet	Discharge								
1955.....									81.0	0.69	58,660
1956.....	July 2, 1956.....	7.59	1,160	1.2	63.3	0.040	0.53	45,940	65.3	.55	47,360
1957.....	June 19, 1957.....	10.55	3,770	1.0	162	.101	1.38	117,100	181	1.54	130,900
1958.....	Apr. 7, 1958.....	6.18	545	2.2	72.5	.045	.62	52,470	50.2	.43	36,320
1959.....	June 1, 1959.....	14.06	10,200	0	110	.069	.94	79,350	121	1.05	87,890
1960.....	Mar. 31, 1960.....	15.38	16,700	15	464	.290	3.96	336,600			

Peak Discharge (base, 3,000 cfs)

1955-56: No peak above base.

1956-57: June 19 (10:30 p.m.) 3,770 cfs (10:55 ft.); July 3 (3:30 p.m.) 3,050 cfs (9.97 ft.).

1957-58: No peak above base.

1958-59: June 1 (11 a.m.) 10,200 cfs (14.06 ft.).

1959-60: Mar. 31 (1 p.m.) 16,700 cfs (15.38 ft.); Apr. 2 (2 p.m.) 14,100 cfs (14.93 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 3, 14-19, Nov. 23 to Dec. 31, 1955; Jan. 1 to Mar. 31, Nov. 17-23, Dec. 6-31, 1956; Jan. 1 to Feb. 25, Mar. 4, 7, 16-21, Nov. 9, 10, 19-23, 30, Dec. 1, 8-31, 1957; Jan. 1 to Feb. 28, Nov. 25 to Dec. 31, 1958; Jan. 1 to Mar. 27, Nov. 5-8, 12-18, Dec. 17-19, 29-31, 1959; Jan. 1 to Mar. 27, 1960.

Dry Creek at Hawarden, Iowa

LOCATION.—Lat. 42°59'45", long. 96°28'15", in NE¼ NE¼ sec. 2, T. 94 N., R. 48 W., on left bank 6 ft. downstream from bridge on State Highway 10 at east edge of Hawarden, 1.7 miles upstream from mouth.

DRAINAGE AREA.—48.4 square miles (revised in 1956).

RECORDS AVAILABLE.—June 1948 to September 1960.

GAGE.—Water-stage recorder and concrete control. Datum of gage is 1,170.42 ft. above mean sea level, datum of 1929 (Corps of Engineers bench mark). Prior to Oct. 30, 1949, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—12 years, 7.88 cfs (5,700 acre-ft. per year).

EXTREMES.—1948-60: Maximum discharge, 10,900 cfs June 7, 1953 (gage height, 17.57 ft.), from rating curve extended above 860 cfs on basis of contracted-opening measurement of peak flow; no flow for many days in most years.

Flood in September 1926 reached a stage of 18.0 ft. (discharge not determined), and flood in 1934 reached a stage of 15.8 ft. (discharge not determined), from information by Iowa State Highway Commission.

REMARKS.—Bankfull stage is about gage height, 10 ft.

REVISIONS (water years).—WSP 1509: 1956.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	0	0.1	0	0	0	0.4	2.0	*0.8	0.2	0	28	0
2.....	0	.1	0	0	0	.5	*2.5	.8	.2	0	*5.7	0
3.....	*.1	*.1	0	*0	0	.5	5.0	1.6	.1	0	2.6	0
4.....	.1	.1	0	0	0	.7	1.9	1.5	.3	0	15	0
5.....	.1	.1	0	0	0	1.0	1.4	1.3	*.1	*0	16	*0
6.....	.1	.1	0	0	0	*1.1	1.4	1.0	1.2	0	17	0
7.....	.1	.1	*0	0	*0	.5	1.2	.8	.6	.5	37	0
8.....	.1	.1	0	0	0	.2	1.0	.7	.3	5.3	7.0	0
9.....	.1	.1	0	0	0	.2	.8	.6	.1	1.9	3.0	0
10.....	0	.1	0	0	0	.2	.8	.6	0	.8	2.0	0
11.....	0	.1	0	0	0	.1	.8	.7	0	.7	1.5	0
12.....	0	.2	0	0	0	.1	.5	.6	0	.9	1.1	0
13.....	0	.2	0	0	0	.1	.3	.5	0	3.1	2.0	0
14.....	0	.1	0	0	0	.1	.4	.6	0	1.5	2.0	0
15.....	0	.1	0	0	0	.1	.3	.5	0	.7	1.5	0
16.....	0	0	0	0	0	.2	.3	.3	0	.3	.9	0
17.....	0	0	0	0	0	.3	.3	.3	0	.1	.8	0
18.....	.1	0	0	0	0	.4	.3	.2	0	.1	.4	0
19.....	.1	0	0	0	0	.5	.3	.2	0	.1	.3	0
20.....	.1	0	0	0	0	2.5	.3	.1	0	.1	.2	0
21.....	.1	0	0	0	0	2.0	.3	.1	0	0	.1	0
22.....	.1	0	0	0	0	1.5	.3	.1	0	0	.1	0
23.....	.1	0	0	0	0	10	.3	.1	0	0	0	0
24.....	.1	0	0	0	0	5.0	.3	.1	0	0	0	0
25.....	.1	0	0	0	0	5.0	.3	.1	2.3	0	0	0
26.....	.1	0	0	0	0	4.0	.4	.1	9.1	0	0	0
27.....	.1	0	0	0	0	2.0	.6	.2	1.0	0	0	0
28.....	.1	0	0	0	.1	1.0	.6	.1	.7	0	0	0
29.....	.1	0	0	0	.3	1.0	.8	.1	.3	0	0	0
30.....	.1	0	0	0	.....	1.0	.9	.6	.1	0	0	0
31.....	.1	.....	0	0	.....	1.5	.....	.3	.....	46	0	.....

Dry Creek at Hawarden, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1.....	0	0	0	0	0	0.2	1.4	0	0	2.2	*1.1	1.1
2.....	*0	*0	.1	0	0	.2	*1.0	0	0	*1.5	1.0	3.3
3.....	0	0	.2	*0	0	.2	.8	0	0	.42	1.2	*1.2
4.....	0	0	*.2	0	0	.2	.5	0	*0	278	.8	.7
5.....	0	0	.2	0	*0	.2	.6	0	0	17	.6	14
6.....	0	0	.2	0	0	*.3	.8	*0	0	4.6	.4	41
7.....	0	0	0	0	0	.3	.8	0	0	3.0	.8	7.5
8.....	0	0	0	0	0	.3	.7	0	0	18	1.3	1.6
9.....	0	0	0	0	0	.3	.7	0	0	3.8	.8	1.2
10.....	0	0	0	0	0	.4	.6	0	0	2.0	.6	1.2
11.....	0	0	0	0	0	.4	.6	0	.1	1.5	.5	.9
12.....	0	0	0	0	0	.4	.4	0	1.3	1.3	.3	.8
13.....	0	0	0	0	0	.5	.6	.2	1.3	1.2	.3	.7
14.....	0	0	0	0	0	.3	.4	.8	1.6	1.6	.3	.7
15.....	0	0	0	0	0	.3	.3	.8	2.8	1.2	.2	.7
16.....	0	0	0	0	0	.3	.3	.8	1.7	1.0	.2	.6
17.....	0	0	0	0	0	0	.3	.7	1.5	.8	.2	.5
18.....	0	0	0	0	0	0	.2	.6	4.4	.8	.2	.5
19.....	0	0	0	0	0	0	.2	.5	2.3	.9	1.6	1.0
20.....	0	0	0	0	0	0	.3	.4	1.1	1.2	.7	.9
21.....	0	0	0	0	.3	.3	.3	.6	13	.8	.4	.8
22.....	0	0	0	0	.3	.7	.2	1.2	81	.8	.3	.7
23.....	0	0	0	0	0	1.2	.2	.8	5.3	.6	.3	.5
24.....	0	.1	0	0	0	1.2	.1	.5	2.5	.4	.3	.3
25.....	0	.3	0	0	0	1.2	0	.3	79	.4	.2	.3
26.....	0	0	0	0	.1	3.0	0	.2	7.1	.3	.2	.3
27.....	0	0	0	0	.1	2.8	0	0	2.6	.2	.2	.2
28.....	0	.1	0	0	.1	2.3	0	0	1.7	9.4	.3	.2
29.....	0	0	0	0	.....	2.0	0	0	3.6	3.9	.4	.2
30.....	0	0	0	0	.....	1.9	0	0	3.3	2.2	.4	.2
31.....	0	.....	0	0	.....	1.7	.....	0	.....	1.5	.4	.....
1957-58												
1.....	*0.1	*0.2	0.1	0.1	0	4.0	*0.6	*0.5	0	0	0	0
2.....	.1	.5	.1	.1	0	3.0	.7	.4	0	0	0	*0
3.....	.1	.2	*.2	0	0	2.0	.8	.4	.1	0	0	0
4.....	.1	.2	.2	0	0	1.5	1.0	.3	.1	0	0	0
5.....	.1	.2	.2	0	0	*1.1	2.3	.3	0	0	*0	0
6.....	.1	.2	.2	0	*0	.9	4.1	.2	0	0	0	0
7.....	.1	.1	.2	*0	0	.9	4.2	.4	0	*0	0	0
8.....	.2	.1	.2	0	0	.9	2.4	.5	0	0	0	0
9.....	.2	0	.2	0	0	.9	1.8	.4	*0	0	0	0
10.....	.2	0	.2	0	0	.9	1.6	.2	0	0	0	0
11.....	.2	0	.1	0	0	.9	1.4	.2	0	0	0	0
12.....	.1	.1	.1	0	0	.9	1.2	.1	0	0	0	0
13.....	.1	.1	.1	.6	0	.9	1.1	0	0	0	0	0
14.....	.1	.1	.2	.7	0	.9	.9	.1	0	0	0	0
15.....	.1	.1	.2	.7	0	.9	.8	.1	0	0	0	0
16.....	.1	.2	.2	.4	0	.9	.8	.1	0	0	0	0
17.....	.1	.2	.2	.4	0	.8	.6	.1	0	0	0	0
18.....	.1	.2	.2	.2	0	.8	.5	.1	0	0	0	0
19.....	.1	.2	.3	.1	0	.8	.7	0	0	0	0	0
20.....	.1	.2	.3	0	0	.8	.7	0	0	0	0	0
21.....	.2	.2	.3	0	0	.8	.6	0	0	0	0	0
22.....	.2	.2	.3	0	.1	.8	.6	0	0	0	0	0
23.....	.2	.2	.3	0	.2	.8	.8	0	0	0	0	0
24.....	.1	.3	.3	0	.3	.8	1.4	0	0	0	0	0
25.....	.1	.3	.3	0	.4	.8	1.2	0	0	0	0	0
26.....	.1	.3	.2	0	1.0	.7	1.0	0	0	0	0	0
27.....	.1	.3	.2	0	12	.6	.9	0	0	0	0	0
28.....	.1	.2	.2	0	15	.6	.9	0	0	0	0	0
29.....	.1	.2	.2	0	.....	.6	.8	0	0	0	0	0
30.....	.1	.1	.2	0	.....	.6	.6	0	0	0	0	0
31.....	.1	.....	.2	0	.....	.6	.....	0	.....	0	0	.....

Dry Creek at Hawarden, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	0	0	*0	0	0	0	0.4	0	*30	0.7	0	*0
2.....	*0	0	0	0	*0	*28	.3	0	13	.5	42	0
3.....	0	0	0	0	0	24	.2	0	7.9	.3	13	0
4.....	0	*0	0	0	0	10	.1	1.0	4.9	.1	*3.1	0
5.....	0	0	0	*0	0	5.0	0	*0.1	3.2	.1	1.9	0
6.....	0	0	0	0	0	1.0	* 0	35	1.6	0	1.1	0
7.....	0	0	0	0	0	.6	0	6.0	1.6	*0	.3	0
8.....	0	0	0	0	0	.8	0	2.2	1.2	.1	0	0
9.....	0	0	0	0	0	1.5	0	1.1	.8	.1	0	0
10.....	0	0	0	0	0	3.0	0	.9	.5	.1	0	0
11.....	0	0	0	0	0	7.0	0	.4	.4	0	0	0
12.....	0	0	0	0	0	5.0	0	.2	4.0	.1	0	0
13.....	0	0	0	0	0	4.0	0	.1	.7	.1	0	0
14.....	0	0	0	0	0	3.1	0	0	0	0	1.9	0
15.....	0	0	0	0	0	1.9	0	0	0	0	2.8	0
16.....	0	0	0	0	0	1.7	0	0	0	0	2.0	0
17.....	0	0	0	0	0	1.5	0	0	0	.2	2.0	0
18.....	0	0	0	0	0	1.4	0	0	0	.2	1.0	0
19.....	0	0	0	0	0	1.3	0	0	0	.2	.5	0
20.....	0	0	0	0	0	1.2	0	1.4	0	.1	.2	0
21.....	0	0	0	0	0	1.3	0	22	0	0	0	0
22.....	0	0	0	0	0	1.4	0	2.3	0	0	0	0
23.....	0	0	0	0	0	1.1	0	1.0	0	0	0	0
24.....	0	0	0	0	0	.8	0	.5	0	0	0	0
25.....	0	0	0	0	0	.3	0	.4	.2	0	0	0
26.....	0	0	0	0	0	.2	0	.2	.4	0	0	0
27.....	0	0	0	0	0	.2	0	.2	.8	0	0	0
28.....	0	0	0	0	0	.1	0	192	.6	0	0	0
29.....	0	0	0	0	0	.2	0	59	.3	0	0	0
30.....	0	0	0	0	0	.8	0	52	.3	0	0	0
31.....	0	0	0	0	0	1.1	0	516	0	0	0	0
1959-60												
1.....	0	0.1	0.2	0.5	0	0	746	2.2	*4.0	1.6	0.2	2.4
2.....	0	.1	.3	.2	*0	*0	1,210	1.9	3.8	1.4	.2	1.4
3.....	0	.2	.3	0	0	0	98	*1.7	3.5	1.2	.2	1.0
4.....	0	.2	*.4	0	0	0	86	2.3	3.0	1.0	.2	.8
5.....	*0	.1	.4	0	0	0	7.3	2.4	2.8	.9	.8	.6
6.....	0	0	.4	* 0	0	0	3.9	3.5	2.7	.7	1.0	.4
7.....	0	0	.3	0	0	0	3.1	3.1	2.6	.5	1.0	.3
8.....	0	0	.4	0	0	0	2.6	3.1	2.4	.4	1.0	8.8
9.....	0	0	.3	0	0	0	2.2	2.6	2.6	.4	1.0	19
10.....	0	0	.3	0	0	0	1.9	2.3	2.7	.4	.8	5.1
11.....	0	0	.4	0	0	0	2.0	2.0	2.8	.3	.6	3.3
12.....	0	0	.3	0	0	0	*84	1.9	2.7	.4	.3	2.2
13.....	0	0	.3	0	0	0	87	1.8	2.7	.7	.3	1.6
14.....	0	0	.3	0	0	0	15	1.7	2.6	1.1	.2	1.4
15.....	0	0	.4	0	0	0	6.1	1.5	2.4	1.0	.2	1.2
16.....	0	0	.4	0	0	0	4.7	3.5	2.4	.8	.2	1.0
17.....	0	0	.4	0	0	0	4.2	3.2	2.6	.6	.3	1.5
18.....	0	0	.4	0	0	0	3.6	3.5	2.8	1.4	.6	1.8
19.....	0	.1	.3	0	0	0	3.2	6.7	2.8	2.7	.5	2.5
20.....	0	.1	.2	0	0	0	2.7	13	2.6	1.9	.6	1.9
21.....	0	.1	.2	0	0	0	2.5	160	2.6	1.6	.5	1.8
22.....	0	.1	.2	0	0	.2	2.4	47	2.5	1.2	.3	24
23.....	0	.1	.2	0	0	1.0	2.2	25	2.4	.8	.7	6.7
24.....	0	.1	.2	0	0	5.0	2.0	16	2.0	.6	2.5	4.4
25.....	0	.1	.3	0	0	10	2.0	12	1.8	.3	1.7	3.1
26.....	0	0	1.2	0	0	20	1.9	10	1.6	.2	1.3	2.5
27.....	0	0	1.6	0	0	250	1.8	7.5	1.9	.4	.8	2.3
28.....	0	0	1.5	0	0	*1,130	1.8	6.0	1.2	.4	8.0	1.9
29.....	0	.1	2.5	0	0	660	1.9	5.5	1.7	.3	7.6	1.8
30.....	0	.1	1.5	0	0	156	1.9	5.0	1.8	.2	5.7	1.5
31.....	0	0	1.0	0	0	25	0	4.5	0	.2	3.1	0

Dry Creek at Hawarden, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.07	0.06	0	0	0.01	1.41	0.89	0.50	0.55	2.00	4.65	0
1956-57.....	0	.02	.03	0	.03	.73	.41	.27	7.24	13.1	.53	2.79
1957-58.....	.12	.18	.21	.11	1.04	.60	1.23	.14	.07	0	0	0
1958-59.....	0	0	0	0	0	3.53	.03	29.1	2.41	.09	2.32	0
1959-60.....	0	.05	.55	.02	0	72.8	79.8	11.7	2.53	.83	1.37	3.61

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.0014	0.0012	0	0	0.00021	0.029	0.018	0.010	0.011	0.041	0.096	0
1956-57.....	0	0.0041	0.0062	0	0.0062	0.015	0.085	0.056	0.150	0.271	0.11	0.658
1957-58.....	.0025	.0037	.0043	.0023	.021	.012	.025	.0029	.00014	0	0	0
1958-59.....	0	0	0	0	0	0.73	0.0062	.601	.050	.0019	0.048	0
1959-60.....	0	.0010	.011	.00041	0	1.50	1.65	.242	.052	.017	.028	.075

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.002	0.001	0	0	0.0003	0.03	0.02	0.01	0.01	0.05	0.11	0
1956-57.....	0	.0004	.0007	0	.0007	.02	.009	.006	.17	.31	.01	.06
1957-58.....	.003	.004	.005	.003	.02	.01	.03	.003	.0002	0	0	0
1958-59.....	0	0	0	0	0	.08	.0008	.69	.06	.002	.06	0
1959-60.....	0	.001	.01	.0005	0	1.73	1.84	.28	.06	.02	.03	.08

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	4.2	3.4	0	0	0.8	87	53	31	33	123	287	0
1956-57.....	0	1.0	1.8	0	1.8	45	24	17	431	803	33	166
1957-58.....	7.5	11	13	6.5	58	37	73	8.7	.4	0	0	0
1958-59.....	0	0	0	0	0	217	2.0	1,790	144	5.8	142	0
1959-60.....	0	3.2	34	1.4	0	4,480	4,750	719	151	51	84	215

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30							Calendar year			
	Momentary maximum			Min-imum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet
	Date	Gage height in feet	Dis-charge								
1955									1.44	0.41	1,040
1956	July 31, 1956.....	8.09	152	0	0.86	0.0178	0.23	.622	.85	.23	618
1957	July 4, 1957.....	12.00	606	0	2.10	.043	.59	1,520	2.14	.60	1,550
1958	Apr. 6, 1958.....	5.92	17	0	.30	.006	.08	215	.25	.07	184
1959	May 31, 1959.....	14.75	1,000	0	3.18	.066	.89	2,300	3.23	.90	2,340
1960	Apr. 2, 1960.....	15.36	3,000	0	14.4	.298	4.05	10,490			

Peak Discharge (base, 300 cfs)

1955-56: No peak above base.

1956-57: July 4 (6:30 a.m.) 606 cfs (12.00 ft.).

1957-58: No peak above base.

1958-59: May 28 (6 p.m.) 376 cfs (11.18 ft.); May 31 (8:30 a.m.) 1,000 cfs (14.75 ft.).

1959-60: Mar. 28 (2:30 a.m.) 2,430 cfs (15.10 ft.); Apr. 2 (3:30 a.m.) 3,000 cfs (15.36 ft.); Apr. 12 (7 p.m.) 388 cfs (10.32 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 14 to Dec. 31, 1955; Jan. 1 to Mar. 30, Dec. 30, 31, 1956; Feb. 21, 22, Mar. 6, 13, Dec. 10-31, 1957; Jan. 1, 2, 12-22, Feb. 22-26, 1958; Mar. 4-13, Dec. 28-31, 1959; Jan. 1-3, Mar. 22-27, 1960. No gage-height record Mar. 7-12, 1957; Feb. 27 to Mar. 4, 1958; Nov. 19 to Dec. 3, 1959; May 26-31, 1960.

Big Sioux River at Akron, Iowa

LOCATION.—Lat. 42°49'40", long 96°33'50", in W½ sec. 31, T. 93 N., R. 48 W., on left bank 300 ft. downstream from highway bridge in Akron and 2¾ miles upstream from Union Creek.

DRAINAGE AREA.—9,030 sq. mi., approximately, of which about 1,970 sq. mi. is probably noncontributing. (Revised in 1955.)

RECORDS AVAILABLE.—October 1928 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 1,118.90 ft. above mean sea level, datum of 1929. Prior to Dec. 3, 1934, chain gage at bridge 300 ft. upstream at same datum.

AVERAGE DISCHARGE.—32 years, 828 cfs (599,400 acre-ft. per year).

EXTREMES.—1928-60: Maximum discharge, 49,500 cfs Apr. 1, 1960 (gage height, 21.56 ft.); minimum daily, 7 cfs Feb. 26-28, 1936.

REMARKS.—Bankfull stage is about gage height, 17 ft.

REVISIONS (water years).—WSP 1309: 1929(M), 1931-33(M), 1936 (M), 1938(M), 1940(M).

Daily Discharge, in Cubic Feet per Second, Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	42	53	*30	38	*31	55	503	230	122	222	*293	195
2.....	42	*55	33	38	32	70	558	*236	121	193	276	195
3.....	45	49	34	38	32	65	*604	260	120	444	262	254
4.....	47	52	35	37	33	60	604	272	116	543	266	209
5.....	68	56	36	37	34	55	601	282	303	*421	274	190
6.....	67	55	35	37	35	55	598	295	756	331	254	175
7.....	55	48	34	37	35	50	569	293	*658	297	*287	168
8.....	65	43	33	36	34	50	526	266	596	313	443	157
9.....	66	61	33	37	35	55	484	264	435	333	405	*146
10.....	59	63	33	37	34	60	448	*256	311	306	348	145
11.....	56	64	33	36	34	60	413	254	236	260	410	138
12.....	*55	63	33	34	32	55	403	246	191	246	616	135
13.....	53	65	33	34	30	60	*405	256	*160	*226	1,190	135
14.....	49	*47	*34	35	29	65	400	256	148	197	1,310	*129
15.....	49	45	34	34	29	*65	372	266	135	252	*1,390	115
16.....	51	40	32	33	30	65	350	*338	122	692	1,210	109
17.....	52	40	30	32	*30	70	343	387	120	*1,740	979	106
18.....	53	40	30	32	30	70	324	343	120	*1,220	818	108
19.....	*54	45	29	*32	30	75	*306	280	112	*784	685	104
20.....	56	50	29	32	30	75	293	248	195	*552	575	97
21.....	55	55	30	32	30	80	280	222	*182	467	*506	*97
22.....	54	60	30	30	32	90	264	197	236	413	443	98
23.....	56	55	31	29	33	95	254	179	230	362	390	97
24.....	56	55	32	29	35	120	*246	165	186	322	345	95
25.....	57	50	32	29	35	150	244	*157	165	278	313	95
26.....	56	55	31	28	34	230	236	150	821	256	289	*90
27.....	*57	50	*34	29	34	*326	236	146	493	228	258	84
28.....	58	45	35	30	*34	345	224	140	*306	213	240	81
29.....	60	40	35	30	40	459	234	143	291	195	226	81
30.....	57	35	35	30	.....	*670	232	*140	258	184	*215	86
31.....	54	.....	36	30	.....	581	.....	133	.....	188	200	.....

Big Sioux River at Akron, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	88	81	105	60	25	80	1,200	*405	684	2,340	755	516
2	*82	81	105	60	25	80	*988	386	668	*1,970	677	510
3	78	85	90	55	25	90	848	367	650	1,940	677	631
4	78	92	75	55	25	100	755	356	659	4,220	591	1,110
5	73	125	65	55	25	95	687	341	665	5,820	522	956
6	70	133	60	50	30	*80	612	321	665	5,520	472	*1,050
7	69	133	60	50	35	85	573	307	*653	4,680	435	767
8	69	125	65	50	40	90	519	*289	634	3,260	441	653
9	*69	125	70	50	45	95	*475	289	622	2,490	*413	567
10	69	122	75	*50	50	100	449	294	600	1,980	600	493
11	69	119	*80	45	55	*133	449	307	588	1,720	1,090	441
12	68	114	75	45	60	145	427	285	570	*1,560	873	396
13	64	111	70	45	60	137	416	283	*570	1,370	615	*354
14	68	110	65	45	*60	157	410	303	570	1,440	510	338
15	68	108	65	45	55	117	402	334	591	1,160	464	324
16	68	85	65	45	55	130	396	386	618	1,000	*430	305
17	70	85	65	35	50	129	388	*380	622	898	399	294
18	69	95	65	35	50	148	*375	369	*1,460	*804	375	278
19	*65	95	60	30	55	134	367	375	*4,260	761	346	296
20	68	85	60	30	60	*165	377	380	*12,100	761	324	*280
21	69	*80	60	35	*65	152	421	424	*18,500	860	307	316
22	72	70	60	*30	60	148	1,050	*438	*17,700	832	346	331
23	72	85	60	30	65	163	478	917	*14,600	*1,370	*375	298
24	*67	80	60	30	70	244	*742	543	*9,820	2,470	441	283
25	73	90	60	25	75	862	612	567	*7,820	2,100	801	276
26	70	75	60	25	75	*3,850	570	555	*4,670	1,510	826	270
27	70	70	*60	25	80	*4,240	516	546	3,080	1,360	671	255
28	77	75	65	25	*80	*3,110	475	*558	3,380	1,870	603	259
29	78	70	65	25	.....	*2,150	452	585	*3,160	1,110	570	261
30	81	*100	60	*25	.....	1,910	427	631	2,640	*920	*537	*253
31	*82	.....	60	25	.....	1,640	.....	*671	.....	820	522	.....
1957-58												
1	243	255	265	170	110	420	*530	*623	195	142	90	35
2	232	269	246	155	110	810	557	586	195	135	84	34
3	224	263	259	145	105	720	573	557	*198	134	84	35
4	214	286	269	130	95	570	540	530	209	144	76	33
5	209	316	286	125	90	460	649	505	230	138	*72	36
6	206	309	*288	125	80	450	613	517	344	154	70	41
7	208	313	252	125	80	360	820	540	425	162	67	44
8	208	*309	234	120	80	320	*1,020	*517	464	146	64	40
9	208	292	234	120	75	281	1,040	492	391	*157	58	*38
10	209	265	255	*115	70	280	905	470	336	163	54	34
11	*208	269	210	115	70	328	865	440	304	170	54	33
12	208	288	205	115	60	286	800	414	281	180	*53	33
13	209	297	*200	120	60	284	760	399	*275	166	53	31
14	208	297	205	125	*55	*269	730	*397	253	152	52	38
15	211	*295	230	125	55	261	700	377	241	*137	50	38
16	212	297	245	130	55	246	*659	349	234	125	48	*37
17	214	292	245	130	55	236	659	333	219	120	45	37
18	*234	301	245	130	60	234	649	316	208	123	44	52
19	248	295	240	130	60	229	636	295	*195	120	*44	51
20	250	273	*240	130	70	232	616	281	184	113	61	44
21	259	253	240	130	70	*227	606	269	178	109	51	43
22	252	*210	240	130	80	230	596	*255	172	*106	43	38
23	250	208	230	130	105	246	606	243	169	102	42	*36
24	*250	275	215	*125	125	279	633	239	170	94	40	38
25	257	290	215	120	135	328	*629	230	174	94	39	35
26	261	281	180	125	150	*405	649	232	170	91	*39	35
27	261	290	190	120	*215	540	659	227	160	102	39	34
28	261	299	140	120	390	583	669	216	151	97	39	33
29	257	*309	140	120	.....	560	652	*208	146	*93	38	32
30	253	*286	160	*115	.....	583	642	201	*139	93	38	31
31	*246	.....	*175	115	.....	573	.....	200	.....	93	*37	.....

Big Sioux River at Akron, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	*29	39	*37	35	15	20	279	109	*5,040	239	62	232
2	30	40	40	35	15	75	263	107	*6,470	220	88	244
3	31	39	40	25	15	110	253	113	*7,810	212	*392	180
4	32	39	40	25	15	160	232	120	3,150	201	940	152
5	30	42	35	25	15	130	225	219	*1,720	188	749	141
6	29	38	30	30	15	100	206	243	1,360	175	472	128
7	32	39	30	35	15	85	*209	281	1,130	164	301	117
8	*33	42	30	35	15	65	196	*246	*986	158	236	107
9	35	45	25	35	12	65	186	253	851	148	192	99
10	38	41	30	35	12	130	178	259	752	144	168	87
11	34	43	30	30	12	180	174	243	680	137	144	81
12	32	45	25	30	15	*160	175	222	643	132	*125	74
13	31	*46	25	30	15	190	169	209	573	127	125	72
14	31	48	25	25	15	250	*160	195	504	117	190	69
15	31	47	*26	25	15	320	158	184	460	*113	160	69
16	*35	47	30	20	15	350	156	175	420	109	163	70
17	36	57	30	15	15	*365	156	170	388	118	154	*74
18	33	60	30	15	14	360	151	160	*355	109	131	80
19	30	59	30	15	*13	470	151	151	328	103	120	81
20	30	67	25	15	12	*437	158	176	313	98	111	90
21	29	67	25	14	13	388	156	349	306	94	104	87
22	30	69	30	14	13	454	151	*760	281	91	102	82
23	*32	70	30	14	13	*448	*141	540	*253	86	102	77
24	31	70	35	15	13	489	137	397	241	77	107	689
25	35	69	35	15	14	428	132	318	234	74	110	755
26	36	45	40	15	14	420	127	281	377	70	176	469
27	35	30	40	15	*14	*374	123	257	316	68	209	301
28	37	30	45	15	15	311	123	*438	288	63	243	227
29	38	30	40	16	.....	309	116	2,060	252	58	328	192
30	*38	35	*38	*16	.....	*297	*110	*3,750	*246	54	304	169
31	38	.....	35	15	.....	288	.....	4,620	.....	*53	*265	.....
1959-60												
1	151	123	140	190	*65	70	42,700	1,250	1,440	663	*210	472
2	*146	130	140	190	70	70	43,900	1,220	1,340	564	206	448
3	142	148	145	180	75	70	*38,100	1,160	1,190	522	200	428
4	134	162	145	175	75	70	31,600	1,120	1,090	496	191	402
5	128	166	140	165	75	70	23,200	1,070	988	463	202	364
6	120	114	140	160	80	70	18,100	1,110	891	434	287	309
7	114	154	145	165	80	65	*15,900	1,230	830	411	294	309
8	118	186	140	165	85	65	14,000	1,480	765	400	283	346
9	111	195	140	165	90	65	12,400	1,450	714	386	254	515
10	116	*195	140	160	95	65	9,810	*1,290	694	372	228	607
11	114	181	135	160	95	65	*7,780	1,140	667	359	210	643
12	117	166	140	*160	90	65	6,600	1,040	663	359	198	646
13	117	125	150	155	90	60	6,750	954	*667	391	187	564
14	114	141	135	145	90	60	*8,130	888	660	469	180	*478
15	110	135	135	140	85	*60	8,790	830	636	451	173	419
16	*110	135	*135	130	*85	60	7,560	946	633	402	169	389
17	109	140	140	125	80	60	4,590	888	691	375	161	378
18	107	140	140	120	80	60	3,420	971	779	380	160	364
19	103	145	140	110	80	60	2,860	1,010	926	431	*162	402
20	102	145	140	100	80	60	2,500	1,560	954	466	180	626
21	99	145	145	90	80	60	*2,260	2,080	874	*512	196	643
22	107	150	145	80	80	60	2,050	2,800	830	445	182	587
23	110	155	150	70	80	60	1,880	2,670	803	389	178	684
24	104	157	150	65	75	60	1,740	2,200	772	349	204	776
25	114	155	150	60	75	60	1,610	1,910	738	321	280	820
26	130	155	180	55	75	60	1,490	1,590	680	297	299	765
27	114	150	195	55	70	500	1,390	2,020	657	278	251	694
28	110	140	210	55	70	4,000	*1,330	2,340	721	265	344	643
29	110	140	215	55	*70	9,000	1,290	2,260	653	258	515	*597
30	*116	*140	*195	60	.....	*20,200	1,270	1,890	*796	241	351	570
31	120	.....	195	60	.....	27,300	.....	*1,570	.....	224	*512	.....

Big Sioux River at Akron, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	55.0	51.1	32.7	33.3	32.6	141	385	235	275	409	507	130
1956-57	72.0	96.8	68.1	39.8	52.0	670	576	411	3,794	1,964	549	445
1957-58	231	283	225	127	98.8	382	689	370	234	128	53.8	37.3
1958-59	32.9	47.9	32.5	22.5	14.1	265	172	568	1,224	123	228	176
1959-60	117	150	153	121	80.0	2,021	10,830	1,482	825	399	247	530

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.0078	0.0072	0.0046	0.0047	0.0016	0.020	0.055	0.033	0.039	0.058	0.072	0.018
1956-57	.010	.014	.0096	.0056	.0074	.095	.082	.058	.537	.278	.078	.063
1957-58	.033	.040	.032	.018	.014	.051	.098	.052	.033	.018	.0076	.0053
1958-59	.0047	.0068	.0046	.0032	.0020	.038	.024	.080	.173	.017	.032	.025
1959-60	.017	.021	.022	.017	.011	.286	1.53	.210	.117	.057	.035	.075

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.009	0.008	0.005	0.005	0.005	0.02	0.06	0.04	0.04	0.07	0.08	0.02
1956-57	.01	.02	.01	.007	.008	.11	.09	.07	.60	.32	.09	.07
1957-58	.04	.04	.04	.02	.01	.06	.11	.06	.04	.02	.009	.006
1958-59	.005	.008	.005	.004	.002	.04	.03	.09	.19	.02	.04	.03
1959-60	.02	.02	.02	.02	.01	.33	1.71	.24	.13	.07	.04	2.69

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	3,380	3,040	2,010	2,050	1,880	8,690	22,920	14,480	16,350	25,150	31,170	7,760
1956-57	4,430	5,760	4,190	2,450	2,890	41,170	34,300	25,300	225,800	120,700	33,730	26,500
1957-58	14,220	16,840	13,840	7,800	5,480	23,480	40,980	22,730	13,900	7,840	3,310	2,220
1958-59	2,030	2,850	2,000	1,390	781	16,320	10,220	34,920	72,850	7,540	14,030	10,500
1959-60	7,180	8,950	9,390	7,470	4,600	124,300	644,600	91,110	49,080	24,540	15,170	31,510

Yearly Discharge, in Cubic Feet per Second

Year	Water year ending September 30							Calendar year			
	Momentary maximum			Min-imum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet
	Date	Gage height in feet	Dis-charge								
1955									260	0.50	188,400
1956	July 17, 1956	8.13	1,840	28	191	0.027	0.36	138,900	199	.38	144,800
1957	June 21, 1957	19.57	19,400	25	728	.103	1.40	527,200	770	1.48	557,700
1958	April 8, 1958	5.98	1,120	31	238	.034	.46	172,600	186	.35	134,600
1959	June 3, 1959	16.93	8,430	12	242	.034	.46	175,400	268	.51	194,100
1960	April 1, 1960	21.56	49,500	55	1,402	.199	2.69	1,018,000			

Peak Discharge base (3,500 cfs)

1955-56: No peak above base.

1956-57: Mar. 26 (11 p.m.) 4,580 cfs (12.14 ft.); June 21 (11:30 a.m.) 19,400 cfs (19.57 ft.); July 5 (6:30 a.m.) 5,980 cfs (14.40 ft.).

1957-58: No peak above base.

1958-59: June 3 (7:30 a.m.) 8,430 cfs (16.93 ft.).

1959-60: Apr. 1 (7 p.m.) 49,500 cfs (21.56 ft.); Apr. 15 (3 p.m.) 8,930 cfs (16.18 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 15 to Dec. 31, 1955; Jan. 1 to Mar. 26, Nov. 16 to Dec. 31, 1956; Jan. 1 to Mar. 10, Dec. 11-31, 1957; Jan. 1 to Mar. 8, Nov. 26 to Dec. 31, 1958; Jan. 1 to Mar. 19, Nov. 15 to Dec. 31, 1959; Jan. 1 to Mar. 29, 1960.

Missouri River at Sioux City, Iowa

LOCATION.—Lat. $42^{\circ}29'10''$, long. $96^{\circ}24'45''$, in NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 16, 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, 2.0 miles downstream from Big Sioux River.

DRAINAGE AREA.—314,600 square miles, approximately.

RECORDS AVAILABLE.—October 1897 to September 1960 in reports of Geological Survey. Monthly discharge only for some periods, published in WSP 1310. January 1879 to December 1890 (monthly discharges only) in House Document 238, 73rd Congress, 2d session, Missouri River. Gage height records collected in this vicinity September 1878 to December 1899 are contained in reports of Missouri River Commission and since July 1889 are contained in reports of U. S. Weather Bureau.

GAGE.—Water-stage recorder. Datum of gage is 1,076.96 ft. above mean sea level, datum of 1929. Sept. 2, 1878, to Dec. 31, 1905, staff, cable, and chain gages at various locations within 1.7 miles of present site and at various datums. Jan. 1, 1906, to Feb. 14, 1935, chain gage at present site and datum.

AVERAGE DISCHARGE.—63 years (1897-1960), 32,660 cfs (23,640,000 acre-ft. per year).

EXTREMES.—1928-31, 1938-60: Maximum discharge, 441,000 cfs Apr. 14, 1952; maximum gage height, 24.28 ft. Apr. 14, 1952; minimum discharge, 2,500 cfs Dec. 29, 1941; minimum gage height observed, -3.34 ft. Dec. 27, 1946.

REMARKS.—Flow partly regulated by upstream main stem reservoirs. Discharge measurements generally made six times a month, three times a month during winter.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	31,200	29,800	9,400	8,800	8,800	11,300	28,600	30,900	28,900	30,200	33,400	34,000
2	31,200	27,200	10,500	8,550	8,800	11,300	28,600	29,200	28,900	30,900	33,700	32,600
3	31,600	24,200	12,000	9,300	8,800	12,700	31,200	28,900	29,800	30,900	32,300	32,600
4	32,000	21,500	11,300	9,400	8,800	11,900	30,900	29,800	29,800	28,300	31,200	32,600
5	32,600	18,000	10,700	9,500	8,800	11,500	30,600	29,500	29,800	27,400	31,200	32,300
6	32,600	15,700	9,800	9,500	8,800	11,300	30,900	29,200	30,900	27,100	31,600	32,000
7	32,600	12,900	9,800	9,450	8,800	12,100	29,500	28,900	30,600	26,800	32,300	30,600
8	32,000	10,900	9,400	9,300	8,700	13,500	28,000	29,200	29,200	27,100	32,600	30,900
9	31,200	10,200	8,800	9,300	8,700	14,100	28,300	29,200	28,600	28,300	32,300	32,000
10	31,200	10,000	8,500	9,300	8,600	16,300	28,300	29,500	29,200	28,900	33,700	33,000
11	31,200	10,000	8,400	9,300	8,800	18,500	28,300	29,800	28,900	31,000	33,000	33,000
12	30,900	10,000	8,300	9,300	9,000	19,800	28,600	29,500	28,900	34,300	33,000	33,000
13	30,900	9,900	8,300	9,200	8,900	21,000	29,200	28,900	29,800	31,600	33,700	34,000
14	31,200	9,750	8,300	9,200	8,800	27,800	29,500	29,200	31,200	30,900	34,400	33,400
15	31,600	9,900	8,250	9,000	8,800	33,700	29,500	28,900	31,200	32,300	34,800	35,400
16	31,600	9,000	8,250	8,800	8,800	32,600	29,800	28,600	32,300	31,200	35,100	35,400
17	31,600	8,800	8,500	8,550	8,900	30,600	29,500	28,600	32,300	30,600	35,400	35,100
18	31,600	8,800	9,200	8,500	9,000	30,900	29,200	29,200	32,600	30,900	36,500	35,400
19	31,600	8,800	9,600	8,400	9,100	30,900	29,200	29,200	32,600	29,500	34,400	35,400
20	32,600	10,000	10,200	8,400	9,300	32,000	29,500	30,600	32,000	28,300	33,000	35,100
21	32,600	11,000	10,300	8,400	9,400	31,200	29,200	30,900	32,600	27,700	34,000	34,800
22	32,600	10,900	10,400	8,500	9,600	32,300	29,500	30,600	34,000	28,000	33,700	34,400
23	33,000	9,900	10,500	8,700	9,800	31,600	29,800	30,200	32,300	28,300	33,000	33,700
24	33,000	8,400	10,400	9,000	10,200	28,000	30,200	31,600	29,200	29,200	33,700	33,000
25	32,600	8,250	10,200	9,200	10,500	29,500	31,200	29,800	30,600	30,600	33,400	33,700
26	31,600	8,100	9,500	9,400	11,000	29,500	31,600	30,200	33,000	33,000	32,600	33,400
27	32,600	8,850	9,250	9,300	11,300	30,900	31,600	29,500	29,800	33,700	33,400	34,400
28	32,300	8,500	9,000	9,300	11,300	31,200	31,600	29,500	27,100	34,000	33,400	34,400
29	32,000	8,600	8,800	9,200	11,300	29,800	31,200	29,800	27,700	34,400	34,400	34,400
30	32,000	8,800	8,600	9,000	.....	28,900	31,200	29,500	29,800	34,400	34,400	35,100
31	31,600	.....	8,800	8,100	.....	29,200	.....	28,900	.....	34,400	35,100	.....

Missouri River at Sioux City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	35,100	15,800	8,390	8,900	7,800	9,700	10,200	28,300	26,800	29,200	31,200	30,200
2	35,100	15,800	8,520	8,700	7,700	9,600	9,820	29,500	21,400	31,600	29,200	30,900
3	35,400	15,800	8,650	8,500	7,600	9,200	9,560	29,500	25,000	29,800	28,300	30,200
4	35,100	15,600	8,650	8,600	7,600	9,100	9,690	29,200	26,800	25,900	28,900	29,800
5	35,100	15,400	8,650	8,500	7,600	9,100	9,950	29,200	27,100	28,300	29,500	30,900
6	34,800	15,400	8,260	8,400	7,800	8,650	9,560	30,200	27,400	30,600	30,200	31,600
7	33,700	15,200	9,000	8,600	8,400	8,390	9,170	30,900	27,400	29,200	30,200	29,500
8	34,600	15,000	9,800	8,700	8,600	8,390	9,170	31,600	27,100	30,200	30,600	28,600
9	34,000	14,900	11,000	8,200	10,000	8,130	9,040	32,600	27,100	27,100	33,000	28,600
10	34,400	15,000	12,000	6,000	9,800	8,130	9,040	33,000	27,100	26,800	33,000	28,900
11	34,800	15,000	13,200	7,500	9,600	8,390	9,040	34,400	27,700	27,100	32,600	29,200
12	33,700	14,600	11,500	8,900	9,400	8,650	8,910	34,000	29,200	27,100	33,400	27,100
13	34,800	14,600	9,600	9,000	9,200	8,390	8,780	32,300	32,300	28,600	32,600	27,100
14	34,800	15,000	8,600	9,000	9,100	8,780	9,560	32,300	30,900	32,000	32,600	28,300
15	34,400	14,700	8,800	9,200	9,000	7,520	11,200	29,500	27,100	32,000	31,600	27,100
16	33,400	12,600	8,700	9,400	9,000	8,130	13,400	25,900	22,400	32,000	30,900	26,200
17	31,200	11,000	8,700	9,600	8,900	9,430	16,400	27,400	25,300	29,800	29,500	23,100
18	28,300	10,100	8,400	9,700	8,600	8,780	19,500	21,800	20,200	30,200	30,200	25,300
19	24,700	9,950	7,400	10,000	8,500	8,780	22,800	22,600	22,400	30,900	30,900	28,900
20	22,600	10,100	8,600	10,000	8,900	8,650	27,100	24,400	22,100	32,300	29,800	29,200
21	19,800	9,690	9,200	9,400	9,300	8,650	29,800	27,400	20,600	31,600	31,600	28,000
22	17,800	8,910	9,200	9,000	10,500	8,780	29,800	23,600	23,400	26,500	30,600	26,500
23	16,100	8,650	9,100	8,600	8,900	8,780	29,800	17,800	25,900	24,700	30,600	27,400
24	15,800	8,650	9,000	8,500	10,500	8,650	28,600	18,800	28,600	31,200	30,600	26,500
25	15,800	8,520	8,900	8,500	10,300	8,650	27,700	22,100	32,600	32,600	29,800	27,400
26	15,800	8,130	8,900	8,600	11,200	9,170	27,400	26,800	33,400	31,200	30,600	27,700
27	15,600	8,390	9,000	8,600	10,200	11,700	27,100	25,900	29,800	31,200	30,600	28,600
28	14,900	8,260	9,000	8,400	9,700	12,200	27,100	25,300	28,300	32,300	30,900	30,200
29	14,900	7,880	9,000	8,400	.....	11,700	27,100	23,600	25,600	34,400	30,900	29,500
30	15,200	8,780	9,000	8,780	.....	10,700	27,100	25,900	26,500	33,000	30,600	30,200
31	15,900	.....	9,000	7,800	.....	10,300	.....	27,400	.....	32,300	30,200	.....
1957-58												
1	29,100	15,800	8,200	9,300	8,000	10,600	20,200	26,000	28,600	30,900	21,300	27,800
2	29,800	16,400	8,090	10,000	8,500	9,420	18,700	26,400	27,800	35,400	20,900	27,400
3	30,100	16,200	8,090	10,500	7,000	9,920	19,200	26,600	28,400	31,100	22,000	28,600
4	30,100	16,000	8,200	10,500	7,400	10,600	20,900	26,600	28,100	23,800	23,600	28,600
5	32,100	15,800	8,090	10,500	9,400	10,200	24,000	25,600	28,100	23,400	25,800	29,600
6	32,400	15,800	8,200	10,500	10,200	9,420	24,000	26,800	28,100	24,800	27,600	29,100
7	33,600	15,800	8,090	10,000	9,500	9,300	22,400	26,600	28,800	27,100	28,800	28,100
8	33,900	15,200	8,090	8,500	8,600	9,180	24,600	27,400	28,100	28,400	27,400	27,600
9	33,000	15,000	8,090	8,100	8,900	9,180	27,100	27,400	28,400	29,600	27,100	27,800
10	30,900	15,100	8,000	9,000	9,000	9,050	27,100	27,400	28,100	30,100	28,100	27,800
11	30,600	15,100	7,000	9,500	9,300	9,050	27,100	27,400	26,400	26,600	28,800	27,800
12	30,900	15,400	4,000	10,000	9,600	9,050	26,600	27,400	26,400	25,200	29,600	27,600
13	31,200	15,600	5,500	9,600	9,200	9,050	26,000	26,800	26,800	25,200	29,800	28,400
14	31,500	15,600	8,000	9,300	9,400	9,050	25,800	27,100	26,000	25,800	29,600	29,600
15	32,100	15,200	10,000	9,300	9,700	9,050	25,600	26,200	25,200	27,600	27,600	29,400
16	30,600	14,200	9,500	9,400	9,400	9,180	25,400	26,000	25,200	28,600	27,100	28,100
17	30,400	11,700	9,420	9,400	9,600	9,180	25,600	25,400	25,600	28,800	27,600	27,800
18	30,900	10,400	9,300	9,300	9,700	9,180	25,200	25,600	26,000	29,100	27,600	27,800
19	31,200	9,800	9,050	9,200	9,700	9,050	25,600	25,000	27,800	29,600	27,800	27,800
20	31,200	9,550	8,800	9,100	9,800	9,050	25,800	24,800	28,600	28,800	29,400	28,100
21	33,000	9,420	8,680	9,050	9,900	9,050	26,200	25,000	29,400	25,800	29,400	28,400
22	33,000	9,420	8,920	9,050	10,300	8,920	26,200	25,400	29,600	23,400	28,600	28,600
23	33,300	9,550	9,420	8,920	11,300	8,800	25,600	25,600	29,600	23,400	29,100	29,100
24	30,600	9,180	9,420	8,920	11,200	8,800	26,000	26,200	29,100	25,400	27,800	28,600
25	26,400	9,180	9,420	8,800	10,900	9,180	22,200	27,100	29,100	26,000	27,800	28,600
26	25,000	9,180	9,300	9,050	11,000	9,420	21,100	28,100	28,400	24,000	28,400	28,800
27	23,400	9,050	9,300	8,320	13,000	9,920	23,000	28,600	27,800	25,400	27,600	28,400
28	21,800	8,440	9,300	7,000	12,000	12,000	26,000	28,400	28,600	23,800	27,800	28,100
29	19,500	8,440	8,920	7,000	.....	13,800	26,000	28,600	29,600	24,600	28,400	28,600
30	17,600	8,200	8,800	8,000	.....	17,000	26,000	28,400	30,400	25,800	28,600	29,400
31	15,800	.....	8,600	8,500	.....	19,400	.....	30,100	.....	25,800	28,100	.....

Missouri River at Sioux City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	28,800	28,100	7,860	8,600	10,300	11,400	20,600	27,800	21,600	25,600	30,600	33,000
2	29,100	24,600	8,680	8,800	10,400	11,400	21,600	28,400	19,400	21,600	31,200	33,000
3	29,400	22,000	8,560	8,700	10,100	11,700	21,100	28,600	19,000	21,300	30,100	32,100
4	28,800	19,000	8,090	9,000	10,300	11,700	21,100	29,100	19,700	22,200	27,400	32,100
5	28,600	16,300	7,800	9,800	10,500	11,600	22,600	30,100	19,200	22,600	23,400	31,500
6	28,800	13,300	7,600	10,200	10,000	11,000	24,400	29,400	19,400	23,400	25,000	31,200
7	28,600	11,800	6,500	10,500	9,800	11,200	25,200	24,000	22,400	24,400	25,600	31,200
8	28,800	10,700	8,000	10,500	10,000	11,300	25,600	21,800	23,800	24,600	26,400	31,200
9	29,800	9,680	8,500	10,500	9,300	11,500	25,800	24,600	23,400	25,000	27,100	31,200
10	29,800	9,300	9,500	10,500	9,600	11,300	25,600	26,600	24,000	25,400	28,100	30,900
11	29,400	9,180	10,000	10,500	9,900	11,300	25,200	25,400	24,200	26,200	28,600	31,200
12	29,600	8,680	10,000	10,200	10,400	11,600	25,000	24,600	24,600	27,100	28,600	30,900
13	29,800	8,680	10,000	10,000	12,200	11,800	25,600	23,600	25,400	28,100	29,400	30,600
14	30,100	8,200	10,000	10,000	12,400	12,000	26,200	21,300	25,800	28,400	31,200	31,500
15	30,100	7,980	10,000	10,000	11,600	12,000	26,400	20,600	27,400	28,800	31,200	31,200
16	30,100	7,980	10,100	9,200	11,600	11,800	26,800	22,200	28,400	28,800	27,400	31,200
17	29,600	8,090	11,000	8,800	11,800	10,800	28,800	23,800	29,100	29,100	28,400	31,800
18	28,600	8,200	11,000	9,500	11,700	10,600	29,100	25,000	29,600	29,100	29,100	31,500
19	28,800	8,200	10,700	10,500	11,400	11,200	28,800	25,400	29,100	27,800	29,400	30,600
20	29,100	8,320	10,500	11,000	11,000	11,000	29,800	25,400	27,400	27,100	30,100	29,800
21	29,100	8,200	10,500	10,500	11,200	10,700	27,800	25,200	26,800	27,100	31,200	29,800
22	29,400	8,090	11,500	10,000	11,500	10,700	26,400	26,200	27,100	27,400	31,800	30,600
23	29,800	8,090	11,800	10,000	11,300	10,900	26,600	24,400	27,400	28,100	32,100	28,800
24	30,100	8,090	11,000	11,000	11,100	10,900	26,800	23,000	27,600	28,400	31,500	28,100
25	30,600	8,090	10,500	11,500	11,100	10,900	26,800	23,000	27,400	28,800	31,500	28,600
26	30,600	7,750	10,000	12,000	11,200	11,200	26,800	23,400	27,600	29,800	31,200	28,800
27	30,600	7,410	9,600	12,000	11,200	11,400	27,100	23,600	28,600	29,800	31,800	28,800
28	30,900	8,320	9,400	11,800	11,400	11,800	27,600	25,000	28,100	30,400	32,400	29,100
29	30,600	8,560	8,500	11,200	.....	12,400	26,800	27,100	27,100	30,600	32,400	28,800
30	30,600	7,980	8,200	10,500	.....	15,100	27,100	27,800	27,600	30,600	33,000	28,400
31	30,100	.....	8,600	10,000	.....	18,600	.....	31,200	.....	30,600	32,400	.....
1959-60												
1	27,800	27,600	8,500	9,500	8,600	8,000	52,600	24,600	21,300	23,200	29,400	26,400
2	27,600	24,800	8,500	9,500	8,600	8,000	78,200	24,800	21,400	22,400	29,800	29,400
3	28,100	21,800	9,000	9,800	8,800	8,000	95,100	24,800	21,400	22,000	29,600	30,600
4	27,100	19,500	9,200	10,200	9,000	7,800	89,100	26,800	21,400	22,800	29,400	30,900
5	27,100	17,800	9,600	10,800	9,000	7,800	79,400	26,200	21,100	24,400	30,600	30,400
6	27,100	14,400	8,800	11,200	9,000	9,000	69,800	26,800	21,300	25,200	33,900	30,600
7	27,600	12,100	8,800	11,000	9,000	11,000	62,000	24,200	21,400	26,000	32,100	30,100
8	28,400	10,800	8,800	11,000	9,200	11,000	57,100	21,100	24,400	27,100	29,600	29,800
9	27,800	10,200	8,800	10,200	9,400	10,000	53,500	22,800	27,600	27,400	29,100	30,400
10	27,100	9,500	8,680	10,000	9,400	8,500	50,800	24,000	29,400	27,600	28,400	28,800
11	27,100	9,200	8,680	10,000	9,200	8,500	45,800	24,200	26,800	27,800	28,400	27,600
12	27,400	9,000	8,560	9,200	9,000	8,400	40,500	24,000	23,000	29,100	28,400	27,400
13	27,600	8,800	8,560	8,600	9,000	8,400	38,900	23,600	22,600	29,400	28,800	27,800
14	27,600	7,400	8,560	8,600	9,000	8,300	37,700	23,800	23,000	25,400	29,100	29,400
15	28,100	7,000	8,800	8,600	9,000	8,200	36,500	24,800	22,600	25,000	29,400	30,400
16	28,100	7,200	9,180	8,000	9,000	8,000	35,100	26,800	24,200	25,600	29,800	30,900
17	28,100	7,600	9,550	8,000	8,800	8,500	33,000	28,100	25,000	26,600	30,100	30,400
18	27,800	8,500	9,300	8,000	8,600	9,000	29,800	26,200	22,200	27,800	30,900	30,600
19	28,100	9,500	9,420	7,600	8,400	9,500	25,600	25,600	22,000	28,800	31,800	30,100
20	28,800	11,500	9,420	6,800	8,400	9,000	23,000	25,000	23,600	28,400	31,800	29,800
21	28,800	11,200	9,550	7,600	8,400	9,000	21,800	26,800	24,600	27,800	31,200	30,100
22	29,100	10,500	9,550	8,000	8,600	9,000	24,000	26,200	21,600	28,600	31,200	30,100
23	28,800	9,600	9,550	8,200	8,600	8,800	24,200	24,400	21,600	29,400	31,200	30,100
24	27,600	9,200	9,550	8,600	8,600	8,800	24,200	23,000	21,800	29,800	31,500	29,400
25	27,100	8,800	9,800	9,000	8,600	8,800	24,000	21,800	22,400	29,800	32,400	27,400
26	27,800	8,600	9,800	9,200	8,400	8,800	23,600	22,000	24,000	29,600	30,100	26,800
27	27,400	8,500	9,920	9,200	8,400	13,000	23,400	20,800	25,400	29,600	29,100	27,100
28	27,400	8,500	10,200	9,000	8,200	20,000	23,800	20,000	22,000	29,600	34,200	27,400
29	28,100	8,400	9,680	8,600	8,200	30,000	24,600	20,900	25,200	29,400	38,800	27,400
30	28,600	8,500	9,600	8,600	.....	65,000	25,000	21,100	24,000	29,100	33,300	27,100
31	29,100	.....	9,500	8,600	.....	57,100	.....	21,100	.....	29,100	25,000	.....

Missouri River at Sioux City, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	31,900	12,220	9,460	9,005	9,359	23,740	29,820	29,580	30,450	30,460	33,520	33,650
1956-57	27,000	12,250	9,217	8,690	9,061	9,135	17,450	27,520	26,780	30,060	30,810	28,420
1957-58	29,190	12,660	8,445	9,149	9,696	10,130	24,510	26,810	27,940	26,890	27,390	28,380
1958-59	29,620	10,970	9,464	10,240	10,870	11,700	25,840	25,430	25,270	27,040	29,660	30,580
1959-60	27,880	11,530	9,187	9,090	8,772	13,330	42,400	24,070	23,270	27,220	30,590	29,160

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
1955-56	1,961,000	727,200	581,700	553,700	538,300	1,460,000
1956-57	1,660,000	728,700	566,700	534,300	503,200	561,700
1957-58	1,795,000	753,100	519,300	562,500	538,500	622,900
1958-59	1,821,000	652,800	581,900	629,400	603,600	719,600
1959-60	1,714,000	686,300	564,900	558,900	504,600	819,500

Monthly Runoff, in Acre-Feet

Water year	Apr.	May	June	July	Aug.	Sept.
1955-56	1,774,000	1,819,000	1,812,000	1,873,000	2,061,000	2,002,000
1956-57	1,038,000	1,692,000	1,594,000	1,849,000	1,895,000	1,691,000
1957-58	1,458,000	1,648,000	1,662,000	1,654,000	1,684,000	1,689,000
1958-59	1,537,000	1,564,000	1,504,000	1,663,000	1,824,000	1,820,000
1959-60	2,523,000	1,480,000	1,385,000	1,674,000	1,881,000	1,735,000

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30					Calendar year		
	Momentary maximum			Minimum day	Mean	Runoff in acre-feet	Runoff in acre-feet	
	Date	Gage height in feet	Discharge					Mean
1955						22,230	16,090,000	
1956	Aug. 18, 1956	7 10	38,900	8,100	23,640	17,160,000	23,210	16,850,000
1957	Oct. 3, 1956	(1)6 33	36,200	6,000	19,770	14,310,000	19,920	14,430,000
1958	July 2, 1958	7 28	39,500	4,000	20,150	14,590,000	20,130	14,570,000
1959	May 31, 1959	6 50	33,600	6,500	20,610	14,920,000	20,480	14,830,000
1960	Apr. 3, 1960	10 52	101,000	6,800	21,390	15,530,000		

(1) Maximum gage height, 6.43 ft. June 25, 1957.

Peak Discharge (Base, 80,000 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: No peak above base.

1958-59: No peak above base.

1959-60: Mar. 30 (6 p.m.) 92,400 cfs (9.96 ft.); Apr. 3 (7 p.m.) 101,000 cfs (10.52 ft.).

Notes to Tables of Daily Discharge

Stage-discharge relation affected by ice Nov 17-21, Nov. 28 to Dec. 31, 1955; Jan. 1 to Mar. 2, Dec. 7-31, 1956; Jan. 1 to Mar. 5, Dec. 10-16, 31, 1957; Jan. 1-20, Jan. 29 to Feb. 22, Dec. 5-31, 1958; Jan. 1 to Mar 15, Nov. 15 to Dec. 5, Dec. 30, 31, 1959; Jan. 1 to Mar. 30, 1960.

Perry Creek at 38th Street, Sioux City, Iowa

LOCATION.—Lat. 42°32'05", long. 96°24'35", in SE¼SE¼ sec. 8, T. 89 N., R. 47 W., on right upstream abutment of bridge on 38th Street in Sioux City, 3.6 miles upstream from mouth.

DRAINAGE AREA.—65.1 square miles (revised in 1956).

RECORDS AVAILABLE.—October 1945 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 1,117.04 ft. above sea level (city of Sioux City bench mark). Prior to May 20, 1954, wire-weight gage with supplementary high-water recorder operating above 5.0 ft. gage height, both at same site and datum.

AVERAGE DISCHARGE.—15 years, 17.3 cfs (12,520 acre-ft. per year).

EXTREMES.—1945-60: Maximum discharge, 7,780 cfs Sept. 10, 1949 (gage height, 21.80 ft.), from rating curve extended above 1,700 cfs on basis of slope-area measurement of peak flow; no flow at times in 1946, 1958-60.

Flood of July 7, 1944, reached a stage of about 25.5 ft., from flood-marks (discharge, 9,600 cfs, by contracted-opening measurement, by Corps of Engineers).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	1.0	2.5	1.2	1.8	1.9	233	9.3	2.8	1.2	0.6	1.1	0.1
2.....	.8	*1.7	1.2	1.9	1.9	107	9.6	2.8	1.2	.4	*.9	.1
3.....	1.8	1.3	1.1	2.0	1.9	36	*13	2.8	2.3	.3	.7	.1
4.....	*1.2	1.6	1.6	2.1	1.9	12	7.0	2.6	1.4	.3	50	.2
5.....	75	1.8	1.8	*2.0	2.1	*12	5.8	2.6	*1.2	.4	28	*.3
6.....	4.6	1.5	1.9	1.9	*1.8	0.6	5.8	2.8	2.4	.3	11	.3
7.....	1.4	1.0	*1.9	1.9	1.9	7.0	4.1	2.4	1.8	5.9	0.2	.3
8.....	.0	1.4	1.9	2.0	2.1	6.0	3.6	2.1	1.0	1.7	2.0	.2
9.....	.4	2.2	1.9	2.2	1.7	5.0	3.5	2.2	.9	.5	1.1	.2
10.....	.4	2.3	1.8	2.3	1.5	4.5	3.2	30	.7	.2	.9	.2
11.....	.4	2.2	1.8	2.4	1.5	4.0	3.4	59	.6	27	.8	.2
12.....	.4	2.0	1.8	2.3	1.4	3.5	3.4	4.8	.5	5.0	.9	.2
13.....	.7	1.8	1.7	2.3	1.5	3.5	2.9	3.5	.4	1.4	.9	.2
14.....	*1.1	1.6	1.7	2.4	1.4	4.0	2.6	2.9	.4	8.7	1.1	.2
15.....	1.5	*1.6	1.0	2.3	1.3	4.5	2.2	2.6	.4	20	.6	.3
16.....	1.1	1.2	1.6	2.2	1.2	5.0	2.1	2.4	.3	1.7	.6	.2
17.....	1.1	1.1	1.6	1.9	1.2	5.5	1.9	2.2	.3	*24	.6	.2
18.....	1.5	1.4	1.5	1.7	1.2	5.5	1.7	2.2	*.4	3.5	426	.1
19.....	1.5	1.8	1.5	1.3	1.2	*7.2	1.7	2.0	.4	1.3	5.4	.1
20.....	1.4	3.0	1.5	1.3	1.4	7.2	1.6	2.2	.4	1.0	2.2	*.2
21.....	1.2	3.8	1.5	1.4	1.7	7.6	1.5	*2.2	1.7	.7	*1.3	.2
22.....	1.4	4.8	1.6	1.4	1.4	9.0	1.3	2.1	1.2	.6	1.0	.1
23.....	1.7	3.6	2.1	1.3	1.6	7.8	1.2	2.0	.0	.4	.7	.1
24.....	1.8	2.8	2.1	1.6	1.6	8.2	1.2	1.8	.4	.4	.5	.1
25.....	1.9	2.5	2.2	1.5	2.1	9.9	*1.4	1.7	.6	.3	.5	.1
26.....	2.0	2.9	2.4	1.3	2.2	12	1.6	1.6	2.6	.3	.4	.2
27.....	1.7	2.5	2.3	1.6	2.3	9.6	2.0	1.4	.7	.2	.3	.2
28.....	*1.1	1.5	2.4	1.9	2.0	7.4	2.6	1.3	.5	.3	.2	.2
29.....	1.3	1.3	2.4	2.0	20	5.2	2.9	18	.0	.3	.3	.2
30.....	.8	1.4	2.0	1.9	.....	7.8	2.5	4.2	1.0	.4	.2	.3
31.....	2.0	.....	1.9	1.9	.....	8.2	.....	1.5	.....	13	.1	.....

Perry Creek at 38th Street, Sioux City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	*0.4	1.0	1.2	1.8	0.8	2.4	3.6	1.2	1.3	*5.6	*0.9	4.2
2	.2	1.0	1.3	*1.6	.8	2.2	*3.4	1.2	1.2	2.0	1.4	7.8
3	.2	1.0	*1.3	1.8	.8	2.2	2.6	1.0	*1.2	1.2	6.0	2.4
4	.2	2.0	1.4	1.4	.8	2.4	2.8	.8	1.2	7.5	2.1	*1.1
5	.1	*2.3	1.3	1.4	.9	2.2	3.0	.8	1.2	4.4	1.6	1.0
6	.1	1.3	.8	1.2	*1.0	2.0	2.9	*1.1	1.5	2.2	1.2	*104
7	.1	1.2	.6	1.6	1.2	*2.0	3.4	1.0	2.8	1.7	.8	6.5
8	.1	1.1	.6	1.4	1.6	2.0	3.4	1.7	1.7	356	1.1	2.6
9	.2	1.2	.7	.8	1.6	2.4	3.6	1.0	1.7	14	12	2.2
10	.3	1.3	.9	.8	1.8	2.9	3.5	.9	1.7	4.8	6.4	2.1
11	.4	1.3	*1.0	.8	1.8	4.4	3.8	.7	1.7	2.9	2.3	1.4
12	.4	1.2	1.0	.8	2.0	4.2	2.6	5.5	1.3	2.2	1.0	1.1
13	.2	1.3	1.0	.8	2.0	5.6	2.9	16	4.5	2.9	.5	1.2
14	.3	1.5	1.0	*.8	2.0	3.4	2.3	25	5.3	4.1	.5	4.1
15	.6	1.7	1.0	.8	1.8	2.3	2.4	4.2	4.1	12	.4	2.2
16	.5	1.7	1.0	.8	1.8	2.8	2.6	2.5	74	5.6	.3	1.2
17	.6	1.8	1.0	.8	1.8	2.6	2.5	2.9	202	2.4	.4	1.0
18	.7	2.0	1.0	.8	1.6	3.6	2.4	2.4	14	1.2	.5	*.9
19	.8	1.9	1.2	.8	*1.6	*3.4	2.4	2.2	3.5	1.3	.4	41
20	1.0	1.6	1.2	1.0	1.6	5.8	2.3	9.3	2.6	2.2	1.4	5.8
21	1.2	1.5	*1.3	1.0	1.4	9.0	1.7	12	*2.2	1.3	1.0	2.9
22	1.4	1.2	1.3	1.0	1.2	12	1.5	4.2	225	*1.8	*1.8	2.0
23	1.5	1.6	1.3	.8	1.2	11	1.7	2.8	12	1.0	2.2	1.4
24	1.6	1.8	1.3	.8	1.4	10	1.4	2.0	2.2	.9	.4	1.2
25	1.8	1.6	1.3	.8	1.6	5.4	1.5	1.9	27	.7	.2	1.0
26	1.8	*1.2	1.4	.8	1.8	4.0	1.9	1.8	20	.7	.2	1.0
27	1.8	1.1	1.4	.8	2.0	4.1	1.2	1.8	4.8	4.2	.9	1.0
28	1.7	1.2	2.0	.8	2.4	3.8	1.1	1.8	2.1	1.7	.8	1.0
29	1.8	.9	2.2	.8	.....	3.6	.9	1.6	1.2	1.2	1.8	.9
30	2.3	1.1	2.4	.8	.....	3.6	1.1	1.7	1.0	1.0	.8	.9
31	1.3	.....	2.2	.8	.....	3.8	.....	1.6	.....	.9	.....	.....
1957-58												
1	0.8	13	2.2	0.8	1.7	15	*4.0	*3.8	33	0.6	22	0
2	.7	8.5	*2.2	*.6	1.7	8.0	4.0	4.2	13	1.9	6.0	0
3	*.6	2.9	1.7	.5	1.7	7.0	4.5	4.2	12	1.5	1.5	0
4	.3	1.8	1.7	.4	1.7	6.0	11	3.5	9.7	1.7	*.8	0
5	.3	1.5	2.3	.4	*1.7	5.0	153	3.1	6.3	1.2	.4	.2
6	.5	1.4	2.2	.5	1.7	*4.0	43	2.9	4.8	1.0	.8	.2
7	1.5	1.4	1.8	.5	1.7	3.5	22	4.8	4.2	*.8	.4	.1
8	3.5	1.4	1.5	.5	1.6	3.0	18	5.4	28	.9	.2	0
9	1.2	.9	1.5	.6	1.6	4.5	15	4.5	*9.5	2.5	.1	0
10	.8	1.2	1.4	.8	1.6	4.5	13	3.5	4.2	1.8	.1	0
11	.8	1.8	.4	1.0	1.5	4.0	11	2.9	2.7	1.5	.1	0
12	.9	2.0	.3	1.0	1.5	4.0	10	2.3	3.3	1.2	.1	0
13	1.2	1.5	.8	1.2	1.4	4.0	11	2.0	4.5	1.0	.7	0
14	1.1	1.7	1.2	1.4	1.3	4.0	10	2.9	3.3	1.0	1.1	1.1
15	2.9	2.8	1.2	1.2	1.2	3.0	9.3	2.5	2.7	.9	.4	.4
16	1.8	4.2	1.5	1.2	1.1	2.5	8.1	*2.0	2.5	.6	.3	.1
17	*1.4	3.3	2.7	1.2	1.0	3.0	8.1	4.8	2.2	.7	0	.1
18	1.4	2.3	3.5	1.2	1.0	3.0	7.4	7.0	1.8	.7	*0	0
19	1.7	2.7	3.1	1.2	1.0	4.0	7.4	2.7	1.7	2.6	0	*0
20	1.7	2.7	*2.7	1.2	1.0	5.5	6.0	1.5	1.7	1.2	.1	0
21	4.8	2.5	2.7	*1.3	1.0	5.5	*5.1	1.2	1.5	*1.1	0	.1
22	3.8	2.2	2.9	1.3	1.0	4.5	4.8	1.4	2.9	.6	0	.1
23	3.5	3.5	2.9	1.5	2.0	6.0	4.6	1.1	2.9	.4	.8	.1
24	2.7	3.8	2.3	1.7	4.0	8.9	20	1.0	2.2	.7	.4	0
25	1.8	3.8	2.7	1.7	6.0	*4.8	8.0	.9	2.0	.5	.1	0
26	1.5	*4.2	2.0	1.7	10	3.5	6.0	1.5	2.5	.4	.2	0
27	1.4	4.5	2.0	1.7	140	3.3	5.0	1.2	*1.4	39	.1	0
28	1.7	3.3	2.0	1.7	40	3.3	4.5	.7	1.0	7.8	.1	0
29	1.7	2.3	1.5	1.7	.....	3.8	4.0	.8	1.0	2.2	0	0
30	1.8	1.5	1.2	1.7	.....	3.8	4.0	1.1	.8	3.5	3	0
31	*1.7	.....	1.0	1.7	.....	3.5	.....	*520	.....	2.7	0	.....

Perry Creek at 38th Street, Sioux City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	0	0.8	*0.3	0.5	0.9	20	5.1	.9	25	5.1	0.3	0
2	0	.7	.4	.5	.9	50	5.1	.8	12	3.1	1.1	0
3	0	.8	.5	.5	*.9	30	4.2	1.7	8.9	1.8	*.7	0
4	0	*.7	.5	.5	.9	3.0	3.3	1.8	6.6	1.2	.7	0
5	0	.6	.3	.5	.9	1.0	2.7	5.4	5.4	.9	.3	0
6	.1	.8	.3	.5	.9	1.5	2.3	14	4.5	*.7	5.6	0
7	.1	.8	.3	*.5	.9	3.0	*3.3	6.6	3.5	.4	.7	0
8	.1	1.0	.3	.5	.9	3.0	2.0	3.1	*2.9	.9	.2	0
9	.1	1.0	.3	.5	.9	4.5	1.4	10	2.5	.4	.1	0
10	.1	.9	.3	.5	.9	5.0	1.5	54	2.2	.4	.1	0
11	.1	.9	.3	.5	.9	6.0	1.4	*6.6	2.2	.4	0	0
12	.2	1.0	.3	.6	.9	7.0	1.4	4.0	2.2	.5	0	0
13	.4	1.1	.3	.7	.9	8.0	1.2	2.5	1.8	.4	.2	0
14	.4	1.1	.3	.7	.9	7.0	1.1	2.2	1.7	.4	14	0
15	.7	.9	.3	.7	.9	3.5	1.0	1.8	1.2	.3	3.2	0
16	.3	1.0	.3	.7	.9	3.5	1.2	1.8	1.2	.4	1.1	.1
17	.4	2.0	4	.7	.9	3.5	*1.7	2.2	1.0	2.0	.5	0
18	.5	1.8	5	.7	.9	4.0	1.4	2.2	1.1	1.5	.3	.7
19	.5	1.2	.6	.7	.9	6.0	2.5	2.7	1.0	1.0	.3	.4
20	.6	1.1	.7	.7	.9	5.0	6.0	6.1	1.0	.5	1	.4
21	.4	.9	.8	.7	1.0	4.0	5.7	12	1.2	.4	.1	.3
22	.5	.9	.8	.7	1.0	4.0	2.9	3.5	1.0	.4	1.3	.2
23	.5	.9	.8	.7	1.1	6.0	1.8	1.5	.7	.3	1.0	.1
24	.4	.9	.8	.8	*1.1	*6.0	1.5	.9	.8	*.2	.2	.1
25	.4	.8	.8	.8	1.5	5.0	1.4	*1.1	.7	.2	0	.1
26	.7	.4	.7	.8	2.0	10	1.1	1.5	.7	.2	0	.7
27	.7	.3	.6	.8	3.0	5.0	1.2	.9	.9	.1	0	.9
28	.7	.3	.5	.9	8.0	4.5	1.4	215	1.2	.1	.1	.7
29	.8	.3	.5	.9	.9	4.0	1.2	105	4.2	.1	.1	0
30	1.0	.3	.5	.9	.9	4.5	1.0	263	14	.2	.1	0
31	1.0	.5	.9	.9	.9	5.1	.9	686	.4	*0	.4	.9
1959-60												
1	0.3	1.5	1.5	0.7	1.4	0.7	1,610	2.5	*5.1	3.5	*0.1	2.0
2	3.0	.9	1.4	.7	*1.8	*.6	768	2.0	5.1	2.9	.1	1.4
3	2.0	*1.1	1.4	.6	2.2	.6	39	*3.3	5.1	2.5	.1	.9
4	.4	2.2	*1.4	.6	2.2	.6	20	5.7	4.8	1.7	.1	.8
5	.2	2.9	1.2	.7	2.0	.6	15	7.8	3.8	1.7	118	.6
6	*.4	1.4	1.0	*.8	2.0	.5	14	29	4.0	1.2	45	.4
7	.4	1.2	1.1	.9	2.0	.5	13	14	3.3	1.2	6.9	.3
8	1.5	1.4	1.2	.9	2.7	.5	13	7.4	2.9	1.2	2.2	1.2
9	.9	1.4	1.1	1.0	2.5	.5	12	5.7	4.2	1.2	.9	1.4
10	.6	1.5	1.1	1.1	2.5	.5	12	5.1	4.5	.8	.5	1.1
11	.6	1.7	1.2	1.1	1.8	.4	11	4.0	5.1	*.7	.3	.9
12	.4	1.4	1.2	1.2	1.7	.4	*11	3.5	5.4	123	.4	.6
13	.4	1.0	.9	1.2	1.6	.4	15	3.3	5.4	16	.4	.8
14	.4	1.2	1.1	1.1	1.5	.4	11	3.3	5.4	1.5	.2	1.2
15	.6	.9	1.4	1.0	1.5	.4	8.5	3.1	4.0	.8	.1	1.4
16	.5	.9	1.2	1.2	1.5	.3	7.7	*0.6	11	.5	.1	1.4
17	.4	.4	1.4	1.2	1.4	.3	7.0	4.8	*5.1	.5	.3	2.2
18	.4	.5	1.2	1.0	1.4	.3	6.0	4.5	4.0	.6	.2	2.9
19	.4	1.0	1.1	1.0	1.3	.4	5.4	6.6	3.3	.6	.1	*2.3
20	.7	1.5	1.1	1.0	1.2	.5	5.4	15	8.5	.3	.4	1.5
21	.8	1.5	1.1	*.9	1.2	.6	4.8	75	5.1	.2	.2	1.2
22	2.7	1.5	1.1	.7	1.1	.6	4.2	22	4.0	.1	.2	1.1
23	1.8	1.8	1.1	.5	1.0	.7	3.8	11	3.1	.2	.3	2.3
24	1.1	2.0	1.1	.5	1.0	.7	3.5	8.1	3.1	.4	.4	4.2
25	1.5	1.5	1.4	.5	.9	.8	3.5	8.1	2.2	.3	.9	3.1
26	2.3	1.2	2.7	.5	.9	2.5	2.9	11	1.8	0	1.3	1.8
27	2.0	1.0	3.3	.5	.8	300	2.9	8.9	2.7	0	1.4	1.4
28	1.8	.9	5.7	.5	.8	718	3.8	8.0	7.0	0	862	1.2
29	1.8	.9	2.9	.5	.7	1,780	3.8	7.0	4.5	0	37	1.1
30	3.5	1.1	1.2	.5	.8	*549	2.7	6.0	4.0	0	8.8	1.1
31	2.5	.8	.8	.8	.8	185	.8	5.5	.1	3.1	.1	.1

Perry Creek at 38th Street, Sioux City, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	3.72	2.09	1.80	1.87	2.30	18.5	3.55	5.64	0.94	3.91	17.6	0.19
1956-57	.83	1.42	1.25	1.01	1.51	4.23	2.41	3.70	20.9	16.7	1.66	6.90
1957-58	1.66	3.02	1.91	1.13	8.31	4.79	14.7	19.4	5.64	2.72	1.20	.08
1958-59	.38	.87	.48	.66	1.31	7.50	2.30	47.6	3.78	.80	1.05	.16
1959-60	1.17	1.31	1.50	.82	1.51	114	88.0	10.0	4.58	5.28	35.2	1.46

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.057	0.032	0.028	0.029	0.035	0.284	0.055	0.087	0.014	0.090	0.270	0.0029
1956-57	.013	.022	.019	.016	.023	.065	.037	.057	.321	.257	.025	.106
1957-58	.025	.046	.029	.017	.128	.074	.226	.298	.087	.042	.018	.0012
1958-59	.0058	.013	.0074	.010	.020	.115	.035	.731	.058	.012	.016	.0025
1959-60	.018	.020	.023	.013	.024	1.75	1.35	.154	.070	.081	.541	.022

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.07	0.04	0.03	0.03	0.04	0.33	0.06	0.10	0.02	0.07	0.31	0.003
1956-57	.01	.02	.02	.02	.02	.07	.04	.07	.36	.30	.03	.12
1957-58	.03	.05	.03	.02	.13	.08	.25	.34	.10	.05	.02	.001
1958-59	.007	.01	.008	.01	.02	.13	.04	.84	.06	.01	.02	.003
1959-60	.02	.02	.03	.01	.03	2.03	1.51	.18	.08	.09	.62	.03

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	229	124	111	115	132	1,140	211	347	56	240	1,080	11
1956-57	51	84	77	62	84	260	144	227	1,240	1,030	102	411
1957-58	102	180	117	70	462	294	876	1,190	336	167	74	5.0
1958-59	23	52	29	41	73	461	137	2,930	225	49	64	9.3
1959-60	72	78	92	50	88	7,040	5,240	616	273	325	2,170	87

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30							Calendar year				
	Momentary maximum			Min-imum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet	
	Date	Gage height in feet	Dis-charge									
1955									8.63	1.81	6,250	
1956	Aug. 18, 1956	9.42	2,440	0.1	5.24	0.080	1.10	3,800	4.89	1.01	3,540	
1957	July 8, 1957	7.90	1,920	1	5.21	.080	1.08	3,770	5.47	1.14	3,960	
1958	May 31, 1958	8.80	1,540	0	5.35	.082	1.10	3,870	4.95	1.02	3,580	
1959	May 30, 1959	12.14	2,660	0	5.65	.087	1.16	4,090	5.81	1.20	4,230	
1960	Apr. 1, 1960	13.05	3,020	0	22.2	.341	4.65	16,130				

Peak Discharge (base, 800 cfs)

- 1955-56: Aug. 4 (8 p.m.) 865 cfs (4.88 ft.); Aug. 18 (4:30 a.m.) 2,440 cfs (9.42 ft.).
- 1956-57: June 22 (3:30 a.m.) 1,320 cfs (6.20 ft.); July 8 (4 a.m.) 1,920 cfs (7.90 ft.).
- 1957-58: May 31 (4:30 p.m.) 1,540 cfs (8.89 ft.).
- 1958-59: May 30 (12 p.m.) 2,660 cfs (12.14 ft.).
- 1959-60: Mar. 29 (1 p.m.) 2,140 cfs (10.70 ft.); Apr. 1 (8:30 p.m.) 3,020 cfs (13.05 ft.); July 12 (4:30 p.m.) 1,120 cfs (7.32 ft.); Aug. 5 (6:30 p.m.) 836 cfs (6.22 ft.); Aug. 28 (5 a.m.) 2,700 cfs (12.16 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.
 Stage-discharge relation affected by ice Dec. 1-19, 1955; Feb. 29, Dec. 8-31, 1956; Jan. 1 to Mar. 8, Dec. 9-16, 27-31, 1957; Jan. 1 to Feb. 27, Mar. 2-22, Nov. 23 to Dec. 16, 1958; Feb. 27 to Mar. 28, 1959; Jan. 25-31, Feb. 13 to Mar. 27, 1960. No gage height record Mar. 7-12, 1956; Apr. 22-30, Dec. 17-31, 1958; Jan. 1-6, Jan. 8 to Feb. 2, Feb. 4-23, 1959.

Floyd River at Alton, Iowa

LOCATION.—Lat. 42°58'40", long. 96°00'00", in NE¼ sec. 11, T. 94 N., R. 44 W., on left bank at downstream side of Chicago and North Western Railway Co. bridge at east edge of Alton, 22 miles upstream from confluence with West Floyd River and 42 miles upstream from mouth.

DRAINAGE AREA.—265 square miles.

RECORDS AVAILABLE.—October 1955 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 1,269.55 ft. above mean sea level, datum of 1929.

AVERAGE DICHARGE.—5 years, 20.0 cfs (14,480 acre-ft. per year).

EXTREMES.—1955-60: Maximum discharge, 4,150 cfs Mar. 28, 1960 (gage height, 17.27 ft.); no flow at times in 1956, 1958-59.

REMARKS.—Bankfull stage is about gage height, 15 ft.

Daily Discharge, in Cubic Feet per Second, for Period December 1955 to September 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1			1.4	0.5	0.1	5.0	34	*8.2	3.3	4.2	54	3.1
2			1.3	.4	.1	20	36	8.5	2.7	3.1	*26	2.9
3			1.2	.4	.1	18	35	14	2.3	2.3	24	2.5
4			1.1	*.5	.1	16	*30	15	2.3	1.7	11	2.7
5			1.0	.3	.1	15	20	15	*2.7	*1.7	7.0	*3.5
6			.9	.3	.2	*12	19	12	2.5	1.6	8.9	2.7
7			*.8	.3	*.2	5.0	14	9.8	2.7	3.3	34	2.1
8			.7	.3	.2	5.0	12	8.5	2.5	5.9	20	1.4
9			.6	.3	.2	4.0	12	7.9	2.3	5.9	9.8	1.0
10			.5	.3	.2	3.0	12	8.3	2.3	5.0	8.5	1.0
11			.4	.3	.2	1.0	11	22	1.7	60	5.6	.8
12			.3	.3	.2	1.0	9.2	25	.6	16	6.8	.8
13			.2	.2	.2	1.0	8.9	19	.4	5.0	18	.6
14			.3	.2	.2	1.0	9.2	13	.3	2.9	52	.5
15			.3	.2	.2	1.5	8.2	10	.3	2.5	58	.6
16			.2	.2	.2	2.0	7.3	8.5	.3	2.5	30	.3
17			.2	.1	.2	3.0	7.0	7.0	.4	2.3	17	.2
18			.2	.1	.3	4.0	5.9	5.9	.2	1.7	12	.3
19			.2	.1	.3	5.0	6.2	4.7	.3	1.2	8.9	.2
20			.2	.1	.3	6.0	6.5	4.4	.2	.9	7.0	.2
21			.3	.1	.3	8.0	4.7	4.2	.1	.9	7.6	.2
22			.3	.1	.3	8.0	2.9	3.7	.6	.8	6.2	.2
23			.3	.1	.3	8.0	4.2	3.5	20	.6	5.3	.1
24			.3	.1	.3	8.0	3.7	3.5	9.8	.5	3.1	.1
25			.3	.1	.3	12	4.2	2.9	3.3	.4	2.9	.2
26			.3	.1	.4	28	4.2	2.7	3.3	.3	2.7	.1
27			.3	.1	.4	37	4.7	2.9	26	.2	2.3	.1
28			.5	.1	.5	28	5.0	2.9	22	.2	2.1	.1
29			.5	.1	.5	15	5.0	3.1	10	.2	2.7	.1
30			.5	.1	.....	19	7.0	4.2	5.9	.2	2.7	.1
31			.5	.1	.....	23	.....	3.5	.....	1.7	2.9	.....

Floyd River at Alton, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	0.1	0	1.0	1.2	0.1	1.4	*34	2.5	7.0	33	*3.7	3.3
2	*.1	0	.9	1.0	.1	1.0	27	3.1	5.6	*22	3.3	3.7
3	.1	0	1.6	*1.2	.1	.9	19	3.5	4.4	101	4.0	*2.9
4	.1	.1	*1.6	1.0	.1	.9	14	3.5	*3.7	392	4.4	2.7
5	.1	*.1	2.1	.9	*.2	1.2	17	3.1	3.5	219	3.5	3.3
6	.1	1.7	1.9	.8	.2	*1.9	13	*2.9	3.3	105	3.1	15
7	.1	4.4	1.2	.6	.2	2.3	13	2.5	4.2	65	2.5	7.0
8	.1	3.3	.8	.6	.1	2.9	14	2.1	4.7	60	3.5	3.7
9	.1	2.9	.5	.5	.2	2.7	12	2.1	4.7	35	4.2	2.7
10	.1	2.1	.5	.5	.4	2.9	13	2.3	4.4	27	3.7	3.1
11	.1	1.6	.4	.4	.2	6.2	16	2.3	4.2	21	3.5	2.9
12	.1	1.7	.5	.4	.2	6.8	14	2.3	4.0	17	2.9	2.7
13	.1	1.6	.4	.3	.1	9.2	14	4.0	3.3	15	2.5	2.5
14	0	1.6	.4	.3	.1	10	13	9.2	2.9	14	2.3	2.5
15	0	1.0	.4	.2	.1	5.6	11	11	2.7	12	2.1	2.5
16	.1	.8	.4	.2	.2	1.0	10	8.5	4.0	11	1.9	2.1
17	.1	.8	.3	.2	.2	.3	10	8.2	8.9	10	1.7	2.1
18	.1	1.0	.3	.2	.2	.2	9.8	7.3	10	7.0	1.4	1.7
19	0	2.1	.3	.2	.2	.1	9.5	6.8	10	1.0	1.2	5.0
20	0	2.1	.3	.1	.2	.2	9.5	6.8	9.2	3.7	1.2	5.0
21	0	2.3	.2	.1	.2	.5	9.5	9.2	11	6.2	1.6	5.0
22	0	1.7	.2	.1	.2	2.1	8.2	44	43	5.9	2.5	4.4
23	0	1.6	.2	.1	.1	4.2	7.6	40	125	5.3	3.7	3.5
24	0	1.6	.2	.1	.1	10	7.3	23	134	5.6	3.5	2.9
25	.1	1.6	.2	.1	1.3	43	7.0	15	103	5.3	2.9	2.5
26	.1	1.4	.2	.1	.6	153	6.5	12	80	4.7	2.5	1.9
27	0	1.6	.3	.1	.5	130	6.2	29	85	5.0	2.7	1.7
28	0	1.6	.3	.1	.6	122	5.0	24	141	6.5	3.1	1.6
29	0	1.4	.5	.1	.....	81	5.0	15	75	7.0	4.0	1.2
30	0	1.0	.8	.1	.....	58	4.0	11	54	7.0	4.4	1.0
31	0	.....	1.0	.1	.....	44	.....	8.9	.....	5.9	3.7	.....
1957-58												
1	*1.0	*8.2	8.5	2.5	2.1	12	6.2	*17	4.2	3.3	2.5	0.1
2	.9	15	9.2	2.3	1.9	9.2	*7.0	15	4.0	2.7	1.9	*.1
3	.8	16	*8.5	1.7	1.7	10	7.6	14	57	2.7	1.4	.1
4	.8	18	7.9	1.6	1.6	7.9	10	12	244	3.3	.9	.1
5	.6	17	7.6	1.4	1.4	*7.3	30	11	164	2.7	*.6	.1
6	.5	16	7.9	1.6	1.4	7.0	43	10	74	2.5	.6	.2
7	.8	14	6.5	*1.4	*1.2	6.2	48	11	48	1.9	.5	.1
8	1.4	12	6.5	1.2	1.0	3.7	51	12	34	*2.1	.6	.1
9	1.7	7.9	6.2	1.2	.6	5.3	40	11	*32	4.0	.5	.1
10	1.6	7.9	6.5	1.2	.5	5.3	36	10	25	5.3	.4	.1
11	1.6	11	3.7	1.4	.5	5.6	32	9.2	15	7.0	.3	.1
12	1.6	11	2.5	1.6	.5	5.6	29	8.2	18	6.5	.4	.1
13	1.6	9.8	3.1	1.9	.3	5.9	27	7.3	16	7.3	.3	.1
14	1.7	9.2	3.5	2.5	.3	6.8	25	7.3	13	5.6	.3	.2
15	15	9.5	4.0	2.5	.3	5.3	24	7.6	12	4.0	.3	.1
16	32	11	4.4	2.5	.3	4.2	22	7.6	10	2.9	.3	.1
17	25	11	5.6	2.7	.3	5.3	19	7.6	8.5	2.5	.3	.1
18	14	9.5	6.5	2.5	.2	5.3	18	23	1.9	2.3	.2	.1
19	10	6.8	7.0	2.7	.2	5.0	16	19	.8	2.7	.1	.1
20	7.3	12	6.8	2.7	.2	6.5	16	11	5.6	3.1	.1	.1
21	8.5	10	6.5	2.7	.2	6.2	15	9.2	4.2	2.7	.1	0
22	9.5	8.5	7.0	2.5	.2	6.2	14	7.9	2.1	2.7	0	0
23	10	9.8	7.3	2.3	.2	6.8	16	6.8	3.5	2.1	0	0
24	9.2	11	5.6	2.3	.2	7.3	24	5.9	5.3	1.6	0	.1
25	8.5	11	7.0	2.3	.5	7.6	28	5.0	7.9	1.2	0	0
26	7.6	12	4.2	2.5	5.0	7.9	30	5.0	9.8	.9	.1	0
27	7.3	15	5.0	2.5	30	7.6	28	5.0	7.9	3.5	.1	0
28	7.0	10	4.7	2.5	45	7.3	25	4.2	9.2	3.3	.2	0
29	7.3	12	4.2	2.3	.....	6.8	22	3.7	8.2	3.3	.2	0
30	7.3	5.6	3.3	2.3	.....	6.5	19	3.5	5.0	3.3	.2	.1
31	7.0	.....	3.1	2.1	.....	6.2	.....	4.0	.....	2.9	.1	.....

Floyd River at Alton, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	0.1	0.3	0.1	0.1	0.2	0.9	7.0	0.5	823	51	0	*1.6
2.....	*.1	.2	*.1	.1	*.2	*1.0	9.5	.5	155	31	320	1.6
3.....	.1	*.2	.1	0	.2	.8	15	1.4	89	23	*78	1.2
4.....	.1	.2	.1	0	.2	.4	10	3.0	64	19	22	.9
5.....	.2	.2	.1	*0	.2	.3	8.5	*124	51	14	12	.8
6.....	.2	.2	.1	0	.2	.3	*5.9	*310	42	12	12	.5
7.....	.2	.2	.1	0	.2	.2	5.0	353	33	*9.5	8.9	.4
8.....	.2	.2	.1	0	.2	.2	4.0	122	27	5.9	5.6	.3
9.....	.4	.1	0	0	.2	.1	3.3	65	23	.5	6.2	.2
10.....	.3	.1	0	0	.2	.1	2.7	51	20	1.7	7.0	.1
11.....	.2	.1	0	0	.2	.1	2.9	41	20	3.3	5.6	.1
12.....	.2	.1	0	0	.2	.1	2.5	33	20	4.4	4.2	.1
13.....	.1	.2	0	0	.2	.1	2.5	25	18	5.0	3.5	.1
14.....	.2	.2	0	0	.2	.1	2.1	19	16	5.6	5.0	.1
15.....	.3	.2	0	0	.2	.1	1.7	16	14	5.0	7.0	.1
16.....	.2	.2	0	0	.2	.1	1.7	14	14	4.4	6.5	.1
17.....	.2	.3	.1	0	.2	.1	1.7	13	23	4.7	5.0	.1
18.....	.2	.6	.1	0	.2	.2	1.7	12	235	5.0	4.2	.2
19.....	.1	.6	.1	0	.2	.4	2.1	11	56	5.3	3.5	.4
20.....	.1	.6	.1	0	.2	1.5	3.7	11	22	4.7	2.7	1.9
21.....	.1	.6	.1	0	.3	1.5	*3.7	15	20	3.1	2.3	2.3
22.....	.1	.6	.1	0	.3	2.0	2.5	44	19	2.7	2.5	3.3
23.....	.1	.6	.1	0	.4	6.0	2.3	31	15	2.1	3.1	2.9
24.....	.1	.6	.1	.1	.4	5.0	2.1	22	13	1.6	2.9	2.9
25.....	.1	.5	.1	.1	.5	4.5	1.7	17	12	1.2	1.9	3.3
26.....	.1	.4	.1	.1	.6	4.0	1.0	15	50	.9	1.6	3.3
27.....	.1	.3	.1	.2	.7	3.5	.9	13	52	.3	1.4	3.5
28.....	.1	.2	.1	.2	.8	6.5	1.0	24	104	.1	1.4	3.5
29.....	.1	.1	.1	.2	.....	3.7	.8	49	48	0	1.4	3.1
30.....	.2	.1	.1	.2	.....	4.2	.5	104	55	0	1.4	2.7
31.....	.2	.....	.1	.2	.....	7.0	.....	*559	.....	0	1.4	.....
1959-60												
1.....	2.3	2.9	3.4	15	2.6	2.5	771	29	*83	16	*3.2	77
2.....	2.9	*3.2	3.5	10	*2.8	*2.3	2,420	27	70	14	2.8	53
3.....	3.5	2.9	*3.7	8.6	3.0	2.3	2,000	*23	60	13	2.0	38
4.....	3.0	3.2	4.3	7.5	3.0	2.3	282	26	50	13	1.6	29
5.....	*3.0	3.7	4.5	6.5	3.4	2.2	121	27	42	*13	3.5	24
6.....	3.0	1.8	4.3	*5.6	3.2	2.2	81	34	38	12	8.0	20
7.....	3.2	1.4	4.3	5.4	3.4	2.2	64	38	34	12	5.8	*18
8.....	3.2	1.3	4.3	5.2	3.5	2.2	53	36	30	12	4.7	52
9.....	3.2	2.1	3.9	5.2	3.9	2.2	44	31	30	12	4.3	80
10.....	3.2	3.0	4.1	5.6	3.9	2.2	38	26	33	13	3.9	105
11.....	3.0	3.5	4.3	5.8	3.5	2.2	36	22	36	14	3.7	68
12.....	3.0	3.9	4.7	6.1	3.4	2.2	*34	20	34	16	3.4	44
13.....	3.0	2.6	4.5	6.4	3.4	2.2	75	18	32	16	3.2	32
14.....	3.0	2.0	4.5	6.6	3.2	2.2	124	17	30	14	2.9	28
15.....	3.0	2.1	4.9	6.6	3.2	2.1	73	16	28	13	2.8	25
16.....	2.9	2.2	5.4	5.8	3.2	2.1	54	23	32	14	2.1	22
17.....	2.8	1.8	5.8	5.4	3.0	2.1	45	69	35	13	2.1	22
18.....	2.6	1.7	5.8	4.9	2.9	2.2	38	112	31	16	6.5	28
19.....	2.6	1.8	5.6	4.5	2.9	2.2	35	84	27	16	132	42
20.....	2.5	2.1	5.6	4.1	2.8	2.2	32	125	27	23	202	52
21.....	2.5	2.2	5.8	3.5	2.8	2.2	29	462	26	15	28	50
22.....	2.6	2.3	5.8	3.0	2.8	2.3	27	453	24	9.0	13	94
23.....	2.8	2.6	5.8	2.6	2.9	2.3	25	214	23	6.5	10	136
24.....	2.6	3.2	5.6	2.5	2.8	2.3	24	144	20	5.0	8.9	106
25.....	2.3	3.4	5.8	2.3	2.8	2.4	23	264	18	4.5	145	105
26.....	2.5	3.7	9.2	2.2	2.8	2.6	22	390	16	4.1	304	111
27.....	2.5	3.4	15	2.2	2.8	200	21	303	15	4.1	114	96
28.....	2.3	3.4	27	2.2	2.6	2,200	23	232	16	3.9	499	77
29.....	2.1	3.0	24	2.3	2.5	*2,580	29	156	16	3.5	*476	65
30.....	2.2	3.0	20	2.3	.....	917	30	119	17	3.4	190	55
31.....	2.9	.....	18	2.5	.....	289	.....	98	.....	3.0	120	.....

Floyd River at Alton, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	12.0	21.5	0.52	0.21	0.21	10.4	11.6	8.51	4.38	4.38	14.8	0.96
1956-57	.06	1.49	.64	.38	.25	22.9	12.0	10.5	31.9	39.8	2.94	3.40
1957-58	6.75	11.3	5.82	2.11	3.49	6.64	21.3	9.39	28.3	3.29	.44	.08
1958-59	.16	.30	.07	.05	.29	1.77	3.67	68.4	71.8	7.32	17.4	1.39
1959-60	2.78	2.65	7.53	5.11	3.07	201	222	117	32.4	11.2	74.5	58.5

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	10.0075	10.0057	0.0020	0.00079	0.00091	0.039	0.044	0.032	0.017	0.017	0.056	0.0036
1956-57	.0023	.0056	.0024	.0014	.00094	.086	.045	.040	.120	.150	.011	.013
1957-58	.025	.043	.022	.0079	.013	.025	.092	.035	.107	.012	.0016	.00030
1958-59	.00060	.0011	.00026	.00019	.0011	.0067	.014	.258	.271	.028	.066	.0052
1959-60	.010	.010	.028	.019	.012	.758	.838	.442	.122	.042	.281	.221

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	10.009	10.006	0.002	0.0009	0.001	0.05	0.05	0.04	0.02	0.02	0.06	0.004
1956-57	.0003	.006	.003	.002	.001	.10	.05	.05	.13	.17	.01	.01
1957-58	.03	.05	.03	.009	.01	.03	.10	.04	.12	.01	.002	.0003
1958-59	.0007	.001	.0003	.0002	.001	.008	.02	.30	.30	.03	.08	.006
1959-60	.01	.01	.03	.02	.01	.88	.94	.51	.14	.05	.32	.25

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	123	189	32	13	14	640	692	523	260	269	910	57
1956-57	3.6	89	39	24	14	1,410	712	645	1,900	2,450	181	203
1957-58	415	670	358	130	194	408	1,440	577	1,690	202	27	4.8
1958-59	9.9	18	4.6	3.0	16	109	218	4,210	4,270	450	1,070	83
1959-60	171	157	463	314	177	12,300	13,240	7,220	1,930	688	4,580	3,480

‡Monthly figures estimated on the basis of records for nearby stations; daily discharge figures not available

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30						Calendar year				
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet
	Date	Gage height in feet	Discharge								
1956	July 11, 1956	9.45	287	0.1	4.99	0.019	0.26	3,620	4.84	0.26	3,510
1957	July 4, 1957	10.54	440	0	10.6	.040	.53	7,670	12.4	.63	8,980
1958	June 3, 1958	9.82	326	0	8.45	.032	.43	6,120	6.50	.32	4,710
1959	June 1, 1959	12.77	1,130	0	14.4	.054	.75	10,460	15.5	.80	11,220
1960	Mar. 28, 1960	17.27	4,150	1.3	61.7	.233	3.17	44,810	.....	.....	.....

Peak Discharge (base 800 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: No peak above base.

1958-59: June 1 (9:30 a.m.) 1,130 cfs (12.77 ft.); Aug. 2 (1:30 p.m.) 1,110 cfs (12.72 ft.).

1959-60: Mar. 28 (5 p.m.) 4,150 cfs (17.27 ft.); Apr. 2 (10 p.m.) 2,740 cfs (16.06 ft.); Aug. 28 (6 p.m.) 830 cfs (12.12 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Jan. 18 to Feb. 5, Feb. 14 to Mar. 25, 1956; Jan. 25 to Feb. 3, Feb. 17-24, 1957; Feb. 26 to Mar. 1, Nov. 25 to Dec. 31, 1958; Jan. 1 to Mar. 26, Dec. 29-31, 1959; Mar. 9-28, 1960. No gage-height record Dec. 1-6, 1955.

West Branch Floyd River near Struble, Iowa

LOCATION.—Lat. 42°55'15", long. 96°10'30", in NE¼ sec. 32, T. 94 N., R. 45 W., on right bank at downstream side of highway bridge, 0.2 mile west of U. S. Highway 75, 2.2 miles northeast of Struble, and 14 miles upstream from confluence with Floyd River.

DRAINAGE AREA.—181 square miles.

RECORDS AVAILABLE.—October 1955 to September 1960.

GAGE.—Water-stage recorder.

EXTREMES.—1955-60: Maximum discharge, 3,880 cfs Mar. 29, 1960 (gage height, 14.72 ft.); no flow for many days in 1956-59.

REMARKS.—Bankfull stage is about gage height, 14 ft.

Daily Discharge, in Cubic Feet per Second, for Period December 1955 to September 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1			0.8	0.6	0	1.0	8.5	*2.6	1.1	4.7	*50	0.7
2			.8	.6	0	2.0	7.0	2.8	1.1	3.7	23	.6
3			.8	*.6	0	3.0	7.0	5.3	1.1	3.3	11	.4
4			.7	.6	0	4.0	*5.5	5.1	*1.2	2.8	7.7	.4
5			.7	.6	0	4.5	3.9	4.1	1.2	*2.1	21	*.4
6			.6	.6	0	*4.5	3.5	3.7	1.3	1.8	128	.5
7			*.6	.6	*0	4.5	3.7	3.0	1.2	5.8	46	.5
8			.6	.6	0	4.0	3.2	2.6	1.1	9.0	24	.5
9			.6	.6	0	3.5	2.8	2.5	1.0	8.2	12	.5
10			.6	.6	0	3.0	2.6	2.6	.9	4.1	8.5	.4
11			.6	.6	0	3.0	2.4	5.5	.8	3.3	7.2	.5
12			.6	.6	0	3.0	2.2	3.7	.7	210	8.0	.5
13			.6	.6	0	3.0	2.1	2.5	.7	25	15	.5
14			.6	.6	0	3.0	1.8	2.4	.8	12	9.9	.6
15			.6	.6	0	3.0	1.7	2.2	.9	8.2	7.2	.6
16			.6	.5	0	3.0	1.8	1.8	1.0	6.3	5.8	.4
17			.6	.5	0	3.5	1.8	1.7	1.1	5.5	6.3	.4
18			.6	.5	0	3.5	1.5	1.7	1.2	5.3	4.9	.4
19			.6	.4	0	4.0	1.5	1.4	1.2	4.9	4.5	.4
20			.6	.4	0	4.0	1.7	1.4	1.2	4.7	3.5	.4
21			.6	.4	0	4.0	1.7	1.3	1.0	5.1	3.3	.4
22			.6	.3	0	4.0	1.5	1.2	1.5	4.5	3.0	.4
23			.6	.3	.1	5.0	1.5	1.2	1.3	3.7	2.2	.4
24			.6	.2	.1	5.0	1.8	1.1	1.0	3.5	2.1	.4
25			.6	.2	.1	6.0	1.8	1.1	1.0	3.5	1.8	.5
26			.6	.1	.2	6.0	2.2	1.1	164	3.3	1.7	.6
27			.6	.1	.2	7.0	2.4	1.0	59	3.0	1.4	.5
28			.6	.1	.3	7.0	2.6	1.0	20	2.8	1.2	.4
29			.6	0	.5	8.0	3.7	1.2	10	2.8	1.0	.8
30			.6	0	.....	8.0	2.6	1.7	6.7	2.6	.9	.9
31			.6	0	.....	9.0	.....	1.2	.....	62	.9	.....

West Branch Floyd River near Struble, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	0.9	0.9	1.0	1.0	0	3.0	*6.7	0.5	1.3	*16	*3.9	2.4
2	*.9	.9	1.0	*.8	0	3.0	5.1	.6	.9	10	5.1	2.6
3	.8	.8	.8	.8	0	2.5	4.1	.6	*.7	56	8.0	*2.5
4	.7	1.3	.6	.6	*0	2.5	8.0	.4	.8	573	6.7	2.2
5	.7	*1.8	*.6	.6	0	2.5	4.0	.5	.7	150	5.8	1.8
6	.6	1.7	.6	.4	0	*2.5	3.5	*.6	.8	54	5.3	5.5
7	.5	1.3	.6	.4	0	2.5	3.3	.6	2.1	32	4.9	5.5
8	.5	.9	.6	.4	0	2.5	2.8	.6	2.1	170	19	5.3
9	.6	1.1	.6	.2	0	2.5	3.0	1.1	1.8	25	4.7	4.7
10	.6	1.0	.6	.2	.1	2.5	3.5	1.4	1.3	15	3.2	3.9
11	.6	.9	.6	.1	.2	2.5	3.3	2.1	1.1	12	2.8	3.2
12	.6	.9	.6	.1	.4	3.0	3.0	1.8	.8	10	2.5	2.6
13	.6	.9	.6	.1	.8	3.0	2.5	2.4	.8	8.7	2.5	2.2
14	.6	.9	.6	0	1.0	3.0	2.5	4.5	.9	39	2.6	2.2
15	1.5	1.0	.6	0	.4	2.5	2.2	45	.9	9.0	2.5	2.1
16	.7	1.0	.6	0	.4	2.5	2.1	16	2.4	7.2	2.5	1.7
17	.7	1.0	.6	0	.4	2.0	1.8	9.3	4.1	6.3	2.4	1.7
18	.8	1.0	.6	0	.4	1.5	1.5	7.2	3.7	5.8	2.2	1.5
19	.7	1.0	.6	0	.4	1.5	1.5	5.8	3.0	5.8	1.8	1.8
20	.8	1.0	.6	0	.4	*1.0	1.5	5.5	2.4	5.8	1.7	2.5
21	.7	1.0	.6	0	.4	1.5	1.3	6.5	2.1	5.8	1.7	2.5
22	.7	1.0	.6	0	.2	2.5	1.2	5.8	8.0	5.8	1.7	2.4
23	.7	1.5	.6	0	.2	3.0	1.0	6.5	53	5.5	1.8	1.8
24	.7	1.5	.6	0	.2	4.0	1.1	4.5	15	5.3	2.1	1.8
25	.7	1.5	.6	0	.6	5.0	1.1	3.7	54	5.3	2.4	1.7
26	.9	1.5	.8	0	1.5	6.5	.9	3.2	45	5.5	2.1	1.5
27	.9	1.2	1.0	0	2.0	7.5	.8	3.2	16	7.9	2.2	1.5
28	.8	1.2	1.2	0	3.0	9.0	.7	2.5	226	13	2.8	2.5
29	.7	1.2	1.5	0	.....	11	.6	2.5	68	9.0	3.0	3.0
30	.9	1.2	1.2	0	.....	10	.6	2.2	28	7.0	3.0	3.2
31	.9	.....	1.2	0	.....	7.5	.....	1.7	.....	4.9	2.5	.....
1957-58												
1	*3.0	3.7	5.5	2.0	0.8	10	*3.2	*6.5	3.2	0.8	0.6	0.2
2	2.5	6.5	5.5	1.5	.8	9.0	3.5	5.8	3.0	.9	.4	*.2
3	1.8	8.5	*5.0	1.0	.8	8.0	3.5	5.5	3.2	.9	.4	.1
4	1.8	6.7	5.0	1.0	.7	6.5	4.3	5.3	65	1.3	*3.1	.1
5	1.7	6.3	5.0	1.0	.7	*6.0	16	4.9	30	1.2	.4	.2
6	1.7	5.8	5.0	*1.0	.7	5.1	111	4.7	12	1.0	.3	.4
7	1.8	5.3	5.0	1.0	*.7	4.1	39	6.5	6.5	.8	.2	.4
8	2.2	4.3	5.0	1.0	.7	4.0	23	8.5	5.5	*.9	.2	.2
9	2.2	4.5	4.5	1.2	.6	4.0	18	7.7	*5.5	1.3	.2	.2
10	2.1	5.0	3.5	1.5	.6	4.0	16	7.0	4.7	1.4	.1	.1
11	1.8	5.3	4.0	1.5	.5	4.0	15	6.3	4.3	1.3	.2	.1
12	1.8	4.3	4.0	1.5	.5	4.0	14	4.9	4.3	1.2	.1	.1
13	1.8	4.7	4.0	1.5	.4	3.5	13	3.7	4.7	1.1	.1	.1
14	1.8	4.7	4.0	1.5	.4	3.2	12	3.7	3.9	1.1	.2	.6
15	9.8	4.5	4.5	1.5	.3	3.2	11	3.7	3.5	.9	.2	.6
16	11	5.3	4.5	1.5	.3	3.0	9.0	3.2	3.2	.7	.1	.4
17	7.2	5.3	5.0	1.5	.2	3.0	8.7	3.3	3.5	.7	.1	.2
18	4.9	5.0	5.0	1.2	.2	3.0	8.0	3.9	2.8	.6	.1	.1
19	3.5	5.0	5.0	1.2	.1	3.4	7.2	3.7	2.5	1.0	.1	.1
20	3.0	4.5	5.0	1.0	.1	3.5	7.5	3.2	2.4	.9	.2	.1
21	3.9	4.5	5.0	1.0	.1	3.5	7.2	2.8	2.1	.7	.2	.1
22	3.9	4.5	5.0	1.0	.1	3.5	7.2	2.5	2.2	.6	.2	.1
23	3.7	4.5	3.5	1.0	.2	3.9	8.0	2.2	1.8	.6	.3	.1
24	3.3	4.5	4.0	1.0	.5	4.1	13	2.1	1.8	.5	.4	.1
25	3.0	5.0	4.0	1.0	1.0	4.5	14	1.8	1.8	.4	.4	.1
26	2.8	5.0	4.0	1.0	3.0	4.3	11	1.8	1.7	.4	.3	.1
27	2.8	4.5	3.8	.9	20	4.1	9.9	2.1	1.5	1.5	.2	0
28	2.6	4.5	3.6	.9	30	3.7	9.3	1.8	1.3	.8	.2	0
29	2.6	4.5	3.5	.8	.....	3.3	9.0	1.7	1.1	.6	.2	0
30	2.5	5.0	3.0	.8	.....	3.2	7.7	1.7	.9	.8	.2	0
31	*2.6	.....	2.5	.8	.....	3.0	.....	3.7	.....	.7	.2	.....

West Branch Floyd River near Struble, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	0	0.3	*0.1	0	0	0	4.3	0.2	209	10	0.5	0.8
2.....	*.1	.3	.2	0	*0	*0	4.5	.2	44	7.5	61	1.3
3.....	.1	*.2	.2	0	0	0	3.0	.6	23	4.9	*119	1.0
4.....	.1	.3	.2	0	0	0	2.6	1.0	14	3.7	23	.8
5.....	.1	.2	.2	*0	0	0	1.8	*2.2	10	2.8	8.7	.7
6.....	.1	.2	.1	0	0	0	*1.3	10	8.5	2.2	7.5	.6
7.....	.2	.3	.1	0	0	0	1.3	21	6.7	*1.7	14	.5
8.....	.2	.4	.1	0	0	0	1.1	6.0	5.8	1.3	5.5	.4
9.....	.2	.4	.1	0	0	.1	1.0	4.1	4.9	1.2	3.5	.4
10.....	.1	.3	.1	0	0	.1	.9	3.0	4.5	.9	2.5	.3
11.....	.1	.2	.1	0	0	.1	.8	1.8	4.5	.8	1.8	.2
12.....	.1	.2	0	0	0	.1	.7	1.3	4.3	.7	1.7	.2
13.....	.1	.3	0	0	0	.2	.6	.8	3.7	.7	2.1	.2
14.....	.2	.3	0	0	0	.2	.6	.5	3.5	.6	4.7	.2
15.....	.2	.3	0	0	0	.2	.6	.4	3.2	.6	5.5	.2
16.....	.2	.4	0	0	0	.3	.5	.5	2.8	.8	5.1	.4
17.....	.2	.9	0	0	0	.3	.7	.7	2.6	1.2	4.7	.8
18.....	.2	1.1	.1	0	0	.3	.6	.7	26	2.8	3.5	1.1
19.....	.2	.8	.1	0	0	.4	.7	.6	19	2.1	2.4	1.1
20.....	.2	.5	0	0	0	1.0	1.4	.6	7.5	1.1	1.8	1.2
21.....	.4	.4	0	0	0	4.0	*1.3	1.2	4.9	.8	1.4	1.0
22.....	.3	.4	0	0	0	5.0	.9	1.3	3.5	.6	1.8	.8
23.....	.4	.3	.1	0	0	6.0	.7	.8	2.6	.6	1.7	.6
24.....	.3	.4	.1	0	0	7.0	.8	.4	2.2	.6	1.5	.6
25.....	.4	.3	.1	0	0	6.0	.7	.2	2.2	.5	1.2	.7
26.....	.3	.2	.2	0	0	5.0	.7	.1	2.1	.4	.9	.9
27.....	.4	.2	.3	0	*0	4.5	.7	.1	2.2	.4	.9	1.1
28.....	.3	.2	.3	0	0	4.0	.6	*156	4.3	.4	.7	.9
29.....	.4	.1	.3	0	.....	3.7	.4	218	7.7	.4	.7	.7
30.....	.3	.1	.2	0	.....	3.2	.....	.66	10	.3	.7	.6
31.....	.3	.....	.1	0	.....	4.5	.....	*464	.....	.4	*.8	.....
1959-60												
1.....	0.6	1.3	1.7	1.6	0.5	0.2	1,340	18	*36	10	*2.5	19
2.....	1.3	*1.2	1.7	1.4	*.5	*.2	2,630	16	33	9.0	2.4	13
3.....	1.7	1.0	*1.7	1.3	.5	.2	420	*12	30	8.0	2.4	9.9
4.....	1.3	1.4	1.7	1.3	.5	.2	181	11	28	7.5	2.3	8.0
5.....	*1.1	2.5	1.7	1.3	.5	.2	89	15	26	7.5	3.3	7.1
6.....	.8	2.5	1.7	*1.3	.5	.2	65	19	24	*7.4	6.9	6.3
7.....	.8	2.4	1.7	1.3	.5	.2	55	24	22	7.4	6.7	*5.7
8.....	1.5	2.2	1.7	1.3	.5	.2	45	26	20	6.9	3.7	9.9
9.....	1.4	2.0	1.7	1.3	.5	.1	35	23	18	6.9	2.8	58
10.....	1.2	2.0	1.7	1.3	.4	.1	25	20	22	6.7	2.5	36
11.....	1.1	2.0	1.8	1.3	.4	.1	20	17	30	6.1	2.4	18
12.....	.8	1.9	1.8	1.3	.4	.1	*25	15	22	7.1	2.3	12
13.....	.7	1.8	1.8	1.3	.4	.1	260	13	18	11	2.1	9.9
14.....	.7	1.7	1.8	1.3	.4	.1	87	12	16	9.3	2.1	9.6
15.....	.7	1.7	1.8	1.2	.4	.1	55	11	15	6.5	2.0	9.0
16.....	.6	1.7	1.9	1.0	.4	.1	50	12	14	5.3	2.0	8.0
17.....	.6	1.7	1.9	.9	.4	.1	48	35	34	5.2	2.0	8.3
18.....	.6	1.7	1.9	.9	.4	.1	44	90	27	8.8	2.4	9.3
19.....	.7	1.7	1.9	.8	.4	.1	40	58	22	11	2.9	12
20.....	.7	1.7	1.9	.8	.4	.1	36	67	22	7.1	2.6	18
21.....	.8	1.7	1.9	.7	.3	.1	34	577	24	4.8	2.1	14
22.....	1.1	1.7	1.9	.7	.3	.1	32	178	22	4.2	1.9	14
23.....	1.0	1.7	1.9	.6	.3	.1	29	97	20	3.6	1.8	44
24.....	.9	1.7	1.9	.6	.3	.1	26	78	18	3.3	2.1	31
25.....	.8	1.7	2.0	.5	.3	.2	24	85	16	3.2	7.4	27
26.....	.7	1.7	2.2	.5	.3	.....	.....	.....	.....	.....	.....	.....
27.....	.6	1.7	2.5	.5	.3	.....	.....	.....	.....	.....	.....	.....
28.....	.6	1.7	3.0	.5	.3	180	20	87	12	3.5	19	23
29.....	.7	1.7	4.0	.5	.3	3,130	19	68	11	2.9	48	18
30.....	1.0	1.7	.....	.....	.....	*3,130	19	55	15	2.8	*140	14
31.....	1.3	.....	2.5	.....	.....	605	20	47	11	2.6	68	13
			2.0	.....	.....	172	.....	41	.....	2.7	33	.....

West Branch Floyd River near Struble, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	11.5	10.09	0.63	0.42	0.05	4.39	2.93	2.31	9.54	13.8	13.6	0.50
1956-57	.74	1.14	.74	.18	.46	3.74	2.51	4.80	18.3	41.5	3.72	2.66
1957-58	3.26	5.06	4.38	1.17	2.32	4.37	14.7	4.07	6.33	.89	.24	.17
1958-59	.22	.35	.11	0	0	1.81	1.21	31.1	15.0	1.71	9.38	.68
1959-60	.92	1.77	1.98	.98	.40	233	193	62.6	21.4	6.18	14.1	17.0

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.0083	0.0050	0.0035	0.0023	0.00028	0.024	0.016	0.013	0.053	0.076	0.075	0.0028
1956-57	.0041	.0063	.0041	.00099	.0025	.021	.014	.027	.101	.229	.021	.015
1957-58	.018	.028	.024	.0065	.013	.024	.081	.022	.035	.0049	.0013	.00094
1958-59	.0012	.0019	.00061	0	0	.010	.0067	.172	.083	.0094	.052	.0038
1959-60	.0051	.0098	.011	.0054	.0022	1.29	1.07	.346	.118	.034	.078	.094

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.009	0.006	0.004	0.003	0.0003	0.03	0.02	0.01	0.06	0.09	0.09	0.03
1956-57	.005	.007	.005	.001	.003	.02	.02	.03	.11	.26	.02	.02
1957-58	.02	.03	.03	.007	.01	.03	.09	.03	.04	.006	.001	.001
1958-59	.001	.002	.0007	0	0	.01	.007	.20	.09	.01	.06	.004
1959-60	.006	.01	.01	.006	.002	1.48	1.19	.40	.13	.04	.09	.10

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	.191	.154	.38	.26	3.0	.270	.175	.142	.568	.848	.839	.30
1956-57	.46	.68	.45	.11	.26	.230	.149	.295	1,090	2,550	.229	.158
1957-58	.201	.301	.270	.72	.129	.269	.873	.250	.377	.55	.14	.10
1958-59	.13	.21	6.7	0	0	.111	.72	1,910	.891	.105	.577	.40
1959-60	.56	.105	.122	.60	.23	14,320	11,490	3,850	1,270	.380	.864	1,010

‡Monthly figures estimated on the basis of records for nearby stations; daily discharge figures not available.

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30							Calendar year			
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet
	Date	Gage height in feet	Discharge								
1956	July 12, 1956	9.22	463	0	4.25	0.023	0.35	3,080	4.22	0.35	3,060
1957	July 4, 1957	11.32	840	0	6.76	.037	.50	4,900	7.61	.56	5,510
1958	Apr. 6, 1958	7.34	218	0	3.90	.022	.30	2,820	2.89	.22	2,090
1959	May 31, 1959	10.27	646	0	5.18	.029	.38	3,750	5.51	.41	3,990
1960	Mar. 29, 1960	14.72	3,880	.1	46.2	.255	3.46	33,550			

Peak Discharge (base, 400 cfs)

1955-56: July 12 (6:30 a.m.) 463 cfs (9.22 ft.).
 1956-57: June 28 (1 p.m.) 511 cfs (9.50 ft.); July 4 (5 a.m.) 840 cfs (11.32 ft.); July 8 (3:30 a.m.) 594 cfs (9.96 ft.).
 1957-58: No peak above base.
 1958-60: May 29 (1 a.m.) 495 cfs (9.38 ft.); May 31 (1 a.m.) 646 cfs (10.27 ft.).
 1959-60: Mar. 29 (12:30 a.m.) 3,880 cfs (14.72 ft.); (11:30 p.m. Apr. 1 to 1:30 a.m. Apr. 2) 3,630 cfs (14.62 ft.); May 21 (3 a.m.) 740 cfs (10.83 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.
 †Stage-discharge relation affected by ice Dec. 1-31, 1955; Jan. 1 to Mar. 31, Nov. 15 to Dec. 31, 1956; Jan. 1 to Mar. 27, Apr. 12, Nov. 9, 10, Nov. 18 to Dec. 31, 1957; Jan. 1 to Feb. 28, Mar. 8-19, Nov. 26 to Dec. 31, 1958; Jan. 1 to Mar. 28, Nov. 5 to Dec. 31, 1959; Jan. 1 to Mar. 27, 1960. No gage-height record Oct. 1 to Nov. 30, 1955; Apr. 6-12, 15-23, June 4-16, June 19 to July 5, 1960.

Floyd River at James, Iowa

LOCATION.—Lat. 42°34'30", long. 96°18'45", in SE¼SE¼ sec. 30, T. 90 N., R. 46 W., on right bank at downstream side of highway bridge at James, 10.7 miles upstream from mouth and 15.1 miles downstream from West Branch Floyd River.

DRAINAGE AREA.—882 square miles (revised in 1956).

RECORDS AVAILABLE.—December 1934 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 1,102.59 ft. above mean sea level, datum of 1929. Prior to Sept. 11, 1938, June 9 to Nov. 15, 1953, and Oct. 1, 1955, to May 22, 1957, wire-weight gage; Sept. 11, 1938, to June 8, 1953 (destroyed by flood) and Nov. 16, 1953, to Sept. 30, 1955, water-stage recorder, all at same site and datum.

AVERAGE DISCHARGE.—25 years 181 cfs (131,000 acre-ft. per year).

EXTREMES.—1934-60: Maximum discharge, 71,500 cfs June 8, 1953 (gage height, 25.3 ft., from floodmarks), from rating curve extended above 15,600 cfs on basis of contracted-opening and flow over-embankment measurement of peak flow; minimum daily, 1 cfs Aug. 20, 27, 1936, Feb. 10-23, 1959.

REMARKS.—Bankfull stage is about gage height, 18 ft.

REVISIONS (water years).—WSP 1240: 1935(M), 1936, 1937-38(M), 1942, 1945.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	9.9	12	10	6.0	6.8	30	50	25	32	20	48	8.6
2.....	9.9	*13	9.6	6.0	6.6	100	53	27	26	18	*42	8.6
3.....	9.9	14	9.2	6.0	6.6	85	65	28	21	16	40	7.8
4.....	13	14	9.0	6.0	6.6	74	*61	35	18	15	44	7.3
5.....	*34	13	8.4	*6.0	6.6	*62	56	36	*18	*14	32	*7.0
6.....	47	10	8.0	6.0	6.6	54	51	36	17	12	35	6.6
7.....	36	8.1	7.2	6.0	6.6	26	45	33	15	11	130	6.3
8.....	30	10	*6.8	6.0	*6.5	20	39	31	12	11	108	5.9
9.....	25	11	6.4	6.0	6.5	15	36	28	9.6	11	57	6.1
10.....	16	14	6.2	6.0	6.5	13	33	38	8.8	13	47	6.3
11.....	15	15	6.2	6.0	6.5	12	32	108	8.8	26	29	5.7
12.....	16	14	6.0	6.0	6.6	11	31	55	9.3	30	24	6.0
13.....	14	14	6.0	6.0	6.6	11	30	43	8.6	201	24	6.3
14.....	14	11	6.0	6.0	6.6	12	30	40	8.0	120	24	5.9
15.....	14	13	6.0	6.0	6.7	15	28	37	8.3	60	24	5.9
16.....	14	11	6.0	6.0	6.8	17	26	32	8.3	28	24	5.7
17.....	14	9.2	6.0	6.0	7.0	19	25	27	8.3	21	24	5.5
18.....	13	8.4	6.0	6.0	7.2	20	24	24	8.6	18	145	4.9
19.....	14	9.6	6.0	6.0	7.2	21	23	22	8.3	16	49	4.9
20.....	13	11	6.0	5.8	7.4	30	22	20	8.3	14	24	4.9
21.....	14	13	6.0	5.6	7.4	41	20	19	8.3	11	20	5.1
22.....	13	14	6.0	5.4	7.6	42	20	19	8.0	12	17	4.7
23.....	14	11	6.0	5.2	7.8	45	20	15	8.0	11	14	4.3
24.....	14	9.0	6.0	5.2	8.0	51	21	16	8.3	10	12	4.3
25.....	14	10	6.0	5.4	8.2	51	22	16	8.8	8.3	11	4.3
26.....	14	11	6.0	5.4	8.4	60	22	15	10	6.8	10	4.2
27.....	13	11	6.0	5.6	8.8	67	23	14	49	6.6	9.5	4.1
28.....	13	11	6.0	6.0	8.8	65	24	14	89	6.6	8.8	4.1
29.....	13	10	6.0	6.4	9.0	37	25	47	36	6.6	8.0	4.3
30.....	11	10	6.0	6.6	.....	49	*26	98	23	6.6	8.0	4.5
31.....	12	.....	6.0	6.8	.....	53	.....	66	.....	9.3	8.0	.....

Floyd River at James, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1.....	*5.9	9.8	9.0	7.8	1.7	16	84	14	14	*156	*31	20
2.....	3.9	9.0	8.0	*7.4	1.7	16	*66	13	15	106	28	27
3.....	3.7	8.6	6.2	6.2	1.7	16	53	12	*16	78	41	*24
4.....	3.7	8.6	5.2	6.0	*1.7	17	53	11	14	166	36	21
5.....	3.7	10	*1.3	5.8	1.7	*14	54	11	12	1,150	29	30
6.....	4.1	*12	4.0	5.8	2.0	16	49	*11	12	730	26	226
7.....	4.1	11	3.8	5.4	2.0	16	46	9.8	10	294	24	79
8.....	4.9	9.8	3.8	5.0	2.2	15	42	9.0	10	810	34	61
9.....	4.9	9.0	3.8	4.0	3.0	14	34	8.8	13	810	294	46
10.....	4.9	9.0	3.8	3.0	4.0	14	32	9.6	13	316	135	40
11.....	5.1	8.8	3.9	3.0	6.0	15	28	9.8	11	151	59	32
12.....	5.1	8.3	3.9	3.0	10	19	24	9.8	11	110	41	27
13.....	5.3	8.3	3.5	3.0	15	19	25	29	11	89	32	25
14.....	5.1	8.3	3.5	*3.0	18	20	27	60	54	119	28	28
15.....	5.1	8.3	3.5	2.8	19	24	27	40	26	230	25	26
16.....	6.1	8.3	3.5	2.8	18	8.0	25	26	71	97	23	52
17.....	6.6	9.8	3.5	2.8	17	13	24	23	336	77	21	20
18.....	7.0	10	3.8	2.8	16	12	22	24	196	63	21	19
19.....	7.0	11	4.0	2.5	12	11	20	24	46	62	20	60
20.....	6.8	9.8	4.2	2.5	12	16	19	24	31	55	20	50
21.....	7.3	7.8	4.2	2.5	10	20	19	36	22	51	20	34
22.....	7.0	7.8	4.0	2.2	9.0	20	19	28	91	48	19	28
23.....	7.3	7.8	4.0	2.2	9.0	22	18	26	79	45	20	26
24.....	7.3	7.6	4.0	2.0	11	26	18	31	61	41	18	24
25.....	7.3	7.6	4.0	2.0	14	37	18	43	295	38	18	23
26.....	8.3	7.2	4.5	1.8	15	34	18	37	352	37	16	22
27.....	7.6	7.0	5.0	1.8	16	32	17	30	214	40	18	20
28.....	7.0	7.0	6.0	1.8	16	118	16	26	142	37	22	20
29.....	8.3	7.4	7.0	1.7	.....	119	14	24	228	55	20	19
30.....	8.3	8.6	8.0	1.7	.....	101	14	28	280	43	24	*19
31.....	8.3	.....	8.0	1.7	.....	87	.....	19	.....	34	20	.....
1957-58												
1.....	18	37	35	13	10	267	26	50	223	15	18	3.7
2.....	18	48	*35	11	10	83	*26	47	56	15	12	3.3
3.....	18	42	36	10	10	67	27	46	46	14	10	*4.3
4.....	16	39	36	10	10	61	34	41	52	18	.....	3.8
5.....	16	41	37	10	10	55	57	38	142	15	*9.3	3.3
6.....	16	40	36	*9.5	10	*18	88	36	214	14	8.3	3.0
7.....	16	40	35	9.5	*10	40	164	35	147	13	7.0	3.7
8.....	20	38	30	9.5	10	32	124	36	141	*13	6.6	3.7
9.....	20	28	30	9.5	10	31	106	37	*94	16	6.6	3.5
10.....	19	28	25	9.5	9.5	33	99	35	71	17	7.0	3.3
11.....	18	37	25	10	9.0	31	87	32	62	15	6.8	3.3
12.....	17	36	25	10	8.5	30	82	30	57	14	6.3	3.3
13.....	17	34	25	10	8.0	30	75	28	52	15	5.0	3.3
14.....	16	33	26	10	8.0	28	71	26	48	14	4.0	4.1
15.....	30	34	26	10	8.0	26	66	26	43	14	7.0	3.7
16.....	29	39	28	11	8.0	24	62	24	38	13	4.3	3.7
17.....	34	38	28	11	8.0	24	58	28	34	12	4.9	3.7
18.....	37	35	28	11	8.0	26	54	30	32	12	4.7	3.4
19.....	35	26	28	11	8.0	26	48	27	30	13	3.5	3.1
20.....	30	38	28	11	8.0	26	51	26	27	13	3.5	3.1
21.....	30	36	30	11	8.0	26	48	31	25	13	3.2	3.1
22.....	32	27	30	11	8.0	26	46	26	24	11	2.9	3.1
23.....	31	30	28	11	8.5	26	48	24	24	10	4.1	3.4
24.....	28	36	26	11	9.0	26	57	21	22	9.6	5.1	3.7
25.....	27	35	26	11	10	26	57	19	22	9.3	4.9	3.1
26.....	26	37	25	11	12	25	64	18	21	8.8	4.5	3.1
27.....	26	40	25	11	60	26	62	16	20	25	4.0	3.0
28.....	24	40	25	11	548	26	62	16	20	17	3.5	3.0
29.....	24	36	25	10	.....	26	58	15	18	13	4.7	3.1
30.....	24	35	20	10	.....	26	*55	15	16	14	4.7	3.2
31.....	*23	.....	17	10	.....	26	.....	*441	.....	14	3.7	.....

Floyd River at James, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	3.7	5.1	*3.5	2.4	1.2	20	28	11	*1,590	64	8.3	*11
2	*4.1	4.9	3.5	2.2	1.2	50	26	11	1,070	57	9.6	11
3	4.9	*4.9	3.5	2.0	*1.2	*70	26	12	466	50	268	11
4	4.1	4.7	3.5	1.8	1.2	80	24	16	250	48	*434	10
5	4.1	4.3	3.5	1.8	1.2	75	24	*32	182	45	144	10
6	4.3	4.3	3.2	*1.8	1.2	70	24	50	128	41	83	8.3
7	4.5	4.1	3.2	1.8	1.2	65	*23	102	114	*34	64	8.3
8	4.5	3.1	3.0	1.8	1.2	60	22	290	100	30	51	8.0
9	4.9	3.7	3.0	1.8	1.2	62	21	249	90	28	38	7.8
10	4.7	4.3	2.8	1.8	1.0	66	20	254	85	26	30	7.8
11	4.1	4.1	2.8	1.8	1.0	68	19	104	77	22	26	7.6
12	4.5	3.9	2.8	1.8	1.0	72	18	78	74	21	22	7.6
13	4.5	4.1	2.8	1.8	1.0	78	17	62	72	20	20	7.6
14	4.5	4.5	2.6	1.8	1.0	70	16	52	53	20	80	7.6
15	4.7	4.1	2.6	1.8	1.0	60	15	46	49	18	70	7.6
16	4.5	4.5	2.8	1.6	1.0	55	14	40	48	17	41	7.8
17	4.7	5.1	2.8	1.6	1.0	55	16	35	45	20	30	7.8
18	4.3	5.7	3.0	1.6	1.0	50	16	32	43	24	24	8.3
19	4.7	5.9	3.0	1.6	1.0	45	16	30	500	18	22	9.8
20	4.7	5.7	3.0	1.6	1.0	45	22	47	200	16	20	9.8
21	4.7	5.5	3.0	1.4	1.0	45	24	48	49	15	18	9.6
22	4.7	5.7	3.2	1.4	1.0	45	20	34	46	13	16	9.2
23	4.7	5.1	3.2	1.4	1.0	45	17	31	45	12	17	8.8
24	4.5	5.0	3.2	1.4	1.5	45	16	38	44	11	15	8.4
25	4.5	4.8	3.2	1.4	2.0	45	14	40	43	10	14	8.2
26	4.7	4.6	3.2	1.4	3.0	44	14	35	43	9.3	13	8.0
27	4.9	4.0	3.2	1.2	4.0	42	14	30	43	8.8	13	8.3
28	4.9	3.6	3.2	1.2	10	39	13	173	46	8.6	11	8.3
29	4.7	3.5	3.0	1.2	.....	36	12	325	50	8.3	10	8.8
30	4.9	3.5	2.8	1.2	.....	31	11	347	51	8.3	10	9.3
31	4.9	.....	2.6	1.2	.....	29	.....	1,630	.....	8.3	11	.....
1959-60												
1	9.3	13	15	35	8.0	7.5	2,910	100	*308	78	27	243
2	12	12	16	30	*8.0	*7.5	8,100	96	278	68	*27	208
3	15	*12	*16	28	8.0	7.5	6,810	*92	248	67	28	167
4	15	12	16	27	8.0	7.5	3,930	103	225	66	27	155
5	13	14	15	25	8.0	7.5	1,320	100	200	60	137	127
6	*12	14	15	*24	8.0	7.0	494	131	180	*58	398	103
7	12	12	15	23	8.5	7.0	341	111	160	56	111	*92
8	12	12	15	23	8.5	7.0	268	115	150	54	78	87
9	18	15	15	23	8.5	7.0	234	111	163	53	61	103
10	16	18	15	22	8.0	7.0	206	103	175	51	50	131
11	14	18	16	22	7.5	7.0	193	96	180	49	40	155
12	13	16	16	22	7.5	7.0	*175	89	165	93	35	135
13	12	14	16	21	7.5	7.0	184	86	160	54	33	107
14	11	12	16	20	7.5	7.0	418	83	135	50	33	96
15	11	12	16	18	7.5	7.0	268	81	130	50	32	87
16	11	12	16	16	7.5	7.0	211	92	125	51	*27	82
17	10	12	17	14	7.5	7.0	180	86	130	48	28	78
18	9.8	12	17	13	7.5	7.0	159	96	135	48	27	86
19	9.8	12	17	12	7.5	7.0	147	135	139	54	25	83
20	9.6	13	18	11	7.5	7.0	139	175	139	54	25	82
21	9.6	15	18	10	7.5	7.0	131	1,340	143	52	250	82
22	9.6	16	18	9.5	7.5	7.0	123	2,310	119	52	103	81
23	10	17	18	9.0	7.5	7.0	119	903	100	53	85	83
24	10	17	18	8.5	7.5	7.0	111	458	100	42	80	147
25	11	16	19	8.0	7.5	7.0	107	482	92	36	85	155
26	9.6	14	21	7.5	7.5	8.0	103	1,250	88	32	100	147
27	9.3	13	23	7.0	7.5	300	100	1,610	88	32	396	147
28	9.3	12	25	7.0	7.5	4,650	100	678	88	32	1,630	143
29	9.0	13	30	7.0	7.5	*12,000	96	522	87	30	*643	127
30	11	14	35	7.0	.....	9,700	96	410	81	32	834	107
31	14	.....	38	7.5	.....	4,050	.....	352	.....	30	422	.....

Floyd River at James, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	16.7	11.5	6.68	5.92	7.19	39.0	32.8	34.3	17.0	24.8	35.5	5.67
1956-57	6.03	8.78	4.77	3.42	9.45	29.9	30.8	22.8	89.5	198	38.2	37.3
1957-58	23.7	36.1	28.4	10.5	30.2	41.1	65.4	42.6	60.7	13.9	6.12	3.40
1958-59	4.55	4.54	3.05	1.63	1.62	53.6	18.7	138	190	23.6	52.7	8.72
1959-60	11.5	13.8	18.7	16.7	7.72	996	926	400	150	51.1	190	121

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.019	0.013	0.0076	0.0067	0.0082	0.044	0.037	0.039	0.019	0.028	0.040	0.0064
1956-57	.0068	.010	.0054	.0039	.011	.034	.035	.026	.101	.224	.043	.042
1957-58	.027	.041	.032	.012	.034	.047	.074	.048	.069	.016	.0069	.0039
1958-59	.0052	.0051	.0035	.0018	.0018	.061	.021	.156	.215	.027	.060	.0099
1959-60	.013	.016	.021	.019	.0088	1.13	1.05	.454	.170	.058	.215	.137

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.02	0.01	0.009	0.008	0.009	0.05	0.04	0.04	0.02	0.03	0.05	0.007
1956-57	.008	.01	.006	.004	.01	.04	.04	.03	.11	.26	.05	.05
1957-58	.03	.05	.04	.01	.04	.05	.08	.06	.08	.02	.008	.004
1958-59	.006	.006	.004	.002	.002	.07	.02	.18	.24	.03	.07	.01
1959-60	.02	.02	.02	.02	.009	1.30	1.17	.52	.19	.07	.25	.15

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	1,020	685	411	364	414	2,400	1,950	2,110	1,010	1,530	2,180	337
1956-57	371	523	293	210	525	1,840	1,830	1,400	5,330	12,170	2,350	2,220
1957-58	1,460	2,150	1,740	644	1,680	2,520	3,890	2,620	3,610	852	376	203
1958-59	280	270	188	100	90	3,300	1,110	8,500	11,300	1,450	3,240	519
1959-60	710	821	1,150	1,030	444	61,260	55,090	24,590	8,950	3,140	11,660	7,190

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30						Calendar year					
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet	
	Date	Gage height in feet	Discharge									
1955												
1956	July 13, 1956	8.60	318	4.1	19.9	0.023	0.29	14,410	58.5	0.89	42,340	
1957	July 5, 1957	13.83	1,330	1.7	40.1	.045	.62	29,060	18.6	.28	13,480	
1958	May 31, 1958	13.12	970	2.9	30.0	.031	.47	21,740	45.9	.71	33,220	
1959	June 1, 1959	17.59	1,920	1.0	41.9	.048	.64	30,350	23.7	.37	17,130	
1960	Mar. 29, 1960	21.93	15,100	7.0	242	.274	3.74	176,000	44.6	.68	32,290	

Peak Discharge (base, 2,500 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: No peak above base.

1958-59: No peak above base.

1959-60: Mar. 29 (5 p.m.) 15,100 cfs (21.93 ft.); Apr. 2 (3:30 p.m.) 9,480 cfs (20.83 ft.); May 22 (8 a.m.) 2,710 cfs (17.22 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 16 to Dec. 31, 1955; Jan. 1 to Mar. 20, Nov. 23 to Dec. 31, 1956; Jan. 1 to Feb. 28, Nov. 9, 10, 19-24, Nov. 29 to Dec. 31, 1957; Jan. 1 to Feb. 27, Nov. 24 to Dec. 31, 1958; Jan. 1 to Mar. 23, Nov. 5-9, Nov. 12 to Dec. 31, 1959; Jan. 1 to Mar. 27, 1960.

West Fork Ditch at Holly Springs, Iowa

LOCATION.—Lat. 42°15'34", long. 96°04'41", in SE¼SE¼ sec. 16, T. 86 N., R. 45 W., on right bank 10 ft. downstream from bridge on county road, three-quarters of a mile south of Holly Springs, 11.4 miles upstream from Wolf Creek, 15.7 miles north of Onawa, and 22 miles southeast of Sioux City.

DRAINAGE AREA.—399 square miles (revised in 1956).

RECORDS AVAILABLE.—April 1939 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 1,052.82 ft. above mean sea level, datum of 1929 (Corps of Engineers bench mark). Prior to June 16, 1959, wire-weight gage at bridge three-quarters of a mile upstream at same datum.

AVERAGE DISCHARGE.—21 years 94.9 cfs (68,700 acre-ft. per year).

EXTREMES.—1930-60: Maximum discharge about 10,000 cfs Mar. 30, 1960 (estimated on basis of records at former site, three-quarters of a mile upstream); maximum gage height, 22.43 ft. Mar. 30 (after levees broke in vicinity of gage); minimum daily discharge 0.2 cfs July 30, Aug. 17, 1956.

Flood of Mar. 30, 1960, reached a stage of 25.2 ft., from floodmark, at former site three-quarters of a mile upstream.

REMARKS.—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 and becomes known as Monona-Harrison ditch 3 miles southwest of Turin. Bankfull stage is about gage height, 24 ft.

REVISIONS (water years).—WSP 1240: 1943 (monthly mean for March), 1945(M). WSP 1310: 1941(M), 1944-46(M).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	9.2	11	8.2	5.0	5.0	11	11	15	20	7.1	2.0	3.3
2.....	8.9	10	8.0	5.0	5.0	12	11	15	11	5.8	2.9	3.3
3.....	8.9	10	7.5	5.0	5.0	13	11	16	10	5.0	1.1	2.4
4.....	9.2	10	7.0	5.0	5.2	14	13	16	6.6	5.3	.8	3.3
5.....	10	10	6.5	5.0	5.4	15	14	16	6.0	5.0	1.2	2.7
6.....	10	11	6.0	5.0	5.8	15	15	16	7.9	4.6	2.0	2.6
7.....	11	10	6.0	5.0	6.0	15	16	16	9.6	12	9.0	2.6
8.....	11	9.6	6.0	5.0	6.2	14	16	16	7.3	6.8	6.3	2.7
9.....	9.6	10	6.0	5.0	6.4	13	15	15	5.3	1.0	5.3	2.7
10.....	9.2	9.6	6.0	5.0	6.6	12	*15	15	5.0	1.2	4.8	3.1
11.....	9.6	10	6.0	5.0	6.9	11	15	16	5.5	108	5.5	2.6
12.....	10	10	6.0	5.0	7.2	11	14	25	5.5	76	5.5	2.2
13.....	9.6	10	5.8	5.0	7.4	11	14	16	5.3	22	*2.9	2.2
14.....	10	10	*5.8	5.0	7.6	11	14	15	5.0	16	2.0	2.9
15.....	9.6	*10	5.8	5.0	7.8	*11	13	15	5.3	13	1.0	3.3
16.....	10	9.6	5.8	5.0	8.0	11	13	16	5.5	11	.3	3.3
17.....	10	10	5.8	*5.0	8.0	11	13	*15	5.5	*5.5	.2	3.1
18.....	10	10	5.8	5.0	8.2	11	12	15	5.0	9.0	3.7	3.1
19.....	*10	10	5.8	5.0	8.2	11	11	15	*5.3	7.6	3.5	3.3
20.....	10	10	5.5	5.0	*8.3	12	11	13	4.8	8.3	2.0	*1.7
21.....	9.6	9.2	5.3	5.0	8.3	13	11	13	7.1	5.0	1.6	1.4
22.....	9.6	9.6	5.0	5.0	8.3	15	11	10	5.5	4.6	1.2	1.2
23.....	10	9.2	5.0	5.0	8.3	20	10	9.6	5.0	4.4	1.0	1.1
24.....	10	9.2	5.0	5.0	8.3	29	10	9.6	4.2	3.1	.6	1.1
25.....	9.6	9.2	5.0	5.0	8.3	30	11	9.0	2.6	3.1	5	1.0
26.....	9.6	8.6	5.0	5.0	8.6	27	11	8.6	30	2.7	.3	.8
27.....	9.2	8.6	5.0	5.0	9.0	27	13	9.3	19	2.2	.5	.8
28.....	11	8.5	5.0	5.0	9.5	18	14	8.6	11	.6	.4	1.0
29.....	10	8.4	5.0	5.0	10	16	14	80	2.7	.3	.4	1.0
30.....	10	8.3	5.0	5.0	.....	13	14	162	2.9	.2	11	1.0
31.....	10	.....	5.0	5.0	.....	11	.....	22	.....	.3	11	.....

West Fork Ditch at Holly Springs, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1.....	1.0	2.4	4.0	3.5	2.0	7.0	10	11	9.8	209	37	18
2.....	1.0	2.6	4.0	3.5	2.0	7.0	10	11	11	284	29	28
3.....	1.0	2.6	4.0	3.5	2.0	7.0	10	11	8.4	208	60	24
4.....	2.0	3.9	4.0	3.5	2.1	7.0	10	11	7.8	580	38	21
5.....	2.6	4.8	4.0	3.5	2.2	7.0	10	11	6.6	398	41	33
6.....	2.2	4.8	3.5	3.5	2.4	7.0	9.0	12	13	200	40	274
7.....	2.0	4.8	3.5	3.5	2.7	7.0	9.0	12	15	200	26	72
8.....	2.1	4.6	3.5	3.5	3.0	7.0	9.0	13	15	537	20	29
9.....	2.2	4.8	3.5	3.4	3.5	7.0	9.0	16	12	165	15	34
10.....	2.2	4.8	3.5	3.4	4.5	7.0	9.0	16	11	84	11	46
11.....	2.1	4.8	3.5	3.3	5.0	7.0	9.5	18	12	69	12	49
12.....	2.2	4.6	3.5	3.1	5.5	7.0	9.5	19	7.5	55	13	39
13.....	2.4	5.0	3.5	3.0	6.0	7.2	9.5	25	32	49	13	40
14.....	2.4	5.3	3.5	*2.9	6.5	7.3	9.5	174	*1,480	70	12	68
15.....	2.2	5.0	3.5	*2.6	6.5	7.5	*9.6	186	164	100	11	31
16.....	2.1	4.8	3.5	2.4	6.5	7.8	9.5	93	330	*68	11	25
17.....	*2.4	4.6	3.5	2.2	6.5	8.0	9.5	88	831	20	12	20
18.....	2.0	4.8	*3.4	2.0	6.5	8.5	9.5	57	*391	20	13	*17
19.....	2.1	*4.8	3.5	2.0	*6.6	*9.3	9.5	22	150	20	*11	22
20.....	1.9	4.8	3.5	2.0	6.5	10	9.5	49	5.6	20	12	22
21.....	1.9	4.6	3.5	2.0	6.5	10	10	*284	231	20	11	22
22.....	2.0	4.2	3.5	2.0	6.5	10	10	168	*1,270	20	11	22
23.....	2.0	4.2	3.5	2.0	6.5	10	10	34	2,060	20	13	15
24.....	1.9	3.9	3.5	2.0	6.6	10	10	35	1,820	20	15	15
25.....	1.9	3.9	3.5	2.0	6.6	10	10	31	1,220	20	14	13
26.....	2.0	4.0	3.5	2.0	6.8	10	10	24	255	20	17	13
27.....	2.4	4.0	3.5	2.0	6.8	12	11	18	160	20	22	12
28.....	2.9	4.0	3.5	2.0	7.0	11	11	15	84	140	22	13
29.....	2.4	4.0	3.5	2.0	.....	9.6	11	13	1,210	81	20	13
30.....	2.4	4.0	3.5	2.0	.....	9.0	11	11	241	60	20	12
31.....	2.6	.....	3.5	2.0	.....	9.6	.....	11	.....	38	18	.....
1957-58												
1.....	11	20	40	10	10	78	18	30	36	18	16	5.8
2.....	10	24	37	10	10	70	20	31	32	20	16	6.0
3.....	10	30	35	10	10	55	26	32	159	18	12	*6.2
4.....	9.3	39	32	10	10	*46	37	28	207	16	*12	6.2
5.....	9.7	44	30	10	*10	46	100	28	110	16	11	6.2
6.....	8.5	37	26	10	10	45	136	*26	60	16	10	6.0
7.....	12	38	25	11	10	45	*102	24	51	16	10	6.2
8.....	12	36	25	11	10	44	90	23	95	*15	9.3	6.2
9.....	16	33	22	12	10	44	80	22	49	20	9.3	7.0
10.....	14	31	20	*12	9.5	39	77	22	46	16	9.3	6.2
11.....	12	30	*10	12	9.5	38	69	22	*42	16	9.3	5.9
12.....	11	32	10	12	9.5	36	66	26	45	18	9.3	6.2
13.....	12	*29	10	12	9.5	32	63	24	42	17	10	6.6
14.....	18	29	10	12	9.5	30	59	23	41	16	8.1	7.0
15.....	25	29	10	12	9.5	26	49	22	38	16	8.1	6.2
16.....	118	39	11	12	9.0	25	45	22	40	14	7.7	5.9
17.....	40	40	11	12	9.0	24	41	20	38	15	7.0	5.9
18.....	31	39	11	11	9.0	22	39	19	33	16	7.7	5.6
19.....	29	40	11	11	9.0	22	36	18	29	58	7.3	5.0
20.....	29	41	11	11	9.0	31	36	16	30	17	7.0	5.6
21.....	*21	42	12	11	12	24	33	14	26	18	7.0	3.8
22.....	46	43	12	11	50	23	35	14	24	16	7.3	3.5
23.....	53	44	12	11	100	22	39	14	21	16	7.3	3.3
24.....	29	45	12	11	150	22	38	13	19	16	7.3	3.1
25.....	26	45	12	11	300	22	36	14	19	18	8.1	3.0
26.....	26	45	12	11	324	22	35	12	18	16	7.3	2.8
27.....	28	45	12	11	195	22	38	14	18	16	6.6	2.7
28.....	26	45	11	11	118	22	36	11	17	16	6.2	2.6
29.....	24	43	10	11	.....	21	35	12	16	12	6.0	2.6
30.....	24	42	10	11	.....	20	30	11	17	16	6.0	2.5
31.....	18	.....	10	10	.....	19	.....	38	.....	20	5.8	.....

West Fork Ditch at Holly Springs, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	2.5	3.5	2.9	2.4	2.1	20	20	8.1	362	263	22	13
2.....	2.4	3.5	*3.0	2.3	2.1	30	*20	7.7	180	121	24	13
3.....	*2.3	*4.4	3.1	2.3	*2.1	*20	17	8.9	120	83	297	13
4.....	2.2	3.8	3.1	2.3	2.1	25	18	9.3	100	62	286	13
5.....	2.2	4.1	3.0	2.3	2.1	20	16	14	90	54	*74	12
6.....	5.0	4.1	2.8	*2.3	2.1	18	14	14	80	48	47	10
7.....	14	4.4	2.7	2.3	2.1	16	14	136	70	46	52	9.4
8.....	12	4.7	2.6	2.3	2.1	16	11	108	65	39	50	9.8
9.....	9.3	4.7	2.5	2.3	2.0	15	11	161	60	38	35	9.1
10.....	8.5	4.4	2.4	2.3	2.0	15	10	219	150	37	29	8.8
11.....	1.2	4.1	2.3	2.3	2.0	22	9.7	195	476	37	27	8.8
12.....	1.2	5.0	2.2	2.3	2.0	30	9.3	166	243	37	24	8.5
13.....	1.5	4.7	2.2	2.3	2.0	35	8.9	87	146	37	22	8.5
14.....	1.2	4.1	2.2	2.3	2.0	40	8.5	56	113	36	27	8.2
15.....	1.4	3.8	2.2	2.3	2.0	35	7.7	*46	84	36	35	9.1
16.....	1.4	4.1	2.2	2.3	2.0	32	8.1	43	66	36	38	9.4
17.....	1.4	3.8	2.3	2.3	2.0	30	7.7	40	59	45	32	10
18.....	1.2	3.8	2.4	2.3	2.0	40	8.9	38	59	100	26	12
19.....	2.3	4.4	2.5	2.3	2.0	50	9.3	36	59	61	23	12
20.....	3.2	4.7	2.6	2.2	2.2	45	13	87	72	49	21	13
21.....	2.8	4.4	2.7	2.2	2.5	40	11	122	54	38	20	31
22.....	2.1	4.7	2.7	2.2	3.0	35	9.3	69	49	33	19	21
23.....	1.2	4.7	2.7	2.2	3.5	33	8.1	131	45	30	18	14
24.....	1.2	4.7	2.7	2.2	4.0	32	8.1	104	42	26	17	14
25.....	1.1	4.0	2.7	2.2	5.0	30	7.7	201	42	25	16	14
26.....	1.2	3.5	2.7	2.2	7.0	27	7.7	136	42	24	15	29
27.....	1.9	3.2	2.7	2.2	10	25	7.7	580	40	23	14	46
28.....	1.7	3.0	2.7	2.2	15	24	8.1	1,670	64	22	13	20
29.....	2.5	2.8	2.7	2.2	.....	29	7.7	*1,810	*192	21	13	14
30.....	3.0	2.8	2.6	2.1	.....	37	8.1	2,220	507	21	13	13
31.....	3.2	.....	2.5	2.1	.....	36	.....	1,810	.....	21	*13	.....
1959-60												
1.....	13	14	20	50	15	12	1,640	59	*222	83	31	80
2.....	13	14	20	40	*15	12	2,830	57	196	74	*29	74
3.....	13	*13	*20	35	15	*12	2,200	*55	177	66	26	72
4.....	14	17	20	35	15	12	700	53	150	61	32	70
5.....	14	26	18	30	15	12	480	67	142	*55	276	70
6.....	*13	30	18	*29	15	12	340	89	134	51	670	*70
7.....	14	20	19	28	15	11	280	96	127	47	86	66
8.....	19	16	20	27	15	11	241	82	121	47	51	62
9.....	15	15	20	26	15	11	215	65	117	45	41	59
10.....	16	15	20	25	15	11	200	55	123	45	36	60
11.....	15	18	20	25	14	11	180	50	134	43	32	63
12.....	13	19	18	25	14	11	175	49	127	357	31	61
13.....	12	20	19	24	14	11	*183	47	124	312	29	61
14.....	12	20	20	24	14	11	202	39	118	68	26	66
15.....	11	19	20	24	14	11	148	36	108	58	26	66
16.....	11	18	19	22	13	11	133	47	104	52	26	70
17.....	10	17	18	22	13	11	124	139	121	50	27	71
18.....	10	16	18	22	13	11	119	148	105	49	29	70
19.....	10	16	20	20	13	11	109	124	93	53	35	69
20.....	11	16	20	20	13	11	94	186	94	40	50	68
21.....	11	16	18	20	12	10	92	1,110	92	43	35	69
22.....	12	18	18	18	12	10	88	1,160	89	39	30	74
23.....	11	20	15	18	12	10	73	450	80	39	29	146
24.....	11	20	17	18	12	10	64	348	73	36	69	90
25.....	11	20	16	16	12	10	62	724	69	35	103	70
26.....	11	18	18	16	12	12	59	2,220	66	34	87	61
27.....	11	16	30	16	12	50	56	1,060	62	37	139	60
28.....	11	18	70	15	12	*1,000	57	4,402	84	34	1,260	58
29.....	11	20	120	15	12	3,600	59	325	79	34	2,030	56
30.....	12	20	80	15	.....	8,000	59	282	101	32	584	54
31.....	14	.....	60	15	.....	*2,000	.....	254	.....	35	111	.....

West Fork Ditch at Holly Springs, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	9.82	9.65	5.83	5.00	7.31	15.0	12.9	21.2	7.71	11.5	2.92	2.23
1956-57	2.08	4.31	3.58	2.65	5.06	8.41	9.80	48.4	404	123	20.0	35.4
1957-58	24.5	37.3	16.8	11.1	51.5	33.5	51.5	20.8	47.3	17.9	8.75	5.06
1958-59	3.17	4.06	2.60	2.26	3.25	29.1	10.9	333	124	50.0	43.9	14.2
1959-60	12.4	18.2	27.4	23.7	13.6	481	375	319	115	66.5	196	69.5

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.025	0.024	0.015	0.013	0.018	0.038	0.032	0.053	0.019	0.029	0.0073	0.0056
1956-57	.0052	.011	.0090	.0066	.013	.021	.025	.121	1.01	.308	.050	.089
1957-58	.061	.093	.042	.028	.129	.084	.129	.052	1.19	.045	.022	.013
1958-59	.0079	.010	.0065	.0057	.0081	.073	.027	.835	.311	.125	.110	.036
1959-60	.031	.046	.069	.059	.034	1.21	.940	.799	.288	.167	.491	.174

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.03	0.03	0.02	0.01	0.02	0.04	0.04	0.06	0.02	0.03	0.008	0.006
1956-57	.006	.01	.01	.008	.01	.02	.03	.14	1.13	.36	.06	.10
1957-58	.07	.10	.05	.03	.13	.10	.14	.06	.13	.05	.03	.01
1958-59	.009	.01	.008	.007	.008	.08	.03	.96	.35	.14	.13	.04
1959-60	.04	.05	.08	.07	.04	1.40	1.05	.92	.32	.19	.57	.19

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	604	574	358	307	422	920	766	1,310	459	708	180	132
1956-57	128	257	220	163	281	517	583	2,970	24,030	7,570	1,230	2,110
1957-58	1,500	2,220	1,040	680	2,860	2,060	3,060	1,280	2,810	1,100	538	301
1958-59	195	242	160	139	180	1,790	646	20,500	7,400	3,070	2,700	846
1959-60	764	1,080	1,680	1,460	780	29,750	22,340	19,590	6,830	4,090	12,030	4,140

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30							Calendar year				
	Momentary maximum			Min-imum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet	
	Date	Gage height in feet	Dis-charge									
1955									40.2	1.38	29,110	
1956	May 29, 1956	6.9	390	0.2	9.28	0.023	0.31	6,740	8.00	0.26	5,810	
1957	June 14, 1957											
1958	Feb. 25, 1958	14.24	2,300	1.0	55.3	.139	1.88	40,060	61.1	2.08	44,210	
1959	May 28 or 29, 1959	11.31	about 700	2.5	26.9	.067	.90	19,450	21.1	.71	15,290	
1960	Mar. 30, 1960	18.00	4,320	1.1	52.3	.131	1.77	37,870	56.4	1.92	40,800	
		22.43	10,000	10	144	.361	4.92	104,500				

Peak Discharge (base, 1,800 cfs)

1955-56: No peak above base.

1956-57: June 14 (about 9 a.m.) 2,300 cfs (14.24 ft.); June 17 (about 6 p.m.) 2,220 cfs (13.97 ft.); June 22 (about 10 p.m.) 2,300 cfs (14.2 ft.); June 29 (about 6 a.m.) 2,260 cfs (14.08 ft.).

1957-58: No peak above base.

1958-59: May 28 or 29 (time unknown) 4,320 cfs (18.00 ft.). May 30 or 31 (time unknown) about 3,500 cfs.

1959-60: Mar. 30 (time unknown) about 10,000 cfs; Apr. 2 (10 p.m.) 3,280 cfs (17.27 ft.); May 26 (7:30 p.m.) 2,890 cfs (16.69 ft.); Aug. 29 (2 a.m.) 2,480 cfs (14.67 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 27 to Dec. 31, 1955; Jan. 1 to Mar. 23, Nov. 26 to Dec. 31, 1956; Jan. 1 to Mar. 18, Nov. 19 to Dec. 31, 1957; Jan. 1 to Feb. 25, Nov. 25 to Dec. 31, 1958; Jan. 1 to Mar. 27, Nov. 6-9, Nov. 13 to Dec. 31, 1959; Jan. 1 to Mar. 28, 1960. No gage-height record Aug. 28 to Sept. 2, Sept. 23 to Oct. 6, 1958; June 2-10, July 21, to Aug. 1, Aug. 20-27, 1959; Apr. 4-12, 1960.

Monona-Harrison Ditch near Turin, Iowa

LOCATION.—Lat. 41°57'55", long. 95°59'30", in NE¼NW¼ sec. 32, T. 83 N., R. 44 W., on right pier at downstream side of bridge on Brown's grade, 1.0 mile west of gaging station on Little Sioux River near Turin, 4 miles southwest of Turin, 5.2 miles northeast of Blencoe, and 12.5 miles upstream from mouth.

DRAINAGE AREA.—900 square miles. Prior to Jan. 15, 1958, 4,426 square miles, revised in 1956 (combined area above this station and above station on Little Sioux River 1.0 mile east).

RECORDS AVAILABLE.—January 1958 to September 1960. Records for April 1939 to January 1958 not equivalent owing to diversion from Little Sioux River through equalizer ditch 1.5 miles upstream. Prior to May 1942, published as "near Blencoe."

GAGE.—Water-stage recorder. Datum of gage is 1,020.00 ft. above mean sea level, datum of 1920 (Corps of Engineers bench mark). Prior to May 7, 1942, wire-weight gage at site 4.8 miles downstream at datum 10.40 ft. lower. May 7, 1942, to Oct. 13, 1953, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—18 years (1939-57), 975 cfs (705,900 acre-ft. per year).

EXTREMES.—1958-60: Maximum discharge, 10,400 cfs Mar. 30, 1960 (gage height, 16.32 ft.); minimum daily, 8.5 cfs Jan. 3-11, 1959.

1939-57: Maximum discharge, 21,000 cfs June 20, 1954 (gage height, 23.40 ft.); maximum gage height, 25.6 ft., from floodmarks, Mar. 4, 1949, ice jam); minimum daily discharge, 3 cfs Sept. 8, 1941.

REMARKS.—Monona-Harrison ditch is a dug channel and is a continuation of West Fork ditch, paralleling Little Sioux River, and empties into the Missouri River 1.5 miles upstream from mouth of Little Sioux River. At times, prior Jan. 15, 1958, part or all of flow of Little Sioux River was diverted into Monona-Harrison Ditch through an equalizer ditch which connected the two channels 1.5 miles above station. The equalizer ditch was permanently closed on Jan. 14, 1958.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	91	102	84	64	42	70	389	184	444	116	47	103
2	97	98	82	61	42	100	429	193	348	177	48	76
3	91	92	80	64	44	100	400	191	290	154	52	60
4	89	109	76	63	44	359	470	193	232	84	46	53
5	88	103	72	62	46	328	599	200	180	65	41	51
6	94	98	70	62	47	314	509	222	*836	62	42	51
7	103	98	68	60	48	358	492	242	314	222	120	49
8	138	106	66	60	50	400	414	254	177	142	138	46
9	134	106	64	59	51	369	398	264	136	96	91	59
10	134	114	62	56	52	330	358	428	118	77	86	58
11	121	114	60	54	53	310	325	714	109	279	72	58
12	104	116	58	52	54	289	298	370	106	1,100	67	54
13	94	113	*57	50	54	259	274	396	103	444	72	50
14	91	88	56	48	55	236	257	274	97	312	*67	50
15	91	88	56	47	56	210	224	250	86	244	62	50
16	90	89	56	46	*50	190	214	*237	81	158	68	45
17	90	90	57	44	55	180	190	227	76	123	65	40
18	90	92	58	*42	58	190	189	214	94	*118	87	42
19	88	95	59	41	58	*200	182	200	*63	102	108	38
20	*90	100	60	40	58	217	169	191	65	94	134	37
21	80	105	60	40	60	222	160	180	79	77	102	35
22	87	110	62	40	60	240	180	173	67	69	84	35
23	90	*121	62	40	62	200	140	156	60	63	72	34
24	91	118	62	40	62	252	*142	144	55	61	63	29
25	90	110	62	40	62	257	132	130	54	86	60	*32
26	94	108	64	40	63	301	131	129	142	53	54	30
27	94	102	64	40	64	328	142	129	198	50	50	26
28	96	96	64	40	64	287	152	125	96	69	46	25
29	98	82	64	40	64	336	169	131	69	53	43	26
30	97	88	64	41	.....	348	*173	154	83	64	42	27
31	102	.....	64	41	.....	331	.....	370	.....	62	45	.....

Monona-Harrison Ditch near Turin, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	25	49	90	56	31	100	880	121	342	1,490	377	291
2	28	50	90	50	31	100	840	120	352	1,010	337	2,490
3	29	48	88	50	31	100	780	113	355	890	1,210	1,130
4	25	63	82	45	32	95	740	102	398	3,420	641	586
5	27	142	77	40	33	90	660	94	460	4,990	380	497
6	23	138	74	38	35	90	580	88	429	2,510	309	1,600
7	24	121	70	35	37	90	509	94	444	1,440	270	1,090
8	23	97	68	35	41	96	444	86	444	1,970	235	623
9	27	91	66	35	47	131	392	82	414	2,410	204	446
10	26	88	66	33	54	102	348	444	414	1,970	188	387
11	26	86	66	33	70	116	304	186	373	1,220	180	383
12	25	87	64	33	100	123	280	129	358	1,030	177	328
13	30	98	62	33	100	129	264	121	309	990	164	294
14	35	92	60	*33	98	111	252	210	*6,270	1,310	152	598
15	74	84	58	33	97	110	257	444	3,930	*990	154	656
16	66	88	58	33	96	110	*254	306	2,360	930	175	325
17	*45	92	*58	33	94	110	242	196	5,330	774	162	255
18	41	90	54	33	92	158	234	177	4,760	608	167	*220
19	36	*77	54	33	91	*175	242	182	*2,410	604	*147	267
20	35	76	54	33	*90	138	212	*160	1,280	550	144	282
21	35	76	54	31	90	162	196	839	860	532	193	235
22	33	76	54	31	90	189	189	1,400	4,660	736	177	215
23	35	76	54	31	90	196	186	715	7,080	1,130	157	188
24	42	76	54	31	90	193	173	476	3,600	623	238	167
25	44	76	54	30	90	198	162	414	4,000	446	180	157
26	47	80	56	30	90	200	160	444	5,750	396	142	142
27	46	82	58	30	92	230	156	444	3,920	635	164	132
28	50	81	60	30	94	260	148	414	2,770	604	201	120
29	46	86	60	30	.....	342	138	367	2,990	851	396	108
30	53	90	60	30	.....	632	132	328	1,920	568	380	103
31	48	.....	58	30	.....	800	.....	309	.....	446	300	.....
1957-58												
1	98	480	290	140	15	390	59	81	137	25	92	24
2	98	1,120	280	140	15	146	61	76	156	1,010	129	25
3	91	910	270	140	15	95	66	74	107	950	115	23
4	80	755	260	150	15	109	75	69	600	430	81	22
5	73	660	250	160	15	*108	171	64	246	242	68	22
6	71	604	240	160	14	169	408	61	109	160	*74	22
7	71	586	230	160	14	140	324	62	78	127	62	20
8	120	568	220	170	14	91	216	66	101	105	56	21
9	150	550	210	170	14	72	166	66	185	95	50	22
10	132	514	200	*170	14	91	141	61	130	94	49	*21
11	120	514	*160	170	13	81	127	56	80	94	44	20
12	122	514	160	170	13	72	116	51	70	92	41	20
13	150	463	160	170	13	74	109	49	70	76	43	23
14	127	*446	160	100	13	77	103	47	109	71	42	25
15	254	480	170	60	13	78	99	48	70	65	39	23
16	740	550	180	47	13	69	92	46	55	62	37	21
17	623	586	180	40	*13	60	87	45	54	61	36	20
18	532	580	180	35	13	62	82	40	50	59	34	22
19	406	560	190	26	13	65	76	46	*41	137	33	20
20	341	540	190	20	13	63	75	47	39	262	32	20
21	*347	500	190	20	13	69	74	38	38	125	31	19
22	410	450	190	20	13	71	*74	44	39	*91	31	20
23	480	400	190	20	50	68	77	40	39	77	35	22
24	463	400	180	20	400	66	106	38	39	124	42	19
25	463	420	180	16	350	65	119	36	51	110	42	18
26	463	420	180	16	220	65	106	*35	35	72	37	17
27	463	440	170	16	842	61	96	54	32	102	32	16
28	446	400	170	16	1,100	59	99	34	31	87	29	18
29	446	350	160	16	.....	58	98	32	31	71	29	16
30	430	300	150	16	.....	58	89	32	30	71	27	14
31	430	.....	140	16	.....	57	.....	39	.....	102	25	.....

Monona-Harrison Ditch near Turin, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	17	16	*14	10	12	91	*86	55	*4,990	530	47	30
2	18	18	14	9.0	*12	*119	77	55	3,440	*275	77	30
3	*16	18	14	8.5	12	119	63	59	1,760	183	*102	*28
4	14	*19	14	8.5	12	90	62	62	714	147	344	29
5	14	15	13	8.5	12	95	52	*193	584	122	150	29
6	15	18	13	*8.5	12	110	58	1,160	342	108	92	30
7	16	21	13	8.5	12	90	53	915	257	100	80	27
8	25	19	12	8.5	12	50	50	458	222	98	91	27
9	15	22	11	8.5	12	40	48	356	203	85	66	23
10	14	21	10	8.5	12	38	47	802	189	81	64	23
11	14	18	9.0	8.5	12	38	45	1,160	508	77	56	24
12	16	18	9.0	9.0	12	40	43	436	602	74	51	24
13	18	20	9.0	9.5	12	70	42	318	252	72	50	23
14	16	19	9.0	10	12	100	51	260	232	69	60	24
15	18	18	9.0	11	12	65	47	232	210	67	69	24
16	16	20	9.0	11	12	60	42	216	194	66	74	24
17	15	19	9.5	11	12	50	47	202	185	66	63	24
18	18	21	10	12	12	50	55	191	183	133	55	27
19	19	21	11	12	12	80	55	182	187	131	48	28
20	19	20	12	12	12	75	89	178	187	91	44	27
21	16	19	12	12	13	60	135	*1,350	192	70	41	36
22	16	19	12	12	14	60	105	780	181	60	39	100
23	14	18	12	12	15	77	83	535	176	53	37	56
24	14	19	12	12	16	86	72	356	176	50	37	42
25	14	15	12	12	18	81	59	262	168	47	36	38
26	15	14	12	12	20	108	57	232	158	45	35	39
27	16	14	12	12	25	136	54	240	166	44	34	70
28	14	14	12	12	28	103	50	1,120	198	43	32	72
29	14	14	12	12	.....	81	47	5,740	263	42	32	47
30	14	14	11	12	.....	78	46	*2,920	530	41	31	41
31	16	.....	11	12	.....	81	.....	6,210	.....	43	30	.....
1959-60												
1	39	40	33	54	40	36	4,980	109	*356	166	*68	318
2	43	*35	33	52	42	34	7,030	105	330	143	66	246
3	48	35	*33	50	42	34	6,100	*101	294	132	61	208
4	46	39	36	50	42	34	4,800	91	278	122	58	182
5	.....	*36	39	50	42	32	4,080	102	260	*116	75	166
6	36	87	28	*52	44	32	3,600	230	250	110	2,440	155
7	35	126	28	52	44	32	2,780	210	244	109	753	146
8	48	47	28	52	46	30	1,750	155	240	109	200	141
9	78	42	30	52	48	30	950	129	238	108	140	141
10	75	46	30	52	48	30	535	117	242	106	102	136
11	64	42	32	52	47	30	420	101	254	103	88	129
12	60	44	30	54	*46	28	380	94	254	243	83	123
13	58	40	30	56	45	28	369	94	248	1,180	78	119
14	48	36	35	56	44	28	390	91	240	365	72	117
15	53	34	35	50	42	28	500	87	234	187	71	119
16	60	32	35	45	42	28	400	249	871	143	71	119
17	62	30	33	43	42	28	300	304	585	129	70	113
18	66	30	32	41	42	*28	270	234	382	146	71	252
19	66	32	33	40	40	28	*240	360	264	117	81	218
20	67	35	40	40	40	28	212	875	318	110	257	138
21	66	36	37	40	40	28	195	3,680	294	102	122	122
22	70	38	36	40	38	28	191	3,840	228	98	80	135
23	68	42	47	40	38	26	171	1,640	187	94	69	113
24	63	42	39	40	38	26	151	850	162	86	87	140
25	59	42	43	40	38	26	129	841	151	81	146	186
26	62	40	45	40	36	28	122	2,440	148	78	119	150
27	58	38	62	40	36	32	115	2,560	136	82	151	127
28	61	36	124	40	36	170	113	664	138	78	1,390	117
29	65	35	201	40	36	5,400	117	506	222	77	5,160	109
30	55	34	120	40	.....	9,780	116	436	186	77	2,620	105
31	45	.....	60	40	.....	*5,520	.....	395	.....	78	*535	.....

Monona-Harrison Ditch near Turin, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	98.2	102	64.3	49.0	54.7	265	276	232	162	155	70.1	45.7
1956-57	37.1	85.3	63.9	34.9	72.4	183	345	310	2,299	1,231	271	480
1957-58	298	535	196	83.5	117	90.6	120	50.9	95.1	169	48.9	20.5
1958-59	16.0	18.0	11.4	10.5	13.9	78.1	60.7	879	589	100	66.7	35.5
1959-60	56.8	42.5	47.0	46.2	41.5	699	1,384	700	274	157	496	153

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958†					0.130	0.101	0.133	0.057	0.106	0.188	0.054	0.023
1958-59	0.018	0.020	0.013	0.012	.015	.087	.067	.977	.654	.111	.074	.039
1959-60	.063	.047	.052	.051	.046	.777	1.54	.778	.304	.174	.551	.170

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958†					0.13	0.12	0.15	0.07	0.12	0.22	0.06	0.03
1958-59	0.02	0.02	0.01	0.01	.02	.10	.08	1.13	.73	.13	.09	.04
1959-60	.07	.05	.06	.06	.05	.90	1.72	.90	.34	.20	.64	.19

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	6,040	6,080	3,950	3,010	3,150	16,320	16,430	14,260	9,650	9,530	4,310	2,720
1956-57	2,280	5,080	3,930	2,140	4,020	11,260	20,540	19,050	136,800	75,700	16,640	28,570
1957-58	18,330	31,850	12,060	5,140	6,470	5,570	7,120	3,130	5,660	10,410	3,010	1,220
1958-59	984	1,070	703	645	772	1,800	3,610	51,020	35,070	6,170	4,100	2,110
1959-60	3,490	2,530	2,800	2,840	2,390	42,980	82,330	43,020	16,330	9,670	30,510	9,100

†Combined with those for Little Sioux River near Turin, Iowa (Prior to Jan. 14, 1958).

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30						Calendar year				
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet
	Date	Gage height in feet	Discharge								
1955										482	349,200
1956	June 6, 1956	6.44	2,340	25	131			95,450	125		90,670
1957	June 14, 1957										
	22, 1957	14.28	8,630	23	450			326,000	521		377,000
1958	July 2, 1958	(1)6.01	1,400								
1959	May 31, 1959	(2)13.73	9,120	8.5	158	0.176	2.38	114,100	166	2.51	120,200
1960	Mar. 30, 1960	16.32	10,400	26	342	0.380	5.18	248,100			

(1) Maximum gage height, 6.27 ft. Feb. 24, 1958 (backwater from ice).

(2) Maximum gage height, 14.72 ft. May 29, 1959.

Peak Discharge (base, 2,500 cfs)

1957-58: No peak above base.

1958-59: May 29 (6 a.m.) 8,570 cfs (14.72 ft.); May 31 (8:30 a.m.) 9,120 cfs (13.73 ft.).

1959-60: Mar. 30 (9 a.m.) 10,400 cfs (16.32 ft.); Apr. 2 (3 a.m.) 7,800 cfs (13.95 ft.); May 22 (2:30 a.m.) 4,480 cfs (10.58 ft.); May 27 (2:30 a.m.) 4,000 cfs (10.02 ft.); Aug. 6 (1 p.m.) 3,060 cfs (8.82 ft.); Aug. 29 (11 a.m.) 5,700 cfs (11.96 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 15-22, Nov. 24 to Dec. 31, 1955; Jan. 1 to Mar. 4, Mar. 8-18, Nov. 21 to Dec. 2, Dec. 6-31, 1956; Jan. 1 to Mar. 6, Mar. 15-17, Nov. 18 to Dec. 31, 1957; Jan. 1 to Feb. 25, Nov. 26 to Dec. 31, 1958; Jan. 1 to Feb. 26, Mar. 4-22, Nov. 13-20, Nov. 24 to Dec. 21, Dec. 30, 31, 1959; Jan. 1 to Mar. 29, 1960.

Spirit Lake near Orleans, Iowa

LOCATION.—Lat. 43°28'10", long. 95°07'25", in NE¼NW¼ sec. 20, T. 100 N., R. 36 W., 2.3 miles northwest of Orleans.

DRAINAGE AREA.—75.6 square miles.

RECORDS AVAILABLE.—May 1933 to September 1960 (fragmentary prior to 1951). Prior to October 1949, published as "at Orleans".

GAGE.—Water stage recorder. Datum of gage is 1,387.25 ft. above mean sea level, datum of 1929, and 90.0 ft. above Iowa Lake Survey datum. Prior to July 6, 1950, staff or float gage or water-stage recorder at various sites near lake outlet, all at present datum.

EXTREMES.—1933-60: Maximum gage height observed, 15.74 ft. June 19, 1944; minimum observed, 6.75 ft. Oct. 20, 1935.

Daily Gage Height, in Feet, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	12.72	12.42	12.27	12.32	12.35	12.35	12.52	12.63	12.59	12.31	12.25	12.07
2	12.71	12.40	12.27	12.32	12.36	12.35	12.53	12.65	12.57	12.30	12.28	12.05
3	12.70	12.39	12.29	12.32	12.35	12.35	12.59	12.71	12.55	12.28	12.29	12.03
4	12.70	12.38	12.33	12.32	12.36	12.35	12.61	12.74	12.54	12.25	12.31	12.01
5	12.73	12.37	12.33	12.32	12.35	12.35	12.61	12.75	12.54	12.25	12.32	11.98
6	12.74	12.35	12.32	12.31	12.35	12.35	12.62	12.75	12.53	12.26	12.32	11.97
7	12.72	12.33	12.32	12.30	12.35	12.34	12.63	12.75	12.54	12.31	12.32	11.94
8	12.70	12.33	12.32	12.30	12.35	12.34	12.62	12.74	12.53	12.28	12.34	11.92
9	12.69	12.33	12.32	12.30	12.35	12.35	12.62	12.74	12.51	12.27	12.33	11.92
10	12.68	12.33	12.32	12.29	12.35	12.40	12.62	12.76	12.49	12.25	12.32	11.92
11	12.65	12.34	12.32	12.29	12.35	12.44	12.62	12.80	12.47	12.26	12.31	11.92
12	12.63	12.34	12.32	12.29	12.35	12.44	12.62	12.80	12.45	12.27	12.35	11.91
13	12.61	12.33	12.32	12.29	12.35	12.44	12.62	12.81	12.43	12.27	12.36	11.91
14	12.60	12.33	12.32	12.29	12.35	12.44	12.62	12.80	12.41	12.25	12.34	11.89
15	12.58	12.32	12.32	12.30	12.35	12.43	12.61	12.78	12.39	12.25	12.34	11.88
16	12.57	12.33	12.31	12.30	12.35	12.43	12.60	12.75	12.38	12.24	12.33	11.86
17	12.55	12.32	12.31	12.31	12.35	12.44	12.58	12.75	12.37	12.22	12.33	11.85
18	12.53	12.32	12.32	12.31	12.35	12.45	12.58	12.73	12.37	12.23	12.30	11.83
19	12.52	12.32	12.32	12.31	12.35	12.45	12.57	12.72	12.37	12.24	12.26	11.82
20	12.50	12.31	12.32	12.31	12.35	12.44	12.56	12.70	12.35	12.25	12.24	11.80
21	12.50	12.31	12.31	12.31	12.35	12.45	12.56	12.70	12.35	12.25	12.20	11.77
22	12.49	12.31	12.31	12.31	12.35	12.45	12.55	12.70	12.38	12.23	12.18	11.75
23	12.50	12.30	12.31	12.30	12.35	12.45	12.53	12.68	12.35	12.22	12.16	11.73
24	12.50	12.30	12.31	12.31	12.35	12.45	12.52	12.66	12.33	12.20	12.14	11.72
25	12.48	12.29	12.31	12.32	12.35	12.46	12.54	12.64	12.30	12.19	12.12	11.72
26	12.48	12.29	12.31	12.32	12.35	12.47	12.55	12.63	12.37	12.18	12.10	11.71
27	12.47	12.29	12.31	12.32	12.35	12.50	12.56	12.64	12.34	12.18	12.08	11.70
28	12.47	12.29	12.31	12.33	12.35	12.52	12.56	12.64	12.32	12.15	12.07	11.67
29	12.46	12.28	12.31	12.33	12.35	12.52	12.62	12.65	12.28	12.13	12.10	11.67
30	12.44	12.28	12.32	12.33	.....	12.52	12.63	12.65	12.31	12.14	12.10	11.66
31	12.43	.....	12.32	12.33	.....	12.52	.....	12.62	.....	12.25	12.09	.....

Spirit Lake near Orleans, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	11.62	11.34	11.39	11.37	11.10			11.40	11.60	12.07	12.07	11.84
2	11.61	11.34	11.39	11.37	11.09			11.41	11.60	12.06	12.04	11.86
3	11.59	11.33	11.39	11.37	11.07			11.40	11.59	12.13	12.02	11.83
4	11.57	11.36	11.38	11.37	11.05			11.36	11.59	12.25	11.99	11.83
5	11.57	11.48	11.39	11.36	11.03			11.34	11.59	12.25	11.96	11.81
6	11.55	11.50	11.39	11.36	11.01			11.33	11.60	12.25	11.92	11.80
7	11.53	11.49	11.38	11.36	11.00			11.29	11.65	12.25	11.86	11.79
8	11.51	11.47	11.38	11.35	10.98			11.29	11.67	12.28	11.90	11.77
9	11.50	11.46	11.38	11.34	10.97			11.32	11.67	12.28	11.95	11.76
10	11.48	11.45	11.37	11.33				11.32	11.67	12.25	11.94	11.77
11	11.46	11.44	11.37	11.32				11.29	11.67	12.25	11.93	11.76
12	11.44	11.43	11.38	11.32				11.30	11.67	12.24	11.93	11.75
13	11.43	11.42	11.39	11.31				11.35	11.67	12.25	11.94	11.74
14	11.45	11.42	11.38	11.31				11.42	11.67	12.23	11.94	11.73
15	11.44	11.45	11.38	11.29				11.45	11.67	12.22	11.93	11.70
16	11.44	11.41	11.38	11.28				11.45	11.72	12.20	11.91	11.69
17	11.43	11.42	11.38	11.26				11.44	11.85	12.20	11.89	11.66
18	11.43	11.41	11.37	11.25				11.44	11.91	12.18	11.88	11.65
19	11.43	11.41	11.37	11.24				11.44	11.90	12.15	11.87	11.64
20	11.42	11.42	11.37	11.23			11.44	11.45	11.90	12.16	11.87	11.67
21	11.42	11.40	11.37	11.23			11.47	11.51	11.90	12.18	11.86	11.66
22	11.40	11.38	11.37	11.22			11.46	11.49	11.99	12.20	11.85	11.65
23	11.39	11.40	11.37	11.21			11.45	11.49	12.02	12.19	11.88	11.64
24	11.38	11.40	11.37	11.20			11.44	11.49	12.02	12.15	11.86	11.63
25	11.35	11.40	11.37	11.19			11.44	11.51	12.05	12.12	11.85	11.63
26	11.35	11.40	11.37	11.18			11.44	11.54	12.07	12.12	11.82	11.63
27	11.34	11.40	11.37	11.17			11.43	11.54	12.07	12.12	11.84	11.59
28	11.31	11.39	11.37	11.16			11.42	11.54	12.07	12.12	11.84	11.56
29	11.32	11.39	11.37	11.15			11.42	11.55	12.07	12.11	11.84	11.54
30	11.34	11.39	11.37	11.13			11.41	11.59	12.07	12.10	11.84	11.54
31	11.34		11.37	11.11				11.60		12.08	11.84	
1957-58												
1	11.54	11.55	11.55	11.52				11.61	11.26	11.11		
2	11.54	11.58	11.55	11.52				11.59	11.25	11.13		
3	11.53	11.58	11.55	11.52				11.59	11.26	11.15		
4	11.52	11.58	11.55	11.52				11.58	11.28	11.18		
5	11.49	11.57	11.55	11.51				11.56	11.27	11.16		
6	11.51	11.56	11.55	11.51				11.56	11.26	11.14		
7	11.52	11.56	11.55	11.50				11.55	11.25	11.12		
8	11.54	11.53	11.56					11.67	11.55	11.26	11.14	10.80
9	11.52	11.53	11.56					11.67	11.55	11.25	11.18	10.78
10	11.51	11.53	11.56					11.67	11.53	11.24	11.18	10.78
11	11.50	11.51	11.55					11.67	11.53	11.22	11.17	10.77
12	11.50	11.51	11.55					11.67	11.52	11.21	11.16	10.77
13	11.50	11.53	11.55					11.67	11.49	11.24	11.16	10.72
14	11.50	11.53	11.55					11.66	11.50	11.21	11.15	10.72
15	11.55	11.55	11.54					11.65	11.49	11.20	11.14	10.75
16	11.56	11.57	11.54					11.64	11.48	11.19	11.10	10.68
17	11.55	11.57	11.54					11.64	11.49	11.19	11.11	10.67
18	11.55	11.60	11.54					11.64	11.47	11.16	11.10	10.63
19	11.55	11.60	11.55					11.64	11.44	11.16	11.13	10.58
20	11.54	11.60	11.55					11.64	11.42	11.14	11.08	10.64
21	11.55	11.59	11.55					11.63	11.40	11.11	10.59	10.08
22	11.57	11.58	11.55					11.62	11.39	11.17		10.06
23	11.60	11.58	11.55					11.67	11.36	11.17		10.05
24	11.58	11.58	11.55					11.69	11.34	11.17	11.09	10.05
25	11.56	11.57	11.55					11.68	11.33	11.15		10.04
26	11.55	11.57	11.54					11.66	11.30	11.14		10.02
27	11.54	11.57	11.54					11.65	11.30	11.12		10.00
28	11.53	11.57	11.54					11.63	11.27	11.13		9.97
29	11.53	11.56	11.53					11.62	11.25	11.11		9.94
30	11.52	11.56	11.53					11.60	11.26	11.12	11.07	9.91
31	11.51		11.52						11.26		11.07	

Spirit Lake near Orleans, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	9.89	9.59	9.42	9.39					10.14	9.81	9.28	9.03
2	9.87	9.58	9.42	9.39					10.15	9.78	9.30	8.99
3	9.86	9.58	9.42	9.39					10.14	9.76	9.30	8.95
4	9.85	9.57	9.42	9.39					10.12	9.75	9.30	8.93
5	9.83	9.54	9.41						10.12	9.73	9.29	8.92
6	9.82	9.53	9.41					9.74	10.12	9.71	9.27	8.91
7	9.82	9.52	9.41					9.74	10.10	9.68	9.24	8.91
8	9.83	9.52	9.42					9.73	10.08	9.67	9.20	8.90
9	9.80	9.52	9.42					9.73	10.07		9.18	8.85
10	9.76	9.51	9.42					9.73	10.06		9.16	8.83
11	9.76	9.50	9.42					9.73	10.06		9.16	8.80
12	9.74	9.50	9.42					9.72	10.04		9.15	8.78
13	9.74	9.49	9.42					9.69	10.02		9.13	8.77
14	9.75	9.50	9.41					9.66	9.97		9.15	8.75
15	9.74	9.50	9.41					9.65	9.95		9.16	8.79
16	9.74	9.49	9.41					9.64	9.95		9.14	8.73
17	9.73	9.49	9.40					9.63	9.95		9.14	8.72
18	9.72	9.48	9.40					9.63	9.94		9.11	8.71
19	9.70	9.50	9.40					9.64	9.93		9.10	8.70
20	9.69	9.50	9.40					9.70	9.91		9.10	8.71
21	9.67	9.49	9.40					9.80	9.90		9.09	8.77
22	9.67	9.49	9.40					9.81	9.88		9.10	8.88
23	9.67	9.50	9.40					9.81	9.84	9.43	9.12	8.89
24	9.66	9.48	9.40					9.80	9.83	9.42	9.15	8.89
25	9.65	9.43	9.40					9.79	9.82	9.39	9.13	8.89
26	9.64	9.43	9.40					9.79	9.81	9.37	9.12	8.89
27	9.63	9.44	9.39					9.79	9.81	9.36	9.09	8.91
28	9.62	9.43	9.39					9.84	9.82	9.35	9.09	8.90
29	9.61	9.43	9.39					9.89	9.82	9.34	9.07	8.88
30	9.60	9.43	9.39					9.92	9.83	9.32	9.07	8.87
31	9.59		9.39					10.11		9.30	9.05	
1959-60												
1	8.87	8.87	8.89	9.04				10.12	10.91	11.02	10.92	10.84
2	8.90	8.85	8.89	9.07				10.13	10.90	11.02	10.92	10.83
3	8.90	8.87	8.89	9.07				10.12	10.90	11.00	10.90	10.82
4	8.90	8.96	8.89	9.07				10.14	10.91	10.99		10.81
5	8.90	8.90	8.89	9.07				10.17	10.90	10.98	10.90	10.80
6	8.90	8.88	8.89	9.07				10.20	10.89	10.96	10.88	10.77
7	8.89	8.87	8.89	9.07				10.18	10.88	10.95	10.86	10.76
8	8.90	8.87	8.89	9.07				10.17	10.86	10.92	10.85	10.86
9	8.92	8.88	8.89	9.07				10.16	10.85	10.93	10.84	10.83
10	8.90	8.87	8.89	9.07				10.14	10.88	10.93	10.82	10.79
11	8.85	8.86	8.89	9.07				10.13	10.89	10.97	10.82	10.76
12	8.88	8.89	8.89	9.07			9.51	10.12	10.88	11.10	10.79	10.74
13	8.86	8.90	8.89	9.07			9.90	10.11	10.88	11.11	10.77	10.72
14	8.85	8.89	8.89	9.07			10.01	10.10	10.88	11.10	10.76	10.71
15	8.84	8.89	8.89	9.07			10.02	10.10	10.92	11.09	10.73	10.70
16	8.84	8.89	8.89	9.07			10.05	10.25	10.98	11.08	10.70	10.68
17	8.83	8.88	8.89	9.07			10.05	10.28	10.96	11.09	10.70	10.69
18	8.83	8.88	8.89	9.07			10.01	10.31	10.96	11.10	10.73	10.72
19	8.82	8.87	8.89	9.07			10.01	10.38	10.96	11.10	10.76	10.76
20	8.84	8.87	8.89	9.07			10.05	10.41	10.97	11.08	10.78	10.76
21	8.82	8.87	8.89	9.07			10.07	10.51	10.95	11.07	10.77	10.80
22	8.83	8.87	8.89	9.07			10.07	10.58	10.95	11.08	10.76	10.88
23	8.83	8.87	8.89	9.07			10.09	10.61	11.02	11.08	10.75	10.91
24	8.83	8.87	8.89	9.07			10.11	10.64	11.03	11.07	10.74	10.96
25	8.83	8.88	8.90	9.07			10.10	10.72	11.03	11.06	10.79	10.98
26	8.84	8.90	8.91	9.07			10.09	10.79	11.02	11.03	10.83	10.97
27	8.83	8.90	8.94	9.07			10.09	10.82	11.02	11.02	10.80	10.97
28	8.82	8.90	9.01	9.07			10.12	10.85	11.04	11.01	10.86	10.96
29	8.84	8.90	9.02	9.07			10.16	10.87	11.05	10.99	10.87	10.96
30	8.87	8.90	9.02	9.07			10.13	10.88	11.04	10.95	10.86	10.95
31	8.87		9.02	9.07				10.89		10.92	10.85	

Okoboji Lake at Lakeside Laboratory, near Milford, Iowa

LOCATION.—Lat. 43°22'30", long. 95°10'55", in SE ¼ NW ¼ sec. 23, T. 99 N., R. 37 W., at pumping station of Lakeside Laboratory on west shore, 4 miles northwest of Milford.

DRAINAGE AREA.—125 square miles.

RECORDS AVAILABLE.—May 1933 to September 1960. Prior to October 1937, published as "at Arnolds Park."

GAGE.—Water-stage recorder. Datum of gage is 1,391.76 ft. above mean sea level, datum of 1929, and 94.51 ft. above Iowa Lake Survey datum. Prior to June 17, 1938, staff gage at State pier at Arnolds Park at same datum.

EXTREMES.—1933-60: Maximum gage height, 5.42 ft. June 15, 1945; minimum observed 0.20 ft. Sept. 20, 1959.

Daily Gage Height, in Feet, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	2.91	2.58	2.36	2.42	2.48	2.51	2.75	2.89	2.93	2.73	2.58	2.46
2.....	2.90	2.57	2.36	2.42	2.49	2.52	2.77	2.90	2.91	2.72	2.60	2.45
3.....	2.89	2.55	2.38	2.42	2.49	2.52	2.84	2.96	2.90	2.70	2.61	2.44
4.....	2.90	2.53	2.42	2.42	2.50	2.52	2.85	2.98	2.90	2.67	2.61	2.41
5.....	2.92	2.52	2.42	2.42	2.49	2.52	2.85	2.99	2.90	2.65	2.63	2.39
6.....	2.93	2.50	2.42	2.42	2.49	2.53	2.86	3.00	2.90	2.64	2.64	2.36
7.....	2.91	2.49	2.42	2.42	2.49	2.53	2.87	3.00	2.91	2.72	2.64	2.34
8.....	2.88	2.48	2.42	2.42	2.49	2.53	2.86	2.98	2.91	2.71	2.64	2.32
9.....	2.87	2.46	2.42	2.41	2.49	2.53	2.86	2.99	2.90	2.69	2.64	2.32
10.....	2.86	2.46	2.41	2.41	2.49	2.58	2.86	3.01	2.89	2.67	2.63	2.31
11.....	2.84	2.46	2.41	2.41	2.50	2.61	2.86	3.06	2.87	2.66	2.65	2.31
12.....	2.82	2.45	2.41	2.41	2.50	2.61	2.86	3.06	2.85	2.67	2.67	2.30
13.....	2.80	2.45	2.42	2.41	2.50	2.61	2.85	3.08	2.83	2.67	2.67	2.30
14.....	2.78	2.43	2.41	2.41	2.50	2.61	2.86	3.07	2.82	2.66	2.65	2.28
15.....	2.77	2.44	2.41	2.42	2.50	2.61	2.86	3.06	2.81	2.65	2.65	2.27
16.....	2.76	2.41	2.41	2.43	2.50	2.61	2.85	3.04	2.80	2.64	2.65	2.25
17.....	2.74	2.42	2.41	2.43	2.51	2.62	2.84	3.04	2.79	2.62	2.64	2.23
18.....	2.72	2.43	2.42	2.43	2.51	2.63	2.82	3.03	2.79	2.61	2.63	2.21
19.....	2.70	2.43	2.42	2.43	2.51	2.64	2.81	3.02	2.78	2.62	2.58	2.20
20.....	2.70	2.42	2.42	2.43	2.51	2.64	2.80	3.00	2.78	2.63	2.56	2.17
21.....	2.68	2.42	2.42	2.43	2.50	2.65	2.81	3.01	2.76	2.61	2.53	2.15
22.....	2.66	2.42	2.43	2.43	2.50	2.66	2.80	3.00	2.75	2.60	2.51	2.14
23.....	2.68	2.40	2.43	2.43	2.50	2.67	2.78	2.99	2.71	2.59	2.49	2.12
24.....	2.66	2.40	2.43	2.43	2.50	2.67	2.76	2.97	2.70	2.58	2.47	2.11
25.....	2.65	2.39	2.43	2.44	2.51	2.69	2.77	2.96	2.68	2.56	2.45	2.10
26.....	2.65	2.39	2.42	2.45	2.51	2.70	2.77	2.95	2.81	2.55	2.42	2.10
27.....	2.65	2.38	2.42	2.45	2.51	2.71	2.82	2.96	2.80	2.55	2.41	2.08
28.....	2.65	2.37	2.42	2.46	2.51	2.75	2.81	2.96	2.77	2.53	2.41	2.05
29.....	2.65	2.37	2.42	2.46	2.51	2.75	2.87	2.97	2.74	2.51	2.45	2.06
30.....	2.62	2.36	2.42	2.46	.....	2.75	2.88	2.97	2.73	2.53	2.47	2.04
31.....	2.60	.....	2.42	2.46	.....	2.75	.....	2.96	.....	2.59	2.48	.....

Okoboji Lake at Lakeside Laboratory, near Milford, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	2.03	1.71	1.69	1.67	1.59	1.57	.....	1.98	2.27	2.77	2.76	2.59
2	2.01	1.71	1.69	1.67	1.59	1.57	.....	1.98	2.25	2.77	2.71	2.61
3	1.99	1.70	1.70	1.67	1.59	1.57	.....	1.97	2.24	2.81	2.72	2.58
4	1.98	1.76	1.70	1.67	1.59	1.57	.....	1.94	2.23	2.88	2.70	2.58
5	1.96	1.87	1.69	1.67	1.59	1.57	.....	1.92	2.23	2.89	2.66	2.56
6	1.93	1.87	1.69	1.67	1.59	1.57	.....	1.91	2.24	2.89	2.62	2.55
7	1.91	1.85	1.68	1.67	1.59	1.58	.....	1.88	2.25	2.91	2.58	2.54
8	1.89	1.85	1.68	1.67	1.59	1.58	.....	1.88	2.28	2.95	2.61	2.51
9	1.87	1.83	1.68	1.67	1.59	1.58	.....	1.92	2.27	2.93	2.66	2.51
10	1.86	1.82	1.68	1.67	1.59	1.57	.....	1.92	2.27	2.91	2.65	2.51
11	1.83	1.81	1.68	1.67	1.59	1.57	.....	1.90	2.27	2.90	2.64	2.50
12	1.81	1.80	1.68	1.67	1.59	1.57	.....	1.92	2.26	2.90	2.64	2.49
13	1.80	1.79	1.68	1.65	1.59	1.58	.....	1.95	2.27	2.90	2.65	2.48
14	1.82	1.79	1.68	1.64	1.59	1.58	.....	2.05	2.29	2.88	2.63	2.47
15	1.80	1.70	1.68	1.64	1.58	1.58	.....	2.07	2.30	2.86	2.62	2.45
16	1.80	1.79	1.68	1.63	1.58	1.59	.....	2.06	2.41	2.85	2.60	2.44
17	1.80	1.77	1.68	1.63	1.58	1.58	.....	2.07	2.61	2.85	2.58	2.40
18	1.80	1.77	1.68	1.62	1.58	1.58	.....	2.07	2.66	2.82	2.57	2.40
19	1.79	1.77	1.68	1.62	1.58	1.58	2.00	2.07	2.68	2.80	2.56	2.44
20	1.79	1.77	1.68	1.61	1.58	1.60	1.99	2.09	2.68	2.79	2.55	2.43
21	1.78	1.74	1.68	1.62	1.58	1.60	2.01	2.16	2.69	2.80	2.55	2.42
22	1.77	1.73	1.67	1.61	1.57	1.60	2.01	2.17	2.77	2.82	2.53	2.40
23	1.76	1.75	1.67	1.61	1.57	.....	2.00	2.17	2.78	2.80	2.58	2.40
24	1.73	1.73	1.67	1.61	1.57	.....	1.99	2.17	2.78	2.80	2.56	2.38
25	1.71	1.73	1.67	1.61	1.57	.....	2.00	2.19	2.80	2.77	2.53	2.37
26	1.72	1.72	1.67	1.60	1.57	.....	2.01	2.23	2.80	2.77	2.53	2.36
27	1.70	1.72	1.67	1.60	1.57	.....	2.00	2.23	2.79	2.79	2.52	2.34
28	1.67	1.71	1.67	1.60	1.57	.....	2.00	2.22	2.78	2.80	2.54	2.30
29	1.69	1.70	1.67	1.60	.....	.....	1.99	2.26	2.79	2.80	2.54	2.28
30	1.71	1.70	1.67	1.60	.....	.....	1.98	2.27	2.79	2.79	2.51	2.28
31	1.71	.....	1.67	1.60	.....	.....	.....	2.28	.....	2.78	2.57	.....
1957-58												
1	2.28	2.24	2.25	2.23	2.24	2.21	2.27	2.51	.....	2.15	1.98	1.50
2	2.27	2.30	2.25	2.22	2.24	2.22	2.28	2.50	.....	2.15	1.98	1.48
3	2.26	2.29	2.25	2.22	2.24	2.22	2.34	2.50	.....	2.14	1.97	1.48
4	2.25	2.28	2.25	2.22	2.24	2.22	2.38	2.49	.....	2.15	1.94	1.46
5	2.22	2.27	2.25	2.22	2.23	2.23	2.45	2.47	.....	2.13	1.93	1.44
6	2.23	2.26	2.25	2.22	2.23	2.23	2.49	2.46	2.28	2.11	1.92	1.44
7	2.23	2.26	2.25	2.22	2.23	2.24	2.49	2.47	2.27	2.10	1.91	1.43
8	2.26	2.24	2.25	2.22	2.23	2.23	2.49	2.48	.....	2.08	1.89	1.40
9	2.25	2.23	2.25	2.22	2.23	2.22	2.48	2.46	.....	2.21	1.88	1.39
10	2.23	2.22	2.25	2.22	2.23	2.22	2.48	2.46	.....	2.18	1.86	1.37
11	2.22	2.20	2.24	2.21	2.22	2.23	2.48	2.46	.....	2.20	1.86	1.34
12	2.22	2.20	2.23	2.21	2.22	2.23	2.48	2.45	.....	2.17	1.84	1.32
13	2.22	2.21	2.23	2.21	2.22	2.23	2.47	2.44	.....	2.16	1.81	1.30
14	2.21	2.22	2.23	2.22	2.22	2.23	2.47	2.44	2.23	2.15	1.80	1.31
15	2.28	2.24	2.23	2.22	2.22	2.24	2.47	2.44	.....	2.14	1.82	1.32
16	2.30	2.26	2.22	2.22	2.22	2.24	2.46	2.43	2.27	2.12	1.78	1.30
17	2.29	2.26	2.22	2.22	2.22	2.24	2.47	2.44	2.27	2.11	1.76	1.29
18	2.28	2.29	2.23	2.22	2.21	2.24	2.46	2.43	2.22	2.11	1.74	1.26
19	2.27	2.29	2.24	2.22	2.21	2.24	2.47	2.40	2.22	2.08	1.72	1.25
20	2.26	2.28	2.24	2.22	2.21	2.24	2.48	2.39	2.22	2.07	1.71	1.24
21	2.28	2.27	2.24	2.22	2.20	2.24	2.47	2.38	2.18	2.06	1.68	1.23
22	2.30	2.27	2.24	2.22	2.20	2.25	2.46	2.39	.....	2.04	1.65	1.21
23	2.34	2.26	2.24	2.22	2.20	2.25	2.50	2.35	.....	2.03	1.63	1.20
24	2.31	2.27	2.24	2.22	2.20	2.25	2.55	2.34	.....	2.03	1.62	1.20
25	2.29	2.26	2.24	2.22	2.20	2.25	2.53	2.33	.....	2.00	1.58	1.19
26	2.26	2.26	2.24	2.23	2.20	2.25	2.55	2.31	.....	1.99	1.57	1.17
27	2.24	2.26	2.24	2.24	2.20	2.26	2.53	2.32	.....	2.00	1.54	1.14
28	2.24	2.26	2.24	2.24	2.20	2.26	2.53	.....	2.14	1.97	1.54	1.12
29	2.23	2.25	2.23	2.24	.....	2.26	2.51	.....	2.15	2.01	1.55	1.08
30	2.24	2.25	2.23	2.24	.....	2.26	2.50	.....	2.15	2.01	1.54	1.06
31	2.22	.....	2.23	2.24	.....	2.27	.....	2.28	.....	1.99	1.52	.....

Okoboji Lake at Lakeside Laboratory, near Milford, Iowa—Continued

Daily Gage Height, in Feet, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept
1958-59												
1		0.60	0.40	0.36	0.30	0.43	0.60	0.52	1.55	1.36	0.80	0.62
2		.60	.40	.36	.30	.45	.61	.52	1.57	1.33	.82	.59
3		.60	.38	.36	.30	.46	.62	.52	1.58	1.31	.84	.56
4		.59	.38	.36	.30	.46	.62	.64	1.57	1.30	.84	.53
5		.59	.37	.36	.30	.47	.63	.65	1.58	1.29	.84	.50
6		.58	.37	.36	.30	.47	.63	.82	1.57	1.27	.84	.48
7		.56	.37	.36	.30	.47	.63	.84	1.57	1.24	.82	.46
8		.54	.36	.32	.28	.47	.62	.84	1.55	1.23	.80	.44
9		.52	.36	.32	.28	.47	.62	.82	1.55	1.21	.77	.42
10		.51	.36	.32		.47	.62	.86	1.55	1.20	.74	.39
11		.50	.36	.31		.47	.62	.86	1.55	1.18	.72	.37
12		.50	.36	.31	.32	.47	.62	.88	1.54	1.16	.70	.34
13		.49	.36	.30	.36	.47	.61	.88	1.52	1.14	.72	.32
14		.49	.36	.30	.38	.47	.61	.88	1.48	1.12	.72	.30
15		.48	.36	.30	.40	.47	.61	.84	1.46	1.10	.70	.28
16		.48	.36	.29	.40	.46	.61	.82	1.47	1.09	.68	.25
17		.48	.36	.29	.40	.46	.62	.80	1.46	1.08	.67	.23
18		.50	.36	.29	.40	.46	.63	.80	1.47	1.08	.66	.22
19		.49	.36	.29	.40	.47	.63	.80	1.47	1.06	.64	.21
20		.48	.36	.30	.40	.47	.62	.90	1.44	1.03	.62	.20
21		.48	.36	.30	.40	.47	.61	1.00	1.43	1.02	.61	.26
22		.47	.36	.31	.40	.47	.59	1.04	1.41	1.01	.60	.46
23	0.72	.47	.36	.31	.43	.47	.59	1.06	1.37	1.00	.62	.44
24	.70	.46	.36	.32	.43	.47	.58	1.06	1.36	.96	.68	.42
25	.68	.46	.36	.32	.43	.47	.58	1.06	1.35	.94	.66	.40
26	.68	.44	.36	.32	.43	.47	.58	1.08	1.34	.92	.64	.42
27	.66	.44	.36	.32	.43	.57	.58	1.08	1.35	.90	.62	.48
28	.65	.43	.36	.31	.43	.58	.57	1.16	1.36	.88	.62	.46
29	.63	.42	.36	.31		.58	.56	1.26	1.36	.86	.64	.44
30	.62	.42	.36	.31		.58	.54	1.28	1.37	.84	.63	.42
31	.61		.36	.30		.60		1.49		.82	.62	
1959-60												
1	0.40	0.28	0.24	0.46	0.44	0.45	1.00	1.46	2.22	2.26	2.28	2.33
2	.42	.28	.24	.46	.44	.45	1.18	1.46	2.20	2.26	2.27	2.32
3	.42	.28	.24	.46	.44	.45	1.20	1.44	2.20	2.26	2.27	2.31
4	.42	.28	.24	.46	.44	.45	1.24	1.44	2.20	2.24	2.27	2.31
5	.42	.29	.24	.46	.44	.45	1.26	1.46	2.20	2.24	2.27	2.30
6	.40	.30	.24	.46	.44	.45	1.28	1.46	2.19	2.22	2.28	2.27
7	.40	.30	.24	.46	.44	.45	1.28	1.48	2.18	2.21	2.27	2.26
8	.42	.30	.24	.46	.44	.45	1.29	1.48	2.17	2.19	2.26	2.35
9	.42	.30	.24	.46	.44	.50	1.30	1.46	2.15	2.19	2.25	2.33
10	.40	.30	.24	.46	.44	.50	1.30	1.46	2.15	2.19	2.23	2.30
11	.40	.28	.23	.46	.44	.52	1.30	1.44	2.17	2.24	2.21	2.28
12	.37	.28	.23	.46	.44	.52	1.30	1.42	2.17	2.46	2.19	2.23
13	.35	.28	.23	.46	.44	.52	1.42	1.40	2.16	2.49	2.18	2.22
14	.32	.28	.23	.46	.44	.52	1.44	1.38	2.15	2.49	2.17	2.20
15	.32	.26	.23	.46	.43	.52	1.44	1.36	2.17	2.48	2.14	2.20
16	.32	.26	.23	.46	.43	.52	1.44	1.52	2.22	2.47	2.12	2.18
17	.30	.25	.23	.46	.43	.53	1.44	1.62	2.21	2.48	2.11	2.19
18	.28	.24	.23	.46	.43	.53	1.44	1.67	2.20	2.51	2.17	2.24
19	.28	.24	.23	.46	.43	.53	1.43	1.71	2.20	2.51	2.20	2.25
20	.26	.24	.23	.46	.43	.53	1.42	1.77	2.22	2.49	2.22	2.24
21	.24	.24	.23	.46	.45	.53	1.42	1.88	2.20	2.48	2.22	2.32
22	.28	.24	.23	.46	.45	.53	1.42	1.93	2.19	2.47	2.20	2.45
23	.30	.24	.23	.46	.45	.53	1.42	1.97	2.25	2.47	2.20	2.47
24	.32	.24	.23	.46	.45	.53	1.42	1.99	2.28	2.45	2.19	2.53
25	.30	.24	.23	.46	.45	.53	1.44	2.05	2.26	2.44	2.25	2.54
26	.28	.24	.26	.45	.45	.53	1.44	2.15	2.26	2.43	2.29	2.54
27	.26	.24	.30	.45	.45	.53	1.44	2.18	2.26	2.41	2.26	2.54
28	.24	.24	.40	.45	.45	.66	1.46	2.20	2.26	2.39	2.32	2.53
29	.26	.24	.40	.44	.45	.76	1.46	2.20	2.26	2.38	2.35	2.52
30	.28	.24	.40	.44		.90	1.48	2.20	2.28	2.35	2.33	2.51
31	.28		.42	.44		.94		2.21		2.32	2.33	

Little Sioux River at Gillett Grove, Iowa

LOCATION.—Lat. 43°01'05", long. 95°02'45", in SE¼NW¼ sec. 25, T. 95 N., R. 36 W., on left bank 5 ft. downstream from highway bridge, 0.2 mile northwest of Gillett Grove and 0.9 mile above Elk Creek.

DRAINAGE AREA.—1,334 square miles.

RECORDS AVAILABLE.—June 1958 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 1,266.84 ft. above mean sea level, datum of 1929.

EXTREMES.—1958-60: Maximum discharge, 5,140 cfs Mar. 30, 1960 (gage height, 13.78 ft.); minimum daily, 1.0 cfs Feb. 3-27, 1959.

Flood of June 9, 1953, reached a stage of 17.87 ft., from floodmark (discharge about 15,000 cfs).

REMARKS.—Bankfull stage is about gage height, 12 ft.

Daily Discharge, in Cubic Feet per Second, for Period June to September 1958

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1958									
1	180	45	19	6.7	16	68	38	9.9	9.9
2	180	43	16	6.4	17	78	36	10	9.4
3	180	42	15	5.6	18	74	34	9.0	8.6
4	180	44	14	5.3	19	66	33	8.2	7.4
5	180	44	14	6.0	20	59	31	7.4	7.4
6	*140	42	13	6.4	21	54	28	6.7	6.7
7	140	38	13	6.4	22	54	27	6.7	5.6
8	140	36	*12	6.0	23	60	26	6.7	5.0
9	140	*49	11	5.3	24	61	22	7.0	6.4
10	140	62	10	4.4	25	61	21	7.8	7.4
11	140	75	9.0	*4.0	26	61	20	8.2	5.6
12	140	66	9.0	3.7	27	55	18	9.0	5.3
13	86	54	8.2	4.7	28	52	19	9.4	4.7
14	76	46	7.8	6.7	29	49	19	8.6	4.2
15	70	43	9.4	12	30	45	17	8.2	4.4
					31		18	7.0	

Little Sioux River at Gillett Grove, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	6.0	12	6.8	5.0	1.1	1.4	*110	22	1,800	382	28	25
2.....	6.0	11	7.4	4.6	1.1	1.5	98	21	*3,360	320	70	33
3.....	6.0	11	*8.0	4.3	*1.0	1.3	86	26	4,350	257	122	24
4.....	6.0	11	9.0	4.0	1.0	*1.2	72	28	3,720	211	72	22
5.....	6.4	13	8.8	3.7	1.0	1.2	64	46	2,920	177	53	19
6.....	6.7	*12	7.8	3.5	1.0	1.2	56	*163	2,340	148	47	18
7.....	*7.0	13	6.0	3.4	1.0	1.2	50	373	1,810	129	41	17
8.....	7.8	14	5.4	*3.3	1.0	1.4	43	406	1,360	*115	35	15
9.....	8.2	14	5.0	3.2	1.0	1.6	38	276	1,050	101	32	17
10.....	9.0	13	4.8	3.1	1.0	1.0	35	235	804	90	31	15
11.....	9.4	13	4.6	3.0	1.0	1.3	31	199	632	82	28	14
12.....	9.4	12	4.5	3.0	1.0	1.7	29	151	540	77	26	13
13.....	9.0	13	4.4	3.0	1.0	2.0	28	113	466	85	24	14
14.....	9.0	14	4.4	2.8	1.0	1.8	28	89	404	80	36	13
15.....	9.9	14	4.4	2.7	1.0	1.6	29	75	362	68	50	13
16.....	10	12	4.4	2.5	1.0	1.4	35	66	320	62	43	14
17.....	11	14	4.4	2.2	1.0	1.2	40	60	288	60	36	19
18.....	9.9	21	4.4	1.8	1.0	1.3	39	54	278	60	33	22
19.....	9.4	19	4.5	1.6	1.0	4.5	37	51	351	55	31	23
20.....	9.9	17	4.7	1.5	1.0	5.4	36	133	309	50	28	26
21.....	9.4	15	5.1	1.4	1.0	4.7	36	*2,160	298	48	25	36
22.....	9.9	19	5.6	1.3	1.0	4.0	32	2,520	267	47	24	43
23.....	11	16	6.2	1.3	1.0	210	31	1,220	239	46	26	38
24.....	11	15	6.6	1.2	1.0	*230	30	656	215	41	38	*35
25.....	11	13	7.0	1.2	1.0	180	28	446	198	37	42	32
26.....	11	10	7.2	1.2	1.0	150	27	351	178	34	36	40
27.....	12	8.4	7.0	1.2	1.0	130	25	288	167	*32	31	42
28.....	13	7.4	6.7	1.2	1.2	120	25	257	227	32	28	37
29.....	14	6.6	6.3	1.2	.....	125	24	382	253	31	27	34
30.....	12	6.6	5.9	1.2	.....	135	23	466	351	28	24	32
31.....	12	.....	5.4	1.1	.....	122	.....	1,070	.....	27	*22	.....
1959-60												
1.....	30	34	45	220	36	26	3,140	384	1,450	298	128	213
2.....	35	34	46	190	37	26	*2,780	354	1,170	280	122	185
3.....	43	33	47	130	38	25	4,310	334	940	202	113	158
4.....	43	35	47	80	38	25	4,090	307	796	253	103	137
5.....	37	28	46	110	38	25	2,580	307	712	235	100	118
6.....	34	23	45	120	39	25	2,000	344	621	217	105	101
7.....	32	27	44	110	40	25	1,730	384	556	201	103	89
8.....	31	32	43	105	41	25	1,490	405	506	190	93	98
9.....	33	38	41	98	42	25	1,140	384	449	183	89	203
10.....	34	45	40	92	40	25	852	354	438	177	*83	334
11.....	32	51	41	86	38	25	*686	325	471	197	78	262
12.....	28	30	42	82	36	25	608	298	482	384	72	222
13.....	28	22	43	78	35	25	686	271	460	740	70	204
14.....	28	34	*43	71	33	26	970	253	449	768	64	194
15.....	26	40	44	70	*32	26	1,000	235	438	582	60	183
16.....	28	38	45	66	31	26	910	*262	686	482	57	170
17.....	28	34	46	62	30	26	910	506	768	449	57	159
18.....	28	32	46	58	30	27	880	1,000	740	506	66	172
19.....	26	32	47	54	29	27	*768	1,140	634	582	64	*194
20.....	26	*33	47	50	28	27	660	1,450	543	505	64	325
21.....	*27	34	47	*47	28	*28	582	2,860	*506	*494	66	354
22.....	29	35	47	44	27	28	518	4,090	482	394	59	394
23.....	32	36	47	41	27	29	471	*3,650	460	334	55	582
24.....	33	38	46	38	27	29	427	3,040	582	289	57	740
25.....	34	37	50	36	26	30	416	2,580	647	253	56	768
26.....	31	36	60	35	26	36	384	2,780	608	226	69	852
27.....	30	38	160	34	26	450	344	3,140	394	201	201	824
28.....	31	39	427	34	26	*1,400	344	3,340	364	183	219	740
29.....	31	41	438	34	26	4,420	354	2,940	334	165	262	647
30.....	31	43	325	34	.....	5,010	374	2,340	316	154	262	582
31.....	34	.....	270	35	.....	4,310	.....	1,810	.....	140	244	.....

Little Sioux River at Gillett Grove, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58									100	36.6	10.0	6.25
1958-59	9.43	13.0	5.89	2.44	1.01	55.9	42.2	400	995	97.2	38.4	24.8
1959-60	31.4	35.1	90.5	75.7	32.8	525	1,213	1,351	600	336	105	340

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58									0.075	0.027	0.0075	0.0047
1958-59	0.0071	0.0097	0.0044	0.0018	0.00076	0.042	0.032	0.300	746	073	.029	.019
1959-60	.024	.026	.068	.057	.025	.394	.909	1.01	.450	.252	.079	.255

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58									0.08	0.03	0.009	0.005
1958-59	0.008	0.01	0.005	0.002	0.0008	0.05	0.04	0.35	.83	.08	.03	.02
1959-60	.03	.03	.08	.07	.03	.45	1.01	1.17	.50	.29	.09	.28

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58									5,970	2,250	615	372
1958-59	580	774	362	150	56	3,440	2,510	24,600	59,220	5,970	2,360	1,480
1959-60	1,930	2,090	5,560	4,660	1,880	32,290	72,210	83,040	35,710	20,660	6,430	20,240

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30							Calendar year			
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet
	Date	Gage height in feet	Discharge								
1958											
1959	June 3, 1959	13.23	4,500	1.0	140	0.105	1.43	101,500	151	1.54	109,400
1960	Mar. 30, 1960	13.78	5,140	22	395	.296	4.03	286,700			

Peak Discharge (base, 2,500 cfs)

1957-58: No peak above base.

1958-59: May 21 (10 p.m.) 3,340 cfs (12.19 ft.); June 3 (2 p.m.) 4,500 cfs (13.23 ft.).

1959-60: Mar. 30 (6 a.m.) 5,140 cfs (13.78 ft.); Apr. 3 (8 p.m.) 4,880 cfs (13.64 ft.); May 22 (12:30 a.m.) 4,640 cfs (13.39 ft.); May 28 (10 a.m.) 3,440 cfs (12.28 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 25 to Dec. 31, 1958; Jan. 1 to Mar. 28, Nov. 5-7, Nov. 12 to Dec. 27, Dec. 31, 1959; Jan. 1 to Mar. 28, 1960. No gage-height record June 1-12, 1958; Mar. 29 to Apr. 19, 1959.

Little Sioux River at Correctionville, Iowa

LOCATION.—Lat. 42°28'20", long. 95°47'50", in NE¼ NW¼ sec. 1, T. 88 N., R. 43 W., on right bank 10 ft. upstream from bridge on State Highway 31, 0.2 mile upstream from Bacon Creek, 0.5 mile west of Correctionville, and 0.8 mile downstream from Pierson Creek.

DRAINAGE AREA.—2,500 square miles (revised in 1956).

RECORDS AVAILABLE.—May 1918 to July 1925, October 1928 to July 1932, June 1936 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 1,096.49 ft. above mean sea level, datum of 1929. May 28, 1918, to July 1, 1925, and Oct. 29, 1928, to July 15, 1929, chain gage 0.2 mile downstream at datum 1.25 ft. lower. July 16, 1929, to July 2, 1932, and June 15, 1936, to Nov. 7, 1938, chain gage at present site and datum.

AVERAGE DISCHARGE.—33 years (1918-24, 1928-31, 1936-60), 652 cfs (472,000 acre-ft. per year).

EXTREMES.—1918-25, 1928-32, 1936-60: Maximum discharge, 20,900 cfs June 21, 1954 (gage height, 23.36 ft.); minimum daily, 2.6 cfs July 17, 25, 1936, caused by construction dam above gage.

Flood of June 23 or 24, 1891, reached a stage of 29.34 ft., present datum, from levels to floodmark by Soil Conservation Service (discharge not determined).

REMARKS.—Bankfull stage is about gage height, 13 ft.

REVISIONS.—(water years).—WSP 856: 1919. WSP 1240: 1924-25, 1931, 1932(M), 1937, 1945(M), 1947(M), 1949(M).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	30	34	24	15	11	40	390	126	231	16	18	47
2.....	23	34	22	15	12	53	378	127	185	18	20	30
3.....	22	*34	22	15	13	53	390	137	146	24	20	26
4.....	22	35	22	15	14	75	402	*152	112	25	16	31
5.....	*32	38	22	*15	14	110	*428	179	98	24	23	29
6.....	50	38	22	15	14	105	440	199	86	20	77	31
7.....	59	37	*22	11	*14	86	390	211	*75	25	82	50
8.....	64	33	22	12	14	92	330	220	70	24	*74	48
9.....	64	34	20	13	15	87	290	222	62	23	62	43
10.....	53	38	20	13	15	64	260	217	60	29	58	3
11.....	44	40	19	13	16	74	235	208	57	*156	62	*34
12.....	41	41	18	13	16	68	220	202	53	169	61	30
13.....	40	41	18	14	17	60	208	201	50	132	54	27
14.....	38	36	*17	14	16	58	197	194	46	90	46	24
15.....	36	*31	17	13	*14	*53	176	190	41	69	42	23
16.....	34	33	16	*13	14	62	163	187	37	57	38	20
17.....	32	31	16	12	14	78	155	*176	35	49	37	18
18.....	*30	32	15	11	12	89	148	171	35	43	91	16
19.....	30	31	15	11	13	91	137	155	*32	38	60	14
20.....	30	37	15	11	14	100	129	144	30	37	59	13
21.....	30	40	15	11	14	139	122	136	26	32	51	12
22.....	30	44	14	11	14	104	112	127	23	31	44	13
23.....	31	37	14	11	17	150	99	116	20	29	*39	12
24.....	31	40	14	11	21	143	*95	107	18	27	33	8.3
25.....	32	41	15	11	21	194	94	100	18	*26	28	*8.0
26.....	32	40	16	11	21	197	92	91	23	27	24	8.0
27.....	33	38	17	12	19	238	103	91	22	26	21	8.0
28.....	36	38	16	12	18	270	108	89	20	23	18	6.3
29.....	36	31	14	11	21	260	109	90	17	21	16	7.0
30.....	36	28	14	10	.....	244	126	270	16	18	19	7.0
31.....	34	.....	15	10	.....	310	.....	400	.....	18	43	.....

Little Sioux River at Correctionville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1.....	6.3	20	35	22	12	60	770	99	340	929	197	202
2.....	7.0	21	37	24	12	65	*710	96	342	832	178	560
3.....	5.9	23	36	23	12	70	680	89	440	815	235	270
4.....	4.8	28	35	22	12	85	590	82	478	2,010	170	212
5.....	*5.1	43	31	22	12	84	515	79	*440	1,650	156	194
6.....	4.6	56	*30	22	*13	60	440	74	440	1,110	142	*272
7.....	4.8	54	30	23	14	*50	378	*72	428	962	131	285
8.....	4.3	*49	30	*23	15	47	320	79	402	962	*126	217
9.....	4.0	51	29	22	16	63	280	562	378	1,220	121	180
10.....	4.3	57	29	21	19	84	246	116	320	*800	114	178
11.....	8.3	62	28	20	23	84	227	81	280	631	108	166
12.....	4.0	57	25	18	28	80	208	79	250	616	103	149
13.....	5.6	54	25	16	34	69	199	129	319	586	99	138
14.....	8.3	51	23	14	34	60	197	283	686	561	119	175
15.....	6.6	46	21	*16	32	51	*194	161	330	474	121	184
16.....	6.3	38	21	16	30	41	185	112	933	*405	108	156
17.....	*5.9	37	21	16	28	43	182	148	1,330	353	98	142
18.....	5.9	43	*21	16	26	49	169	137	*1,230	304	96	132
19.....	5.1	*46	21	15	*24	*55	161	143	746	270	89	*132
20.....	5.3	46	21	14	23	67	152	176	544	260	87	137
21.....	8.7	38	23	14	20	76	148	*871	833	298	*88	142
22.....	7.0	34	23	14	18	85	140	362	*4,120	899	89	138
23.....	7.0	30	23	14	18	89	136	330	2,540	360	101	130
24.....	9.0	31	23	14	20	104	132	330	1,530	237	93	126
25.....	18	28	23	14	24	125	129	415	1,850	206	84	120
26.....	22	30	24	14	30	168	126	428	2,540	244	83	114
27.....	16	35	25	14	40	209	120	378	1,720	366	99	109
28.....	11	33	26	14	55	342	113	330	1,780	551	151	105
29.....	12	31	25	13	.....	650	108	310	1,430	353	201	100
30.....	17	36	24	12	.....	822	104	290	1,110	250	158	97
31.....	18	.....	23	12	.....	840	.....	355	.....	217	163	.....
1957-58												
1.....	95	272	275	160	100	618	184	558	248	133	86	18
2.....	91	432	300	160	100	392	*199	558	191	132	87	17
3.....	87	405	350	150	95	366	212	488	1,110	128	70	*17
4.....	85	379	*372	150	95	366	250	460	*1,070	122	63	17
5.....	82	*379	410	140	*95	*340	379	418	1,180	116	*58	16
6.....	81	379	446	130	90	328	432	*392	1,220	114	57	18
7.....	86	405	392	130	90	292	*516	366	998	114	54	17
8.....	*110	392	328	120	85	260	601	366	768	118	50	17
9.....	109	366	304	*120	80	219	661	340	646	136	47	15
10.....	103	340	*250	110	75	200	691	328	572	*124	43	15
11.....	98	328	290	110	70	240	661	304	516	160	42	14
12.....	98	304	230	110	65	233	616	281	460	168	40	14
13.....	102	304	250	120	60	240	586	260	439	128	39	14
14.....	107	*328	270	130	55	231	572	248	379	134	37	14
15.....	137	340	280	130	50	219	544	*231	328	131	35	17
16.....	240	366	270	130	50	206	516	216	292	124	33	16
17.....	226	392	260	130	50	186	488	209	270	116	32	15
18.....	174	405	260	130	*50	175	460	207	*260	112	29	14
19.....	155	392	270	130	50	168	446	194	240	115	28	14
20.....	165	418	280	130	50	*170	432	192	233	112	27	14
21.....	*202	366	260	*130	50	175	418	189	219	*105	25	13
22.....	221	316	250	130	60	178	405	183	206	101	24	13
23.....	237	356	240	130	100	178	408	172	195	95	27	12
24.....	237	440	230	130	160	178	481	165	189	91	27	12
25.....	231	460	210	120	200	176	502	180	181	86	33	13
26.....	231	460	200	120	300	178	502	178	180	81	26	14
27.....	233	474	190	110	1,300	176	537	175	174	77	23	12
28.....	237	474	190	110	1,000	176	601	159	165	73	22	11
29.....	237	474	180	110	.....	176	601	151	155	69	21	11
30.....	233	310	170	100	.....	178	572	141	145	74	19	9.1
31.....	226	.....	160	100	.....	181	.....	160	.....	81	19	.....

Little Sioux River at Correctionville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	9.0	22	21	11	6.8	50	240	72	4,720	1,440	110	90
2	9.0	22	*22	11	6.8	90	232	66	2,770	1,220	160	90
3	9.0	22	23	10	*6.8	100	223	74	*2,280	1,080	1,400	81
4	9.0	22	23	10	6.8	110	211	86	2,180	916	869	78
5	10	22	22	9.5	6.8	90	196	121	2,280	760	*553	76
6	11	*22	20	9.5	7.0	70	184	266	2,790	644	471	76
7	*11	23	16	9.5	7.0	60	172	*360	3,440	566	693	74
8	11	24	15	*9.5	7.0	55	*164	380	3,580	*496	380	65
9	12	25	14	9.5	7.0	50	146	420	3,100	452	302	*60
10	14	25	14	9.0	7.0	45	136	991	2,390	400	240	56
11	11	24	13	9.0	7.0	40	130	829	2,660	360	206	53
12	11	23	13	8.5	7.0	35	122	631	1,560	330	180	51
13	11	24	12	8.5	7.0	35	114	518	1,220	330	160	50
14	11	25	12	8.5	7.0	70	106	430	1,050	320	172	48
15	12	25	12	8.5	7.0	55	103	370	916	311	205	46
16	11	26	13	8.0	7.0	50	98	320	805	284	214	47
17	10	27	13	8.0	7.0	45	104	293	730	276	201	54
18	10	28	13	8.0	6.8	45	113	266	670	351	180	57
19	12	28	14	7.4	6.5	50	107	248	670	302	161	54
20	12	33	14	7.4	6.5	60	134	330	631	257	140	75
21	13	33	14	7.4	6.5	50	158	546	592	232	125	376
22	13	32	14	7.4	6.5	47	144	775	579	209	115	141
23	14	31	14	7.4	6.5	46	131	860	529	192	107	96
24	13	31	14	7.4	7.0	266	118	1,290	496	177	103	96
25	14	32	14	6.8	8.0	257	106	1,650	463	164	98	95
26	25	24	14	6.8	8.0	311	95	1,650	430	152	112	107
27	17	23	14	6.8	9.0	330	92	1,010	418	142	100	117
28	17	21	14	6.8	9.0	311	87	1,730	860	134	108	142
29	17	20	13	6.8	.....	330	82	*3,300	1,520	125	108	121
30	25	20	12	6.8	.....	284	76	1,550	1,560	121	106	106
31	22	.....	12	6.8	.....	257	.....	6,580	.....	114	94	.....
1959-60												
1	103	108	*185	600	180	120	7,660	685	4,800	852	330	657
2	111	103	190	500	180	120	8,440	685	4,160	775	311	553
3	115	100	185	400	180	*120	9,080	670	3,300	715	*293	474
4	114	*110	180	300	175	120	8,600	*670	2,620	657	275	420
5	114	155	160	340	170	115	6,300	685	2,130	618	293	370
6	110	85	150	*360	170	110	4,800	700	1,790	579	653	330
7	*106	90	160	355	170	110	*4,970	685	1,560	*540	400	302
8	223	105	170	350	170	110	4,390	670	1,440	518	340	*311
9	266	120	170	345	*170	110	2,980	685	*1,290	496	302	302
10	248	140	170	340	170	110	2,180	685	1,220	474	284	275
11	196	155	170	335	165	110	1,790	657	1,150	463	266	275
12	172	100	170	330	160	110	1,440	631	1,120	631	248	320
13	154	80	170	325	160	110	1,520	592	1,120	754	232	380
14	148	85	170	320	160	110	1,410	566	1,120	700	223	360
15	140	100	170	315	155	110	1,290	529	1,050	805	204	350
16	130	150	170	310	150	110	1,330	709	1,050	916	200	330
17	120	140	170	305	145	110	1,410	821	1,150	884	200	330
18	113	130	170	300	140	110	1,330	852	1,330	1,010	203	360
19	108	130	170	295	140	110	1,260	980	1,370	1,080	201	340
20	106	135	170	290	140	110	1,220	1,660	1,330	948	232	340
21	101	150	170	285	140	110	1,150	5,670	1,220	820	223	350
22	106	160	170	270	135	110	1,050	7,100	1,150	790	220	360
23	108	170	170	250	135	110	948	6,200	1,080	745	200	441
24	107	180	170	230	130	110	884	5,060	1,010	657	208	518
25	104	190	170	210	125	110	820	6,250	948	579	420	579
26	104	180	248	190	125	110	775	9,240	916	518	533	670
27	100	175	380	170	120	200	730	9,400	980	474	302	745
28	100	175	685	160	120	2,500	715	7,800	916	430	2,220	790
29	98	175	805	165	120	14,200	700	6,400	948	400	2,560	820
30	99	180	750	170	.....	*13,500	685	5,500	916	390	884	805
31	107	.....	650	175	.....	8,440	.....	5,060	.....	370	852	.....

Little Sioux River at Correctionville, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	36.6	36.4	17.7	12.4	15.4	121	218	169	58.1	43.4	43.1	22.8
1956-57	8.33	40.3	26.2	17.2	23.0	151	269	232	1,004	636	126	175
1957-58	160	382	267	126	165	239	482	273	441	112	39.5	14.4
1958-59	13.1	25.3	15.1	8.31	7.08	119	137	904	1,596	415	264	89.5
1959-60	130	135	251	300	152	1,347	2,729	2,874	1,539	664	462	449

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.015	0.015	0.0071	0.0050	0.0062	0.048	0.087	0.068	0.023	0.017	0.017	0.0091
1956-57	.0033	.016	.010	.0069	.0092	.062	.108	.093	.402	.254	.050	.070
1957-58	.064	.153	.107	.050	.066	.096	.193	.109	.176	.045	.016	.0058
1958-59	.0052	.010	.0060	.0033	.0028	.048	.055	.362	.638	.166	.106	.036
1959-60	.052	.054	.100	.120	.061	.539	1.09	1.15	.616	.266	.185	.180

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.02	0.02	0.008	0.006	0.007	0.06	0.10	0.08	0.03	0.02	0.02	0.01
1956-57	.004	.02	.01	.008	.01	.07	.12	.11	.45	.29	.06	.08
1957-58	.07	.17	.12	.06	.07	.11	.22	.13	.20	.05	.02	.006
1958-59	.006	.01	.007	.004	.003	.05	.06	.42	.71	.19	.12	.04
1959-60	.06	.06	.12	.14	.07	.62	1.22	1.33	.69	.31	.21	.20

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	2,250	2,160	1,090	764	889	7,430	12,940	10,380	3,460	2,670	2,650	1,350
1956-57	512	2,400	1,610	1,060	1,280	9,480	15,980	14,270	59,720	39,140	7,750	10,440
1957-58	9,830	22,720	16,420	7,760	9,170	14,680	28,710	16,800	26,240	6,890	2,420	859
1958-59	805	1,510	928	511	393	7,330	8,180	55,560	94,990	25,500	16,210	5,330
1959-60	8,000	8,040	15,450	18,430	8,730	82,800	162,400	176,700	91,600	40,840	28,390	26,690

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30						Calendar year					
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet	
	Date	Gage height in feet	Discharge									
1955												
1956	May 31, 1956	7.05	452	6.3	66.2	0.026	0.38	48,030	259	1.42	187,400	
1957	June 22, 1957	16.76	5,700	4.0	226	.090	1.23	163,600	64.8	0.37	47,060	
1958	June 3, 1958	11.85	2,060	9.1	224	.090	1.23	162,500	287	1.56	208,100	
1959	May 31, 1959	19.30	8,280	6.5	300	.120	1.62	217,200	339	1.84	245,500	
1960	Mar. 29, 1960	22.57	16,000	80	920	.368	5.03	668,100				

Peak Discharge (base, 4,000 cfs)

- 1955-56: No peak above base.
 1956-57: June 22 (9 a.m.) 5,700 cfs (16.76 ft.).
 1957-58: No peak above base.
 1958-59: May 28 (11 p.m.) 7,240 cfs (18.56 ft.); May 31 (2:30 a.m.) 8,280 cfs (19.30 ft.); June 11 (11:30 a.m.) 5,200 cfs (16.8 ft.).
 1959-60: Mar. 29 (9 p.m.) 16,000 cfs (22.57 ft.); May 22 (7 a.m.) 7,100 cfs (18.53 ft.); May 26 (11 p.m.) 10,400 cfs (20.38 ft.); Aug. 28 (10 p.m.) 4,540 cfs (16.00 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.
 Stage-discharge relation affected by ice Nov. 29 to Dec. 31, 1955; Jan. 1 to Mar. 20, Nov. 22, 23, 26, 27, Dec. 6-31, 1956; Jan. 1 to Mar. 4, Mar. 14, Nov. 30 to Dec. 3, Dec. 10-31, 1957; Jan. 1 to Feb. 27, Nov. 26 to Dec. 31, 1958; Jan. 1 to Mar. 22, Nov. 6 to Dec. 25, Dec. 30, 31, 1959; Jan. 1 to Mar. 28, 1960.

Little Sioux River near Kennebec, Iowa

LOCATION.—Lat. 42°04'55", long. 96°00'50", in SE¼SW¼ sec. 18, T. 84 N., R. 44 W., near left bank on downstream side of pier of bridge on Monona County Highway A, 1.1 miles south of Kennebec, 5.5 miles northeast of Onawa, and 6.2 miles upstream from Maple River.

DRAINAGE AREA.—2,738 square miles (revised in 1956).

RECORDS AVAILABLE.—April 1939 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 1,027.02 ft. above mean sea level (Monona County highway bench mark). Prior to May 24, 1950, wire-weight gage, and May 24, 1950, to Oct. 12, 1959, water-stage recorder at same site at datum 0.87 ft. higher. Oct. 13, 1959, to Mar. 27, 1960, no gage.

AVERAGE DISCHARGE.—21 years, 761 cfs (550,900 acre-ft. per year.)

EXTREMES.—1939-60: Maximum discharge, 16,400 cfs Mar. 30, 1960 (gage height, 23.26 ft.); maximum gage height, 26.63 ft. June 21, 1954 (before levees broke in vicinity of gage); minimum daily discharge, 11 cfs Oct. 11, 1956.

REMARKS.—High levees are not overtopped.

REVISIONS (water years).—WSP 1310: 1942(M).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	44	50	35	38	25	90	287	146	362	56	37	59
2.....	43	46	34	38	26	100	310	148	243	60	37	59
3.....	42	*49	33	38	26	140	322	*146	193	35	37	53
4.....	41	48	32	38	27	160	344	151	170	34	48	42
5.....	*40	46	31	*38	27	130	*380	162	163	35	42	39
6.....	45	48	*31	37	27	*120	392	189	*239	35	39	42
7.....	53	50	31	37	*27	270	392	199	110	81	98	38
8.....	56	50	31	36	27	250	356	219	96	47	*85	45
9.....	65	50	31	36	28	220	310	225	84	46	75	52
10.....	71	49	31	35	28	210	276	262	78	*40	66	*50
11.....	62	51	31	34	28	180	256	287	72	88	60	48
12.....	52	51	31	33	28	150	227	231	68	243	61	42
13.....	48	51	31	32	29	130	213	219	64	178	66	41
14.....	45	51	*31	31	29	120	201	219	57	155	60	37
15.....	45	51	31	30	29	100	185	215	52	120	57	37
16.....	42	50	32	29	29	*90	*179	*211	50	100	52	33
17.....	44	48	33	28	*29	90	167	213	45	81	54	30
18.....	*42	47	34	*27	29	90	160	217	44	72	61	28
19.....	41	46	35	26	30	96	155	211	*44	42	85	26
20.....	41	45	35	26	30	103	143	193	41	58	84	24
21.....	41	45	36	26	31	106	141	181	43	53	73	23
22.....	41	45	36	25	31	121	134	165	37	49	68	24
23.....	41	*44	37	25	32	128	131	145	34	44	*56	20
24.....	42	42	37	25	32	128	131	129	33	41	53	20
25.....	43	41	38	25	33	129	125	123	32	*39	52	*20
26.....	41	40	38	25	33	162	121	117	68	37	51	17
27.....	41	39	38	25	37	169	125	115	54	45	49	13
28.....	43	38	38	25	50	201	134	112	34	72	44	13
29.....	45	37	38	25	80	235	141	115	32	56	41	14
30.....	48	36	38	25	.....	237	141	114	34	45	37	14
31.....	49	.....	38	25	.....	227	.....	240	.....	37	39	.....

Little Sioux River near Kennebec, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	14	29	54	36	20	62	824	110	368	1,130	276	193
2	17	30	57	36	20	66	*773	110	368	960	251	1,380
3	14	32	59	36	20	70	722	102	380	858	746	500
4	13	32	59	35	20	80	688	94	452	2,050	298	310
5	*13	46	58	35	20	80	601	84	476	2,300	221	*251
6	12	54	*47	35	*20	60	521	82	*440	1,560	203	394
7	12	70	36	35	21	56	464	*80	440	1,100	*189	324
8	13	*64	35	*35	22	55	392	80	440	1,100	169	298
9	13	66	35	35	24	54	344	121	428	1,170	153	237
10	12	70	35	33	26	71	310	455	392	*1,210	146	205
11	11	75	35	31	30	75	260	140	356	790	136	203
12	12	72	35	29	35	80	241	92	333	644	136	178
13	13	65	36	27	45	80	229	88	322	644	131	155
14	20	55	36	*25	55	77	217	153	*1,850	688	121	271
15	31	50	36	22	55	70	223	276	618	601	134	235
16	17	45	37	22	50	68	*219	179	888	*500	148	205
17	*17	40	*37	22	47	68	209	125	1,480	452	131	178
18	15	45	37	22	44	86	205	140	1,520	404	126	*158
19	14	*46	37	22	40	*98	201	110	*1,100	368	*112	160
20	13	46	37	22	*36	81	181	*150	616	344	110	146
21	14	40	37	22	33	70	169	344	548	333	150	146
22	14	37	36	22	31	75	162	756	2,000	626	112	146
23	17	35	35	22	29	82	155	392	3,770	756	114	141
24	19	37	35	22	31	90	150	368	2,350	392	140	131
25	23	37	35	22	35	105	150	308	2,030	310	120	128
26	26	39	35	22	40	130	155	428	2,600	276	104	117
27	28	41	35	22	45	158	150	428	2,600	356	121	110
28	31	43	36	22	55	215	136	404	1,900	440	181	104
29	29	47	36	22	.....	344	125	356	1,850	560	211	102
30	31	50	36	21	.....	630	125	322	1,440	404	223	96
31	28	.....	36	20	.....	807	.....	322	.....	322	187	.....
1957-58												
1	96	276	287	200	110	960	203	572	193	180	117	38
2	94	416	298	190	105	586	203	548	264	412	141	39
3	86	428	333	180	100	440	227	524	239	190	125	37
4	82	401	368	170	95	488	264	500	1,550	170	108	35
5	78	380	368	160	90	440	380	476	1,060	160	*85	34
6	76	380	452	155	85	440	452	440	1,280	148	81	34
7	78	392	416	150	80	416	464	428	1,280	141	72	32
8	94	392	392	150	80	400	*536	416	1,060	145	67	32
9	118	392	298	145	75	350	601	404	850	162	62	*36
10	114	368	250	*145	75	325	659	380	700	181	60	34
11	109	344	*130	145	70	287	688	356	600	155	58	32
12	106	344	140	150	70	300	644	333	521	172	56	30
13	106	*310	200	160	65	310	601	310	476	213	54	29
14	110	310	240	170	65	298	572	287	464	162	54	28
15	155	356	270	170	65	287	560	*276	404	162	51	28
16	235	392	280	170	65	276	536	256	380	165	49	28
17	256	416	290	170	65	256	500	239	344	156	47	27
18	243	440	300	170	*65	239	488	254	322	146	47	27
19	193	440	300	165	65	221	464	221	*310	207	48	27
20	176	440	300	160	65	*213	452	211	287	179	46	27
21	197	452	290	155	65	211	452	213	276	145	44	26
22	*239	380	285	150	90	211	452	203	264	*128	43	26
23	256	298	280	145	400	215	452	197	260	135	42	26
24	258	404	260	140	1,000	211	476	181	243	148	41	26
25	260	452	260	140	700	207	512	181	241	115	40	26
26	260	488	240	140	600	201	524	191	221	104	47	25
27	260	488	220	135	1,300	201	524	195	217	109	50	25
28	264	500	200	130	1,680	199	572	183	215	96	44	24
29	264	500	140	125	.....	199	630	183	197	82	42	24
30	264	440	200	120	.....	197	616	156	191	85	40	24
31	256	.....	210	115	.....	201	.....	165	.....	94	39	.....

Little Sioux River near Kennebec, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	22	35	35	20	18	45	287	131	5,660	1,600	150	150
2	20	34	*35	20	*18	*70	*260	121	*3,600	*1,320	188	*130
3	20	*31	35	20	18	100	239	110	2,600	1,170	435	120
4	19	32	32	18	18	110	241	97	2,350	994	1,360	115
5	18	31	30	18	18	130	225	162	2,300	824	*807	110
6	18	34	28	*18	20	100	225	*233	2,550	688	536	108
7	*49	35	28	18	20	75	209	333	3,000	601	683	106
8	21	36	26	18	18	70	187	380	3,330	524	644	104
9	20	35	26	18	18	65	179	428	3,380	464	404	100
10	20	37	24	18	18	55	170	488	2,950	416	374	85
11	22	38	24	18	18	50	158	1,170	3,130	380	322	76
12	25	38	22	20	20	50	150	756	2,210	356	276	74
13	20	34	22	20	20	50	145	601	1,400	333	287	72
14	21	35	20	20	18	70	140	524	1,170	333	298	70
15	22	36	20	18	18	100	136	464	994	333	276	70
16	20	38	22	18	18	80	131	416	892	310	287	70
17	18	38	22	18	18	70	129	380	790	287	260	70
18	17	47	22	20	18	60	136	344	722	298	250	75
19	17	47	22	20	18	70	140	310	674	368	230	80
20	17	46	24	18	18	70	153	298	638	344	210	80
21	19	45	24	18	18	60	178	*572	616	298	200	100
22	19	45	24	18	18	70	183	644	586	251	180	400
23	19	45	24	18	25	100	174	858	586	227	170	250
24	21	45	24	20	25	150	174	1,060	560	211	150	150
25	23	45	24	20	25	250	160	1,520	536	199	135	120
26	25	40	24	20	25	310	129	1,850	512	193	120	130
27	30	40	24	20	30	344	120	1,560	436	183	130	140
28	35	40	24	20	30	333	115	1,660	611	172	140	130
29	25	35	22	20	.....	333	126	*4,540	1,110	160	160	115
30	25	35	20	20	.....	333	136	2,590	1,720	153	160	150
31	25	.....	20	18	.....	298	.....	6,080	.....	155	155	.....
1959-60												
1	135	125	175	650	185	120	8,470	837	*4,880	998	*108	998
2	140	*120	180	550	185	120	8,750	797	4,190	917	364	737
3	160	120	180	400	*185	120	8,190	*757	3,930	837	318	659
4	145	115	170	350	185	120	8,610	737	3,320	757	290	583
5	135	130	160	300	185	120	7,230	737	2,760	*697	397	509
6	*125	170	150	*320	185	120	5,130	797	2,370	610	1,200	456
7	120	95	*135	350	185	120	4,420	757	2,070	602	737	402
8	200	100	150	340	185	120	4,420	737	1,870	583	456	391
9	300	110	170	340	185	120	3,440	717	1,720	545	378	391
10	270	120	170	330	180	120	2,700	678	1,570	527	321	357
11	230	140	170	330	175	115	2,220	675	1,520	509	296	318
12	200	160	170	320	170	115	1,970	665	1,420	799	290	318
13	180	110	170	320	160	115	*1,920	659	1,420	817	263	402
14	160	90	175	320	160	115	1,920	602	1,380	737	245	456
15	155	100	175	320	160	115	1,820	564	1,420	737	242	432
16	150	110	175	310	155	115	1,770	602	1,820	897	233	408
17	140	160	175	310	150	115	1,820	897	1,240	998	227	405
18	130	150	175	310	140	*115	1,920	897	1,420	1,040	215	777
19	125	140	175	310	140	115	1,920	1,040	1,620	1,200	257	473
20	120	140	175	*310	140	115	1,820	1,500	1,720	1,200	182	405
21	115	150	175	310	130	110	1,770	3,620	1,620	977	239	402
22	120	160	*175	300	130	110	1,670	5,310	1,470	897	245	398
23	125	170	175	280	130	110	1,470	6,020	1,290	877	275	436
24	120	180	175	260	125	110	1,340	*5,400	1,240	797	266	621
25	115	190	175	240	120	110	1,200	5,130	1,160	697	254	678
26	115	200	220	220	*120	110	1,090	7,010	1,090	621	545	717
27	115	190	350	200	120	110	998	8,890	1,090	564	509	837
28	110	180	600	180	120	500	937	8,610	1,200	509	1,010	897
29	110	170	750	170	120	5,000	897	7,010	1,090	473	*3,740	937
30	115	170	850	175	.....	14,900	857	5,800	1,060	456	1,870	977
31	120	.....	750	180	.....	*13,100	.....	5,130	.....	432	*1,160	.....

Little Sioux River near Kennebec, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	46.4	46.1	34.1	30.4	31.6	151	219	181	89.2	69.3	57.0	33.4
1956-57	17.9	47.9	39.7	26.9	33.9	134	310	235	1,145	763	181	240
1957-58	174	401	274	154	264	316	400	306	497	156	61.3	29.5
1958-59	22.3	38.5	24.9	19.0	20.1	131	171	950	1,720	456	322	118
1959-60	148	142	251	310	156	1,181	3,090	2,696	1,876	753	562	559

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.017	0.017	0.012	0.011	0.012	0.055	0.080	0.066	0.033	0.025	0.021	0.012
1956-57	.0065	.017	.014	.0098	.012	.049	.113	.086	.418	.279	.066	.088
1957-58	.064	.146	.100	.056	.096	.115	.179	.112	.182	.057	.022	.011
1958-59	.0081	.014	.0091	.0069	.0073	.048	.062	.362	.628	.167	.118	.043
1959-60	.051	.052	.092	.113	.057	.431	1.13	.985	.685	.275	.205	.204

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.02	0.02	0.01	0.01	0.01	0.06	0.09	0.08	0.04	0.03	0.02	0.01
1956-57	.008	.02	.02	.01	.01	.06	.13	.10	.47	.32	.08	.10
1957-58	.07	.16	.12	.06	.10	.13	.20	.13	.20	.07	.03	.01
1958-59	.009	.02	.01	.008	.008	.06	.07	.42	.70	.19	.14	.05
1959-60	.06	.06	.11	.13	.06	.59	1.26	1.14	.76	.32	.24	.23

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	2,850	2,750	2,090	1,870	1,820	9,290	13,050	11,150	5,310	4,260	3,500	1,990
1956-57	1,100	2,850	2,440	1,650	1,880	8,220	18,450	14,460	68,140	46,910	11,110	14,280
1957-58	10,680	23,850	16,850	9,460	14,660	19,410	29,160	18,800	29,580	9,610	3,770	1,760
1958-59	1,370	2,290	1,530	1,170	1,120	8,070	10,190	60,850	102,400	28,060	19,790	7,040
1959-60	9,120	8,460	15,410	19,050	8,950	72,630	183,800	165,800	111,600	46,290	34,580	33,280

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30						Calendar year					
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet	
	Date	Gage height in feet	Discharge									
1955												
1956	June 6, 1956	(1)6.99	464	13	82.5	0.030	0.40	59,930	296	80.8	1.47	214,100
1957	June 23, 1957	15.53	4,300	11	265	.097	1.33	191,500	.40		1.63	58,630
1958	Feb. 28, 1958	(2)10.92	1,900	24	259	.095	1.28	187,600	327		.97	236,500
1959	May 31, 1959	19.90	7,040	17	337	.123	1.68	243,900	195		1.88	141,400
1960	Mar. 30, 1960	23.26	16,400	90	977	.357	4.87	709,000	375			271,700

(1) Maximum gage height 7.12 ft. Mar. 7, 1956 (ice jam).

(2) Maximum gage height 11.35 ft. Feb. 24, 1958 (ice jam).

Peak Discharge (base, 4,000 cfs)

1955-56: No peak above base.

1956-57: June 23 (4 a.m.) 4,300 cfs (15.53 ft.).

1957-58: No peak above base.

1958-59: May 29 (4 a.m.) 5,260 cfs (17.84 ft.); May 31 (9 a.m.) 7,040 cfs (19.90 ft.); June 11 (9 p.m.) 4,600 cfs (16.8 ft.).

1959-60: Mar. 30 (9 p.m.) 16,400 cfs (23.26 ft.); May 27 (11:30 p.m.) 9,610 cfs (19.57 ft.); Aug. 29 (2:30 p.m.) 4,140 cfs (14.53 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 16 to Dec. 31, 1955; Jan. 1 to Mar. 18, Nov. 20-29, Dec. 6-31, 1956; Jan. 1 to Mar. 6, Mar. 15, 16, Dec. 10-31, 1957; Jan. 1 to Feb. 27, Nov. 22 to Dec. 31, 1958; Jan. 1 to Mar. 25, 1959; Mar. 28, 29, 1960. No gage height record Nov. 13-18, 1956; Mar. 21-26, 1957; Aug. 20-25, Sept. 10-17, 24-30, Oct. 9-14, 16-23, 25-31, 1958; Oct. 13 to Dec. 31, 1959; Jan. 1 to Mar. 27, 1960. Stage-discharge relation indefinite Aug. 17 to Oct. 12, 1959.

Odebolt Creek near Arthur, Iowa

LOCATION.—Lat. 42°20'05", long. 95°22'55", in SE¼NE¼ sec. 21, T. 87 N., R. 39 W., near center of span on downstream side of county road bridge, 700 ft. south of State Highway 175, 2 miles west of Arthur, 4.5 miles east of Ida Grove, and 5 miles upstream from mouth and Maple River.

DRAINAGE.—39.3 square miles.

RECORDS AVAILABLE.—October 1957 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 1,258.57 ft. above mean sea level, datum of 1929.

EXTREMES.—1957-60: Maximum discharge, 5,160 cfs May 31, 1959 (gage height, 12.18 ft.); maximum gage height, 13.00 ft. Mar. 29, 1960 (ice jam); minimum daily discharge, 0.2 cfs Jan. 2 to Feb. 27, 1959.

Flood of July 3, 1951, reached a stage of 11.96 ft., from floodmark (discharge 4,300 cfs, from contracted-opening measurement of peak flow).

REMARKS.—Bankfull stage is about gage height, 10 ft.

Daily Discharge, in Cubic Feet per Second, Water Year 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58												
1.....	1.7	3.8	2.0	1.3	1.9	14	6.4	4.5	3.1	2.7	59	1.8
2.....	1.8	4.4	2.5	1.4	1.9	12	6.4	4.2	2.2	25	18	1.8
3.....	1.9	3.1	2.7	1.5	1.9	10	6.6	3.9	60	5.0	8.2	1.7
4.....	1.9	2.9	2.7	1.6	1.9	*7.2	7.4	3.7	14	5.6	6.9	1.7
5.....	1.8	2.8	2.4	1.7	*1.9	6.9	8.7	3.6	5.9	4.7	*5.6	1.7
6.....	1.8	2.8	2.1	1.8	1.9	7.9	7.6	3.7	5.2	4.0	5.2	1.7
7.....	2.0	2.8	1.8	*1.9	1.9	8.7	6.9	*3.8	5.0	*3.4	4.8	1.7
8.....	2.5	2.5	1.7	2.0	1.8	6.4	*6.6	3.6	46	3.1	4.6	1.6
9.....	2.2	2.4	1.5	2.1	1.8	7.6	6.4	3.3	14	3.4	4.2	1.6
10.....	1.9	2.4	*1.3	2.2	1.8	6.6	6.2	3.1	*6.9	3.1	3.8	1.4
11.....	1.9	2.5	1.1	2.3	1.8	6.2	5.9	2.6	5.9	13	3.6	1.3
12.....	1.9	2.3	1.7	2.4	1.8	6.9	5.9	2.2	5.6	5.0	3.6	1.4
13.....	1.9	2.5	2.2	2.4	1.8	8.4	5.4	2.2	5.6	3.6	3.4	1.4
14.....	1.9	*2.3	2.5	2.4	1.8	7.6	5.2	3.1	5.0	3.4	3.4	2.5
15.....	2.9	3.1	2.4	2.4	1.7	7.4	5.0	2.2	4.6	3.3	3.3	*2.0
16.....	2.5	6.2	2.1	2.3	1.7	9.3	4.7	2.0	4.4	2.9	2.9	1.3
17.....	1.9	3.6	1.8	2.2	1.7	8.7	4.5	2.0	4.6	3.1	2.8	1.2
18.....	1.8	7.6	2.0	2.1	1.7	6.2	4.2	1.8	4.2	3.1	2.6	1.1
19.....	1.8	6.4	2.6	2.0	1.7	5.9	4.0	1.7	4.0	20	2.6	1.1
20.....	1.8	5.0	2.8	2.0	1.7	6.4	3.8	1.6	3.8	7.4	2.6	1.1
21.....	*1.8	4.0	2.5	2.0	1.7	6.2	3.7	1.6	3.8	5.0	2.6	1.1
22.....	2.3	3.3	1.6	1.9	40	5.9	3.6	1.6	4.6	4.6	2.5	1.1
23.....	2.8	3.0	1.4	1.9	70	6.2	4.0	1.4	4.4	4.0	2.8	1.1
24.....	2.0	3.0	1.3	1.9	57	6.2	4.8	1.4	5.2	3.8	2.8	1.1
25.....	1.8	2.9	1.2	1.9	19	5.6	5.4	1.4	5.4	3.6	2.2	1.0
26.....	1.8	3.0	1.2	1.9	58	5.4	6.0	1.8	3.6	3.3	2.0	.9
27.....	1.8	3.0	1.2	1.9	181	5.2	5.4	1.7	3.4	3.8	1.9	.9
28.....	1.8	3.2	1.2	1.9	23	5.2	5.2	1.3	3.3	3.1	1.9	.9
29.....	1.8	3.1	1.2	1.9	.....	5.4	5.1	1.2	3.1	3.3	1.9	1.0
30.....	1.7	2.5	1.2	1.9	.....	5.4	4.8	1.4	2.8	4.8	1.8	1.0
31.....	1.7	.....	1.3	1.9	.....	5.4	.....	14	.....	17	1.8	.....

Odebolt Creek near Arthur, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	0.9	0.9	0.4	0.3	0.2	0.8	6.9	4.8	*72	14	3.3	8.9
2.....	1.0	.9	.4	.2	.2	2.0	6.4	5.0	50	12	5.2	7.8
3.....	1.0	.9	.3	.2	.2	1.5	6.4	7.6	39	11	3.8	2.9
4.....	1.0	.9	.4	.2	.2	1.1	6.2	7.1	35	10	3.6	2.5
5.....	1.0	.9	.5	.2	.2	.8	6.2	110	33	9.3	3.1	1.9
6.....	1.0	.8	.5	.2	.2	.6	5.4	64	31	8.7	4.4	1.8
7.....	1.0	.9	.4	.2	.2	.4	5.2	*37	28	8.4	3.1	1.7
8.....	.9	.9	.4	.2	.2	.4	4.4	29	26	8.2	2.8	*1.6
9.....	.9	.9	.3	.2	.2	.4	4.2	28	24	7.4	2.5	1.2
10.....	.8	.9	.3	.2	.2	3.0	4.2	28	23	7.4	*2.5	1.2
11.....	.8	.9	.3	.2	.2	6.0	4.0	21	27	7.2	2.5	1.3
12.....	.8	.9	.3	.2	.2	*12	4.0	19	28	7.2	2.0	1.3
13.....	.9	1.0	.3	.2	.2	20	3.8	17	21	6.9	2.3	1.2
14.....	.9	1.0	.3	.2	.2	9.0	3.8	16	17	6.4	7.9	.8
15.....	.9	1.0	*.3	.2	.2	2.5	3.6	15	*15	6.2	3.4	.9
16.....	.8	1.0	.3	.2	.2	2.0	3.6	15	14	*6.2	2.8	1.0
17.....	.8	*1.1	.3	.2	.2	1.8	4.8	14	13	6.6	2.5	1.2
18.....	.8	.9	.3	.2	.2	*1.7	4.2	*13	13	6.2	2.2	1.2
19.....	.8	.8	.3	.2	.2	2.0	4.4	13	12	5.4	2.0	1.3
20.....	.8	.8	.3	.2	.2	17	*13	14	12	5.2	1.8	1.9
21.....	.8	.7	.3	.2	.2	14	10	52	12	4.8	1.7	3.4
22.....	.8	.7	.3	.2	.2	11	14	16	11	4.6	2.0	1.3
23.....	.8	.8	.3	.2	.2	*9.9	12	16	10	4.2	1.8	1.0
24.....	.7	.8	.3	.2	.2	8.8	9.9	15	10	4.0	1.4	.9
25.....	.7	.8	.3	.2	.2	8.0	8.2	14	9.6	4.0	1.4	1.4
26.....	.7	.6	.3	*.2	.2	15	7.2	12	9.0	4.0	1.4	1.7
27.....	.8	.3	.3	.2	.2	9.2	6.9	10	9.9	3.6	1.3	1.8
28.....	.8	.4	.3	.2	.3	8.0	6.4	84	25	3.6	1.4	1.0
29.....	*.8	.5	.3	.....	.....	7.0	5.6	*129	12	3.3	2.0	1.0
30.....	.9	.5	.3	.2	.....	6.4	5.2	72	22	3.8	1.6	.8
31.....	.8	.....	.3	.2	.....	6.0	.....	*1,520	.....	3.6	1.3	.....
1959-60												
1.....	1.2	1.9	1.4	3.0	2.5	2.9	*318	18	21	13	5.4	4.0
2.....	2.9	*1.6	1.4	2.8	2.5	2.8	112	17	19	12	5.2	3.7
3.....	2.3	1.9	1.5	2.7	*2.5	2.8	67	16	17	11	5.0	3.5
4.....	1.3	4.4	1.5	2.6	2.5	2.7	58	16	15	11	4.7	3.5
5.....	.9	2.0	1.4	2.5	2.6	2.7	49	19	14	11	8.2	3.3
6.....	.9	2.9	1.3	*2.5	2.6	2.7	46	27	13	11	12	3.3
7.....	.9	3.2	1.2	2.3	2.7	2.7	43	24	13	11	8.2	3.2
8.....	*4.8	2.3	1.3	2.2	2.7	2.6	35	21	12	11	6.6	4.2
9.....	1.8	2.5	1.4	2.2	2.8	2.6	33	20	12	11	5.6	3.9
10.....	1.2	2.7	1.5	2.4	3.0	2.6	31	18	12	10	4.9	3.7
11.....	1.2	1.8	1.5	2.6	3.1	2.6	28	17	12	10	*4.4	3.5
12.....	1.0	1.2	1.6	2.8	3.0	2.6	25	16	12	43	4.0	3.3
13.....	1.1	1.5	1.7	3.1	3.0	2.6	23	15	12	29	3.8	3.1
14.....	1.0	1.8	1.9	3.2	3.0	2.6	22	16	12	17	3.6	3.0
15.....	1.0	1.6	1.8	3.2	3.0	2.6	23	14	13	15	3.4	3.0
16.....	1.1	1.4	1.7	3.1	3.0	2.6	28	*13	50	14	3.4	2.9
17.....	1.0	1.4	1.7	3.1	3.1	2.6	28	12	33	14	4.2	2.9
18.....	1.1	1.4	1.7	3.0	3.1	2.6	*24	21	23	*18	4.6	5.0
19.....	.9	1.4	1.7	2.8	3.1	2.6	21	31	20	12	3.4	*3.4
20.....	1.1	1.6	1.7	2.8	3.1	2.7	20	21	*18	11	3.4	3.1
21.....	1.1	1.7	1.8	2.7	3.1	*2.7	19	43	16	11	3.3	2.8
22.....	1.9	2.0	1.8	2.7	3.1	2.8	18	36	14	10	3.1	2.6
23.....	1.4	2.2	1.8	2.7	3.1	2.8	18	29	14	9.0	3.3	5.0
24.....	1.3	2.4	1.8	2.7	3.1	3.0	17	26	13	8.6	3.4	7.6
25.....	1.3	1.9	1.9	2.6	3.1	3.1	17	62	12	8.0	7.4	5.9
26.....	1.4	1.6	2.5	2.6	3.1	3.2	16	57	12	7.4	7.9	4.2
27.....	1.4	1.4	5.0	2.6	3.1	3.4	15	48	12	7.0	4.4	3.4
28.....	1.4	1.2	20	2.6	3.0	20	18	40	14	6.6	5.6	3.3
29.....	1.6	1.2	7.4	2.6	*2.9	600	19	33	14	6.4	5.2	3.3
30.....	1.6	*1.3	4.0	2.5	.....	*435	19	28	13	6.1	4.7	3.1
31.....	2.0	.....	3.3	2.5	.....	270	.....	24	.....	5.8	4.3	.....

Odebolt Creek near Arthur, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58.....	1.97	3.41	1.85	1.97	17.4	7.17	5.53	2.83	8.32	5.84	5.65	1.37
1958-59.....	.85	.81	.33	.20	.20	6.07	6.34	78.0	22.1	6.56	2.61	1.93
1959-60.....	1.45	1.91	2.65	2.70	2.91	45.1	40.3	25.7	16.2	12.3	5.05	3.69

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58.....	0.050	0.087	0.047	0.050	0.443	0.182	0.141	0.072	0.212	0.149	0.144	0.035
1958-59.....	.022	.021	.0084	.0051	.0051	.151	.161	1.98	.562	.167	.066	.049
1959-60.....	.037	.049	.067	.069	.074	1.15	1.03	.654	.412	.313	.128	.094

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58.....	0.06	0.10	0.05	0.06	0.46	0.21	0.16	0.08	0.24	0.17	0.17	0.04
1958-59.....	.02	.02	.01	.006	.005	.18	.18	2.29	.63	.19	.08	.05
1959-60.....	.04	.05	.08	.08	.08	1.32	1.15	.76	.46	.36	.15	.10

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58.....	121	203	113	121	964	441	329	174	495	359	348	82
1958-59.....	52	48	20	12	11	373	377	4,800	1,320	403	161	115
1959-60.....	89	114	163	166	168	2,780	2,400	1,580	966	756	311	220

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30							Calendar year				
	Momentary maximum			Min-imum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet	
	Date	Gage height in feet	Dis-charge									
1958...	Feb. 27, 1958.	7.04	378	0.9	5.18	0.132	1.80	3,750	4.74	1.64	3,430	
1959...	May 31, 1959.	12.18	5,160	.2	10.6	.270	3.66	7,690	11.0	3.78	7,940	
1960...	Mar. 29, 1960.	13.00	700	.9	13.4	.341	4.63	9,710	.....	.....	.....

Peak Discharge (base, 500 cfs)

1957-58: No peak above base.

1958-59: May 31 (4 a.m.) 5,160 cfs (12.18 ft.).

1959-60: Mar. 29 (8 p.m.) about 700 cfs (13.00 ft.); Apr. 1 (4 p.m.) 560 cfs (8.29 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

**Field estimate made on this day.

Stage-discharge relation affected by ice Nov. 9, 10, Nov. 19 to Dec. 16, Dec. 24-31, 1957; Jan. 1 to Feb. 23, Nov. 25 to Dec. 31, 1958; Jan. 1 to Mar. 28, Nov. 5 to Dec. 31, 1959; Jan. 1 to Mar. 31, 1960. No gage height record Apr. 13 to May 6, June 29 to July 6, 1958; Apr. 10-17, 19-24, May 8-13, 20, 22-24, May 27 to June 19, July 23 to Aug. 4, Aug. 7-10, Aug. 30 to Sept. 7, Sept. 9-18, 1960.

Maple River at Mapleton, Iowa

LOCATION.—Lat. 42°09'30", long. 95°48'25", in SE¼ SE¼ sec. 23, T. 85 N., R. 43 W., on right pier on downstream side of bridge on State Highway 175, 80 ft. downstream from Chicago & North Western Railway Co. bridge, 0.5 mile southwest of Mapleton, 12.5 miles northeast of Turin, and 16.0 miles upstream from mouth.

DRAINAGE AREA.—669 square miles (revised in 1956).

RECORDS AVAILABLE.—October 1941 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 1,085.86 ft. above mean sea level, datum of 1929. Prior to Aug. 20, 1952, wire-weight gage (June 8, 1949, to Aug. 19, 1952, supplementary water-stage recorder operative above 9.5 ft.) and Aug. 20, 1952, to June 20, 1954, water-stage recorder (destroyed by flood) all at present site. June 21, 1954, to Sept. 6, 1955, wire-weight gage at site 1.4 miles upstream at datum 4.05 ft. higher. Sept. 7, 1955, to Sept. 20, 1956, wire-weight gage at present site and datum.

AVERAGE DISCHARGE.—19 years, 221 cfs (160,000 acre-ft. per year).

EXTREMES.—1941-60: Maximum discharge, 15,600 cfs June 20, 1954; maximum gage height, 22.1 ft. June 12, 1950; no flow Sept. 21, 22, 1945, caused by temporary dam above gage.

REMARKS.—Leveed banks should not be overtopped.

REVISIONS (water years).—WSP 1310: 1942(M), 1946(M), 1948(M).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	24	26	17	15	10	50	35	26	12	11	6.8	14
2	23	26	17	15	10	60	60	27	11	71	9.1	6.3
3	24	26	16	15	10	70	48	27	9.6	38	9.1	5.0
4	24	26	15	15	10	64	43	27	6.3	27	7.2	4.1
5	25	26	15	15	10	60	39	27	4.6	13	8.2	4.1
6	25	24	14	15	10	50	35	28	*554	11	30	5.4
7	29	22	14	15	10	45	31	28	123	109	51	4.6
8	27	22	14	14	10	35	31	26	52	22	24	4.6
9	25	23	13	14	11	25	31	46	34	14	14	4.6
10	23	26	13	13	11	20	*31	158	33	10	13	3.7
11	24	26	13	12	11	17	30	510	31	300	9.1	5.9
12	24	25	13	12	11	17	29	81	30	170	9.6	4.1
13	24	24	13	11	11	18	28	76	18	60	13	3.2
14	23	16	*13	11	12	19	27	40	17	17	*9.6	6.8
15	23	*24	13	10	12	20	26	23	14	16	9.1	5.0
16	23	21	13	*9.8	*12	*21	25	17	14	12	10	5.9
17	23	20	13	9.8	12	21	24	*16	13	*11	14	5.9
18	*24	18	13	9.8	12	22	23	13	12	11	31	4.6
19	24	18	13	10	12	23	22	13	*11	10	29	5.0
20	24	20	13	10	12	33	22	12	11	10	16	6.3
21	24	22	13	10	12	37	23	11	12	9.6	11	7.7
22	24	25	13	11	12	39	22	11	11	9.1	8.6	5.4
23	24	24	15	11	12	39	22	10	9.1	8.6	8.2	5.4
24	25	23	18	11	12	37	22	9.6	8.6	8.6	5.9	5.4
25	25	22	20	12	12	35	23	8.6	44	8.6	5.9	*5.0
26	26	21	18	12	12	45	23	8.2	264	8.6	5.9	5.0
27	26	21	17	12	12	47	24	7.7	50	8.2	5.0	5.0
28	25	20	16	11	15	44	25	7.2	33	7.2	4.6	4.1
29	26	19	16	10	30	35	25	9.1	17	7.7	3.7	6.3
30	26	18	15	10	.....	22	26	9.6	16	6.8	*3.7	5.9
31	26	.....	15	10	.....	34	.....	10	.....	7.7	5.9	.....

Maple River at Mapleton, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1.....	4.9	11	10	7.0	3.5	14	31	17	9.5	142	29	26
2.....	4.9	12	10	6.4	3.5	16	28	16	7.8	108	26	116
3.....	4.3	11	10	6.4	3.5	17	25	10	7.0	91	142	47
4.....	4.0	32	9.6	6.4	3.7	17	25	14	6.2	1,270	63	30
5.....	4.0	75	9.2	6.0	4.0	16	26	14	6.2	1,320	32	24
6.....	4.0	54	8.6	6.0	4.0	15	27	15	6.2	343	26	229
7.....	3.8	35	8.0	6.0	5.0	12	27	15	7.4	220	24	71
8.....	4.3	24	7.4	5.4	6.0	12	24	15	7.8	275	17	45
9.....	3.8	20	7.4	5.4	6.6	15	23	17	7.8	259	13	31
10.....	4.3	17	7.0	5.4	7.2	22	22	14	7.4	208	17	29
11.....	4.3	15	6.4	5.0	8.0	23	19	24	10	202	21	28
12.....	4.3	14	6.2	4.8	8.5	24	17	28	14	188	21	26
13.....	5.2	13	6.2	4.6	8.5	24	19	34	7.8	158	19	25
14.....	6.6	13	6.2	4.6	8.5	22	18	48	*1,740	227	17	179
15.....	55	13	6.2	*4.3	8.0	20	*18	40	429	91	15	86
16.....	18	10	6.2	4.3	8.0	18	19	36	357	73	12	49
17.....	*18	14	6.2	4.3	7.6	16	19	35	662	*62	11	39
18.....	12	13	*6.2	4.3	7.6	34	17	31	413	55	15	31
19.....	10	13	6.2	4.3	7.6	*35	17	31	210	49	16	*69
20.....	10	*11	6.2	4.2	*7.6	29	16	42	116	45	16	39
21.....	10	10	6.2	4.0	7.6	43	16	*158	84	43	*20	34
22.....	9.5	10	6.2	4.0	7.0	48	16	260	90	58	18	29
23.....	9.5	10	6.2	4.0	7.0	40	15	176	71	95	19	24
24.....	8.6	10	6.2	4.0	7.0	40	15	92	63	58	19	23
25.....	10	10	6.2	3.5	7.6	39	16	62	602	45	16	21
26.....	11	10	6.6	3.5	8.6	35	17	48	*916	37	15	18
27.....	8.2	10	6.6	3.5	10	32	16	41	390	102	35	15
28.....	7.4	10	6.6	3.5	12	31	16	23	853	68	45	14
29.....	8.2	10	7.0	3.5	.....	29	17	16	507	58	37	12
30.....	12	10	7.0	3.5	.....	28	16	13	204	45	28	13
31.....	10	.....	7.0	3.5	.....	27	.....	12	.....	37	22	.....
1957-58												
1.....	15	172	57	20	25	380	77	79	84	52	292	24
2.....	15	306	86	21	24	250	81	73	77	226	192	22
3.....	15	190	81	21	24	175	91	69	75	86	104	*22
4.....	14	151	75	21	24	125	103	66	982	99	77	21
5.....	14	121	79	22	*24	*117	148	62	386	70	*60	22
6.....	15	100	80	22	24	110	144	59	199	53	53	22
7.....	16	89	70	23	24	100	155	*60	137	46	49	22
8.....	35	82	65	25	24	96	*135	66	580	*44	48	21
9.....	31	73	59	26	23	92	121	66	447	53	45	22
10.....	25	59	*68	*27	23	90	115	61	168	51	40	20
11.....	23	67	50	28	23	86	110	57	*118	52	37	18
12.....	28	73	65	29	23	95	104	53	102	79	34	18
13.....	41	69	90	30	23	113	99	47	94	60	33	18
14.....	28	*69	90	30	22	108	94	47	90	54	33	22
15.....	149	75	70	29	22	95	89	48	79	46	31	24
16.....	202	98	65	28	22	80	86	47	71	40	29	23
17.....	147	95	70	28	20	73	81	45	64	39	28	20
18.....	126	102	75	28	20	77	76	46	60	38	26	19
19.....	85	93	80	27	20	77	73	50	55	149	26	19
20.....	71	76	82	27	20	79	69	42	51	104	24	18
21.....	*65	79	75	27	25	80	67	39	48	66	24	17
22.....	76	84	76	27	200	80	66	38	50	53	24	17
23.....	90	81	74	27	650	80	68	37	53	47	29	17
24.....	80	95	60	26	668	79	85	37	71	45	33	17
25.....	80	95	65	26	266	77	98	35	81	42	33	16
26.....	77	98	55	26	*257	73	102	37	56	40	30	16
27.....	69	110	45	26	1,450	71	90	43	46	48	28	16
28.....	64	100	40	26	800	71	90	42	41	43	26	15
29.....	61	100	20	25	.....	73	89	40	38	40	25	16
30.....	58	79	20	25	.....	75	85	40	36	52	24	14
31.....	56	.....	20	25	.....	75	.....	55	.....	57	23	.....

Maple River at Mapleton, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	14	14	8.0	3.8	2.7	40	*86	36	5,010	757	72	44
2	14	14	*7.5	3.8	2.7	70	77	33	*1,510	*557	86	*44
3	*14	*14	7.5	3.6	*2.7	*95	65	40	833	400	86	56
4	14	15	7.5	3.6	2.7	70	56	44	662	350	153	47
5	15	14	7.5	3.4	2.7	65	49	*291	510	300	*261	41
6	14	14	7.0	3.4	2.7	60	44	430	458	270	151	40
7	16	14	7.0	*3.4	2.7	40	49	376	398	240	168	40
8	17	14	7.0	3.4	2.7	35	45	322	333	210	141	39
9	15	15	6.5	3.4	2.7	30	41	250	284	190	110	37
10	15	15	6.5	3.4	2.7	28	38	243	250	170	99	35
11	14	14	6.5	3.4	2.7	30	36	316	654	150	90	35
12	13	14	6.0	3.4	2.7	40	33	394	400	140	83	34
13	14	15	6.0	3.4	2.7	90	32	257	300	130	107	34
14	14	16	6.0	3.4	2.7	100	30	187	250	120	221	34
15	14	16	5.5	3.4	2.7	60	29	159	210	110	131	34
16	14	15	5.5	3.2	2.7	50	27	137	200	106	95	34
17	14	17	5.5	3.2	2.5	50	44	127	190	112	84	37
18	14	18	5.0	3.2	2.5	55	49	113	180	112	78	42
19	14	18	5.0	3.2	2.5	85	49	108	170	115	67	51
20	14	18	5.0	3.2	2.5	80	71	145	160	104	66	52
21	14	16	5.0	3.0	2.8	70	86	*785	160	100	64	112
22	14	16	4.8	3.0	2.8	65	77	402	150	95	62	91
23	14	16	4.8	3.0	3.0	90	85	334	140	90	60	66
24	14	16	4.8	3.0	3.0	86	79	243	135	84	55	47
25	14	16	4.8	3.0	3.0	86	67	202	130	78	52	45
26	14	13	4.6	3.0	4.0	117	55	182	125	76	51	48
27	14	12	4.6	3.0	10	100	48	178	200	73	51	49
28	14	11	4.2	3.0	20	79	46	1,660	1,060	70	52	47
29	14	10	4.2	3.0	.....	74	42	*5,040	448	68	56	39
30	14	9.0	4.0	2.7	.....	77	38	2,060	1,020	68	55	35
31	14	.....	4.0	2.7	.....	81	.....	11,800	.....	73	49	.....
1959-60												
1	37	41	55	90	44	22	2,500	180	*332	220	*107	354
2	45	36	50	80	*44	22	3,100	173	305	210	97	258
3	55	*36	*60	75	44	*22	1,500	*166	276	205	93	211
4	54	54	65	70	44	22	850	158	253	200	93	183
5	48	90	60	68	44	22	750	178	233	*193	391	163
6	*40	65	55	65	44	22	678	228	220	185	490	141
7	36	50	50	*65	44	22	599	214	209	175	400	126
8	291	40	50	65	44	22	*523	193	193	166	211	*261
9	121	45	50	65	46	22	434	180	188	163	170	158
10	73	50	50	65	48	22	403	163	190	161	147	138
11	61	50	50	65	46	22	390	154	190	154	134	124
12	54	50	50	68	42	22	367	147	188	364	121	113
13	47	46	52	70	38	22	373	143	188	468	113	109
14	42	44	55	66	34	22	386	138	185	284	105	113
15	40	42	52	60	32	22	393	134	317	241	101	117
16	36	40	50	56	30	22	367	173	2,310	193	97	119
17	36	40	50	52	30	22	377	141	758	211	101	128
18	35	40	48	50	38	22	348	158	300	339	111	752
19	35	40	46	50	28	22	311	244	260	270	128	273
20	34	40	50	50	28	22	290	502	240	278	119	193
21	34	42	55	50	28	22	276	1,580	230	198	111	166
22	42	44	58	48	26	20	264	1,210	220	166	101	143
23	41	46	58	48	26	20	250	1,060	210	147	105	206
24	36	50	54	48	26	20	233	638	200	136	149	329
25	35	46	58	48	24	20	225	825	195	132	158	253
26	37	44	73	48	24	20	214	1,420	190	141	269	206
27	37	44	110	46	22	25	198	1,140	190	130	222	173
28	35	44	246	46	22	*500	190	800	377	124	474	147
29	34	44	368	46	22	5,500	198	542	250	124	842	134
30	36	46	276	46	.....	10,400	188	451	230	121	884	119
31	44	.....	130	44	.....	*4,080	.....	377	.....	115	698	.....

Maple River at Mapleton, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	24.6	22.5	14.6	12.0	12.0	35.6	29.2	42.7	49.2	33.3	12.6	5.48
1956-57	9.36	17.3	7.14	4.70	6.92	25.6	19.9	45.4	260	195	26.6	47.4
1957-58	60.5	103	64.7	25.7	170	105	96.4	51.2	148	63.7	50.3	19.3
1958-59	14.2	14.6	5.74	3.25	3.64	67.7	32.4	868	552	178	95.4	46.3
1959-60	52.6	46.3	81.7	58.5	34.6	680	572	445	321	200	237	197

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.037	0.031	0.022	0.018	0.018	0.053	0.044	0.064	0.074	0.050	0.019	0.0082
1956-57	.014	.026	.011	.0070	.010	.038	.030	.068	.389	.291	.040	.071
1957-58	.090	.154	.097	.038	.254	.157	.144	.077	.221	.095	.075	.029
1958-59	.021	.022	.0086	.0049	.0054	.101	.078	1.30	.825	.266	.143	.069
1959-60	.079	.069	.122	.087	.052	1.02	.855	.665	.480	.299	.354	.294

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.04	0.04	0.03	0.02	0.02	0.06	0.05	0.07	0.08	0.06	0.02	0.009
1956-57	.02	.03	.01	.008	.01	.04	.03	.08	.43	.34	.05	.08
1957-58	.10	.17	.11	.04	.27	.18	.16	.09	.25	.11	.09	.03
1958-59	.02	.02	.01	.006	.006	.12	.09	1.50	.92	.31	.16	.08
1959-60	.09	.08	.14	.10	.06	1.17	.95	.77	.54	.35	.41	.33

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	1,510	1,340	900	737	690	2,190	1,740	2,620	2,930	2,050	776	326
1956-57	575	1,030	439	289	384	1,570	1,180	2,790	15,500	11,960	1,640	2,820
1957-58	3,720	6,110	3,980	1,580	9,460	6,450	5,730	3,150	8,810	3,920	3,090	1,150
1958-59	875	871	353	200	202	4,160	3,120	53,340	32,850	10,940	5,860	2,760
1959-60	3,240	2,760	5,030	3,600	1,990	41,790	34,070	27,390	19,090	12,330	14,560	11,720

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30							Calendar year				
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet	
	Date	Gage height in feet	Discharge									
1955									95.3	1.96	68,980	
1956	June 6, 1956	10.24	3,260	3.2	24.5	0.037	0.50	17,810	22.2	.45	16,100	
1957	June 14, 1957	9.95	2,820	3.5	55.5	.083	1.13	40,180	71.8	1.45	51,940	
1958	Feb. 27, 1958	8.60	about									
1959	May 31, 1959		1,800	14	78.9	.118	1.60	57,150	62.8	1.27	45,440	
1959-60	Mar. 30, 1960	17.90	11,400	20	245	.366	4.99	177,570	172	3.50	124,500	

Peak Discharge (base, 4,000 cfs)

- 1955-56: No peak above base.
 1956-57: No peak above base.
 1957-58: No peak above base.
 1958-59: May 28 (10:30 p.m.) 5,520 cfs (13.18 ft.); May 31 (7:30 p.m.) 14,000 cfs (19.70 ft.).
 1959-60: Mar. 30 (10:30 a.m.) 11,400 cfs (17.90 ft.); June 15 (12 p.m.) 5,670 cfs (12.80 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.
 Stage-discharge relation affected by ice Nov. 17 to Dec. 31, 1955; Jan. 1 to Mar. 18, Nov. 21 to Dec. 31, 1956; Jan. 1 to Mar. 9, Mar. 16-18, Dec. 10-15, 19-31, 1957; Jan. 1 to Feb. 23, Nov. 26 to Dec. 31, 1958; Jan. 1 to Mar. 23, Nov. 5 to Dec. 21, Dec. 31, 1959; Jan. 1 to Mar. 29, 1960. No gage-height record Apr. 29 to May 5, 1956; Feb. 27 to Mar. 4, 1958; June 12-27, July 3-15, 1959; June 18-27, June 29 to July 4, 1960.

Little Sioux River near Turin, Iowa

LOCATION.—Lat. $41^{\circ}57'55''$, long. $95^{\circ}58'20''$, in NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 33, T. 83 N., R. 44 W., on downstream side of left pier of bridge on Brown's grade, 1.0 mile east of gaging station on Monona-Harrison ditch near Turin, 2.5 miles downstream from Maple River, 3.8 miles south of Turin, 6.2 miles northeast of Blencoe, and 13.8 miles upstream from mouth.

DRAINAGE AREA.—3,526 square miles. Prior to Jan. 15, 1958, 4,426 square miles revised (combined area above this station and above Monona-Harrison ditch 1.0 mile west).

RECORDS AVAILABLE.—January 1958 to September 1960. April 1939 to May 1942 at site 4.7 miles downstream published as "near Blencoe." June 1942 to January 1958 at site 1,200 ft. east on old river channel; records not equivalent owing to diversion into Monona-Harrison ditch through equalizer ditch 1.5 miles upstream.

GAGE.—Water-stage recorder. Datum of gage is 1,019.85 ft. above mean sea level, datum of 1929 (Corps of Engineers bench mark). Prior to July 15, 1958, staff gages near present site at different datums. July 15 to Sept. 3, 1958, wire-weight gage at present site and datum.

AVERAGE DISCHARGE.—18 years (1939-57), 276 cfs (199,800 acre-ft. per year), unadjusted.

EXTREMES.—1958-60: Maximum discharge, 23,900 cfs Mar. 30, 1960 (gage height, 25.08 ft.); minimum daily, 22 cfs Feb. 10-22, 1959.

1939-57: Maximum discharge, 7,920 cfs June 22, 1954 (gage height, about 24.2 ft., includes flow over Brown's grade by-passing gage); maximum gage height, 26.0 ft., from floodmark, Mar. 4, 1949 (ice jam); no flow at times during period September 1939 to October 1940, and for several months each year 1948-52, 1956-57, when all of flow was carried by Monona-Harrison ditch. See page 399.

REMARKS.—High levees are unlikely to be overtopped.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	0.2	0.4	0.2	0.3	0	2.0	0.4	0.7	0.6	0.2	0.2	0.3
2.....	.2	.4	.2	.3	0	2.5	.4	.7	.5	.2	.2	.2
3.....	.2	.6	.2	.3	0	5.0	1.8	.8	.5	.2	.2	.1
4.....	.2	.5	.2	.3	0	4.0	.3	.8	.5	.2	.2	.1
5.....	.2	.5	.2	.3	0	*3.3	.3	.8	.4	.2	.2	.1
6.....	.2	.6	.2	.3	0	2.5	.2	.7	.4	.2	.5	.1
7.....	.2	.6	.2	.2	0	2.0	.2	.7	.4	23	1.0	.1
8.....	.2	.5	*.2	.1	0	.8	.1	.7	.3	.4	.7	.1
9.....	.1	.5	.2	.1	0	.7	.1	.6	.3	.4	.4	.1
10.....	.1	.5	.2	.1	0	.6	.1	36	.3	.4	.3	.1
11.....	.1	.5	.2	.1	0	.5	.1	58	.3	61	.2	.1
12.....	.1	.5	.2	.1	0	.5	.1	24	.3	17	.2	.1
13.....	.1	.4	.2	.1	0	.6	.1	2.0	.3	5.2	.2	.1
14.....	.1	.4	.2	.2	0	.7	.1	.7	.3	2.1	*.2	.1
15.....	.1	.4	.2	.3	0	.8	.1	.4	.2	1.6	.2	.1
16.....	.1	.3	.2	.1	*0	.9	.1	*.4	.2	1.4	2.8	.1
17.....	.1	.3	.2	0	0	2.5	.1	.4	.2	.5	9.9	.1
18.....	.1	.3	.2	*0	0	2.5	.1	.4	*.2	158	1.0	.1
19.....	.2	.3	.2	0	0	*2.2	.1	.4	*.2	.2	1.0	.1
20.....	*.3	.3	.2	0	0	3.0	.1	.4	.2	.2	.5	.1
21.....	.3	.3	.3	0	0	13	.1	.4	.2	.4	.3	.2
22.....	.3	.3	.4	0	0	8.9	.1	.4	.2	.4	.3	.2
23.....	.3	.3	.4	0	0	6.7	.1	.3	.2	.4	.2	.2
24.....	.3	.3	.4	0	0	3.4	*.2	.3	.2	.4	.2	*.2
25.....	.3	.3	.4	0	0	1.1	.2	.3	.1	.3	.1	.2
26.....	.3	.3	.4	0	0	.9	.1	.3	.4	.2	.1	.2
27.....	.4	.3	.4	0	*.1	.8	.2	.3	.4	.4	.1	.2
28.....	.4	.2	.4	0	.2	.8	.6	.3	.3	.3	.1	.2
29.....	.4	.2	.3	0	1.0	.8	.7	.6	.3	.3	.1	.2
30.....	.4	.2	.3	0	.....	.9	.8	.7	.2	.2	.1	.2
31.....	.4	.....	.3	0	.....	1.0	.....	.6	.....	.5	.1	.....

Little Sioux River near Turin, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	0.2	0.1	0.2	.2	0	.2	.2	0	0	0	0	0
2	.2	.1	.2	.2	0	.2	.2	0	0	0	0	0
3	.2	.4	.2	.2	0	.2	.2	0	0	0	0	0
4	.2	6.0	.2	.2	0	.2	.2	0	0	0	0	0
5	.2	10	.2	.2	0	.2	.2	0	0	0	0	0
6	.1	5.0	.1	.1	0	.2	.2	0	0	0	0	0
7	.1	1.0	.1	.1	0	.2	.2	0	0	0	0	0
8	.1	.4	.1	.1	0	.2	.2	0	0	0	0	0
9	.1	.2	.1	.1	0	.2	.2	0	0	0	0	0
10	.1	.2	.1	0	0	.2	.2	0	0	0	0	0
11	.1	.2	.1	0	.1	.4	.1	0	0	0	0	0
12	.1	.2	.1	0	.1	.4	.1	0	0	0	0	0
13	.1	.2	.1	0	.1	.4	.1	0	0	0	0	0
14	.4	.2	.1	*0	.1	.6	.1	0	0	*.85	0	0
15	.2	.2	.1	0	.1	.6	*.1	0	0	*0	0	0
16	.6	.2	.1	0	0	.8	.1	0	0	0	0	0
17	.2	.2	*.1	0	0	.8	.1	0	0	0	0	0
18	*.1	.2	.1	0	0	1.5	.1	0	0	0	0	*0
19	.1	*.2	.1	0	0	*1.0	.1	0	*0	0	*0	0
20	.1	.2	.1	0	*0	.8	.1	*0	0	0	0	0
21	.1	.2	.1	0	0	.6	.1	0	0	0	0	0
22	.1	.2	.1	0	0	.6	.1	0	*15	0	0	0
23	.1	.2	.1	0	0	.4	.1	0	1.0	0	0	0
24	.1	.2	.1	0	0	.4	.1	0	0	0	0	0
25	.1	.2	.1	0	.1	.4	.1	0	10	0	0	*0
26	.1	.2	.1	0	.2	.2	.1	0	1.0	0	0	0
27	.1	.2	.1	0	.2	.2	.1	0	0	0	0	0
28	.1	.2	.1	0	.2	.2	0	0	0	0	0	0
29	.1	.2	.1	0	.....	.2	0	0	0	0	0	0
30	.1	.2	.2	0	.....	.2	0	0	0	0	0	0
31	.1	.....	.2	.....	.....	.2	.....	0	.....	0	.....	.....
1957-58												
1	0	0	0	0	160	2,000	300	700	260	220	178	61
2	0	0	0	0	155	1,300	300	640	360	1,200	368	67
3	*0	0	0	0	150	800	310	620	300	1,100	258	66
4	0	0	0	0	145	*600	320	600	1,500	500	228	62
5	0	0	0	0	140	600	450	560	2,800	300	225	64
6	0	0	0	0	135	600	550	520	1,600	250	*190	61
7	0	0	0	0	*135	580	600	510	1,600	210	164	58
8	0	0	0	0	130	540	650	510	1,600	200	159	57
9	0	0	0	5	120	500	700	490	1,800	200	159	58
10	0	0	*0	*5	110	460	750	460	1,200	220	154	*56
11	0	0	0	10	100	430	790	430	800	240	148	52
12	0	0	0	10	*96	410	820	400	700	220	160	51
13	0	0	0	20	90	*470	750	370	600	260	174	53
14	0	*0	0	80	85	500	700	350	580	280	118	61
15	0	0	0	220	80	450	670	330	500	230	109	58
16	0	0	0	220	78	420	650	310	460	230	108	55
17	0	0	0	220	*75	380	620	300	420	220	104	54
18	0	0	0	220	74	360	600	310	400	210	100	50
19	0	0	0	220	74	*310	560	290	380	300	90	48
20	0	0	0	215	74	320	540	260	350	380	85	49
21	0	0	0	210	80	320	540	*235	330	250	80	45
22	0	0	0	205	200	320	540	235	320	*200	77	46
23	0	0	0	*200	800	320	540	235	320	190	86	47
24	0	0	0	195	1,400	320	*550	230	320	200	102	49
25	0	0	0	190	1,800	310	580	225	320	180	100	42
26	0	0	0	190	1,100	310	620	225	*300	160	92	40
27	0	0	0	185	1,000	310	650	240	280	180	97	38
28	0	0	0	180	3,000	*300	620	240	270	197	82	40
29	0	0	0	175	.....	300	700	230	250	145	80	40
30	0	0	0	*170	.....	300	740	230	230	166	64	35
31	0	.....	0	165	.....	300	.....	210	.....	184	67	.....

Little Sioux River near Turin, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	37	45	*36	26	23	100	*415	158	*12,000	2,580	253	193
2.....	38	50	36	26	*23	250	369	155	7,650	*2,170	454	*185
3.....	36	*51	36	26	23	230	323	163	4,510	1,910	435	182
4.....	34	*51	36	26	23	180	314	184	3,630	1,720	1,720	175
5.....	34	46	35	26	23	160	286	*383	3,240	1,540	1,510	163
.....	39	40	34	*26	23	220	274	748	3,390	1,340	992	160
7.....	*52	52	33	26	23	160	271	748	3,860	1,170	850	153
8.....	43	50	32	26	23	150	239	770	4,260	950	1,120	151
9.....	38	46	31	25	23	140	222	770	4,100	840	641	137
10.....	*33	51	30	25	22	130	208	840	3,550	748	520	122
.....	34	47	29	25	22	120	193	1,530	4,000	662	415	111
12.....	38	47	28	25	22	*140	177	1,370	3,310	580	352	111
13.....	37	49	27	25	22	200	172	1,070	1,970	540	339	109
14.....	37	47	27	25	22	250	177	840	1,720	500	500	107
15.....	38	47	27	25	22	220	167	726	1,510	500	468	105
.....	35	53	28	24	22	210	153	620	1,370	520	346	96
17.....	32	57	29	24	22	200	180	560	1,260	460	339	100
18.....	30	60	30	24	22	200	198	500	1,120	460	342	113
19.....	38	58	31	24	22	220	222	456	992	540	308	128
20.....	39	57	32	24	22	220	277	441	992	500	280	130
.....	42	55	32	23	22	200	292	*1,450	940	460	259	194
22.....	37	52	32	23	22	210	308	1,120	840	386	233	500
23.....	34	44	32	23	25	220	292	1,280	840	352	211	320
24.....	34	44	32	23	30	274	256	1,340	748	320	195	187
25.....	31	44	32	23	30	342	247	1,840	748	289	182	167
.....	36	42	32	23	35	468	211	2,170	704	289	167	172
27.....	36	40	32	23	40	*484	190	1,910	750	259	144	180
28.....	43	38	32	23	50	430	172	2,690	1,610	259	167	172
29.....	41	37	30	23	.....	418	148	7,910	1,690	230	195	165
30.....	40	36	28	23	.....	433	155	*5,510	2,880	*242	198	198
31.....	42	.....	26	23	.....	418	.....	11,500	.....	253	203	.....
1959-60												
1.....	175	163	280	800	210	110	12,200	1,010	*5,440	1,350	*548	1,450
2.....	185	*169	310	700	*210	100	12,700	990	5,040	1,200	495	1,070
3.....	206	158	*305	600	210	*100	11,200	*970	4,380	1,120	460	910
4.....	193	175	250	500	210	100	10,900	910	3,540	1,070	432	810
5.....	185	250	200	450	210	110	9,760	930	2,920	*970	530	710
.....	*172	225	220	400	210	120	6,960	990	2,520	890	1,550	652
7.....	165	200	230	400	210	120	5,360	950	2,250	850	1,250	582
8.....	280	200	230	400	220	125	5,280	890	2,100	810	690	618
9.....	449	200	230	400	220	130	4,310	870	1,950	770	565	600
10.....	355	210	230	410	220	135	3,400	810	1,850	750	495	548
.....	274	210	240	420	190	140	2,980	830	1,750	730	453	478
12.....	259	220	260	440	160	140	2,690	810	1,700	1,070	428	446
13.....	247	180	160	460	150	140	*2,520	790	1,650	1,350	407	495
14.....	203	170	180	460	150	140	2,470	770	1,650	1,160	377	565
15.....	190	170	220	450	150	140	2,360	690	1,650	1,070	362	565
.....	187	170	220	450	150	140	2,200	730	4,300	1,160	362	548
17.....	172	180	220	450	140	140	2,250	950	2,100	1,250	359	530
18.....	163	200	210	440	140	140	2,250	1,010	1,850	1,450	365	1,340
19.....	160	210	210	430	140	140	2,150	1,250	1,900	1,600	407	810
20.....	151	220	220	*420	140	140	2,050	1,640	2,000	1,600	350	600
.....	144	240	220	400	130	140	1,950	4,590	1,900	1,350	365	565
22.....	151	250	220	375	130	140	1,850	6,500	1,750	1,160	365	548
23.....	155	250	220	350	130	140	1,700	7,560	1,600	1,120	383	565
24.....	146	240	220	325	130	140	1,550	6,500	1,550	1,010	450	850
25.....	142	230	220	300	130	140	1,450	5,700	1,400	910	413	930
.....	151	220	220	275	130	140	1,300	8,220	1,300	810	600	910
27.....	146	210	230	250	120	200	1,200	10,500	1,300	750	850	970
28.....	146	210	500	225	120	500	1,120	10,500	1,450	652	1,120	1,010
29.....	148	230	800	200	120	8,060	1,120	8,500	1,600	600	3,960	1,030
30.....	144	250	900	200	.....	22,200	1,030	6,720	1,450	530	2,740	1,030
31.....	155	.....	900	210	.....	*18,600	.....	3,700	.....	512	*1,800	.....

Little Sioux River near Turin, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
1955-56	0.22	0.38	0.26	0.10	0.04	2.45
1956-57	.15	.91	.12	.05	.04	.42
1957-58	0	0	0	113	414	499
1958-59	37.5	48.0	31.2	24.4	25.1	245
1959-60	194	207	297	406	165	1,706

Water year	Apr.	May	June	July	Aug.	Sept.
1955-56	0.27	4.33	0.30	3.83	5.77	0.14
1956-57	.12	0	.90	2.7	0	0
1957-58	590	371	705	291	136	52.1
1958-59	237	1,669	2,673	762	463	166
1959-60	4,009	3,219	2,261	1,020	772	758

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.022	0.023	0.015	0.011	0.012	0.061	0.062	0.053	0.037	0.036	0.017	0.010
1956-57	.0084	.019	.014	.0079	.016	.041	.078	.070	.520	.279	.061	.108
1957-58	.067	.121	.044	.045	.120	.133	.160	.095	.181	.104	.042	.016
1958-59	.011	.014	.0088	.0069	.0071	.069	.067	.473	.758	.216	.131	.047
1959-60	.055	.059	.084	.115	.047	.484	1.14	.913	.641	.289	.219	.215

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.03	0.03	0.02	0.01	0.01	0.07	0.07	0.06	0.04	0.04	0.02	0.01
1956-57	.01	.02	.02	.009	.02	.05	.09	.08	.58	.32	.07	.12
1957-58	.08	.13	.05	.05	.12	.15	.18	.11	.20	.12	.05	.02
1958-59	.01	.02	.01	.008	.007	.08	.07	.55	.85	.25	.15	.05
1959-60	.06	.07	.10	.13	.05	.56	1.27	1.05	.72	.33	.25	.24

Note: Discharge in cubic feet per second per square mile and runoff in inches computed from combined flow at this station and Monona-Harrison ditch through September 1958.

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
1955-56	14	23	16	6.3	2.6	151
1956-57	9.1	54	7.5	2.8	2.4	26
1957-58	0	0	0	6,960	22,980	30,680
1958-59	2,300	2,850	1,920	1,500	1,390	15,070
1959-60	11,900	12,300	18,280	24,970	9,480	104,900

Water year	Apr.	May	June	July	Aug.	Sept.
1955-56	16	266	18	235	355	8.5
1956-57	7.3	0	54	169	0	0
1957-58	35,130	22,800	41,950	17,890	8,340	3,100
1958-59	14,100	102,600	159,000	46,870	28,440	9,890
1959-60	238,500	197,900	134,600	62,730	47,470	45,090

Little Sioux River near Turin, Iowa—Continued

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30							Calendar year			
	Momentary maximum			Min-imum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet
	Date	Gage height in feet	Dis-charge								
1955									2.62	1.50	1,890
1956	Aug. 18, 1956	19.7	about								
1957	July 13, 1957	20.43	832 432	0	1.53 .46	0.030 .102	0.41 1.39	1,110 332	1.55 .36	0.38 1.60	1,130 262
1958			(1)35			.094	1.26	189,800			
1959	May 31, 1959	21.80	14,000	22	533	.151	2.06	385,900	582	2.24	421,300
1960	Mar. 30, 1960	25.08	23,900	100	1,251	.355	4.83	908,100			

(1) For period Jan. 15 to Sept. 30, 1958.

Peak Discharge (base, 4,500 cfs)

1958:59: May 29 (2 p.m.) 8,550 cfs (19.17 ft.); May 31 (3:30 p.m.) 14,000 cfs (21.80 ft.); June 11 (8:30 p.m.) 6,370 cfs (14.78 ft.).

1959-60: Mar. 30 (8:30 p.m.) 23,900 cfs (25.08 ft.); May 23 (3 p.m.) 7,680 cfs (16.88 ft.); May 27 (12 p.m.) 11,200 cfs (19.40 ft.); June 16 (5 a.m.) 6,840 cfs (16.20 ft.); Aug. 29 (8 p.m.) 4,520 cfs (13.60 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 8 to Dec. 31, 1955; Jan. 1 to Mar. 20, Nov. 21 to Dec. 31, 1956; Jan. 1 to Mar. 9, 1957; Nov. 24 to Dec. 31, 1958; Jan. 1 to Mar. 23, Nov. 5 to Dec. 31, 1959; Jan. 1 to Mar. 29, 1960. No gage height record July 30 to Aug. 13, Aug. 19 to Sept. 23, Sept. 25 to Oct. 16, Nov. 9-18, 1956; Mar. 20 to Apr. 14, Apr. 16 to May 19, May 21 to June 18, June 23 to July 12, July 16 to Aug. 18, Aug. 20 to Sept. 17, Sept. 25 to Dec. 31, 1957; Jan. 1 to July 27, 1958. Stage-discharge relation indefinite Oct. 18 to Nov. 5, 1956.

Soldier River at Pisgah, Iowa

LOCATION.—Lat. 41°49'50", long. 95°55'50", in NW¼ NE¼ sec. 14, T. 81 N., R. 44 W., on left bank on downstream side of highway bridge at west edge of Pisgah, 2.8 miles downstream from Stowe Creek, and 13.1 miles upstream from mouth.

DRAINAGE AREA.—407 square miles (revised in 1956).

RECORDS AVAILABLE.—March 1940 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 1,036.53 ft. above mean sea level, datum of 1929. Prior to Oct. 11, 1954, wire-weight gage at same site and datum with supplementary water-stage recorder operating above 8.2 ft. gage height Mar. 2, 1946, to Sept. 24, 1953.

AVERAGE DISCHARGE.—20 years, 122 cfs (88,320 acre-ft. per year).

EXTREMES.—1940-60: Maximum discharge, 22,500 cfs June 12, 1950 (gage height, 28.17 ft.); minimum daily, 2 cfs Jan. 2-10, 1945.

REMARKS.—Bankfull stage is about gage height, 30 ft.

REVISIONS (water years).—WSP 1240: 1940, 1941(M), 1947 (monthly mean for February).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	12	13	25	7.0	7.5	50	21	19	13	68	28	7.0
2.....	12	13	20	7.0	7.5	80	25	24	12	24	14	6.6
3.....	12	12	15	7.0	7.5	110	33	21	11	16	12	6.8
4.....	12	*13	10	7.0	8.0	90	31	15	13	14	11	16
5.....	12	14	8.0	7.0	8.0	90	19	15	13	13	9.1	14
6.....	13	14	6.0	7.0	8.0	*80	16	14	110	12	10	10
7.....	14	12	6.0	7.0	8.0	60	15	13	146	456	76	8.6
8.....	13	13	*6.0	6.0	*8.0	50	14	12	*26	64	25	6.4
9.....	12	13	6.0	6.0	8.0	40	14	11	18	*25	13	6.2
10.....	12	14	6.0	6.0	8.0	30	14	572	14	16	12	6.2
11.....	*13	15	6.0	6.0	8.0	25	13	*775	12	490	12	6.1
12.....	12	14	6.0	*6.0	8.0	20	13	96	11	*466	11	*5.9
13.....	12	14	6.0	6.0	8.0	20	13	425	11	34	11	5.7
14.....	11	13	6.0	6.0	8.0	20	13	33	8.9	18	11	6.1
15.....	11	15	6.0	6.0	8.0	50	11	18	8.6	40	*10	6.4
16.....	11	16	6.5	6.5	8.5	40	*10	16	7.7	14	80	6.1
17.....	12	16	6.5	6.5	8.5	35	11	15	8.6	10	*228	5.5
18.....	12	16	6.5	6.5	8.5	31	9.6	13	8.6	13	430	5.2
19.....	12	18	6.5	6.5	9.0	31	9.2	12	8.6	8.0	36	5.5
20.....	12	19	6.5	6.5	9.0	27	9.2	12	8.6	8.3	16	5.5
21.....	11	21	6.5	7.0	9.0	35	9.6	13	8.9	14	12	5.5
22.....	12	21	6.5	7.0	9.0	27	9.2	13	8.3	8.9	10	5.5
23.....	13	26	6.5	7.0	9.5	28	8.9	13	7.7	7.4	9.3	5.5
24.....	13	24	6.5	7.0	9.5	24	8.9	12	6.8	6.2	8.4	5.5
25.....	13	23	6.5	7.0	9.5	27	10	11	5.1	5.7	8.0	5.5
26.....	13	21	7.0	7.5	10	31	9.2	11	11	5.5	7.6	5.5
27.....	12	24	7.0	7.5	10	24	12	12	28	5.5	7.4	5.7
28.....	14	20	7.0	7.5	15	24	15	11	14	138	7.2	5.3
29.....	14	18	7.0	7.5	30	14	18	31	11	22	7.2	5.5
30.....	14	20	7.0	7.5	.....	16	19	24	94	11	7.2	5.7
31.....	13	.....	7.0	7.5	.....	18	.....	16	.....	350	7.6	.....

Soldier River at Pisgah, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1.....	*6.1	12	9.0	10	3.3	37	21	*4.7	8.2	20	25	45
2.....	6.1	11	9.4	10	3.3	31	*20	4.1	7.2	20	23	114
3.....	5.9	10	9.4	*10	3.3	30	19	3.7	6.2	18	20	47
4.....	5.9	16	*9.4	10	3.3	*25	18	3.1	*6.1	17	33	24
5.....	5.7	109	9.2	9.8	3.3	22	22	3.0	5.9	18	*22	19
6.....	5.5	91	9.0	9.6	3.3	17	23	2.8	5.7	18	17	*341
7.....	5.7	25	9.0	9.4	*3.3	15	25	2.8	9.1	14	15	60
8.....	5.7	17	8.8	9.0	3.4	13	22	3.3	9.3	14	13	26
9.....	5.9	14	8.8	8.6	4.0	17	17	*3.5	8.2	13	13	20
10.....	5.9	13	8.8	7.8	15	21	15	4.5	8.2	13	13	20
11.....	6.2	12	8.8	6.8	60	23	14	4.4	8.0	*13	13	20
12.....	5.9	12	8.8	6.0	56	22	12	4.2	7.4	12	13	20
13.....	6.2	11	8.8	5.4	50	22	12	6.2	9.1	194	13	16
14.....	8.5	*11	8.8	4.8	47	21	12	14	46	651	214	166
15.....	12	10	8.8	4.5	45	17	11	14	995	176	24	120
16.....	38	9.8	8.8	4.3	45	15	12	6.8	1,720	270	14	29
17.....	16	9.6	8.8	4.2	45	20	13	5.9	509	36	10	19
18.....	12	9.6	9.0	4.0	45	48	12	5.5	158	24	52	16
19.....	10	9.6	9.0	3.9	35	62	9.3	5.0	*55	21	11	176
20.....	9.6	9.6	9.2	3.8	35	44	8.2	5.2	37	20	10	42
21.....	9.6	9.0	9.4	3.7	32	48	7.2	116	307	132	49	25
22.....	9.3	9.0	9.8	3.7	32	46	7.0	41	622	1,010	21	19
23.....	8.8	9.0	10	3.7	40	34	6.4	16	69	101	14	17
24.....	8.2	9.0	10	3.6	40	30	5.9	11	30	40	14	17
25.....	9.1	9.0	11	3.6	45	44	5.2	8.6	657	27	12	16
26.....	9.6	9.0	11	3.5	50	29	6.2	8.4	530	24	11	15
27.....	8.6	9.0	11	3.5	60	23	5.7	7.4	92	669	51	15
28.....	7.8	9.0	11	3.5	43	22	4.4	29	78	189	100	15
29.....	14	9.0	11	3.5	.....	22	4.8	52	32	54	34	14
30.....	17	9.0	11	3.4	.....	20	4.8	16	20	36	47	14
31.....	13	.....	11	3.4	.....	21	.....	10	.....	29	19	.....
1957-58												
1.....	12	130	28	12	17	104	32	46	64	92	260	13
2.....	12	260	*30	*11	17	83	32	39	37	1,530	160	13
3.....	11	66	28	10	17	74	34	35	30	199	97	13
4.....	11	41	34	10	17	74	52	29	27	500	46	12
5.....	10	35	30	10	*17	*83	245	29	26	109	47	*13
6.....	10	29	30	12	17	109	106	26	16	50	*285	15
7.....	12	*29	25	12	17	88	74	29	15	66	44	15
8.....	24	24	25	12	16	56	58	*41	200	*30	29	12
9.....	30	15	26	14	16	66	54	34	400	29	23	12
10.....	*16	16	28	16	16	68	*48	24	94	42	23	14
11.....	15	30	25	20	16	54	48	22	50	34	24	11
12.....	16	26	25	20	16	56	42	19	*218	30	20	10
13.....	119	24	25	30	16	83	35	19	180	29	52	8.4
14.....	32	27	28	45	16	72	35	20	85	50	29	64
15.....	300	37	30	50	14	54	34	24	64	26	22	64
16.....	97	111	35	45	14	39	32	22	60	14	20	34
17.....	41	64	55	35	14	39	30	19	50	15	16	20
18.....	26	25	55	32	12	42	29	15	42	16	16	16
19.....	23	35	35	30	12	39	30	15	37	742	18	13
20.....	22	55	35	30	12	44	34	14	34	290	16	13
21.....	22	50	35	30	12	41	35	14	34	90	15	11
22.....	29	30	35	30	500	41	35	22	34	44	15	14
23.....	77	35	35	30	1,580	39	46	18	42	34	15	13
24.....	41	45	25	30	750	35	79	13	39	478	52	15
25.....	26	42	25	30	244	34	66	13	32	62	41	14
26.....	22	44	25	28	*244	29	52	32	54	30	29	13
27.....	20	54	20	26	830	29	44	132	34	30	22	10
28.....	19	48	20	24	258	30	70	29	23	20	18	9.3
29.....	19	44	20	22	.....	30	64	19	18	35	18	9.3
30.....	19	25	20	20	.....	29	48	19	16	170	18	9.3
31.....	19	.....	15	18	.....	27	.....	57	.....	97	15	.....

Soldier River at Pisgah, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	8.4	12	7.5	3.5	4.0	220	*110	16	382	*192	40	171
2	8.4	12	8.0	3.5	4.0	*260	82	15	*230	104	695	76
3	9.2	12	*8.2	3.0	4.0	200	69	34	195	82	*100	*26
4	9.2	*13	8.4	3.0	*4.0	150	55	68	159	66	39	21
5	9.2	12	7.5	2.5	4.0	150	49	*825	134	64	27	17
6	*9.2	11	7.0	2.5	4.0	150	43	448	116	62	27	15
7	12	12	7.0	*2.5	4.0	120	70	142	108	58	20	14
8	14	14	6.5	2.5	4.0	100	52	96	100	56	12	12
9	12	14	6.5	2.5	4.0	100	37	110	82	48	9.2	12
10	10	13	6.0	2.5	4.0	110	34	138	79	48	12	11
11	10	12	6.0	2.5	4.0	100	30	89	79	45	12	12
12	9.2	12	5.5	3.0	4.0	100	27	79	473	53	8.4	12
13	11	12	5.5	3.5	4.0	120	25	72	116	67	36	12
14	12	13	5.0	3.5	4.0	150	23	61	84	45	232	13
15	12	14	5.0	3.5	4.0	70	21	56	79	43	122	13
16	11	14	5.0	3.5	4.0	60	20	55	70	43	37	13
17	11	17	5.0	3.5	4.0	55	37	55	64	49	20	15
18	10	22	5.5	3.5	4.0	60	52	56	61	52	20	23
19	11	20	5.5	3.5	4.0	150	54	58	56	45	17	23
20	11	18	6.0	3.5	4.0	100	124	54	54	40	15	21
21	10	15	6.0	3.5	6.0	93	96	*373	55	37	12	21
22	9.2	14	6.0	3.5	8.0	91	60	120	102	35	11	17
23	9.2	14	6.0	3.5	15	106	46	82	64	34	9.2	15
24	9.2	13	6.0	3.5	40	91	37	61	62	33	9.2	14
25	11	12	6.0	3.5	60	98	29	55	58	30	9.2	17
26	11	8.0	6.0	3.5	*90	187	24	55	54	30	6.9	24
27	12	7.5	6.0	3.5	170	168	25	55	78	28	7.6	24
28	12	7.0	5.5	4.0	200	87	25	1,830	928	27	9.2	21
29	12	7.0	5.0	4.0	.....	60	20	1,380	230	26	16	19
30	12	7.0	4.5	4.0	.....	69	18	432	354	26	12	17
31	12	.....	4.0	4.0	.....	96	.....	2,520	.....	40	194	.....
1959-60												
1	21	25	30	25	24	22	1,760	108	140	142	62	*55
2	37	21	30	22	26	22	1,280	104	*132	116	60	51
3	49	19	32	18	*28	22	732	*102	124	110	*55	48
4	30	*55	*30	14	28	22	710	104	124	100	56	44
5	25	70	32	12	28	20	454	190	118	96	250	44
6	*21	25	35	*11	28	20	424	278	114	95	673	43
7	19	35	35	12	28	20	372	128	108	*91	441	40
8	211	35	35	12	30	20	284	106	106	91	104	61
9	122	35	35	15	28	20	219	104	106	104	81	95
10	41	39	35	15	26	20	204	96	118	106	70	56
11	28	31	35	15	25	20	209	91	128	96	64	49
12	24	27	40	18	24	20	192	87	142	108	60	44
13	22	16	35	20	22	20	*204	89	130	163	55	44
14	21	16	30	20	22	20	197	89	120	102	52	44
15	20	16	26	20	22	20	166	84	114	87	49	45
16	18	16	24	18	22	20	180	93	*1,480	86	51	44
17	16	16	22	18	22	20	204	108	361	87	82	45
18	17	16	22	18	22	*20	154	340	209	525	104	676
19	17	16	22	18	22	20	146	1,010	180	142	77	215
20	18	18	25	18	22	20	140	825	319	104	203	82
21	16	22	29	16	22	20	136	1,500	227	93	77	67
22	20	30	24	16	22	20	136	368	168	84	58	66
23	25	50	28	16	22	20	126	261	152	81	51	62
24	19	45	24	16	22	20	124	232	128	79	110	114
25	17	30	27	16	22	25	120	232	122	77	104	126
26	20	30	45	16	22	30	114	222	120	74	66	82
27	22	30	69	16	22	90	110	159	114	76	56	69
28	19	30	202	16	22	1,500	114	161	120	76	56	66
29	18	30	110	16	22	3,200	126	159	234	74	166	64
30	20	30	58	18	.....	*1,750	116	146	148	77	82	64
31	27	.....	30	20	.....	875	.....	142	.....	70	61	.....

Soldier River at Pisgah, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	12.4	17.0	7.90	6.76	9.43	40.2	14.5	74.1	22.1	76.9	37.0	6.70
1956-57	9.61	17.1	9.54	5.84	30.4	27.8	12.5	13.6	202	126	30.3	50.2
1957-58	37.2	49.9	29.3	24.0	169	54.5	54.1	28.7	68.5	161	48.5	16.8
1958-59	10.6	12.8	6.05	3.29	23.9	118	46.5	306	157	51.9	58.2	24.0
1959-60	32.3	29.1	40.5	16.8	24.0	257	315	249	197	110	114	86.8

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.030	0.042	0.019	0.017	0.023	0.099	0.036	0.182	0.054	0.189	0.091	0.016
1956-57	.024	.042	.023	.014	.075	.068	.031	.033	.496	.310	.074	.123
1957-58	.091	.123	.072	.059	.415	.134	.133	.071	.168	.396	.119	.041
1958-59	.026	.031	.015	.0081	.059	.290	.114	.752	.386	.128	.143	.059
1959-60	.079	.071	.100	.041	.059	.631	.774	.612	.484	.270	.280	.213

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.04	0.05	0.02	0.02	0.02	0.11	0.04	0.21	0.06	0.22	0.10	0.02
1956-57	.03	.05	.03	.02	.08	.08	.03	.04	.55	.36	.09	.14
1957-58	.11	.14	.08	.07	.43	.15	.15	.08	.19	.46	.14	.05
1958-59	.03	.04	.02	.009	.06	.34	.13	.87	.43	.15	.16	.07
1959-60	.09	.08	.11	.05	.06	.73	.86	.71	.54	.31	.32	.24

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	762	1,010	486	416	542	2,470	860	4,560	1,320	4,730	2,280	399
1956-57	591	1,020	587	359	1,690	1,710	744	837	12,010	7,720	1,860	2,990
1957-58	2,280	2,970	1,800	1,480	9,380	3,350	3,220	1,760	4,080	9,880	2,990	998
1958-59	653	761	372	202	1,330	7,280	2,760	18,820	9,330	3,190	3,580	1,430
1959-60	1,980	1,730	2,490	1,030	1,380	15,780	18,750	15,310	11,710	6,770	7,010	5,170

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30								Calendar year		
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet
	Date	Gage height in feet	Discharge								
1955									48.6	1.63	35,220
1956	July 11, 1956	10.68	2,880	5.1	27.3	0.067	0.91	19,840	27.2	.91	19,780
1957	June 16, 1957	17.64	9,000	2.8	44.4	.109	1.50	32,120	51.1	1.72	36,970
1958	July 2, 1958	13.7	5,260	8.4	61.0	.150	2.05	41,190	53.8	1.81	38,920
1959	May 31, 1959	16.87	8,060	2.5	68.7	.169	2.31	49,710	74.8	2.50	54,120
1960	June 16, 1960	14.0	5,580	11	123	.302	4.10	89,110			

Peak Discharge (base, 5,000 cfs)

1955-56: No peak above base.

1956-57: June 16 (1 a.m.) 9,000 cfs (17.64 ft.).

1957-58: July 2 (4 a.m.) 5,260 cfs (13.7 ft.).

1958-59: May 28 (1:30 p.m.) 6,010 cfs (14.60 ft.); May 31 (9:30 a.m.) 8,060 cfs (16.87 ft.).

1959-60: June 16 (4:30 a.m.) 5,580 cfs (14.0 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 28 to Dec. 31, 1955; Jan. 1 to Mar. 17, Nov. 17 to Dec. 31, 1956; Jan. 1 to Feb. 27, Nov. 18-24, Nov. 30 to Dec. 31, 1957; Jan. 1 to Feb. 22, Nov. 26 to Dec. 31, 1958; Jan. 1 to Mar. 20, Nov. 5-7, Nov. 13 to Dec. 19, Dec. 31, 1959; Jan. 1 to Mar. 29, 1960.

Boyer River at Logan, Iowa

LOCATION.—Lat. 41°38'30", long. 95°47'00", in SE¼NW¼ sec. 19, T. 79 N., R. 42 W., on downstream handrail of county bridge, 300 ft. downstream from Illinois Central Railroad bridge at Logan, 10.5 miles upstream from Willow Creek, and 15.8 miles upstream from mouth.

DRAINAGE AREA.—871 square miles (revised in 1956).

RECORDS AVAILABLE.—May 1918 to July 1925, November 1937 to September 1960.

GAGE.—Wire-weight gage read once daily since October 1, 1957. Datum of gage is 1,009.38 ft. above mean sea level (Chicago and North Western Railway Co. bench mark). Prior to Apr. 17, 1925, chain gage at present site; Apr. 17 to July 1, 1925, chain gage at site 300 ft. downstream; Nov. 4, 1937, to Mar. 16, 1952, wire-weight gage at present site. Mar. 17, 1952, to Sept. 30, 1957, wire-weight gage 400 ft. upstream on bridge on U. S. Highway 30; all at same datum. Supplementary water-stage recorder operating above 4.8 ft. gage height Oct. 22, 1946, to Oct. 7, 1954, at site 400 ft. upstream and since Oct. 8, 1954, at site 300 ft. upstream, both at same datum.

AVERAGE DISCHARGE.—28 years (1918-24, 1938-60), 299 cfs (216,500 acre-ft. per year).

EXTREMES.—1918-25, 1937-60: Maximum discharge, 23,600 cfs June 16, 1957 (gage heights: 23.32 ft., from floodmark, site then in use; 22.67 ft., in gage well, 21.5 ft., present site); minimum daily, 1.5 cfs July 16, 1938.

REMARKS.—Bankfull stage is about gage height, 19 ft.

REVISIONS (water years).—WSP 1240: 1918-19, 1920(M), 1921, 1922(M), 1924-25, 1938(M), 1945 (calendar year runoff).

Daily Discharge, in Cubic Feet per Second, Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	21	17	17	10	7.5	50	51	27	37	68	53	11
2	21	17	18	10	7.5	60	50	23	35	15	23	11
3	23	17	18	10	7.6	70	47	21	29	14	15	11
4	23	*16	17	10	7.7	100	39	20	27	13	18	748
5	24	17	16	10	7.8	140	35	19	23	13	15	432
6	40	17	15	9.0	8.0	*106	33	19	23	13	20	101
7	116	18	13	8.0	8.0	97	28	19	82	519	345	49
8	37	19	11	8.0	8.5	74	30	17	*58	254	99	37
9	29	18	10	7.5	8.5	71	22	16	43	105	33	16
10	23	18	9.5	7.5	8.5	59	20	673	34	*20	19	14
11	*19	19	9.5	7.2	9.0	32	19	771	32	594	19	14
12	15	19	9.0	*7.2	9.0	29	20	158	34	866	18	*13
13	16	20	*9.0	7.0	10	26	20	3,010	31	51	17	11
14	16	19	9.0	7.0	10	26	21	150	29	37	17	8.5
15	16	19	9.0	7.0	*11	30	21	*59	28	27	*18	8.3
16	16	17	9.0	7.0	11	23	*21	29	29	63	876	7.8
17	16	16	9.0	7.0	12	22	21	27	27	25	526	7.2
18	15	17	9.0	7.0	12	23	17	23	26	40	1,050	6.7
19	15	18	9.0	7.0	12	23	15	20	26	42	472	6.3
20	16	18	9.0	7.0	12	23	12	19	27	17	175	6.3
21	16	19	9.5	7.2	13	27	13	17	26	23	112	6.1
22	15	20	9.5	7.2	13	39	13	15	24	12	79	5.8
23	16	19	9.5	7.2	13	42	12	13	23	12	74	5.7
24	16	19	9.5	7.5	13	50	11	12	22	10	19	5.3
25	15	20	9.5	7.5	13	58	11	12	20	10	15	5.2
26	15	22	10	7.5	14	60	12	11	78	7.0	16	5.2
27	16	23	10	7.5	15	55	30	12	45	5.2	11	5.0
28	16	22	10	7.5	20	51	51	470	16	90	11	5.2
29	16	15	10	7.5	30	48	39	1,020	15	88	11	5.5
30	17	16	10	7.5	.....	46	27	266	51	47	11	5.8
31	17	.....	10	7.5	.....	43	.....	77	.....	23	11	.....

Boyer River at Logan, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1...	*7.0	13	18	15	4.0	69	41	*12	15	45	50	80
2...	7.0	12	18	15	4.0	43	*39	11	11	40	50	150
3...	7.0	12	18	*15	4.0	46	34	9.5	9.0	40	50	90
4...	7.0	15	*18	15	4.0	*37	36	8.3	8.0	35	50	70
5...	7.0	80	18	15	4.0	39	41	8.1	8.0	35	*41	60
6...	7.0	*290	18	15	*4.3	37	43	7.8	8.0	35	35	*410
7...	7.0	35	18	15	4.5	27	38	7.8	9.0	30	30	100
8...	7.0	30	17	14	5.0	22	34	7.6	10	30	25	50
9...	7.0	28	16	13	10	22	31	*7.6	9.0	30	25	25
10...	7.0	26	15	12	30	27	29	8.0	9.0	70	25	25
11...	7.2	24	15	11	80	34	24	9.0	9.0	*131	25	25
12...	7.4	23	15	10	130	38	20	11	9.0	250	25	25
13...	7.7	22	15	8.5	150	42	17	13	9.0	500	25	25
14...	8.5	21	15	7.5	140	43	17	17	*4,120	1,000	300	200
15...	10	20	15	7.0	120	36	17	16	2,110	250	50	150
16...	50	20	15	6.5	100	29	18	13	*14,200	120	35	70
17...	20	19	15	6.0	80	32	22	11	4,110	50	25	35
18...	13	19	15	5.5	60	86	22	10	1,140	30	70	25
19...	11	18	15	5.0	50	207	18	15	460	30	25	200
20...	10	18	15	5.0	39	88	16	2,000	*287	30	25	90
21...	10	18	15	5.0	38	87	13	*1,120	231	250	70	30
22...	10	18	15	5.0	42	118	14	600	3,500	1,500	40	25
23...	10	18	15	4.5	39	77	14	200	570	250	30	25
24...	10	18	15	4.5	40	71	14	70	350	30	25	24
25...	10	18	15	4.5	47	95	13	20	2,200	30	20	24
26...	10	18	15	4.5	51	86	14	17	1,140	50	20	24
27...	10	18	15	4.5	70	60	15	15	500	1,000	80	24
28...	11	18	15	4.0	80	50	16	50	200	400	125	23
29...	12	18	15	4.0	.....	44	16	60	60	150	60	23
30...	20	18	15	4.0	.....	43	13	50	45	100	60	23
31...	15	.....	15	4.0	.....	43	.....	25	.....	70	50	.....
1957-58												
1...	23	300	120	80	55	570	98	98	69	78	130	42
2...	23	257	*118	70	55	500	102	94	59	*5,430	176	43
3...	25	136	120	60	55	440	113	93	67	449	144	39
4...	25	94	115	50	55	246	141	79	59	700	144	38
5...	25	69	110	50	*55	198	330	80	260	232	*95	*38
6...	25	72	120	50	55	*218	196	74	366	135	358	43
7...	37	*84	130	45	55	168	176	*84	323	92	114	41
8...	40	40	130	45	55	159	154	87	264	*83	88	39
9...	57	45	130	*45	50	129	155	95	450	79	76	38
10...	*42	70	130	45	45	132	*143	80	220	83	79	34
11...	37	75	120	45	45	148	136	80	159	68	68	39
12...	39	79	110	50	45	137	134	79	*467	68	61	39
13...	93	84	90	55	45	170	122	64	352	68	73	34
14...	260	82	90	70	40	161	121	64	300	83	67	73
15...	280	79	90	100	40	143	118	77	250	74	60	82
16...	330	74	90	80	40	143	118	73	200	68	58	57
17...	129	124	110	70	40	129	108	68	160	59	53	40
18...	122	129	150	70	40	116	102	66	136	47	49	38
19...	116	122	150	70	40	121	104	74	110	1,180	46	35
20...	113	122	120	70	40	116	100	58	106	466	99	38
21...	95	126	110	70	40	113	100	57	95	225	60	35
22...	74	124	104	65	700	113	97	55	94	155	40	31
23...	208	124	107	65	2,230	110	101	52	101	135	58	34
24...	168	126	104	65	1,260	107	107	50	107	437	71	36
25...	87	126	110	65	605	98	130	48	129	258	74	33
26...	74	122	113	65	570	98	106	48	124	139	64	27
27...	68	126	113	60	1,300	98	107	280	106	250	57	25
28...	63	124	113	60	730	95	112	200	88	130	50	24
29...	63	124	112	60	.....	100	119	75	74	240	51	25
30...	67	122	110	60	.....	94	104	68	69	819	53	26
31...	67	.....	100	60	.....	91	.....	83	.....	268	53	.....

Boyer River at Logan, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	20	29	*11	9.0	10	400	195	66	4,100	*740	93	130
2.....	18	25	15	8.0	10	500	170	65	2,070	425	210	275
3.....	21	31	16	7.0	11	200	152	95	*911	326	*174	*176
4.....	22	*31	16	6.0	*11	150	130	391	570	272	100	88
5.....	22	29	15	6.0	11	100	108	*2,760	470	241	95	67
6.....	*24	28	14	5.7	11	80	84	1,000	380	218	93	58
7.....	24	31	12	5.7	11	70	91	640	339	198	83	57
8.....	26	31	10	*5.7	10	66	116	485	290	184	67	54
9.....	26	31	9.5	5.7	10	*68	*85	425	241	172	67	51
10.....	25	31	9.0	5.7	10	72	79	552	220	161	75	46
11.....	26	23	9.0	6.0	10	82	77	366	239	154	70	46
12.....	22	31	9.0	6.6	11	100	72	300	380	143	66	44
13.....	24	32	9.0	7.0	12	276	67	284	272	139	61	45
14.....	24	32	9.0	7.0	12	449	64	239	220	136	83	45
15.....	24	31	9.0	6.8	12	213	60	220	198	130	119	44
16.....	26	32	9.5	6.6	11	146	58	208	184	122	94	44
17.....	24	52	10	6.5	11	135	62	204	182	129	77	50
18.....	25	48	11	6.4	11	101	72	192	166	143	68	58
19.....	25	38	11	6.6	10	237	95	210	154	137	62	59
20.....	25	34	11	7.0	10	466	172	218	150	104	60	55
21.....	25	36	12	7.2	15	301	186	232	146	110	57	52
22.....	23	31	12	6.8	20	237	157	257	155	104	106	50
23.....	22	33	12	6.8	30	218	152	206	132	100	161	47
24.....	25	32	13	6.8	50	215	152	206	114	93	75	46
25.....	24	32	13	6.8	100	193	143	174	126	87	58	46
26.....	26	30	13	7.0	200	332	120	170	116	83	57	49
27.....	26	25	14	7.0	250	361	108	164	164	79	54	52
28.....	28	20	14	7.5	300	201	112	2,270	2,600	77	52	56
29.....	26	15	14	8.0	.....	195	88	2,000	640	75	57	48
30.....	29	14	13	8.5	.....	184	78	1,000	1,660	73	56	44
31.....	30	.....	11	9.0	.....	176	.....	*5,790	.....	80	61	.....
1959-60												
1.....	36	69	55	80	60	50	3,040	318	410	295	129	*161
2.....	42	66	55	70	60	50	2,870	305	*366	241	126	129
3.....	74	63	60	60	*65	50	1,430	282	339	220	*119	118
4.....	41	*154	*65	55	65	50	1,300	*264	323	194	102	102
5.....	52	352	70	50	65	50	1,020	588	323	198	101	102
6.....	45	130	70	45	65	45	935	1,000	310	182	700	98
7.....	*47	80	80	45	65	45	890	500	305	*176	1,200	90
8.....	182	100	80	*45	70	45	800	640	274	166	470	93
9.....	163	120	70	50	70	45	740	500	260	184	290	114
10.....	79	132	75	50	65	45	605	455	257	192	232	114
11.....	61	129	85	50	60	*45	570	425	272	180	226	102
12.....	55	112	75	60	55	40	570	395	326	1,900	220	94
13.....	52	80	75	70	55	40	*552	395	339	700	200	90
14.....	52	70	80	75	55	40	535	380	287	455	194	95
15.....	49	65	82	75	55	40	470	366	264	267	190	86
16.....	57	60	91	75	55	40	440	395	*780	214	145	83
17.....	52	55	78	70	55	40	535	395	822	210	129	93
18.....	50	55	70	65	55	40	518	440	440	680	204	400
19.....	53	55	65	60	55	40	518	1,410	395	366	326	800
20.....	53	60	83	55	55	40	395	958	470	262	252	166
21.....	54	70	79	55	55	40	366	1,650	440	214	188	250
22.....	53	90	78	55	55	40	380	680	326	214	154	118
23.....	57	110	73	55	55	40	366	622	300	198	168	129
24.....	56	139	77	55	50	40	326	535	279	190	226	224
25.....	54	139	86	55	50	40	326	588	250	180	178	267
26.....	57	135	88	55	50	40	321	1,460	241	159	150	166
27.....	59	120	380	55	50	200	300	*822	235	182	126	134
28.....	62	100	680	55	50	2,500	287	588	232	157	228	118
29.....	60	80	350	55	50	6,340	292	455	300	154	250	110
30.....	58	60	180	55	.....	5,020	305	440	280	143	202	107
31.....	70	.....	100	60	.....	3,740	.....	425	.....	139	146	.....

Boyer River at Logan, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	22.6	18.4	11.0	7.81	11.4	51.7	25.4	227	33.3	101	135	52.5
1956-57	11.1	30.8	15.8	8.53	51.1	57.4	23.3	143	1,178	213	50.5	71.7
1957-58	92.7	113	114	61.8	299	170	128	83.3	179	406	86.1	38.9
1958-59	24.4	30.7	11.9	6.85	42.1	211	110	690	586	169	84.2	66.1
1959-60	63.1	102	117	58.5	57.6	610	733	602	318	297	244	158

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.026	0.021	0.013	0.0090	0.013	0.059	0.029	0.261	0.038	0.116	0.155	0.060
1956-57	.013	.035	.018	.0098	.059	.066	.027	.164	1.35	.245	.058	.082
1957-58	.106	.130	.131	.071	.343	.195	.147	.096	.206	.466	.099	.045
1958-59	.028	.035	.014	.0079	.048	.242	.126	.792	.673	.194	.097	.076
1959-60	.072	.117	.134	.067	.066	.700	.842	.691	.400	.341	.280	.181

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.03	0.02	0.01	0.01	0.01	0.07	0.03	0.30	0.04	0.13	0.18	0.07
1956-57	.01	.04	.02	.01	.06	.08	.03	.19	1.51	.28	.07	.09
1957-58	.12	.14	.15	.08	.36	.22	.16	.11	.23	.54	.11	.05
1958-59	.03	.04	.02	.009	.05	.28	.14	.91	.75	.22	.11	.08
1959-60	.08	.13	.16	.08	.07	.81	.94	.80	.45	.39	.32	.20

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	1,390	1,090	679	480	658	3,180	1,510	13,970	1,980	6,190	8,330	3,120
1956-57	680	1,830	970	525	2,840	3,530	1,390	8,790	70,110	13,110	3,110	4,260
1957-58	5,700	6,710	7,020	3,800	16,630	10,440	7,640	5,120	10,640	24,990	5,290	2,310
1958-59	1,500	1,830	732	421	2,340	12,950	6,560	42,420	34,890	10,380	5,180	3,930
1959-60	3,880	6,050	7,210	3,600	3,310	37,530	43,640	37,040	20,720	18,270	15,020	9,430

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30							Calendar year			
	Momentary maximum			Min-imum day	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet	
	Date	Gage height in feet	Dis-charge								
1955	May 13, 1956	11.7	7,440	5.0	58.7	0.067	0.90	42,580	131	2.03	94,760
1956	June 16, 1957	22.67	23,600	4.0	154	.177	2.39	111,100	176	2.73	127,100
1957	July 2, 1958	18.70	17,400	23	147	.169	2.27	106,300	126	1.95	90,920
1958	May 31, 1959	15.00	13,100	5.7	170	.195	2.64	123,100	188	2.92	136,200
1960	Mar. 29, 1960	14.62	10,200	36	283	.325	4.43	205,700	.....	.....	.....

Peak Discharge (base, 6,000 cfs)

- 1955-56: May 13 (about 5:30 a.m.) 7,440 cfs (11.7 ft.).
 1956-57: June 14 (8 a.m.) 9,940 cfs (13.58 ft.); June 16 (1:30 a.m.) 23,600 cfs (22.67 ft.); June 22 (3 a.m.) 9,660 cfs (13.45 ft.); June 25 (about 12 m.) about 6,000 cfs.
 1957-58: July 2 (4 a.m.) 17,400 cfs (18.70 ft.).
 1958-59: May 5 (time unknown) about 6,000 cfs; May 31 (10 a.m.) 13,100 cfs (15.00 ft.).
 1959-60: Mar. 29 (9 p.m.) 10,200 cfs (14.62 ft.); July 12 (time and discharge unknown).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.
 Stage-discharge relation affected by ice Nov. 28 to Dec. 31, 1955; Jan. 1 to Mar. 15, Dec. 5-31, 1956; Jan. 1 to Feb. 19, Feb. 27, 28, Mar. 25, Dec. 11-20, Dec. 30, 31, 1957; Jan. 1 to Feb. 22, Nov. 26 to Dec. 31, 1958; Jan. 1 to Mar. 12, Nov. 6-9, 14-23, Nov. 26 to Dec. 14, Dec. 18, 19, 30, 31, 1959; Jan. 1 to Mar. 28, 1960. No gage-height record Oct. 2 to Nov. 5, Nov. 7 to Dec. 3, 1956; May 10-20, May 22 to June 13, June 27 to July 10, July 12 to Aug. 4, Aug. 6 to Sept. 7 to Oct. 6, Dec. 3-10, 1957.

Missouri River at Omaha, Nebraska

LOCATION.—Lat. 41°15'30", long. 95°55'20", in SE¼NW¼ sec. 23, T. 15 N., R. 13 E., on right bank on left side of concrete floodwall, beneath Ak-Sar-Ben Bridge in Omaha, at mile 632.1.

DRAINAGE AREA.—322,800 square miles, approximately.

RECORDS AVAILABLE.—September 1928 to September 1960. April 1872 to December 1899 (gage heights only) in reports of the Missouri River Commission and since January 1875 (gage height only) in reports of the U. S. Weather Bureau.

GAGE.—Water-stage recorder. Datum of gage is 958.24 ft. above mean sea level, datum of 1929. Apr. 10, 1872, to Aug. 31, 1928, staff, cable, and chain gages at several sites within 0.6 mile of present site not more than 0.43 ft. 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 ft. higher. Dec. 1, 1929, to May 26, 1930, chain gage, and May 27, 1930, to Oct. 18, 1931, wire-weight gage, at present site and datum. Oct. 19, 1931, to Sept. 30, 1936, water-stage recorder 0.4 mile downstream at present datum.

AVERAGE DISCHARGE.—32 years, 28,280 cfs (20,470,000 acre-ft. per year).

EXTREMES.—1928-60: Maximum discharge, 396,000 cfs Apr. 18, 1952; maximum gage height, 30.20 ft. Apr. 18, 1952; minimum discharge, about 2,200 cfs Jan. 6, 1937; minimum gage height observed, -2.77 ft. Jan. 10, 1957, result of freezeup.

REMARKS.—Flow partly regulated by upstream main stem reservoirs. Discharge measurements generally made six times a month, three times a month during winter.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	32,100	32,100	3,420	9,450	8,550	11,600	30,400	31,500	30,400	29,400	33,900	34,200
2	31,800	30,600	3,900	9,300	8,400	11,800	31,200	31,500	29,600	30,600	33,000	34,200
3	31,800	28,600	4,860	9,300	8,260	12,400	31,800	30,100	29,600	30,400	32,100	33,900
4	31,800	25,600	6,160	9,150	8,260	12,900	31,500	28,800	29,400	30,900	32,100	36,600
5	32,100	23,000	8,120	9,150	8,260	13,500	30,900	29,100	29,600	29,600	31,200	36,300
6	33,000	20,600	9,750	9,150	8,260	14,900	30,100	29,600	29,600	27,400	30,900	34,200
7	33,300	18,100	10,500	9,600	8,550	13,600	30,600	29,400	30,600	28,400	32,100	33,600
8	33,000	15,700	10,400	9,600	8,550	13,200	30,600	29,400	29,800	29,100	33,600	31,800
9	32,400	13,600	9,900	9,600	8,850	13,800	29,400	29,600	28,800	27,400	33,000	31,200
10	31,800	12,900	9,750	9,450	8,850	15,500	29,400	30,900	28,100	27,100	32,700	31,500
11	31,200	12,400	9,450	9,450	9,600	17,700	29,400	32,100	28,100	28,600	32,700	32,100
12	31,500	12,300	9,450	9,450	9,150	19,300	29,600	31,200	28,600	35,100	33,300	32,700
13	31,500	12,300	9,300	9,600	9,150	21,600	29,600	32,400	28,400	39,000	33,000	33,000
14	31,200	12,200	9,450	9,450	9,300	23,900	29,800	28,800	28,800	34,800	32,700	33,000
15	30,900	11,800	9,300	9,450	9,600	26,400	30,400	28,800	29,600	32,100	33,000	33,600
16	30,900	11,600	9,150	9,450	9,450	32,400	30,600	29,100	30,600	32,700	35,700	33,900
17	31,200	10,200	9,000	9,450	9,600	35,100	31,200	28,800	31,200	32,700	35,100	34,800
18	30,900	7,980	8,850	9,150	9,900	40,200	30,600	28,800	32,100	31,500	39,300	34,200
19	30,900	6,910	8,700	8,550	10,200	34,800	29,600	28,800	32,700	30,400	38,700	33,900
20	30,600	7,560	8,550	8,550	10,400	33,000	29,400	29,100	33,600	29,600	36,600	33,900
21	31,500	9,750	8,850	8,500	10,500	33,300	29,400	29,800	33,000	28,800	33,900	33,900
22	32,700	12,400	9,600	8,500	11,100	33,900	29,400	30,400	32,400	28,600	32,700	33,900
23	33,300	14,000	10,500	8,600	11,400	34,500	28,800	33,400	32,700	28,100	32,100	33,900
24	33,300	12,800	11,100	8,600	11,600	34,500	29,100	30,400	33,000	28,400	31,500	33,300
25	33,600	11,600	11,100	9,000	11,700	30,400	29,400	30,900	31,500	28,600	31,500	32,700
26	33,300	10,400	11,100	9,200	11,600	31,200	29,800	31,200	30,900	29,400	32,100	32,700
27	32,700	9,600	11,100	9,450	11,800	30,600	30,600	30,600	33,600	31,200	32,700	33,300
28	32,700	5,560	10,500	9,450	11,800	31,500	31,200	30,900	33,000	33,600	32,400	35,000
29	33,300	2,970	9,750	9,450	11,700	33,000	31,800	31,500	29,400	31,500	33,600	34,200
30	33,000	3,240	9,450	9,600	.....	31,800	31,800	32,700	28,100	33,600	33,900	34,800
31	33,000	.....	9,450	9,150	.....	30,600	.....	30,600	.....	34,200	34,200	.....

Missouri River at Omaha, Nebraska—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	35,200	15,800	8,880	12,000	8,200	11,800	12,200	26,400	25,400	27,200	31,000	29,700
2	35,800	16,400	9,130	11,700	8,200	11,600	11,700	27,000	26,100	29,000	30,000	32,600
3	35,200	16,600	9,390	10,900	8,160	11,600	11,400	28,400	24,300	31,000	30,000	34,000
4	35,200	16,700	9,260	9,260	8,160	11,300	11,300	29,000	22,800	32,100	29,200	31,500
5	35,500	16,700	9,390	9,000	8,040	11,000	11,000	29,700	25,000	31,500	28,400	30,000
6	35,500	16,900	9,390	9,000	7,920	11,400	10,900	29,700	26,600	31,200	28,400	29,700
7	35,200	16,000	8,760	8,610	7,920	11,000	11,000	29,400	28,700	31,200	28,200	31,200
8	34,600	15,700	8,610	8,520	7,800	10,300	10,700	30,000	27,700	31,500	28,700	30,400
9	34,300	15,700	8,160	8,400	7,920	9,910	10,300	31,200	28,200	31,500	29,000	29,200
10	34,000	15,700	4,520	4,870	7,800	9,780	10,000	32,600	28,200	32,600	29,700	29,700
11	33,700	15,700	5,080	4,520	8,280	9,520	9,910	32,400	28,400	30,700	31,500	29,700
12	34,000	15,800	7,140	4,790	9,290	9,260	9,780	31,200	27,700	30,200	32,100	30,000
13	34,000	15,800	10,700	4,880	9,780	9,260	9,780	30,400	28,000	30,200	31,800	29,700
14	33,700	15,500	10,200	5,600	9,290	9,390	9,650	31,800	31,400	31,200	32,900	29,000
15	33,700	15,500	8,880	6,400	9,000	9,390	9,650	32,400	39,400	35,500	31,800	29,700
16	33,400	15,700	7,690	8,500	9,000	9,390	9,780	31,200	50,000	34,900	31,500	29,200
17	32,900	16,000	8,160	8,600	9,130	9,000	10,700	28,400	43,000	32,100	31,200	27,500
18	31,500	13,500	8,760	9,000	9,260	9,390	12,300	28,000	41,100	29,700	31,000	25,900
19	28,700	11,800	8,760	9,400	9,650	10,300	15,200	26,400	34,900	29,000	31,000	26,100
20	25,900	11,000	8,400	9,700	9,520	10,300	18,900	25,900	29,700	30,000	30,700	28,700
21	23,400	10,900	8,400	10,000	9,260	9,780	22,800	29,000	25,400	30,700	31,000	30,400
22	21,500	10,700	8,880	10,300	8,880	9,520	26,800	27,200	30,400	32,900	31,000	30,200
23	18,900	10,300	9,650	10,600	9,000	9,390	28,000	27,500	31,500	30,700	31,200	29,000
24	17,200	9,780	10,300	10,200	9,650	9,520	27,700	23,600	31,600	27,700	30,700	27,700
25	16,600	9,520	10,300	9,800	9,910	9,780	28,000	21,700	35,800	27,700	30,400	27,700
26	16,400	9,260	9,910	9,000	9,910	9,520	28,000	21,900	38,800	30,700	30,200	27,500
27	16,400	9,130	9,650	8,000	11,000	9,260	27,000	21,100	38,800	31,800	30,700	27,700
28	16,200	8,880	10,000	8,180	11,600	9,260	26,800	25,900	34,600	32,900	31,800	28,200
29	15,800	8,760	10,600	7,500	10,400	26,600	25,900	31,500	31,500	32,100	31,500	28,700
30	15,700	8,880	11,000	7,900	11,800	26,600	25,700	28,700	31,800	31,800	31,500	28,700
31	15,700		11,600	8,200		12,300	26,600	24,300	28,700	32,100	30,400	
1957-58												
1	28,000	18,700	10,200	6,080	8,760	21,100	17,600	25,900	28,200	28,200	26,100	28,200
2	28,200	19,100	10,000	5,580	9,200	16,400	20,700	25,400	29,200	36,700	25,900	27,700
3	28,000	19,500	10,000	5,800	9,200	13,500	20,900	25,100	29,000	31,500	23,000	27,500
4	28,700	18,700	9,910	5,980	9,000	12,600	19,700	25,700	29,000	31,800	22,300	27,500
5	29,400	17,600	9,780	6,920	8,880	13,200	22,100	25,700	31,500	26,800	23,000	28,700
6	30,400	17,200	9,780	8,280	8,400	15,700	25,700	25,400	31,000	24,600	25,900	29,200
7	31,800	16,900	9,910	8,760	8,700	15,000	26,800	25,700	30,200	24,800	26,400	29,000
8	32,900	17,100	9,910	9,520	9,000	13,400	24,600	26,100	30,200	26,100	27,200	28,200
9	33,200	17,100	9,780	10,700	9,000	12,300	21,100	26,600	31,500	27,200	27,700	28,000
10	32,900	16,700	9,650	11,500	9,000	11,700	26,400	27,000	30,400	29,000	26,800	27,700
11	32,400	16,200	8,760	9,500	8,500	11,600	26,600	26,800	29,400	29,700	26,800	27,200
12	32,100	16,200	6,590	9,910	8,500	11,100	26,100	26,600	28,700	29,000	27,200	27,000
13	31,800	16,400	5,580	11,100	8,500	11,000	26,400	27,000	28,700	26,100	29,200	27,000
14	32,600	16,600	5,300	11,700	8,000	11,000	27,000	27,500	27,700	24,800	29,400	27,700
15	33,200	16,700	7,000	11,100	8,000	11,100	26,400	27,700	27,500	25,200	29,200	28,400
16	31,300	17,100	8,500	11,100	8,000	11,000	25,900	27,500	26,400	25,900	28,700	29,200
17	32,600	17,200	9,500	11,300	8,000	10,900	25,700	27,000	25,700	27,000	27,500	28,700
18	31,500	16,000	10,500	11,400	8,000	10,700	25,900	26,400	25,000	27,500	27,500	27,700
19	31,800	13,600	10,600	12,000	8,000	10,700	25,900	25,700	25,000	31,200	28,000	28,000
20	31,500	14,500	10,200	11,800	8,500	10,600	26,400	25,400	25,900	29,200	28,000	28,000
21	31,800	11,800	10,200	10,900	9,900	10,400	27,000	25,200	27,000	27,700	28,700	28,200
22	32,900	11,600	9,910	10,600	10,200	10,300	27,500	25,200	27,700	26,600	29,000	28,200
23	33,400	11,100	9,650	10,300	13,500	10,400	28,000	25,700	28,200	24,800	29,200	28,400
24	32,900	11,000	9,780	10,000	15,500	10,400	28,000	26,100	28,200	23,900	29,000	28,700
25	31,500	11,000	10,000	10,000	15,500	10,300	27,200	26,600	27,700	24,800	28,400	29,000
26	28,400	10,700	10,200	9,910	15,300	10,300	25,400	27,000	27,200	24,800	27,500	29,000
27	26,400	10,700	10,200	9,650	17,600	10,400	22,800	28,000	27,000	25,200	27,200	29,200
28	24,600	10,900	9,910	9,600	22,500	10,700	23,400	28,400	26,600	23,900	27,700	29,000
29	23,600	10,700	9,780	9,300		10,900	25,700	28,200	26,600	24,100	27,500	29,000
30	21,900	10,400	9,390	9,000		12,000	26,400	28,000	27,500	27,700	27,700	29,400
31	20,100		8,520	8,640		14,000		28,000		25,900	28,000	

Missouri River at Omaha, Nebraska—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	29,400	29,000	7,250	8,500	11,300	10,700	16,200	25,700	55,000	35,400	32,100	34,000
2	29,000	27,200	7,250	7,500	10,600	11,100	19,900	26,800	43,000	32,100	33,400	33,700
3	28,400	25,000	7,800	6,000	10,000	11,400	21,100	28,400	32,600	28,000	33,700	33,400
4	28,700	22,500	10,200	6,400	9,910	11,600	21,500	28,200	27,500	25,900	34,300	32,600
5	29,000	20,100	10,400	7,500	9,910	11,300	20,700	37,000	25,900	25,200	32,400	31,500
6	29,000	17,200	8,880	7,690	10,200	10,400	20,900	34,300	25,000	24,800	27,700	31,000
7	29,200	14,400	7,800	7,000	10,300	10,400	22,800	34,000	23,400	25,000	25,200	31,200
8	29,200	13,400	5,500	9,260	10,200	10,400	23,900	29,700	23,400	25,900	26,100	31,500
9	29,200	12,600	4,600	10,400	10,200	10,600	23,900	26,100	27,200	26,600	27,500	31,200
10	29,700	11,600	4,400	11,100	10,300	10,700	24,800	25,900	28,700	26,600	28,200	31,500
11	30,000	10,600	4,400	11,600	10,000	11,100	24,300	28,000	31,000	26,600	28,000	31,800
12	29,700	10,200	4,700	11,700	9,390	11,800	23,900	28,700	31,800	26,600	28,200	31,500
13	29,200	9,780	6,400	11,700	9,390	13,500	23,400	26,800	29,000	27,000	28,700	31,500
14	29,700	9,520	8,000	11,600	9,260	13,800	23,200	25,700	28,000	27,200	30,000	30,700
15	30,200	9,130	9,000	10,700	10,300	14,200	23,200	24,100	28,000	27,200	30,700	31,000
16	30,200	8,760	9,000	10,500	11,400	13,600	23,200	23,000	28,200	27,700	31,500	32,100
17	29,700	8,640	8,600	10,500	11,700	14,200	25,200	23,000	28,700	28,000	30,700	32,900
18	29,700	8,640	9,000	10,000	11,400	13,500	26,400	24,800	29,200	28,100	28,400	32,400
19	28,700	8,640	11,000	9,000	11,600	14,200	28,000	25,900	29,700	29,000	29,000	31,500
20	28,200	8,760	12,300	8,500	11,600	18,500	29,700	26,100	30,000	29,200	29,200	30,400
21	28,700	8,880	13,500	9,000	11,400	15,700	30,700	27,500	29,700	28,200	29,200	29,700
22	28,700	9,130	13,200	9,500	11,000	12,900	29,400	29,700	28,700	28,000	30,400	30,000
23	29,000	9,130	12,300	11,000	10,900	12,300	26,600	28,200	28,400	27,700	31,200	30,700
24	29,200	9,260	12,300	11,000	11,000	12,400	26,100	26,800	28,400	28,200	31,000	30,200
25	29,200	9,260	13,200	9,600	10,900	12,800	26,600	25,200	28,400	28,700	31,200	29,200
26	29,700	9,260	13,500	9,800	10,700	13,600	26,400	25,000	28,200	29,000	31,500	28,400
27	29,700	9,130	12,600	10,600	10,700	14,000	26,600	25,700	28,400	29,700	31,800	28,400
28	30,400	8,520	11,600	11,100	10,900	13,600	26,800	28,200	35,800	30,400	31,800	28,400
29	31,500	7,360	10,400	11,300	11,300	13,200	26,800	38,200	32,100	30,700	32,400	29,000
30	30,200	7,360	9,500	11,300	11,300	13,400	26,600	39,800	35,200	31,200	33,200	29,400
31	29,700	.....	9,000	11,300	.....	13,800	.....	44,000	.....	32,100	33,200	.....
1959-60												
1	30,200	29,200	8,500	11,100	9,650	9,130	113,000	26,600	28,400	27,200	28,700	29,000
2	29,700	28,700	9,400	10,700	9,780	8,880	96,500	26,100	27,700	25,700	28,700	27,200
3	29,000	26,800	10,400	8,760	9,910	8,760	105,000	25,000	27,000	24,800	29,200	29,000
4	28,200	25,200	11,000	5,680	9,780	8,760	116,000	25,400	26,100	23,900	29,700	30,700
5	27,500	23,600	11,100	4,700	9,780	8,880	116,000	29,000	25,200	23,400	30,200	31,200
6	26,800	20,300	10,700	4,430	9,650	8,760	104,000	30,700	24,600	24,600	37,600	31,000
7	26,800	17,100	10,300	4,610	9,910	8,400	90,000	29,400	23,600	25,700	39,800	30,200
8	28,700	14,400	9,910	5,380	10,200	8,640	78,500	29,400	23,600	26,400	32,600	31,000
9	29,400	12,800	9,650	6,560	10,300	9,650	71,600	25,700	24,300	28,400	30,200	31,000
10	29,700	12,200	9,520	9,130	10,300	10,900	64,000	25,400	27,500	28,400	29,400	30,000
11	29,400	11,800	9,520	11,300	10,300	11,300	59,000	25,900	30,400	28,200	29,000	29,400
12	29,200	11,700	9,390	12,000	10,300	10,600	51,000	25,200	30,700	29,700	28,400	28,200
13	28,700	11,600	9,390	12,300	10,200	9,520	44,700	24,800	27,000	32,100	29,000	27,000
14	28,000	11,100	9,390	12,200	10,600	9,260	42,700	24,600	25,200	33,200	29,200	27,200
15	28,000	9,500	9,390	10,900	9,520	8,880	41,400	24,800	25,000	28,400	29,200	27,700
16	28,000	7,000	9,390	10,300	9,780	8,640	38,500	26,400	32,900	25,900	29,200	29,200
17	28,000	4,880	9,390	9,910	10,000	8,520	38,200	28,200	30,000	28,400	30,400	30,000
18	27,700	4,430	9,650	8,880	10,200	8,520	35,500	30,400	30,000	29,000	31,000	31,200
19	27,700	5,880	9,910	8,040	10,200	8,400	32,400	31,800	29,200	29,000	30,700	32,400
20	27,700	7,200	9,910	8,040	10,000	9,130	29,700	31,800	31,000	29,200	31,200	30,400
21	28,000	14,400	9,780	8,280	9,780	9,650	27,700	39,100	32,900	29,400	31,200	31,000
22	28,400	12,600	9,910	8,040	9,390	9,650	26,400	40,100	30,200	28,700	31,000	30,400
23	29,000	13,000	9,910	7,920	8,880	9,910	26,800	39,400	26,100	28,700	30,700	31,000
24	29,200	12,800	9,910	8,160	8,880	9,780	27,200	36,100	25,200	29,200	32,400	31,500
25	28,000	12,900	10,000	8,280	9,000	9,910	26,400	31,800	25,000	29,700	32,900	30,700
26	27,500	13,500	10,000	8,160	9,000	9,650	26,800	33,400	25,700	30,000	33,200	29,000
27	28,200	12,300	10,700	8,400	8,880	9,780	27,000	35,500	26,100	30,000	31,500	27,700
28	28,000	10,900	11,300	8,880	9,000	10,700	27,200	31,900	27,000	30,200	30,200	27,500
29	28,400	10,000	12,000	9,260	9,260	18,000	26,800	31,000	28,600	30,200	37,000	27,700
30	28,700	9,000	12,200	9,520	.....	41,700	27,200	29,400	29,200	30,000	40,400	28,000
31	29,200	.....	11,400	9,520	.....	96,500	.....	28,400	.....	29,200	34,900	.....

Missouri River at Omaha, Nebraska—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	32,140	13,950	9,047	9,219	9,784	24,930	30,250	30,230	30,560	30,830	33,400	33,590
1956-57	27,930	13,460	8,831	8,521	8,981	10,170	16,480	28,020	31,640	31,060	30,620	29,310
1957-58	30,150	14,900	9,322	9,578	10,400	12,090	25,080	26,550	28,130	27,150	27,280	28,290
1958-59	29,430	12,430	9,251	9,789	10,590	12,730	24,630	28,720	30,290	28,300	30,380	31,030
1959-60	28,420	13,890	10,090	8,690	9,720	13,510	54,570	29,860	27,590	28,220	31,570	29,580

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
1955-56	1,976,000	829,800	556,300	566,900	562,800	1,533,000
1956-57	1,717,000	800,900	543,000	524,000	498,800	625,600
1957-58	1,854,000	886,400	573,200	589,000	577,500	743,200
1958-59	1,810,000	739,800	568,800	601,900	588,000	782,900
1959-60	1,747,000	826,700	620,700	534,300	559,000	830,600

Water year	Apr.	May	June	July	Aug.	Sept.
1955-56	1,800,000	1,859,000	1,818,000	1,896,000	2,053,000	1,999,000
1956-57	980,700	1,723,000	1,883,000	1,910,000	1,883,000	1,744,000
1957-58	1,492,000	1,632,000	1,674,000	1,669,000	1,677,000	1,683,000
1958-59	1,465,000	1,766,000	1,802,000	1,740,000	1,868,000	1,846,000
1959-60	3,247,000	1,836,000	1,642,000	1,735,000	1,941,000	1,760,000

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30					Calendar year		
	Momentary maximum			Minimum day	Mean	Runoff in acre-feet	Mean	Runoff in acre-feet
	Date	Gage height in feet	Discharge					
1955							23,430	16,960,000
1956	Mar. 18, 1956	(1)5.90	42,000	2,970	20,040	17,450,000	23,620	17,150,000
1957	June 16, 1957	9.25	59,000	4,160	20,490	14,830,000	20,840	15,090,000
1958	July 2, 1958	8.55	45,400	5,300	20,790	15,050,000	20,520	14,860,000
1959	June 1, 1959	9.77	57,000	4,400	21,520	15,580,000	21,620	15,650,000
1960	Apr. 1, 1960	(2)16.81	120,000	4,430	23,800	17,280,000		

(1) Maximum gage height 7.47 ft. July 13, 1956.

(2) Maximum gage height 16.96 ft. Apr. 4, 1960.

Peak Discharge (base, 95,000 cfs)

1955-56: No peak above base.

1956-57: No peak above base.

1957-58: No peak above base.

1958-59: No peak above base.

1959-60: Apr. 1 (8 a.m.) 120,000 cfs (16.81 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Jan. 21-26, 1956; Jan. 14 to Feb. 2, Dec. 14-18, 1957; Jan. 3, 10, 11, 28-30, Feb. 2-4, 7-24, Dec. 7-18, 30, 31, 1958; Jan. 1-5, 16-26, Nov. 15, 16, 20, Nov. 30 to Dec. 2, 1959; Feb. 17-20, 1960.

Indian Creek at Council Bluffs, Iowa

LOCATION.—Lat. 41°17'40", long. 95°49'55", in NW¼SE¼ sec. 18, T. 75 N., R. 43 W., on downstream side of left pile bent of bridge on Mud Hollow Road at north edge of Council Bluffs, 8.8 miles upstream from mouth.

DRAINAGE AREA.—7.99 square miles.

RECORDS AVAILABLE.—July 1954 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 1,038.86 ft. above mean sea level (city of Council Bluffs bench mark). Prior to Apr. 12, 1955, wire-weight gage at site a quarter of a mile downstream at different datum.

AVERAGE DISCHARGE.—6 years, 1.32 cfs (956 acre-ft. per year).

EXTREMES.—1954-60: Maximum discharge, 2,200 cfs July 29, 1958 (gage-height, 14.16 ft.); no flow at times most years.

REMARKS.—High banks are never overtopped in vicinity of gage.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....		0	0	.....	0.2	*2.6	0.5	*0.3	0	0	1.4	0
2.....		0	0	.....	.1	2.0	.6	.2	0	0	.3	0
3.....		0	0	.....	.1	1.8	.7	.1	0	0	0	0
4.....		0	0	.....	.1	1.4	.3	.1	0	0	0	.1
5.....		0	0	.....	.1	*1.0	.2	.1	0	0	0	33
6.....		0	0	.....	.1	.5	*.3	.1	.1	0	0	.1
7.....		0	0	.....	.1	.4	.2	.1	0	*35	0	0
8.....		0	0	.....	.1	.2	.2	.1	*0	.2	15	0
9.....		0	0	*	.1	.2	.2	.1	0	0	0	0
10.....		0	0	.....	.1	.1	.2	.1	0	0	*0	0
11.....		0	0	.....	.1	.1	.2	.1	0	26	0	*0
12.....		0	0	.....	.1	.1	.2	.1	0	6	0	0
13.....		0	0	.....	** .1	*.1	.2	1.2	0	29	0	0
14.....		0	0	.....	.1	.1	.2	.2	0	7	0	0
15.....		0	0	.....	0	.1	.2	.2	0	12	0	0
16.....		0	0	.....	0	.2	.2	.1	0	0	*14	0
17.....		0	0	.....	*0	.2	*.2	.1	0	0	.9	0
18.....		0	0	.....	0	.4	.2	.1	0	0	23	0
19.....		0	0	.....	0	.4	.2	.1	0	0	0	0
20.....	*	0	0	.....	** .1	.4	.2	.1	.1	0	0	0
21.....		.2	0	.....	.1	.6	.2	*.1	0	0	0	0
22.....		.1	0	.....	0	.6	.1	.1	0	0	0	0
23.....		0	0	.....	.1	.8	.1	.1	0	0	0	0
24.....		0	0	.....	.4	.8	.2	0	0	0	*0	0
25.....		0	0	.....	.6	1.0	*.2	0	0	0	0	0
26.....		0	0	.....	1.0	1.2	.2	0	.2	0	0	*0
27.....		0	0	*	1.5	1.3	.2	0	0	0	0	0
28.....		0	0.2	.....	1.8	.5	.4	0	0	0	0	0
29.....		0	.4	.....	2.0	*.1	.3	.1	.1	0	.1	0
30.....		0	.1	.....	.....	.4	.2	.6	0	0	1.8	0
31.....		0	.....	.....	.....	.4	.....	0	.....	24	.1	.....

Indian Creek at Council Bluffs, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	0	0.1	0.5	0.1	0	0.2	0.5	0.1	2.5	0.7	0	1.3
2	0	0	.5	.1	0	.3	.5	0	1.2	*.3	*0	2.0
3	0	0	.3	*.1	0	.3	*.6	0	.6	.3	0	.1
4	0	.7	.2	.1	0	.3	.9	0	.3	.2	0	*0
5	0	.5	*.1	0	0	.3	1.0	0	*.1	.1	0	2.8
6	0	.1	0	.1	.1	.4	1.1	*0	7.0	.2	0	.5
7	0	*0	0	.1	*.1	.4	.5	0	*30	.1	0	.1
8	0	0	0	.1	.1	.4	.4	0	.5	.1	0	0
9	0	0	0	0	.1	.4	.4	*1.9	.7	*0	0	0
10	0	0	0	0	.2	.6	.4	*.4	*.3	0	0	.7
11	0	0	0	0	.2	*.6	.4	.3	14	0	0	.4
12	*0	0	0	0	.2	.6	.3	4	.3	0	0	*0
13	7.1	0	0	.1	.3	.5	.4	2.4	.1	0	1.4	0
14	.5	0	0	.1	.3	.4	.4	2.1	.7	0	*.1	.1
15	.4	0	.5	0	*.3	.4	.4	.5	*97	*.1	0	0
16	.4	0	.8	0	.3	.4	**3	1.3	21	0	0	0
17	.4	0	.2	0	.3	.5	.5	.9	8.3	0	0	0
18	.2	0	0	0	.3	.5	*.1	.6	1.0	*0	0	0
19	.1	0	*0	0	.2	.3	.7	.7	.6	0	0	0
20	0	.1	.1	0	.2	.3	0	*3.3	.6	.5	0	.2
21	0	.1	.1	.1	.1	.2	0	*.6	.7	.1	0	.2
22	0	.1	.1	.1	.1	.2	.3	.3	.9	0	0	0
23	0	.1	0	*0	.1	.2	.1	.3	.3	0	0	*0
24	0	.1	0	0	.1	.4	0	.3	.3	0	0	0
25	0	.1	0	0	.1	**3.0	.3	.3	.4	0	0	0
26	*0	.1	.2	0	.2	*2.6	*1.1	.2	.3	0	0	0
27	0	.2	.5	0	.2	1.2	.3	.2	.4	0	2.2	0
28	0	.2	.5	0	.2	.7	.2	.2	.3	0	60	0
29	0	.4	.4	0	.....	.6	.4	*23	.2	0	*8.3	0
30	.6	.4	.3	0	.....	.6	**1	11	.2	*0	.6	0
31	.2	.....	.2	0	.....	.6	.....	8.2	.....	0	.1	.....
1957-58												
1	0	0.7	0.4	0	0.5	2.0	0.6	0.4	0.3	0.1	1.8	0.3
2	0	.2	.2	0	.5	1.5	.5	*.5	.3	1.7	1.6	.2
3	0	.2	.2	0	*.5	1.0	.8	.5	.3	.5	1.3	.2
4	0	.2	.2	0	.5	1.0	.4	*.8	.2	.3	1.2	.3
5	0	.2	.3	0	.4	1.0	1.1	.5	**2	.2	17	*15
6	0	.2	.2	0	.4	*.8	.6	.5	.2	.2	20	.6
7	0	*.2	.2	0	.3	1.7	.5	.7	.1	.1	.9	.3
8	.1	.1	.2	0	.2	3.3	.5	.8	.2	.1	*.6	.3
9	.1	.2	.2	0	.1	1.7	.5	.6	.2	.2	.6	.2
10	.1	.2	.1	.1	0	.8	.5	.6	.2	*3.4	.5	.2
11	.1	.2	0	.1	0	.6	.4	.6	.1	.3	.5	.2
12	.2	.2	0	.1	0	.7	1.1	.5	.2	.2	.5	.2
13	.1	.2	0	*.1	0	.6	.5	.5	.3	.2	31	.2
14	.1	.2	.2	.1	0	.5	.5	.6	.3	.2	4.0	.4
15	.3	.3	.4	.1	0	.6	.5	.6	.2	.1	1.5	.4
16	.1	.2	.5	.2	0	.8	.5	.5	.2	0	.8	*.3
17	.1	.2	.6	.2	0	1.0	.4	.6	.2	.5	.6	.3
18	.1	.2	.5	.2	0	.6	*.4	.5	.2	.2	.5	.2
19	.1	1.1	.3	.2	0	.7	.5	.4	.6	20	.5	.2
20	.1	.4	.2	.2	2.0	.6	.6	.4	.2	.5	.4	.7
21	.1	.3	.1	.2	*9.0	*.6	.5	.4	.2	.3	.4	.6
22	.8	.3	.2	.2	15	.6	.4	.4	.2	.2	.3	.3
23	.2	.4	.1	.3	5.0	.5	.8	.3	.2	*.1	.3	.5
24	.1	.4	*.2	.3	4.0	.5	.6	.3	.2	.1	.4	.5
25	.1	.4	.2	.4	3.5	.5	.5	.3	.2	.1	.4	.4
26	.1	*.4	.2	.5	3.0	.5	.5	.3	.1	.1	*.4	.4
27	.1	.4	.2	.5	2.5	.4	.5	.5	0	4.0	.4	.4
28	.2	.3	.1	.5	2.0	.6	.6	.2	0	.1	.3	.4
29	.2	.2	.5	.5	.....	.4	.5	.2	0	57	.3	.4
30	.2	.3	0	.5	.....	.4	.5	.4	0	64	.3	.3
31	.2	.....	0	.5	.....	.5	.....	.4	.....	2.7	.3	.....

Indian Creek at Council Bluffs, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept
1958-59												
1	0.3	0.6	0.9	0.1	0.1	1.0	0.9	0.4	1.1	0.7	0.6	0.3
2	.4	.6	1.0	.1	.1	1.0	*.9	104	1.1	.5	73	.3
3	.4	.7	*1.1	.1	.1	1.0	.8	3.0	.9	.4	.6	.3
4	.4	*.6	1.0	.1	.1	1.0	.8	27	.9	.5	28	.2
5	.3	.5	.5	.1	.1	1.0	1.0	4.1	.9	.4	.6	.2
6	.4	.6	.1	.1	** .1	.9	.7	1.6	.8	.4	.5	.2
7	*.7	.7	.1	.1	.1	.8	.7	1.3	.8	.3	.6	.2
8	.3	.8	.1	.1	.1	.8	.6	1.1	.8	*.3	.5	.2
9	.3	.6	.1	.1	.1	*.7	.6	27	*.7	.3	.6	.2
10	.3	.6	.1	.1	.1	.6	.5	4.0	.8	.3	1.1	*.1
11	.3	.7	.1	.1	.1	.5	.5	2.3	2.8	.3	*.6	.2
12	.4	.7	.1	.1	.1	.4	.5	*1.5	.8	.3	.5	.2
13	.3	.7	0	.1	.1	.3	.5	1.2	.7	.2	.5	.2
14	.3	.8	0	.1	.1	.1	.5	1.2	.6	.2	1.5	.2
15	.3	.8	0	.1	.1	0	.4	1.1	.6	.3	.8	.2
16	.3	.8	0	.1	.1	0	.4	1.0	.5	.4	.7	.2
17	.3	1.4	.2	.1	.1	0	.4	1.0	.5	64	.6	.6
18	.3	.4	.4	.1	.1	*.2	.4	38	*.5	.8	.6	1.0
19	.3	*.2	.5	.1	.1	.3	.4	3.8	.5	.6	.5	.6
20	.3	.2	.6	.1	.1	.4	.5	2.0	.5	.5	.5	.6
21	*.2	.2	.7	.1	1.0	.5	.5	1.7	.9	.5	.5	*.6
22	.3	.3	*.7	.1	**5.0	.6	.4	1.4	.6	*.5	30	.6
23	.3	.3	.8	.1	**25	.8	*.5	1.3	.5	.4	1.0	.5
24	.3	.3	.8	.1	.1	1.2	1.0	.5	1.2	.4	.4	.6
25	.4	.3	.7	.1	10	1.5	.4	*1.1	.4	.4	.6	.6
26	.4	.3	.7	.1	*3.8	3.0	.4	1.0	.4	.4	*.4	.7
27	.4	.3	.6	.1	3.0	1.1	2.6	1.0	.5	.4	.4	.6
28	.4	.3	.6	.1	1.5	.9	.6	8.4	.5	.4	.4	.5
29	.5	.3	.5	.1	.1	.9	.4	2.1	5.8	.4	.8	.5
30	.5	.3	.3	.1	.1	.9	.4	2.9	2.8	.4	.6	.4
31	.6	.2	.1	.1	.1	.9	.1	3.6	.8	.4	.4	.4
1959-60												
1	0.5	0.6	0.4	0.4	0.4	0.6	9.5	1.9	1.4	1.6	0.5	*1.2
2	1.0	*.6	.5	.4	*.4	.6	7.4	2.1	1.4	1.6	.5	1.3
3	.5	1.1	.5	.2	.4	.6	5.9	2.0	1.3	1.4	.4	1.1
4	.5	2.8	.5	.1	.4	.6	5.3	1.8	1.4	1.2	.4	1.2
5	.5	.4	.4	.2	.4	.6	4.9	2.6	1.3	1.3	*63	1.1
6	.5	.3	.4	.3	.4	.6	*4.7	2.7	*1.3	1.2	5.0	1.1
7	*.4	.4	.6	.8	.5	.6	4.4	1.9	1.2	1.2	2.5	1.1
8	3.2	.5	*.5	*.8	.6	.6	4.1	1.8	1.3	*1.2	.8	4.0
9	.3	.5	.7	.6	.8	*.6	3.9	*1.7	1.9	3.9	.8	1.4
10	.3	.4	.7	.5	.7	.6	3.5	1.6	2.0	1.4	.8	1.4
11	.3	.4	.8	.7	.6	.6	3.4	1.6	2.7	1.2	.8	1.2
12	.4	.4	.5	1.0	.6	.5	3.2	1.6	2.3	5.1	.7	1.2
13	.4	.4	.5	.7	.6	.5	3.2	1.6	2.3	1.5	.7	1.3
14	.4	.2	.6	.5	.6	.5	2.8	1.5	2.0	1.2	.7	1.4
15	.4	.2	.5	.5	.6	.5	3.0	1.4	2.0	1.1	.7	1.3
16	.4	.2	.5	.5	.7	.5	4.0	2.2	4.0	1.1	1.4	1.4
17	.4	.1	.5	.5	.6	.5	4.6	1.5	1.1	1.6	36	1.9
18	.4	.2	.5	.5	.6	.5	3.3	1.9	1.2	6.0	*1.6	8.0
19	.4	.4	.5	.5	.6	.5	3.0	1.9	1.0	1.5	1.1	1.5
20	.3	.6	.6	.4	.6	.5	*2.8	2.7	58	1.1	1.0	*1.4
21	*.3	.7	.6	.4	.5	.5	2.8	9.0	2.2	*1.1	.9	1.6
22	.4	.7	.6	.4	.6	.5	2.6	2.7	1.6	1.1	.8	1.4
23	.3	.6	*.6	.4	.6	.5	2.2	*2.5	*1.5	1.0	.8	4.0
24	.4	.6	.6	.4	.6	.5	2.1	31	1.3	.9	2.0	10
25	.4	.5	.7	.3	.6	.5	2.0	3.0	1.3	.8	3.0	4.0
26	.4	.3	.8	.3	.6	.5	1.9	2.5	1.3	.8	1.0	2.4
27	.4	.3	.8	.3	.6	2.0	1.9	2.3	1.3	.8	1.0	1.8
28	.4	.2	1.1	.3	.6	8.0	2.1	2.1	1.2	.7	14	1.6
29	.5	.2	.7	.3	.6	15	2.3	1.6	1.3	.7	1.9	1.7
30	.5	.3	.6	.3	.6	10	2.2	1.6	2.9	.6	1.3	1.9
31	.6	.5	.4	.4	.6	7.6	.1	1.4	.5	1.2	.4	.4

Indian Creek at Council Bluffs, Iowa—Continued
Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0	0.01	0.02	0	0.31	0.65	0.25	0.15	0.02	4.11	1.83	1.11
1956-57.....	.32	.11	.18	.04	.15	.59	.38	2.01	6.35	.09	2.35	.28
1957-58.....	.13	.32	.20	.19	1.76	.87	.57	.45	.20	5.09	2.89	.83
1958-59.....	.36	.53	.44	.10	2.26	.75	.62	8.14	.99	2.47	4.80	.39
1959-60.....	.52	.50	.59	.45	.57	1.83	3.63	3.15	3.57	1.50	4.75	2.20

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0	0.0013	0.0025	0	0.039	0.081	0.031	0.019	0.0025	0.514	0.229	0.139
1956-57.....	.040	.014	.023	.0050	.019	.074	.048	.252	.795	.011	.294	.035
1957-58.....	.016	.040	.025	.024	.220	.109	.071	.056	.025	.637	.362	.104
1958-59.....	.045	.066	.055	.013	.283	.094	.078	1.02	.124	.309	.601	.049
1959-60.....	.065	.063	.074	.056	.071	.229	.454	.394	.447	.188	.594	.275

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0	0.001	0.003	0	0.04	0.09	0.04	0.02	0.002	0.59	0.26	0.15
1956-57.....	.05	.02	.03	.005	.02	.09	.05	.29	.89	.01	.34	.04
1957-58.....	.02	.04	.03	.03	.23	.13	.08	.07	.03	.73	.42	.12
1958-59.....	.05	.07	.06	.01	.29	.11	.09	1.17	.14	.36	.69	.05
1959-60.....	.07	.07	.09	.06	.08	.26	.51	.45	.50	.22	.69	.31

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0	0.6	1.4	0	18	40	15	9.1	1.0	253	112	66
1956-57.....	20	6.5	11	2.2	8.5	36	23	124	378	5.4	144	17
1957-58.....	7.9	19	12	12	98	54	34	28	12	313	178	49
1958-59.....	22	32	27	6.1	126	46	37	500	59	152	295	23
1959-60.....	32	30	36	28	33	112	216	194	212	92	292	131

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30						Calendar year					
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet	
	Date	Gage height in feet	Discharge									
1955									1.10	1.88	800	
1956	July 7, 1956.	10.21	769	0	0.71	0.089	1.20	516	.76	1.29	552	
1957	June 15, 1957.	13.79	2,050	0	1.07	.134	1.84	776	1.07	1.83	777	
1958	July 29, 1958.	14.16	2,200	0	1.13	.141	1.93	817	1.18	2.02	859	
1959	May 2, 1959.	14.08	2,160	0	1.83	.229	3.09	1,330	1.85	3.14	1,340	
1960	June 20, 1960.	10.62	1,050	.1	1.94	.243	3.31	1,410				

Peak Discharge (base, 700 cfs)

- 1955-56: July 7 (6:15 p.m.) 769 cfs (10.21 ft.); July 13 (3:30 a.m.) 718 cfs (9.86 ft.).
 1956-57: June 7 (12:30 a.m.) 943 cfs (10.15 ft.); June 15 (10:30 p.m.) 2,050 cfs (13.79 ft.).
 1957-58: July 29 (11:30 p.m.) 2,200 cfs (14.16 ft.).
 1958-59: May 2 (10 p.m.) 2,160 cfs (14.08 ft.); May 9 (3 p.m.) 845 cfs (9.75 ft.); May 18 (1 p.m.) 1,120 cfs (10.92 ft.); July 17 (12:30 p.m.) 1,230 cfs (11.27 ft.); Aug. 2 (6 a.m.) 1,290 cfs (11.50 ft.); Aug. 22 (5 p.m.) 753 cfs (9.37 ft.).
 1959-60: May 24 (8 a.m.) 943 cfs (10.18 ft.); June 20 (5 a.m.) 1,050 cfs (10.62 ft.); Aug. 5 (9 p.m.) 845 cfs (9.76 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

**Field estimate made on this day.

Stage-discharge relation affected by ice Feb. 1 to Mar. 26, Nov. 21-28, Dec. 5-31, 1956; Jan. 1 to Mar. 18, Mar. 24-26, Nov. 22 to Dec. 31, 1957; Jan. 1 to Feb. 28, Nov. 25 to Dec. 31, 1958; Jan. 1 to Mar. 26, Nov. 5-7, 13-20, Nov. 26 to Dec. 6, Dec. 11-19, 31, 1959; Jan. 1-5, 10, Jan. 15 to Mar. 30, 1960. No gage height record Apr. 8-16, Nov. 8-16, 1956.

Waubonsie Creek near Bartlett, Iowa

LOCATION.—Lat. 40°53'05", long. 95°44'45," in NE¼ NE¼ Sec. 11, T. 70 N., R. 43 W., on left pier on downstream side of highway bridge, 2.5 miles east of Bartlett and 3.5 miles west of Tabor.

DRAINAGE AREA.—30.4 square miles (revised in 1956).

RECORDS AVAILABLE.—January 1946 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 936.96 ft. above mean sea level, datum of 1929. Prior to June 16, 1951, wire-weight gage and Jan. 10, 1946, to May 8, 1950, supplementary high-stage water-stage recorder, at same site and datum.

AVERAGE DISCHARGE.—14 years, 11.7 cfs (8.470 acre-ft. per year).

EXTREMES.—1946-60: Maximum discharge, 14,500 cfs May 8, 1950 (gage height, 37.8 ft., from floodmark), from rating curve extended above 800 cfs on basis of slope-area measurements at gage heights 32.8 and 37.8 ft.; no flow at times in 1954-59.

REMARKS.—Bankfull stage is about gage height, 38 ft.

Daily Discharge, in Cubic Feet per Second, Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	1.5	1.0	0.6	0.6	1.5	2.5	3.6	2.5	0.4	5.3	219	1.6
2	1.1	1.0	6	6	1.6	8.0	3.9	4.7	3	3.2	*10	1.2
3	1.0	1.1	6	7	1.6	15	13	*2.9	3	*3.9	2.4	.9
4	.8	1.2	6	7	1.6	25	3.9	2.2	3	2.3	1.9	.7
5	.9	1.4	.5	*.8	1.7	18	3.1	2.2	3	.8	1.6	44
6	.9	1.1	.5	.8	1.7	10	2.9	2.2	.4	3	1.5	1.9
7	1.2	.9	.5	.8	1.7	6.0	3.1	1.7	*1.7	.2	25	.9
8	1.0	1.0	.5	.9	*1.8	4.0	2.0	1.6	.7	1	85	.7
9	.7	*1.0	.4	.9	1.8	*3.5	2.0	1.8	.4	.1	*23	.3
10	.6	.8	.4	1.0	2.0	3.5	2.2	1.8	.2	.1	3.6	*.1
11	*.6	.6	.4	1.0	2.0	5.0	1.7	*2.2	.1	96	3.1	.2
12	.4	.6	.4	1.1	1.9	4.0	*1.7	1.7	*0	209	3.0	.1
13	.4	.6	.4	1.1	1.9	3.5	1.7	1.5	0	5.0	2.8	0
14	.3	.6	.4	1.2	1.9	3.0	1.7	1.1	0	1.8	2.7	0
15	.3	.6	.4	1.2	1.9	3.0	1.5	4.0	0	*539	2.5	0
16	.4	.6	.3	1.0	1.8	3.0	1.2	1.2	0	229	2.4	0
17	.4	.6	.2	.8	*1.8	3.0	1.5	1.0	0	7.0	2.2	0
18	1.2	.8	.2	.8	1.6	3.1	1.4	.9	*0	76	361	0
19	.4	1.0	.2	.9	1.6	3.2	1.4	2.5	0	29	8.6	0
20	.3	2.0	*.3	.9	1.8	3.3	1.5	1.7	0	2.3	6.4	0
21	1.0	3.6	.3	1.0	1.8	5.0	1.5	1.2	.3	1.2	4.3	0
22	.5	2.3	.4	1.0	1.8	5.3	1.0	*1.1	1.4	.8	3.5	0
23	.3	2.0	.6	1.1	1.9	6.1	1.1	1.3	.8	.6	3.0	0
24	*1.1	1.2	.6	1.1	2.0	5.6	1.4	.9	.2	.6	2.5	*0
25	.8	1.4	.8	1.2	2.1	4.2	1.5	.5	0	.4	2.2	0
26	.8	1.5	1.0	1.2	2.2	5.6	1.6	.6	1.1	.3	2.0	0
27	.4	2.0	1.2	1.3	2.2	5.6	*1.5	.8	.6	.2	1.9	0
28	1.7	.8	1.0	1.3	2.3	3.4	7.5	.6	.4	14	1.8	0
29	.6	.5	.8	1.4	2.4	2.5	4.2	.6	1.1	17	1.0	25
30	.7	.6	.6	1.4	.....	2.7	2.5	2.5	79	.3	*0.7	0
31	.7	.....	.6	1.5	.....	2.9	.....	1.1	.....	7.4	2.1	.....

Waubonsie Creek near Bartlett, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	0	0	0.3	1.0	0.1	2.5	5.2	1.1	1.8	246	0	3.5
2	0	0	.9	.8	.1	2.0	6.8	1.1	1.3	12	*.5	3.7
3	0	0	*1.6	*.5	.2	1.6	34	1.1	1.2	*5.9	.5	3.7
4	*0	6.0	1.8	.4	.2	1.5	12	1.1	1.7	3.3	.1	3.4
5	0	2.0	.8	.4	.2	1.5	4.0	1.1	1.6	2.2	0	67
6	0	.8	.4	.3	.3	1.3	*1.5	1.0	1.6	1.8	0	23
7	0	.6	.1	.3	.5	1.0	7.6	1.0	*225	1.6	0	3.5
8	0	.6	0	.2	1.5	1.3	*2.4	1.0	16	1.4	*0	2.8
9	*0	*.5	0	.2	2.0	1.8	2.1	.81	5.3	*.8	0	2.2
10	0	.4	0	.2	2.0	2.1	2.0	*20	4.0	.6	0	3.0
11	0	.4	.2	.2	2.2	3.0	1.9	4.3	8.4	.5	0	*3.6
12	0	.4	.4	.2	*2.2	2.5	1.9	5.3	3.9	.5	0	3.0
13	0	.4	.4	.2	2.2	*2.6	1.8	12	3.7	.4	0	2.6
14	0	.4	.8	.2	2.2	2.8	1.8	*8.6	311	.3	0	2.0
15	0	.4	.8	.1	2.0	1.8	1.8	3.8	227	.2	0	1.6
16	0	.3	.8	.1	2.0	1.8	1.8	4.9	137	.2	1.5	1.2
17	0	.4	*1.0	.1	2.0	2.1	2.0	4.4	298	0	.2	.8
18	0	.6	1.0	*0	2.0	5.0	2.0	3.0	15	0	0	*.7
19	0	.5	1.0	0	2.0	2.7	*2.0	4.4	4.6	0	0	.7
20	0	.4	1.0	.1	2.0	2.0	2.0	3.2	3.0	10	.4	1.0
21	.8	.4	1.0	.2	1.8	2.2	2.0	2.8	2.4	9.7	.2	1.7
22	.2	.4	1.0	.3	1.5	2.3	2.2	2.4	3.4	2.1	0	1.4
23	*0	.4	1.0	.2	1.5	2.3	2.2	2.3	2.0	1.0	0	1.0
24	0	.5	.9	.1	1.8	4.0	2.2	2.1	1.9	*.6	0	.9
25	0	.5	.9	.1	2.3	10	2.1	2.1	1.9	*.6	0	.7
26	0	.4	*.9	.1	2.5	*11	*2.8	1.9	1.9	.6	1.0	.7
27	0	.4	1.0	.1	2.5	6.6	1.9	1.7	2.2	.5	22	.5
28	0	.4	1.2	.1	*2.5	*6.0	1.2	1.7	1.8	.4	6.2	.4
29	0	.3	1.2	.1	.....	5.3	1.1	*86	1.1	.2	6.4	.4
30	.6	.2	1.2	.1	.....	4.8	1.1	58	2.8	.2	5.5	.4
31	.2	.....	1.2	.1	.....	5.0	.....	*3.2	.....	0	4.3	.....
1957-58												
1	0.4	1.2	1.8	1.2	1.2	12	3.0	2.5	1.6	0	15	1.0
2	.5	1.9	2.2	1.0	1.0	12	3.7	2.5	1.6	76	9.8	.9
3	.4	1.9	2.2	1.0	.8	10	5.3	2.6	1.4	10	7.7	*1.2
4	.2	1.9	2.2	1.0	.8	8.0	7.6	2.7	1.4	5.0	5.8	5.1
5	0	1.9	2.2	1.0	.8	8.0	34	2.4	1.1	1.9	14	101
6	0	1.9	2.2	1.2	.8	6.0	16	2.3	.7	1.4	60	*88
7	1.4	1.8	2.0	1.2	.6	5.0	8.6	2.2	.6	1.1	20	8.8
8	4.2	1.8	2.0	1.2	.4	5.0	6.6	*2.4	.7	*.7	11	5.5
9	1.6	1.6	2.0	1.4	.3	4.5	4.9	*2.4	.5	4.1	11	79
10	*1.2	1.6	2.0	1.6	*.3	4.0	*3.7	2.3	.4	20	7.0	36
11	1.2	1.6	1.8	1.8	.3	4.0	3.6	2.1	*.3	10	4.0	9.1
12	14	1.5	1.8	1.8	.3	*3.8	3.5	1.9	.9	2.2	*2.7	7.7
13	3.4	1.6	2.0	2.0	.3	3.8	3.4	1.8	1.1	1.6	135	6.7
14	1.7	1.6	2.2	2.2	.3	3.6	3.2	1.6	.6	1.4	24	50
15	2.0	1.6	2.4	*2.2	.2	3.4	3.1	1.6	.4	1.3	9.4	22
16	1.7	1.6	2.8	2.2	.2	3.2	3.0	1.6	.2	1.1	5.8	13
17	1.1	1.6	*3.0	2.0	1	3.0	3.0	2.1	.2	91	4.2	9.1
18	.8	1.7	2.5	2.0	.1	3.0	2.8	2.6	.2	6.0	4.2	8.0
19	.7	2.2	2.2	1.8	.1	2.9	3.0	2.7	0	396	3.7	7.4
20	.6	2.5	2.0	1.8	.1	2.9	3.2	2.5	0	35	2.5	9.4
21	1.1	*3.4	1.8	1.8	5.0	2.8	3.3	2.5	.2	9.4	*1.6	24
22	*5.6	2.8	1.6	1.6	10	2.8	3.0	2.4	.3	4.5	2.0	11
23	2.9	2.8	1.4	1.4	15	2.8	3.5	2.2	.4	4.0	2.5	32
24	1.6	2.8	1.2	1.6	18	2.6	4.0	1.9	.3	*4.2	2.9	14
25	1.3	2.4	1.5	1.6	*20	2.6	3.5	1.8	.5	1.6	2.9	9.8
26	1.0	2.4	1.5	1.8	18	2.6	3.1	1.6	.4	.1	2.9	7.4
27	1.0	2.4	1.5	1.6	22	2.6	3.0	1.4	.3	.6	2.0	5.8
28	1.0	2.4	1.5	1.4	15	2.8	3.0	1.4	.2	.4	2.0	4.8
29	1.0	1.6	1.5	1.2	.....	2.8	3.0	1.2	0	1.4	2.2	4.2
30	1.0	1.6	1.5	1.2	.....	2.8	2.7	1.2	0	*957	1.8	3.4
31	.9	.....	1.4	1.2	.....	2.8	.....	1.4	.....	32	1.2	.....

Waubonsie Creek near Bartlett, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	2.9	2.7	1.5	1.6	0.5	15	11	2.6	*7.8	9.0	60	5.5
2	3.4	3.2	*1.5	1.6	4	14	9.0	22	6.7	5.5	36	2.9
3	3.4	3.2	1.5	1.6	4	13	*6.0	122	6.7	7.3	6.7	2.6
4	3.2	2.9	1.5	1.6	3	12	5.3	11	5.7	6.7	5.7	2.6
5	2.7	*2.2	1.4	1.6	3	10	5.0	33	6.2	5.5	*71	2.5
6	31	2.0	1.3	1.6	2	10	4.8	48	4.8	5.5	54	2.2
7	6.4	2.9	1.3	1.6	2	12	4.8	15	4.6	*4.4	7.3	1.8
8	4.5	2.9	1.3	1.6	.1	14	4.2	*6.5	4.2	4.0	4.4	*1.5
9	4.0	2.2	1.3	1.6	0	*16	3.8	36	4.2	3.4	3.6	1.0
10	2.2	2.2	1.3	1.6	0	16	4.0	57	4.4	3.1	18	.8
11	1.8	2.0	1.3	1.6	0	14	4.2	15	4.4	2.8	5.7	6
12	2.2	2.7	1.3	*1.6	*0	14	4.2	14	4.4	2.8	2.5	6
13	2.0	6.1	1.3	1.6	0	12	3.8	13	3.8	2.9	1.8	7
14	2.4	2.7	1.3	1.6	0	10	4.0	8.4	3.3	2.8	3.9	8
15	2.2	3.4	1.3	1.5	0	8.0	3.8	7.0	3.4	2.8	37	.9
16	*2.0	3.2	1.3	1.5	0	6.0	3.8	6.5	3.1	2.6	12	.9
17	1.6	9.8	1.4	1.4	*0	*5.7	*7.8	6.2	3.8	*1.0	5.3	9.2
18	1.4	4.8	1.4	1.4	0	9.0	6.0	517	*5.7	3.8	3.3	153
19	2.0	2.9	1.5	1.3	0	18	7.5	24	3.8	2.5	*3.8	108
20	2.0	*2.0	1.5	1.3	0	14	9.9	7.5	4.6	2.0	4.4	5.0
21	1.2	1.8	1.6	1.2	1.0	6.0	5.5	13	7.8	1.9	1.9	*1.2
22	1.2	1.8	1.7	1.2	5.0	4.2	4.2	26	4.6	2.0	1.6	2.9
23	1.4	2.0	*1.7	1.1	50	4.4	3.8	3.1	4.0	1.9	8.0	2.5
24	1.4	2.0	1.7	1.1	60	4.4	3.6	2.5	4.2	1.6	3.4	3.8
25	1.6	1.8	1.7	1.0	*100	13	3.3	2.0	4.0	1.5	1.2	3.4
26	2.0	1.8	1.7	1.0	70	*65	3.6	19	3.4	1.4	.8	5.7
27	2.2	1.8	1.7	.9	30	22	4.6	126	3.6	1.5	1.4	4.2
28	2.2	1.6	1.7	.9	20	14	5.0	15	3.8	2.0	73	3.1
29	2.4	1.6	1.7	.8	.....	11	3.3	59	3.6	1.8	127	2.6
30	2.7	1.5	1.6	.7	.....	15	2.9	71	16	1.3	4.2	2.6
31	2.7	.....	1.6	.6	.....	12	.....	13	.....	268	28	.....
1959-60												
1	4.0	4.2	3.4	2.0	5.4	2.5	50	9.6	7.0	11	6.7	12
2	13	4.4	*3.5	1.5	5.5	2.5	40	9.0	6.2	7.3	6.5	*7.5
3	6.5	*3.4	3.5	1.0	5.5	2.5	30	*8.1	6.2	5.5	6.2	7.0
4	5.3	4.6	3.2	.9	5.6	2.5	26	7.8	6.2	4.8	5.7	6.7
5	7.0	4.8	3.3	*.9	5.8	2.5	23	11	6.0	10	*6.4	6.5
6	*12	4.6	3.1	.9	6.0	2.5	20	15	6.0	10	32	6.0
7	5.7	4.4	2.8	1.0	6.6	2.5	18	10	*6.0	*6.0	11	5.7
8	26	4.0	2.7	1.5	*8.5	2.5	15	9.3	6.0	5.7	9.0	10
9	8.4	3.8	2.6	2.0	8.2	2.5	16	7.6	6.5	8.1	7.8	8.1
10	6.2	3.6	2.8	2.5	7.0	*2.5	15	8.1	7.0	6.7	6.7	6.5
11	5.3	3.5	3.0	3.0	6.0	2.5	14	7.8	9.9	5.7	6.5	6.0
12	4.8	3.5	3.0	5.0	5.0	2.5	*13	7.5	18	14	6.2	5.7
13	4.8	3.5	3.0	7.0	4.5	2.5	13	7.5	13	7.8	6.0	5.7
14	4.8	3.5	3.0	15	4.0	2.5	12	7.3	11	6.5	6.0	6.0
15	4.8	3.3	3.0	18	3.7	2.5	12	7.3	8.1	6.5	5.7	5.7
16	4.8	3.0	3.1	12	3.8	2.5	11	18	22	6.0	8.1	5.5
17	4.8	2.8	3.2	8.5	3.8	2.5	25	9.3	9.0	6.0	135	5.5
18	5.0	2.7	3.2	9.0	3.7	2.5	14	15	9.6	20	369	87
19	5.3	3.2	3.2	9.5	3.6	2.5	12	*11	7.0	9.0	23	8.4
20	5.0	3.7	3.2	8.5	3.5	2.5	12	14	55	7.3	22	5.7
21	5.0	3.8	3.2	8.0	3.3	2.5	10	62	*14	6.2	8.1	5.3
22	4.6	3.9	3.2	7.5	3.2	2.5	9.6	17	9.6	6.2	4.2	*4.4
23	4.8	3.7	3.3	7.0	3.0	2.5	9.6	11	8.1	6.0	3.3	43
24	4.4	3.5	3.3	6.5	2.8	2.5	9.9	9.3	7.0	5.7	44	290
25	5.0	3.2	3.2	6.0	2.6	2.5	9.0	9.3	6.5	5.7	31	20
26	6.0	2.8	3.5	5.8	2.5	2.8	8.1	9.3	6.5	5.7	10	11
27	*6.0	2.6	4.5	5.6	2.5	10	8.1	7.8	6.2	5.5	7.3	8.4
28	5.5	2.5	7.0	5.5	2.5	100	8.7	7.5	6.2	5.7	250	7.8
29	5.3	2.6	5.0	5.4	2.5	150	11	8.1	6.0	12	165	8.1
30	4.8	2.9	4.0	5.3	.....	90	16	7.5	51	9.3	20	6.7
31	5.3	.....	3.5	5.3	.....	70	.....	7.3	.....	7.5	18	.....

Waubonsie Creek near Bartlett, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.74	1.15	0.53	1.01	1.86	5.76	2.63	1.87	3.53	39.9	26.6	1.75
1956-57	.06	.63	.80	.23	1.58	3.30	3.85	10.6	43.3	9.79	1.57	4.70
1957-58	1.79	1.99	1.93	1.55	4.71	4.45	5.24	2.06	.55	54.2	12.3	19.5
1958-59	3.36	2.79	1.48	1.33	12.1	13.3	5.09	42.6	4.99	11.9	19.3	11.3
1959-60	6.46	3.53	3.40	5.73	4.50	15.7	16.4	11.5	11.6	7.72	40.2	20.7

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.024	0.038	0.017	0.033	0.061	0.189	0.087	0.062	0.116	1.31	0.875	0.058
1956-57	.0020	.021	.026	.0076	.052	.109	.127	.349	1.42	.322	.052	.155
1957-58	.059	.065	.063	.051	.155	.146	.172	.068	.018	1.78	.405	.641
1958-59	.111	.092	.049	.044	.398	.437	.167	1.10	.164	.391	.635	.372
1959-60	.212	.116	.112	.188	.148	.516	.539	.378	.382	.254	1.32	.681

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.03	0.04	0.02	0.04	0.07	0.22	0.10	0.07	0.13	1.51	1.01	0.06
1956-57	.002	.02	.03	.009	.05	.13	.14	.40	1.59	.37	.06	.17
1957-58	.07	.07	.07	.06	.16	.17	.19	.08	.02	2.06	.47	.72
1958-59	.13	.10	.06	.05	.41	.51	.19	1.62	.18	.45	.73	.41
1959-60	.24	.13	.13	.22	.16	.59	.60	.44	.42	.29	1.52	.76

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	46	68	32	62	107	354	156	115	210	2,450	1,640	104
1956-57	3.6	38	49	14	88	203	229	650	2,580	602	97	280
1957-58	110	118	119	95	262	274	312	127	33	3,330	755	1,160
1958-59	207	166	91	82	671	821	303	2,620	297	731	1,180	671
1959-60	397	210	209	352	259	963	974	707	688	475	2,470	1,230

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30						Calendar year				
	Momentary maximum			Min-imum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet
	Date	Gage height in feet	Dis-charge								
1955									5.71	2.56	4,130
1956	July 15, 1956	26.9	5,200	0	7.37	0.242	3.30	5,340	7.29	3.26	5,290
1957	June 7, 1957	22.85	2,430	0	6.67	.219	2.97	4,830	7.02	3.13	5,090
1958	July 19, 1958	22.64	2,360	0	9.25	.304	4.14	6,700	9.42	4.22	6,810
1959	May 18, 1959	25.90	3,760	0	10.8	.355	4.84	7,840	11.3	5.05	8,190
1960	Aug. 18, 1960	21.72	2,040	0.9	12.3	.405	5.50	8,930			

Peak Discharge (base, 1,200 cfs)

- 1955-56: July 11 (11 p.m.) 1,430 cfs (18.07 ft.); July 15 (10 p.m.) 5,200 cfs (26.9 ft.); Aug. 1 (8:30 p.m.) 2,450 cfs (20.97 ft.); Aug. 18 4 a.m.) 2,820 cfs (23.85 ft.).
- 1956-57: June 7 (4:30 p.m.) 2,430 cfs (22.85 ft.); July 1 (12 m.) 1,500 cfs (19.98 ft.).
- 1957-58: July 19 (4:30 a.m.) 2,360 cfs (22.64 ft.); July 30 (1:30 a.m.) 2,360 cfs (22.57 ft.).
- 1958-59: May 18 (3 p.m.) 3,760 cfs (25.90 ft.); May 27 (3:30 a.m.) about 1,200 cfs; July 31 (2 p.m.) 2,290 cfs (22.42 ft.); Aug. 28 (11:30 p.m.) 1,640 cfs (20.50 ft.); Sept. 18 (11:30 p.m.) 1,610 cfs (20.43 ft.).
- 1959-60: Aug. 18 (1 a.m.) 2,040 cfs (21.72 ft.); Aug. 28 (time and discharge unknown); Sept. 24 (time and discharge unknown).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 16-20, Nov. 29 to Dec. 31, 1955; Jan. 1 to Mar. 20, Nov. 20 to Dec. 31, 1956; Jan. 1 to Mar. 8, Mar. 24, 25, Nov. 20 to Dec. 31, 1957; Jan. 1 to Mar. 8, Nov. 26 to Dec. 31, 1958; Jan. 1 to Mar. 16, Nov. 5 to Dec. 31, 1959; Jan. 1 to Apr. 2, 1960. No gage-height record Oct. 24 to Nov. 8, 1956; Sept. 12-17, 1957; Mar. 13-19, Mar. 21 to Apr. 1, 1958.

Missouri River at Nebraska City, Nebraska

LOCATION.—Lat. 40°40'30", long. 95°50'10", in NW ¼ SW ¼ sec. 10, T. 8 N., R. 14 E., on downstream side of pier near center of Waubensie Highway Bridge at Nebraska City.

DRAINAGE AREA.—414,400 square miles, approximately.

RECORDS AVAILABLE.—August 1929 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 903.94 ft. above mean sea level, datum of 1929. Aug. 1, 1878, to Oct. 30, 1888, staff 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 ft. lower (St. Louis directrix). Aug. 12, 1929, to June 26, 1930, chain gage on railroad bridge and June 27, 1930, to Oct. 21, 1931, wire-weight gage, at present site and datum.

AVERAGE DISCHARGE.—31 years, 33,880 cfs (24,530,000 acre-ft. per year).

EXTREMES.—1929-60: Maximum discharge, 414,000 cfs Apr. 19, 1952; maximum gage height, 27.66 ft. Apr. 18, 1952; minimum discharge, 1,600 cfs Dec. 31, 1946 (discharge measurement); minimum gage height observed, 0.75 ft. Jan. 11, 1957, result of freezeup.

REMARKS.—Flow partly regulated by upstream main stem reservoirs. During water years 1956 and 1957, discharge measurements generally made three times a month during winter and six times a month during rest of year. During water years 1958-60, discharge measurements generally made at same intervals except for navigation season, when they were made either five or seven days per week. Bankfull stage is about gage height, 15 ft.

Daily Discharge, in Cubic Feet per Second for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	36,800	36,200	4,900	12,600	12,600	15,100	33,900	36,800	39,900	30,400	38,800	33,600
2	36,200	35,100	4,900	12,400	12,400	15,700	31,600	37,400	36,800	32,700	36,000	33,000
3	35,100	33,000	5,100	13,600	12,000	17,000	35,400	35,700	34,300	31,600	33,000	33,000
4	35,100	30,300	5,100	13,600	11,800	19,000	35,400	33,900	33,600	36,400	33,300	36,000
5	35,400	27,900	6,950	13,400	12,600	20,800	35,700	32,700	32,700	36,800	32,400	41,900
6	35,400	24,900	8,950	11,800	12,600	24,000	34,600	33,000	31,700	32,400	32,400	42,300
7	36,800	22,500	10,600	12,000	13,600	22,000	35,400	33,300	32,700	30,100	32,700	35,700
8	36,500	20,200	10,900	13,000	13,000	21,200	35,700	32,700	34,600	35,700	35,400	34,300
9	36,500	18,500	10,900	13,800	13,000	18,600	34,300	32,700	33,300	32,000	35,400	33,300
10	36,500	16,600	10,900	14,400	12,600	19,500	33,000	33,000	31,300	31,000	33,900	33,000
11	35,100	16,000	11,400	14,600	12,800	21,500	33,000	36,000	30,400	30,400	33,900	33,600
12	35,100	15,400	11,200	14,400	13,000	22,000	33,000	36,800	30,700	35,000	34,300	33,900
13	35,100	15,200	10,900	13,800	13,200	19,200	32,700	38,500	30,400	40,300	34,300	34,300
14	34,000	15,000	10,900	10,200	13,200	21,000	32,700	38,800	30,100	38,200	33,900	34,600
15	34,000	15,000	10,300	9,850	14,200	22,000	32,700	36,000	31,000	33,600	35,400	34,600
16	33,700	14,400	10,000	10,200	14,400	24,000	33,300	35,000	32,000	34,300	37,100	34,600
17	34,000	12,600	9,600	10,000	13,800	15,100	34,300	34,300	32,700	35,400	37,800	34,600
18	34,800	10,300	9,200	10,600	12,800	47,100	33,900	33,000	34,300	34,300	41,900	34,600
19	34,800	8,800	9,100	11,000	14,600	49,100	33,300	32,400	34,600	33,000	46,300	34,300
20	34,000	8,650	9,000	10,600	15,400	41,900	33,000	31,700	34,600	32,000	41,500	34,600
21	33,700	9,550	9,000	10,400	16,000	39,900	32,400	31,700	34,300	31,300	38,500	35,000
22	34,400	12,600	10,900	10,600	15,600	40,300	32,400	32,000	34,600	30,400	35,400	35,400
23	34,800	15,600	12,400	11,000	15,600	38,800	31,700	32,400	36,400	29,800	33,900	35,400
24	35,800	16,600	14,400	11,200	16,000	40,300	32,700	31,700	36,900	29,500	33,300	34,600
25	36,200	17,000	15,000	11,400	16,400	36,400	33,000	32,000	34,600	29,500	33,300	33,900
26	36,800	15,600	14,600	12,000	16,800	35,000	33,600	33,300	32,700	30,400	33,600	33,300
27	36,800	13,800	15,200	12,400	17,200	35,000	31,600	32,400	34,300	32,000	33,900	33,300
28	36,200	11,400	15,400	12,800	16,400	34,600	36,000	32,000	40,700	35,900	33,600	33,600
29	35,800	6,700	13,000	12,800	15,500	36,000	36,800	32,700	35,400	35,000	33,600	34,600
30	35,400	5,200	12,600	12,000	.....	36,800	37,100	36,400	31,300	35,400	34,300	36,000
31	35,400	.....	12,200	12,400	.....	35,400	.....	35,000	.....	34,300	34,300	.....

Missouri River at Nebraska City, Nebraska—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	36,400	18,400	10,800	15,500	9,400	18,400	18,200	31,000	34,300	34,600	34,600	31,600
2	37,400	18,600	10,600	16,600	10,000	20,800	17,900	31,300	35,000	59,000	33,300	37,400
3	37,800	19,500	12,100	14,300	10,500	19,500	18,200	32,400	33,300	59,000	33,600	43,100
4	36,800	19,500	12,100	13,700	10,700	17,900	17,100	33,600	30,400	48,300	32,700	39,900
5	37,800	19,800	11,700	12,500	10,800	17,000	17,200	33,900	30,700	42,700	31,700	34,600
6	37,100	20,000	11,500	12,100	11,000	16,800	17,400	33,300	33,000	38,500	32,000	33,600
7	36,800	20,000	11,400	11,700	11,000	16,600	17,400	33,000	38,200	36,400	31,700	34,300
8	35,700	19,200	10,200	11,200	11,000	15,500	17,000	32,700	37,100	36,000	31,700	33,900
9	35,400	18,800	7,660	10,800	11,300	14,300	17,000	33,600	35,000	35,000	31,700	31,700
10	35,700	18,600	5,300	8,360	11,600	13,500	16,400	37,100	33,900	35,400	31,700	31,700
11	35,400	18,400	5,630	4,320	11,800	13,900	15,900	37,400	34,600	34,600	33,300	33,300
12	35,000	18,400	7,100	4,500	12,000	13,100	15,100	37,300	33,600	32,400	33,900	33,300
13	35,000	18,600	8,950	4,700	11,000	13,100	14,700	35,700	32,000	32,000	33,600	33,300
14	35,400	18,200	11,000	5,500	15,300	12,900	14,700	38,800	34,300	32,000	37,100	33,000
15	35,000	17,400	10,400	7,000	14,100	12,900	14,700	41,100	48,700	35,700	39,200	33,300
16	36,000	17,900	9,250	8,400	14,500	13,100	14,900	42,300	80,600	43,500	35,400	34,600
17	36,400	17,900	8,650	8,950	15,100	12,700	15,300	42,300	87,800	42,300	36,000	37,400
18	36,000	16,800	9,550	9,500	14,500	12,700	16,400	35,400	106,000	37,800	33,600	32,700
19	33,900	15,100	10,200	10,000	15,100	13,700	17,700	34,600	74,600	34,600	32,000	29,200
20	30,700	14,500	10,400	11,000	14,900	15,100	20,800	32,700	53,100	34,300	32,000	29,800
21	27,400	14,100	10,200	12,000	14,500	15,100	24,800	42,300	41,900	37,100	32,400	32,400
22	24,800	13,100	10,400	11,500	14,500	14,300	28,900	37,100	44,300	38,200	32,000	33,000
23	22,500	12,900	11,000	11,000	14,100	13,900	33,300	39,200	57,600	38,200	33,000	32,700
24	20,200	12,100	11,700	11,000	12,100	14,300	33,000	36,400	50,000	33,300	33,600	30,400
25	19,200	12,100	11,700	10,600	11,900	15,100	33,300	30,400	43,500	30,400	33,000	29,500
26	19,200	12,500	11,900	10,400	12,700	15,500	35,400	29,500	45,900	32,000	33,000	29,800
27	18,600	11,900	11,900	10,000	13,500	15,900	36,000	31,300	46,300	34,600	33,900	30,100
28	18,600	11,500	12,300	9,800	15,900	16,100	32,700	33,900	43,900	37,800	38,200	30,100
29	18,400	10,900	13,100	9,600	16,100	16,100	32,000	36,000	39,200	36,000	39,900	31,000
30	18,200	10,900	14,100	9,250	17,000	17,000	31,700	37,800	35,700	35,000	40,700	32,400
31	18,600	14,700	9,200	17,900	17,900	17,900	31,700	36,000	35,700	37,100	37,100	37,100
1957-58												
1	32,400	23,800	14,500	11,400	12,700	59,500	24,200	36,400	35,700	30,400	54,900	31,000
2	32,000	23,500	14,300	7,940	12,500	38,200	28,900	35,000	35,700	48,100	48,700	31,300
3	31,300	24,000	14,100	7,880	12,700	24,200	30,400	34,300	36,000	48,300	39,200	31,000
4	32,000	23,000	14,300	7,520	12,500	20,500	30,400	33,300	35,700	48,700	32,000	32,400
5	32,400	22,500	14,100	7,240	12,700	19,000	34,600	33,300	38,800	40,700	30,400	33,600
6	32,400	22,000	13,900	7,800	12,100	21,200	42,300	32,700	38,500	31,000	67,300	47,100
7	33,600	21,800	13,900	9,200	11,700	25,000	48,300	32,000	35,000	29,200	72,000	40,700
8	35,400	21,800	13,900	10,000	11,900	24,500	41,100	32,000	33,900	29,200	58,000	34,300
9	36,000	21,000	13,900	10,200	12,300	22,200	38,500	32,000	35,400	29,200	45,900	31,700
10	36,800	20,200	13,900	12,100	12,100	20,500	39,200	32,400	37,400	35,000	37,800	31,000
11	36,000	19,200	12,300	12,300	11,200	20,000	39,900	32,400	35,400	54,000	33,600	32,400
12	35,700	19,500	10,900	11,900	11,000	20,200	38,500	32,400	35,000	46,700	32,400	31,700
13	36,000	19,800	10,200	13,300	11,000	20,000	38,200	31,300	36,400	38,200	33,900	31,000
14	36,800	20,000	8,360	15,100	11,000	19,500	36,800	31,700	34,300	35,000	39,200	31,300
15	35,700	20,800	8,500	16,100	10,500	19,200	35,400	32,400	33,600	31,300	38,200	35,000
16	38,200	20,800	15,900	15,100	10,500	19,500	33,900	32,700	33,300	30,400	37,400	33,900
17	38,200	21,200	17,000	15,100	10,900	19,200	33,600	34,300	31,300	31,300	33,900	32,700
18	36,400	21,000	16,600	15,100	10,600	18,400	33,900	35,400	31,000	33,300	32,400	31,300
19	37,100	19,500	17,200	16,600	10,900	17,700	33,000	33,300	31,700	47,100	32,400	31,000
20	37,100	17,900	16,600	17,200	10,900	17,200	33,000	33,000	31,300	59,500	32,400	30,700
21	36,800	17,000	16,100	15,900	10,500	17,000	33,600	32,000	31,300	51,800	32,400	31,300
22	37,800	17,200	15,900	13,900	11,500	18,200	34,600	31,300	31,700	47,900	32,000	30,700
23	39,600	16,400	15,100	13,300	13,000	20,500	36,000	31,700	31,700	41,500	32,000	30,700
24	39,600	15,500	14,900	14,100	16,000	20,000	37,100	31,700	31,700	35,700	32,400	31,000
25	39,600	15,500	14,700	14,100	25,300	18,800	37,800	31,700	31,700	42,700	31,700	31,300
26	36,800	15,500	14,700	14,500	26,500	21,200	36,800	32,400	32,000	43,500	31,000	31,700
27	32,700	15,100	14,700	14,300	45,100	23,000	34,300	33,300	31,300	44,700	30,700	31,000
28	30,400	15,300	15,100	14,100	69,500	22,500	32,400	33,900	30,700	40,700	31,700	31,300
29	28,600	15,300	15,100	13,900	22,200	34,300	33,900	28,900	36,000	31,000	31,000	31,300
30	26,800	15,100	15,100	13,700	22,000	36,800	33,600	29,500	50,200	30,700	31,300	31,300
31	24,500	14,300	12,900	22,200	22,200	22,200	34,600	34,600	57,600	31,000	31,000	31,000

Missouri River at Nebraska City, Nebraska—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	31,300	34,300	10,300	12,700	14,000	19,800	25,600	32,000	76,800	51,900	33,900	34,600
2	32,000	33,300	10,000	12,700	15,000	19,200	28,000	30,100	72,500	47,500	43,500	36,000
3	32,000	31,000	10,000	11,500	16,000	21,800	32,700	45,900	53,600	38,800	70,600	36,000
4	31,300	28,300	12,300	6,000	16,200	21,000	33,600	35,000	39,200	32,400	68,000	35,700
5	30,400	26,800	17,000	6,600	16,400	22,000	31,300	63,700	36,000	30,700	53,600	31,600
6	30,100	24,500	17,400	8,000	16,400	20,000	29,800	65,000	33,900	31,300	40,700	33,600
7	32,700	21,200	10,600	10,000	16,000	18,600	30,100	58,500	32,000	30,700	33,600	33,600
8	33,000	18,800	8,500	11,000	15,500	19,000	32,000	49,100	30,400	28,600	30,100	33,600
9	32,700	17,700	7,940	12,000	15,500	20,000	32,700	40,700	32,000	31,300	30,400	33,600
10	32,700	16,600	6,970	13,000	15,600	20,500	33,000	40,300	33,300	30,400	32,000	33,000
11	33,600	15,500	6,580	15,000	16,000	21,200	33,300	40,300	33,300	30,400	32,000	33,000
12	33,600	14,500	6,710	17,000	17,000	22,200	31,700	41,100	38,500	30,400	32,700	33,000
13	33,000	14,100	6,710	17,500	17,000	25,600	30,400	46,300	35,000	31,000	31,700	32,700
14	32,400	14,100	7,000	18,000	16,500	29,200	28,900	41,900	32,000	31,700	33,900	32,400
15	31,700	13,700	9,000	17,000	16,000	28,900	27,700	35,700	32,000	32,400	34,600	33,300
16	31,300	14,100	10,000	17,000	15,800	23,800	28,300	32,400	32,000	33,600	37,400	33,300
17	32,000	13,900	11,200	17,000	15,600	23,000	28,900	31,000	32,000	32,700	36,800	33,000
18	32,400	14,300	11,500	16,800	15,200	23,000	30,400	34,600	33,300	35,400	33,900	37,100
19	32,000	14,300	12,100	16,600	15,000	22,500	32,000	41,900	33,300	34,300	31,000	38,500
20	31,000	13,900	13,900	16,400	14,900	25,000	36,400	37,100	33,900	34,300	30,700	37,400
21	31,000	14,500	15,900	16,000	16,000	25,600	47,500	35,700	33,900	32,400	33,300	36,000
22	31,000	14,100	17,000	15,000	18,000	21,500	44,300	47,100	36,000	32,400	33,600	32,000
23	31,000	13,700	16,400	14,000	20,000	20,500	38,800	51,300	32,400	29,800	41,100	34,600
24	31,000	14,700	15,300	13,000	22,000	21,000	35,400	47,100	35,000	30,400	34,600	33,600
25	31,700	14,500	15,100	12,000	23,000	21,500	34,600	39,200	33,300	30,400	32,700	33,600
26	32,400	13,900	15,900	11,600	25,000	23,500	34,300	35,700	32,000	30,700	32,700	31,700
27	33,000	14,300	15,900	11,500	23,000	28,000	33,900	36,000	31,300	31,700	34,600	32,400
28	33,900	12,700	15,300	11,200	21,000	29,500	36,400	35,700	39,900	33,000	34,300	32,000
29	31,600	11,200	14,500	11,200	.....	28,000	35,400	57,200	43,900	31,700	36,800	32,700
30	35,000	10,600	13,500	11,500	.....	25,900	34,600	69,000	46,300	32,400	36,000	32,000
31	35,000	.....	12,900	12,000	.....	24,800	.....	66,500	.....	33,300	38,200	.....
1959-60												
1	31,700	35,400	12,700	13,700	14,500	13,700	162,000	36,000	36,800	44,300	33,600	38,800
2	33,900	35,000	12,700	13,300	14,900	13,700	155,000	36,400	36,400	38,200	33,000	32,700
3	34,300	34,600	13,900	11,900	15,300	13,700	163,000	36,000	35,000	35,700	35,000	32,000
4	33,300	32,700	15,300	9,100	15,700	13,900	172,000	33,900	33,600	33,900	33,600	33,300
5	32,000	32,000	16,100	5,630	15,900	13,900	176,000	35,400	31,700	30,700	32,400	34,300
6	32,000	29,800	17,400	5,520	15,900	13,900	170,000	48,300	29,500	30,700	42,700	33,900
7	31,000	24,800	16,100	6,450	15,900	13,900	152,000	55,400	29,200	33,000	48,700	33,000
8	33,900	19,500	14,300	5,980	16,800	13,700	134,000	64,500	29,500	33,900	41,500	32,700
9	35,000	17,700	14,900	6,710	18,200	13,900	116,000	50,400	29,800	34,600	36,800	34,300
10	35,000	17,400	15,100	9,100	17,700	15,100	97,800	45,900	32,700	35,700	34,300	33,900
11	35,000	16,100	14,700	11,900	16,800	15,900	84,000	46,700	43,200	36,000	33,600	32,400
12	34,300	15,500	14,700	14,700	17,200	16,100	76,200	45,500	53,600	37,400	31,700	32,000
13	33,000	15,000	14,300	15,500	17,900	15,500	66,000	42,300	49,100	42,700	31,700	31,000
14	33,000	14,500	14,300	16,600	18,200	14,700	62,000	40,300	39,600	42,700	32,000	31,700
15	32,700	13,900	14,300	16,600	17,700	14,500	58,000	38,500	38,200	38,500	31,700	31,700
16	31,700	11,200	14,100	14,500	17,000	14,300	53,600	37,800	39,200	35,000	31,700	33,900
17	32,700	8,800	14,500	13,300	16,800	13,900	53,100	39,900	51,800	32,700	33,600	34,300
18	33,000	7,240	14,100	12,100	16,800	13,700	51,800	39,900	46,300	34,600	37,800	38,500
19	33,600	6,580	14,500	11,000	17,000	13,700	47,100	41,900	40,700	36,000	35,000	38,500
20	32,000	7,940	14,500	10,600	17,400	14,300	44,300	50,800	51,200	34,300	34,600	37,100
21	32,000	16,900	14,300	11,400	17,000	15,300	40,300	73,000	87,800	33,900	35,700	34,600
22	32,000	17,900	13,700	11,900	15,900	16,100	36,000	70,500	72,500	33,900	35,400	33,600
23	33,300	17,700	13,300	11,500	15,300	16,400	33,900	61,000	66,500	32,700	34,300	35,400
24	34,300	20,000	14,300	11,500	14,700	16,800	35,400	55,400	51,800	33,900	37,100	38,800
25	33,300	20,800	13,700	11,400	14,300	17,400	35,000	47,900	40,300	33,000	44,700	37,100
26	32,000	21,000	13,500	11,700	14,100	18,200	34,600	50,800	38,800	33,600	45,500	36,400
27	32,400	20,000	14,700	11,900	13,900	20,000	34,600	48,700	36,400	33,900	39,200	33,300
28	32,400	17,200	16,100	12,700	13,700	36,000	35,400	47,900	36,800	33,600	35,400	32,700
29	32,000	15,900	15,700	13,500	13,700	62,500	34,600	45,100	36,800	33,900	49,100	32,400
30	32,700	13,700	14,700	14,100	.....	.....	.....	104,000	39,900	45,100	33,300	56,700
31	33,900	.....	13,700	14,100	.....	.....	134,000	.....	39,900	.....	33,300	49,500

Missouri River at Nebraska City, Nebraska—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	35,360	17,350	10,510	12,090	14,110	29,490	34,010	34,040	33,780	33,220	35,450	34,830
1956-57	30,370	16,250	10,560	10,160	12,780	15,310	21,850	35,450	45,820	37,820	34,120	33,200
1957-58	34,670	19,370	14,200	12,690	15,920	22,360	35,590	32,980	33,530	40,930	38,030	32,560
1958-59	32,280	17,640	12,050	13,250	17,270	23,070	33,040	43,970	37,970	33,260	37,390	33,930
1959-60	33,010	19,230	14,520	11,610	16,080	23,960	81,660	46,640	43,000	35,150	37,660	34,260

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.
1955-56	2,174,000	1,033,000	646,200	743,500	811,400	1,813,000
1956-57	1,867,000	967,100	619,600	624,800	709,700	941,600
1957-58	2,132,000	1,153,000	872,800	780,100	884,200	1,375,000
1958-59	1,985,000	1,049,000	740,600	814,800	959,200	1,418,000
1959-60	2,030,000	1,144,000	893,000	33,040	713,800	924,700

Water year	Apr.	May	June	July	Aug.	Sept.
1955-56	2,024,000	2,093,000	2,010,000	2,043,000	2,180,000	2,073,000
1956-57	1,300,000	2,180,000	2,726,000	2,325,000	2,098,000	1,976,000
1957-58	2,118,000	2,028,000	1,995,000	2,517,000	2,339,000	1,937,000
1958-59	1,966,000	2,704,000	2,259,000	2,045,000	2,299,000	2,019,000
1959-60	4,859,000	2,868,000	2,558,000	2,161,000	2,316,000	2,038,000

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30					Calendar year		
	Momentary maximum			Minimum day	Mean	Runoff in acre-feet	Mean	Runoff in acre-feet
	Date	Gage height in feet	Discharge					
1955						26,760	19,370,000	
1956	Mar. 19, 1956	(1)10.4	54,000	4,900	27,060	19,640,000	26,550	19,270,000
1957	June 18, 1957	17.08	116,000	4,320	25,370	18,360,000	26,300	19,040,000
1958	Aug. 6, 1958	13.48	85,000	7,240	27,810	20,130,000	27,280	19,750,000
1959	Aug. 3, 1959	(2)14.80	83,400	6,000	27,980	20,260,000	28,390	20,550,000
1960	Apr. 5, 1960	21.43	178,000	5,520	33,030	23,980,000		

(1) Maximum gage height, 12.12 ft. Jan. 11, 1956 (backwater from ice).

(2) Maximum gage height, 14.92 ft. June 1, 1959.

Peak Discharge (base, 100,000 cfs)

1955-56: No peak above base.

1956-57: June 18 (4 a.m.) 116,000 cfs (17.08 ft.).

1957-58: No peak above base.

1958-59: No peak above base.

1959-60: Apr. 5 (1:30 p.m.) 178,000 cfs (21.43 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Dec. 15-31, 1955; Jan. 1 to Feb. 26, 1956; Jan. 12 to Feb. 13, 1957; Jan. 6-8, Feb. 12-24, Dec. 14-17, 1958; Jan. 4 to Feb. 28, Nov. 12-14, 1959.

West Nishnabotna River at Hancock, Iowa

LOCATION.—Lat. 41°23'28", long. 95°22'10", in NE¼ sec. 18, T. 76 N., R. 39 W., on downstream side of bridge on County Highway C, 0.3 mile west of Hancock school, and 2.0 miles downstream from Jim Creek.

DRAINAGE AREA.—609 square miles.

RECORDS AVAILABLE.—October 1959 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 1,085.94 ft. above mean sea level, datum of 1929.

EXTREMES.—1959-60: Maximum discharge, 9,320 cfs Mar. 29, 1960 (gage height, 13.64 ft.), from rating curve extended above 6,000 cfs by logarithmic plotting; minimum daily, 23 cfs Jan. 6, 1960.

Daily Discharge, in Cubic Feet per Second, for Water Year 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1959-60												
1.....	35	47	41	35	49	41	2,940	272	221	611	90	241
2.....	50	*43	*41	30	50	41	2,450	255	210	244	87	217
3.....	45	43	43	28	50	41	1,500	251	197	190	87	197
4.....	50	60	45	26	*48	41	1,140	251	193	156	84	190
5.....	70	100	40	24	47	41	*888	329	190	146	103	176
6.....	50	60	38	23	46	41	836	3,540	180	153	1,800	166
7.....	70	50	36	24	45	41	738	1,080	176	130	2,490	*153
8.....	*97	70	36	*25	45	41	556	618	173	123	556	153
9.....	87	90	36	28	45	41	462	512	*163	166	*294	210
10.....	66	97	36	30	45	41	418	*434	170	214	221	159
11.....	41	77	38	35	44	*41	434	357	193	149	180	149
12.....	34	71	38	45	43	41	426	316	265	*1,420	146	149
13.....	35	55	38	50	43	41	406	280	265	642	120	146
14.....	35	50	40	50	43	41	379	258	217	305	103	146
15.....	32	47	42	48	43	41	334	255	187	241	84	149
16.....	32	46	45	46	43	40	326	316	241	210	84	146
17.....	32	46	48	45	43	40	495	316	280	207	384	146
18.....	34	50	48	45	43	40	530	262	221	1,260	1,580	146
19.....	34	75	48	45	43	40	395	330	221	418	534	153
20.....	32	60	52	45	43	40	349	360	316	258	709	145
21.....	32	65	60	44	42	40	323	495	414	214	272	140
22.....	32	75	54	44	42	40	305	418	262	193	231	140
23.....	34	80	60	44	42	40	280	316	224	183	204	156
24.....	34	80	54	44	42	40	265	372	190	170	221	398
25.....	32	70	63	44	42	40	265	462	176	156	272	383
26.....	32	40	80	44	42	40	251	434	173	149	290	204
27.....	32	26	113	44	42	45	241	353	170	146	204	170
28.....	35	35	294	44	42	250	251	272	170	136	561	155
29.....	35	38	251	44	42	4,800	301	258	170	130	914	145
30.....	37	40	100	45	.....	*5,000	330	244	173	130	368	140
31.....	47	.....	40	47	.....	2,450	.....	231	.....	113	276	.....

West Nishnabotna River at Hancock, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1959-60.....	43.3	59.5	64.5	39.2	44.1	439	627	466	213	290	437	176

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1959-60.....	0.071	0.098	0.106	0.064	0.072	0.721	1.03	0.765	0.350	0.476	0.718	0.289

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1959-60.....	0.08	0.11	0.12	0.07	0.08	0.83	1.15	0.88	0.39	0.55	0.83	0.32

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1959-60.....	2,660	3,540	3,960	2,410	2,540	26,980	37,320	28,660	12,700	17,840	26,870	10,470

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30							Calendar year			
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet
	Date	Gage height in feet	Discharge								
1960...	Mar. 29, 1960	13.64	9,320	23	242	0.397	5.41	176,000	.....	.....	.....

Peak Discharge (base, 4,000 cfs)

1959-60: Mar. 29 (10 p.m.) 9,320 cfs (13.64 ft.); May 6 (3:30 a.m.) 8,120 cfs (12.57 ft.); Aug. 7 (6 a.m.) 4,800 cfs (9.70 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 4-8, Nov. 13 to Dec. 24, Dec. 30, 31, 1959; Jan. 1 to Mar. 29, 1960. No gage height record Oct. 2-7, 1959; Sept. 11-18, 1960.

Mule Creek near Malvern, Iowa

LOCATION.—Lat. 40°56'40", long. 95°35'40", in NW¼ NW¼ sec. 20, T. 71 N., R. 41 W., on left bank 10 ft. downstream from highway bridge, 1.8 miles upstream from mouth, and 4.4 miles south of Malvern.

DRAINAGE AREA.—10.6 square miles.

RECORDS AVAILABLE.—June 1954 to September 1960.

GAGE.—Water-stage recorder and concrete control. Datum of gage is 974.20 ft. above mean sea level (levels by Soil Conservation Service).

AVERAGE DISCHARGE.—6 years, 3.70 cfs (2,680 acre-ft. per year).

EXTREMES.—1954-60: Maximum discharge, 2,070 cfs Aug. 21, 1954 (gage height, 15.84 ft.) from rating curve, extended above 510 cfs on basis of slope-area measurement of peak flow; no flow Jan. 20-25, 1956.

REMARKS.—Records of suspended-sediment loads for the period July 1954 to September 1960, and water temperatures for the period October 1958 to September 1960 are published in reports of the Geological Survey. High banks are never overtopped. Records June 1954 to Sept. 1955 published herein supersede those previously published in Water-Supply Bulletin No. 6.

Daily Discharge, in Cubic Feet per Second, Period June to September, 1954

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1954									
1		0.87	1.4	2.2	16	1.9	.55	3.5	2.4
2		.87	*.87	2.0	17	1.9	.71	1.4	2.2
3		.87	.71	1.9	18	1.4	.87	1.5	2.0
4		.87	.71	1.9	19	1.2	.55	1.4	2.2
5		.87	1.0	1.9	20	1.0	.55	1.2	2.4
6		.71	1.9	1.9	21	15	.71	255	2.2
7		.71	6.4	1.9	22	3.0	.87	15	1.9
8		.71	2.4	*1.9	23	2.0	.87	*158	1.9
9		.71	1.7	2.2	24	1.6	.71	11	1.9
10	2.2	.71	1.4	2.0	25	1.4	.71	4.0	1.9
11	4.3	.71	1.5	2.0	26	1.0	.71	3.1	1.7
12	4.0	.71	1.5	1.9	27	1.2	.71	13	1.9
13	1.5	.71	1.2	2.0	28	1.0	.71	2.8	2.4
14	1.7	.55	1.5	2.0	29	*.87	.55	2.6	2.0
15	7.8	.55	1.2	1.9	30	.87	.55	2.6	6.5
					31		.55	2.2	

Mule Creek near Malvern, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1955 and 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1954-55												
1	2.2	2.6	1.3	1.1	*0.80	*80	2.8	1.2	*0.55	0.42	0.10	0.33
2	2.2	2.6	1.2	1.2	.80	*45	2.8	1.2	.55	.42	*.08	.27
3	2.0	2.3	1.3	1.2	.80	8.0	2.8	*1.2	.87	.33	.10	.27
4	2.6	2.0	1.5	1.2	.80	5.0	3.4	1.0	1.0	.33	.10	.27
5	6.4	*1.7	1.4	1.2	.80	4.4	*2.6	1.0	1.7	*.33	.13	.21
6	*2.2	1.9	1.3	*1.2	.80	4.0	2.4	.55	1.0	.27	.13	** .21
7	2.0	2.0	*1.3	1.2	.80	3.5	2.4	.87	.87	.21	.13	.21
8	2.2	2.0	1.3	1.2	.80	4.5	2.6	.71	.87	.21	.13	.21
9	2.0	2.0	1.3	1.2	.80	3.5	2.6	6.6	.87	.13	.13	.21
10	2.0	2.2	1.3	1.1	.80	2.5	2.6	1.5	.87	.10	.55	.17
11	2.2	2.4	1.3	1.1	.80	3.1	2.6	1.4	1.0	.10	.21	.17
12	2.2	2.2	1.3	1.1	1.0	2.6	2.8	1.4	1.0	.10	.21	.17
13	2.2	2.2	1.2	1.0	1.5	1.8	2.8	1.2	1.0	.10	.17	.17
14	2.2	2.0	1.2	.90	2.0	2.0	2.4	1.2	.71	.10	.17	.17
15	2.4	2.0	1.2	.90	3.0	1.8	2.2	1.0	.71	.10	.17	.17
16	2.4	2.0	1.2	.90	2.0	*1.6	1.7	1.0	.71	.10	.17	.17
17	2.4	2.0	1.2	.90	1.5	1.5	1.7	1.0	.71	.10	.13	.17
18	2.4	1.7	1.4	.90	9.0	1.6	1.7	1.0	.87	.10	.13	.17
19	2.4	1.5	1.5	.90	25	1.6	1.5	.87	.71	.10	.13	.17
20	2.8	1.5	1.4	.80	15	2.0	1.5	.87	.71	.10	.13	4.5
21	2.2	1.7	1.3	.80	8.0	4.5	1.5	1.0	.71	.10	.13	13
22	2.0	1.7	1.2	.80	6.0	3.0	1.7	.87	.71	.10	.17	.27
23	2.0	1.9	1.3	.80	5.5	2.1	1.9	1.2	.71	.10	.13	.27
24	2.0	2.0	1.5	.80	4.5	2.5	2.2	1.0	2.4	.10	.13	.71
25	2.0	2.4	1.2	.80	10	3.6	1.5	1.2	1.7	.10	.13	.33
26	2.8	2.4	1.2	.80	20	3.0	1.5	1.9	.87	.10	.13	1.5
27	2.4	2.4	1.2	.80	10	3.5	1.5	1.0	.71	.10	.13	1.0
28	2.4	2.6	1.1	.80	5.0	4.0	2.2	1.7	1.2	.10	.13	2.3
29	2.4	2.4	1.0	.80		3.2	1.4	1.2	1.4	.10	.21	18
30	2.6	1.7	1.0	.80		3.0	1.2	.55	.55	.10	.17	.71
31	2.6		1.0	.80		2.8		.71		.10	.21	
1955-56												
1	0.27	0.17	0.10	0.21	0.10	1.8	0.42	0.33	0.06	0.13	15	0.55
2	.17	*.17	.10	.21	.11	1.6	.55	*.42	.06	.21	5.0	.33
3	.06	.13	.10	.21	.12	1.4	*1.2	.42	.06	5.2	1.2	.21
4	*.10	.21	.10	*.21	.13	1.3	.21	.42	.06	.71	.55	.27
5	.10	.21	.10	.21	.15	*1.2	.17	.42	*.06	.21	.33	3.2
6	.10	.17	*.10	.21	.15	1.2	.33	.33	.10	.13	.21	1.2
7	.08	.17	.10	.21	*.15	1.0	.33	.27	.10	4.6	*11	.87
8	.06	.17	.10	.21	.15	1.2	.27	.27	.10	4.2	.29	.55
9	.06	.21	.10	.21	.15	1.0	.33	.33	.08	.33	.22	.42
10	.06	.21	.10	.21	.15	1.1	.17	.27	.08	*.17	2.7	.55
11	.08	.17	.10	.21	.15	1.2	.13	.27	.08	*31	1.4	.55
12	.10	.13	.10	.21	.15	1.2	.17	.13	.08	6.3	.71	*.55
13	.10	.17	.10	.21	.15	1.2	.13	.10	.08	1.8	.71	.42
14	.13	.13	.10	.21	.15	1.1	.13	.10	.08	.55	.42	.27
15	.10	.17	.10	.21	.15	.90	.13	.08	.08	*211	.33	.27
16	.10	.30	.10	.18	.15	1.2	.13	.08	.08	.98	.80	.27
17	.33	.25	.10	.15	.15	.90	.13	.06	.10	6.2	.42	.21
18	.13	.22	.10	.13	.15	.70	.13	.08	.10	2.4	*116	.21
19	.10	.28	.10	.10	.15	.80	*.13	.54	.10	1.5	4.0	.21
20	.17	.32	.10	0	.15	.90	*.17	.42	.13	13	1.5	.21
21	.27	.35	.11	0	.25	.55	.17	.21	.13	3.7	.87	.21
22	.13	.30	.12	0	.25	.55	.21	.13	.17	.87	.42	.13
23	.17	.25	.13	0	.50	.87	.21	.13	.13	.42	.55	.17
24	.24	.22	.14	0	.90	.42	.13	.10	.13	.21	.33	.17
25	.17	.20	.15	0	1.6	.71	.17	.08	.10	.21	.27	.13
26	.17	.17	.16	.10	1.5	.71	.13	.06	.17	.17	.21	.13
27	.17	.15	.17	.10	1.2	.55	.13	.06	.10	.13	.17	.17
28	.17	.13	.18	.10	1.1	.42	1.1	.06	.10	.71	.27	.10
29	.17	.11	.19	.10	1.0	.27	.42	.55	.13	.55	2.2	.10
30	.13	.10	.20	.10		.42	.27	.55	.21	.33	2.1	.17
31	.17		.21	.10		.42		.10		*16	.71	

Mule Creek near Malvern, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	0.21	0.71	0.80	0.50	0.20	0.58	*1.5	0.69	2.1	*125	0.42	0.76
2	.13	.71	.87	.45	.20	.54	1.8	.42	1.4	13	.55	3.4
3	.17	.55	.71	.70	.30	.52	7.6	.32	1.2	5.0	.55	*1.0
4	.17	1.7	.70	.60	.40	.52	4.7	.22	1.0	2.3	.42	.55
5	.13	3.4	*.46	.50	*.46	.50	3.1	.22	.84	1.2	.32	3.3
6	.10	1.7	.40	.50	.50	*.47	2.2	.22	*.84	.69	*.32	7.5
7	.13	*1.2	.30	*.40	.50	.42	1.9	.22	.75	.69	.22	1.8
8	.17	1.2	.30	.30	.54	.42	1.7	*.22	16	1.2	.22	.84
9	.13	.87	.25	.20	.54	.55	1.5	31	4.4	*1.2	.22	.69
10	.21	.55	.40	.15	.54	.87	1.9	*15	2.3	1.0	.22	1.0
11	.21	.55	.40	.20	.60	1.0	1.7	4.0	6.4	.84	.32	1.8
12	.21	.71	.35	.10	.60	1.0	1.5	2.3	3.7	.84	.32	1.0
13	.42	.71	.25	.10	.60	.87	1.4	2.3	2.6	.84	.32	.69
14	.33	.71	.25	.10	.50	.87	1.2	5.3	11	.69	.42	.69
15	.21	.70	.30	.10	.40	1.0	1.0	3.1	13	.84	.42	.69
16	*.17	.80	.20	.10	.50	.71	1.0	2.1	.59	.69	1.8	.69
17	.17	1.2	.20	.20	.60	.55	1.0	2.6	*127	.69	.69	.55
18	.21	1.0	.20	.30	.35	1.2	1.0	2.3	14	.55	.42	.42
19	.21	.87	.30	.35	.25	.71	1.0	1.8	5.3	.55	.42	.42
20	.55	.60	.40	.40	.25	.55	1.0	1.8	3.7	1.0	.42	.55
21	.55	.50	.60	.40	.20	.71	.87	1.6	2.3	1.4	.42	.69
22	.42	.50	.60	.30	.15	.71	.71	1.0	1.2	1.4	.32	.42
23	.33	.50	.70	.20	.20	.71	.71	.84	.69	1.0	.42	.42
24	.33	.70	.60	.15	.30	1.9	.69	.84	.55	.84	.42	.42
25	.33	1.0	.50	.10	.30	11	*.69	.84	.69	.69	.32	.42
26	.33	.60	.70	.10	.21	3.7	1.0	1.2	1.2	.69	.32	.55
27	.33	.60	.87	.10	.25	1.5	.69	.84	2.1	.84	3.4	.55
28	.33	.60	1.0	.20	.34	1.5	.42	.55	2.1	.69	4.7	.55
29	.42	.60	.87	.20	.15	.55	149	2.3	.42	1.8	.55	.55
30	.71	.70	.87	.20	.14	.69	.61	2.1	.55	.84	.55	.55
31	.55		.87	.20	1.4	1.4	5.0		.69	.69		
1957-58												
1	0.55	3.9	1.0	0.52	0.90	3.5	*1.8	1.2	0.84	0.22	6.2	1.6
2	1.2	3.4	*1.1	.50	.95	3.1	1.8	1.2	.69	2.8	4.4	1.6
3	.42	1.6	1.1	.50	1.0	2.6	2.3	1.4	.55	1.8	3.4	1.8
4	.22	1.0	1.1	.50	*1.1	*1.9	3.9	1.4	.42	2.1	2.8	4.2
5	.22	1.0	1.1	.70	.86	3.0	11	*1.4	*.84	1.2	3.1	*27
6	.22	*1.0	1.1	.65	.70	3.2	4.0	1.8	.84	.84	13	41
7	.99	1.2	1.1	*.62	.60	3.0	2.6	2.1	1.2	.55	*4.4	5.0
8	1.4	1.2	.95	.65	.50	2.9	2.3	2.3	.84	.42	2.8	2.8
9	*.61	1.1	.80	.80	.40	2.8	1.4	2.1	.84	*1.2	2.3	2.8
10	.55	.80	.70	.95	*.34	2.8	1.8	1.8	.84	3.6	2.1	2.8
11	.69	.95	.60	1.1	.29	2.3	1.6	1.6	.84	2.6	2.1	2.3
12	3.8	1.2	.60	1.1	.26	2.6	1.6	1.2	1.0	1.8	2.1	2.1
13	1.8	1.2	.64	1.1	.23	2.3	1.6	1.0	1.0	1.2	9.4	1.8
14	1.3	1.2	.68	1.0	.20	2.1	1.6	.84	.84	1.2	5.9	14
15	2.6	1.2	.73	*.90	.17	1.8	1.4	.84	.55	.84	2.8	6.2
16	1.4	1.4	.78	.90	.15	1.7	1.4	1.0	.55	.84	2.3	2.8
17	4.3	1.4	*.90	.90	.15	1.7	1.2	1.4	.42	11	2.1	2.3
18	1.7	3.5	1.2	.90	.15	1.7	1.2	1.2	.42	4.0	1.8	2.1
19	.84	3.0	1.2	.90	.15	1.7	1.6	.84	.55	.79	1.6	2.1
20	1.2	2.0	1.2	.90	.15	1.7	1.8	.69	.55	6.8	1.6	2.6
21	1.6	1.7	1.1	.88	.90	1.6	1.8	.69	.55	3.7	1.6	3.4
22	3.9	1.5	1.1	.85	2.5	1.6	1.2	.69	.84	2.3	1.6	2.6
23	4.2	1.5	1.0	.82	5.0	1.6	2.1	.69	.84	1.8	2.3	8.5
24	2.3	1.9	1.0	.86	8.0	1.4	2.1	.55	.84	2.3	2.3	4.4
25	1.4	2.0	1.2	.92	3.5	1.4	1.2	.55	.84	1.8	2.1	2.1
26	1.2	1.8	1.2	1.0	1.1	1.4	1.2	.42	.69	1.6	2.1	1.8
27	1.0	1.7	1.2	.92	3.0	1.4	1.2	.42	.55	2.5	2.1	1.6
28	1.0	1.8	1.0	.88	4.5	1.6	1.8	.32	.32	1.8	2.1	1.6
29	1.0	1.3	.85	.82		1.8	1.4	.32	.14	1.6	2.1	1.4
30	1.0	.90	.65	.78		2.1	1.2	.69	.14	*378	2.1	1.8
31	1.0		.54	.84		1.8		.84		13	1.6	

Mule Creek near Malvern, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	1.4	1.4	1.1	0.96	0.80	4.3	6.4	2.2	8.2	4.6	3.4	4.6
2	1.4	1.4	1.2	1.0	.84	4.0	5.2	16	7.6	3.4	4.0	2.9
3	1.6	1.2	*1.6	1.0	1.0	*3.1	4.9	62	6.8	2.9	3.1	2.2
4	1.8	1.0	1.7	1.0	1.0	2.9	3.4	7.2	7.2	4.0	*2.6	2.0
5	1.6	*1.4	1.5	1.0	*.91	2.7	3.4	21	*6.8	3.1	13	2.0
6	2.2	.91	1.3	1.0	.91	2.6	3.1	*71	6.0	2.9	22	2.0
7	2.2	1.0	1.1	*1.0	1.0	3.1	*4.0	11	5.6	*2.6	3.4	1.8
8	1.8	1.4	.96	1.0	1.2	3.8	2.2	9.3	4.9	2.4	2.2	1.8
9	*1.8	1.4	.86	1.0	1.2	4.8	2.6	44	4.3	2.2	2.0	1.6
10	1.4	.91	.80	1.0	1.0	4.6	3.1	22	4.3	2.2	18	*1.4
11	1.2	.91	.80	1.0	.90	4.0	3.1	11	4.6	2.2	4.9	1.4
12	1.2	1.0	.80	1.0	.90	4.0	3.4	10	4.3	2.4	2.4	1.2
13	1.4	1.2	.80	1.0	1.0	4.3	2.9	10	4.0	2.6	2.0	1.4
14	1.4	1.6	.80	1.0	1.0	5.2	2.9	5.6	3.7	2.6	2.2	1.6
15	1.4	1.8	.80	1.0	1.1	6.0	3.1	6.8	3.7	2.4	6.6	1.6
16	1.4	1.6	.80	1.0	1.1	4.0	3.1	6.8	3.4	2.6	3.4	1.6
17	1.2	2.9	.80	.96	.90	2.9	5.6	6.8	3.4	2.9	2.4	4.7
18	1.2	2.0	.84	.94	.80	3.7	6.0	*188	5.2	4.0	2.2	44
19	1.0	1.2	.88	.90	1.0	5.8	4.3	26	4.9	2.6	2.0	37
20	1.6	1.0	.92	.85	1.1	5.2	6.0	9.8	4.6	2.2	1.8	4.9
21	1.6	1.0	.94	.82	1.0	4.2	4.3	12	4.3	2.2	1.8	3.7
22	1.6	1.0	1.0	.80	1.5	4.0	3.4	7.6	3.7	2.2	1.8	2.6
23	1.6	1.0	1.0	.80	15	3.4	3.1	7.6	3.4	2.2	2.6	2.2
24	1.4	1.0	1.0	.80	25	3.4	2.9	7.2	3.4	2.0	2.2	2.9
25	1.6	1.1	1.0	.80	32	7.7	2.6	6.4	3.1	1.8	2.0	2.9
26	1.6	1.0	1.0	.80	25	38	2.2	8.4	2.9	1.6	1.8	3.4
27	1.2	1.0	1.0	.80	13	12	2.6	41	2.9	1.8	1.8	2.9
28	1.2	.90	1.0	.80	6.0	8.0	3.7	26	2.6	2.2	5.2	2.4
29	1.2	.84	1.0	.80	.....	7.2	2.6	56	2.9	2.0	32	2.0
30	1.2	.96	.92	.80	.....	8.4	2.2	112	7.6	1.6	3.7	2.0
31	1.2	.....	.84	.80	.....	7.6	.....	13	.....	2.2	13	.....
1959-60												
1	2.6	3.1	2.3	1.9	3.7	3.3	30	8.4	5.2	6.4	3.4	6.0
2	6.2	2.9	2.4	2.1	3.7	*3.2	26	7.6	5.2	6.4	*3.4	5.6
3	4.0	2.9	*2.4	1.9	4.0	3.1	23	*6.8	4.9	5.6	3.4	5.2
4	3.7	3.4	2.4	1.8	4.3	3.1	21	6.0	5.2	5.6	3.1	4.9
5	5.2	3.6	2.4	*1.6	4.3	3.0	19	8.4	4.9	6.0	3.5	4.6
6	*6.0	*3.1	2.2	1.9	3.7	3.0	*17	15	4.9	6.0	10	4.3
7	4.0	2.9	2.1	2.4	3.7	2.9	15	10	4.9	4.9	4.6	4.0
8	9.8	3.1	1.9	2.2	5.6	2.8	14	7.6	*4.6	*4.9	3.7	4.6
9	4.3	3.1	2.1	2.0	6.8	2.8	13	7.2	4.6	6.4	3.4	*4.3
10	3.7	3.1	2.4	1.9	4.3	2.8	12	6.4	5.6	5.2	3.1	3.7
11	3.4	2.9	2.9	2.3	4.0	2.7	11	5.6	7.2	4.6	3.1	3.7
12	3.1	2.9	2.6	5.2	*3.6	2.7	10	5.6	10	7.1	3.1	3.1
13	3.1	2.9	2.5	4.3	3.4	2.7	9.2	5.6	8.9	5.6	2.9	3.1
14	3.1	2.7	2.4	7.8	3.1	2.7	8.6	5.6	7.2	4.3	2.9	3.4
15	3.1	2.4	2.4	5.0	3.0	2.7	8.2	5.6	5.6	4.0	2.9	3.4
16	2.9	2.2	2.4	4.0	2.9	2.7	7.8	10	14	4.0	3.1	3.7
17	2.9	2.7	2.4	3.5	3.4	2.8	17	6.4	6.8	4.0	18	3.7
18	2.9	3.0	2.3	4.5	3.8	2.9	13	7.6	6.0	6.4	70	51
19	2.6	3.1	2.2	3.8	3.6	2.9	10	6.8	5.6	4.3	6.8	6.4
20	2.6	2.9	2.4	3.4	3.5	3.0	9.3	6.8	48	3.7	4.9	4.3
21	2.6	2.9	2.4	3.1	3.5	3.0	9.0	35	12	3.7	4.3	4.0
22	2.6	2.9	2.6	2.9	3.5	3.1	8.6	11	8.0	3.7	4.0	3.7
23	3.4	2.9	2.6	2.7	3.4	3.2	8.4	8.9	8.4	3.7	3.7	14
24	3.1	2.9	2.4	2.6	3.4	3.3	8.4	8.4	7.6	3.7	9.6	100
25	2.4	2.9	2.9	2.5	3.4	3.5	8.0	8.0	8.0	3.7	12	12
26	2.9	2.8	2.9	2.6	3.3	3.5	7.6	7.6	7.6	3.7	6.4	7.6
27	2.6	2.5	4.9	2.8	3.3	16	7.2	6.4	7.6	3.4	4.9	6.8
28	2.6	2.2	6.0	3.0	3.3	31	7.6	6.4	7.6	3.7	108	6.4
29	2.4	2.0	3.1	3.1	3.3	52	10	6.4	7.6	4.3	51	6.8
30	2.9	2.2	2.3	3.4	.....	39	13	6.0	26	4.0	9.8	6.0
31	3.7	.....	2.0	3.7	.....	34	.....	5.6	.....	3.4	6.8	.....

Mule Creek near Malvern, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54										0.710	16.2	2.17
1954-55	2.41	2.07	1.26	0.968	4.92	6.94	2.15	1.26	0.941	0.156	0.157	1.55
1955-56	.140	.198	.121	.139	.385	.929	.277	.238	.101	13.3	7.14	4.27
1956-57	.286	.891	.523	.271	.385	1.29	1.56	9.64	12.2	5.42	.731	1.12
1957-58	1.47	1.64	.949	.828	1.35	2.13	2.10	1.04	0.679	17.2	3.17	5.25
1958-59	1.47	1.23	1.00	.917	4.93	5.96	3.61	27.3	4.68	2.54	5.53	4.96
1959-60	3.56	2.84	2.62	3.09	3.75	8.05	12.7	8.35	8.99	4.72	12.3	10.1

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54										0.067	1.53	0.20
1954-55	0.227	0.195	0.119	0.091	0.464	0.655	0.203	0.119	0.089	0.15	.015	.146
1955-56	.013	.019	.011	.013	.036	.088	.026	.022	.0095	1.25	.674	.040
1956-57	.027	.084	.049	.026	.036	.122	.147	.909	1.15	5.11	.069	.106
1957-58	.139	.155	.090	.078	.127	.201	.198	.102	.064	1.62	.299	.495
1958-59	.139	.116	.094	.087	.465	.562	.341	2.58	.442	2.40	5.22	4.68
1959-60	.336	.268	.247	.292	.354	.759	1.20	.788	.848	.445	1.16	.953

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54										0.08	1.77	0.23
1954-55	0.26	0.22	0.14	0.11	0.48	0.76	0.23	0.14	0.10	.02	.02	.16
1955-56	.02	.02	.01	.02	.04	.10	.03	.03	.01	1.44	.78	.05
1956-57	.03	.09	.06	.03	.04	.14	.16	1.05	1.28	.59	.08	.12
1957-58	.16	.17	.10	.09	.13	.23	.22	.12	.07	1.87	.34	.55
1958-59	.16	.13	.11	.10	.48	.65	.38	2.97	.49	.28	.60	.52
1959-60	.39	.30	.28	.34	.38	.88	1.34	.91	.95	.51	1.33	1.06

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1953-54										44	999	129
1954-55	148	123	78	60	273	427	128	78	56	9.6	9.7	92
1955-56	8.6	12	7.5	8.5	22	57	16	15	6.0	815	439	25
1956-57	18	53	32	17	21	79	93	593	726	333	45	66
1957-58	90	98	58	51	75	131	125	66	40	1,060	195	313
1958-59	90	73	62	56	274	367	215	1,680	278	156	340	2.95
1959-60	219	169	161	190	216	495	757	513	535	290	753	6.02

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30						Calendar year					
	Momentary maximum			Min-imum day	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet		
	Date	Gage height in feet	Dis-charge									
1954(1)	Aug. 21, 1954	15.84	2,070									
1955	Mar. 1, 1955	7.51	411	0.08	2.05	0.193	2.64	1,480	1.60	2.07	1,160	
1956	July 15, 1956	15.54	1,990	0	1.97	.186	2.55	1,430	2.08	2.68	1,510	
1957	May 29, 1957	12.58	1,310	.10	2.87	.271	3.67	2,080	3.07	3.92	2,220	
1958	July 30, 1958	12.35	1,180	.14	3.18	.300	4.05	2,300	3.15	4.02	2,280	
1959	May 18, 1959	11.50	1,180	.80	5.37	.507	6.87	3,890	5.81	7.44	4,210	
1960	Aug. 28, 1960	8.22	565	1.6	6.75	.637	8.67	4,900				

(1) Maximum for period June to September.

Peak Discharge (base, 300 cfs)

June to Sept. 1954: Aug. 21 (5:30 p.m.) 2,070 cfs (15.84 ft.); Aug. 23 (8:30 p.m.) 1,680 cfs (14.19 ft.).

1954-55: Mar. 1 (4:30 p.m.) 411 cfs (7.51 ft.).

Mule Creek near Malvern, Iowa—Continued

- 1955-56: July 11 (9 p.m.) 398 cfs (7.55 ft.); July 15 (8 p.m.) 1,990 cfs (15.54 ft.); Aug. 18 (4 a.m.) 867 cfs (10.4 ft.).
- 1956-57: May 29 (8 p.m.) 1,310 cfs (12.58 ft.); June 7 (4 p.m.) 849 cfs (9.80 ft.); June 15 (11:30 p.m.) 334 cfs (6.30 ft.); June 17 (1:30 p.m.) 479 cfs (7.40 ft.); July 1 (1 p.m.) 678 cfs (8.70 ft.).
- 1957-58: July 19 (4 a.m.) 334 cfs (6.92 ft.); July 30 (1:30 a.m.) 1,180 cfs (12.35 ft.).
- 1958-59: May 2 (11:30 p.m.) 332 cfs (6.62 ft.); May 6 (2:30 p.m.) 300 cfs (6.34 ft.); May 18 (3 p.m.) 1,180 cfs (11.50 ft.); May 29 (12 p.m.) 549 cfs (8.07 ft.); Sept. 18 (11 p.m.) 472 cfs (7.57 ft.).
- 1959-60: Aug. 28 (7:30 p.m.) 565 cfs (8.22 ft.); Sept. 24 (4:30 a.m.) 428 cfs (7.30 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

**Field estimate made on this day.

Stage-discharge relation affected by ice Dec. 3-15, 17-21, 23, 24, 26-31, 1954; Jan. 1-12, Jan. 14 to Mar. 3, Mar. 6-30, Nov. 16 to Dec. 31, 1955; Jan. 1 to Mar. 20, Nov. 15, 16, Nov. 20 to Dec. 1, Dec. 4-26, 1956; Jan. 1 to Mar. 6, Nov. 8-11, Nov. 18 to Dec. 31, 1957; Jan. 1 to Mar. 8, Mar. 15-21, Nov. 25 to Dec. 1, Dec. 4-24, 28-31, 1958; Jan. 1-11, Jan. 13 to Feb. 2, Feb. 10-26, Mar. 4-9, 14-16, 19-21, Nov. 5, 6, 13, 18, Nov. 26 to Dec. 1, Dec. 5-9, 13, 14, 18, 30, 31, 1959; Jan. 1-11, 14-29, Feb. 10 to Mar. 26, 1960. Stage-discharge relation indefinite Apr. 1-22, 1960.

Spring Valley Creek near Tabor, Iowa

LOCATION.—Lat. 40°54'35", long. 95°36'00", in SW ¼ NE ¼ sec. 31, T. 71 N., R. 41 W., on left bank 20 ft. downstream from highway bridge, 1.5 miles upstream from mouth and 4.0 miles northeast of Tabor.

DRAINAGE AREA.—7.65 square miles.

RECORDS AVAILABLE.—October 1955 to September 1960.

GAGE.—Water-stage recorder and concrete control. Altitude of gage is 975 ft. (from topographic map).

AVERAGE DISCHARGE.—5 years (1955-60), 2.62 cfs (1,900 acre-ft. per year).

EXTREMES.—1955-60: Maximum discharge, 4,150 cfs July 30, 1958 (gage height, 15.48 ft.), from rating curve extended above 210 cfs on basis of slope-area measurement at gage height 13.5 ft.; no flow at times 1955-58.

REMARKS.—Banks never overtopped.

Daily Discharge, in Cubic Feet per Second for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	0.5	0.2	0.1	0.3	0.3	2.4	0.7	1.0	0.1	0.3	10	0.1
2	3	2	1	3	3	2.2	8	*1.2	1	.5	2.1	.1
3	2	2	1	3	3	2.0	*1.4	.7	1	1.0	2	.1
4	2	2	0	*.4	3	1.8	.9	.6	1	.4	1	.1
5	2	2	.1	.4	3	2.0	.6	.6	*.1	.2	0	3.7
6	2	2	.1	.4	*.4	*1.5	.6	.5	.2	.1	0	.5
7	2	2	.1	.4	.4	1.4	.6	.4	.4	.2	*1.5	.3
8	2	2	.1	.4	.4	1.3	.6	.4	.2	.2	14	.2
9	2	2	.1	.4	.4	1.1	.6	.5	.1	.1	4.1	.1
10	2	2	.1	.4	.4	1.4	.5	.4	0	*0	.4	.1
11	2	2	.1	.4	.4	1.5	.5	.4	0	*18	2	*.1
12	2	2	.1	.3	.4	1.5	.5	.3	0	6.6	2	0
13	2	2	.1	.2	.4	1.5	.5	2	0	.8	.3	0
14	2	2	.1	.2	.4	1.3	.5	2	0	.4	.2	.1
15	2	3	.1	.2	.4	1.0	.5	2	0	*118	.1	.1
16	2	.4	.1	.2	.4	1.4	.5	2	0	4.8	.1	.1
17	4	.3	0	.2	.4	1.2	*.5	.1	0	.7	2	.1
18	2	.4	0	.2	.4	.9	.5	2	0	4.6	23	.1
19	2	.4	0	.2	.4	1.0	.4	3	0	2.9	.7	.1
20	3	.5	0	.2	.4	1.1	*.4	2	.1	2.5	.2	0
21	4	.5	0	.2	.5	1.0	.4	2	0	.6	.4	0
22	3	.4	0	.2	.7	.9	.4	2	.1	.4	.3	0
23	2	.4	0	.2	1.0	.8	.4	2	.2	.3	.1	0
24	2	.3	.1	.2	1.5	.8	.4	1	.1	.3	0	0
25	2	2	.1	.2	2.5	.7	.5	0	.1	.1	0	0
26	2	2	.1	.2	2.1	.7	.4	0	.1	.1	0	0
27	2	2	.1	.2	2.0	.7	.4	0	.2	0	0	0
28	2	.1	.2	.2	1.9	.6	1.2	0	.1	.2	.3	0
29	2	.1	.3	.2	1.8	.6	.8	2.4	.1	.4	12	0
30	2	.1	.5	.2	.....	.5	.6	.6	1.4	.1	1.9	0
31	2	.....	.4	.3	.....	.6	.....	.2	.....	*9.9	.4	.....

Spring Valley Creek near Tabor, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	0	0.3	0.3	0.2	0.2	0.5	*1.3	0.4	1.2	*43	0.1	0.2
2	0	.2	.5	.1	.2	.4	1.7	.6	.8	1.3	.2	2.0
3	0	.3	.6	.2	.2	.4	6.0	.8	1.1	1.2	.3	.2
4	0	2.5	.5	.2	.2	.4	3.0	.8	.8	.9	.1	*.2
5	0	2.4	*.4	.2	*.2	.4	2.0	.6	.6	.9	.1	1.8
6	0	.5	.2	.2	.2	*.4	1.8	.9	*.6	.8	*.1	3.3
7	0	*.4	*.1	*.2	.2	.4	1.6	.9	*42	.7	0	.4
8	0	.2	.1	.1	.3	.4	1.4	*.6	1.9	.7	0	.3
9	0	.3	.1	.1	.4	.5	1.2	20	1.2	*.6	.1	.3
10	0	.4	.2	.1	.4	.6	1.7	*2.2	1.2	.4	.1	.8
11	0	.3	.2	.1	.5	.6	1.4	1.3	2.6	.4	.1	1.6
12	0	.8	.2	.1	.5	.6	1.0	1.2	1.1	.4	.1	.5
13	.1	.6	.2	.1	.5	*.6	.8	2.7	1.1	.2	.1	.4
14	0	.6	.2	.1	.4	.6	.6	2.0	6.4	.2	.4	.4
15	0	.3	.2	.1	.3	.6	.5	1.2	5.6	.4	.1	.4
16	*0	.2	.2	.1	.3	.5	*.5	2.2	13	.3	.8	.4
17	0	.4	.1	.1	.4	.4	.5	1.3	56	.2	.2	.3
18	0	.4	.1	.2	.3	.6	.5	.9	2.0	.1	.1	.1
19	0	.4	.1	.2	.2	.5	.5	.6	1.2	.2	.2	.3
20	.1	.4	.2	.2	.2	.4	.5	.7	1.2	.9	.2	.4
21	.4	.3	.3	.2	.2	.5	.5	1.0	1.2	.8	.1	.5
22	.4	.2	.3	.2	.2	.5	.5	.6	1.1	.6	.1	.4
23	.2	.4	.3	.1	.2	.5	.5	.6	1.0	.6	.2	.4
24	.2	.5	.3	.1	.2	1.5	*.5	.6	1.0	.4	.1	.4
25	.4	.4	.3	.1	.2	8.0	.8	.6	1.0	.4	0	.4
26	.5	.3	.4	.1	.2	3.0	1.0	.5	.9	.4	.5	.2
27	.5	.2	.6	.1	.2	1.4	.8	.5	1.1	.4	3.0	.2
28	.5	.1	.6	.1	.3	1.4	.6	.4	.8	.2	1.4	.3
29	.5	.1	.6	.1	.....	1.3	.4	106	1.3	.2	.4	.3
30	.4	.2	.6	.2	.....	1.3	.8	4.7	.8	.2	.2	.4
31	.4	.....	.4	.2	.....	1.2	.....	1.4	.....	.2	.1	.....
1957-58												
1	0.4	2.3	0.8	0.4	0.5	2.2	*0.5	0.8	0.7	0	4.4	1.3
2	.2	.6	.9	.4	.5	2.0	.5	.8	.8	16	2.8	1.3
3	.2	.5	*.7	.4	.4	2.0	.7	.7	.8	2.8	2.4	1.3
4	.2	.5	.7	.4	*.6	*2.5	1.7	.6	.7	1.2	2.4	2.3
5	.2	.5	.8	.7	.5	2.1	2.0	*.9	*.6	.8	3.0	*1.3
6	.2	.5	.9	.9	.4	1.8	1.2	.9	.5	.6	12	6.9
7	1.0	*.5	.7	*1.4	.4	1.5	1.2	.8	.4	.4	*2.3	1.2
8	.9	.6	.4	1.3	.3	1.2	1.2	.9	.3	.3	1.2	1.1
9	*.5	.6	.3	1.1	.3	2.0	.7	.7	.4	*.7	1.4	2.7
10	.5	.6	.2	1.3	.2	2.6	.8	.6	.3	4.4	1.8	2.6
11	.6	.7	.1	1.7	.2	2.2	.7	.5	.2	3.0	1.5	1.0
12	.5	.8	.1	1.5	.2	2.8	.7	.6	.4	1.5	1.6	.9
13	.8	1.0	.3	1.2	.2	1.3	.7	.7	.5	1.0	15	.8
14	.7	.8	1.3	1.0	.1	1.2	.7	.9	.4	.8	2.6	13
15	1.4	.8	1.0	.9	.1	2.2	.7	.8	.2	.7	2.0	1.8
16	.6	.7	2.4	.8	.1	1.7	.7	.8	.2	.6	1.6	1.0
17	.6	.7	.6	.7	.1	2.0	.8	.9	.3	14	1.4	1.1
18	.5	.8	1.1	.7	.1	1.5	.8	.6	.2	1.5	1.5	1.0
19	.5	1.0	.7	.7	.1	.9	1.0	.6	.2	67	1.5	1.0
20	.6	1.0	1.1	.7	.1	.5	1.1	.6	.3	2.2	1.6	2.2
21	.4	.9	1.0	.7	.4	.6	1.0	.7	.3	1.5	1.5	1.8
22	1.9	.8	.9	.6	1.0	.4	.9	.4	.2	1.3	1.5	1.2
23	2.3	.8	.9	.5	3.0	.3	.9	.4	.3	1.2	1.8	9.4
24	.5	.9	.8	.5	4.5	.5	1.2	.4	.2	1.5	1.8	1.6
25	.4	.9	.8	.6	1.8	.4	1.2	.4	.3	1.2	1.8	1.1
26	.5	.7	.8	.6	.7	.4	1.0	.8	.2	1.0	1.5	1.2
27	.4	.8	.8	.6	1.0	.4	.9	.7	.1	1.2	1.5	1.1
28	.5	.7	.8	.5	1.5	.5	.9	.7	.1	1.1	1.4	1.1
29	.5	.6	.8	.5	.....	.4	.9	.8	.1	1.0	1.4	1.0
30	.5	.4	.4	.4	.....	.4	.8	.8	0	*257	1.4	1.0
31	.5	.....	.4	.5	.....	.4	.....	.7	.....	10	1.3	.....

Spring Valley Creek near Tabor, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	1.0	0.6	0.8	0.8	0.4	6.6	4.9	2.4	5.1	3.2	4.1	2.0
2	1.0	.6	.9	.8	.4	4.0	4.7	16	4.7	2.9	3.3	1.6
3	1.0	.6	*1.1	.8	.5	*3.0	4.4	13	4.4	2.6	1.5	1.6
4	1.0	.6	1.1	.9	.5	2.5	4.2	6.7	4.0	3.0	*1.6	1.6
5	1.0	*.6	1.1	.9	*.4	2.2	4.2	6.7	*4.0	2.7	20	1.5
6	2.2	.8	.9	.9	.4	2.0	4.0	*22	3.7	2.4	8.6	1.5
7	1.4	1.1	.8	.9	*.9	5	2.5	*3.3	4.7	3.7	*2.2	1.4
8	1.1	1.2	.7	.9	.5	5.0	2.9	4.7	3.3	2.2	2.1	1.2
9	*.9	1.1	.7	.9	.5	4.7	2.9	13	3.3	2.1	2.4	1.2
10	.8	1.1	.6	.9	.5	4.2	2.9	4.7	3.5	2.1	4.7	*1.0
11	.8	.7	.6	.9	.4	3.4	2.9	4.4	3.3	3.2	2.6	1.2
12	.7	.8	.6	.9	.4	3.7	2.9	4.4	3.3	2.7	2.1	1.2
13	.8	.9	.6	.9	.4	3.9	2.7	4.2	3.2	2.9	2.0	1.2
14	.8	1.1	.6	.9	.4	3.3	2.9	4.0	3.0	2.6	2.2	1.2
15	.8	1.4	.6	.8	.5	3.8	3.2	3.7	2.9	2.7	3.1	1.0
16	.8	1.2	.6	.8	.5	3.0	3.2	3.8	2.7	2.7	2.2	1.0
17	.8	1.9	.7	.8	.5	2.5	3.5	3.8	2.7	2.9	2.1	2.8
18	.8	1.2	.7	.7	.4	3.0	3.2	100	3.3	2.7	2.0	31
19	.7	1.0	.7	.7	.4	4.0	3.8	6.2	3.3	2.4	2.0	12
20	.8	.8	.8	.7	.4	4.4	3.5	5.3	3.0	2.4	1.8	3.0
21	.7	.8	.8	.7	.6	4.5	3.2	6.7	3.8	2.2	1.6	2.9
22	.7	.8	.9	.6	5.0	5.8	2.9	5.6	3.8	2.2	1.6	2.6
23	.9	.8	1.0	.6	12	7.7	2.7	5.4	3.3	2.2	1.8	2.4
24	.7	.8	1.0	.6	18	6.7	3.0	5.3	3.2	2.1	1.8	2.9
25	.7	.8	1.0	.6	28	7.4	2.9	4.8	3.0	2.1	1.6	2.7
26	1.0	.7	1.0	.6	16	10	2.7	6.0	2.7	2.0	1.6	3.0
27	.7	.7	1.0	.5	12	6.0	2.7	24	2.6	2.2	1.8	2.9
28	.9	.6	1.0	.5	9.0	5.8	2.9	16	2.4	2.2	9.5	2.7
29	.8	.6	1.0	.5	.....	5.6	2.7	26	2.8	1.6	10	2.6
30	.8	.7	1.8	.4	.....	5.8	2.6	45	5.3	1.9	2.0	2.6
31	.7	.....	.7	.4	.....	5.1	.....	5.6	.....	9.4	15	.....
1959-60												
1	2.7	3.2	1.5	2.0	3.1	1.7	38	5.3	4.5	4.4	2.7	3.8
2	4.2	3.2	1.7	1.8	3.3	*1.6	28	5.1	4.4	4.2	*2.6	3.8
3	2.7	3.2	*1.9	1.7	3.5	1.5	22	*4.4	4.4	4.0	2.6	3.7
4	3.4	3.3	2.0	1.6	3.5	1.5	18	4.9	4.4	3.8	2.6	3.7
5	5.2	2.5	2.2	*1.5	3.3	1.4	16	5.6	4.4	4.2	3.0	3.5
6	*4.5	*2.0	2.4	1.7	3.2	1.4	*12	6.7	4.5	4.2	4.1	3.3
7	3.2	2.4	2.2	1.9	3.2	1.4	11	5.1	4.5	3.7	2.7	3.3
8	6.3	2.7	2.1	2.1	5.7	1.4	10	4.7	*4.5	*3.7	2.7	3.5
9	3.2	3.3	1.9	1.8	4.0	1.4	9.5	4.7	4.5	4.2	2.6	*3.3
10	3.3	3.2	2.1	1.7	2.8	1.3	9.2	4.7	5.0	4.0	2.4	3.2
11	3.3	2.9	2.2	2.0	2.3	1.3	9.2	4.5	7.0	3.8	2.2	3.2
12	3.3	3.0	2.3	3.8	*2.0	1.3	8.9	4.5	9.0	4.5	2.2	3.0
13	3.3	3.1	2.4	3.1	2.2	1.3	9.2	4.5	7.4	3.8	2.2	3.2
14	3.3	2.5	2.4	4.0	2.4	1.3	8.0	4.4	6.4	3.8	2.1	3.2
15	3.2	2.1	2.4	6.0	2.6	1.3	7.4	4.4	5.6	3.7	2.1	3.2
16	3.0	1.9	2.4	4.3	2.6	1.3	7.0	5.8	9.0	3.3	2.4	3.2
17	3.0	1.7	2.4	3.7	2.5	1.4	12	4.5	12	3.7	19	3.2
18	3.0	2.1	2.4	3.5	2.4	1.4	8.0	7.1	6.0	4.5	35	12
19	3.2	3.0	2.4	3.3	2.3	1.5	7.7	4.9	5.0	3.7	4.2	3.2
20	3.0	2.8	2.4	3.1	2.2	1.6	7.4	6.2	15	3.7	3.5	3.2
21	3.0	2.6	2.4	2.8	2.2	1.7	7.0	15	5.1	3.2	3.3	3.2
22	3.0	2.6	2.6	2.6	2.2	1.8	6.0	6.0	4.9	3.2	3.2	3.2
23	2.7	2.6	2.4	2.5	2.1	1.9	6.0	5.8	4.5	3.2	3.2	6.9
24	2.7	2.6	2.4	2.4	2.0	2.0	6.5	5.6	4.4	3.0	8.5	4.2
25	3.4	2.6	2.4	2.3	2.0	2.1	6.0	5.6	4.4	3.0	4.9	4.7
26	3.2	2.6	2.4	2.5	2.0	2.2	5.1	5.3	4.4	3.0	4.9	4.0
27	3.1	2.4	2.8	2.6	1.9	10	5.1	4.9	4.5	3.0	3.7	4.0
28	3.0	2.1	3.7	2.7	1.8	36	5.3	4.7	4.2	2.9	117	4.0
29	2.9	1.8	4.5	2.8	1.8	66	6.2	4.7	4.0	3.2	12	4.0
30	3.0	1.6	3.0	2.9	.....	33	6.2	4.7	7.0	2.9	4.9	3.8
31	3.5	.....	2.4	3.0	.....	30	.....	4.5	.....	2.9	4.2	.....

Spring Valley Creek near Tabor, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.23	0.25	0.11	0.27	0.74	1.21	0.59	0.40	0.13	5.64	2.35	0.20
1956-57	15	49	30	14	28	98	1.16	5.12	5.06	1.88	.31	.82
1957-58	.80	.77	.77	.78	.69	1.32	.94	.69	.34	12.8	2.61	2.60
1958-59	.90	.89	.82	.74	3.91	4.58	3.28	12.4	3.44	2.83	3.92	3.25
1959-60	3.35	2.59	2.41	2.70	2.66	6.94	10.6	5.45	5.83	3.63	8.80	5.18

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.030	0.033	0.014	0.035	0.097	0.158	0.077	0.052	0.017	0.737	0.307	0.026
1956-57	.020	.064	.039	.018	.037	.128	.152	.669	.661	2.46	.041	.081
1957-58	.105	.101	.101	.102	.090	.173	.123	.090	.044	1.67	.341	.340
1958-59	.118	.116	.107	.097	.511	.599	.429	1.62	.450	.370	.512	.425
1959-60	.438	.339	.315	.353	.348	.907	1.39	.712	.762	.475	1.15	6.77

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.04	0.04	0.02	0.04	0.10	0.18	0.09	0.06	0.02	0.85	0.35	0.03
1956-57	.02	.07	.05	.02	.04	.15	.17	.77	.74	.28	.05	.09
1957-58	.12	.11	.12	.12	.09	.20	.14	.10	.05	1.93	.39	.38
1958-59	.14	.13	.12	.11	.53	.69	.48	1.87	.50	.43	.59	.47
1959-60	.50	.38	.36	.41	.37	1.05	1.55	.82	.85	.55	1.33	.76

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	14	15	6.5	16	43	74	35	25	7.7	347	145	12
1956-57	9.1	29	19	8.7	15	60	69	315	301	115	19	37
1957-58	49	46	47	48	38	81	56	43	20	788	160	155
1958-59	55	53	50	45	217	282	195	762	205	171	241	193
1959-60	206	151	148	166	153	426	631	335	347	223	511	308

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30							Calendar year			
	Momentary maximum			Min-imum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet
	Date	Gage height in feet	Dis-charge								
1956	July 15, 1956.	13.50	2,310	0	1.02	0.133	1.82	740	1.04	1.86	762
1957	May 29, 1957.	12.07	1,480	0	1.38	.180	2.45	997	1.50	2.66	1,080
1958	July 30, 1958.	15.48	4,150	0	2.12	.277	3.75	1,530	2.14	3.79	1,550
1959	May 18, 1959.	12.57	1,730	.4	3.42	.447	6.06	2,470	3.90	6.91	2,820
1960	Aug. 28, 1960.	12.28	1,570	1.3	5.01	.655	8.93	3,640	.....	.....	.....

Peak Discharge (base, 250 cfs)

- 1955-56: July 11 (10 p.m.) 317 cfs (8:59 ft.); July 15 (about 9:30 p.m.) 2,310 cfs (13.50 ft.); Aug. 18 (4:30 a.m.) 359 cfs (8.78 ft.).
- 1956-57: May 29 (about 9 p.m.) 1,480 cfs (12.07 ft.); June 7 (5:30 p.m.) 865 cfs (10.58 ft.); June 17 (1:30 p.m.) 380 cfs (8.90 ft.); July 1 (12 m) 778 cfs (10.33 ft.).
- 1957-58: July 19 (4 a.m.) 935 cfs (10.85 ft.); July 30 (about 1:30 a.m.) 4,150 cfs (15.48 ft.).
- 1958-59: May 18 (about 2 p.m.) 1,730 cfs (12.57 ft.); May 29, about 670

Spring Valley Creek near Tabor, Iowa—Continued

cfs; Aug. 5 (5 a.m.) 279 cfs (8.40 ft.); Sept. 18 (10 p.m.) 298 cfs (8.51 ft.).

1959-60: Aug. 17 (12 p.m.) 473 cfs (9:30 ft.); Aug. 28 (7 p.m.) 1,570 cfs (12.28 ft.); Sept. 24 (4:30 a.m.) 328 cfs (8.63 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Dec. 2, 3, 5, 8-11, 15, 16, 23-25, 28-31, 1955; Jan. 4, 7-13, 15, 16, Nov. 7, 15, 16, Nov. 21 to Dec. 1, Dec. 5, 6, 10-26, 31, 1956; Jan. 1-9, 11-14, 17, Nov. 19 to Dec. 15, Dec. 30, 31, 1957; Jan. 1 to Mar. 7, Nov. 25 to Dec. 31, 1958; Jan. 1 to Feb. 25, Feb. 27 to Mar. 19, Nov. 5-9, 13-24, Nov. 26 to Dec. 13, Dec. 16, 18, 19, 24-31, 1959; Jan. 1 to Feb. 1, Feb. 8 to Mar. 27, 1960. No gage height record Oct. 1 to Dec. 1, 1955; Apr. 18-23, Apr. 26 to May 2, 1958; Nov. 11-16, 1958; June 9-20, 1960. Stage-discharge relation indefinite Jan. 17 to Apr. 20, 1956; Jan. 18 to Apr. 24, 1957.

West Nishnabotna River at Randolph, Iowa

LOCATION.—Lat. 40°52'25", long. 95°34'40", in NE¼NE¼ sec. 17, T. 70 N., R. 41 W., on downstream side of bridge on State Highway 184, 0.3 mile downstream from Deer Creek, 0.5 mile west of Randolph, and 16.2 miles upstream from confluence with East Nishnabotna River.

DRAINAGE AREA.—1,326 square miles (revised in 1956).

RECORDS AVAILABLE.—June 1948 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 932.99 ft. above mean sea level, unadjusted. Prior to Aug. 26, 1955, wire-weight gage and June 30, 1949, to Aug. 25, 1955, supplementary water-stage recorder, operating above gage height 8.4 ft. at same site and datum.

AVERAGE DISCHARGE.—12 years, 490 cfs (354,700 acre-ft. per year).

EXTREMES.—1948-60: Maximum discharge, 29,600 cfs May 9, 1950 (gage height, 21.93 ft.); maximum gage height, 24.8 ft. Mar. 5, 1949, from graph based on gage readings (ice jam); minimum daily discharge, 10 cfs Dec. 17-21, 1955.

Flood in June 1947 reached a stage of about 24 ft., from information by local residents (discharge not determined).

REMARKS.—Bankfull stage is about gage height, 19 ft.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	44	23	31	22	16	35	47	68	339	19	470	48
2.....	36	21	30	21	16	50	51	77	165	20	380	28
3.....	32	24	30	21	16	70	63	68	108	33	246	18
4.....	33	24	30	21	16	80	67	62	81	31	110	495
5.....	32	26	30	21	18	98	67	54	85	20	70	*5,240
6.....	32	30	30	21	20	135	67	47	67	20	63	3,010
7.....	34	30	30	20	21	90	58	41	123	544	*68	770
8.....	35	28	30	18	22	80	51	35	118	3,950	143	330
9.....	34	*29	28	18	23	80	46	33	140	310	945	222
10.....	32	30	25	18	24	70	46	32	68	150	322	180
11.....	29	32	20	*18	23	50	44	31	44	*160	138	148
12.....	*26	34	20	16	22	55	*43	31	34	1,140	87	125
13.....	25	34	20	16	21	*65	41	604	24	*2,220	76	100
14.....	24	33	18	16	20	74	41	1,380	*24	427	63	92
15.....	23	32	14	16	20	63	35	450	24	*1,300	51	90
16.....	23	32	12	16	20	54	33	190	23	2,180	141	85
17.....	22	40	10	15	*20	58	33	120	22	820	1,300	77
18.....	22	41	10	15	19	65	32	87	23	735	*2,610	*67
19.....	23	40	10	15	19	67	31	*62	23	405	1,010	60
20.....	23	42	*10	15	19	63	30	42	69	198	298	54
21.....	23	40	10	14	18	65	31	37	85	174	138	52
22.....	24	42	12	14	18	68	29	35	33	108	83	51
23.....	23	40	14	14	18	72	28	33	47	85	67	46
24.....	20	31	16	14	17	70	28	30	38	74	41	44
25.....	23	36	18	14	17	72	29	29	27	57	41	41
26.....	23	37	21	16	17	68	29	29	22	57	38	38
27.....	25	44	22	18	17	67	29	29	32	42	20	33
28.....	25	46	22	20	20	62	40	41	22	44	30	33
29.....	24	35	22	20	25	56	47	130	33	165	54	32
30.....	24	32	22	18	.....	51	65	1,620	24	395	83	30
31.....	23	.....	22	17	.....	48	.....	1,190	.....	218	110	.....

West Nishnabotna River at Randolph, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	31	33	43	34	12	90	186	55	401	857	86	204
2	29	33	45	33	13	86	211	51	217	416	79	244
3	29	31	45	32	14	80	388	50	177	323	79	436
4	29	40	45	31	15	72	287	48	153	287	73	300
5	*29	212	45	31	16	72	234	47	135	252	66	*109
6	28	605	40	30	19	70	195	44	123	230	62	295
7	26	303	35	*30	23	60	165	43	1,750	220	61	126
8	25	165	32	28	30	56	150	40	539	208	*56	291
9	25	121	31	27	45	56	*144	54	252	*192	53	165
10	25	94	31	24	60	60	135	412	208	214	61	121
11	25	83	31	22	90	*69	115	153	*746	171	56	135
12	24	74	31	20	120	66	107	99	800	153	55	271
13	31	*69	31	18	190	65	101	107	287	147	53	171
14	274	65	*31	16	180	63	97	*165	899	138	59	141
15	201	62	31	15	160	63	94	241	*2,930	135	71	135
16	376	56	31	14	140	65	90	241	*11,800	207	74	126
17	200	61	31	13	130	65	90	168	*6,150	174	71	99
18	92	58	31	12	120	90	92	126	3,070	135	59	92
19	63	58	32	12	110	144	86	112	1,120	112	58	85
20	51	52	32	12	100	229	76	101	780	234	62	79
21	51	46	32	12	92	195	71	434	605	257	76	76
22	49	40	32	12	90	165	68	1,160	580	234	94	76
23	43	40	33	12	90	159	66	426	1,300	162	74	73
24	39	40	34	12	100	180	62	255	630	121	76	69
25	42	40	35	12	100	160	61	198	488	107	68	65
26	33	40	35	12	*100	140	137	168	1,620	101	65	63
27	32	40	36	12	96	174	94	138	890	101	213	62
28	30	40	36	12	92	135	77	123	630	97	388	61
29	31	40	36	12	.....	141	68	410	590	97	335	59
30	36	40	36	12	.....	162	59	*1,200	464	141	227	59
31	33	.....	35	12	.....	183	.....	*725	.....	99	344	.....
1957-58												
1	57	141	186	100	90	910	260	205	129	50	2,080	224
2	57	307	171	100	90	575	267	199	134	*6,540	1,910	211
3	56	295	211	100	85	455	294	192	127	*6,400	1,050	*199
4	55	227	186	100	85	*407	353	189	116	*3,900	733	211
5	52	174	186	100	85	425	540	183	116	1,620	*669	376
6	52	153	224	110	80	575	416	174	111	905	*5,730	*8,600
7	69	144	214	110	80	485	344	169	105	680	1,610	1,680
8	107	135	189	110	80	445	302	183	97	*560	975	793
9	99	126	162	110	80	412	286	*180	93	500	799	597
10	90	121	150	120	*80	371	275	172	91	1,630	680	667
11	81	115	130	130	80	366	264	157	*84	1,020	597	445
12	101	126	150	160	80	348	260	155	89	570	540	380
13	118	141	160	190	75	344	249	144	99	470	1,240	344
14	107	138	180	220	75	348	242	142	1,080	412	1,270	570
15	126	135	200	*200	75	340	*235	147	374	366	619	786
16	*189	138	210	190	70	323	224	202	180	331	490	485
17	168	186	*225	180	70	302	215	205	137	500	420	371
18	147	224	225	170	70	294	202	180	120	495	366	323
19	107	183	220	160	70	294	208	150	111	*3,080	298	298
20	88	*165	217	150	70	294	211	134	109	3,620	331	286
21	90	177	204	140	80	286	208	132	99	1,360	402	480
22	107	183	204	130	200	286	195	127	91	805	358	366
23	180	190	195	120	2,500	283	215	125	89	636	420	461
24	238	200	171	110	*6,000	275	232	118	89	597	445	550
25	183	210	168	110	3,370	267	224	111	86	733	376	344
26	141	198	168	110	1,400	264	208	107	127	575	331	286
27	126	211	171	110	1,950	256	208	105	89	545	279	260
28	118	224	141	110	2,200	264	215	111	71	525	264	242
29	115	230	130	100	.....	260	221	99	63	435	256	238
30	115	201	120	100	.....	260	215	107	56	*7,150	256	228
31	109	.....	110	90	.....	260	.....	113	.....	1,850	242	.....

West Nishnabotna River at Randolph, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	211	183	140	105	60	1,440	555	460	*2,620	3,190	302	169
2	215	186	*140	100	60	1,440	565	471	1,280	1,280	384	160
3	218	186	150	95	60	1,120	*586	4,780	1,120	870	460	199
4	224	189	130	90	60	*652	440	1,500	975	757	1,200	208
5	215	*177	125	85	60	306	412	1,640	870	715	*722	172
6	*218	160	125	80	60	170	380	*2,530	818	658	2,220	155
7	235	163	120	75	60	240	366	1,170	781	*602	525	147
8	246	166	115	70	60	302	358	940	751	565	294	142
9	267	166	110	65	60	331	344	1,190	715	525	264	134
10	232	160	110	65	60	495	323	1,900	709	485	405	*129
11	195	157	105	65	60	430	314	1,320	896	470	290	129
12	202	157	105	*65	*60	490	306	1,050	1,420	520	249	134
13	205	157	100	65	60	787	302	1,010	824	460	218	134
14	205	160	100	65	65	1,010	290	905	739	435	208	134
15	199	163	95	65	65	940	283	824	709	425	264	129
16	195	163	95	65	65	445	275	763	663	425	264	122
17	189	192	100	65	65	398	306	733	630	420	235	172
18	186	228	105	65	65	366	327	*3,250	644	644	211	297
19	186	224	110	65	65	690	323	2,950	614	490	195	694
20	189	195	115	65	65	1,750	416	1,160	608	412	192	256
21	186	180	120	65	65	1,030	460	1,010	580	362	180	195
22	183	177	125	65	80	540	450	818	560	344	169	169
23	183	174	125	65	500	455	412	709	545	323	224	150
24	180	172	125	65	*1,450	440	402	646	525	306	344	144
25	180	169	125	65	2,000	465	366	592	515	283	242	147
26	177	165	125	65	2,500	1,280	327	586	490	267	192	157
27	180	155	125	65	3,130	*1,080	323	1,440	480	256	172	174
28	180	155	120	65	2,620	799	1,280	2,490	480	252	166	174
29	180	150	120	65	.....	580	709	*9,240	1,050	249	484	155
30	180	145	115	60	.....	500	530	6,480	2,060	235	183	144
31	183	.....	110	60	.....	565	.....	3,530	.....	386	228	.....
1959-60												
1	145	150	135	140	185	160	5,370	768	640	1,940	381	715
2	182	147	*140	135	190	160	5,200	665	615	1,080	365	615
3	218	*145	140	130	195	160	3,100	665	590	690	358	558
4	193	164	150	120	200	155	2,660	615	576	615	354	518
5	204	180	135	*110	205	150	2,250	740	572	572	347	496
6	*255	185	130	95	205	150	1,970	3,040	545	554	2,200	473
7	190	175	125	95	200	150	1,760	2,200	532	*550	4,060	460
8	258	175	130	100	*200	150	*1,560	1,250	518	518	1,880	*446
9	332	180	130	105	195	145	1,320	970	*518	536	*768	450
10	221	180	130	110	190	145	1,180	*850	522	768	554	468
11	190	170	135	110	190	145	1,110	795	540	615	482	437
12	172	164	140	180	190	145	1,080	740	640	1,270	442	414
13	162	154	145	300	185	140	1,080	715	690	1,880	410	406
14	160	145	152	280	185	140	1,040	690	665	822	390	406
15	157	140	152	400	180	140	970	665	590	586	373	406
16	152	135	157	260	180	140	910	740	795	554	362	398
17	145	135	152	240	180	140	1,180	768	665	532	521	398
18	145	145	142	230	180	*140	1,400	715	615	690	*3,570	3,100
19	147	160	142	220	175	140	1,110	715	590	1,280	1,470	715
20	145	180	140	210	170	140	940	740	2,640	665	880	522
21	145	190	145	200	170	140	850	1,250	1,220	536	910	450
22	142	193	150	195	170	140	795	1,110	910	486	581	406
23	142	188	154	190	165	110	768	880	715	460	504	715
24	133	185	152	185	165	140	740	1,230	640	442	576	3,620
25	130	182	152	180	160	140	740	1,680	590	428	850	1,530
26	138	164	154	180	160	150	690	1,640	568	419	690	880
27	138	135	180	180	160	200	665	880	558	406	550	640
28	138	130	248	180	160	1,200	665	768	550	402	1,420	545
29	138	125	358	180	160	13,000	690	715	536	406	6,670	532
30	138	130	280	180	.....	*13,400	880	690	*3,710	419	1,480	504
31	145	.....	160	180	.....	5,370	.....	665	.....	390	880	.....

West Nishnabotna River at Randolph, Iowa—Continued

Monthly Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	27.1	33.6	20.6	17.4	19.4	67.8	42.7	217	65.6	519	300	388
1956-57.....	65.5	89.4	35.0	18.9	83.8	110	127	245	1,344	204	105	143
1957-58.....	111	180	180	130	688	365	260	152	145	1,576	840	710
1958-59.....	201	172	117	70.5	485	697	424	1,874	856	568	377	181
1959-60.....	171	161	159	181	181	1,192	1,489	986	802	694	1,138	741

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.020	0.025	0.016	0.013	0.015	0.051	0.032	0.164	0.049	0.391	0.226	0.293
1956-57.....	.049	.067	.026	.014	.063	.083	.096	.185	1.01	.154	.079	.108
1957-58.....	.084	.136	.136	.098	.519	.275	.196	.115	.109	1.19	.633	.535
1958-59.....	.152	.130	.088	.053	.366	.526	.320	1.41	.646	.428	.284	.137
1959-60.....	.129	.121	.120	.137	.137	.899	1.12	.744	.605	.523	.858	.559

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.02	0.03	0.02	0.02	0.02	0.06	0.04	0.19	0.06	0.45	0.26	0.33
1956-57.....	.06	.08	.03	.02	.07	.10	.11	.21	1.13	.18	.09	.12
1957-58.....	.10	.15	.16	.11	.54	.32	.22	.13	.12	1.37	.73	.60
1958-59.....	.17	.15	.10	.06	.38	.61	.36	1.63	.72	.49	.33	.15
1959-60.....	.15	.14	.14	.16	.15	1.04	1.25	.86	.67	.60	.99	.62

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	1,670	2,000	1,270	1,070	1,110	4,170	2,540	13,320	3,900	31,940	18,440	23,090
1956-57.....	4,030	5,320	2,150	1,160	4,660	6,770	7,550	15,060	80,000	12,540	6,450	8,510
1957-58.....	6,840	10,710	11,060	8,010	38,220	22,420	15,450	9,360	8,650	96,910	51,640	42,250
1958-59.....	12,350	10,260	7,200	4,330	26,940	42,840	25,250	115,200	50,910	34,920	23,180	10,760
1959-60.....	10,510	9,580	9,790	11,110	10,410	73,300	88,610	60,600	47,710	42,670	69,970	44,080

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30							Calendar year				
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet	
	Date	Gage height in feet	Discharge									
1955.....										202	2.07	146,500
1956.....	July 8, 1956.....	17.8	17,900	10	144	0.109	1.50	104,500	153	1.60	111,100	
1957.....	June 16, 1957.....	17.58	15,600	12	213	.161	2.20	154,200	237	2.44	171,300	
1958.....	Sept. 6, 1958.....	(118.20)	17,900	50	444	.335	4.55	321,500	446	4.56	322,700	
1959.....	May 29, 1959.....	18.13	16,200	60	503	.379	5.15	364,100	503	5.16	364,200	
1960.....	Mar. 30, 1960.....	19.18	20,600	95	659	.497	6.77	478,300				

(1) Maximum gage height, 18.62 ft. Feb. 24, 1958 (backwater from ice).

Peak Discharge (base, 6,500 cfs)

1955-56: July 8 (1:30 a.m.) 17,900 cfs (17.8 ft.); July 15 (10 p.m.) 9,260 cfs (14.06 ft.).

1956-57: June 16 (1:30 p.m.) 15,600 cfs (17.58 ft.).

1957-58: Feb. 24 (time unknown) about 11,000 cfs; July 3 (2 a.m.) 16,500 cfs (17.70 ft.); July 19 (12 p.m.) 8,400 cfs (15.35 ft.); July 30 (8:30 a.m.) 14,600 cfs (17.30 ft.); Aug. 6 (5 a.m.) 11,800 cfs (16.50 ft.); Sept. 6 (5:30 a.m.) 17,900 cfs (18.20 ft.).

West Nishnabotna River at Randolph, Iowa—Continued

1958-59: May 3 (10:30 a.m.) 6,580 cfs (13.15 ft.); May 18 (7:30 p.m.) 8,200 cfs (14.43 ft.); May 29 (2 a.m.) 16,200 cfs (18.13 ft.).

1959-60: Mar. 30 (1 a.m.) 20,600 cfs (19.18 ft.); May 6 (10:30 a.m.) 7,570 cfs (14.42 ft.); June 30 (6:30 p.m.) 8,200 cfs (14.73 ft.); Aug. 7 (4:30 p.m.) 7,360 cfs (14.26 ft.); Aug. 29 (1 a.m.) 14,500 cfs (17.16 ft.); Sept. 18 (5:30 a.m.) 8,410 cfs (14.76 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 16, Nov. 29 to Dec. 31, 1955; Jan. 1 to Mar. 4, Mar. 7-13, Nov. 22 to Dec. 31, 1956; Jan. 1 to Mar. 10, Mar. 24-26, Nov. 23-25, Dec. 10-19, Dec. 29-31, 1957; Jan. 1 to Feb. 23, Nov. 26 to Dec. 31, 1958; Jan. 1 to Feb. 26, Mar. 6, 7, Nov. 6-8, 14-21, Nov. 27 to Dec. 12, Dec. 31, 1959; Jan. 1 to Mar. 29, 1960.

Davids Creek near Hamlin, Iowa

LOCATION.—Lat. 41°40'25", long. 94°48'20", in NE¼NE¼ sec. 9, T. 79 N., R. 34 W., on left bank 20 ft. downstream from bridge on State Highway 64, 5.2 miles east of Hamlin, and 8 miles upstream from mouth and East Nishnabotna River.

DRAINAGE AREA.—26.0 square miles (revised in 1956).

RECORDS AVAILABLE.—June 1952 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 1,266.54 ft. above mean sea level, datum of 1929.

AVERAGE DISCHARGE.—8 years, 9.36 cfs (6,780 acre-ft. per year).

EXTREMES.—1952-60: Maximum discharge, 22,700 cfs July 2, 1958 (gage height, 19.35 ft.), from rating curve extended above 500 cfs on basis of slope-area measurement of peak flow; no flow for many days in 1952-56.

REMARKS.—Records of suspended-sediment loads for the period July 1952 to September 1960 are published in reports of U. S. Geological Survey. Bankfull stage is about gage height, 14 ft.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	0.06	0.08	0.06	0	0	0.02	0.12	0.15	0.12	1.6	13	0.52
2.....	.06	.08	.05	.01	0	.03	.15	.28	.06	.39	1.8	.45
3.....	.06	.08	.04	.01	0	.04	.18	*.28	.18	30	.59	1.5
4.....	.08	*.08	.03	.01	0	.02	.18	.15	.08	12	.28	274
5.....	*.08	.08	.02	.02	0	.01	.18	.12	.04	1.2	.18	*174
6.....	.15	.08	.01	*.02	0	0	*.15	.08	*14	.52	94	25
7.....	.08	.12	*0	.02	0	0	.08	.08	87	17	*8.0	13
8.....	.08	.12	.01	.02	*0	*0	.15	.06	1.6	2.6	142	8.5
9.....	.08	.12	.02	.02	0	0	.23	.08	.59	.59	11	6.4
10.....	.08	.12	.02	.02	0	0	.15	.06	.28	.28	3.6	*5.3
11.....	.08	.08	.02	.02	0	0	.33	.12	.18	6.2	2.4	4.0
12.....	.06	.08	.02	.02	0	.01	.15	.12	.12	*10	1.6	3.6
13.....	.04	.08	.02	.02	0	.50	.12	2.4	.08	1.0	1.1	3.1
14.....	.06	.12	.02	.02	0	.45	.12	.33	.06	.28	.92	2.6
15.....	.08	.08	.01	.01	0	.40	.12	.08	.08	23	.75	2.6
16.....	.08	.08	.01	.01	0	.36	.11	.08	.08	56	*169	2.1
17.....	.06	.09	0	.01	0	.30	.10	.06	.08	2.4	12	1.6
18.....	.08	.10	0	.01	0	.25	.10	.06	.06	2.2	10	1.6
19.....	.08	.10	0	0	0	.20	.09	.06	.08	1.0	7.2	1.6
20.....	.08	.13	0	0	0	.27	.08	.05	.08	.39	4.0	1.5
21.....	.18	.16	0	0	0	.23	.06	.05	.06	.28	2.6	1.4
22.....	.12	.14	.01	0	0	.35	.02	.04	.12	.23	1.8	1.2
23.....	.12	.11	.02	0	0	.45	.04	.04	.15	.23	1.5	1.0
24.....	.08	.11	.03	0	0	.50	.02	.03	.06	.18	1.0	1.0
25.....	.12	.11	.04	0	0	.33	.06	.03	.08	.12	.83	1.0
26.....	.15	.11	.04	0	0	.28	.06	.02	.12	.08	.75	1.0
27.....	.12	.10	.04	0	0	.18	.08	.02	.23	.08	.67	.92
28.....	.12	.09	.03	0	0	.15	.18	.02	.12	6.4	.52	.75
29.....	.08	.08	.03	0	01	.15	.15	4.5	.12	1.4	.59	.75
30.....	.08	.07	.01	0	.....	.12	.12	7.2	7.2	.52	.67	.75
31.....	.08	.....	0	0	.....	.12	.....	.15	.....	1.6	.75	.....

Davids Creek near Hamlin, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	0.83	1.4	3.8	1.4	0.60	0.90	25	3.6	4.6	9.5	1.2	1.2
2	.75	1.4	4.7	1.0	.70	.82	23	3.4	4.0	9.5	1.2	9.0
3	.75	1.2	5.0	1.2	.80	.96	*15	3.1	4.0	8.5	1.2	4.0
4	.75	9.5	4.6	1.0	.90	1.2	17	2.8	4.0	8.0	1.0	1.5
5	.75	63	4.0	.94	1.0	1.5	19	2.8	*3.1	7.2	1.0	1.4
6	.75	22	2.6	1.0	1.0	1.6	15	*2.6	3.1	6.8	.92	4.6
7	.67	*14	*1.9	.92	*1.0	1.2	16	2.6	5.6	6.4	.75	*3.6
8	.83	10	1.5	*1.2	1.3	*1.2	14	2.6	4.9	6.0	.67	2.1
9	.83	9.5	1.4	.90	5.0	1.3	13	2.8	4.6	5.6	*.59	1.5
10	.92	8.5	2.5	.70	4.0	1.4	13	6.7	5.3	5.3	.59	1.4
11	1.0	7.6	2.1	.60	2.6	2.0	10	4.6	6.4	*4.9	.67	5.1
12	1.0	6.4	1.5	.60	2.0	1.4	8.0	5.6	4.6	4.6	.59	7.2
13	1.6	6.0	1.3	.60	1.8	1.6	9.0	6.4	4.2	4.0	.67	3.4
14	5.6	6.4	1.8	.60	1.5	1.8	8.0	18	13	4.0	1.2	2.8
15	28	5.6	2.0	.60	1.3	.59	8.0	12	36	6.8	.92	2.8
16	6.8	3.6	2.2	.60	1.2	.83	8.0	10	*483	4.9	.59	2.1
17	3.4	4.9	1.7	.60	1.1	2.0	8.0	12	89	3.6	.59	1.6
18	*2.8	4.9	1.4	.60	1.1	15	7.2	9.5	49	3.1	.92	1.4
19	2.4	4.0	1.8	.60	1.0	6.8	7.2	8.5	25	2.8	.92	1.4
20	2.1	3.0	1.9	.80	.86	4.6	6.0	13	20	2.6	.92	1.4
21	2.0	1.9	2.1	1.5	.80	4.2	5.3	15	16	3.1	2.0	1.6
22	2.0	1.6	2.4	1.1	.70	3.6	5.6	8.5	20	3.1	1.1	1.4
23	1.6	2.7	2.0	.82	.90	3.6	5.6	7.6	14	2.8	.92	1.2
24	1.6	4.0	1.5	.70	1.5	3.4	4.6	7.2	13	2.4	.92	1.1
25	1.6	4.5	1.3	.62	2.5	.67	4.2	8.0	18	2.1	.83	1.0
26	1.6	3.9	1.6	.56	1.2	.59	7.6	6.4	13	2.1	.59	1.0
27	1.2	3.6	1.9	.50	.92	.83	5.6	5.6	13	2.1	2.4	.92
28	1.1	3.2	2.2	.50	1.3	2.8	4.6	5.3	16	2.1	4.0	.92
29	1.2	3.0	2.0	.50	.50	16	4.0	5.3	11	1.8	2.8	.92
30	1.6	3.5	2.3	.50	.50	14	3.6	6.4	9.5	1.6	2.0	.92
31	1.4		1.8	.54		22		5.6		1.5	1.2	
1957-58												
1	0.92	7.6	13	6.6	4.5	27	*15	6.4	4.2	78	50	7.3
2	.83	14	13	6.2	4.2	23	15	6.4	3.4	*1,620	33	6.9
3	.83	9.0	*13	5.8	4.1	*21	15	6.8	3.1	*407	24	6.2
4	.83	8.5	13	5.6	*3.9	*21	19	6.4	*3.1	*291	21	*6.0
5	.83	*7.6	12	5.7	3.8	21	19	6.0	2.8	55	21	88
6	4.3	7.6	13	5.8	3.7	22	17	*6.5	2.6	*43	*20	114
7	*5.1	7.6	12	6.0	3.5	20	13	7.2	2.6	36	18	19
8	28	7.2	10	*6.0	3.4	19	13	7.6	2.6	*32	18	16
9	11	5.0	8.0	6.0	3.3	19	13	6.8	2.4	30	17	16
10	6.4	5.6	7.0	6.2	3.1	17	13	6.4	2.1	29	16	14
11	4.9	6.4	8.2	6.4	3.0	18	12	6.4	1.8	28	16	13
12	4.6	6.4	9.0	6.6	2.8	20	11	6.0	4.9	26	15	12
13	5.6	8.0	9.6	6.7	2.7	20	11	5.3	43	25	16	12
14	5.3	7.6	10	6.8	2.7	19	10	5.6	8.6	24	16	21
15	8.1	8.5	11	7.0	2.6	17	9.5	6.0	6.4	22	15	22
16	7.6	15	12	7.0	2.6	16	9.0	6.0	4.9	20	13	15
17	6.0	12	13	6.8	2.6	15	9.0	6.4	4.6	21	12	14
18	4.9	8.0	15	6.6	2.6	14	8.5	5.3	4.0	21	12	12
19	4.6	6.0	15	6.3	2.6	14	9.0	4.9	4.0	282	11	11
20	4.2	13	13	6.0	2.6	14	9.0	4.9	3.4	49	11	11
21	4.2	11	12	6.2	2.6	14	8.0	4.6	3.4	34	11	12
22	7.2	11	13	7.0	3.0	13	7.6	4.6	4.5	28	10	10
23	14	11	13	6.8	30	13	9.0	4.0	6.0	26	13	11
24	12	11	12	6.6	100	13	8.5	4.0	5.8	29	15	12
25	9.5	11	13	6.3	53	13	7.2	3.6	3.6	24	11	9.7
26	8.0	12	11	6.2	30	13	7.2	3.4	2.6	22	11	9.3
27	7.2	13	12	5.8	83	13	7.2	3.1	2.4	22	10	8.5
28	7.2	14	10	5.6	39	13	9.0	2.6	2.1	20	9.1	8.3
29	6.8	11	9.0	5.4		13	6.4	2.6	1.8	19	8.9	8.3
30	6.4	10	8.0	5.0		13	6.4	2.8	1.6	50	9.1	7.3
31	5.6		7.2	4.7		12		5.0		48	7.3	

Davids Creek near Hamlin, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	7.2	3.9	3.1	1.3	1.0	40	20	16	45	37	3.0	14
2	7.2	3.9	3.6	1.2	1.0	30	14	16	35	24	5.8	6.8
3	7.0	3.9	*3.9	1.1	1.0	*18	14	51	31	21	5.2	4.4
4	6.8	3.7	4.5	1.1	*1.0	6.7	12	27	*28	18	*4.8	3.9
5	6.4	*3.7	3.6	1.1	1.0	8.0	11	62	26	16	4.3	2.3
6	6.7	3.5	3.0	1.0	1.0	9.0	11	*43	23	14	3.8	1.9
7	8.4	3.5	2.6	*1.0	1.0	7.0	*13	34	22	*12	3.5	1.5
8	*7.7	3.5	2.2	1.0	1.0	9.0	11	32	21	11	3.2	1.4
9	7.0	3.5	2.0	1.0	1.0	14	9.5	42	20	10	2.9	1.2
10	6.2	3.5	1.9	1.0	1.0	20	9.0	42	18	9.5	2.7	*1.1
11	5.4	3.5	1.8	1.0	1.0	45	8.0	31	17	9.0	2.5	1.2
12	5.0	3.5	1.8	1.0	1.0	60	7.3	30	16	8.1	2.3	1.3
13	4.5	3.5	1.8	1.1	1.0	80	7.0	28	15	7.5	2.0	1.3
14	4.2	3.5	1.8	1.2	1.0	61	6.4	26	14	7.2	1.8	1.5
15	4.0	3.5	1.8	1.2	1.0	50	6.0	25	13	7.0	5.0	1.1
16	3.9	4.5	1.8	1.2	1.0	38	7.2	24	12	6.4	2.7	1.1
17	3.9	9.4	1.8	1.2	1.0	25	9.2	23	11	6.0	2.5	2.3
18	3.9	11	1.8	1.1	1.0	50	8.0	40	10	5.7	2.2	3.5
19	3.9	9.5	1.8	1.1	1.0	120	11	25	9.5	5.4	1.8	3.2
20	3.9	8.2	1.9	1.1	1.0	33	30	22	9.2	5.2	1.6	3.0
21	3.9	7.6	2.0	1.1	1.0	13	36	19	8.9	5.0	1.5	1.8
22	3.9	6.8	2.0	1.1	1.0	18	29	18	8.5	4.8	1.1	1.6
23	3.9	6.4	2.1	1.1	1.0	15	21	17	8.2	4.5	4.0	1.4
24	3.9	6.2	2.2	1.1	1.0	10	20	16	7.7	4.3	2.7	1.3
25	3.9	5.8	2.3	1.1	1.0	11	17	15	7.5	4.1	1.3	5.3
26	3.9	3.9	2.3	1.1	1.0	10	33	16	7.3	4.0	.98	5.4
27	3.9	4.5	2.3	1.0	50	18	22	13	10	3.8	.79	3.9
28	4.0	5.0	2.3	1.0	45	14	32	64	24	3.6	.79	2.7
29	3.9	3.6	2.0	1.0	.....	14	20	81	29	3.5	1.5	2.5
30	3.9	2.8	1.7	1.0	.....	14	17	76	72	3.3	1.1	2.3
31	3.9	.....	1.4	1.0	.....	14	.....	58	.....	3.1	2.7	.....
1959-60												
1	*2.2	1.3	2.3	5.0	3.7	*2.2	329	17	22	25	7.3	12
2	3.9	1.0	*2.5	4.0	3.7	2.2	176	16	20	19	*6.4	11
3	3.7	.81	2.5	3.0	3.6	2.2	114	*13	18	16	6.0	10
4	3.0	4.0	2.2	2.3	3.6	2.1	99	12	18	14	5.6	9.3
5	4.5	4.4	1.9	*1.9	3.7	2.1	*85	36	17	14	34	9.0
6	3.5	*5.1	1.7	3.0	4.0	2.1	75	158	16	13	104	8.6
7	3.0	5.0	1.6	4.0	4.5	2.1	56	74	*15	12	153	8.1
8	5.2	4.5	1.6	3.5	6.0	2.0	44	51	14	*12	29	*8.8
9	3.9	4.2	1.7	3.0	7.6	2.0	37	40	14	22	21	8.8
10	3.2	4.0	1.9	2.8	9.2	2.0	37	35	14	14	17	8.4
11	2.8	3.0	2.1	4.5	11	2.0	34	31	19	30	15	7.9
12	2.7	2.8	2.4	7.0	12	2.0	31	29	28	111	14	7.4
13	2.3	2.6	2.0	10	*11	2.0	33	27	22	40	13	7.4
14	2.3	2.4	1.6	8.4	8.0	2.0	28	25	18	23	12	7.7
15	2.2	2.2	1.5	7.6	6.0	2.1	26	23	16	20	11	7.4
16	1.8	2.0	1.4	6.6	4.8	2.1	35	43	36	18	11	7.4
17	1.8	1.8	1.3	5.4	4.6	2.2	156	27	21	16	64	7.2
18	1.8	2.3	1.2	4.5	4.5	2.3	78	28	21	20	99	7.9
19	1.6	2.8	1.1	4.0	4.5	2.3	53	28	27	15	31	7.0
20	1.5	3.0	1.0	3.7	4.4	2.3	40	26	60	14	24	6.8
21	1.5	3.2	1.0	3.6	4.3	2.3	31	28	32	13	20	6.5
22	1.5	3.1	1.0	3.5	4.1	2.3	25	23	25	12	18	6.5
23	1.6	2.9	1.0	4.3	3.7	2.4	21	21	22	12	16	10
24	1.1	2.7	1.0	5.0	3.3	2.4	19	67	19	12	15	22
25	1.1	2.5	1.0	4.7	3.0	2.7	19	141	18	11	14	7.9
26	1.5	2.3	2.5	4.5	2.7	6.0	17	53	17	10	13	5.7
27	1.1	2.1	5.0	4.3	2.5	20	16	36	16	10	12	4.6
28	.70	1.9	12	4.2	2.3	60	16	31	16	9.5	16	3.7
29	1.4	1.8	8.2	4.0	2.3	250	19	27	15	8.8	25	3.7
30	1.7	2.0	5.8	3.9	.....	*300	26	24	47	8.4	15	2.3
31	1.8	.....	6.6	3.8	.....	250	.....	23	.....	7.5	13	.....

Davids Creek near Hamlin, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.089	0.099	0.020	0.009	0.0003	0.185	0.123	0.552	3.77	5.80	16.0	18.1
1956-57	2.56	7.49	2.28	.784	1.45	3.88	10.0	6.89	30.6	4.48	1.16	2.35
1957-58	6.55	9.52	11.3	6.18	14.5	16.8	10.9	5.28	4.94	112	15.8	17.8
1958-59	5.04	4.98	2.29	1.08	4.64	29.1	15.2	33.3	19.3	9.16	2.65	2.87
1959-60	2.32	2.79	2.60	4.52	5.12	30.3	59.2	39.1	22.1	18.8	27.6	8.03

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.0034	0.0038	0.00077	0.00035	0.000012	0.0071	0.0047	0.021	0.145	0.223	0.615	0.696
1956-57	.098	.288	.088	.030	.056	.149	.385	.265	1.18	.172	.045	.090
1957-58	.252	.366	.435	.238	.558	.646	.419	.203	.190	4.31	.608	.685
1958-59	.194	.192	.088	.042	.178	1.12	.585	1.28	.742	.352	.102	.110
1959-60	.089	.107	.100	.174	.197	1.17	2.28	1.50	.850	.723	1.06	.309

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.004	0.004	0.0009	0.0004	0.00001	0.008	0.005	0.02	0.16	0.26	0.71	0.78
1956-57	.11	.32	.10	.03	.06	.17	.43	.31	1.31	.20	.05	.10
1957-58	.29	.41	.50	.27	.58	.74	.47	.23	.21	4.95	.70	.76
1958-59	.22	.21	.10	.05	.19	1.29	.65	1.48	.83	.41	.12	.12
1959-60	.10	.12	.12	.20	.21	1.35	2.54	1.74	.95	.83	1.22	.34

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	5.5	5.9	1.2	0.5	0.02	11	7.3	34	224	357	982	1,080
1956-57	158	446	140	48	80	239	595	423	1,820	275	71	140
1957-58	403	566	694	380	803	1,030	648	324	294	6,860	973	1,060
1958-59	310	296	141	67	258	1,790	906	2,050	1,150	563	163	171
1959-60	143	166	160	278	295	1,870	3,520	2,410	1,320	1,150	1,690	478

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30							Calendar year			
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet
	Date	Gage height in feet	Discharge								
1955											
1956	Sept. 4, 1956	12.41	574	0	3.73	0.143	1.95	2,710	4.73	2.47	3,440
1957	June 16, 1957	14.80	1,160	.50	6.13	.236	3.19	4,440	7.40	3.86	5,350
1958	July 2, 1958	19.35	22,700	.83	19.4	.746	10.11	14,040	18.1	9.44	13,120
1959	May 20, 1959	(1)9.66	240	.79	10.9	.419	5.67	7,860	10.5	5.48	7,590
1960	Mar. 29, 1960	(2)12.94	about 600	.70	18.6	.715	9.72	13,480			

(1) Maximum gage height, 10.90 ft. Feb. 27, 1959 (backwater from ice).

(2) Backwater from ice.

Peak Discharge (base, 400 cfs)

1955-56: June 6 (12 p.m.) 406 cfs (11.34 ft.); Aug. 16 (10 a.m.) 406 cfs (11.31 ft.); Sept. 4 (7:30 a.m.) 574 cfs (12.41 ft.).

1956-57: June 16 (6 a.m.) 1,160 cfs (14.80 ft.).

1957-58: July 2 (1:15 a.m.) 22,700 cfs (19.35 ft.); July 3 (9:30 p.m.) 1,190 cfs (14.84 ft.); July 19 (4 p.m.) 625 cfs (12.26 ft.); Sept. 5 (10 p.m.) 425 cfs (11.08 ft.).

Davids Creek near Hamlin, Iowa—Continued

1958-59: No peak above base.

1959-60: Mar. 29 about 600 cfs; Aug. 7 (1:30 a.m.) 453 cfs (10.70 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 17 to Dec. 25, Dec. 27-31, 1955; Jan. 1, Jan. 4 to Mar. 24, Nov. 20 to Dec. 31, 1956; Jan. 1 to Mar. 9, Nov. 9, 10, Nov. 18 to Dec. 16, Dec. 26-31, 1957; Jan. 1 to Feb. 24, Nov. 26 to Dec. 31, 1958; Jan. 1 to Mar. 19, Nov. 6-8, Nov. 13 to Dec. 13, 16-25, Dec. 30, 31, 1959; Jan. 1 to Mar. 30, 1960. No gage-height record Apr. 15-20, May 20-25, 1956. Backwater from debris Oct. 11-24, Nov. 7-15, 19-25, 1958; Apr. 9-20, May 19-27, June 10-27, July 8 to Aug. 10; Sept. 8-11, 1959.

East Nishnabotna River at Red Oak, Iowa

LOCATION.—Lat. 41°00'55", long. 95°14'15", in NW ¼ NE ¼ sec. 29, T. 72 N., R. 38 W., on right bank 10 ft. downstream from bridge on U. S. Highway 34, 0.5 mile west of Red Oak, and 0.9 mile upstream from Red Oak Creek.

DRAINAGE AREA.—894 square miles (revised in 1956).

RECORDS AVAILABLE.—May 1918 to July 1925, May 1936 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 1,010.45 ft. above mean sea level, unadjusted. Prior to July 5, 1925, chain gage, 0.5 mile downstream at datum 0.40 ft. lower. May 29, 1936, to Nov. 13, 1952, wire-weight gage at present site and datum with supplementary water-stage recorder in operation above 3.2 ft. gage height July 30, 1939, to Nov. 13, 1952.

AVERAGE DISCHARGE.—30 years (1918-24, 1936-60), 348 cfs (251,900 acre-ft. per year).

EXTREMES.—1918-25, 1936-60: Maximum discharge, 36,200 cfs June 13, 1947 (gage height, 23.23 ft.), from rating curve extended above 14,000 cfs on basis of an overflow profile and extended channel rating; minimum daily, 6 cfs Aug. 18, 1936.

REMARKS.—Bankfull stage is about gage height, 15 ft.

REVISIONS (water years).—WSP 1240: 1921, 1922-23 (M), 1924, 1942 (M), 1944 (M), 1946. WSP 1710: 1957.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1	47	25	37	24	22	60	43	44	160	20	980	34
2	34	25	39	24	22	80	41	49	70	22	832	25
3	28	25	41	24	22	87	40	47	53	28	226	20
4	26	25	38	*24	24	68	43	45	45	26	103	2,160
5	27	28	36	30	26	71	43	42	49	50	65	*4,810
6	28	27	36	32	27	74	40	34	49	47	45	1,970
7	30	26	36	35	28	60	33	30	247	254	*200	553
8	29	25	35	30	30	54	32	27	717	375	581	282
9	27	28	32	37	27	46	32	26	146	84	1,210	217
10	25	*28	30	38	24	40	31	26	63	*47	357	181
11	24	30	25	39	23	37	*31	26	41	35	150	152
12	*23	28	20	40	23	*36	29	26	32	52	89	128
13	23	29	18	40	*23	45	28	44	26	820	70	109
14	23	26	16	40	23	50	27	*257	*23	155	60	95
15	23	27	14	35	24	47	24	120	22	91	45	84
16	23	27	14	30	24	40	25	73	19	556	38	76
17	24	28	14	25	24	45	25	57	18	776	656	*59
18	23	28	14	25	25	46	25	49	16	372	1,150	56
19	23	29	14	25	25	45	23	38	16	118	610	50
20	23	33	14	24	25	44	23	32	23	208	176	45
21	23	36	*14	24	26	47	23	31	63	91	101	40
22	23	38	14	23	26	50	22	31	118	54	65	38
23	24	36	20	23	27	49	22	31	*71	39	52	402
24	25	27	22	22	27	49	23	29	40	33	42	4
25	26	34	25	22	28	50	23	27	32	27	34	3 ⁹
26	26	41	27	22	29	46	25	28	34	23	28	35
27	26	41	26	22	30	45	24	30	33	21	24	33
28	29	41	25	22	40	50	31	33	38	21	22	32
29	27	38	25	22	50	44	39	36	27	1,070	21	31
30	26	35	25	22	.....	44	42	183	28	554	45	28
31	26	.....	25	22	.....	44	.....	651	.....	150	96	.....

East Nishnabotna River at Red Oak, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1.....	28	36	105	48	15	96	327	82	695	345	84	92
2.....	28	31	92	47	15	90	496	75	450	326	80	261
3.....	27	27	94	47	15	69	650	69	379	321	77	498
4.....	27	53	105	46	17	66	460	59	348	313	74	144
5.....	*25	756	103	46	18	71	406	53	324	290	71	103
6.....	24	1,120	101	45	21	63	350	50	302	255	67	142
7.....	24	375	61	44	25	53	282	48	875	228	*59	464
8.....	24	248	54	*43	30	35	*305	44	562	220	54	215
9.....	23	176	48	40	35	31	270	92	379	*187	50	127
10.....	24	144	44	37	50	47	248	334	348	178	52	111
11.....	23	123	41	35	80	*58	270	311	*1,580	169	50	116
12.....	21	105	40	33	130	64	242	208	1,200	159	49	252
13.....	28	*88	38	31	*220	63	165	*211	482	150	48	201
14.....	45	80	*38	28	190	56	176	449	436	140	63	138
15.....	179	80	38	26	160	48	168	670	920	144	56	118
16.....	604	84	39	24	130	47	162	353	7,740	262	56	113
17.....	240	67	40	22	100	50	168	311	6,340	178	52	103
18.....	120	70	40	20	90	83	157	327	*3,470	146	48	*92
19.....	66	84	41	18	76	202	142	273	1,220	127	51	86
20.....	67	90	42	17	64	170	137	257	840	125	59	81
21.....	64	77	43	16	56	120	130	542	695	162	72	82
22.....	50	73	44	15	50	107	103	586	627	148	60	84
23.....	46	80	44	15	80	92	109	266	923	142	64	81
24.....	40	77	45	15	84	92	118	245	546	122	59	77
25.....	38	86	46	15	82	80	103	217	521	111	52	74
26.....	37	77	46	15	78	80	105	214	780	106	49	70
27.....	33	*77	47	15	82	86	211	211	530	107	139	67
28.....	32	98	47	15	92	92	165	165	530	103	240	64
29.....	32	66	48	15	.....	123	111	219	522	99	265	64
30.....	32	92	48	15	.....	193	92	*4,980	393	93	146	63
31.....	33	.....	48	15	.....	257	.....	*2,290	.....	87	123	.....
1957-58												
1.....	56	116	213	110	120	840	271	177	120	104	2,530	201
2.....	56	268	292	110	110	640	290	177	158	6,440	1,260	*194
3.....	53	254	271	110	110	528	297	180	118	*24,300	882	189
4.....	50	168	254	110	110	494	310	182	102	*17,100	*608	184
5.....	49	143	240	120	110	*511	342	168	96	4,610	553	213
6.....	50	134	290	120	110	620	320	165	90	1,500	1,640	*9,090
7.....	52	130	285	120	110	580	283	163	82	*988	805	*16,500
8.....	94	126	252	120	100	528	261	172	78	752	701	3,560
9.....	192	118	232	120	100	477	259	184	78	641	738	1,280
10.....	160	102	200	120	*100	477	254	165	*76	958	518	1,060
11.....	106	106	100	140	100	445	247	151	72	671	465	740
12.....	104	126	150	180	90	430	235	145	74	540	432	644
13.....	124	124	200	220	90	445	228	*136	80	476	828	590
14.....	122	136	250	300	90	445	*220	130	520	429	536	590
15.....	163	138	270	*290	90	415	218	136	240	406	480	1,260
16.....	199	145	*250	250	80	370	213	145	151	301	449	862
17.....	*149	196	280	210	80	356	206	149	140	472	400	644
18.....	116	175	280	180	80	342	201	147	132	385	340	590
19.....	98	118	270	160	80	342	201	132	132	3,030	295	536
20.....	94	*140	260	150	80	328	206	118	140	4,140	280	500
21.....	88	170	254	150	90	328	204	114	124	1,180	272	518
22.....	98	180	254	140	180	318	196	114	134	940	252	500
23.....	168	190	271	130	500	315	204	114	136	782	255	483
24.....	211	200	268	130	*5,800	297	220	110	163	740	286	500
25.....	160	210	254	130	3,280	288	223	106	288	895	340	483
26.....	136	225	278	130	1,320	285	194	102	180	644	263	*394
27.....	124	273	254	130	1,650	280	187	98	145	682	247	367
28.....	118	300	230	130	1,710	278	194	92	122	654	236	337
29.....	118	305	210	120	.....	278	204	86	112	483	223	328
30.....	116	235	190	120	.....	276	184	90	102	1,810	213	316
31.....	110	.....	110	120	.....	268	.....	94	.....	1,080	208	.....

East Nishnabotna River at Red Oak, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	295	147	130	90	60	1,700	466	608	*2,040	1,790	161	127
2	283	147	130	85	60	*1,480	*518	554	1,380	805	184	111
3	289	147	135	80	60	782	449	3,340	1,200	590	236	250
4	289	147	*147	80	60	483	385	1,590	1,060	518	*313	141
5	277	*149	100	75	60	304	346	2,940	940	480	255	102
6	258	145	95	75	60	226	322	*2,200	850	*432	1,380	92
7	269	141	90	70	60	231	307	1,610	760	415	328	86
8	286	143	85	70	60	258	316	1,180	701	415	221	*79
9	298	141	85	70	60	263	301	1,060	663	400	191	77
10	242	139	80	65	60	364	272	1,730	626	390	187	72
11	216	133	80	65	*60	391	255	1,330	663	380	189	70
12	213	129	75	65	60	638	247	962	850	360	170	70
13	216	127	75	*65	64	1,010	234	962	626	330	149	68
14	216	131	75	65	68	1,480	231	850	554	300	145	68
15	213	135	75	65	70	610	223	760	536	285	164	68
16	208	133	80	60	70	298	213	720	500	270	189	66
17	199	141	80	60	66	304	218	682	483	258	170	85
18	187	187	85	60	64	277	260	1,560	466	355	145	125
19	184	213	90	60	64	1,260	274	2,830	449	340	131	199
20	182	159	95	60	64	2,660	441	1,550	432	252	121	161
21	179	143	100	60	64	798	652	1,230	416	231	115	121
22	175	139	105	60	70	466	500	1,100	639	221	111	94
23	168	135	110	60	100	466	483	940	536	216	143	83
24	164	133	110	60	800	449	432	850	466	208	175	77
25	161	131	110	60	1,200	416	391	760	416	194	127	86
26	157	120	110	60	1,600	932	349	740	367	189	102	164
27	159	80	110	60	2,400	*1,480	331	720	331	182	100	201
28	159	90	105	60	2,840	644	2,430	2,730	325	177	96	153
29	157	100	105	60	.....	500	975	*10,400	449	175	104	113
30	151	110	100	60	.....	449	701	5,150	1,150	182	104	94
31	147	.....	95	60	.....	483	.....	3,310	.....	173	139	.....
1959-60												
1	88	96	80	100	140	125	6,170	812	482	678	191	407
2	107	96	80	85	140	120	4,330	539	460	577	181	313
3	145	*94	78	80	140	120	2,100	501	430	393	177	286
4	147	111	76	*75	*140	120	1,710	463	420	346	172	274
5	*133	120	74	75	140	120	1,360	420	400	316	179	251
6	159	125	73	70	135	115	1,300	2,170	*383	310	871	222
7	135	105	*60	70	130	115	1,220	1,910	360	301	2,400	*212
8	121	100	63	75	135	115	*1,080	1,030	340	289	1,070	212
9	145	127	65	75	140	115	905	835	319	310	*413	214
10	131	131	68	75	140	*115	768	*745	316	445	325	217
11	109	127	86	75	140	115	722	657	328	390	286	201
12	100	117	94	180	140	115	700	597	424	*1,250	263	191
13	96	109	90	360	140	110	637	577	501	1,640	249	186
14	92	105	81	340	135	110	657	558	417	678	235	181
15	92	100	98	280	135	110	597	520	367	445	222	181
16	90	100	94	180	135	110	520	539	330	393	214	186
17	86	95	90	150	135	110	678	980	320	355	295	179
18	83	95	85	150	135	115	1,620	577	330	331	*1,630	703
19	85	100	81	150	135	115	1,140	558	387	349	1,140	292
20	85	105	78	150	135	115	930	637	678	325	700	227
21	85	110	76	150	130	115	790	768	812	298	463	199
22	86	123	74	145	130	115	657	768	558	283	349	186
23	85	129	74	145	130	115	577	597	463	268	310	268
24	83	137	72	145	130	115	520	798	407	257	337	1,310
25	81	131	70	145	130	115	501	1,830	371	243	463	1,400
26	85	107	70	145	125	125	501	2,320	352	235	361	420
27	83	86	150	140	125	150	482	905	340	227	295	307
28	86	84	340	140	125	1,500	445	657	337	214	451	268
29	86	82	385	140	125	12,500	417	597	343	214	*2,260	254
30	86	80	242	140	.....	*12,900	745	539	1,450	207	858	251
31	92	.....	159	140	.....	5,100	.....	501	.....	204	501	.....

East Nishnabotna River at Red Oak, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	26.3	30.5	24.9	28.2	26.7	51.4	30.4	71.0	77.3	201	265	382
1956-57	67.2	155	55.2	27.8	74.5	89.8	228	458	1,165	179	79.6	139
1957-58	114	175	240	151	588	414	236	137	139	2,519	596	1,465
1958-59	213	137	98.3	66.0	369	713	451	1,837	696	371	205	110
1959-60	102	108	107	141	134	1,134	1,159	836	448	412	576	333

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.029	0.034	0.028	0.032	0.030	0.057	0.034	0.079	0.086	0.225	0.296	0.427
1956-57	.075	.173	.062	.031	.083	.100	.255	.512	1.30	0.200	.089	.155
1957-58	.128	.196	.268	.169	.658	.463	.261	.153	.155	2.82	.633	1.64
1958-59	.238	.153	.110	.074	.413	.798	.504	2.05	.779	.415	.229	.123
1959-60	.114	.121	.120	.158	.150	1.27	1.30	.935	.501	.461	.644	.372

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.03	0.04	0.03	0.04	0.03	0.07	0.04	0.09	0.10	0.26	0.34	0.48
1956-57	.09	.19	.07	.04	.09	.12	.28	.59	1.45	.23	.10	.17
1957-58	.15	.22	.31	.19	.69	.53	.29	.18	.17	3.25	.73	1.83
1958-59	.27	.17	.13	.09	.43	.92	.56	2.37	.87	.48	.26	.14
1959-60	.13	.13	.14	.18	.16	1.46	1.45	1.08	.56	.53	.74	.42

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	1,610	1,810	1,530	1,730	1,540	3,160	1,810	4,370	4,600	12,340	16,270	22,740
1956-57	4,130	9,220	3,390	1,710	4,140	5,520	13,540	28,190	69,340	10,990	4,900	8,300
1957-58	7,010	10,420	14,760	9,260	32,670	25,440	14,030	8,410	8,300	151,900	34,780	87,180
1958-59	13,080	8,160	6,040	4,060	20,480	43,840	26,820	113,000	41,400	22,840	12,590	6,550
1959-60	6,280	6,400	6,560	8,670	7,730	69,730	68,980	51,380	26,630	25,330	35,430	19,830

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30							Calendar year			
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet
	Date	Gage height in feet	Discharge								
1955											
1956	Sept. 5, 1956	12.57	7,630	14	101	0.113	1.55	73,510	141	2.14	101,900
1957	June 17, 1957	15.12	11,800	15	226	253	3.42	163,400	117	1.80	85,300
1958	July 3, 1958	22.27	35,600	49	562	629	8.54	407,200	556	8.43	402,200
1959	May 20, 1959	15.14	12,700	60	440	492	6.69	318,900	429	6.52	310,800
1960	Mar. 30, 1960	16.40	15,100	60	459	513	6.98	333,000			

Peak Discharge (base, 4,500 cfs)

1955-56: Sept. 5 (4:30 p.m.) 7,630 cfs (12.57 ft.).

1956-57: May 30 (4 a.m.) 6,780 cfs (11.35 ft.); June 17 (3 a.m.) 11,800 cfs (15.12 ft.).

1957-58: Feb. 24 (7 a.m.) 7,710 cfs (12.17 ft.); July 3 (4:30 p.m.) 35,600 cfs (22.27 ft.); July 19 (11:30 p.m.) 9,700 cfs (13.20 ft.); Aug. 1 (10 a.m.) 5,960 cfs (10.30 ft.); Sept. 7 (5 p.m.) 19,900 cfs (18.58 ft.).

1958-59: Feb. 27, about 4,800 cfs; May 3 (12 m.) 6,080 cfs (10.35 ft.);

East Nishnabotna River at Red Oak, Iowa—Continued

May 29 (1 p.m.) 12,700 cfs (15.14 ft.).

1959-60: Mar. 30 (11 a.m.) 15,100 cfs (16.40 ft.); May 25 (11 p.m.) 5,000 cfs. (9.25 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 17, Nov. 29 to Dec. 31, 1955; Jan. 1 to Mar. 2, Mar. 8-13, Dec. 8-31, 1956; Jan. 1 to Feb. 24, Mar. 8, 9, 25, 26, Dec. 10-20, 28-31, 1957; Jan. 1 to Feb. 24, Nov. 26-30, Dec. 5-31, 1958; Jan. 1 to Feb. 27, Nov. 5-8, 14-21, Nov. 28 to Dec. 5, 1959; Jan. 3 to Mar. 28, 1960. No gage height record Apr. 1-6, 1956; July 7-16, Dec. 20-27, 1959.

Nishnabotna River above Hamburg, Iowa

LOCATION.—Lat. 40°38'00", long. 95°37'35", in SW¼SE¼ sec. 11, T 67 N., R. 42 W., on left bank 1,200 ft. downstream from Chicago, Burlington & Quincy Railroad bridge, 1.6 miles downstream from confluence of East Nishnabotna and West Nishnabotna Rivers, and 2 miles north-east of Hamburg.

DRAINAGE AREA.—2,806 square miles (revised in 1956).

RECORDS AVAILABLE.—March 1922 to September 1923, October 1928 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 894.17 ft. above mean sea level, datum of 1929. Prior to Oct. 1, 1923, chain gage at site 6 miles downstream at different datum. Oct. 5, 1928, to Sept. 6, 1929, chain gage at site 1,000 ft. upstream at datum 0.42 ft. higher. Sept. 7, 1929, to Feb. 11, 1935, chain gage, and Feb. 12, 1935, to June 5, 1947, wire-weight gage, at present site and datum. June 6 to July 22, 1947, staff gage at site 1,000 ft. upstream at different datum. July 23, 1947, to Nov. 16, 1950, staff gage at present site and datum.

AVERAGE DISCHARGE.—33 years (1922-23, 1928-60), 930 cfs (673,300 acre-ft. per year).

EXTREMES.—1922-23, 1928-60: Maximum discharge, 55,500 cfs June 24, 1947 (gage height, 26.03 ft., present site and datum, from floodmark); minimum daily, 4.5 cfs Aug. 30, 1934.

REMARKS.—Bankfull stage is about gage height, 19 ft.

REVISIONS (water years).—WSP 1240: 1923, 1929-37, 1938-40(M), 1943 (M).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	120	57	60	50	50	100	112	129	730	81	730	223
2.....	97	58	62	50	50	150	108	152	298	95	1,350	100
3.....	80	59	60	51	50	180	134	145	186	152	1,000	80
4.....	73	64	60	52	50	190	126	133	*143	106	312	68
5.....	69	65	58	*53	52	201	124	128	126	79	184	*5,640
6.....	67	64	58	55	52	217	123	118	124	65	133	*7,090
7.....	70	64	54	58	52	174	118	106	120	77	113	2,380
8.....	66	64	52	56	54	100	108	95	283	6,830	200	730
9.....	61	*65	47	54	54	80	100	89	505	1,140	*1,430	430
10.....	58	67	45	53	54	60	95	87	225	*375	1,410	325
11.....	*53	68	43	52	54	50	94	92	140	253	430	259
12.....	47	69	40	51	54	52	*89	88	104	*1,530	229	221
13.....	44	71	37	50	55	*54	88	79	*79	1,670	174	195
14.....	44	69	34	50	*55	80	82	1,210	65	1,680	136	172
15.....	44	71	30	50	55	110	76	535	60	430	115	158
16.....	44	50	27	50	54	120	75	312	56	1,680	101	146
17.....	42	54	24	50	54	123	74	*191	55	1,420	809	138
18.....	43	56	23	50	53	133	73	143	54	900	3,750	*129
19.....	44	61	23	50	53	136	70	118	51	810	2,970	118
20.....	44	67	*23	50	53	134	69	96	91	290	816	108
21.....	44	84	23	51	52	138	68	88	148	278	350	102
22.....	44	90	23	52	52	141	65	81	115	201	225	95
23.....	45	82	25	53	51	148	65	77	129	146	168	92
24.....	45	69	30	54	51	146	66	71	138	120	134	88
25.....	45	85	35	55	50	146	66	66	91	102	113	84
26.....	48	74	40	56	50	145	68	66	84	89	100	80
27.....	51	87	45	56	60	140	68	67	71	81	87	*77
28.....	58	98	50	55	70	131	82	67	64	79	79	74
29.....	59	60	50	54	80	126	98	106	58	118	195	47
30.....	58	56	50	52	.....	123	108	488	143	1,180	393	43
31.....	57	.....	50	50	.....	118	.....	1,430	.....	730	419	.....

Nishnabotna River above Hamburg, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1.....	41	88	140	92	28	210	479	186	2,130	1,100	192	411
2.....	39	88	160	90	30	217	578	173	792	1,120	175	447
3.....	37	85	186	88	31	197	1,130	160	562	752	168	761
4.....	36	99	*181	86	32	173	1,000	148	479	716	155	737
5.....	35	385	184	84	34	160	752	138	430	616	138	356
6.....	34	1,340	158	90	37	162	616	136	392	578	*134	478
7.....	33	1,040	145	*92	43	134	562	132	2,800	545	110	430
8.....	31	504	120	90	60	130	528	125	3,320	496	100	826
9.....	31	350	110	84	80	110	*512	123	901	479	95	446
10.....	31	281	100	76	130	110	462	653	612	*479	94	318
11.....	29	241	94	70	200	117	446	597	*1,040	430	102	404
12.....	28	217	90	60	300	136	462	512	3,020	401	97	*414
13.....	127	203	88	54	400	*132	404	414	1,860	372	90	545
14.....	743	186	84	45	350	127	340	*512	845	347	130	430
15.....	372	170	82	40	320	104	340	682	3,220	331	115	331
16.....	388	158	80	35	300	117	328	845	*13,700	340	132	275
17.....	698	155	80	31	280	112	324	595	14,100	528	145	284
18.....	315	152	80	*29	*265	148	324	528	*9,720	382	112	244
19.....	186	141	*80	28	240	150	309	496	6,750	312	94	206
20.....	136	148	80	28	210	408	278	446	4,160	312	102	189
21.....	130	130	80	27	200	382	256	408	2,680	422	131	189
22.....	123	120	82	27	300	293	247	*1,780	2,170	545	194	186
23.....	102	110	84	27	260	272	232	1,010	2,390	401	148	168
24.....	95	110	86	27	220	287	229	562	2,060	334	141	88
25.....	88	110	90	27	240	200	229	479	1,220	287	123	72
26.....	*87	110	91	27	240	270	238	411	2,370	256	102	63
27.....	85	110	93	27	210	318	321	382	2,050	259	207	63
28.....	81	110	94	27	200	281	324	372	1,460	290	554	62
29.....	82	110	96	27	.....	284	331	1,260	1,260	229	770	62
30.....	119	*120	96	27	.....	331	214	*4,460	1,100	244	621	161
31.....	97	.....	94	27	.....	414	.....	*4,550	.....	226	462	.....
1957-58												
1.....	130	331	490	150	240	3,540	684	492	300	184	5,200	600
2.....	117	562	480	180	230	2,380	684	507	326	4,850	5,770	568
3.....	112	663	550	200	230	1,810	738	552	366	*11,300	3,540	*552
4.....	108	595	*500	220	230	*1,500	792	552	310	10,800	2,320	600
5.....	108	462	500	240	230	1,460	883	507	281	*12,100	*1,760	774
6.....	108	404	540	250	230	1,600	902	478	276	14,100	8,980	7,070
7.....	121	382	580	260	230	1,500	792	464	269	8,980	5,090	7,110
8.....	235	360	530	*260	220	1,370	720	478	263	5,360	2,770	7,330
9.....	256	340	460	270	200	1,240	667	*492	263	3,610	2,200	*7,220
10.....	312	321	400	280	200	1,140	650	478	*239	4,460	1,760	6,120
11.....	*290	299	130	300	*200	1,100	650	450	223	4,970	1,460	3,620
12.....	334	309	200	340	200	1,020	633	422	234	2,440	1,320	2,510
13.....	462	369	250	420	180	1,020	600	394	250	1,750	1,670	1,760
14.....	331	366	350	470	180	1,020	600	380	577	1,480	3,340	1,650
15.....	379	369	440	500	160	1,000	*584	380	1,000	*1,340	1,500	2,380
16.....	446	369	*490	500	160	921	568	422	475	1,260	1,190	2,510
17.....	479	370	550	470	140	883	552	478	363	1,420	1,020	1,600
18.....	369	460	650	440	140	846	537	450	321	1,810	940	1,280
19.....	287	390	600	380	140	846	537	408	305	7,820	883	1,140
20.....	247	370	570	350	140	828	537	366	293	8,970	864	1,060
21.....	229	400	550	340	140	810	537	352	293	6,000	883	1,700
22.....	247	430	528	320	200	792	522	339	269	3,620	864	1,280
23.....	331	430	496	300	1,800	774	537	326	269	2,510	864	1,240
24.....	479	450	479	280	5,200	756	568	326	265	2,510	864	1,550
25.....	496	500	479	260	*4,100	738	568	310	288	1,920	864	1,280
26.....	401	530	462	260	5,630	720	552	298	397	1,810	883	1,060
27.....	344	560	479	260	4,020	702	522	286	313	1,500	756	940
28.....	318	580	404	260	4,580	702	507	286	247	1,460	702	883
29.....	306	600	350	260	.....	702	522	281	217	1,140	667	846
30.....	302	560	250	250	.....	684	522	300	198	8,870	650	828
31.....	296	.....	120	250	.....	684	.....	300	.....	7,080	616	.....

Nishnabotna River above Hamburg, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	790	440	280	220	175	3,700	1,420	1,220	8,850	5,780	1,300	770
2	770	440	350	210	175	2,970	1,370	1,140	6,320	3,720	1,040	622
3	750	440	*425	200	175	*2,700	*1,370	4,340	5,150	2,100	1,090	472
4	750	*440	440	200	175	1,570	1,180	5,240	4,390	1,790	1,650	584
5	731	425	280	180	175	910	1,040	4,630	3,700	1,370	*3,150	456
6	731	410	100	180	175	400	955	7,200	3,180	1,420	3,360	395
7	712	425	200	170	175	450	910	*4,280	2,830	*1,270	2,560	365
8	*731	425	230	170	175	622	870	3,110	2,500	1,180	1,090	*344
9	731	410	250	*170	175	712	870	3,110	2,250	1,090	870	338
10	712	410	230	170	175	890	830	4,230	*2,010	1,040	1,020	323
11	640	395	210	170	175	955	790	4,000	1,960	1,000	910	292
12	604	395	210	175	*175	955	770	2,970	2,740	1,000	676	292
13	604	395	200	175	185	1,520	750	2,830	2,220	1,240	604	289
14	604	410	190	180	200	2,070	731	2,640	1,740	978	805	286
15	584	425	180	180	200	2,440	731	2,310	1,570	890	1,860	286
16	570	425	180	180	200	1,070	712	2,130	1,520	870	850	270
17	570	440	180	175	190	790	731	2,010	1,420	870	712	645
18	553	520	190	175	185	770	830	4,110	1,420	1,040	622	892
19	536	536	200	175	180	978	870	*8,010	1,370	1,090	553	1,570
20	520	536	210	175	175	3,710	1,090	5,450	1,320	900	520	870
21	520	456	220	175	175	3,100	1,140	4,230	1,270	830	488	658
22	504	410	240	175	300	1,320	1,220	3,480	1,270	790	456	504
23	504	410	250	175	800	1,000	1,180	2,900	1,570	770	456	425
24	488	395	260	175	2,500	955	1,090	2,570	1,220	731	712	395
25	472	380	270	175	2,000	1,020	1,020	2,310	1,140	694	604	395
26	472	300	280	175	4,000	2,380	910	2,190	1,090	676	488	472
27	472	250	280	175	6,000	3,150	870	3,400	1,040	658	440	622
28	472	200	280	175	5,510	2,540	2,370	2,600	1,000	658	425	553
29	472	200	250	175	1,620	*2,700	14,000	1,340	640	948	472	472
30	456	180	230	175	1,320	1,520	*14,700	3,220	622	504	410	410
31	456	.....	220	175	1,370	.....	11,700	.....	1,220	1,220	.....	.....
1959-60												
1	395	395	353	400	580	520	20,500	2,130	1,420	4,650	694	1,740
2	747	*395	*365	380	600	520	17,000	1,840	1,370	2,310	658	1,470
3	830	395	377	360	620	500	13,800	*1,570	1,320	1,740	622	1,270
4	584	456	395	340	640	480	9,650	1,520	1,270	1,420	622	1,140
5	790	450	395	*320	960	480	7,750	1,520	1,680	1,270	604	1,070
6	1,140	430	350	280	660	460	6,300	3,240	1,220	1,220	2,080	1,000
7	*850	420	317	280	660	450	*5,150	4,630	*1,180	*1,140	3,780	932
8	770	430	341	300	660	450	4,550	3,220	1,140	1,090	4,560	*890
9	810	456	353	320	660	450	3,850	2,440	1,000	1,090	1,880	870
10	676	472	356	350	660	450	3,400	2,190	1,000	1,320	*1,220	830
11	584	456	380	360	650	*450	3,050	1,900	1,180	1,520	1,000	830
12	536	440	410	400	640	450	2,900	1,740	1,370	1,320	890	770
13	504	400	395	600	640	450	2,750	1,620	1,620	3,600	830	731
14	472	250	374	1,000	640	450	2,600	1,570	1,570	2,330	770	712
15	456	300	371	950	*640	430	2,500	1,520	1,420	1,570	731	694
16	440	350	380	900	640	430	2,310	1,620	1,570	1,220	712	694
17	425	380	374	800	620	430	2,440	1,840	1,520	1,140	894	676
18	425	400	347	700	690	430	3,110	2,130	1,680	1,570	4,520	2,910
19	425	420	335	660	580	430	3,400	1,740	1,370	1,770	3,920	1,940
20	410	440	341	620	580	430	2,570	1,680	2,990	1,530	2,080	1,090
21	410	460	341	600	580	430	2,310	2,780	2,840	1,090	1,960	910
22	395	472	350	580	590	430	2,190	2,570	2,310	978	1,370	830
23	410	472	377	560	590	430	2,070	2,130	1,840	910	1,140	1,260
24	395	472	359	540	590	430	1,900	1,790	1,470	870	1,000	4,420
25	410	472	362	540	540	430	1,840	3,350	1,320	830	1,320	3,870
26	371	440	377	540	540	430	1,740	4,170	1,270	790	1,780	2,380
27	230	350	410	540	540	500	1,620	2,780	1,220	770	1,140	1,470
28	214	220	584	540	520	3,000	1,570	2,010	1,180	750	1,110	1,220
29	371	200	932	540	520	13,000	1,570	1,740	1,180	731	6,580	1,090
30	374	300	850	540	.....	19,900	2,130	1,570	3,490	770	*4,390	1,070
31	395	.....	500	560	.....	*23,300	.....	1,520	.....	712	2,440	.....

Nishnabotna River above Hamburg, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	56.9	68.3	41.3	52.4	51.3	127	89.7	215	151	735	602	650
1956-57.....	144	239	107	51.3	187	209	426	721	2,987	457	191	321
1957-58.....	290	438	447	307	1,055	1,132	622	405	323	4,756	2,006	2,302
1958-59.....	596	397	242	179	889	1,615	1,095	4,485	2,421	1,262	1,032	509
1959-60.....	524	400	411	529	605	2,304	1,617	2,196	1,573	1,420	1,848	1,359

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.020	0.024	0.015	0.019	0.019	0.045	0.032	0.077	0.054	0.262	0.215	0.232
1956-57.....	.051	.085	.038	.018	.067	.074	.152	.257	1.06	.163	.068	.114
1957-58.....	.103	.156	.159	.109	.376	.403	.222	.144	.115	1.69	.715	.820
1958-59.....	.212	.141	.086	.064	.317	.576	.390	1.60	.863	.450	.368	.181
1959-60.....	.187	.143	.146	.189	.216	.821	1.65	.783	.561	.506	.659	.484

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.02	0.03	0.02	0.02	0.02	0.05	0.04	0.09	0.06	0.30	0.25	0.26
1956-57.....	.06	.10	.04	.02	.07	.09	.17	.30	1.19	.19	.08	.13
1957-58.....	.12	.17	.18	.13	.39	.47	.25	.17	.13	1.95	.82	.92
1958-59.....	.24	.16	.10	.07	.33	.66	.44	1.84	.96	.52	.42	.20
1959-60.....	.22	.16	.17	.22	.23	.95	1.84	.90	.63	.58	.76	.54

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	3,500	4,060	2,540	3,220	3,120	7,830	5,340	13,200	9,000	45,200	37,000	38,660
1956-57.....	8,840	14,220	6,560	3,150	10,390	12,860	25,330	44,320	177,800	28,080	11,770	19,110
1957-58.....	17,810	26,040	27,480	18,880	58,610	69,600	37,030	24,900	19,220	292,400	123,400	137,000
1958-59.....	36,660	23,650	14,910	11,020	49,390	99,290	65,140	275,800	144,000	77,610	63,440	30,280
1959-60.....	32,220	23,790	25,290	32,530	34,810	141,700	274,800	135,000	93,600	87,310	113,600	80,880

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30							Calendar year			
	Momentary maximum			Min-imum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet
	Date	Gage height in feet	Dis-charge								
1955.....									425	2.05	307,800
1956.....	July 8, 1956.....	20.90	13,500	23	238	0.085	1.16	172,700	265	1.29	192,200
1957.....	June 16, 1957.....	(1)21.59	20,400	27	501	.179	2.44	362,400	558	2.71	404,100
1958.....	July 6, 1958.....	22.75	14,600	108	1,177	.419	5.70	852,400	1,183	5.73	856,300
1959.....	May 29, 1959.....	21.70	15,400	100	1,231	.439	5.94	891,200	1,239	5.99	897,300
1960.....	Mar. 31, 1960.....	24.56	23,900	200	1,482	.528	7.20	1,076,000	.....	.....	.....

(1) Backwater from Missouri River.

Peak Discharge (base, 9,000 cfs)

1955-56: July 8 (7 a.m.) 13,500 cfs (20.90 ft.); Sept. 6 (2:30 a.m.) 9,760 cfs (18.38 ft.).

1956-57: June 7 (11 p.m.) 13,400 cfs (18.90 ft.); June 16 (5 p.m.) about 20,400 cfs (21.59 ft.).

1957-58: Feb. 24 (time and discharge unknown); July 6 (12 m.) 14,600 cfs (22.75 ft.); July 19 (9:30 a.m.) 10,000 cfs (19.45 ft.); July 30 (10:30 a.m.) 11,300 cfs (20.43 ft.); Aug. 6 (7:30 a.m.) 11,400

Nishnabotna River above Hamburg, Iowa—Continued

cfs (20.53 ft.); Sept. 6 (12:30 p.m.) 10,300 cfs (20.55 ft.).

1958-59: Feb. 27 (time and discharge unknown); May 19 (5 to 7 a.m.) 9,640 cfs (17.90 ft.); May 29 (5 p.m.) 15,400 cfs (21.70 ft.).

1959-60: Mar. 31 (7 a.m.) 23,900 cfs (24.56 ft.).

*Discharge measurement made on this day.

Notes to Tables of Daily Discharge

Stage-discharge relation affected by ice Nov. 17, Nov. 29 to Dec. 31, 1955; Jan. 1 to Mar. 4, Mar. 16-18, Nov. 22 to Dec. 2, Dec. 8-31, 1956; Jan. 1 to Mar. 1, Mar. 8, 25, 26, Nov. 17 to Dec. 21, Dec. 29-31, 1957; Jan. 1 to Feb. 24, Nov. 26 to Dec. 2, Dec. 5-31, 1958; Jan. 1 to Feb. 27, Mar. 6, 7, Nov. 5-8, 13-21, 27-29, Dec. 31, 1959; Jan. 1 to Mar. 29, 1960. Backwater from Missouri River Apr. 4-14, 1960.

Tarkio River at Stanton, Iowa

LOCATION.—Lat. 40°58'55", long. 95°06'35", in NW ¼ SW ¼ sec. 4, T. 71 N., R. 37 W., on right bank 10 ft. downstream from highway bridge and half a mile west of Stanton.

DRAINAGE AREA.—49.3 square miles.

RECORDS AVAILABLE.—October 1957 to September 1960.

GAGE.—Water-stage recorder and concrete control.

EXTREMES.—1957-60: Maximum discharge, 4,650 cfs Sept. 18, 1960 (gage height 16.61 ft.) from rating curve extended above 1,500 cfs on basis of slope-area measurement at gage height, 15.37 ft.; no flow Oct. 1-5, 1958.

Flood of July 16, 1956, reached a stage of 15.37 ft. (discharge, 3,380 cfs).

Daily Discharge, in Cubic Feet per Second, Water Year 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58												
1.....	0	6.9	16	5.4	4.0	32	14	8.6	6.4	1.1	31	5.4
2.....	0	16	13	3.8	4.0	28	13	11	3.8	*127	25	*5.4
3.....	0	8.0	10	3.4	3.5	25	18	12	3.8	496	20	4.6
4.....	0	5.4	9.8	3.1	3.0	24	20	12	3.1	88	*17	7.7
5.....	0	4.6	12	3.8	3.0	42	18	12	2.5	29	132	33
6.....	.5	4.2	15	5.0	3.0	48	14	10	2.2	17	571	88
7.....	2	4.2	10	6.4	2.5	43	11	12	2.2	*11	58	17
8.....	6	3.8	8.0	5.4	2.5	32	11	13	1.7	9.2	38	12
9.....	4	3.1	9.8	3.4	2.5	30	11	8.6	1.4	8.6	29	88
10.....	3	2.8	12	3.8	*2.0	29	10	6.9	*1.2	68	25	30
11.....	3	4.2	5.4	4.2	2.0	26	10	5.9	1.4	80	21	16
12.....	30	4.2	5.4	6.9	2.0	*26	9.8	5.0	5.9	26	18	12
13.....	10	5.9	7.4	8.6	2.0	25	8.6	*4.2	12	20	18	11
14.....	8	4.2	9.2	*8.0	2.0	22	*8.6	5.0	10	17	18	50
15.....	17	4.2	12	5.9	2.0	20	9.2	8.6	9.8	14	15	40
16.....	12	3.8	*10	5.9	1.5	18	8.6	7.4	7.0	12	13	22
17.....	*6.4	2.8	12	5.9	1.5	17	9.2	26	5.0	117	12	19
18.....	4.6	.7	12	5.9	1.5	17	9.2	9.2	3.8	38	10	17
19.....	4.2	3.1	10	5.4	1.5	17	9.8	4.2	4.6	216	9.2	17
20.....	3.4	*5.4	9.2	5.0	1.5	17	11	3.8	5.0	67	33	42
21.....	4.2	6.9	7.4	5.0	5.0	17	10	4.2	5.4	41	14	53
22.....	7.4	8.0	8.0	5.0	50	17	9.2	3.8	4.6	33	8.6	17
23.....	9.2	8.0	7.4	5.0	252	15	13	3.1	5.4	27	10	27
24.....	6.9	9.8	5.9	5.0	265	13	11	4.6	5.9	65	10	25
25.....	5.0	9.2	9.8	5.0	89	13	9.2	4.2	6.4	31	8.6	16
26.....	4.2	12	6.4	5.0	53	12	9.8	4.2	5.4	22	7.4	14
27.....	3.8	20	8.6	5.0	85	12	11	2.5	5.0	39	6.4	11
28.....	4.2	21	5.9	4.5	45	13	9.2	1.7	3.8	28	4.6	9.8
29.....	3.8	17	6.4	4.5	.....	13	8.0	1.7	1.7	20	4.6	9.8
30.....	3.4	13	3.8	4.5	.....	12	8.6	2.8	2	*392	4.2	8.6
31.....	3.4	.....	3.1	4.5	.....	12	.....	4.2	.....	41	3.8	.....

Tarkio River at Stanton, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	8.0	7.4	0.6	1.4	1.2	24	32	46	*76	61	3.1	5.0
2.....	8.0	8.0	1.2	1.4	1.2	*19	*33	18	65	35	5.9	4.2
3.....	7.4	6.9	2.5	1.4	1.2	12	35	104	62	27	3.4	3.4
4.....	8.0	5.9	*2.6	.9	1.1	7.4	32	*39	54	27	*6.4	2.8
5.....	7.4	*4.6	1.7	.7	1.1	.5	28	262	49	22	15	2.2
6.....	7.4	6.9	.6	.6	.9	.2	26	93	45	*20	*347	1.9
7.....	8.0	8.0	.7	.6	1.2	2.5	29	64	41	17	28	1.2
8.....	7.4	7.4	.9	.9	1.2	6.4	29	54	38	15	16	*.7
9.....	*6.7	6.4	.7	.9	1.2	20	27	82	35	12	12	.7
10.....	5.4	5.4	.6	.9	1.1	30	30	78	34	12	12	.9
11.....	5.9	5.4	.7	1.1	*1.1	20	34	56	65	10	9.2	.9
12.....	7.4	5.4	.6	*1.1	1.1	25	37	54	38	9.8	6.4	.9
13.....	7.4	5.4	.2	1.7	2.2	28	37	49	28	9.2	5.9	.7
14.....	8.0	5.4	.2	3.1	2.8	18	37	42	26	8.6	13	.9
15.....	8.6	5.4	.2	2.2	3.4	5.0	37	39	23	8.6	15	.6
16.....	6.9	5.4	.2	1.7	2.5	8.0	37	36	20	9.2	12	.4
17.....	6.9	9.2	.2	.9	2.2	10	47	34	19	8.6	9.2	4.2
18.....	6.4	5.4	1.1	1.9	1.9	20	58	423	18	8.0	5.9	19
19.....	6.4	3.1	1.7	1.1	1.4	60	50	287	17	5.9	5.0	118
20.....	5.4	2.2	1.4	1.1	1.1	38	58	165	17	5.4	4.2	12
21.....	5.0	2.2	1.2	1.1	1.2	25	76	108	20	5.0	3.8	6.9
22.....	3.8	2.2	1.4	1.1	6.0	23	67	78	24	5.0	2.8	5.9
23.....	3.4	2.5	1.7	1.1	80	22	64	69	15	4.2	7.4	5.4
24.....	5.0	2.2	1.7	.9	98	20	60	59	13	3.4	5.0	5.9
25.....	5.0	1.9	1.4	1.1	254	30	54	53	11	3.4	3.4	8.6
26.....	5.4	.4	1.7	1.1	196	210	53	49	9.8	3.4	2.8	13
27.....	5.0	.4	2.8	1.1	92	72	55	56	10	3.4	2.8	11
28.....	4.2	.9	2.8	1.2	38	43	58	128	8.6	3.4	3.4	6.9
29.....	3.4	1.1	2.2	1.4	.....	36	49	*450	16	3.1	5.9	6.4
30.....	2.8	.4	1.7	1.7	.....	44	47	242	152	1.9	3.8	5.9
31.....	5.4	.....	1.2	1.9	.....	36	.....	114	.....	2.2	4.6	.....
1959-60												
1.....	5.4	5.9	6.9	13	18	11	400	43	23	127	12	44
2.....	18	5.4	6.4	10	18	11	234	37	23	53	9.2	36
3.....	14	*5.9	6.4	7.8	25	11	135	32	24	40	8.6	32
4.....	10	11	6.0	*9.2	*26	11	103	29	29	33	9.8	27
5.....	*23	5.0	4.0	7.4	22	11	89	35	16	28	14	25
6.....	35	5.0	5.0	7.4	20	11	79	71	*16	27	157	21
7.....	20	7.0	*5.0	9.2	19	11	65	47	15	23	92	*20
8.....	24	9.0	5.0	9.8	40	11	*56	37	15	22	16	20
9.....	18	12	4.2	9.8	38	11	52	*32	18	51	*12	19
10.....	14	12	5.4	9.8	18	*11	48	26	20	32	13	17
11.....	12	8.6	6.4	11	16	11	44	26	24	*23	10	17
12.....	11	8.6	4.5	328	16	10	40	25	23	58	9.8	15
13.....	9.2	5.5	4.5	122	15	10	36	25	22	33	9.8	14
14.....	9.2	4.5	5.4	200	15	10	34	22	20	22	6.9	14
15.....	8.6	5.0	5.4	85	15	10	32	21	18	19	5.4	14
16.....	7.4	4.5	4.5	60	15	10	30	51	28	18	6.9	14
17.....	6.9	3.0	4.2	35	15	10	75	32	23	17	60	14
18.....	6.9	4.2	3.0	20	15	11	46	32	24	42	152	777
19.....	6.9	7.0	5.0	20	14	11	39	38	22	20	38	36
20.....	5.9	7.8	5.0	20	12	12	35	39	81	17	28	26
21.....	5.4	8.0	5.0	18	12	12	31	60	41	17	21	24
22.....	6.4	9.2	5.4	18	12	12	28	41	35	16	19	21
23.....	7.4	6.9	5.9	15	12	12	26	37	30	15	18	137
24.....	5.0	6.4	5.4	15	12	12	30	38	26	15	18	591
25.....	5.9	5.4	5.4	15	12	12	26	39	24	14	82	103
26.....	6.4	4.0	6.4	15	12	15	24	36	24	12	39	70
27.....	4.6	3.5	13	16	12	75	22	34	27	12	23	56
28.....	4.6	3.0	57	16	12	800	23	33	29	12	353	49
29.....	4.6	3.1	35	18	12	*1,520	35	33	18	12	383	47
30.....	5.0	5.4	18	18	.....	558	97	31	1,030	12	74	44
31.....	6.4	.....	12	18	.....	344	.....	26	.....	12	54	.....

Tarkio River at Stanton, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58	5.47	7.41	9.06	5.10	31.8	22.2	11.1	7.17	4.55	71.0	38.6	24.3
1958-59	6.17	4.45	1.24	1.24	28.4	29.5	45.2	112	35.0	11.9	18.7	8.55
1959-60	10.6	6.39	8.73	37.9	17.2	116	67.1	35.7	58.9	27.5	56.6	78.1

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58	0.111	0.150	0.184	0.103	0.645	0.450	0.225	0.145	0.092	1.44	0.783	0.493
1958-59 . . . . .	.125	.090	.025	.025	.576	.598	.917	2.27	.710	.241	.379	.173
1959-60 . . . . .	.215	.130	.177	.769	.349	2.35	1.36	.724	1.19	.558	1.15	1.58

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58	0.13	0.17	0.21	0.12	0.67	0.52	0.25	0.17	0.10	1.66	0.90	0.55
1958-59 . . . . .	.14	.10	.03	.03	.60	.69	1.02	2.61	.79	.28	.44	.19
1959-60 . . . . .	.25	.14	.20	.89	.38	2.71	1.52	.84	1.33	.61	1.32	1.77

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58	336	441	557	314	1,770	1,360	660	441	271	4,370	2,370	1,440
1958-59	380	265	76	76	1,580	1,810	2,690	6,860	2,080	733	1,150	509
1959-60	649	380	537	2,330	992	7,110	3,990	2,200	3,510	1,690	3,480	4,650

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30							Calendar year				
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet	
	Date	Gage height in feet	Discharge									
1958	July 30, 1958.	14.74	2,750	0	19.8	0.402	5.45	14,330	18.9	5.21	13,720	
1959	May 20, 1959.	14.13	2,300	.2	25.2	511	6.92	18,210	26.3	7.24	19,050	
1960	Sept. 18, 1960.	16.61	4,650	3.0	43.4	880	11.99	31,520	.....	.....	.....

Peak Discharge (base, 1,500 cfs)

1957-58: July 3 (7:30 p.m.) 2,400 cfs (14.26 ft.); July 30 (2 a.m.) 2,750 cfs (14.74 ft.); Aug 6 (1 a.m.) 2,010 cfs (13.84 ft.).

1958-59: May 19 (11 p.m.) 1,580 cfs (13.12 ft.); May 29 (12:30 a.m.) 2,300 cfs (14.13 ft.).

1959-60: Mar. 28 (10 p.m.) 2,640 cfs (14.53 ft.); June 30 (8 p.m.) 4,240 cfs (16.23 ft.); Aug. 28 (10:30 p.m.) 2,070 cfs (13.79 ft.); Sept. 18 (4 a.m.) 4,650 cfs (16.61 ft.); Sept. 24 (8 a.m.) 2,070 cfs (13.81 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Jan. 21 to Feb. 22, 1958; Feb. 22, 23, Mar. 11-21, Nov. 6-8, 13-21, 26-28, Dec. 3-5, 12, 13, 16-18, 30, 31, 1959; Jan. 1-3, Jan. 15 to Feb. 2, Feb. 8 to Mar. 28, 1960. No gage-height record Oct. 1-14, 1957; Apr. 9-17, 1960.

Nodaway River at Clarinda, Iowa

LOCATION.—Lat. 40°44'10", long. 95°00'30", in NE¼ sec. 32, T. 69 N., R. 36 W., on downstream side of center bridge pier 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.—762 square miles (revised in 1956).

RECORDS AVAILABLE.—May 1918 to July 1925, May 1936 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 960.36 ft. above mean sea level, datum of 1929. Prior to July 5, 1925, chain gage, and May 28, 1936, to Mar. 26, 1957, wire-weight gage, at same site and datum.

AVERAGE DISCHARGE.—30 years (1918-24, 1936-60), 291 cfs (210,700 acre-ft. per year).

EXTREMES.—1918-25, 1936-60: Maximum discharge, 31,100 cfs June 13, 1947 (gage height, 25.3 ft. from floodmark), from rating curve extended above 15,000 cfs on basis of an overflow profile and extended channel rating; minimum daily, 1 cfs Sept. 5, 9, 12, 14, 1918, Dec. 9, 27-31, 1923.

Maximum stage known, 25.4 ft., from floodmarks, in August 1903.

REMARKS.—Bankfull stage is about gage height, 14 ft.

REVISIONS (water years).—WSP 1240: 1918-20(M), 1921, 1922-25(M), 1936-38, 1942, 1943-45(M). WSP 1710: 1958-59(P).

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	148	13	16	14	13	60	19	18	65	12	1,040	33
2.....	60	12	17	14	13	87	18	23	21	21	739	30
3.....	28	12	17	15	13	94	17	18	21	21	580	27
4.....	24	12	16	*15	13	67	18	16	14	16	148	22
5.....	21	14	16	15	13	62	17	16	9.6	21	56	77
6.....	22	12	15	15	13	65	17	16	12	10	36	319
7.....	17	13	15	15	13	40	15	14	146	808	*39	153
8.....	18	14	14	15	13	30	19	12	110	997	27	76
9.....	16	14	13	15	14	58	17	12	69	144	728	46
10.....	16	*15	13	15	14	62	12	12	25	*36	250	26
11.....	13	15	12	14	14	39	*13	26	17	20	82	21
12.....	*15	13	11	13	15	*21	13	11	12	49	60	19
13.....	13	14	11	13	*15	46	13	12	*9.9	561	40	17
14.....	12	12	10	10	15	42	14	*12	7.1	116	34	16
15.....	12	15	9.0	8.0	15	47	14	11	5.3	104	26	14
16.....	12	8.2	8.0	7.0	15	25	12	8.6	6.6	508	25	14
17.....	12	14	7.0	6.0	14	40	12	8.9	5.3	116	56	*13
18.....	11	15	6.4	5.2	14	25	12	8.2	5.0	627	2,070	12
19.....	11	17	5.8	5.0	14	25	12	12	3.8	193	1,100	12
20.....	10	20	5.2	5.0	14	24	13	11	94	49	376	11
21.....	10	25	*5.0	5.0	14	26	12	11	73	23	144	10
22.....	10	20	5.0	5.0	13	26	12	12	301	17	74	12
23.....	12	21	5.2	5.2	13	25	12	10	186	14	55	11
24.....	11	18	6.0	6.0	13	25	12	8.2	65	12	32	11
25.....	10	20	8.0	6.0	13	21	13	14	23	11	25	11
26.....	11	22	10	8.0	13	21	13	10	21	8.9	21	10
27.....	11	25	12	10	13	20	12	90	15	7.3	19	10
28.....	18	22	13	12	18	23	15	25	11	8.6	17	9.6
29.....	33	16	13	13	30	22	17	18	7.3	1,480	116	12
30.....	14	15	14	13	.....	20	17	20	9.2	782	42	11
31.....	13	.....	14	13	.....	19	.....	13	.....	254	302	.....

Nodaway River at Clarinda, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	11	89	52	27	10	38	430	180	542	168	29	26
2	10	34	57	27	11	29	*742	160	315	150	26	136
3	9.2	19	50	27	12	31	1,840	145	263	150	23	112
4	9.2	51	33	27	13	37	824	128	232	142	21	68
5	*9.6	1,040	39	26	14	39	720	114	200	135	20	*40
6	8.6	760	36	26	16	38	508	108	180	104	19	92
7	9.2	258	24	*25	19	40	460	102	709	94	*15	263
8	8.9	110	23	24	25	29	*475	98	878	84	16	112
9	9.6	63	21	23	30	41	400	130	542	*74	15	70
10	9.2	60	21	22	40	37	343	1,010	346	68	15	53
11	9.2	47	20	21	50	*36	318	1,420	*923	65	15	90
12	8.9	46	19	20	60	43	315	560	1,850	60	15	85
13	26	*36	18	18	70	32	245	*542	586	55	15	61
14	460	39	*18	17	*84	32	240	1,830	622	52	23	44
15	415	31	18	16	90	37	229	1,690	918	225	27	36
16	133	24	18	15	92	44	219	742	769	114	20	32
17	60	29	18	14	94	32	222	742	1,650	77	20	34
18	45	30	19	13	96	41	214	680	*1,480	65	18	26
19	30	26	20	12	100	76	198	490	660	60	20	22
20	21	28	20	11	90	96	180	445	370	55	23	22
21	23	31	21	10	60	63	160	560	298	72	53	24
22	19	38	21	10	40	44	148	475	274	81	44	23
23	20	43	22	10	40	36	162	312	250	70	26	22
24	19	39	22	10	45	50	160	268	219	57	19	20
25	21	37	23	10	50	75	142	271	312	41	18	21
26	20	40	24	10	63	*106	175	271	1,540	34	18	20
27	17	35	25	10	50	92	1,040	263	487	130	21	19
28	14	35	25	10	32	88	445	214	298	55	55	18
29	19	40	26	10	.....	116	258	190	298	40	68	18
30	53	50	27	10	.....	148	214	*4,360	206	32	50	18
31	92	.....	27	10	.....	211	.....	*1,020	.....	31	40	.....
1957-58												
1	18	36	70	35	40	334	165	76	37	*18	2,320	67
2	17	46	96	30	40	346	170	79	106	*4,790	1,140	*61
3	15	40	92	30	35	329	183	114	90	6,760	530	58
4	15	36	74	30	35	332	201	116	65	5,770	*358	60
5	14	34	76	30	35	*346	227	90	49	2,310	298	79
6	14	29	96	30	35	560	209	81	33	662	674	1,830
7	21	31	80	35	30	460	172	77	31	*415	490	*4,000
8	38	30	70	35	30	388	148	90	34	329	326	888
9	52	29	65	40	30	326	135	90	36	329	281	1,260
10	50	20	65	50	*30	334	128	83	*28	766	245	2,200
11	44	19	55	60	30	318	128	72	24	1,080	201	490
12	50	19	55	80	30	295	120	65	25	490	183	379
13	161	32	60	90	30	323	114	*58	79	367	175	332
14	50	36	70	*100	30	306	*110	58	50	320	180	554
15	43	39	75	120	30	274	108	68	72	295	170	1,010
16	*50	37	*80	120	25	255	106	58	57	373	152	827
17	38	38	90	120	25	237	104	76	40	674	135	415
18	30	80	95	110	25	232	98	145	58	1,460	124	340
19	27	65	100	100	25	227	98	67	46	3,000	118	301
20	27	*60	95	90	25	224	102	52	46	2,510	110	276
21	26	61	94	70	30	219	114	44	79	1,260	124	949
22	31	60	88	65	40	209	100	41	52	600	100	373
23	43	57	86	60	500	198	104	43	39	460	100	460
24	104	57	77	58	2,400	190	116	43	34	556	112	430
25	90	61	72	56	1,330	180	118	39	34	720	116	320
26	70	68	76	54	742	175	100	38	31	410	110	261
27	43	98	75	52	1,010	170	96	36	28	361	100	211
28	36	110	74	50	878	170	92	33	23	475	90	190
29	34	100	65	47	.....	170	88	31	20	394	85	178
30	33	80	50	45	.....	170	83	40	18	*5,340	79	158
31	32	.....	40	40	.....	165	.....	38	.....	1,010	70	.....

Nodaway River at Clarinda, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	145	74	62	34	34	550	560	215	*1,620	3,550	82	205
2	137	74	68	33	34	484	*500	198	1,270	1,340	90	312
3	126	74	64	32	34	*314	425	1,090	990	695	104	466
4	120	74	*62	31	34	196	346	694	820	560	*188	200
5	113	*72	54	30	34	96	295	3,150	670	484	936	141
6	108	69	46	30	34	17	238	*1,520	580	*404	5,640	113
7	102	68	42	31	34	58	230	875	500	337	2,120	90
8	*101	68	40	32	34	90	227	580	418	301	506	*68
9	108	68	38	33	34	113	208	560	376	268	331	65
10	97	66	37	34	34	262	191	2,540	346	244	277	59
11	88	66	36	32	*34	217	180	3,320	337	225	250	57
12	86	65	35	*32	38	262	176	1,170	450	208	227	56
13	83	64	34	32	80	472	163	1,050	328	215	198	54
14	82	64	34	32	100	560	154	648	259	196	359	53
15	82	68	34	32	90	404	145	520	215	189	881	52
16	80	65	34	32	80	150	135	476	194	180	1,020	51
17	78	95	35	32	70	122	163	400	183	176	400	92
18	78	115	35	32	60	152	227	1,500	176	351	244	150
19	78	128	36	32	55	536	332	2,530	158	326	196	478
20	77	102	38	32	50	1,580	902	2,880	150	176	172	256
21	77	74	38	32	60	722	927	1,980	143	150	145	150
22	74	68	38	32	150	349	520	1,270	580	137	131	108
23	71	64	40	32	500	295	408	930	396	131	168	86
24	71	59	45	34	1,500	301	346	670	196	124	180	80
25	71	58	46	34	*1,200	323	295	600	163	115	176	104
26	72	52	47	34	2,440	2,080	247	560	139	106	122	306
27	74	48	47	34	1,770	*1,580	227	540	133	102	97	247
28	72	45	45	34	990	780	298	523	124	97	82	165
29	72	45	40	34	.....	520	467	*7,710	199	97	110	122
30	71	50	36	34	.....	540	265	*9,750	4,100	90	101	104
31	71	.....	35	34	.....	602	.....	3,570	.....	86	760	.....
1959-60												
1	99	97	*101	200	200	180	6,380	1,740	224	1,490	58	436
2	219	99	104	150	220	180	4,330	543	215	485	58	330
3	235	*104	106	90	240	175	2,430	427	202	326	56	275
4	187	1,030	113	*70	260	170	2,120	365	301	221	44	224
5	*225	418	92	68	280	165	1,690	337	405	211	40	199
6	313	217	70	70	300	160	1,500	778	*224	215	914	167
7	268	160	80	75	340	160	1,270	2,720	199	184	943	150
8	244	180	90	80	400	160	970	1,040	180	161	620	*137
9	217	200	93	80	1,340	160	790	*680	172	158	*208	139
10	189	208	90	80	494	160	730	568	167	315	111	124
11	161	165	101	90	109	160	636	568	193	*307	85	115
12	143	147	97	3,500	250	160	584	500	389	416	74	109
13	133	120	75	5,940	300	165	548	449	427	1,070	70	104
14	124	75	99	*1,900	350	170	*558	425	369	389	61	100
15	122	65	101	1,900	360	175	490	400	275	227	53	93
16	113	60	93	600	*357	180	480	458	296	184	51	96
17	106	55	86	450	322	185	722	778	275	172	341	95
18	104	60	82	350	307	190	2,430	406	261	231	2,170	3,300
19	104	80	80	250	250	190	1,380	393	210	211	1,080	513
20	99	100	80	200	200	190	850	414	843	167	322	315
21	97	140	82	170	190	*190	642	436	414	120	234	224
22	97	161	86	150	180	200	548	578	334	115	153	184
23	117	145	102	120	180	200	471	377	330	104	124	388
24	104	137	101	120	180	200	460	320	237	93	100	2,640
25	93	122	102	120	180	200	458	918	193	85	757	1,380
26	93	106	104	120	180	200	406	1,120	172	83	1,490	548
27	86	75	151	120	180	800	322	656	158	81	211	334
28	85	55	1,080	130	180	6,080	303	322	147	74	1,040	280
29	85	75	930	140	180	*16,400	300	278	142	70	5,290	237
30	86	90	480	150	.....	14,500	1,220	268	3,430	75	2,120	231
31	95	.....	250	180	.....	6,620	.....	251	.....	66	730	.....

Nodaway River at Clarinda, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	20.8	15.9	11.1	10.7	14.4	38.9	14.4	16.4	45.7	227	269	35.5
1956-57	52.2	107	26.0	16.8	49.9	59.9	401	630	607	85.2	26.0	54.2
1957-58	42.5	50.3	76.0	62.3	269	273	128	65.8	45.5	1,429	300	632
1958-59	89.3	70.1	42.6	32.5	343	475	327	1,743	540	376	526	150
1959-60	143	158	171	570	293	1,579	1,201	629	379	261	633	449

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.027	0.021	0.015	0.014	0.019	0.051	0.019	0.022	0.060	0.298	0.353	0.047
1956-57	.069	.140	.034	.022	.065	.079	.526	.827	.797	.112	.034	.071
1957-58	.056	.066	.100	.082	.353	.358	.168	.086	.060	1.88	.394	.829
1958-59	.117	.092	.056	.043	.450	.623	.429	2.29	.709	.493	.690	.197
1959-60	.188	.207	.224	.748	.385	2.07	1.58	.825	.497	.343	.831	.589

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.03	0.02	0.02	0.02	0.02	0.06	0.02	0.02	0.07	0.34	0.41	0.05
1956-57	.08	.16	.04	.03	.07	.09	.59	.95	.89	.13	.04	.08
1957-58	.06	.07	.11	.09	.37	.41	.19	.10	.06	2.16	.45	.93
1958-59	.14	.10	.06	.05	.47	.72	.48	2.64	.79	.57	.80	.22
1959-60	.22	.23	.26	.86	.42	2.39	1.76	.95	.56	.40	.96	.66

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	1,280	948	680	655	827	2,390	857	1,010	2,720	13,980	16,560	2,110
1956-57	3,210	6,360	1,600	1,030	2,770	3,680	23,850	38,720	36,130	5,240	1,600	3,230
1957-58	2,610	2,990	4,670	3,830	14,970	16,780	7,610	4,050	2,710	87,880	18,440	37,600
1958-59	5,490	4,170	2,620	2,000	19,060	29,210	19,430	107,100	32,160	23,130	32,320	8,910
1959-60	8,810	9,410	10,510	35,030	16,880	97,080	71,440	38,700	22,580	16,080	38,890	26,710

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30							Calendar year			
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet
	Date	Gage height in feet	Discharge								
1955									110	1.95	79,610
1956	July 7, 1956	10.0	3,850	3.8	60.6	0.080	1.08	44,000	72.0	1.29	52,780
1957	May 30, 1957	10.45	6,980	8.6	176	.231	3.15	127,400	175	3.11	126,590
1958	July 3, 1958	15.85	13,800	14	282	.370	5.01	204,100	285	5.07	206,200
1959	May 30, 1959	14.97	13,200	17	395	.518	7.04	285,600	417	7.45	302,000
1960	Mar. 30, 1960	18.88	16,900	40	540	.709	9.67	392,100			

Peak Discharge (base, 5,000 cfs)

1955-56: No peak above base.

1956-57: May 30 (6 a.m.) 6,980 cfs (10.45 ft.); June 17 (7 p.m.) 6,150 cfs (9.86 ft.).

1957-58: July 3 (6:30 p.m.) 13,800 cfs (15.85 ft.); July 30 (5 a.m.) 13,600 cfs (15.56 ft.); Sept. 7 (5 a.m.) 6,810 cfs (10.26 ft.); Sept. 10 (12:30 a.m.) 9,880 cfs (12.60 ft.).

Nodaway River at Clarinda, Iowa—Continued

- 1958-59: Feb. 24 about 6,500 cfs; May 11 (1 a.m.) 8,990 cfs (11.79 ft.); May 30 (9:30 a.m.) 13,200 cfs (14.97 ft.); June 30 (10 p.m.) 8,830 cfs (11.70 ft.); Aug. 6 (11 a.m.) 11,700 cfs (14.00 ft.).
- 1959-60: Jan. 12 (9:30 p.m.) 14,900 cfs (16.90 ft.); Mar. 30 (2 a.m.) 16,900 cfs (18.88 ft.); June 30 (9 p.m.) 9,620 cfs (12.40 ft.); Aug. 29 (1 a.m.) 11,400 cfs (13.80 ft.); Sept. 18 (8 a.m.) 11,400 cfs (13.82 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 28 to Dec. 31, 1955; Jan. 1 to Mar. 1, Mar. 7, 8, 11, 12, Nov. 26-29, Dec. 8-31, 1956; Jan. 1 to Feb. 25, Nov. 28-30, Dec. 7-20, 29-31, 1957; Jan. 1 to Feb. 24, Nov. 26 to Dec. 2, Dec. 6-31, 1958; Jan. 1 to Feb. 25, Nov. 7-9, 14-21, 27-30, Dec. 6-8, 13, 31, 1959; Jan. 1-12, Jan. 16 to Feb. 8, Feb. 12-15, Feb. 19 to Mar. 28, 1960.

East Fork One Hundred and Two River near Bedford, Iowa

LOCATION.—Lat. 40°38'00", long. 94°44'55", in NE¼NE¼ sec. 9, T. 67 N., R. 34 W., on left bank at downstream side of county highway bridge, a quarter of a mile upstream from Daugherty Creek and 2.8 miles southwest of junction of U. S. Highways 2 and 148 in Bedford.

DRAINAGE AREA.—92.1 square miles.

RECORDS AVAILABLE.—September 1959 to September 1960.

GAGE.—Water-stage recorder.

EXTREMES.—1959-60: Maximum discharge, 5,400 cfs Jan. 12, 1960 (gage height, 15.95 ft.); minimum daily, 0.2 cfs Aug. 4, 1960.

REMARKS.—Slight regulation at low flow by low dam used for water supply in Bedford.

Daily Discharge, in Cubic Feet per Second, for Period September 10-30, 1959

Day	Sept.	Day	Sept.	Day	Sept.
1959					
10.....	0.4	17.....	1.8	24.....	2.7
11.....	.4	18.....	7.2	25.....	6.0
12.....	.4	19.....	13	26.....	80
13.....	.3	20.....	6.3	27.....	60
14.....	.3	21.....	5.5	28.....	37
15.....	1.8	22.....	5.0	29.....	15
16.....	1.8	23.....	4.0	30.....	9.0

East Fork One Hundred and Two River near Bedford, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Year 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1950-60												
1....	8.1	7.2	*2.5	60	35	11	200	205	11	*2,090	0.3	32
2....	20	7.2	4.0	50	45	11	150	54	8.5	181	.3	18
3....	40	*5.9	6.0	40	60	11	120	35	5.9	50	.3	12
4....	30	6.3	7.0	*35	*75	11	100	25	48	25	.2	9.5
5....	*143	7.6	7.0	30	60	11	80	24	276	18	1.3	6.7
6....	169	5.5	6.0	15	40	10	67	119	*26	14	150	4.8
7....	68	4.0	6.0	15	30	10	53	216	13	11	228	3.8
8....	54	6.0	6.0	18	35	10	42	44	8.1	8.5	36	*3.2
9....	41	8.0	6.0	20	50	10	36	*30	4.8	12	*9.5	3.2
10....	24	9.0	6.0	22	40	10	32	24	4.2	17	4.2	2.5
11....	15	8.0	6.0	25	35	10	31	18	8.5	*11	2.7	2.2
12....	11	7.0	6.0	2,500	30	10	28	16	26	225	2.0	2.0
13....	10	6.0	6.0	*1,330	25	10	28	14	76	37	1.3	1.8
14....	9.0	5.0	6.0	*544	22	10	*57	14	36	13	1.1	1.8
15....	8.5	4.5	6.0	706	20	10	46	12	17	9.0	1.0	1.8
16....	7.2	4.0	6.0	100	18	10	35	736	48	6.7	.8	1.6
17....	6.3	3.5	5.0	70	16	*10	107	133	24	5.6	22	1.6
18....	5.6	3.2	5.0	50	15	10	94	44	14	4.5	1,010	21
19....	5.2	3.2	5.0	45	14	10	41	42	9.5	3.5	195	22
20....	4.8	3.8	5.0	40	13	9.0	32	32	269	3.0	328	7.6
21....	4.5	4.8	6.0	35	12	9.0	28	111	248	2.2	50	4.2
22....	4.5	7.2	6.0	32	11	9.0	24	68	69	2.0	17	3.2
23....	8.1	7.2	6.0	28	11	9.0	20	33	102	1.8	11	216
24....	8.1	7.2	6.0	26	11	9.0	19	24	50	1.5	7.6	1,010
25....	6.3	5.6	6.0	25	11	10	30	20	17	1.5	340	676
26....	5.6	5.0	7.0	25	11	12	76	30	12	1.1	949	60
27....	4.8	4.2	50	25	11	400	29	19	9.5	1.1	62	30
28....	4.2	3.2	350	25	11	*1,600	24	12	8.5	.8	76	18
29....	4.2	2.6	200	25	11	2,760	34	9.0	7.6	.7	1,920	15
30....	4.2	2.0	100	25	.....	1,160	706	8.5	2,270	.7	447	12
31....	5.6	.....	70	28	.....	300	.....	8.1	.....	.5	62	.....

East Fork One Hundred and Two River near Bedford, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1960.....	23.9	5.46	29.7	291	26.8	209	79.0	70.3	124	89.0	191	73.4

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1960.....	0.200	0.059	0.322	3.16	0.291	2.27	0.858	0.763	1.35	0.966	2.07	0.737

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1960.....	0.30	0.07	0.37	3.64	0.31	2.62	0.96	0.88	1.51	1.11	2.40	0.89

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1960.....	1,470	325	1,820	17,880	1,540	12,860	4,700	4,320	7,390	5,470	11,770	4,370

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30								Calendar year		
	Momentary maximum			Min-imum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet
	Date	Gage height in feet	Dis-charge								
1960...	Jan. 12, 1960..	15.95	5,400	0.2	102	1.11	15.06	73,920	.....	.....	.....

Peak Discharge (base, 2,000 cfs)

1959-60: Jan. 12 (5 p.m.) 5,400 cfs (15.95 ft.); Mar. 29 (12 m.) 3,120 cfs (14.50 ft.); June 30 (11 p.m.) 4,120 cfs (14.29 ft.); Aug. 25 (9:30 p.m.) 2,140 cfs (11.11 ft.); Aug. 29 (1:30 p.m.) 2,530 cfs (11.81 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 6-17, 26-29, 1959; Jan. 1-11, Jan. 16 to Mar. 28, 1960. No gage-height record Dec. 2-31, 1959; Mar. 31 to Apr. 5, 1960.

Thompson River at Davis City, Iowa

LOCATION.—Lat. 40°38'20", long. 93°48'30", in SE¼SE¼ sec. 35, T. 68 N., R. 26 W., on right bank 15 ft. downstream from bridge on U. S. Highway 69 at Davis City, 5¼ miles upstream from Iowa-Missouri State line, and 9 miles downstream from Elk Creek.

DRAINAGE AREA.—701 square miles (revised in 1956).

RECORDS AVAILABLE.—May 1918 to July 1925, July 1941 to September 1960. Prior to October 1918, published as "Grand River."

GAGE.—Water-stage recorder. Datum of gage is 875.55 ft. above mean sea level, unadjusted (Corps of Engineers bench mark). May 14, 1918 to July 2, 1925, chain gage and July 14, 1941, to Feb. 24, 1942, wire-weight gage at same site and datum.

AVERAGE DISCHARGE.—25 years (1918-24, 1941-60) 346 cfs (250,500 acre-ft. per year).

EXTREMES.—1918-25, 1941-60: Maximum discharge, 21,300 cfs June 14, 1947 (gage height, 20.14 ft.), from rating curve extended above 15,000 cfs on basis of velocity-area study; minimum daily, 0.1 cfs June 25, 1956.

Flood of Aug. 8, 1885, reached a stage of 22.8 ft. from floodmark (discharge, 30,000 cfs), from rating curve extended above 15,000 cfs on basis of velocity-area study. Minimum flow known prior to July 1941, 0.10 cfs Aug. 16, 1934, discharge measurement.

REMARKS.—Bankfull stage is about gage height, 19 ft.

REVISIONS (water years).—WSP 1240: 1918, 1920-21 (M), 1922-24, 1925 (M), 1946-47(M). WSP 1710: 1957.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	22	1.4	1.0	0.6	0.8	11	4.8	1.4	0.3	2.0	661	255
2.....	21	1.7	1.2	.6	.8	50	6.6	3.4	.2	30	1,600	77
3.....	41	1.7	1.4	.6	.8	45	5.4	2.8	1.0	52	700	40
4.....	31	1.8	1.5	.6	.8	35	4.6	2.0	.2	97	218	29
5.....	23	2.0	1.3	.6	.8	19	4.3	2.2	6.6	58	103	22
6.....	16	2.2	1.2	.6	.9	11	3.8	2.0	12	19	165	112
7.....	11	2.0	1.2	.6	.9	9.1	3.8	2.0	9.0	38	1,420	106
8.....	8.3	1.8	1.2	.6	.9	7.6	3.6	2.0	6.3	565	1,100	58
9.....	6.0	2.2	1.1	.6	.9	6.6	3.2	2.0	3.8	97	2,130	38
10.....	4.6	2.4	1.1	.6	.9	5.9	3.2	1.4	2.8	28	1,990	28
11.....	3.4	2.4	1.0	.6	.9	6.5	3.0	1.4	4.1	15	488	22
12.....	2.8	2.4	1.0	.6	.9	5.3	3.0	1.0	6.0	13	158	17
13.....	2.4	3.0	1.0	.6	.9	*4.3	2.8	.8	3.6	11	209	14
14.....	2.2	2.6	1.0	.6	1.0	7.2	2.6	.5	2.2	6.6	128	12
15.....	2.2	*2.4	*1.0	.6	1.0	7.6	2.2	1.2	1.7	4.3	60	11
16.....	2.0	2.4	1.0	.6	*1.1	8.0	2.0	*1.3	.8	6.6	40	9.5
17.....	1.7	2.2	1.0	.6	1.2	8.6	1.8	.9	.6	3.8	31	8.0
18.....	1.6	2.0	.9	*.6	1.1	6.9	1.8	1.0	.4	11	27	*6.9
19.....	*1.4	2.0	.8	.6	1.0	6.9	*1.6	.8	.4	39	168	6.3
20.....	1.4	2.4	.7	.6	.9	6.4	1.4	.6	*.5	59	1,680	5.4
21.....	2.0	2.6	.7	.6	.9	6.0	1.2	.8	.6	57	*354	4.6
22.....	1.7	2.6	.7	.6	.9	5.5	1.0	.9	.4	115	122	4.1
23.....	1.6	2.4	.7	.6	.9	5.3	.8	.7	.3	95	70	3.8
24.....	1.3	2.6	.7	.6	.9	5.1	.8	.6	.2	47	45	3.4
25.....	1.0	2.2	.7	.6	.9	5.6	.8	.4	.1	*28	35	3.2
26.....	1.2	1.8	.7	.7	2.0	6.4	.8	.2	4.0	19	28	2.8
27.....	1.4	1.5	.7	.7	2.5	7.3	.9	.4	12	14	24	2.4
28.....	1.4	1.3	.7	.7	2.7	8.6	1.6	.4	6.3	12	20	2.0
29.....	1.4	1.0	.7	.7	3.0	6.3	1.8	.9	3.4	1,100	19	1.7
30.....	1.4	1.0	.6	.7	.....	5.1	1.3	.8	2.6	382	17	2.0
31.....	1.3	.....	.6	.7	.....	5.1	.....	.2	.....	263	225	.....

Thompson River at Davis City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1.....	2.0	1.7	3.3	3.1	1.4	4.0	504	180	242	60	13	6.0
2.....	1.6	.7	3.7	3.0	1.4	4.8	1,120	138	202	51	13	13
3.....	1.3	.7	3.7	2.9	1.4	6.0	*4,490	113	118	44	75	8.6
4.....	1.5	1.5	3.7	2.8	1.4	5.8	*3,860	96	92	42	19	6.3
5.....	1.2	3.3	3.9	2.6	1.4	5.2	2,080	78	78	37	13	6.8
6.....	.8	3.1	3.4	2.5	1.4	4.7	930	69	70	34	10	7.5
7.....	.7	2.3	3.0	2.4	1.5	4.4	585	63	98	33	10	11
8.....	.4	2.0	2.8	2.3	1.6	4.1	446	59	75	30	9.6	12
9.....	.5	2.5	2.6	2.2	1.7	5.4	338	55	87	29	9.2	11
10.....	.4	4.4	2.5	2.1	1.8	4.9	269	54	393	25	8.9	9.2
11.....	.5	3.1	2.5	2.0	1.9	8.6	223	585	304	23	9.2	32
12.....	.4	13	2.3	1.9	1.9	8.2	191	1,230	*373	22	9.2	41
13.....	.4	11	2.1	1.8	1.9	8.2	170	1,190	930	20	8.2	14
14.....	5.2	8.9	1.8	1.7	1.9	7.2	152	1,690	1,570	19	12	10
15.....	3.5	7.5	1.9	1.7	1.9	6.3	131	1,410	643	77	10	8.2
16.....	2.2	5.2	2.0	1.7	1.9	6.3	122	*746	482	40	8.9	7.2
17.....	*2.2	4.6	2.0	1.7	1.9	4.1	140	595	553	25	12	6.0
18.....	1.5	4.1	2.0	1.7	2.1	5.2	138	530	652	20	10	5.4
19.....	1.6	3.3	*2.0	1.7	8.0	6.3	*131	374	241	20	8.9	*5.2
20.....	1.7	3.1	2.5	1.8	7.0	6.0	118	397	124	36	8.2	6.3
21.....	1.2	3.0	3.1	1.9	*4.9	*4.9	100	446	92	29	*122	14
22.....	.9	3.0	4.1	2.0	4.0	5.2	89	1,170	78	323	27	24
23.....	.9	3.0	4.9	2.0	3.0	4.9	85	*624	64	233	14	13
24.....	.8	3.1	4.6	*1.9	2.5	9.6	*82	272	57	35	12	7.5
25.....	1.2	3.2	4.1	1.8	2.3	28	80	205	60	*23	9.2	5.2
26.....	.9	3.2	3.6	1.7	8.0	26	93	197	282	19	8.6	4.1
27.....	.8	3.2	3.5	1.5	5.4	26	1,660	203	192	17	8.6	3.5
28.....	1.3	3.2	3.4	1.5	4.5	28	818	155	118	17	7.8	3.1
29.....	1.6	3.2	3.3	1.5	.....	67	520	124	111	15	6.5	2.9
30.....	1.9	3.3	3.3	1.5	.....	126	275	109	74	15	6.8	2.7
31.....	2.5	.....	3.2	1.5	.....	196	.....	100	.....	14	5.7	.....
1957-58												
1.....	2.6	12	11	11	14	575	56	33	19	7.4	710	30
2.....	2.5	12	10	10	14	338	66	36	14	88	545	29
3.....	2.4	11	12	8.6	14	206	64	61	11	278	1,640	26
4.....	2.6	7.4	11	8.0	14	157	77	535	10	3,730	637	25
5.....	2.2	6.5	14	8.0	14	155	83	708	8.9	2,030	288	24
6.....	2.4	5.8	16	8.2	13	338	112	251	12	1,320	251	23
7.....	2.9	5.8	13	8.2	12	362	125	141	15	379	203	22
8.....	3.4	6.2	11	7.6	11	270	97	116	12	167	167	38
9.....	3.8	6.2	10	7.6	10	221	83	97	17	127	179	141
10.....	4.0	5.5	10	7.8	9.0	212	72	86	42	121	172	*69
11.....	3.8	5.8	10	8.2	7.6	164	62	74	15	239	157	328
12.....	4.3	9.4	8.0	8.8	6.2	150	57	62	11	326	108	171
13.....	5.2	11	7.6	10	5.4	141	54	50	13	134	90	72
14.....	5.5	11	8.8	12	5.4	119	50	43	13	419	82	44
15.....	9.8	8.9	10	15	5.4	108	*49	38	10	*4,860	75	39
16.....	12	7.4	12	18	5.4	95	46	41	8.4	*554	69	35
17.....	*8.9	7.4	15	21	5.0	90	43	41	7.8	505	66	92
18.....	4.7	49	20	18	4.8	83	42	279	7.8	668	62	83
19.....	4.0	44	*25	16	*4.8	75	43	125	*12	1,830	56	62
20.....	3.6	23	27	14	4.8	*72	47	66	13	3,010	*57	46
21.....	3.1	19	19	13	4.8	72	51	*47	11	2,000	88	42
22.....	3.4	*15	17	14	4.8	74	53	37	8.9	1,180	77	60
23.....	126	12	20	*16	50	70	66	28	8.4	394	47	127
24.....	158	16	24	16	800	66	72	23	8.1	*267	43	187
25.....	41	11	62	16	1,500	64	.53	19	7.8	221	43	119
26.....	19	13	47	15	1,180	62	49	16	9.8	177	38	69
27.....	13	13	34	15	1,270	57	51	15	10	*3,240	37	56
28.....	28	12	25	14	870	54	50	13	8.4	2,410	38	42
29.....	29	10	19	14	.....	53	43	11	7.1	424	38	35
30.....	22	8.6	11	14	.....	53	36	12	6.8	*1,150	35	29
31.....	15	.....	13	14	.....	53	.....	14	.....	*2,600	31	.....

Thompson River at Davis City, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1.....	23	8.6	29	17	48	595	2,820	297	7,500	4,460	50	80
2.....	20	9.3	34	16	65	436	2,200	234	6,200	3,270	52	124
3.....	19	9.3	*40	15	90	332	824	214	2,420	2,250	48	95
4.....	17	9.6	42	14	70	271	480	184	726	540	94	187
5.....	15	*11	29	13	50	141	356	1,410	460	356	213	164
6.....	14	13	24	13	40	100	294	2,760	400	280	*12,000	97
7.....	42	11	21	12	32	130	271	1,120	336	234	*15,100	70
8.....	*35	13	19	12	30	139	325	500	294	*195	10,600	60
9.....	61	10	16	11	28	179	264	476	261	190	5,680	54
10.....	27	9.6	15	11	27	346	222	2,950	237	177	834	46
11.....	15	10	14	11	27	*428	206	6,900	*208	128	480	42
12.....	12	13	13	11	*29	472	197	*2,930	192	114	294	40
13.....	11	11	12	*11	350	684	190	1,680	177	103	228	36
14.....	11	11	12	12	1,700	1,090	179	720	167	94	*187	34
15.....	11	14	12	13	900	1,090	*169	495	148	140	2,120	33
16.....	12	15	12	14	400	580	157	396	132	150	1,800	*30
17.....	11	1,090	12	15	250	460	314	342	122	94	838	36
18.....	9.6	1,540	12	15	*187	630	318	318	116	80	472	58
19.....	9.6	400	12	15	162	1,760	960	2,340	114	77	314	67
20.....	9.3	180	13	14	140	2,590	*5,940	1,540	100	77	222	70
21.....	8.2	115	14	14	120	1,800	*4,630	*2,840	100	90	*182	56
22.....	8.9	84	15	13	140	745	*1,380	3,780	90	67	150	64
23.....	9.3	68	16	12	845	408	625	1,090	217	60	130	233
23.....	8.6	58	17	11	2,500	400	444	580	118	54	116	152
25.....	8.2	53	18	11	2,120	436	353	440	80	50	106	242
26.....	8.9	47	18	10	1,840	4,440	290	364	70	48	97	3,830
27.....	9.6	35	20	10	1,500	*4,800	492	308	60	46	92	7,300
28.....	8.9	30	22	10	*1,020	2,840	1,980	268	50	46	88	3,030
29.....	9.3	26	22	10	.....	824	672	3,390	50	47	82	585
30.....	12	25	20	15	.....	654	432	7,700	2,080	77	77	368
31.....	9.3	.....	19	50	.....	880	.....	7,700	.....	59	74	.....
1959-60												
1.....	287	103	74	380	311	135	8,920	1,300	191	*4,380	53	208
2.....	246	108	*74	300	325	135	4,540	945	235	826	53	123
3.....	255	112	76	230	325	130	2,420	494	184	331	52	90
4.....	401	*108	94	180	392	130	1,220	360	156	220	52	73
5.....	2,980	120	84	150	412	130	896	360	338	168	52	62
6.....	1,700	228	72	*123	432	130	798	1,700	153	142	56	54
7.....	768	339	64	110	404	130	686	3,950	*142	125	80	48
8.....	545	200	60	100	325	130	560	2,120	128	118	88	44
9.....	560	162	70	94	690	*130	462	847	118	120	*131	41
10.....	392	184	80	90	520	130	396	524	110	128	74	36
11.....	271	200	99	350	*390	130	365	*418	118	144	59	34
12.....	214	184	130	3,200	330	135	350	360	549	165	46	31
13.....	187	160	124	5,250	270	135	*340	318	665	*125	36	*30
14.....	*169	128	122	7,800	240	135	445	295	390	103	31	29
15.....	157	96	114	9,250	260	135	588	272	250	92	34	28
16.....	143	84	110	5,750	260	140	937	2,120	202	82	30	29
17.....	128	76	106	1,620	250	140	3,700	1,890	180	76	275	28
18.....	118	74	99	900	240	140	1,420	770	177	71	1,870	34
19.....	110	80	88	520	210	140	882	467	162	68	875	158
20.....	104	87	84	440	200	140	637	1,100	566	64	494	216
21.....	101	92	84	390	180	140	450	560	742	62	208	84
22.....	97	118	92	350	165	145	375	396	418	61	131	56
23.....	184	137	112	310	150	145	322	380	483	59	96	277
24.....	143	148	157	280	140	145	295	336	1,540	58	69	2,820
25.....	124	137	179	260	125	145	277	282	440	58	58	3,860
26.....	104	122	164	250	130	145	259	656	212	66	66	1,390
27.....	92	77	999	250	140	350	282	500	165	61	50	401
28.....	87	60	2,930	260	140	2,500	331	304	142	56	44	239
29.....	85	71	2,500	270	140	9,470	277	242	134	54	1,030	177
30.....	85	82	1,380	290	.....	14,700	536	216	3,180	54	1,500	150
31.....	99	.....	540	294	.....	13,800	.....	198	.....	54	462	.....

Thompson River at Davis City, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	7.12	2.07	0.94	0.62	1.14	10.8	2.55	1.19	3.08	106	453	30.2
1956-57.....	1.41	3.91	3.06	2.01	2.86	20.6	665	428	282	46.0	16.3	10.2
1957-58.....	17.7	12.8	17.8	12.5	209	149	61.7	101	11.9	1,125	198	72.2
1958-59.....	15.7	131	19.2	13.9	525	990	933	1,815	774	440	1,704	576
1959-60.....	353	129	354	1,292	279	1,431	1,132	796	416	264	263	362

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.010	0.0030	0.0013	0.00088	0.0016	0.015	0.0036	0.0017	0.0044	0.151	0.646	0.043
1956-57.....	.0020	.0056	.0044	.0029	.0041	.029	.949	.611	.402	.066	.023	.015
1957-58.....	.025	.018	.025	.018	.298	.213	.088	.144	.017	1.60	.282	.103
1958-59.....	.022	.187	.027	.020	.749	1.41	1.33	2.59	1.10	.628	2.43	.822
1959-60.....	.504	.184	.505	1.84	.398	2.04	1.61	1.14	.593	.377	.375	.516

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	0.01	0.003	0.002	0.001	0.002	0.02	0.004	0.002	0.005	0.17	0.74	0.05
1956-57.....	.002	.006	.005	.003	.004	.03	1.06	.70	.45	.08	.03	.02
1957-58.....	.03	.02	.03	.02	.31	.24	.10	.17	.02	1.85	.33	.11
1958-59.....	.03	.21	.03	.02	.78	1.63	1.48	2.99	1.23	.72	2.80	.92
1959-60.....	.58	.21	.58	2.12	.43	2.35	1.80	1.31	.66	.43	.43	.58

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56.....	438	123	58	38	66	663	152	73	183	6,520	27,840	1,800
1956-57.....	86	233	188	124	159	1,260	39,550	26,290	16,770	2,830	1,000	608
1957-58.....	1,090	763	1,100	768	11,620	9,140	3,670	6,180	710	69,190	12,160	4,290
1958-59.....	963	7,790	1,180	855	29,180	60,850	55,510	111,600	46,070	27,080	104,800	34,280
1959-60.....	21,690	7,690	21,740	79,420	16,060	88,000	67,370	48,950	24,730	16,250	16,180	21,520

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30						Calendar year					
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet	
	Date	Gage height in feet	Discharge									
1955.....									94.9	1.84	68,670	
1956.....	Aug. 9, 1956..	4.70	2,670	0.1	52.3	0.075	1.01	37,950	52.1	1.01	37,840	
1957.....	Apr. 3, 1957..	7.54	5,250	.4	123	.175	2.39	89,100	126	2.46	91,550	
1958.....	July 15, 1958..	9.22	7,400	2.2	167	.238	3.23	120,700	176	3.42	127,700	
1959.....	Aug. 6, 1959..	18.42	17,500	8.2	663	.946	12.84	480,200	720	13.94	521,300	
1960.....	Mar. 30, 1960.	16.63	15,200	28	592	.845	11.48	429,600				

Peak Discharge (base, 4,500 cfs)

1955-56: No peak above base.

1956-57 Apr. 3 (1:30 p.m.) 8,190 cfs (7.54 ft.).

1957-58: July 15 (11:30 a.m.) 7,400 cfs (9.22 ft.); July 27 (6:30 p. m.) 5,850 cfs (8.19 ft.).

1958-59: Mar. 26 (11 a.m.) 5,430 cfs (7.67 ft.); Apr. 20 (8:30 a.m.) 6,900 cfs (9.18 ft.); May 11 (5 a.m.) 7,900 cfs (10.25 ft.); May 31 (5:30 p.m.) 8,300 cfs (10.60 ft.); July 1 (2:30 a.m.) 5,700 cfs (8.04 ft.); Aug. 6 (7 p.m.) 17,500 cfs (18.42 ft.); Sept. 27 (2 a.m.) 8,100 cfs (10.35 ft.).

Thompson River at Davis City, Iowa—Continued

1959-60: Jan. 14 (7 a.m.) 9,690 cfs (11.92 ft.); Mar. 30 (5:30 a.m.) 15,200 cfs (16.63 ft.); Apr. 17 (2 a.m.) 4,800 cfs (6.97 ft.); July-1 (3:30 a.m.) 7,600 cfs (9.89 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 27 to Dec. 31, 1955; Jan. 1 to Mar. 12, Nov. 20-29, Dec. 6-18, 26-31, 1956; Jan. 1 to Mar. 6, Nov. 29 to Dec. 16, Dec. 26-31, 1957; Jan. 1 to Feb. 25, Nov. 27 to Dec. 1, Dec. 6-24, 30, 31, 1958; Jan. 1 to Feb. 17, Feb. 20-22, Nov. 15-19, 28, Dec. 5-9, Dec. 31, 1959; Jan. 1-12, 18-29, Feb. 10 to Mar. 28, 1960. No gage-height record Mar. 14-27, 1956.

Weldon River near Leon, Iowa

LOCATION.—Lat. 40°41'50", long. 93°38'15", in NE¼NE¼ sec. 17, T. 68 N., R. 24 W., on left bank 10 ft. downstream from highway bridge, 5.7 miles upstream from Steele Creek, and 6.5 miles southeast of Leon.

DRAINAGE AREA.—104 square miles.

RECORDS AVAILABLE.—October 1958 to September 1960.

GAGE.—Water-stage recorder. Datum of gage is 906.21 ft. above mean sea level, datum of 1929.

EXTREMES.—1958-60: Maximum discharge, 48,000 cfs Aug. 6, 1959 (gage height, 25.27 ft.), from rating curve extended above 5,600 cfs on basis of contracted-opening and flow over embankment of peak flow; minimum daily, 0.7 cfs, July 25, 26, Sept. 16, 1959, Aug. 14, 1960.

Flood of Aug. 6, 1959, was greatest flood in at least 40 years.

REMARKS.—Bankfull stage is about gage height, 21 ft.

Daily Discharge, in Cubic Feet per Second, Water Year 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1...	2.9	1.7	9.0	5.5	30	61	218	40	166	585	1.0	1.5
2...	2.8	1.7	11	5.0	27	59	220	35	49	40	1.2	1.7
3...	2.6	1.6	*12	4.5	24	38	96	35	30	16	1.3	1.1
4...	2.5	1.6	12	4.2	22	27	53	35	24	14	37	1.0
5...	2.4	1.6	9.5	4.0	20	25	37	570	20	9.2	402	1.0
6...	2.3	*1.3	8.0	3.8	19	23	28	220	17	6.0	*16,400	.9
7...	25	1.3	7.0	3.6	18	23	27	75	15	4.0	*285	.9
8...	110	1.5	6.0	3.4	16	36	27	55	13	*3.8	41	.8
9...	38	1.3	5.0	3.2	15	73	27	400	11	3.8	18	.9
10...	7.9	1.3	4.5	3.1	15	94	24	1,350	8.0	4.3	11	.8
11...	3.6	1.1	4.0	3.1	17	*106	22	2,040	*6.3	3.0	8.2	.8
12...	3.2	1.2	3.5	3.1	19	174	20	*177	5.4	2.2	5.7	.9
13...	3.2	1.3	3.5	*3.2	400	315	18	419	4.5	1.9	4.3	.8
14...	3.0	1.6	3.5	4.0	700	401	17	60	4.5	1.7	4.0	.8
15...	2.8	3.2	3.5	4.0	300	261	*15	25	3.6	1.7	136	.8
16...	2.7	2.8	3.6	3.5	120	180	13	20	3.2	1.6	48	*.7
17...	2.3	2,300	3.8	3.2	60	119	79	20	2.5	1.5	13	2.5
18...	2.3	756	4.2	3.1	*24	396	182	340	2.2	1.3	7.9	2.5
19...	2.2	46	4.5	3.0	17	870	1,810	459	2.3	1.0	5.2	2.5
20...	2.0	26	5.0	3.0	15	340	*2,970	115	2.0	.9	4.5	1.5
21...	1.9	20	5.5	2.9	15	98	*204	*5,040	1.9	.8	*3.6	1.3
22...	1.7	16	6.0	2.9	150	53	59	362	1.9	.9	2.7	1.1
23...	1.7	15	6.5	2.9	700	51	30	94	1.9	.9	2.2	4.5
24...	1.5	13	7.0	2.9	200	48	20	40	1.8	.8	1.9	3.0
25...	1.3	12	7.5	3.1	100	111	12	25	1.8	.7	1.6	4.0
26...	1.3	10	8.0	3.2	250	*2,550	8.2	20	1.8	.7	1.5	1,340
27...	1.5	9.0	8.0	3.0	140	*424	571	20	1.8	.8	1.5	970
28...	1.5	8.5	8.0	2.9	*92	82	1,280	400	1.9	1.1	1.5	52
29...	1.3	8.2	8.0	8.0	.....	48	124	3,010	2.0	1.3	1.2	14
30...	1.3	8.0	7.3	21	.....	260	50	3,100	447	1.3	1.1	8.5
31...	1.3	.....	6.4	24	.....	174	.....	768	.....	1.2	1.2	.....

Weldon River near Leon, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Year 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1959-60												
1.....	6.6	23	7.0	59	30	11	360	90	98	*466	3.0	4.2
2.....	6.6	20	*8.0	70	40	11	128	48	198	73	2.9	2.6
3.....	6.0	18	9.0	40	50	11	82	32	32	35	2.9	2.0
4.....	230	*22	9.6	20	60	11	69	28	14	22	2.9	1.7
5.....	2,420	26	10	*14	60	11	61	43	12	16	3.0	1.5
6.....	237	23	9.0	12	54	11	56	1,540	9.6	14	50	1.3
7.....	95	19	7.0	15	52	11	49	291	8.0	13	10	1.1
8.....	50	19	6.0	17	60	11	42	66	*5.7	15	4.0	10
9.....	40	22	5.0	21	72	12	36	46	5.7	19	*3.3	4.2
10.....	31	22	5.0	25	90	*13	32	36	5.7	16	2.0	1.5
11.....	24	18	15	200	*54	14	28	*29	9.2	14	1.3	1.1
12.....	22	16	35	2,170	40	14	27	24	177	249	1.0	1.1
13.....	20	14	30	707	35	14	*28	22	109	*30	.8	*1.7
14.....	*17	11	24	726	31	15	144	21	34	15	.7	1.5
15.....	15	9.0	22	838	30	15	94	20	24	13	1.0	1.5
16.....	14	7.0	22	145	33	16	2,680	933	22	11	1.1	4.5
17.....	12	5.0	20	80	35	17	1,580	83	18	9.5	133	4.5
18.....	12	7.0	17	59	28	18	169	43	10	8.5	97	25
19.....	12	9.0	16	45	23	19	64	50	6.4	7.5	70	19
20.....	12	13	17	38	20	21	50	368	334	6.5	43	8.0
21.....	11	15	18	32	17	22	43	120	198	6.0	13	5.4
22.....	11	15	19	27	16	23	38	82	53	5.4	9.6	4.8
23.....	146	15	46	23	14	24	33	49	416	5.0	8.0	43
24.....	36	15	45	20	13	24	31	38	146	4.7	7.0	181
25.....	21	13	32	16	12	24	29	58	32	4.4	8.0	59
26.....	17	10	31	15	11	24	28	46	21	4.1	8.0	18
27.....	15	7.0	1,340	15	11	800	27	28	14	3.9	7.6	8.8
28.....	12	6.0	942	17	11	2,200	27	21	10	3.7	21	5.4
29.....	12	5.0	252	19	11	3,470	27	20	8.8	3.5	340	4.5
30.....	14	6.0	122	21	.....	1,390	200	19	740	3.3	41	4.2
31.....	27	.....	39	25	.....	200	.....	17	.....	3.2	11	.....

Weldon River near Leon, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59.....	7.74	109	6.49	4.85	126	243	275	626	28.4	23.0	563	80.8
1959-60.....	116	14.3	103	178	34.9	273	209	139	92.4	35.5	29.3	14.4

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59.....	0.074	1.05	0.062	0.047	1.21	2.34	2.64	6.02	0.273	0.221	5.41	0.777
1959-60.....	1.12	.137	.990	1.71	.336	2.62	2.01	1.34	.888	.341	.282	.138

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59.....	0.09	1.17	0.07	0.05	1.26	2.69	2.95	6.94	0.31	0.26	6.24	0.87
1959-60.....	1.29	.15	1.14	1.98	.36	3.03	2.24	1.54	.99	.39	.32	.15

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59.....	476	6,490	399	298	6,990	14,920	16,390	38,480	1,690	1,420	34,620	4,810
1959-60.....	7,150	853	6,310	10,970	2,010	16,810	12,420	8,550	5,500	2,180	1,800	857

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30							Calendar year				
	Momentary maximum			Min-imum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet	
	Date	Gage height in feet	Dis-charge									
1959...	Aug. 6, 1959..	25.27	48,600	0.7	175	1.68	22.90	127,000	185	24.15	133,900	
1960...	Apr. 16, 1960.	19.72	9,210	.7	104	1.00	13.58	75,410	.....	.....	.....

Peak Discharge (base, 4,500 cfs)

1958-59: Nov. 17 (5 p.m.) 7,410 cfs (17.87 ft.); Apr. 20 (12:30 a.m.) 6,870 cfs (17.32 ft.); May 21 (4 a.m.) 8,740 cfs (19.16 ft.); May 29 (3 a.m.) 6,330 cfs (16.74 ft.); May 30 (6:30 a.m.) 5,220 cfs (15.37 ft.); Aug. 6 (3:30 a.m.) 48,600 cfs (25.27 ft.).

1959-60: Oct. 5 (4:30 a.m.) 5,700 cfs (16.00 ft.); Mar. 29 (9 p.m.) 7,220 cfs (18.12 ft.); Apr. 16 (7 p.m.) 9,210 cfs (19.72 ft.); May 16 (6:30 a.m.) 4,910 cfs (15.88 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 26 to Dec. 2, Dec. 6-31, 1958; Jan. 1 to Feb. 27, Mar. 6, 7, Nov. 14 to Dec. 13, 1959; Jan. 2-11, Jan. 17 to Mar. 28, 1960. No gage-height record Oct. 1-8, 1958; June 4-10, 22-29, 1959; July 14 to Aug. 8, 1960.

Honey Creek near Russell, Iowa

LOCATION.—Lat. 40°55'25", long. 93°07'55", in SW¼NW¼ sec. 26, T. 71 N., R. 20 W., on left bank 15 ft. downstream from highway bridge, 0.7 mile upstream from Chariton River, and 5.5 miles southeast of Russell.

DRAINAGE AREA.—13.2 square miles (revised in 1956).

RECORDS AVAILABLE.—June 1952 to September 1960.

GAGE.—Water-stage recorder and concrete control. Datum of gage is 901.73 ft. above mean sea level, datum of 1929 (levels by Soil Conservation Service).

AVERAGE DISCHARGE.—8 years, 6.09 cfs (4,410 acre-ft. per year).

EXTREMES.—1952-60: Maximum discharge, 4,100 cfs May 21, 1959 (gage height, 11.26 ft.), from rating curve extended above 640 cfs on basis of contracted-opening and flow-over-road measurement of peak flow; no flow at times in each year.

REMARKS.—Records of suspended-sediment loads for the period June 1952 to September 1960 are published in reports of U. S. Geological Survey. Bankfull stage is about gage height, 7.5 ft.

Daily Discharge, in Cubic Feet per Second, for Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	0	0	0	0	0	0	0	0	0	0	*80	0
2.....	0	*0	0	0	0	0	0	*0	0	0	65	0
3.....	0	0	0	*0	0	0	*0	0	0	5.0	2.8	0
4.....	*0	0	0	0	0	0	0	0	0	18	.45	0
5.....	0	0	*0	0	0	*0	0	0	*0	1.4	.15	0
6.....	0	0	0	0	*0	0	0	0	0	.10	*.04	0
7.....	0	0	0	0	0	0	0	0	0	0	.01	0
8.....	0	0	0	0	0	0	0	0	0	0	10	0
9.....	0	0	0	0	0	0	0	0	0	*0	*75	0
10.....	0	0	0	0	0	0	0	0	0	0	2.9	0
11.....	0	0	0	0	0	0	0	0	0	0	1.1	0
12.....	0	0	0	0	0	0	0	0	0	0	5.8	*0
13.....	0	0	0	0	0	0	0	0	0	0	32	0
14.....	0	0	0	0	0	0	0	0	0	0	2.1	0
15.....	0	0	0	0	0	0	0	0	0	0	.95	0
16.....	0	0	0	0	0	0	0	0	0	0	2.3	0
17.....	0	0	0	0	0	0	0	0	0	0	3.1	0
18.....	0	0	0	0	0	0	0	0	0	0	55	0
19.....	0	0	0	0	0	0	0	0	0	0	6.2	0
20.....	0	0	0	0	0	0	0	0	0	0	2.1	0
21.....	*0	0	0	0	0	0	0	0	0	0	.90	0
22.....	0	0	0	0	0	0	0	0	0	0	.45	0
23.....	0	0	0	0	0	0	0	0	0	0	.17	0
24.....	0	0	0	0	0	0	0	0	0	0	.07	0
25.....	0	0	0	0	0	0	0	0	0	0	.04	0
26.....	0	0	0	0	0	0	0	0	0	0	.02	0
27.....	0	0	0	0	0	0	0	0	0	0	0	0
28.....	0	0	0	0	0	0	0	0	0	0	0	0
29.....	0	0	0	0	0	0	0	0	0	0	0	0
30.....	0	0	0	0	.....	0	0	0	0	0	0	0
31.....	0	.....	0	0	.....	0	.....	0	.....	7.5	0	.....

Honey Creek near Russell, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1	0	0	0	0	0	0	*9.8	2.2	0.51	0.07	0.04	0
2	0	0	0	0	0	0	14	1.8	.37	.05	0	0
3	0	0	0	0	0	0	*139	1.4	.22	.04	0	*0
4	0	0	*0	0	*0	0	48	1.1	.22	.05	0	0
5	0	0	0	0	0	*0	**12	.70	.19	.03	*0	0
6	0	*0	0	0	0	0	7.0	.70	.14	0	0	0
7	0	0	0	*0	0	0	5.4	.62	*1.9	0	0	0
8	0	0	0	0	0	0	4.7	*.47	2.2	*0	0	0
9	0	0	0	0	0	0	4.1	.54	2.3	0	0	0
10	0	0	0	0	0	0	3.0	1.3	1.4	0	0	0
11	0	0	0	0	0	0	3.4	1.4	17	0	0	0
12	0	0	0	0	0	0	2.8	3.6	*6.6	0	0	0
13	0	0	0	0	0	0	2.5	5.9	14	0	0	0
14	0	0	0	0	0	0	2.0	7.3	*54	0	0	.06
15	*0	0	0	0	0	0	1.8	3.8	7.3	0	0	11
16	0	0	0	0	0	0	1.9	3.6	2.5	0	0	1.3
17	0	0	0	0	0	0	4.5	15	1.5	0	0	.19
18	0	0	0	0	0	0	*3.5	4.6	1.5	0	0	.03
19	0	0	0	0	0	0	2.7	3.4	.95	0	0	0
20	0	0	0	0	0	0	2.3	20	.47	0	0	.20
21	0	0	0	0	0	*0	1.6	*101	.28	0	0	.95
22	0	0	0	0	0	0	92	6.4	.25	2.8	0	.47
23	0	0	0	0	0	0	19	*4.0	.19	.14	0	.14
24	0	0	0	0	0	0	6.2	2.6	.19	0	0	.05
25	0	0	0	0	0	0	3.5	2.2	.14	0	0	0
26	0	0	0	0	0	0	6.5	1.7	.25	0	0	0
27	0	0	0	0	0	0	5.4	1.2	.62	0	0	0
28	0	0	0	0	0	.86	9.4	.86	.54	14	0	0
29	0	0	0	0	0	3.5	4.6	.78	.37	14	0	0
30	0	0	0	0	0	3.8	2.8	.70	.16	1.1	0	0
31	0	0	0	0	0	4.1	0	.86	0	.19	0	0
1957-58												
1	0	0.19	0.37	0.38	1.0	13	1.7	0.78	0.22	0	*85	0.12
2	0	1.1	*.42	.25	1.0	8.2	2.6	.78	.32	*312	16	*.14
3	0	.86	.47	.35	*1.0	*6.3	2.7	1.4	.19	*48	4.5	.16
4	0	.25	.47	.47	1.0	5.8	4.1	81	.14	*192	3.2	.22
5	0	.16	.54	.54	1.1	9.8	4.4	*25	.07	14	26	.22
6	0	.16	.70	*.95	1.0	17	5.0	6.0	*.05	4.6	14	.22
7	0	.19	.70	1.1	.90	7.6	4.8	4.0	.23	2.2	4.4	.16
8	0	.54	.62	.70	.80	7.6	2.8	3.6	.95	2.0	*2.6	.14
9	*0	.62	.45	.45	.60	6.6	2.3	2.8	12	1.6	1.9	58
10	0	.54	.35	.56	.50	5.2	2.1	2.1	2.6	1.9	1.5	7.2
11	0	.54	.15	.70	.45	4.3	1.9	1.7	.78	3.8	1.2	1.6
12	0	.47	.11	.90	.40	3.8	1.6	1.4	2.8	3.2	2.2	.86
13	0	.54	.11	1.1	.35	3.6	1.5	1.0	2.6	1.8	7.3	.47
14	0	1.0	.22	1.4	.30	3.2	1.4	.95	1.7	1.3	2.2	.32
15	0	.54	.37	1.6	.28	2.8	1.4	1.4	.86	1.1	1.4	.95
16	0	.42	.54	1.5	.26	2.6	1.3	1.2	.70	.86	.95	1.0
17	0	.32	.78	1.4	.25	2.3	1.2	1.0	1.6	5.4	.78	.95
18	0	1.7	*1.9	1.3	.25	2.3	1.1	.95	1.2	5.8	.54	.70
19	0	*4.3	2.5	1.2	.27	2.3	1.2	.62	.54	129	*.37	.47
20	0	2.3	2.7	1.3	.30	*2.3	2.1	*.35	.37	34	1.6	.37
21	0	1.8	2.1	1.2	*.34	2.1	2.2	.32	*.28	6.9	2.5	2.3
22	0	1.9	1.7	*1.1	.45	1.9	*2.7	.28	.22	*4.0	1.1	1.4
23	1.2	1.2	1.3	1.3	1.6	1.9	2.5	.25	.22	2.6	.62	.57
24	5.2	1.1	.86	1.3	100	1.8	3.4	.22	.19	2.0	.70	.85
25	1.5	.95	6.7	1.3	45	1.6	1.9	.19	.14	1.7	.54	5.3
26	.42	.86	3.5	1.3	15	1.5	1.5	.16	.10	1.2	.47	2.8
27	.22	.70	2.4	1.3	.22	1.5	1.4	1.4	.05	45	.47	1.9
28	.14	.54	1.6	1.2	16	1.4	1.4	.12	.02	8.7	.42	1.4
29	.14	.40	1.1	1.2	0	1.5	1.0	.07	0	3.0	.32	1.2
30	.14	.33	.80	1.1	0	1.5	0	.86	.07	0	*229	.22
31	.14	0	.56	1.1	0	*1.4	0	0	0	*200	.16	0

Honey Creek near Russell, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1959 and 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	0.78	0.54	0.70	0.70	3.0	8.8	*250	3.8	45	100	0	0
2	.70	.62	.90	.80	.90	*6.6	22	3.4	25	5.0	0	0
3	.70	.62	*1.3	.40	.60	5.0	11	4.6	15	2.0	*0	0
4	.70	*.62	1.5	.25	.50	3.5	6.0	*3.1	7.6	1.6	8.2	0
5	.54	.70	.80	.19	*.41	1.0	4.8	17	5.2	1.4	4.9	0
6	.47	.42	.50	*.23	.35	.25	*3.8	7.6	*3.1	*.86	4.1	0
7	6.4	.37	.35	.28	.50	1.0	3.8	4.0	1.9	.54	2.5	0
8	3.8	.47	.33	.32	19	2.4	4.1	2.8	1.5	.47	.62	0
9	*2.6	.42	.30	.47	15	4.0	4.0	6.0	1.0	.42	.28	0
10	1.7	.32	.28	.54	20	6.0	3.2	12.0	1.2	.32	.22	0
11	1.2	.28	.33	.37	15	10	3.2	35	1.1	.28	.19	*0
12	1.1	.28	.25	.31	30	20	5.0	11	.86	.25	.10	0
13	1.0	.32	.17	.45	80	35	3.6	4.0	.25	.19	.07	0
14	1.0	.47	.12	1.3	50	60	3.0	3.0	.25	.16	.04	0
15	1.0	.62	.10	1.5	35	70	2.6	2.7	.22	.19	.04	0
16	1.0	.70	.12	1.8	30	25	2.3	2.3	.22	.28	.04	0
17	1.0	94	.17	.40	25	20	5.0	2.2	.22	.22	2.8	0
18	1.0	55	.30	.25	20	70	6.0	53	.22	.16	.37	0
19	.95	4.5	.58	.16	17	*350	141	110	.16	.12	.22	0
20	.95	3.1	.50	.13	15	100	170	180	.69	.05	.10	0
21	.78	2.5	.46	12	40	20	30	*1.100	.25	.03	.05	0
22	.70	2.1	.54	11	100	15	15	*48	.28	.01	.01	0
23	.70	2.0	.60	10	30	11	9.0	15	.22	0	0	1.6
24	.62	1.8	.70	.13	10	10	6.0	10	.14	0	0	1.6
25	.86	1.5	.70	.17	30	9.0	4.4	7.6	.12	0	0	.98
26	.78	1.0	.80	.15	20	*220	3.5	7.6	.14	0	0	82
27	.62	.70	.90	15	15	*33	50	7.0	.12	0	0	100
28	.62	.80	1.0	.18	11	18	76	90	.12	0	0	3.0
29	.54	.70	.90	.90	.....	14	9.0	66	3.1	0	0	2.1
30	.54	.60	.70	20	.....	12	5.3	*150	73	0	0	1.8
31	.54	.....	.50	9.0	.....	11	.....	80	.....	0	0	.....
1959-60												
1	1.7	2.5	1.1	4.0	2.8	1.8	32	26	2.8	57	*0	0.19
2	1.7	1.8	1.3	3.1	2.7	1.8	26	*6.3	2.1	7.7	0	.10
3	1.6	1.6	*1.2	2.5	2.7	1.7	22	4.4	1.6	1.9	0	.03
4	11	2.0	1.2	*2.0	2.7	1.7	18	3.4	1.4	1.0	0	0
5	*80	5.3	1.2	1.6	2.6	1.7	14	8.7	1.1	*.70	0	0
6	90	3.4	1.2	1.8	2.6	1.7	9.0	444	*1.0	.62	0	0
7	20	2.3	1.2	1.9	2.6	1.7	5.8	60	1.1	.54	3.7	0
8	6.0	2.2	1.2	2.1	4.0	1.7	4.8	9.0	1.1	.42	1.2	0
9	4.1	2.5	1.1	2.3	6.0	1.7	*3.8	6.0	.70	.62	.32	*0
10	3.0	3.0	1.3	2.5	10	1.7	3.2	4.7	.70	44	.10	0
11	2.3	2.3	5.2	.30	5.0	1.7	3.5	4.0	2.2	3.8	.05	0
12	1.7	2.0	18	250	4.5	1.7	3.0	3.1	36	1.6	.01	0
13	1.7	1.7	5.3	15	4.0	1.7	3.4	3.0	32	1.3	0	0
14	1.6	1.5	4.0	10	3.5	1.7	7.4	2.5	4.0	.70	0	0
15	1.6	1.3	3.8	20	3.3	1.7	28	2.1	1.9	.47	0	0
16	1.6	1.2	3.5	35	3.1	1.7	187	*380	1.8	.37	0	0
17	1.4	1.1	3.1	7.0	2.9	1.7	150	*35	1.6	.37	.03	0
18	1.2	*1.1	2.7	5.0	2.7	1.7	9.0	18	1.1	.32	1.3	0
19	1.2	1.2	2.3	4.3	2.6	1.7	7.0	10	1.0	.28	.78	.54
20	1.2	1.5	2.3	4.0	2.4	1.7	5.4	138	36	.22	.32	.32
21	1.2	2.2	2.6	3.7	2.3	1.7	4.6	63	26	.14	.65	.07
22	2.1	2.5	3.0	3.6	2.2	1.7	4.1	38	4.8	.12	.32	.01
23	10	2.7	16	3.4	2.1	1.7	3.4	6.2	64	.06	.12	.04
24	4.0	2.8	7.6	3.3	2.0	1.7	3.0	104	21	.04	.07	.70
25	2.5	2.3	5.2	3.2	1.9	1.7	25	170	2.3	.06	.04	.47
26	1.5	1.7	5.8	3.1	1.9	1.7	20	20	1.4	1.9	0	.28
27	1.4	1.3	100	3.1	1.9	1.70	4.0	10	1.0	.37	0	.12
28	*1.3	1.1	45	3.1	1.8	920	3.2	8.0	1.5	.16	.05	.05
29	1.3	.94	10	*3.0	*1.8	500	22	6.0	1.4	.10	4.8	.01
30	1.3	1.0	6.0	3.0	.....	200	152	4.5	32	.05	1.4	0
31	2.0	.....	5.0	2.9	.....	42	.....	3.5	.....	.02	.37	.....

Honey Creek near Russell, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0	0	0	0	0	0	0	0	0	1.03	11.2	0
1956-57	0	0	0	0	0	0.395	14.2	6.51	3.94	1.05	1.001	.480
1957-58 .....	.294	.884	1.20	1.02	7.59	4.35	2.20	4.52	1.04	40.9	5.97	7.79
1958-59	1.16	5.94	.561	1.35	22.6	37.8	28.8	66.1	6.27	3.70	.802	6.44
1959-60	8.49	2.00	8.66	14.2	3.12	60.5	28.3	51.7	9.55	4.10	0.504	.098

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0	0	0	0	0	0	0	0	0	0.078	0.848	0
1956-57	0	0	0	0	0	.030	1.08	.493	.298	.080	.00008	.036
1957-58 .....	.022	.067	.091	.077	.575	.330	.167	.342	.079	3.10	.452	.590
1958-59 .....	.088	.450	.043	.102	1.71	2.86	2.18	5.01	.475	.280	.061	.488
1959-60 .....	.643	.152	.656	1.08	.236	4.58	2.14	3.92	.723	.311	.038	.0074

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0	0	0	0	0	0	0	0	0	0.09	0.98	0
1956-57	0	0	0	0	0	.03	1.20	.57	.33	.09	.0001	.04
1957-58 .....	.03	.07	.10	.09	.60	.38	.19	.39	.09	3.57	.52	.66
1958-59 .....	.10	.50	.05	.12	1.78	3.30	2.43	5.77	.53	.32	.07	.54
1959-60 .....	.74	.17	.76	1.24	.26	5.29	2.40	4.51	.81	.36	.04	.008

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0	0	0	0	0	0	0	0	0	63	692	0
1956-57	0	0	0	0	0	24	844	400	235	64	.1	29
1957-58	18	53	74	63	421	267	131	278	62	2,520	367	464
1958-59	71	353	35	83	1,260	2,320	1,710	4,060	373	227	49	383
1959-60	522	119	532	872	180	3,720	1,690	3,180	568	252	31	5.8

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30							Calendar year			
	Momentary maximum			Min-imum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet
	Date	Gage height in feet	Dis-charge								
1955									1.12	1.16	811
1956	July 31, 1956..	7.34	265	0	1.04	0.079	1.07	755	1.04	1.07	755
1957	Apr. 22, 1957..	(1)7.17	263	0	2.20	.167	2.26	1,600	2.40	2.46	1,740
1958	July 2, 1958..	8.86	638	0	6.51	.493	6.69	4,720	6.94	7.14	5,030
1959	May 21, 1959..	11.26	4,100	0	15.1	1.14	15.51	10,920	16.1	16.53	11,640
1960	May 6, 1960..	(2)9.33	1,260	0	16.1	1.22	16.59	11,670			

- (1) Maximum gage height, 7.69 ft. Apr. 3, 1957 (backwater from Chariton River).
- (2) Maximum gage height 10.15 ft. Mar. 30, 1960 (backwater from Chariton River).

Peak Discharge (base, 250 cfs)

1955-56: July 31 (12 p.m.) 265 cfs (7.34 ft.).
 1956-57: Apr. 22 (3 p.m.) 263 cfs (7.17 ft.); May 21 (6 a.m.) 254 cfs (7.11 ft.).
 1957-58: Feb. 24 (7 p.m.) 273 cfs (7.20 ft.); July 2 (9:30 a.m.) 638 cfs (8.86 ft.); July 4 (4:30 a.m.) 418 cfs (8.32 ft.); July 30 (10:30 a.m.) 394 cfs (8.84 ft.); Sept. 23 (11 p.m.) 264 cfs (7.12 ft.).

Honey Creek near Russell, Iowa—Continued

1958-59: Mar. 19 about 470 cfs; Mar. 26 about 400 cfs; Apr. 1 (5:30 a.m.) 669 cfs (8.48 ft.); Apr. 20 about 450 cfs; Apr. 27 (10:30 p.m.) 296 cfs (7.26 ft.); May 21 (1:30 a.m.) 4,100 cfs (11.26 ft.); May 30 (7:30 a.m.) 645 cfs (8.89 ft.); Sept. 27 (3 a.m.) 270 cfs (7.06 ft.).

1959-60: Dec. 28 about 260 cfs; Jan. 12 (4 a.m.) 669 cfs (8.51 ft.); Mar. 28 (2:30 a.m.) 1,080 cfs (9.16 ft.); Apr. 16 (9:30 p.m.) 900 cfs (8.92 ft.); May 6 (4 p.m.) 1,260 cfs (9.33 ft.); May 16 about 1,000 cfs; May 20 (3:30 a.m.) 340 cfs (7.51 ft.); May 24 (9:30 p.m.) 303 cfs (7.28 ft.).

Notes to Tables of Daily Discharge

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

**Field estimate made on this day.

Stage-discharge relation affected by ice Nov. 27-30, Dec. 9-13, Dec. 26-31, 1957; Jan. 1-3, Jan. 7 to Feb. 24, Nov. 25 to Dec. 31, 1958; Jan. 1-7, Jan. 12 to Mar. 1, Mar. 5-18, Nov. 13-20, Nov. 26 to Dec. 6, 1959; Jan. 2-11, Jan. 19 to Mar. 27, 1960. Backwater from Chariton River July 30 to Aug. 4, 1958; Mar. 19 to Apr. 4, May 19 to June 3, Dec. 27-31, 1959; Jan. 1, 12-18, Mar. 28 to Apr. 5, May 25 to June 3, 1960.

Chariton River near Rathbun, Iowa

LOCATION.—Lat. 40°48'40", long. 92°53'00", in NW¼NW¼ sec. 1, T. 69 N., R. 18 W., on upstream side of highway bridge, 0.8 mile northeast of Rathbun, 1.0 mile upstream from Walnut Creek, and 1.3 miles downstream from Buck Branch.

DRAINAGE AREA.—551 square miles.

RECORDS AVAILABLE.—October 1956 to September 1960.

GAGE.—Wire-weight gage read once daily. Datum of gage is 843.27 ft. above mean sea level, datum of 1929.

EXTREMES.—1956-60: Maximum discharge, 21,800 cfs Mar. 31, 1960 (gage height, 25.3 ft., from floodmark); minimum daily, 0.1 cfs Oct. 12-14, 17-24, 1957.

REMARKS.—Bankfull stage is about gage height, 17 ft. Road east of gage is overflowed about gage height, 18 ft.

Daily Discharge, in Cubic Feet per Second, for Water Year 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.2	0.5	1.6	1.1	0.5	4.0	30	90	18	9.0	37	4.2
2	2	.5	1.6	1.1	.5	3.9	113	56	18	9.0	22	3.9
3	2	.5	1.6	1.1	.5	3.8	502	42	12	8.5	18	3.6
4	2	.5	1.6	1.1	.5	1.1	*1,300	32	14	5.9	78	2.3
5	2	.5	1.6	1.1	.5	.8	*1,410	24	13	5.2	23	1.3
6	2	.5	1.5	1.1	.7	.8	1,070	17	10	5.0	9.9	1.2
7	2	.5	1.5	1.1	.7	.7	956	14	11	4.5	7.3	3.4
8	2	.5	1.5	1.1	.7	.7	860	12	253	4.2	5.9	2.2
9	2	.5	1.5	1.1	.7	.8	560	10	272	3.9	4.8	1.4
10	2	.5	1.5	1.1	.7	1.9	278	9.3	128	2.6	4.5	1.1
11	3	.7	1.5	.8	.9	1.1	164	8.8	*184	2.4	3.5	3.2
12	3	.7	1.5	.8	.9	1.0	119	11	*560	2.4	3.0	6.4
13	3	.7	1.5	.8	.9	1.1	96	10	605	2.1	1.5	10
14	3	.7	1.5	.8	.9	.8	73	66	605	1.5	1.4	9.9
15	3	.7	1.5	.8	.9	.2	57	468	940	1.4	1.2	6.1
16	4	.7	2.1	.8	3.5	.2	53	434	906	1.0	.8	67
17	4	.7	2.1	.8	3.5	.2	49	187	490	.9	1.2	160
18	4	.7	2.1	.8	3.5	1.1	*44	128	296	.9	1.5	89
19	4	.7	2.1	.8	3.5	.2	78	187	248	.6	5.5	*42
20	4	.7	2.1	.8	3.5	.2	85	168	260	.5	5.3	25
21	4	.9	2.1	.7	6.5	*.2	79	717	202	.4	4.7	14
22	4	.9	2.1	.7	6.5	3.4	611	1,390	187	.4	*4.3	6.8
23	4	.9	2.1	.7	6.5	1.1	522	1,120	83	.3	4.4	4.8
24	4	.9	2.1	.7	6.5	1.4	*322	*400	42	.2	7.8	9.3
25	4	.9	2.1	.7	6.5	2.1	*192	187	24	*.4	7.3	5.0
26	4	.9	2.1	.7	6.5	2.3	110	128	18	5.3	3.4	4.4
27	4	.9	2.1	.7	6.5	3.6	98	80	18	4.4	3.2	4.3
28	4	.9	2.1	.7	6.5	3.0	187	56	15	276	6.8	3.9
29	4	.9	2.1	.7	.....	2.6	137	42	12	*438	4.2	3.2
30	4	.9	2.1	.7	.....	4.0	142	31	9.3	604	4.0	2.9
31	4	.....	2.1	.7	.....	5.0	.....	24	.....	146	4.7	.....

Chariton River near Rathbun, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1958 and 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1957-58												
1.....	2.4	14	10	39	19	1,620	27	34	4.7	2.1	1,150	12
2.....	1.2	17	9.6	31	19	1,300	26	27	6.1	129	1,660	14
3.....	.8	14	10	24	18	575	34	42	4.7	*1,030	1,950	13
4.....	.5	13	9.9	21	18	342	42	557	5.0	1,040	2,010	12
5.....	.4	7.6	7.6	17	18	227	53	*1,360	5.3	1,460	1,680	11
6.....	.4	6.6	6.8	14	17	222	82	1,270	4.2	986	1,770	10
7.....	.4	10	7.1	12	17	284	132	479	3.4	394	1,150	9.0
8.....	.3	11	7.6	11	16	284	155	237	3.2	303	504	8.5
9.....	.2	4.0	7.1	12	15	260	142	197	46	150	272	143
10.....	.2	3.3	5.9	13	13	248	105	150	69	83	173	*1,820
11.....	.2	2.9	5.7	14	11	217	70	104	51	54	114	*1,050
12.....	.1	11	5.2	14	9.0	182	66	64	68	68	147	368
13.....	.1	10	4.8	14	7.4	155	53	55	248	102	*1,060	155
14.....	.1	8.5	4.7	12	7.4	132	*43	41	63	132	*314	72
15.....	.2	7.6	5.9	12	7.4	114	37	39	51	73	119	52
16.....	.3	4.0	5.5	16	7.4	90	36	31	26	212	86	44
17.....	*.1	3.9	5.7	20	7.4	74	34	39	18	303	54	39
18.....	.1	4.3	5.9	23	7.4	67	29	38	23	192	43	37
19.....	.1	28	*6.1	26	6.2	59	28	32	16	458	32	43
20.....	.1	70	8.5	28	*5.2	*58	37	26	*11	848	28	32
21.....	.1	78	20	25	5.2	50	48	*24	8.5	1,090	*43	28
22.....	.1	*57	35	23	6.0	53	103	19	8.0	616	80	40
23.....	.1	50	34	*21	8.0	47	101	14	7.6	420	57	247
24.....	.1	28	28	20	200	40	207	12	6.2	*248	48	1,550
25.....	8.5	26	31	20	1,000	39	164	12	5.9	115	45	1,480
26.....	31	15	42	20	1,500	39	150	9.6	5.2	74	39	865
27.....	36	12	168	19	1,790	38	92	8.0	5.0	59	33	342
28.....	38	11	150	19	1,710	37	60	7.6	3.8	119	24	164
29.....	39	11	89	19	.....	36	43	5.5	3.5	646	21	118
30.....	37	10	35	19	.....	34	36	5.2	2.9	*1,170	17	82
31.....	15	.....	30	19	.....	32	.....	4.5	.....	*1,660	14	.....
1958-59												
1.....	53	13	40	27	62	1,730	1,880	600	6,070	570	13	5.3
2.....	49	13	42	25	80	1,280	1,820	502	4,160	1,260	8.8	8.8
3.....	42	13	*43	23	100	660	2,420	340	2,790	915	3.5	58
4.....	30	12	44	21	80	388	2,200	244	2,140	424	273	22
5.....	27	13	54	19	70	224	1,280	199	1,350	234	323	38
6.....	24	*12	47	18	60	100	515	719	510	114	204	29
7.....	49	11	32	18	54	92	307	970	269	72	1,010	20
8.....	388	11	26	17	52	120	224	615	179	*48	1,240	11
9.....	*463	10	23	17	54	152	209	329	110	47	826	8.5
10.....	412	9.9	19	17	160	189	194	239	96	46	557	6.4
11.....	160	9.6	18	17	270	*269	160	444	74	35	476	4.6
12.....	102	9.6	17	17	400	412	147	*860	*65	21	214	3.2
13.....	77	13	17	*17	800	705	142	926	60	18	86	2.8
14.....	56	13	17	19	1,100	1,290	130	1,190	47	12	52	2.8
15.....	43	13	17	24	1,400	1,470	*114	920	35	9.6	36	2.4
16.....	37	13	17	27	1,300	1,380	102	499	32	9.6	34	2.2
17.....	24	101	17	29	1,100	1,110	91	246	24	7.5	72	*3.2
18.....	32	941	17	26	1,000	914	227	268	21	5.0	364	2.6
19.....	28	*1,400	18	23	600	*1,630	408	849	16	4.8	376	3.2
20.....	20	*890	20	21	400	2,130	2,170	1,570	16	4.3	*184	3.5
21.....	19	557	20	19	280	*3,460	2,420	2,430	16	3.5	85	4.6
22.....	18	352	21	17	320	*3,160	4,260	*14,200	13	3.2	41	3.2
23.....	17	160	22	17	1,000	2,200	2,640	11,200	11	2.8	28	72
24.....	15	102	22	16	1,300	1,490	1,940	5,500	9.9	3.2	20	23
25.....	13	72	22	15	1,750	930	1,290	3,260	9.6	4.3	14	74
26.....	13	64	22	15	2,010	1,540	571	2,330	9.2	4.1	11	232
27.....	13	50	24	15	*2,060	1,790	318	1,610	8.5	4.1	9.6	1,390
28.....	13	45	24	15	1,880	2,180	526	995	6.1	3.9	7.5	1,510
29.....	13	40	27	16	.....	2,300	1,100	1,660	7.0	3.5	7.2	1,190
30.....	14	40	28	72	.....	1,770	810	2,150	99	3.0	6.4	705
31.....	15	.....	28	66	.....	1,440	.....	5,580	.....	28	5.8	.....

Chariton River near Rathbun, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Year 1960

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1959-60												
1.....	571	59	30	842	135	84	10,000	1,110	274	410	10	174
2.....	376	62	*28	660	135	82	5,300	858	199	780	7.2	99
3.....	147	74	27	364	140	82	3,780	489	156	630	4.3	72
4.....	224	62	28	290	150	82	2,380	318	118	437	3.5	48
5.....	1,200	*56	29	330	160	80	1,940	239	89	280	3.2	32
6.....	*1,610	55	32	250	180	80	1,220	698	152	130	3.9	26
7.....	1,610	66	39	180	200	80	630	6,130	106	81	9.6	16
8.....	1,280	60	34	130	190	82	400	6,900	*72	60	17	14
9.....	858	57	30	100	260	86	269	4,900	63	42	*66	9.2
10.....	690	62	27	96	450	*90	239	2,420	51	194	53	9.2
11.....	329	60	25	170	400	92	174	1,750	45	795	35	8.2
12.....	170	59	31	600	330	94	147	*1,020	96	292	25	6.1
13.....	110	56	48	1,500	280	98	130	400	367	*92	15	3.9
14.....	86	52	106	2,000	240	100	*152	184	585	66	11	*3.5
15.....	*71	50	106	4,100	220	104	229	204	412	63	7.0	3.2
16.....	59	46	99	4,020	200	107	650	374	318	44	4.6	3.5
17.....	48	40	85	3,160	180	110	1,370	1,510	204	32	3.2	6.7
18.....	39	35	82	2,200	170	113	1,670	2,150	134	16	47	5.6
19.....	34	32	80	1,610	155	117	3,780	2,800	118	13	53	5.3
20.....	31	30	72	1,220	140	120	3,230	2,150	99	11	184	7.2
21.....	28	29	59	690	130	125	2,250	1,750	376	11	170	24
22.....	25	30	55	500	120	130	1,470	1,550	437	8.2	126	54
23.....	29	38	60	380	110	135	705	906	463	5.0	126	34
24.....	118	36	74	300	105	140	364	906	600	3.9	63	24
25.....	254	53	106	260	95	145	249	2,250	660	4.3	27	19
26.....	152	52	110	210	*91	150	214	2,300	571	3.7	13	39
27.....	134	51	170	190	87	350	264	2,380	515	2.4	11	254
28.....	96	44	575	170	86	1,500	280	2,520	364	2.1	10	194
29.....	82	37	1,290	160	85	5,980	184	1,880	214	53	4.8	106
30.....	72	33	1,190	150	.....	17,800	466	906	147	38	18	59
31.....	62	.....	970	140	.....	*19,000	.....	412	.....	19	282	.....

Chariton River near Rathbun, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57	0.32	0.70	1.83	0.86	2.85	1.72	343	198	215	49.9	9.36	16.7
1957-58	6.87	18.3	25.9	19.3	231	224	74.5	159	26.1	459	475	295
1958-59	73.5	167	26.0	22.7	705	1,242	1,020	2,047	608	126	213	131
1959-60	339	49.2	184	870	180	1,527	1,471	1,754	267	149	45.6	45.3

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57	0.00058	0.0013	0.0033	0.0016	0.0052	0.0031	0.623	0.359	0.390	0.091	0.017	0.030
1957-58 . . . . .	.012	.033	.047	.035	.419	.407	.135	.289	.047	.833	.862	.535
1958-59 . . . . .	.133	.303	.047	.041	1.28	2.25	1.85	3.72	1.10	.229	.387	.328
1959-60 . . . . .	.615	.089	.334	1.58	.327	2.77	2.67	3.18	.485	.270	.083	.082

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57	0.0007	0.001	0.004	0.002	0.005	0.004	0.70	0.42	0.44	0.10	0.02	0.03
1957-58 . . . . .	.01	.04	.05	.04	.44	.47	.15	.33	.05	.96	.99	.60
1958-59 . . . . .	.15	.31	.05	.05	1.33	2.60	2.07	4.28	1.23	.26	.44	.37
1959-60 . . . . .	.71	.10	.38	1.82	.35	3.20	2.98	3.67	.54	.31	.10	.09

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57	20	42	112	53	159	106	20,420	12,200	12,800	3,070	575	995
1957-58	423	1,090	1,590	1,180	12,820	13,800	4,430	9,810	1,550	28,240	20,230	17,570
1958-59	4,520	9,920	1,600	1,400	39,160	76,370	60,720	125,800	36,210	7,780	13,070	10,790
1959-60	20,840	2,930	11,300	53,500	10,360	93,890	87,540	107,800	15,880	9,160	2,800	2,700

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30							Calendar year				
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet	
	Date	Gage height in feet	Discharge									
1957	Apr. 5, 1957	13.72	1,500	0.2	69.8	0.127	1.73	50,550	73.9	1.82	53,480	
1958	Aug. 4, 1958	17.3	2,070									
	Sept. 10, 1958	15.7	2,070	.1	168	.305	4.13	121,700	186	4.57	134,700	
1959	May 22, 1959	24.0	16,600	2.2	535	.971	13.17	387,300	561	13.82	406,400	
1960	Mar. 31, 1960	25.3	21,800	2.1	577	1.05	14.25	418,700	.....	.....	.....

Peak Discharge (base, 2,000 cfs)

1956-57: No peak above base.

1957-58: Aug. 4 (8 a.m.) 2,070 cfs (17.3 ft.); Sept. 10 (8 a.m.) 2,070 cfs (15.7 ft.).

1958-59: Feb. 26 (8 p.m.) 2,200 cfs (17.2 ft.); Mar. 21 (12 p.m.) 4,100 cfs (19.51 ft.); Mar. 29 (2 a.m.) 2,520 cfs (18.2 ft.); Apr. 3 (6 p.m.) 3,160 cfs (18.9 ft.); Apr. 22 (6 a.m.) 4,420 cfs (19.72 ft.); May 22 (10 a.m. to 12 m) 16,600 cfs (24.0 ft.); May 31 (12 p.m.) 7,100 cfs (21.1 ft.).

1959-60: Jan. 15 (6 p.m.) 4,900 cfs (20.0 ft.); Mar. 31 (5 a.m.) 24,800 cfs (25.3 ft.); Apr. 19 (1 p.m.) 4,260 cfs (19.6 ft.); May 7 (6 p.m.)

Chariton River near Rathbun, Iowa—Continued

9,400 cfs (22.0 ft.); May 19 (4 a.m.) 3,300 cfs (19.0 ft.); May 27 (12 p.m.) 2,720 cfs (18.5 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Dec. 30-31, 1957; Jan. 1-6, Jan. 17 to Feb. 26, Nov. 27-30, Dec. 1, 6, 8, 9, 11-15, 22, 1958; Jan. 1 to Feb. 24, Mar. 6-8, Nov. 15-18, Nov. 28 to Dec. 3, Dec. 7-12, 1959; Jan. 4-14, Jan. 22 to Mar. 28 1960.

Chariton River near Centerville, Iowa

LOCATION.—Lat. 40°44'20", long. 92°48'05", in NE¼NW¼ sec. 34, T. 69 N., R. 17 W., on left bank 10 ft. downstream from bridge on State Highway 2, 3 miles east of Centerville, and 3.5 miles downstream from Cooper Creek.

DRAINAGE AREA.—708 square miles (revised in 1956).

RECORDS AVAILABLE.—May 1938 to September 1959 (discontinued).

GAGE.—Water-stage recorder and concrete control. Datum of gage is 825.68 ft. above mean sea level, datum of 1929.

AVERAGE DISCHARGE.—21 years, 336 cfs (243,300 acre-ft. per year).

EXTREMES.—1938-59: Maximum discharge, 21,700 cfs June 20, 1946 (gage height, 24.20 ft., from floodmark); minimum daily, 0.1 cfs Oct. 11, 1938, Sept. 30, Oct. 1-3, 1940.

REMARKS.—Bankfull stage is about gage height, 18 ft.

REVISIONS (water years).—WSP 1036: 1944. WSP 1240; 1944(M), 1949.

Daily Discharge, in Cubic Feet per Second, Water Year 1956

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56												
1.....	3.0	0.8	0.7	0.8	0.9	3.5	1.1	2.2	8.8	1.8	345	2.3
2.....	1.6	.8	.8	.8	.9	3.5	1.1	2.3	5.4	2.9	2,060	1.4
3.....	.9	.8	.9	.8	.9	3.2	1.2	2.2	4.1	13	1,850	1.0
4.....	.8	.9	1.1	.8	.9	2.6	1.2	2.0	3.5	55	1,580	6.5
5.....	1.1	.8	1.0	.8	.9	2.6	1.2	2.0	2.9	270	606	13
6.....	1.2	.8	1.0	.8	1.0	2.9	1.2	1.9	2.6	216	291	9.5
7.....	1.4	.8	1.0	.8	1.0	3.0	1.2	1.8	2.4	188	154	5.0
8.....	1.0	.8	1.0	.8	1.1	2.5	1.0	1.6	2.2	109	267	2.7
9.....	.8	.8	1.0	.8	1.2	2.3	.8	1.7	1.8	75	647	1.8
10.....	.6	.8	.9	.8	1.3	2.0	.8	1.9	1.7	25	876	1.5
11.....	.6	.8	.9	.8	1.5	1.9	.8	1.8	1.5	15	966	1.2
12.....	.5	.9	.9	.8	1.6	*1.8	.8	1.6	1.4	10	436	1.1
13.....	.5	.9	.9	.8	1.8	1.7	.8	1.2	1.2	6.6	345	1.2
14.....	.5	.9	1.0	.8	2.4	1.8	.7	1.0	1.1	4.4	420	1.8
15.....	.5	*.9	*1.0	.8	3.0	2.0	.7	.9	.8	3.6	412	2.1
16.....	.5	1.0	1.0	.8	*2.7	2.0	.8	.7	.8	2.9	266	2.9
17.....	.5	.9	.9	.8	2.5	2.0	.8	*.6	1.0	2.0	133	1.9
18.....	*.5	1.0	.9	*.8	2.4	2.2	.7	.5	1.7	1.3	115	*1.5
19.....	.5	1.0	.9	.9	2.4	2.3	*.6	.4	1.8	1.1	105	1.5
20.....	.6	1.0	.8	.8	2.6	2.4	.6	.4	29	1.2	195	1.4
21.....	.6	1.1	.8	.8	3.0	2.5	.7	.4	*34	1.0	*305	1.2
22.....	.5	1.1	.8	.8	2.7	2.5	.7	.4	13	.8	181	1.0
23.....	.6	1.1	.8	.8	2.5	2.4	.8	.4	7.9	.8	122	.9
24.....	.6	1.1	1.0	.8	4.6	2.2	.8	.4	7.9	.8	65	.8
25.....	.6	1.1	.9	.8	25	2.2	.8	.4	5.9	*.8	38	.8
26.....	.6	1.1	.9	.8	27	2.0	*.8	.4	4.3	.8	25	.8
27.....	.6	1.0	1.0	.9	12	1.9	.9	.4	3.4	.8	18	.6
28.....	.6	.9	.9	.9	6.0	2.0	1.3	.4	3.0	.8	15	.5
29.....	.6	.9	.9	.9	4.4	1.8	2.6	.4	2.6	1.4	12	.4
30.....	.7	.8	.8	.9	.....	1.5	2.5	.8	2.2	2.5	9.3	.4
31.....	.7	.....	.8	.9	.....	1.2	.....	7.4	.....	1.8	4.6	.....

Chariton River near Centerville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, for Water Years 1957 and 1958

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1956-57												
1..	0.4	0.6	1.6	1.9	0.6	2.2	37	160	32	18	80	6.2
2..	.3	.5	1.9	1.6	.6	3.2	96	99	28	19	43	5.0
3..	.3	.5	2.2	1.5	.6	3.7	509	67	25	19	112	4.6
4..	.3	.5	2.4	1.5	.6	3.5	*1,440	51	22	18	150	4.2
5..	.3	.8	2.6	1.4	.6	3.2	1,690	41	20	17	51	3.7
6..	.3	.9	2.9	1.4	.6	2.8	1,250	34	18	14	29	3.5
7..	.2	.7	2.4	1.3	.7	2.8	1,040	30	26	11	19	22
8..	.2	.6	2.2	1.3	.8	2.6	964	26	128	9.5	15	23
9..	.2	.5	1.9	1.3	1.0	2.5	694	23	309	8.8	12	14
10..	.2	.7	1.8	1.2	1.1	2.4	378	24	658	8.8	10	10
11..	.2	.6	1.9	1.2	1.2	3.0	223	25	*1,070	7.0	8.8	12
12..	.2	.6	1.9	1.1	1.2	3.5	158	29	658	5.6	5.5	26
13..	.2	*.6	1.6	1.1	1.2	2.8	124	34	1,390	4.7	4.1	27
14..	.4	1.1	1.5	1.0	1.2	2.4	97	67	676	4.3	3.2	22
15..	.7	1.2	1.6	1.0	1.2	2.1	80	284	920	3.6	2.6	18
16..	.6	1.1	1.8	1.0	1.3	1.6	67	503	1,180	3.2	2.0	26
17..	.5	.8	1.9	1.0	1.4	1.4	70	271	602	2.7	2.0	150
18..	*.5	.8	2.1	1.0	1.5	1.5	*75	160	423	2.3	2.0	107
19..	.5	.8	2.5	1.0	24	1.8	96	202	267	2.2	2.3	62
20..	.5	.8	*2.9	1.1	20	1.8	128	188	274	2.0	9.0	*37
21..	.4	.8	3.1	1.3	*15	1.8	96	644	211	1.8	9.2	26
22..	.4	.9	3.4	1.4	13	*1.8	899	1,770	191	1.6	*7.5	19
23..	.4	1.0	3.8	1.2	7.9	1.6	1,080	1,650	107	1.8	6.2	14
24..	.4	1.1	4.0	*1.0	4.3	1.6	431	*627	59	1.8	13	9.9
25..	.5	1.2	3.0	.9	3.1	6.2	*274	245	38	*1.4	11	13
26..	.5	1.2	2.8	.8	7.4	13	191	168	30	1.3	9.5	16
27..	.4	1.3	2.7	.7	5.0	16	139	105	26	2.9	7.4	13
28..	.4	1.4	2.8	.7	3.0	17	1,170	70	23	169	9.7	8.8
29..	.5	1.3	2.8	.7	.....	22	378	51	21	2,180	14	5.0
30..	.6	1.2	2.8	.6	.....	25	226	41	19	1,110	11	3.1
31..	.7	.....	2.4	.6	.....	28	.....	35	.....	313	8.6	.....
1957-58												
1..	2.9	18	13	47	24	2,040	46	54	17	2.7	2,340	17
2..	1.7	31	13	54	24	1,630	50	48	15	59	2,150	16
3..	1.0	30	13	40	23	1,000	54	45	13	*652	2,360	14
4..	.6	24	12	30	22	525	68	511	13	1,120	2,520	14
5..	.5	18	12	22	22	350	82	1,330	13	1,500	2,630	14
6..	.5	15	12	20	21	340	102	1,470	13	1,360	2,600	13
7..	.5	14	12	18	21	363	126	741	12	467	1,880	12
8..	.4	21	12	16	20	363	159	332	12	314	818	12
9..	.3	19	11	15	20	318	159	247	81	155	368	535
10..	.3	16	10	16	17	314	126	179	74	88	223	*2,750
11..	.2	14	9.0	17	14	273	98	132	78	64	147	*1,650
12..	.2	13	8.2	18	12	243	80	102	141	68	197	560
13..	.2	13	7.6	19	10	199	68	82	370	108	*1,580	223
14..	.2	13	7.6	20	10	167	*58	66	90	126	*639	111
15..	1.3	15	7.6	21	10	151	52	56	56	95	220	76
16..	4.0	17	8.8	23	10	135	50	45	36	230	110	66
17..	*.6	15	9.6	26	10	120	46	44	27	386	75	66
18..	.3	24	11	31	10	100	44	66	23	247	60	58
19..	.3	51	*12	33	9.0	95	37	54	*24	480	45	56
20..	.2	82	66	34	*8.4	*88	54	41	19	1,120	35	48
21..	.2	80	74	31	7.8	80	98	*37	15	1,360	*54	43
22..	.3	*62	48	29	9.0	76	132	31	12	835	90	48
23..	2.0	43	48	28	12	70	139	25	11	462	74	184
24..	6.0	36	38	*27	500	66	247	22	11	*327	74	2,130
25..	5.8	30	133	26	1,500	62	251	18	10	155	54	1,880
26..	5.5	21	231	25	2,100	57	215	17	9.4	80	43	1,280
27..	35	19	160	25	2,340	56	135	14	7.7	64	36	436
28..	45	17	170	25	2,310	52	95	13	6.1	152	31	223
29..	40	15	100	25	.....	50	72	13	4.7	725	27	155
30..	31	13	60	25	.....	48	60	12	3.6	*1,980	22	117
31..	23	.....	38	25	.....	48	.....	12	.....	*2,600	20	.....

Chariton River near Centerville, Iowa—Continued

Daily Discharge, in Cubic Feet per Second, Water Year 1959

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1958-59												
1	80	18	54	35	74	2,170	2,440	690	6,160	725	32	46
2	64	18	60	32	70	1,630	2,530	590	5,480	1,510	22	66
3	54	18	*64	30	110	900	2,700	430	3,930	1,280	18	118
4	41	18	68	27	90	506	2,910	334	2,880	610	754	60
5	37	18	70	25	80	346	1,900	222	1,940	330	1,510	70
6	36	*18	50	24	70	122	806	492	819	175	1,180	45
7	120	17	45	23	62	110	430	1,180	376	94	1,200	30
8	410	16	37	22	68	150	306	839	227	*68	1,570	20
9	*550	17	32	22	76	200	272	434	154	60	1,260	15
10	650	17	28	22	300	268	254	322	120	60	610	11
11	272	17	26	22	500	*378	218	366	100	50	550	9.0
12	130	15	24	22	430	590	187	*778	*79	35	314	6.3
13	88	16	23	*23	1,000	990	179	1,020	70	30	130	5.4
14	77	16	22	27	1,500	1,770	166	1,160	64	25	79	5.2
15	66	17	22	32	1,800	2,020	154	1,180	49	22	55	5.2
16	55	17	22	36	1,600	1,770	*138	760	43	21	44	5.2
17	44	209	22	36	1,500	1,510	142	338	38	20	40	*6.9
18	39	1,180	22	33	1,300	1,360	414	218	34	19	86	13
19	33	*1,540	24	31	750	3,160	458	724	32	17	370	10
20	30	*1,130	26	27	500	3,220	3,410	1,640	31	16	*276	9.6
21	26	725	27	24	350	3,220	3,270	2,280	28	15	97	9.2
22	24	522	27	22	280	*3,650	*3,600	*10,100	26	15	50	10
23	23	310	28	21	1,300	2,960	3,800	13,200	24	14	33	414
24	22	175	28	20	1,900	2,060	2,620	9,720	24	14	26	240
25	20	122	30	21	2,200	1,260	1,700	5,120	24	13	21	118
26	20	90	31	21	2,500	2,280	848	3,380	23	12	18	381
27	20	70	32	20	*2,700	2,900	394	2,310	22	11	16	2,210
28	19	60	35	20	*2,400	2,490	438	1,150	21	11	14	2,020
29	19	53	39	22	.....	2,870	1,180	2,210	20	13	12	1,510
30	18	50	39	34	.....	2,320	1,080	2,600	77	17	12	882
31	18	.....	38	80	.....	1,740	.....	3,480	.....	64	21	.....

Chariton River near Centerville, Iowa—Continued

Monthly Mean Discharge, in Cubic Feet per Second

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.78	0.92	0.91	0.82	4.14	2.27	1.00	1.31	5.33	32.8	415	2.29
1956-57	.39	.87	2.43	1.12	4.29	5.96	470	249	315	128	21.6	23.7
1957-58	6.77	26.6	44.1	26.2	325	306	100	189	40.6	570	694	427
1958-59	100	217	35.3	27.6	911	1,643	1,298	3,234	764	173	336	278

Monthly Discharge, in Cubic Feet per Second, per Square Mile

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.0011	0.0013	0.0013	0.0012	0.0058	0.0032	0.0014	0.0019	0.0075	0.046	0.586	0.0032
1956-57	.00055	.0012	.0034	.0016	.0061	.0084	.664	.352	.445	.181	.031	.033
1957-58	.0096	.038	.062	.037	.459	.432	.141	.257	.057	.805	.980	.603
1958-59	.141	.306	.050	.039	1.29	2.32	1.83	3.16	1.08	.244	.475	.393

Monthly Runoff, in Inches

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	0.001	0.001	0.001	0.001	0.006	0.004	0.002	0.002	0.008	0.05	0.68	0.001
1956-57	.0006	.001	.004	.002	.006	.01	.74	.41	.50	.21	.04	.04
1957-58	.01	.04	.07	.04	.48	.50	.16	.31	.06	.93	1.13	.67
1958-59	.16	.34	.06	.04	1.34	2.67	2.05	3.64	1.20	.28	.55	.44

Monthly Runoff, in Acre-Feet

Water year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1955-56	48	55	56	50	238	140	60	80	317	2,020	25,520	136
1956-57	24	52	149	69	238	367	27,970	15,320	18,750	7,870	1,330	1,410
1957-58	417	1,580	2,710	1,610	18,040	18,800	5,960	11,620	2,410	35,070	42,690	25,400
1958-59	6,160	12,910	2,170	1,700	50,600	101,000	77,240	137,400	45,450	10,640	20,670	16,560

Yearly Discharge, in Cubic Feet per Second

Water year	Water year ending September 30							Calendar year				
	Momentary maximum			Minimum day	Mean	Per square mile	Runoff in inches	Runoff in acre-feet	Mean	Runoff in inches	Runoff in acre-feet	
	Date	Gage height in feet	Discharge									
1955									101	1.88	73,280	
1956	Aug. 2, 1956	10.2	2,640	0.4	39.5	0.056	0.76	28,720	39.6	.76	28,790	
1957	July 29, 1957	11.37	3,180	.2	102	.144	1.96	73,550	108	2.08	78,030	
1958	July 31, 1958	13.50	3,140	.2	230	.325	4.40	166,300	253	4.84	182,800	
1959	May 22, 1959	23.20	14,100	5.2	666	.941	12.77	482,500				

Peak Discharge (base, 2,000 cfs)

- 1955-56: Aug. 2 (5 p.m.) 2,640 cfs (10.2 ft.).
- 1956-57: Apr. 22 (9 p.m.) 2,100 cfs (9.02 ft.); June 10 (11 p.m.) 2,100 cfs (9.05 ft.); July 29 (5:30 a.m.) 3,180 cfs (11.37 ft.).
- 1957-58: Feb. 27 (9 p.m.) 2,470 cfs (11.03 ft.); July 31 (9:30 a.m.) 3,140 cfs (13.50 ft.); Aug. 5 (9 p.m.) 2,930 cfs (12.72 ft.); Sept. 10 (10:30 a.m.) 3,040 cfs (13.10 ft.); Sept. 24 (12 m) 2,440 cfs (10.90 ft.).
- 1958-59: Feb. 27 about 3,100 cfs; Mar. 15 (3:30 a.m.) 2,060 cfs (9.18 ft.); Mar. 22 (11 a.m.) 3,750 cfs (13.06 ft.); Mar. 26 (10 p.m.) 3,510 cfs (12.59 ft.); Apr. 1 (7 p.m.) 3,130 cfs (11.78 ft.); Apr. 20 (7:30 p.m.) 4,200 cfs (13.99 ft.); May 22 (12 p.m.) 14,100 cfs

Chariton River near Centerville, Iowa—Continued

(23.20 ft.); June 1 (6 p.m.) 6,810 cfs (17.90 ft.); Aug. 5 (10 a.m.) 2,440 cfs (10.22 ft.); Sept. 27 (12 m) 2,440 cfs (10.17 ft.).

Notes to Tables of Daily Discharge

*Discharge measurement made on this day.

Stage-discharge relation affected by ice Nov. 27 to Dec. 3, Dec. 8-11, 1955; Feb. 5-16, 22, 23, Nov. 20 to Dec. 1, Dec. 7-19, 1956; Jan. 1-21, Jan. 27 to Feb. 1, Feb. 6, 10-16, Nov. 9-12, Dec. 10-17, 27-31, 1957; Jan. 1 to Feb. 26, Nov. 26 to Dec. 1, Dec. 5-15, 1958; Jan. 2-9, Jan. 31 to Feb. 28, Mar. 7-9, 1959. Stage-discharge relation indefinite Oct. 1-26, 1957. No gage-height record Oct. 8-13, 22-27, Oct. 29 to Nov. 3, Nov. 5-10, 1956, Aug. 15-20, 1958.

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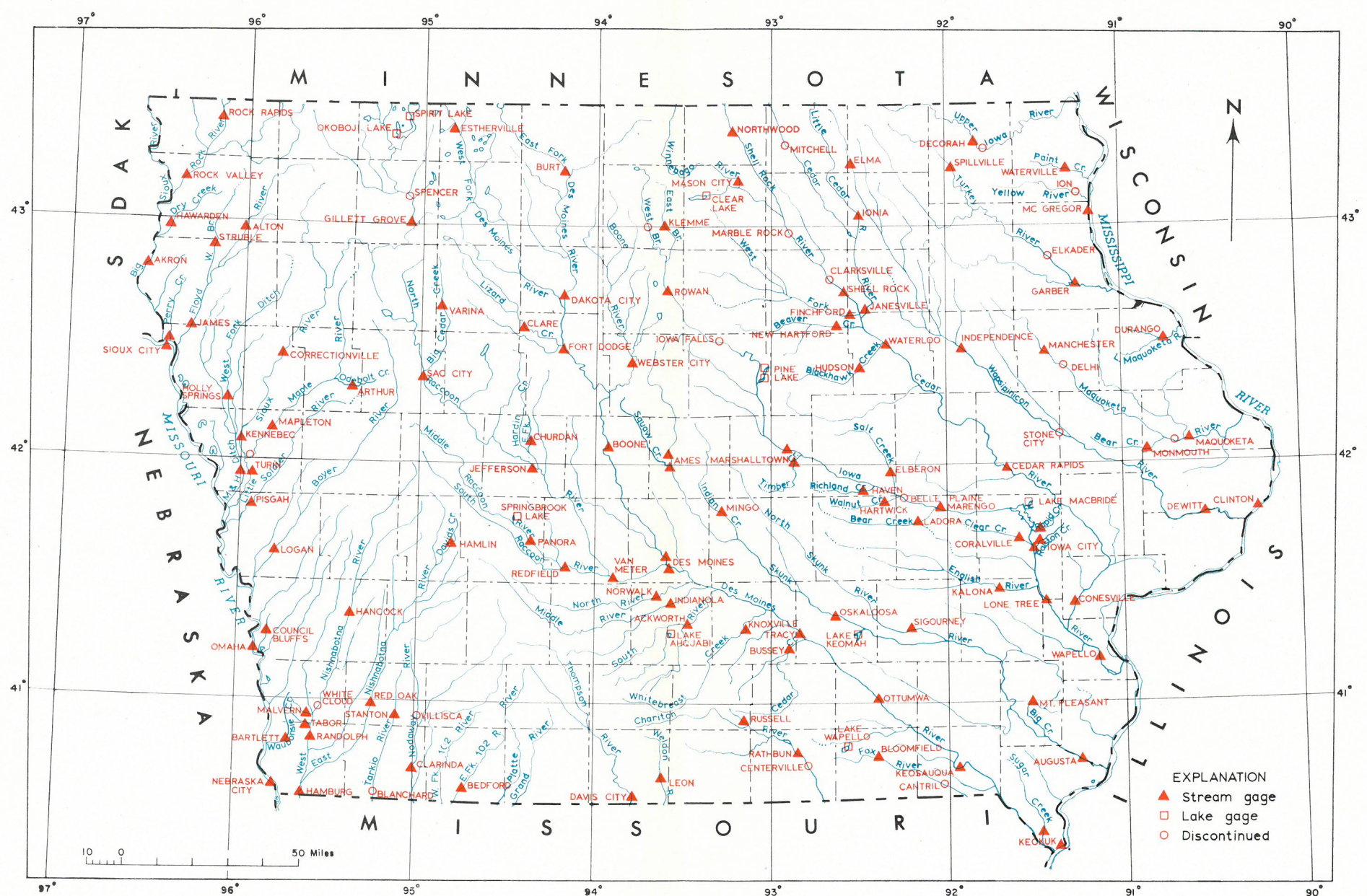


Plate 5—Map of Iowa showing location of steam-gaging stations and lake gages operated by the United States Geological Survey in cooperation with other agencies, October, 1960.