Water Resources Data
Iowa
Water Year 2002

Volume 1. Surface Water—Mississippi River Basin

Water-Data Report IA-02-1

U.S. Department of the Interior
U.S. Geological Survey

Prepared in cooperation with the
Iowa Department of Natural Resources
(Geological Survey Bureau),
Iowa Department of Transportation, and with
Federal agencies

CALENDAR FOR WATER YEAR 2002

2001

OCTOBER

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2002

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U.S. Department of the Interior
U.S. Geological Survey

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Iowa
Water Year 2002

Volume 1. Surface Water—Mississippi River Basin

By G.M. Nalley, J.G. Gorman, R.D. Goodrich, V.E. Miller, M.J. Turco, and S.M. Linhart

Water-Data Report IA-02-1

Prepared in cooperation with the Iowa Department of Natural Resources (Geological Survey Bureau), Iowa Department of Transportation, and with Federal agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

Gale A. Norton, Secretary

U.S. GEOLOGICAL SURVEY

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Iowa City, Iowa 52244

2003

PREFACE

This volume of the annual hydrologic data report of Iowa is one of a series of annual reports that document hydrologic data gathered from the U.S. Geological Survey's surface- and ground-water data-collection networks in each State, Puerto Rico, and the Trust Territories. These records of streamflow, ground-water levels, and quality of water provide the hydrologic information needed by local, State, and Federal agencies, and the private sector for developing and managing our Nation's land and water resources.

This report is the culmination of a concerted effort by dedicated personnel of the U.S. Geological Survey who collected, compiled, analyzed, verified, and organized the data, and who typed, edited, and assembled the report. The authors had primary responsibility for assuring that the information contained herein is accurate, complete, and adheres to Geological Survey policy and established guidelines.

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REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY *(Leave blank)*	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	14 February 2003	Annual, 1 Oct. 2001 - 30 Sept. 2002

4. TITLE AND SUBTITLE
Water Resources Data, Iowa, Water Year 2002, Volume 1:
Surface Water - Mississippi River Basin

5. FUNDING NUMBERS

6. AUTHOR(S)
G.M. Nalley, J.G. Gorman, R.D. Goodrich, V.E. Miller, M.J. Turco, and
S.M. Linhart

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
U.S. Geological Survey, Water Resources Division
P.O. Box 1230
Iowa City, IA 52244

8. PERFORMING ORGANIZATION REPORT NUMBER
USGS-WRD-IA-02-1

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)
U.S. Geological Survey, Water Resources Division
P.O. Box 1230
Iowa City, IA 52244

10. SPONSORING / MONITORING AGENCY REPORT NUMBER
USGS-WRD-IA-02-1

11. SUPPLEMENTARY NOTES
Prepared in cooperation with the Iowa Department of Natural Resources (Geological Survey Bureau), Iowa Department of Transportation, and other Federal agencies.

12a. DISTRIBUTION / AVAILABILITY STATEMENT
No restrictions on distribution. This report may be purchased from:

National Technical Information Service
Springfield, VA 22161

12b. DISTRIBUTION CODE

13. ABSTRACT *(Maximum 200 words)*
Water resources data for Iowa for the 2002 water year consists of records of stage, discharge, and water quality of streams; stage, and/or contents of lakes and reservoirs; ground water levels and water quality of ground-water wells. This report volume contains discharge records for 95 gaging stations; stage or contents for 6 lakes and reservoirs and 7 streams; water quality for 1 stream-gaging station; sediment records for 10 stream-gaging stations; and precipitation record for 7 precipitation stations. Also included are data for 58 crest-stage partial record stations.

14. SUBJECT TERMS
*Iowa, *Hydrologic data, *Surface water, *Water quality, Flow rates, Gaging stations, Lakes, Reservoirs, Chemical analyses, Sediment, Water temperatures, Sampling sites, Water levels, Water analyses, Data collection.

15. NUMBER OF PAGES
361

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	

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[Letter after station name designates types of data: (d) discharge, (c) chemical, (p) precipitation, (s) sediment, (t) temperature, (e) elevations, gage heights, or contents]

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DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

The following continuous-record surface-water discharge or stage-only stations (gaging stations) in Iowa have been discontinued. Daily streamflow or stage records were collected and published for the period of record, expressed in water years, shown for each station. Discontinued project stations with less than 3 years of record have not been included. Information regarding these stations may be obtained from the District Office at the address given on the back side of the title

Station name	Station number	Drainage area (mi^2)	Period of record
Upper Iowa River near Decorah, Ia. (d)	05388000	568	1913-14; 1919-27, 1933-51
Paint Creek at Waterville, Ia. (d)	05388500	42.8	1952-73
Yellow River at Ion, Ia. (d)	05389000	221	1934-51
Sny Magill Creek near Clayton, Ia. (d)	05411400	27.6	1992-01
Turkey River at Spillville, Ia. (d)	05411600	177	1957-73; 1978-91
Big Springs near Elkader, Ia. (d)	05411950	103	1938; 1982-83; 1988-95
Turkey River at Elkader, Ia. (d)	05412000	891	1932-42
Unnamed Creek near Luana, Ia. (d)	05412056	1.15	1986-92
Silver Creek near Luana, Ia (d)	05412060	4.39	1986-98
Roberts Creek at St. Olaf, Ia. (d)	05412100	70.7	1986-01
Little Maquoketa River near Durango, Ia. (d)	05414500	130	1934-82
Maquoketa River near Manchester, Ia. (d)	05417000	305	1933-73
Maquoketa River near Delhi, Ia. (d)	05417500	347	1933-40
Bear Creek near Monmouth, Ia. (d)	05417700	61.3	1957-76
Maquoketa River above North Fork Maquoketa River near Maquoketa, Ia. (d)	05418000	938	1913-14
North Fork Maquoketa River at Fulton, Ia. (d)	05418450	516	1977-91
Elk River near Almont, Ia. (d)	05420300	55.9	1995-97
Wapsipinicon River near Elma, Ia. (d)	05420560	95.2	1958-92
Wapsipinicon River at Stone City, Ia. (d)	05421500	1,324	1903-14
Crow Creek at Eldridge, Ia. (d)	05422420	2.20	1977-82
Crow Creek at Mt. Joy, Ia. (d)	05422450	6.90	1977-82
Pine Creek near Muscatine, Ia. (d)	05448150	38.9	1975-82
Eagle Lake Inlet near Britt, Ia. (e)	05448285	3.83	1975-80
Eagle Lake Outlet near Britt, Ia. (e)	05448290	11.3	1975-80
West Branch (West Fork) Iowa River near Klemme, Ia. (d)	05448500	112	1948-58
East Branch (East Fork) Iowa River near Klemme, Ia. (d)	05449000	133	1948-76; 1977-95
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Upper Pine Lake at Eldora, Ia. (e)	05450500	14.9	1936-70
Lower Pine Lake at Eldora, Ia. (e)	05451000	15.9	1936-70
Iowa River near Belle Plaine, Ia. (d)	05452500	2,455	1939-59
Lake Macbride near Solon, Ia. (e)	05453500	27.0	1937-71
Ralston Creek at Iowa City, Ia. (d)	05455000	3.01	1924-87
Cedar River at Mitchell, Ia. (d)	05457500	826	1933-42
Shell Rock River near Northwood, Ia. (d)	05459000	300	1945-86
Shell Rock River at Marble Rock, Ia. (d)	05460500	1,318	1933-53
Shell Rock River at Greene, Ia. (d)	05461000	1,357	1933-42
Flood Creek near Powersville, Ia (d)	05461390	127	1996-98
Shell Rock River near Clarksville, Ia. (d)	05461500	1,626	1915-27; 1932-34
Fourmile Creek near Lincoln, Ia. (d)	05464130	13.8	1962-67; 1969-74; 1976-80
Half Mile Creek near Gladbrook, Ia. (d)	05464133	1.33	1962-67; 1969-74; 1976-80
Fourmile Creek near Traer, Ia. (d)	05464137	19.5	1962-74; 1975-80
Prairie Creek at Fairfax, Ia. (d)	05464640	178	1966-82
Lake Keomah near Oskaloosa, Ia. (e)	05472000	3.06	1936-71
Skunk River at Coppock, Ia. (d)	05473000	2,916	1913-44
Big Creek near Mount Pleasant, Ia. (d)	05473500	106	1955-79

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS—Continued

Station name	Station number	Drainage area (mi^2)	Period of record
Des Moines River at Estherville (d)	05476500*	1,372	1951-95
East Fork Des Moines River near Burt, Ia. (d)	05478000	462	1951-74
Des Moines River near Fort Dodge, Ia. (d)	05479500	3,753	1911-13
Lizard Creek near Clare, Ia. (d)	05480000	257	1940-82
Des Moines River near Boone, Ia. (d)	05481500	5,511	1920-68
North Raccoon River near Newell, Ia. (d)	05482135*	233	1982-95
Storm Lake at Storm Lake, Ia. (e)	05482140	28.3	1970-75
Big Cedar Creek near Varina, Ia. (d)	05482170	80.0	1960-91
East Fork Hardin Creek near Churdan, Ia. (d)	05483000	24.0	1953-91
Hazelbrush Creek near Maple River, Ia. (d)	05483343	9.22	1990-94
Springbrook Lake near Guthrie Center, Ia. (e)	05483460	5.18	1936-71
Raccoon River at Des Moines, Ia. (e)	05485000	3,628	1902-03
Lake Ahquabi near Indianola, Ia. (e)	05487000	4.93	1936-71
White Breast Creek near Knoxville, Ia. (d)	05488000	380	1945-62
South Coal Creek near Bussey, Ia. (d)	05489090	12.9	1977-81
Muchakinock Creek near Eddyville, Ia (d)	05489190	70.2	1975-79
Lake Wapello near Drakesville, Ia. (e)	05490000	7.75	1936-71
Sugar Creek near Keokuk, Ia. (d)	05491000	105	1922-31; 1958-73
Fox River at Cantril, Ia. (d)	05494500	161	1940-51
Rock River at Rock Rapids, Ia. (d)	06483270	788	1959-74
Dry Creek at Hawarden, Ia. (d)	06484000	48.4	1948-69
West Branch Floyd River near Struble, Ia. (d)	06600300*	108	1955-95
Monona-Harrison Ditch near Blencoe, IA (d)	06602410	4,440	1939-42
Loon Creek near Orleans, Ia. (d)	06603920	31.0	1971-74
Spirit Lake Outlet at Orleans, Ia. (e)	06604100	75.6	1971-74
Milford Creek at Milford, Ia. (d)	06604400	146	1971-74
Little Sioux River at Spencer, Ia. (d)	06605100	990	1936-42
Little Sioux River at Gillett Grove, Ia. (d)	06605600	1,334	1958-73
Little Sioux River near Kennebeck, Ia. (d)	06606700	2,738	1939-69
Odebolt Creek near Arthur, Ia. (d)	06607000	39.3	1957-75
Maple River at Turin, Ia. (d)	06607300	725	1939-41
Little Sioux River near Blencoe, Ia. (d)	06607510	4,440	1939-42
Steer Creek near Magnolia, Ia. (d)	06609200	9.26	1963-69
Thompson Creek near Woodbine, Ia. (d)	06609590	6.97	1963-69
Willow Creek near Logan, Ia. (d)	06609600	129	1972-75
Indian Creek at Council Bluffs, Ia. (d)	06610500	6.92	1954-76
Mosquito Creek near Earling, Ia. (d)	06610520	32.0	1965-79
Waubonsie Creek near Bartlett, Ia. (d)	06806000	30.4	1946-69
West Nishnabotna River at Harlan, Ia. (d)	06807320	316	1977-82
West Nishnabotna River at (near) White Cloud, Ia. (d)	06807500	967	1918-24
Mule Creek near Malvern, Ia. (d)	06808000	10.6	1954-69
Spring Valley Creek near Tabor, Ia. (d)	06808200	7.6	1955-64
Davids Creek near Hamlin, Ia. (d)	06809000	26.0	1952-73
Tarkio River at Stanton, Ia. (d)	06811840*	49.3	1958-91
Tarkio River at Blanchard, Ia. (d)	06812000	200	1934-40
West Nodaway River at Villisca, Ia. (d)	06816500	342	1918-25
Platte River near Diagonal, Ia. (d)	06818750*	217	1969-91
East Fork One Hundred and Two River near Bedford, Ia. (d)	06819190	92.1	1959-83
Elk River near Decatur City, Ia. (d)	06897950*	52.5	1968-94
Weldon River near Leon, Ia. (d)	06898400	104	1959-91
Honey Creek near Russell, Ia. (d)	06903500	13.2	1952-62
Chariton River near Centerville, Ia. (d)	06904000	708	1938-59

DISCONTINUED SURFACE-WATER-QUALITY STATIONS

The following water-quality stations have been discontinued in Iowa. Continuous daily records of water temperature, specific conductance, or sediment and monthly or periodic samples of chemical quality or biological data were collected and published for the period of record shown for each station.

Station name	Station number	Drainage area (mi^2)	Type of record	Period of record
Upper Iowa River at Decorah, Ia.	05387500	511	Sed. Temp.	1963-68 1963-83
Upper Iowa River near Dorchester, Ia.	05388250	770	Sed., Temp.*, Cond.*	1975-81
Paint Creek at Waterville, Ia.	05388500	42.8	Temp. Sed.	1952-56 1952-57
Unnamed Creek near Luana	05412056	1.15	Chem.	1986-92
Sny Magill Creek near Clayton, Ia.	05411400	27.6	Sed., Temp., Cond.	1992-01
Turkey River at Garber, Ia.	05412500	1,545	Temp.*, Sed.*	1957-62
Mississippi River at Dubuque, Ia.	05414700	81,600	Chem.	1969-73
Elk River near Almont, Ia	05420300	55.9	Sed., Temp., Cond.	1995-97
Mississippi River at Clinton, Ia	05420500	85,600	Sed.	1995-97
Wapsipinicon River near Tripoli, Ia	05420860	343	Chem.	1996-98
Wapsipinicon River at Independence, Ia.	05421000	1,048	Cond.* Temp.*, Sed.*	1968-70 1967-70
Crow Creek at Bettendorf, Ia.	05422470	17.8	Cond.*, Temp.*, Sed.	1978-82
Iowa River near Rowan, Ia.	05449500	429	Temp.*, Sed.* Chem.	1957-62 1996-98
Iowa River at Marshalltown, Ia	05451500	1,532	Temp., Sed.	1988-95
Iowa River at Iowa City, Ia.	05454500	3,271	Chem.. Temp.*, Sed. Cond.	1906-07; 1944-54 1944-87 1968-87
Ralston Creek at Iowa City, Ia.	05455000	3.01	Cond Sed. Temp.	1968-87 1952-87 1967-87
Flood Creek near Powersville, Ia	05461390	127	Chem.	1996-98
Shell Rock River at Shell Rock, Ia.	05462000	1,746	Temp.*	1953-68
Cedar River at Cedar Falls, Ia	05463050	4,734	Chem.	1975-79; 1984; 1986-1995
Cedar River near (at) Gilbertville, Ia.	05464020	5,234	Chem.	1971; 1975-81
Fourmile Creek near Lincoln, Ia.	05464130	13.78	Chem., Temp., Sed.	1969-74
Half Mile Creek near Gladbrook, Ia.	05464133	1.33	Chem., Temp., Sed.	1969-74
Fourmile Creek near Traer, Ia.	05464137	19.51	Chem., Temp., Sed.	1969-74
Wolf Creek near Dysart, Ia	05464220	299	Chem.	1996-98
Cedar River near Palo, Ia.	05464450	6,380	Chem.	1975-79
Cedar River at Cedar Rapids, Ia.	05464500	6,510	Chem.* Temp.* Sed.	1906-07; 1944-54 1944-54 1943-54
Cedar River near Bertram, Ia.	05464760	6,955	Chem.	1975-81
Iowa River at Wapello, Ia	05465500	12, 499	Chem.	1977-95
Mississippi River at Burlington, Ia.	05469720	114,000	Chem.	1969-73
South Skunk River at Colfax, Ia	05471050	803	Cond.*, Temp.*, Sed.	1989-93
Skunk River at Augusta, Ia	05474000	4,303	Chem.	1977-95
Mississippi River at Keokuk, Ia.	05474500	119,000	Chem.	1974-87
Des Moines River at Fort Dodge, Ia.	05480500	4,190	Chem.	1972-73
Des Moines River at 2nd Avenue at Des Moines, Ia.	05482000	6,245	Chem. Temp.*, Sed.	1954-55 1954-61
East Fork Hardin Creek near Churdan, Ia.	05483000	24.0	Temp.*, Sed.*	1952-57
Hazelbrush Creek near Maple River, Ia	05483343	9.22	Cond., Temp., Sed.	1991-94
Middle Raccoon River near Bayard, Ia.	05483450	375	Cond.*, Temp.*, Sed.	1979-85
Middle Raccoon River at Panora, Ia.	05483600	440	Cond.*, Temp.*, Sed.	1979-85

DISCONTINUED SURFACE-WATER-QUALITY STATIONS—Continued

Station name	Station number	Drainage area (mi^2)	Type of record	Period of record
Raccoon River at Van Meter, Ia	05484500	3,441	Chem. Bio.	1974-79; 1986-94 1974-79
Raccoon River at Des Moines, Ia.	05485000	3,590	Chem., Temp.	1945-47
Des Moines River below Raccoon River at Des Moines, Ia.	05485500	9,879	Chem.* Temp.*, Sed.	1944-45 1944-47
Des Moines River below Des Moines, Ia.	05485520	9,901	Chem.	1971; 1974-81
Middle River near Indianola, Ia.	05486490	503	Temp.*, Sed.	1962-67
White Breast Creek near Dallas, Ia.	05487980	342	Chem. Temp.*, Sed.	1969-73 1967-73
Big Sioux River at Sioux City, Ia.	06485950	9,410	Chem.	1969-73
Missouri River at Sioux City, Ia.	06486000	314,600	Chem.	1972-86
			Sed.	1972-76; 1977-81; 1991-00
Floyd River at James, Ia.	06600500	886	Temp.*, Sed., Cond.*	1968-73
Floyd River at Sioux City, Ia.	06600520	921	Chem.	1969-73
Missouri River at Decatur, Neb.	06601200	316,160	Chem.	1974-81
Spirit Lake near Orleans, Ia.	06604000	75.6	Temp.	1968-75
Little Sioux River at Correctionville, Ia.	06606600	2,500	Chem.* Temp.* Sed.	1954-55 1951-62 1950-62
Little Sioux River near Kennebec, Ia.	06606700	2,738	Temp. Sed.	1951-55 1950-57
Little Sioux River at River Sioux, Ia.	06607513	3,600	Chem.	1969-73
Soldier River near Mondamin, Ia.	06608505	440	Chem.	1970-73
Steer Creek near Magnolia, Ia.	06609200	9.26	Temp., Sed., Cond.	1963-69
Thompson Creek near Woodbine, Ia.	06609590	6.97	Temp., Sed., Cond.	1963-69
Willow Creek near Logan, Ia.	06609600	129	Cond., Temp. Sed.	1972-75 1971-75
Missouri River at Omaha, Nebr.	06610000	322,800	Cond.*	1969-86
Mule Creek near Malvern, Ia.	06808000	10.6	Temp. Sed.	1958-69 1954-69
Davids Creek near Hamlin, Ia.	06809000	26.0	Temp.* Sed.	1952-53; 1965-68 1952-68
East Nishnabotna River at Red Oak, Ia.	06809500	894	Temp.*, Sed., Cond.*	1962-73
Nishnabotna River above Hamburg, Ia.	06810000	2,806	Chem. Temp.*, Cond. Bio.	1979-93 1979-81 1979-81
Nodaway River at Clarinda	06817000	762	Cond.*, Temp.*, Sed.	1976-92
Platte River near Diagonal, Ia.	06818750	217	Chem.	1969-73
Elk Creek near Decatur City, Ia.	06897950	52.5	Bio. Chem.	1970-72 1968-94
Thompson River at Davis City, Ia.	06898000	701	Chem. Temp.*, Sed., Cond.*	1967-73 1968-73
Weldon River near Leon, Ia.	06898400	104	Chem.	1968-73
Chariton River near Chariton, Ia.	06903400	182	Temp.*, Sed., Cond.*	1969-73
Honey Creek near Russell, Ia.	06903500	13.2	Sed.	1952-62
Chariton River near Rathbun, Ia.	06903900	549	Temp.*, Sed.*, Cond.*	1962-69

INTRODUCTION

The Water Resources Division of the U.S. Geological Survey, in cooperation with State, county, municipal, and other Federal agencies, obtains a large amount of data pertaining to the water resources of Iowa each water year. These data, accumulated during many water years, constitute a valuable data base for developing an improved understanding of the water resources of the State. To make this data readily available to interested parties outside of the Geological Survey, the data is published annually in this report series entitled “Water Resources Data - Iowa” as part of the National Water Data System. This report is available in a printable, electronic form on our website.

Water resources data for water year 2002 for Iowa consists of records of stage, discharge, and water quality of streams; stage and contents of lakes and reservoirs; and water levels and water quality of ground water. This report, in two volumes, contains stage or discharge records for 133 gaging stations; stage records for 9 lakes and reservoirs; water-quality records for 4 gaging stations; sediment records for 12 gaging stations; and water levels for 157 ground-water observation wells. Also included are peak-flow data for 91 crest-stage partial-record stations, water-quality data from 89 municipal wells, and precipitation data collected at 6 gaging stations and 1 precipitation sites. Additional water data were collected at various sites not included in the systematic data-collection program, and are published here as miscellaneous measurements and analyses. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating local, State, and Federal agencies in Iowa.

Records of discharge or stage of streams, and contents or stage of lakes and reservoirs were first published in a series of U.S. Geological Survey water-supply papers entitled “Surface Water Supply of the United States.” Through September 30, 1960, these water-supply papers were published in an annual series; during 1961-65 and 1966-70, they were published in 5-year series. Records of chemical quality, water temperatures, and suspended sediment were published from 1941 to 1970 in an annual series of water-supply papers entitled “Quality of Surface Waters of the United States.” Records of ground-water levels were published from 1935 to 1974 in a series of water-supply papers entitled “Ground-Water Levels in the United States.” Water-supply papers may be consulted in the libraries of the principal cities in the United States, or they may be purchased from Books and Open-File Reports Section, Federal Center, Box 25425, Denver, Colorado 80225.

For water years 1961 through 1970, streamflow data were released by the Geological Survey in annual reports on a State-boundary basis. Water-quality records for water years 1964 through 1970 were similarly released either in separate reports or in conjunction with streamflow records.

Beginning with the 1971 water year, water data for streamflow, water quality, and ground water is published in official U.S. Geological Survey reports on a State-boundary basis. These official reports carry an identification number consisting of the two-letter State postal abbreviation, the last two digits of the water year, and the volume number. For example, this report is identified as “U.S. Geological Survey Water-Data Report IA-02-1.” These water-data reports are for sale by the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161.

Additional information for ordering specific reports may be obtained from the Director, Water Resources Programs for the State of Iowa, at the address given on the back of the title page or by telephone, (319) 337-4191.

COOPERATION

The U.S. Geological Survey and organizations in the State of Iowa have had cooperative agreements for the systematic collection of streamflow records since 1914, for ground-water levels since 1935, and for water-quality records since 1943. Organizations that assisted in collecting data through cooperative agreements with the U.S. Geological Survey in Iowa during water year 2002 are:

Iowa Department of Natural Resources (Geological Survey Bureau)
Iowa Department of Transportation
Iowa Highway Research Board

Iowa State University
University of Iowa, Institute of Hydraulic Research
University of Iowa, Hygienic Laboratory
University of Iowa

Appanoose County Board of Supervisors
Buchanan County emergency Management
Davis County Board of Supervisors
Freemont County Board of Supervisors
Lake Delhi Recreation Association
Lake Panorama Association
Limestone Bluffs RC&D
Van Buren County Board of Supervisors

City of Ames
City of Bloomfield
City of Cedar Rapids
City of Clear Lake
City of Coralville
City of Decorah Water Department
City of Des Moines Water Works
City of Iowa City
City of Milford
City of Ottumwa
Ottumwa Water and Hydro Plant
City of Waterloo Water Pollution Control Plant
City of Waverly

City of Bettendorf
City of Burlington
City of Charles City
City of Clinton
City of Davenport
City of Des Moines
City of Fort Dodge
City of Marshalltown
City of Mt. Pleasant
City of Cedar Falls
City of Sioux City
City of West Des Moines

Assistance in the form of funds or services was given by the U.S. Army Corps of Engineers in collecting streamflow records for 73 stream gaging stations. Assistance also was furnished by NOAA-National Weather Service, U.S. Department of Commerce, and Biological Resources Division (BRD) of U.S. Geological Survey.

The following organizations aided in collecting records: Milford Municipal Utilities, Central Iowa Energy Cooperative, and Ameren-Union Electric Company.

Organizations that supplied data are acknowledged in the station descriptions.

SUMMARY OF HYDROLOGIC CONDITIONS

Surface Water

For water year 2002 (October 1, 2001 to September 30, 2002) climatological conditions were well below normal. Recorded precipitation for the year ranged from 1.99 inches greater than normal in the East Central Iowa Climatological District to 8.68 inches less than normal in the Southwest Iowa Climatological District (fig. 1). Precipitation recorded for the State averaged 30.82 inches, which was 2.29 inches below normal, or 93 percent of the normal 33.11 inches for 1961-90 (table 1). Overall, water year 2002 was the 53rd driest and 10th warmest for 129 years of record. [In this summary of hydrologic conditions, all data and statistics pertaining to precipitation and temperature in Iowa were provided by Harry Hillaker, State Climatologist, Iowa Department of Agriculture and Land Stewardship, (oral and written commun., 2002)].

Annual runoff for the period of record at index stations 05464500 Cedar River at Cedar Rapids, 05480500 Des Moines River at Fort Dodge, and 06810000 Nishnabotna River above Hamburg are shown in figure 2. The water-year 2002 runoff at Cedar Rapids was 1,908,000 acre-feet, which is 816,000 acre-feet less than the mean annual runoff for the period of record, 2,724,000 acre-feet. The water-year 2002 runoff at Fort Dodge was 659,400 acre-feet, which is 612,600 acre-feet less than the

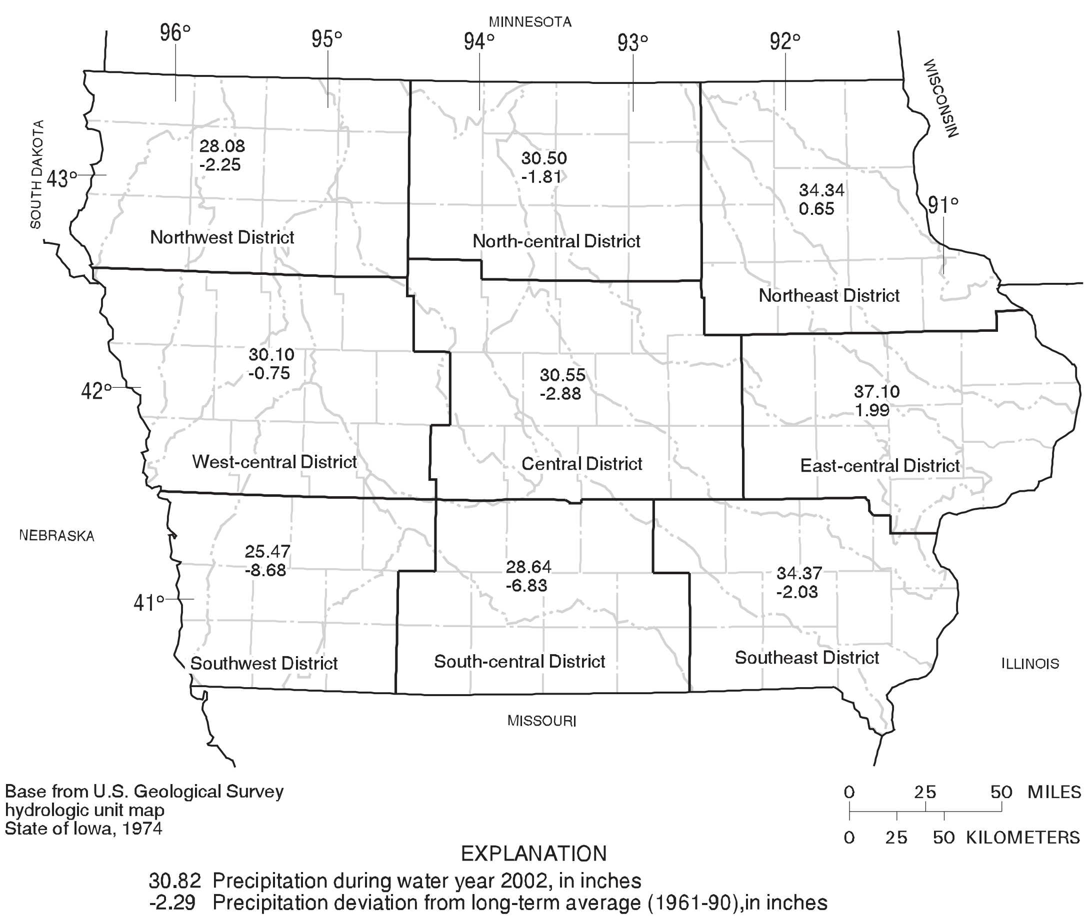

Figure 1. Precipitation record for the National Weather Service's designated Climatological Districts for water year 2002 (source: Harry Hillaker, State Climatologist, Iowa Department of Agriculture and Land Stewardship, written commun., 2002)

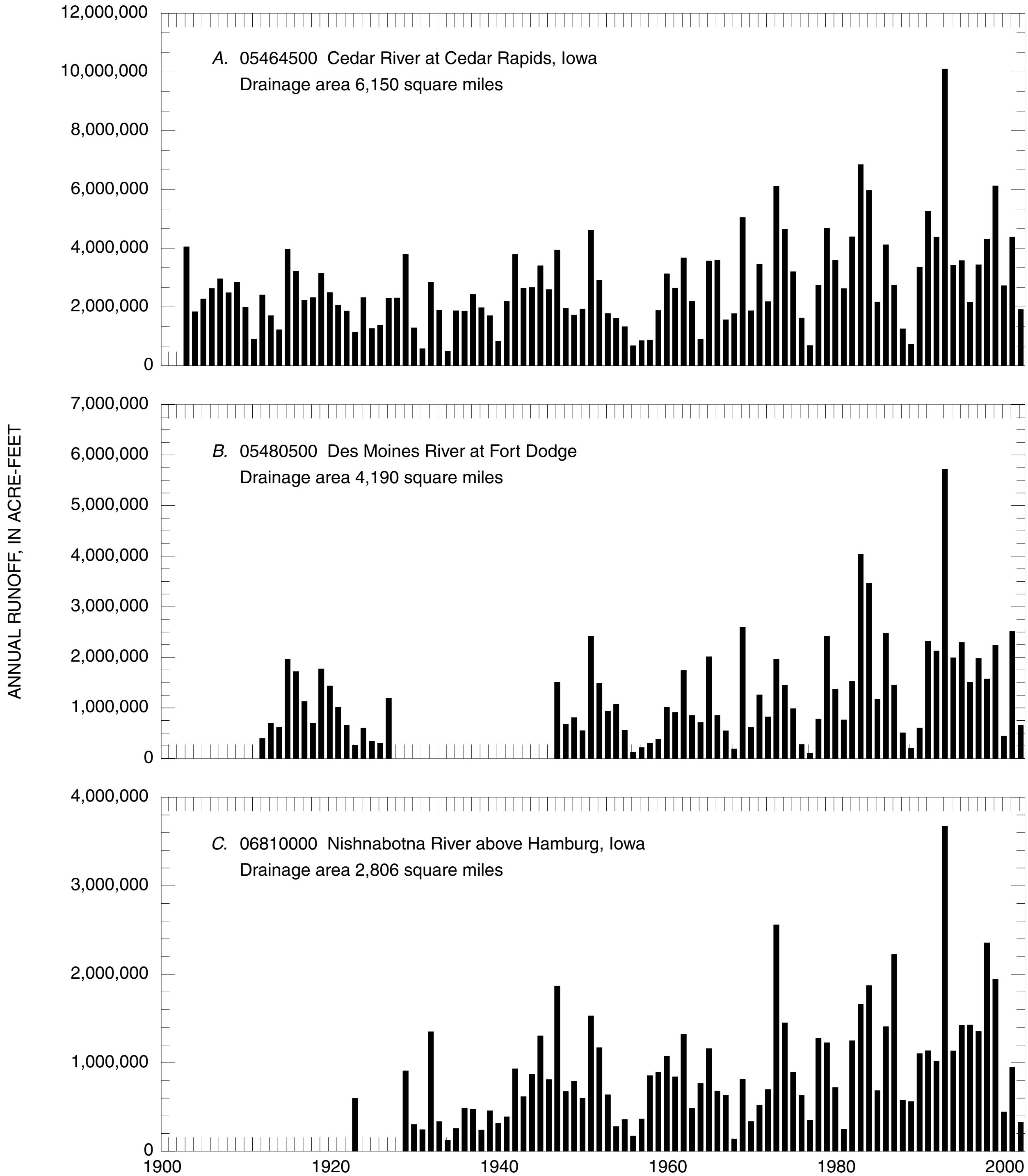

Figure 2. Annual runoff for period of record at index stations.

Table 1. Monthly and annual precipitation during the 2002 water year as a percentage of normal precipitation (1961-90). [Source: Harry Hillaker, State Climatologist, Iowa Department of Agriculture and Land Stewardship, written commun., 2002]

National Weather Service Climatological District	2001			2002									
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Annual
Northwest	50	240	41	37	79	59	99	77	75	66	189	56	92
North-central	62	116	78	35	129	46	107	68	65	125	187	58	94
Northeast	97	77	74	27	151	55	115	99	142	117	130	58	102
West-central	67	164	65	29	89	60	117	109	67	94	198	49	98
Central	100	71	57	39	108	37	119	91	71	128	147	48	91
East-central	148	67	81	47	106	65	133	120	114	159	107	46	106
Southwest	95	65	49	57	92	45	87	108	39	68	130	36	75
South-central	123	30	61	69	68	70	107	135	44	93	93	33	81
Southeast	151	39	72	93	86	75	131	154	117	58	116	21	94
Statewide	100	90	66	49	102	57	114	106	81	102	145	45	93

mean for the period of record, 1,272,000 acre-feet. The water-year 2002 runoff at Hamburg was 328,300 acre-feet, which is 591,500 acre-feet less than the mean for the period of record, 919,800 acre-feet.

The locations of the active continuous-record gaging stations in Iowa for water year 2002 are shown in figure 3. The locations of the active crest-stage gaging stations are shown in figure 4.

Suspended Sediment

Daily suspended-sediment discharge data (hereafter referred to as sediment discharge) were collected at 12 streamflow-gaging stations in Iowa during the 2002 water year. Four stations have 24 years or more of record: 05389500 Mississippi River at McGregor, 05465500 Iowa River at Wapello, 05474000 Skunk River at Augusta, and 05481650 Des Moines River near Saylorville; two stations on the Missouri River have 16 years of record: 06610000 Missouri River at Omaha, Nebraska and 06807000 Missouri River at Nebraska City, Nebraska; one station in northeast Iowa has 11 years of record: 05389400 Bloody Run Creek near Marquette; two sediment stations were established (2001) in northeast/east-central Iowa to monitor sediment movement in the Maquoketa River Basin; 05416900 Maquoketa River at Manchester and 05418500 Maquoketa River near Maquoketa; three stations in central Iowa have 7 years of record: 05471040 Squaw Creek near Colfax, 05487540 Walnut Creek near Prairie City, and 05487550 Walnut Creek near Vandalia. The locations of active sediment and surface water-quality stations are shown in figure 5.

The peak daily sediment discharge on 8 of 12 stations occurred between June 4-13, after significant rain events. Two others peaked August 23-26. Mississippi River at McGregor, which has most of its drainage basin in Minnesota and Wisconsin, had an annual sediment discharge of 1,012,000 tons, which was the eighth lowest sediment discharge in 27 years of record, and 61.4 percent of the average mean sediment discharge (fig. 6).

The sediment station on the Des Moines River near Saylorville in central Iowa is downstream from a major flood-control reservoir (Saylorville Reservoir). The annual sediment discharge at this station for water year 2002 was 48,558 tons. This represents 20.8 percent of the 25-year mean sediment discharge. The mean annual sediment discharge since dam completion is 234,000 tons (fig. 6).

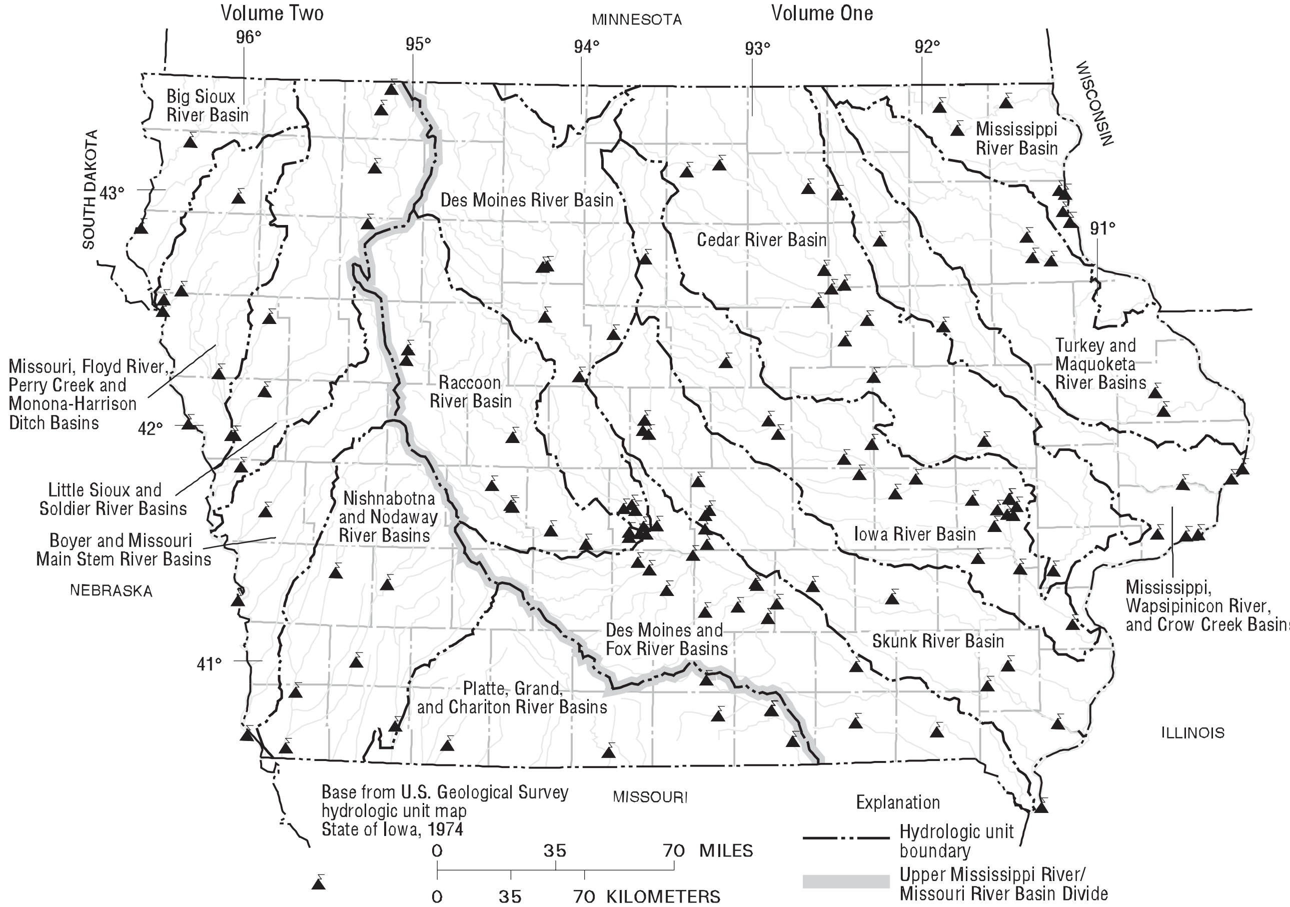

Figure 3. Location of active continuous-record gaging stations in Iowa, water year 2002. [See drainage basin maps in indicated volume for gaging-station identification.]

Sediment discharges for Iowa River at Wapello and Skunk River at Augusta in southeast Iowa were indicative of the below-normal precipitation in central and eastern Iowa. The Iowa River basin drainage includes parts of the Southeast, East-central, Central, Northeast, and North-central Climatological Districts, and drains an area nearly three times as large as the Skunk Basin. These districts had about 97 percent of normal precipitation. Wapello had an annual sediment discharge of 1.33 million tons. This represents 50.4 percent of the 24-year mean sediment discharge of 2.63 million tons (fig. 6). The headwaters of the Skunk River basin are in central Iowa and flow is southeasterly to the confluence with the Mississippi River. A substantial part of the drainage basin is located in the Southeast Climatological District. The annual precipitation for this district was 94 percent of normal for water year 2002. The 2002 annual sediment discharge for Skunk River at Augusta was 1.71 million tons, which is 62.6 percent of the 27-year mean sediment discharge of 2.73 million tons (fig. 6).

The 2002 annual sediment discharge for the small drainage basin in northeast Iowa; Bloody Run Creek near Marquette (05489400) was 589.8 tons with the largest percentage of total yearly runoff occurring in May at 14 percent. The annual runoff was 15.6 percent of the 11-year mean sediment discharge of 3,787 tons.

The annual sediment discharge for the new station in northeast Iowa, Maquoketa River at Manchester (05416900), was 38,590 tons; 85.9 percent of the yearly total was measured in June. The station in east-central Iowa, Maquoketa River near Maquoketa (05418500), had an annual sediment discharge of 1.06 million tons. Fifty-seven percent of the yearly total was measured in June.

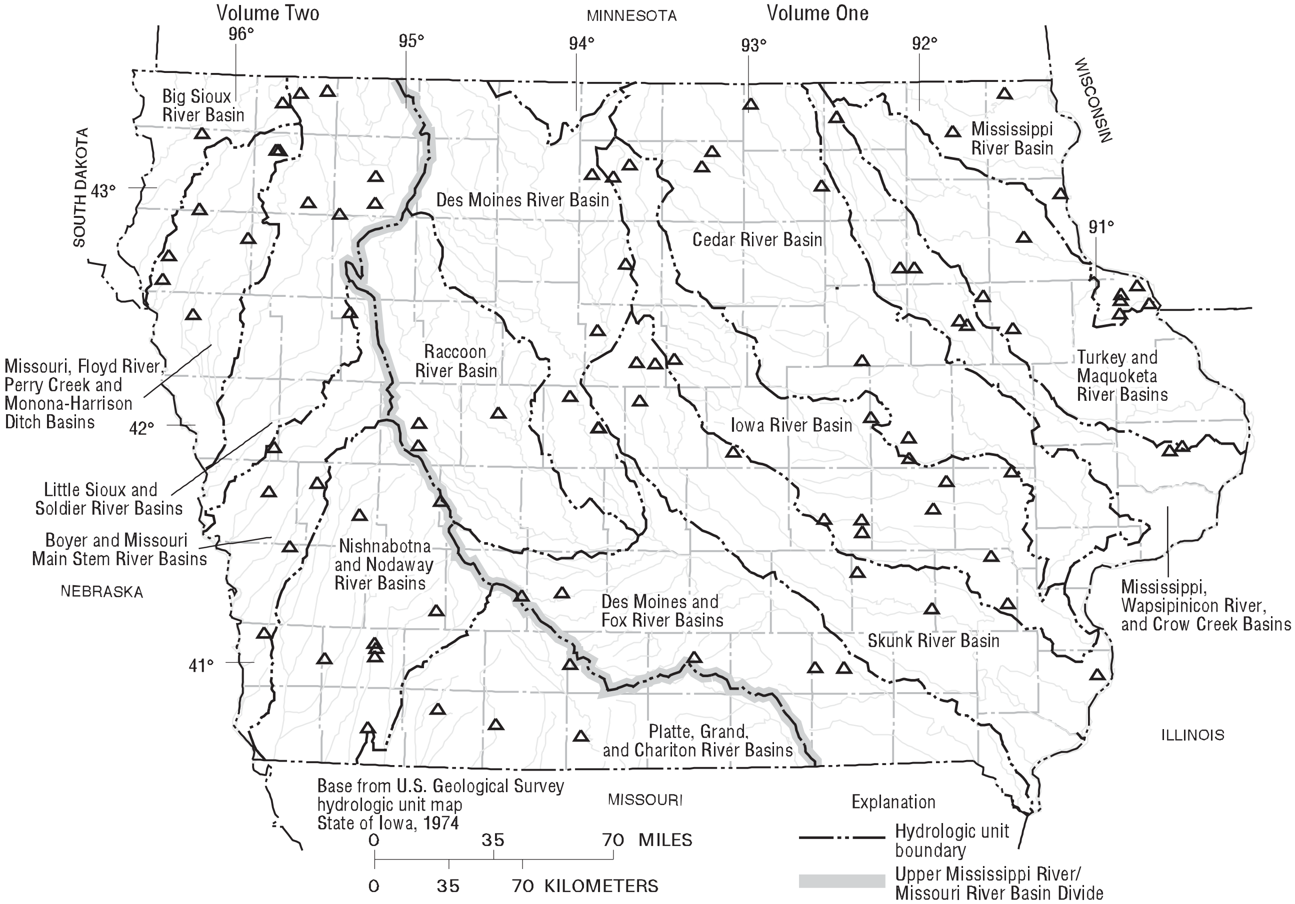

Figure 4. Location of active crest-stage gaging stations in Iowa, water year 2002. [See drainage basin maps in indicated volume for gaging-station identification.]

The annual sediment discharge for the three stations located in central Iowa with less than approximately 20 square miles of drainage reflect precipitation patterns on small drainage basins. The annual sediment discharge for Squaw Creek near Colfax (05471040) was 893 tons. Fifty percent of Squaw Creek's annual sediment discharge was measured in June. The annual sediment discharge for Walnut Creek near Prairie City (05487540) was 248.7 tons, while Walnut Creek near Vandalia (05487550) was 3,706 tons of annual sediment discharge. Vandalia has a drainage area approximately three times the size of Prairie City, but had about 6.7 times the amount of sediment discharge of Prairie City.

The two Missouri River stations have large drainage areas, which the sediment discharges reflect. The annual sediment discharge at Omaha was 6.76 million tons, which was 33 percent of the 16-year mean of 20.4 million tons. The annual sediment discharge at Nebraska City was 11.2 million tons, which was 36 percent of the 16-year mean of 31.6 million tons.

Ground-Water-Level Observation Network

The ground-water monitoring network in Iowa provides a historical record of the water-level changes in the Nation's most important aquifers. The locations of the 157 wells monitored on a quarterly, monthly, or intermittent basis in Iowa during water year 2002 are shown in figure 7.

In this report, records of water levels are presented for a network of observation wells. However, many other water levels are measured through Federal, State, and local agency cooperative projects and entered into computer storage. Information for

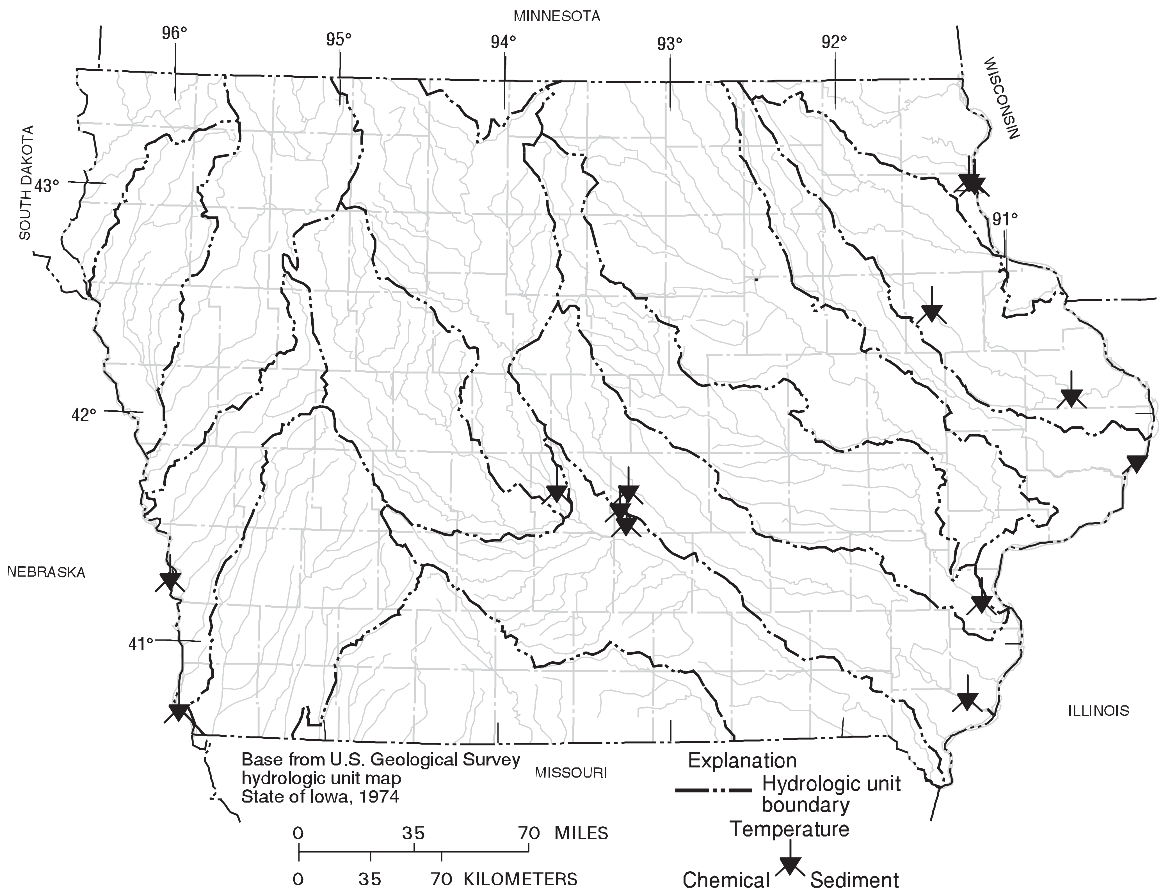

Figure 5. Location of active sediment and surface-water quality stations in Iowa, water year 2002.

specific projects may be obtained from the Director, Water Resources Programs for the State of Iowa, or via the world wide web using the following universal resource locator address: <URL:http://iowa.usgs.gov/>.

Measurements of water levels are made in many types of wells under varying conditions, but the methods of measurement are standardized to the extent possible. The equipment and measuring techniques used at each observation well ensure that measurements at each well are of consistent accuracy and reliability.

Tables of water-level data are presented by counties arranged in alphabetical order. The principal identification number for a given well is the 15-digit number that appears in the upper left corner of the table. The secondary identification number is the local well number, an alphanumeric number, derived from the township-range location of the well.

Water-level records are obtained from direct measurements with a steel tape or from an airline. The water-level measurements in this report are given in feet with reference to land-surface datum. Land-surface datum is a datum plane that is approximately at land surface at each well. The measuring point is the height above or below the land-surface datum and the point where the water level is measured. Both the measuring point and land-surface datum are provided for each well.

Water levels are reported to as many significant figures as can be justified by the local conditions. For example, in a measurement to a depth of water of several hundred feet, the error of determining the absolute value of the total depth to water may be a few tenths of a foot, whereas the error in determining the net change of water level between successive measurements

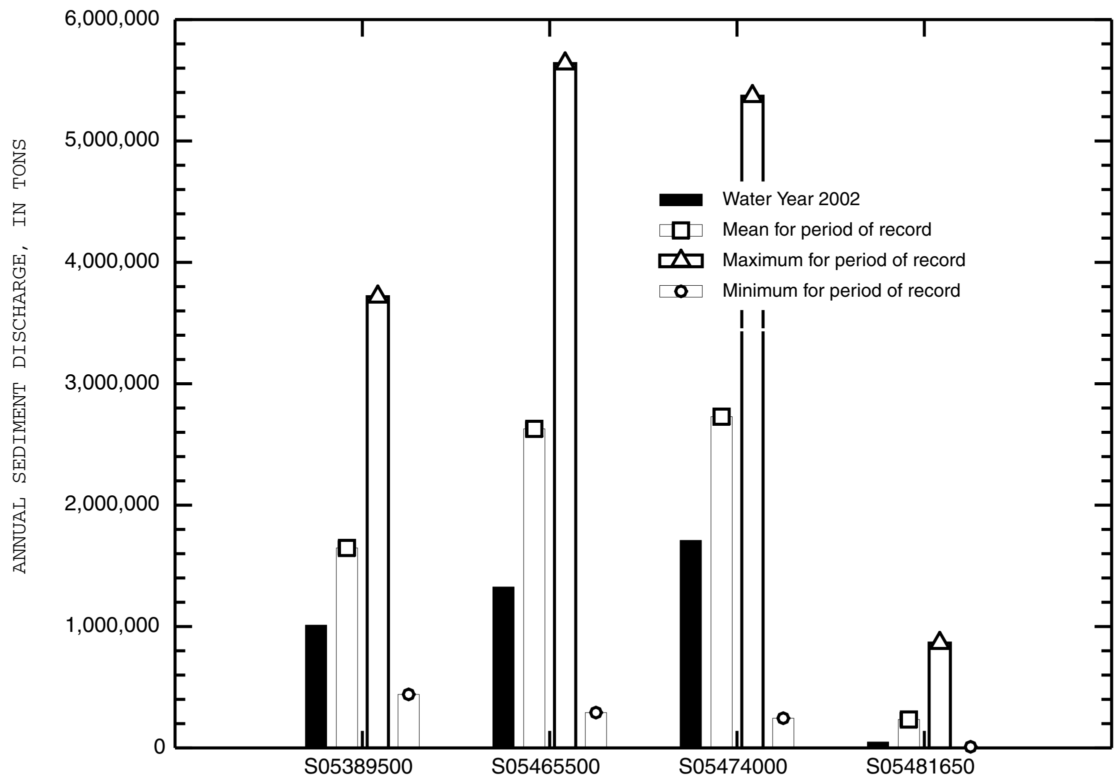

Figure 6. Comparison of annual sediment discharge for water year 2002 with mean, previous maximum, and previous minimum annual sediment discharges for periods of record at four long-term daily sediment stations

may be only a hundredth or a few hundredths of a foot. For lesser depths to water, the accuracy is greater. Accordingly, most measurements are reported to a hundredth of a foot, but some are given to a tenth of a foot or a larger unit.

Ground-water supplies in Iowa are withdrawn from unconsolidated and bedrock aquifers. There are three types of unconsolidated aquifers: (1) alluvial aquifers, which consist of sand-and-gravel deposits associated with present-day fluvial systems; (2) glacial-drift aquifers, which consist of shallow, discontinuous, permeable lenses of sand and gravel interbedded with less-permeable glacial drift; and (3) buried-channel aquifers. Buried-channel aquifers are formed in areas where coarse sand and gravel were deposited in bedrock valleys and overlain by a thick layer of glacial drift.

Six wells completed in an unconsolidated aquifer recorded a new historical water level during the 2002 water year. No wells recorded a high historical water level. Six wells recorded low historical water levels (table 2).

The five major bedrock-aquifer units in Iowa are the Cambrian-Ordovician, Silurian-Devonian, Mississippian, Pennsylvanian, and Dakota. The Cambrian-Ordovician aquifer system consists of aquifers in sandstone of Early Cambrian age and dolomite and sandstone of Late Cambrian to Early Ordovician age. The Dresbach is the basal aquifer of the Cambrian-Ordovician aquifer system and is present locally in northeastern and east-central Iowa. Overlying the Dresbach aquifer is the more aerially extensive Jordan-St. Peter aquifer. A confining shale unit separates the Jordan-St. Peter aquifer from the Galena aquifer, the uppermost aquifer in the Cambrian-Ordovician aquifer system. Overlying the Cambrian-Ordovician aquifer system is the Silurian-Devonian aquifer, which yields water from fractures in Silurian dolomite and Devonian limestone. Overlying the Silurian-Devonian aquifer is the Mississippian aquifer, which is composed of limestone and dolomite of Mississippian age and underlies about 60 percent of Iowa. Overlying the Mississippian aquifer are discontinuous lenses of sandstone in the Cherokee and Kansas City Groups of Pennsylvanian age, which form small, localized aquifers. The Dakota

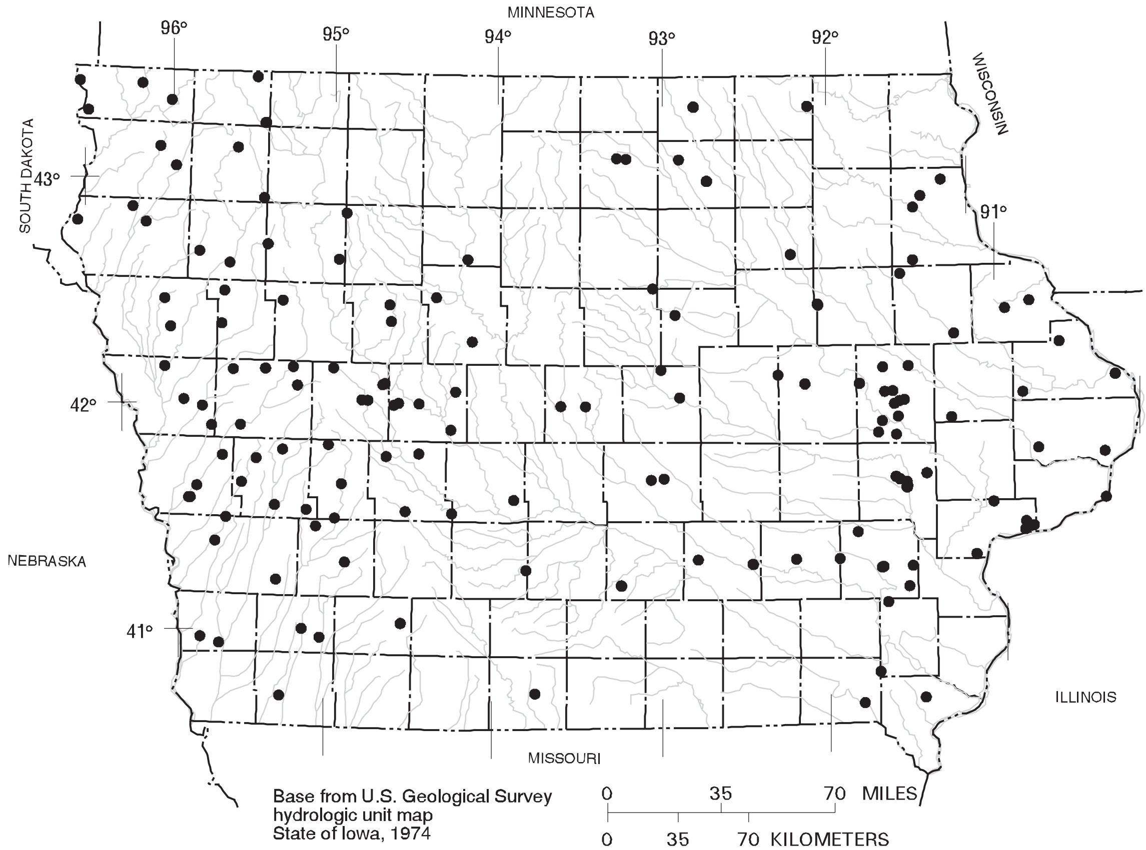

Figure 7. Location of wells in the ground-water-level observation network in Iowa, water year 2002.

Table 2. Historical low water level measured during the 2002 water year in wells completed in unconsolidated aquifers
{Water-level measurements in feet below land surface]

County	Well number	Aquifer type	New historical low water level	Date measured	Previous historical low water level	Date measured
Adams	410248094324801	Glacial Drift	8.24	08/14/2002	5.45	11/30/2000
Carroll	420643094403701	Alluvial	68.68	08/14/2002	67.29	08/07/2000
Mills	405641095365101	Buried Channel	175.86	08/14/2002	171.94	11/10/1994
Shelby	413359095182701	Buried-channel	153.32	08/15/2002	153.32	04/12/1990
Shelby	413953095302601	Glacial-drift	20.10	10/29/2001	19.93	08/07/2000
Story	420137093361501	Glacial-drift	79.00	04/29/2002	76.06	08/08/2000

aquifer is the youngest bedrock-aquifer unit in the State and yields water from sandstone of Cretaceous age in northwest and western Iowa.

Thirty-four wells completed in bedrock aquifers recorded new historical water levels during the 2002 water year. Two wells recorded historical high water levels (table 3), and thirty-two wells recorded historical low water levels (table 4).

Table 3. Historical high water level measured during the 2002 water year in wells completed in bedrock aquifers.
[Water-level measurements in feet below land surface; readings above land surface indicated by "+"]

County	Well number	Aquifer type	New historical high water level	Date measured	Previous historical high water level	Date measured
Ida	423107095383201	Mississippian	176.44	02/21/2002	177.06	08/06/2001
Jackson	420842090165703	Cambrian-Ordovician	4.16	05/08/2002	5.19	01/08/1986

Table 4. Historical low water level measured during the 2002 water year in wells completed in bedrock aquifers
[Water-level measurements are in feet below land surface]

County	Well number	Aquifer type	New historical low water level	Date measured	Previous historical low water level	Date measured
Appanose	404103092404001	Cambrian-Ordovician	391.40	11/13/2001	389.00	02/08/1999
Audubon	413044094565601	Cretaceous	53.61	08/15/2002	53.55	04/21/1990
Calhoun	422339094375101	Cambrian-Ordovician	305	11/08/2001	296	08/09/2000
Cherokee	424132095480211	Cretaceous	157.60	08/14/2002	156.77	08/07/2000
Cherokee	424348095231601	Cretaceous	196.84	08/14/2002	196.17	11/02/1998
Clayton	425736091260303	Cambrian-Ordovician	185.83	05/24/2002	185.60	02/20/2001
Clinton	414921090450401	Silurian	125	08/13/2002	104	08/09/2001
Crawford	421005095342801	Cretaceous	249.57	08/14/2002	249.05	02/05/1982
Decatur	404422093445602	Cambrian-Ordovician	446.20	05/22/2002	445.22	07/26/2001
Dubuque	422901090471901	Cambrian-Ordovician	249.44	11/14/2001	248.02	05/04/1999
Floyd	430200092435301	Devonian	8.48	02/13/2002	7.40	02/14/2000
Floyd	430200092435303	Devonian	88.68	02/13/2002	83.41	02/14/2001
Floyd	430200092435304	Devonian	94.55	02/13/2002	89.07	02/14/2001
Floyd	430200092435305	Devonian	88.23	02/13/2002	83.13	02/14/2001
Floyd	430200092435306	Devonian	93.63	02/13/2002	88.44	02/06/1996
Floyd	430800092540301	Cambrian-Ordovician	201	04/30/2002	198	08/03/1999
Howard	432158092065801	Cambrian-Ordovician	355	11/07/2001	355	05/09/2000
Ida	422215095390811	Cretaceous	208.66	08/14/2002	208.27	11/20/2000
Jackson	420842090165701	Cambrian-Ordovician	10.92	08/13/2002	3.88	11/04/1982
Johnson	414132091345502	Silurian	261.11	07/09/2002	253.83	07/09/2001
Johnson	414132091345503	Silurian	324	07/09/2002	314	08/28/2001
Johnson	414145091350101	Cambrian-Ordovician	421	09/17/2002	419	08/28/2001

Table 4. Historical low water level measured during the 2002 water year in wells completed in bedrock aquifers—Continued
[Water-level measurements are in feet below land surface]

County	Well number	Aquifer type	New historical low water level	Date measured	Previous historical low water level	Date measured
Lee	404306091270201	Cambrian-Ordovician	273.45	08/12/2002	271.77	08/07/2001
Madison	411727093483001	Mississippian	281.84	05/22/2002	281.43	07/26/2001
Mitchell	432156092484102	Devonian	12.87	02/13/2002	12.44	02/14/2000
Mitchell	432156092484103	Devonian	13.86	02/13/2002	13.32	02/14/2000
Mitchell	432156092484104	Devonian	17.21	02/13/2002	16.52	05/09/2000
Mitchell	432156092484105	Devonian	22.71	02/12/2002	22.16	05/09/2000
Plymouth	425249096125001	Cretaceous	126.30	10/30/2001	125.45	08/08/2000
Shelby	413255095070401	Cretaceous‘	43.80	08/15/2002	43.23	12/04/2000
Sioux	430140095573101	Sioux	220.36	08/15/2002	219.57	02/05/1996
Sioux	430913096033201	Sioux	197.86	08/15/2002	196.72	08/08/2000

Surface-Water Quality

Surface-water-quality data was collected in Iowa during water year 2002 at two National Stream-Quality Accounting Network (NASQAN) stations. The NASQAN stations in Iowa are the Mississippi River at Clinton (station number 05420500) and Missouri River at Omaha (06610000). The combined drainage area of the two stations is approximately 408,000 square miles. Land use throughout the two drainage basins is primarily agricultural. Fifteen water samples were collected at Missouri River at Omaha, and thirteen water sample were collected at Mississippi River at Clinton during the 2002 water year.

Nearly all the samples collected at the two stations contained detectable concentrations of agricultural chemicals. Dissolved nitrite plus nitrate as nitrogen (hereafter referred to as nitrate) were common during the 2002 water year, with all samples containing concentrations greater than the detection level of 0.05 mg/L (milligrams per liter).

Nitrate concentrations at Clinton ranged from 0.53 mg/L on August 12 to 2.49 mg/L, on June 7. Nitrate concentrations at Omaha ranged from 0.08 mg/L on Sept. 10 to 1.71 mg/L, on May 13. Nitrate concentrations in water samples did not exceed 10 mg/L, which is the U.S. Environmental Protection Agency (USEPA), Maximum Contaminate Level (MCL) for public drinking water (USEPA), 1990 Maximum contaminant levels, subpart B of part 141, National primary drinking water regulations: U.S.Code of Federal Regulations, Title 40, Parts 100 to 149, revised as of July 1, 1990, p.553-677). Pesticide analyses were completed for 27 water samples collected at the two NASQAN stations. Atrazine and metolachlor, two of the most commonly used herbicides in Iowa, were detected throughout the year at both NASQAN stations. Some of the detections of herbicide concentrations were at very low detection limits and are marked with an "E" code for an estimated value. An "E" code means the compound was detected but that the value is approaching quantifiable limits. Acetochlor was detected ten times at Omaha and ten times at Clinton. The largest herbicide concentration was 7.16 ug/L (micrograms per liter) of atrazine in the water sample collected from the Missouri River on June 12. The largest overall concentration of acetochlor, alachlor, atrazine, cyanazine, and metolachlor in a single event was on the Missouri River on May 13. This water sample had 3.75 ug/L of acetochlor, 0.007 ug/L of alachlor, 4.11 ug/L of atrazine, 0.04 ug/L of cyanazine, and 1.58 ug/L of metolachlor. The only herbicide that exceeded USEPA MCL's (USEPA,1992, Fact sheet: EPA 570/9-91-012FS, December 1992) was atrazine at both sites. The USEPA MCL for atrazine is 3.0 mg/L. The Mississippi River at Clinton had atrazine above the MCL on June 7 with a value of 3.66 mg/L. The Missouri River at Omaha had atrazine above the MCL both on May 13, (4.11) mg/L and June 12, (7.16) mg/L. Herbicide concentrations were generally larger in samples collected during May and June than in samples collected at other times during water year 2002. Water samples collected in September through March had the lowest overall concentrations of the five herbicides during the 2002 water year.

Ground-Water Quality

The Iowa ground-water-quality monitoring program has been operated since 1982 by the U.S. Geological Survey in cooperation with the Iowa Department of Natural Resources, Geological Survey Bureau. The purpose of the program is twofold: (1) provide consistent and representative data describing the chemical water quality of the principal aquifers of the State; and (2) determine possible trends in both water quality and spatial distribution of water quality.

The ground-water-quality monitoring program was initiated to continue a program begun in 1950 by the State Health Department that consisted of periodic, nonspecific sampling of untreated water from municipal supply wells. Each year, approximately 250 wells, primarily municipal supply, were randomly-selected for sampling between April and November. Between 1985 and 1989, the emphasis of the program was on the analysis of nitrate and herbicide concentrations in samples from wells less than 200 feet in depth. Because of the random pattern of sampling both spatially (different wells each year) and seasonally (different times during the year), trends in ground-water quality were difficult to determine from the data. Therefore, in 1990, to provide year-to-year continuity of data and a more statistically sound basis for the study of long-term water-quality trends, a sampling strategy based on a random selection of wells weighted by aquifer vulnerability was implemented. Aquifer vulnerability was determined by the frequency of atrazine detections in water samples collected from wells in the respective aquifers. In 1990 and 1991, a fixed network of 50 wells was selected to be sampled annually, and approximately 200 wells continued to be selected on a rotational basis.

In 1992, the investigation of water-quality trends became the primary focus of the program, and a 10-year work plan was designed to eliminate spatial and seasonal variance, yet allow flexibility within the schedule to address additional data needs. For sampling site selection in 1992, the well inventory was divided into categories based on aquifer type and again on well depth for surficial aquifers, and into categories designated "vulnerable to contamination" and "not vulnerable to contamination" based on the map Groundwater Vulnerability Regions of Iowa (Hoyer, B.E., and Hallberg, G.R., 1991, Special Map Series 11: Iowa Department of Natural Resources, scale 1:500,000) for bedrock aquifers. Vulnerability was determined by the combination and interpretation of factors including geologic and soil data, thickness of Quaternary cover, proximity to agricultural injection wells and sinkholes through which contaminants can be introduced to the aquifer, and evaluation of historical ground water and well contamination. A total of 90 sites were selected for sampling from a well inventory comprising approximately 1,640 public supply wells. From the 90 sites in the fixed network, 45 wells from two surficial aquifer types were selected to be sampled annually. The other 45 wells (from the bedrock aquifers) were selected to be sampled on a rotational schedule based on aquifer vulnerability to contamination. The wells determined to be vulnerable to contamination would be sampled every 2 years and those wells categorized as not vulnerable to contamination would be sampled every 4 years. All 90 wells were sampled in the first 2 years (1992 and 1993) and the sampling rotation began in 1994. In 2001, the sampling rotation was suspended in favor of sampling all 90 wells annually. The sampling effort during the 2002 water year is the eleventh year of this program to determine possible ground-water-quality trends.

Ground-Water Monitoring Network

During the 2002 water year, a total of 89 ground-water samples were collected from municipal wells located throughout the State (fig. 8). These wells were sampled as part of the Iowa ground-water-quality monitoring (GWM) program to determine water-quality trends. Ground-water is found in both surficial and bedrock aquifers. The surficial aquifers include: (1) alluvial aquifers comprising sand and gravel associated with present-day fluvial systems and (2) glacial drift and buried-channel aquifers associated with previous glaciation. The bedrock aquifers include: (1) Cretaceous aquifers comprised of fine- to coarse-grained sandstones of the Dakota Group (2) Mississippian aquifers composed primarily of porous limestones and dolomites (3) Silurian-Devonian aquifers composed of porous and fractured limestones and dolomites; and (4) Cambrian-Ordovician aquifers comprised of sandstones and dolomitic sandstones of the Jordon Formation. Samples were collected during July through early October 2002. All samples were analyzed by the University of Iowa Hygienic Laboratory for common ions, nutrients, and herbicides. All but one sample were analyzed for trace metals. In addition, most samples were analyzed for volatile organic compounds (VOCs) and radio chemistry. However, in a few cases only wells less than 300 feet deep were analyzed for VOCs and only wells deeper than 300 feet were analyzed for radio chemistry. Results for all constituent analyses are published in this report. Discussion of analytical results will be limited to the nitrogen species nitrate and ammonia, and herbicides.

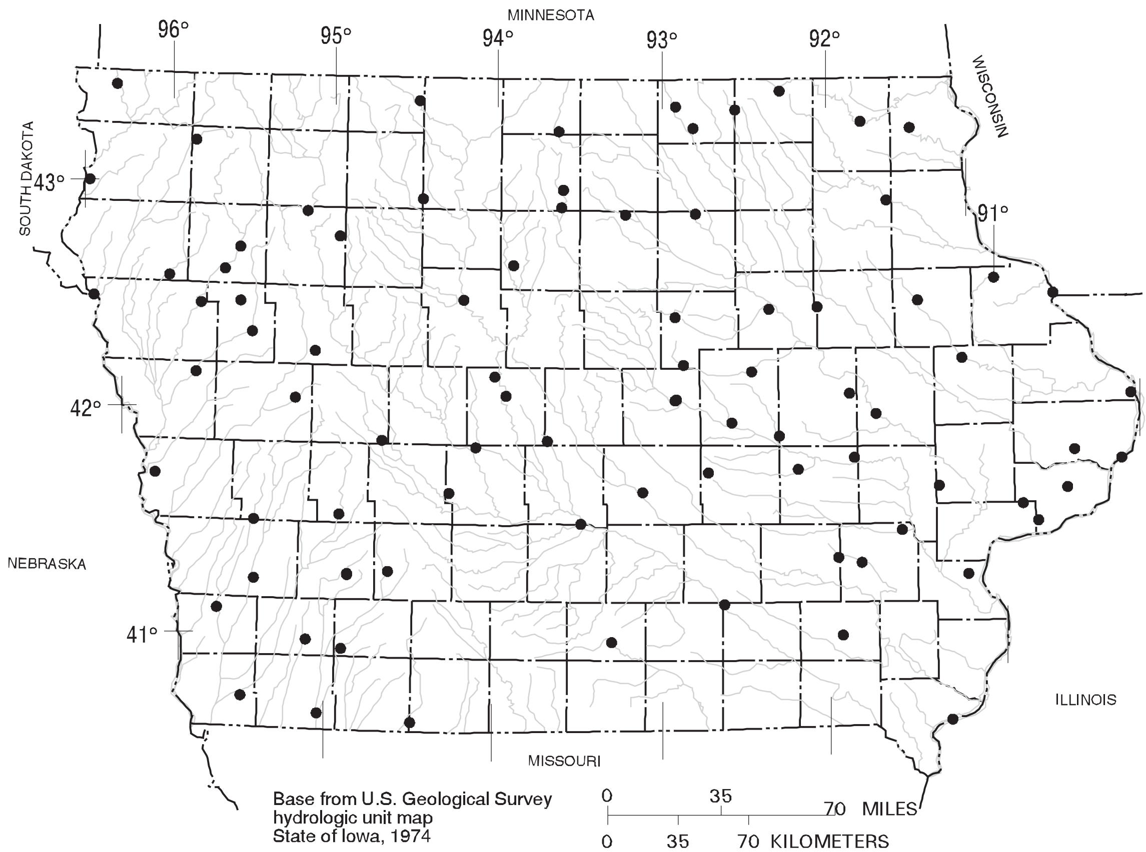

Figure 8. Location of active ground-water-quality monitoring wells in Iowa, water year 2002

A summary of results for nutrient and herbicide analyses are listed by compound in table 5. Nitrate was detected in 38 of the 89 samples and ammonia was detected in 54 of the 89 samples analyzed for these compounds. One or more herbicides were detected in 32 of the 89 samples. The laboratory minimum reporting level (MRL) for ammonia is 0.05 mg/L and nitrate is 0.10 mg/L. The MRL's for the herbicides listed below are 0.05 µg/L. The MRL is the lowest concentration reliably measured by the laboratory.

Table 5. Summary of nitrogen species and herbicides detected in samples from the Ground-Water-Quality Monitoring project, water year 2002
[µg/L, micrograms per liter; mg/L, milligrams per liter; <, less than detection limit]

Compound	Number of samples analyzed	Number of samples in which compound detected	Median value	Maximum concentration detected
Acetochlor	89	1	< 0.05 µg/L	0.22 µg/L
Ammonia	89	54	0.13mg/L	8.5 mg/L
Alachlor	89	1	< 0.05 µg/L	0.30 µg/L
Atrazine	89	17	< 0.05 µg/L	0.40 µg/L
Butylate	89	0	< 0.05 µg/L	< 0.10 µg/L
Cyanazine	89	0	< 0.05 µg/L	< 0.10 µg/L
Deethylatrazine	89	6	< 0.05 µg/L	0.20 µg/L
Deisopropylatrazine	89	1	< 0.05 µg/L	0.10 µg/L
Metolachlor	89	7	< 0.05 µg/L	3.6 µg/L
Metribuzin	89	0	< 0.05 µg/L	< 0.05 µg/L
Nitrate	89	38	< 0.10 mg/L	19.0 mg/L
Prometone	89	2	< 0.05 µg/L	0.1 µg/L
Trifluralin	89	0	< 0.05 µg/L	0.10 µg/L

SPECIAL NETWORKS AND PROGRAMS

Hydrologic Benchmark Network is a network of 50 sites in small drainage basins around the country whose purpose is to provide consistent data on the streamflow representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by human activities. At 10 of these sites, water-quality information is being gathered on major ions and nutrients, primarily to assess the affects of acid deposition on stream chemistry. Additional information on the Hydrologic Benchmark Program can be found at http://water.usgs.gov/hbn/.

National Stream-Quality Accounting Network (NASQAN) monitors the water quality of large rivers within the Nation's largest river basins. From 1995 through 1999, a network of approximately 40 stations were operated in the Mississippi, Columbia, Colorado, and Rio Grande. From 2000 through 2004, sampling was reduced to a few index stations on the Colorado and Columbia so that a network of 5 stations could be implemented on the Yukon River. Samples are collected with sufficient frequency that the flux of a wide range of constituents can be estimated. The objective of NASQAN is to characterize the water quality of these large rivers by measuring concentration and mass transport of a wide range of dissolved and suspended constituents, including nutrients, major ions, dissolved and sediment-bound heavy metals, common pesticides, and inorganic and organic forms of carbon. This information will be used (1) to describe the long-term trends and changes in concentration and transport of these constituents; (2) to test findings of the National Water-Quality Assessment Program (NAWQA); (3) to characterize processes unique to large-river systems such as storage and re-mobilization of sediments and associated contaminants; and (4) to refine existing estimates of off-continent transport of water, sediment, and chemicals for assessing human effects on the world's oceans and for determining global cycles of carbon, nutrients, and other chemicals. Additional information about the NASQAN Program can be found at http://water.usgs.gov/nasqan/.

The National Atmospheric Deposition Program/National Trends Network (NADP/NTN) provides continuous measurement and assessment of the chemical constituents in precipitation throughout the United States. As the lead federal agency, the USGS works together with over 100 organizations to provide a long-term, spatial and temporal record of atmospheric deposition generated from a network of 225 precipitation chemistry monitoring sites. This long-term, nationally consistent monitoring program, coupled with ecosystem research, provides critical information toward a national scorecard to evaluate the effectiveness of ongoing and future regulations intended to reduce atmospheric emissions and subsequent impacts to the Nation's land and water resources. Reports and other information on the NADP/NTN Program, as well as all data from the individual sites, can be found at http://bqs.usgs.gov/acidrain/.

The National Water-Quality Assessment (NAWQA) Program of the U.S. Geological Survey is a long-term program with goals to describe the status and trends of water-quality conditions for a large, representative part of the Nation's ground- and surface-water resources; provide an improved understanding of the primary natural and human factors affecting these observed conditions and trends; and provide information that supports development and evaluation of management, regulatory, and monitoring decisions by other agencies.

Assessment activities are being conducted in 59 study units (major watersheds and aquifer systems) that represent a wide range of environmental settings nationwide and that account for a large percentage of the Nation's water use. A wide array of chemical constituents will be measured in ground water, surface water, streambed sediments, and fish tissues. The coordinated application of comparative hydrologic studies at a wide range of spatial and temporal scales will provide information for decision making by water-resources managers and a foundation for aggregation and comparison of findings to address water-quality issues of regional and national interest.

Communication and coordination between USGS personnel and other local, State, and federal interests are critical components of the NAWQA Program. Each study unit has a local liaison committee consisting of representatives from key federal, State, and local water resources agencies, Indian nations, and universities in the study unit. Liaison committees typically meet semiannually to discuss their information needs, monitoring plans and progress, desired information products, and opportunities to collaborate efforts among the agencies. Additional information about the NAWQA Program can be found at http://water.usgs.gov/nawqa/nawqa_home.html

EXPLANATION OF THE RECORDS

The surface-water and ground-water records published in this report are for the 2002 water year that began October 1, 2001 and ended September 30, 2002. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data, stage and content data for lakes and reservoirs, water-quality data for surface and ground water, and ground-water-level data. The locations of the stations and wells where the data was collected are shown in figures 3-5, 7, 8. The following sections of the introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report was collected, analyzed, computed, and arranged for presentation.

Station Identification Numbers

Each data station, whether streamsite or well, in this report is assigned a unique identification number. This number is unique in that it applies specifically to a given station and to no other. The number usually is assigned when a station is first established and is retained for that station indefinitely. The systems used by the U.S. Geological Survey to assign identification numbers for surface-water stations and for ground-water well sites differ, but both are based on geographic location. The "downstream order" system is used for regular surface-water stations, and the "latitude-longitude" system is used for wells.

Downstream Order System

Since October 1, 1950, the order of listing hydrologic-station records in Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a mainstream station are listed before that station. A station on a tributary that enters between two mainstream stations is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary, with respect to the stream to which it is immediately tributary, is indicated by an indention in the "List of Stations" in the front of this report. Each indention represents one rank. This downstream order and system of indention shows which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

The station-identification number is assigned according to downstream order. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete eight-digit number for each station, such as 05388250, which appears just to the left of the station name, includes the two-digit Part number "05" plus the six-digit downstream-order number "388250." The Part number designates the major river basin; for example, Part "05" is the Mississippi River Basin.

Latitude-Longitude System

The identification numbers for wells and miscellaneous surface-water sites are assigned according to the grid system of latitude and longitude (fig. 9). The number consists of 15 digits. The first six digits denote the degrees, minutes, and seconds of latitude, the next seven digits denote degrees, minutes, and seconds of longitude, and the last two digits (assigned sequentially) identify the wells or other sites within a 1-second grid. This site-identification number, once assigned, is a pure number and has no additional significance. In the rare instance where the initial determination of latitude and longitude are found to be in error, the station will retain its initial identification number; however, its true latitude and longitude will be listed in the LOCATION paragraph of the station description.

Numbering System For Wells

Each well is identified by means of (1) a 15-digit number that is based on the grid system of latitude and longitude, and (2) a local number that is provided for continuity with older reports and for other use as dictated by local needs. The local well numbers are in accordance with the Bureau of Land Management's system of land subdivision. Each well number is made up of three segments. The first segment indicates the township, the second the range, and the third the section in which the well is located (fig. 10). The letters after the section number, which are assigned in a counter-clockwise direction (beginning with “A” in the northeast quarter), represent subdivisions of the section. The first letter denotes a 160-acre tract, the second a 40-acre tract, the third a 10-acre tract, and the fourth a 2.5 acre tract. Numbers are added as suffixes to distinguish wells in the same tract. Thus, the number 96-20-3CDBD1 designates the well in the SE 1/4 NW 1/4 SE 1/4 SW 1/4 sec.3, T.96 N., R.20 W.

Latitude and longitude coordinates for wells:

1. 414315091252001
2. 414315091252002
3. 414316091251901

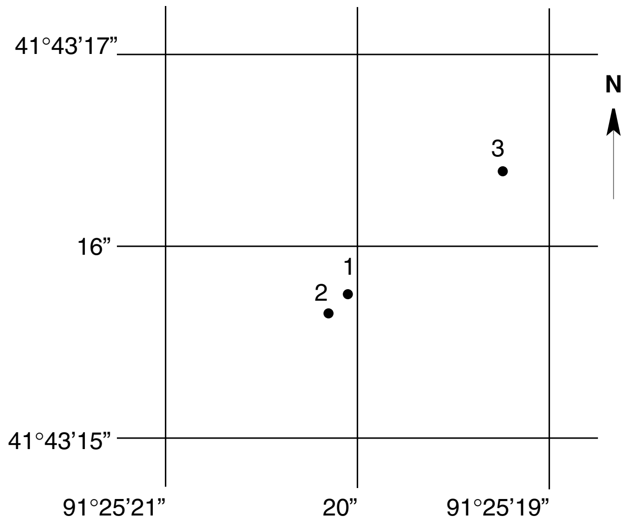

Figure 9. Latitude-longitude well number

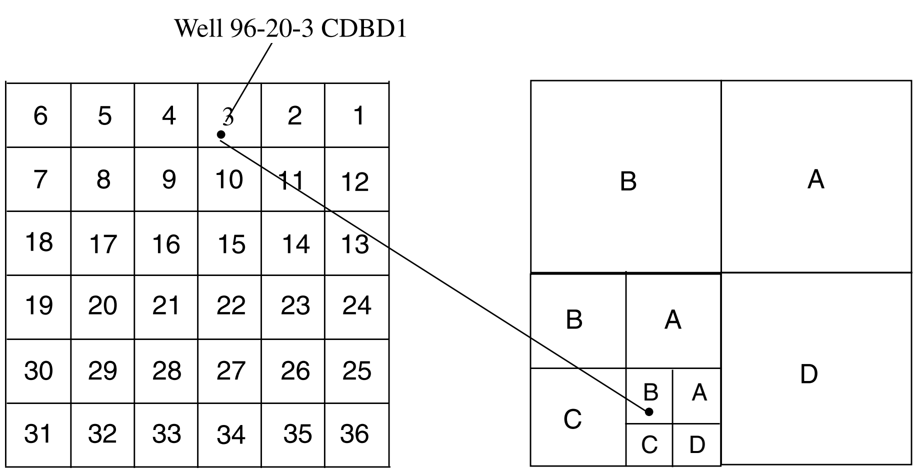

Figure 10. Local well-numbering system for well 96-20-3 CDBD1.

Records of Stage and Water Discharge

Records of stage and water discharge may be complete or partial. Complete records of discharge are those obtained using a continuous stage-recording device through which either instantaneous or mean daily discharges may be computed for any time, or any period of time, during the period of record. Complete records of lake or reservoir content, similarly, are those for which stage or content may be computed or estimated with reasonable accuracy for any time, or period of time. They may be obtained using a continuous stage-recording device, but need not be. Because daily mean discharges and end-of-day contents commonly are published for such stations, they are referred to as "daily stations." Location of all complete-record surface water stations which are given in this report are shown in figure 3.

Partial records are obtained through discrete measurements without using a continuous stage-recording device, and generally pertain only to a characteristic of either high, medium or low flow. The location of all active, crest-stage gaging stations are shown in figure 4.

Data Collection and Computation

The data obtained at a complete-record gaging station on a stream or canal consists of a continuous record of stage, individual measurements of discharge throughout a range of stages, and notations regarding factors that may affect the relationships between stage and discharge. This data, together with supplemental information, such as weather records, are used to compute daily discharges. The data obtained at a complete-record gaging station on a lake or reservoir consists of a record of stage and of notations regarding factors that may affect the relationship between stage and lake content. This data is used with stage-capacity curves or tables to compute lake storage.

Continuous records of stage are obtained with analog recorders that trace continuous graphs of stage or with digital recorders that punch stage values on paper tapes at selected time intervals. Measurements of discharge are made with current meters using methods adopted by the Geological Survey as a result of experience accumulated since 1880. These methods are described in standard textbooks, in Water-Supply Paper 2175, and in U.S. Geological Survey Techniques of Water-Resources Investigations, Book 3, Chapter A6.

In computing discharge records, results of individual measurements are plotted against the corresponding stages, and stage-discharge relation curves are then constructed. From these curves, rating tables indicating the approximate discharge for any stage within the range of the measurements are prepared. If it is necessary to define extremes of discharge outside the range of the current-meter measurements, the curves are extended using: (1) logarithmic plotting; (2) velocity-area studies; (3) results of indirect measurements of peak discharge, such as slope-area or contracted-opening measurements, and computations of flow over dams or weirs; or (4) step-backwater techniques.

Daily mean discharges are computed by applying the daily mean stages (gage heights) to the stage-discharge curves or tables. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the shifting-control method, in which correction factors based on the individual discharge measurements and notes of the personnel making the measurements are applied to the gage heights before the discharges are determined from the curves or tables. This shifting-control method also is used if the stage-discharge relation is changed temporarily because of aquatic growth or debris on the control. For some stations, formation of ice in the winter may so obscure the stage-discharge relations that daily mean discharges must be estimated from other information such as temperature and precipitation records, notes of observations, and records for other stations in the same or nearby basins for comparable periods.

At some stream-gaging stations, the stage-discharge relation is affected by the backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations, the stage-discharge relation is affected by changing stage; at these stations, the rate of change in stage is used as a factor in computing discharge.

In computing records of lake or reservoir contents, it is necessary to have available from surveys, curves or tables defining the relationship of stage and content. The application of stage to the stage-content curves or tables gives the contents from which daily, monthly, or yearly changes then are determined. If the stage-content relation changes because of deposition of sediment in a lake or reservoir, periodic resurveys may be necessary to redefine the relation. Even when this is done, the contents computed may become increasingly in error as the lapsed time since the last survey increases. Discharges over lake or reservoir spillways are computed using stage-discharge relations.

For some gaging stations, there are periods when no gage-height record is obtained, or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For these periods, the daily discharges are estimated from the recorded range in stage, discharge computed before and after the missing record, discharge measurements, weather records, and comparison with other station records from the same or nearby basins. Likewise, daily contents may be estimated from operator's logs, previous or following record, inflow-outflow studies, and other information. Information explaining how estimated daily-discharge values are identified in station records is included in the next two sections, "Data Presentation" (REMARKS paragraph) and "Identifying Estimated Daily Discharge."

Data Presentation

Streamflow data in this report are presented in a new format that is considerably different from the format in data reports prior to the 1991 water year. The major changes are that statistical characteristics of discharge now appear in tabular summaries following the water-year data table, and less information is provided in the text or station manuscript above the table. These changes represent the results of a pilot program to reformat the annual water-data report to meet current user needs and data preference.

The records published for each continuous-record surface-water discharge station (gaging station) consist of four parts, the manuscript or station description; the data table of daily mean values of discharge for the current water year with summary data; a tabular statistical summary of monthly mean flow data for a designated period, by water year; and a summary statistics table that includes statistical data of annual, daily, and instantaneous flows as well as data pertaining to annual runoff, 7-day low-flow minimums, and flow duration.

Station Manuscript

The manuscript provides, under various headings, descriptive information, such as station location; period of record; historical extremes outside period of record; record accuracy; and other remarks pertinent to station operation and regulation. The following information, as appropriate, is provided with each continuous record of discharge or lake content. Comments to follow clarify information presented under the various headings of the station description.

LOCATION.--Information on locations is obtained from the most accurate maps available. The location of the gage with respect to the cultural and physical features in the vicinity and with respect to the reference place mentioned in the station name is given. River mileages were determined by methods given in "River Mileage Measurement," Bulletin 14, Revision of October 1968, prepared by the Water Resources Council or were provided by the U.S. Army Corps of Engineers.

DRAINAGE AREA.--Drainage areas are measured using the most accurate maps available. Because the type of maps available varies from one drainage basin to another, the accuracy of drainage areas likewise varies. Drainage areas are updated as better maps become available.

PERIOD OF RECORD.--This indicates the period for which there are published records for the station or for an equivalent station. An equivalent station is one that was in operation at a time that the present station was not, and whose location was such that records from it can reasonably be considered equivalent with records from the present station.

REVISED RECORDS.--Because of new information, published records occasionally are found to be incorrect, and revisions are printed in later reports. Listed under this heading are all the reports in which revisions have been published for the station and the water years to which the revisions apply. If a revision did not include daily, monthly, or annual figures of discharge, that fact is noted after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the most recently revised figure was first published is given

GAGE.--The type of gage in current use, the datum of the current gage sea level (see "Definition of Terms"), and a condensed history of the types, locations, and datums of previous gages are given under this heading.

REMARKS.--All periods of estimated daily-discharge record will either be identified by date in this paragraph of the station description for water-discharge stations or flagged in the daily-discharge table. (See next section, "Identifying Estimated Daily Discharge.") If a REMARKS paragraph is used to identify estimated record, the paragraph will begin with this information presented as the first entry. The paragraph is also used to present information relative to the accuracy of the records, to special methods of computation, and to conditions that affect natural flow at the station. In addition, information may be presented pertaining to average discharge data for the period of record; to extremes data for the period of record and the current year; and, possibly, to other pertinent items. For reservoir stations, information is given on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir.

COOPERATION.--Records provided by a cooperating organization or obtained for the Geological Survey by a cooperating organization are identified here.

EXTREMES FOR PERIOD OF RECORD.--Extremes may include maximum and minimum stages and maximum and minimum discharges or content. Extremes are published only for stations with significant flow regulation and where extremes occurred in pre-regulation periods. Unless otherwise qualified, the maximum discharge or content is the instantaneous maximum corresponding to the highest stage that occurred. The highest stage may have been obtained from a graphic or digital recorder, a crest-stage gage, or by direct observation of a nonrecording gage. If the maximum stage did not occur on the same day as the maximum discharge or content, it is given separately. Similarly, the minimum is the instantaneous minimum discharge, unless otherwise qualified, and was determined and is reported in the same manner as the maximum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Included here is information concerning major floods or unusually low flows that occurred outside the stated period of record. The information may or may not have been obtained by the U.S. Geological Survey.

REVISIONS.--If errors in published water-quality records are discovered after publication, appropriate updates are made in the U.S. Geological Survey's distributed data system, NWIS, and subsequently to its web-based National data system, NWISWEB [http://water.usgs.gov/nwis/nwis]. Because of the usual volume of updates makes it impractical to document individual changes in the State data-report series or elsewhere, potential users of U.S. Geological Survey water-quality data are encouraged to obtain all required data from NWIS or NWISWEB to ensure the most recent updates. Updates to NWISWEB are currently made on an annual basis.

Although rare, occasionally the records of a discontinued gaging station may need revision. Because, for these stations, there would be no current or, possibly, future station manuscript published to document the revision in a "Revised Records" entry, users of data for these stations who obtained the record from previously published data reports may wish to contact the District Office (address given on the back of the title page of this report) to determine if the published records were ever revised after the station was discontinued. Of course, if the data for a discontinued station were obtained by computer retrieval, the data would be current, and there would be no need to check because any published revision of data is always accompanied by revision of the corresponding data in computer storage.

Manuscript information for lake or reservoir stations differs from that for stream stations in the nature of the "Remarks" and in the inclusion of a skeleton stage-capacity table when daily contents are given.

Headings for AVERAGE DISCHARGE, EXTREMES FOR PERIOD OF RECORD, and EXTREMES FOR CURRENT YEAR have been deleted, and the information contained in these paragraphs is now presented in the tabular summaries following the discharge table or in the REMARKS paragraph, as appropriate. EXTREMES FOR PERIOD OF RECORD are now presented only for stations with significant flow regulation and where extremes occurred in pre-regulation periods. No changes have been made to the data presentations of lake contents or reservoir storage.

Data Table of Daily Mean Values

The daily table for stream-gaging stations gives mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed “TOTAL” gives the sum of the daily figures. The line headed “MEAN” gives the average flow in cubic feet per second during the month. The lines headed “MAX” and “MIN” give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also is usually expressed in cubic feet per second per square mile (line headed “CFSM”), or in inches (line headed “IN.”), or in acre-feet (line headed “AC-FT”). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion or if the drainage area includes large noncontributing areas. In the yearly summary below the monthly summary, the figures shown are the appropriate discharges for the calendar and water years. At some stations, monthly and (or) yearly observed discharges are adjusted for reservoir storage or diversion, or diversions or reservoir contents are given. These figures are identified by a symbol and corresponding footnote.

Statistics of Monthly Mean Data

A tabular summary of the mean (line headed “MEAN”), maximum (line headed “MAX”), and minimum (line headed “MIN”) of monthly mean flows for each month for a designated period is provided below the mean values table. The water years of the first occurrence of the maximum and minimum monthly flows are provided immediately below those figures. The designated period will be expressed as “FOR PERIOD OF RECORD, BY WATER YEAR (WY),” for unregulated streams for the water years listed in the PERIOD OF RECORD paragraph in the station manuscript. It will consist of all of the station record within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the period of record for the station. The water years for which the statistics are computed will be consecutive, unless a break in the station record is indicated in the manuscript. For significantly regulated streams, the first and last water years of the range of years will be given for the post-regulation period.

Summary Statistics

A table titled “SUMMARY STATISTICS” follows the statistics of monthly mean data tabulation. This table consists of four columns, with the first column containing the line headings of the statistics being reported. The table provides a statistical summary of yearly, daily, and instantaneous flows, not only for the current water year, but also for the previous calendar year and for a designated period, as appropriate. The designated period selected, “PERIOD OF RECORD,” for unregulated streams, will consist of all of the station record within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the period of record for the station. The water years for which the statistics are computed will be consecutive, unless a break in the station record is indicated in the manuscript. For significantly regulated streams, the period selected will be designated as “WATER YEARS ___ - ___,” for the post regulation period. All of the calculations for the statistical characteristics designated ANNUAL (See line headings below.), except for the “ANNUAL 7-DAY MINIMUM” statistic, are calculated for the designated period using complete water years. The other statistical characteristics may be calculated using partial water years.

The date or water year, as appropriate, of the first occurrence of each statistic reporting extreme values of discharge is provided adjacent to the statistic. Repeated occurrences may be noted in the REMARKS paragraph of the manuscript or in footnotes. Because the designated period may not be the same as the station period of record published in the manuscript, occasionally the dates of occurrence listed for the daily and instantaneous extremes in the designated-period column may not be within the selected water years listed in the heading. When this occurs, it will be noted in the REMARKS paragraph or in footnotes. Selected streamflow duration curve statistics and runoff data are also given. Runoff data may be omitted if there is extensive regulation or diversion of flow in the drainage basin.

The following summary statistics data, as appropriate, are provided with each continuous record of discharge. Comments to follow clarify information presented under the various line headings of the summary statistics table.

ANNUAL TOTAL.--The sum of the daily mean values of discharge for the year. At some stations, the annual total discharge is adjusted for reservoir storage or diversion. The adjusted figures are identified by a symbol and corresponding footnotes.

ANNUAL MEAN.--The arithmetic mean of the individual daily mean discharges for the year noted or for the designated period. At some stations, the yearly mean discharge is adjusted for reservoir storage or diversion. The adjusted figures are identified by a symbol and corresponding footnotes.

HIGHEST ANNUAL MEAN.--The maximum annual mean discharge occurring for the designated period.

LOWEST ANNUAL MEAN.--The minimum annual mean discharge occurring for the designated period.

HIGHEST DAILY MEAN.--The maximum daily mean discharge for the year or for the designated period.

LOWEST DAILY MEAN.--The minimum daily mean discharge for the year or for the designated period.

ANNUAL 7-DAY MINIMUM.--The lowest mean discharge for 7 consecutive days for a calendar year or a water year. Note that most low-flow frequency analyses of annual 7-day minimum flows use a climatic year (April 1 - March 31). The date shown in the summary statistics table is the initial date of the 7-day period. (This value should not be confused with the 7-day 10-year low-flow statistic.)

INSTANTANEOUS PEAK FLOW.--The maximum instantaneous discharge occurring for the water year or for the designated period. Note that secondary instantaneous peak discharges above a selected base discharge are stored in District computer files for stations meeting certain criteria. Those discharge values may be obtained by writing to the District Office. (See address on back of title page of this report.)

INSTANTANEOUS PEAK STAGE.--The maximum instantaneous stage occurring for the water year or for the designated period. If the dates of occurrence for the instantaneous peak flow and instantaneous peak stage differ, the REMARKS paragraph in the manuscript or a footnote may be used to provide further information.

INSTANTANEOUS LOW FLOW.--The minimum instantaneous discharge occurring for the water year or for the designated period.

ANNUAL RUNOFF.--Indicates the total quantity of water in runoff for a drainage area for the year. Data reports may use any of the following units of measurement in presenting annual runoff data:

Acre-foot (AC-FT) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

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

Inches (INCHES) indicates the depth to which the drainage area would be covered if all of the runoff for a given time period were uniformly distributed on it.

10 PERCENT EXCEEDS.--The discharge that is exceeded 10 percent of the time for the designated period.

50 PERCENT EXCEEDS.--The discharge that is exceeded 50 percent of the time for the designated period.

90 PERCENT EXCEEDS.--The discharge that is exceeded 90 percent of the time for the designated period.

Data collected at partial-record stations follow the information for continuous-record sites. Data for partial-record discharge stations are presented in two tables. The first is a table of annual maximum stage and discharge at crest-stage stations, and the second is a table of discharge measurements at low-flow partial-record stations. The tables of partial-record stations are followed by a listing of discharge made at sites other than continuous-record or partial-record stations. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Identifying Estimated Daily Discharge

Estimated daily-discharge values published in the water-discharge tables of annual State data reports are identified by listing the dates of the estimated record in the REMARKS paragraph of the station description, and are flagged "e" in tables.

Accuracy of the Records

The accuracy of streamflow records depends primarily on: (1) the stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements; and (2) the accuracy of measurements of stage, measurements of discharge, and interpretation of records.

The accuracy attributed to the records is indicated under "REMARKS." "Excellent" means that about 95 percent of the daily discharges are within 5 percent of their true values; "good," within 10 percent; and "fair," within 15 percent. Records that do not meet the criteria mentioned are rated "poor." Different accuracies may be attributed to different parts of a given record.

Daily mean discharges in this report are given to the nearest hundredth of a cubic foot per second for values less than 1 ft ^{3}/s the nearest tenth between 1.0 and 10 ft^3/s; to whole numbers between 10 and 1,000 ft^3/s; and to 3 significant figures for more than 1,000 ft^3/s. The number of significant figures used is based solely on the magnitude of the discharge value. The same rounding rules apply to discharges listed for partial-record stations and miscellaneous sites.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. For such stations, figures of cubic feet per second per square mile and of runoff, in inches, are not published.

Other Records Available

Information used in the preparation of the records in this publication, such as discharge-measurement notes, gage-height records, temperature measurements, and rating tables is on file in various field offices of the Iowa District. Also, most of the daily mean discharges are in computer-readable form and have been analyzed statistically. Information on the availability of the unpublished information or on the results of statistical analyses of the published records may be obtained from the offices whose addresses are given on the back of the title page of this report.

Records of Surface-Water Quality

Records of surface-water quality ordinarily are obtained at or near streamgaging stations because interpretation of records of surface-water quality nearly always requires corresponding discharge data. Records of surface-water quality in this report may involve a variety of types of data and measurement frequencies.

Classification of Records

Water-quality data for surface-water sites are grouped into one of three classifications. A continuing-record station is a site where data is collected on a regularly scheduled basis. Frequency may be once or more times daily, weekly, monthly, or quarterly. A partial-record station is a site where limited water-quality data is collected systematically over a period of years. Frequency of sampling is usually less than quarterly. A miscellaneous sampling site is a location other than a continuing or partial-record station, where random samples are collected to give better areal coverage to define water-quality conditions in the river basin.

A careful distinction needs to be made between "continuing records" as used in this report and "continuous recordings," which refers to a continuous graph or a series of discrete values punched at short intervals on a paper tape. Some records of water quality, such as temperature and specific conductance, may be obtained through continuous recordings; however, because of costs, most data is obtained only monthly or less frequently. Locations of stations for which records on the quality of surface water appear in this report are shown in figure 5.

Arrangement of Records

Water-quality records collected at a surface-water daily record station are published immediately following that record, regardless of the frequency of sample collection. Station number and name are the same for both records. Where a surface-water daily record station is not available or where the water quality differs significantly from that at the nearby surface-water station, the continuing water-quality record is published with its own station number and name in the regular downstream-order sequence. Water-quality data for partial-record stations and for miscellaneous sampling sites appear in separate tables following the table of discharge measurements at miscellaneous sites.

On-Site Measurements and Sample Collection

In obtaining water-quality data, a major concern needs to be assuring that the data obtained represent the in situ quality of the water. To assure this, certain measurements, such as water temperature, pH, alkalinity and dissolved oxygen, are made onsite when the samples are taken. To assure that measurements made in the laboratory also represent the in situ water, carefully prescribed procedures are followed in collecting the samples, in treating the samples to prevent changes in quality pending analysis, and in shipping the samples to the laboratory. Procedures for onsite measurements and for collecting, treating, and shipping samples are given in publications on "Techniques of Water-Resources Investigations," Book 1, Chap. D2; Book 3, Chap. A1, A3, and A4; Book 9, Chap.A1-A9.

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain the representative sample needed for an accurate mean concentration and for use in calculating load. All samples obtained for the National Stream Quality Accounting Network are obtained from at least several verticals. Whether samples are obtained from the centroid of flow or from several verticals depends on flow conditions and other factors, which must be evaluated by the collector.

Chemical-quality data published in this report are considered to be the most representative values available for stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis.

Water Temperature and Specific Conductance

Water temperatures are measured at most of the water-quality stations. The measurement of temperature and specific conductance is performed during each regular site visit (usually at a six week interval) to streamgaging stations. Records of stream temperature indicate significant thermal characteristics of the stream when analyzed over a long period of record. Large streams have small daily temperature variations, while shallow streams may have a daily range of several degrees and may closely follow the changes in air temperature. Furthermore, some streams may be affected by waste-heat discharge.

Specific conductance can be used as a general indicator of stream quality. This determination is easily made in the field with a portable meter, and the results are very useful as general indicators of dissolved-solids concentration or as a base for extrapolating other analytical data. Records for temperature and specific conductance appear in the section "Analyses of samples collected at miscellaneous sites".

Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samples. Samples usually are obtained at several verticals in the cross section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross sections.

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily, or in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided-day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided-day method. For periods when no samples were collected, daily discharges of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples were collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observations, such data are useful in establishing seasonal relations between quality and streamflow and in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of the quantities of suspended-sediment, records of the periodic measurements of the particle-size distribution of the suspended-sediment and bed material are included. Miscellaneous suspended-sediment samples were collected during flood events have been included with the station's water quality data or in the section "Analyses of samples at miscellaneous sites".

Laboratory Measurements

Sediment samples, samples for indicator bacteria, and daily samples for specific conductance are analyzed locally. All other samples are analyzed in the U.S. Geological Survey laboratory in Arvada, Colorado and the University of Iowa Hygienic Laboratory. Methods used in analyzing sediment samples and computing sediment records are given in TWRI, Book 5, Chap. C1. Methods used by the U.S. Geological Survey laboratories are given in TWRI, Book 1, Chap. D2, Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4.

Data Presentation

For continuing-record stations, information pertinent to the history of station operation is provided in descriptive headings preceding the tabular data. These descriptive headings give details regarding location, drainage area, period of record, type of data available, instrumentation, general remarks, cooperation, and extremes for parameters currently measured daily. Tables of chemical, physical, biological, radiochemical data, and so forth, obtained at a frequency less than daily are presented first. Tables of "daily values" of specific conductance, pH, water temperature, dissolved oxygen, and suspended sediment then follow in sequence.

In the descriptive headings, if the location is identical to that of the discharge gaging station, neither the LOCATION nor the DRAINAGE AREA statements are repeated. The following information, as appropriate, is provided with each continuous-record station. Comments that follow clarify information presented under the various headings of the station description.

LOCATION.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

DRAINAGE AREA.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

PERIOD OF RECORD.--This indicates the periods for which there are published water-quality records for the station. The periods are shown separately for records of parameters measured daily or continuously and those measured less than daily. For those measured daily or continuously, periods of record are given for the parameters individually.

INSTRUMENTATION.--Information on instrumentation is given only if a water-quality monitor temperature record, sediment pumping sampler, or other sampling device is in operation at a station.

REMARKS.--Remarks provide added information pertinent to the collection, analysis, or computation of the records.

COOPERATION.--Records provided by a cooperating organization or obtained for the Geological Survey by a cooperating organization are identified here.

EXTREMES.--Maximums and minimums are given only for parameters measured daily or more frequently. None are given for parameters measured weekly or less frequently, because the true maximums or minimums may not have been sampled. Extremes, when given, are provided for both the period of record and for the current water year.

REVISIONS.--If errors in published water-quality records are discovered after publication, appropriate updates are made to the Water-Quality File in the U.S. Geological Survey's computerized data system, WATSTORE, and subsequently by monthly transfer of update transactions to the U.S. Environmental Protection Agency's STORET system. Because the usual volume of updates makes it impractical to document individual changes in the State data-report series or elsewhere, potential users of U.S. Geological Survey water-quality data are encouraged to obtain all required data from the appropriate computer file to insure the most recent updates.

The surface-water-quality records for partial-record stations and miscellaneous sampling sites are published in separate tables following the table of discharge measurements at miscellaneous sites. No descriptive statements are given for these records. Each station is published with its own station number and name in the regular downstream-order sequence.

Remarks Codes

The following remarks codes may appear with the water-quality data in this report:

PRINTED OUTPUT	REMARK
E	Estimated value
>	Actual value is know to be greater than the value shown
<	Actual value is known to be less than the value shown
K	Results based on colony count outside the acceptance range (non-ideal colony count)
L	Biological organism count less than 0.5 percent (organism may be observed rather than counted)
D	Biological organism count equal to or greater than 15 percent (dominant)
&	Biological organism estimated as dominant
V	Analyte was detected in both the environmental sample and the associated blank

Water Quality-Control Data

Data generated from quality-control (QC) samples are a requisite for evaluating the quality of the sampling and processing techniques as well as data from the actual samples themselves. Without QC data, environmental sample data cannot be adequately interpreted because the errors associated with the sample data are unknown. The various types of QC samples collected by this district are described in the following section. Procedures have been established for the storage of water-quality-control data within the USGS. These procedures allow for storage of all derived QC data and are identified so that they can be related to corresponding environmental samples.

Blank Samples

Blank samples are collected and analyzed to ensure that environmental samples have not been contaminated by the overall data-collection process. The blank solution used to develop specific types of blank samples is a solution that is free of the analytes of interest. Any measured value signal in a blank sample for an analyte (a specific component measured in a chemical analysis) that was absent in the blank solution is believed to be due to contamination. There are many types of blank samples possible, each designed to segregate a different part of the overall data-collection process. The types of blank samples collected in this District are:

Field blank - a blank solution that is subjected to all aspects of sample collection, field processing preservation, transportation, and laboratory handling as an environmental sample.

Trip blank - a blank solution that is put in the same type of bottle used for an environmental sample and kept with the set of sample bottles before and after sample collection.

Equipment blank - a blank solution that is processed through all equipment used for collecting and processing an environmental sample (similar to a field blank but normally done in the more controlled conditions of the office).

Sampler blank - a blank solution that is poured or pumped through the same field sampler used for collecting an environmental sample.

Filter blank - a blank solution that is filtered in the same manner and through the same filter apparatus used for an environmental sample.

Splitter blank - a blank solution that is mixed and separated using a field splitter in the same manner and through the same apparatus used for an environmental sample.

Preservation blank - a blank solution that is treated with the sampler preservatives used for an environmental sample.

Reference Samples

Reference material is a solution or material prepared by a laboratory whose composition is certified for one or more properties so that it can be used to assess a measurement method. Samples of reference material are submitted for analysis to ensure that an analytical method is accurate for the known properties of the reference material. Generally, the selected reference material properties are similar to the environmental sample properties.

Replicate Samples

Replicate samples are a set of environmental samples collected in a manner such that the samples are thought to be essentially identical in composition. Replicate is the general case for which a duplicate is the special case consisting of two samples. Replicate samples are collected and analyzed to establish the amount of variability in the data contributed by some part of the collection and analytical process. There are many types of replicate samples possible, each of which may yield slightly different results in a dynamic hydrologic setting, such as a flowing stream. The types of replicate samples collected in this District are:

Sequential samples - a type of replicate sample in which the samples are collected one after the other, typically over a short time.

Split sample - a type of replicate sample in which a sample is split into subsamples contemporaneous in time and space.

Spike Samples

Spike samples are samples to which known quantities of a solution with one or more well-established analyte concentrations have been added. These samples are analyzed to determine the extent of matrix interference or degradation on the analyte concentration during sample processing and analysis.

Dissolved Trace-Element Concentrations

Traditionally, dissolved trace-element concentrations have been reported at the microgram per liter (µg/L) level. Recent evidence, mostly from large rivers, indicates that actual dissolved-phase concentrations for a number of trace elements are within the range of 10's to 100's of nanograms per liter (ng/L). Data above the µg/L level should be viewed with caution. Such data may actually represent elevated environmental concentrations from natural or human causes; however, these data could reflect contamination introduced during sampling, processing, or analysis. To confidently produce dissolved trace-element data with insignificant contamination, the U.S. Geological Survey began using new trace-element protocols at some stations in water year 1994.

Change in National Trends Network Procedures

Sample handling procedures at all National Trends Network stations were changed substantially on January 11, 1994, in order to reduce contamination from the sample shipping container. The data for samples before and after that date are different and not directly comparable. A tabular summary of the differences based on a special intercomparison study is available from the NADP Program Office, Illinois State Water Survey, 2204 Griffith Drive, Champaign, Il 61820-7495 (217-333-7873).

Records of Ground-Water Levels

Ground-water level data from a network of observation wells in Iowa are published in this report. This data provides a limited historical record of water-level changes in the State's most important aquifers. Locations of the observation wells in this network in Iowa are shown in figure 7. Information about the availability of the data in the water-level files and reports of the U.S. Geological Survey may be obtained from the Iowa District Office (see address on back of title page).

Data Collection and Computation

Measurements of water levels are made in many types of wells under varying conditions, but the methods of measurement are standardized to the extent possible. The equipment and measuring techniques used at each observation well ensures that measurements at each well are of consistent accuracy and reliability.

Tables of water-level data are arranged alphabetically by counties. The site identification number, based on latitude and longitude, for a given well is the 15-digit numeric value that appears in the upper left corner of the station description. The secondary identification number is the local well number, an alphanumeric value, derived from the township, range, and section location of the well (fig. 10).

Water-level records are obtained from direct measurements with a chalked steel tape, electric line, airline, or from the graph of a water-level recorder. The water-level measurements in this report are in feet with reference to land-surface datum. Land-surface datum is a plane that is approximately at land surface at each well. The elevation of the land-surface datum is given in the well description. The height of the measuring point above or below land-surface datum is given in each well description. Water levels in wells equipped with recording gages are reported for every fifth day and the end of each month (EOM).

Water-level measurements are reported to the nearest hundredth of a foot. Estimates, indicated by an "e" may be reported in tenths of a foot. Adjustments to the water level recorder chart are indicated by an "a". The error of water-level measurements may be, at most, a few hundredths of a foot.

Data Presentation

Each well record consists of two parts: the station description, and the table of water levels observed during the water year. The description of the well is presented by headings preceding the tabular data. The following explains the information presented under each heading.

LOCATION.--This paragraph follows the well identification number and includes the latitude and longitude (given in degrees, minutes, and seconds), the hydrologic unit number, the distance and direction from a geographic point of reference, and the well owner's name.

AQUIFER.--This entry is the aquifer(s) name (if one exists) and geologic age of the strata open to the well.

WELL CHARACTERISTICS.--This entry describes the well depth, casing diameter, casing depth, opening or screened interval(s), method of construction, and use of water from the well.

INSTRUMENTATION.--This paragraph provides information on the frequency of measurement and the collection method used.

DATUM.--This entry includes the land-surface elevation and the measuring point at the well. The elevation of the land-surface datum is described in feet above (or below) sea level; it is reported with a precision depending on the method of determination. The measuring point is described physically and in relation to land surface.

REMARKS.--This entry describes factors that may influence the water level in a well or the measurement of the water level, and any information not presented in the other parts of the station description but considered useful.

PERIOD OF RECORD.--This entry indicates the period for which there are published records for the well. It reports the month and year of the beginning of publication of water-level records by the U.S. Geological Survey.

REVISED RECORDS.--If any revisions of previously published data were made for water-levels, the Water Data Report in which they appeared and year published would appear here.

EXTREMES FOR PERIOD OF RECORD.--This entry contains the highest and lowest water levels for the period of record, below land-surface datum, and the dates of their occurrence.

A table of water levels follows the station description for each well. Water levels are reported in feet below land-surface datum. For wells equipped with recorders, only abbreviated tables are published. The highest and lowest water levels of the water year and the dates of occurrence are shown on a line below the abbreviated table. Because all values are not published for wells with recorders, the extremes may be values that are not listed in the table. Missing records are indicated by dashes in place of the water level.

Hydrographs which are representative of hydrologic conditions in the important aquifers in Iowa are included for 20 wells.

Only water-level data from a national network of observation wells are given in this report. This data is intended to provide a sampling and historical record of water-level changes in the Nation's most important aquifers. Locations of the observation wells in this network in Iowa are shown in figure 7.

Records of Ground-Water Quality

Records of ground-water quality in this report differ from other types of records in that for most sampling sites, they consist of only one set of measurements for the water year. The quality of ground water ordinarily changes only slowly; therefore, for most general purposes: one annual sampling, or only a few samples taken at infrequent intervals during the year, is sufficient. Frequent measurement of the same constituents is not necessary unless one is concerned with a particular problem, such as monitoring for trends in nitrate concentration. In the special cases where the quality of ground water may change more rapidly, more frequent measurements are made to identify the nature of the changes.

The records of ground-water quality in this report were obtained as a part a statewide ground-water quality monitoring network operated by the Iowa District. All samples were obtained from municipal wells throughout Iowa. This program is conducted in cooperation with the University of Iowa Hygienic Laboratory (UHL) and the Iowa Department of Natural Resources (Geological Survey Bureau). All samples are collected by USGS personnel, field-preserved and submitted to UHL for analysis. Chemical analyses include common constituents (major ions), nutrients, organic compounds, radio nuclides and pesticides. Approximately 10 percent of the samples receive additional analyses for about 90 organic priority pollutants; however, these analyses are not presented in this report, but are on file in the Iowa District Office.

Most methods for collecting and analyzing water samples are described in the “U.S. Geological Survey Techniques of Water-Resources Investigations” manuals listed on a following page. The values reported in this report represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. All samples were obtained by trained personnel. The wells sampled were pumped long enough to assure that the water collected came directly from the aquifer and had not stood for a long time in the well casing where it would have been exposed to the atmosphere and to the material comprising the casings. The samples collected represent raw water.

Data Presentation

The records of ground-water quality are published in a section titled GROUND-WATER QUALITY DATA immediately following the ground-water-level records. Data for quality of ground water are listed alphabetically by county, and are identified by station number. The prime identification number for wells sampled is the 15-digit station number derived from the latitude-longitude locations. No descriptive statements are given for ground-water-quality records; however, the station number, date and time of sampling, depth of well, and other pertinent data are given in the table containing the chemical analyses of the ground water. The REMARK codes listed for surface-water-quality records are also applicable to ground-water-quality records.

Explanation of Quality of Ground-Water Data Tables -- Descriptive Headings

Station number	Local well number	Date	Local well name	County	Sample date	Sample time	Aquifer code	Total depth of well (ft)
411441094401602	075N33W32CDDD	1943	BRIDGEWATER 1	ADAIR	08-11-92	1130	111ALVM	49

STATION NUMBER**:** 15-digit number based on grid system of latitude and longitude.
LOCAL WELL NUMBER**:** Refers to the Bureau of Land Management System of land subdivision.
DATE: The date that construction on the well was completed.
LOCAL WELL NAME**:** Name used by community to identify well.
COUNTY: The name of the county where the well is located.
SAMPLE DATE: Date the well was sampled.
SAMPLE TIME: Time the sample was collected.
AQUIFER CODE: Refers to the lithologic unit in which the well is completed. Derived from two digits of the geologic unit, the principal unit which provides the majority of water to the well:

11 - Quaternary	33- Mississippian	36 - Ordovician
21 - Cretaceous	34 - Devonian	37 - Cambrian
32 - Pennsylvanian	35 - Silurian	

The third digit and remaining alphabetic characters refer to the more specific lithologic unit which the well is tapping. The following examples are commonly used units:

Code	General	Specific
111ALVM	Quaternary	(alluvium)
217DKOT	Cretaceous	(Dakota sandstone)
344CDVL	Devonian	(Cedar Valley limestone)

DEPTH OF WELL, TOTAL (FT): Total depth of well in feet.

ACCESS TO USGS WATER DATA

The USGS provides near real-time stage and discharge data for many of the gaging stations equipped with the necessary telemetry and historic daily-mean and peak-flow discharge data for most current or discontinued gaging stations through the world wide web (WWW). This data may be accessed at:

`http://www.usgs.gov`

Some water-quality and ground-water data also are available through the WWW. In addition, data can be provided in various machine-readable formats on magnetic tape , 3-1/2 inch floppy disk or compact disk. Information about the availability of specific types of data or products, and user charges, can be obtained locally from each of the Water Resources Division District Offices (See address on the back of the title page.)

The Iowa District maintains a web site highlighting many of the District’s activities. Many of the continuous stream gages presented in these reports have near-real-time data available, and all gages have historic data available. This data may be accessed at:

`http://ia.water.usgs.gov`

DEFINITION OF TERMS

Specialized technical terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. Definitions of common terms such as algae, water level, and precipitation are given in standard dictionaries. Not all terms defined in this alphabetical list apply to every State. See also table for converting inch/pound units to International System (SI) units on the inside of the back cover.

Acid neutralizing capacity (ANC) is the equivalent sum of all bases or base-producing materials, solutes plus particulates, in an aqueous system that can be titrated with acid to an equivalence point. This term designates titration of an "unfiltered" sample (formerly reported as alkalinity).

Acre-foot (AC-FT, acre-ft) is a unit of volume, commonly used to measure quantities of water used or stored, equivalent to the volume of water required to cover 1 acre to a depth of 1 foot and equivalent to 43,560 cubic feet, 325,851 gallons, or 1,233 cubic meters. (See also "Annual runoff")

Adenosine triphosphate (ATP) is an organic, phosphate-rich compound important in the transfer of energy in organisms. Its central role in living cells makes ATP an excellent indicator of the presence of living material in water. A measurement of ATP therefore provides a sensitive and rapid estimate of biomass. ATP is reported in micrograms per liter.

Algal growth potential (AGP) is the maximum algal dry weight biomass that can be produced in a natural water sample under standardized laboratory conditions. The growth potential is the algal biomass present at stationary phase and is expressed as milligrams dry weight of algae produced per liter of sample. (See also "Biomass" and "Dry weight")

Alkalinity is the capacity of solutes in an aqueous system to neutralize acid. This term designates titration of a "filtered" sample.

Annual runoff is the total quantity of water that is discharged ("runs off") from a drainage basin in a year. Data reports may present annual runoff data as volumes in acre-feet, as discharges per unit of drainage area in cubic feet per second per square mile, or as depths of water on the drainage basin in inches.

Annual 7-day minimum is the lowest mean value for any 7-consecutive-day period in a year. Annual 7-day minimum values are reported herein for the calendar year and the water year (October 1 through September 30). Most low-flow frequency analyses use a climatic year (April 1-March 31), which tends to prevent the low-flow period from being artificially split between adjacent years. The date shown in the summary statistics table is the initial date of the 7-day period. (This value should not be confused with the 7-day, 10-year low-flow statistic.)

Aroclor is the registered trademark for a group of polychlorinated biphenyls that were manufactured by the Monsanto Company prior to 1976. Aroclors are assigned specific 4-digit reference numbers dependent upon molecular type and degree of substitution of the biphenyl ring hydrogen atoms by chlorine atoms. The first two digits of a numbered aroclor represent the molecular type, and the last two digits represent the percentage weight of the hydrogen-substituted chlorine.

Artificial substrate is a device that is purposely placed in a stream or lake for colonization of organisms. The artificial substrate simplifies the community structure by standardizing the substrate from which each sample is collected. Examples of artificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and multiplate samplers (made of hardboard) for benthic organism collection, and plexiglass strips for periphyton collection. (See also "Substrate")

Ash mass is the mass or amount of residue present after the residue from the dry mass determination has been ashed in a muffle furnace at a temperature of 500 °C for 1 hour. Ash mass of zooplankton and phytoplankton is expressed in grams per cubic meter (g/m^3), and periphyton and benthic organisms in grams per square meter (g/m^2). (See also "Biomass" and "Dry mass")

Aspect is the direction toward which a slope faces with respect to the compass.

Bacteria are microscopic unicellular organisms, typically spherical, rodlike, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, whereas others perform an essential role in nature in the recycling of materials; for example, by decomposing organic matter into a form available for reuse by plants.

Bankfull stage, as used in this report, is the stage at which a stream first overflows its natural banks formed by floods with 1- to 3-year recurrence intervals.

Base discharge (for peak discharge) is a discharge value, determined for selected stations, above which peak discharge data are published. The base discharge at each station is selected so that an average of about three peak flows per year will be published. (See also “Peak flow”)

Base flow is sustained flow of a stream in the absence of direct runoff. It includes natural and human-induced streamflows. Natural base flow is sustained largely by ground-water discharge.

Bedload is material in transport that is supported primarily by the streambed. In this report, bedload is considered to consist of particles in transit from the bed to an elevation equal to the top of the bedload sampler nozzle (ranging from 0.25 to 0.5 foot) that are retained in the bedload sampler. A sample collected with a pressure-differential bedload sampler also may contain a component of the suspended load.

Bedload discharge (tons per day) is the rate of sediment moving as bedload, reported as dry weight, that passes through a cross section in a given time. NOTE: Bedload discharge values in this report may include a component of the suspended-sediment discharge. A correction may be necessary when computing the total sediment discharge by summing the bedload discharge and the suspended-sediment discharge. (See also “Bedload,” “Dry weight,” “Sediment,” and “Suspended-sediment discharge”)

Bed material is the sediment mixture of which a streambed, lake, pond, reservoir, or estuary bottom is composed. (See also “Bedload” and “Sediment”)

Benthic organisms are the group of organisms inhabiting the bottom of an aquatic environment. They include a number of types of organisms, such as bacteria, fungi, insect larvae and nymphs, snails, clams, and crayfish. They are useful as indicators of water quality.

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by microorganisms, such as bacteria.

Biomass is the amount of living matter present at any given time, expressed as mass per unit area or volume of habitat.

Biomass pigment ratio is an indicator of the total proportion of periphyton that are autotrophic (plants). This is also called the Autotrophic Index.

Blue-green algae (*Cyanophyta*) are a group of phytoplankton organisms having a blue pigment, in addition to the green pigment called chlorophyll. Blue-green algae often cause nuisance conditions in water. Concentrations are expressed as a number of cells per milliliter (cells/mL) of sample. (See also “Phytoplankton”)

Bottom material (See “Bed material”)

Bulk electrical conductivity is the combined electrical conductivity of all material within a doughnut-shaped volume surrounding an induction probe. Bulk conductivity is affected by different physical and chemical properties of the material including the dissolved solids content of the pore water and lithology and porosity of the rock.

Cells/volume refers to the number of cells of any organism that is counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample volume, and are generally reported as cells or units per milliliter (mL) or liter (L).

Cells volume (biovolume) determination is one of several common methods used to estimate biomass of algae in aquatic systems. Cell members of algae are frequently used in aquatic surveys as an indicator of algal production. However, cell numbers alone cannot represent true biomass because of considerable cell-size variation among the algal species. Cell volume (μm^3) is determined by obtaining critical cell measurements or cell dimensions (for example, length, width, height, or radius) for 20 to 50 cells of each important species to obtain an average biovolume per cell. Cells are categorized according to the correspondence of their cellular shape to the nearest geometric solid or combinations of simple solids (for example, spheres, cones, or cylinders). Representative formulae used to compute biovolume are as follows:

sphere $4/3\ \pi r^3$ cone $1/3\ \pi r^3 h$ cylinder $\pi r^3 h$.

pi (π) is the ratio of the circumference to the diameter of a circle; pi = 3.14159….

From cell volume, total algal biomass expressed as biovolume ($\mu m^3/mL$) is thus determined by multiplying the number of cells of a given species by its average cell volume and then summing these volumes for all species.

Cfs-day (See “Cubic foot per second-day”)

Channel bars, as used in this report, are the lowest prominent geomorphic features higher than the channel bed.

Chemical oxygen demand (COD) is a measure of the chemically oxidizable material in the water and furnishes an approximation of the amount of organic and reducing material present. The determined value may correlate with BOD or with carbonaceous organic pollution from sewage or industrial wastes. [See also “Biochemical oxygen demand (BOD)”]

***Clostridium perfringens** (C. perfringens)* is a spore-forming bacterium that is common in the feces of human and other warmblooded animals. Clostridial spores are being used experimentally as an indicator of past fecal contamination and presence of microorganisms that are resistant to disinfection and environmental stresses. (See also “Bacteria”)

Coliphages are viruses that infect and replicate in coliform bacteria. They are indicative of sewage contamination of water and of the survival and transport of viruses in the environment.

Color unit is produced by 1 milligram per liter of platinum in the form of the chloroplatinate ion. Color is expressed in units of the platinum-cobalt scale.

Confined aquifer is a term used to describe an aquifer containing water between two relatively impermeable boundaries. The water level in a well tapping a confined aquifer stands above the top of the confined aquifer and can be higher or lower than the water table that may be present in the material above it. In some cases, the water level can rise above the ground surface, yielding a flowing well.

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

Continuous-record station is a site where data are collected with sufficient frequency to define daily mean values and variations within a day.

Control designates a feature in the channel that physically affects the water-surface elevation and thereby determines the stage-discharge relation at the gage. This feature may be a constriction of the channel, a bedrock outcrop, a gravel bar, an artificial structure, or a uniform cross section over a long reach of the channel.

Control structure, as used in this report, is a structure on a stream or canal that is used to regulate the flow or stage of the stream or to prevent the intrusion of saltwater.

Cubic foot per second (CFS, ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point in 1 second. It is equivalent to approximately 7.48 gallons per second or approximately 449 gallons per minute, or 0.02832 cubic meters per second. The term “second-foot” sometimes is used synonymously with “cubic foot per second” but is now obsolete.

Cubic foot per second-day (CFS-DAY, Cfs-day, $[(ft^3/s)/d]$) 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, 1.98347 acre-feet, 646,317 gallons, or 2,446.6 cubic meters. The daily mean discharges reported in the daily value data tables are numerically equal to the daily volumes in cfs-days, and the totals also represent volumes in cfs-days.

Cubic foot per second per square mile [CFSM, $(ft^3/s)/mi^2$] is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming the runoff is distributed uniformly in time and area. (See also “Annual runoff”)

Daily mean suspended-sediment concentration is the time-weighted concentration of suspended sediment passing a stream cross section during a 24-hour day. (See also “Sediment” and “Suspended-sediment concentration”)

Daily-record station is a site where data are collected with sufficient frequency to develop a record of one or more data values per day. The frequency of data collection can range from continuous recording to periodic sample or data collection on a daily or near-daily basis.

Data collection platform (DCP) is an electronic instrument that collects, processes, and stores data from various sensors, and transmits the data by satellite data relay, line-of-sight radio, and/or landline telemetry.

Data logger is a microprocessor-based data acquisition system designed specifically to acquire, process, and store data. Data are usually downloaded from onsite data loggers for entry into office data systems.

Datum is a surface or point relative to which measurements of height and/or horizontal position are reported. A vertical datum is a horizontal surface used as the zero point for measurements of gage height, stage, or elevation; a horizontal datum is a reference for positions given in terms of latitude-longitude, State Plane coordinates, or UTM coordinates. (See also “Gage datum,” “Land-surface datum,” “National Geodetic Vertical Datum of 1929,” and “North American Vertical Datum of 1988”)

Diatoms are the unicellular or colonial algae having a siliceous shell. Their concentrations are expressed as number of cells per milliliter (cells/mL) of sample. (See also “Phytoplankton”)

Diel is of or pertaining to a 24-hour period of time; a regular daily cycle.

Discharge, or **flow**, is the rate that matter passes through a cross section of a stream channel or other water body per unit of time. The term commonly refers to the volume of water (including, unless otherwise stated, any sediment or other constituents suspended or dissolved in the water) that passes a cross section in a stream channel, canal, pipeline, etc., within a given period of time (cubic feet per second). Discharge also can apply to the rate at which constituents, such as suspended sediment, bedload, and dissolved or suspended chemicals, pass through a cross section, in which cases the quantity is expressed as the mass of constituent that passes the cross section in a given period of time (tons per day).

Dissolved refers to that material in a representative water sample that passes through a 0.45-micrometer membrane filter. This is a convenient operational definition used by Federal and State agencies that collect water-quality data. Determinations of "dissolved" constituent concentrations are made on sample water that has been filtered.

Dissolved oxygen (DO) is the molecular oxygen (oxygen gas) dissolved in water. The concentration in water is a function of atmospheric pressure, temperature, and dissolved-solids concentration of the water. The ability of water to retain oxygen decreases with increasing temperature or dissolved-solids concentration. Photosynthesis and respiration by plants commonly cause diurnal variations in dissolved-oxygen concentration in water from some streams.

Dissolved-solids concentration in water is the quantity of dissolved material in a sample of water. It is determined either analytically by the "residue-on-evaporation" method, or mathematically by totaling the concentrations of individual constituents reported in a comprehensive chemical analysis. During the analytical determination, the bicarbonate (generally a major dissolved component of water) is converted to carbonate. In the mathematical calculation, the bicarbonate value, in milligrams per liter, is multiplied by 0.4926 to convert it to carbonate. Alternatively, alkalinity concentration (as mg/L $CaCO_3$) can be converted to carbonate concentration by multiplying by 0.60.

Diversity index (H) (Shannon index) is a numerical expression of evenness of distribution of aquatic organisms. The formula for diversity index is:

$$\bar{d} = -\sum_{i \approx 1}^{s} \frac{n_i}{n} \log_2 \frac{n_i}{n} ,$$

where n_i is the number of individuals per taxon, n is the total number of individuals, and s is the total number of taxa in the sample of the community. Index values range from zero, when all the organisms in the sample are the same, to some positive number, when some or all of the organisms in the sample are different.

Drainage area of a stream at a specific location is that area upstream from the location, measured in a horizontal plane, that has a common outlet at the site for its surface runoff from precipitation that normally drains by gravity into a stream. Drainage areas given herein include all closed basins, or noncontributing areas, within the area unless otherwise specified.

Drainage basin is a part of the Earth's surface that contains a drainage system with a common outlet for its surface runoff. (See "Drainage area")

Dry mass refers to the mass of residue present after drying in an oven at 105 °C, until the mass remains unchanged. This mass represents the total organic matter, ash and sediment, in the sample. Dry-mass values are expressed in the same units as ash mass. (See also "Ash mass," "Biomass," and "Wet mass")

Dry weight refers to the weight of animal tissue after it has been dried in an oven at 65 ˚C until a constant weight is achieved. Dry weight represents total organic and inorganic matter in the tissue. (See also "Wet weight")

Embeddedness is the degree to which gravel-sized and larger particles are surrounded or enclosed by finer-sized particles. (See also "Substrate embeddedness class")

Enterococcus bacteria are commonly found in the feces of humans and other warmblooded animals. Although some strains are ubiquitous and not related to fecal pollution, the presence of enterococci in water is an indication of fecal pollution and the possible presence of enteric pathogens. Enterococcus bacteria are those bacteria that produce pink to red colonies with black or reddish-brown precipitate after incubation at 41 °C on mE agar (nutrient medium for bacterial growth) and subsequent transfer to EIA medium. Enterococci include *Streptococcus feacalis, Streptococcus feacium, Streptococcus avium,* and their variants. (See also "Bacteria")

EPT Index is the total number of distinct taxa within the insect orders Ephemeroptera, Plecoptera, and Trichoptera. This index summarizes the taxa richness within the aquatic insects that are generally considered pollution sensitive; the index usually decreases with pollution.

Escherichia coli *(E. coli)* are bacteria present in the intestine and feces of warmblooded animals. *E. coli* are a member species of the fecal coliform group of indicator bacteria. In the laboratory, they are defined as those bacteria that produce yellow or yellow-brown colonies on a filter pad saturated with urea substrate broth after primary culturing for 22 to 24 hours at 44.5 ˚C on mTEC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample. (See also "Bacteria")

Estimated (E) concentration value is reported when an analyte is detected and all criteria for a positive result are met. If the concentration is less than the method detection limit (MDL), an 'E' code will be reported with the value. If the analyte is qualitatively identified as present, but the quantitative determination is substantially more uncertain, the National Water Quality Laboratory will identify the result with an ‘E’ code even though the measured value is greater than the MDL. A value reported with an ‘E’ code should be used with caution. When no analyte is detected in a sample, the default reporting value is the MDL preceded by a less than sign (<).

Euglenoids (*Euglenophyta*) are a group of algae that are usually free-swimming and rarely creeping. They have the ability to grow either photosynthetically in the light or heterotrophically in the dark. (See also “Phytoplankton”)

Extractable organic halides (EOX) are organic compounds that contain halogen atoms such as chlorine. These organic compounds are semivolatile and extractable by ethyl acetate from air-dried streambed sediment. The ethyl acetate extract is combusted, and the concentration is determined by microcoulometric determination of the halides formed. The concentration is reported as micrograms of chlorine per gram of the dry weight of the streambed sediment.

Fecal coliform bacteria are present in the intestines or feces of warmblooded animals. They often are used as indicators of the sanitary quality of the water. In the laboratory, they are defined as all organisms that produce blue colonies within 24 hours when incubated at 44.5 °C plus or minus 0.2 °C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample. (See also “Bacteria”)

Fecal streptococcal bacteria are present in the intestines of warmblooded animals and are ubiquitous in the environment. They are characterized as gram-positive, cocci bacteria that are capable of growth in brain-heart infusion broth. In the laboratory, they are defined as all the organisms that produce red or pink colonies within 48 hours at 35 °C plus or minus 1.0 °C on KF-streptococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample. (See also “Bacteria”)

Fire algae (*Pyrrhophyta*) are free-swimming unicells characterized by a red pigment spot. (See also “Phytoplankton”)

Flow-duration percentiles are values on a scale of 100 that indicate the percentage of time for which a flow is not exceeded. For example, the 90th percentile of river flow is greater than or equal to 90 percent of all recorded flow rates.

Gage datum is a horizontal surface used as a zero point for measurement of stage or gage height. This surface usually is located slightly below the lowest point of the stream bottom such that the gage height is usually slightly greater than the maximum depth of water. Because the gage datum itself is not an actual physical object, the datum usually is defined by specifying the elevations of permanent reference marks such as bridge abutments and survey monuments, and the gage is set to agree with the reference marks. Gage datum is a local datum that is maintained independently of any national geodetic datum. However, if the elevation of the gage datum relative to the national datum (North American Vertical Datum of 1988 or National Geodetic Vertical Datum of 1929) has been determined, then the gage readings can be converted to elevations above the national datum by adding the elevation of the gage datum to the gage reading.

Gage height (G.H.) is the water-surface elevation, in feet above the gage datum. If the water surface is below the gage datum, the gage height is negative. Gage height often is used interchangeably with the more general term “stage,” although gage height is more appropriate when used in reference to a reading on a gage.

Gage values are values that are recorded, transmitted, and/or computed from a gaging station. Gage values typically are collected at 5-, 15-, or 30-minute intervals.

Gaging station is a site on a stream, canal, lake, or reservoir where systematic observations of stage, discharge, or other hydrologic data are obtained.

Gas chromatography/flame ionization detector (GC/FID) is a laboratory analytical method used as a screening technique for semivolatile organic compounds that are extractable from water in methylene chloride.

Geomorphic channel units, as used in this report, are fluvial geomorphic descriptors of channel shape and stream velocity. Pools, riffles, and runs are types of geomorphic channel units considered for National Water-Quality Assessment (NAWQA) Program habitat sampling.

Green algae have chlorophyll pigments similar in color to those of higher green plants. Some forms produce algae mats or floating “moss” in lakes. Their concentrations are expressed as number of cells per milliliter (cells/mL) of sample. (See also “Phytoplankton”)

Habitat, as used in this report, includes all nonliving (physical) aspects of the aquatic ecosystem, although living components like aquatic macrophytes and riparian vegetation also are usually included. Measurements of habitat are typically made over a wider geographic scale than are measurements of species distribution.

Habitat quality index is the qualitative description (level 1) of instream habitat and riparian conditions surrounding the reach sampled. Scores range from 0 to 100 percent with higher scores indicative of desirable habitat conditions for aquatic life. Index only applicable to wadable streams.

Hardness of water is a physical-chemical characteristic that commonly is recognized by the increased quantity of soap required to produce lather. It is computed as the sum of equivalents of polyvalent cations (primarily calcium and magnesium) and is expressed as the equivalent concentration of calcium carbonate ($CaCO_3$).

High tide is the maximum height reached by each rising tide. The high-high and low-high tides are the higher and lower of the two high tides, respectively, of each tidal day. *See NOAA web site: http://www.co-ops.nos.noaa.gov/tideglos.html*

Hilsenhoff's Biotic Index (HBI) is an indicator of organic pollution that uses tolerance values to weight taxa abundances; usually increases with pollution. It is calculated as follows:

$$HBI = sum\frac{(n)(a)}{N} ,$$

where n is the number of individuals of each taxon, a is the tolerance value of each taxon, and N is the total number of organisms in the sample.

Horizontal datum (See "Datum")

Hydrologic index stations referred to in this report are continuous-record gaging stations that have been selected as representative of streamflow patterns for their respective regions. Station locations are shown on index maps.

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as defined by the former Office of Water Data Coordination and delineated on the State Hydrologic Unit Maps by the USGS. Each hydrologic unit is identified by an 8-digit number.

Inch (IN., in.), as used in this report, refers to the depth to which the drainage area would be covered with water if all of the runoff for a given time period were uniformly distributed on it. (See also "Annual runoff")

Instantaneous discharge is the discharge at a particular instant of time. (See also "Discharge")

Island, as used in this report, is a mid-channel bar that has permanent woody vegetation, is flooded once a year on average, and remains stable except during large flood events.

Laboratory reporting level (LRL) is generally equal to twice the yearly determined long-term method detection level (LT-MDL). The LRL controls false negative error. The probability of falsely reporting a nondetection for a sample that contained an analyte at a concentration equal to or greater than the LRL is predicted to be less than or equal to 1 percent. The value of the LRL will be reported with a "less than" (<) remark code for samples in which the analyte was not detected. The National Water Quality Laboratory (NWQL) collects quality-control data from selected analytical methods on a continuing basis to determine LT-MDLs and to establish LRLs. These values are reevaluated annually on the basis of the most current quality-control data and, therefore, may change. [Note: In several previous NWQL documents (NWQL Technical Memorandum 98.07, 1998), the LRL was called the non-detection value or NDV—a term that is no longer used.]

Land-surface datum (lsd) is a datum plane that is approximately at land surface at each ground-water observation well.

Latent heat flux (often used interchangeably with latent heat-flux density) is the amount of heat energy that converts water from liquid to vapor (evaporation) or from vapor to liquid (condensation) across a specified cross-sectional area per unit time. Usually expressed in watts per square meter.

Light-attenuation coefficient, also known as the extinction coefficient, is a measure of water clarity. Light is attenuated according to the Lambert-Beer equation:

$$I = I_o e^{-\lambda L} ,$$

where I_o is the source light intensity, I is the light intensity at length L (in meters) from the source, λ is the light-attenuation coefficient, and e is the base of the natural logarithm. The light-attenuation coefficient is defined as

$$\lambda = -\frac{1}{L}\log_e\frac{I}{I_o} .$$

Lipid is any one of a family of compounds that are insoluble in water and that make up one of the principal components of living cells. Lipids include fats, oils, waxes, and steroids. Many environmental contaminants such as organochlorine pesticides are lipophilic.

Long-term method detection level (LT-MDL) is a detection level derived by determining the standard deviation of a minimum of 24 method detection limit (MDL) spike sample measurements over an extended period of time. LT-MDL data are collected on a continuous basis to assess year-to-year variations in the LT-MDL. The LT-MDL controls false positive error. The chance of falsely reporting a concentration at or greater than the LT-MDL for a sample that did not contain the analyte is predicted to be less than or equal to 1 percent.

Low tide is the minimum height reached by each falling tide. The high-low and low-low tides are the higher and lower of the two low tides, respectively, of each tidal day. *See NOAA web site: http://www.co-ops.nos.noaa.gov/tideglos.html*

Macrophytes are the macroscopic plants in the aquatic environment. The most common macrophytes are the rooted vascular plants that usually are arranged in zones in aquatic ecosystems and restricted in the area by the extent of illumination through the water and sediment deposition along the shoreline.

Mean concentration of suspended sediment (Daily mean suspended-sediment concentration) is the time-weighted concentration of suspended sediment passing a stream cross section during a given time period. (See also “Daily mean suspended-sediment concentration” and “Suspended-sediment concentration”)

Mean discharge (MEAN) is the arithmetic mean of individual daily mean discharges during a specific period. (See also “Discharge”)

Mean high or **low tide** is the average of all high or low tides, respectively, over a specific period.

Mean sea level is a local tidal datum. It is the arithmetic mean of hourly heights observed over the National Tidal Datum Epoch. Shorter series are specified in the name; for example, monthly mean sea level and yearly mean sea level. In order that they may be recovered when needed, such datums are referenced to fixed points known as benchmarks. (See also “Datum”)

Measuring point (MP) is an arbitrary permanent reference point from which the distance to water surface in a well is measured to obtain water level.

Membrane filter is a thin microporous material of specific pore size used to filter bacteria, algae, and other very small particles from water.

Metamorphic stage refers to the stage of development that an organism exhibits during its transformation from an immature form to an adult form. This developmental process exists for most insects, and the degree of difference from the immature stage to the adult form varies from relatively slight to pronounced, with many intermediates. Examples of metamorphic stages of insects are egg-larva-adult or egg-nymph-adult.

Method detection limit (MDL) is the minimum concentration of a substance that can be measured and reported with 99-percent confidence that the analyte concentration is greater than zero. It is determined from the analysis of a sample in a given matrix containing the analyte. At the MDL concentration, the risk of a false positive is predicted to be less than or equal to 1 percent.

Methylene blue active substances (MBAS) are apparent detergents. The determination depends on the formation of a blue color when methylene blue dye reacts with synthetic anionic detergent compounds.

Micrograms per gram (UG/G, µg/g) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the element per unit mass (gram) of material analyzed.

Micrograms per kilogram (UG/KG, µg/kg) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the constituent per unit mass (kilogram) of the material analyzed. One microgram per kilogram is equivalent to 1 part per billion.

Micrograms per liter (UG/L, µg/L) is a unit expressing the concentration of chemical constituents in water as mass (micrograms) of constituent per unit volume (liter) of water. One thousand micrograms per liter is equivalent to 1 milligram per liter. One microgram per liter is equivalent to 1 part per billion.

Microsiemens per centimeter (US/CM, µS/cm) is a unit expressing the amount of electrical conductivity of a solution as measured between opposite faces of a centimeter cube of solution at a specified temperature. Siemens is the International System of Units nomenclature. It is synonymous with mhos and is the reciprocal of resistance in ohms.

Milligrams per liter (MG/L, mg/L) is a unit for expressing the concentration of chemical constituents in water as the mass (milligrams) of constituent per unit volume (liter) of water. Concentration of suspended sediment also is expressed in milligrams per liter and is based on the mass of dry sediment per liter of water-sediment mixture.

Minimum reporting level (MRL) is the smallest measured concentration of a constituent that may be reliably reported by using a given analytical method.

Miscellaneous site, miscellaneous station, or miscellaneous sampling site is a site where streamflow, sediment, and/or water-quality data or water-quality or sediment samples are collected once, or more often on a random or discontinuous basis to provide better areal coverage for defining hydrologic and water-quality conditions over a broad area in a river basin.

Most probable number (MPN) is an index of the number of coliform bacteria that, more probably than any other number, would give the results shown by the laboratory examination; it is not an actual enumeration. MPN is determined from the distribution of gas-positive cultures among multiple inoculated tubes.

Multiple-plate samplers are artificial substrates of known surface area used for obtaining benthic invertebrate samples. They consist of a series of spaced, hardboard plates on an eyebolt.

Nanograms per liter (NG/L, ng/L) is a unit expressing the concentration of chemical constituents in solution as mass (nanograms) of solute per unit volume (liter) of water. One million nanograms per liter is equivalent to 1 milligram per liter.

National Geodetic Vertical Datum of 1929 (NGVD of 1929) is a fixed reference adopted as a standard geodetic datum for elevations determined by leveling. It was formerly called "Sea Level Datum of 1929" or "mean sea level." Although the datum was derived from the mean sea level at 26 tide stations**,** it does not necessarily represent local mean sea level at any particular place. *See NOAA web site: http://www.ngs.noaa.gov/faq.shtml#WhatVD29VD88* (See "North American Vertical Datum of 1988")

Natural substrate refers to any naturally occurring immersed or submersed solid surface, such as a rock or tree, upon which an organism lives. (See also "Substrate")

Nekton are the consumers in the aquatic environment and consist of large free-swimming organisms that are capable of sustained, directed mobility.

Nephelometric turbidity unit (NTU) is the measurement for reporting turbidity that is based on use of a standard suspension of formazin. Turbidity measured in NTU uses nephelometric methods that depend on passing specific light of a specific wavelength through the sample.

North American Vertical Datum of 1988 (NAVD 1988) is a fixed reference adopted as the official civilian vertical datum for elevations determined by Federal surveying and mapping activities in the United States. This datum was established in 1991 by minimum-constraint adjustment of the Canadian**,** Mexican, and United States first-order terrestrial leveling networks.

Open or **screened interval** is the length of unscreened opening or of well screen through which water enters a well, in feet below land surface.

Organic carbon (OC) is a measure of organic matter present in aqueous solution, suspension, or bottom sediment. May be reported as dissolved organic carbon (DOC), particulate organic carbon (POC), or total organic carbon (TOC).

Organic mass or **volatile mass** of a living substance is the difference between the dry mass and ash mass and represents the actual mass of the living matter. Organic mass is expressed in the same units as for ash mass and dry mass. (See also "Ash mass," "Biomass," and "Dry mass")

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per area habitat, usually square meter (m^2), acre, or hectare. Periphyton, benthic organisms, and macrophytes are expressed in these terms.

Organism count/volume refers to the number of organisms collected and enumerated in a sample and adjusted to the number per sample volume, usually milliliter (mL) or liter (L). Numbers of planktonic organisms can be expressed in these terms.

Organochlorine compounds are any chemicals that contain carbon and chlorine. Organochlorine compounds that are important in investigations of water, sediment, and biological quality include certain pesticides and industrial compounds.

Parameter code is a 5-digit number used in the USGS computerized data system, National Water Information System (NWIS), to uniquely identify a specific constituent or property.

Partial-record station is a site where discrete measurements of one or more hydrologic parameters are obtained over a period of time without continuous data being recorded or computed. A common example is a crest-stage gage partial-record station at which only peak stages and flows are recorded.

Particle size is the diameter, in millimeters (mm), of a particle determined by sieve or sedimentation methods. The sedimentation method utilizes the principle of Stokes law to calculate sediment particle sizes. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube, sedigraph) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification, as used in this report, agrees with the recommendation made by the American Geophysical Union Subcommittee on Sediment Terminology. The classification is as follows:

Classification	Size (mm)	Method of analysis
Clay	>0.00024 - 0.004	Sedimentation
Silt	>0.004 - 0.062	Sedimentation
Sand	>0.062 - 2.0	Sedimentation/sieve
Gravel	>2.0 - 64.0	Sieve
Cobble	>64 - 256	Manual measurement
Boulder	>256	Manual measurement

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. For the sedimentation method, most of the organic matter is removed, and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native water analysis.

Peak flow (peak stage) is an instantaneous local maximum value in the continuous time series of streamflows or stages, preceded by a period of increasing values and followed by a period of decreasing values. Several peak values ordinarily occur in a year. The maximum peak value in a year is called the annual peak; peaks lower than the annual peak are called secondary peaks. Occasionally, the annual peak may not be the maximum value for the year; in such cases, the maximum value occurs at midnight at the beginning or end of the year, on the recession from or rise toward a higher peak in the adjoining year. If values are recorded at a discrete series of times, the peak recorded value may be taken as an approximation of the true peak, which may occur between the recording instants. If the values are recorded with finite precision, a sequence of equal recorded values may occur at the peak; in this case, the first value is taken as the peak.

Percent composition or **percent of total** is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population, in terms of types, numbers, weight, mass, or volume.

Percent shading is a measure of the amount of sunlight potentially reaching the stream. A clinometer is used to measure left and right bank canopy angles. These values are added together, divided by 180, and multiplied by 100 to compute percentage of shade.

Periodic-record station is a site where stage, discharge, sediment, chemical, physical, or other hydrologic measurements are made one or more times during a year but at a frequency insufficient to develop a daily record.

Periphyton is the assemblage of microorganisms attached to and living upon submerged solid surfaces. Although primarily consisting of algae, they also include bacteria, fungi, protozoa, rotifers, and other small organisms. Periphyton are useful indicators of water quality.

Pesticides are chemical compounds used to control undesirable organisms. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides.

pH of water is the negative logarithm of the hydrogen-ion activity. Solutions with pH less than 7.0 standard units are termed "acidic," and solutions with a pH greater than 7.0 are termed "basic." Solutions with a pH of 7.0 are neutral. The presence and concentration of many dissolved chemical constituents found in water are affected, in part, by the hydrogen-ion activity of water. Biological processes including growth, distribution of organisms, and toxicity of the water to organisms also are affected, in part, by the hydrogen-ion activity of water.

Phytoplankton is the plant part of the plankton. They are usually microscopic, and their movement is subject to the water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials to the surrounding water, the phytoplankton have a profound effect upon the quality of the water. They are the primary food producers in the aquatic environment and commonly are known as algae. (See also "Plankton")

Picocurie (PC, pCi) is one trillionth (1×10^{-12}) of the amount of radioactive nuclide represented by a curie (Ci). A curie is the quantity of radioactive nuclide that yields 3.7×10^{10} radioactive disintegrations per second (dps). A picocurie yields 0.037 dps, or 2.22 dpm (disintegrations per minute).

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers. Concentrations are expressed as a number of cells per milliliter (cells/mL) of sample.

Polychlorinated biphenyls (PCBs) are industrial chemicals that are mixtures of chlorinated biphenyl compounds having various percentages of chlorine. They are similar in structure to organochlorine insecticides.

Polychlorinated naphthalenes (PCNs) are industrial chemicals that are mixtures of chlorinated naphthalene compounds. They have properties and applications similar to polychlorinated biphenyls (PCBs) and have been identified in commercial PCB preparations.

Pool, as used in this report, is a small part of a stream reach with little velocity, commonly with water deeper than surrounding areas.

Primary productivity is a measure of the rate at which new organic matter is formed and accumulated through photosynthetic and chemosynthetic activity of producer organisms (chiefly, green plants). The rate of primary production is estimated by measuring the amount of oxygen released (oxygen method) or the amount of carbon assimilated (carbon method) by the plants.

Primary productivity (carbon method) is expressed as milligrams of carbon per area per unit time [mg C/(m^2/time)] for periphyton and macrophytes or per volume [mg C/(m^3/time)] for phytoplankton. The carbon method defines the amount of carbon dioxide consumed as measured by radioactive carbon (carbon-14). The carbon-14 method is of greater sensitivity than the oxygen light and dark bottle method and is preferred for use with unenriched water samples. Unit time may be either the hour or day, depending on the incubation period. (See also "Primary productivity")

Primary productivity (oxygen method) is expressed as milligrams of oxygen per area per unit time [mg O/(m^2/time)] for periphyton and macrophytes or per volume [mg O/(m^3/time)] for phytoplankton. The oxygen method defines production and respiration rates as estimated from changes in the measured dissolved-oxygen concentration. The oxygen light and dark bottle method is preferred if the rate of primary production is sufficient for accurate measurements to be made within 24 hours. Unit time may be either the hour or day, depending on the incubation period. (See also "Primary productivity")

Radioisotopes are isotopic forms of elements that exhibit radioactivity. Isotopes are varieties of a chemical element that differ in atomic weight but are very nearly alike in chemical properties. The difference arises because the atoms of the isotopic forms of an element differ in the number of neutrons in the nucleus; for example, ordinary chlorine is a mixture of isotopes having atomic weights of 35 and 37, and the natural mixture has an atomic weight of about 35.453. Many of the elements similarly exist as mixtures of isotopes, and a great many new isotopes have been produced in the operation of nuclear devices such as the cyclotron. There are 275 isotopes of the 81 stable elements, in addition to more than 800 radioactive isotopes.

Reach, as used in this report, is a length of stream that is chosen to represent a uniform set of physical, chemical, and biological conditions within a segment. It is the principal sampling unit for collecting physical, chemical, and biological data.

Recoverable from bed (bottom) material is the amount of a given constituent that is in solution after a representative sample of bottom material has been digested by a method (usually using an acid or mixture of acids) that results in dissolution of readily soluble substances. Complete dissolution of all bottom material is not achieved by the digestion treatment and thus the determination represents less than the total amount (that is, less than 95 percent) of the constituent in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results. (See also "Bed material")

Recurrence interval, also referred to as return period, is the average time, usually expressed in years, between occurrences of hydrologic events of a specified type (such as exceedances of a specified high flow or nonexceedance of a specified low flow). The terms "return period" and "recurrence interval" do not imply regular cyclic occurrence. The actual times between occurrences vary randomly, with most of the times being less than the average and a few being substantially greater than the average. For example, the 100-year flood is the flow rate that is exceeded by the annual maximum peak flow at intervals whose average length is 100 years (that is, once in 100 years, on average); almost two-thirds of all exceedances of the 100-year flood occur less than 100 years after the previous exceedance, half occur less than 70 years after the previous exceedance, and about one-eighth occur more than 200 years after the previous exceedance. Similarly, the 7-day, 10-year low flow ($7Q_{10}$) is the flow rate below which the annual minimum 7-day-mean flow dips at intervals whose average length is 10 years (that is, once in 10 years, on average); almost two-thirds of the nonexceedances of the $7Q_{10}$ occur less than 10 years after the previous nonexceedance, half occur less than 7 years after, and about one-eighth occur more than 20 years after the previous nonexceedance. The recurrence interval for annual events is the reciprocal of the annual probability of occurrence. Thus, the 100-year flood has a 1-percent chance of being exceeded by the maximum peak flow in any year, and there is a 10-percent chance in any year that the annual minimum 7-day-mean flow will be less than the $7Q_{10}$.

Replicate samples are a group of samples collected in a manner such that the samples are thought to be essentially identical in composition.

Return period (See "Recurrence interval")

Riffle, as used in this report, is a shallow part of the stream where water flows swiftly over completely or partially submerged obstructions to produce surface agitation.

River mileage is the curvilinear distance, in miles, measured upstream from the mouth along the meandering path of a stream channel in accordance with Bulletin No. 14 (October 1968) of the Water Resources Council and typically is used to denote location along a river.

Run, as used in this report, is a relatively shallow part of a stream with moderate velocity and little or no surface turbulence.

Runoff is the quantity of water that is discharged ("runs off") from a drainage basin during a given time period. Runoff data may be presented as volumes in acre-feet, as mean discharges per unit of drainage area in cubic feet per second per square mile, or as depths of water on the drainage basin in inches. (See also "Annual runoff")

Sea level, as used in this report, refers to one of the two commonly used national vertical datums (NGVD 1929 or NAVD 1988). See separate entries for definitions of these datums. See conversion factors and vertical datum page (inside back cover) for identification of the datum used in this report.

Sediment is solid material that originates mostly from disintegrated rocks; when transported by, suspended in, or deposited from water, it is referred to as “fluvial sediment.” Sediment includes chemical and biochemical precipitates and decomposed organic material, such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are affected by environmental and land-use factors. Some major factors are topography, soil characteristics, land cover, and depth and intensity of precipitation.

Sensible heat flux (often used interchangeably with latent sensible heat-flux density) is the amount of heat energy that moves by turbulent transport through the air across a specified cross-sectional area per unit time and goes to heating (cooling) the air. Usually expressed in watts per square meter.

Seven-day, 10-year low flow ($7Q_{10}$) is the discharge below which the annual 7-day minimum flow falls in 1 year out of 10 on the long-term average. The recurrence interval of the $7Q_{10}$ is 10 years; the chance that the annual 7-day minimum flow will be less than the $7Q_{10}$ is 10 percent in any given year. (See also “Annual 7-day minimum” and “Recurrence interval”)

Shelves, as used in this report, are streambank features extending nearly horizontally from the flood plain to the lower limit of persistent woody vegetation.

Sodium adsorption ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions within soil and is an index of sodium or alkali hazard to the soil. Sodium hazard in water is an index that can be used to evaluate the suitability of water for irrigating crops.

Soil heat flux (often used interchangeably with soil heat-flux density) is the amount of heat energy that moves by conduction across a specified cross-sectional area of soil per unit time and goes to heating (or cooling) the soil. Usually expressed in watts per square meter.

Soil-water content is the water lost from the soil upon drying to constant mass at 105 °C; expressed either as mass of water per unit mass of dry soil or as the volume of water per unit bulk volume of soil.

Specific electrical conductance (conductivity) is a measure of the capacity of water (or other media) to conduct an electrical current. It is expressed in microsiemens per centimeter at 25 °C. Specific electrical conductance is a function of the types and quantity of dissolved substances in water and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is from 55 to 75 percent of the specific conductance (in microsiemens). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

Stable isotope ratio (per MIL) is a unit expressing the ratio of the abundance of two radioactive isotopes. Isotope ratios are used in hydrologic studies to determine the age or source of specific water, to evaluate mixing of different water, as an aid in determining reaction rates, and other chemical or hydrologic processes.

Stage (See “Gage height”)

Stage-discharge relation is the relation between the water-surface elevation, termed stage (gage height), and the volume of water flowing in a channel per unit time.

Streamflow is the discharge that occurs in a natural channel. Although the term “discharge” can be applied to the flow of a canal, the word “streamflow” uniquely describes the discharge in a surface stream course. The term “streamflow” is more general than “runoff” as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Substrate is the physical surface upon which an organism lives.

Substrate embeddedness class is a visual estimate of riffle streambed substrate larger than gravel that is surrounded or covered by fine sediment (<2mm, sand or finer). Below are the class categories expressed as the percentage covered by fine sediment:

0	no gravel or larger substrate	3	26-50 percent
1	> 75 percent	4	5-25 percent
2	51-75 percent	5	< 5 percent

Surface area of a lake is that area (acres) encompassed by the boundary of the lake as shown on USGS topographic maps, or other available maps or photographs. Because surface area changes with lake stage, surface areas listed in this report represent those determined for the stage at the time the maps or photographs were obtained.

Surficial bed material is the upper surface (0.1 to 0.2 foot) of the bed material that is sampled using U.S. Series Bed-Material Samplers.

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of undissolved material in a water-sediment mixture. It is defined operationally as the material retained on a 0.45-micrometer filter.

Suspended, recoverable is the amount of a given constituent that is in solution after the part of a representative suspended water-sediment sample that is retained on a 0.45-micrometer membrane filter has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all the particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures are required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results. Determinations of "suspended, recoverable" constituents are made either by directly analyzing the suspended material collected on the filter or, more commonly, by difference, on the basis of determinations of (1) dissolved and (2) total recoverable concentrations of the constituent. (See also "Suspended")

Suspended sediment is the sediment maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid. (See also "Sediment")

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 foot above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L). The analytical technique uses the mass of all of the sediment and the net weight of the water-sediment mixture in a sample to compute the suspended-sediment concentration. (See also "Sediment" and "Suspended sediment")

Suspended-sediment discharge (tons/d) is the rate of sediment transport, as measured by dry mass or volume, that passes a cross section in a given time. It is calculated in units of tons per day as follows: concentration (mg/L) x discharge (ft^3/s) x 0.0027. (See also "Sediment," "Suspended sediment," and "Suspended-sediment concentration")

Suspended-sediment load is a general term that refers to a given characteristic of the material in suspension that passes a point during a specified period of time. The term needs to be qualified, such as "annual suspended-sediment load" or "sand-size suspended-sediment load," and so on. It is not synonymous with either suspended-sediment discharge or concentration. (See also "Sediment")

Suspended, total is the total amount of a given constituent in the part of a water-sediment sample that is retained on a 0.45-micrometer membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. Knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as "suspended, total." Determinations of "suspended, total" constituents are made either by directly analyzing portions of the suspended material collected on the filter or, more commonly, by difference, on the basis of determinations of (1) dissolved and (2) total concentrations of the constituent. (See also "Suspended")

Suspended solids, total residue at 105 ˚C concentration is the concentration of inorganic and organic material retained on a filter, expressed as milligrams of dry material per liter of water (mg/L). An aliquot of the sample is used for this analysis.

Synoptic studies are short-term investigations of specific water-quality conditions during selected seasonal or hydrologic periods to provide improved spatial resolution for critical water-quality conditions. For the period and conditions sampled, they assess the spatial distribution of selected water-quality conditions in relation to causative factors, such as land use and contaminant sources.

Taxa (Species) richness is the number of species (taxa) present in a defined area or sampling unit.

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchial scheme beginning with Kingdom and ending with Species at the base. The higher the classification level, the fewer features the organisms have in common. For example, the taxonomy of a particular mayfly, *Hexagenia limbata,* is the following:

Kingdom:	Animal
Phylum:	Arthropoda
Class:	Insecta
Order:	Ephemeroptera
Family:	Ephemeridae
Genus:	*Hexagenia*
Species:	*Hexagenia limbata*

Thalweg is the line formed by connecting points of minimum streambed elevation (deepest part of the channel).

Thermograph is an instrument that continuously records variations of temperature on a chart. The more general term "temperature recorder" is used in the table descriptions and refers to any instrument that records temperature whether on a chart, a tape, or any other medium.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water resulting from the mixing of flow proportionally to the duration of the concentration.

Tons per acre-foot (T/acre-ft) is the dry mass (tons) of a constituent per unit volume (acre-foot) of water. It is computed by multiplying the concentration of the constituent, in milligrams per liter, by 0.00136.

Tons per day (T/DAY, tons/d) is a common chemical or sediment discharge unit. It is the quantity of a substance in solution, in suspension, or as bedload that passes a stream section during a 24-hour period. It is equivalent to 2,000 pounds per day, or 0.9072 metric tons per day.

Total is the amount of a given constituent in a representative whole-water (unfiltered) sample, regardless of the constituent's physical or chemical form. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent present in both the dissolved and suspended phases of the sample. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total." (Note that the word "total" does double duty here, indicating both that the sample consists of a water-suspended sediment mixture and that the analytical method determined at least 95 percent of the constituent in the sample.)

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. This group includes coliforms that inhabit the intestine of warmblooded animals and those that inhabit soils. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria that ferment lactose with gas formation within 48 hours at 35 °C. In the laboratory, these bacteria are defined as all the organisms that produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35 °C plus or minus 1.0 °C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 milliliters of sample. (See also "Bacteria")

Total discharge is the quantity of a given constituent, measured as dry mass or volume, that passes a stream cross section per unit of time. When referring to constituents other than water, this term needs to be qualified, such as "total sediment discharge," "total chloride discharge," and so on.

Total in bottom material is the amount of a given constituent in a representative sample of bottom material. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total in bottom material."

Total length (fish) is the straight-line distance from the anterior point of a fish specimen's snout, with the mouth closed, to the posterior end of the caudal (tail) fin, with the lobes of the caudal fin squeezed together.

Total load refers to all of a constituent in transport. When referring to sediment, it includes suspended load plus bed load.

Total organism count is the number of organisms collected and enumerated in any particular sample. (See also "Organism count/volume")

Total recoverable is the amount of a given constituent in a whole-water sample after a sample has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the dissolved and suspended phases of the sample. To achieve comparability of analytical data for whole-water samples, equivalent digestion procedures are required of all laboratories performing such analyses because different digestion procedures may produce different analytical results.

Total sediment discharge is the mass of suspended-sediment plus bed-load transport, measured as dry weight, that passes a cross section in a given time. It is a rate and is reported as tons per day. (See also "Bedload," "Bedload discharge," "Sediment," "Suspended sediment," and "Suspended-sediment concentration")

Total sediment load or **total load** is the sediment in transport as bedload and suspended-sediment load. The term may be qualified, such as "annual suspended-sediment load" or "sand-size suspended-sediment load," and so on. It differs from total sediment discharge in that load refers to the material, whereas discharge refers to the quantity of material, expressed in units of mass per unit time. (See also "Sediment," "Suspended-sediment load," and "Total load")

Transect, as used in this report, is a line across a stream perpendicular to the flow and along which measurements are taken, so that morphological and flow characteristics along the line are described from bank to bank. Unlike a cross section, no attempt is made to determine known elevation points along the line.

Turbidity is the reduction in the transparency of a solution due to the presence of suspended and some dissolved substances. The measurement technique records the collective optical properties of the solution that cause light to be scattered and attenuated rather than transmitted in straight lines; the higher the intensity of scattered or attenuated light, the higher the value of the turbidity. Turbidity is expressed in nephelometric turbidity units (NTU). Depending on the method used, the turbidity units as NTU can be defined as the intensity of light of a specified wavelength scattered or attenuated by suspended particles or absorbed at a method specified angle, usually 90 degrees, from the path of the incident light. Currently approved methods for the measurement of turbidity in the USGS include those that conform to U.S. EPA Method 180.1, ASTM D1889-00, and ISO 7027. Measurements of turbidity by these different methods and different instruments are unlikely to yield equivalent values.

Ultraviolet (UV) absorbance (absorption) at 254 or 280 nanometers is a measure of the aggregate concentration of the mixture of UV absorbing organic materials dissolved in the analyzed water, such as lignin, tannin, humic substances, and various aromatic compounds. UV absorbance (absorption) at 254 or 280 nanometers is measured in UV absorption units per centimeter of pathlength of UV light through a sample.

Unconfined aquifer is an aquifer whose upper surface is a water table free to fluctuate under atmospheric pressure. (See “Water-table aquifer”)

Vertical datum (See “Datum”)

Volatile organic compounds (VOCs) are organic compounds that can be isolated from the water phase of a sample by purging the water sample with inert gas, such as helium, and subsequently analyzed by gas chromatography. Many VOCs are human-made chemicals that are used and produced in the manufacture of paints, adhesives, petroleum products, pharmaceuticals, and refrigerants. They are often components of fuels, solvents, hydraulic fluids, paint thinners, and dry cleaning agents commonly used in urban settings. VOC contamination of drinking-water supplies is a human health concern because many are toxic and are known or suspected human carcinogens.

Water table is that surface in a ground-water body at which the water pressure is equal to the atmospheric pressure.

Water-table aquifer is an unconfined aquifer within which the water table is found.

Water year in USGS reports dealing with surface-water supply is the 12-month period October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 2002, is called the “2002 water year.”

WDR is used as an abbreviation for “Water-Data Report” in the REVISED RECORDS paragraph to refer to State annual hydrologic-data reports. (WRD was used as an abbreviation for “Water-Resources Data” in reports published prior to 1976.)

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

Wet mass is the mass of living matter plus contained water. (See also “Biomass” and “Dry mass”)

Wet weight refers to the weight of animal tissue or other substance including its contained water. (See also “Dry weight”)

WSP is used as an acronym for “Water-Supply Paper” in reference to previously published reports.

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column and often are large enough to be seen with the unaided eye. Zooplankton are secondary consumers feeding upon bacteria, phytoplankton, and detritus. Because they are the grazers in the aquatic environment, the zooplankton are a vital part of the aquatic food web. The zooplankton community is dominated by small crustaceans and rotifers. (See also “Plankton”)

TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS OF THE U.S. GEOLOGICAL SURVEY

The U.S.G.S. publishes a series of manuals describing procedures for planning and conducting specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, section A of book 3 (Applications of Hydraulics) pertains to surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises.

The reports listed below are for sale by the U.S.G.S., Information Services, Box 25286, Federal Center, Denver, Colorado 80225 (authorized agent of the Superintendent of Documents, Government Printing Office). Prepayment is required. Remittance should be made in the form of a check or money order payable to the "U.S. Geological Survey." Prices are not included because they are subject to change. Current prices can be obtained by writing to the above address. When ordering or inquiring about prices for any of these publications, please give the title, book number, chapter number, and mention the "U.S. Geological Survey Techniques of Water-Resources Investigations."

Book 1. Collection of Water Data by Direct Measurement

Section D. Water Quality

1–D1. *Water temperature—influential factors, field measurement, and data presentation*, by H.H. Stevens, Jr., J.F. Ficke, and G.F. Smoot: USGS–TWRI book 1, chap. D1. 1975. 65 p.

1–D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents*, by W.W. Wood: USGS–TWRI book 1, chap. D2. 1976. 24 p.

Book 2. Collection of Environmental Data

Section D. Surface Geophysical Methods

2–D1. *Application of surface geophysics to ground-water investigations,* by A.A.R. Zohdy, G.P. Eaton, and D.R. Mabey: USGS–TWRI book 2, chap. D1. 1974. 116 p.

2–D2. *Application of seismic-refraction techniques to hydrologic studies,* by F.P. Haeni: USGS–TWRI book 2, chap. D2. 1988. 86 p.

Section E. Subsurface Geophysical Methods

2–E1. *Application of borehole geophysics to water-resources investigations,* by W.S. Keys and L.M. MacCary: USGS–TWRI book 2, chap. E1. 1971. 126 p.

2–E2. *Borehole geophysics applied to ground-water investigations,* by W.S. Keys: USGS–TWRI book 2, chap. E2. 1990. 150 p.

Section F. Drilling and Sampling Methods

2–F1. *Application of drilling, coring, and sampling techniques to test holes and wells*, by Eugene Shuter and W.E. Teasdale: USGS–TWRI book 2, chap. F1. 1989. 97 p.

Book 3. Applications of Hydraulics

Section A. Surface-Water Techniques

3–A1. *General field and office procedures for indirect discharge measurements,* by M.A. Benson and Tate Dalrymple: USGS–TWRI book 3, chap. A1. 1967. 30 p.

3–A2. *Measurement of peak discharge by the slope-area method,* by Tate Dalrymple and M.A. Benson: USGS–TWRI book 3, chap. A2. 1967. 12 p.

3–A3. *Measurement of peak discharge at culverts by indirect methods,* by G.L. Bodhaine: USGS–TWRI book 3, chap. A3. 1968. 60 p.

3–A4. *Measurement of peak discharge at width contractions by indirect methods,* by H.F. Matthai: USGS-TWRI book 3, chap. A4. 1967. 44 p.

3–A5. *Measurement of peak discharge at dams by indirect methods,* by Harry Hulsing: USGS–TWRI book 3. chap. A5. 1967. 29 p.

3–A6. *General procedure for gaging streams,* by R.W. Carter and Jacob Davidian: USGS–TWRI book 3, chap. A6. 1968. 13 p.

3–A7. *Stage measurement at gaging stations,* by T.J. Buchanan and W.P. Somers: USGS–TWRI book 3, chap. A7. 1968. 28 p.

3–A8. *Discharge measurements at gaging stations,* by T.J. Buchanan and W.P. Somers: USGS–TWRI book 3, chap. A8. 1969. 65 p.

3–A9. *Measurement of time of travel in streams by dye tracing,* by F.A. Kilpatrick and J.F. Wilson, Jr.: USGS–TWRI book 3, chap. A9. 1989. 27 p.

3–Al0. *Discharge ratings at gaging stations,* by E.J. Kennedy: USGS–TWRI book 3, chap. A10. 1984. 59 p.

3–A11. *Measurement of discharge by the moving-boat method,* by G.F. Smoot and C.E. Novak: USGS–TWRI book 3, chap. A11. 1969. 22 p.

3–A12. *Fluorometric procedures for dye tracing*, Revised, by J.F. Wilson, Jr., E.D. Cobb, and F.A. Kilpatrick: USGS–TWRI book 3, chap. A12. 1986. 34 p.

3–A13. *Computation of continuous records of streamflow*, by E.J. Kennedy: USGS–TWRI book 3, chap. A13. 1983. 53 p.

3–A14. *Use of flumes in measuring discharge,* by F.A. Kilpatrick and V.R. Schneider: USGS–TWRI book 3, chap. A14. 1983. 46 p.

3–A15. *Computation of water-surface profiles in open channels,* by Jacob Davidian: USGS–TWRI book 3, chap. A15. 1984. 48 p.

3–A16. *Measurement of discharge using tracers*, by F.A. Kilpatrick and E.D. Cobb: USGS–TWRI book 3, chap. A16. 1985. 52 p.

3–A17. *Acoustic velocity meter systems,* by Antonius Laenen: USGS–TWRI book 3, chap. A17. 1985. 38 p.

3–A18. *Determination of stream reaeration coefficients by use of tracers,* by F.A. Kilpatrick, R.E. Rathbun, Nobuhiro Yotsukura, G.W. Parker, and L.L. DeLong: USGS–TWRI book 3, chap. A18. 1989. 52 p.

3–A19. *Levels at streamflow gaging stations*, by E.J. Kennedy: USGS–TWRI book 3, chap. A19. 1990. 31 p.

3–A20. *Simulation of soluble waste transport and buildup in surface waters using tracers*, by F.A. Kilpatrick: USGS–TWRI book 3, chap. A20. 1993. 38 p.

3–A21 *Stream-gaging cableways,* by C. Russell Wagner: USGS–TWRI book 3, chap. A21. 1995. 56 p.

Section B. Ground-Water Techniques

3B1. *Aquifer-test design, observation, and data analysis,* by R.W. Stallman: USGS–TWRI book 3, chap. B1. 1971. 26 p.

3–B2. *Introduction to ground-water hydraulics, a programed text for self-instruction*, by G.D. Bennett: USGS–TWRI book 3, chap. B2. 1976. 172 p.

3–B3. *Type curves for selected problems of flow to wells in confined aquifers*, by J.E. Reed: USGS–TWRI book 3, chap. B3. 1980. 106 p.

3–B4. *Regression modeling of ground-water flow,* by R.L. Cooley and R.L. Naff: USGS–TWRI book 3, chap. B4. 1990. 232 p.

3–B4. *Supplement 1. Regression modeling of ground-water flow --Modifications to the computer code for nonlinear regression solution of steady-state ground-water flow problems,* by R.L. Cooley: USGS–TWRI book 3, chap. B4. 1993. 8 p.

3–B5. *Definition of boundary and initial conditions in the analysis of saturated ground-water flow systems—An introduction*, by O.L. Franke, T.E. Reilly, and G.D. Bennett: USGS–TWRI book 3, chap. B5. 1987. 15 p.

3–B6. *The principle of superposition and its application in ground-water hydraulics,* by T.E. Reilly, O.L. Franke, and G.D. Bennett: USGS–TWRI book 3, chap. B6. 1987. 28 p.

3–B7. *Analytical solutions for one-, two-, and three-dimensional solute transport in ground-water systems with uniform flow,* by E.J. Wexler: USGS–TWRI book 3, chap. B7. 1992. 190 p.

3–B8. *System and boundary conceptualization in ground-water flow simulation,* by T.E. Reilly: USGS–TWRI book 3, chap. B8. 2001. 29 p.

Section C. Sedimentation and Erosion Techniques

3–C1. *Fluvial sediment concepts,* by H.P. Guy: USGS–TWRI book 3, chap. C1. 1970. 55 p.

3–C2. *Field methods for measurement of fluvial sediment*, by T.K. Edwards and G.D. Glysson: USGS–TWRI book 3, chap. C2. 1999. 89 p.

3–C3. *Computation of fluvial-sediment discharge,* by George Porterfield: USGS–TWRI book 3, chap. C3. 1972. 66 p.

Book 4. Hydrologic Analysis and Interpretation

Section A. Statistical Analysis

4–A1. *Some statistical tools in hydrology*, by H.C. Riggs: USGS–TWRI book 4, chap. A1. 1968. 39 p.

4–A2. *Frequency curves,* by H.C. Riggs: USGS–TWRI book 4, chap. A2. 1968. 15 p.

4–A3. *Statistical methods in water resources*, by D.R. Helsel and R.M. Hirsch: USGS–TWRI book 4, chap. A3. 1991. Available only online at http://water.usgs.gov/pubs/twri/twri4a3/. (Accessed August 30, 2002.)

Section B. Surface Water

4–B1. *Low-flow investigations,* by H.C. Riggs: USGS–TWRI book 4, chap. B1. 1972. 18 p.

4–B2. *Storage analyses for water supply*, by H.C. Riggs and C.H. Hardison: USGS–TWRI book 4, chap. B2. 1973. 20 p.

4–B3. *Regional analyses of streamflow characteristics,* by H.C. Riggs: USGS–TWRI book 4, chap. B3. 1973. 15 p.

Section D. Interrelated Phases of the Hydrologic Cycle

4–D1. *Computation of rate and volume of stream depletion by wells*, by C.T. Jenkins: USGS–TWRI book 4, chap. D1. 1970. 17 p.

Book 5. Laboratory Analysis

Section A. Water Analysis

5–A1. *Methods for determination of inorganic substances in water and fluvial sediments,* by M.J. Fishman and L.C. Friedman, editors: USGS–TWRI book 5, chap. A1. 1989. 545 p.

5–A2. *Determination of minor elements in water by emission spectroscopy,* by P.R. Barnett and E.C. Mallory, Jr.: USGS–TWRI book 5, chap. A2. 1971. 31 p.

5–A3. *Methods for the determination of organic substances in water and fluvial sediments*, edited by R.L. Wershaw, M.J. Fishman, R.R. Grabbe, and L.E. Lowe: USGS–TWRI book 5, chap. A3. 1987. 80 p.

5–A4. *Methods for collection and analysis of aquatic biological and microbiological samples,* by L.J. Britton and P.E. Greeson, editors: USGS–TWRI book 5, chap. A4. 1989. 363 p.

5–A5. *Methods for determination of radioactive substances in water and fluvial sediments,* by L.L. Thatcher, V.J. Janzer, and K.W. Edwards: USGS–TWRI book 5, chap. A5. 1977. 95 p.

5–A6. *Quality assurance practices for the chemical and biological analyses of water and fluvial sediments,* by L.C. Friedman and D.E. Erdmann: USGS–TWRI book 5, chap. A6. 1982. 181 p.

Section C. Sediment Analysis

5–C1. *Laboratory theory and methods for sediment analysis*, by H.P. Guy: USGS–TWRI book 5, chap. C1. 1969. 58 p.

Book 6. Modeling Techniques

Section A. Ground Water

6–A1. *A modular three-dimensional finite-difference ground-water flow model*, by M.G. McDonald and A.W. Harbaugh: USGS–TWRI book 6, chap. A1. 1988. 586 p.

6–A2. *Documentation of a computer program to simulate aquifer-system compaction using the modular finite-difference ground-water flow model,* by S.A. Leake and D.E. Prudic: USGS–TWRI book 6, chap. A2. 1991. 68 p.

6–A3. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 1: Model Description and User's Manual,* by L.J. Torak: USGS–TWRI book 6, chap. A3. 1993. 136 p.

6–A4. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 2: Derivation of finite-element equations and comparisons with analytical solutions,* by R.L. Cooley: USGS–TWRI book 6, chap. A4. 1992. 108 p.

6–A5. *A modular finite-element model (MODFE) for areal and axisymmetric ground-water-flow problems, Part 3: Design philosophy and programming details,* by L.J. Torak: USGS–TWRI book 6, chap. A5, 1993. 243 p.

6–A6. *A coupled surface-water and ground-water flow model (MODBRANCH) for simulation of stream-aquifer interaction*, by Eric D. Swain and Eliezer J. Wexler: USGS–TWRI book 6, chap. A5,1996. 125 p.

6–A7. *User's guide to SEAWAT: A computer program for simulation of three-dimensional variable-density ground-water flow*, by Weixing Guo and Christian D. Langevin: USGS–TWRI book 6, chap. A7, 2002. 77 p.

Book 7. Automated Data Processing and Computations

Section C. Computer Programs

7–C1. *Finite difference model for aquifer simulation in two dimensions with results of numerical experiments,* by P.C. Trescott, G.F. Pinder, and S.P. Larson: USGS–TWRI book 7, chap. C1. 1976. 116 p.

7–C2. *Computer model of two-dimensional solute transport and dispersion in ground water*, by L.F. Konikow and J.D. Bredehoeft: USGS–TWRI book 7, chap. C2. 1978. 90 p.

7–C3. *A model for simulation of flow in singular and interconnected channels,* by R.W. Schaffranek, R.A. Baltzer, and D.E. Goldberg: USGS–TWRI book 7, chap. C3. 1981. 110 p.

Book 8. Instrumentation

Section A. Instruments for Measurement of Water Level

8–A1. *Methods of measuring water levels in deep wells,* by M.S. Garber and F.C. Koopman: USGS–TWRI book 8, chap. A1. 1968. 23 p.

8–A2. *Installation and service manual for U.S. Geological Survey manometers*, by J.D. Craig: USGS–TWRI book 8, chap. A2. 1983. 57 p.

Section B. Instruments for Measurement of Discharge

8–B2. *Calibration and maintenance of vertical-axis type current meters,* by G.F. Smoot and C.E. Novak: USGS–TWRI book 8, chap. B2. 1968. 15 p.

Book 9. Handbooks for Water-Resources Investigations

Section A. National Field Manual for the Collection of Water-Quality Data

9–A1. *National field manual for the collection of water-quality data: Preparations for water sampling*, by F.D. Wilde, D.B. Radtke, Jacob Gibs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A1. 1998. 47 p.

9–A2. *National field manual for the collection of water-quality data: Selection of equipment for water sampling*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A2. 1998. 94 p.

9–A3. *National field manual for the collection of water-quality data: Cleaning of equipment for water sampling*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A3. 1998. 75 p.

9–A4. *National field manual for the collection of water-quality data: Collection of water samples*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A4. 1999. 156 p.

9–A5. *National field manual for the collection of water-quality data: Processing of water samples*, edited by F.D. Wilde, D.B. Radtke, Jacob Gibs, and R.T. Iwatsubo: USGS–TWRI book 9, chap. A5. 1999, 149 p.

9–A6. *National field manual for the collection of water-quality data: Field measurements*, edited by F.D. Wilde and D.B. Radtke: USGS–TWRI book 9, chap. A6. 1998. Variously paginated.

9–A7. *National field manual for the collection of water-quality data: Biological indicators*, edited by D.N. Myers and F.D. Wilde: USGS–TWRI book 9, chap. A7. 1997 and 1999. Variously paginated.

9–A8. *National field manual for the collection of water-quality data: Bottom-material samples*, by D.B. Radtke: USGS–TWRI book 9, chap. A8. 1998. 48 p.

9–A9. *National field manual for the collection of water-quality data: Safety in field activities*, by S.L. Lane and R.G. Fay: USGS–TWRI book 9, chap. A9. 1998. 60 p.

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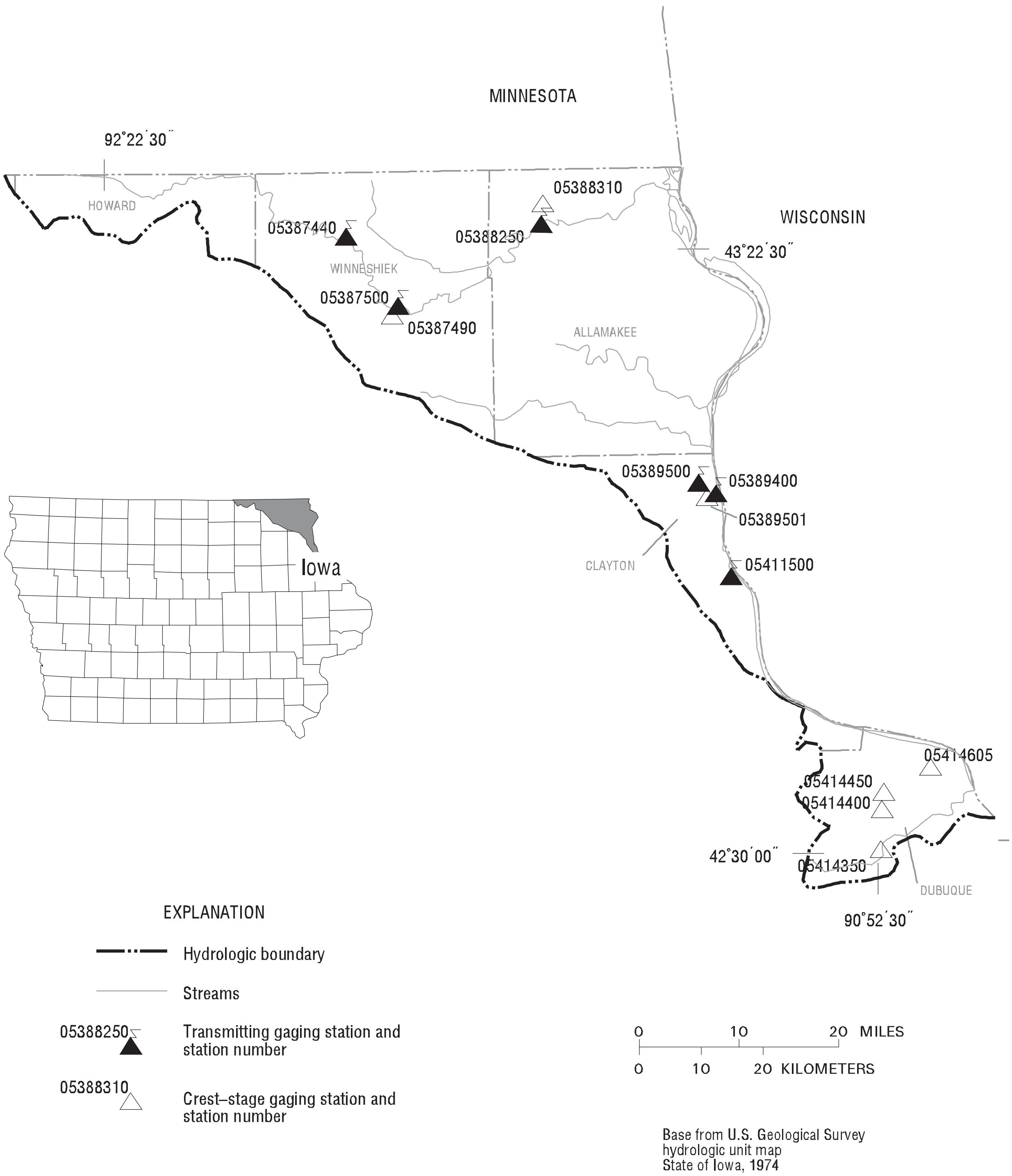


Figure 11. Locations of active continuous-record and crest-stage gaging stations in the Mississippi River drainage basin (northeast Iowa).

Gaging Stations

05387440 Upper Iowa River at Bluffton, IA 56
05387500 Upper Iowa River at Decorah, IA. 58
05388250 Upper Iowa River near Dorchester, IA .60
05389400 Bloody Run Creek near Marquette, IA. .62
05389500 Mississippi River at McGregor, IA. 68
05411500 Mississippi River at Clayton, IA 74

Crest Stage Gaging Stations

05387490 Dry Run Creek near Decorah, IA 350
05388310 Waterloo Creek near Dorchester, IA 350
05389501 Mississippi River Tributary at McGregor, IA. 350
05414350 Little Maquoketa River near Graf, IA 350
05414400 Middle Fork Little Maquoketa River near Rickardsville, IA. 351
05414450 North Fork Little Maquoketa River near Rickardsville, IA 351
05414605 Bloody Run Tributary near Sherrill, IA 351

05387440 UPPER IOWA RIVER AT BLUFFTON, IA

LOCATION.--Lat 43°24'25", long 91°53'56", in $SW^1/_4$ $SW^1/_4$ $NE^1/_4$ sec.10, T.99 N., R.9 W., Winneshiek County, Hydrologic Unit 07060002, on left bank 10 ft downstream of bridge on County Highway W20, 0.5 miles upstream of Silver Creek, and 9.3 mi upstream from Decorah.

DRAINAGE AREA.--367 mi^2.

PERIOD OF RECORD.--September 1957 to July 1977; low-flow measurement site: October 20, 1999 to current year.

GAGE.--Water-stage recorder. Datum of gage is 945.50 ft. above NGVD of 1929.

REMARKS.--Records good. U.S. Geological Survey satellite and telephone modem data collection platform at station.

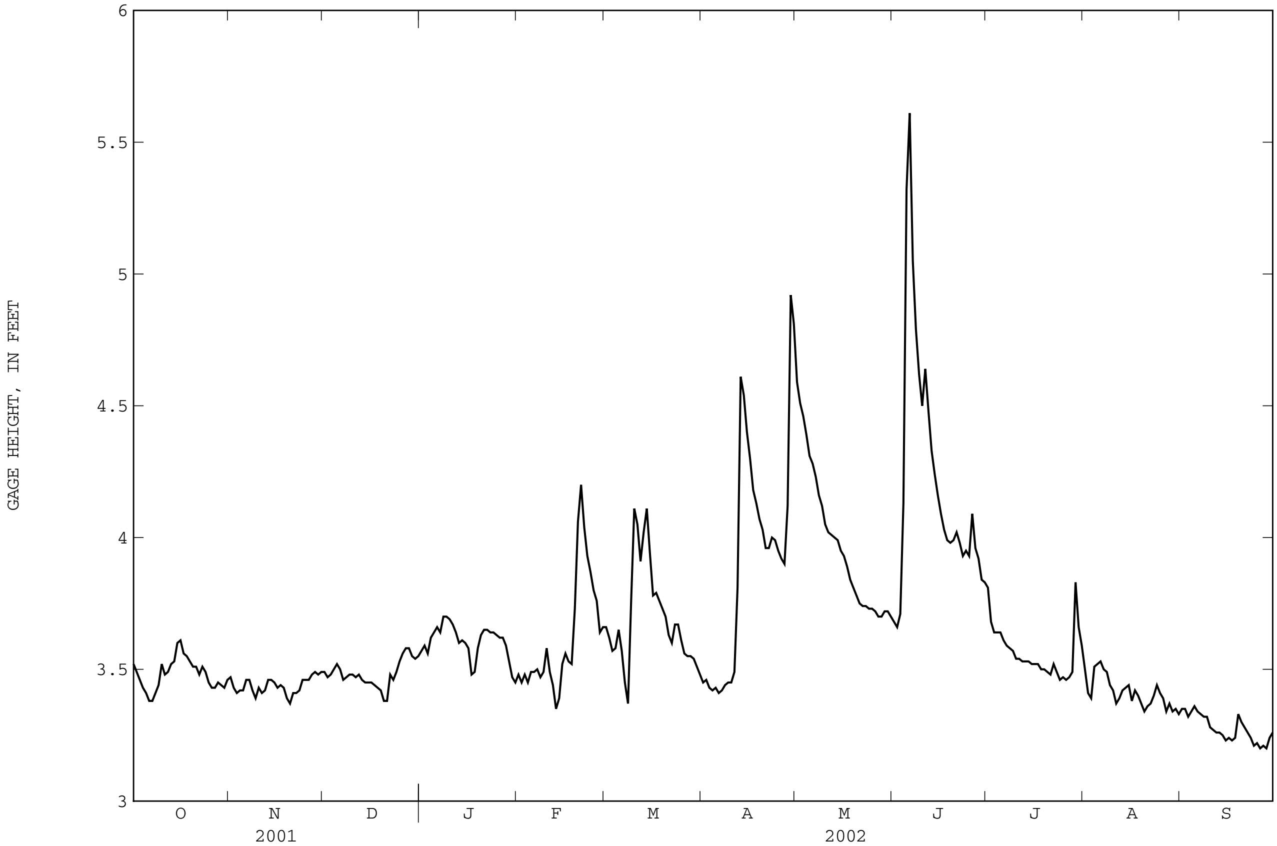
EXTREMES FOR CURRENT WATER YEAR.--Maximum gage height 5.85 ft June 6; minimum gage height 3.16 ft Sept. 24, 28.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of March 27, 1961, discharge 20,200 ft^3/s; Flood of June 21, 1954, discharge 13,600 ft^3/s; on basis of peak flow at Decorah gage, downstream 11.0 miles.

GAGE HEIGHT from dcp, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.52	3.47	3.49	3.57	3.48	3.66	3.45	4.59	3.68	3.81	3.50	3.35
2	3.49	3.43	3.47	3.59	3.45	3.62	3.46	4.51	3.66	3.68	3.41	3.35
3	3.46	3.41	3.48	3.56	3.48	3.57	3.43	4.46	3.71	3.64	3.39	3.32
4	3.43	3.42	3.50	3.62	3.45	3.58	3.42	4.39	4.13	3.64	3.51	3.34
5	3.41	3.42	3.52	3.64	3.49	3.65	3.43	4.31	5.32	3.64	3.52	3.36
6	3.38	3.46	3.50	3.66	3.49	3.57	3.41	4.28	5.61	3.61	3.53	3.34
7	3.38	3.46	3.46	3.64	3.50	3.45	3.42	4.23	5.05	3.59	3.50	3.33
8	3.41	3.42	3.47	3.70	3.47	3.37	3.44	4.16	4.79	3.58	3.49	3.32
9	3.44	3.39	3.48	3.70	3.49	3.76	3.45	4.12	4.62	3.57	3.44	3.32
10	3.52	3.43	3.48	3.69	3.58	4.11	3.45	4.05	4.50	3.54	3.42	3.28
11	3.48	3.41	3.47	3.67	3.49	4.05	3.49	4.02	4.64	3.54	3.37	3.27
12	3.49	3.42	3.48	3.64	3.44	3.91	3.81	4.01	4.48	3.53	3.39	3.26
13	3.52	3.46	3.46	3.60	3.35	4.02	4.61	4.00	4.33	3.53	3.42	3.26
14	3.53	3.46	3.45	3.61	3.39	4.11	4.54	3.99	4.24	3.53	3.43	3.25
15	3.60	3.45	3.45	3.60	3.52	3.94	4.40	3.95	4.16	3.52	3.44	3.23
16	3.61	3.43	3.45	3.58	3.56	3.78	4.30	3.93	4.09	3.52	3.38	3.24
17	3.56	3.44	3.44	3.48	3.53	3.79	4.18	3.89	4.03	3.52	3.42	3.23
18	3.55	3.43	3.43	3.49	3.52	3.76	4.13	3.84	3.99	3.50	3.40	3.24
19	3.53	3.39	3.42	3.58	3.73	3.73	4.07	3.81	3.98	3.50	3.37	3.33
20	3.51	3.37	3.38	3.63	4.06	3.70	4.03	3.78	3.99	3.49	3.34	3.30
21	3.51	3.41	3.38	3.65	4.20	3.63	3.96	3.75	4.02	3.48	3.36	3.28
22	3.48	3.41	3.48	3.65	4.04	3.60	3.96	3.74	3.98	3.52	3.37	3.26
23	3.51	3.42	3.46	3.64	3.93	3.67	4.00	3.74	3.93	3.49	3.40	3.24
24	3.49	3.46	3.49	3.64	3.87	3.67	3.99	3.73	3.95	3.46	3.44	3.21
25	3.45	3.46	3.53	3.63	3.80	3.61	3.95	3.73	3.93	3.47	3.41	3.22
26	3.43	3.46	3.56	3.62	3.76	3.56	3.92	3.72	4.09	3.46	3.39	3.20
27	3.43	3.48	3.58	3.62	3.64	3.55	3.90	3.70	3.96	3.47	3.34	3.21
28	3.45	3.49	3.58	3.59	3.66	3.55	4.12	3.70	3.92	3.49	3.37	3.20
29	3.44	3.48	3.55	3.53	---	3.54	4.92	3.72	3.84	3.83	3.34	3.24
30	3.43	3.49	3.54	3.47	---	3.51	4.81	3.72	3.83	3.66	3.35	3.26
31	3.46	---	3.55	3.45	---	3.48	---	3.70	---	3.59	3.33	---
MEAN	3.48	3.44	3.48	3.60	3.62	3.69	3.92	3.98	4.21	3.56	3.41	3.27
MAX	3.61	3.49	3.58	3.70	4.20	4.11	4.92	4.59	5.61	3.83	3.53	3.36
MIN	3.38	3.37	3.38	3.45	3.35	3.37	3.41	3.70	3.66	3.46	3.33	3.20

05387440 UPPER IOWA RIVER AT BLUFFTON, IA--Continued



05387500 UPPER IOWA RIVER AT DECORAH, IA

LOCATION.--Lat 43°18'19", long 91°47'48", in $NW^1/_4$ $NE^1/_4$ $SW^1/_4$ sec.16, T.98 N., R.8 W., Winneshiek County, Hydrologic Unit 07060002, on right bank 1,200 ft upstream of bridge on College Street, 0.8 miles downstream from Dry Run Creek Cutoff, and 3.0 miles upstream from Trout Run.

DRAINAGE AREA.--511 mi^2.

PERIOD OF RECORD.--Discharge records from August 1951 to September 1983; Stage only records from October 20, 1999 to current year.

GAGE.--Water-stage recorder. Datum of gage is 850.00 ft. above NGVD of 1929.

REMARKS.--Records good. U.S. Geological Survey satellite and telephone modem data collection platform at station.

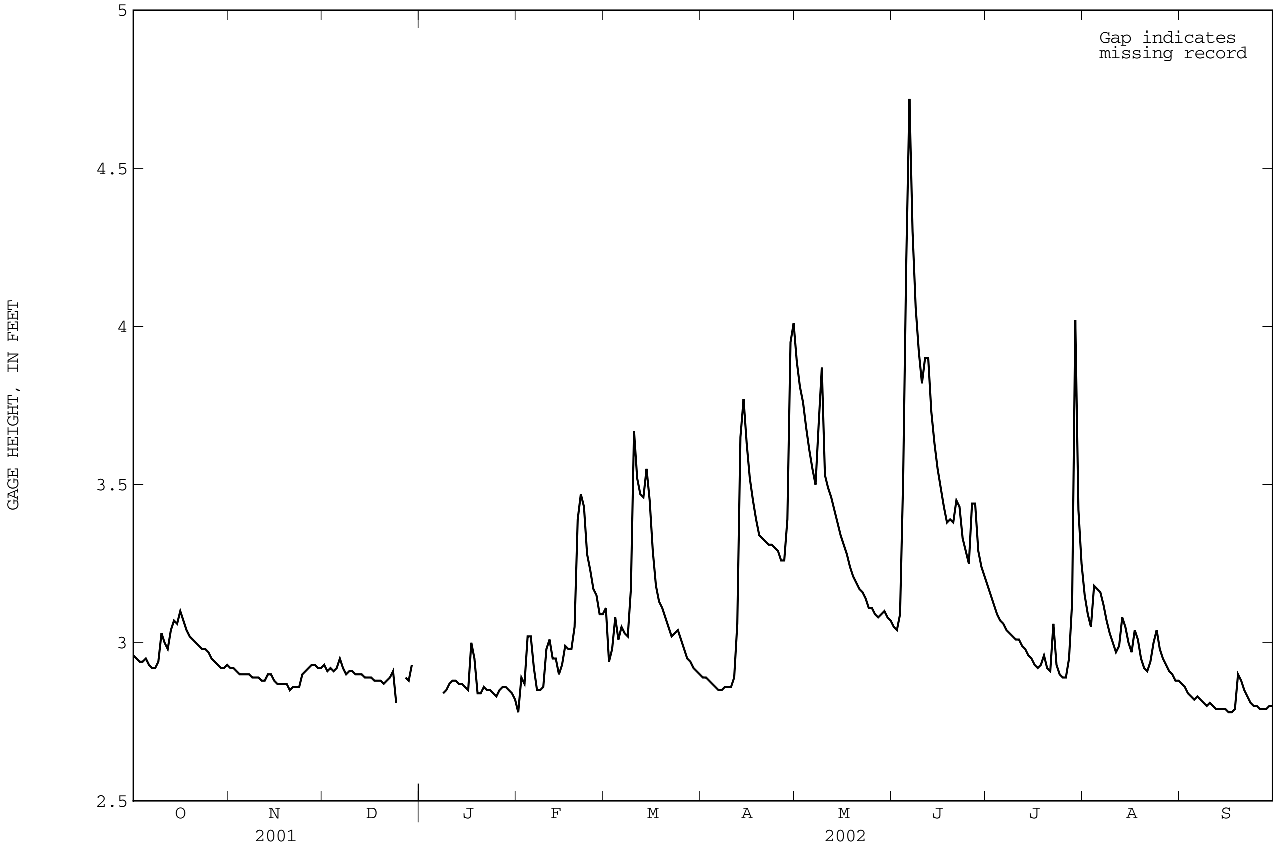
EXTREMES FOR CURRENT WATER YEAR.--Maximum gage height 5.28 ft May 8; minimum gage height 2.64 Dec. 21.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum flood known, probably since at least 1913, occurred May 29, 1941, at site of former gaging station near Decorah, 4 miles downstream, discharge, 28,500 ft^3/s.

GAGE HEIGHT, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.96	2.92	2.93	---	2.78	3.11	2.89	3.89	3.05	3.18	3.15	2.87
2	2.95	2.92	2.91	---	2.89	2.94	2.89	3.81	3.04	3.15	3.09	2.86
3	2.94	2.91	2.92	---	2.87	2.98	2.88	3.76	3.09	3.12	3.05	2.84
4	2.94	2.90	2.91	---	3.02	3.08	2.87	3.68	3.52	3.09	3.18	2.83
5	2.95	2.90	2.92	---	3.02	3.01	2.86	3.61	4.21	3.07	3.17	2.82
6	2.93	2.90	2.95	---	2.92	3.05	2.85	3.55	4.72	3.06	3.16	2.83
7	2.92	2.90	2.92	---	2.85	3.03	2.85	3.50	4.30	3.04	3.12	2.82
8	2.92	2.89	2.90	2.84	2.85	3.02	2.86	3.69	4.06	3.03	3.07	2.81
9	2.94	2.89	2.91	2.85	2.86	3.17	2.86	3.87	3.92	3.02	3.03	2.80
10	3.03	2.89	2.91	2.87	2.98	3.67	2.86	3.53	3.82	3.01	3.00	2.81
11	3.00	2.88	2.90	2.88	3.01	3.52	2.89	3.49	3.90	3.01	2.97	2.80
12	2.98	2.88	2.90	2.88	2.95	3.47	3.06	3.46	3.90	2.99	2.99	2.79
13	3.04	2.90	2.90	2.87	2.95	3.46	3.65	3.42	3.73	2.98	3.08	2.79
14	3.07	2.90	2.89	2.87	2.90	3.55	3.77	3.38	3.63	2.96	3.05	2.79
15	3.06	2.88	2.89	2.86	2.93	3.45	3.63	3.34	3.55	2.95	3.00	2.79
16	3.10	2.87	2.89	2.85	2.99	3.29	3.52	3.31	3.49	2.93	2.97	2.78
17	3.07	2.87	2.88	3.00	2.98	3.18	3.45	3.28	3.43	2.92	3.04	2.78
18	3.04	2.87	2.88	2.95	2.98	3.13	3.39	3.24	3.38	2.93	3.01	2.79
19	3.02	2.87	2.88	2.84	3.05	3.11	3.34	3.21	3.39	2.96	2.95	2.90
20	3.01	2.85	2.87	2.84	3.39	3.08	3.33	3.19	3.38	2.92	2.92	2.88
21	3.00	2.86	2.88	2.86	3.47	3.05	3.32	3.17	3.45	2.91	2.91	2.85
22	2.99	2.86	2.89	2.85	3.43	3.02	3.31	3.16	3.43	3.06	2.94	2.83
23	2.98	2.86	2.91	2.85	3.28	3.03	3.31	3.14	3.33	2.93	3.00	2.81
24	2.98	2.90	2.81	2.84	3.23	3.04	3.30	3.11	3.29	2.90	3.04	2.80
25	2.97	2.91	---	2.83	3.17	3.01	3.29	3.11	3.25	2.89	2.98	2.80
26	2.95	2.92	---	2.85	3.15	2.98	3.26	3.09	3.44	2.89	2.95	2.79
27	2.94	2.93	2.89	2.86	3.09	2.95	3.26	3.08	3.44	2.95	2.93	2.79
28	2.93	2.93	2.88	2.86	3.09	2.94	3.39	3.09	3.29	3.13	2.91	2.79
29	2.92	2.92	2.93	2.85	---	2.92	3.95	3.10	3.24	4.02	2.90	2.80
30	2.92	2.92	---	2.84	---	2.91	4.01	3.08	3.21	3.42	2.88	2.80
31	2.93	---	---	2.82	---	2.90	---	3.07	---	3.25	2.88	---
MEAN	2.98	2.89	---	---	3.04	3.13	3.24	3.37	3.56	3.05	3.01	2.81
MAX	3.10	2.93	---	---	3.47	3.67	4.01	3.89	4.72	4.02	3.18	2.90
MIN	2.92	2.85	---	---	2.78	2.90	2.85	3.07	3.04	2.89	2.88	2.78

05387500 UPPER IOWA RIVER AT DECORAH, IA--Continued



05388250 UPPER IOWA RIVER NEAR DORCHESTER, IA

LOCATION.--Lat 43°25'16", long 91°30'31", in SW$^1/_4$ NW$^1/_4$ sec.1, T.99 N., R.6 W., Allamakee County, Hydrologic Unit 07060002, on right bank at upstream side of bridge on State Highway 76, 650 ft. upstream from Mineral Creek, 0.5 mi upstream from Bear Creek, 3.5 mi south of Dorchester, and 18.1 mi upstream from mouth.

DRAINAGE AREA.--770 mi^2.

PERIOD OF RECORD.--September 1936 to September 1938 and October 1939 to June 1975(discharge measurements only), October 1938 to September 1939, July 1975 to current year.

GAGE.--Water-stage recorder. Datum of gage is 660.00 ft. above NGVD of 1929. Prior to Jan. 6, 1938, nonrecording gage on old bridge at site 0.2 mi upstream at datum 5.91 ft. higher. Jan. 6, 1938 to Apr. 26, 1948, nonrecording gage at datum 60.00 ft. lower, Apr. 27, 1948 to August 1963, nonrecording gage on old bridge and August 1963 to June 1975 nonrecording gage on new bridge at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey satellite and telephone modem data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 30, 1941, reached a stage of 21.8 ft., from flood profile, discharge, 30,400 ft^3/s on basis of slope-area determination of peak flow.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	281	257	253	e167	e130	e197	261	852	359	459	477	250
2	275	251	251	e189	e115	e202	266	805	353	444	404	246
3	270	245	249	e174	e124	e190	255	742	381	e423	360	237
4	264	242	250	e192	e136	e187	248	705	483	e402	387	229
5	262	239	250	e218	e114	e189	240	657	823	e384	466	226
6	261	242	251	e209	e120	e187	246	628	1270	e365	438	223
7	251	241	254	e202	e129	e200	246	595	1270	e347	399	225
8	249	238	246	e220	e142	e213	243	565	1050	e335	369	220
9	253	230	235	e237	e171	e278	240	1520	911	e324	348	217
10	296	229	237	e226	e197	e411	241	864	821	e315	331	218
11	307	226	238	e218	e219	e469	254	705	804	e311	316	213
12	285	225	236	e207	e201	e517	293	710	906	305	308	210
13	294	234	237	e205	e188	528	366	653	774	300	359	207
14	382	240	234	e196	e179	514	624	634	698	294	400	214
15	365	239	234	e187	215	539	618	581	648	288	361	213
16	347	233	234	e175	228	487	577	552	606	281	333	208
17	346	230	233	e158	246	425	521	521	573	274	349	206
18	329	231	231	e134	243	389	497	495	547	274	363	209
19	316	232	229	e157	264	373	493	474	532	301	331	264
20	307	224	224	e167	352	365	482	452	541	295	310	285
21	300	221	218	e178	458	350	488	434	556	277	302	255
22	293	222	225	e195	478	332	488	419	609	413	336	228
23	296	223	e214	e183	437	322	472	413	538	395	327	211
24	294	240	e170	e170	391	326	475	398	493	300	366	204
25	290	262	e161	e158	370	326	462	394	478	285	352	203
26	276	249	e156	e172	352	316	441	391	512	280	326	204
27	266	262	e166	e188	e271	297	439	378	817	277	309	203
28	263	260	e188	e174	e213	287	497	373	590	375	297	201
29	254	256	e185	e157	---	286	603	405	508	953	278	204
30	252	255	e180	e147	---	286	894	387	474	894	264	203
31	255	---	e175	e137	---	271	---	370	---	589	255	---
TOTAL	8979	7178	6844	5697	6683	10259	12470	18072	19925	11759	10821	6636
MEAN	289.6	239.3	220.8	183.8	238.7	330.9	415.7	583.0	664.2	379.3	349.1	221.2
MAX	382	262	254	237	478	539	894	1520	1270	953	477	285
MIN	249	221	156	134	114	187	240	370	353	274	255	201
AC-FT	17810	14240	13580	11300	13260	20350	24730	35850	39520	23320	21460	13160
CFSM	0.38	0.31	0.29	0.24	0.31	0.43	0.54	0.76	0.86	0.49	0.45	0.29
IN.	0.43	0.35	0.33	0.28	0.32	0.50	0.60	0.87	0.96	0.57	0.52	0.32

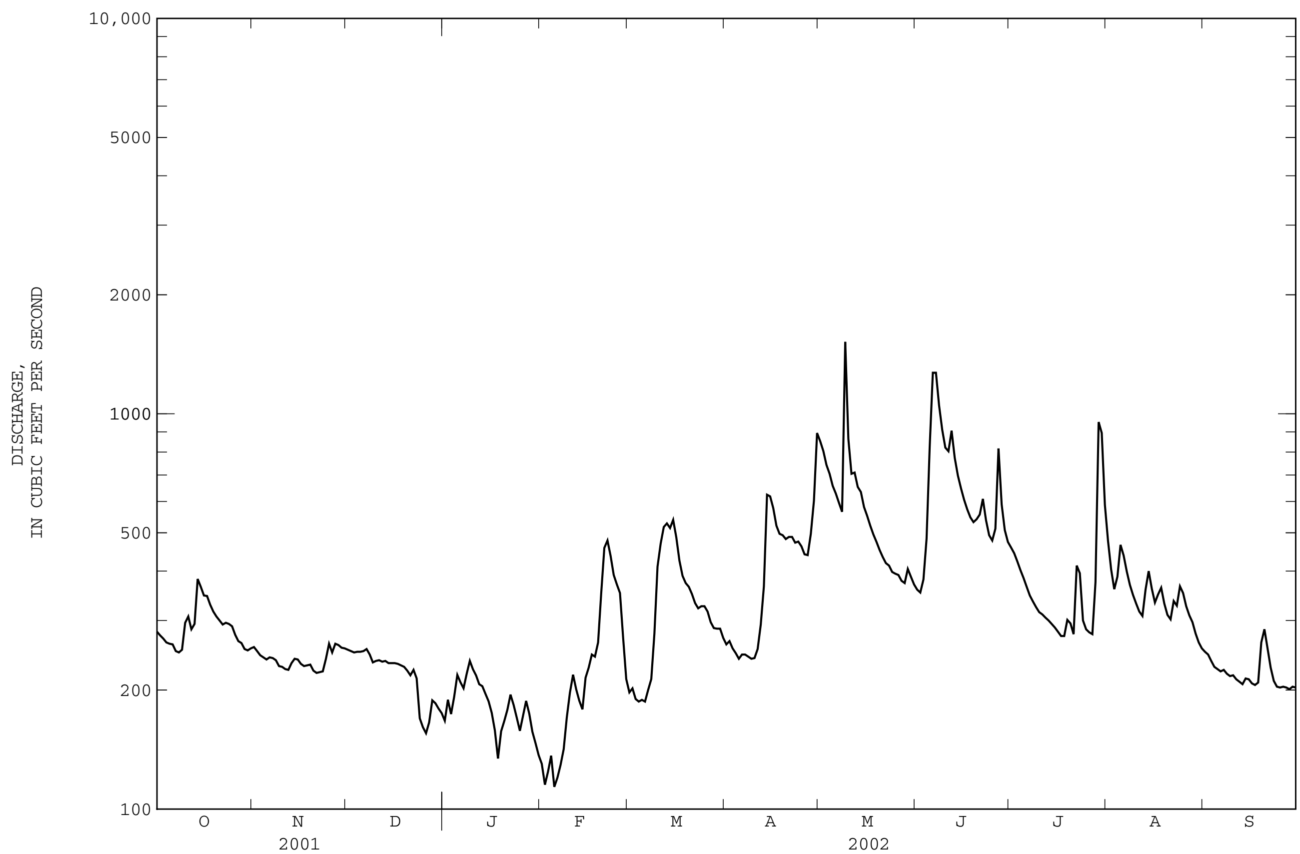
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	411.8	433.7	349.2	258.5	399.5	994.7	1095	837.3	903.1	682.7	573.9	445.7
MAX	2045	1476	1421	836	1400	1922	3973	2066	3538	3318	3702	1334
(WY)	1987	1983	1983	1983	1984	1983	1993	1991	2000	1993	1993	1986
MIN	116	125	99.9	96.7	112	331	225	175	123	92.9	112	77.5
(WY)	1990	1990	1990	1977	1978	2002	1977	1977	1977	1939	1989	1939

05388250 UPPER IOWA RIVER NEAR DORCHESTER, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1939 - 2002	
ANNUAL TOTAL	258903		125323			
ANNUAL MEAN	709.3		343.4		618.3	
HIGHEST ANNUAL MEAN					1726	1993
LOWEST ANNUAL MEAN					178	1977
HIGHEST DAILY MEAN	8780	Apr 13	1520	May 9	15100	Aug 17 1993
LOWEST DAILY MEAN	86	Jan 9	114	Feb 5a	30	Sep 23 1939
ANNUAL SEVEN-DAY MINIMUM	102	Jan 17	124	Feb 1	49	Sep 20 1939
MAXIMUM PEAK FLOW			2260	May 9	22000	Aug 17 1993
MAXIMUM PEAK STAGE			10.29	May 9	20.00	Aug 17 1993
ANNUAL RUNOFF (AC-FT)	513500		248600		447900	
ANNUAL RUNOFF (CFSM)	0.92		0.45		0.80	
ANNUAL RUNOFF (INCHES)	12.51		6.05		10.91	
10 PERCENT EXCEEDS	1580		579		1330	
50 PERCENT EXCEEDS	282		278		364	
90 PERCENT EXCEEDS	140		188		142	

a Ice affected
e Estimated



05389400 BLOODY RUN CREEK NEAR MARQUETTE, IA

LOCATION.--Lat 43°02'27", long 91°12'23", in Basil Giard Claim #1, sec.16, T.95 N., R.3 W., Clayton County, Hydrologic Unit 07060001, on right bank 50 ft downstream from State Highway 18 bridge, 1.5 miles upstream from mouth at Mississippi River, and 1.5 miles west of Marquette.

DRAINAGE AREA.--34.1 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1991 to current year.

GAGE.--Water-stage recorder. Datum of gage is 624.818 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	22	22	16	18	17	13	21	19	26	15	15
2	22	22	21	16	17	17	14	22	18	26	15	15
3	22	20	21	15	17	15	13	20	22	26	15	15
4	22	20	21	16	16	16	12	20	37	26	21	15
5	21	21	22	17	16	16	12	20	28	25	19	15
6	20	21	21	17	17	16	12	21	22	25	17	15
7	21	21	21	16	17	16	13	19	21	24	15	15
8	21	20	21	17	17	18	14	19	21	23	16	15
9	21	21	20	17	18	24	14	20	21	23	15	14
10	23	20	21	16	27	18	13	19	20	21	15	15
11	22	20	20	16	20	17	15	20	21	21	14	15
12	21	20	21	16	18	17	17	22	20	20	15	13
13	21	23	21	16	18	17	15	23	19	20	20	13
14	21	20	20	16	18	16	16	24	20	18	17	13
15	22	19	20	17	19	15	17	22	20	18	16	13
16	21	19	21	16	18	13	18	20	20	18	15	13
17	21	19	21	16	18	13	18	20	21	18	16	13
18	22	20	20	15	18	13	19	19	21	18	15	14
19	22	20	20	16	24	15	21	19	22	21	15	16
20	21	20	20	17	24	15	18	18	22	17	14	18
21	22	21	20	17	21	14	19	18	22	17	16	15
22	23	21	22	17	20	14	19	19	22	24	20	14
23	24	20	21	18	20	14	19	19	22	17	19	14
24	23	23	19	17	20	14	20	18	22	16	21	14
25	22	23	18	17	19	13	19	20	24	15	17	14
26	22	22	19	18	19	13	19	19	26	15	16	13
27	21	24	19	18	18	13	20	19	26	17	16	14
28	21	22	19	17	18	13	26	19	26	17	15	13
29	21	22	17	18	---	13	23	21	26	19	16	13
30	21	22	17	17	---	12	21	20	26	16	15	14
31	22	---	16	18	---	12	---	20	---	15	15	---
TOTAL	671	628	622	516	530	469	509	620	677	622	506	428
MEAN	21.65	20.93	20.06	16.65	18.93	15.13	16.97	20.00	22.57	20.06	16.32	14.27
MAX	24	24	22	18	27	24	26	24	37	26	21	18
MIN	20	19	16	15	16	12	12	18	18	15	14	13
AC-FT	1330	1250	1230	1020	1050	930	1010	1230	1340	1230	1000	849
CFSM	0.63	0.61	0.59	0.49	0.55	0.44	0.50	0.59	0.66	0.59	0.48	0.42
IN.	0.73	0.68	0.68	0.56	0.58	0.51	0.55	0.68	0.74	0.68	0.55	0.47

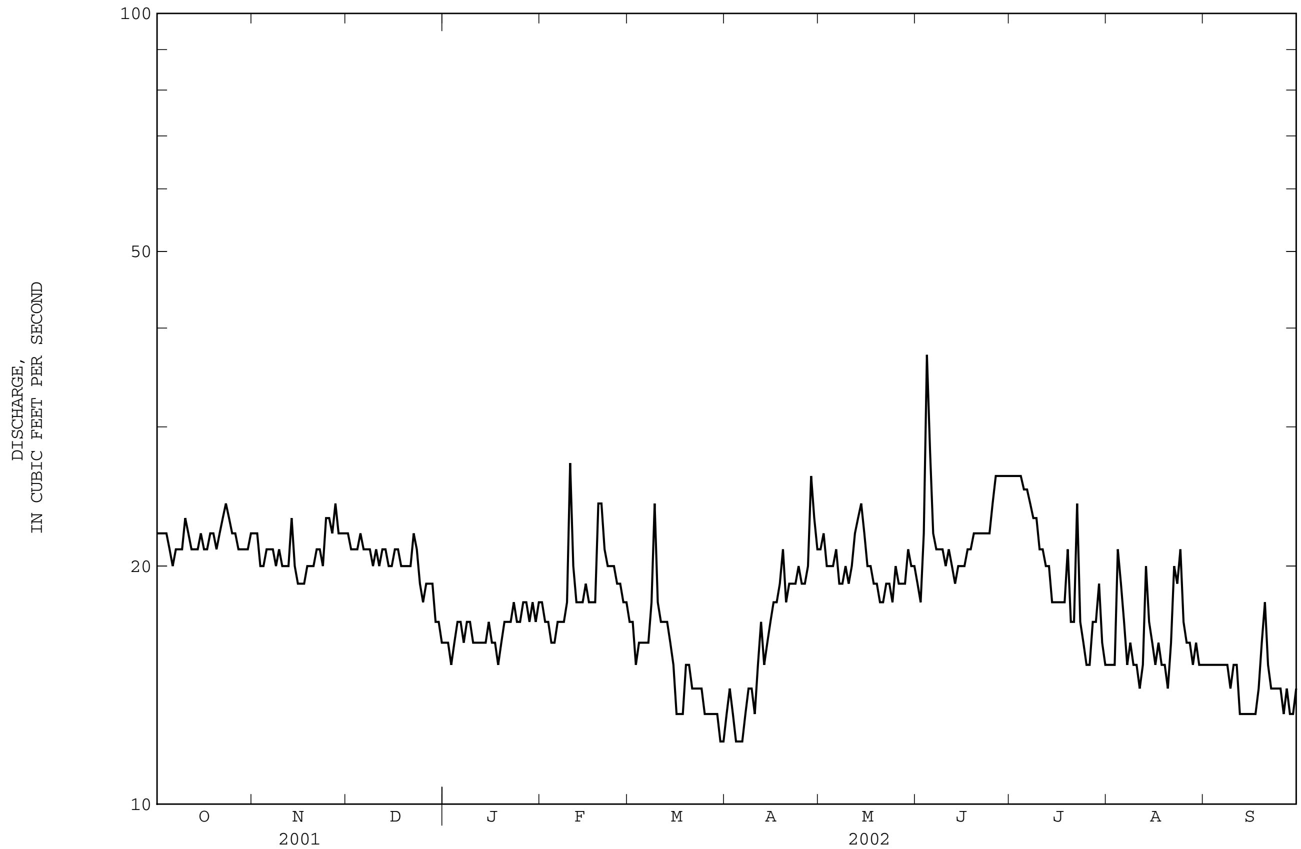
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	20.80	21.68	18.07	16.17	21.69	28.58	26.85	30.22	30.82	27.50	25.84	22.62
MAX	30.9	35.3	26.0	22.3	33.6	87.6	55.3	65.7	55.4	54.2	48.9	36.4
(WY)	1994	1992	1992	1992	1994	1993	1993	1993	1993	1993	1993	1993
MIN	14.9	13.5	11.2	9.80	11.3	15.1	15.2	17.3	16.4	15.9	12.9	13.7
(WY)	1998	1998	1998	2001	2001	2002	1997	1997	1997	1997	1997	1997

05389400 BLOODY RUN CREEK NEAR MARQUETTE, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1992 - 2002	
ANNUAL TOTAL	8165.6		6798			
ANNUAL MEAN	22.37		18.62		24.24	
HIGHEST ANNUAL MEAN					42.1	1993
LOWEST ANNUAL MEAN					17.2	1997
HIGHEST DAILY MEAN	135	Aug 2	37	Jun 4	550	Mar 31 1993
LOWEST DAILY MEAN	6.8	Jan 20	12	Mar 30a	6.8	Jan 20 2001
ANNUAL SEVEN-DAY MINIMUM	8.3	Jan 20	13	Mar 30	8.3	Jan 20 2001
MAXIMUM PEAK FLOW			55	Jun 4	1820	Feb 18 1997
MAXIMUM PEAK STAGE			4.79	Jun 4	7.68	Feb 18 1997
ANNUAL RUNOFF (AC-FT)	16200		13480		17560	
ANNUAL RUNOFF (CFSM)	0.66		0.55		0.71	
ANNUAL RUNOFF (INCHES)	8.90		7.41		9.65	
10 PERCENT EXCEEDS	31		22		35	
50 PERCENT EXCEEDS	21		19		21	
90 PERCENT EXCEEDS	11		14		14	

a Also Mar. 31 and Apr. 4-6.
e Estimated



05389400 BLOODY RUN CREEK NEAR MARQUETTE, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1991 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1991 to current year.
WATER TEMPERATURES: October 1991 to current year.
SUSPENDED-SEDIMENT DISCHARGE: October 1991 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 670 microsiemens Sept. 27, 1994; minimum daily, 140 microsiemens Oct. 14, 1997.
WATER TEMPERATURES: Maximum daily, 32.0°C Aug. 17, 1998; minimum daily, 0.0°C Jan. 7, 18-21, 1994, Jan. 5,7,8, Feb. 21, 1997.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,780 mg/L Mar. 31, 1993; minimum daily mean, 1 mg/L Oct. 30, 1994.
SEDIMENT LOADS: Maximum daily, 4,500 tons Mar. 31, 1993; minimum daily, 0.08 tons Oct. 30, 1994, Nov. 23-24, 1997, and Dec. 8, 1997.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 636 microsiemens June 3; minimum daily, 372 microsiemens Oct. 1.
WATER TEMPERATURES: Maximum daily, 25.0°C July 8; minimum daily, 4.0°C Dec. 24, 25, 31.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 91 mg/L June 4; minimum daily mean, 6.9 mg/L Sept. 10.
SEDIMENT LOADS: Maximum daily, 9.4 tons June 4; minimum daily, 0.32 tons Sept. 10.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	TEMPER-ATURE WATER (DEG C) (00010)	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT						
02...	0900	11.3	21	76	4.2	46
NOV						
13...	1645	9.1	21	83	4.8	26
JAN						
09...	0815	3.5	17	72	3.2	49
MAR						
19...	0845	5.6	14	19	.72	61
APR						
30...	0845	10.4	21	6.0	.34	68
JUN						
12...	0930	15.4	20	62	3.4	84
JUL						
16...	0920	14.9	16	33	1.5	62
SEP						
05...	1335	16.5	15	37	1.5	81

SPECIFIC CONDUCTANCE, in MICROSIEMENS/CM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	372	378	394	439	382	423	427	459	---	620	524	---
2	---	383	---	425	---	---	---	466	---	547	456	560
3	377	---	---	395	---	---	---	527	636	601	---	453
4	388	415	383	440	427	427	488	---	596	562	---	445
5	437	---	385	---	403	519	519	---	591	528	511	464
6	382	463	419	---	---	502	511	483	583	---	506	583
7	---	---	392	415	396	513	542	445	580	---	457	---
8	386	436	413	397	423	499	554	491	---	570	419	---
9	395	411	---	403	389	---	504	479	---	611	450	481
10	384	382	379	393	---	---	475	520	622	568	---	625
11	379	---	457	409	425	503	469	---	575	624	---	521
12	419	---	397	---	425	508	509	---	584	555	420	473
13	412	418	418	---	402	417	---	412	527	---	434	489
14	---	411	445	404	---	511	---	447	539	593	551	---
15	389	420	---	395	404	534	438	475	---	524	425	---
16	386	419	---	402	431	---	553	516	---	497	441	519
17	404	449	412	379	---	---	541	545	451	442	---	503
18	387	---	391	398	394	544	569	---	505	409	---	454
19	---	399	393	---	422	466	530	---	569	469	432	556
20	397	398	412	---	506	467	---	504	473	---	461	513
21	---	---	408	399	468	511	---	445	---	---	436	---
22	379	396	---	386	399	444	561	428	---	523	552	---
23	438	---	---	394	---	---	527	567	517	450	560	557
24	393	395	453	403	---	---	508	560	511	491	---	520
25	561	383	431	404	415	552	545	---	492	532	---	484
26	429	390	414	---	390	442	---	---	---	---	526	488
27	---	394	424	372	414	498	528	564	594	441	522	490
28	---	---	426	---	490	533	---	560	629	---	595	---
29	377	410	---	386	---	542	554	550	---	520	582	---
30	409	402	---	393	---	---	536	524	588	423	532	478
31	---	---	419	427	---	---	---	547	---	442	---	---

05389400 BLOODY RUN CREEK NEAR MARQUETTE, IA--Continued

WATER TEMPERATURE, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15.0	11.0	9.0	5.0	6.0	6.0	5.0	11.0	---	23.0	22.0	---
2	---	10.0	---	5.0	---	---	---	11.0	---	24.0	21.0	21.0
3	15.0	---	---	5.0	---	---	---	14.0	14.0	24.0	---	21.0
4	14.0	11.0	10.0	6.0	6.0	5.0	6.0	---	17.0	21.0	---	20.0
5	14.0	---	12.0	---	6.0	7.0	9.0	---	16.0	19.0	21.0	16.5
6	10.0	13.0	10.0	---	---	7.0	10.0	17.0	17.0	---	21.0	20.0
7	---	---	9.0	5.0	8.0	7.0	9.0	17.0	18.0	---	20.0	---
8	14.0	11.0	6.0	7.0	8.0	8.0	9.0	17.0	---	25.0	21.0	---
9	15.0	11.0	---	8.0	8.0	---	13.0	15.0	---	24.0	21.0	21.0
10	14.0	10.0	7.0	6.0	---	---	14.0	15.0	18.0	20.0	---	19.0
11	15.0	---	7.0	7.0	7.0	9.0	15.0	---	18.0	19.0	---	19.0
12	15.0	---	8.0	---	6.0	9.0	14.0	---	20.0	20.0	20.0	19.0
13	14.0	9.1	5.0	---	7.0	10.0	---	12.0	20.0	---	19.0	19.0
14	---	13.0	6.0	8.0	---	11.0	---	15.0	18.0	22.0	20.0	---
15	11.0	15.0	---	7.0	9.0	16.0	19.0	16.0	---	17.0	20.0	---
16	11.0	14.0	---	5.0	9.0	---	20.0	16.0	---	14.9	21.0	19.0
17	11.0	13.0	8.0	6.0	---	---	19.0	15.0	20.0	22.0	---	---
18	11.0	---	7.0	5.0	10.0	9.0	18.0	---	21.0	22.0	---	18.0
19	---	9.0	5.0	---	9.0	7.0	14.0	---	19.0	21.0	21.0	20.0
20	12.0	9.0	5.0	---	8.0	10.0	---	14.0	22.0	---	20.0	18.0
21	---	---	5.0	8.0	8.0	6.0	---	15.0	---	---	20.0	---
22	12.0	8.0	---	8.0	9.0	8.0	9.0	16.0	---	24.0	20.0	---
23	12.0	---	---	7.0	---	---	14.0	15.0	24.0	22.0	21.0	15.0
24	12.0	11.0	4.0	7.0	---	---	10.0	15.0	24.0	19.0	---	15.0
25	9.0	11.0	4.0	8.0	8.0	7.0	12.0	---	23.0	20.0	---	16.0
26	8.0	9.0	5.0	---	6.0	8.0	---	---	---	---	21.0	16.0
27	---	9.0	5.0	6.0	8.0	1.0	13.0	14.0	24.0	19.0	21.0	15.0
28	---	---	5.0	---	7.0	12.0	---	18.0	24.0	---	20.0	---
29	11.0	9.0	---	5.0	---	11.0	15.0	19.0	---	23.0	20.0	---
30	10.0	9.0	---	6.0	---	---	15.0	20.0	24.0	24.0	20.0	18.0
31	---	---	4.0	7.0	---	---	---	18.0	---	24.0	---	---

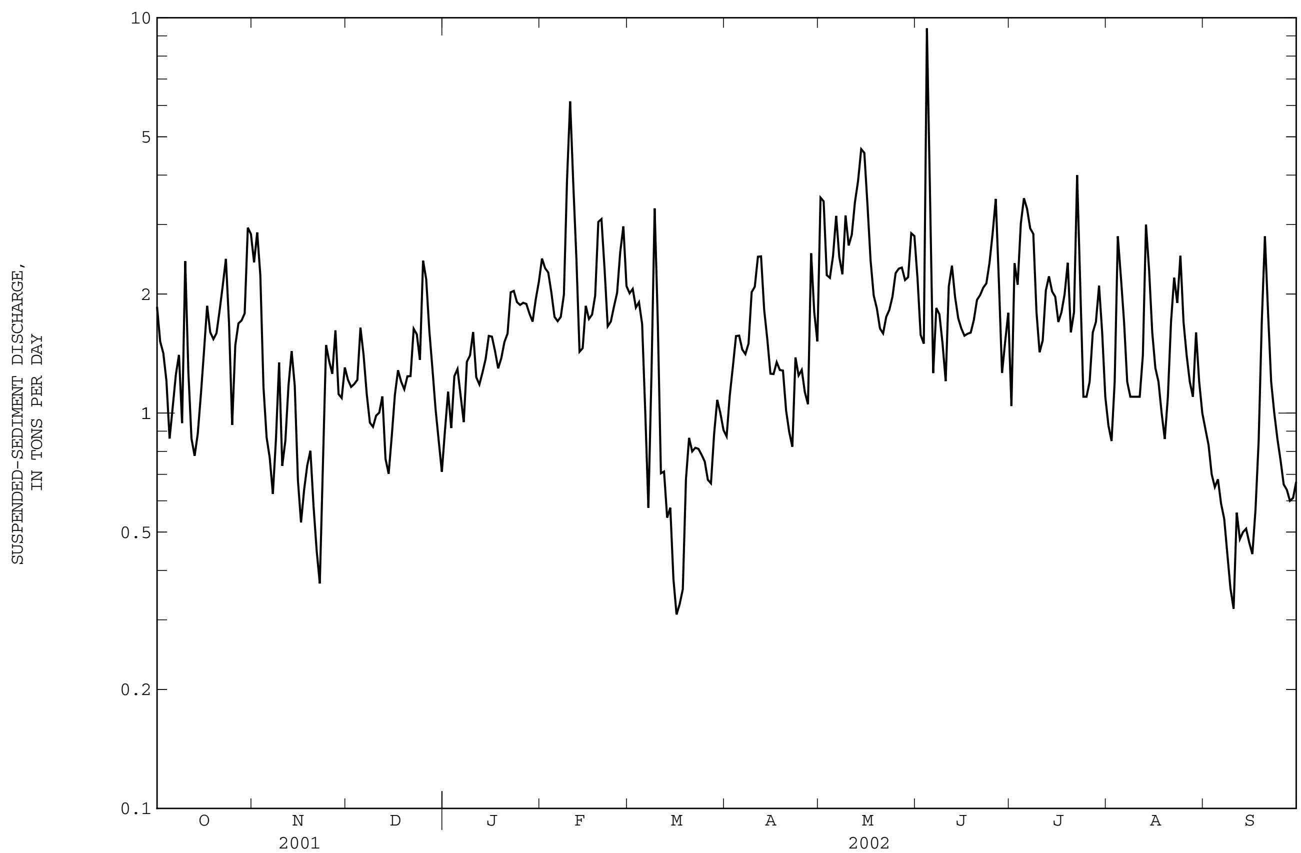
SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	32	1.9	41	2.4	21	1.2	21	0.90	51	2.5	43	2.0
2	26	1.5	49	2.9	20	1.2	26	1.1	51	2.3	45	2.1
3	24	1.4	40	2.2	21	1.2	22	0.92	49	2.3	45	1.8
4	21	1.2	21	1.2	21	1.2	28	1.2	47	2.0	45	1.9
5	15	0.86	16	0.87	28	1.6	28	1.3	40	1.8	38	1.7
6	19	1.0	14	0.77	24	1.4	24	1.1	38	1.7	23	1.0
7	22	1.3	11	0.62	20	1.1	22	0.95	37	1.8	13	0.58
8	24	1.4	16	0.86	17	0.95	30	1.3	43	2.0	25	1.3
9	16	0.94	24	1.3	17	0.92	31	1.4	81	3.9	50	3.3
10	39	2.4	13	0.74	18	0.99	37	1.6	84	6.1	36	1.7
11	21	1.3	16	0.85	18	1.0	28	1.2	70	3.8	15	0.70
12	15	0.86	21	1.2	20	1.1	27	1.2	50	2.5	16	0.71
13	14	0.78	23	1.4	13	0.77	29	1.3	30	1.4	12	0.54
14	15	0.89	21	1.2	13	0.70	31	1.4	31	1.5	14	0.58
15	19	1.1	13	0.68	16	0.88	35	1.6	36	1.9	9.5	0.38
16	25	1.4	10	0.53	20	1.1	35	1.6	35	1.7	8.6	0.31
17	32	1.9	12	0.64	23	1.3	33	1.4	37	1.8	9.2	0.33
18	27	1.6	14	0.74	22	1.2	32	1.3	41	2.0	9.8	0.36
19	26	1.5	15	0.80	21	1.1	33	1.4	48	3.0	17	0.68
20	28	1.6	11	0.58	23	1.2	34	1.5	49	3.1	22	0.87
21	31	1.8	8.0	0.45	23	1.2	35	1.6	40	2.3	21	0.80
22	35	2.1	6.6	0.37	28	1.6	43	2.0	31	1.7	22	0.82
23	38	2.5	13	0.74	28	1.6	42	2.0	32	1.7	22	0.81
24	27	1.7	24	1.5	26	1.4	40	1.9	35	1.9	21	0.78
25	16	0.93	22	1.4	49	2.4	40	1.9	39	2.0	21	0.75
26	25	1.5	21	1.3	43	2.2	40	1.9	51	2.6	19	0.68
27	30	1.7	24	1.6	31	1.6	40	1.9	60	3.0	19	0.66
28	30	1.7	19	1.1	25	1.3	38	1.8	44	2.1	25	0.89
29	32	1.8	18	1.1	22	1.0	36	1.7	---	---	31	1.1
30	52	2.9	22	1.3	19	0.85	41	1.9	---	---	30	1.00
31	49	2.8	---	---	16	0.71	44	2.1	---	---	27	0.91
TOTAL	---	48.26	---	33.34	---	37.97	---	46.37	---	66.4	---	32.04

05389400 BLOODY RUN CREEK NEAR MARQUETTE, IA--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	25	0.87	61	3.5	43	2.2	15	1.0	22	0.93	20	0.91
2	30	1.1	57	3.4	32	1.6	34	2.4	20	0.85	18	0.83
3	39	1.3	41	2.2	26	1.5	30	2.1	29	1.2	16	0.70
4	46	1.6	41	2.2	91	9.4	43	3.0	48	2.8	14	0.65
5	47	1.6	46	2.5	45	3.5	52	3.5	41	2.2	15	0.68
6	45	1.4	56	3.2	21	1.3	48	3.3	37	1.7	13	0.59
7	41	1.4	49	2.5	32	1.8	46	2.9	27	1.2	12	0.54
8	39	1.5	44	2.2	32	1.8	46	2.8	24	1.1	9.9	0.44
9	53	2.0	58	3.2	26	1.5	29	1.8	26	1.1	8.2	0.36
10	58	2.1	52	2.7	22	1.2	25	1.4	26	1.1	6.9	0.32
11	63	2.5	53	2.8	38	2.1	27	1.5	25	1.1	13	0.56
12	54	2.5	58	3.4	44	2.4	38	2.0	31	1.4	11	0.48
13	44	1.8	63	3.9	38	2.0	41	2.2	52	3.0	12	0.50
14	36	1.5	73	4.7	32	1.7	42	2.0	47	2.3	12	0.51
15	28	1.3	75	4.6	30	1.6	40	2.0	35	1.6	11	0.47
16	26	1.3	64	3.4	29	1.6	34	1.7	30	1.3	10	0.44
17	27	1.3	46	2.4	28	1.6	36	1.8	26	1.2	14	0.57
18	25	1.3	39	2.0	28	1.6	42	2.0	23	1.0	20	0.85
19	23	1.3	36	1.8	29	1.7	42	2.4	20	0.86	34	1.7
20	20	1.0	34	1.6	32	1.9	34	1.6	26	1.1	51	2.8
21	17	0.90	32	1.6	34	2.0	40	1.8	38	1.7	40	1.8
22	16	0.82	35	1.8	34	2.1	62	4.0	38	2.2	29	1.2
23	28	1.4	35	1.8	35	2.1	45	2.1	34	1.9	24	1.0
24	24	1.2	40	2.0	40	2.4	27	1.1	41	2.5	21	0.86
25	25	1.3	42	2.3	43	2.8	27	1.1	35	1.7	18	0.76
26	22	1.1	44	2.3	49	3.5	27	1.2	29	1.4	16	0.66
27	19	1.1	45	2.3	31	2.2	35	1.6	26	1.2	15	0.64
28	35	2.5	42	2.2	18	1.3	34	1.7	25	1.1	14	0.60
29	29	1.8	40	2.2	22	1.5	39	2.1	33	1.6	14	0.61
30	26	1.5	54	2.9	26	1.8	34	1.6	27	1.2	15	0.67
31	---	---	53	2.8	---	---	26	1.1	22	1.0	---	---
TOTAL	---	44.29	---	82.4	---	65.7	---	62.8	---	46.54	---	23.70
YEAR		589.81										



05389400 BLOODY RUN CREEK NEAR MARQUETTE, IA--Continued

PRECIPITATION RECORDS

PERIOD OF RECORD.--December 1991 to current year.

INSTRUMENTATION.--Tipping bucket rain gage.

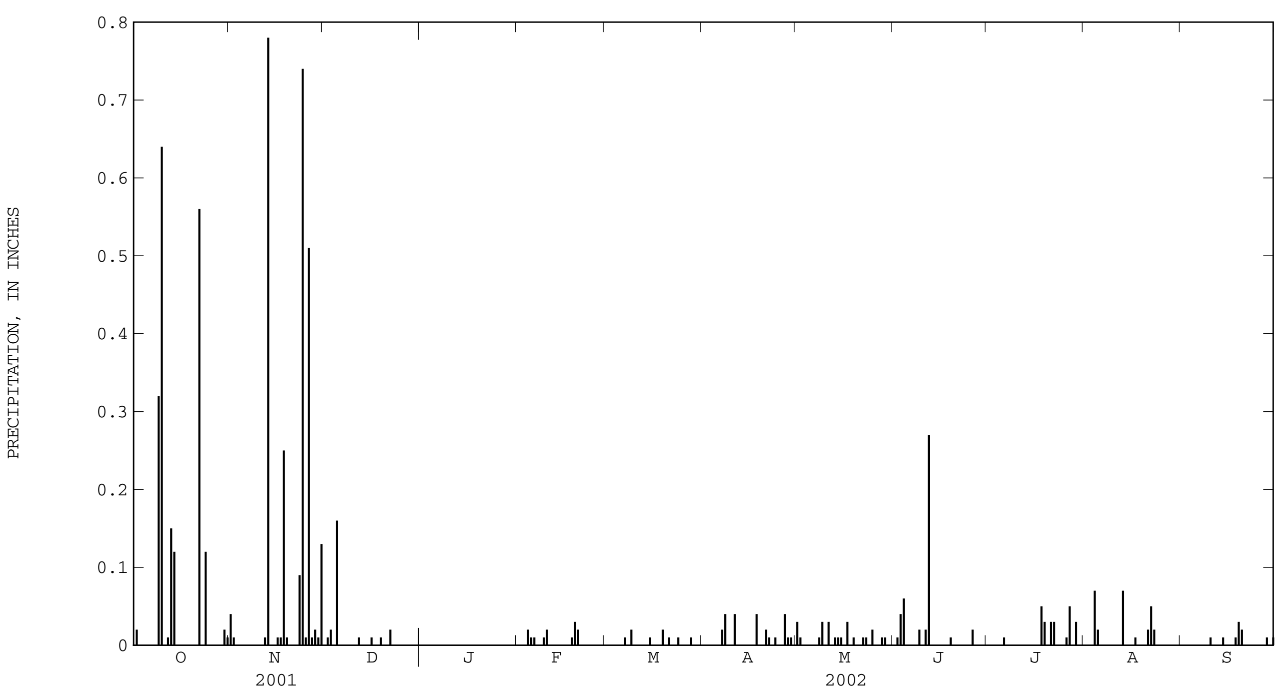
REMARKS.--Water years 1992-1995 in files at the District office. Records good except for winter period, which is poor due to intermittent snow accumulation and subsequent melting.

EXTREME FOR PERIOD OF RECORD.--Maximum daily accumulation, 2.92 in., June 20, 1994.

EXTREME FOR CURRENT YEAR.--Maximum daily accumulation, 0.78 in., Nov. 13.

PRECIPITATION FROM DCP, in INCHES, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.0	0.04	0.0	0.0	0.0	0.0	0.0	0.03	0.0	0.0	0.0	0.0
2	0.02	0.01	0.01	0.0	0.0	0.0	0.0	0.01	0.01	0.0	0.0	0.0
3	0.0	0.0	0.02	0.0	0.0	0.0	0.0	0.0	0.04	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.02	0.0	0.0	0.0	0.06	0.0	0.07	0.0
5	0.0	0.0	0.16	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.02	0.0
6	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.01	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.01	0.02	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.04	0.01	0.0	0.0	0.0	0.0
9	0.32	0.0	0.0	0.0	0.01	0.02	0.0	0.03	0.02	0.0	0.0	0.0
10	0.64	0.0	0.0	0.0	0.02	0.0	0.0	0.0	0.0	0.0	0.0	0.01
11	0.0	0.0	0.0	0.0	0.0	0.0	0.04	0.03	0.02	0.0	0.0	0.0
12	0.01	0.01	0.01	0.0	0.0	0.0	0.0	0.0	0.27	0.0	0.0	0.0
13	0.15	0.78	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.07	0.0
14	0.12	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.01
15	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.01	0.0	0.0	0.0	0.0
16	0.0	0.01	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
17	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.03	0.0	0.0	0.01	0.0
18	0.0	0.25	0.0	0.0	0.01	0.0	0.04	0.0	0.0	0.05	0.0	0.01
19	0.0	0.01	0.01	0.0	0.03	0.02	0.0	0.01	0.01	0.03	0.0	0.03
20	0.0	0.0	0.0	0.0	0.02	0.0	0.0	0.0	0.0	0.0	0.0	0.02
21	0.0	0.0	0.0	0.0	0.0	0.01	0.02	0.0	0.0	0.03	0.02	0.0
22	0.56	0.0	0.02	0.0	0.0	0.0	0.01	0.01	0.0	0.03	0.05	0.0
23	0.0	0.09	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.02	0.0
24	0.12	0.74	0.0	0.0	0.0	0.01	0.01	0.0	0.0	0.0	0.0	0.0
25	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.02	0.0	0.0	0.0	0.0
26	0.0	0.51	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.01	0.0	0.0
27	0.0	0.01	0.0	0.0	0.0	0.0	0.04	0.0	0.0	0.05	0.0	0.0
28	0.0	0.02	0.0	0.0	0.0	0.01	0.01	0.01	0.0	0.0	0.0	0.01
29	0.0	0.01	0.0	0.0	---	0.0	0.01	0.01	0.0	0.03	0.0	0.0
30	0.02	0.13	0.0	0.0	---	0.0	0.0	0.0	0.0	0.0	0.0	0.01
31	0.01	---	0.0	0.0	---	0.0	---	0.0	---	0.0	0.0	---
TOTAL	1.97	2.64	0.24	0.0	0.13	0.09	0.24	0.24	0.45	0.24	0.26	0.10
MEAN	0.06	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
MAX	0.64	0.78	0.16	0.00	0.03	0.02	0.04	0.03	0.27	0.05	0.07	0.03
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



05389500 MISSISSIPPI RIVER AT MCGREGOR, IA

LOCATION.--Lat 43°01'29", long 91°10'21", in $SE^1/_4$ $SE^1/_4$ sec.22, T.95 N., R.3 W., Clayton County, Hydrologic Unit 07060001, on right bank in city park at east end of Main Street in McGregor, 2.6 mi upstream from Wisconsin River, 4.3 mi downstream from Yellow River, and at mile 633.4 upstream from Ohio River.

DRAINAGE AREA.--67,500 mi^2, approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1936 to current year.

REVISED RECORDS.--WDR IA-75-1: 1974.

GAGE.--Water-stage recorder. Datum of gage is 604.84 ft above NGVD of 1929. Prior to June 1, 1937, and since June 2, 1939, auxiliary water-stage recorder; June 1, 1937 to June 1, 1939, auxiliary nonrecording gage 14.1 mi upstream in tailwater of dam 9, at datum 5.30 ft lower.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Minor flow regulation caused by navigation dams. U.S. Geological Survey satellite and telephone modem data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1828, that of Apr. 24, 1965.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e17400	24900	42500	e22300	21800	26900	39700	85300	42600	e81700	42700	52300
2	e17400	31100	40200	e24000	e21100	24300	43400	83100	41800	e80900	42800	47400
3	18900	29400	34200	e23800	e20500	e19700	47000	80900	42100	79400	42500	45500
4	18700	25300	32400	e23500	e20100	e17200	48400	79600	45900	77900	42500	45200
5	19000	23200	34200	e23300	e20500	e21000	48700	77500	48800	75900	43600	45300
6	18800	19500	36300	e23800	e20300	e23200	47400	75900	51900	73800	44200	46400
7	e18400	19700	39800	e24300	20300	e24900	43700	73500	56600	71300	45400	49000
8	e13400	22300	42600	e27200	19400	e25300	44000	70900	62200	67100	46700	53100
9	e12200	23700	43300	e29900	20500	e26400	44600	71800	65900	63800	48700	54900
10	e15800	22100	43300	e31100	23500	e25700	44700	69100	66600	59300	51400	57100
11	24800	20900	44400	e31100	25700	e24300	46100	67600	66900	55300	50700	60900
12	25700	20600	46000	e29800	24700	e26800	52500	68900	64200	53600	48900	63900
13	22700	20700	45000	e27800	24300	35500	57900	71000	60100	52300	48500	64700
14	21200	21800	38600	e27200	24200	38400	62000	73600	57100	53000	48300	62900
15	21200	22700	35300	e27200	23200	41100	70000	77100	54200	55600	46800	59300
16	25500	22600	33700	e27200	21300	41300	75600	80400	53100	58000	44500	53800
17	e27600	22600	35000	e26800	19700	40400	86400	82100	51700	60300	43000	49800
18	e26200	22700	36600	e26700	19700	37600	95700	82900	49400	61600	42800	44500
19	e24600	22400	35300	e25900	21900	33300	e104000	82300	46800	62600	42400	43200
20	e24700	22900	33700	e23400	27000	32800	e112000	81300	45400	61900	41600	44100
21	e27000	22600	29800	e22400	31700	33200	e119000	80400	46700	60700	40600	44100
22	25200	23000	25400	e21100	33700	33600	e122000	77400	48500	61200	43200	40200
23	23800	22600	25900	e21500	34700	34100	120000	75700	49000	61000	46900	36200
24	23300	22600	26900	e23400	36800	34300	117000	72400	51500	58800	51100	34200
25	23600	26300	27700	e25500	35200	33600	113000	67800	57400	54800	56200	32500
26	22700	e28700	e24800	e26200	32600	30600	107000	61000	e61800	52600	61600	35500
27	20900	e31000	e23800	25900	29200	26100	e101000	56500	e68800	51000	65100	38200
28	18800	e32600	e22900	24600	27600	21800	e95300	53600	e73800	49000	66700	37900
29	e17900	40200	e19400	23300	---	29800	e91100	51400	e79200	48000	66300	37300
30	e16900	42500	e18500	22600	---	33900	88400	46500	81100	46800	62300	37200
31	e16900	---	e19800	22100	---	37000	---	42700	---	44000	57700	---
TOTAL	651200	753200	1037300	784900	701200	934100	2287600	2220200	1691100	1893200	1525700	1416600
MEAN	21010	25110	33460	25320	25040	30130	76250	71620	56370	61070	49220	47220
MAX	27600	42500	46000	31100	36800	41300	122000	85300	81100	81700	66700	64700
MIN	12200	19500	18500	21100	19400	17200	39700	42700	41800	44000	40600	32500
AC-FT	1292000	1494000	2057000	1557000	1391000	1853000	4537000	4404000	3354000	3755000	3026000	2810000
CFSM	0.31	0.37	0.50	0.38	0.37	0.45	1.13	1.06	0.84	0.90	0.73	0.70
IN.	0.36	0.42	0.57	0.43	0.39	0.51	1.26	1.22	0.93	1.04	0.84	0.78

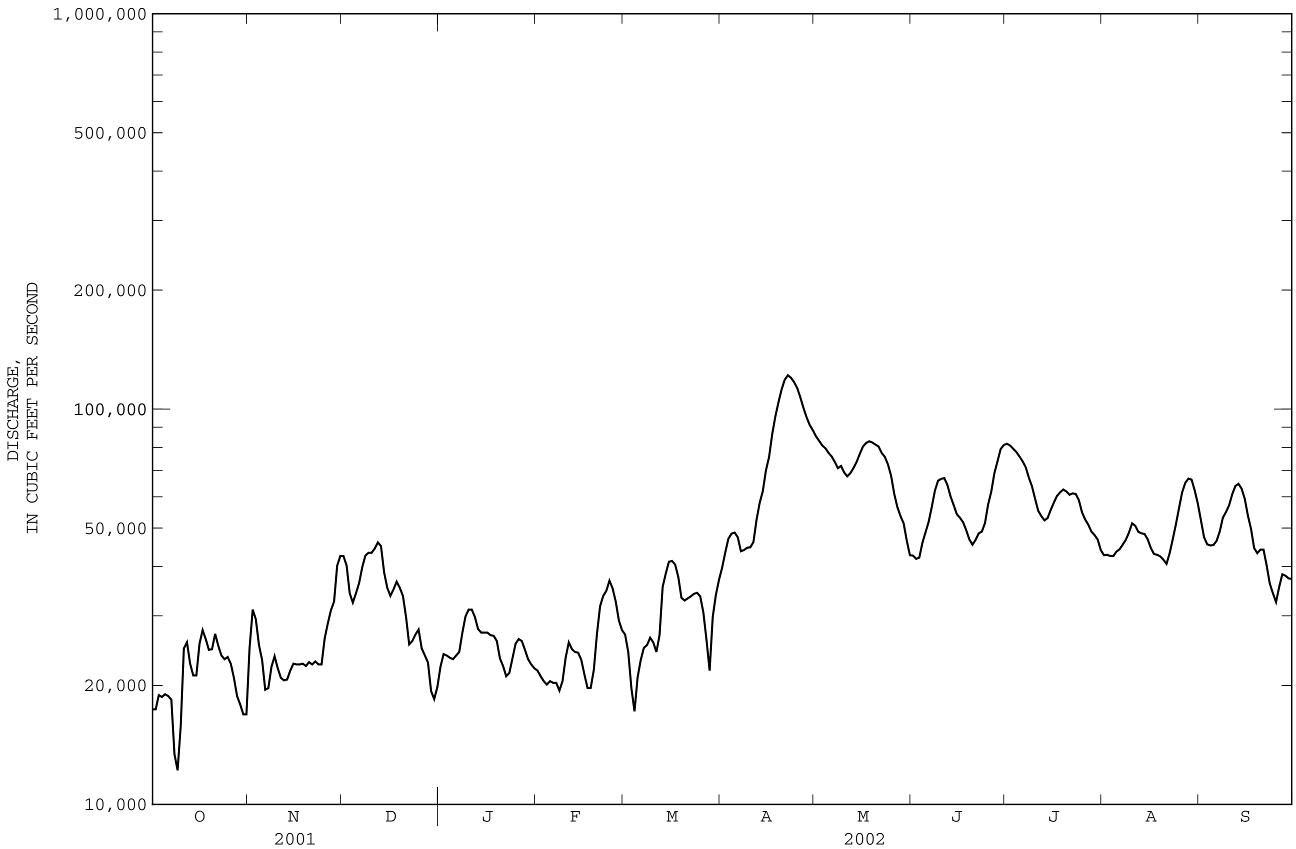
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	28430	29340	22430	19460	20250	39360	76230	62330	50080	41590	28540	28940
MAX	114600	64840	59200	35700	48540	103800	164800	138700	112600	142200	84430	72890
(WY)	1987	1983	1992	1983	1984	1983	1965	2001	1993	1993	1993	1986
MIN	9874	10870	9506	7665	9934	13190	27780	18240	13420	11220	10330	10650
(WY)	1937	1938	1937	1940	1940	1940	1990	1977	1988	1988	1964	1940

05389500 MISSISSIPPI RIVER AT MCGREGOR, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1936 - 2002	
ANNUAL TOTAL	19521500		15896300			
ANNUAL MEAN	53480		43550		37300	
HIGHEST ANNUAL MEAN					64720	1993
LOWEST ANNUAL MEAN					17400	1977
HIGHEST DAILY MEAN	247000	Apr 21	122000	Apr 22	276000	Apr 24 1965
LOWEST DAILY MEAN	12200	Oct 9	12200	Oct 9	6200	Dec 9 1936
ANNUAL SEVEN-DAY MINIMUM	16600	Oct 4	16600	Oct 4	6490	Dec 7 1936
MAXIMUM PEAK FLOW			121000	Apr 22	276000	Apr 24 1965
MAXIMUM PEAK STAGE			17.17	Apr 22	25.38	Apr 24 1965
ANNUAL RUNOFF (AC-FT)	38720000		31530000		27020000	
ANNUAL RUNOFF (CFSM)	0.79		0.65		0.55	
ANNUAL RUNOFF (INCHES)	10.76		8.76		7.51	
10 PERCENT EXCEEDS	110000		75600		75900	
50 PERCENT EXCEEDS	28300		40600		27800	
90 PERCENT EXCEEDS	20200		21100		13300	

e Estimated



05389500 MISSISSIPPI RIVER AT MCGREGOR, IA--Continued

WATER-QUALITY RECORDS

LOCATION.--Samples collected from right bank dock 1.2 mi upstream from discharge station. Prior to April 1981, and March 7 to Sept. 30, 1997, samples collected at bridge on U.S. Highway 18, 1.2 mi upstream from gage. April 1981 to March 6, 1997, samples collected from right bank dock, 0.3 mi downstream from discharge station.

PERIOD OF RECORD.--July 1975 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: July 1975 to current year.
WATER TEMPERATURES: July 1975 to current year.
SUSPENDED-SEDIMENT DISCHARGE: July 1975 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 633 microsiemens Nov. 3, 1996; minimum daily, 190 microsiemens Sept. 29, 1980.
WATER TEMPERATURES: Maximum daily, 31.0°C June 28, 2002; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,350 mg/L Mar. 19, 1986; minimum daily mean, 1 mg/L on many days in 1977-92 and 1999.
SEDIMENT LOADS: Maximum daily, 363,000 tons Mar. 19, 1986; minimum daily, 31 tons Dec. 25, 1976.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 430 microsiemens July 10; minimum daily, 301 microsiemens Apr. 30.
WATER TEMPERATURES: Maximum daily, 31.0°C, June 28; minimum daily, 1.0°C Dec. 24.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 58 mg/L Apr. 17; minimum daily mean, 3.2 mg/L Jan. 6, 7.
SEDIMENT LOADS: Maximum daily, 13,400 tons Apr. 17, 18; minimum daily, 206 tons Jan. 6.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	TEMPER-ATURE WATER (DEG C) (00010)	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT						
10...	1000	11.0	16500	12	535	97
NOV						
14...	1230	50.0	23200	13	814	97
MAR						
25...	1300	4.3	43300	38	4440	97
APR						
30...	1145	11.7	109000	25	7360	96
JUN						
11...	1730	24.4	75100	4.0	811	81
JUL						
16...	1340	27.7	57400	30	4650	88
SEP						
18...	1230	--	42100	15	1710	99

SPECIFIC CONDUCTANCE, in MICROSIEMENS/CM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	385	---	405	---	---	373	303	---	388	---	---
2	---	---	---	401	---	---	---	---	---	402	---	---
3	383	---	---	---	---	---	---	---	374	416	---	376
4	376	---	---	---	388	392	---	---	373	---	---	372
5	376	---	---	---	323	394	393	---	376	---	339	369
6	---	380	339	---	---	394	372	304	---	---	337	---
7	---	---	351	398	368	---	374	304	---	---	340	---
8	---	386	352	400	---	---	388	310	---	425	---	---
9	375	---	---	392	---	---	414	---	---	426	---	352
10	371	382	357	---	---	---	403	---	359	430	---	346
11	382	---	358	---	421	406	---	---	346	---	---	348
12	---	---	352	---	412	401	---	---	350	---	344	---
13	---	379	---	---	416	400	---	329	---	---	350	---
14	---	386	---	381	---	---	---	326	---	423	358	---
15	343	388	---	372	---	---	386	325	---	416	---	---
16	377	---	---	371	---	---	359	---	---	390	---	352
17	373	---	334	---	---	---	328	---	417	400	---	358
18	---	---	300	---	372	378	---	---	421	---	---	358
19	---	383	348	---	414	408	---	---	---	---	371	---
20	---	383	---	---	412	406	---	357	---	---	370	---
21	---	---	---	---	---	---	---	362	---	---	364	---
22	380	386	---	392	---	---	312	373	---	394	---	---
23	380	---	---	310	---	---	316	---	---	378	---	357
24	316	---	363	300	---	---	313	---	394	372	---	360
25	---	---	378	---	408	415	---	---	396	---	---	364
26	---	386	384	---	400	410	---	---	---	---	356	---
27	---	388	---	358	400	408	---	378	390	---	341	---
28	---	---	---	---	---	---	---	382	389	---	330	---
29	380	388	---	405	---	---	302	384	---	355	---	---
30	385	---	---	380	---	---	301	---	---	326	---	336
31	---	---	400	---	---	---	---	---	---	330	---	---

05389500 MISSISSIPPI RIVER AT MCGREGOR, IA--Continued

WATER TEMPERATURE, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	10.0	---	3.0	---	---	5.0	11.0	---	29.0	---	---
2	---	---	---	3.0	---	---	---	---	---	30.0	---	---
3	18.0	---	---	---	---	---	---	---	19.0	30.0	---	26.0
4	18.0	---	---	---	3.0	4.0	---	---	18.0	---	---	26.0
5	16.0	---	---	---	3.0	4.0	5.0	---	18.0	---	28.0	26.0
6	---	12.0	9.0	---	---	4.0	5.0	15.0	---	---	27.0	---
7	---	---	8.0	3.0	4.0	---	6.0	15.0	---	---	27.0	---
8	---	12.0	7.0	3.0	---	---	6.0	16.0	---	30.0	---	---
9	16.0	---	---	4.0	---	---	7.0	---	---	30.0	---	27.0
10	15.0	10.0	5.0	---	---	---	9.0	---	20.0	29.0	---	26.0
11	15.0	---	5.0	---	4.0	5.0	---	---	22.0	---	---	25.0
12	---	---	5.0	---	4.0	4.0	---	---	25.0	---	28.0	---
13	---	11.0	---	---	4.0	4.0	---	12.0	---	---	26.0	---
14	---	11.0	---	4.0	---	---	---	13.0	---	26.0	26.0	---
15	14.0	13.0	---	3.0	---	---	14.0	14.0	---	27.0	---	---
16	12.0	---	---	2.0	---	---	15.0	---	---	27.7	---	24.0
17	11.0	---	5.0	---	---	---	16.0	---	24.0	28.0	---	24.0
18	---	---	6.0	---	5.0	7.0	---	---	25.0	---	---	24.0
19	---	11.0	5.0	---	5.0	4.0	---	---	---	---	25.0	---
20	---	10.0	---	---	5.0	5.0	---	14.0	---	---	25.0	---
21	---	---	---	---	---	---	---	15.0	---	---	26.0	---
22	12.0	9.0	---	4.0	---	---	10.0	15.0	---	29.0	---	---
23	13.0	---	---	3.0	---	---	11.0	---	---	29.0	---	19.0
24	12.0	---	1.0	4.0	---	---	10.0	---	28.0	27.0	---	19.0
25	---	---	2.0	---	6.0	3.0	---	---	28.0	---	---	19.0
26	---	9.0	3.0	---	5.0	4.0	---	---	---	---	27.0	---
27	---	9.0	---	4.0	5.0	5.0	---	18.0	30.0	---	27.0	---
28	---	---	---	---	---	---	---	20.0	31.0	---	26.0	---
29	9.0	8.0	---	3.0	---	---	10.0	21.0	---	29.0	---	---
30	10.0	---	---	3.0	---	---	11.0	---	---	29.0	---	20.0
31	---	---	3.0	---	---	---	---	---	---	29.0	---	---

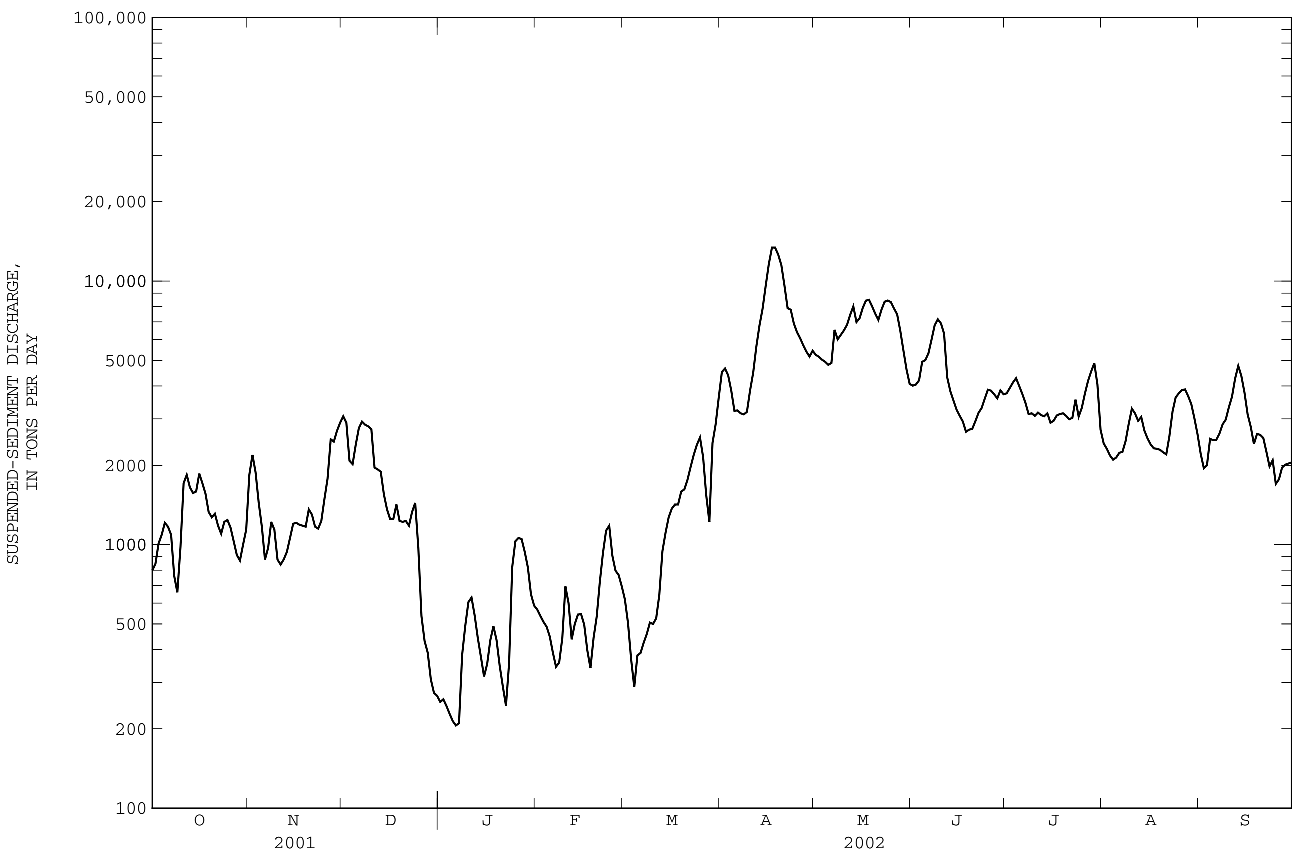
SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	17	799	27	1840	27	3070	4.2	253	9.6	567	8.5	620
2	18	846	26	2190	27	2900	4.0	259	9.4	536	7.7	505
3	20	1010	24	1880	22	2080	3.8	244	9.2	509	6.9	367
4	22	1090	21	1440	23	2020	3.6	228	9.0	488	6.2	288
5	24	1210	19	1170	26	2390	3.4	214	8.1	448	6.7	380
6	23	1170	17	878	28	2770	3.2	206	7.1	389	6.2	388
7	22	1090	18	972	27	2930	3.2	210	6.3	344	6.3	424
8	21	760	20	1220	25	2850	5.2	382	6.8	357	6.7	458
9	20	659	18	1140	24	2810	6.1	492	8.0	441	7.1	506
10	23	981	15	877	23	2740	7.2	605	11	694	7.2	500
11	26	1710	15	840	16	1960	7.5	630	8.6	600	8.0	525
12	26	1840	16	879	16	1930	6.7	539	6.5	437	8.9	644
13	27	1650	17	939	16	1890	5.9	443	7.6	500	9.8	944
14	27	1570	18	1060	15	1550	5.1	375	8.3	543	11	1110
15	28	1590	20	1200	14	1360	4.3	316	8.7	545	11	1270
16	27	1860	20	1210	14	1250	4.8	353	8.6	497	12	1370
17	23	1710	20	1190	13	1250	6.0	434	7.5	397	13	1420
18	22	1560	19	1180	14	1420	6.8	490	6.4	340	14	1420
19	20	1330	19	1170	13	1230	6.2	434	7.5	443	18	1590
20	19	1270	22	1360	13	1220	5.5	347	7.3	533	18	1620
21	18	1310	21	1300	15	1230	4.8	290	8.4	722	20	1760
22	17	1180	19	1170	17	1180	4.3	245	10	931	22	1970
23	17	1100	19	1150	19	1330	6.1	354	12	1130	24	2190
24	19	1220	20	1230	20	1440	13	821	12	1180	26	2390
25	19	1240	21	1490	13	972	15	1030	9.6	908	28	2550
26	19	1160	23	1780	8.0	536	15	1060	9.0	797	26	2150
27	18	1030	30	2510	6.7	431	15	1050	9.7	767	22	1540
28	18	914	28	2460	6.3	389	14	939	9.3	695	21	1220
29	18	870	25	2700	5.9	308	13	820	---	---	30	2430
30	22	1000	25	2900	5.5	274	11	648	---	---	31	2860
31	25	1140	---	---	5.0	267	9.8	587	---	---	36	3620
TOTAL	---	37869	---	43325	---	49977	---	15298	---	16738	---	41029

05389500 MISSISSIPPI RIVER AT MCGREGOR, IA--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	42	4520	23	5250	35	4010	17	3750	21	2420	16	2210
2	40	4660	23	5160	36	4050	18	3930	20	2310	15	1950
3	35	4390	23	5030	37	4200	19	4120	19	2180	16	2000
4	29	3840	23	4940	40	4940	20	4280	19	2100	21	2520
5	24	3220	23	4810	38	5010	20	4000	18	2140	20	2490
6	25	3230	24	4890	38	5320	19	3730	19	2230	20	2500
7	27	3150	33	6530	39	6000	18	3450	18	2250	20	2640
8	26	3120	31	6010	41	6800	17	3130	20	2470	20	2860
9	26	3190	32	6250	40	7160	18	3150	22	2870	20	2980
10	32	3840	35	6500	38	6910	19	3080	24	3280	22	3320
11	36	4490	37	6830	35	6320	21	3170	23	3150	22	3640
12	40	5630	40	7450	25	4310	21	3100	22	2950	25	4270
13	43	6770	42	8020	24	3820	22	3070	23	3050	27	4770
14	47	7850	35	6990	23	3520	22	3150	21	2710	26	4360
15	51	9590	35	7230	22	3250	19	2900	20	2530	24	3770
16	57	11600	36	7900	22	3080	19	2950	20	2400	21	3120
17	58	13400	38	8430	21	2930	19	3090	20	2320	21	2800
18	52	13400	38	8490	20	2680	19	3130	20	2310	20	2410
19	45	12600	36	8020	22	2730	19	3150	20	2290	23	2630
20	38	11500	34	7520	22	2750	18	3080	20	2240	22	2610
21	30	9610	33	7120	23	2940	18	2990	20	2200	21	2540
22	24	7890	37	7790	24	3160	18	3030	22	2580	21	2250
23	24	7790	41	8350	25	3300	22	3550	25	3200	20	1980
24	22	6900	43	8440	26	3580	19	3060	26	3620	23	2090
25	21	6400	46	8320	25	3870	22	3300	25	3750	19	1700
26	21	6070	48	7870	23	3840	26	3740	23	3860	18	1770
27	21	5710	49	7480	20	3720	30	4180	22	3880	19	1960
28	21	5400	45	6480	18	3590	34	4540	20	3660	20	2010
29	21	5170	39	5460	18	3850	38	4880	19	3410	20	2030
30	23	5440	37	4620	17	3720	32	4050	18	3010	20	2050
31	---	---	35	4070	---	---	23	2730	17	2620	---	---
TOTAL	---	200370	---	208250	---	125360	---	107460	---	85990	---	80230
YEAR		1011896										



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05411500 MISSISSIPPI RIVER AT CLAYTON, IA

LOCATION.--Lat 42°54'13", long 91°08'45", NE$^1/_4$ NW$^1/_4$ sec.1, T.93 N., R.3 W., Clayton County, Hydrologic Unit 07060003, 6 miles below the Wisconsin River.

DRAINAGE AREA.--79,200 mi^2.

PERIOD OF RECORD.--April 1930 to June 1936, January 1992 to current year.

GAGE.--Water-stage recorder. Datum of gage is 602.60 ft above NGVD of 1929.

REMARKS.--Records good. U.S. Geological Survey satellite data collection platform with telephone modem at station.

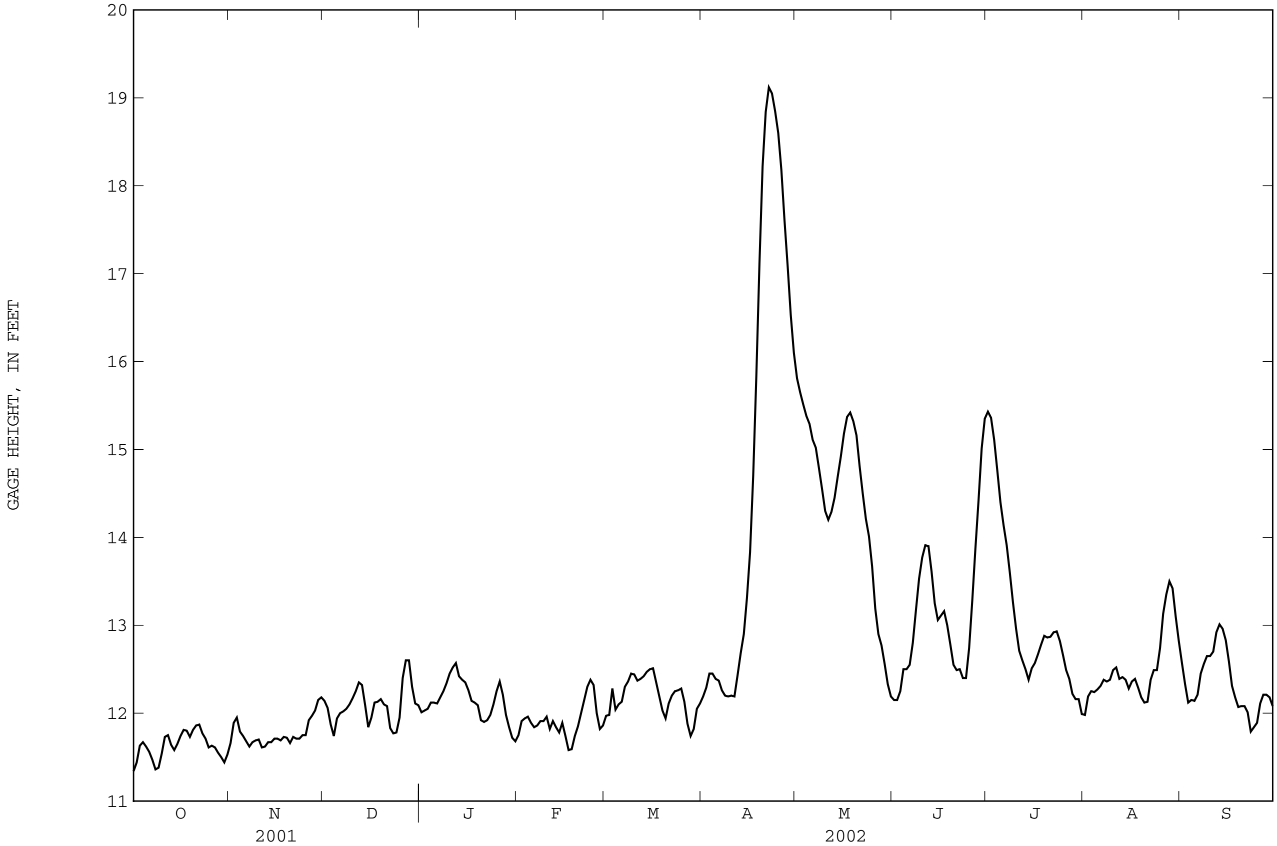
EXTREMES FOR CURRENT WATER YEAR.--Maximum gage height 19.18 ft Apr. 22; minimum gage height 11.29 ft Oct. 1.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height 25.48 ft Apr. 20, 2001; minimum gage height 11.16 ft Aug. 21, 1992.

GAGE HEIGHT FROM DCP, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11.34	11.66	12.14	12.01	11.75	11.97	12.19	15.81	12.15	15.43	11.98	12.57
2	11.44	11.89	12.06	12.03	11.91	11.98	12.29	15.65	12.15	15.36	12.19	12.33
3	11.63	11.95	11.87	12.05	11.94	12.28	12.45	15.51	12.25	15.11	12.25	12.12
4	11.67	11.79	11.74	12.12	11.96	12.04	12.45	15.38	12.50	14.76	12.24	12.15
5	11.62	11.74	11.94	12.12	11.89	12.10	12.39	15.29	12.50	14.40	12.27	12.14
6	11.56	11.68	12.00	12.11	11.84	12.13	12.37	15.11	12.55	14.14	12.31	12.21
7	11.47	11.62	12.02	12.18	11.86	12.30	12.26	15.02	12.80	13.91	12.38	12.45
8	11.36	11.67	12.05	12.25	11.91	12.36	12.20	14.79	13.17	13.60	12.36	12.56
9	11.38	11.69	12.10	12.34	11.91	12.45	12.19	14.55	13.53	13.26	12.38	12.65
10	11.54	11.70	12.17	12.45	11.96	12.44	12.20	14.30	13.77	12.96	12.49	12.65
11	11.73	11.61	12.25	12.52	11.82	12.37	12.19	14.20	13.91	12.71	12.52	12.70
12	11.75	11.62	12.35	12.57	11.91	12.39	12.43	14.29	13.90	12.60	12.39	12.92
13	11.64	11.67	12.32	12.42	11.84	12.42	12.68	14.45	13.61	12.50	12.41	13.01
14	11.58	11.67	12.09	12.38	11.78	12.47	12.90	14.69	13.25	12.38	12.38	12.96
15	11.65	11.71	11.84	12.35	11.89	12.50	13.31	14.92	13.06	12.51	12.28	12.83
16	11.74	11.71	11.95	12.26	11.74	12.51	13.83	15.18	13.11	12.57	12.36	12.59
17	11.81	11.69	12.12	12.14	11.58	12.35	14.70	15.37	13.16	12.67	12.39	12.31
18	11.80	11.73	12.13	12.12	11.59	12.19	15.83	15.42	13.00	12.78	12.29	12.18
19	11.73	11.72	12.16	12.09	11.74	12.03	17.12	15.32	12.78	12.88	12.18	12.07
20	11.81	11.66	12.10	11.92	11.85	11.94	18.22	15.16	12.55	12.86	12.12	12.08
21	11.86	11.73	12.08	11.90	12.00	12.11	18.84	14.81	12.49	12.87	12.13	12.08
22	11.87	11.71	11.83	11.92	12.15	12.20	19.12	14.50	12.50	12.92	12.38	12.01
23	11.77	11.71	11.77	11.98	12.30	12.25	19.05	14.21	12.40	12.93	12.49	11.79
24	11.71	11.75	11.78	12.10	12.38	12.26	18.85	14.01	12.40	12.82	12.49	11.84
25	11.61	11.75	11.95	12.25	12.32	12.28	18.60	13.67	12.74	12.66	12.74	11.89
26	11.63	11.92	12.40	12.36	12.00	12.13	18.18	13.19	13.28	12.49	13.13	12.11
27	11.61	11.97	12.60	12.21	11.82	11.88	17.61	12.90	13.87	12.39	13.35	12.21
28	11.55	12.03	12.60	11.98	11.86	11.74	17.09	12.77	14.42	12.22	13.50	12.21
29	11.50	12.15	12.30	11.84	---	11.82	16.53	12.56	15.01	12.16	13.42	12.18
30	11.44	12.18	12.11	11.72	---	12.05	16.10	12.33	15.35	12.16	13.10	12.08
31	11.53	---	12.09	11.68	---	12.11	---	12.19	---	11.99	12.82	---
MEAN	11.62	11.77	12.09	12.14	11.91	12.20	14.87	14.44	13.14	13.13	12.51	12.33
MAX	11.87	12.18	12.60	12.57	12.38	12.51	19.12	15.81	15.35	15.43	13.50	13.01
MIN	11.34	11.61	11.74	11.68	11.58	11.74	12.19	12.19	12.15	11.99	11.98	11.79

05411500 MISSISSIPPI RIVER AT CLAYTON, IA--Continued



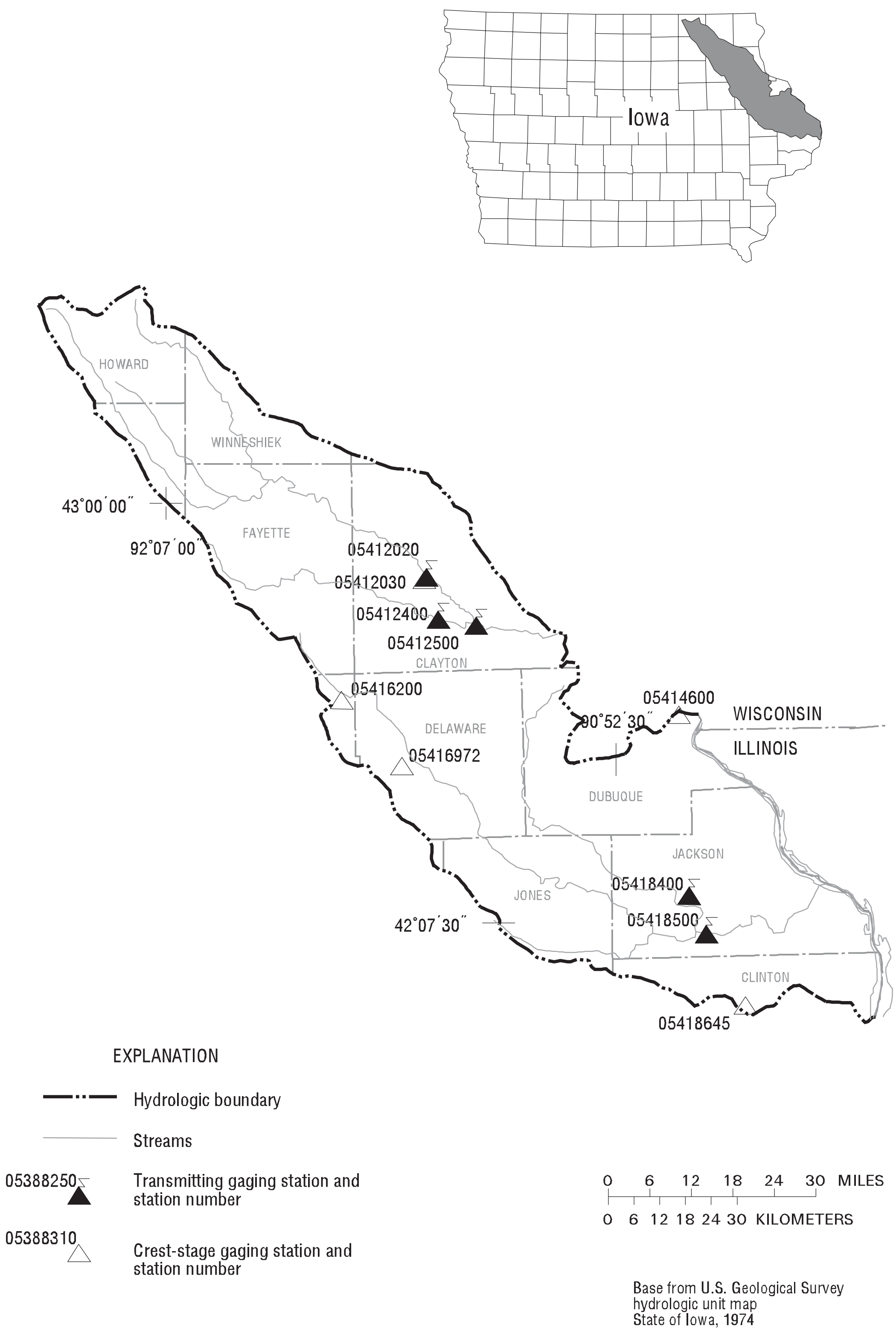


Figure 12. Locations of active continuous-record and crest-stage gaging stations in the Turkey River and Maquoketa River drainage basins.

Gaging Stations

05411850 Turkey River near Eldorado, IA 78
05412020 Turkey River above French Hollow Creek at Elkader, IA. 80
05412400 Volga River at Littleport, IA. 82
05412500 Turkey River at Garber, IA 84
05416900 Maquoketa River at Manchester, IA. 86
05418400 North Fork Maquoketa River near Fulton, IA 92
05418500 Maquoketa River near Maquoketa, IA 94

Crest Stage Gaging Stations

05412030 French Hollow Creek near Elkader, IA 350
05414600 Little Maquoketa River Tributary at Dubuque, IA. 351
05416200 Lamont Creek Tributary near Lamont, IA 351
05416972 Sand Creek near Manchester, IA 351
05418645 Williams Creek near Charlotte, IA. 351

05411850 TURKEY RIVER NEAR ELDORADO, IA

LOCATION.--Lat 43°03'15", long 91°48'32", in $NW^1/_4$ $SE^1/_4$ $SE^1/_4$ sec.8, T.95 N., R.8 W., Fayette County, Hydrologic Unit 07060004, on left bank 5 ft. downstream of bridge on County Highway B40, 3.6 miles downstream of confluence with the Little Turkey River, 3.4 upstream of Dry Branch Creek, and 1.4 miles east of Eldorado.

DRAINAGE AREA.--641 mi^2.

PERIOD OF RECORD.--September 27, 2000 to current year.

GAGE.--Water-stage recorder. Datum of gage is 890.00 ft. above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 15, 1991, gage height 18.78 ft, discharge not determined; flood discharge at downstream site at Garber was 49,900 ft^3/s; flood of May 19, 1999 at downstream site at Garber was 53,900 ft^3/s, gage height 30.91 ft. This is the highest known flood in the basin.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	154	159	165	e107	e76	e145	155	773	454	207	538	139
2	152	157	162	e112	e82	e141	157	721	401	184	363	136
3	150	154	162	e108	e91	e141	156	662	389	170	261	132
4	148	155	163	e112	e84	e142	155	630	836	163	341	130
5	147	154	164	e115	e78	e142	154	575	1690	156	561	128
6	145	153	166	e111	e85	e146	152	540	1260	152	650	126
7	144	154	166	e108	e94	e148	152	502	939	149	612	124
8	144	153	164	e110	e99	e153	156	472	763	145	455	122
9	147	150	159	e121	e110	e189	157	1040	632	142	347	121
10	173	151	160	e119	e137	e221	156	963	539	140	273	121
11	172	150	159	e116	e152	e234	157	674	497	138	219	122
12	163	149	161	e115	e144	e211	174	634	450	136	188	120
13	320	153	161	e114	e142	e201	331	589	416	132	226	119
14	470	155	158	e106	e137	e198	574	541	379	129	319	119
15	289	153	157	e99	e146	e195	471	499	338	126	423	119
16	252	152	158	e93	154	e192	408	467	300	123	346	117
17	224	152	158	e83	150	e190	357	430	267	121	268	116
18	208	152	156	e75	147	205	401	394	245	121	222	118
19	195	153	155	e82	164	206	537	366	266	123	231	129
20	185	149	149	e94	219	205	416	342	643	123	195	136
21	179	149	145	e102	247	197	387	326	575	121	174	136
22	175	149	e148	e107	289	160	394	315	765	135	179	127
23	179	149	e141	e101	266	168	385	309	705	141	176	121
24	177	155	e132	e95	263	172	378	295	502	133	172	118
25	e172	162	e121	e86	233	168	364	300	398	127	168	116
26	166	158	e114	e94	195	162	331	289	391	124	162	115
27	163	168	e113	e102	e163	160	330	271	406	142	156	115
28	159	166	e115	e96	e150	160	540	303	361	161	152	116
29	159	166	e113	e90	---	158	810	743	295	1020	148	118
30	158	165	e111	e84	---	156	896	796	246	2040	144	116
31	159	---	e108	e80	---	156	---	554	---	1060	142	---
MEAN	188.0	154.8	147.2	101.2	153.5	174.9	339.7	526.3	544.9	260.8	284.2	123.1
MAX	470	168	166	121	289	234	896	1040	1690	2040	650	139
MIN	144	149	108	75	76	141	152	271	245	121	142	115
AC-FT	11560	9210	9050	6220	8520	10750	20210	32360	32430	16030	17480	7320
CFSM	0.29	0.24	0.23	0.16	0.24	0.27	0.53	0.82	0.85	0.41	0.44	0.19
IN.	0.34	0.27	0.26	0.18	0.25	0.31	0.59	0.95	0.95	0.47	0.51	0.21

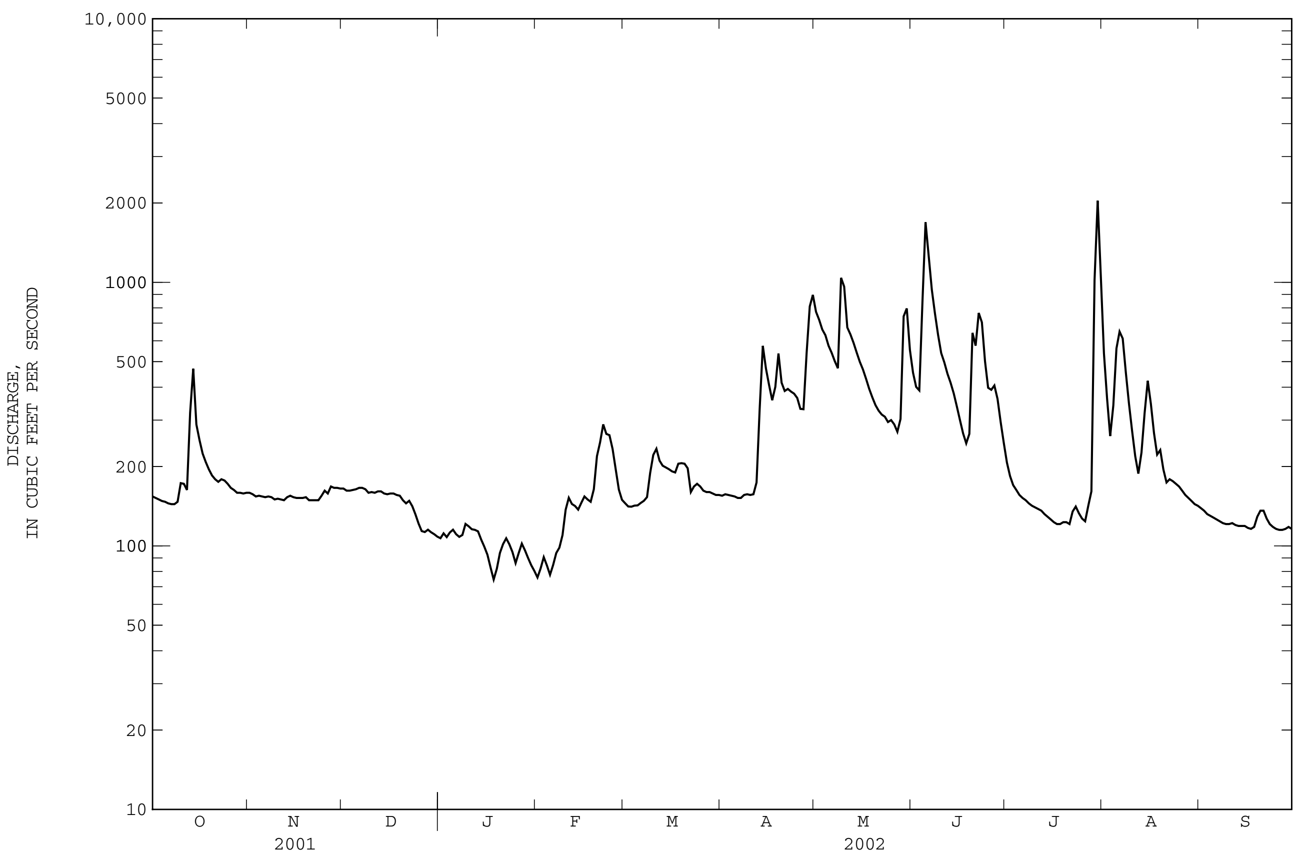
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	177.4	212.4	134.2	111.9	167.6	528.9	1552	1170	600.5	245.1	217.7	159.6
MAX	188	270	147	123	182	883	2764	1814	656	261	284	196
(WY)	2002	2001	2002	2001	2001	2001	2001	2001	2001	2002	2002	2001
MIN	167	155	121	101	153	175	340	526	545	229	151	123
(WY)	2001	2002	2001	2002	2002	2002	2002	2002	2002	2001	2001	2002

05411850 TURKEY RIVER NEAR ELDORADO, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 2000 - 2002	
ANNUAL MEAN	624.1		250.2		439.9	
HIGHEST ANNUAL MEAN					630	2001
LOWEST ANNUAL MEAN					250	2002
HIGHEST DAILY MEAN	6970	Apr 12	2040	Jul 30	6970	Apr 12 2001
LOWEST DAILY MEAN	70	Jan 2	75	Jan 18a	66	Dec 25 2000
ANNUAL SEVEN-DAY MINIMUM	92	Jan 1	82	Jan 30	79	Dec 28 2000
MAXIMUM PEAK FLOW			2150	Jul 30	7520	Apr 12 2001
MAXIMUM PEAK STAGE			8.43	Jul 30	13.93	Apr 12 2001
ANNUAL RUNOFF (AC-FT)	451800		181200		318700	
ANNUAL RUNOFF (CFSM)	0.97		0.39		0.69	
ANNUAL RUNOFF (INCHES)	13.22		5.30		9.32	
10 PERCENT EXCEEDS	1530		538		931	
50 PERCENT EXCEEDS	175		159		170	
90 PERCENT EXCEEDS	140		113		116	

a Ice affected.
e Estimated.



05412020 TURKEY RIVER ABOVE FRENCH HOLLOW CREEK AT ELKADER, IA

LOCATION.--Lat 42°50'36", long 91°24'04", in NW$^1/_4$ SE$^1/_4$ sec.26, T.93 N., R.05 W., Clayton County, Hydrologic Unit 07060004, on left bank 5 ft. downstream of bridge on State Highway 13, and 100 ft upstream of the mouth of French Hollow Creek.

DRAINAGE AREA.--891 mi^2.

PERIOD OF RECORD.--August 28, 2001 to September 30, 2002.

GAGE.--Water-stage recorder. Datum of gage is 694.93 ft. above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 15, 1991, gage height and discharge not determined; flood discharge at downstream site at Garber was 49,900 ft^3/s; flood of May 19, 1999 at downstream site at Garber was 53,900 ft^3/s, gage height 30.91 ft. This is the highest known flood in the basin.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	327	312	349	e203	e178	e258	298	1050	670	517	953	290
2	313	308	341	e211	e172	e246	304	1000	600	479	730	285
3	298	296	335	e202	e188	e237	297	927	587	455	611	271
4	290	288	338	e210	e204	e232	293	887	1210	450	616	261
5	283	285	344	e229	e198	e237	289	851	1440	385	668	254
6	273	283	355	e223	e203	e242	285	807	1510	354	802	247
7	266	283	340	e219	e217	e247	286	765	1280	337	819	240
8	265	282	338	244	e223	e268	303	724	1110	321	770	230
9	266	276	326	249	e235	e296	321	709	987	309	670	224
10	321	272	319	254	e244	e338	306	1200	901	294	590	224
11	386	268	316	257	e245	436	304	990	871	288	535	223
12	348	267	325	261	e228	429	348	882	823	286	483	219
13	337	279	333	e244	e232	485	371	822	769	281	505	209
14	742	285	325	e239	e249	468	534	785	730	271	516	207
15	697	283	319	e219	e260	445	686	742	689	263	572	205
16	561	276	332	e214	289	425	638	705	644	255	618	198
17	505	274	330	e198	284	400	597	665	605	248	572	192
18	483	273	321	e183	274	388	570	624	575	250	509	195
19	456	276	310	e198	325	379	771	590	557	256	473	228
20	434	271	292	e209	466	391	765	561	585	253	466	248
21	410	267	265	e217	498	373	704	533	850	249	447	252
22	411	266	298	e225	475	330	699	510	782	258	657	242
23	430	266	e275	e217	509	327	685	494	935	291	528	219
24	414	287	e246	e209	503	349	681	474	830	283	537	202
25	379	346	e222	e198	498	341	658	475	714	268	457	193
26	339	328	e213	e213	454	336	623	469	756	255	419	189
27	324	357	e210	e227	e341	326	613	442	732	286	395	184
28	317	356	e216	e218	e284	324	782	433	671	360	371	179
29	308	345	e205	e203	---	320	863	581	622	571	336	203
30	299	350	e203	e191	---	312	1030	846	568	1240	320	193
31	304	---	e200	e184	---	302	---	813	---	1430	302	---
TOTAL	11786	8805	9141	6768	8476	10487	15904	22356	24603	12043	17247	6706
MEAN	380.2	293.5	294.9	218.3	302.7	338.3	530.1	721.2	820.1	388.5	556.4	223.5
MAX	742	357	355	261	509	485	1030	1200	1510	1430	953	290
MIN	265	266	200	183	172	232	285	433	557	248	302	179
AC-FT	23380	17460	18130	13420	16810	20800	31550	44340	48800	23890	34210	13300
CFSM	0.42	0.33	0.33	0.24	0.34	0.37	0.59	0.80	0.91	0.43	0.62	0.25
IN.	0.49	0.36	0.38	0.28	0.35	0.43	0.66	0.92	1.01	0.50	0.71	0.28

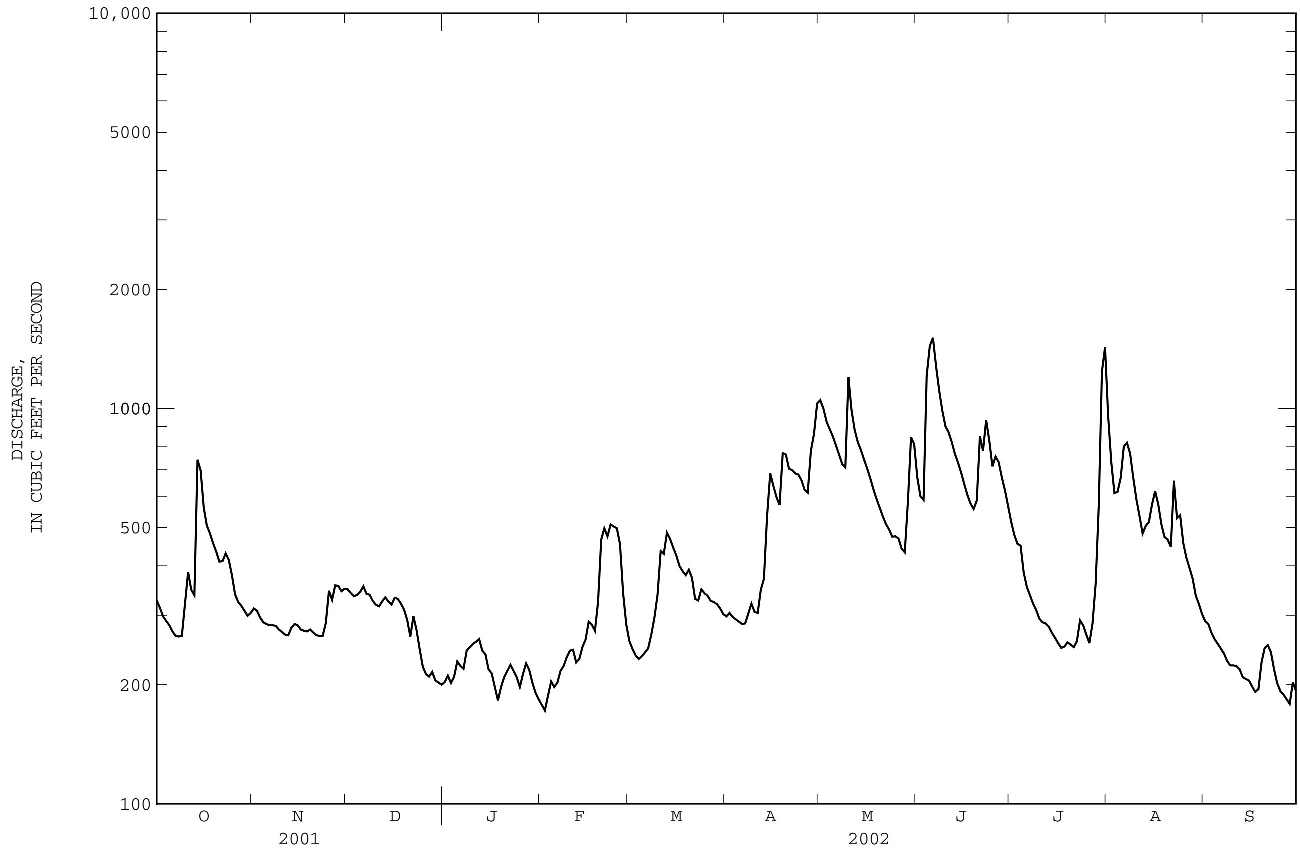
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	380.2	293.5	294.9	218.3	302.7	338.3	530.1	721.2	820.1	388.5	556.4	223.5
MAX	380	294	295	218	303	338	530	721	820	388	556	224
(WY)	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002
MIN	380	294	295	218	303	338	530	721	820	388	556	224
(WY)	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002

05412020 TURKEY RIVER ABOVE FRENCH HOLLOW CREEK AT ELKADER, IA--Continued

SUMMARY STATISTICS	FOR 2002 WATER YEAR		WATER YEARS 2001 - 2002	
ANNUAL TOTAL	154322			
ANNUAL MEAN	422.8		422.8	
HIGHEST ANNUAL MEAN			423	2002
LOWEST ANNUAL MEAN			423	2002
HIGHEST DAILY MEAN	1510	Jun 6	1510	Jun 6 2002
LOWEST DAILY MEAN	172	Feb 2a	172	Feb 2 2002a
ANNUAL SEVEN-DAY MINIMUM	188	Jan 30	188	Jan 30 2002
MAXIMUM PEAK FLOW	1630	Jun 5	1630	Jun 5 2002
MAXIMUM PEAK STAGE	7.65	Jun 5	7.65	Jun 5 2002
ANNUAL RUNOFF (AC-FT)	306100		306300	
ANNUAL RUNOFF (CFSM)	0.47		0.47	
ANNUAL RUNOFF (INCHES)	6.36		6.36	
10 PERCENT EXCEEDS	769		769	
50 PERCENT EXCEEDS	325		328	
90 PERCENT EXCEEDS	212		214	

a Ice affected
e Estimated



05412400 VOLGA RIVER AT LITTLEPORT, IA

LOCATION.--Lat 42°45'15", long 91°22'10", in $NE^{1}/_{4}$ $NE^{1}/_{4}$ $SE^{1}/_{4}$ sec.25, T.92 N., R.5 W., Clayton County, Hydrologic Unit 07060004, on left bank 10 ft. downstream of bridge on County Highway X21, 6 miles upstream of confluence with the Turkey River, and 8.0 miles southeast of Elkader.

DRAINAGE AREA.--348 mi^2.

PERIOD OF RECORD.--September 1957 to July 1977 as miscellaneous low-flow site. September 19, 1999 to current year.

GAGE.--Water-stage recorder. Datum of gage is 677.00 ft. above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 17, 1999 reached a stage of 25.36 ft, approximate discharge 30,000 cfs. (from indirect measurement at Mederville, 2.5 miles upstream of Littleport)

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	147	164	204	e89	e60	e142	150	357	502	164	101	71
2	142	163	196	e99	e66	e122	155	371	452	153	100	78
3	137	154	190	e91	e71	e104	153	349	431	146	e98	76
4	134	146	189	e98	e65	e97	147	327	2700	164	e143	68
5	130	142	188	e111	e59	e101	141	304	3150	148	e155	67
6	124	141	189	e104	e66	e115	138	292	1430	145	e119	64
7	119	141	190	e99	e76	e131	143	280	962	143	102	63
8	117	139	188	e107	e81	e155	158	260	748	137	91	60
9	117	134	181	e119	e82	e185	183	251	613	130	84	60
10	129	130	176	e112	e127	210	180	237	525	127	79	61
11	149	126	171	e111	e157	226	179	237	491	129	77	63
12	168	125	166	e108	e139	235	220	262	429	126	78	62
13	173	129	166	e105	e123	225	227	276	429	123	95	e60
14	215	137	160	e97	e115	217	228	291	361	117	105	e58
15	424	136	155	e93	148	207	228	278	326	108	89	e57
16	323	131	156	e86	150	195	225	268	295	102	83	e55
17	273	126	155	e74	141	185	216	255	272	99	83	55
18	244	124	150	e58	136	179	207	239	256	97	87	59
19	229	127	147	e69	171	182	201	227	245	108	80	75
20	214	126	141	e77	246	192	193	218	235	107	78	87
21	200	123	135	e86	310	192	197	209	219	98	73	88
22	194	121	144	e95	299	181	202	203	209	104	210	77
23	208	119	e133	e86	276	185	194	201	197	97	216	69
24	207	128	e115	e75	270	196	189	201	186	90	185	64
25	204	152	e101	e65	262	186	190	204	178	88	156	61
26	192	153	e96	e75	246	174	179	204	211	88	134	59
27	182	173	e94	e87	e186	168	182	193	211	114	120	57
28	174	190	e103	e80	e159	165	331	187	200	131	118	58
29	169	203	e96	e74	---	164	382	313	185	132	98	82
30	164	204	e94	e69	---	160	390	781	174	128	80	79
31	163	---	e90	e65	---	154	---	610	---	111	75	---
TOTAL	5765	4307	4659	2764	4287	5330	6108	8885	16822	3754	3392	1993
MEAN	186.0	143.6	150.3	89.16	153.1	171.9	203.6	286.6	560.7	121.1	109.4	66.43
MAX	424	204	204	119	310	235	390	781	3150	164	216	88
MIN	117	119	90	58	59	97	138	187	174	88	73	55
AC-FT	11430	8540	9240	5480	8500	10570	12120	17620	33370	7450	6730	3950
CFSM	0.53	0.41	0.43	0.26	0.44	0.49	0.59	0.82	1.61	0.35	0.31	0.19
IN.	0.62	0.46	0.50	0.30	0.46	0.57	0.65	0.95	1.80	0.40	0.36	0.21

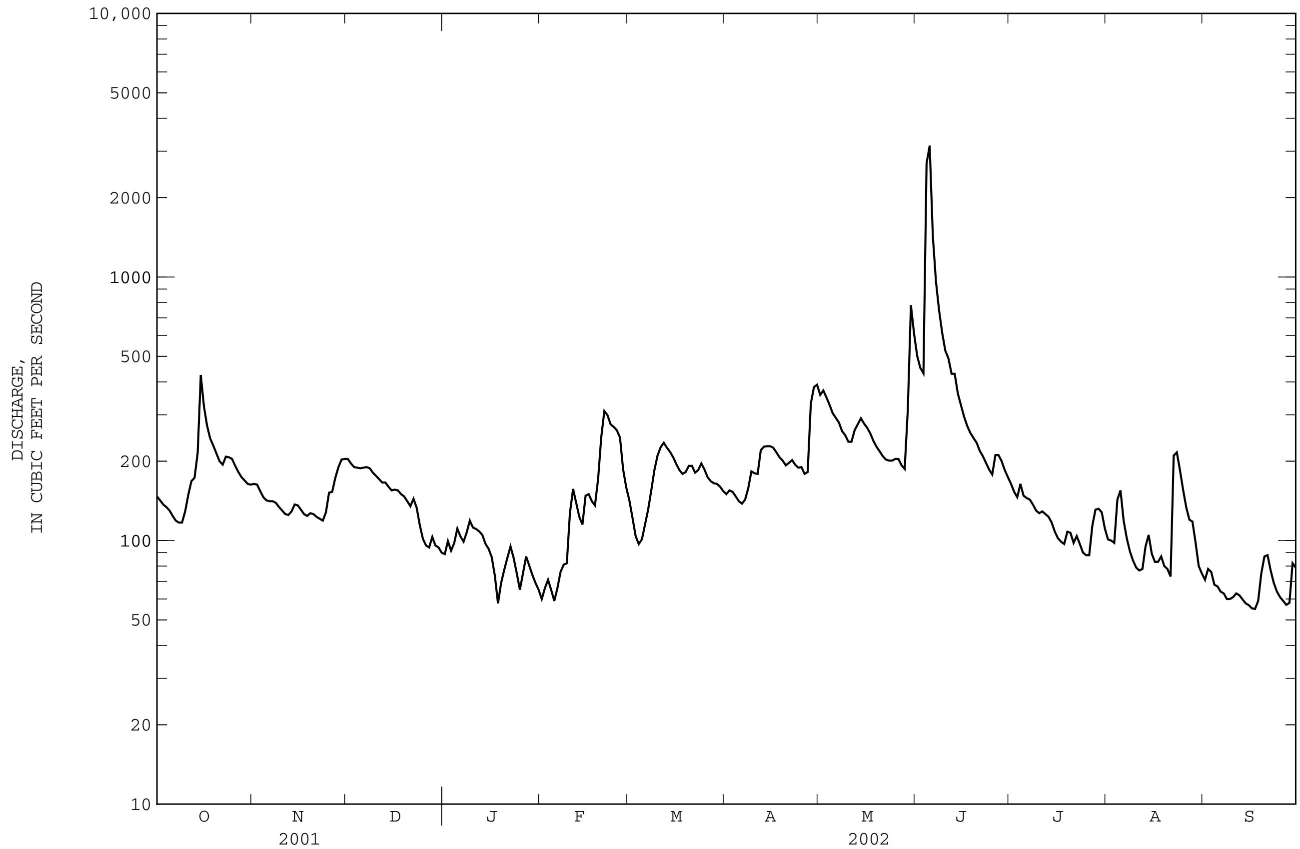
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	121.6	123.8	92.35	64.74	138.4	325.8	368.9	412.3	495.6	224.6	126.6	133.3
MAX	186	144	150	89.2	175	649	590	680	628	321	138	246
(WY)	2002	2002	2002	2002	2000	2001	2001	2001	2000	2000	2000	2001
MIN	68.5	101	53.9	43.9	85.5	157	204	270	298	121	109	66.4
(WY)	2001	2000	2001	2000	2001	2000	2002	2000	2001	2002	2002	2002

05412400 VOLGA RIVER AT LITTLEPORT, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 2000 - 2002	
ANNUAL TOTAL	105566		68066			
ANNUAL MEAN	289.2		186.5		218.9	
HIGHEST ANNUAL MEAN					270	2001
LOWEST ANNUAL MEAN					186	2002
HIGHEST DAILY MEAN	2440	Mar 23	3150	Jun 5	3150	Jun 5 2002
LOWEST DAILY MEAN	38	Jan 2	55	Sep 16a	27	Jan 28 2000
ANNUAL SEVEN-DAY MINIMUM	46	Jan 1	58	Sep 12	31	Jan 26 2000
MAXIMUM PEAK FLOW			3810	Jun 4	3810	Jun 4 2002
MAXIMUM PEAK STAGE			13.11	Jun 4	13.11	Jun 4 2002
ANNUAL RUNOFF (AC-FT)	209400		135000		158600	
ANNUAL RUNOFF (CFSM)	0.83		0.54		0.63	
ANNUAL RUNOFF (INCHES)	11.28		7.28		8.55	
10 PERCENT EXCEEDS	744		276		443	
50 PERCENT EXCEEDS	172		147		134	
90 PERCENT EXCEEDS	80		75		61	

a Also Sept. 17.
e Estimated



05412500 TURKEY RIVER AT GARBER, IA

LOCATION.--Lat 42°44'24", long 91°15'42", in SE$^1/_4$ NW$^1/_4$ sec.36, T.92 N., R.4 W., Clayton County, Hydrologic Unit 07060004, on right bank 10 ft. upstream from bridge on county highway C43, 800 ft. upstream from Wayman Creek, 1,000 ft. southeast of Garber, 2,000 ft. downstream from Elk Creek, 1 mi downstream from Volga River, and 21.2 mi upstream from mouth.

DRAINAGE AREA.--1,545 mi^2.

PERIOD OF RECORD.--August 1913 to November 1916, May 1919 to September 1927, April 1929 to September 1930, October 1932 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1922-25 (M), 1927 (M). WSP 1438: Drainage area; WDR IA-95-1: location.

GAGE.--Water-stage recorder. Datum of gage is 634.46 ft. above NGVD of 1929. Prior to Feb. 7, 1935, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1890, that of May 17, 1999.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	585	587	634	e405	e316	e438	551	1620	1320	808	1330	431
2	566	580	614	e413	e290	e439	559	1590	1150	765	962	475
3	546	558	598	e404	e296	e437	553	1480	1090	687	789	435
4	526	538	594	e415	e301	e432	541	1390	8440	674	805	400
5	510	524	603	e423	e285	e432	535	1350	6850	632	879	385
6	488	508	614	e414	e287	e429	522	1310	4480	612	952	372
7	470	506	608	e410	e293	e434	521	1250	3140	596	1000	363
8	462	501	600	e418	e301	e438	554	1170	2460	559	967	352
9	463	483	583	e430	e310	e465	616	1120	2070	544	849	340
10	496	478	569	e418	e344	e546	601	1500	1820	514	748	329
11	595	470	559	e409	e344	713	586	1560	1790	513	677	328
12	607	466	562	e398	e335	756	649	1370	1610	495	626	320
13	602	483	578	e397	e355	773	677	1280	1590	479	630	312
14	792	510	560	e387	e384	774	724	1240	1420	459	663	309
15	1220	514	547	e368	e415	745	956	1180	1290	448	655	307
16	992	496	559	e341	446	713	917	1140	1180	435	732	301
17	860	483	563	e328	435	685	868	1090	1090	417	701	296
18	807	482	548	e313	415	667	826	1020	1030	423	641	300
19	763	486	537	e330	500	664	909	958	988	459	582	341
20	729	476	514	e351	671	698	1040	910	961	438	559	377
21	695	466	481	e369	794	688	960	871	1120	418	540	390
22	683	457	497	e384	766	639	942	840	1190	443	1200	369
23	747	451	e483	e376	757	627	924	825	1210	448	1010	342
24	718	475	e445	e364	750	650	910	811	1200	442	869	318
25	702	543	e432	e354	737	644	895	810	1040	416	761	305
26	661	558	e419	e374	686	619	856	811	1290	395	654	297
27	628	586	e419	e387	e518	604	843	782	1220	454	588	292
28	614	620	e428	e374	e464	602	1150	759	1050	529	541	288
29	606	634	e421	e356	---	598	1340	1040	958	582	510	397
30	595	635	e416	e337	---	581	1540	1680	876	1250	482	341
31	588	---	e411	e325	---	563	---	1700	---	1850	453	---
TOTAL	20316	15554	16396	11772	12795	18493	24065	36457	56923	18184	23355	10412
MEAN	655.4	518.5	528.9	379.7	457.0	596.5	802.2	1176	1897	586.6	753.4	347.1
MAX	1220	635	634	430	794	774	1540	1700	8440	1850	1330	475
MIN	462	451	411	313	285	429	521	759	876	395	453	288
AC-FT	40300	30850	32520	23350	25380	36680	47730	72310	112900	36070	46320	20650
CFSM	0.42	0.34	0.34	0.25	0.30	0.39	0.52	0.76	1.23	0.38	0.49	0.22
IN.	0.49	0.37	0.39	0.28	0.31	0.45	0.58	0.88	1.37	0.44	0.56	0.25

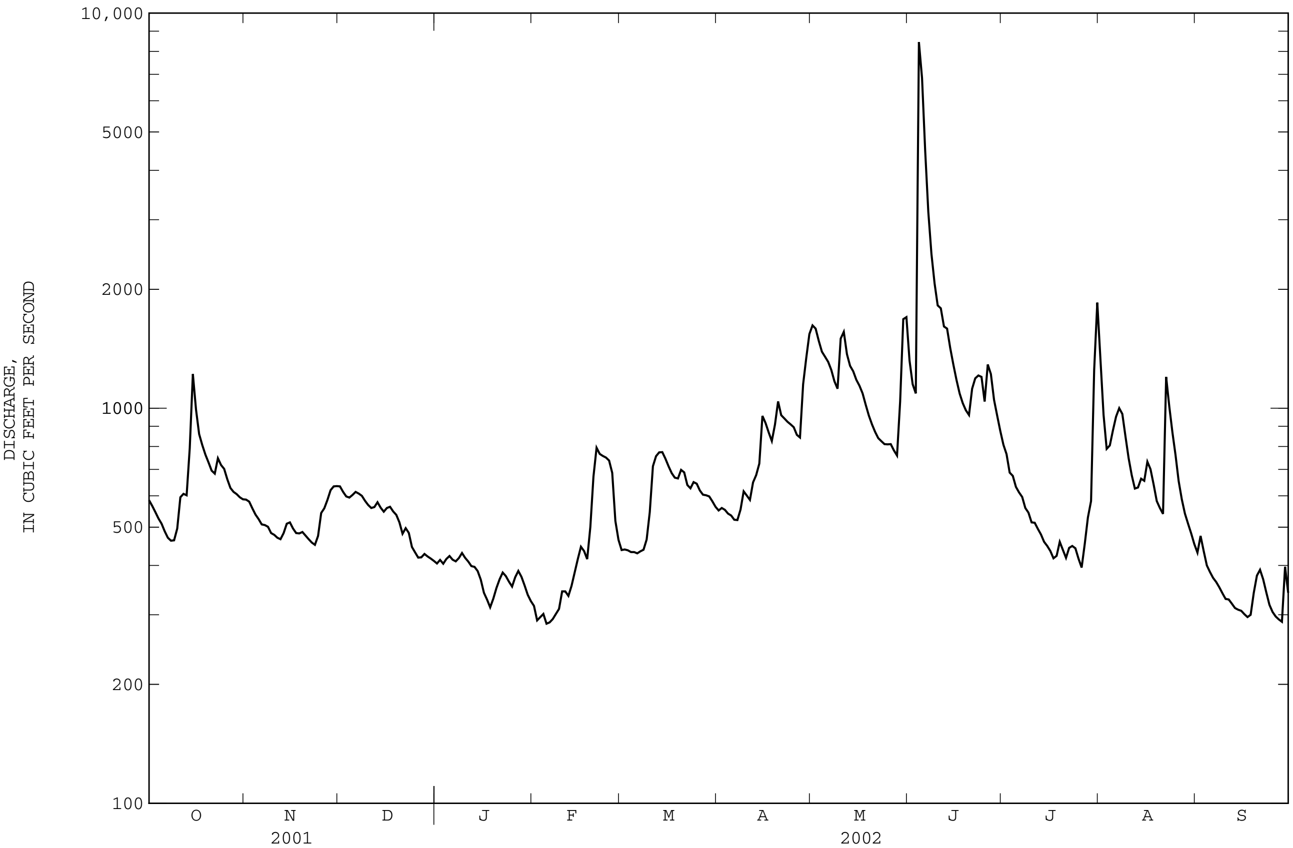
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1913 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	575.6	615.8	480.6	506.0	821.8	2010	1736	1362	1424	986.7	854.3	638.4
MAX	2527	2834	2889	3306	4265	4832	6382	5176	5316	5772	5119	3011
(WY)	1987	1962	1983	1916	1922	1979	1951	1999	1947	1993	1993	1938
MIN	88.2	92.2	78.5	62.0	60.9	188	288	95.7	103	121	140	108
(WY)	1950	1950	1959	1940	1959	1934	1957	1934	1934	1936	1964	1958

05412500 TURKEY RIVER AT GARBER, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1913 - 2002	
ANNUAL TOTAL	484398		264722			
ANNUAL MEAN	1327		725.3		1004	
HIGHEST ANNUAL MEAN					2905	1993
LOWEST ANNUAL MEAN					249	1934
HIGHEST DAILY MEAN	9290	Apr 13	8440	Jun 4	43400	May 17 1999
LOWEST DAILY MEAN	140	Jan 2	285	Feb 5a	49	Jan 28 1940
ANNUAL SEVEN-DAY MINIMUM	176	Jan 1	293	Feb 2	51	Jan 25 1940
MAXIMUM PEAK FLOW			13800	Jun 4	53900	May 17 1999
MAXIMUM PEAK STAGE			19.60	Jun 4	30.91	May 17 1999
INSTANTANEOUS LOW FLOW			280	Sep 28		
ANNUAL RUNOFF (AC-FT)	960800		525100		727600	
ANNUAL RUNOFF (CFSM)	0.86		0.47		0.65	
ANNUAL RUNOFF (INCHES)	11.66		6.37		8.83	
10 PERCENT EXCEEDS	3410		1200		2120	
50 PERCENT EXCEEDS	597		578		530	
90 PERCENT EXCEEDS	280		348		170	

a Ice affected
e Estimated



05416900 MAQUOKETA RIVER AT MANCHESTER, IA

LOCATION.--Lat 42°28'12", long 91°26'54", in SW$^1/_4$ SW$^1/_4$ SW$^1/_4$ sec.33, T.89 N., R.5 E., Delaware, Hydrologic Unit 07060006, on left bank, 10 feet downstream of east bound bridge of Highway 20, 1.5 miles upstream of Sand Creek, and 1.5 miles downstream of dam in Manchester.

DRAINAGE AREA.--275 mi^2.

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--April 26, 2000 to September 30, 2002 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 895.00 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	237	192	210	e116	e97	e169	142	377	372	179	116	107
2	233	183	196	e116	e100	e151	146	351	321	170	108	111
3	e204	172	192	e118	e103	e147	140	331	308	162	103	118
4	e164	166	188	e120	e97	e144	134	306	6300	156	136	112
5	e137	163	189	e117	e100	e146	133	281	6790	150	133	95
6	e132	162	198	e120	e102	e149	132	266	2250	170	123	87
7	e119	161	195	e119	e94	160	140	243	1180	154	112	97
8	e118	159	188	e130	e97	163	162	225	833	146	105	70
9	e118	153	181	137	e98	205	205	229	653	141	100	93
10	e137	153	178	135	e122	181	234	205	574	141	97	80
11	e181	150	174	133	e137	211	233	220	e618	159	100	75
12	e265	147	172	133	e127	200	244	326	536	146	92	73
13	e274	152	180	131	e138	189	253	386	510	138	103	74
14	e369	153	175	131	e143	181	254	357	532	132	97	85
15	e523	149	171	128	148	176	247	310	468	125	91	91
16	e411	145	175	126	144	164	230	277	405	122	90	76
17	e328	141	194	e116	140	161	215	244	365	120	91	98
18	e277	141	198	e109	139	162	201	220	341	119	88	79
19	e227	144	193	e108	163	163	201	205	e329	165	85	70
20	e215	138	181	e103	250	169	191	192	e306	136	85	76
21	e203	138	174	e100	318	174	197	183	e269	124	86	85
22	e166	137	182	e101	267	162	202	177	e246	138	402	80
23	265	136	e166	e99	247	176	195	167	e239	119	347	78
24	304	144	e121	e100	237	173	199	157	e224	111	314	77
25	278	158	e137	e96	229	159	191	162	215	108	215	77
26	239	163	e157	e100	212	153	182	159	221	108	172	77
27	216	191	e163	e101	e187	148	190	152	254	149	149	76
28	207	232	e159	e104	e169	149	320	155	218	142	137	76
29	202	224	e138	e106	---	147	541	614	200	160	130	92
30	192	219	e127	e109	---	143	457	732	190	153	122	92
31	192	---	e123	e105	---	139	---	485	---	126	112	---
TOTAL	7133	4866	5375	3567	4405	5114	6511	8694	26267	4369	4241	2577
MEAN	230.1	162.2	173.4	115.1	157.3	165.0	217.0	280.5	875.6	140.9	136.8	85.90
MAX	523	232	210	137	318	211	541	732	6790	179	402	118
MIN	118	136	121	96	94	139	132	152	190	108	85	70
AC-FT	14150	9650	10660	7080	8740	10140	12910	17240	52100	8670	8410	5110
CFSM	0.84	0.59	0.63	0.42	0.57	0.60	0.79	1.02	3.18	0.51	0.50	0.31
IN.	0.96	0.66	0.73	0.48	0.60	0.69	0.88	1.18	3.55	0.59	0.57	0.35

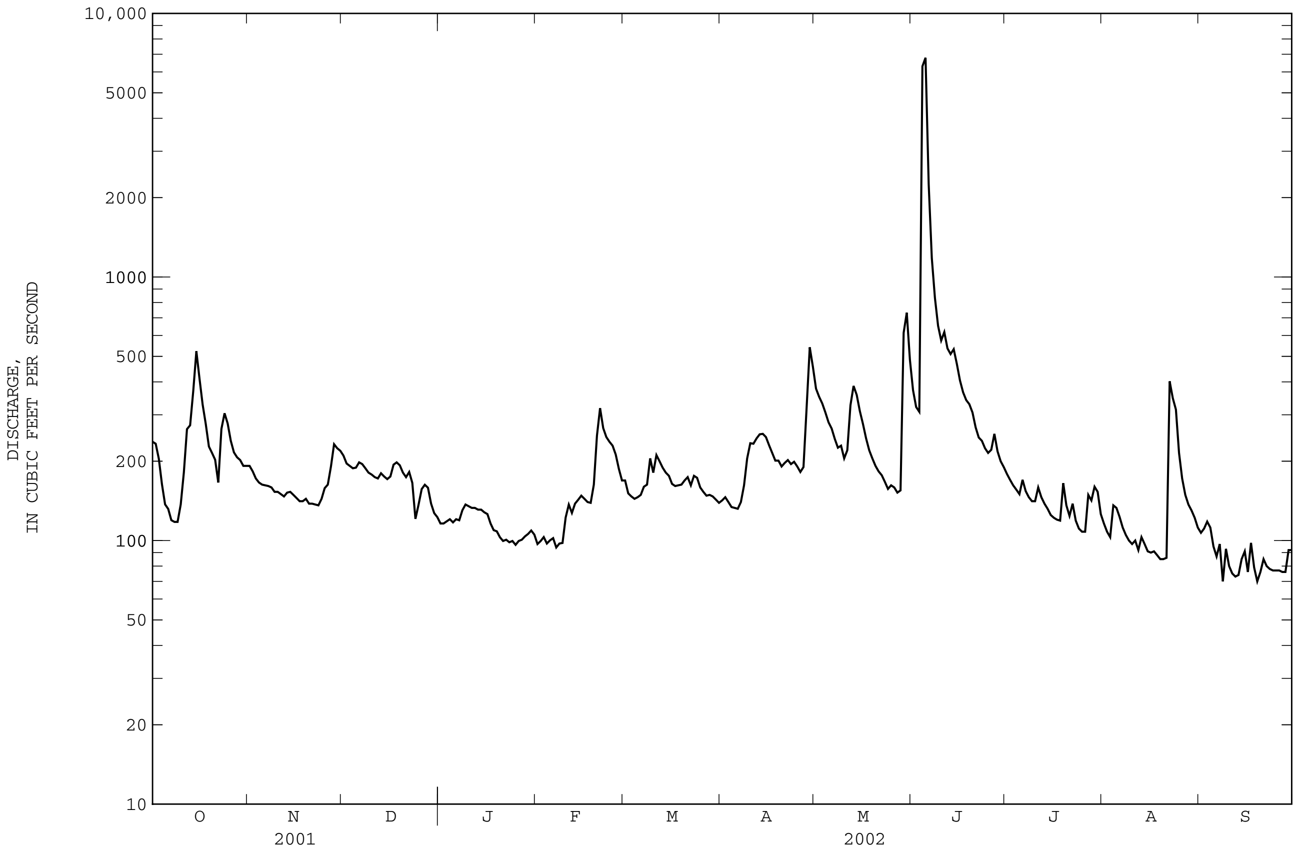
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	153.8	134.1	108.4	83.53	136.2	405.0	345.7	397.8	769.0	241.1	162.0	159.9
MAX	230	162	173	115	157	645	474	473	1005	382	210	302
(WY)	2002	2002	2002	2002	2002	2001	2001	2001	2000	2000	2001	2001
MIN	77.5	106	43.4	52.0	115	165	217	280	427	141	137	85.9
(WY)	2001	2001	2001	2001	2001	2002	2002	2002	2001	2002	2002	2002

05416900 MAQUOKETA RIVER AT MANCHESTER, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 2000 - 2002	
ANNUAL TOTAL	105704		83119			
ANNUAL MEAN	289.6		227.7		244.4	
HIGHEST ANNUAL MEAN					261	2001
LOWEST ANNUAL MEAN					228	2002
HIGHEST DAILY MEAN	1840	Mar 23	6790	Jun 5	6790	Jun 5 2002
LOWEST DAILY MEAN	38	Jan 9	70	Sep 8a	32	Dec 5 2000
ANNUAL SEVEN-DAY MINIMUM	43	Jan 7	77	Sep 22	39	Dec 21 2000
MAXIMUM PEAK FLOW			10800	Jun 4	10800	Jun 4 2002
MAXIMUM PEAK STAGE			18.35	Jun 4	18.35	Jun 4 2002
ANNUAL RUNOFF (AC-FT)	209700		164900		177000	
ANNUAL RUNOFF (CFSM)	1.05		0.83		0.89	
ANNUAL RUNOFF (INCHES)	14.30		11.24		12.07	
10 PERCENT EXCEEDS	577		319		541	
50 PERCENT EXCEEDS	192		159		162	
90 PERCENT EXCEEDS	72		97		76	

a Also Sept. 19.
e Estimated



05416900 MAQUOKETA RIVER AT MANCHESTER, IA--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.--April 26, 2000 to September 30, 2002 (discontinued).

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: April 26, 2000 to September 30, 2002 (discontinued).
WATER TEMPERATURES: April 26, 2000 to September 30, 2002 (discontinued).
SUSPENDED-SEDIMENT DISCHARGE: April 26, 2000 to September 30, 2002 (discontinued).

REMARKS.--During periods of ice effect, sediment samples are collected in open water channel. Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 596 microsiemens Mar. 5, 2002; minimum daily, 162 microsiemens June 4, 2002.
WATER TEMPERATURES: Maximum daily, 31.0 C Aug. 7, 8, 2001; minimum daily, 0.0 C Dec. 12, many days in winter.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,340 mg/L May 13, 2000; minimum daily mean, 2 mg/L Jan. 16, 2001.
SEDIMENT LOADS: Maximum daily, 18,900 tons June 4, 2002; minimum daily, 0.38 tons Jan. 16, 2001.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 596 microsiemens Mar. 5; minimum daily, 162 microsiemens June 4.
WATER TEMPERATURES: Maximum daily, 26.5 C July 3, 9; minimum daily, 0.0 C many days in winter.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 976 mg/L June 4; minimum daily mean, 3.8 mg/L Jan. 25.
SEDIMENT LOADS: Maximum daily, 18,900 tons June 4; minimum daily, 1.2 tons Jan. 25.

SPECIFIC CONDUCTANCE, in MICROSIEMENS/CM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	537	515	---	---	---
2	468	442	---	---	558	---	---	491	---	525	---	---
3	---	---	---	525	---	---	---	---	---	448	---	535
4	---	---	537	---	---	---	538	---	162	---	---	549
5	---	473	---	---	471	596	543	---	234	---	---	549
6	---	530	---	---	580	550	525	---	---	---	---	---
7	---	---	---	---	550	561	---	534	---	---	539	---
8	---	---	---	543	535	---	---	532	---	511	448	---
9	---	---	---	551	---	---	540	---	---	531	---	525
10	---	---	---	547	---	---	521	---	---	---	---	538
11	---	---	---	542	---	529	531	---	493	---	---	560
12	---	---	551	---	519	531	---	473	529	---	514	---
13	---	516	549	---	518	533	---	---	---	---	518	---
14	---	---	---	---	526	523	---	532	---	---	---	---
15	---	---	553	---	534	536	---	543	---	504	534	---
16	---	---	---	---	---	---	524	527	---	518	---	538
17	---	---	---	580	---	---	---	---	---	517	---	---
18	---	---	---	590	---	---	540	---	529	---	---	547
19	---	---	553	---	527	441	540	498	---	---	536	---
20	---	---	---	---	515	550	---	540	---	---	541	---
21	---	---	---	---	517	534	538	468	---	---	---	---
22	463	---	548	567	---	---	---	---	---	498	488	---
23	---	---	---	572	---	---	---	---	---	534	---	543
24	---	---	---	563	---	---	---	---	527	---	---	559
25	---	---	---	577	---	491	524	---	515	478	---	---
26	---	---	---	---	467	484	540	---	---	562	---	539
27	---	---	---	---	542	548	---	---	---	---	525	---
28	---	539	---	---	526	543	---	501	501	---	---	---
29	---	---	486	495	---	540	504	300	---	---	---	---
30	475	---	---	551	---	---	521	---	---	511	---	521
31	475	---	---	547	---	---	---	---	---	---	---	---

WATER TEMPERATURE, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	13.0	17.8	---	---	---
2	15.5	12.0	---	---	1.5	---	---	12.5	---	25.5	---	---
3	---	---	---	0.0	---	---	---	---	---	26.5	---	23.0
4	---	---	14.5	---	---	---	7.5	---	16.5	---	---	23.0
5	---	10.0	---	---	0.0	1.0	7.5	---	16.5	---	---	24.0
6	---	---	---	---	1.5	0.5	7.0	---	---	---	---	---
7	---	---	---	---	3.0	1.5	---	20.0	---	---	23.5	---
8	---	---	---	10.5	3.0	---	8.5	20.5	---	25.5	23.5	---
9	---	---	---	3.0	---	---	11.0	---	---	26.5	---	24.0
10	---	---	---	1.5	---	---	11.0	---	---	---	---	21.5
11	---	---	---	3.0	---	2.5	15.0	---	19.5	---	---	19.5
12	---	---	4.5	---	3.0	5.5	---	11.0	21.0	---	---	---
13	---	11.5	2.0	---	3.5	7.0	---	---	---	---	20.0	---
14	---	---	---	---	5.0	5.0	---	15.5	---	---	---	---
15	---	---	4.5	---	3.5	4.0	---	16.0	---	23.5	18.0	---
16	---	---	---	---	---	---	21.5	15.5	---	25.5	---	19.5
17	---	---	---	1.0	---	---	---	---	---	25.0	---	---
18	---	---	---	0.0	---	---	21.0	---	20.0	---	---	19.0
19	---	---	3.5	---	7.0	5.8	3	19.5	---	---	21.5	---
20	---	---	---	---	4.0	8.5	---	---	---	---	21.0	---
21	---	---	---	---	2.5	2.0	9.0	15.5	---	---	---	---
22	10.8	---	3.5	3.0	---	---	---	---	---	25.5	22.0	---
23	---	---	---	3.5	---	---	---	---	---	---	---	14.0
24	---	---	---	3.0	---	---	---	---	---	---	---	14.5
25	---	---	---	1.0	---	1.0	12.0	---	26.0	23.5	---	---
26	---	---	---	---	3.5	6.5	9.0	---	---	24.5	---	16.5
27	---	---	---	---	0.0	9.0	---	---	---	---	23.5	---
28	---	1.5	---	---	2.5	11.0	---	20.5	25.0	---	---	---
29	---	---	0.0	---	---	11.5	12.0	18.5	---	---	---	---
30	8.5	---	---	1.0	---	---	13.5	---	---	26.0	---	18.0
31	10.0	---	---	0.0	---	---	---	---	---	---	---	---

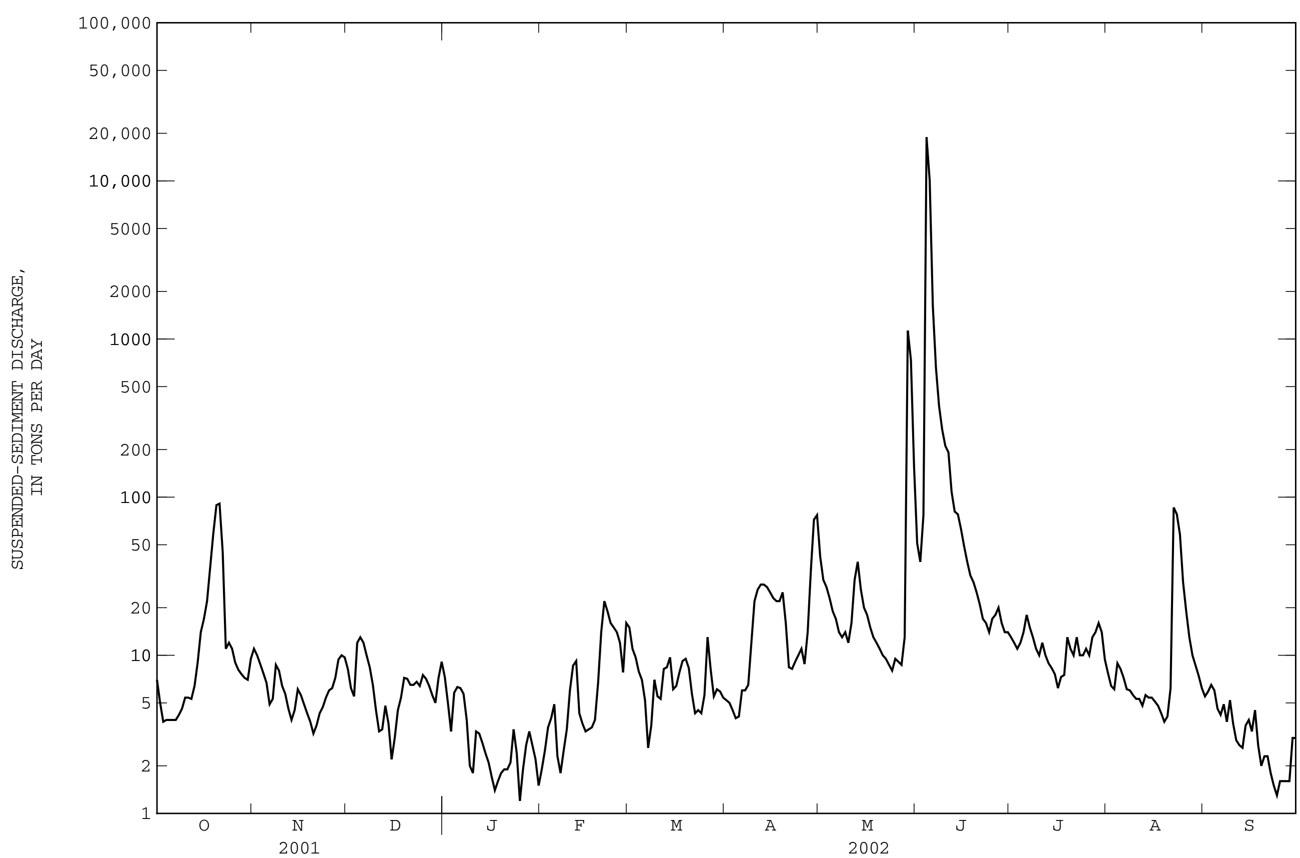
SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	11	7.0	20	11.0	14	8.2	18	7.3	5.9	1.9	31	15.0
2	8.0	5.0	21	10.0	12	6.2	13	5.0	8.3	2.5	27	11.0
3	6.0	3.8	19	8.8	11	5.5	8.8	3.3	11	3.5	23	9.7
4	6.1	3.9	17	7.7	23	12.0	15	5.8	14	4.0	19	7.9
5	6.1	3.9	15	6.7	25	13.0	17	6.3	16	4.9	15	7.0
6	6.2	3.9	11	4.9	23	12.0	16	6.2	7.1	2.3	11	5.2
7	6.2	3.9	12	5.3	20	10.0	15	5.7	5.7	1.8	5.9	2.6
8	6.3	4.2	20	8.7	16	8.4	11	3.9	8.2	2.5	8.1	3.6
9	6.3	4.6	19	8.0	13	6.5	5.4	2.0	11	3.4	13	7.0
10	6.3	5.4	15	6.4	9.3	4.5	5.1	1.8	14	6.0	11	5.5
11	6.4	5.4	14	5.7	7.0	3.3	9.2	3.3	17	8.6	9.4	5.3
12	6.9	5.3	12	4.6	7.2	3.4	8.9	3.2	19	9.2	15	8.2
13	7.7	6.4	9.6	3.9	9.9	4.8	7.9	2.8	10	4.3	17	8.4
14	8.5	9.0	11	4.5	7.8	3.7	6.9	2.4	9.1	3.7	20	9.7
15	9.4	14.0	15	6.1	4.8	2.2	5.9	2.1	8.4	3.3	13	6.1
16	10	17.0	14	5.6	6.4	3.0	4.9	1.7	8.7	3.4	15	6.4
17	12	22.0	13	4.9	8.6	4.5	4.3	1.4	9.3	3.5	18	7.8
18	17	36.0	11	4.3	10	5.4	5.0	1.6	11	3.9	21	9.2
19	23	59.0	9.7	3.8	14	7.2	5.3	1.8	15	6.7	22	9.5
20	29	89.0	8.4	3.2	14	7.1	5.5	1.9	20	14.0	18	8.3
21	30	91.0	9.7	3.6	14	6.5	5.7	1.9	26	22.0	12	5.7
22	24	45.0	12	4.3	13	6.5	6.3	2.1	26	19.0	9.8	4.3
23	15	11.0	13	4.7	14	6.8	10	3.4	25	16.0	9.5	4.5
24	15	12.0	14	5.4	14	6.4	7.3	2.4	23	15.0	9.2	4.3
25	14	11.0	14	6.0	15	7.5	3.8	1.2	22	14.0	13	5.6
26	14	9.0	14	6.2	14	7.1	5.8	1.9	21	12.0	32	13.0
27	14	8.1	14	7.2	13	6.4	8.4	2.7	15	7.8	20	8.1
28	14	7.6	15	9.4	12	5.6	10	3.3	29	16.0	14	5.5
29	13	7.2	17	10.0	12	5.0	8.5	2.7	---	---	15	6.1
30	13	7.0	16	9.7	17	7.2	7.1	2.2	---	---	15	5.9
31	18	9.5	---	---	22	9.1	4.8	1.5	---	---	14	5.4
TOTAL	---	527.1	---	190.6	---	205.0	---	94.8	---	215.2	---	221.8

05416900 MAQUOKETA RIVER AT MANCHESTER, IA--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	14	5.2	41	42.0	50	51.0	26	13.0	26	7.7	19	5.5
2	13	5.0	32	30.0	44	39.0	26	12.0	23	6.4	19	5.9
3	12	4.5	30	27.0	86	77.0	25	11.0	24	6.1	20	6.5
4	11	4.0	28	23.0	976	18900	29	12.0	26	8.9	19	6.0
5	11	4.1	26	19.0	494	10100	35	14.0	24	8.2	17	4.6
6	17	6.0	24	17.0	262	1620	39	18.0	23	7.2	17	4.2
7	16	6.0	21	14.0	205	659	37	15.0	21	6.1	18	4.9
8	15	6.5	21	13.0	167	377	34	13.0	21	6.0	19	3.8
9	22	12.0	23	14.0	151	267	28	11.0	21	5.6	19	5.2
10	35	22.0	22	12.0	135	211	27	10.0	20	5.3	16	3.7
11	42	26.0	26	16.0	115	192	28	12.0	20	5.3	13	2.9
12	42	28.0	34	30.0	74	108	26	10.0	20	4.8	13	2.7
13	40	28.0	38	39.0	59	81.0	25	8.9	20	5.6	12	2.6
14	39	27.0	27	26.0	54	78.0	24	8.3	21	5.4	15	3.6
15	38	25.0	24	20.0	49	63.0	23	7.6	22	5.4	15	3.9
16	36	23.0	23	18.0	45	49.0	20	6.2	21	5.1	15	3.3
17	38	22.0	23	15.0	40	39.0	19	7.3	19	4.8	17	4.5
18	41	22.0	22	13.0	35	32.0	20	7.5	18	4.3	13	2.7
19	46	25.0	21	12.0	32	29.0	25	13.0	16	3.8	11	2.0
20	31	16.0	21	11.0	30	25.0	25	11.0	17	4.1	12	2.3
21	16	8.4	21	10.0	28	21.0	26	10.0	25	6.2	10	2.3
22	15	8.2	20	9.5	26	17.0	30	13.0	77	86.0	8.3	1.8
23	17	9.1	19	8.7	24	16.0	27	10.0	82	78.0	7.1	1.5
24	19	10.0	19	8.0	23	14.0	29	10.0	68	58.0	6.3	1.3
25	21	11.0	22	9.5	29	17.0	31	11.0	49	29.0	7.8	1.6
26	18	8.8	22	9.1	31	18.0	28	10.0	39	19.0	8.0	1.6
27	27	14.0	21	8.7	29	20.0	29	13.0	31	13.0	8.0	1.6
28	38	34.0	31	13.0	27	16.0	31	14.0	27	10.0	8.1	1.6
29	49	72.0	557	1130	27	14.0	33	16.0	24	8.6	12	3.0
30	62	77.0	354	738	27	14.0	35	14.0	22	7.4	12	3.0
31	---	---	118	156	---	---	29	9.4	20	6.2	---	---
TOTAL	---	569.8	---	2511.5	---	33164.0	---	351.2	---	437.5	---	100.1
YEAR		38588.6										



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05418400 NORTH FORK MAQUOKETA RIVER NEAR FULTON, IA

LOCATION.--Lat 42°09'52", long 90°40'44", in $SW^1/_4$ $SW^1/_4$ $SE^1/_4$ sec.16, T.85 N., R.2 E., Jackson County, Hydrologic Unit 07060006, on right downstream bank at County Highway E17, 0.25 mile upstream from Prairie Creek, and 7.0 mi northeast of Maquoketa.

DRAINAGE AREA.--505 mi^2.

PERIOD OF RECORD.--April 29, 1998 to current year.

GAGE.--Water-stage recorder. Datum of gage is 679.00 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--A flood, Aug. 18, 1981, reached a stage of 17.26 ft, discharge, 10,700 ft^3/s, at site and datum 3.5 miles downstream, in use prior to Oct. 1, 1991.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	258	320	280	e214	e191	e194	199	291	556	599	399	660
2	254	311	270	e215	e176	e198	207	291	484	561	369	651
3	248	288	267	e220	e167	e210	206	281	471	525	345	876
4	242	265	261	e217	e156	e220	195	265	e12600	504	328	678
5	234	253	247	e221	e145	e228	191	258	e20200	486	321	599
6	227	246	247	e224	e148	e237	192	260	e13200	985	317	553
7	222	246	243	e234	e146	e250	210	263	e5690	1080	301	518
8	221	241	239	e242	e155	286	295	259	e3570	600	287	489
9	222	228	231	e238	e169	447	533	277	e2580	748	280	461
10	241	223	229	e234	e182	597	504	263	e2150	557	274	437
11	245	223	229	e231	e174	375	438	278	e1730	518	269	417
12	243	217	230	e234	e164	336	424	353	1430	499	311	396
13	245	232	278	e230	e187	287	401	404	1150	465	477	376
14	251	254	280	e229	e195	268	373	375	1320	445	276	362
15	240	240	262	e225	203	254	364	343	1080	423	261	357
16	228	227	252	e223	197	236	349	323	937	407	e242	332
17	221	220	254	e215	194	221	325	304	858	396	e238	316
18	223	219	256	e211	190	216	312	279	802	393	e236	331
19	226	224	255	e209	209	214	313	267	771	665	e232	494
20	228	217	246	e205	246	220	299	262	759	932	e231	441
21	226	217	264	e206	283	226	300	254	705	540	e235	451
22	243	221	246	e204	260	201	308	248	666	481	10600	348
23	1340	223	264	e200	238	214	301	253	638	1420	11500	318
24	1040	244	e234	e191	233	220	303	252	612	708	2300	306
25	708	271	e195	e191	229	205	300	271	587	539	1620	298
26	530	261	e228	e186	220	197	278	293	662	471	1210	296
27	431	266	e233	e190	e200	198	278	267	1460	454	1030	296
28	385	272	e234	e194	e198	201	307	256	966	534	907	292
29	361	268	e227	e195	---	208	315	352	727	576	856	287
30	341	274	e217	e200	---	203	298	565	648	488	763	324
31	327	---	e222	e196	---	196	---	761	---	442	705	---
TOTAL	10651	7411	7620	6624	5455	7763	9318	9668	80009	18441	37720	12960
MEAN	343.6	247.0	245.8	213.7	194.8	250.4	310.6	311.9	2667	594.9	1217	432.0
MAX	1340	320	280	242	283	597	533	761	20200	1420	11500	876
MIN	221	217	195	186	145	194	191	248	471	393	231	287
AC-FT	21130	14700	15110	13140	10820	15400	18480	19180	158700	36580	74820	25710
CFSM	0.68	0.49	0.49	0.42	0.39	0.50	0.62	0.62	5.28	1.18	2.41	0.86
IN.	0.78	0.55	0.56	0.49	0.40	0.57	0.69	0.71	5.89	1.36	2.78	0.95

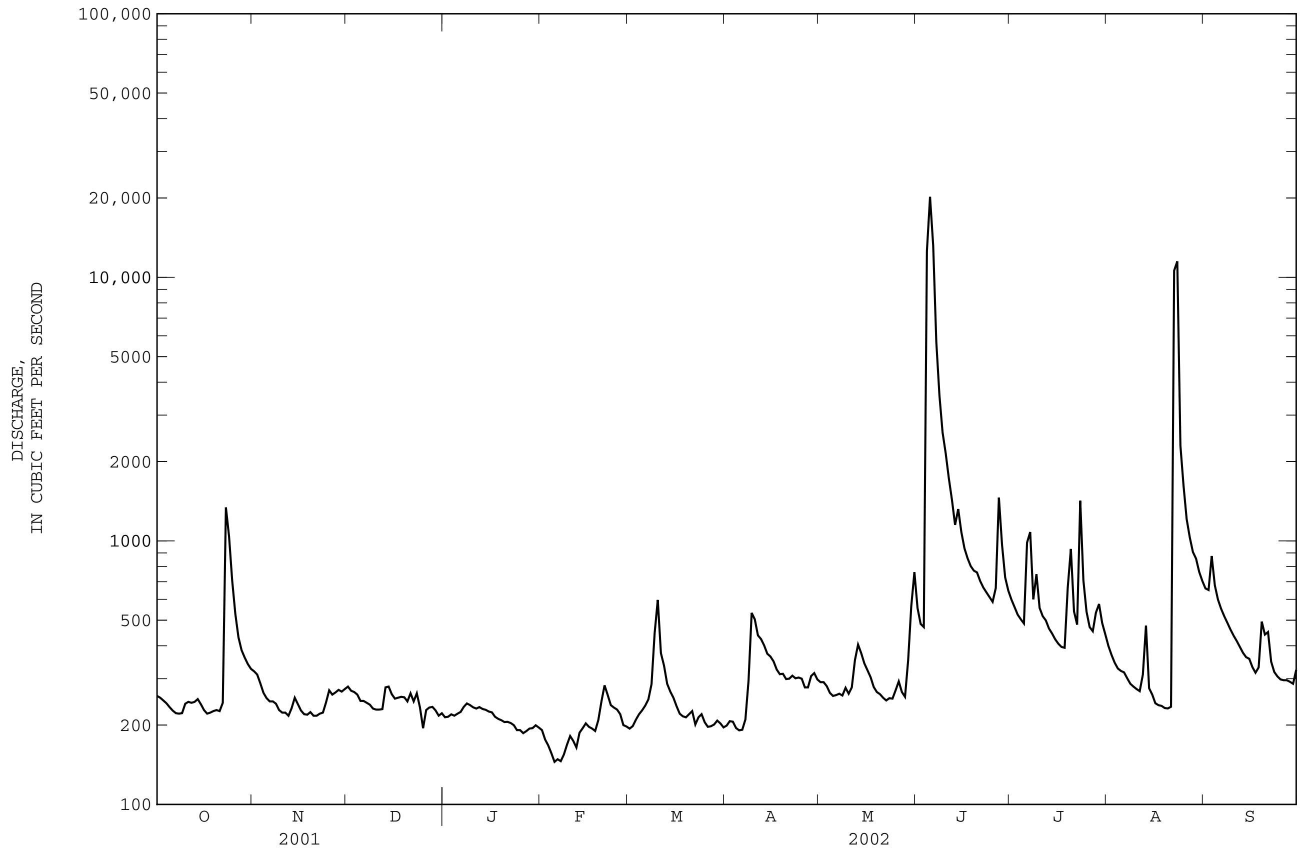
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	321.7	263.7	176.9	138.7	382.9	397.5	507.2	567.3	1213	459.7	484.4	310.9
MAX	490	388	246	214	549	800	857	1179	2667	595	1217	432
(WY)	1999	1999	2002	2002	2001	2001	1999	1999	2002	2002	2002	2002
MIN	199	182	64.5	85.3	195	223	311	312	528	268	241	241
(WY)	2001	2001	2001	2000	2002	2000	2002	2002	2001	2001	2000	2000

05418400 NORTH FORK MAQUOKETA RIVER NEAR FULTON, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1998 - 2002	
ANNUAL TOTAL	141258		213640			
ANNUAL MEAN	387.0		585.3		445.8	
HIGHEST ANNUAL MEAN					585	2002
LOWEST ANNUAL MEAN					320	2000
HIGHEST DAILY MEAN	1920	Mar 13	20200	Jun 5	20200	Jun 5 2002
LOWEST DAILY MEAN	72	Jan 1	145	Feb 5	44	Dec 5 2000
ANNUAL SEVEN-DAY MINIMUM	88	Jan 1	155	Feb 3	56	Dec 21 2000
MAXIMUM PEAK FLOW			22600	Jun 5	22600	Jun 5 2002
MAXIMUM PEAK STAGE			19.87	Jun 5	19.87	Jun 5 2002
ANNUAL RUNOFF (AC-FT)	280200		423800		323000	
ANNUAL RUNOFF (CFSM)	0.77		1.16		0.88	
ANNUAL RUNOFF (INCHES)	10.41		15.74		11.99	
10 PERCENT EXCEEDS	698		752		731	
50 PERCENT EXCEEDS	274		268		292	
90 PERCENT EXCEEDS	180		200		160	

e Estimated



05418500 MAQUOKETA RIVER NEAR MAQUOKETA, IA

LOCATION.--Lat 42°05'00", long 90°37'58", in SW$^{1}/_{4}$ NE$^{1}/_{4}$ sec.17, T.84 N., R.3 E., Jackson County, Hydrologic Unit 07060006, on right downstream bank at State Highway 62 bridge, 900 ft. upstream from Prairie Creek, 2.0 mi northeast of Maquoketa, 2.2 mi downstream from North Fork, and 26.7 mi upstream from mouth.

DRAINAGE AREA.--1,553 mi^{2}.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1913 to current year. Prior to October 1939, published as "below North Fork near Maquoketa". Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 405: 1914. WSP 1438: Drainage area. WSP 1508: 1914-17, 1919-25, 1926 (M), 1929, 1933-34 (M), 1943.

GAGE.--Water-stage recorder. Datum of gage is 625.96 ft. above NGVD of 1929. Prior to July 14, 1924, nonrecording gage, and July 15, 1924 to Sept. 30, 1972, recording gage at site 300 ft. upstream from State Highway 62 bridge at datum 10.00 ft. higher. On Aug. 3, 1995 the gage was moved to the current location.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Diurnal fluctuation caused by power plant 4 mi upstream of station. U.S. Army Corps of Engineers rain gage and data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--A flood, probably in 1903, reached a stage of 23.5 ft., discharge, 43,000 ft.3/s, at datum in use prior to Oct. 1, 1972.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	921	1010	807	e577	e498	e736	755	1440	2590	1480	1320	1310
2	904	1000	797	e596	e422	e687	781	1390	2080	1400	1220	1290
3	845	909	777	e619	e405	e619	730	1340	1980	1330	1100	1450
4	834	857	740	e708	e371	e603	773	1210	22700	1320	1060	1360
5	831	830	738	e789	e361	e594	735	1160	45900	1310	1050	1200
6	790	812	751	e705	e356	690	729	1160	31600	2260	1050	1150
7	767	785	762	e600	e422	838	777	1150	13200	2220	1070	1080
8	828	749	759	e681	e487	900	927	1100	5730	1620	1010	1070
9	920	708	739	e782	e547	1170	1560	1110	4390	1770	982	1010
10	994	680	729	e881	e639	1530	1690	1070	3690	1470	891	996
11	1010	662	715	e779	e605	1250	1580	1050	3530	1340	909	962
12	965	646	710	e729	e558	1190	1510	1210	4120	1410	1060	974
13	840	690	788	e706	e590	1100	1460	1460	3400	1390	2580	954
14	894	738	802	e645	e641	1050	1370	1500	3350	1250	1200	888
15	852	685	793	e649	e664	1020	1310	1450	3060	1190	1070	931
16	784	648	787	e595	e674	950	1280	1430	2700	1140	918	841
17	735	626	754	e490	687	920	1250	1350	2470	1110	921	924
18	770	618	751	e482	676	885	1210	1280	2280	1090	908	963
19	794	615	782	e504	731	849	1230	1210	2180	2170	935	1180
20	769	611	787	e504	758	875	1130	1080	2190	4610	869	1220
21	703	623	767	e544	876	861	1120	1040	2140	2110	849	1210
22	728	608	782	e621	930	839	1140	1030	1960	1890	4550	950
23	1690	605	e763	e576	956	833	1110	979	1890	1990	16100	913
24	2930	647	e645	e504	960	873	1130	996	1830	1870	6320	868
25	2070	671	e502	e488	899	851	1130	1030	1720	1480	3690	839
26	1710	721	e531	e487	858	807	1070	1080	1390	1340	2670	830
27	1410	710	e615	e528	837	800	1050	1070	2530	1380	2220	850
28	1250	672	e619	e551	e755	e782	1160	1060	2140	1410	1850	794
29	1160	711	e600	e562	---	812	1180	2990	1750	1850	1700	833
30	1100	774	e551	e580	---	813	1280	4280	1470	1610	1530	785
31	1030	---	e623	e547	---	799	---	3300	---	1410	1430	---
TOTAL	32828	21621	22266	19009	18163	27526	34157	44005	181960	51220	65032	30625
MEAN	1059	720.7	718.3	613.2	648.7	887.9	1139	1420	6065	1652	2098	1021
MAX	2930	1010	807	881	960	1530	1690	4280	45900	4610	16100	1450
MIN	703	605	502	482	356	594	729	979	1390	1090	849	785
AC-FT	65110	42890	44160	37700	36030	54600	67750	87280	360900	101600	129000	60740
CFSM	0.68	0.46	0.46	0.39	0.42	0.57	0.73	0.91	3.91	1.06	1.35	0.66
IN.	0.79	0.52	0.53	0.46	0.44	0.66	0.82	1.05	4.36	1.23	1.56	0.73

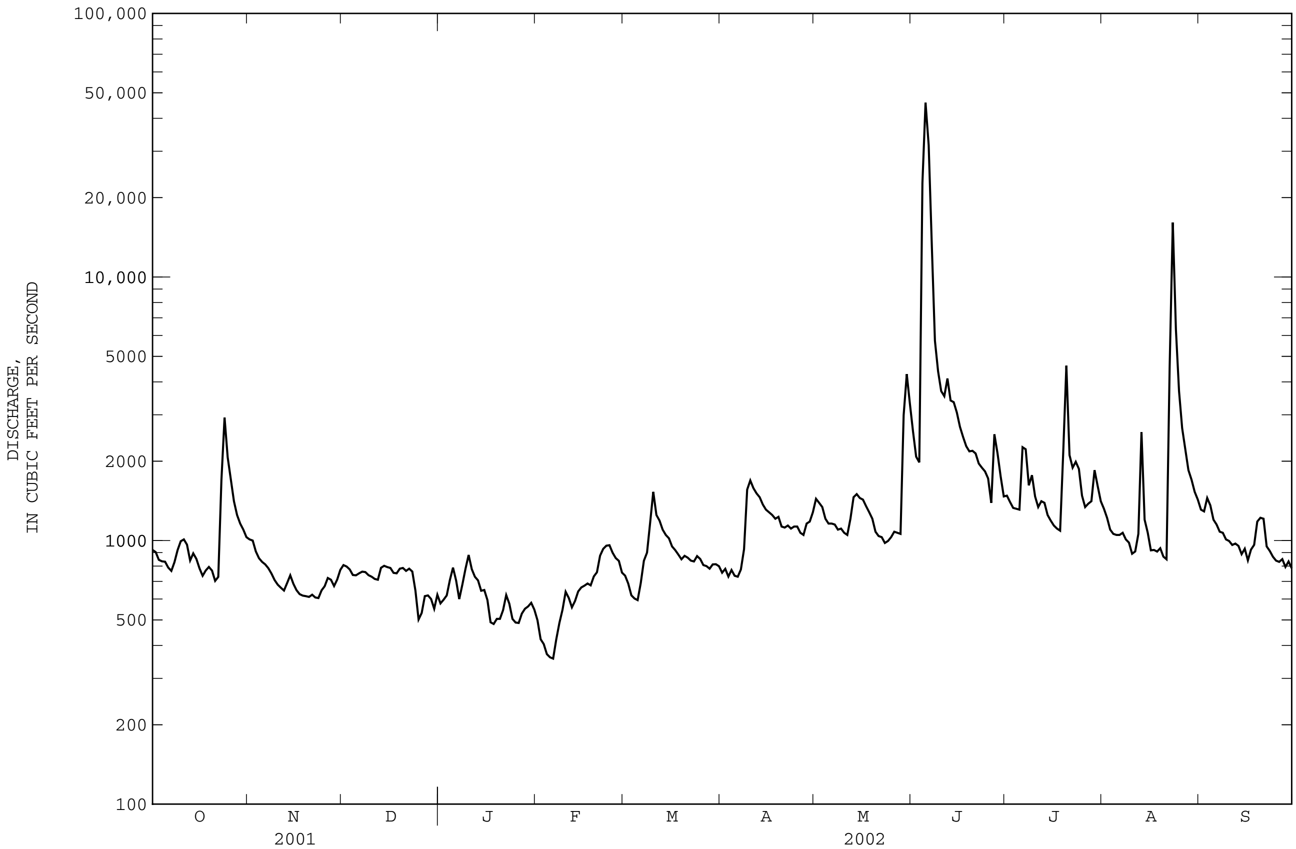
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1914 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	736.8	787.1	652.9	679.2	1103	1846	1389	1266	1548	1079	846.1	883.1
MAX	2486	4983	2397	2851	4161	4798	4843	4267	6670	8835	3340	3074
(WY)	1987	1962	1983	1960	1971	1993	1973	1974	1947	1993	1924	1981
MIN	210	198	168	150	196	241	305	198	170	177	227	182
(WY)	1957	1959	2001	1940	1936	1934	1934	1934	1934	1936	1958	1958

05418500 MAQUOKETA RIVER NEAR MAQUOKETA, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1914 - 2002	
ANNUAL TOTAL	475268		548412			
ANNUAL MEAN	1302		1502		1067	
HIGHEST ANNUAL MEAN					2874	1993
LOWEST ANNUAL MEAN					306	1958
HIGHEST DAILY MEAN	5390	Mar 16	45900	Jun 5	45900	Jun 5 2002
LOWEST DAILY MEAN	200	Jan 1	356	Feb 6	105	Feb 11 1936
ANNUAL SEVEN-DAY MINIMUM	254	Jan 1	403	Feb 2	105	Feb 11 1936
MAXIMUM PEAK FLOW			47900	Jun 5	48000	Jun 27 1944
MAXIMUM PEAK STAGE			34.09	Jun 5	24.70	Jun 27 1944a
ANNUAL RUNOFF (AC-FT)	942700		1088000		772900	
ANNUAL RUNOFF (CFSM)	0.84		0.97		0.69	
ANNUAL RUNOFF (INCHES)	11.38		13.14		9.33	
10 PERCENT EXCEEDS	2430		2120		2010	
50 PERCENT EXCEEDS	916		927		660	
90 PERCENT EXCEEDS	551		605		300	

a Datum in use prior to Oct. 1, 1972.
e Estimated



05418500 MAQUOKETA RIVER NEAR MAQUOKETA, IA--Continued

WATER QUALITY RECORDS

PERIOD OF RECORD.--April 1978 to December 1981; October 1994 to September 30, 1997; April 13, 2000 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: April 1978 to December 1981; October 1994 to September 30, 1997; April 13, 2000 to current year.
WATER TEMPERATURES: April 1978 to December 1981; October 1994 to September 30, 1997; April 13, 2000 to current year.
SUSPENDED-SEDIMENT DISCHARGE: April 1978 to December 1981; October 1994 to September 30, 1997; April 13, 2000 to current year.

REMARKS.--During periods of ice effect, sediment samples are collected in open water channel. Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 625 microsiemens Mar. 2, 1995; minimum daily, 160 microsiemens June 16, 1981.
WATER TEMPERATURES: Maximum daily, 30.5 C July 12, 1995; minimum daily, 0.0 C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 14,700 mg/L June 13, 1981; minimum daily mean, 12 mg/L Feb. 7, 8, 1981.
SEDIMENT LOADS: Maximum daily, 361,000 tons Aug. 31, 1981; minimum daily, 9.4 tons Feb. 8, 1981.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 607 microsiemens Aug. 19; minimum daily, 186 microsiemens June 5.
WATER TEMPERATURES: Maximum daily, 29.0 C July 1-3, Aug. 1; minimum daily, 1.2 C Mar. 7.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 3,550 mg/L Aug. 22; minimum daily mean, 63 mg/L Sept. 24.
SEDIMENT LOADS: Maximum daily, 255,000 tons June 5; minimum daily, 67.2 tons Feb. 5.

SPECIFIC CONDUCTANCE, in MICROSIEMENS/CM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	598	549	---
2	---	---	---	---	---	---	---	---	---	539	594	---
3	---	---	---	---	---	---	---	---	535	532	---	490
4	---	---	---	---	---	---	---	---	---	---	---	515
5	---	---	---	---	---	---	---	---	186	568	564	544
6	---	---	---	---	---	---	---	592	274	---	583	---
7	---	---	---	---	---	528	---	577	401	358	543	---
8	---	---	---	---	---	---	---	---	---	528	590	---
9	---	---	---	---	---	---	---	587	530	522	---	---
10	---	---	---	---	---	---	---	---	556	533	---	---
11	---	---	---	---	---	---	---	---	561	---	---	535
12	---	---	---	---	---	---	531	---	499	598	---	---
13	---	---	---	---	---	---	---	559	539	---	301	492
14	---	---	---	---	---	---	---	568	551	587	427	---
15	---	---	---	---	---	---	---	601	---	597	---	---
16	---	---	---	---	---	---	---	585	---	536	499	551
17	---	---	---	---	---	---	---	---	586	---	---	---
18	---	---	---	---	---	---	---	581	---	544	---	---
19	---	---	---	---	---	---	---	---	576	535	607	---
20	---	---	---	---	---	---	---	451	565	---	480	---
21	---	---	---	---	---	---	---	442	570	---	488	---
22	---	---	---	---	---	---	---	552	---	530	237	---
23	---	---	---	---	---	---	---	449	---	375	---	589
24	340	---	---	---	---	---	---	470	511	441	---	---
25	---	---	---	---	---	---	---	---	482	537	---	---
26	---	---	---	---	---	---	---	---	482	---	502	---
27	---	---	---	---	---	---	---	475	444	---	532	---
28	---	---	---	---	---	---	---	546	490	---	---	---
29	---	---	---	---	---	---	---	311	---	545	563	---
30	---	---	---	---	---	---	---	349	---	522	503	---
31	---	---	---	---	---	---	---	503	---	553	---	---

WATER TEMPERATURE, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	29.0	29.0	---
2	---	---	---	---	---	---	---	---	---	29.0	28.5	---
3	---	---	---	---	---	---	---	---	18.5	29.0	---	24.5
4	---	---	---	---	---	---	---	---	---	---	---	22.0
5	---	---	---	---	---	---	---	---	17.5	28.5	25.5	20.5
6	---	---	---	---	---	---	---	21.5	18.0	---	26.0	---
7	---	---	---	---	---	1.2	---	20.0	19.5	25.0	25.5	---
8	---	---	---	---	---	---	---	---	---	27.0	25.5	---
9	---	---	---	---	---	---	---	16.5	20.0	27.0	---	---
10	---	---	---	---	---	---	---	---	22.5	25.5	---	---
11	---	---	---	---	---	---	---	---	22.0	---	---	23.0
12	---	---	---	---	---	---	13.5	---	22.5	24.0	---	---
13	---	---	---	---	---	---	---	14.5	21.0	---	22.0	21.5
14	---	---	---	---	---	---	---	16.5	19.5	26.0	---	---
15	---	---	---	---	---	---	---	17.0	---	26.5	---	---
16	---	---	---	---	---	---	---	16.5	---	27.0	23.0	21.5
17	---	---	---	---	---	---	---	---	20.5	---	---	---
18	---	---	---	---	---	---	---	16.0	---	26.0	---	---
19	---	---	---	---	---	---	---	---	20.5	27.0	24.0	---
20	---	---	---	---	---	---	---	14.5	24.0	---	23.5	---
21	---	---	---	---	---	---	---	15.0	25.0	---	25.5	---
22	---	---	---	---	---	---	---	18.0	---	26.5	24.0	---
23	---	---	---	---	---	---	---	18.5	---	24.5	---	16.5
24	11.9	---	---	---	---	---	---	18.5	27.0	24.5	---	---
25	---	---	---	---	---	---	---	---	27.0	25.0	---	---
26	---	---	---	---	---	---	---	---	25.3	---	24.5	---
27	---	---	---	---	---	---	---	20.0	24.5	---	24.5	---
28	---	---	---	---	---	---	---	23.0	25.0	---	---	---
29	---	---	---	---	---	---	---	19.5	---	25.0	25.0	---
30	---	---	---	---	---	---	---	21.5	---	26.5	23.5	---
31	---	---	---	---	---	---	---	21.5	---	28.0	---	---

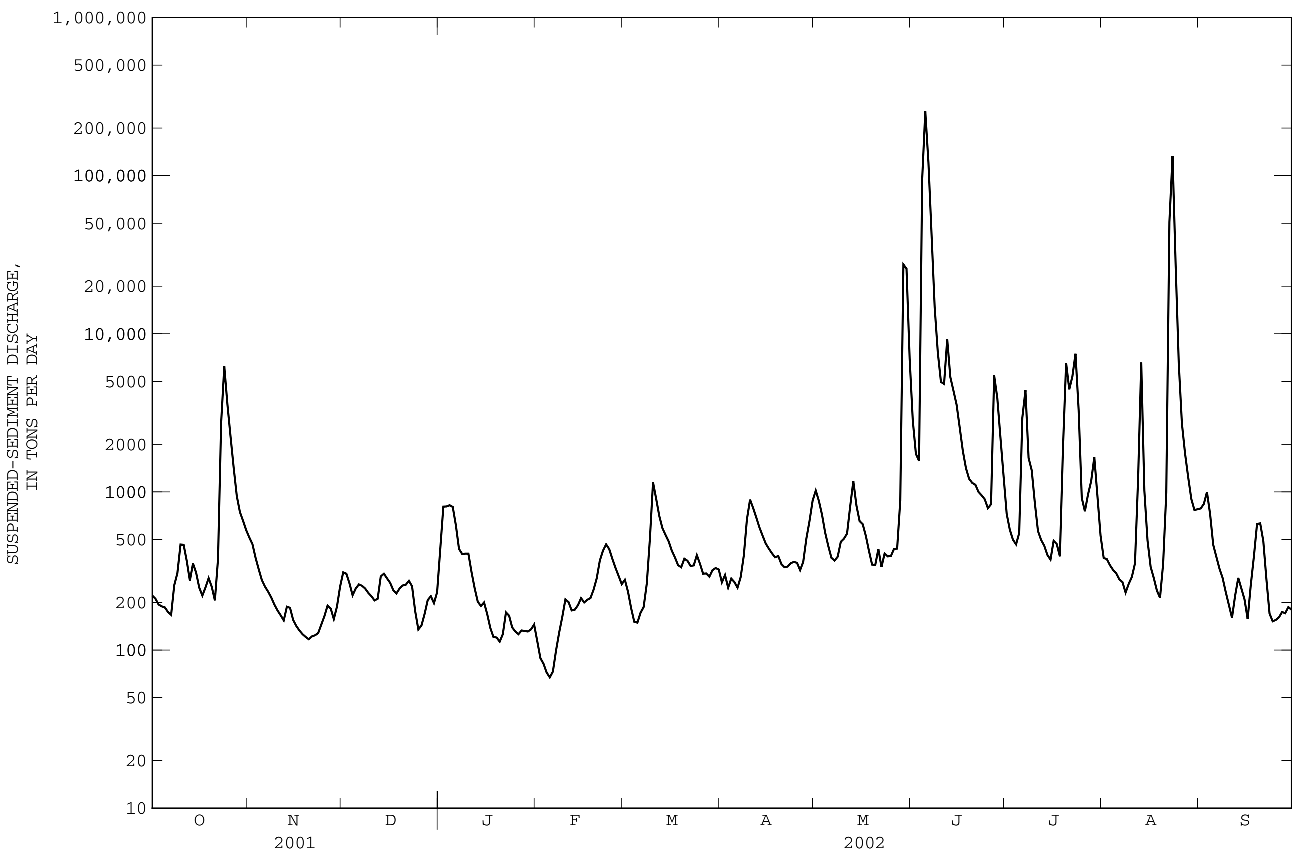
SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN- TRATION (MG/L)	LOAD (TONS/ DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	89	221	189	515	142	310	278	433	85	114	140	278
2	86	211	172	467	141	304	501	807	78	88.9	126	234
3	85	194	156	383	126	264	484	809	75	81.9	110	184
4	84	189	140	324	111	222	431	824	72	72.1	93	151
5	83	186	124	277	123	245	377	803	69	67.2	93	149
6	82	174	115	252	128	260	323	615	76	73.1	92	172
7	81	167	111	234	124	255	269	436	87	99.1	83	187
8	114	257	106	215	120	245	220	405	98	129	108	263
9	124	306	102	194	115	230	193	407	110	162	159	506
10	173	465	97	178	111	219	171	407	121	209	277	1150
11	169	463	93	166	107	206	148	311	123	201	266	904
12	140	366	88	154	110	211	125	246	118	178	219	704
13	121	274	101	188	137	292	106	202	113	180	198	590
14	146	353	93	185	140	304	109	190	111	192	188	534
15	134	309	84	155	133	284	114	200	119	213	177	486
16	117	248	81	142	125	266	105	169	110	200	166	425
17	111	221	78	133	117	239	104	138	112	208	155	385
18	120	249	76	126	112	228	93	121	116	213	144	344
19	133	285	73	121	116	245	88	120	122	241	145	334
20	121	251	71	117	121	256	83	113	139	284	160	378
21	108	206	73	122	125	259	86	126	155	368	158	367
22	186	377	75	124	130	274	103	173	168	425	150	340
23	557	2750	78	128	123	253	106	165	180	466	152	343
24	783	6220	83	145	101	176	102	139	168	435	169	398
25	638	3580	91	164	100	135	99	131	155	377	153	351
26	482	2240	98	191	100	143	96	126	143	331	139	304
27	370	1420	95	183	102	169	93	133	130	294	141	305
28	279	941	87	157	124	207	89	132	128	261	138	291
29	238	745	98	188	135	219	86	131	---	---	145	320
30	221	656	120	252	133	198	86	135	---	---	149	330
31	205	573	---	---	138	232	98	145	---	---	149	323
TOTAL	---	25097	---	6180	---	7350	---	9292	---	6163.3	---	12030

05418500 MAQUOKETA RIVER NEAR MAQUOKETA, IA--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEA CON TRA (MG	LOAD (TONS/ DAY)	MEAN CONCEN TRATIO (MG/L)	LOAD (TONS DAY)	MEAN CONCEN TRATIO (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN TRATIO (MG/L)	LOAD (TONS DAY)	MEAN CONCEN TRATIO (MG/L)	LOAD (TONS/ DAY)	MEAN CONCE TRATI (MG/L	LOAD (TONS DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	131	268	263	1020	404	2830	182	727	107	382	220	786
2	141	298	233	877	309	1740	153	577	115	376	240	839
3	126	248	198	717	293	1570	139	499	116	344	252	998
4	135	283	170	553	1330	94900	131	466	112	321	194	725
5	135	269	145	455	2060	255000	156	549	108	306	141	463
6	125	248	122	383	1380	121000	439	2940	98	280	124	389
7	137	289	119	368	1190	42500	745	4390	93	269	111	327
8	156	395	130	389	937	14700	370	1640	84	231	97	286
9	159	671	161	484	637	7590	285	1370	99	262	84	233
10	196	894	175	506	496	4960	213	852	121	290	71	193
11	185	789	191	545	504	4820	157	566	144	353	61	160
12	168	688	248	812	830	9240	130	497	392	1220	82	221
13	156	596	295	1170	575	5320	122	457	914	6580	109	286
14	147	529	202	818	482	4360	118	400	299	1020	100	245
15	139	472	167	654	429	3560	116	373	171	494	82	209
16	131	438	162	625	349	2550	160	491	136	336	68	157
17	126	409	144	527	271	1810	155	468	115	286	101	257
18	123	386	123	423	230	1410	133	391	97	238	146	391
19	123	393	107	347	204	1210	285	1910	84	214	191	627
20	119	350	119	345	193	1140	541	6540	150	351	188	633
21	115	334	155	435	192	1110	793	4450	415	987	146	489
22	114	337	120	335	190	1000	1060	5370	3550	50900	105	280
23	119	354	154	408	186	951	1400	7490	3120	133000	67	170
24	118	361	145	391	182	898	624	3290	1440	27000	63	152
25	116	356	141	393	170	789	227	916	635	6460	67	155
26	111	320	149	436	237	836	208	754	369	2710	70	161
27	127	361	152	438	779	5450	258	965	290	1750	74	174
28	162	507	307	882	665	3930	307	1170	245	1240	77	171
29	205	654	2980	27400	464	2220	333	1660	195	902	81	187
30	255	880	2210	25800	319	1270	216	943	185	768	82	180
31	---	---	766	6940	---	---	139	530	200	777	---	---
TOTAL	---	13377	---	75876	---	600664	---	53641	---	240647	---	10544
YEAR		1060861.3										



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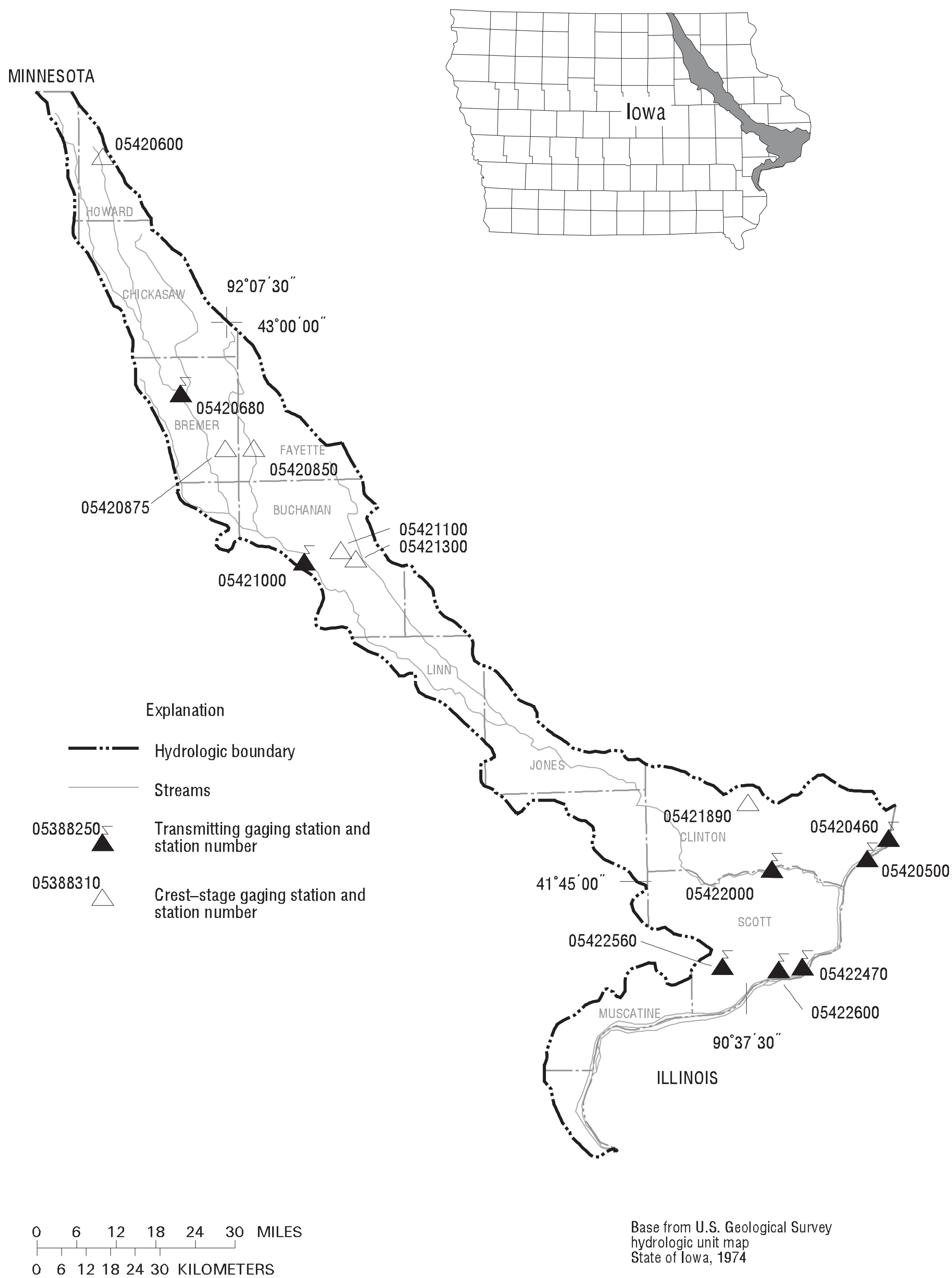


Figure 13. Locations of active continuous-record and crest-stage gaging stations in the Mississippi River, Wapsipinicon River, and Crow Creek drainage basins.

Gaging Stations

05420460 Beaver Slough at 3rd Street at Clinton, IA 102
05420500 Mississippi River at Clinton, IA 104
05420680 Wapsipinicon River nr Tripoli, IA. 112
05421000 Wapsipinicon River at Independence, IA 118
05422000 Wapsipinicon River near De Witt, IA. 120
05422470 Crow Creek at Bettendorf, IA 122
05422560 Duck Creek at 110th Ave at Davenport, IA 124
05422600 Duck Creek at Duck Creek Golf Course, Davenport, IA. 126

Crest Stage Gaging Stations

05420600 Little Wapsipinicon River Tributary near Riceville, IA 352
05420850 Little Wapsipinicon River near Oran, IA. 352
05420875 Buck Creek near Oran, IA 352
05421100 Pine Creek Tributary near Winthrop, IA 352
05421300 Wapsipinicon River Tributary at Winthrop, IA 352
05421890 Silver Creek at Welton, IA 352

05420460 BEAVER SLOUGH AT THIRD STREET CLINTON, IA

LOCATION.--Lat 41°49'38", long 90°11'25", in SW$^{1}/_{4}$ SE$^{1}/_{4}$ NW$^{1}/_{4}$ sec.18, T.81 N., R.7 E., Clinton County, Hydrologic Unit 07080101, at river end of 3rd street, at downstream end of ADM repair dock, 10.3 miles upstream from Wapsipinicon River, 4.8 miles upstream from Camanche gage, 5.9 miles downstream from Lock and Dam 13, and at mile 516.6 upstream from Ohio River.

DRAINAGE AREA.--85,600 mi^2, approximately, at Fulton-Lyons Bridge at Clinton.

PERIOD OF RECORD.--October 1992 to current year.

GAGE.--Water-stage recorder. Datum of gage is 562.68 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Minor flow regulation caused by navigation dams. U.S. Geological Survey satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6260	5840	12800	e5530	7640	9110	11700	30100	14200	23200	13900	16700
2	5930	7360	12600	e5960	6950	9340	12500	28100	13100	24400	13200	15200
3	5680	7770	12500	e5870	e6340	8370	13600	27400	12500	24800	13200	14000
4	5380	8100	10900	e5830	e5930	7240	14100	25500	19400	e24700	13000	13300
5	6050	7770	9980	e5840	e5570	6740	14200	25100	32400	e24200	13200	12600
6	7270	7080	9220	e6190	e5580	6510	14300	24800	33600	e23500	13400	12600
7	6560	6880	10500	e6540	e5450	6970	14300	24200	29400	e22500	13600	12500
8	5130	6620	12400	e7230	e5610	8230	14600	23200	23200	e21500	13700	13000
9	4280	6810	12700	e7620	6900	9980	15600	23500	20200	20800	13800	14000
10	4350	6580	12000	e7780	8330	10200	15600	22700	19700	18600	14200	14500
11	5860	6490	12300	e7790	9430	9710	15100	22100	20400	16900	14500	14800
12	7500	6620	12700	e7520	9130	10400	15200	21800	21500	15500	13800	15200
13	7980	6580	13200	e7090	8690	11800	15800	20900	21000	14300	14000	15500
14	8100	6530	13200	e6780	8370	12600	15900	21300	21300	13900	14300	15900
15	7520	6990	12300	e6650	7980	12800	17200	21700	20600	13700	13500	16000
16	7500	7080	11100	e6630	8100	13000	18100	22800	19200	13700	12800	16100
17	7770	7270	10100	e6530	7700	12900	19700	23200	18100	13900	12400	16000
18	7380	7380	9520	e6530	6670	12800	21800	23700	16900	14400	12000	14100
19	6950	7360	10500	e6250	6600	12300	24800	24200	16100	15000	12100	13200
20	7110	7380	10800	e5870	8070	11600	26900	24400	16000	15500	12200	12800
21	7940	7150	9940	e5580	9640	11500	31500	24600	15800	15800	12100	12500
22	8530	6920	9320	e5280	10000	11600	34000	23500	15200	16400	15600	12200
23	9060	6990	9080	e5300	10300	11100	35600	22900	14800	17300	21100	11600
24	9730	7700	8690	e5910	10600	10700	37300	22300	14600	16900	19100	10100
25	9730	8560	e6720	e6790	11900	10600	38200	20200	14500	16200	16100	9290
26	8330	8300	e5630	e7450	12200	10900	37700	19900	15000	15500	15000	8760
27	7570	9270	e5380	8300	11100	11000	37000	19000	17500	15200	15800	9910
28	6190	9980	e5830	8790	9730	10400	36300	16700	19500	14400	17200	11100
29	5470	10800	e5110	8620	---	9110	35000	15600	21300	14200	18000	11200
30	5540	12100	e4850	8230	---	9020	33100	14900	22000	14200	18300	11000
31	5590	---	e5010	7890	---	9980	---	14900	---	13300	18000	---
TOTAL	214240	228260	306880	210170	230510	318510	686700	695200	579000	544400	453100	395660
MEAN	6911	7609	9899	6780	8232	10270	22890	22430	19300	17560	14620	13190
MAX	9730	12100	13200	8790	12200	13000	38200	30100	33600	24800	21100	16700
MIN	4280	5840	4850	5280	5450	6510	11700	14900	12500	13300	12000	8760
AC-FT	424900	452800	608700	416900	457200	631800	1362000	1379000	1148000	1080000	898700	784800
CFSM	0.08	0.09	0.12	0.08	0.10	0.12	0.27	0.26	0.23	0.21	0.17	0.15
IN.	0.09	0.10	0.13	0.09	0.10	0.14	0.30	0.30	0.25	0.24	0.20	0.17

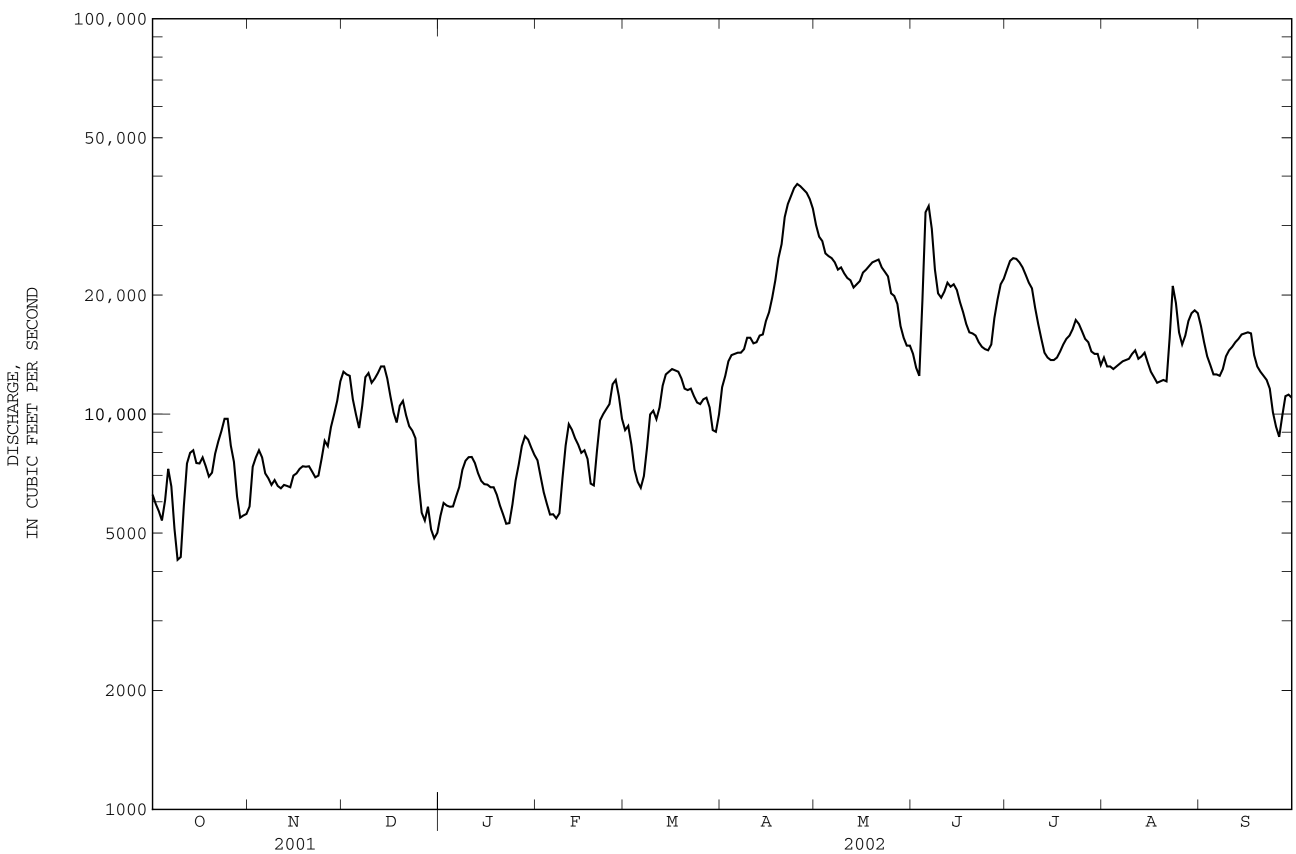
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	10400	12010	9645	9053	10230	14770	28680	26080	20950	19820	13880	11500
MAX	15960	18320	11680	12780	14510	19900	43980	42580	35240	49690	28330	21640
(WY)	1996	1996	1997	1995	1994	1995	1997	2001	1993	1993	1993	1993
MIN	5760	7609	6070	6780	8101	9474	10350	11590	13010	11950	8520	6083
(WY)	2001	2002	2001	2002	2000	2001	2000	2000	1997	1995	2001	1996

05420460 BEAVER SLOUGH AT THIRD STREET CLINTON, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1993 - 2002	
ANNUAL TOTAL	5701400		4862630			
ANNUAL MEAN	15620		13320		15600	
HIGHEST ANNUAL MEAN					23060	1993
LOWEST ANNUAL MEAN					10720	2000
HIGHEST DAILY MEAN	61600	Apr 23	38200	Apr 25	61600	Apr 23 2001
LOWEST DAILY MEAN	4280	Oct 9	4280	Oct 9	3560	Oct 20 2000
ANNUAL SEVEN-DAY MINIMUM	5500	Dec 25	5330	Dec 26	4330	Dec 21 1999
MAXIMUM PEAK FLOW			38600	Apr 25		
MAXIMUM PEAK STAGE			20.30	Apr 26		
ANNUAL RUNOFF (AC-FT)	11310000		9645000		11300000	
ANNUAL RUNOFF (CFSM)	0.18		0.16		0.18	
ANNUAL RUNOFF (INCHES)	2.48		2.11		2.48	
10 PERCENT EXCEEDS	35100		23200		28000	
50 PERCENT EXCEEDS	9450		12300		12500	
90 PERCENT EXCEEDS	6530		6260		7240	

e Estimated



05420500 MISSISSIPPI RIVER AT CLINTON, IA

(National stream-quality accounting network station)

LOCATION.--Lat 41°46'50", long 90°15'07", in NW$^1/_4$ sec.34, T.81 N., R.6 E., Clinton County, Hydrologic Unit 07080101, on right bank at end of Eighth Avenue in Camanche, 5.0 mi upstream from Wapsipinicon River, 6.4 mi downstream from Clinton, 10.6 mi downstream from Lock and Dam 13, and at mile 511.8 upstream from Ohio River.

DRAINAGE AREA.--85,600 mi^2, approximately, at Fulton-Lyons Bridge at Clinton.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June to August 1873 (fragmentary), October 1873 to current year (October 1932 to September 1939, published as "at Le Claire")(June 1873 to December 1932 published in the Iowa State Planning Board report "Stream-flow records of Iowa, 1873-1932").

REVISED RECORDS.--WDR IA-75-1: 1974.

GAGE.--Water-stage recorder. Datum of gage is 562.68 ft above NGVD of 1929. June 6, 1969 to Sept. 16, 1988, water-stage recorder at site 400 ft upstream at same datum. Auxiliary water-stage recorder at Lock and Dam 13 since Oct. 1, 1958. See WSP 1728 for history of changes prior to Oct. 1, 1955.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Minor flow regulation caused by navigation dams. U.S. Army Corps of Engineers rain gage and data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage known since at least 1828, that of Apr. 28, 1965.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27200	25400	55600	e24000	33200	39600	48800	131000	61900	101000	55700	72800
2	25800	32000	55000	e25900	30200	40600	51900	122000	56900	106000	53000	66300
3	24700	33800	54300	e25500	e27500	36400	56700	119000	54400	108000	52700	60800
4	23400	35200	47600	e25300	e25800	31500	58800	111000	84300	e107000	52200	57700
5	26300	33800	43400	e25400	e24200	29300	59200	109000	141000	e105000	52800	54800
6	31600	30800	40100	e26900	e24300	28300	59600	108000	146000	e102000	53800	54800
7	28500	29900	45700	e28400	e23700	30300	59700	105000	128000	e97800	54400	54300
8	22300	28800	53900	e31400	e24400	35800	60800	101000	101000	e93400	54800	56700
9	18600	29600	55200	e33100	30000	43400	64800	102000	87900	90500	55200	60900
10	18900	28600	52000	e33800	36200	44400	64900	98700	85500	80700	57000	62900
11	25500	28200	53300	e33900	41000	42200	62800	96300	88600	73600	57900	64200
12	32600	28800	55200	e32700	39700	45100	63400	94800	93400	67400	59800	66100
13	34700	28600	57200	e30800	37800	51300	65700	90900	91200	62200	61000	67600
14	35200	28400	57400	e29500	36400	54600	69300	92700	92400	60300	62200	69000
15	32700	30400	53400	e28900	34700	55700	74800	94200	89500	59700	58700	69400
16	32600	30800	48300	e28800	35200	56400	78800	99000	83400	59700	55600	69800
17	33800	31600	43900	e28400	33500	56200	85700	101000	78700	60400	54000	69400
18	32100	32100	41400	e28400	29000	55700	95000	103000	73400	62500	52300	61100
19	30200	32000	45600	e27200	28700	53400	108000	105000	69800	65200	52600	57500
20	30900	32100	46900	e25500	35100	50600	117000	106000	69600	67500	53200	55600
21	34500	31100	43200	e24300	41900	50000	137000	107000	68800	68600	52500	54300
22	37100	30100	40500	e23000	43600	50300	148000	102000	66100	71200	67800	53000
23	39400	30400	39500	e23000	44600	48400	155000	99700	64200	75200	91600	50300
24	42300	33500	37800	e25700	46200	46600	162000	97000	63300	73300	83200	43900
25	42300	37200	e29200	e29500	51600	46000	166000	87700	63200	70600	69900	40400
26	36200	36100	e24500	e32400	53200	47300	164000	86500	65100	67300	65000	38100
27	32900	40300	e23400	36100	48100	47800	161000	82400	76000	66000	68700	43100
28	26900	43400	e25300	38200	42300	45100	158000	72800	84700	62800	74800	48100
29	23800	47100	e22200	37500	---	39600	152000	67700	92600	61700	78100	48500
30	24100	52400	e21100	35800	---	39200	144000	64900	95500	61900	79500	47900
31	24300	---	e21800	34300	---	43400	---	64600	---	57800	78300	---
TOTAL	931400	992500	1333900	913600	1002100	1384500	2952700	3021900	2516400	2366300	1918300	1719300
MEAN	30050	33080	43030	29470	35790	44660	98420	97480	83880	76330	61880	57310
MAX	42300	52400	57400	38200	53200	56400	166000	131000	146000	108000	91600	72800
MIN	18600	25400	21100	23000	23700	28300	48800	64600	54400	57800	52200	38100
AC-FT	1847000	1969000	2646000	1812000	1988000	2746000	5857000	5994000	4991000	4694000	3805000	3410000
CFSM	0.35	0.39	0.50	0.34	0.42	0.52	1.15	1.14	0.98	0.89	0.72	0.67
IN.	0.40	0.43	0.58	0.40	0.44	0.60	1.28	1.31	1.09	1.03	0.83	0.75

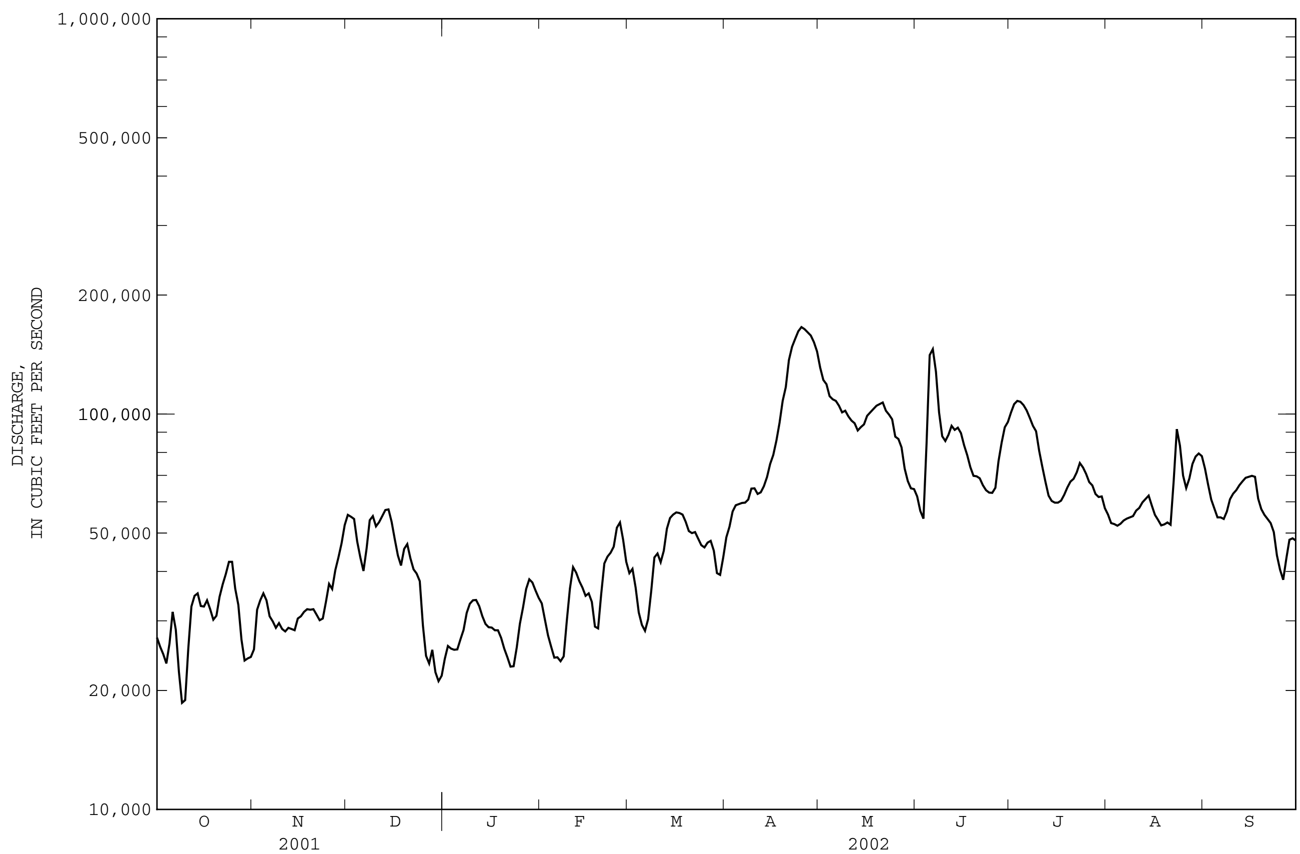
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1874 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	40620	39230	27980	25840	28260	50550	90080	82460	69400	56210	37970	38150
MAX	203600	146800	73590	54100	65680	127500	175900	212400	182100	198900	113400	92380
(WY)	1882	1882	1882	1973	1966	1973	1997	1888	1892	1993	1993	1938
MIN	13490	13760	11120	11390	14000	17600	26040	23190	15420	14690	12460	13870
(WY)	1934	1934	1934	1890	1893	1934	1931	1977	1988	1988	1936	1933

05420500 MISSISSIPPI RIVER AT CLINTON, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1874 - 2002	
ANNUAL TOTAL	24788500		21052900			
ANNUAL MEAN	67910		57680		48940	
HIGHEST ANNUAL MEAN					94690	1882
LOWEST ANNUAL MEAN					18870	1934
HIGHEST DAILY MEAN	268000	Apr 23	166000	Apr 25	307000	Apr 28 1965
LOWEST DAILY MEAN	18600	Oct 9	18600	Oct 9	6500	Dec 25 1933
ANNUAL SEVEN-DAY MINIMUM	23900	Dec 25	23200	Dec 26	7430	Dec 24 1933
MAXIMUM PEAK FLOW			168000	Apr 25		
MAXIMUM PEAK STAGE			17.42	Apr 26	24.65	Apr 28 1965
ANNUAL RUNOFF (AC-FT)	49170000		41760000		35450000	
ANNUAL RUNOFF (CFSM)	0.79		0.67		0.57	
ANNUAL RUNOFF (INCHES)	10.77		9.15		7.77	
10 PERCENT EXCEEDS	152000		101000		95200	
50 PERCENT EXCEEDS	41100		53000		37600	
90 PERCENT EXCEEDS	28400		27200		19000	

e Estimated



05420500 MISSISSIPPI RIVER AT CLINTON, IA--Continued
(National stream-quality accounting network station)

WATER QUALITY RECORDS

PERIOD OF RECORD.--October 1974 to September 1987, October 1994 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	TEMPER-ATURE WATER (DEG C) (00010)	TEMPER-ATURE AIR (DEG C) (00020)	TURBID-ITY LAB HACH 2100AN (NTU) (99872)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)
OCT													
17...	1300	35400	404	7.9	11.3	--	19	10.1	92	751	180	42.3	18.7
NOV													
28...	1100	43800	413	8.3	6.9	--	13	10.8	89	751	180	42.0	17.9
FEB													
20...	1015	37900	389	8.6	3.5	2.7	12	14.9	112	729	180	41.6	17.9
MAR													
18...	1015	56100	379	8.9	3.0	6.5	18	15.2	113	751	170	40.9	17.5
APR													
16...	1030	84000	379	8.9	14.9	24.0	33	12.0	119	748	170	39.6	16.3
25...	1200	163000	259	7.7	11.4	13.0	52	9.2	84	754	100	25.3	9.66
MAY													
07...	1100	106000	267	8.2	15.2	15.0	36	10.0	99	747	120	28.7	11.1
21...	1040	108000	268	8.1	14.0	17.0	31	10.0	98	757	120	27.7	11.2
JUN													
07...	1210	132000	277	7.5	18.5	--	600	6.2	67	752	120	29.5	12.1
24...	1120	65800	364	7.7	25.5	--	18	7.4	90	759	170	40.0	16.8
JUL													
18...	1000	66200	408	8.0	27.4	--	16	8.5	106	750	180	44.3	17.5
AUG													
12...	1015	32700	339	8.1	26.2	27.0	20	8.2	101	746	150	36.6	14.9
SEP													
11...	1030	43800	353	7.9	23.8	20.0	34	7.1	84	750	160	37.7	15.0

Date	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)
OCT													
17...	9.78	.3	2.51	140	2	167	22.6	17.2	.1	7.42	240	.33	.98
NOV													
28...	10.8	.4	2.19	124	0	150	21.2	18.5	.2	6.06	244	.33	1.10
FEB													
20...	11.4	.4	2.04	144	3	168	26.4	17.6	.1	6.17	238	.32	1.46
MAR													
18...	11.6	.4	2.31	144	4	167	23.2	17.3	.1	6.63	236	.32	1.42
APR													
16...	14.5	.5	2.71	133	7	147	25.6	22.2	.2	2.62	231	.31	.94
25...	8.25	.4	2.79	87	0	105	18.6	12.2	E.1	7.90	161	.22	.96
MAY													
07...	6.45	.3	2.25	45	0	54	20.8	11.2	E.1	4.91	150	.20	.66
21...	6.69	.3	2.12	86	0	104	21.8	11.7	.1	3.56	175	.24	.65
JUN													
07...	5.04	.2	3.53	93	0	112	18.2	8.82	.1	4.75	184	.25	2.49
24...	8.93	.3	2.54	108	0	130	29.4	13.7	.2	5.51	231	.31	2.04
JUL													
18...	8.57	.3	2.46	142	2	169	28.6	14.2	.2	10.6	261	.36	2.11
AUG													
12...	7.56	.3	2.23	106	2	126	15.5	12.1	.2	8.89	208	.28	.53
SEP													
11...	8.85	.3	2.73	106	0	127	17.6	14.4	.1	8.36	229	.31	.64

05420500 MISSISSIPPI RIVER AT CLINTON, IA--Continued
(National stream-quality accounting network station)

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE) (01010)
OCT													
17...	E.007	E.04	.66	.059	.072	.135	33	3150	99	1.1	1	37	<.06
NOV													
28...	E.007	.06	.67	.041	.053	.096	20	2370	99	.7	--	--	--
FEB													
20...	.013	<.04	.87	<.007	.007	.080	20	2050	93	.4	--	--	--
MAR													
18...	.016	<.04	1.2	<.007	.013	.135	30	4540	98	.4	2	30	<.06
APR													
16...	.013	<.04	1.3	<.007	.018	.190	73	16600	98	.8	--	--	--
25...	.019	<.04	1.2	<.007	.051	.22	103	45300	96	.7	2	31	<.06
MAY													
07...	.034	<.04	.96	.013	.028	.168	83	23800	99	.7	--	--	--
21...	E.006	<.04	.99	.018	.032	.164	64	18700	98	.7	--	--	--
JUN													
07...	.032	<.04	2.5	<.007	.123	.80	557	199000	96	1.4	--	--	--
24...	.041	<.04	.77	.067	.088	.143	35	6220	98	1.1	--	--	--
JUL													
18...	.038	<.04	.81	.095	.111	.165	29	5180	99	1.8	--	--	--
AUG													
12...	.010	E.03	1.1	.101	.119	.19	37	3270	98	2.3	2	38	<.06
SEP													
11...	.016	<.04	.99	.066	.099	.17	75	8870	99	1.7	--	--	--

Date	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COBALT, DIS-SOLVED (UG/L AS CO) (01035)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO) (01060)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)
OCT													
17...	<.04	<.8	.23	1.3	<10	<.08	3.5	1.0	1.0	1.73	.4	<1	72.8
NOV													
28...	--	--	--	--	E9	--	2.9	--	--	--	E.2	--	70.2
FEB													
20...	--	--	--	--	31	--	3.7	--	--	--	<.3	--	97.4
MAR													
18...	E.02	<.8	.24	1.1	45	.09	3.9	4.7	.8	1.48	E.2	<1	76.4
APR													
16...	--	--	--	--	24	--	3.8	--	--	--	E.2	--	84.1
25...	<.04	<.8	.20	1.6	56	.10	2.7	9.2	.6	1.03	E.3	<1	58.9
MAY													
07...	--	--	--	--	62	--	2.9	--	--	--	E.3	--	56.7
21...	--	--	--	--	55	--	3.2	--	--	--	E.2	--	60.5
JUN													
07...	--	--	--	--	E8	--	2.0	--	--	--	.6	--	56.0
24...	--	--	--	--	14	--	5.2	--	--	--	.7	--	84.4
JUL													
18...	--	--	--	--	<10	--	6.5	--	--	--	.7	--	108
AUG													
12...	<.04	<.8	.20	1.4	<10	E.07	4.0	1.0	1.3	1.57	.4	<1	79.2
SEP													
11...	--	--	--	--	<10	--	3.9	--	--	--	.4	--	80.7

05420500 MISSISSIPPI RIVER AT CLINTON, IA--Continued
(National stream-quality accounting network station)

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	PH WATER WHOLE LAB (STAND- ARD UNITS) (00403)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC PARTIC- ULATE TOTAL (MG/L AS C) (00689)	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	PROPA- CHLOR, WATER, DISS, REC (UG/L) (04024)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	PRO- METON, WATER, DISS, REC (UG/L) (04037)
OCT													
17...	1.6	3	.81	--	8.2	.39	5.2	2.0	.11	--	--	--	--
NOV													
28...	1.2	--	--	E.026	8.2	.36	4.8	1.2	--	<.010	<.002	<.011	M
FEB													
20...	.5	--	--	E.026	8.4	.39	5.7	2.7	--	<.010	<.002	.005	<.01
MAR													
18...	E.1	2	.79	E.015	8.6	.35	5.7	3.5	.11	<.010	<.002	<.005	<.01
APR													
16...	1.8	--	--	E.013	8.9	.39	--	5.9	--	<.010	<.002	.008	E.01
25...	1.8	2	.56	E.009	8.0	.47	7.2	4.2	.14	<.010	<.002	.006	<.01
MAY													
07...	2.0	--	--	E.015	7.7	.53	13.0	3.9	--	<.010	<.002	.005	<.01
21...	1.5	--	--	E.018	8.1	.49	8.9	3.3	--	<.010	<.002	.009	<.01
JUN													
07...	4.2	--	--	E.308	8.1	1.0	6.2	15.2	--	<.010	<.002	.055	<.01
24...	1.9	--	--	E.071	7.9	.62	7.9	1.6	--	<.010	<.002	.009	M
JUL													
18...	2.9	--	--	E.090	8.2	.60	8.1	1.4	--	<.010	<.002	.012	E.01
AUG													
12...	3.5	2	.86	E.035	8.4	.59	16.8	2.7	.14	<.010	<.002	.007	E.01
SEP													
11...	2.8	--	--	E.038	7.8	.51	9.6	2.9	--	<.010	<.002	.006	E.01

Date	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	FONOFOS WATER DISS REC (UG/L) (04095)	ALKA- LINITY WAT.DIS FET LAB CACO3 (MG/L) (29801)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	P,P' DDE DISSOLV (UG/L) (34653)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	LINDANE DIS- SOLVED (UG/L) (39341)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	MALA- THION, DIS- SOLVED (UG/L) (39532)	PARA- THION, DIS- SOLVED (UG/L) (39542)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)
OCT													
17...	--	--	170	--	--	--	--	--	--	--	--	--	--
NOV													
28...	<.018	<.003	165	<.005	<.003	<.005	<.004	<.005	E.007	<.027	<.007	<.005	.051
FEB													
20...	<.018	<.003	158	<.005	<.003	<.005	<.004	<.005	E.011	<.027	<.010	<.005	.037
MAR													
18...	<.018	<.003	155	<.005	<.003	<.005	<.004	<.005	E.011	<.027	<.010	<.005	.035
APR													
16...	<.018	<.003	145	<.005	<.003	<.005	<.004	<.005	.046	<.027	<.010	<.005	.032
25...	<.018	<.003	91	<.005	<.003	<.005	<.004	<.005	.046	<.027	<.010	<.005	.038
MAY													
07...	<.018	<.003	97	<.005	<.003	<.005	<.004	<.005	.023	<.027	<.010	<.005	.035
21...	<.018	<.003	97	<.005	<.003	<.005	<.004	<.005	.027	<.027	<.010	<.005	.094
JUN													
07...	<.025	<.003	106	<.005	<.003	.012	<.004	<.005	1.70	<.027	<.010	<.005	3.66
24...	<.018	<.003	129	<.005	<.003	<.005	<.004	<.005	.163	<.027	<.010	<.005	.575
JUL													
18...	E.011	<.003	147	<.005	<.003	<.005	<.004	<.005	.078	<.027	<.010	<.005	1.02
AUG													
12...	<.018	<.003	138	<.005	<.003	<.005	<.004	<.005	.018	<.027	<.010	E.002	.224
SEP													
11...	E.005	<.003	E143	<.005	<.003	<.005	<.004	<.005	.016	<.027	<.010	E.004	.122

05420500 MISSISSIPPI RIVER AT CLINTON, IA--Continued
(National stream-quality accounting network station)

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	ALA-CHLOR, WATER, DISS, REC, (UG/L) (46342)	ACETO-CHLOR, WATER FLTRD REC (UG/L) (49260)	METRI-BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	2,6-DI-ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	TRI-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	ETHAL-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	TER-BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	LIN-URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	METHYL PARA-THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	PEB-ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)
OCT													
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV													
28...	<.002	.006	<.006	<.002	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.002	<.02
FEB													
20...	<.004	<.006	<.006	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02
MAR													
18...	<.004	<.006	<.006	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02
APR													
16...	<.004	.009	<.006	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02
25...	<.004	.011	<.006	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02
MAY													
07...	<.004	.020	<.006	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02
21...	.005	.042	<.006	<.006	<.009	<.009	<.011	<.034	<.035	<.006	E.001	<.004	<.02
JUN													
07...	.084	1.78	<.015	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02
24...	.013	.177	<.006	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02
JUL													
18...	<.011	.056	<.006	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02
AUG													
12...	<.004	.009	<.006	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02
SEP													
11...	<.004	.007	<.006	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02

Date	MOL-INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	ETHO-PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	BEN-FLUR-ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	CARBO-FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	TER-BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	PRON-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	DISUL-FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	TRIAL-LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	PRO-PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	CAR-BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	THIO-BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	PENDI-METH-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)
OCT													
17...	--	--	--	--	--	--	--	--	--	--	--	--	--
NOV													
28...	<.002	<.005	<.010	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.010
FEB													
20...	<.002	<.005	<.010	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022
MAR													
18...	<.002	<.005	<.010	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022
APR													
16...	<.002	<.005	<.010	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022
25...	<.002	<.005	<.010	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022
MAY													
07...	<.002	<.005	<.010	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022
21...	<.002	<.005	<.010	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022
JUN													
07...	<.002	<.005	<.010	E.104	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022
24...	<.002	<.005	<.010	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022
JUL													
18...	<.002	<.005	<.010	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022
AUG													
12...	<.002	<.005	<.010	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022
SEP													
11...	<.002	<.005	<.010	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022

05420500 MISSISSIPPI RIVER AT CLINTON, IA--Continued
(National stream-quality accounting network station)

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	DIAZ- INON D10 SRG WAT FLT 0.7 U GF, REC PERCENT (91063)	HCH ALPHA D6 SRG WAT FLT 0.7 U GF, REC PERCENT (91065)	BORON, DIS- SOLVED (UG/L AS B) (01020)
OCT								
17...	--	--	--	--	413	--	--	26
NOV								
28...	<.007	<.02	<.050	<.006	410	92.3	103	23
FEB								
20...	<.007	<.02	<.050	<.006	403	117	108	24
MAR								
18...	<.007	<.02	<.050	<.006	396	119	115	30
APR								
16...	<.007	<.02	<.050	<.006	385	111	90.6	26
25...	<.007	<.02	<.050	<.006	262	145	100	19
MAY								
07...	<.007	<.02	<.050	<.006	271	114	114	15
21...	<.007	<.02	<.050	<.006	276	107	104	16
JUN								
07...	<.007	<.02	<.050	<.006	286	119	110	20
24...	<.007	<.02	<.050	<.006	362	102	96.4	25
JUL								
18...	<.007	<.02	<.050	<.006	386	112	94.5	34
AUG								
12...	<.007	<.02	<.050	<.006	331	108	115	35
SEP								
11...	<.007	<.02	<.050	<.006	339	111	97.3	27

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05420680 WAPSIPINICON RIVER NEAR TRIPOLI, IA

LOCATION.--Lat 42°50'10", long 92°15'26", in NW$^1/_4$ SW$^1/_4$ SW$^1/_4$ sec. 27, T.93 N., R.12 W., Bremer County, Hydrologic Unit 07080102, on left downstream bank 40 ft from bridge on State Highway 93, 1.0 mile upstream of the mouth of the East Fork of the Wapsipinicon River, and 2.0 miles north of Tripoli.

DRAINAGE AREA.--343 mi^2.

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--September 1957 to July 1977 (operated as a partial-record low flow measurement site). Discharge records April 1996 to September 1998 and October 1, 2000 to September 30, 2001. Stage-only records May 13 to September 30, 2000.

REVISIONS.--WDR-IA-98-1: 1997(M)

GAGE.--Water stage recorder. Datum of gage is 1,000 ft above NGVD of 1929, from map.

REMARKS.--Records good except for those for estimated daily discharges, which are poor. U.S. Geological Survey rain gage and data collection platform with telephone modem at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 1, 1969, discharge about 18,900 ft^3/s, gage height 17.26 ft: Flood of May 17, 1999, discharge 3,900 ft^3/s, gage height 14.39 ft; Flood of July 21, 1999, discharge 19,400 ft^3/s, gage height 18.50 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40	41	48	e19	e27	e82	65	618	223	232	760	67
2	38	40	47	e24	e31	e79	66	509	190	193	293	63
3	36	39	46	e22	e30	e77	64	419	173	165	174	53
4	34	38	53	e27	e26	e75	62	378	250	144	173	53
5	33	37	62	e34	e28	e71	60	335	579	127	345	51
6	32	37	54	e31	e31	e66	58	294	574	114	552	49
7	30	38	54	e29	e37	e62	59	262	502	105	646	47
8	29	38	51	e26	e40	e60	61	234	448	97	601	46
9	30	36	49	e38	e44	e61	62	214	349	90	366	45
10	36	36	48	e36	e37	e60	62	225	275	82	225	44
11	40	35	47	e32	e30	e65	64	227	241	88	172	43
12	40	36	47	e27	e28	e89	83	238	208	86	146	42
13	46	39	48	e27	e25	e127	164	253	193	80	151	40
14	52	40	48	e24	e35	110	344	235	174	74	184	40
15	57	41	47	e21	46	106	347	212	161	68	318	39
16	61	40	47	e25	42	106	274	197	146	62	283	38
17	68	40	46	e28	32	103	222	182	132	57	202	36
18	64	40	45	e29	29	91	200	167	122	54	179	37
19	59	41	44	e31	41	85	195	154	146	52	169	39
20	56	40	e35	e30	71	78	209	143	654	51	144	46
21	52	39	e31	e31	104	77	184	134	966	56	122	51
22	51	39	e27	e36	119	76	178	128	906	60	111	47
23	53	39	e23	e34	139	60	182	124	988	65	107	43
24	51	41	e22	e31	133	72	180	119	1080	71	102	39
25	49	42	e21	e35	104	85	172	118	673	61	100	37
26	47	44	e19	e40	92	78	160	114	468	53	94	36
27	44	46	e22	e37	e85	72	155	109	561	54	87	35
28	42	49	e25	e32	e84	71	241	113	650	68	81	35
29	42	48	e23	e25	---	68	491	248	445	182	76	37
30	41	47	e21	e19	---	65	623	474	306	411	71	36
31	41	---	e20	e22	---	65	---	305	---	668	67	---
TOTAL	1394	1206	1220	902	1570	2442	5287	7482	12783	3770	7101	1314
MEAN	44.97	40.20	39.35	29.10	56.07	78.77	176.2	241.4	426.1	121.6	229.1	43.80
MAX	68	49	62	40	139	127	623	618	1080	668	760	67
MIN	29	35	19	19	25	60	58	109	122	51	67	35
AC-FT	2760	2390	2420	1790	3110	4840	10490	14840	25360	7480	14080	2610
CFSM	0.13	0.12	0.11	0.08	0.16	0.23	0.51	0.70	1.23	0.35	0.66	0.13
IN.	0.15	0.13	0.13	0.10	0.17	0.26	0.57	0.80	1.37	0.41	0.76	0.14

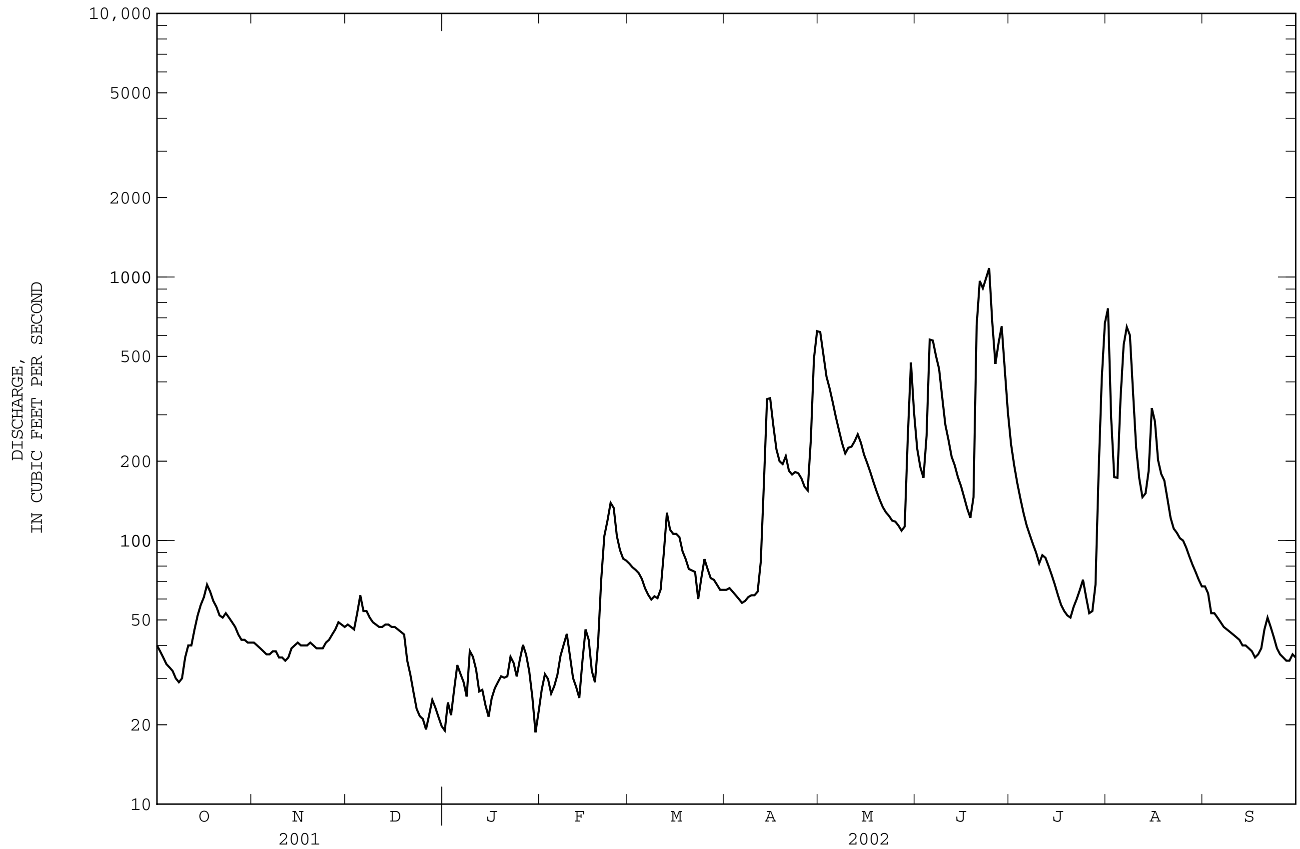
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	168.1	86.43	56.14	56.73	160.1	566.4	767.1	407.0	579.1	196.3	98.38	67.65
MAX	407	114	84.5	77.0	275	1354	1648	816	1172	517	229	128
(WY)	1998	2001	1997	1997	1998	1997	2001	2001	1998	1998	2002	1997
MIN	27.1	40.2	39.4	29.1	56.1	78.8	176	174	188	69.2	36.0	25.3
(WY)	1997	2002	2002	2002	2002	2002	2002	1996	1997	2001	2001	1996

05420680 WAPSIPINICON RIVER NEAR TRIPOLI, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1996 - 2002	
ANNUAL TOTAL	106441		46471			
ANNUAL MEAN	291.6		127.3		268.2	
HIGHEST ANNUAL MEAN					367	1998
LOWEST ANNUAL MEAN					127	2002
HIGHEST DAILY MEAN	3830	Apr 14	1080	Jun 24	3830	Apr 14 2001
LOWEST DAILY MEAN	19	Dec 26	19	Dec 26	16	Oct 7 1996
ANNUAL SEVEN-DAY MINIMUM	22	Dec 25	21	Dec 26	18	Oct 5 1996
MAXIMUM PEAK FLOW			1120	Jun 24	4730	Jun 29 1998
MAXIMUM PEAK STAGE			11.62	Jun 24	14.91	Jun 29 1998
INSTANTANEOUS LOW FLOW					14	Oct 7 1996
ANNUAL RUNOFF (AC-FT)	211100		92180		194300	
ANNUAL RUNOFF (CFSM)	0.84		0.37		0.78	
ANNUAL RUNOFF (INCHES)	11.44		5.00		10.53	
10 PERCENT EXCEEDS	843		298		721	
50 PERCENT EXCEEDS	62		61		90	
90 PERCENT EXCEEDS	34		30		37	

e Estimated



05420680 WAPSIPINICON RIVER NEAR TRIPOLI, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--January 2001 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	TEMPER-ATURE WATER (DEG C) (00010)	TEMPER-ATURE AIR (DEG C) (00020)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	AGENCY COL-LECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANA-LYZING SAMPLE (CODE NUMBER) (00028)	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	GAGE HEIGHT (FEET) (00065)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SAMPLE TREAT-MENT (CODES) (00115)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)
OCT													
03...	0944	15.4	14.2	729	1028	80020	36	7.19	401	1	9.0	90	7.6
NOV													
05...	0940	7.5	8.7	744	1028	80020	36	7.25	420	1	11.3	97	7.9
DEC													
03...	1000	3.0	11.1	733	1028	80020	46	7.29	432	1	12.3	92	8.1
JAN													
07...	1046	.1	-13.0	736	1028	80020	29	7.43	579	1	11.0	75	7.4
FEB													
11...	0951	.1	-4.0	737	1028	80020	30	7.14	473	1	13.5	92	7.6
APR													
02...	0945	4.6	2.0	729	1028	80020	66	7.46	411	1	13.1	101	8.1
MAY													
01...	0953	11.9	15.0	730	1028	80020	603	10.62	409	1	10.1	93	7.7
JUN													
05...	1015	15.1	23.0	739	1028	80020	593	10.19	360	1	10.1	101	7.5
JUL													
02...	1015	25.5	29.5	739	1028	80020	194	8.44	449	--	7.5	92	7.8
AUG													
02...	0915	23.0	18.0	740	1028	80020	300	9.25	359	--	7.3	85	7.5

Date	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	TER-BUTHYL-AZINE, WATER, DISS, REC (UG/L) (04022)	PROPA-CHLOR, WATER, DISS, REC (UG/L) (04024)	BUTYL-ATE, WATER, DISS, REC (UG/L) (04028)
OCT													
03...	0	172	<.04	E.007	.58	1.75	.119	E.02	23.0	24.5	U	<.010	<.002
NOV													
05...	0	185	<.04	E.007	.48	1.58	.070	<.02	24.9	25.9	U	<.010	<.002
DEC													
03...	0	186	<.04	E.006	.43	2.30	.086	<.02	26.9	24.9	U	<.010	<.002
JAN													
07...	0	298	.15	.035	.40	5.10	.066	E.01	30.9	34.5	U	<.010	<.002
FEB													
11...	0	200	.05	.024	.35	3.67	.083	<.02	25.1	28.0	U	<.010	<.002
APR													
02...	0	157	E.02	.029	.42	3.47	.085	E.01	21.3	24.7	--	<.010	<.002
MAY													
01...	0	124	.05	.052	.75	10.7	.131	.03	22.8	19.5	--	<.010	<.002
JUN													
05...	0	107	.10	.079	1.2	9.41	.35	.09	18.1	14.1	--	<.010	<.002
JUL													
02...	0	145	<.04	.038	.53	9.91	.194	.04	22.8	19.5	--	<.010	<.002
AUG													
02...	0	134	<.04	.052	1.0	5.59	.23	.08	15.1	16.3	--	<.010	<.002

05420680 WAPSIPINICON RIVER NEAR TRIPOLI, IA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	FONOFOS WATER DISS REC (UG/L) (04095)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	P,P' DDE DISSOLV (UG/L) (34653)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	LINDANE DIS- SOLVED (UG/L) (39341)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	MALA- THION, DIS- SOLVED (UG/L) (39532)
OCT 03...	E.005	E.01	E.071	<.018	<.003	<.005	<.003	<.005	143	<.004	<.005	.088	<.027
NOV 05...	<.011	E.01	E.052	<.018	<.003	<.005	<.003	<.005	153	<.004	<.005	.041	<.027
DEC 03...	E.003	M	E.040	<.018	<.003	<.005	<.003	<.005	154	<.004	<.005	.045	<.027
JAN 07...	<.005	<.01	E.068	<.018	<.003	<.005	<.003	<.005	245	<.004	<.005	.049	<.027
FEB 11...	<.005	E.01	E.047	<.018	<.003	<.005	<.003	<.005	165	<.004	<.005	.038	<.027
APR 02...	<.005	M	E.029	<.018	<.003	<.005	<.003	<.005	129	<.004	<.005	.029	<.027
MAY 01...	.010	.02	E.129	<.018	<.003	<.005	<.003	<.005	101	<.004	<.005	.235	<.027
JUN 05...	.056	E.01	E.316	<.018	<.003	<.005	<.003	<.005	88	<.004	<.005	.534	<.027
JUL 02...	.042	.02	E.196	<.018	<.003	<.005	<.003	<.005	121	<.004	<.005	.099	<.027
AUG 02...	.008	E.01	E.153	<.018	<.003	<.005	<.003	<.005	111	<.004	<.005	.129	<.027

Date	PARA- THION, DIS- SOLVED (UG/L) (39542)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)	ACETO- CHLOR, WATER FLTRD REC (UG/L) (49260)	PURPOSE SITE VISIT, (CODE) (50280)	TUR- BID- ITY FIELD WATER UNFLTRD (NTU) (61028)	SAMPLE PURPOSE CODE (71999)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD) (72000)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	DRAIN- AGE AREA (SQ. MI.) (81024)	SAM- PLING METHOD, CODES (82398)	METRI- BUZIN SENCOR WATER DISSOLV (UG/L) (82630)
OCT 03...	<.007	<.005	.113	.009	.022	1001	23	15.00	1000	13	346	10	<.006
NOV 05...	<.007	<.005	.068	<.008	.007	1001	--	15.00	1000	5.0	346	30	<.006
DEC 03...	<.007	<.005	.059	.008	.011	1001	8.4	15.00	1000	6.5	346	10	<.006
JAN 07...	<.010	<.005	.072	.011	.019	1001	6.6	15.00	1000	73	346	10	<.006
FEB 11...	<.010	<.005	.059	.018	.009	1001	7.7	15.00	1000	4.7	346	10	<.006
APR 02...	<.010	<.005	.052	.010	.010	1001	8.2	15.00	1000	4.5	346	10	<.006
MAY 01...	<.010	<.005	.297	.035	.185	1001	30	15.00	1000	29	346	10	<.008
JUN 05...	<.010	<.005	5.58	.139	3.09	1001	140	15.00	1000	88	346	10	<.006
JUL 02...	<.010	<.005	.929	<.004	.036	1001	50	15.00	1000	42	346	10	<.006
AUG 02...	<.010	<.005	.356	.007	.047	1001	58	15.00	1000	48	346	10	<.006

Date	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	PEB- ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	BEN- FLUR- ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)
OCT 03...	<.002	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.002	E.01	<.002	<.005	<.010
NOV 05...	<.002	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.002	E.01	<.002	<.005	<.010
DEC 03...	<.002	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.002	M	<.002	<.005	<.010
JAN 07...	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02	<.002	<.005	<.010
FEB 11...	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02	<.002	<.005	<.010
APR 02...	E.001	<.009	<.009	<.011	<.034	<.035	<.006	E.001	<.004	<.02	<.002	<.005	<.010
MAY 01...	<.006	<.009	<.009	<.011	<.034	<.035	<.006	.002	<.004	E.01	<.002	<.005	<.010
JUN 05...	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02	<.002	<.005	<.010
JUL 02...	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	E.01	<.002	<.005	<.010
AUG 02...	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02	<.002	<.005	<.010

05420680 WAPSIPINICON RIVER NEAR TRIPOLI, IA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	CARBO-FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	TER-BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	PRON-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	DISUL-FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	TRIAL-LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	PRO-PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	CAR-BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	THIO-BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	PENDI-METH-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	NAPROP-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PRO-PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	METHYL AZIN-PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)
OCT 03...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.010	<.007	<.02	<.050
NOV 05...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.010	<.007	<.02	<.050
DEC 03...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.010	<.007	<.02	<.050
JAN 07...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050
FEB 11...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050
APR 02...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050
MAY 01...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050
JUN 05...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050
JUL 02...	E.014	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050
AUG 02...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050

Date	PER-METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	SAMPLER TYPE (CODE) (84164)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	DIAZ-INON D10 SRG WAT FLT 0.7 U GF, REC PERCENT (91063)	HCH ALPHA D6 SRG WAT FLT 0.7 U GF, REC PERCENT (91065)	SET NUMBER SCHED-ULE 2001 (NO.) (99818)	SAMPLE VOLUME SCHED-ULE 2001 (ML) (99856)
OCT 03...	<.006	3045	--	108	90.6	2.00E+08	941
NOV 05...	<.006	3045	--	91.7	82.6	2.00E+08	917
DEC 03...	<.006	3045	--	90.7	79.0	2.00E+08	921
JAN 07...	<.006	3045	585	85.3	82.4	2.00E+08	934
FEB 11...	<.006	3045	481	93.7	81.3	2.00E+08	902
APR 02...	<.006	3045	420	85.2	94.4	--	929
MAY 01...	<.006	3039	417	130	104	--	930
JUN 05...	<.006	3039	360	E128	114	--	916
JUL 02...	<.006	3045	--	110	89.4	--	924
AUG 02...	<.006	3035	--	97.2	91.5	--	938

05420680 WAPSIPINICON RIVER NEAR TRIPOLI, IA

PRECIPITATION RECORDS

PERIOD OF RECORD.--April 10, 1996 to September 30, 1998; June 1, 2000 to current year.

INSTRUMENTATION.--Tipping bucket rain gage.

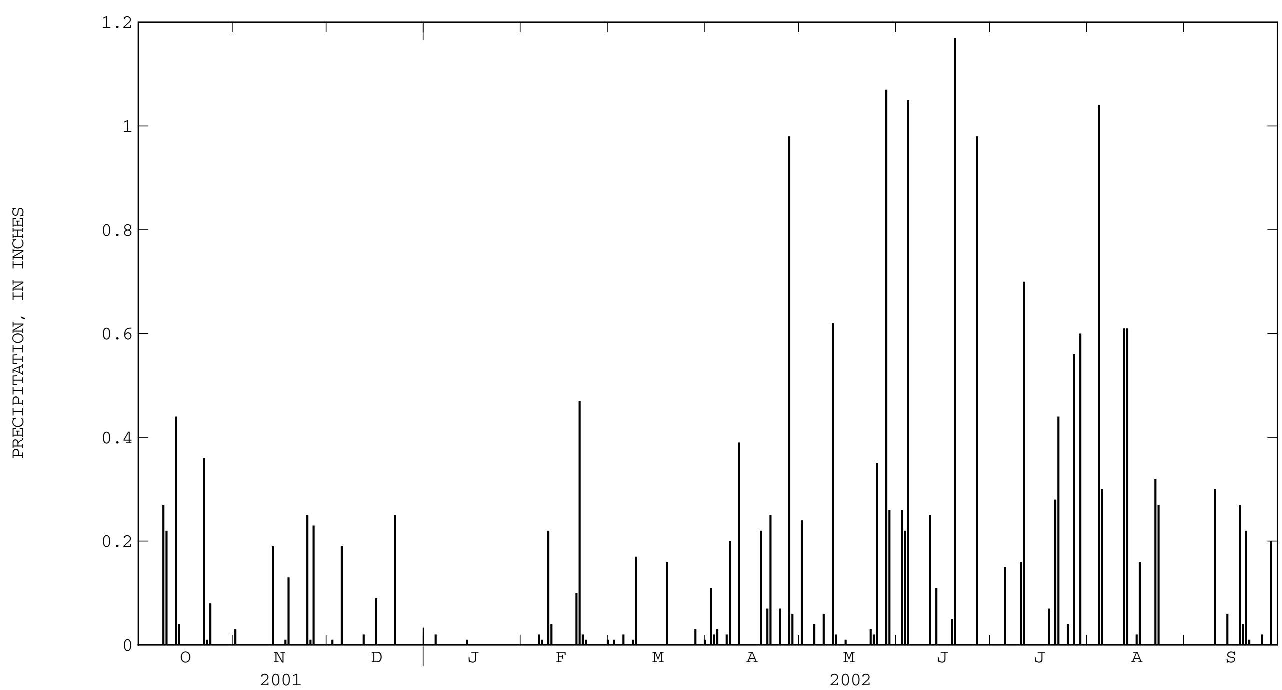
REMARKS.--Records good except for winter period, which is poor due to intermittent snow accumulation and subsequent melting.

EXTREME FOR PERIOD OF RECORD.--Maximum daily accumulation 2.40 in., June 21, 1997.

EXTREME FOR CURRENT YEAR.--Maximum daily accumulation, 1.17 in., June 19.

PRECIPITATION from 8200, in INCHES, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.0	0.03	0.0	0.0	0.0	0.0	0.0	0.24	0.0	0.0	0.0	0.0
2	0.0	0.0	0.01	0.0	0.0	0.01	0.11	0.0	0.26	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.0	0.22	0.0	0.0	0.0
4	0.0	0.0	0.0	0.02	0.0	0.0	0.03	0.0	1.05	0.0	1.04	0.0
5	0.0	0.0	0.19	0.0	0.0	0.02	0.0	0.04	0.0	0.15	0.30	0.0
6	0.0	0.0	0.0	0.0	0.02	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.01	0.0	0.02	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.01	0.20	0.06	0.0	0.0	0.0	0.0
9	0.27	0.0	0.0	0.0	0.22	0.17	0.0	0.0	0.0	0.0	0.0	0.0
10	0.22	0.0	0.0	0.0	0.04	0.0	0.0	0.0	0.0	0.16	0.0	0.30
11	0.0	0.0	0.0	0.0	0.0	0.0	0.39	0.62	0.25	0.70	0.0	0.0
12	0.0	0.0	0.02	0.0	0.0	0.0	0.0	0.02	0.0	0.0	0.61	0.0
13	0.44	0.19	0.0	0.0	0.0	0.0	0.0	0.0	0.11	0.0	0.61	0.0
14	0.04	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.06
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.0
16	0.0	0.0	0.09	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.0
17	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.16	0.0
18	0.0	0.13	0.0	0.0	0.10	0.0	0.22	0.0	0.05	0.0	0.0	0.27
19	0.0	0.0	0.0	0.0	0.47	0.16	0.0	0.0	1.17	0.07	0.0	0.04
20	0.0	0.0	0.0	0.0	0.02	0.0	0.07	0.0	0.0	0.0	0.0	0.22
21	0.0	0.0	0.0	0.0	0.01	0.0	0.25	0.0	0.0	0.28	0.0	0.01
22	0.36	0.0	0.25	0.0	0.0	0.0	0.0	0.0	0.0	0.44	0.32	0.0
23	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.03	0.0	0.0	0.27	0.0
24	0.08	0.25	0.0	0.0	0.0	0.0	0.07	0.02	0.0	0.0	0.0	0.0
25	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.35	0.0	0.04	0.0	0.02
26	0.0	0.23	0.0	0.0	0.0	0.0	0.0	0.0	0.98	0.0	0.0	0.0
27	0.0	0.0	0.0	0.0	0.0	0.0	0.98	0.0	0.0	0.56	0.0	0.0
28	0.0	0.0	0.0	0.0	0.01	0.03	0.06	1.07	0.0	0.0	0.0	0.20
29	0.0	0.0	0.0	0.0	---	0.0	0.0	0.26	0.0	0.60	0.0	0.0
30	0.0	0.0	0.0	0.0	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	0.0	---	0.0	0.0	---	0.01	---	0.0	---	0.0	0.0	---
TOTAL	1.42	0.85	0.56	0.03	0.90	0.41	2.42	2.72	4.09	3.00	3.33	1.12
MEAN	0.05	0.03	0.02	0.00	0.03	0.01	0.08	0.09	0.14	0.10	0.11	0.04
MAX	0.44	0.25	0.25	0.02	0.47	0.17	0.98	1.07	1.17	0.70	1.04	0.30
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



05421000 WAPSIPINICON RIVER AT INDEPENDENCE, IA

LOCATION.--Lat 42°27'49", long 91°53'42", in SE$^{1}/_{4}$ sec.4, T.88 N., R.9 W., Buchanan County, Hydrologic Unit 07080102, on right bank at Sixth Street in Independence, 1,800 ft downstream from dam at abandoned hydroelectric plant, 4.9 mi downstream from Otter Creek, 9.7 mi upstream from Pine Creek, and at mile 142.5.

DRAINAGE AREA.--1,048 mi^2.

PERIOD OF RECORD.--July 1933 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1938-39, 1940 (M), 1947.

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

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1901, that of May 18, 1999.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	214	324	377	169	e128	e290	300	1290	1320	743	446	176
2	200	314	358	159	e115	e264	318	1380	1090	617	582	167
3	188	292	344	150	e113	e253	296	1380	968	557	632	152
4	171	274	339	145	e116	e251	282	1250	1640	513	542	138
5	161	263	342	147	e119	e255	281	1110	6280	473	466	127
6	147	265	349	155	e122	e267	265	1050	5180	428	421	119
7	135	262	357	153	e115	e277	281	957	3940	375	369	112
8	131	260	367	152	e120	338	316	885	3280	177	614	106
9	134	236	386	162	e135	400	347	843	2560	239	714	103
10	158	237	408	168	e152	314	355	769	1930	269	686	100
11	216	232	380	169	e141	426	364	751	1570	294	531	98
12	308	223	371	179	e136	443	397	1010	1370	300	413	96
13	315	227	359	179	e158	477	428	1170	1180	284	402	93
14	516	235	336	189	e257	475	471	1130	1020	258	402	93
15	941	249	324	191	277	505	570	1060	904	224	391	90
16	818	251	359	188	288	460	683	981	803	202	403	88
17	631	244	356	165	266	431	704	887	721	184	459	86
18	544	239	333	159	263	421	647	801	654	169	432	92
19	498	240	313	148	302	420	600	729	601	157	377	110
20	448	228	293	143	422	425	550	668	571	151	333	130
21	407	228	262	149	568	427	574	620	613	143	323	117
22	381	228	286	148	634	366	595	588	898	149	422	104
23	410	230	e258	152	624	378	556	581	1100	141	546	100
24	491	254	e135	151	655	391	572	541	1170	144	442	94
25	487	276	e193	148	649	373	564	534	1150	142	340	93
26	425	279	e237	157	579	358	538	515	1250	148	304	92
27	388	324	e248	167	e360	337	547	499	1130	175	270	88
28	364	369	e249	179	e307	345	727	474	947	163	242	86
29	352	388	e219	184	---	342	948	e638	901	194	223	95
30	328	388	e200	178	---	326	1140	873	875	188	208	106
31	317	---	e178	152	---	312	---	1190	---	271	192	---
TOTAL	11224	8059	9516	5035	8121	11347	15216	27154	47616	8472	13127	3251
MEAN	362.1	268.6	307.0	162.4	290.0	366.0	507.2	875.9	1587	273.3	423.5	108.4
MAX	941	388	408	191	655	505	1140	1380	6280	743	714	176
MIN	131	223	135	143	113	251	265	474	571	141	192	86
AC-FT	22260	15990	18870	9990	16110	22510	30180	53860	94450	16800	26040	6450
CFSM	0.35	0.26	0.29	0.15	0.28	0.35	0.48	0.84	1.51	0.26	0.40	0.10
IN.	0.40	0.29	0.34	0.18	0.29	0.40	0.54	0.96	1.69	0.30	0.47	0.12

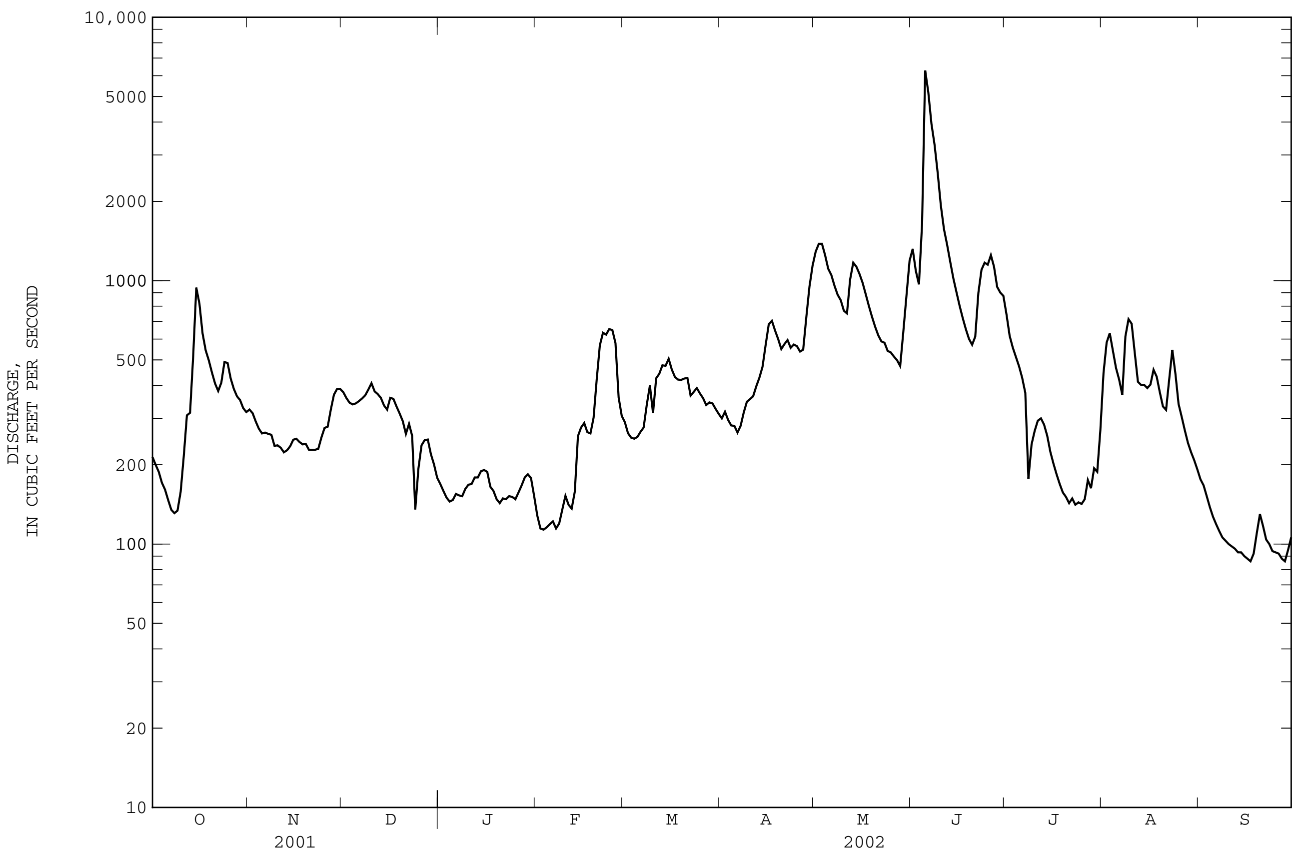
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1934 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	390.6	443.4	301.2	222.4	356.9	1409	1379	991.5	1019	733.1	547.5	366.1
MAX	2306	2280	1962	1411	1698	3201	5578	4326	4721	4836	5443	1940
(WY)	1973	1992	1992	1946	1984	1986	1993	1999	1947	1993	1993	1981
MIN	29.3	42.2	26.9	12.6	19.0	68.4	198	45.3	12.4	18.9	21.5	20.5
(WY)	1989	1977	1977	1977	1956	1934	1957	1934	1934	1936	1934	1976

05421000 WAPSIPINICON RIVER AT INDEPENDENCE, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1934 - 2002	
ANNUAL TOTAL	344516		168138			
ANNUAL MEAN	943.9		460.7		681.1	
HIGHEST ANNUAL MEAN					2304	1993
LOWEST ANNUAL MEAN					74.5	1934
HIGHEST DAILY MEAN	6540	May 8	6280	Jun 5	28000	May 18 1999
LOWEST DAILY MEAN	79	Sep 5	86	Sep 17a	7.0	Oct 1 1933b
ANNUAL SEVEN-DAY MINIMUM	85	Aug 31	91	Sep 12	7.1	Jan 24 1977
MAXIMUM PEAK FLOW			7150	Jun 5	31100	May 18 1999
MAXIMUM PEAK STAGE			9.99	Jun 5	22.35	May 18 1999
ANNUAL RUNOFF (AC-FT)	683300		333500		493400	
ANNUAL RUNOFF (CFSM)	0.90		0.44		0.65	
ANNUAL RUNOFF (INCHES)	12.23		5.97		8.83	
10 PERCENT EXCEEDS	3170		919		1670	
50 PERCENT EXCEEDS	300		324		276	
90 PERCENT EXCEEDS	120		135		53	

a Also Sept. 28
b Many days in 1934 when power plant shut down; Jan. 25-30, 1977.
e Estimated



05422000 WAPSIPINICON RIVER NEAR DE WITT, IA

LOCATION.--Lat 41°46'01", long 90°32'05", in SW$^{1}/_{4}$ NE$^{1}/_{4}$ sec.6, T.80 N., R.4 E., Clinton County, Hydrologic Unit 07080103, on left bank 5 ft upstream from bridge on Highway 956, 0.9 mi downstream from Silver Creek, 4.0 mi south of water tower in De Witt, 6.2 mi upstream from Brophy Creek, and 18.2 mi upstream from mouth.

DRAINAGE AREA.--2,330 mi^2.

PERIOD OF RECORD.--July 1934 to current year.

REVISED RECORDS.--WSP 1308: 1937 (M). WSP 1438: Drainage area. WSP 1708: 1951.

GAGE.--Water-stage recorder. Datum of gage is 598.81 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U. S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	779	1240	1040	e940	e824	e1440	1160	2540	3220	2090	1490	919
2	740	1170	1060	e927	e800	e1280	1150	2730	2910	1930	1320	867
3	701	1110	1070	e905	e752	e1030	1130	2750	2860	1840	1180	872
4	681	1070	1060	e901	e678	e823	1100	2730	5580	1710	1120	818
5	749	1030	1050	e891	e589	e852	1070	2720	8390	1570	1200	750
6	719	1000	1050	e876	e671	e1060	1050	2700	10400	1580	1340	700
7	664	974	1040	e888	e731	1390	1080	2600	12200	1920	1300	660
8	639	948	1030	e908	e785	1630	1300	2430	13800	1940	1180	628
9	607	928	1030	e930	e844	2470	2660	2720	12100	1600	1090	591
10	617	912	1020	e942	e860	2660	3110	2500	10100	1480	1040	573
11	669	890	1010	973	e875	2200	2650	2380	9430	1410	1010	546
12	687	868	1010	943	e883	1940	2370	3690	9040	1770	1130	528
13	648	858	1130	958	e917	1880	2180	3820	7590	2390	1530	509
14	656	920	1260	939	e965	1880	2070	3360	5690	1710	2300	493
15	670	986	1220	933	1050	1790	1980	3130	4970	1430	1460	482
16	699	942	1180	e900	1070	1680	1900	3060	4400	1270	1200	467
17	726	908	1180	e937	1050	1590	1840	3220	3860	1160	1090	458
18	880	882	1150	e913	1030	1570	1800	2880	3410	1080	1030	453
19	1060	875	1140	e841	1080	1520	1890	2550	3060	2330	1280	455
20	1040	868	1140	e832	1280	1470	1940	2300	2800	5250	2480	534
21	973	849	1120	e797	1540	1430	1910	2100	2620	4620	1430	586
22	931	843	1110	e797	1480	1370	1920	1960	2410	2390	1270	513
23	1900	830	e1070	e812	1510	1400	1880	1860	2230	1760	1400	493
24	2440	866	e1030	e822	1610	1370	1900	1770	2110	1630	2250	472
25	2390	918	e943	e836	1670	1320	2260	1770	2160	1390	2330	463
26	2000	909	e811	e851	1670	1270	2030	1890	2270	1230	2000	445
27	1720	922	e830	e853	e1590	1260	1950	1830	2550	1570	1720	417
28	1570	932	e845	e866	e1540	1230	2580	1730	2670	2460	1420	432
29	1430	941	e917	e875	---	1240	2590	1860	2470	1890	1230	427
30	1330	994	e934	e873	---	1200	2420	3290	2310	2110	1100	402
31	1290	---	e965	e851	---	1160	---	3800	---	1800	992	---
TOTAL	32605	28383	32445	27510	30344	46405	56870	80670	159610	60310	43912	16953
MEAN	1052	946.1	1047	887.4	1084	1497	1896	2602	5320	1945	1417	565.1
MAX	2440	1240	1260	973	1670	2660	3110	3820	13800	5250	2480	919
MIN	607	830	811	797	589	823	1050	1730	2110	1080	992	402
AC-FT	64670	56300	64350	54570	60190	92040	112800	160000	316600	119600	87100	33630
CFSM	0.45	0.41	0.45	0.38	0.46	0.64	0.81	1.11	2.28	0.83	0.61	0.24
IN.	0.52	0.45	0.52	0.44	0.48	0.74	0.91	1.28	2.54	0.96	0.70	0.27

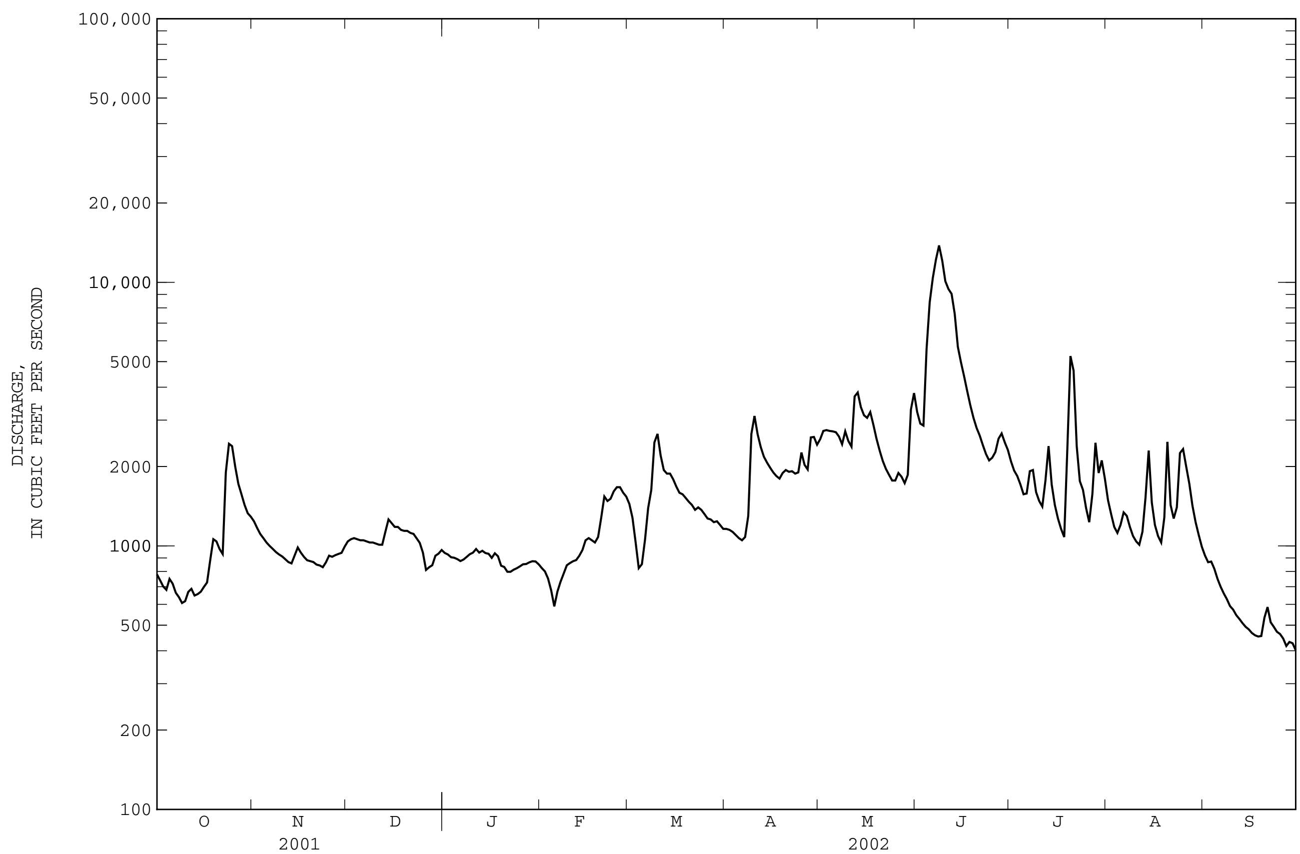
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1935 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	925.6	1114	910.8	823.1	1269	2971	3040	2422	2505	1790	1153	1024
MAX	3549	6435	4945	4086	3798	7137	9768	6854	10950	14280	8550	5647
(WY)	1973	1962	1983	1946	1984	1986	1993	1999	1947	1993	1993	1993
MIN	137	159	104	59.4	104	301	453	323	234	165	103	133
(WY)	1977	1965	1977	1977	1940	1954	1977	1977	1977	1936	1936	1976

05422000 WAPSIPINICON RIVER NEAR DE WITT, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1935 - 2002	
ANNUAL TOTAL	858969		616017			
ANNUAL MEAN	2353		1688		1662	
HIGHEST ANNUAL MEAN					5461	1993
LOWEST ANNUAL MEAN					374	1989
HIGHEST DAILY MEAN	10200	May 15	13800	Jun 8	25400	Apr 22 1973
LOWEST DAILY MEAN	300	Jan 9	402	Sep 30	46	Jan 22 1977
ANNUAL SEVEN-DAY MINIMUM	357	Jan 7	437	Sep 24	47	Jan 18 1977
MAXIMUM PEAK FLOW			14400	Jun 8	31100	Jun 17 1990
MAXIMUM PEAK STAGE			13.16	Jun 8	14.19	Jun 17 1990
ANNUAL RUNOFF (AC-FT)	1704000		1222000		1204000	
ANNUAL RUNOFF (CFSM)	1.01		0.72		0.71	
ANNUAL RUNOFF (INCHES)	13.68		9.81		9.67	
10 PERCENT EXCEEDS	6140		2720		3960	
50 PERCENT EXCEEDS	1210		1180		924	
90 PERCENT EXCEEDS	531		685		234	

e Estimated.



05422470 CROW CREEK AT BETTENDORF, IA

LOCATION.--Lat 41°33'03", long 90°27'15", in NW$^{1}/_{4}$ NW$^{1}/_{4}$ sec.24, T.78 N., R.4 E., Scott County, Hydrologic Unit 07080101, on left bank 200 ft upstream from bridge on Valley Road (old U.S. Highway 67), 3.5 mi east of U.S. Highway 6, and 0.7 mi upstream from mouth.

DRAINAGE AREA.--17.8 mi^2.

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 576.23 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	5.5	6.6	e2.3	e1.7	e8.5	10	27	15	6.2	12	3.1
2	2.0	4.8	5.6	e3.8	e1.4	9.2	15	26	16	5.8	11	3.4
3	2.0	4.4	5.5	e3.1	e0.90	9.5	11	21	46	5.3	9.4	3.5
4	4.8	4.0	5.4	e3.7	e0.60	9.8	9.3	19	825	5.1	35	3.0
5	16	3.9	5.8	e4.6	e0.21	9.5	9.1	18	101	4.4	58	2.8
6	5.0	4.0	6.8	e3.6	e1.3	9.4	8.5	18	66	16	12	2.5
7	3.7	4.0	5.3	e2.6	e2.0	9.8	29	16	49	9.3	8.1	2.7
8	3.2	4.2	4.8	4.2	e2.5	48	78	16	39	4.7	6.6	2.3
9	3.1	3.8	4.4	4.5	e4.2	66	89	23	32	4.5	5.9	2.1
10	9.3	4.0	4.4	4.2	e7.0	31	49	15	28	3.4	5.1	2.0
11	8.2	3.5	4.3	3.9	e5.9	26	39	73	34	6.6	4.6	2.0
12	5.0	3.4	4.8	3.9	e4.7	23	34	126	26	3.9	4.9	1.8
13	6.6	3.7	9.1	3.8	e4.1	21	29	61	32	2.9	8.9	1.7
14	6.8	9.0	5.4	3.8	e5.0	19	26	51	22	2.4	5.1	1.7
15	5.1	5.6	4.8	e1.7	6.0	16	23	39	19	2.0	3.5	1.4
16	4.9	4.0	5.8	e2.1	5.9	14	20	56	17	1.8	3.2	1.4
17	4.6	3.5	5.8	e2.5	5.4	13	17	42	16	1.5	3.2	1.3
18	4.6	3.1	5.1	e2.5	5.3	12	17	33	15	1.4	2.8	1.5
19	4.5	3.1	5.0	3.0	11	12	20	28	15	15	12	1.9
20	4.6	3.2	4.7	3.2	29	11	25	24	14	4.4	4.7	2.8
21	4.6	3.2	4.6	3.1	19	10	28	22	13	2.1	3.7	2.9
22	14	3.0	8.8	3.2	14	10	26	20	12	1.8	9.9	1.7
23	71	2.9	7.7	e1.7	13	10	22	21	11	2.0	25	1.4
24	18	21	e6.2	e0.99	12	9.5	36	19	11	1.9	9.4	1.2
25	12	11	e5.2	e0.27	11	8.8	29	36	9.5	2.0	6.3	1.4
26	8.8	7.6	e4.2	e1.5	9.8	8.7	22	21	11	2.0	5.3	1.3
27	7.0	8.6	e4.7	e2.8	e9.7	8.6	44	19	11	159	4.8	1.3
28	5.8	6.3	e5.3	e2.0	e8.9	8.8	49	18	8.5	24	4.2	1.6
29	5.4	5.9	e4.5	e1.4	---	12	33	19	7.7	85	3.7	2.5
30	6.8	7.7	e4.0	e0.69	---	9.1	28	16	6.8	22	3.4	2.9
31	6.6	---	e2.5	e0.75	---	9.7	---	15	---	14	3.6	---
TOTAL	266.0	161.9	167.1	85.40	201.51	482.9	874.9	958	1528.5	422.4	295.3	63.1
MEAN	8.581	5.397	5.390	2.755	7.197	15.58	29.16	30.90	50.95	13.63	9.526	2.103
MAX	71	21	9.1	4.6	29	66	89	126	825	159	58	3.5
MIN	2.0	2.9	2.5	0.27	0.21	8.5	8.5	15	6.8	1.4	2.8	1.2
AC-FT	528	321	331	169	400	958	1740	1900	3030	838	586	125
CFSM	0.48	0.30	0.30	0.15	0.40	0.88	1.64	1.74	2.86	0.77	0.54	0.12
IN.	0.56	0.34	0.35	0.18	0.42	1.01	1.83	2.00	3.19	0.88	0.62	0.13

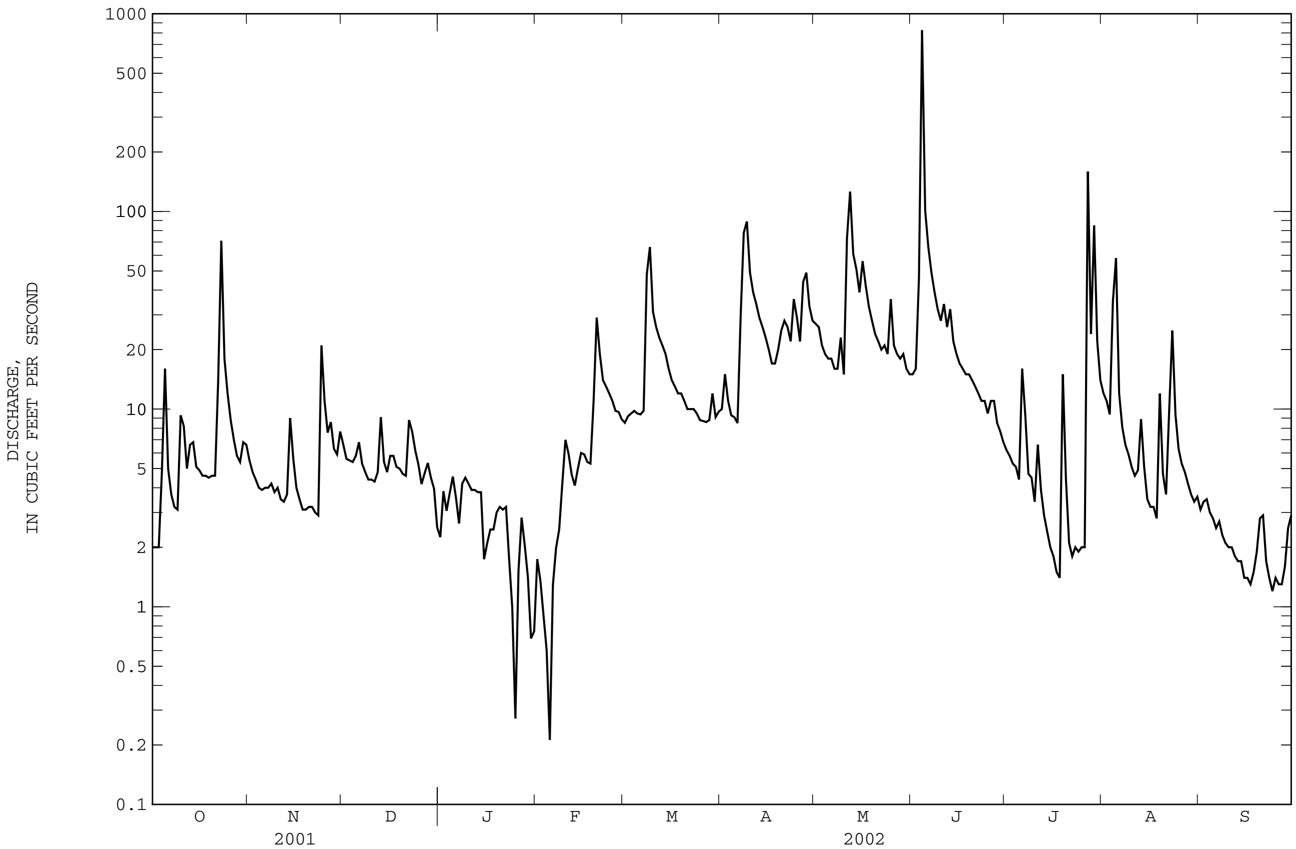
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	10.40	11.47	11.58	7.523	14.03	21.49	21.75	25.07	28.60	14.38	14.70	7.024
MAX	50.9	45.4	44.1	25.0	42.1	54.6	61.3	111	157	65.4	99.8	34.7
(WY)	1982	1993	1983	1988	1985	1979	1983	1996	1990	1992	1990	1992
MIN	0.67	1.19	0.77	1.09	0.76	3.45	2.33	1.68	3.17	0.74	0.85	0.49
(WY)	1989	1990	1990	2000	1989	1989	1989	1989	1988	1988	1978	1988

05422470 CROW CREEK AT BETTENDORF, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1978 - 2002	
ANNUAL TOTAL	6140.49		5507.01			
ANNUAL MEAN	16.82		15.09		15.66	
HIGHEST ANNUAL MEAN					31.7	1990
LOWEST ANNUAL MEAN					3.35	1989
HIGHEST DAILY MEAN	220	Feb 24	825	Jun 4	1660	Jun 16 1990
LOWEST DAILY MEAN	0.62	Sep 5	0.21	Feb 5	0.13	Aug 16 1988
ANNUAL SEVEN-DAY MINIMUM	0.73	Aug 30	0.89	Jan 30	0.21	Aug 13 1988
MAXIMUM PEAK FLOW			3290	Jun 4	7700	Jun 16 1990
MAXIMUM PEAK STAGE			8.98	Jun 4	11.03	Jun 16 1990
ANNUAL RUNOFF (AC-FT)	12180		10920		11350	
ANNUAL RUNOFF (CFSM)	0.95		0.85		0.88	
ANNUAL RUNOFF (INCHES)	12.83		11.51		11.96	
10 PERCENT EXCEEDS	38		29		33	
50 PERCENT EXCEEDS	8.6		6.2		7.4	
90 PERCENT EXCEEDS	2.4		2.0		1.4	

e Estimated



05422560 DUCK CREEK AT 110th AVENUE, DAVENPORT, IA

LOCATION.--Lat 41°33'24", long 90°41'15", in NW$^1/_4$ SW$^1/_4$, sec.13, T.78 N., R.2 E., Scott County, Hydrologic Unit 07080101, on left bank 20 ft. downstream from the bridge on County Road Y48 (110th Street), 0.3 miles downstream from unnamed creek, 3 miles west of Davenport, and 13.95 miles from the mouth.

DRAINAGE AREA.--16.1 mi^2.

PERIOD OF RECORD.--March 1994 to current year.

GAGE.--Water stage recorder. Datum of gage is 659.00 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharge, which is poor. U.S. Geological Survey rain gage and data collection platform with telephone modem at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

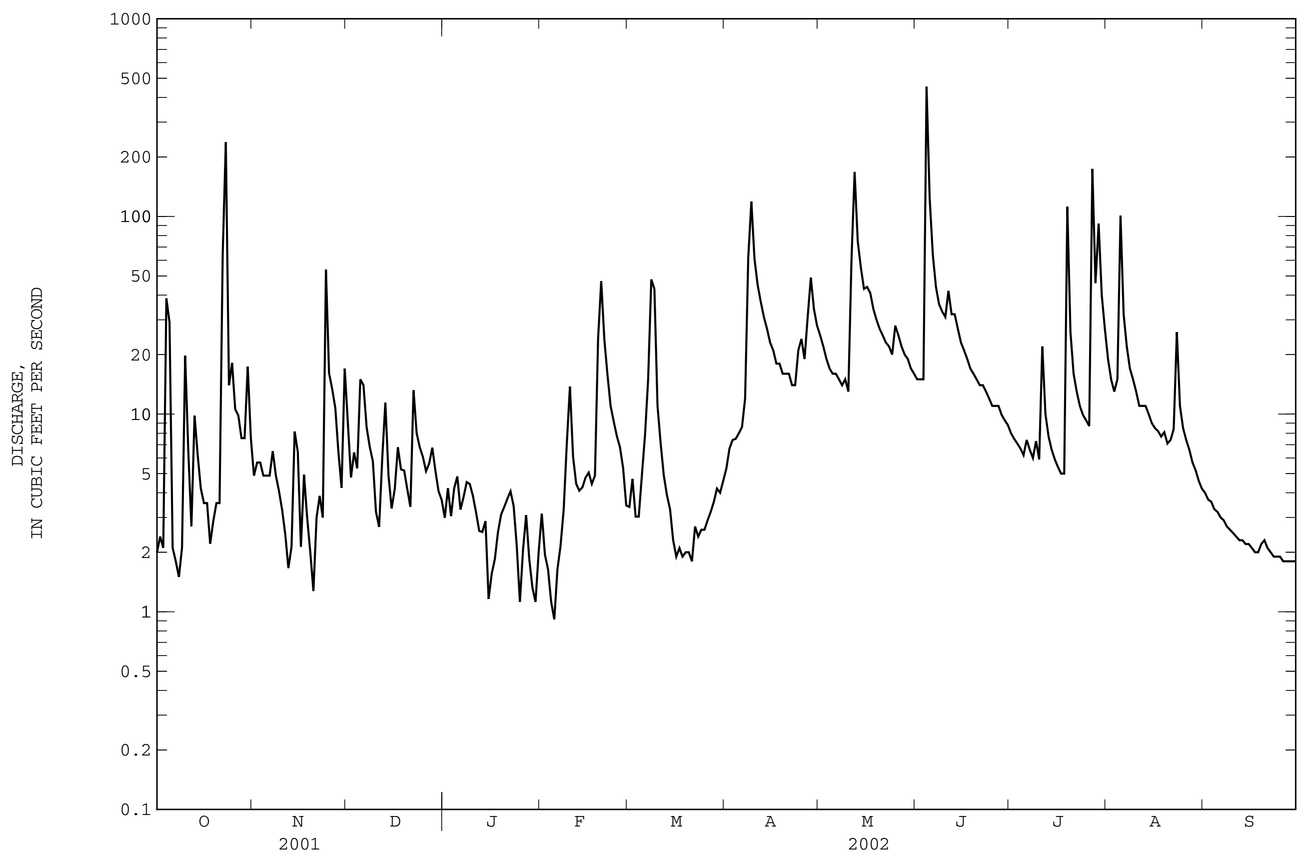
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e2.0	e4.9	e9.1	e3.0	e3.1	e3.4	e5.3	25	15	8.0	19	4.0
2	e2.4	e5.7	e4.8	e4.2	e1.9	e4.7	e6.7	22	15	7.5	15	3.7
3	e2.1	e5.7	e6.4	e3.0	e1.6	e3.0	e7.4	19	15	7.1	13	3.6
4	e39	e4.9	e5.3	e4.2	e1.1	e3.0	e7.5	17	454	6.7	15	3.3
5	e29	e4.9	e15	e4.8	e0.92	e4.9	e8.0	16	123	6.2	101	3.2
6	e2.1	e4.9	e14	e3.3	e1.6	e7.8	e8.6	16	64	7.4	32	3.0
7	e1.8	e6.5	e8.6	e3.8	e2.2	e15	e12	15	44	6.6	22	2.9
8	e1.5	e4.9	e6.8	e4.5	e3.3	e48	e62	14	36	6.0	17	2.7
9	e2.1	e4.1	e5.8	e4.4	e7.1	e43	119	15	33	7.3	15	2.6
10	e20	e3.3	e3.2	e3.8	e14	e11	61	13	31	5.9	13	2.5
11	e6.5	e2.5	e2.7	e3.2	e6.1	e7.1	45	60	42	22	11	2.4
12	e2.7	e1.7	e6.0	e2.6	e4.4	e4.9	37	168	32	10	11	2.3
13	e9.8	e2.1	e11	e2.5	e4.1	e3.9	31	e75	32	7.7	11	2.3
14	e6.2	e8.2	e4.9	e2.9	e4.3	e3.3	27	55	27	6.6	10	2.2
15	e4.2	e6.4	e3.3	e1.2	e4.8	e2.3	23	43	23	5.9	9.0	2.2
16	e3.5	e2.1	e4.2	e1.6	e5.1	e1.9	21	44	21	5.4	8.5	2.1
17	e3.5	e4.9	e6.8	e1.8	e4.4	e2.1	18	41	19	5.0	8.2	2.0
18	e2.2	e3.0	e5.3	e2.5	e4.9	e1.9	18	34	17	5.0	7.7	2.0
19	e2.9	e2.0	e5.2	e3.1	e24	e2.0	16	30	16	112	8.1	2.2
20	e3.5	e1.3	e4.2	e3.4	e47	e2.0	16	27	15	26	7.1	2.3
21	e3.5	e3.0	e3.4	e3.7	e24	e1.8	16	25	14	16	7.4	2.1
22	e64	e3.9	e13	e4.1	e16	e2.7	14	23	14	13	8.4	2.0
23	e238	e3.0	e8.0	e3.4	e11	e2.4	14	22	13	11	26	1.9
24	e14	e54	e6.8	e2.2	e9.2	e2.6	21	20	12	9.9	11	1.9
25	e18	e16	e6.1	e1.1	e7.7	e2.6	24	28	11	9.3	8.5	1.9
26	e11	e13	e5.1	e2.1	e6.8	e2.9	19	25	11	8.7	7.4	1.8
27	e9.8	e11	e5.6	e3.1	e5.3	e3.2	31	22	11	e174	6.6	1.8
28	e7.6	e6.4	e6.8	e1.8	e3.4	e3.6	49	20	9.9	e46	5.7	1.8
29	e7.6	e4.2	e5.2	e1.3	---	e4.2	34	19	9.3	92	5.2	1.8
30	e17	e17	e4.1	e1.1	---	e4.0	28	17	8.8	40	4.6	1.8
31	e7.6	---	e3.7	e2.0	---	e4.6	---	16	---	27	4.2	---
TOTAL	545.1	215.5	200.4	89.7	229.32	209.8	799.5	986	1188.0	721.2	448.6	72.3
MEAN	17.58	7.183	6.465	2.894	8.190	6.768	26.65	31.81	39.60	23.26	14.47	2.410
MAX	238	54	15	4.8	47	48	119	168	454	174	101	4.0
MIN	1.5	1.3	2.7	1.1	0.92	1.8	5.3	13	8.8	5.0	4.2	1.8
AC-FT	1080	427	397	178	455	416	1590	1960	2360	1430	890	143
CFSM	1.09	0.45	0.40	0.18	0.51	0.42	1.66	1.98	2.46	1.45	0.90	0.15
IN.	1.26	0.50	0.46	0.21	0.53	0.48	1.85	2.28	2.74	1.67	1.04	0.17

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	7.966	5.002	3.095	3.842	17.75	15.47	22.50	35.85	28.86	10.42	4.165	2.491
MAX	38.0	23.2	10.1	10.8	45.1	50.1	39.4	68.8	44.2	23.3	14.5	8.53
(WY)	1999	1999	1999	1999	2001	1998	1998	1996	2000	2002	2002	1998
MIN	0.30	0.97	0.74	0.73	4.30	3.28	2.60	14.0	9.13	3.03	1.31	0.75
(WY)	1995	1995	1997	1997	1995	1996	1996	1997	1997	1997	1997	1997

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1995 - 2002	
ANNUAL TOTAL	5787.76		5705.42			
ANNUAL MEAN	15.86		15.63		13.07	
HIGHEST ANNUAL MEAN					17.5	1998
LOWEST ANNUAL MEAN					5.60	1997
HIGHEST DAILY MEAN	422	Feb 24	454	Jun 4	648	May 28 1996
LOWEST DAILY MEAN	0.58	Sep 17	0.92	Feb 5	0.22	Oct 16 1994
ANNUAL SEVEN-DAY MINIMUM	0.69	Sep 11	1.7	Jan 30	0.24	Oct 11 1994
MAXIMUM PEAK FLOW			1470	Jun 4	1870	May 28 1996
MAXIMUM PEAK STAGE			17.92	Jun 4	18.44	May 28 1996
ANNUAL RUNOFF (AC-FT)	11480		11320		9470	
ANNUAL RUNOFF (CFSM)	0.98		0.97		0.81	
ANNUAL RUNOFF (INCHES)	13.37		13.18		11.03	
10 PERCENT EXCEEDS	33		32		30	
50 PERCENT EXCEEDS	7.2		6.8		4.5	
90 PERCENT EXCEEDS	1.6		2.1		0.89	

e Estimated



05422600 DUCK CREEK AT DUCK CREEK GOLF COURSE, DAVENPORT, IA

LOCATION.--Lat 41°32'46", long 90°31'26", in $SW^1/_4$ $SE^1/_4$, $NW^1/_4$, sec.20, T.78 N., R.4 E., Scott County, Hydrologic Unit 07080101, on right bank 500 feet upstream from Kimberly Road, 100 feet upstream of golf cart bridge, 0.5 miles downstream from Pheasant Creek, in Davenport, and 4.45 miles from the mouth.

DRAINAGE AREA.--53.0 mi^2.

PERIOD OF RECORD.--November 1993 to current year.

GAGE.--Water stage recorder. Datum of gage is 597.00 ft above NGVD of 1929.

REMARKS.--Records good except those for periods of estimated daily discharges, which are poor. U.S. Geological Survey rain gage and data collection platform with telephone modem at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	12	13	e7.6	e5.4	e18	33	54	41	22	57	11
2	4.8	11	10	e9.2	e4.5	e19	41	52	64	20	44	11
3	4.6	9.1	10	e8.1	e4.1	e17	24	39	192	21	38	9.9
4	54	8.7	9.7	e9.1	e4.0	e17	20	36	2910	19	55	8.2
5	40	9.7	18	e9.9	e3.4	e20	19	33	421	17	268	7.9
6	8.9	8.5	18	e8.4	e4.0	e24	18	33	203	111	79	7.3
7	6.3	8.4	11	e9.1	e5.4	29	106	29	144	28	51	6.8
8	5.8	8.1	9.9	10	e9.1	216	397	29	113	20	41	6.7
9	5.7	7.5	9.4	11	e16	325	356	67	93	37	35	e6.4
10	31	7.8	9.2	11	e29	e100	139	26	81	18	31	6.0
11	11	7.5	8.8	9.9	e15	e82	101	396	119	85	27	5.8
12	7.0	e5.5	17	9.3	e14	69	85	653	80	27	31	5.4
13	14	e5.3	31	8.9	e14	59	68	204	120	20	42	5.4
14	10	e11	11	9.2	e14	51	59	153	72	16	25	5.1
15	6.3	7.5	e7.8	e6.2	16	44	51	119	62	14	22	5.0
16	6.0	6.8	e8.9	e7.3	15	38	45	197	e56	14	20	4.6
17	5.8	6.5	12	e7.6	14	35	40	121	50	13	19	4.5
18	5.6	6.5	11	e7.2	14	33	37	96	47	19	17	4.4
19	5.4	6.8	11	e7.5	47	31	41	83	45	310	63	4.6
20	5.5	6.2	10	7.9	112	29	34	73	42	56	17	10
21	5.5	6.1	9.3	8.3	46	26	52	66	39	33	33	5.6
22	79	6.2	38	8.3	35	24	35	61	37	26	49	4.6
23	420	6.1	e14	e7.3	32	25	29	71	34	22	e81	4.2
24	53	96	e12	e6.1	29	24	106	57	32	20	e30	3.7
25	27	22	e10	e4.9	26	22	51	146	32	18	e22	4.3
26	19	19	e9.1	e6.1	e20	21	37	66	51	17	19	4.2
27	15	17	e10	e6.9	e19	20	151	56	30	1220	17	3.7
28	13	11	e11	e5.8	e19	e26	111	52	27	141	14	3.7
29	13	9.9	e9.4	e5.1	---	42	69	64	25	522	13	3.9
30	23	22	e8.9	e4.0	---	20	58	47	23	129	13	3.5
31	13	---	e8.1	e4.4	---	28	---	44	---	77	12	---
TOTAL	923.2	375.7	386.5	241.6	585.9	1534	2413	3223	5285	3112	1285	177.4
MEAN	29.78	12.52	12.47	7.794	20.93	49.48	80.43	104.0	176.2	100.4	41.45	5.913
MAX	420	96	38	11	112	325	397	653	2910	1220	268	11
MIN	4.6	5.3	7.8	4.0	3.4	17	18	26	23	13	12	3.5
AC-FT	1830	745	767	479	1160	3040	4790	6390	10480	6170	2550	352
CFSM	0.56	0.24	0.24	0.15	0.39	0.93	1.52	1.96	3.32	1.89	0.78	0.11
IN.	0.65	0.26	0.27	0.17	0.41	1.08	1.69	2.26	3.71	2.18	0.90	0.12

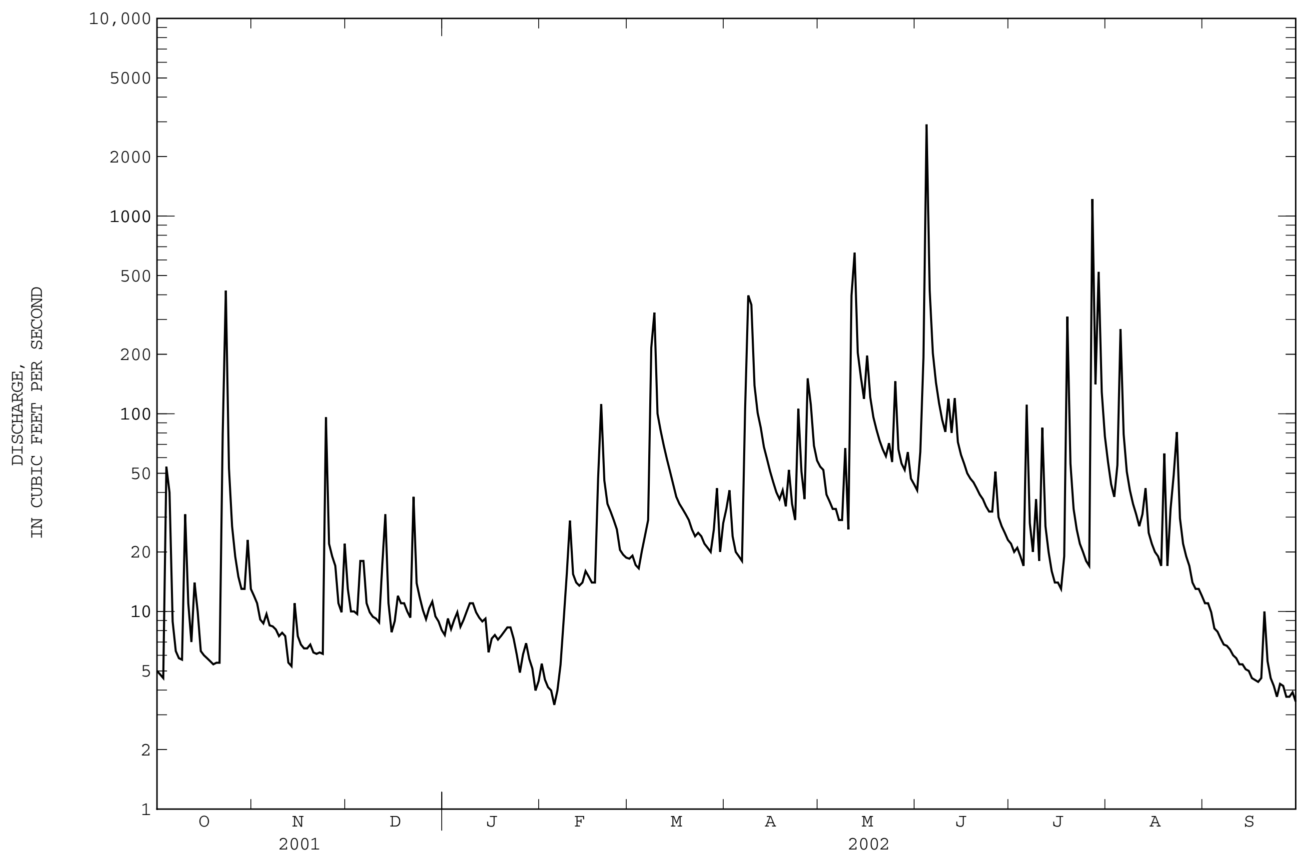
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	25.64	18.98	10.79	15.75	62.10	54.29	83.89	128.6	108.6	41.74	24.92	17.07
MAX	125	68.3	33.1	38.6	173	143	141	250	177	100	41.5	35.1
(WY)	1999	1999	1999	1999	2001	1998	1998	1996	2000	2002	2002	1998
MIN	3.26	4.84	3.74	4.59	13.8	16.0	16.5	56.3	41.0	10.4	11.8	4.96
(WY)	1995	2000	1997	2000	1995	1996	1996	1997	1997	1997	2000	1995

05422600 DUCK CREEK AT DUCK CREEK GOLF COURSE, DAVENPORT, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1995 - 2002	
ANNUAL TOTAL	22347.7		19542.3			
ANNUAL MEAN	61.23		53.54		49.19	
HIGHEST ANNUAL MEAN					61.8	1998
LOWEST ANNUAL MEAN					25.3	1997
HIGHEST DAILY MEAN	1360	Feb 24	2910	Jun 4	2910	Jun 4 2002
LOWEST DAILY MEAN	2.2	Sep 4	3.4	Feb 5	0.86	Oct 4 1994
ANNUAL SEVEN-DAY MINIMUM	2.9	Aug 30	3.9	Sep 24	1.0	Oct 11 1994
MAXIMUM PEAK FLOW			7310	Jun 4	7310	Jun 4 2002
MAXIMUM PEAK STAGE			16.34	Jun 4	16.34	Jun 4 2002
INSTANTANEOUS LOW FLOW			3.1	Sep 30		
ANNUAL RUNOFF (AC-FT)	44330		38760		35630	
ANNUAL RUNOFF (CFSM)	1.16		1.01		0.93	
ANNUAL RUNOFF (INCHES)	15.69		13.72		12.61	
10 PERCENT EXCEEDS	137		98		104	
50 PERCENT EXCEEDS	22		19		18	
90 PERCENT EXCEEDS	5.5		5.6		3.9	

e Estimated



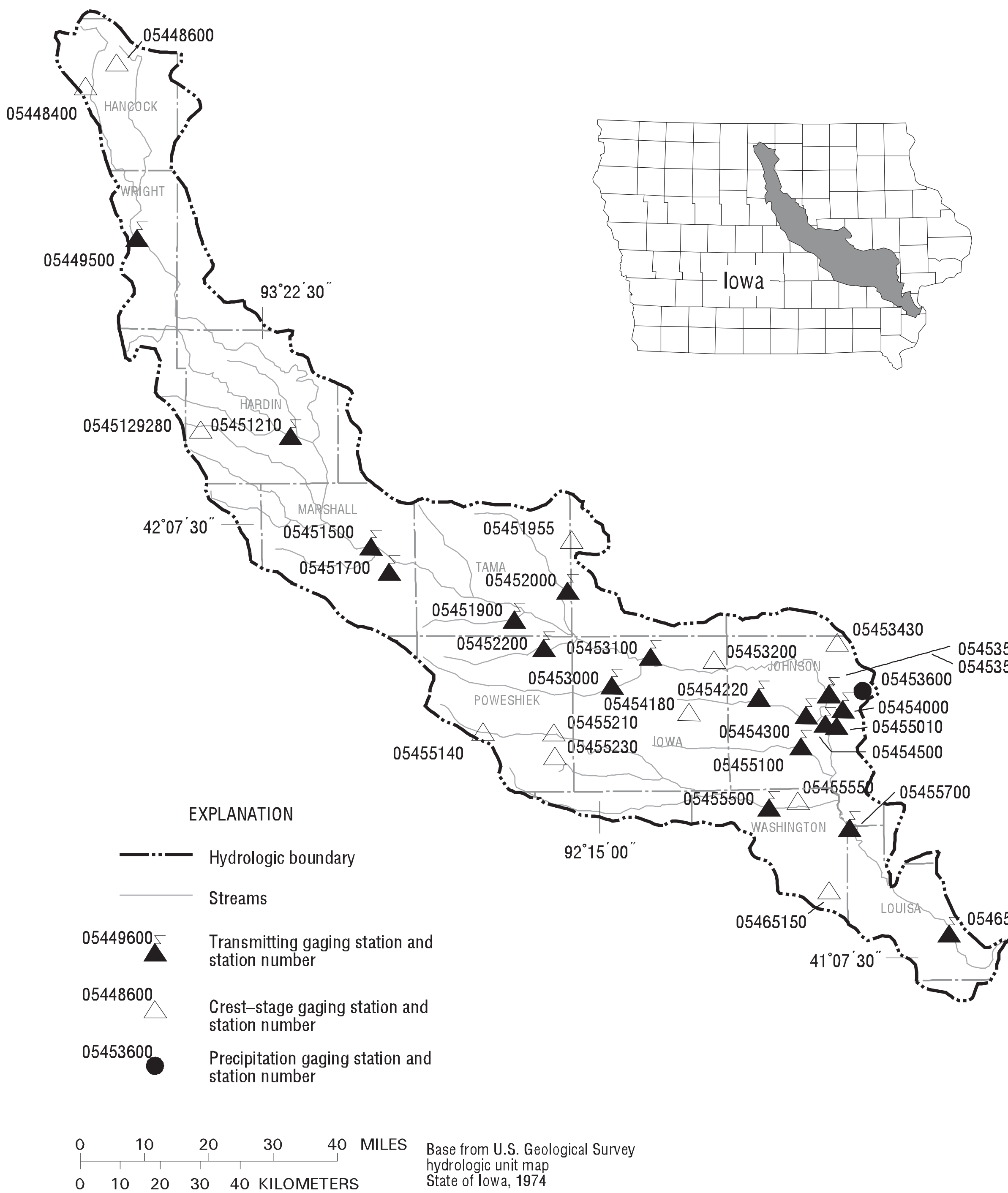


Figure 14. Locations of active continuous-record and crest-stage gaging stations in the Iowa River drainage basin (excluding the Cedar River drainage basin).

Gaging Stations

05449500	Iowa River near Rowan, IA	130
05451210	South Fork Iowa River NE of New Providence, IA	136
05451500	Iowa River at Marshalltown, IA	142
05451700	Timber Creek near Marshalltown, IA	144
05451900	Richland Creek near Haven, IA.	146
05452000	Salt Creek near Elberon, IA.	148
05452200	Walnut Creek near Hartwick, IA	150
05453000	Big Bear Creek at Ladora, IA	152
05453100	Iowa River at Marengo, IA.	154
05453510	Coralville Lake near Coralville, IA.	156
05453520	Iowa River below Coralville Dam near Coralville, IA.	158
05453600	Rapid Creek below Morse, IA (precipitation).	160
05454000	Rapid Creek near Iowa City, IA	162
05454220	Clear Creek near Oxford, IA.	164
05454300	Clear Creek near Coralville, IA.	166
05454500	Iowa River at Iowa City, IA.	168
05455010	South Branch Ralston Creek at Iowa City, IA.	170
05455100	Old Mans Creek near Iowa City, IA.	172
05455500	English River at Kalona, IA.	174
05455700	Iowa River near Lone Tree, IA.	176
	(Cedar River Basin Stations	(178-213)
05465500	Iowa River at Wapello, IA.	214

Crest Stage Gaging Stations

05448400	West Main Drainage Ditch 1 & 2 at Britt, IA.	352
05448600	East Branch Iowa River above Hayfield, IA.	352
0545129280	Honey Creek tributary near Radcliffe, IA	353
05451955	Stein Creek near Clutier, IA	353
05453200	Price Creek at Amana, IA	353
05453430	North Fork Tributary to Mill Creek near Solon, IA.	353
05454180	Clear Creek Tributary near Williamsburg, IA.	353
05455140	North English River near Montezuma, IA	353
05455210	North English River at Guernsey, IA.	353
05455230	Deep River at Deep River, IA	354
05455550	Bulgers Run near Riverside, IA	354
05465150	North Fork Long Creek at Ainsworth, IA	355

05449500 IOWA RIVER NEAR ROWAN, IA

LOCATION.--Lat 42°45'36", long 93°37'23", in NW$^{1}/_{4}$ NE$^{1}/_{4}$ sec.25, T.92 N., R.24 W., Wright County, Hydrologic Unit 07080207, on left bank 10 ft downstream from bridge on county highway C38, 0.9 mi downstream from drainage ditch 123, 3.8 mi northwest of Rowan, 10.7 mi downstream from confluence of East and West Branches, and at mile 316.4.

DRAINAGE AREA.--429 mi^2.

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--October 1940 to September 1976, June 1977 to current year.

REVISED RECORDS.--WSP 1308: 1942-43 (M). WSP 1438: Drainage area. WDR IA-80-1: 1978.

GAGE.--Water-stage recorder. Datum of gage is 1,143.35 ft above NGVD of 1929. Prior to Oct. 14, 1948, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corp of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	63	70	193	140	e74	157	80	361	215	81	146	195
2	62	71	173	e96	e80	197	81	356	194	74	109	173
3	60	67	161	e106	e72	193	81	374	183	70	88	156
4	60	66	153	e126	e71	167	68	350	175	65	190	140
5	59	64	149	e131	e77	157	76	313	203	64	594	128
6	58	64	219	e86	e78	151	78	289	248	69	917	118
7	58	66	296	e82	e77	145	73	267	217	65	1020	110
8	58	64	266	e114	e81	140	80	240	194	57	1040	101
9	56	64	230	e94	e80	e127	79	230	180	52	973	93
10	63	61	204	e82	e71	e129	75	205	167	60	741	88
11	62	62	192	e92	e75	144	82	221	170	337	444	87
12	62	61	176	e89	e81	156	182	393	178	794	533	84
13	67	64	170	e105	e88	181	299	441	205	778	1030	81
14	81	65	166	e94	102	184	288	395	206	696	1290	81
15	86	63	175	e91	113	160	260	345	190	514	1350	80
16	80	64	157	e94	133	129	226	310	175	325	1310	77
17	76	62	148	e112	130	124	201	277	163	236	1240	74
18	74	60	145	108	130	121	184	247	159	179	1130	76
19	77	60	142	116	139	118	168	227	175	146	880	88
20	75	60	117	113	189	115	154	206	210	122	622	96
21	73	58	120	e102	204	108	151	194	192	105	469	86
22	73	59	e118	e101	182	76	152	189	167	105	490	82
23	81	61	105	e93	171	101	147	186	149	98	715	79
24	84	79	164	e91	169	132	146	179	135	89	705	77
25	80	133	210	e95	161	99	151	174	125	82	594	76
26	78	172	177	e97	108	86	132	179	116	77	473	77
27	73	218	158	e78	196	89	139	179	108	77	386	83
28	72	260	158	e50	199	85	332	201	104	72	326	81
29	71	242	154	e58	---	85	457	253	98	119	281	80
30	73	215	144	66	---	82	416	215	88	188	247	79
31	69	---	142	e78	---	80	---	223	---	196	218	---
TOTAL	2164	2775	5282	2980	3331	4018	5038	8219	5089	5992	20551	2926
MEAN	69.81	92.50	170.4	96.13	119.0	129.6	167.9	265.1	169.6	193.3	662.9	97.53
MAX	86	260	296	140	204	197	457	441	248	794	1350	195
MIN	56	58	105	50	71	76	68	174	88	52	88	74
AC-FT	4290	5500	10480	5910	6610	7970	9990	16300	10090	11890	40760	5800
CFSM	0.17	0.22	0.41	0.23	0.28	0.31	0.40	0.63	0.41	0.46	1.59	0.23
IN.	0.19	0.25	0.47	0.27	0.30	0.36	0.45	0.73	0.45	0.53	1.83	0.26

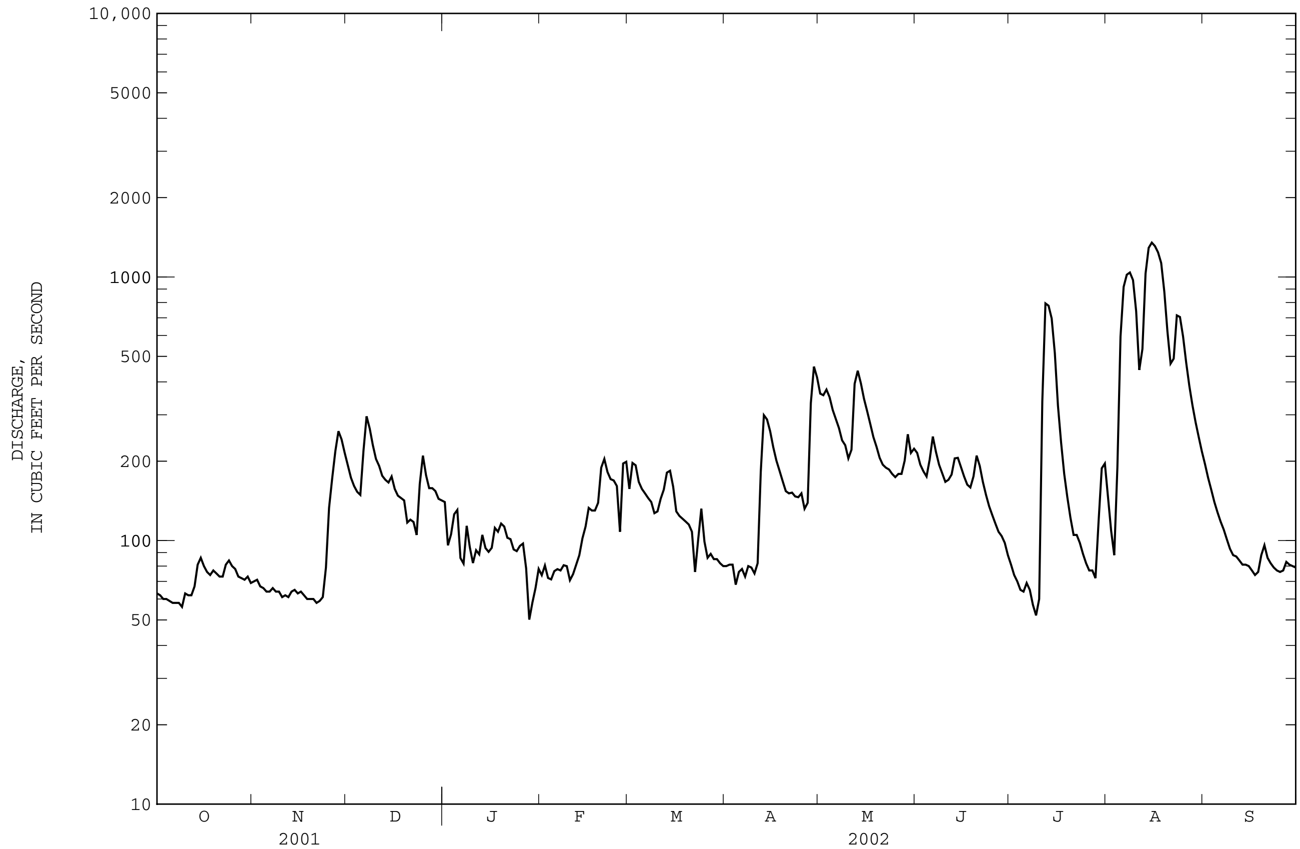
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	132.6	132.1	86.92	55.69	114.0	392.1	498.3	378.9	492.4	305.8	166.6	139.5
MAX	720	695	588	298	931	1415	2439	1793	2452	1922	1684	1213
(WY)	1987	1993	1983	1983	1984	1973	1965	1991	1984	1993	1979	1965
MIN	8.14	9.49	5.62	3.63	3.54	23.9	32.4	44.3	19.2	5.36	5.14	3.98
(WY)	1990	1990	1990	1959	1959	1968	1957	1989	1989	1977	1977	1977

05449500 IOWA RIVER NEAR ROWAN, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1941 - 2002	
ANNUAL TOTAL	174948		68365			
ANNUAL MEAN	479.3		187.3		242.2	
HIGHEST ANNUAL MEAN					869	1993
LOWEST ANNUAL MEAN					30.4	1956
HIGHEST DAILY MEAN	3180	May 5	1350	Aug 15	7640	Jun 21 1954
LOWEST DAILY MEAN	24	Jan 24	50	Jan 28	2.2	Sep 11 1977
ANNUAL SEVEN-DAY MINIMUM	26	Feb 13	58	Oct 3	2.9	Sep 8 1977
MAXIMUM PEAK FLOW			1350	Aug 15	8460	Jun 21 1954
MAXIMUM PEAK STAGE			9.45	Aug 15	14.88	Jun 21 1954
INSTANTANEOUS LOW FLOW			48	Mar 22	2.2	Sep 11 1977
ANNUAL RUNOFF (AC-FT)	347000		135600		175500	
ANNUAL RUNOFF (CFSM)	1.15		0.45		0.58	
ANNUAL RUNOFF (INCHES)	15.57		6.08		7.87	
10 PERCENT EXCEEDS	1540		347		617	
50 PERCENT EXCEEDS	136		127		86	
90 PERCENT EXCEEDS	32		65		18	

e Estimated



WATER-QUALITY RECORDS

PERIOD OF RECORD.--January 2001 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	TEMPER- ATURE WATER (DEG C) (00010)	TEMPER- ATURE AIR (DEG C) (00020)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	AGENCY COL- LECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANA- LYZING SAMPLE (CODE NUMBER) (00028)	DIS- CHARGE, INST. CUBIC FEET PER SECOND (00061)	GAGE HEIGHT (FEET) (00065)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	SAMPLE TREAT- MENT (CODES) (00115)	OXYGEN, DIS- SOLVED (MG/L) (00300)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)
OCT													
03...	1338	15.9	20.1	729	1028	80020	60	3.81	642	1	9.5	96	7.9
NOV													
05...	1326	9.4	13.8	744	1028	80020	59	3.85	642	1	13.0	117	8.2
DEC													
03...	1405	4.6	10.8	735	1028	80020	161	4.51	702	1	11.0	86	8.3
JAN													
07...	1518	.1	--	736	1028	80020	82	4.37	735	1	10.3	71	7.7
FEB													
11...	1413	.4	3.9	737	1028	80020	75	4.12	666	1	14.1	98	8.0
APR													
02...	1420	5.1	4.0	729	1028	80020	81	3.93	615	1	15.6	123	8.5
MAY													
01...	1418	11.2	15.0	721	1028	80020	361	5.59	682	1	10.9	99	8.1
JUN													
05...	1445	16.8	27.0	739	1028	80020	203	4.72	676	1	10.8	112	8.2
JUL													
02...	1430	27.2	31.0	738	1028	80020	74	3.76	568	--	9.9	125	8.3
AUG													
01...	1610	26.2	25.0	735	1028	80020	146	4.19	658	--	7.8	97	8.2

Date	CAR- BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	PHOS- PHORUS TOTAL (MG/L AS P) (00665)	ORTHO- PHOS- PHATE, DIS- SOLVED (MG/L AS P) (00671)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	TER- BUTHYL- AZINE, WATER, DISS, REC (UG/L) (04022)	PROPA- CHLOR, WATER, DISS, REC (UG/L) (04024)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)
OCT													
03...	2	306	<.04	.043	.53	4.32	.131	.06	17.8	53.0	U	<.010	<.002
NOV													
05...	0	298	<.04	.042	.43	4.80	.062	.03	21.0	50.1	U	<.010	<.002
DEC													
03...	2	345	<.04	.032	.66	10.4	.123	.09	19.7	37.3	U	<.010	<.002
JAN													
07...	0	329	.14	.035	.53	8.72	.111	.09	21.3	48.1	U	<.010	<.002
FEB													
11...	0	306	<.04	.023	.44	5.90	.105	.05	22.7	47.5	U	<.010	<.002
APR													
02...	3	284	E.04	.032	.60	4.99	.079	.03	20.3	43.1	--	<.010	<.002
MAY													
01...	2	310	E.030	.032	1.0	11.8	.192	<.040	19.7	28.1	--	<.010	<.002
JUN													
05...	0	296	.04	.078	.90	9.88	.171	.07	20.7	36.7	--	<.010	<.002
JUL													
02...	0	228	<.04	.059	1.3	4.37	.170	.02	21.3	46.9	--	<.010	<.002
AUG													
01...	5	295	<.04	.051	1.5	8.49	.28	.12	16.0	30.4	--	<.010	<.002

05449500 IOWA RIVER NEAR ROWAN, IA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	SIMAZINE, WATER, DISS, REC (UG/L) (04035)	PROMETON, WATER, DISS, REC (UG/L) (04037)	DEETHYL ATRAZINE, WATER, DISS, REC (UG/L) (04040)	CYANAZINE, WATER, DISS, REC (UG/L) (04041)	FONOFOS WATER DISS REC (UG/L) (04095)	ALPHA BHC DISSOLVED (UG/L) (34253)	P,P' DDE DISSOLV (UG/L) (34653)	CHLORPYRIFOS DISSOLVED (UG/L) (38933)	ALKALINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	LINDANE DISSOLVED (UG/L) (39341)	DIELDRIN DISSOLVED (UG/L) (39381)	METOLACHLOR WATER DISSOLV (UG/L) (39415)	MALATHION, DISSOLVED (UG/L) (39532)
OCT 03...	<.011	E.01	E.029	<.018	<.003	<.005	<.003	<.005	253	<.004	<.005	.039	<.027
NOV 05...	<.011	M	E.017	<.018	<.003	<.005	<.003	<.005	246	<.004	<.005	.027	<.027
DEC 03...	<.011	M	E.027	<.018	<.003	<.005	<.003	<.005	286	<.004	<.005	.024	<.027
JAN 07...	<.005	M	E.018	<.018	<.003	<.005	<.003	<.005	271	<.004	<.005	.021	<.027
FEB 11...	<.005	E.01	E.014	<.018	<.003	<.005	<.003	<.005	252	<.004	<.005	.036	<.027
APR 02...	<.005	M	E.011	<.018	<.003	<.005	<.003	<.005	237	<.004	<.005	.023	<.027
MAY 01...	<.005	E.01	E.045	<.018	<.003	<.005	<.003	<.005	257	<.004	<.005	.049	<.027
JUN 05...	<.005	E.01	E.033	<.018	<.003	<.005	<.003	<.005	248	<.004	<.005	.072	<.027
JUL 02...	<.005	E.01	E.030	<.018	<.003	<.005	<.003	<.005	191	<.004	<.005	.025	<.027
AUG 01...	<.005	E.01	E.062	<.018	<.003	<.005	<.003	<.005	251	<.004	<.005	.047	<.027

Date	PARATHION, DISSOLVED (UG/L) (39542)	DIAZINON, DISSOLVED (UG/L) (39572)	ATRAZINE, WATER, DISS, REC (UG/L) (39632)	ALACHLOR, WATER, DISS, REC, (UG/L) (46342)	ACETOCHLOR, WATER FLTRD REC (UG/L) (49260)	PURPOSE SITE VISIT, (CODE) (50280)	TURBIDITY FIELD WATER UNFLTRD (NTU) (61028)	SAMPLE PURPOSE CODE (71999)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD) (72000)	SEDIMENT, SUSPENDED (MG/L) (80154)	DRAINAGE AREA (SQ. MI.) (81024)	SAMPLING METHOD, CODES (82398)	METRIBUZIN SENCOR WATER DISSOLV (UG/L) (82630)
OCT 03...	<.007	<.005	.044	<.002	<.007	1001	27	15.00	1143.35	82	418	10	<.006
NOV 05...	<.007	<.005	.029	<.002	<.004	1001	--	15.00	1143.35	16	418	30	<.006
DEC 03...	<.007	<.005	.040	<.002	E.003	1001	9.7	15.00	1143.35	136	418	10	<.006
JAN 07...	<.010	<.005	.025	<.004	<.006	1001	4.3	15.00	1143.35	134	418	10	<.006
FEB 11...	<.010	<.005	.024	<.004	E.004	1001	6.8	15.00	1143.35	79	418	10	<.006
APR 02...	<.010	<.005	.025	<.004	<.006	1001	7.6	15.00	1143.35	25	418	10	<.006
MAY 01...	<.010	<.005	.075	<.004	.070	1001	43	15.00	1143.35	80	418	10	<.006
JUN 05...	<.010	<.005	.182	<.004	.037	1001	46	15.00	1143.35	77	418	10	<.006
JUL 02...	<.010	<.005	.119	<.004	.006	1001	42	15.00	1143.35	44	418	10	<.006
AUG 01...	<.010	<.005	.160	<.004	.022	1001	80	15.00	1143.35	131	418	10	<.006

Date	2,6-DIETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	TRIFLURALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	ETHALFLURALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	TERBACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	LINURON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	METHYL PARATHION WAT FLT 0.7 U GF, REC (UG/L) (82667)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	PEBULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	TEBUTHIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	MOLINATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	ETHOPROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	BENFLURALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)
OCT 03...	<.002	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.002	.02	<.002	<.005	<.010
NOV 05...	<.002	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.002	<.02	<.002	<.005	<.010
DEC 03...	<.002	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.002	E.01	<.002	<.005	<.010
JAN 07...	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02	<.002	<.005	<.010
FEB 11...	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02	<.002	<.005	<.010
APR 02...	E.001	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	E.01	<.002	<.005	<.010
MAY 01...	E.003	<.009	<.009	<.011	<.034	<.035	<.006	.002	<.004	E.02	<.002	<.005	<.010
JUN 05...	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02	<.002	<.005	<.010
JUL 02...	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	M	<.002	<.005	<.010
AUG 01...	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	E.06	<.002	<.005	<.010

05449500 IOWA RIVER NEAR ROWAN, IA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)
OCT													
03...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.010	<.007	<.02	<.050
NOV													
05...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.010	<.007	<.02	<.050
DEC													
03...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.010	<.007	<.02	<.050
JAN													
07...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050
FEB													
11...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050
APR													
02...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050
MAY													
01...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050
JUN													
05...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050
JUL													
02...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050
AUG													
01...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050

Date	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	SAMPLER TYPE (CODE) (84164)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	DIAZ- INON D10 SRG WAT FLT 0.7 U GF, REC PERCENT (91063)	HCH ALPHA D6 SRG WAT FLT 0.7 U GF, REC PERCENT (91065)	QUALITY ASSUR- ANCE DATA INDICA- TOR CODE (99111)	SET NUMBER SCHED- ULE 2001 (NO.) (99818)	SAMPLE VOLUME SCHED- ULE 2001 (ML) (99856)
OCT								
03...	<.006	3045	--	114	91.6	--	2.00E+08	920
NOV								
05...	<.006	3045	--	106	93.5	--	2.00E+08	928
DEC								
03...	<.006	3045	--	92.7	88.1	--	2.00E+08	913
JAN								
07...	<.006	3045	744	83.7	84.6	--	2.00E+08	892
FEB								
11...	<.006	3045	671	96.4	88.9	--	2.00E+08	900
APR								
02...	<.006	3045	620	81.7	93.7	10	--	898
MAY								
01...	<.006	3039	682	122	106	--	--	932
JUN								
05...	<.006	3045	665	E119	108	--	--	928
JUL								
02...	<.006	3045	--	111	91.7	--	--	948
AUG								
01...	<.006	3035	--	109	101	--	--	918

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05451210 SOUTH FORK IOWA RIVER NORTHEAST OF NEW PROVIDENCE, IA

LOCATION.--Lat 42°18'55", long 93°09'07", in SE$^1/_4$ NW$^1/_4$ SW$^1/_4$ sec.26, T.87 N., R.20 W., Hardin County, Hydrologic Unit 07080207, located 15 ft from the left bank downstream side of the bridge on County Road, 4.0 miles upstream of the confluence with the Iowa River, and 2.0 miles NE of New Providence.

DRAINAGE AREA.--230 mi^2.

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--October 1995 to current year.

GAGE.--Water stage recorder. Datum of gage is 945 ft above NGVD of 1929, from map.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey rain gage and data collection platform with telephone modem at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	49	100	e55	e36	e82	46	e319	153	56	36	47
2	29	48	90	e47	e43	e74	48	297	172	48	31	40
3	27	43	85	e52	e42	e67	45	265	242	43	27	36
4	26	40	81	e69	e38	e76	41	258	216	40	27	29
5	26	39	80	e75	e43	e92	38	278	191	43	34	26
6	25	38	80	e50	e47	e89	36	e300	176	47	127	21
7	23	38	79	e40	e47	e85	35	e392	166	54	213	19
8	23	38	76	e26	e52	e74	36	e531	156	57	145	15
9	23	37	73	e63	e57	e67	35	e674	144	44	104	12
10	26	36	71	e48	e50	e73	30	e744	202	68	77	15
11	26	35	70	e64	e42	e73	31	e894	255	396	60	18
12	25	34	69	e53	e38	e75	51	e1460	230	873	59	21
13	27	36	67	e64	e31	e80	58	e1070	194	581	108	21
14	32	35	66	e53	e37	85	62	556	172	352	497	22
15	44	34	63	e50	47	78	64	433	159	227	488	22
16	48	34	61	e58	48	65	60	368	146	166	298	20
17	46	33	60	e60	49	65	56	311	133	128	226	19
18	42	32	60	e53	54	60	55	274	198	105	376	22
19	43	33	e51	e66	61	59	56	249	240	90	303	30
20	41	32	e48	e71	86	60	49	228	207	80	203	419
21	38	32	e40	e61	129	59	60	212	166	70	e166	356
22	44	33	e35	e70	e112	e51	65	204	144	60	164	231
23	65	33	e29	e56	e103	e62	65	199	130	53	183	173
24	66	39	e40	e47	e98	67	e51	180	118	42	243	142
25	67	47	e58	e52	e84	55	e55	193	108	38	210	120
26	64	59	e74	e57	e71	53	e41	198	98	42	159	109
27	60	90	e82	e53	e85	50	e46	188	88	66	125	100
28	57	119	e84	e39	e97	49	e363	183	79	122	100	96
29	54	117	e75	e28	---	48	e640	178	71	e80	82	92
30	50	108	e73	e25	---	47	e432	171	64	e74	68	90
31	49	---	e66	e28	---	46	---	161	---	e56	57	---
TOTAL	1247	1421	2086	1633	1727	2066	2750	11968	4818	4201	4996	2383
MEAN	40.23	47.37	67.29	52.68	61.68	66.65	91.67	386.1	160.6	135.5	161.2	79.43
MAX	67	119	100	75	129	92	640	1460	255	873	497	419
MIN	23	32	29	25	31	46	30	161	64	38	27	12
AC-FT	2470	2820	4140	3240	3430	4100	5450	23740	9560	8330	9910	4730
CFSM	0.18	0.21	0.30	0.24	0.28	0.30	0.41	1.72	0.72	0.60	0.72	0.35
IN.	0.21	0.24	0.35	0.27	0.29	0.34	0.46	1.99	0.80	0.70	0.83	0.40

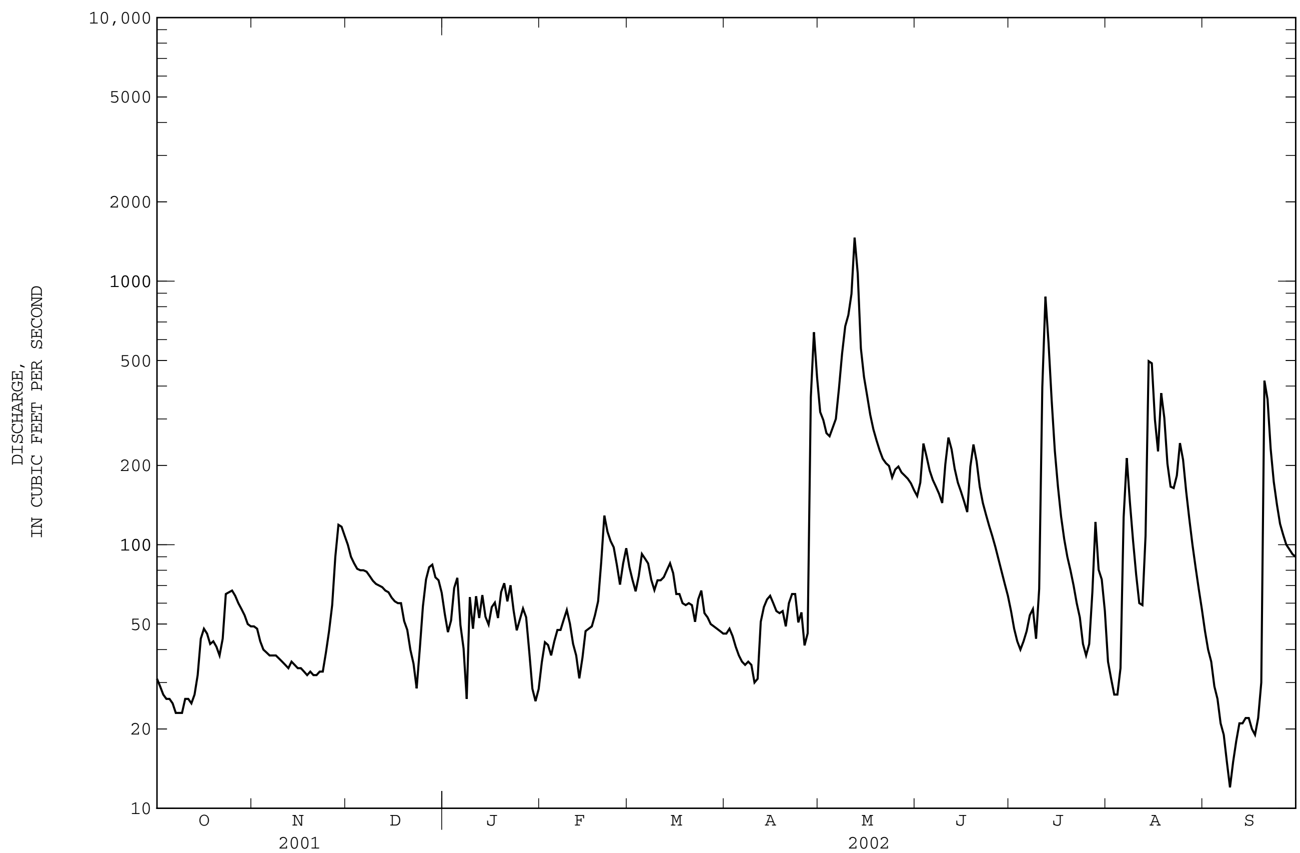
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	26.68	56.38	39.45	27.05	107.1	168.4	220.0	318.4	471.9	166.8	47.59	24.61
MAX	76.6	199	119	65.7	250	386	513	643	1173	414	161	79.4
(WY)	1999	1997	1997	1997	1997	2001	1999	1999	1998	1998	2002	2002
MIN	2.59	4.90	5.03	4.63	7.51	8.73	7.17	13.1	161	59.9	12.5	3.51
(WY)	2000	2000	2000	2001	2001	2000	2000	2000	2002	1996	2000	2000

05451210 SOUTH FORK IOWA RIVER NORTHEAST OF NEW PROVIDENCE, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1996 - 2002	
ANNUAL TOTAL	55859.7		41296			
ANNUAL MEAN	153.0		113.1		149.8	
HIGHEST ANNUAL MEAN					218	1998
LOWEST ANNUAL MEAN					36.6	2000
HIGHEST DAILY MEAN	1650	Mar 22	1460	May 12	2920	Jun 30 1998
LOWEST DAILY MEAN	3.4	Jan 2	12	Sep 9	1.7	Sep 13 2000
ANNUAL SEVEN-DAY MINIMUM	4.0	Jan 1	17	Sep 6	1.9	Sep 11 2000
MAXIMUM PEAK FLOW			2110	May 12	3550	Jun 21 1998
MAXIMUM PEAK STAGE			9.02	May 12	11.59	Jun 21 1998
INSTANTANEOUS LOW FLOW			10	Sep 9	1.7	Sep 26 1999a
ANNUAL RUNOFF (AC-FT)	110800		81910		108600	
ANNUAL RUNOFF (CFSM)	0.68		0.51		0.67	
ANNUAL RUNOFF (INCHES)	9.28		6.86		9.09	
10 PERCENT EXCEEDS	458		241		371	
50 PERCENT EXCEEDS	44		62		48	
90 PERCENT EXCEEDS	6.0		31		5.4	

a Also Oct. 3, 2000.
e Estimated



05451210 SOUTH FORK IOWA RIVER NORTHEAST OF NEW PROVIDENCE, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1995 to current year.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	TEMPER-ATURE WATER (DEG C) (00010)	TEMPER-ATURE AIR (DEG C) (00020)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	AGENCY COL-LECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANA-LYZING SAMPLE (CODE NUMBER) (00028)	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	GAGE HEIGHT (FEET) (00065)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SAMPLE TREAT-MENT (CODES) (00115)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)
OCT													
04...	0825	14.2	9.0	734	1028	80020	26	2.58	625	1	8.7	85	7.9
NOV													
06...	0812	8.7	9.9	740	1028	80020	38	2.75	645	1	10.5	93	8.0
DEC													
04...	0835	6.7	13.4	732	1028	80020	83	--	794	1	11.2	92	8.2
JAN													
08...	0930	.1	--	727	1028	80020	26	3.25	809	1	13.0	89	7.8
FEB													
12...	0809	.1	3.0	734	1028	80020	38	3.07	691	1	13.7	94	8.0
APR													
03...	0816	.7	-5.0	742	1028	80020	47	2.93	664	1	14.3	100	8.3
MAY													
02...	0818	8.4	9.0	730	1028	80020	298	4.62	759	1	10.7	91	8.1
JUN													
06...	0817	15.8	19.0	736	1028	80020	77	3.81	755	1	9.6	97	8.2
JUL													
03...	0755	24.5	30.5	739	1028	80020	43	2.72	655	--	7.3	88	8.1
AUG													
01...	1155	28.3	29.0	734	1028	80020	37	2.63	637	--	9.6	124	8.3

Date	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	TER-BUTHYL-AZINE, WATER, DISS, REC (UG/L) (04022)	PROPA-CHLOR, WATER, DISS, REC (UG/L) (04024)	BUTYL-ATE, WATER, DISS, REC (UG/L) (04028)
OCT													
04...	2	263	<.04	.063	.57	10.9	.025	<.02	25.5	32.3	U	<.010	<.002
NOV													
06...	2	281	<.04	.090	.55	13.1	.022	<.02	25.7	31.4	U	<.010	<.002
DEC													
04...	2	349	<.04	.037	.63	17.5	.076	.05	26.6	30.5	U	<.010	<.002
JAN													
08...	2	364	.06	.033	.42	15.9	.045	.03	25.7	35.6	U	<.010	<.002
FEB													
12...	0	252	<.04	.037	.61	10.9	.086	.02	21.5	30.4	U	<.010	<.002
APR													
03...	2	265	<.04	.043	.45	12.1	.019	<.02	25.3	33.1	--	<.010	<.002
MAY													
02...	0	314	E.034	.027	.83	20.1	.169	E.049	23.9	27.9	--	<.010	<.002
JUN													
06...	3	298	<.04	.041	.57	21.2	.099	.03	24.5	26.2	--	<.010	<.002
JUL													
03...	0	251	<.04	.084	.69	15.2	.054	E.01	23.9	29.7	--	<.010	<.002
AUG													
01...	0	214	<.04	.055	.63	12.2	.051	.02	23.0	31.8	--	<.010	<.002

05451210 SOUTH FORK IOWA RIVER NORTHEAST OF NEW PROVIDENCE, IA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	FONOFOS WATER DISS REC (UG/L) (04095)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	P,P' DDE DISSOLV (UG/L) (34653)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	LINDANE DIS- SOLVED (UG/L) (39341)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	MALA- THION, DIS- SOLVED (UG/L) (39532)
OCT 04...	E.005	M	E.046	<.018	<.003	<.005	<.003	<.005	218	<.004	<.005	.059	<.027
NOV 06...	<.011	M	E.040	<.018	<.003	<.005	<.003	<.005	234	<.004	<.005	.073	<.027
DEC 04...	<.011	M	E.038	<.018	<.003	<.005	<.003	<.005	290	<.004	<.005	.226	<.027
JAN 08...	<.005	<.01	E.033	<.018	<.003	<.005	<.003	<.005	302	<.004	<.005	.059	<.027
FEB 12...	<.005	M	E.026	<.018	<.003	<.005	<.003	<.005	255	<.004	<.005	.086	<.027
APR 03...	<.005	M	E.019	<.018	<.003	<.005	<.003	<.005	221	<.004	<.005	.069	E.010
MAY 02...	<.005	E.01	E.057	<.018	<.003	<.005	<.003	<.005	262	<.004	<.005	.226	<.027
JUN 06...	.005	M	E.050	<.018	<.003	<.005	<.003	<.005	249	<.004	<.005	.147	<.027
JUL 03...	.005	E.01	E.063	<.018	<.003	<.005	<.003	<.005	210	<.004	<.005	.065	<.027
AUG 01...	.011	E.01	E.059	<.018	<.003	<.005	<.003	<.005	180	<.004	<.005	.110	<.027

Date	PARA- THION, DIS- SOLVED (UG/L) (39542)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)	ACETO- CHLOR, WATER FLTRD REC (UG/L) (49260)	PURPOSE SITE VISIT, (CODE) (50280)	TUR- BID- ITY FIELD WATER UNFLTRD (NTU) (61028)	SAMPLE PURPOSE CODE (71999)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD) (72000)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	DRAIN- AGE AREA (SQ. MI.) (81024)	SAM- PLING METHOD, CODES (82398)	METRI- BUZIN SENCOR WATER DISSOLV (UG/L) (82630)
OCT 04...	<.007	<.005	.060	<.002	<.004	1001	5.0	15.00	945	55	224	10	<.006
NOV 06...	<.007	<.005	.053	<.002	<.004	1001	--	15.00	945	67	224	30	<.006
DEC 04...	<.007	<.005	.052	<.002	E.004	1001	9.5	15.00	945	140	224	10	<.006
JAN 08...	<.010	<.005	.035	<.004	<.006	1001	2.9	15.00	945	147	224	10	<.006
FEB 12...	<.010	<.005	.047	<.004	<.006	1001	9.6	15.00	945	23	224	10	<.006
APR 03...	<.010	<.005	.035	<.004	.009	1001	6.7	15.00	945	54	224	10	<.006
MAY 02...	<.010	<.005	.064	<.004	.091	1001	100	15.00	945	144	224	10	<.006
JUN 06...	<.010	<.005	.267	<.004	.021	1001	50	15.00	945	96	224	10	<.006
JUL 03...	<.010	<.005	.142	<.004	E.004	1001	21	15.00	945	36	224	10	<.006
AUG 01...	<.010	<.005	.122	<.004	.016	1001	9.2	15.00	945	61	224	10	<.006

Date	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	PEB- ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	BEN- FLUR- ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)
OCT 04...	<.002	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.002	<.02	<.002	<.005	<.010
NOV 06...	<.002	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.002	<.02	<.002	<.005	<.010
DEC 04...	<.002	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.002	<.02	<.002	<.005	<.010
JAN 08...	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02	<.002	<.005	<.010
FEB 12...	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02	<.002	<.005	<.010
APR 03...	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	M	<.002	<.005	<.010
MAY 02...	<.006	<.009	<.009	<.011	<.034	<.035	<.006	.003	<.004	<.02	<.002	<.005	<.010
JUN 06...	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02	<.002	<.005	<.010
JUL 03...	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02	<.002	<.005	<.010
AUG 01...	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	E.01	<.002	<.005	<.010

05451210 SOUTH FORK IOWA RIVER NORTHEAST OF NEW PROVIDENCE, IA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)
OCT													
04...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.010	<.007	<.02	<.050
NOV													
06...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.010	<.007	<.02	<.050
DEC													
04...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.010	<.007	<.02	<.050
JAN													
08...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050
FEB													
12...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050
APR													
03...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050
MAY													
02...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050
JUN													
06...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050
JUL													
03...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050
AUG													
01...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050

Date	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	SAMPLER TYPE (CODE) (84164)	SPE- CIFIC CON- DUCT- ANCE LAB (US/CM) (90095)	DIAZ- INON D10 SRG WAT FLT 0.7 U GF, REC PERCENT (91063)	HCH ALPHA D6 SRG WAT FLT 0.7 U GF, REC PERCENT (91065)	QUALITY ASSUR- ANCE DATA INDICA- TOR CODE (99111)	SET NUMBER SCHED- ULE 2001 (NO.) (99818)	SAMPLE VOLUME SCHED- ULE 2001 (ML) (99856)
OCT								
04...	<.006	3045	--	96.2	83.7	--	2.00E+08	945
NOV								
06...	<.006	3045	--	98.1	100	--	2.00E+08	950
DEC								
04...	<.006	3045	--	92.6	76.6	--	2.00E+08	945
JAN								
08...	<.006	3045	823	89.5	83.5	--	2.00E+08	913
FEB								
12...	<.006	3045	690	100	91.9	--	2.00E+08	941
APR								
03...	<.006	3045	661	83.8	91.9	40	--	929
MAY								
02...	<.006	3045	748	112	99.1	--	--	947
JUN								
06...	<.006	3045	730	E118	113	--	--	906
JUL								
03...	<.006	3045	--	118	97.2	--	--	946
AUG								
01...	<.006	3035	--	107	108	--	--	885

05451210 SOUTH FORK IOWA RIVER NORTHEAST OF NEW PROVIDENCE, IA--Continued

PRECIPITATION RECORDS

PERIOD OF RECORD.-- October 1995 to current year.

INSTRUMENTATION.-- Tipping bucket rain gage.

REMARKS.-- Estimated totals Oct. 1, Feb. 8-10, and Aug. 21, 22. Records good except for estimated days and winter period, which is poor due to intermittent snow accumulation and subsequent melting.

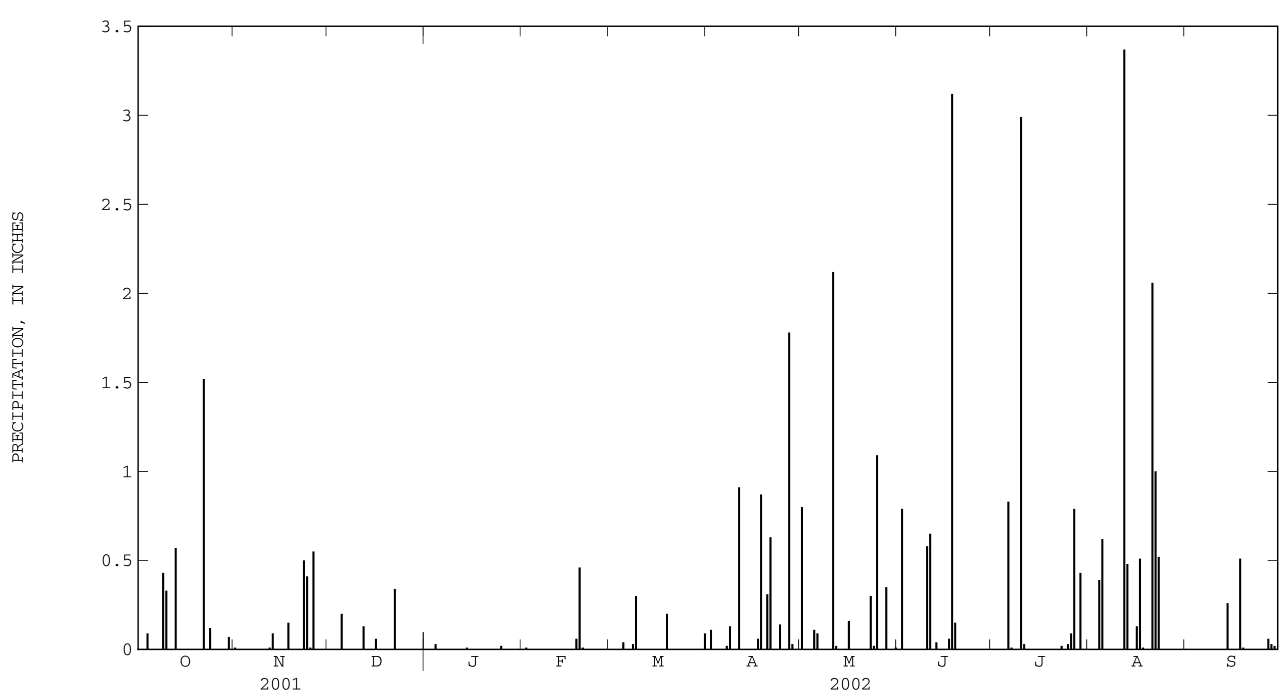
EXTREME FOR PERIOD OF RECORD.-- Maximum daily accumulation, 5.37 in., June 21, 1997.

EXTREME FOR CURRENT YEAR.-- Maximum daily accumulation 3.37 in., Aug. 12.

PRECIPITATION from modem, in INCHES, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.80	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.01	0.0	0.11	0.0	0.79	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.09	0.0	0.0	0.03	0.0	0.0	0.0	0.0	0.0	0.0	0.39	0.0
5	0.0	0.0	0.20	0.0	0.0	0.04	0.0	0.11	0.0	0.0	0.62	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.09	0.0	0.83	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.0	0.0	0.01	0.0	0.0
8	0.0	0.0	0.0	0.0	e0.0	0.03	0.13	0.0	0.0	0.0	0.0	0.0
9	0.43	0.0	0.0	0.0	e0.0	0.30	0.0	0.0	0.0	0.0	0.0	0.0
10	0.33	0.0	0.0	0.0	e0.0	0.0	0.0	0.0	0.58	2.99	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.91	2.12	0.65	0.03	0.0	0.0
12	0.0	0.01	0.13	0.0	0.0	0.0	0.0	0.02	0.0	0.0	3.37	0.0
13	0.57	0.09	0.0	0.0	0.0	0.0	0.0	0.0	0.04	0.0	0.48	0.0
14	0.0	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.26
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.06	0.0	0.0	0.0	0.0	0.16	0.0	0.0	0.13	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0	0.06	0.0	0.06	0.0	0.51	0.0
18	0.0	0.15	0.0	0.0	0.06	0.0	0.87	0.0	3.12	0.0	0.01	0.51
19	0.0	0.0	0.0	0.0	0.46	0.20	0.0	0.0	0.15	0.0	0.0	0.01
20	0.0	0.0	0.0	0.0	0.01	0.0	0.31	0.0	0.0	0.0	0.0	0.0
21	0.0	0.0	0.0	0.0	0.0	0.0	0.63	0.0	0.0	0.0	e2.06	0.0
22	1.52	0.0	0.34	0.0	0.0	0.0	0.0	0.0	0.0	0.0	e1.00	0.0
23	0.0	0.50	0.0	0.0	0.0	0.0	0.0	0.30	0.0	0.02	0.52	0.0
24	0.12	0.41	0.0	0.0	0.0	0.0	0.14	0.02	0.0	0.0	0.0	0.0
25	0.0	0.01	0.0	0.02	0.0	0.0	0.0	1.09	0.0	0.03	0.0	0.0
26	0.0	0.55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.09	0.0	0.0
27	0.0	0.0	0.0	0.0	0.0	0.0	1.78	0.0	0.0	0.79	0.0	0.06
28	0.0	0.0	0.0	0.0	0.0	0.0	0.03	0.35	0.0	0.0	0.0	0.03
29	0.0	0.0	0.0	0.0	---	0.0	0.0	0.0	0.0	0.43	0.0	0.02
30	0.07	0.0	0.0	0.0	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	0.0	---	0.0	0.0	---	0.09	---	0.01	---	0.0	0.0	---
TOTAL	3.13	1.73	0.73	0.06	0.54	0.66	4.99	5.07	5.39	5.22	9.09	0.89
MEAN	0.10	0.06	0.02	0.00	0.02	0.02	0.17	0.16	0.18	0.17	0.29	0.03
MAX	1.52	0.55	0.34	0.03	0.46	0.30	1.78	2.12	3.12	2.99	3.37	0.51
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

e Estimated



05451500 IOWA RIVER AT MARSHALLTOWN, IA

LOCATION.--Lat 42°03'57", long 92°54'27", in SE$^1/_4$ SE$^1/_4$ sec.23, T.84 N., R.18 W., Marshall County, Hydrologic Unit 07080208, on right bank 10 ft downstream from bridge on State Highway 14, 1,500 ft upstream from Burnett Creek, 2.2 mi upstream from Linn Creek, and at mile 222.8.

DRAINAGE AREA.--1,532 mi^2.

PERIOD OF RECORD.--October 1902 to September 1903, October 1914 to September 1927, October 1932 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1915-18, 1919 (M), 1920, 1921-23 (M), 1924-27, 1933, 1934 (M), 1936, 1938, 1947 (M).

GAGE.--Water-stage recorder. Datum of gage is 853.10 ft above NGVD of 1929. See WSP 1728 for history of changes prior to Sept. 21, 1934.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

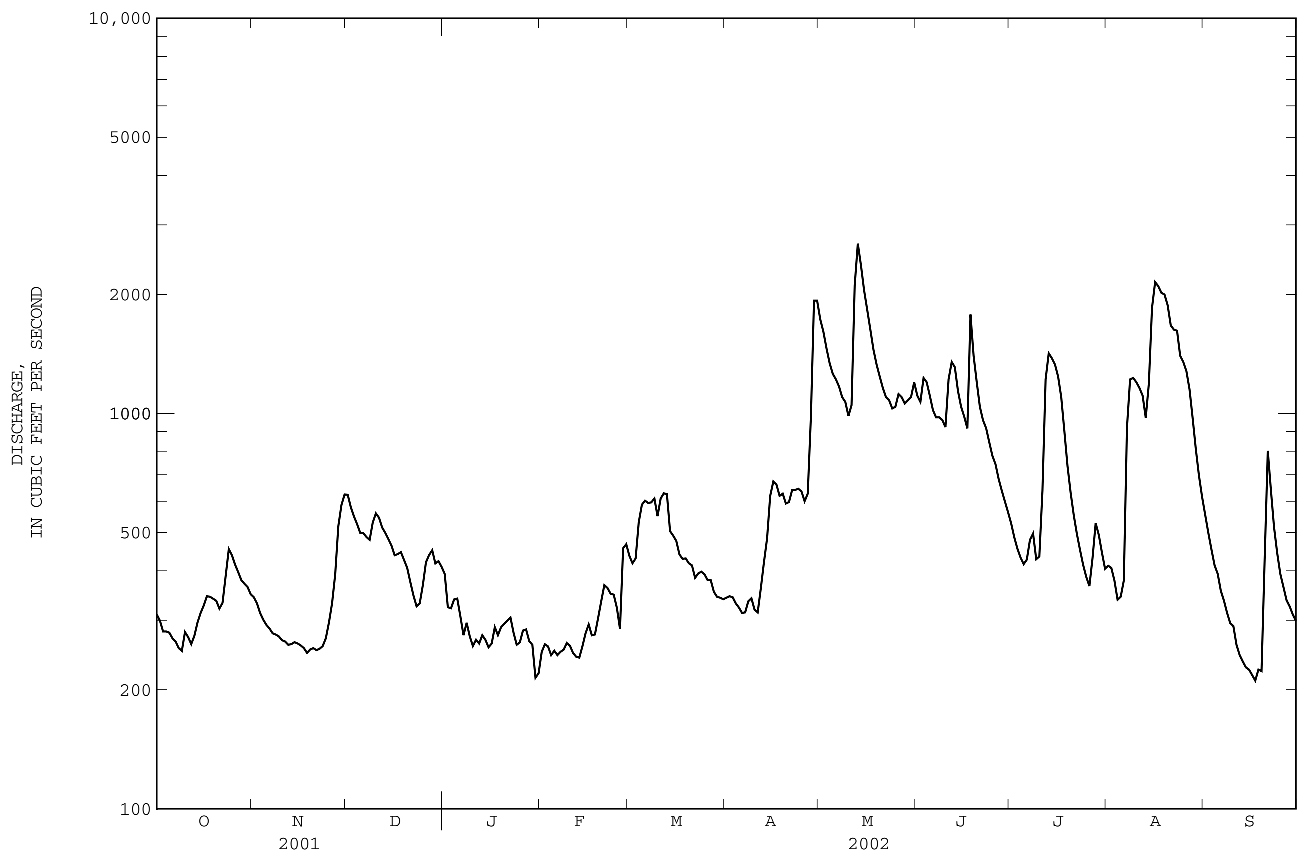
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	310	343	623	e393	e250	e437	342	1730	1110	527	412	554
2	299	331	579	e324	e261	e418	345	1610	1070	486	407	499
3	281	313	549	e322	e258	e430	343	1460	1230	455	378	453
4	281	301	525	e339	e245	e531	331	1340	1200	432	338	413
5	279	292	499	e340	e251	e588	323	1260	1110	416	344	393
6	270	286	498	e307	e245	e602	313	1220	1020	427	378	356
7	265	278	487	e275	e250	e594	314	1170	978	479	922	336
8	255	276	479	e296	e253	e596	335	1100	978	497	1220	313
9	251	273	530	e273	e263	e610	341	1070	963	428	1230	295
10	280	267	559	e258	e259	e550	319	986	924	435	1200	290
11	272	265	545	e268	e248	e610	314	1050	1220	639	1160	260
12	261	260	515	e262	e243	e628	361	2110	1350	1220	e1110	245
13	274	261	499	e275	e241	e625	420	2690	1310	1420	e976	236
14	296	264	481	e268	e258	504	483	2370	1140	1380	e1190	228
15	313	262	463	e256	e278	491	619	2050	1040	1330	e1850	225
16	327	259	438	e262	e293	476	673	1830	982	1240	e2150	218
17	345	255	441	e288	e275	440	661	1630	917	1100	e2100	211
18	344	248	446	e275	e276	429	619	1450	1780	902	e2020	225
19	340	253	426	e288	e304	430	627	1330	1400	737	2000	223
20	336	255	407	e294	e335	418	592	1240	1200	631	1880	429
21	321	252	e375	e299	e368	413	597	1160	1040	553	1670	805
22	332	254	e347	e305	e362	384	640	1100	962	496	1630	640
23	388	258	e325	e279	e350	394	641	1080	918	452	1620	516
24	454	270	e331	e260	e348	398	645	1030	846	414	1400	444
25	438	296	e368	e264	e323	392	635	1040	782	386	1350	393
26	415	331	e420	e282	e285	379	600	1120	744	366	1280	364
27	397	392	e438	e284	e456	379	627	1100	683	431	1150	337
28	379	519	e451	e266	e467	354	978	1060	638	528	972	325
29	371	587	e418	e260	---	344	1930	1080	599	493	813	310
30	364	624	e423	e215	---	342	1930	1100	563	445	697	299
31	349	---	e409	e220	---	339	---	1200	---	405	616	---
TOTAL	10087	9325	14294	8797	8245	14525	17898	42766	30697	20150	36463	10835
MEAN	325.4	310.8	461.1	283.8	294.5	468.5	596.6	1380	1023	650.0	1176	361.2
MAX	454	624	623	393	467	628	1930	2690	1780	1420	2150	805
MIN	251	248	325	215	241	339	313	986	563	366	338	211
AC-FT	20010	18500	28350	17450	16350	28810	35500	84830	60890	39970	72320	21490
CFSM	0.21	0.20	0.30	0.19	0.19	0.31	0.39	0.90	0.67	0.42	0.77	0.24
IN.	0.24	0.23	0.35	0.21	0.20	0.35	0.43	1.04	0.75	0.49	0.89	0.26

MEAN	490.9	491.8	358.4	300.9	624.5	1563	1510	1356	1803	1033	566.3	490.8
MAX	2721	2593	2139	2231	3424	4206	6796	5559	7619	8389	7062	3362
(WY)	1987	1973	1983	1973	1915	1973	1965	1991	1918	1993	1993	1993
MIN	39.2	46.2	31.0	10.2	20.9	98.4	99.3	49.9	16.0	41.8	35.9	27.5
(WY)	1940	1940	1990	1977	1940	1934	1934	1934	1934	1977	1934	1939

05451500 IOWA RIVER AT MARSHALLTOWN, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1903 - 2002	
ANNUAL TOTAL	471644		224082			
ANNUAL MEAN	1292		613.9		882.2	
HIGHEST ANNUAL MEAN					3456	1993
LOWEST ANNUAL MEAN					77.3	1934
HIGHEST DAILY MEAN	6500	Mar 21	2690	May 13	39400	Jun 4 1918
LOWEST DAILY MEAN	90	Jan 2	211	Sep 17	4.7	Jan 25 1977
ANNUAL SEVEN-DAY MINIMUM	102	Feb 16	224	Sep 13	5.2	Jan 20 1977
MAXIMUM PEAK FLOW			2750	May 13	42000	Jun 4 1918
MAXIMUM PEAK STAGE			13.08	May 13	20.77	Aug 17 1993
INSTANTANEOUS LOW FLOW			208	Sep 17		
ANNUAL RUNOFF (AC-FT)	935500		444500		639100	
ANNUAL RUNOFF (CFSM)	0.84		0.40		0.58	
ANNUAL RUNOFF (INCHES)	11.45		5.44		7.82	
10 PERCENT EXCEEDS	4070		1230		2170	
50 PERCENT EXCEEDS	426		426		395	
90 PERCENT EXCEEDS	120		260		76	

e Estimated



05451700 TIMBER CREEK NEAR MARSHALLTOWN, IA

LOCATION.--Lat 42°00'32", long 92°51'08", in SE$^1/_4$ SW$^1/_4$ sec.8, T.83 N., R.17 W., Marshall County, Hydrologic Unit 07080208, on left bank 20 ft upstream from bridge on Shady Oaks Road, 3.0 mi upstream from mouth, and 3.0 mi southeast of Marshalltown.

DRAINAGE AREA.--118 mi^2.

PERIOD OF RECORD.--October 1949 to current year.

REVISED RECORDS.--WSP 1708: 1950-55, 1957-59.

GAGE.--Water stage recorder. Datum of gage is 849.44 ft above NGVD of 1929. Prior to Oct. 1, 1991 at site 1/8 mile upstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1947 reached a stage of 16.8 ft, discharge, 5,700 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.9	20	17	e7.3	e12	e23	20	60	60	81	32	15
2	9.6	17	17	e12	e13	e19	20	57	63	75	29	15
3	9.3	15	17	e19	e11	e17	18	52	87	70	27	14
4	9.2	15	17	e17	e11	e27	18	49	76	68	26	14
5	11	15	18	e16	e13	e32	19	47	70	79	38	13
6	9.2	21	19	e15	e15	e28	19	47	67	67	38	13
7	8.4	16	18	e19	e15	e26	19	44	65	65	30	12
8	8.3	16	17	e22	e14	e25	24	43	61	61	26	11
9	9.4	15	16	e17	e13	e25	29	45	59	58	24	11
10	12	16	16	e10	e15	e27	26	42	63	68	23	11
11	16	14	17	e8.8	e14	e31	24	54	83	128	21	11
12	15	14	19	e7.7	e17	e30	28	103	104	95	22	10
13	12	15	18	e7.1	e16	e28	27	89	742	70	26	10
14	17	16	17	e8.1	e21	26	26	82	272	61	25	10
15	14	15	17	e6.5	e24	24	26	73	193	57	23	10
16	14	16	18	e9.7	e31	22	25	73	160	53	20	10
17	11	15	18	e13	e36	22	24	70	141	49	20	11
18	11	14	e16	e10	e34	22	24	65	994	47	19	12
19	12	14	e12	e12	e30	23	24	62	347	44	18	16
20	12	14	e14	e15	e28	24	22	59	227	42	17	13
21	11	15	e13	e12	e30	20	27	58	191	39	16	12
22	19	14	e15	e10	e24	23	28	57	166	38	18	10
23	85	14	e12	e7.4	e23	24	26	57	147	37	70	10
24	41	15	e13	e9.9	e22	23	27	55	134	35	44	10
25	31	15	e11	e14	e21	20	28	64	123	33	27	9.8
26	24	17	e13	e17	e19	20	27	71	116	32	25	9.2
27	21	24	e14	e19	e18	23	39	66	110	39	23	8.5
28	19	19	e16	e17	e29	23	81	66	99	33	20	8.0
29	18	17	e11	e16	---	20	71	67	93	86	19	7.6
30	18	18	e8.9	e15	---	19	63	65	86	46	18	7.0
31	19	---	e7.9	e13	---	19	---	63	---	37	16	---
TOTAL	535.3	481	472.8	402.5	569	735	879	1905	5199	1793	800	334.1
MEAN	17.27	16.03	15.25	12.98	20.32	23.71	29.30	61.45	173.3	57.84	25.81	11.14
MAX	85	24	19	22	36	32	81	103	994	128	70	16
MIN	8.3	14	7.9	6.5	11	17	18	42	59	32	16	7.0
AC-FT	1060	954	938	798	1130	1460	1740	3780	10310	3560	1590	663
CFSM	0.15	0.14	0.13	0.11	0.17	0.20	0.25	0.52	1.47	0.49	0.22	0.09
IN.	0.17	0.15	0.15	0.13	0.18	0.23	0.28	0.60	1.64	0.57	0.25	0.11

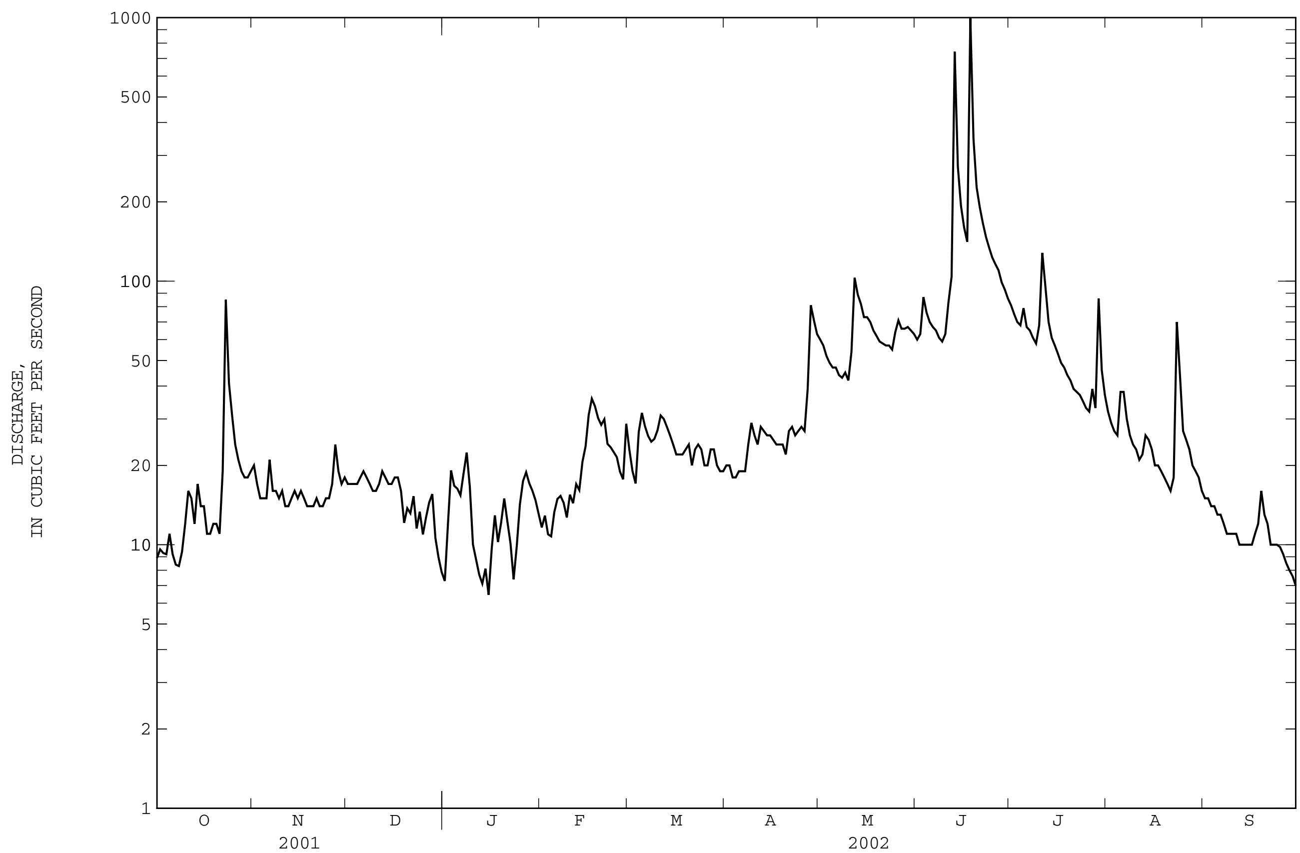
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	36.02	38.59	34.71	34.99	83.54	141.1	109.4	127.6	157.0	93.67	56.80	37.19
MAX	286	265	183	200	351	597	385	447	704	866	635	341
(WY)	1987	1984	1984	1973	1971	1979	1993	1974	1998	1993	1993	1986
MIN	0.76	1.11	0.60	0.054	3.07	5.11	2.84	3.08	1.09	1.03	1.16	1.21
(WY)	1951	1951	1956	1977	1954	1956	1956	1977	1977	1956	1956	1950

05451700 TIMBER CREEK NEAR MARSHALLTOWN, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1950 - 2002	
ANNUAL TOTAL	33092.8		14105.7			
ANNUAL MEAN	90.67		38.65		79.12	
HIGHEST ANNUAL MEAN					299	1993
LOWEST ANNUAL MEAN					2.84	1956
HIGHEST DAILY MEAN	1240	Jun 13	994	Jun 18	6570	Aug 16 1977
LOWEST DAILY MEAN	5.5	Feb 2	6.5	Jan 15	0.00	Jul 24 1956a
ANNUAL SEVEN-DAY MINIMUM	6.6	Jan 21	8.3	Jan 10	0.00	Oct 4 1956
MAXIMUM PEAK FLOW			2280	Jun 18	12000	Aug 16 1977
MAXIMUM PEAK STAGE			12.98	Jun 18	17.69	Aug 16 1977
INSTANTANEOUS LOW FLOW					0.00	Jul 24 1956
ANNUAL RUNOFF (AC-FT)	65640		27980		57320	
ANNUAL RUNOFF (CFSM)	0.77		0.33		0.67	
ANNUAL RUNOFF (INCHES)	10.43		4.45		9.11	
10 PERCENT EXCEEDS	231		71		175	
50 PERCENT EXCEEDS	18		20		32	
90 PERCENT EXCEEDS	9.1		11		3.3	

a Several days in July, Oct. 1956, Feb., July 1977.
e Estimated.



05451900 RICHLAND CREEK NEAR HAVEN, IA

LOCATION.--Lat 41°53'58", long 92°28'27", in SE $^{1}/_{4}$ NE $^{1}/_{4}$ sec.21, T.82 N., R.14 W., Tama County, Hydrologic Unit 07080208, on right bank 5 ft upstream from bridge on county highway, 0.5 mi northeast of Haven, and 3.0 mi upstream from mouth.

DRAINAGE AREA.--56.1 mi ^{2}.

PERIOD OF RECORD.--October 1949 to current year.

REVISED RECORDS.--WSP 1708: 1950-55, 1956 (M), 1957, 1958 (M), 1959.

GAGE.--Water-stage recorder. Datum of gage is 788.69 ft above NGVD of 1929. Prior to Oct. 1, 1971, at datum 10.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1918 reached a stage of 24.3 ft present datum, discharge not determined.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	9.9	5.2	e4.7	e8.8	e7.5	6.5	30	24	29	17	18
2	3.5	9.2	4.5	e7.4	e8.5	e6.1	6.7	27	37	27	15	17
3	3.5	8.7	4.7	e6.4	e6.3	e7.1	5.5	23	45	25	14	15
4	3.7	8.8	5.2	e9.3	e5.3	e8.1	6.0	20	34	24	14	14
5	4.2	8.8	5.3	e12	e4.6	e9.5	6.2	19	31	23	391	13
6	3.9	8.7	6.0	e9.8	e6.8	e10	5.9	18	28	72	102	12
7	3.7	8.5	5.2	e6.7	e8.2	e11	6.8	18	24	40	47	12
8	4.2	7.7	4.9	e9.3	e6.3	e13	10	16	22	25	32	11
9	5.4	7.4	4.7	e14	e6.0	e17	14	16	20	22	25	10
10	9.1	7.7	4.9	e12	e11	e24	12	14	20	24	22	10
11	7.9	7.3	4.7	e10	e15	15	11	26	26	80	19	10
12	5.1	6.9	5.9	e9.0	e9.7	15	17	46	34	36	18	10
13	6.0	8.9	6.2	e8.0	e8.9	11	16	37	413	26	19	10
14	6.7	8.8	4.8	e6.4	e13	9.9	15	33	154	23	17	9.8
15	5.1	7.2	4.5	e5.8	11	9.1	14	30	110	21	14	9.4
16	4.5	6.2	5.6	e4.6	9.6	7.0	13	30	87	20	13	8.9
17	5.2	5.7	6.3	e5.3	9.1	7.2	12	27	75	19	13	8.8
18	5.5	5.6	5.7	e5.4	8.7	6.7	12	24	129	18	13	9.3
19	5.6	5.7	5.3	e5.8	11	7.3	11	22	100	17	13	14
20	5.7	5.5	4.9	e6.0	11	8.6	11	21	76	16	12	16
21	5.3	5.5	6.7	e5.9	10	7.2	15	20	67	15	12	11
22	17	5.6	7.2	e5.9	9.5	8.3	14	20	60	17	11	9.9
23	51	5.6	6.0	e5.6	10	8.1	13	20	55	15	201	9.7
24	19	5.9	e5.6	e5.5	9.8	7.7	13	18	50	14	45	9.5
25	14	5.0	e5.2	e6.2	9.4	6.2	13	42	46	13	127	9.3
26	12	4.8	e4.8	5.5	9.0	7.0	12	46	47	13	128	9.1
27	11	7.0	e5.4	5.9	e10	7.3	25	36	49	31	45	9.2
28	11	5.3	e6.2	6.4	e9.6	7.1	53	34	40	16	30	9.0
29	9.9	4.7	e5.4	5.6	---	6.7	40	34	38	98	26	8.9
30	10	4.9	e4.9	e4.3	---	6.2	34	30	33	31	22	7.8
31	11	---	e4.6	e5.6	---	6.4	---	26	---	20	20	---
TOTAL	272.8	207.5	166.5	220.3	256.1	288.3	443.6	823	1974	870	1497	331.6
MEAN	8.800	6.917	5.371	7.106	9.146	9.300	14.79	26.55	65.80	28.06	48.29	11.05
MAX	51	9.9	7.2	14	15	24	53	46	413	98	391	18
MIN	3.1	4.7	4.5	4.3	4.6	6.1	5.5	14	20	13	11	7.8
AC-FT	541	412	330	437	508	572	880	1630	3920	1730	2970	658
CFSM	0.16	0.12	0.10	0.13	0.16	0.17	0.26	0.47	1.17	0.50	0.86	0.20
IN.	0.18	0.14	0.11	0.15	0.17	0.19	0.29	0.55	1.31	0.58	0.99	0.22

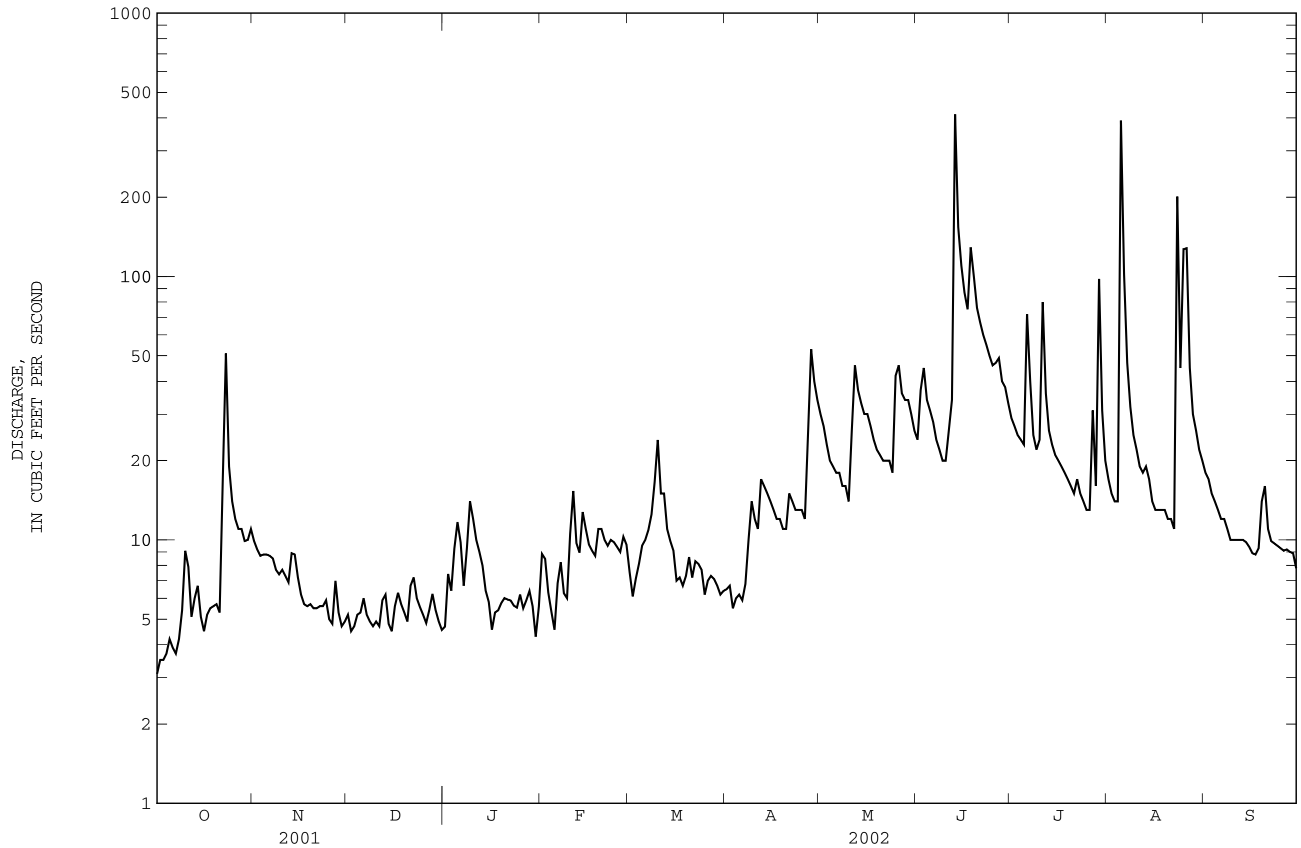
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	17.98	22.17	16.81	19.01	42.44	67.12	57.63	60.71	68.53	44.91	31.43	19.18
MAX	105	122	85.8	104	165	270	323	337	270	463	427	159
(WY)	1987	1984	1983	1960	1965	1979	1991	1974	1990	1993	1993	1993
MIN	0.24	0.31	0.25	0.020	0.32	1.05	0.85	2.04	0.25	0.66	0.76	0.58
(WY)	1957	1951	1957	1977	1989	1956	1956	1956	1956	1977	1955	1950

05451900 RICHLAND CREEK NEAR HAVEN, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1950 - 2002	
ANNUAL TOTAL	18749.6		7350.7			
ANNUAL MEAN	51.37		20.14		38.94	
HIGHEST ANNUAL MEAN					162	1993
LOWEST ANNUAL MEAN					2.49	1956
HIGHEST DAILY MEAN	843	Jun 12	413	Jun 13	2880	Aug 16 1977
LOWEST DAILY MEAN	3.0	Jan 26	3.1	Oct 1	0.00	Jan 22 1977
ANNUAL SEVEN-DAY MINIMUM	3.3	Jan 20	3.7	Oct 1	0.00	Jan 22 1977
MAXIMUM PEAK FLOW			1120	Aug 5	12200	Apr 12 1991
MAXIMUM PEAK STAGE			18.56	Aug 5	26.71	Apr 12 1991
INSTANTANEOUS LOW FLOW			1.8	Oct 1		
ANNUAL RUNOFF (AC-FT)	37190		14580		28210	
ANNUAL RUNOFF (CFSM)	0.92		0.36		0.69	
ANNUAL RUNOFF (INCHES)	12.43		4.87		9.43	
10 PERCENT EXCEEDS	149		37		80	
50 PERCENT EXCEEDS	12		10		14	
90 PERCENT EXCEEDS	4.3		5.3		1.2	

a Also Jan. 23 to Feb. 2, 1977, July 9 and 10, 1959.
e Estimated.



05452000 SALT CREEK NEAR ELBERON, IA

LOCATION.--Lat 41°57'51", long 92°18'47", in NW$^1/_4$ NW$^1/_4$ sec.36, T.83 N., R.13 W., Tama County, Hydrologic Unit 07080208, on left bank 20 ft upstream from bridge on U.S. Highway 30, 2.0 mi upstream from Hog Run, 3.0 mi south of Elberon, and 9.0 mi upstream from mouth.

DRAINAGE AREA.--201 mi^2.

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1946.

GAGE.--Water-stage recorder. Datum of gage is 781.58 ft above NGVD of 1929 (Iowa Highway Commission bench mark). Prior to Oct. 15, 1945 and June 14, 1947 to Feb. 10, 1949, nonrecording gage on upstream side of bridge at present datum.

REMARKS.--Records good except those for estimated daily discharge, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 16, 1944 reached a stage of 19.9 ft, from floodmark at downstream side of bridge, discharge, about 30,000 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	44	28	e17	e28	e22	30	96	87	63	38	26
2	20	39	27	e20	e24	e21	31	90	87	60	32	27
3	19	37	27	e18	e21	e22	29	81	88	56	29	24
4	19	36	27	e21	e19	e23	29	76	89	54	28	22
5	21	35	28	e24	e17	e25	28	74	105	53	33	22
6	20	36	28	e22	e18	e27	28	73	86	50	34	21
7	20	35	26	e19	e20	e30	30	70	81	68	37	20
8	20	33	26	e26	e21	e35	39	65	74	59	29	19
9	22	31	25	e31	e23	e49	62	66	70	51	26	19
10	28	32	26	e27	e33	e70	53	60	69	51	24	e18
11	28	31	26	e25	e31	e61	48	71	76	62	23	e17
12	25	31	27	e23	e29	e53	61	141	76	52	23	16
13	28	34	28	e21	e26	48	60	128	577	46	25	16
14	40	34	26	e19	e30	41	58	113	298	43	24	16
15	33	33	25	e16	33	39	54	105	185	40	21	16
16	29	31	26	e17	30	35	50	101	149	38	20	16
17	26	31	26	e18	28	34	47	93	129	35	20	15
18	27	31	26	e18	28	34	45	86	176	32	19	16
19	26	31	24	e19	33	33	44	83	167	31	18	29
20	26	29	23	e20	39	36	41	78	e129	29	17	26
21	25	30	25	e20	37	31	47	75	e115	28	17	23
22	36	30	28	e21	33	31	50	73	e106	29	24	19
23	311	30	22	e19	35	35	46	73	e98	30	479	17
24	121	32	e20	e18	33	34	46	69	90	27	159	16
25	79	30	e18	e22	31	29	45	83	86	26	63	16
26	63	28	e16	27	21	31	42	93	87	24	58	15
27	54	31	e17	26	e25	30	55	82	87	61	43	15
28	51	28	e19	25	e25	31	126	78	79	45	35	16
29	48	28	e17	23	---	31	123	117	75	88	32	16
30	45	29	e16	21	---	29	104	107	69	99	29	15
31	46	---	e14	16	---	30	---	98	---	49	27	---
TOTAL	1375	970	737	659	771	1080	1551	2698	3690	1479	1486	569
MEAN	44.35	32.33	23.77	21.26	27.54	34.84	51.70	87.03	123.0	47.71	47.94	18.97
MAX	311	44	28	31	39	70	126	141	577	99	479	29
MIN	19	28	14	16	17	21	28	60	69	24	17	15
AC-FT	2730	1920	1460	1310	1530	2140	3080	5350	7320	2930	2950	1130
CFSM	0.22	0.16	0.12	0.11	0.14	0.17	0.26	0.43	0.61	0.24	0.24	0.09
IN.	0.25	0.18	0.14	0.12	0.14	0.20	0.29	0.50	0.68	0.27	0.28	0.11

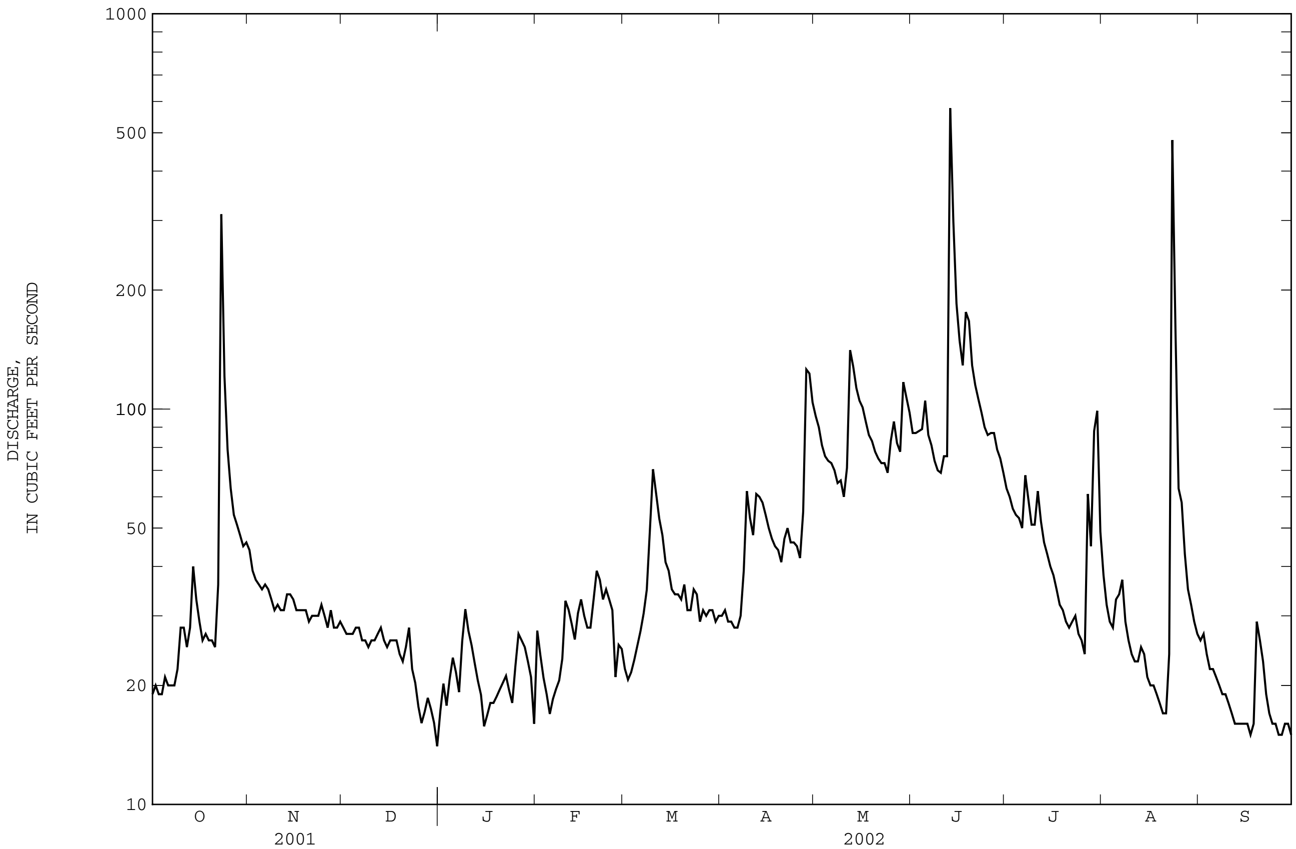
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	65.48	79.52	63.16	70.49	138.5	262.4	192.6	193.2	266.2	193.2	100.3	65.45
MAX	250	425	314	337	607	844	652	573	1826	1803	1157	440
(WY)	1978	1983	1983	1973	1982	1993	1983	1982	1947	1993	1993	1993
MIN	4.85	4.08	2.29	1.14	7.02	11.7	11.0	5.75	7.79	3.84	5.65	5.43
(WY)	1951	1951	1977	1977	1977	1954	1989	1977	1977	1989	1949	1950

05452000 SALT CREEK NEAR ELBERON, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1946 - 2002	
ANNUAL TOTAL	57135		17065			
ANNUAL MEAN	156.5		46.75		140.8	
HIGHEST ANNUAL MEAN					569	1993
LOWEST ANNUAL MEAN					23.2	1989
HIGHEST DAILY MEAN	1630	Mar 13	577	Jun 13	14000	Jul 9 1993
LOWEST DAILY MEAN	14	Dec 31	14	Dec 31	0.85	Jan 31 1977
ANNUAL SEVEN-DAY MINIMUM	17	Dec 25	16	Sep 24	0.95	Jan 25 1977
MAXIMUM PEAK FLOW			891	Aug 23	41800	Jul 9 1993
MAXIMUM PEAK STAGE			11.76	Aug 23	20.85	Jul 9 1993
ANNUAL RUNOFF (AC-FT)	113300		33850		102000	
ANNUAL RUNOFF (CFSM)	0.78		0.23		0.70	
ANNUAL RUNOFF (INCHES)	10.57		3.16		9.52	
10 PERCENT EXCEEDS	373		87		280	
50 PERCENT EXCEEDS	50		31		55	
90 PERCENT EXCEEDS	22		19		9.4	

e Estimated



05452200 WALNUT CREEK NEAR HARTWICK, IA

LOCATION.--Lat 41°50'06", long 92°23'10", in SE$^1/_4$ SW$^1/_4$ sec.8, T.81 N, R.13 W., Poweshiek County, Hydrologic Unit 07080208, on right bank 5 ft downstream from bridge on county highway V21, 1.2 mi downstream from North Walnut Creek, 4.0 mi northwest of Hartwick, and 6.5 mi upstream from mouth.

DRAINAGE AREA.--70.9 mi^2.

PERIOD OF RECORD.--October 1949 to current year.

REVISED RECORDS.--WSP 1558: 1950 (P), 1951-57.

GAGE.--Water-stage recorder. Datum of gage is 786.59 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1947 reached a stage of 17.7 ft, from information by local residents, discharge not determined.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	11	5.7	e6.1	e11	e7.9	7.6	43	33	22	15	14
2	2.1	9.2	5.7	e9.4	e9.0	e7.5	7.7	39	82	20	12	12
3	1.9	8.7	6.0	e6.9	e7.1	e8.7	7.0	34	93	19	11	11
4	2.1	8.4	6.1	e10	e6.0	e8.5	6.6	31	84	18	11	9.5
5	2.5	8.4	6.7	e13	e5.1	e9.8	6.2	28	65	18	284	9.0
6	2.0	8.2	6.9	e11	e6.7	e12	6.3	27	54	91	74	8.6
7	1.9	7.6	6.1	e7.7	e7.6	e16	7.3	26	50	72	41	8.0
8	1.9	7.1	6.0	e12	e6.1	e20	12	24	46	37	31	7.3
9	3.2	6.8	6.0	e18	e6.5	e24	19	25	44	29	26	7.0
10	4.9	7.1	6.0	e15	e12	e29	15	21	42	30	23	6.7
11	3.0	6.7	6.2	e12	e17	e22	14	42	52	50	20	6.3
12	2.5	6.7	6.5	e10	e11	18	21	65	58	35	18	6.1
13	4.9	7.3	7.4	e8.7	e10	14	20	55	517	26	18	5.8
14	4.6	7.1	6.5	e7.2	e13	12	20	49	161	22	15	5.8
15	3.4	6.9	6.5	e5.8	9.4	11	19	45	113	20	13	5.4
16	3.1	6.9	8.0	e6.0	8.3	9.3	19	47	88	17	11	4.9
17	3.0	6.3	7.6	e6.8	8.1	9.3	18	42	75	16	11	4.8
18	3.0	6.3	7.1	e7.7	7.3	8.7	17	39	73	16	10	5.4
19	2.8	6.1	6.6	e8.1	10	9.4	16	37	60	16	11	10
20	2.8	5.6	7.9	e8.7	10	11	14	36	51	15	9.1	9.4
21	2.7	5.7	10	e9.6	9.3	8.3	20	33	46	14	9.6	5.9
22	45	5.7	8.5	e10	8.5	13	18	29	43	13	10	4.5
23	65	5.7	11	e9.2	8.2	9.5	17	29	37	11	162	6.4
24	26	6.4	e8.2	e8.7	7.3	8.7	17	26	34	10	40	7.0
25	19	5.8	e6.9	e9.0	7.3	8.0	16	57	31	9.6	36	7.0
26	17	6.0	e6.4	9.8	e7.4	7.7	15	57	33	9.0	79	6.9
27	14	6.3	e8.0	7.9	e8.7	7.1	38	48	31	30	34	6.9
28	13	5.5	e9.7	7.1	e8.3	7.3	66	43	27	15	25	6.9
29	12	5.3	e9.1	5.9	---	7.1	53	41	25	56	21	6.9
30	13	5.7	e7.3	5.7	---	6.8	46	39	24	24	18	5.8
31	13	---	e6.1	e5.8	---	7.3	---	35	---	18	16	---
TOTAL	297.5	206.5	222.7	278.8	246.2	358.9	578.7	1192	2172	798.6	1114.7	221.2
MEAN	9.597	6.883	7.184	8.994	8.793	11.58	19.29	38.45	72.40	25.76	35.96	7.373
MAX	65	11	11	18	17	29	66	65	517	91	284	14
MIN	1.9	5.3	5.7	5.7	5.1	6.8	6.2	21	24	9.0	9.1	4.5
AC-FT	590	410	442	553	488	712	1150	2360	4310	1580	2210	439
CFSM	0.14	0.10	0.10	0.13	0.12	0.16	0.27	0.54	1.02	0.36	0.51	0.10
IN.	0.16	0.11	0.12	0.15	0.13	0.19	0.30	0.63	1.14	0.42	0.58	0.12

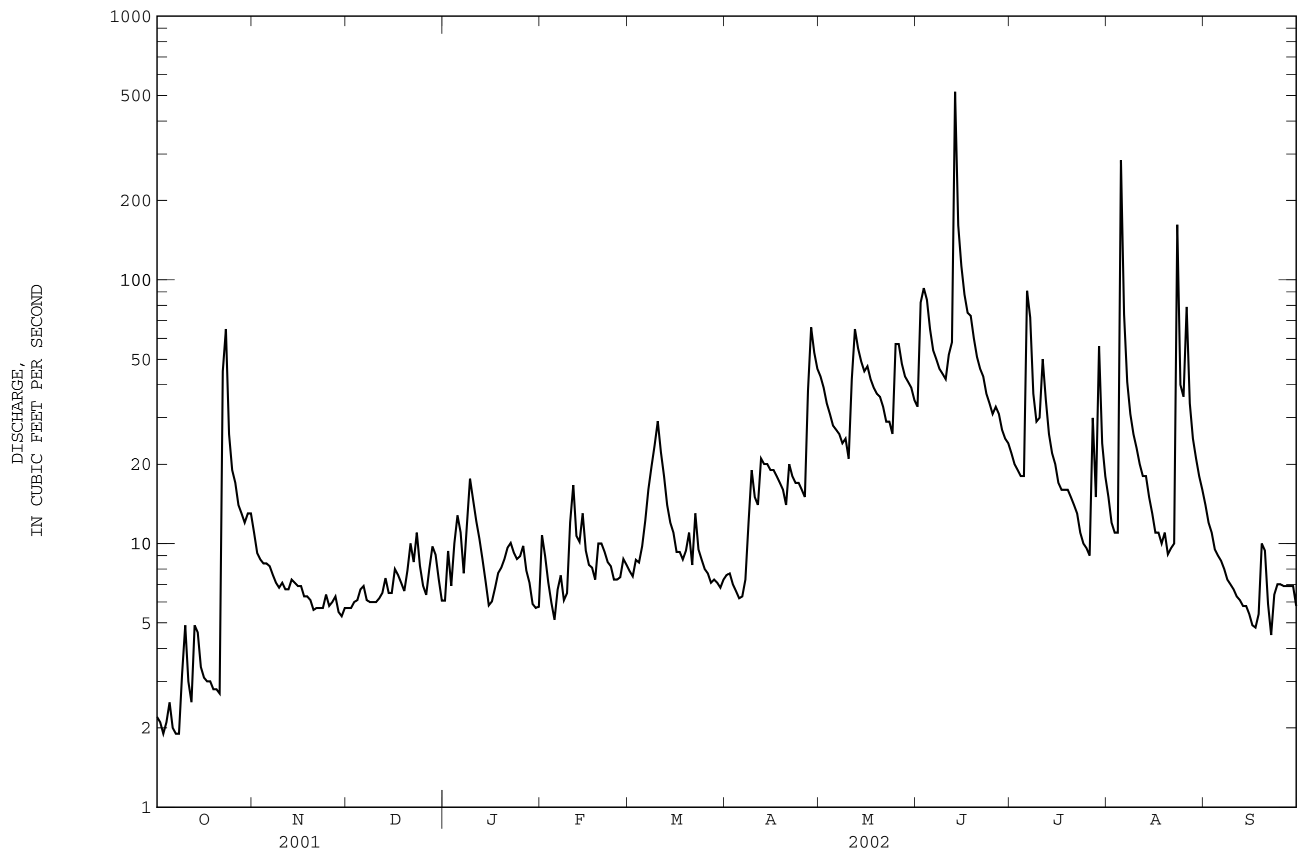
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	19.20	26.95	22.34	25.24	50.64	83.17	75.49	79.16	83.73	54.77	34.88	23.65
MAX	137	171	109	179	191	300	365	452	450	461	498	185
(WY)	1987	1984	1993	1960	1971	1993	1991	1974	1990	1993	1993	1993
MIN	0.003	0.29	0.060	0.006	1.40	1.64	1.03	1.62	0.76	1.01	0.38	0.28
(WY)	1957	1956	1977	1956	1954	1954	1957	1977	1956	1954	1955	1953

05452200 WALNUT CREEK NEAR HARTWICK, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1950 - 2002	
ANNUAL TOTAL	25375.5		7687.8			
ANNUAL MEAN	69.52		21.06		48.21	
HIGHEST ANNUAL MEAN					200	1993
LOWEST ANNUAL MEAN					4.76	1956
HIGHEST DAILY MEAN	882	Jun 12	517	Jun 13	4840	Jul 2 1983
LOWEST DAILY MEAN	1.9	Oct 3	1.9	Oct 3a	0.00	Jul 31 1954
ANNUAL SEVEN-DAY MINIMUM	2.1	Oct 2	2.1	Oct 2	0.00	Many days b
MAXIMUM PEAK FLOW			1240	Jun 13	7900	Apr 29 1991
MAXIMUM PEAK STAGE			10.32	Jun 13	16.93	Apr 29 1991
INSTANTANEOUS LOW FLOW			1.7	Oct 3c		
ANNUAL RUNOFF (AC-FT)	50330		15250		34920	
ANNUAL RUNOFF (CFSM)	0.98		0.30		0.68	
ANNUAL RUNOFF (INCHES)	13.31		4.03		9.24	
10 PERCENT EXCEEDS	178		46		103	
50 PERCENT EXCEEDS	14		10		16	
90 PERCENT EXCEEDS	4.1		5.7		1.4	

a Also Oct. 7, 8.
b Many days in 1954-57 and 1977.
c Also Oct. 4, 6-9.
e Estimated.



05453000 BIG BEAR CREEK AT LADORA, IA

LOCATION.--Lat 41°44'58", long 92°10'55", in $SW^1/_4$ $SW^1/_4$ sec.7, T.80 N., R.11 W., Iowa County, Hydrologic Unit 07080208, on left bank 10 ft downstream from bridge on county highway V52, 0.4 mi south of Ladora, 1.2 mi downstream from Coats Creek, 2.8 mi upstream from Little Bear Creek, and 8.1 mi upstream from mouth.

DRAINAGE AREA.--189 mi^2.

PERIOD OF RECORD.--October 1945 to current year. Prior to October 1966, published as "Bear Creek at Ladora".

REVISED RECORDS.--WSP 1308: 1947 (M). WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 744.94 ft above NGVD of 1929. Oct. 1945 to June 26, 1946, non-recording gage and June 27, 1946 to Sept. 30, 1980, water-stage recorder at datum 10.00 ft higher.

REMARKS.--Records good except those for periods of estimated daily discharge, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	27	17	e11	e20	e21	28	168	119	89	29	35
2	12	22	17	e15	e17	e19	30	152	171	81	25	33
3	11	21	17	e13	e15	e20	27	129	321	76	24	31
4	12	21	17	e16	e13	e21	25	117	549	73	24	27
5	14	20	17	e19	e12	e25	26	109	357	69	574	24
6	13	20	19	e17	e14	e29	25	106	244	70	189	24
7	12	20	19	e14	e16	e37	27	100	207	144	84	22
8	11	19	17	e18	e17	e56	37	93	185	82	61	21
9	11	19	16	e26	e21	e75	68	98	174	70	50	20
10	16	19	18	e23	e28	e63	56	91	166	71	44	19
11	16	19	18	e20	e26	e59	49	174	181	93	41	18
12	14	18	20	e18	e23	57	85	402	197	99	41	18
13	14	18	25	e16	e20	52	85	265	1450	70	39	17
14	19	18	22	e13	e23	44	75	215	637	62	37	18
15	16	18	21	e11	35	40	70	192	431	56	31	17
16	14	17	21	e12	33	36	63	186	344	52	28	16
17	12	17	22	e13	29	34	57	172	293	49	26	16
18	12	16	21	e14	30	34	54	152	270	47	23	16
19	12	17	20	e14	37	34	71	140	258	44	40	181
20	12	17	17	e15	39	38	57	129	231	42	27	90
21	12	17	18	e17	34	35	66	121	203	39	23	55
22	28	17	e21	e17	29	32	73	117	183	36	23	34
23	144	17	e16	e16	33	35	65	114	169	38	267	27
24	64	18	e15	e15	30	35	65	107	149	33	150	24
25	44	17	e13	e14	e28	30	61	171	137	31	68	23
26	35	17	e13	e19	e22	30	55	226	130	30	183	22
27	30	18	e14	e27	e24	30	167	176	127	40	85	21
28	28	19	e15	e22	e24	30	381	160	113	41	60	21
29	26	17	e14	e18	---	29	231	150	104	63	49	21
30	27	17	e12	e15	---	27	189	141	97	54	43	20
31	30	---	e11	e15	---	28	---	130	---	34	38	---
TOTAL	733	557	543	513	692	1135	2368	4803	8197	1878	2426	931
MEAN	23.65	18.57	17.52	16.55	24.71	36.61	78.93	154.9	273.2	60.58	78.26	31.03
MAX	144	27	25	27	39	75	381	402	1450	144	574	181
MIN	11	16	11	11	12	19	25	91	97	30	23	16
AC-FT	1450	1100	1080	1020	1370	2250	4700	9530	16260	3730	4810	1850
CFSM	0.13	0.10	0.09	0.09	0.13	0.19	0.42	0.82	1.45	0.32	0.41	0.16
IN.	0.14	0.11	0.11	0.10	0.14	0.22	0.47	0.95	1.61	0.37	0.48	0.18

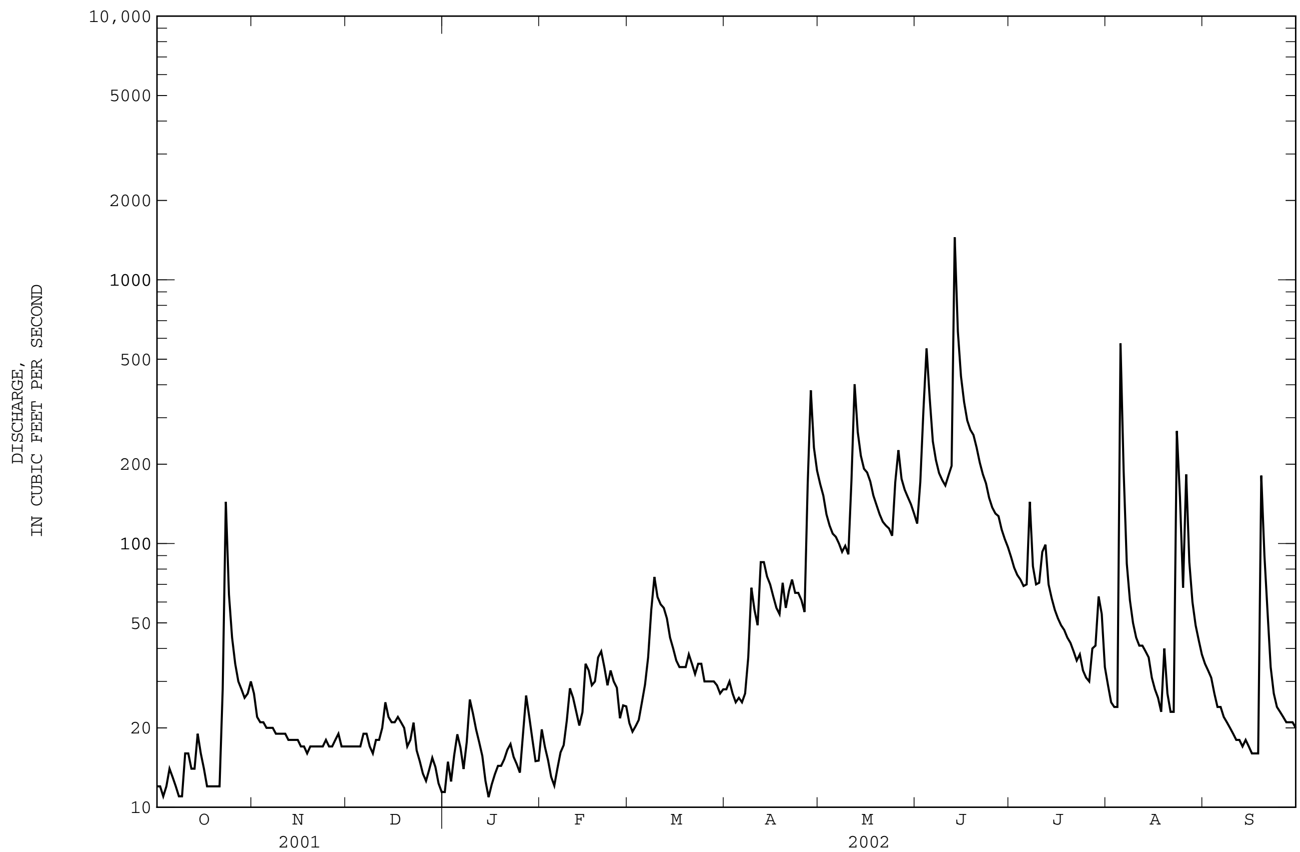
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	56.47	72.02	60.85	71.71	122.5	236.9	198.7	214.1	232.1	139.2	89.61	71.74
MAX	375	341	294	432	543	895	704	1185	1136	1011	1537	559
(WY)	1987	1993	1983	1960	1971	1979	1973	1974	1947	1993	1993	1993
MIN	0.49	1.68	0.33	0.021	2.07	5.99	4.17	2.25	2.94	5.00	2.36	1.34
(WY)	1957	1956	1956	1977	1977	1957	1956	1956	1956	1988	1955	1956

05453000 BIG BEAR CREEK AT LADORA, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1946 - 2002	
ANNUAL TOTAL	70387		24776			
ANNUAL MEAN	192.8		67.88		130.4	
HIGHEST ANNUAL MEAN					516	1993
LOWEST ANNUAL MEAN					8.26	1956
HIGHEST DAILY MEAN	2080	Feb 25	1450	Jun 13	9480	Mar 30 1960
LOWEST DAILY MEAN	11	Sep 6	11	Oct 3a	0.00	Jan 22 1956b
ANNUAL SEVEN-DAY MINIMUM	12	Oct 3	12	Oct 3	0.00	Jan 22 1956
MAXIMUM PEAK FLOW			2590	Jun 13	10500	Mar 30 1960
MAXIMUM PEAK STAGE			19.71	Jun 13	15.32	Sep 8 1977c
INSTANTANEOUS LOW FLOW			9.7	Oct 8d		
ANNUAL RUNOFF (AC-FT)	139600		49140		94480	
ANNUAL RUNOFF (CFSM)	1.02		0.36		0.69	
ANNUAL RUNOFF (INCHES)	13.85		4.88		9.37	
10 PERCENT EXCEEDS	491		171		280	
50 PERCENT EXCEEDS	35		29		46	
90 PERCENT EXCEEDS	14		15		5.7	

a Also Oct. 8, 9.
b Also Jan. 22 to Feb. 8, 1956, Jan. 19 to Feb. 3, 1977.
c Datum in use prior to Oct. 1, 1980.
d Also Oct. 9.
e Estimated.



05453100 IOWA RIVER AT MARENGO, IA

LOCATION.-- Lat 41°48'48", long 92°03'51", in SE$^{1}/_{4}$ NE$^{1}/_{4}$ sec.24, T.81 N., R.11 W., Iowa County, Hydrologic Unit 07080208, on left bank 5 ft upstream from bridge on county highway V66, 1.0 mi downstream from Big Bear Creek, 0.8 mi north of Marengo, 4.6 mi upstream from Hilton Creek, and at mile 139.1.

DRAINAGE AREA.--2,794 mi^{2}.

PERIOD OF RECORD.--October 1956 to current year. Monthly discharge only for some periods, published in WSP 1728.

REVISED RECORDS.--WSP 1558: 1957.

GAGE.--Water-stage recorder. Datum of gage is 720.52 ft above NGVD of 1929.

REMARKS.--Records good, except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	449	607	627	e375	e339	e467	562	2400	1820	e1350	779	1010
2	437	591	672	e448	e298	e380	555	2420	1930	1200	647	909
3	416	565	692	e415	e290	e355	545	2300	2180	1140	588	822
4	400	546	682	e447	e282	e376	536	2190	2790	1070	564	752
5	391	525	670	e477	e298	e426	528	2070	2680	1020	1020	703
6	383	510	649	e451	e328	e509	522	2000	2180	988	1260	654
7	383	503	627	e429	e354	e615	525	1950	1990	1230	795	612
8	377	493	611	e472	e363	e733	559	1900	1830	1190	660	572
9	375	504	590	e517	e394	e857	674	1850	1710	1050	895	534
10	391	504	580	e483	e437	781	707	1790	1650	1020	1170	497
11	386	496	610	e449	e422	823	680	1850	1710	1010	1210	458
12	402	492	650	e431	e477	844	754	2240	1790	1170	1230	442
13	415	497	668	e416	e513	850	779	2490	3870	1270	1210	440
14	420	507	642	e401	558	829	773	3320	4310	1590	1200	423
15	414	494	618	e392	554	841	786	3560	3530	1730	1180	399
16	417	478	603	e419	553	780	793	3350	2840	1710	1420	379
17	411	467	597	e438	570	747	843	3140	2530	1650	1880	372
18	410	461	588	e445	567	727	890	2870	2390	1560	2020	368
19	419	453	576	e466	574	701	908	2650	2990	1430	2030	600
20	429	444	566	e484	594	701	866	2450	4060	1310	2020	542
21	438	437	550	e503	623	687	883	2320	3560	1250	2030	510
22	508	437	556	e523	658	641	905	2250	e3000	e1000	1900	482
23	934	437	539	e504	724	632	890	2240	e2500	e800	2280	729
24	1000	436	e406	e486	776	618	897	2220	e2100	e650	3080	716
25	808	428	e382	e474	786	616	892	2380	1900	576	2310	642
26	718	419	e359	e507	743	609	880	2650	1810	531	2210	584
27	666	427	e399	542	682	598	996	e2400	1730	619	2000	544
28	628	465	e443	513	588	593	1510	e2000	1670	682	1720	507
29	618	511	e419	502	---	595	1540	1820	1570	829	1520	485
30	605	561	e396	e449	---	575	1850	1810	1520	1060	1300	464
31	605	---	e377	e395	---	565	---	1800	---	1090	1130	---
TOTAL	15653	14695	17344	14253	14345	20071	25028	72680	72140	34775	45258	17151
MEAN	504.9	489.8	559.5	459.8	512.3	647.5	834.3	2345	2405	1122	1460	571.7
MAX	1000	607	692	542	786	857	1850	3560	4310	1730	3080	1010
MIN	375	419	359	375	282	355	522	1790	1520	531	564	368
AC-FT	31050	29150	34400	28270	28450	39810	49640	144200	143100	68980	89770	34020
CFSM	0.18	0.18	0.20	0.16	0.18	0.23	0.30	0.84	0.86	0.40	0.52	0.20
IN.	0.21	0.20	0.23	0.19	0.19	0.27	0.33	0.97	0.96	0.46	0.60	0.23

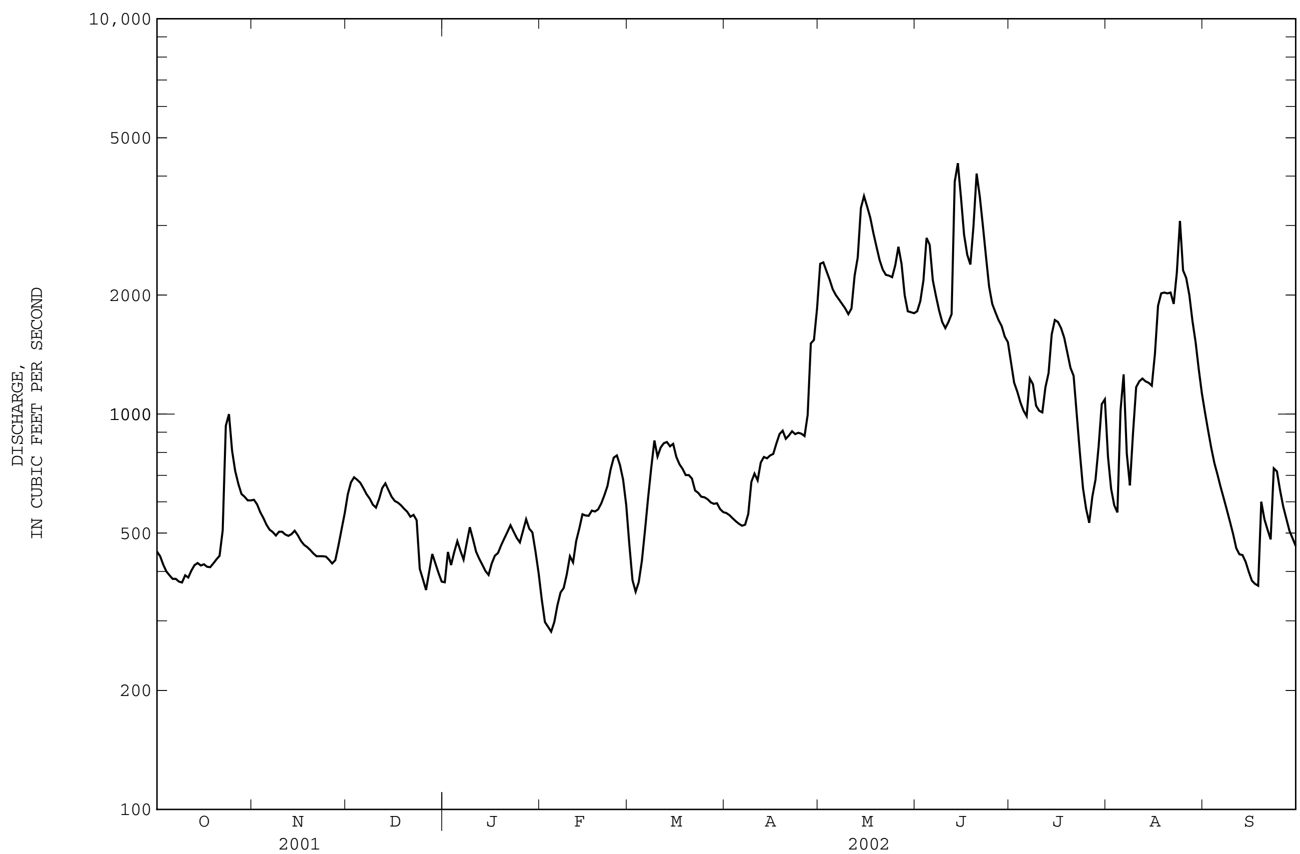
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	997.1	1129	940.0	815.2	1375	3136	3338	3024	3413	2683	1489	997.6
MAX	5078	3878	3633	4194	5424	8227	11310	9340	9287	19620	15290	7901
(WY)	1987	1973	1983	1973	1984	1979	1993	1991	1998	1993	1993	1993
MIN	80.8	90.0	63.0	31.3	79.0	256	259	179	114	116	108	123
(WY)	1957	1957	1990	1977	1977	1964	1977	1977	1977	1977	1989	1988

05453100 IOWA RIVER AT MARENGO, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1957 - 2002	
ANNUAL TOTAL	838918		363393			
ANNUAL MEAN	2298		995.6		1946	
HIGHEST ANNUAL MEAN					7192	1993
LOWEST ANNUAL MEAN					283	1989
HIGHEST DAILY MEAN	9270	Mar 27	4310	Jun 14	35600	Jul 12 1993
LOWEST DAILY MEAN	200	Jan 2	282	Feb 4	24	Jan 29 1977
ANNUAL SEVEN-DAY MINIMUM	240	Jan 1	313	Feb 1	25	Jan 28 1977
MAXIMUM PEAK FLOW			5180	Jun 13	38000	Jul 19 1993
MAXIMUM PEAK STAGE			13.35	Jun 13	20.31	Jul 19 1993
ANNUAL RUNOFF (AC-FT)	1664000		720800		1410000	
ANNUAL RUNOFF (CFSM)	0.82		0.36		0.70	
ANNUAL RUNOFF (INCHES)	11.17		4.84		9.46	
10 PERCENT EXCEEDS	6710		2200		4890	
50 PERCENT EXCEEDS	743		641		990	
90 PERCENT EXCEEDS	385		411		210	

e Estimated



05453510 CORALVILLE LAKE NEAR CORALVILLE, IA

LOCATION.--Lat 41°43'29", long 91°31'40", in SW$^{1}/_{4}$ NE$^{1}/_{4}$ sec.22, T.80 N., R.6 W., Johnson County, Hydrologic Unit 07080208, at outlet works at left end of Coralville Dam on Iowa River, 2.3 mi upstream from Rapid Creek, 4.3 mi northeast of Coralville post office, and at mile 83.3.

DRAINAGE AREA.--3,115 mi^2.

PERIOD OF RECORD.--October 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is at NGVD of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam completed in 1957. Storage began in September 1958. Releases controlled by three gates, 8.33 ft wide and 20 ft high, into forechamber of 23-ft diameter concrete conduit through dam. Inlet invert elevation at 646.0 ft. No dead storage. Maximum design discharge through gates is 20,000 ft^3/s. Ungated spillway is concrete overflow section 500 ft in length at elevation 712 ft above sea level, contents, 469,000 acre-ft, surface area, 24,800 acres. Reservoir is used for flood control, low-flow augmentation, conservation and recreation. Normal operation will lower the elevation from 683 ft. (surface area 5,430 acres) on Feb. 15 to 679 ft (surface area 3,270 acres) on Mar 1, maintaining 679 ft. Mar. 1 to June 15, 683 ft June 15 to Sept. 15, 686 ft. (surface area 7,000 acres) Sept. 15 to Dec. 15, and 683 ft Dec. 15 to Feb. 15, with a minimum release of 150 ft^3/s and maximum release of 10,000 ft^3/s Dec. 15 to May 1 and 6,000 ft^3/s May 1 to Dec. 15. Prior to October 1, 2000 published as contents in acre feet, and as elevation in feet NGVD thereafter.

COOPERATION.--Records provided by U.S. Army Corps of Engineers.

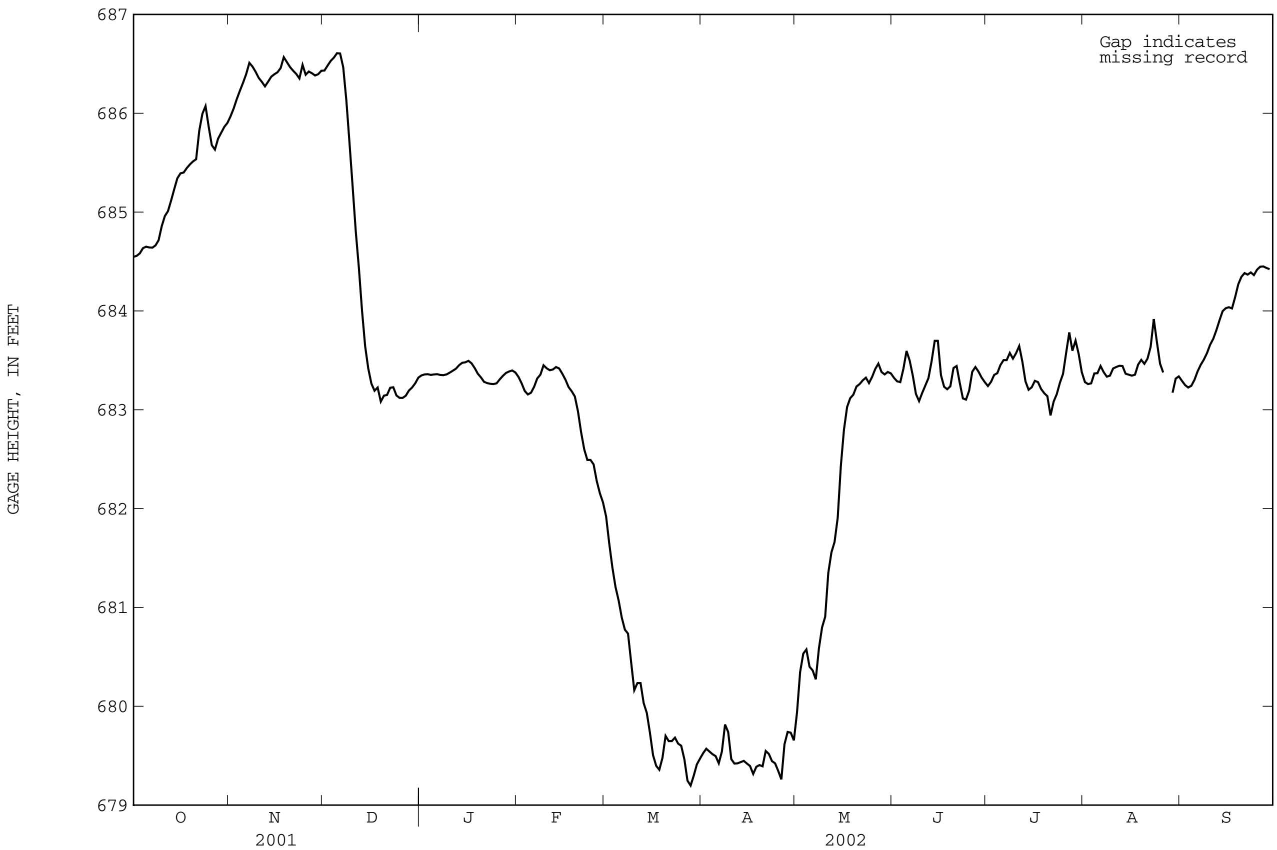
EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 716.75 ft July 24, 1993; minimum elevation, 658.77 ft Mar. 10, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 686.62 ft Dec. 6; minimum elevation, 679.19 ft Mar. 28.

ELEVATION (FEET (NGVD), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY OBSERVATION AT 0600 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	684.54	685.91	686.44	683.34	683.37	682.04	679.48	679.63	683.36	683.27	683.34	683.33
2	684.55	685.99	686.43	683.35	683.32	681.88	679.54	680.04	683.31	683.23	683.26	683.28
3	684.56	686.07	686.50	683.36	683.25	681.57	679.58	680.45	683.28	683.30	683.26	683.24
4	684.59	686.17	686.54	683.36	683.17	681.35	679.53	680.56	683.28	683.37	683.27	683.22
5	684.65	686.25	686.57	683.35	683.15	681.16	679.51	680.58	683.46	683.37	683.40	683.25
6	684.65	686.33	686.62	683.36	683.18	681.04	679.49	680.34	683.64	683.48	683.36	683.32
7	684.64	686.42	686.60	683.36	683.25	680.85	679.40	680.37	683.45	683.51	683.47	683.41
8	684.64	686.54	686.42	683.35	683.34	680.75	679.59	680.24	683.31	683.50	683.35	683.47
9	684.67	686.45	686.03	683.35	683.36	680.73	679.89	680.70	683.11	683.60	683.33	683.52
10	684.73	686.41	685.59	683.36	683.48	680.35	679.69	680.83	683.08	683.49	683.35	683.59
11	684.90	686.34	685.15	683.38	683.40	680.10	679.39	680.93	683.20	683.60	683.44	683.68
12	684.98	686.31	684.69	683.40	683.40	680.28	679.43	681.49	683.26	683.66	683.43	683.73
13	685.02	686.26	684.35	683.42	683.41	680.22	679.42	681.58	683.34	683.43	683.45	683.83
14	685.15	686.34	683.89	683.46	683.44	679.97	679.44	681.69	683.54	683.24	683.44	683.93
15	685.26	686.38	683.56	683.48	683.41	679.92	679.45	681.98	683.75	683.19	683.34	684.02
16	685.37	686.40	683.37	683.48	683.35	679.67	679.41	682.58	683.68	683.24	683.36	684.03
17	685.40	686.42	683.23	683.50	683.29	679.45	679.39	682.87	683.24	683.31	683.34	684.04
18	685.40	686.47	683.18	683.46	683.21	679.38	679.29	683.08	683.23	683.27	683.36	684.02
19	685.46	686.60	683.24	683.41	683.18	679.35	679.42	683.13	683.20	683.19	683.49	684.18
20	685.49	686.49	683.03	683.35	683.12	679.52	679.40	683.16	683.25	683.16	683.51	684.30
21	685.52	686.46	683.18	683.32	682.94	679.76	679.39	683.26	683.48	683.13	683.45	684.36
22	685.54	686.42	683.14	683.27	682.72	679.61	679.60	683.26	683.43	682.88	683.54	684.39
23	685.92	686.39	683.25	683.27	682.56	679.66	679.49	683.31	683.22	683.15	683.67	684.36
24	686.02	686.34	683.22	683.26	682.47	679.69	679.43	683.33	683.08	683.16	684.00	684.40
25	686.09	686.54	683.12	683.26	682.50	679.60	679.42	683.25	683.11	683.31	683.58	684.35
26	685.79	686.34	683.12	683.27	682.43	679.60	679.32	683.36	683.22	683.38	683.43	684.44
27	685.64	686.45	683.12	683.32	682.23	679.42	679.24	683.43	683.44	683.64	683.36	684.45
28	685.63	686.39	683.15	683.35	682.13	679.19	679.74	683.48	683.43	683.83	---	684.45
29	685.78	686.38	683.21	683.38	---	679.20	679.74	683.35	683.37	683.52	683.15	684.43
30	685.81	686.40	683.23	683.39	---	679.33	679.73	683.36	683.31	683.76	683.18	684.42
31	685.88	---	683.28	683.40	---	679.44	---	683.39	---	683.50	683.36	---
MEAN	685.23	686.36	684.40	683.37	683.07	680.13	679.49	682.03	683.34	683.38	---	683.91
MAX	686.09	686.60	686.62	683.50	683.48	682.04	679.89	683.48	683.75	683.83	---	684.45
MIN	684.54	685.91	683.03	683.26	682.13	679.19	679.24	679.63	683.08	682.88	---	683.22

05453510 CORALVILLE LAKE NEAR CORALVILLE, IA--Continued



05453520 IOWA RIVER BELOW CORALVILLE DAM NEAR CORALVILLE, IA

LOCATION.--Lat 41°43'23", long 91°31'47", in $SW^1/_4$ $NE^1/_4$ sec.22, T.80 N., R.6 W., Johnson County, Hydrologic Unit 07080208, on left bank about 500 ft downstream of Coralville Dam control house, 2.3 miles upstream from Rapid Creek, 4.3 miles northeast of Coralville post office, and at mile 83.2.

DRAINAGE AREA.--3,115 mi^2.

PERIOD OF RECORD.--October 1992 to current year.

GAGE.--Water-stage recorder. Datum of gage is 600.00 ft above NGVD of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Records good except those for estimated daily discharges, which are fair. U.S. Army Corps of Engineers satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	719	541	533	387	583	1050	656	1960	2040	1430	1760	1530
2	585	418	525	424	584	1030	653	1910	2070	1160	1100	1400
3	480	374	594	419	541	859	650	2270	2210	958	788	1190
4	482	369	653	418	395	726	657	2420	2690	957	744	980
5	433	369	754	414	287	707	654	2420	3210	945	1000	784
6	410	431	809	409	287	860	660	2400	3280	1010	1190	648
7	382	586	1110	e420	291	974	641	2200	2960	1100	1560	616
8	371	674	1820	414	388	1330	789	1700	2610	1100	1210	620
9	329	712	2100	407	462	1650	1260	1570	2250	1220	851	571
10	287	700	2080	405	718	1440	1510	1550	1750	1330	983	430
11	259	622	2070	417	732	1140	1280	1630	1780	1700	1270	488
12	199	569	2050	412	602	1140	1110	2070	1890	1960	1430	357
13	196	512	2050	417	600	1290	1100	2290	2480	1890	1510	293
14	197	461	1770	447	744	1330	1100	2280	3470	1610	1670	294
15	192	455	1440	467	829	1320	1090	2300	4410	1500	1510	373
16	183	453	e1190	458	829	1270	1090	2630	4610	1500	1410	428
17	282	450	e895	563	830	1150	1070	2860	3560	1680	1710	427
18	360	456	684	555	837	971	1070	2860	2610	1750	1990	419
19	359	476	679	559	1010	784	1040	2660	2420	1600	2220	523
20	362	554	683	528	1200	744	1040	2320	2620	1430	2290	616
21	378	549	653	504	1220	705	1050	2190	3390	1360	2310	600
22	419	548	650	476	1150	743	1160	2110	3370	1200	2300	608
23	1070	540	648	440	1100	740	1240	2050	2910	911	3600	606
24	1690	557	499	431	1090	750	1230	2030	2270	584	4520	720
25	1840	555	348	439	1070	809	1240	2080	1770	536	3980	743
26	1320	537	296	438	1150	955	1160	2070	1750	661	2990	672
27	792	549	297	484	1130	1010	1190	2050	1820	1350	2460	671
28	478	534	296	508	1060	884	1560	2380	1910	2090	2370	674
29	497	526	308	546	---	626	1880	2430	1790	2150	2080	677
30	608	530	326	576	---	589	2050	2030	1600	2180	1710	681
31	615	---	325	577	---	629	---	2040	---	2200	1600	---
TOTAL	16774	15607	29135	14359	21719	30205	32880	67760	77500	43052	58116	19639
MEAN	541.1	520.2	939.8	463.2	775.7	974.4	1096	2186	2583	1389	1875	654.6
MAX	1840	712	2100	577	1220	1650	2050	2860	4610	2200	4520	1530
MIN	183	369	296	387	287	589	641	1550	1600	536	744	293
AC-FT	33270	30960	57790	28480	43080	59910	65220	134400	153700	85390	115300	38950
CFSM	0.17	0.17	0.30	0.15	0.25	0.31	0.35	0.70	0.83	0.45	0.60	0.21
IN.	0.20	0.19	0.35	0.17	0.26	0.36	0.39	0.81	0.93	0.51	0.69	0.23

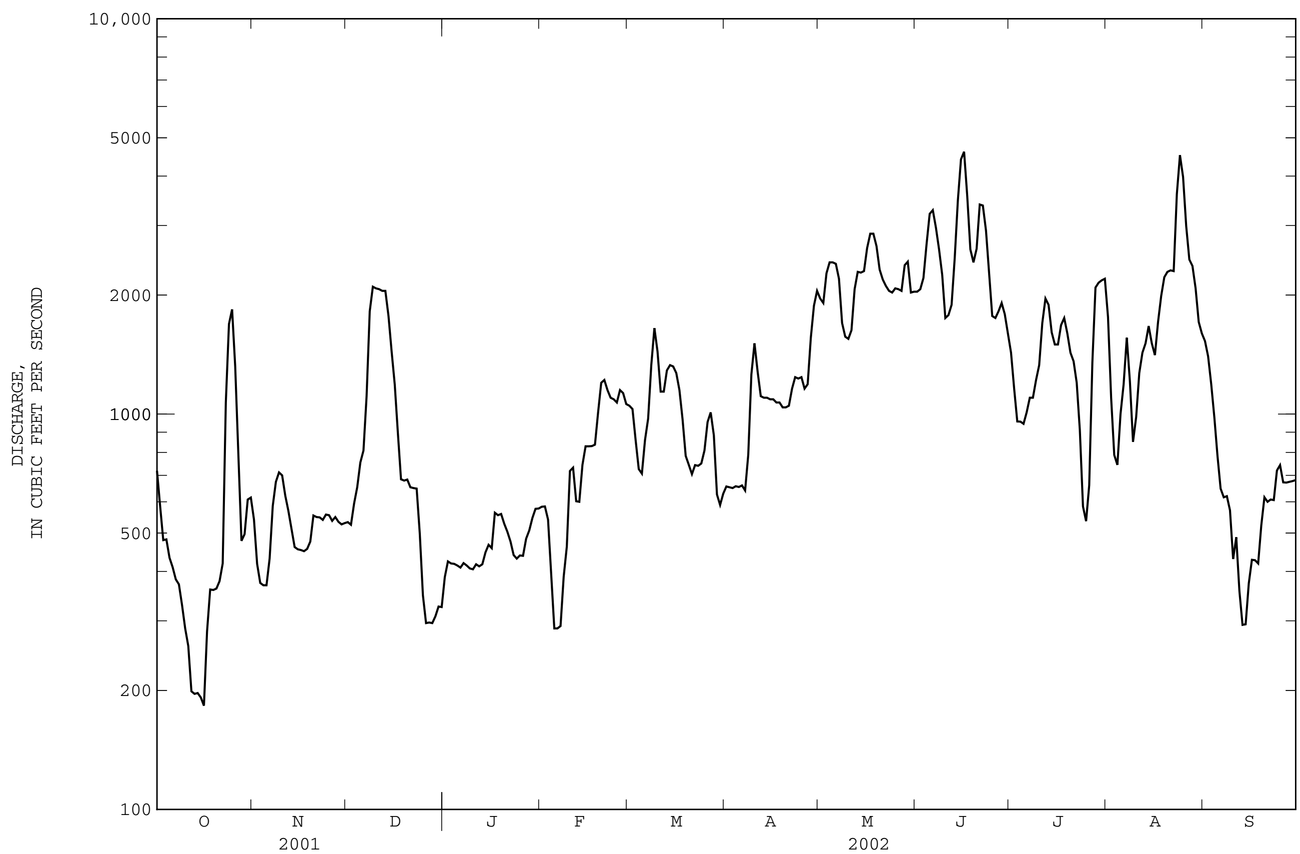
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1084	1130	1310	739.8	1754	3122	3453	3949	4651	5231	3053	1747
MAX	4012	2771	4229	1723	3006	6587	7776	9347	7203	20610	18500	13050
(WY)	1994	1993	1993	1993	1997	1993	1993	1993	1993	1993	1993	1993
MIN	211	156	230	231	391	426	445	412	2362	1389	581	275
(WY)	2000	2000	2000	2000	2000	2000	2000	2000	1994	2002	1997	1997

05453520 IOWA RIVER BELOW CORALVILLE DAM NEAR CORALVILLE, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1993 - 2002	
ANNUAL TOTAL	922991		426746			
ANNUAL MEAN	2529		1169		2607	
HIGHEST ANNUAL MEAN					7910	1993
LOWEST ANNUAL MEAN					866	2000
HIGHEST DAILY MEAN	9450	Mar 19	4610	Jun 16	25000	Jul 21 1993
LOWEST DAILY MEAN	183	Oct 16	183	Oct 16	129	Oct 26 1999
ANNUAL SEVEN-DAY MINIMUM	213	Jan 1	215	Oct 11	141	Oct 23 1999
MAXIMUM PEAK FLOW			4700	Aug 24	25800	Jul 19 1993
MAXIMUM PEAK STAGE			52.45	Aug 24	63.95	Jul 19 1993
ANNUAL RUNOFF (AC-FT)	1831000		846500		1889000	
ANNUAL RUNOFF (CFSM)	0.81		0.38		0.84	
ANNUAL RUNOFF (INCHES)	11.02		5.10		11.37	
10 PERCENT EXCEEDS	6530		2290		6380	
50 PERCENT EXCEEDS	1100		911		1300	
90 PERCENT EXCEEDS	299		406		271	

e Estimated



05453600 RAPID CREEK BELOW MORSE, IA

LOCATION.--Lat 41°43'45", long 91°25'38", in NE corner of sec.21, T.80 N., R.5 W., Johnson County, Hydrologic Unit 07080209, at bridge on county highway, 1.5 miles southwest of Morse.

DRAINAGE AREA.--8.12 mi^2.

PERIOD OF RECORD.--Operated May 1951 to September 1992 as a crest-stage partial record station. March 1994 to current year.

GAGE.--Tipping bucket rain gage.

REMARKS.--Estimated totals Jan. 12, 13, and Aug. 24, 25. Estimated values taken from U.S. Geological Survey gaging station 05454000, Rapid Creek nr Iowa City. Records good except for estimated days and winter period, which is poor due to intermittent snow accumulation and subsequent melting.

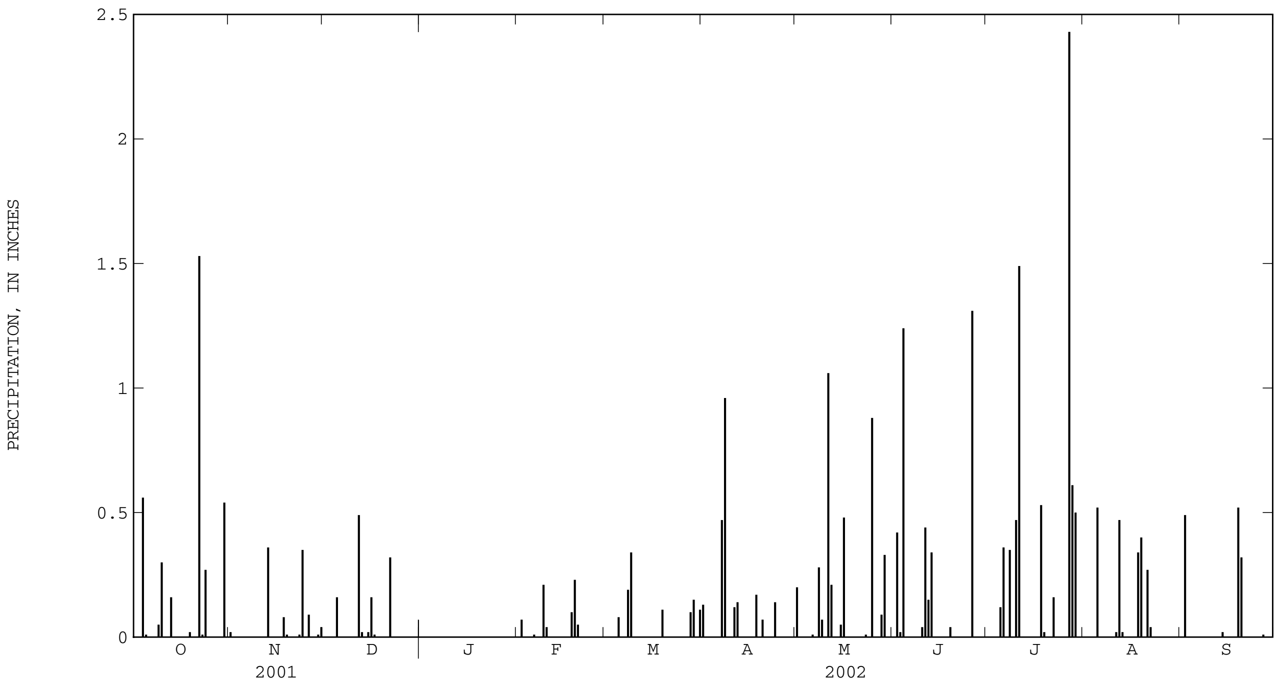
EXTREME FOR PERIOD OF RECORD.--Maximum daily accumulation, 2.65 in., May 9, 1996, June 13, 2000.

EXTREME FOR CURRENT YEAR.--Maximum daily accumulation, 2.43 in., July 27.

PRECIPITATION CUMULATIVE, in INCHES, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.0	0.02	0.0	0.0	0.0	0.0	0.13	0.20	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.07	0.0	0.0	0.0	0.42	0.0	0.0	0.49
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.02	0.0	0.0	0.0
4	0.56	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.24	0.0	0.0	0.0
5	0.01	0.0	0.16	0.0	0.0	0.08	0.0	0.0	0.0	0.12	0.52	0.0
6	0.0	0.0	0.0	0.0	0.01	0.0	0.0	0.01	0.0	0.36	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.47	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.19	0.96	0.28	0.0	0.35	0.0	0.0
9	0.05	0.0	0.0	0.0	0.21	0.34	0.0	0.07	0.0	0.0	0.0	0.0
10	0.30	0.0	0.0	0.0	0.04	0.0	0.0	0.0	0.04	0.47	0.0	0.0
11	0.0	0.0	0.0	---	0.0	0.0	0.12	1.06	0.44	1.49	0.02	0.0
12	0.0	0.0	0.49	---	0.0	0.0	0.14	0.21	0.15	0.0	0.47	0.0
13	0.16	0.36	0.02	---	0.0	0.0	0.0	0.0	0.34	0.0	0.02	0.0
14	0.0	0.0	0.0	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.02
15	0.0	0.0	0.02	0.0	0.0	0.0	0.0	0.05	---	0.0	0.0	0.0
16	0.0	0.0	0.16	0.0	0.0	0.0	0.0	0.48	0.0	0.0	0.0	0.0
17	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
18	0.0	0.08	0.0	0.0	0.10	0.0	0.17	0.0	0.0	0.53	0.34	0.0
19	0.02	0.01	0.0	0.0	0.23	0.11	0.0	0.0	0.04	0.02	0.40	0.52
20	0.0	0.0	0.0	0.0	0.05	0.0	0.07	0.0	0.0	0.0	0.0	0.32
21	0.0	0.0	0.0	0.0	0.0	0.0	---	0.0	0.0	0.0	0.27	0.0
22	1.53	0.0	0.32	0.0	0.0	0.0	---	0.0	0.0	0.16	0.04	0.0
23	0.01	0.01	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0	---	0.0
24	0.27	0.35	0.0	0.0	0.0	0.0	0.14	0.0	0.0	0.0	---	0.0
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.88	0.0	0.0	---	0.0
26	0.0	0.09	0.0	0.0	0.0	0.0	0.0	0.0	1.31	0.0	---	0.0
27	0.0	0.0	0.0	0.0	0.0	0.0	---	0.0	0.0	2.43	0.0	0.01
28	0.0	0.0	0.0	0.0	0.0	0.10	---	0.09	0.0	0.61	0.0	0.0
29	0.0	0.01	0.0	0.0	---	0.15	0.0	0.33	0.0	0.50	0.0	0.0
30	0.54	0.04	0.0	0.0	---	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	0.0	---	0.0	0.0	---	0.11	---	0.0	---	0.0	0.0	---
TOTAL	3.45	0.97	1.18	---	0.71	1.08	---	3.67	---	7.04	---	1.36

05453600 RAPID CREEK BELOW MORSE, IA--Continued



05454000 RAPID CREEK NEAR IOWA CITY, IA

LOCATION.--Lat 41°42'00", long 91°29'15", in $NE^1/_4$ $NE^1/_4$ sec.36. T.80 N., R.6 W., Johnson County, Hydrologic Unit 07080209, on left bank 80 ft upstream from bridge on State Highway 1, 3.5 mi northeast of Iowa City, and 4.7 mi upstream from mouth.

DRAINAGE AREA.--25.3 mi^2.

PERIOD OF RECORD.--October 1937 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1558: 1941 (M), 1943 (P), 1944 (M), 1946. WSP 1708: 1951 (P), 1952. WDR IA-67-1: Drainage area.

GAGE.--Water-stage recorder and concrete control with sharp-crested weir. Datum of gage is 673.72 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey data collection platform with telephone modem, and U.S. Army Corps of Engineers rain gage and data collection platform.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	7.0	2.8	3.0	e3.3	e5.6	8.1	32	19	11	20	7.8
2	2.0	6.0	2.3	2.3	3.0	e4.9	8.6	29	22	10	16	9.1
3	1.5	4.9	2.5	1.8	e2.8	e5.5	7.5	25	21	9.7	14	7.3
4	2.3	4.8	2.5	2.8	2.5	6.6	6.9	23	141	9.0	12	5.9
5	2.9	4.7	2.9	4.9	2.3	7.3	6.9	21	86	8.2	23	5.5
6	1.2	4.5	3.4	e4.3	3.3	7.8	6.9	20	56	8.6	14	5.3
7	0.75	4.5	2.8	e2.7	3.9	7.8	9.0	18	45	9.2	11	4.7
8	0.70	3.8	2.7	4.0	4.2	20	29	17	37	8.1	9.9	4.1
9	0.70	3.4	2.4	5.0	4.6	43	71	18	32	8.0	8.9	3.8
10	1.3	3.7	2.6	e4.4	11	32	46	15	28	7.6	8.2	3.5
11	3.0	3.5	2.7	e3.7	9.6	25	36	35	28	47	7.4	3.6
12	1.9	3.2	3.3	e3.2	8.2	21	34	52	25	29	7.7	3.4
13	1.8	3.9	11	e2.9	8.0	19	29	44	37	18	7.6	3.3
14	2.1	4.5	8.8	e2.4	7.5	17	27	37	31	14	6.9	3.0
15	1.3	3.7	7.2	e2.1	8.1	15	24	32	26	12	5.8	3.1
16	1.2	3.3	7.7	e2.6	7.5	13	21	38	23	11	5.2	2.7
17	1.1	3.0	8.0	e2.8	6.6	13	19	38	20	9.6	4.8	2.5
18	1.0	3.1	7.8	2.9	6.3	12	18	33	19	9.0	4.5	2.4
19	1.1	3.3	7.8	3.0	11	12	18	29	17	11	12	4.2
20	1.2	2.7	7.0	3.3	14	12	16	26	16	8.4	6.3	4.5
21	1.3	2.8	6.5	3.6	12	10	18	24	15	7.1	5.5	3.5
22	9.3	2.9	8.7	3.5	11	9.0	17	22	14	6.9	6.7	2.5
23	47	2.8	8.0	e3.2	11	10	16	21	13	6.0	143	2.2
24	17	4.2	7.2	e2.8	10	9.8	16	18	12	5.7	40	2.1
25	13	4.1	6.7	e2.5	9.6	8.6	15	31	11	5.7	24	2.0
26	9.7	3.0	6.3	3.5	7.7	8.4	14	29	30	5.0	17	1.9
27	7.7	3.2	6.9	3.7	7.6	8.3	40	25	23	125	14	2.0
28	6.9	2.5	6.7	3.5	e6.6	9.0	61	23	16	32	12	2.0
29	6.2	2.4	4.8	3.3	---	9.2	44	28	14	70	11	1.9
30	7.6	2.9	3.6	3.0	---	8.1	36	23	13	42	9.7	1.6
31	7.7	---	3.4	3.5	---	7.9	---	21	---	27	8.6	---
TOTAL	163.85	112.3	167.0	100.2	203.2	397.8	718.9	847	890	590.8	496.7	111.4
MEAN	5.285	3.743	5.387	3.232	7.257	12.83	23.96	27.32	29.67	19.06	16.02	3.713
MAX	47	7.0	11	5.0	14	43	71	52	141	125	143	9.1
MIN	0.70	2.4	2.3	1.8	2.3	4.9	6.9	15	11	5.0	4.5	1.6
AC-FT	325	223	331	199	403	789	1430	1680	1770	1170	985	221
CFSM	0.21	0.15	0.21	0.13	0.29	0.51	0.95	1.08	1.17	0.75	0.63	0.15
IN.	0.24	0.17	0.25	0.15	0.30	0.58	1.06	1.25	1.31	0.87	0.73	0.16

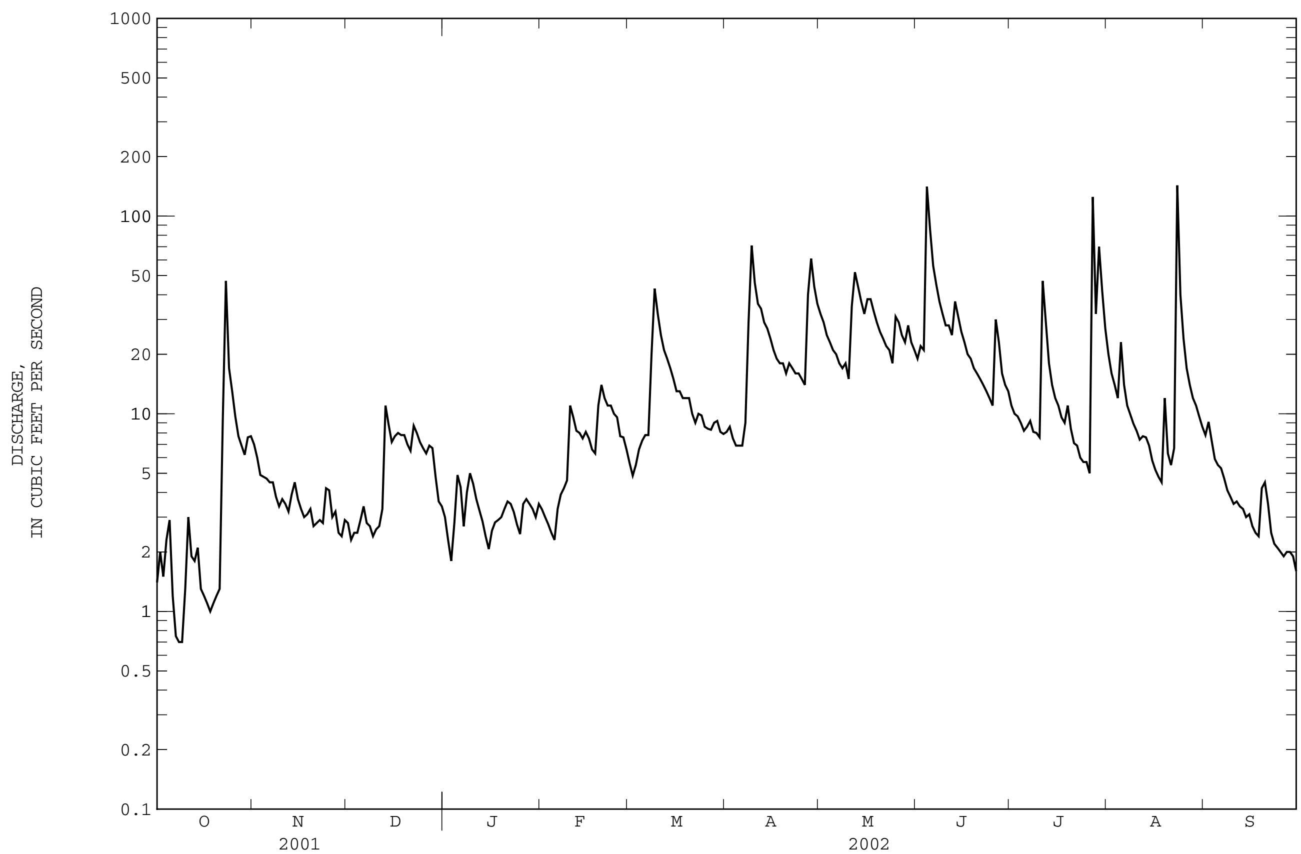
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	7.535	10.10	8.863	9.490	22.42	29.02	24.47	27.37	25.74	15.88	11.70	7.821
MAX	83.5	84.0	66.6	56.8	77.5	106	98.6	167	134	105	176	66.6
(WY)	1999	1993	1983	1946	1953	1979	1973	1974	1990	1969	1993	1965
MIN	0.000	0.000	0.000	0.000	0.22	0.42	1.25	1.13	0.21	0.000	0.032	0.000
(WY)	1954	1956	1956	1940	1989	1956	1956	1977	1956	1957	1955	1955

05454000 RAPID CREEK NEAR IOWA CITY, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1938 - 2002	
ANNUAL TOTAL	7705.29		4799.15			
ANNUAL MEAN	21.11		13.15		16.65	
HIGHEST ANNUAL MEAN					63.8	1993
LOWEST ANNUAL MEAN					1.09	1957
HIGHEST DAILY MEAN	450	Feb 25	143	Aug 23	1720	May 17 1986
LOWEST DAILY MEAN	0.36	Sep 14	0.70	Oct 8a	0.00	Jan 1 1940
ANNUAL SEVEN-DAY MINIMUM	0.58	Sep 10	1.2	Oct 15	0.00	Jan 1 1940
MAXIMUM PEAK FLOW			434	Aug 23	6700	Aug 10 1993
MAXIMUM PEAK STAGE			7.49	Aug 23	15.61	Aug 10 1993
ANNUAL RUNOFF (AC-FT)	15280		9520		12060	
ANNUAL RUNOFF (CFSM)	0.83		0.52		0.66	
ANNUAL RUNOFF (INCHES)	11.33		7.06		8.94	
10 PERCENT EXCEEDS	54		30		35	
50 PERCENT EXCEEDS	7.7		7.8		5.0	
90 PERCENT EXCEEDS	1.2		2.5		0.10	

a Also Oct. 9.
e Estimated.



05454220 CLEAR CREEK NEAR OXFORD, IA

LOCATION.--Lat 41°43'06", long 91°44'24", in SW1/4 SE1/4 SE1/4 sec.23, T.80 N., R.8 W., Johnson County, Hydrologic Unit 07080209, on left bank 15 ft. downstream of bridge on NW Eagle Avenue, 0.2 miles west of Kent Park, 2.6 miles upstream of Buffalo Creek, 2.8 miles east of Oxford, and 4.2 miles west of Tiffin.

DRAINAGE AREA.--58.4 mi^2.

PERIOD OF RECORD.--November 1993 to current year.

GAGE.--Water stage recorder. Datum of gage is 696.50 ft. above NGVD of 1929.

REMARKS.--Records good except for those for estimated daily discharges, which are poor. U.S. Geological Survey rain gage and data collection platform with telephone modem at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	11	7.3	e6.5	e10	e9.4	16	63	44	21	20	6.7
2	2.5	10	6.9	e9.5	e8.9	e8.3	17	59	56	20	16	6.4
3	2.5	8.9	7.0	e12	e8.1	e9.1	15	51	63	19	14	5.4
4	e6.2	9.1	7.2	e14	e7.1	e10	15	47	71	18	13	4.7
5	e8.7	8.7	7.8	e16	e6.6	e13	15	44	72	17	81	4.3
6	e4.6	8.5	7.8	e13	e8.5	e16	14	42	58	20	35	4.0
7	e2.9	8.5	7.0	e8.7	e10	e17	17	38	52	19	21	3.7
8	e3.4	8.3	6.7	e12	e11	e30	30	37	48	17	17	3.3
9	e2.6	7.8	6.3	e17	e15	61	79	61	44	16	14	3.2
10	3.6	8.6	6.6	e14	e26	51	53	44	42	17	13	3.0
11	4.0	7.8	6.5	e13	e23	46	44	117	42	36	11	2.7
12	3.3	7.5	7.9	e11	e19	31	46	156	41	19	11	2.6
13	3.3	8.9	12	e9.2	e16	29	42	111	107	16	10	2.6
14	3.8	9.2	9.6	e7.7	e19	27	40	91	81	15	10	2.5
15	3.6	8.3	8.8	e6.3	21	25	38	79	62	13	8.7	2.6
16	3.3	7.8	9.1	e7.4	15	22	34	82	53	13	7.8	2.5
17	2.9	7.4	8.8	e8.3	12	22	31	80	47	12	7.4	2.1
18	3.0	7.3	8.5	e9.2	12	22	30	70	44	11	6.9	2.1
19	3.1	7.6	8.3	e10	16	21	31	64	41	11	14	17
20	3.2	6.9	7.3	e11	20	22	28	58	38	10	8.6	5.5
21	3.4	7.3	8.8	e12	19	19	32	55	35	9.0	8.3	2.7
22	10	7.4	11	e10	17	20	32	53	33	18	9.7	1.3
23	83	7.2	11	e9.4	17	21	29	50	31	11	219	1.0
24	28	8.5	e9.5	e8.1	16	19	30	46	29	9.4	46	1.2
25	19	7.9	e8.2	e6.4	15	18	28	70	28	8.8	25	1.2
26	15	7.0	e7.3	e11	12	18	26	67	31	8.6	19	0.95
27	12	8.2	e8.1	e13	e14	17	62	58	35	169	13	1.0
28	12	7.3	e9.6	e10	e12	18	126	53	27	30	11	1.0
29	11	7.0	e8.8	e7.5	---	18	85	61	25	91	9.7	1.1
30	11	7.4	e7.8	e6.8	---	16	71	53	23	43	8.4	1.1
31	12	---	e6.9	e6.7	---	16	---	48	---	26	7.5	---
TOTAL	289.5	243.3	254.4	316.7	406.2	691.8	1156	2008	1403	763.8	716.0	99.45
MEAN	9.339	8.110	8.206	10.22	14.51	22.32	38.53	64.77	46.77	24.64	23.10	3.315
MAX	83	11	12	17	26	61	126	156	107	169	219	17
MIN	2.5	6.9	6.3	6.3	6.6	8.3	14	37	23	8.6	6.9	0.95
AC-FT	574	483	505	628	806	1370	2290	3980	2780	1510	1420	197
CFSM	0.16	0.14	0.14	0.17	0.25	0.38	0.66	1.11	0.80	0.42	0.40	0.06
IN.	0.18	0.15	0.16	0.20	0.26	0.44	0.74	1.28	0.89	0.49	0.46	0.06

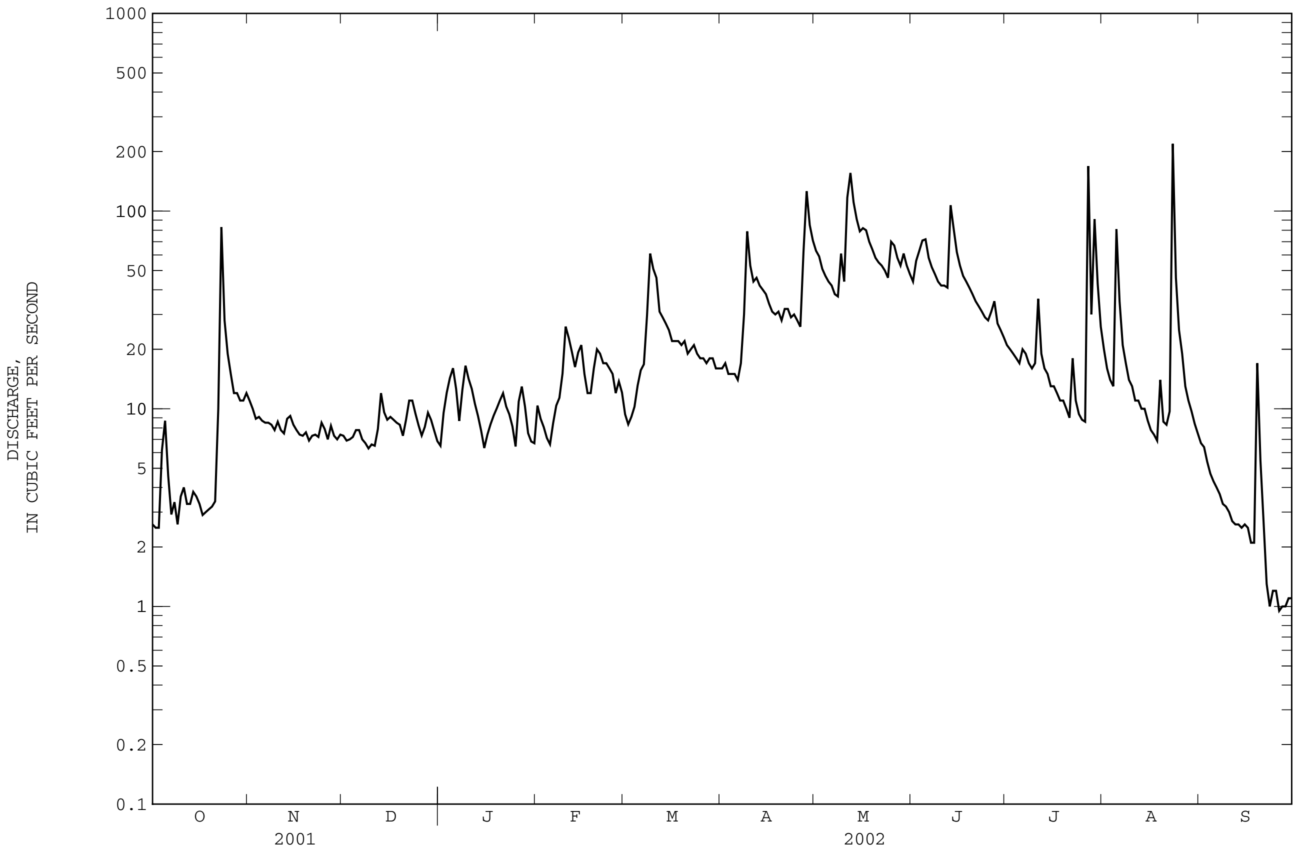
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	24.83	17.36	10.03	15.11	50.80	50.62	59.88	102.3	77.10	32.27	14.79	7.601
MAX	153	74.4	28.1	35.2	129	152	113	269	120	77.0	44.5	29.4
(WY)	1999	1999	1999	1998	2001	2001	1998	1996	2001	2000	1998	1998
MIN	1.74	2.30	2.07	3.04	6.00	5.71	8.16	15.0	32.0	10.4	4.14	1.35
(WY)	1996	2000	2000	2000	2000	2000	1996	2000	1997	1997	1996	1999

05454220 CLEAR CREEK NEAR OXFORD, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1995 - 2002	
ANNUAL TOTAL	19160.2		8348.15			
ANNUAL MEAN	52.49		22.87		38.45	
HIGHEST ANNUAL MEAN					56.4	1999
LOWEST ANNUAL MEAN					21.8	2000
HIGHEST DAILY MEAN	1370	Feb 25	219	Aug 23	2400	May 10 1996
LOWEST DAILY MEAN	2.1	Sep 15	0.95	Sep 26	0.74	Dec 11 1995
ANNUAL SEVEN-DAY MINIMUM	2.4	Sep 11	1.1	Sep 23	0.90	Sep 20 1999
MAXIMUM PEAK FLOW			458	Jul 27	4230	May 10 1996
MAXIMUM PEAK STAGE			8.43	Jul 27	14.89	May 10 1996
INSTANTANEOUS LOW FLOW			0.85	Sep 26		
ANNUAL RUNOFF (AC-FT)	38000		16560		27850	
ANNUAL RUNOFF (CFSM)	0.90		0.39		0.66	
ANNUAL RUNOFF (INCHES)	12.20		5.32		8.94	
10 PERCENT EXCEEDS	128		55		91	
50 PERCENT EXCEEDS	21		13		15	
90 PERCENT EXCEEDS	3.6		3.6		2.4	

e Estimated



05454300 CLEAR CREEK NEAR CORALVILLE, IA

LOCATION.--Lat 41°40'36", long 91°35'55", in $NE^1/_4$ $SE^1/_4$ sec.1, T.79 N., R.7 W., Johnson County, Hydrologic Unit 07080209, on left bank about 15 ft upstream from bridge on county highway, 1.1 mi west of post office in Coralville, 1.5 mi downstream from Deer Creek, and 2.7 mi upstream from mouth.

DRAINAGE AREA.--98.1 mi^2.

PERIOD OF RECORD.--October 1952 to current year. Monthly discharge only for some periods, published in WSP 1728.

REVISED RECORDS.--WDR IA-93-1: 1974 (M), 1982 (M), 1990 (M).

GAGE.--Water-stage recorder. Datum of gage is 647.48 ft above NGVD of 1929 (levels by U.S. Army Corps of Engineers). Prior to Jan. 7, 1957, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair. U.S. Geological Survey data collection platform with telephone modem and U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.3	30	17	e12	e21	e19	32	94	70	45	55	14
2	6.4	27	16	e16	e18	e18	34	88	99	43	45	13
3	6.3	24	16	e14	e16	e19	30	74	106	41	41	13
4	11	23	17	e17	e14	e21	28	68	154	40	38	11
5	14	23	18	e20	e13	e24	27	63	131	37	138	11
6	9.1	22	19	e18	e15	e27	27	60	98	37	87	10
7	7.0	21	17	e15	e17	e31	34	55	86	39	47	9.8
8	7.6	20	16	e19	e18	e44	79	53	78	36	39	9.6
9	7.1	20	16	e27	e24	e90	149	76	72	35	34	9.8
10	32	20	16	e24	e29	72	96	59	69	50	31	9.9
11	25	19	16	e21	e27	61	77	140	80	246	29	10
12	12	18	20	e19	e24	58	84	255	79	62	28	9.7
13	11	20	33	e17	e22	53	73	172	165	44	28	9.7
14	10	23	25	e14	e26	50	67	136	149	39	26	9.4
15	9.7	20	21	e12	30	48	62	116	103	36	24	9.5
16	8.9	19	22	e13	26	42	56	138	88	35	22	9.4
17	7.7	18	22	e14	24	41	50	129	80	34	21	9.0
18	8.0	18	20	e15	24	40	48	108	74	32	20	8.9
19	7.8	19	19	e15	29	39	53	98	69	29	42	31
20	7.7	17	18	e16	35	41	46	89	65	28	27	21
21	7.5	17	18	e17	37	38	55	83	62	26	26	12
22	53	17	22	e18	30	33	54	79	59	35	25	10
23	301	17	20	e16	30	37	49	76	57	30	725	9.7
24	86	21	e17	e15	28	37	49	73	54	24	129	9.3
25	61	19	e15	e14	27	33	46	107	52	23	44	9.4
26	45	18	e14	e20	23	34	42	108	92	22	30	9.4
27	37	19	e15	e29	e24	33	112	88	93	345	25	9.5
28	33	17	e16	e24	e22	34	200	81	57	100	21	9.3
29	32	17	e15	e20	---	34	132	116	51	157	18	9.2
30	34	18	e13	e16	---	31	106	91	48	123	15	8.4
31	32	---	e12	e16	---	31	---	78	---	65	14	---
TOTAL	937.1	601	561	543	673	1213	1997	3051	2540	1938	1894	334.9
MEAN	30.23	20.03	18.10	17.52	24.04	39.13	66.57	98.42	84.67	62.52	61.10	11.16
MAX	301	30	33	29	37	90	200	255	165	345	725	31
MIN	6.3	17	12	12	13	18	27	53	48	22	14	8.4
AC-FT	1860	1190	1110	1080	1330	2410	3960	6050	5040	3840	3760	664
CFSM	0.31	0.20	0.18	0.18	0.25	0.40	0.68	1.00	0.86	0.64	0.62	0.11
IN.	0.36	0.23	0.21	0.21	0.26	0.46	0.76	1.16	0.96	0.73	0.72	0.13

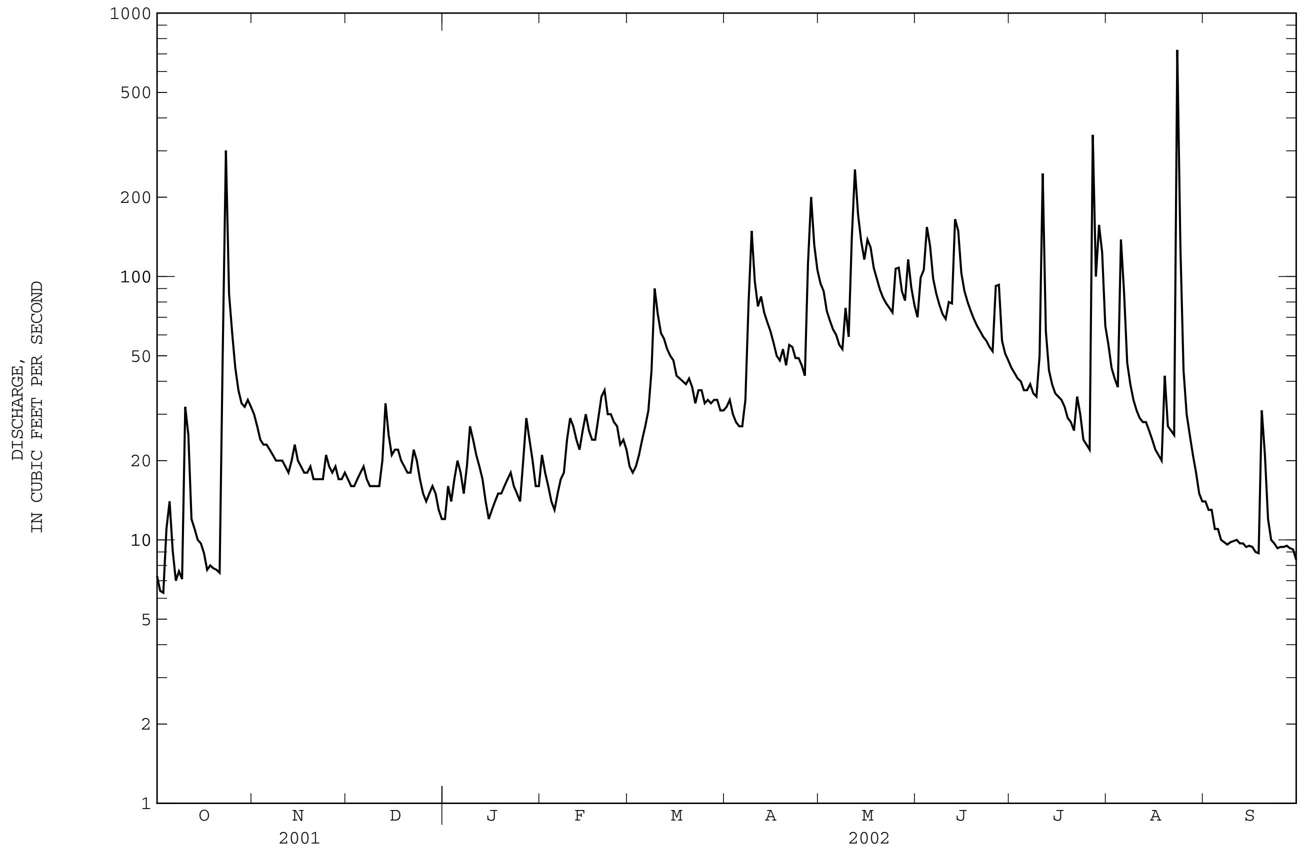
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	33.12	43.98	37.81	39.00	73.12	111.4	102.6	111.8	107.1	90.08	59.47	42.34
MAX	261	246	162	206	243	402	452	589	566	991	759	337
(WY)	1999	1962	1993	1960	2001	1979	1973	1974	1990	1993	1993	1965
MIN	0.55	0.95	0.54	0.10	2.79	4.49	4.15	3.79	0.83	1.69	1.94	0.69
(WY)	1958	1956	1956	1977	1954	1954	1956	1956	1956	1954	1953	1953

05454300 CLEAR CREEK NEAR CORALVILLE, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1953 - 2002	
ANNUAL TOTAL	32965.4		16283.0			
ANNUAL MEAN	90.32		44.61		70.93	
HIGHEST ANNUAL MEAN					327	1993
LOWEST ANNUAL MEAN					6.57	1957
HIGHEST DAILY MEAN	1760	Feb 25	725	Aug 23	7310	Jun 17 1990
LOWEST DAILY MEAN	5.5	Sep 16	6.3	Oct 3	0.00	Jan 18 1977
ANNUAL SEVEN-DAY MINIMUM	6.4	Sep 10	8.2	Oct 15	0.00	Jan 18 1977
MAXIMUM PEAK FLOW			1700	Aug 23	10200	Jun 17 1990
MAXIMUM PEAK STAGE			10.96	Aug 23	16.36	Jun 17 1990
INSTANTANEOUS LOW FLOW			5.7	Oct 3a		
ANNUAL RUNOFF (AC-FT)	65390		32300		51390	
ANNUAL RUNOFF (CFSM)	0.92		0.45		0.72	
ANNUAL RUNOFF (INCHES)	12.50		6.17		9.82	
10 PERCENT EXCEEDS	221		93		148	
50 PERCENT EXCEEDS	37		27		27	
90 PERCENT EXCEEDS	9.9		10		3.0	

a Also Oct. 4.
e Estimated



05454500 IOWA RIVER AT IOWA CITY, IA

LOCATION.--Lat 41°39'24", long 91°32'27", in $SE^1/_4$ $SE^1/_4$ sec.9, T.79 N., R.6 W., Johnson County, Hydrologic Unit 07080209, on right bank 25 ft downstream from Hydraulics Laboratory of University of Iowa in Iowa City, 175 ft downstream from University Dam, 0.8 mi upstream from Ralston Creek, 3.6 mi downstream from Clear Creek, and at mile 74.2.

DRAINAGE AREA.--3,271 mi^2.

PERIOD OF RECORD.--June 1903 to current year. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 29.00 ft above Iowa City datum, and 617.27 ft above NGVD of 1929. Oct. 1, 1934 to Sept. 30, 1972, at datum 10.00 ft higher. See WSP 1708 for history of changes prior to Oct. 1, 1934.

REMARKS.--Records good. Slight fluctuation at low stages caused by powerplant above station. Flow regulated by Coralville Lake (station 05453510), 9.1 mi upstream, since Sept. 17, 1958. U.S. Army Corps of Engineers raingage and satellite data collection platform and U.S. Geological Survey data collection platform with telephone modem backup at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 42,500 ft^3/s June 8, 1918, gage height, 19.6 ft, from graph based on gage readings, site and datum then in use; minimum daily discharge, 29 ft^3/s Oct. 21, 22, 1916, regulated.

EXTREMES OUTSIDE PERIOD OF RECORD.--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 ft^3/s. Maximum stage known since at least 1850, about 3 ft higher than that of July 17, 1881, occurred in June 1851, discharge, 70,000 ft^3/s, estimated

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	677	584	537	379	e592	1050	685	2170	2170	1680	1980	1520
2	553	463	534	438	e562	1040	683	2030	2240	1460	1340	1410
3	444	400	586	438	e530	e840	676	2250	2320	1190	933	1220
4	414	394	660	436	e335	e590	673	2440	2650	1170	871	1020
5	429	390	727	436	e237	e570	672	2450	3220	1170	1150	853
6	396	432	813	436	e241	838	670	2440	3300	1180	1280	702
7	362	577	970	437	e274	986	669	2360	3150	1290	1540	621
8	401	698	1530	438	376	1240	814	1890	2720	1300	1420	620
9	400	725	2010	441	488	1730	1360	1700	2560	1370	949	603
10	281	720	2030	443	718	1530	1600	1660	1990	1510	1000	427
11	278	653	2010	442	819	1260	1410	1830	1980	2260	1210	441
12	226	573	2020	445	655	1150	1210	2250	2010	2180	1440	367
13	226	536	2080	443	630	1300	1170	2490	2420	2150	1470	292
14	222	477	1840	466	729	1350	1140	2440	3120	1850	1620	295
15	216	467	1420	487	857	1340	1130	2420	4180	1670	1540	342
16	212	465	1270	487	847	1290	1110	2600	4500	1650	1400	428
17	262	459	1050	546	842	1180	1100	2900	3920	1740	1530	430
18	374	459	724	e488	841	1020	1090	2870	2790	1890	1840	428
19	369	474	712	e480	982	833	1110	2760	2600	1740	2160	501
20	370	546	709	e467	1180	787	1090	2490	2610	1580	2250	649
21	380	546	683	e495	1240	774	1120	2320	3260	1460	2250	617
22	426	543	677	e476	1170	758	1170	2270	3420	1380	2270	598
23	1120	542	671	471	1090	767	1270	2160	3070	1130	3590	592
24	1670	556	547	450	1080	784	1270	2140	2580	785	4470	649
25	1840	546	394	454	1080	826	1260	2260	2070	649	4010	752
26	1440	538	322	456	1120	940	1200	2230	2080	764	3060	668
27	870	542	320	490	1120	1000	1310	2190	2150	1520	2480	662
28	550	538	320	532	1050	942	1680	2320	2160	2150	2350	662
29	501	534	326	563	---	669	2000	2620	2070	2470	2160	662
30	650	532	336	606	---	605	2220	2240	1870	2290	1740	660
31	639	---	333	605	---	638	---	2190	---	2350	1580	---
TOTAL	17198	15909	29161	14671	21685	30627	34562	71380	81180	48978	58883	19691
MEAN	554.8	530.3	940.7	473.3	774.5	988.0	1152	2303	2706	1580	1899	656.4
MAX	1840	725	2080	606	1240	1730	2220	2900	4500	2470	4470	1520
MIN	212	390	320	379	237	570	669	1660	1870	649	871	292
AC-FT	34110	31560	57840	29100	43010	60750	68550	141600	161000	97150	116800	39060
CFSM	0.17	0.16	0.29	0.14	0.24	0.30	0.35	0.70	0.83	0.48	0.58	0.20
IN.	0.20	0.18	0.33	0.17	0.25	0.35	0.39	0.81	0.92	0.56	0.67	0.22

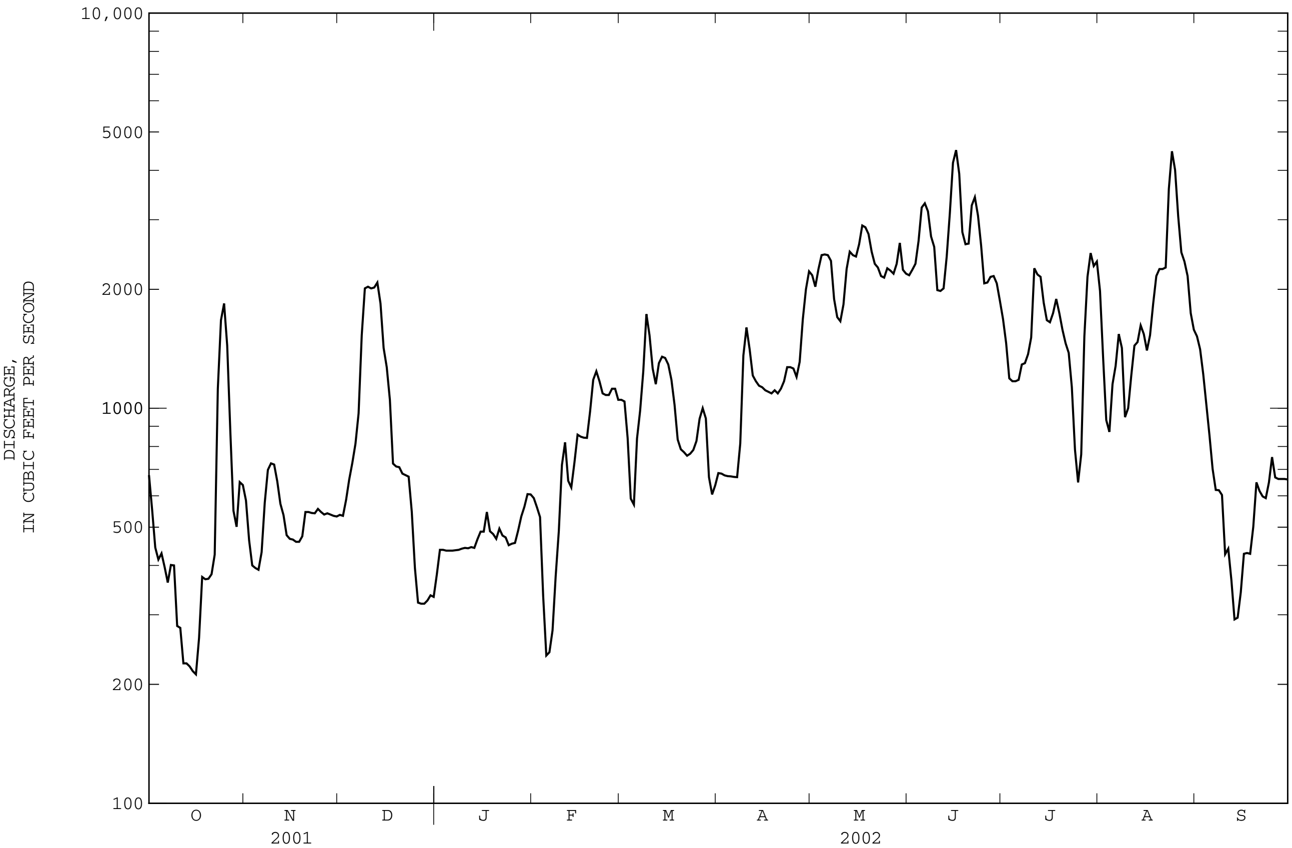
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1132	1428	1409	1048	1755	3376	3765	3277	3660	3477	2187	1432
MAX	4277	5395	4580	5381	5789	7988	9764	9763	11590	22220	20060	13760
(WY)	1994	1987	1983	1973	1973	1971	1979	1993	1991	1993	1993	1993
MIN	135	121	130	141	125	366	348	184	99.1	72.8	162	147
(WY)	1990	1967	1989	1990	1977	1977	1989	1977	1977	1977	1989	1976

05454500 IOWA RIVER AT IOWA CITY, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1959 - 2002a	
ANNUAL TOTAL	982482		443925			
ANNUAL MEAN	2692		1216		2330	
HIGHEST ANNUAL MEAN					8502	1993
LOWEST ANNUAL MEAN					304	1989
HIGHEST DAILY MEAN	10200	Mar 20	4500	Jun 16	26200	Jul 21 1993
LOWEST DAILY MEAN	212	Oct 16	212	Oct 16	49	Aug 1 1977b
ANNUAL SEVEN-DAY MINIMUM	235	Oct 11	235	Oct 11	50	Jul 31 1977
MAXIMUM PEAK FLOW			4650	Aug 23	28200	Aug 10 1993
MAXIMUM PEAK STAGE			15.03	Aug 23	28.52	Aug 10 1993
ANNUAL RUNOFF (AC-FT)	1949000		880500		1688000	
ANNUAL RUNOFF (CFSM)	0.82		0.37		0.71	
ANNUAL RUNOFF (INCHES)	11.17		5.05		9.68	
10 PERCENT EXCEEDS	7010		2380		6000	
50 PERCENT EXCEEDS	1170		970		1290	
90 PERCENT EXCEEDS	344		409		216	

a Post regulation.
b Also Aug. 2, 1977.
e estimated.



05455010 SOUTH BRANCH RALSTON CREEK AT IOWA CITY, IA

LOCATION.--Lat 41°39'05", long 91°30'27", in SW 1/4 NE 1/4 sec.14, T.79 N., R.6 W., Johnson County, Hydrologic Unit 07080209, on right bank 60 ft downstream from bridge on Muscatine Avenue in Iowa City, and 1.2 mi upstream from mouth.

DRAINAGE AREA.--2.94 mi^2.

PERIOD OF RECORD.--Discharge records from October 1963 to September 1995. Stage-only records from October 29, 1996 to current year.

REVISED RECORDS.--WDR IA-66-1: Drainage area.

GAGE.--Records good except those for Feb. 1-10, Feb. 12 to Mar. 7, Mar. 16-31, and Aug. 12, 13. Water-stage recorder and V-notch sharp-crested weir. Datum of gage is 678.03 ft above NGVD of 1929.

REMARKS.--Minor regulation from retention dam 2 miles upstream may affect peaks. U.S. Geological Survey data collection platform with telephone modem at station.

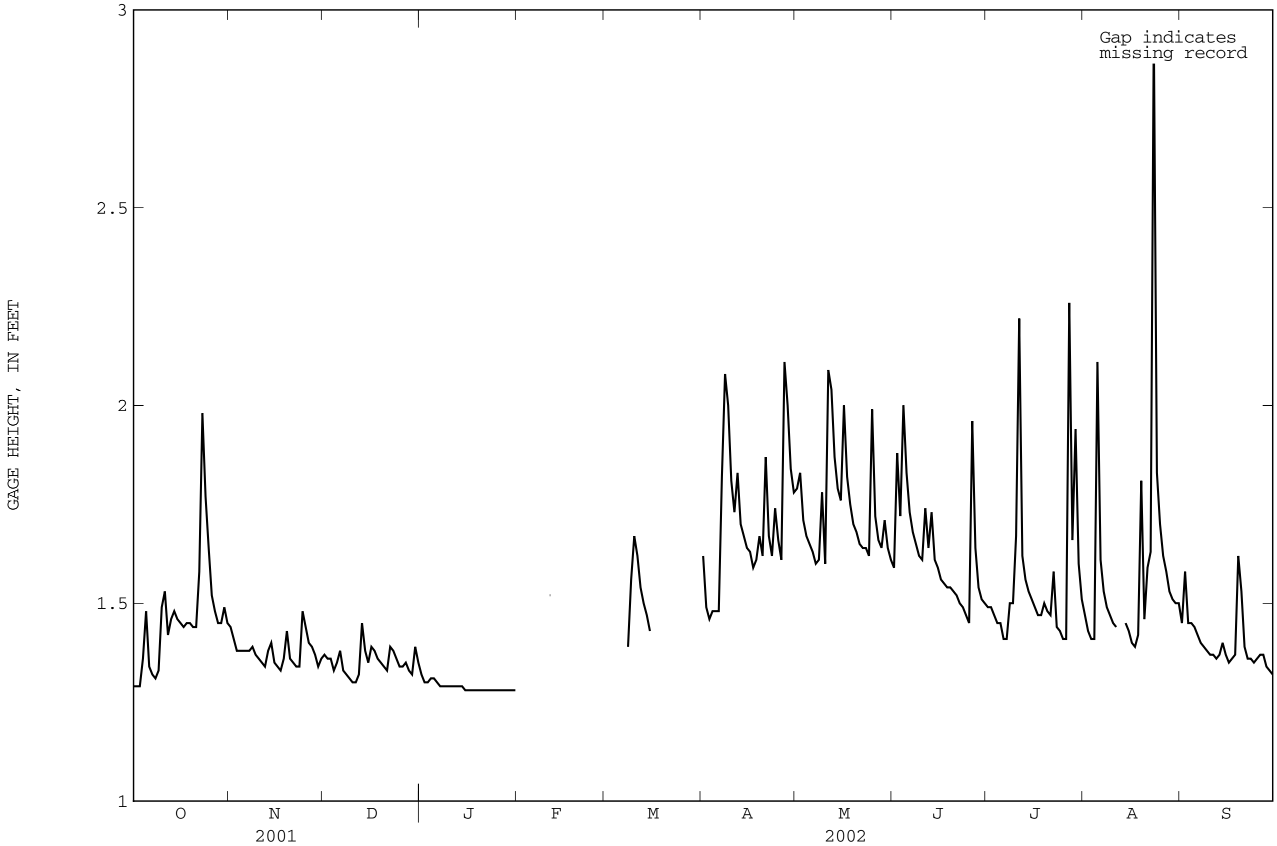
EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 14, 1962, reached a stage of 10.5 ft, from flood profile, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum instantaneous gage height 8.12 ft on Aug. 23. Minimum gage height of 1.28 ft. Jan. 16-31, Aug. 30 to Sep. 6, and Sep. 13-17.

GAGE HEIGHT from 8200 modem, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.29	1.44	1.37	1.32	---	---	1.62	1.79	1.59	1.49	1.47	1.45
2	1.29	1.41	1.36	1.30	---	---	1.49	1.83	1.88	1.49	1.43	1.58
3	1.29	1.38	1.36	1.30	---	---	1.46	1.71	1.72	1.47	1.41	1.45
4	1.36	1.38	1.33	1.31	---	---	1.48	1.67	2.00	1.45	1.41	1.45
5	1.48	1.38	1.35	1.31	---	---	1.48	1.65	1.83	1.45	2.11	1.44
6	1.34	1.38	1.38	1.30	---	---	1.48	1.63	1.73	1.41	1.61	1.42
7	1.32	1.38	1.33	1.29	---	---	1.82	1.60	1.68	1.41	1.53	1.40
8	1.31	1.39	1.32	1.29	---	1.39	2.08	1.61	1.65	1.50	1.49	1.39
9	1.33	1.37	1.31	1.29	---	1.56	2.00	1.78	1.62	1.50	1.47	1.38
10	1.49	1.36	1.30	1.29	---	1.67	1.81	1.60	1.61	1.67	1.45	1.37
11	1.53	1.35	1.30	1.29	1.52	1.62	1.73	2.09	1.74	2.22	1.44	1.37
12	1.42	1.34	1.32	1.29	---	1.54	1.83	2.04	1.64	1.62	---	1.36
13	1.46	1.38	1.45	1.29	---	1.50	1.70	1.87	1.73	1.56	---	1.37
14	1.48	1.40	1.38	1.29	---	1.47	1.67	1.79	1.61	1.53	1.45	1.40
15	1.46	1.35	1.35	1.28	---	1.43	1.64	1.76	1.59	1.51	1.43	1.37
16	1.45	1.34	1.39	1.28	---	---	1.63	2.00	1.56	1.49	1.40	1.35
17	1.44	1.33	1.38	1.28	---	---	1.59	1.82	1.55	1.47	1.39	1.36
18	1.45	1.36	1.36	1.28	---	---	1.61	1.75	1.54	1.47	1.42	1.37
19	1.45	1.43	1.35	1.28	---	---	1.67	1.70	1.54	1.50	1.81	1.62
20	1.44	1.36	1.34	1.28	---	---	1.62	1.68	1.53	1.48	1.46	1.53
21	1.44	1.35	1.33	1.28	---	---	1.87	1.65	1.52	1.47	1.59	1.39
22	1.58	1.34	1.39	1.28	---	---	1.67	1.64	1.50	1.58	1.63	1.36
23	1.98	1.34	1.38	1.28	---	---	1.62	1.64	1.49	1.44	2.95	1.36
24	1.77	1.48	1.36	1.28	---	---	1.74	1.62	1.47	1.43	1.83	1.35
25	1.64	1.44	1.34	1.28	---	---	1.66	1.99	1.45	1.41	1.70	1.36
26	1.52	1.40	1.34	1.28	---	---	1.61	1.72	1.96	1.41	1.62	1.37
27	1.48	1.39	1.35	1.28	---	---	2.11	1.66	1.64	2.26	1.58	1.37
28	1.45	1.37	1.33	1.28	---	---	2.00	1.64	1.54	1.66	1.53	1.34
29	1.45	1.34	1.32	1.28	---	---	1.84	1.71	1.51	1.94	1.51	1.33
30	1.49	1.36	1.39	1.28	---	---	1.78	1.64	1.50	1.60	1.50	1.32
31	1.45	---	1.35	1.28	---	---	---	1.61	---	1.51	1.50	---
MEAN	1.46	1.38	1.35	1.29	---	---	1.71	1.74	1.63	1.56	---	1.40
MAX	1.98	1.48	1.45	1.32	---	---	2.11	2.09	2.00	2.26	---	1.62
MIN	1.29	1.33	1.30	1.28	---	---	1.46	1.60	1.45	1.41	---	1.32

05455010 SOUTH BRANCH RALSTON CREEK AT IOWA CITY, IA--Continued



05455100 OLD MANS CREEK NEAR IOWA CITY, IA

LOCATION.--Lat. 41°36'23", long. 91°36'56", in SE$^1/_4$ SW$^1/_4$ NW$^1/_4$ sec.36, T.79 N., R.7 W., Johnson County, Hydrologic Unit 07080209, on left bank 10 ft downstream from bridge on county highway W62, 5 miles southwest of Iowa City, 5.9 miles upstream of Dirty Face Creek, and 8.6 miles upstream from mouth.

DRAINAGE AREA.--201 mi^2.

PERIOD OF RECORD.--October 1950 to September 1964, published in WSP 1914. Annual maximum, water years 1965-84. Occasional low-flow measurements, water years 1964-77; October 1984 to current year.

GAGE.--Water-stage recorder. Datum of gage is 637.49 ft above NGVD of 1929. Prior to Nov. 16, 1984, nonrecording gage at same site at datum 2.00 ft higher. Prior to Oct. 1, 1987, at datum 2.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

COOPERATION.--Gage height record and discharge measurements for water years 1951-64 were collected by the U.S. Army Corps of Engineers and computed by the U.S. Geological Survey.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 13,500 ft^3/s, on the basis of contracted-opening of peak flow, June 15, 1982, gage height, 17.25 ft, present datum.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.5	40	18	e17	e20	e24	40	256	171	67	35	22
2	6.7	36	17	e20	e18	e22	43	240	188	61	30	21
3	6.4	33	16	e19	e16	e23	39	205	304	56	27	19
4	6.8	30	16	e23	e14	e26	34	186	301	53	25	17
5	12	30	17	e26	e12	e28	34	173	319	48	43	14
6	13	29	20	e24	e13	e33	34	164	224	46	155	13
7	8.8	27	19	e22	e14	e42	36	152	192	56	51	12
8	7.0	27	17	e27	e15	e65	68	140	172	46	35	11
9	6.3	26	16	e29	e14	e175	330	184	155	46	29	10
10	8.2	25	16	e27	e26	138	231	157	146	48	25	8.9
11	35	24	16	e24	e24	123	175	292	148	330	31	9.3
12	18	24	17	e21	e22	109	166	821	150	92	28	7.6
13	13	23	40	e19	e20	90	165	489	377	73	28	7.3
14	11	24	36	e16	e33	83	149	338	350	63	24	7.2
15	11	24	28	e13	46	75	139	276	214	54	21	7.3
16	10	22	26	e14	39	65	126	358	174	49	18	7.1
17	9.2	20	26	e15	32	62	113	358	152	45	16	6.8
18	8.8	19	25	e16	34	59	106	266	139	41	15	6.7
19	8.9	20	24	e16	41	57	112	229	129	37	25	11
20	8.9	20	23	e17	53	56	104	204	120	35	30	28
21	8.8	20	20	e18	58	53	112	187	111	31	22	19
22	10	20	e21	e19	47	42	126	178	105	37	23	11
23	552	19	e23	e16	47	51	117	167	99	37	532	8.7
24	170	21	e21	e14	44	53	113	154	92	29	215	7.4
25	106	23	e19	e13	42	46	108	180	86	26	70	6.8
26	75	20	e18	e15	33	42	97	215	132	24	47	6.4
27	60	20	e19	17	31	42	228	180	122	124	38	6.2
28	53	21	e21	16	e27	41	708	165	91	87	33	6.0
29	47	18	e20	15	---	44	395	429	81	67	29	5.7
30	43	18	e19	12	---	42	299	334	74	97	27	5.6
31	43	---	e17	e13	---	39	---	204	---	49	24	---
TOTAL	1383.3	723	651	573	835	1850	4547	7881	5118	1954	1751	329.0
MEAN	44.62	24.10	21.00	18.48	29.82	59.68	151.6	254.2	170.6	63.03	56.48	10.97
MAX	552	40	40	29	58	175	708	821	377	330	532	28
MIN	6.3	18	16	12	12	22	34	140	74	24	15	5.6
AC-FT	2740	1430	1290	1140	1660	3670	9020	15630	10150	3880	3470	653
CFSM	0.22	0.12	0.10	0.09	0.15	0.30	0.75	1.26	0.85	0.31	0.28	0.05
IN.	0.26	0.13	0.12	0.11	0.15	0.34	0.84	1.46	0.95	0.36	0.32	0.06

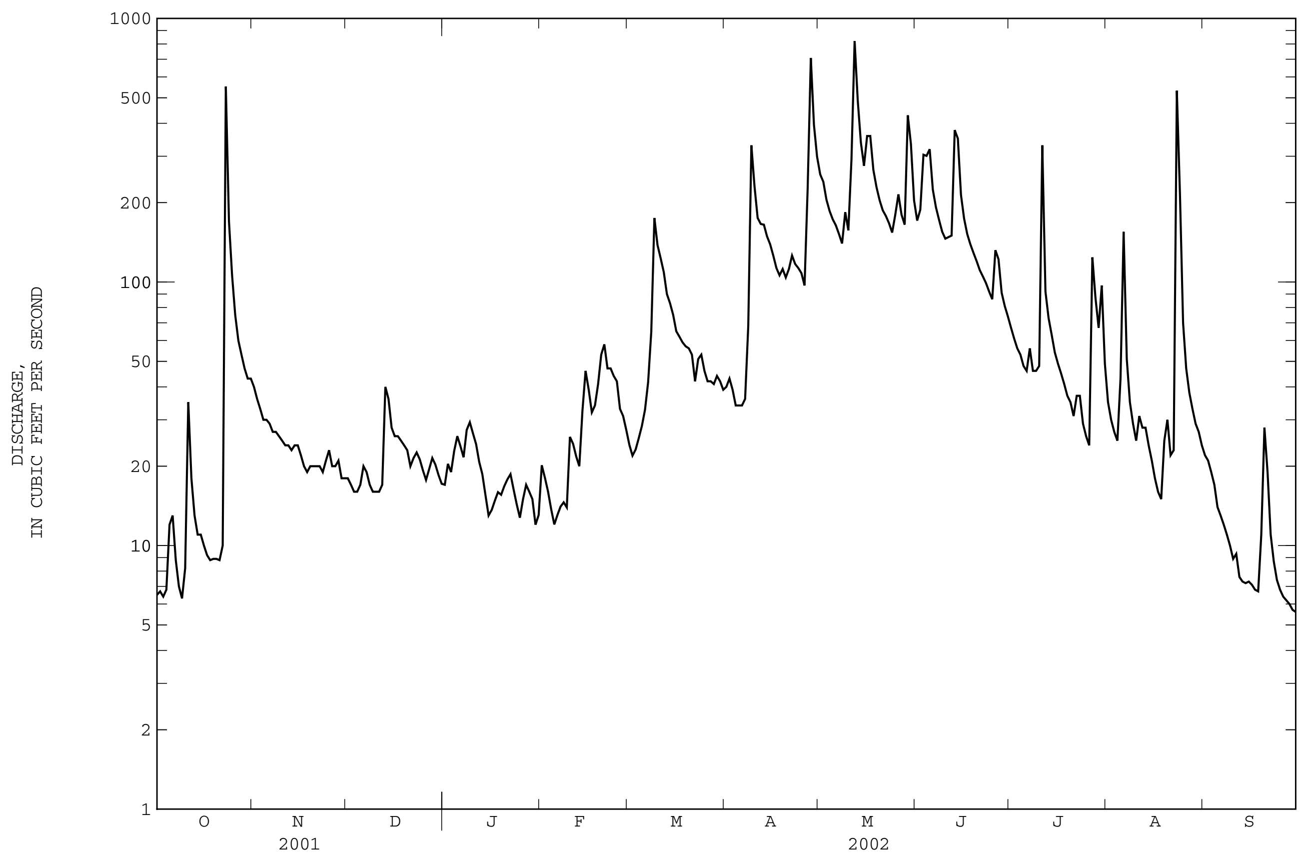
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1951 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	61.09	90.61	53.98	61.28	127.5	242.9	172.6	235.7	196.3	152.3	103.2	59.90
MAX	541	636	337	436	536	793	625	1071	907	1515	1190	598
(WY)	1999	1962	1993	1960	2001	1962	1993	1996	1990	1993	1993	1993
MIN	0.21	0.39	0.35	0.26	2.50	2.12	1.29	4.97	5.34	1.43	2.97	0.36
(WY)	1958	1956	1956	1956	1954	1954	1956	1956	1956	1954	1988	1957

05455100 OLD MANS CREEK NEAR IOWA CITY, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1951 - 2002	
ANNUAL TOTAL	74900.1		27595.3			
ANNUAL MEAN	205.2		75.60		129.8	
HIGHEST ANNUAL MEAN					607	1993
LOWEST ANNUAL MEAN					10.3	1954
HIGHEST DAILY MEAN	3480	Feb 25	821	May 12	8780	Jul 6 1993
LOWEST DAILY MEAN	6.0	Sep 16	5.6	Sep 30	0.10	Sep 6 1957
ANNUAL SEVEN-DAY MINIMUM	6.7	Sep 28	6.3	Sep 24	0.10	Sep 6 1957
MAXIMUM PEAK FLOW			1680	Aug 23	13000	Jul 6 1993
MAXIMUM PEAK STAGE			10.82	Aug 23	17.61	Jul 6 1993
INSTANTANEOUS LOW FLOW			4.8	Sep 30		
ANNUAL RUNOFF (AC-FT)	148600		54740		94040	
ANNUAL RUNOFF (CFSM)	1.02		0.38		0.65	
ANNUAL RUNOFF (INCHES)	13.86		5.11		8.77	
10 PERCENT EXCEEDS	566		187		287	
50 PERCENT EXCEEDS	61		32		40	
90 PERCENT EXCEEDS	12		11		2.1	

e Estimated



05455500 ENGLISH RIVER AT KALONA, IA

LOCATION.--Lat 41°28'11", long 91°42'52",(revised) in SE$^{1}/_{4}$ SE$^{1}/_{4}$ sec.13, T.77 N., R.8 W., Washington County, Hydrologic Unit 07080209, on right bank 30 ft upstream from bridge on State Highway 1, 0.8 mi south of Kalona, 1.1 mi upstream from Camp Creek, 4.5 mi downstream from Smith Creek, and 14.5 mi upstream from mouth.

DRAINAGE AREA.--573 mi^2.

PERIOD OF RECORD.--September 1939 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1940 (M), 1941. WSP 1708: 1956, 1957 (P), 1958 (P).

GAGE.--Water-stage recorder. Datum of gage is 633.45 ft above NGVD of 1929 (levels by U.S. Army Corps of Engineers). Prior to Dec. 27, 1939, nonrecording gage 30 ft downstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1930 reached a stage of 19.9 ft, from floodmark, from information by local residents, discharge, 18,500 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	59	35	e31	e41	e36	84	698	524	139	50	46
2	15	57	33	e35	e39	e34	86	648	689	127	40	44
3	14	50	33	e32	e37	e34	83	580	986	115	36	40
4	16	45	33	e35	e34	e37	75	480	740	107	35	39
5	38	42	35	e38	e38	e41	70	417	898	100	40	36
6	34	40	39	e35	e38	e48	69	377	702	101	480	32
7	25	39	38	e34	e39	e61	74	343	534	98	226	30
8	20	38	36	e38	e40	e98	125	308	449	230	111	29
9	19	36	34	e43	e50	e371	700	407	388	150	75	28
10	48	36	33	e40	e65	e324	630	444	348	120	59	27
11	69	36	32	e37	e73	e239	413	1030	350	128	62	25
12	43	35	34	e35	e88	e228	347	3800	384	120	193	24
13	34	36	68	e34	e101	203	392	2990	1300	105	67	23
14	30	40	63	e33	e111	173	372	1470	2090	88	53	23
15	26	41	57	e31	e112	152	317	1000	993	78	46	22
16	24	38	53	e33	e97	133	271	1180	699	72	44	22
17	24	35	51	e35	e81	118	232	1370	559	66	40	21
18	21	35	49	e37	e78	111	207	965	473	62	36	21
19	20	34	47	e37	97	107	195	767	412	62	45	25
20	20	33	43	e38	123	104	193	649	360	74	100	200
21	19	32	38	e39	137	103	220	568	318	59	98	168
22	24	32	41	e41	112	89	262	514	284	57	67	125
23	454	33	e34	e39	96	86	262	472	258	58	138	79
24	490	38	e33	e38	95	97	245	429	233	51	910	57
25	207	40	e32	e36	86	98	230	523	212	47	278	47
26	123	38	e31	e42	70	89	206	687	244	45	139	41
27	90	37	e33	e50	51	83	476	637	227	56	100	38
28	72	36	e35	e43	e44	85	2050	528	188	63	81	35
29	63	35	e34	e39	---	91	1310	1000	168	59	68	33
30	60	35	e33	e35	---	91	857	1780	152	62	58	31
31	59	---	e32	e35	---	85	---	693	---	62	51	---
TOTAL	2217	1161	1222	1148	2073	3649	11053	27754	16162	2761	3826	1411
MEAN	71.52	38.70	39.42	37.03	74.04	117.7	368.4	895.3	538.7	89.06	123.4	47.03
MAX	490	59	68	50	137	371	2050	3800	2090	230	910	200
MIN	14	32	31	31	34	34	69	308	152	45	35	21
MED	30	36	35	37	76	97	238	648	400	74	67	32
AC-FT	4400	2300	2420	2280	4110	7240	21920	55050	32060	5480	7590	2800
CFSM	0.12	0.07	0.07	0.06	0.13	0.21	0.64	1.56	0.94	0.16	0.22	0.08
IN.	0.14	0.08	0.08	0.07	0.13	0.24	0.72	1.80	1.05	0.18	0.25	0.09

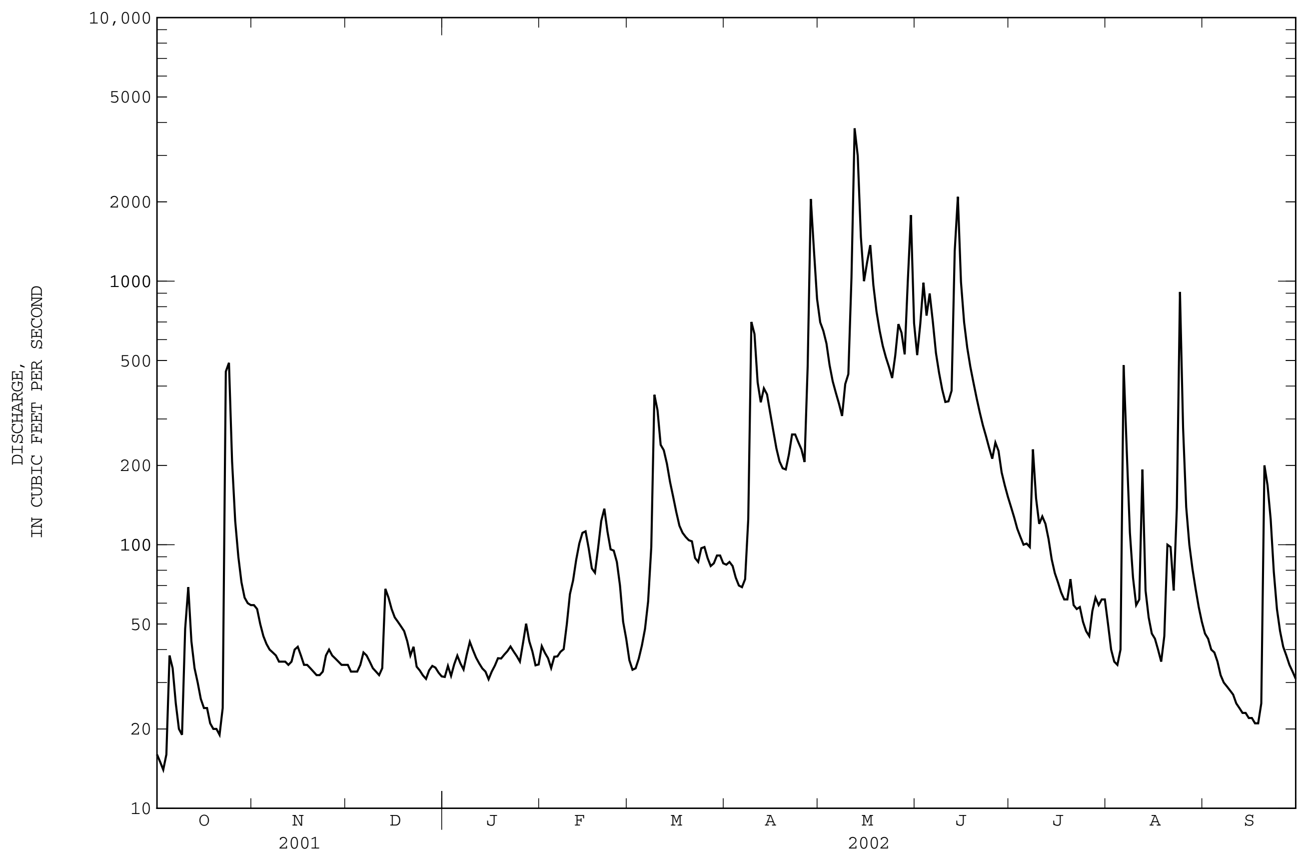
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	161.1	245.3	182.4	205.8	366.0	695.0	641.2	688.5	602.0	405.7	266.8	227.9
MAX	1274	2060	1085	1429	1066	2957	2736	3529	2570	4207	3696	3169
(WY)	1999	1962	1983	1946	1984	1979	1973	1974	1990	1993	1993	1965
MIN	2.98	2.38	2.19	0.76	13.8	10.8	5.35	9.62	21.7	7.31	6.34	3.10
(WY)	1954	1956	1956	1977	1954	1954	1956	1956	1940	1954	1955	1955

05455500 ENGLISH RIVER AT KALONA, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1940 - 2002	
ANNUAL TOTAL	190754		74437			
ANNUAL MEAN	522.6		203.9		390.4	
HIGHEST ANNUAL MEAN					1721	1993
LOWEST ANNUAL MEAN					41.7	1954
HIGHEST DAILY MEAN	6030	Mar 16	3800	May 12	22300	Jul 6 1993
LOWEST DAILY MEAN	14	Sep 5	14	Oct 3	0.66	Feb 5 1977
ANNUAL SEVEN-DAY MINIMUM	16	Sep 1	22	Oct 16	0.68	Feb 1 1977
MAXIMUM PEAK FLOW			4610	May 12	36100	Jul 6 1993
MAXIMUM PEAK STAGE			14.42	May 12	22.55	Jul 6 1993
INSTANTANEOUS LOW FLOW			13	Oct 3a		
ANNUAL RUNOFF (AC-FT)	378400		147600		282800	
ANNUAL RUNOFF (CFSM)	0.91		0.36		0.68	
ANNUAL RUNOFF (INCHES)	12.36		4.82		9.24	
10 PERCENT EXCEEDS	1470		530		871	
50 PERCENT EXCEEDS	100		62		120	
90 PERCENT EXCEEDS	26		32		12	

a Also Oct. 4.
e Estimated.



05455700 IOWA RIVER NEAR LONE TREE, IA

LOCATION.--Lat 41°25'15", long 91°28'25", in $NW^1/_4$ $NE^1/_4$ sec.6, T.76 N., R.5 W., Louisa County, Hydrologic Unit 07080209, on left bank 2,000 ft downstream from tri-county bridge on county highway W66, 5 mi southwest of Lone Tree, 6.2 mi downstream from English River, and at mile 47.2.

DRAINAGE AREA.--4,293 mi^2.

PERIOD OF RECORD.--October 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 588.16 ft above NGVD of 1929. Prior to Dec. 28, 1956, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow regulated by Coralville Lake (station 05453510), 36.1 mi upstream, since Sept. 17, 1958. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 25, 1944, reached a stage of 19.94 ft, discharge not determined, from information by U.S. Army Corps of Engineers.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	719	826	635	e461	e742	1290	979	3360	2860	1920	e2250	1660
2	648	734	633	e511	e718	1250	1000	3130	2810	1750	e1610	1540
3	545	624	632	e519	e689	e1100	978	3100	3420	1450	e1200	1380
4	487	588	709	e521	e629	e899	961	3260	3490	1360	e1150	1150
5	579	572	732	e521	e396	e882	951	3200	4260	1330	e1450	983
6	512	561	857	e519	e312	e1030	938	3150	4350	1290	e1620	816
7	471	625	883	e523	e311	1200	979	3090	4010	1390	e2090	697
8	433	772	1220	e524	e390	1390	1180	2730	3420	1450	1830	667
9	417	827	1820	e525	e583	2430	2560	2480	3210	1600	1250	658
10	398	842	1890	e526	810	2520	2950	2540	2590	1660	1060	593
11	548	836	1890	e525	1080	2010	2580	3060	2440	2910	1210	473
12	434	736	1900	e527	1020	1660	2110	7050	2500	2540	1630	514
13	364	717	2070	e528	911	1740	1990	7300	3440	2440	1650	420
14	347	663	2000	e531	933	1780	1980	5030	5130	2150	1710	385
15	322	626	1620	e553	1120	1740	1890	4100	5460	1870	1850	383
16	309	615	1380	e564	1120	1670	1790	4160	5280	1810	1640	455
17	295	604	1330	e580	1100	1570	1710	5270	4980	1780	1630	482
18	383	596	957	e622	1080	1440	1640	4550	3630	2010	2000	479
19	438	598	858	e577	1170	1250	1660	4090	3150	1930	2290	501
20	433	628	836	e559	1450	1130	1610	3580	2980	1780	2370	659
21	435	668	820	e579	1580	1120	1650	3140	3420	1640	2450	890
22	469	664	850	e589	1550	1080	1720	3000	3840	1620	2540	788
23	1710	663	e827	e574	1410	1070	1840	2830	3570	1430	4330	685
24	2520	677	e780	e568	1390	1090	1920	2750	3090	1150	5880	650
25	2260	689	e630	e552	1370	1130	1890	2980	2450	888	5110	756
26	1980	672	e495	e558	1330	1160	1790	3150	2360	896	3830	723
27	1350	660	e439	e598	1370	1250	2090	3060	2620	1450	2950	694
28	962	651	e438	e636	1260	1270	4210	2930	2390	e2320	2610	687
29	717	643	e432	e678	---	1120	4350	3300	2310	e2730	2470	680
30	801	638	e439	e726	---	952	3640	4580	2120	e2570	1990	673
31	844	---	e435	e747	---	925	---	3320	---	e2650	1730	---
TOTAL	23130	20215	31437	17521	27824	42148	57536	113270	101580	55764	69380	22121
MEAN	746.1	673.8	1014	565.2	993.7	1360	1918	3654	3386	1799	2238	737.4
MAX	2520	842	2070	747	1580	2520	4350	7300	5460	2910	5880	1660
MIN	295	561	432	461	311	882	938	2480	2120	888	1060	383
AC-FT	45880	40100	62360	34750	55190	83600	114100	224700	201500	110600	137600	43880
CFSM	0.17	0.16	0.24	0.13	0.23	0.32	0.45	0.85	0.79	0.42	0.52	0.17
IN.	0.20	0.18	0.27	0.15	0.24	0.37	0.50	0.98	0.88	0.48	0.60	0.19

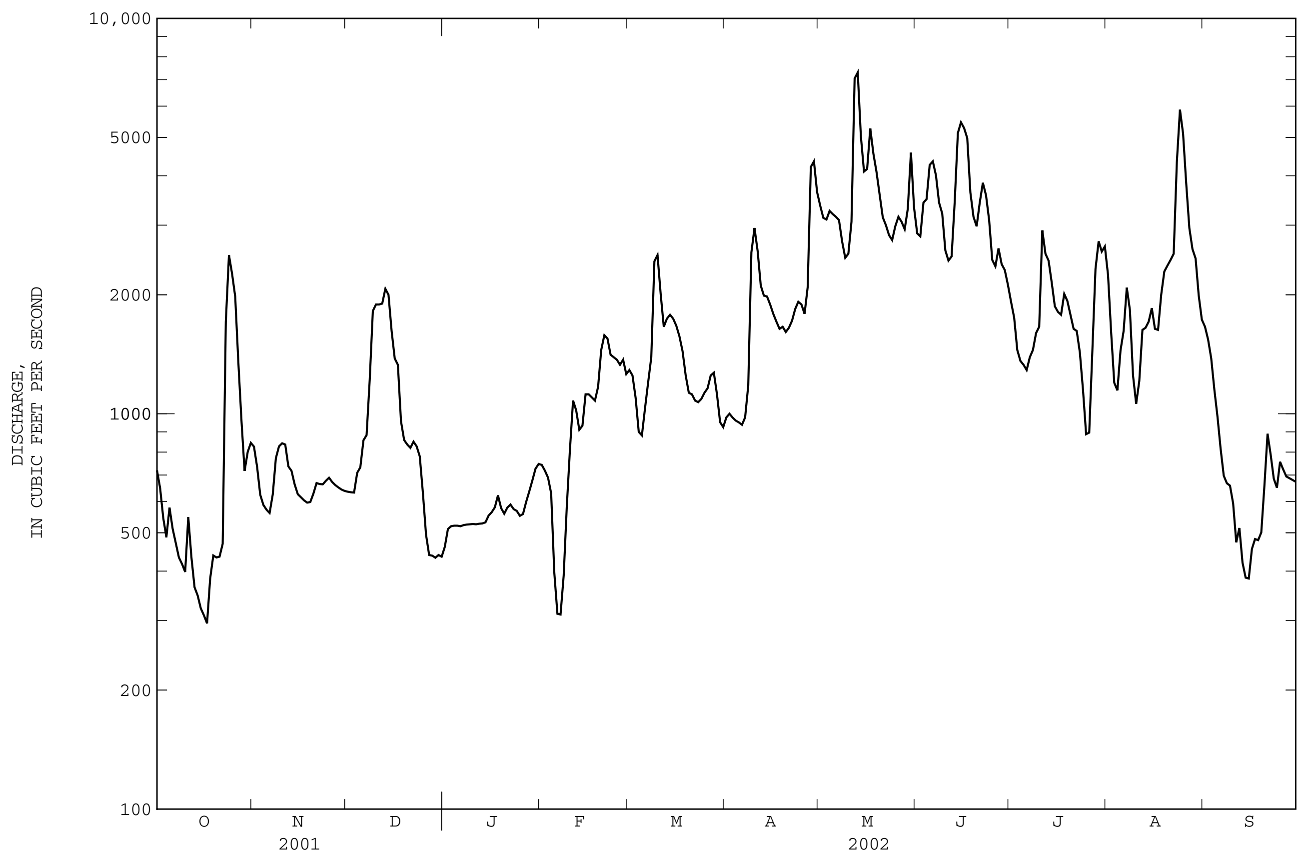
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1526	1957	1851	1472	2437	4690	5091	4664	4789	4397	2812	2012
MAX	6115	6347	6678	7814	7205	10410	12230	14030	13150	30320	26150	18150
(WY)	1994	1962	1983	1973	1973	1993	1979	1993	1974	1993	1993	1993
MIN	192	190	168	154	158	539	533	282	147	180	186	210
(WY)	1989	1967	1989	1977	1977	1977	1989	1977	1977	1977	1989	1988

05455700 IOWA RIVER NEAR LONE TREE, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1959 - 2002a	
ANNUAL TOTAL	1290115		581926			
ANNUAL MEAN	3535		1594		3143	
HIGHEST ANNUAL MEAN					11900	1993
LOWEST ANNUAL MEAN					483	1989
HIGHEST DAILY MEAN	15800	Mar 17	7300	May 13	55100	Jul 7 1993
LOWEST DAILY MEAN	280	Jan 1	295	Oct 17	69	Aug 4 1977
ANNUAL SEVEN-DAY MINIMUM	324	Jan 1	351	Oct 12	75	Jul 30 1977
MAXIMUM PEAK FLOW			8070	May 12	57100	Jul 7 1993
MAXIMUM PEAK STAGE			10.94	May 12	22.94	Jul 7 1993
ANNUAL RUNOFF (AC-FT)	2559000		1154000		2277000	
ANNUAL RUNOFF (CFSM)	0.82		0.37		0.73	
ANNUAL RUNOFF (INCHES)	11.18		5.04		9.95	
10 PERCENT EXCEEDS	9210		3230		7600	
50 PERCENT EXCEEDS	1400		1200		1770	
90 PERCENT EXCEEDS	435		512		320	

a Post regulation.
e Estimated.



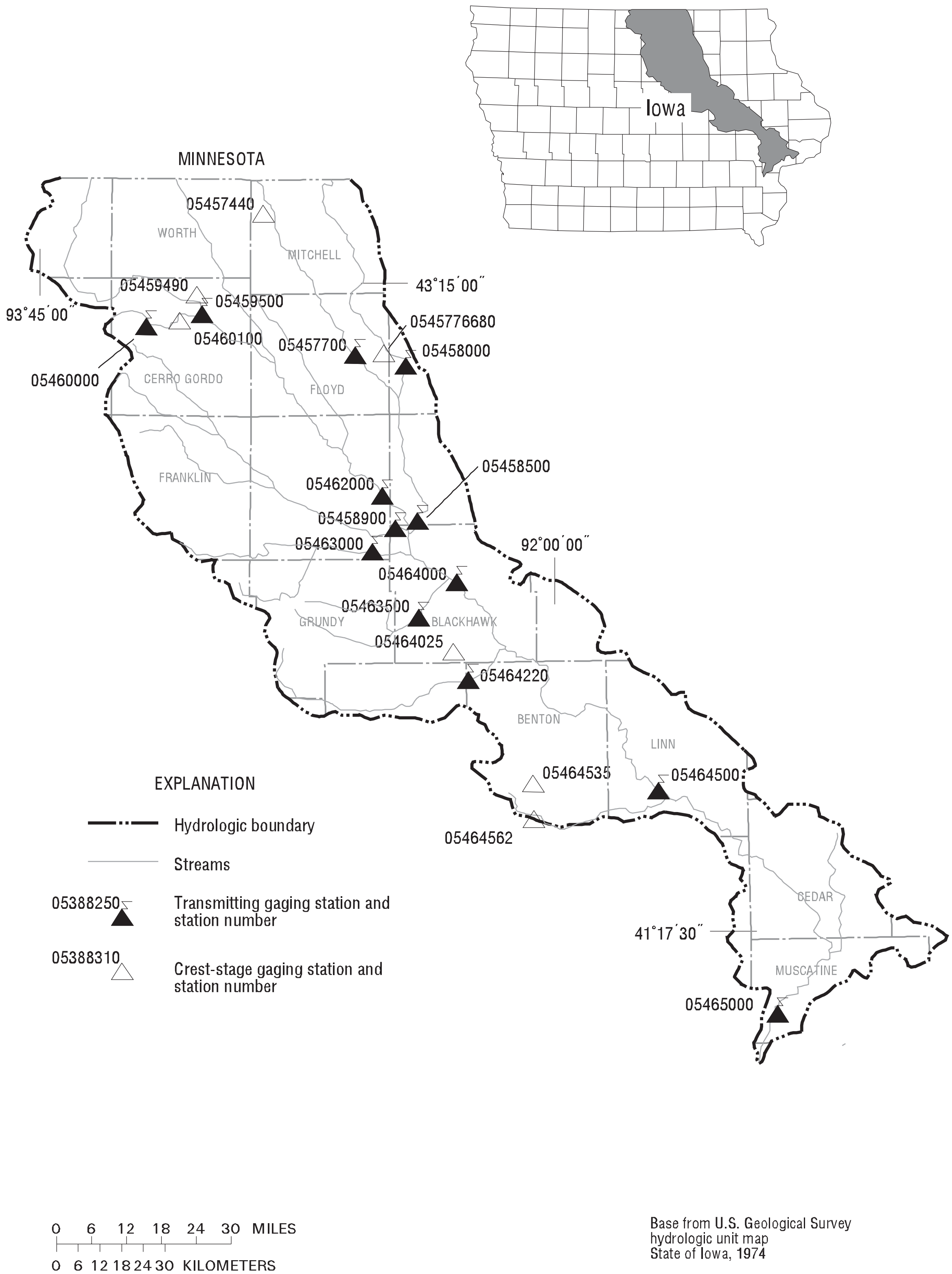


Figure 15. Locations of active continuous-record and crest-stage gaging stations in the Cedar River drainage basin.

Gaging Stations

05457700	Cedar River at Charles City, IA.	180
05458000	Little Cedar River near Ionia, IA.	182
05458300	Cedar River at Waverly, Ia	184
05458500	Cedar River at Janesville, IA.	186
05458900	West Fork Cedar River at Finchford, IA	188
05459500	Winnebago River at Mason City, IA.	190
05460000	Clear Lake at Clear Lake, IA	192
05462000	Shell Rock River at Shell Rock, IA	194
05463000	Beaver Creek at New Hartford, IA	196
05463050	Cedar River at Cedar Falls, Ia	198
05463500	Black Hawk Creek at Hudson, IA	200
05464000	Cedar River at Waterloo, IA.	202
05464220	Wolf Creek near Dysart, IA	204
05464500	Cedar River at Cedar Rapids, IA.	208
05464942	Hoover Creek at Hoover National Historic Site at West Branch, Ia	210
05465000	Cedar River near Conesville, IA.	212

Crest Stage Gaging Stations

05457440	Deer Creek near Carpenter, IA.	354
0545776680	Gizzard Creek Tributary near Bassett, IA	354
05459490	Spring Creek near Mason City, IA	355
05460100	Willow Creek near Mason City, IA	355
05464025	Miller Creek near Eagle Center, IA	355
05464535	Prairie Creek Tributary near Van Horne, IA	355
05464562	Thunder Creek at Blairstown, IA.	355

05457700 CEDAR RIVER AT CHARLES CITY, IA

LOCATION.--Lat 43°03'45", long 92°40'23", in SE$^1/_4$ NE$^1/_4$, sec.12, T.95 N., R.16 W., Floyd County, Hydrologic Unit 07080201, on right bank 800 ft downstream from bridge on U.S. Highway 18 (Brantingham Street) in Charles City, 10.6 mi upstream from Gizzard Creek, and at mile 252.9 upstream from mouth of Iowa River.

DRAINAGE AREA.--1,054 mi^2.

PERIOD OF RECORD.--Discharge records from October 1964 to September 1995; October 1, 2000 to September 30, 2001. Stage-only records from October 1995 to September 2000.

GAGE.--Water-stage recorder. Datum of gage is 973.02 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey data collection platform with telephone modem at station. Occasional minor regulation by dam 0.2 mi upstream from gage. Daily wire-weight gage readings available in district office for period Sept. 13, 1945 to June 30, 1954, at same site and datum. Discharge not published for this period because of extreme regulation of streamflow by power dam 0.2 mi upstream.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 27, 1961, reached a stage of 21.6 ft, from flood marks, discharge, 29,200 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	250	214	317	e172	e162	236	259	1070	369	420	339	269
2	240	211	308	e127	e173	152	266	977	347	374	307	251
3	232	206	295	e134	e201	e172	248	870	313	342	281	235
4	225	205	282	e168	e163	e222	238	763	413	309	337	221
5	220	200	287	e178	e185	250	232	696	1240	289	575	208
6	212	205	318	e145	185	248	230	665	2240	270	1960	203
7	208	209	361	e134	192	248	228	644	1860	275	1790	204
8	414	210	382	e167	192	248	236	598	1330	264	1300	203
9	390	197	363	e147	e196	e230	237	560	1080	242	1190	214
10	233	202	343	e134	e207	e220	234	519	858	230	1020	205
11	353	197	323	e159	e207	e268	274	511	765	335	858	198
12	261	196	328	e151	e239	e316	464	507	741	591	743	193
13	323	203	319	e173	e222	393	900	497	825	480	695	189
14	167	212	434	e141	e220	589	1020	475	748	374	709	192
15	155	216	400	e137	e234	537	894	457	664	305	719	197
16	138	214	149	e141	e232	507	793	450	593	266	695	208
17	160	207	223	e172	e236	388	711	429	534	242	633	196
18	254	206	279	e160	242	368	655	406	502	231	588	219
19	251	204	273	183	264	396	619	383	531	250	545	268
20	240	192	263	196	317	384	566	362	513	267	499	234
21	236	199	252	211	393	435	529	344	513	257	459	214
22	235	197	e212	209	407	372	519	332	502	271	434	201
23	235	197	e139	213	339	316	514	340	913	261	421	202
24	231	214	e121	208	313	349	499	320	918	311	415	e194
25	230	241	e146	198	313	328	481	317	767	279	419	189
26	209	266	e195	207	251	284	456	337	735	257	407	201
27	202	287	e215	210	233	271	473	328	728	296	384	218
28	204	290	e230	216	250	274	644	346	725	329	357	228
29	207	300	e193	210	---	270	932	369	581	457	335	221
30	199	317	e199	206	---	269	1150	439	483	496	314	221
31	208	---	e187	191	---	266	---	417	---	405	294	---
TOTAL	7322	6614	8336	5398	6768	9806	15501	15728	23331	9975	20022	6396
MEAN	236.2	220.5	268.9	174.1	241.7	316.3	516.7	507.4	777.7	321.8	645.9	213.2
MAX	414	317	434	216	407	589	1150	1070	2240	591	1960	269
MIN	138	192	121	127	162	152	228	317	313	230	281	189
AC-FT	14520	13120	16530	10710	13420	19450	30750	31200	46280	19790	39710	12690
CFSM	0.22	0.21	0.26	0.17	0.23	0.30	0.49	0.48	0.74	0.31	0.61	0.20
IN.	0.26	0.23	0.29	0.19	0.24	0.35	0.55	0.56	0.82	0.35	0.71	0.23

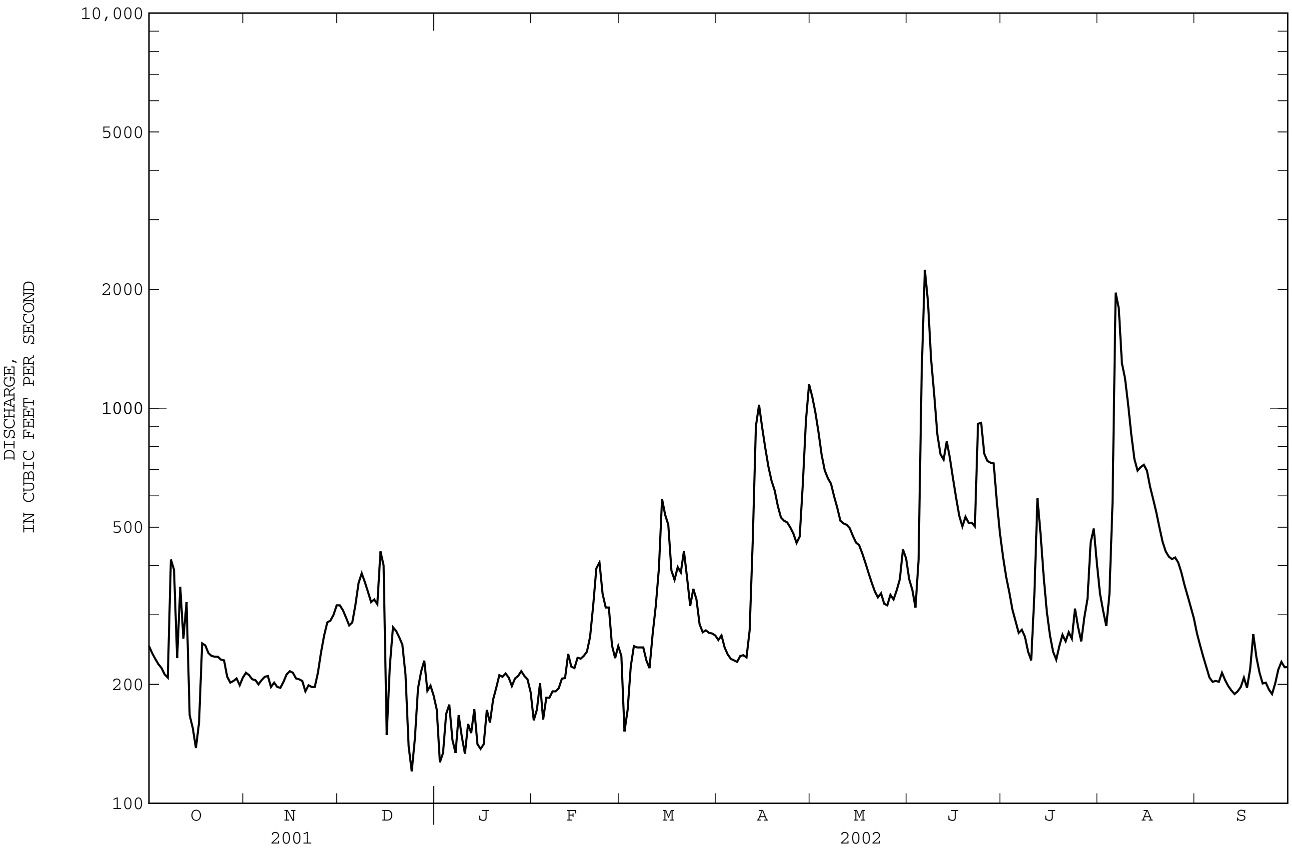
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1995, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	600.0	524.0	379.1	275.9	366.5	1267	1536	1039	1003	829.8	711.2	539.9
MAX	2339	1639	1396	888	1707	3172	5264	3434	4071	3009	4704	1670
(WY)	1987	1983	1983	1973	1984	1983	1965	1991	1993	1993	1993	1965
MIN	126	97.7	85.4	86.3	127	176	251	197	130	159	114	116
(WY)	1977	1977	1990	1990	1990	1968	1968	1977	1977	1988	1988	1976

05457700 CEDAR RIVER AT CHARLES CITY, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1965 - 1995	
ANNUAL TOTAL	421383		135197			
ANNUAL MEAN	1154		370.4		757.3	
HIGHEST ANNUAL MEAN					2048	1993
LOWEST ANNUAL MEAN					159	1977
HIGHEST DAILY MEAN	17600	Apr 8	2240	Jun 6	22100	Aug 17 1993
LOWEST DAILY MEAN	121	Dec 24	121	Dec 24	60	Nov 23 1976a
ANNUAL SEVEN-DAY MINIMUM	177	Dec 23	148	Jan 10	65	Dec 17 1989
MAXIMUM PEAK FLOW			2370	Jun 6	31200	Jul 21 1999
MAXIMUM PEAK STAGE			5.28	Jun 6	22.81	Jul 21 1999
INSTANTANEOUS LOW FLOW			98	Mar 2	45	Nov 17 1989
ANNUAL RUNOFF (AC-FT)	835800		268200		548600	
ANNUAL RUNOFF (CFSM)	1.10		0.35		0.72	
ANNUAL RUNOFF (INCHES)	14.87		4.77		9.76	
10 PERCENT EXCEEDS	2520		701		1630	
50 PERCENT EXCEEDS	312		269		380	
90 PERCENT EXCEEDS	209		189		155	

a Also Jan. 7, 1978.
e Estimated.



05458000 LITTLE CEDAR RIVER NEAR IONIA, IA

LOCATION.--Lat 43°02'05", long 92°30'05", in $SW^1/_4$ $NE^1/_4$ sec.21, T.95 N., R.14 W., Chickasaw County, Hydrologic Unit 07080201, on left bank 12 ft downstream from bridge on county highway B57, 2.4 mi west of Ionia, 6.4 mi upstream from mouth, and 7.6 mi downstream from Beaver Creek.

DRAINAGE AREA.--306 mi^2.

PERIOD OF RECORD.--October 1954 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1708: 1959.

GAGE.--Water-stage recorder. Datum of gage is 973.35 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey data collection platform with telephone modem at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 22, 1954, reached a stage of 11.37 ft, discharge, 4,600 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	47	49	e27	e25	58	58	291	84	101	108	54
2	43	47	49	e25	e28	44	58	283	81	87	84	52
3	41	46	49	30	e26	51	56	264	e90	77	69	50
4	40	45	50	30	e21	52	53	238	132	68	159	47
5	39	45	51	32	e28	51	52	215	166	60	243	44
6	38	45	51	e27	31	51	50	206	301	55	426	43
7	37	45	52	e25	32	51	51	192	309	51	323	40
8	36	44	56	e29	33	52	53	180	245	48	241	39
9	38	43	63	e32	35	e44	54	177	212	45	193	37
10	42	43	63	e29	e32	e39	53	164	188	44	165	37
11	43	42	61	e35	e36	e71	60	156	175	51	135	36
12	43	43	61	e30	e34	e111	203	156	164	48	121	34
13	47	44	58	e38	e37	171	299	150	146	47	169	33
14	58	46	57	e35	e43	183	303	140	131	44	227	32
15	63	47	55	e29	51	194	263	130	118	40	201	32
16	64	46	54	e27	57	155	233	125	106	36	166	31
17	61	45	53	e27	55	132	213	117	96	34	143	30
18	57	44	52	e21	59	122	203	109	90	33	130	31
19	55	44	e46	e29	64	110	186	103	173	34	115	51
20	53	43	e33	e31	83	99	168	e95	215	33	99	45
21	52	43	e31	35	99	96	162	93	235	32	89	39
22	51	43	e38	35	89	75	160	89	303	47	87	35
23	52	43	e21	36	110	84	154	87	194	44	86	33
24	51	46	e18	37	92	101	147	82	162	38	86	31
25	49	48	e16	36	84	86	137	82	135	35	85	30
26	47	48	e25	37	57	73	126	79	249	35	78	32
27	46	50	e35	39	46	70	131	79	209	53	73	33
28	45	50	e30	e36	62	67	281	93	177	78	68	33
29	45	49	e21	e35	---	65	343	98	146	251	64	33
30	45	49	e32	e27	---	63	330	94	120	224	61	32
31	46	---	e26	e30	---	60	---	94	---	152	58	---
TOTAL	1471	1363	1356	971	1449	2681	4640	4461	5152	2025	4352	1129
MEAN	47.45	45.43	43.74	31.32	51.75	86.48	154.7	143.9	171.7	65.32	140.4	37.63
MAX	64	50	63	39	110	194	343	291	309	251	426	54
MIN	36	42	16	21	21	39	50	79	81	32	58	30
AC-FT	2920	2700	2690	1930	2870	5320	9200	8850	10220	4020	8630	2240
CFSM	0.16	0.15	0.14	0.10	0.17	0.28	0.51	0.47	0.56	0.21	0.46	0.12
IN.	0.18	0.17	0.16	0.12	0.18	0.33	0.56	0.54	0.63	0.25	0.53	0.14

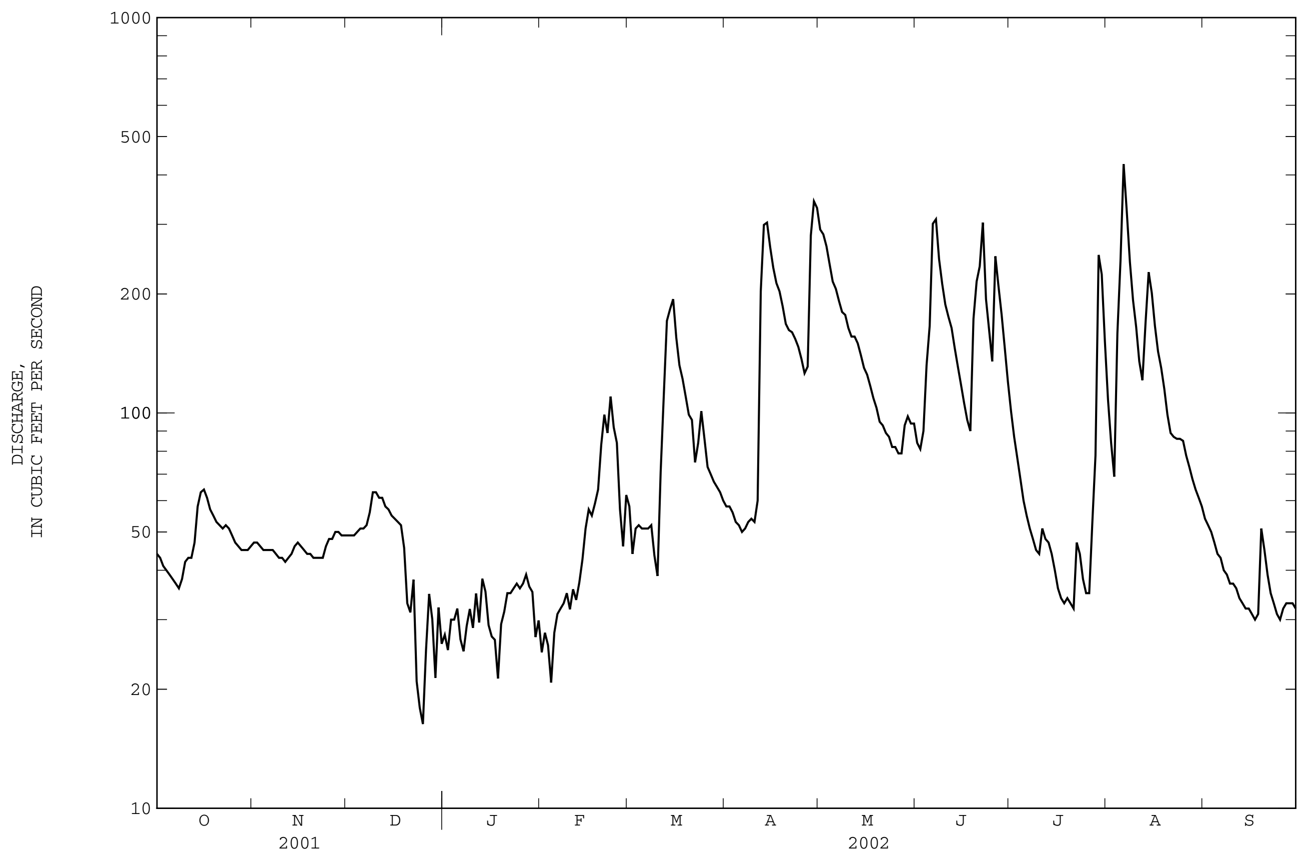
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1955 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	139.8	119.3	76.58	48.20	85.16	359.5	378.6	246.2	291.5	200.3	169.9	131.2
MAX	902	632	503	265	644	1056	1636	906	1199	1317	1744	807
(WY)	1987	1983	1983	1973	1984	1961	2001	1991	2000	1999	1993	1965
MIN	9.64	12.4	4.93	4.20	3.40	34.5	47.3	30.5	18.4	14.2	7.23	12.7
(WY)	1990	1990	1990	1959	1959	1964	1957	1958	1989	1964	1989	1988

05458000 LITTLE CEDAR RIVER NEAR IONIA, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1955 - 2002	
ANNUAL TOTAL	100064		31050			
ANNUAL MEAN	274.1		85.07		187.5	
HIGHEST ANNUAL MEAN					584	1993
LOWEST ANNUAL MEAN					32.0	1977
HIGHEST DAILY MEAN	7530	Apr 13	426	Aug 6	9930	Mar 27 1961
LOWEST DAILY MEAN	16	Dec 25	16	Dec 25e	3.0	Feb 4 1959a
ANNUAL SEVEN-DAY MINIMUM	24	Dec 23	24	Dec 23	3.0	Feb 3 1959
MAXIMUM PEAK FLOW			479	Aug 6	14000	Aug 16 1993
MAXIMUM PEAK STAGE			5.04	Aug 6	18.99	Aug 16 1993
INSTANTANEOUS LOW FLOW					3.0	Feb 4 1959
ANNUAL RUNOFF (AC-FT)	198500		61590		135800	
ANNUAL RUNOFF (CFSM)	0.90		0.28		0.61	
ANNUAL RUNOFF (INCHES)	12.16		3.77		8.32	
10 PERCENT EXCEEDS	539		192		390	
50 PERCENT EXCEEDS	52		52		72	
90 PERCENT EXCEEDS	35		32		20	

a Also Feb. 5-9, 1959.
e Estimated.



05458300 CEDAR RIVER AT WAVERLY, IA

LOCATION.--Lat 42°44'14", long 92°28'12", in NE$^{1}/_{4}$ NW$^{1}/_{4}$ SW$^{1}/_{4}$ sec.35, T.92 N., R.14 W., Bremer County, Hydrologic Unit 07080201, on left bank 300 ft downstream from bridge on county highway at Waverly, 3.6 mi upstream from West Fork Cedar River, and at mile 207.7 upstream from mouth of Iowa River.

DRAINAGE AREA.--1,547 mi^2.

PERIOD OF RECORD.--August 30, 2000 to current year.

GAGE.--Water-stage recorder. Datum of gage is 892.64 ft above NGVD of 1929.

REMARKS.--Records fair except those for estimated daily discharges, which are poor. U.S. Geological Survey data collection platform with telephone modem at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e470	e368	e419	e324	e271	344	354	e1580	e655	e566	e532	e347
2	e670	e396	e425	e297	e276	268	366	e1530	e625	e506	e446	e342
3	e370	e372	e424	e304	299	e273	355	e1390	e570	e481	e421	e337
4	e380	e360	e419	e320	258	e302	337	e1300	e880	e442	e408	e316
5	375	e357	e415	e324	284	364	365	e1140	1290	e404	1580	e290
6	355	e346	e414	e278	e285	372	341	e1030	1590	e383	2100	e280
7	359	e345	e415	e270	e300	393	360	e990	2050	e361	2170	e280
8	373	e372	440	e286	e298	411	384	e900	1700	e353	1700	e290
9	514	e339	457	e276	e303	398	377	e880	1400	e323	1480	e301
10	499	e353	462	e274	e331	323	399	e780	1440	e319	1340	e295
11	426	e340	514	e290	e304	e421	409	e785	1220	e404	e938	e280
12	496	e321	478	e289	e338	488	472	e840	e1090	e570	e881	e249
13	393	e354	443	e317	e345	507	643	e860	e1060	e604	e829	e301
14	514	e351	489	e297	e356	511	1030	e730	e1040	e502	e813	e275
15	325	e359	489	e293	e372	573	1130	e660	e1010	e434	e860	e290
16	339	e367	532	e297	e364	651	958	e720	e900	e387	e839	e295
17	e346	e351	422	e312	e373	616	1080	e670	e815	e340	e746	351
18	333	e348	e376	e294	e380	557	927	e650	e745	e323	e684	310
19	425	e345	e356	e297	421	516	854	e590	e760	e332	e653	342
20	405	e302	e349	e310	428	518	789	e550	e1140	e332	e601	377
21	426	e318	e348	e282	443	460	733	e535	e950	e357	e554	303
22	407	e332	e336	e276	482	e441	716	e500	e840	e336	e554	313
23	412	e323	e314	e295	546	478	711	e515	e940	e357	e591	278
24	403	e327	e303	e261	540	448	704	e505	e1160	e340	e492	285
25	e414	e357	e331	e272	461	437	705	e485	1090	e340	e523	313
26	e379	358	e361	e280	437	437	677	e475	1030	e327	e492	290
27	e375	e378	e374	e284	362	439	672	e470	1160	e374	e477	278
28	e368	406	e388	e300	390	e377	818	e460	e893	e400	e477	294
29	e375	409	e347	e306	---	e310	1060	e575	e923	e519	e415	338
30	e360	e407	e354	e313	---	e279	1290	e785	e621	e659	e394	352
31	e378	---	e338	e310	---	364	---	e720	---	e651	e378	---
TOTAL	12664	10661	12532	9128	10247	13276	20016	24600	31587	13026	25368	9192
MEAN	408.5	355.4	404.3	294.5	366.0	428.3	667.2	793.5	1053	420.2	818.3	306.4
MAX	670	409	532	324	546	651	1290	1580	2050	659	2170	377
MIN	325	302	303	261	258	268	337	460	570	319	378	249
AC-FT	25120	21150	24860	18110	20320	26330	39700	48790	62650	25840	50320	18230
CFSM	0.26	0.23	0.26	0.19	0.24	0.28	0.43	0.51	0.68	0.27	0.53	0.20
IN.	0.30	0.26	0.30	0.22	0.25	0.32	0.48	0.59	0.76	0.31	0.61	0.22

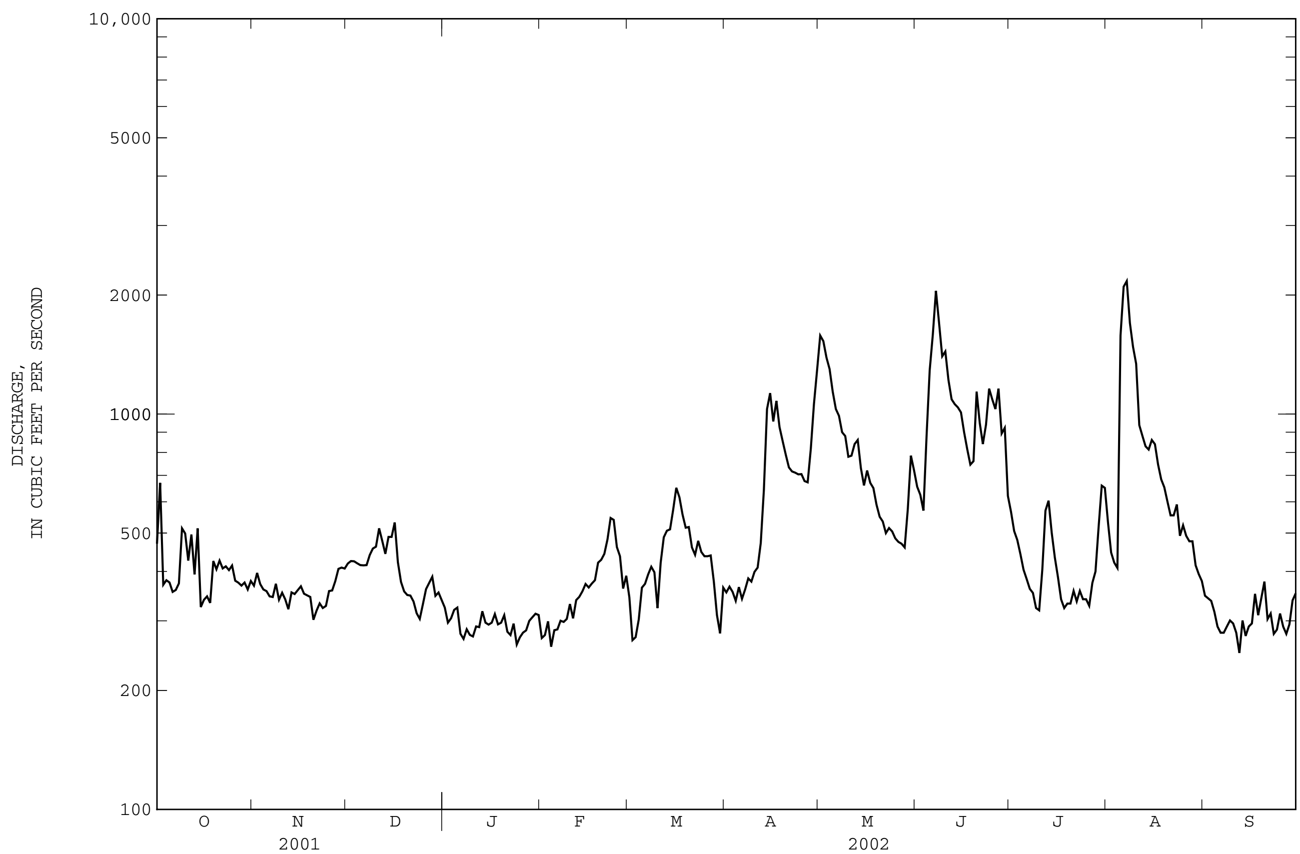
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	385.5	376.6	373.1	358.2	351.3	648.3	4060	2567	1872	1062	887.5	454.7
MAX	409	398	404	422	366	868	7454	4340	2634	1232	1307	525
(WY)	2002	2001	2002	2001	2002	2001	2001	2001	2001	2002	2002	2001
MIN	363	355	342	294	337	428	667	794	1109	893	468	415
(WY)	2001	2002	2001	2002	2001	2002	2002	2002	2002	2001	2001	2002

05458300 CEDAR RIVER AT WAVERLY, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 2000 - 2002	
ANNUAL TOTAL	580369		192297			
ANNUAL MEAN	1590		526.8		1118	
HIGHEST ANNUAL MEAN					1584	2001
LOWEST ANNUAL MEAN					651	2002
HIGHEST DAILY MEAN	23400	Apr 14	2170	Aug 7	23400	Apr 14 2001
LOWEST DAILY MEAN	270	Feb 27	249	Sep 12	250	Dec 18 2000
ANNUAL SEVEN-DAY MINIMUM	283	Feb 27	279	Jan 21	279	Jan 21 2002
MAXIMUM PEAK FLOW			2550	Aug 7	25600	Apr 14 2001
MAXIMUM PEAK STAGE			5.96	Aug 7	12.95	Apr 14 2001
ANNUAL RUNOFF (AC-FT)	1151000		381400		809600	
ANNUAL RUNOFF (CFSM)	1.03		0.34		0.72	
ANNUAL RUNOFF (INCHES)	13.96		4.62		9.82	
10 PERCENT EXCEEDS	3350		944		2190	
50 PERCENT EXCEEDS	480		403		458	
90 PERCENT EXCEEDS	334		295		307	

e Estimated



05458500 CEDAR RIVER AT JANESVILLE, IA

LOCATION.--Lat 42°38'54", long 92°27'54", in NE 1/4 SW 1/4 sec.35, T.91 N., R.14 W., Bremer County, Hydrologic Unit 07080201, on left bank 300 ft downstream from bridge on county highway at Janesville, 3.6 mi upstream from West Fork Cedar River, and at mile 207.7 upstream from mouth of Iowa River.

DRAINAGE AREA.--1,661 mi^2.

PERIOD OF RECORD.--October 1904 to Sept. 1906, October 1914 to September 1927, October 1932 to September 1942, October 1945 to current year. Monthly discharge only for some periods, published in WSP 1308. Published as "Red Cedar River at Janesville", 1905-06.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1906 (M), 1915-16 (M), 1917, 1918-19 (M), 1920-27, 1933-37 (M), 1940-42 (M), WDR IA-97-1:1996.

GAGE.--Water-stage recorder. Datum of gage is 868.26 ft above NGVD of 1929. Prior to July 26, 1919, nonrecording gage at site 1,000 ft downstream at datum 4.0 ft lower. July 26, 1919 to Sept. 30, 1927, Nov. 14, 1932 to Sept 30, 1942, and Apr. 26, 1946 to Nov. 10, 1949, nonrecording gage at county bridge 300 ft upstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Diurnal fluctuation during low water caused by powerplant at Waverly, 10 mi upstream. U.S. Geological Survey data collection platform with telephone modem at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 17, 1945, reached a stage of 16.2 ft, from floodmark at site 300 ft upstream, discharge, 34,300 ft^3/s. Flood of Mar. 16, 1929, reached a stage of about 16 ft, from information by City of Waterloo, discharge not determined.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	481	379	421	e350	e284	426	370	1600	664	685	598	447
2	684	405	426	e320	e289	330	375	1540	631	639	526	439
3	386	388	426	e326	e310	e405	374	1400	572	556	476	449
4	e380	366	422	e341	e277	e482	329	e1300	889	530	464	407
5	e375	364	417	e345	e295	525	355	e1150	1290	507	606	383
6	e365	355	417	e303	e290	495	316	1040	1490	482	1400	364
7	e360	352	416	e288	e310	397	306	993	2370	456	2300	338
8	e370	381	447	302	302	419	353	904	2410	437	2270	359
9	e540	349	463	e290	308	428	335	890	1840	418	1720	369
10	e500	358	468	297	339	e393	322	777	1550	392	1330	362
11	e430	345	520	305	308	e443	323	792	1310	460	1030	357
12	e495	327	510	316	349	541	413	845	1100	555	975	320
13	e390	360	477	336	350	555	557	878	1060	707	970	360
14	e510	356	515	e314	365	564	1010	727	1050	619	888	320
15	e325	364	e520	e308	380	634	1230	669	1010	526	1050	320
16	e340	374	e540	e310	373	744	e1100	725	907	446	970	318
17	356	360	461	e323	379	736	1210	683	820	442	853	342
18	333	353	386	e306	386	660	962	647	749	407	792	356
19	428	350	373	e304	428	597	905	609	764	411	748	342
20	420	307	356	e318	464	566	810	574	1140	374	675	482
21	449	323	358	293	501	549	762	544	954	423	603	351
22	443	338	e350	281	527	522	740	511	842	432	644	356
23	444	325	e331	302	596	536	698	524	e938	e430	695	323
24	437	330	e320	e271	607	510	685	510	1170	387	539	308
25	450	361	e345	e281	558	491	719	500	1140	424	593	331
26	403	359	e372	e290	513	483	624	481	1050	420	559	329
27	396	384	e384	e295	450	455	650	479	1240	453	551	305
28	e380	405	e397	e311	693	e390	801	479	985	465	555	316
29	385	410	e369	319	---	323	1090	587	1010	580	483	344
30	380	411	e373	322	---	288	1400	797	813	778	464	378
31	386	---	e360	322	---	370	---	725	---	770	456	---
TOTAL	13021	10839	12940	9589	11231	15257	20124	24880	33758	15611	26783	10775
MEAN	420.0	361.3	417.4	309.3	401.1	492.2	670.8	802.6	1125	503.6	864.0	359.2
MAX	684	411	540	350	693	744	1400	1600	2410	778	2300	482
MIN	325	307	320	271	277	288	306	479	572	374	456	305
AC-FT	25830	21500	25670	19020	22280	30260	39920	49350	66960	30960	53120	21370
CFSM	0.25	0.22	0.25	0.19	0.24	0.30	0.40	0.48	0.68	0.30	0.52	0.22
IN.	0.29	0.24	0.29	0.21	0.25	0.34	0.45	0.56	0.76	0.35	0.60	0.24

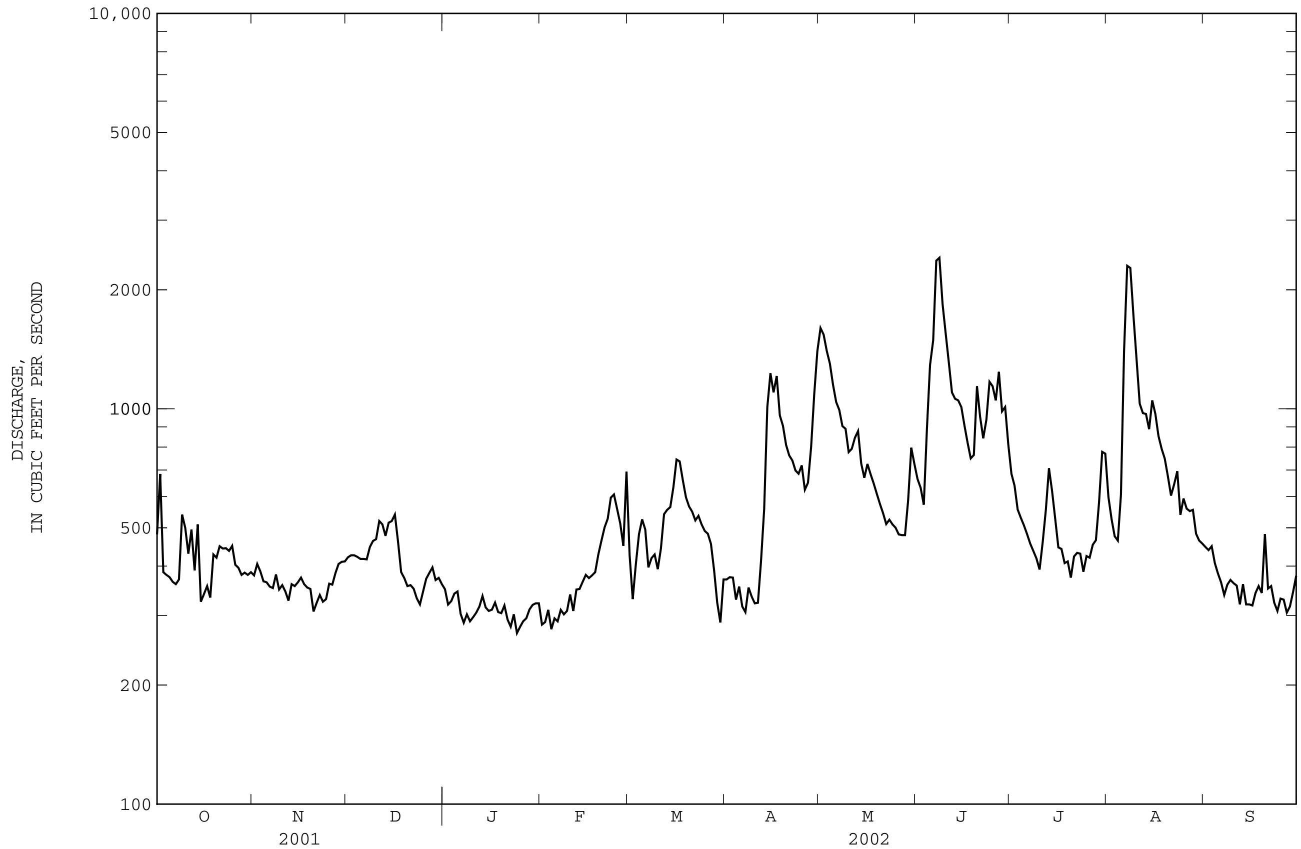
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1905 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	617.1	586.1	436.1	346.4	548.2	1813	1896	1297	1379	1066	792.4	624.2
MAX	3793	2672	2404	1293	3393	4851	8966	5668	6223	6328	7762	2805
(WY)	1987	1983	1983	1983	1984	1973	1993	1991	1993	1999	1993	1993
MIN	101	121	75.2	80.3	61.2	124	247	134	95.2	84.7	83.6	117
(WY)	1935	1934	1934	1917	1959	1934	1957	1934	1934	1934	1934	1934

05458500 CEDAR RIVER AT JANESVILLE, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1905 - 2002	
ANNUAL TOTAL	619736		204808			
ANNUAL MEAN	1698		561.1		951.2	
HIGHEST ANNUAL MEAN					3454	1993
LOWEST ANNUAL MEAN					187	1934
HIGHEST DAILY MEAN	20600	Apr 14	2410	Jun 8	38800	Jul 22 1999
LOWEST DAILY MEAN	260	Feb 28	271	Jan 24	28	Oct 21 1922
ANNUAL SEVEN-DAY MINIMUM	280	Feb 28	288	Jan 21	50	Feb 1 1918
MAXIMUM PEAK FLOW			2590	Jun 7	42200	Jul 22 1999
MAXIMUM PEAK STAGE			3.48	Jun 7	17.15	Jul 22 1999
INSTANTANEOUS LOW FLOW			235	Mar 2		
ANNUAL RUNOFF (AC-FT)	1229000		406200		689100	
ANNUAL RUNOFF (CFSM)	1.02		0.34		0.57	
ANNUAL RUNOFF (INCHES)	13.88		4.59		7.78	
10 PERCENT EXCEEDS	3790		1000		2100	
50 PERCENT EXCEEDS	504		437		477	
90 PERCENT EXCEEDS	340		316		164	

e Estimated



05458900 WEST FORK CEDAR RIVER AT FINCHFORD, IA

LOCATION.--Lat 42°37'50", long 92°32'24", in $SW^1/_4$ $SE^1/_4$ sec.6, T.90 N., R.14 W., Black Hawk County, Hydrologic Unit 07080204, on left bank 100 ft downstream from bridge on county highway C55 at Finchford, 3.2 mi upstream from Shell Rock River, and 5.0 mi upstream from mouth.

DRAINAGE AREA.--846 mi^2.

PERIOD OF RECORD.--October 1945 to current year. Prior to October 1955, published as "West Fork Shell Rock River at Finchford."

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1946 (M), 1947.

GAGE.--Water-stage recorder. Datum of gage is 867.54 ft above NGVD of 1929. Prior to June 10, 1955, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. An authorized diversion of 2,100 acre-ft is made into Big Marsh, 16 mi upstream from gage, each year between September 1 and November 15. Net effect on daily flows at gage is unknown. U.S. Geological Survey Data Collection platform with telephone modem at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1929 reached a stage of about 14 ft, from information by local resident, discharge, about 12,800 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	144	188	291	e185	e147	e199	194	1220	647	348	e397	e396
2	140	189	280	e153	e159	e165	186	1070	596	312	e356	e387
3	136	189	276	e168	e180	e161	194	969	561	290	e328	e392
4	132	188	268	e183	e139	e215	192	912	585	275	e338	e365
5	132	184	262	e188	e155	e243	183	863	612	293	e413	359
6	134	184	265	e153	e144	e250	184	814	553	289	e854	327
7	137	183	271	e134	e171	258	187	780	506	295	e1440	247
8	137	182	350	e151	e165	227	189	754	474	334	e1390	211
9	136	186	e390	e130	e174	230	194	e720	445	316	e936	207
10	139	187	360	e133	e196	207	192	679	427	292	e651	209
11	140	188	341	e155	e182	237	194	658	432	e300	e578	185
12	145	189	321	e161	e203	271	228	731	461	304	e559	167
13	149	190	308	e176	e205	297	310	904	440	402	e587	161
14	161	189	354	e167	e216	297	464	1070	423	660	e545	149
15	183	190	370	e161	e226	303	503	1010	404	614	e748	137
16	204	192	335	e165	234	287	479	904	388	526	e688	131
17	207	191	307	e174	240	259	451	816	368	459	e642	124
18	192	191	289	e150	244	246	425	736	356	409	e578	126
19	188	192	273	e143	248	238	419	671	536	376	e527	127
20	188	188	262	e159	273	232	393	622	1390	351	e477	376
21	190	184	246	e138	318	231	384	582	1820	321	e454	485
22	186	184	e228	e132	e306	217	377	546	1800	e340	e504	384
23	197	183	e209	e139	e297	197	381	525	1160	e341	e555	317
24	208	185	e142	e127	e289	214	379	501	880	e312	e421	257
25	215	192	e175	e141	e276	227	366	495	722	e334	e513	231
26	220	206	e203	e152	e191	208	357	490	621	e318	e472	227
27	217	231	e232	e158	e213	193	356	507	543	e335	e472	267
28	213	252	e248	e167	e222	189	e600	518	480	e338	e458	265
29	206	273	e211	e173	---	e188	909	594	431	e370	e432	254
30	e200	295	e217	e184	---	183	1230	661	391	e502	e414	239
31	185	---	e200	e173	---	190	---	701	---	e498	e396	---
TOTAL	5361	5945	8484	4873	6013	7059	11100	23023	19452	11454	18123	7709
MEAN	172.9	198.2	273.7	157.2	214.8	227.7	370.0	742.7	648.4	369.5	584.6	257.0
MAX	220	295	390	188	318	303	1230	1220	1820	660	1440	485
MIN	132	182	142	127	139	161	183	490	356	275	328	124
AC-FT	10630	11790	16830	9670	11930	14000	22020	45670	38580	22720	35950	15290
CFSM	0.20	0.23	0.32	0.19	0.25	0.27	0.44	0.88	0.77	0.44	0.69	0.30
IN.	0.24	0.26	0.37	0.21	0.26	0.31	0.49	1.01	0.86	0.50	0.80	0.34

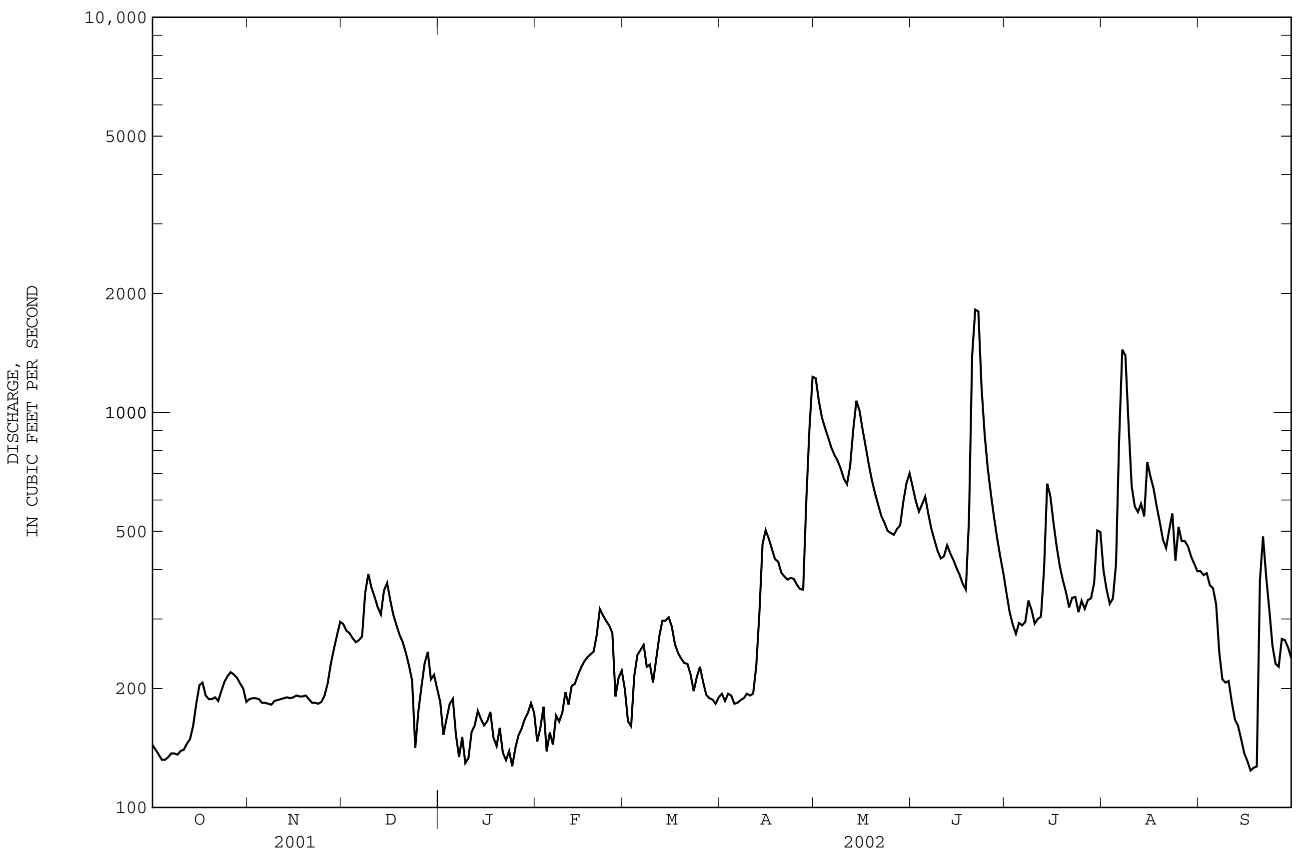
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	313.2	314.9	248.9	170.2	307.2	996.4	1061	864.7	1028	739.6	388.6	306.8
MAX	1412	1502	1165	995	2303	2456	4170	3472	3358	3995	3023	2149
(WY)	1973	1973	1983	1973	1984	1961	1965	1999	1984	1993	1993	1965
MIN	14.9	22.3	14.2	9.35	6.37	86.2	81.8	80.1	39.5	26.6	15.2	16.9
(WY)	1990	1959	1959	1959	1959	1954	1957	1957	1977	1977	1989	1989

05458900 WEST FORK CEDAR RIVER AT FINCHFORD, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1946 - 2002	
ANNUAL TOTAL	342808.6		128596			
ANNUAL MEAN	939.2		352.3		562.3	
HIGHEST ANNUAL MEAN					1800	1993
LOWEST ANNUAL MEAN					65.5	1956
HIGHEST DAILY MEAN	5560	May 7	1820	Jun 21	25100	Jun 27 1951
LOWEST DAILY MEAN	75	Feb 2	124	Sep 17	5.9	Feb 26 1959a
ANNUAL SEVEN-DAY MINIMUM	89	Feb 15	135	Oct 3	6.1	Feb 23 1959
MAXIMUM PEAK FLOW			2010	Jun 22	31900	Jun 27 1951
MAXIMUM PEAK STAGE			10.24	Jun 22	18.45	Jul 29 1990
INSTANTANEOUS LOW FLOW			119	Sep 19	5.9	Feb 26 1959
ANNUAL RUNOFF (AC-FT)	680000		255100		407300	
ANNUAL RUNOFF (CFSM)	1.11		0.42		0.66	
ANNUAL RUNOFF (INCHES)	15.07		5.65		9.03	
10 PERCENT EXCEEDS	2950		654		1370	
50 PERCENT EXCEEDS	256		265		242	
90 PERCENT EXCEEDS	110		153		48	

a Also Feb. 27, 1959.
e Estimated.



05459500 WINNEBAGO RIVER AT MASON CITY, IA

LOCATION.--Lat 43°09'54", long 93°11'33", in NE$^1/_4$ NW$^1/_4$ sec.3, T.96 N., R.20 W., Cerro Gordo County, Hydrologic Unit 07080203, on right bank 650 ft upstream from Thirteenth Street Bridge in Mason City, 0.1 mi downstream from Calmus Creek, 1.0 mi upstream from Willow Creek, and at mile 275.8 upstream from mouth of Iowa River.

DRAINAGE AREA.--526 mi^2.

PERIOD OF RECORD.--October 1932 to current year. Prior to December 1932, monthly discharge only, published in WSP 1308. Prior to October 1959, published as "Lime Creek at Mason City".

REVISED RECORDS.--WSP 825: 1935-36. WSP 1438: Drainage area. WSP 1558: 1933-37, 1943 (M), 1945, 1948.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,069.59 ft above NGVD of 1929. Prior to Oct. 15, 1934, nonrecording gage at datum 6.47 ft lower. Oct. 15 to Nov. 6, 1934, nonrecording gage at different datum, and Nov. 7, 1934, to Mar. 22, 1935, nonrecording gage at present datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey data collection platform with telephone modem at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	48	77	e35	e36	66	74	205	245	e167	572	235
2	43	49	70	e33	e39	61	80	202	212	141	447	227
3	39	45	66	e44	e37	54	73	185	173	129	335	211
4	35	43	71	e47	e26	58	68	167	181	118	675	193
5	37	45	77	e51	e32	55	62	151	327	106	1510	177
6	39	43	111	e37	e34	56	65	143	254	105	2050	164
7	38	44	110	e36	e37	54	64	134	216	97	1840	153
8	36	46	91	e41	e38	56	62	124	178	88	1720	141
9	39	43	83	e47	e44	e37	64	122	149	84	1520	134
10	45	44	78	e42	e41	e31	63	112	135	80	1310	133
11	46	43	77	e51	e48	e49	88	110	170	526	1100	127
12	48	43	78	e44	e46	e74	262	131	216	747	988	118
13	52	46	75	e54	e49	106	e250	128	213	656	1130	114
14	56	e50	75	e50	55	120	243	120	205	513	1190	114
15	59	45	67	e39	70	112	216	113	186	353	1070	113
16	57	46	65	e36	90	98	182	109	163	259	960	109
17	54	46	70	e35	94	103	169	100	146	207	858	106
18	50	47	76	e25	96	108	157	93	438	176	744	116
19	48	e45	65	e41	111	111	139	87	914	154	625	196
20	48	40	54	e46	135	136	127	83	897	137	536	193
21	45	44	50	e51	124	116	123	81	976	124	470	159
22	45	43	e51	e50	101	78	132	76	1010	178	546	140
23	49	45	e24	e37	97	104	130	74	848	354	685	127
24	49	65	e20	e33	99	132	128	70	599	281	616	119
25	51	90	e17	e43	94	100	119	75	e450	244	520	119
26	47	90	e26	e47	46	85	104	85	318	238	474	125
27	44	99	e42	e57	63	83	117	80	278	269	409	137
28	44	103	e37	e54	81	86	208	79	242	417	353	153
29	43	91	e26	e53	---	85	244	e100	212	659	328	149
30	45	83	e39	e43	---	84	224	e300	185	779	296	142
31	47	---	e33	e47	---	78	---	260	---	671	264	---
TOTAL	1424	1654	1901	1349	1863	2576	4037	3899	10736	9057	26141	4444
MEAN	45.94	55.13	61.32	43.52	66.54	83.10	134.6	125.8	357.9	292.2	843.3	148.1
MAX	59	103	111	57	135	136	262	300	1010	779	2050	235
MIN	35	40	17	25	26	31	62	70	135	80	264	106
AC-FT	2820	3280	3770	2680	3700	5110	8010	7730	21290	17960	51850	8810
CFSM	0.09	0.10	0.12	0.08	0.13	0.16	0.26	0.24	0.68	0.56	1.60	0.28
IN.	0.10	0.12	0.13	0.10	0.13	0.18	0.29	0.28	0.76	0.64	1.85	0.31

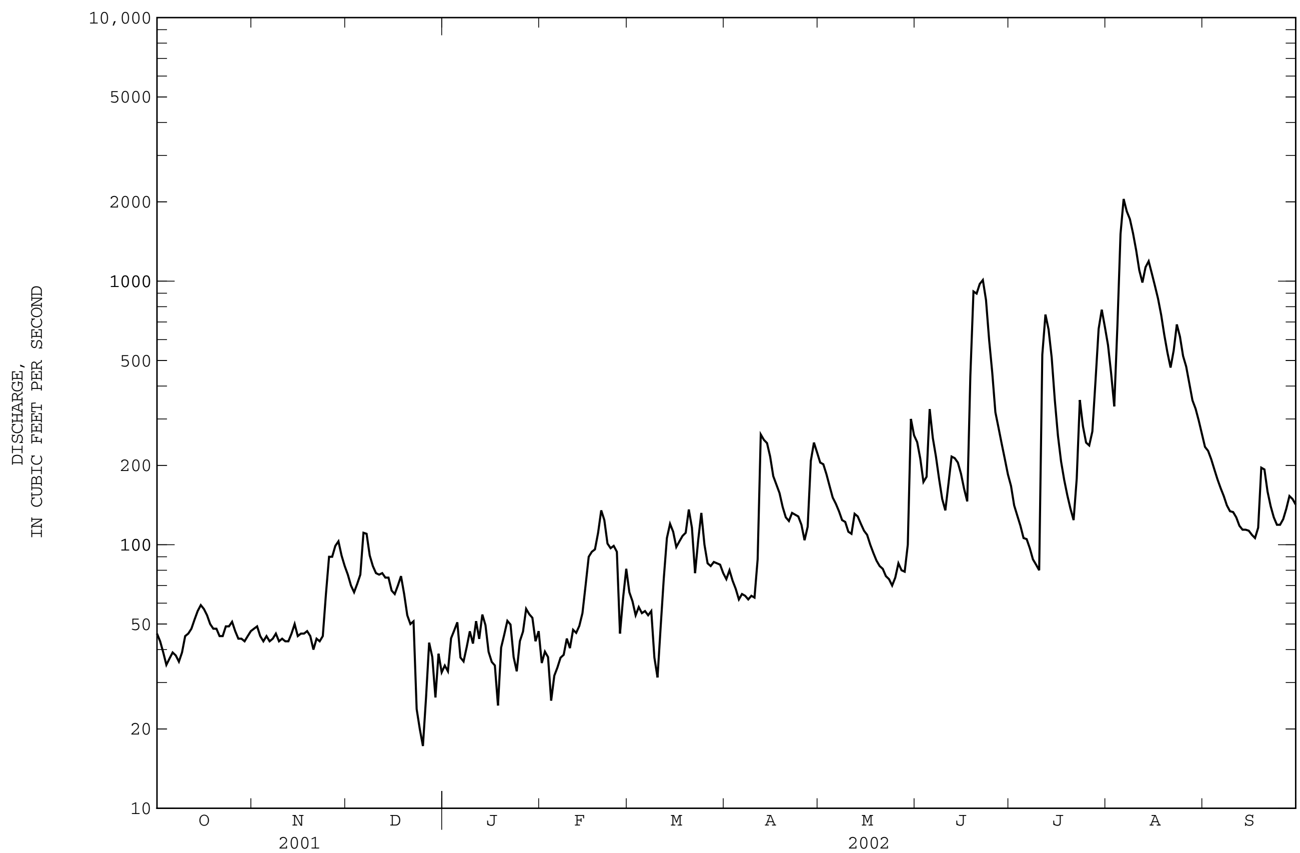
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1933 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	169.9	167.2	110.4	74.72	121.2	512.5	621.2	430.1	497.9	319.0	222.7	177.5
MAX	840	811	724	378	1002	1707	2880	1807	2160	1915	2054	1073
(WY)	1966	1942	1983	1983	1984	1973	1965	1991	1993	1993	1979	1938
MIN	11.3	12.7	7.45	6.61	7.50	17.6	61.0	16.1	21.9	7.29	4.89	12.6
(WY)	1935	1934	1934	1977	1959	1934	1957	1934	1934	1934	1934	1933

05459500 WINNEBAGO RIVER AT MASON CITY, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1933 - 2002	
ANNUAL TOTAL	185774		69081			
ANNUAL MEAN	509.0		189.3		285.7	
HIGHEST ANNUAL MEAN					947	1993
LOWEST ANNUAL MEAN					28.1	1934
HIGHEST DAILY MEAN	5810	Apr 12	2050	Aug 6	9370	Mar 27 1961
LOWEST DAILY MEAN	17	Dec 25	17	Dec 25	1.2	Aug 19 1989
ANNUAL SEVEN-DAY MINIMUM	27	Dec 23	27	Dec 23	3.1	Dec 29 1933
MAXIMUM PEAK FLOW			2120	Aug 6	10800	Mar 30 1933
MAXIMUM PEAK STAGE			6.92	Aug 6	15.70	Mar 30 1933
INSTANTANEOUS LOW FLOW					0.86	Aug 18 1988a
ANNUAL RUNOFF (AC-FT)	368500		137000		207000	
ANNUAL RUNOFF (CFSM)	0.97		0.36		0.54	
ANNUAL RUNOFF (INCHES)	13.14		4.89		7.38	
10 PERCENT EXCEEDS	1500		472		728	
50 PERCENT EXCEEDS	77		94		114	
90 PERCENT EXCEEDS	45		41		20	

a Also Aug. 19, 1988.
e Estimated.



05460000 CLEAR LAKE AT CLEAR LAKE, IA

LOCATION.--Lat 43°08'01", long 93°22'57", in $SE^1/_4$ $NE^1/_4$ sec.13, T.96 N., R.22 W., Cerro Gordo County, Hydrologic Unit 07080203, at the public bathing beach in the town of Clear Lake, near dam across Clear Creek.

DRAINAGE AREA.--22.6 mi^2.

PERIOD OF RECORD.--May 1933 to current year. No winter records 1933-52. Record fragmentary November 1952 to June 1959.

GAGE.--Water-stage recorder. Datum of gage is 1,222.24 ft above NGVD of 1929, and 4.60 ft below crest of spillway of dam at outlet. See WSP 1708 for history of changes prior to June 25, 1959.

REMARKS.--Lake is formed by concrete dam on Clear Creek with ungated overflow spillway 50 ft long at elevation 1,226.84 ft above sea level. Dam constructed in 1903. A previous outlet works had been constructed in 1887. Lake is used for conservation and recreation. Area of lake is approximately 3,600 acres. U.S. Geological Survey satellite data collection platform at station.

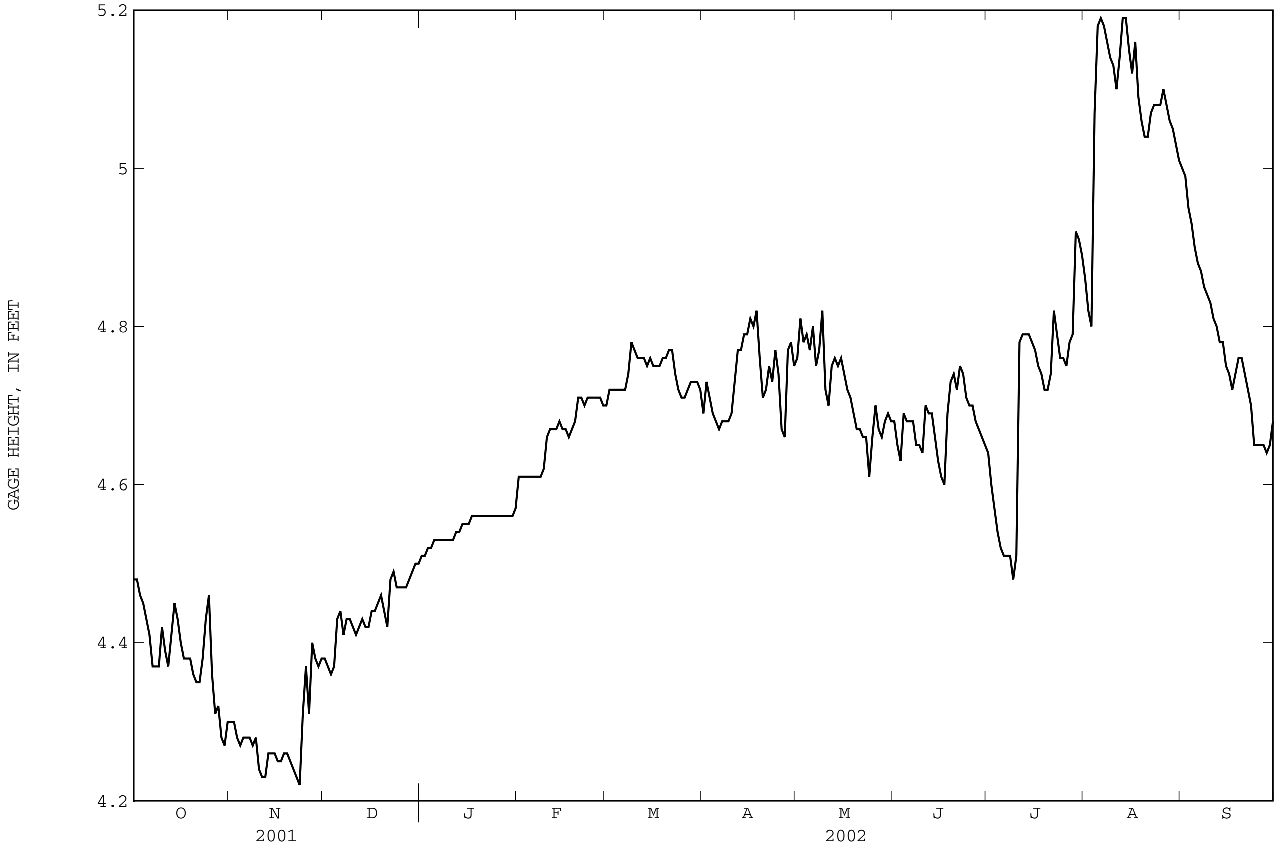
EXTREMES FOR PERIOD OF RECORD.--Maximum gage height observed, 5.94 ft July 3, 1951; minimum observed, 0.76 ft Oct. 26, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 5.28 ft Aug. 17; minimum, 4.20 ft Nov. 23.

GAGE HEIGHT from DCP, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.48	4.30	4.38	4.51	4.61	4.70	4.69	4.76	4.68	4.64	4.86	5.00
2	4.48	4.30	4.37	4.51	4.61	4.72	4.73	4.81	4.65	4.60	4.82	4.99
3	4.46	4.28	4.36	4.52	4.61	4.72	4.71	4.78	4.63	4.57	4.80	4.95
4	4.45	4.27	4.37	4.52	4.61	4.72	4.69	4.79	4.69	4.54	5.07	4.93
5	4.43	4.28	4.43	4.53	4.61	4.72	4.68	4.77	4.68	4.52	5.18	4.90
6	4.41	4.28	4.44	4.53	4.61	4.72	4.67	4.80	4.68	4.51	5.19	4.88
7	4.37	4.28	4.41	4.53	4.61	4.72	4.68	4.75	4.68	4.51	5.18	4.87
8	4.37	4.27	4.43	4.53	4.61	4.74	4.68	4.77	4.65	4.51	5.16	4.85
9	4.37	4.28	4.43	4.53	4.62	4.78	4.68	4.82	4.65	4.48	5.14	4.84
10	4.42	4.24	4.42	4.53	4.66	4.77	4.69	4.72	4.64	4.51	5.13	4.83
11	4.39	4.23	4.41	4.53	4.67	4.76	4.73	4.70	4.70	4.78	5.10	4.81
12	4.37	4.23	4.42	4.54	4.67	4.76	4.77	4.75	4.69	4.79	5.14	4.80
13	4.41	4.26	4.43	4.54	4.67	4.76	4.77	4.76	4.69	4.79	5.19	4.78
14	4.45	4.26	4.42	4.55	4.68	4.75	4.79	4.75	4.66	4.79	5.19	4.78
15	4.43	4.26	4.42	4.55	4.67	4.76	4.79	4.76	4.63	4.78	5.15	4.75
16	4.40	4.25	4.44	4.55	4.67	4.75	4.81	4.74	4.61	4.77	5.12	4.74
17	4.38	4.25	4.44	4.56	4.66	4.75	4.80	4.72	4.60	4.75	5.16	4.72
18	4.38	4.26	4.45	4.56	4.67	4.75	4.82	4.71	4.69	4.74	5.09	4.74
19	4.38	4.26	4.46	4.56	4.68	4.76	4.76	4.69	4.73	4.72	5.06	4.76
20	4.36	4.25	4.44	4.56	4.71	4.76	4.71	4.67	4.74	4.72	5.04	4.76
21	4.35	4.24	4.42	4.56	4.71	4.77	4.72	4.67	4.72	4.74	5.04	4.74
22	4.35	4.23	4.48	4.56	4.70	4.77	4.75	4.66	4.75	4.82	5.07	4.72
23	4.38	4.22	4.49	4.56	4.71	4.74	4.73	4.66	4.74	4.79	5.08	4.70
24	4.43	4.31	4.47	4.56	4.71	4.72	4.77	4.61	4.71	4.76	5.08	4.65
25	4.46	4.37	4.47	4.56	4.71	4.71	4.74	4.66	4.70	4.76	5.08	4.65
26	4.36	4.31	4.47	4.56	4.71	4.71	4.67	4.70	4.70	4.75	5.10	4.65
27	4.31	4.40	4.47	4.56	4.71	4.72	4.66	4.67	4.68	4.78	5.08	4.65
28	4.32	4.38	4.48	4.56	4.70	4.73	4.77	4.66	4.67	4.79	5.06	4.64
29	4.28	4.37	4.49	4.56	---	4.73	4.78	4.68	4.66	4.92	5.05	4.65
30	4.27	4.38	4.50	4.56	---	4.73	4.75	4.69	4.65	4.91	5.03	4.68
31	4.30	---	4.50	4.57	---	4.72	---	4.68	---	4.89	5.01	---
MEAN	4.39	4.28	4.44	4.55	4.66	4.74	4.73	4.72	4.68	4.71	5.08	4.78
MAX	4.48	4.40	4.50	4.57	4.71	4.78	4.82	4.82	4.75	4.92	5.19	5.00
MIN	4.27	4.22	4.36	4.51	4.61	4.70	4.66	4.61	4.60	4.48	4.80	4.64

05460000 CLEAR LAKE AT CLEAR LAKE, IA--Continued



05462000 SHELL ROCK RIVER AT SHELL ROCK, IA

LOCATION.--Lat 42°42'43", long 92°34'58", in $NW^1/_4$ $NE^1/_4$ sec.11, T.91 N., R.15 W., Butler County, Hydrologic Unit 07080202 on right bank 400 ft upstream from bridge on county highway C45 in Shell Rock, 2.2 mi downstream from Curry Creek, and 10.4 mi upstream from mouth.

DRAINAGE AREA.--1,746 mi^2.

PERIOD OF RECORD.--June 1953 to current year. Prior to July 1953, monthly discharge only, published in WSP 1728.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Rockfill dam since Oct. 19, 1957. Datum of gage is 885.34 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey data collection platform with telephone modem at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1856 reached a stage of 17.7 ft at bridge 400 ft downstream, from information provided by U.S. Army Corps of Engineers, discharge, about 45,000 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	330	282	361	220	226	293	342	957	627	561	1220	654
2	312	281	343	219	204	210	342	904	611	509	998	605
3	317	276	339	216	e192	230	339	896	581	465	823	586
4	308	274	334	218	172	280	323	857	572	443	786	504
5	306	270	340	224	e209	279	323	787	539	423	1490	487
6	298	267	347	232	e212	307	313	744	661	405	3530	471
7	293	270	376	225	e225	302	299	706	660	399	4850	446
8	291	269	412	236	e221	304	304	661	611	395	4300	412
9	337	263	379	e239	e226	299	299	654	556	369	3740	404
10	313	266	360	e241	262	e287	296	597	532	360	3160	395
11	306	264	354	e251	265	e320	312	628	543	418	2640	386
12	306	268	356	e248	290	e330	388	692	585	714	2320	375
13	314	269	349	e261	282	362	678	671	630	1100	2290	362
14	338	274	337	277	280	393	797	655	638	1010	2670	352
15	352	277	331	269	283	429	719	627	613	842	2720	348
16	336	276	336	261	294	416	667	614	580	680	2350	e347
17	328	269	332	239	314	397	632	575	541	568	2060	340
18	324	269	322	233	333	410	613	550	520	497	1870	341
19	321	272	325	240	378	436	589	527	870	455	1640	384
20	313	283	319	242	427	440	552	507	2040	427	1370	467
21	308	220	296	250	471	460	540	484	1950	405	1180	465
22	312	256	292	249	453	413	532	466	1920	409	1080	e437
23	315	266	291	255	479	365	516	461	1750	489	1090	380
24	319	254	250	248	357	418	523	441	1460	568	1230	365
25	313	300	224	244	400	479	500	452	1160	582	1180	352
26	299	311	e236	249	378	409	474	455	941	532	1040	353
27	291	358	e267	252	252	367	500	456	834	546	e1000	358
28	300	366	e253	267	285	367	684	469	739	595	e942	372
29	309	372	255	269	---	354	1020	554	664	795	879	387
30	291	368	245	264	---	349	1060	517	603	1570	785	383
31	278	---	233	259	---	344	---	558	---	1540	719	---
TOTAL	9678	8510	9794	7597	8370	11049	15476	19122	25531	19071	57952	12518
MEAN	312.2	283.7	315.9	245.1	298.9	356.4	515.9	616.8	851.0	615.2	1869	417.3
MAX	352	372	412	277	479	479	1060	957	2040	1570	4850	654
MIN	278	220	224	216	172	210	296	441	520	360	719	340
AC-FT	19200	16880	19430	15070	16600	21920	30700	37930	50640	37830	114900	24830
CFSM	0.18	0.16	0.18	0.14	0.17	0.20	0.30	0.35	0.49	0.35	1.07	0.24
IN.	0.21	0.18	0.21	0.16	0.18	0.24	0.33	0.41	0.54	0.41	1.23	0.27

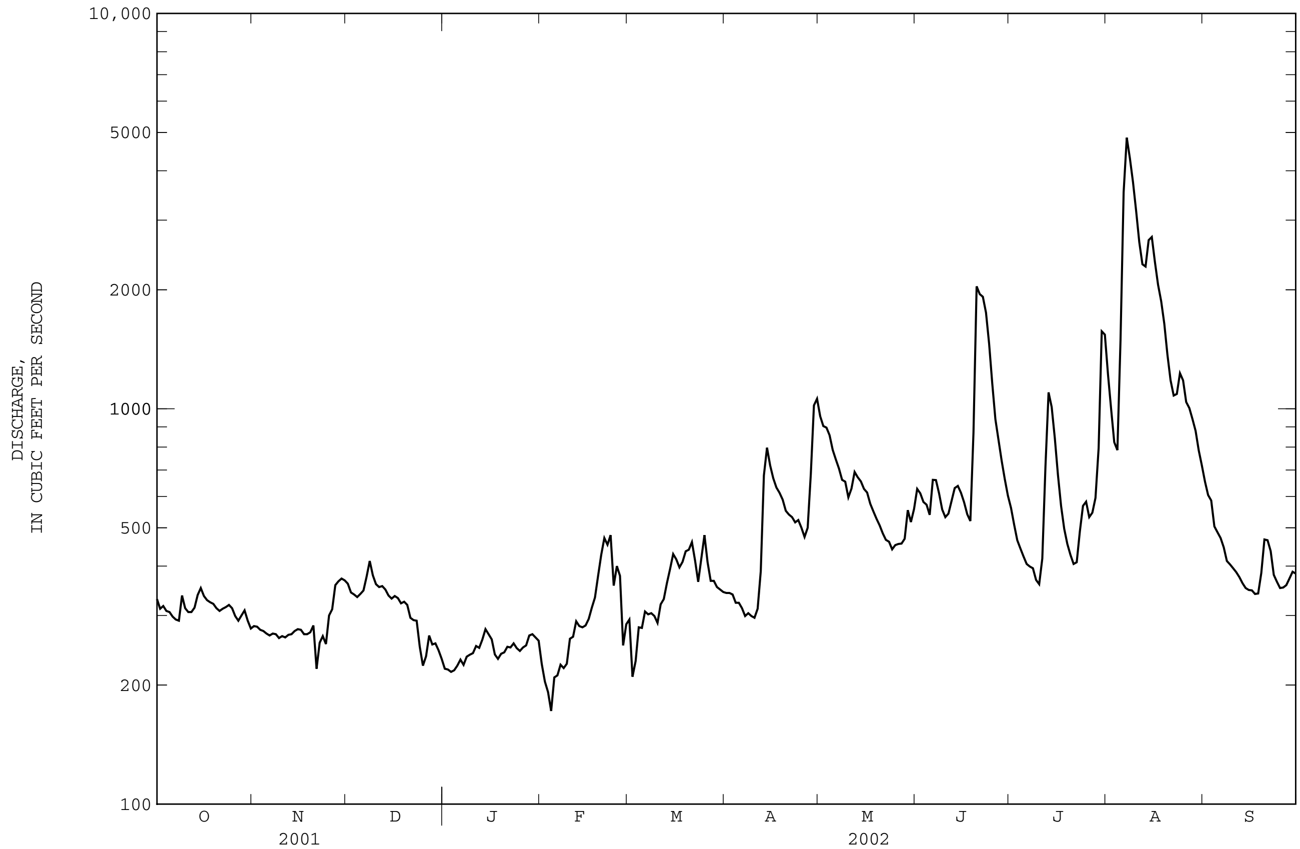
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	728.4	685.2	515.9	347.5	498.5	1629	2127	1669	1804	1333	911.0	696.7
MAX	2544	2326	2381	1375	2833	5426	8540	5889	6239	6461	5637	2816
(WY)	1987	1983	1983	1983	1984	1992	1965	1991	1993	1993	1979	1993
MIN	74.1	77.7	39.8	45.6	44.7	193	226	243	138	114	66.7	96.6
(WY)	1990	1990	1990	1959	1959	1968	1957	1958	1977	1977	1989	1989

05462000 SHELL ROCK RIVER AT SHELL ROCK, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1954 - 2002	
ANNUAL TOTAL	647454		204668			
ANNUAL MEAN	1774		560.7		1080	
HIGHEST ANNUAL MEAN					3231	1993
LOWEST ANNUAL MEAN					171	1977
HIGHEST DAILY MEAN	18600	Apr 13	4850	Aug 7	32100	Mar 28 1961
LOWEST DAILY MEAN	210	Jan 26	172	Feb 4	27	Dec 22 1989
ANNUAL SEVEN-DAY MINIMUM	231	Jan 22	205	Feb 2	29	Dec 16 1989
MAXIMUM PEAK FLOW			4970	Aug 7	33500	Mar 28 1961
MAXIMUM PEAK STAGE			10.69	Aug 7	16.73	Jul 22 1999
INSTANTANEOUS LOW FLOW			112	Mar 2		
ANNUAL RUNOFF (AC-FT)	1284000		406000		782700	
ANNUAL RUNOFF (CFSM)	1.02		0.32		0.62	
ANNUAL RUNOFF (INCHES)	13.79		4.36		8.41	
10 PERCENT EXCEEDS	5440		999		2550	
50 PERCENT EXCEEDS	364		372		535	
90 PERCENT EXCEEDS	250		250		159	

e Estimated



05463000 BEAVER CREEK AT NEW HARTFORD, IA

LOCATION.--Lat 42°34'22", long 92°37'04", in $SE^1/_4$ $SE^1/_4$ sec.28, T.90 N., R.15 W., Butler County, Hydrologic Unit 07080205, on right bank 5 ft. from right end of bridge on county highway T55, 0.2 mi north of New Hartford, and 8 mi upstream from mouth.

DRAINAGE AREA.--347 mi^2.

PERIOD OF RECORD.--October 1945 to current year. Prior to April 1948, monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1948-49. WSP 1708: 1947 (M).

GAGE.--Water-stage recorder. Datum of gage is 882.44 ft. above NGVD of 1929. Prior to July 14, 1959, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey data collection platform with telephone modem at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	75	95	84	e41	e34	207	78	380	198	e146	81	88
2	73	89	80	e40	e39	201	80	335	188	127	63	81
3	70	84	79	e54	e39	184	76	293	e177	120	62	73
4	68	81	77	e66	e34	181	74	255	206	130	70	67
5	67	80	77	e75	e40	163	75	227	215	130	84	65
6	67	82	79	e58	e46	153	73	214	191	135	123	61
7	65	80	78	e53	e50	151	73	197	179	157	141	59
8	65	78	77	e73	e59	154	80	182	169	142	106	e55
9	65	77	75	e80	e60	163	79	173	160	112	87	53
10	72	75	76	e71	e44	140	73	155	161	106	e82	51
11	74	74	74	e69	e51	169	71	179	183	114	e79	50
12	71	74	74	e72	e51	170	95	522	201	140	77	49
13	74	76	74	e79	e65	140	123	649	193	132	287	47
14	92	76	72	e61	e81	129	124	491	177	110	421	46
15	97	75	72	e46	99	120	118	401	165	99	285	45
16	91	73	71	e42	91	108	113	340	159	90	192	43
17	89	71	e68	e42	87	e106	103	286	149	85	149	40
18	91	70	e67	e28	84	e104	94	252	146	81	141	41
19	88	71	68	e36	90	e102	91	230	608	78	139	45
20	85	70	64	e46	148	103	90	212	1310	75	119	65
21	83	70	66	e50	194	93	94	201	623	71	104	96
22	83	70	79	e58	180	81	111	191	425	70	134	81
23	102	70	e67	e34	167	103	118	190	e347	68	353	67
24	118	71	e57	e40	156	102	117	176	275	64	278	60
25	111	74	e46	e49	144	88	110	182	e240	63	212	56
26	104	72	e45	e54	113	84	101	206	e213	63	217	54
27	99	e75	e58	e50	170	85	105	199	190	70	175	53
28	98	80	e50	e42	198	83	297	191	189	85	135	53
29	96	85	e45	e40	---	82	644	245	e174	99	115	56
30	92	85	e49	e38	---	79	482	247	e165	114	103	51
31	94	---	e39	e43	---	77	---	222	---	96	95	---
TOTAL	2619	2303	2087	1630	2614	3905	3962	8223	7976	3172	4709	1751
MEAN	84.48	76.77	67.32	52.58	93.36	126.0	132.1	265.3	265.9	102.3	151.9	58.37
MAX	118	95	84	80	198	207	644	649	1310	157	421	96
MIN	65	70	39	28	34	77	71	155	146	63	62	40
AC-FT	5190	4570	4140	3230	5180	7750	7860	16310	15820	6290	9340	3470
CFSM	0.24	0.22	0.19	0.15	0.27	0.36	0.38	0.76	0.77	0.29	0.44	0.17
IN.	0.28	0.25	0.22	0.17	0.28	0.42	0.42	0.88	0.86	0.34	0.50	0.19

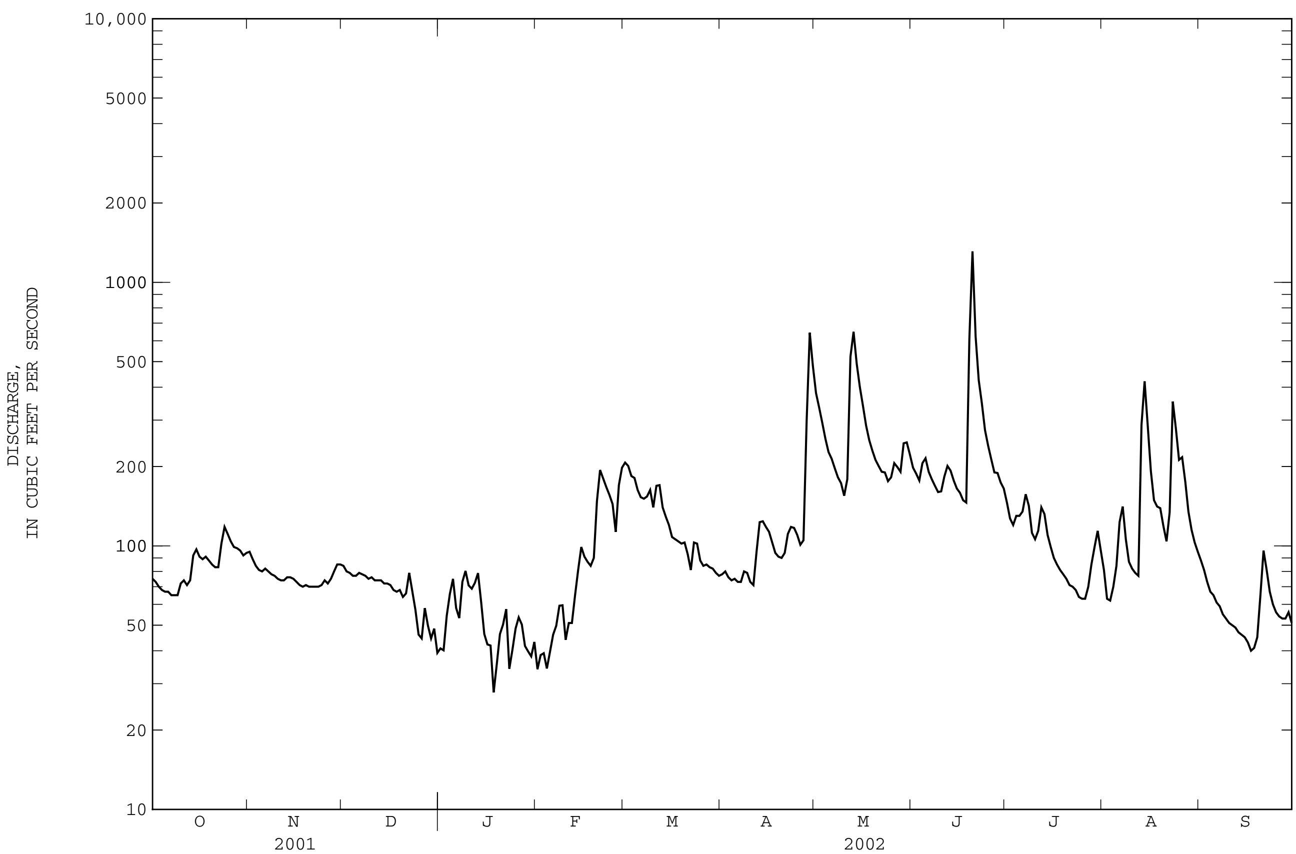
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	118.5	124.0	85.66	72.67	152.5	452.0	384.3	341.7	430.7	278.4	143.7	107.5
MAX	495	673	514	403	651	1606	1578	1606	2213	1686	1368	1028
(WY)	1987	1973	1983	1946	1983	1993	1993	1991	1947	1993	1993	1965
MIN	4.98	8.80	7.13	2.88	3.84	28.1	33.8	23.2	12.5	4.47	4.22	6.02
(WY)	1957	1957	1990	1956	1956	1954	1954	1977	1956	1956	1989	1988

05463000 BEAVER CREEK AT NEW HARTFORD, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1946 - 2002	
ANNUAL TOTAL	94663		44951			
ANNUAL MEAN	259.4		123.2		224.4	
HIGHEST ANNUAL MEAN					874	1993
LOWEST ANNUAL MEAN					21.8	1956
HIGHEST DAILY MEAN	2670	Mar 22	1310	Jun 20	16300	Jun 13 1947
LOWEST DAILY MEAN	16	Jan 2	28	Jan 18	2.0	Sep 30 1989
ANNUAL SEVEN-DAY MINIMUM	18	Jan 1	38	Jan 29	2.3	Jan 19 1956
MAXIMUM PEAK FLOW			1530	Jun 20	18000	Jun 13 1947
MAXIMUM PEAK STAGE			8.21	Jun 20	13.50	Jun 13 1947
ANNUAL RUNOFF (AC-FT)	187800		89160		162600	
ANNUAL RUNOFF (CFSM)	0.75		0.35		0.65	
ANNUAL RUNOFF (INCHES)	10.15		4.82		8.79	
10 PERCENT EXCEEDS	721		212		490	
50 PERCENT EXCEEDS	85		85		88	
90 PERCENT EXCEEDS	32		50		17	

e Estimated



05463050 CEDAR RIVER AT CEDAR FALLS, IA

LOCATION.--Lat 42°32'20", long 92°26'58", in NW $^1/_4$ NE $^1/_4$ sec.12, T.89 N., R.14 W., Black Hawk County, Hydrologic Unit 07080205, at bridge on U.S. Highway 20 at Cedar Falls, 1.1 mi upstream from Dry Run, and at mile 196.0 upstream from mouth of Iowa River.

DRAINAGE AREA.--4,734 mi^2.

PERIOD OF RECORD.--October 1975 to September 1979, May 1984 to September 1985, October 1986 to September 1995; water quality data. October 1999 to current year.

GAGE.--Water-stage recorder. Datum of gage is 855.00 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily stages, which are poor. U.S. Geological Survey rain gage and satellite data collection platform with phone modem at station.

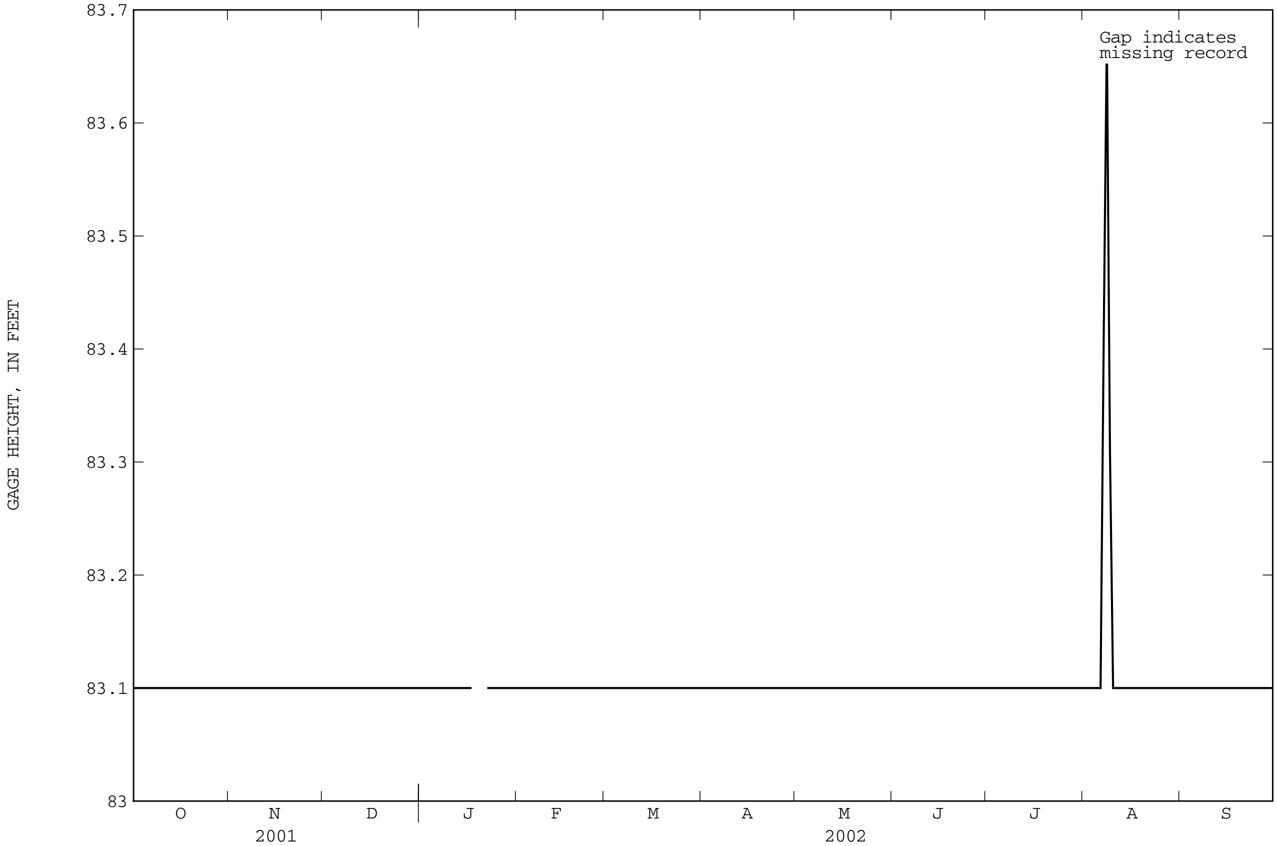
EXTREMES FOR PERIOD OF RECORD.--Maximum gage height 93.99 ft Apr. 14, 2001.

EXTREMES FOR CURRENT YEAR.--Maximum gage height 83.75 ft Aug. 7.

GAGE HEIGHT from DCP, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10
2	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10
3	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10
4	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10
5	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10
6	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10
7	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.41	83.10
8	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.68	83.10
9	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.31	83.10
10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10
11	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10
12	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10
13	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10
14	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10
15	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10
16	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10
17	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10
18	83.10	83.10	83.10	---	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10
19	83.10	83.10	83.10	---	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10
20	83.10	83.10	83.10	---	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10
21	83.10	83.10	83.10	---	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10
22	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10
23	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10
24	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10
25	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10
26	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10
27	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10
28	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10
29	83.10	83.10	83.10	83.10	---	83.10	83.10	83.10	83.10	83.10	83.10	83.10
30	83.10	83.10	83.10	83.10	---	83.10	83.10	83.10	83.10	83.10	83.10	83.10
31	83.10	---	83.10	83.10	---	83.10	---	83.10	---	83.10	83.10	---
MEAN	83.10	83.10	83.10	---	83.10	83.10	83.10	83.10	83.10	83.10	83.14	83.10
MAX	83.10	83.10	83.10	---	83.10	83.10	83.10	83.10	83.10	83.10	83.68	83.10
MIN	83.10	83.10	83.10	---	83.10	83.10	83.10	83.10	83.10	83.10	83.10	83.10

05463050 CEDAR RIVER AT CEDAR FALLS, IA--Continued



05463500 BLACK HAWK CREEK AT HUDSON, IA

LOCATION.--Lat 42°24'28", long 92°27'47", in SW$^1/_4$ NE$^1/_4$ sec.27, T.88 N., R.14 W., Black Hawk County, Hydrologic Unit 07080205, on left bank 35 ft. from bridge on State Highway 58, 0.2 mi northwest of Chicago and Great Western Railway tracks at the west edge of Hudson, 4.5 mi. upstream from Prescotts Creek, and 9.6 mi. upstream from mouth.

DRAINAGE AREA.--303 mi^2.

PERIOD OF RECORD.--April 1952 to September 30, 1995. October 2001 to September 30, 2002.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 865.03 ft. above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	70	49	e36	e29	e82	49	234	142	70	40	96
2	41	65	47	e37	e39	e77	51	219	137	66	35	84
3	40	60	46	e40	e36	e67	48	214	141	63	33	74
4	40	58	46	e48	e35	e68	46	197	261	61	33	65
5	40	57	47	e50	e36	e75	47	179	195	71	34	59
6	39	57	49	e45	e39	e79	46	170	165	127	33	55
7	39	57	47	e43	e45	e82	46	156	150	222	33	50
8	37	56	45	e58	e46	e87	50	144	140	168	30	46
9	38	53	44	e53	e51	e87	52	144	132	111	28	43
10	47	53	45	e51	e62	e84	48	128	126	93	27	41
11	52	52	45	e57	e82	e93	46	148	136	97	25	39
12	52	51	45	e51	123	102	55	418	147	124	27	39
13	56	52	46	e54	100	105	65	461	140	105	60	37
14	90	52	44	e46	91	93	64	360	131	85	102	37
15	84	51	43	e31	117	79	63	299	125	73	84	37
16	74	49	44	e26	108	70	59	267	119	66	58	35
17	69	47	45	e27	117	65	58	235	114	60	48	34
18	67	47	44	e16	96	65	55	213	114	56	44	34
19	65	48	e35	e21	80	65	67	198	130	51	40	38
20	62	47	e34	e24	116	66	81	184	152	48	36	39
21	59	46	e35	e27	168	64	83	173	156	45	33	35
22	59	47	e39	e33	142	53	102	166	128	43	300	32
23	82	46	e25	e31	131	67	118	164	115	40	899	31
24	109	47	e23	e37	120	72	116	156	106	38	666	31
25	99	47	e22	e45	107	58	110	154	99	37	386	30
26	88	45	e30	e51	70	58	98	168	95	35	307	31
27	80	47	e33	e44	e72	56	102	167	90	43	266	31
28	77	51	e29	e36	e110	55	224	160	84	52	193	31
29	75	49	e23	e34	---	55	340	162	80	71	155	32
30	70	50	e30	e32	---	51	279	158	75	64	131	31
31	69	---	e30	e30	---	50	---	151	---	49	111	---
TOTAL	1941	1557	1209	1214	2368	2230	2668	6347	3925	2334	4297	1297
MEAN	62.61	51.90	39.00	39.16	84.57	71.94	88.93	204.7	130.8	75.29	138.6	43.23
MAX	109	70	49	58	168	105	340	461	261	222	899	96
MIN	37	45	22	16	29	50	46	128	75	35	25	30
AC-FT	3850	3090	2400	2410	4700	4420	5290	12590	7790	4630	8520	2570
CFSM	0.21	0.17	0.13	0.13	0.28	0.24	0.29	0.68	0.43	0.25	0.46	0.14
IN.	0.24	0.19	0.15	0.15	0.29	0.27	0.33	0.78	0.48	0.29	0.53	0.16

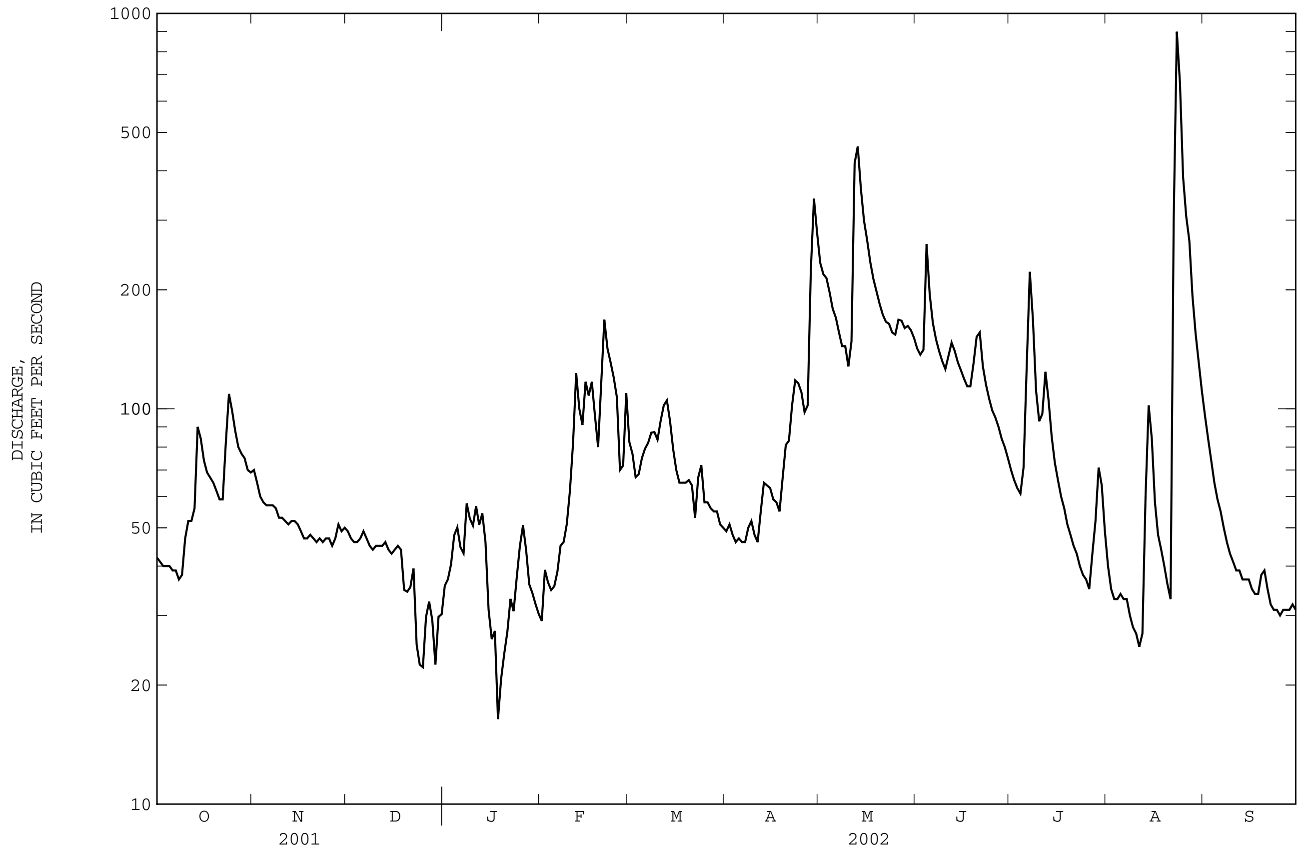
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	98.31	109.8	87.33	71.06	144.2	376.8	318.4	275.9	325.7	254.6	126.7	89.41
MAX	440	359	418	463	564	1280	1173	1036	1403	1705	1134	735
(WY)	1966	1973	1983	1973	1984	1993	1991	1991	1990	1993	1993	1965
MIN	5.37	7.45	3.78	2.34	3.07	15.9	20.5	22.9	10.2	5.33	2.38	7.18
(WY)	1990	1956	1990	1956	1956	1954	1956	1977	1956	1989	1989	1989

05463500 BLACK HAWK CREEK AT HUDSON, IA--Continued

SUMMARY STATISTICS	FOR 2002 WATER YEAR		WATER YEARS 1953 - 2002	
ANNUAL TOTAL	31387			
ANNUAL MEAN	85.99		190.0	
HIGHEST ANNUAL MEAN			697	1993
LOWEST ANNUAL MEAN			18.4	1956
HIGHEST DAILY MEAN	899	Aug 23	11300	Jul 9 1969
LOWEST DAILY MEAN	16	Jan 18	0.12	Jan 26 1977
ANNUAL SEVEN-DAY MINIMUM	25	Jan 15	0.32	Jan 23 1977
MAXIMUM PEAK FLOW	942	Aug 23	19300	Jul 9 1969
MAXIMUM PEAK STAGE	10.37	Aug 23	18.23	Jul 9 1969
INSTANTANEOUS LOW FLOW	16	Jan 18		
ANNUAL RUNOFF (AC-FT)	62260		137600	
ANNUAL RUNOFF (CFSM)	0.28		0.63	
ANNUAL RUNOFF (INCHES)	3.85		8.52	
10 PERCENT EXCEEDS	163		436	
50 PERCENT EXCEEDS	58		76	
90 PERCENT EXCEEDS	33		15	

e Estimated



05464000 CEDAR RIVER AT WATERLOO, IA

LOCATION.--Lat 42°29'44", long 92°20'03", in NW$^1/_4$ NW$^1/_4$ sec.25, T.89 N., R.13 W., Black Hawk County, Hydrologic Unit 07080205, on left bank at foot of East Seventh Street, 0.3 mi upstream from Eleventh Street bridge in Waterloo, 1.1 mi downstream from Black Hawk Creek, and at mile 187.9 upstream from mouth of Iowa River.

DRAINAGE AREA.--5,146 mi^2.

PERIOD OF RECORD.--October 1940 to current year. Prior to April 1941, monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1950.

GAGE.--Water-stage recorder. Datum of gage is 824.14 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Slight diurnal fluctuation during low flow caused by powerplant upstream from station. U.S. National Weather Service Limited Automatic Remote Collector (LARC) and U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 16, 1929, reached a stage of about 20 ft, determined by U. S. Army Corps of Engineers, from information by City of Waterloo, discharge, 65,000 ft^3/s. Flood of Apr. 2, 1933, reached a stage of about 19.5 ft from information by City of Waterloo, discharge, 61,000 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1440	1310	1410	e953	964	1330	1200	4880	3130	2600	3440	2140
2	1530	1300	1390	e1010	855	933	1230	4620	3040	2440	3000	2000
3	1390	1280	1370	e1030	968	e883	1210	4430	2970	2290	2680	1870
4	1310	1260	1360	1000	822	e781	1200	4220	3190	2330	2690	1780
5	1310	1240	1380	989	850	1240	1190	4000	3600	2180	2700	1630
6	1290	1240	1350	978	999	1300	1190	3800	3530	2330	4050	1540
7	1250	1230	1350	987	1060	1320	1190	3670	4080	2270	6940	1420
8	1240	1210	1410	956	1060	1360	1240	3510	4440	2270	7790	1300
9	1320	1220	1510	991	1080	1420	1270	3410	4020	2140	7260	1250
10	1620	1180	1490	1000	1200	1150	1270	3300	3570	2050	6240	1200
11	1430	1190	1460	1020	1140	1340	1280	3420	3420	2450	5110	1150
12	1360	1180	1510	1040	1180	1510	1400	3730	3290	2270	4570	1080
13	1600	1170	1470	1060	1180	1550	1650	4410	3140	2770	4980	1060
14	1490	1190	1460	1100	1180	1590	2280	4500	3120	3120	4960	1050
15	1590	1190	1530	1100	1230	1630	2710	3950	3080	3020	5410	997
16	1410	1210	1510	1090	1250	1690	2690	3870	2940	2740	5310	989
17	1390	1210	1470	1050	1260	1710	2610	3680	2780	2480	4780	970
18	1350	1200	1340	982	1290	1660	2590	3430	2650	2300	4150	1030
19	1340	1180	1290	936	1400	1610	2480	3280	2840	2150	3710	1020
20	1400	1160	1250	983	1520	1570	2400	3110	4470	2080	3620	1190
21	1380	1130	1210	1040	1740	1550	2360	2970	5810	2030	3160	1490
22	1430	1100	1250	1030	1840	1480	2310	2860	5440	1980	3470	1390
23	1470	1120	e1100	1020	1850	1430	2340	2800	5010	1990	3640	1280
24	1490	1160	e566	1020	1870	1430	2410	2750	4370	2010	3680	1150
25	1470	1150	e541	999	1750	1470	2390	2730	4010	2120	3460	1110
26	1420	1210	e612	1060	1650	1450	2320	2680	3670	2120	3270	1110
27	1350	1240	e765	1070	1320	1370	2400	2670	3420	2170	3100	1090
28	1340	1320	e928	1080	1350	1320	2690	2730	3300	2140	3030	1130
29	1340	1360	e1150	1100	---	1250	3710	2850	2970	2610	2850	1220
30	1340	1400	e1020	1100	---	1160	4560	3130	2870	2810	2540	1180
31	1320	---	e1060	1080	---	1150	---	3150	---	3510	2320	---
TOTAL	43410	36540	38512	31854	35858	42637	61770	108540	108170	73770	127910	38816
MEAN	1400	1218	1242	1028	1281	1375	2059	3501	3606	2380	4126	1294
MAX	1620	1400	1530	1100	1870	1710	4560	4880	5810	3510	7790	2140
MIN	1240	1100	541	936	822	781	1190	2670	2650	1980	2320	970
AC-FT	86100	72480	76390	63180	71120	84570	122500	215300	214600	146300	253700	76990
CFSM	0.27	0.24	0.24	0.20	0.25	0.27	0.40	0.68	0.70	0.46	0.80	0.25
IN.	0.31	0.26	0.28	0.23	0.26	0.31	0.45	0.78	0.78	0.53	0.92	0.28

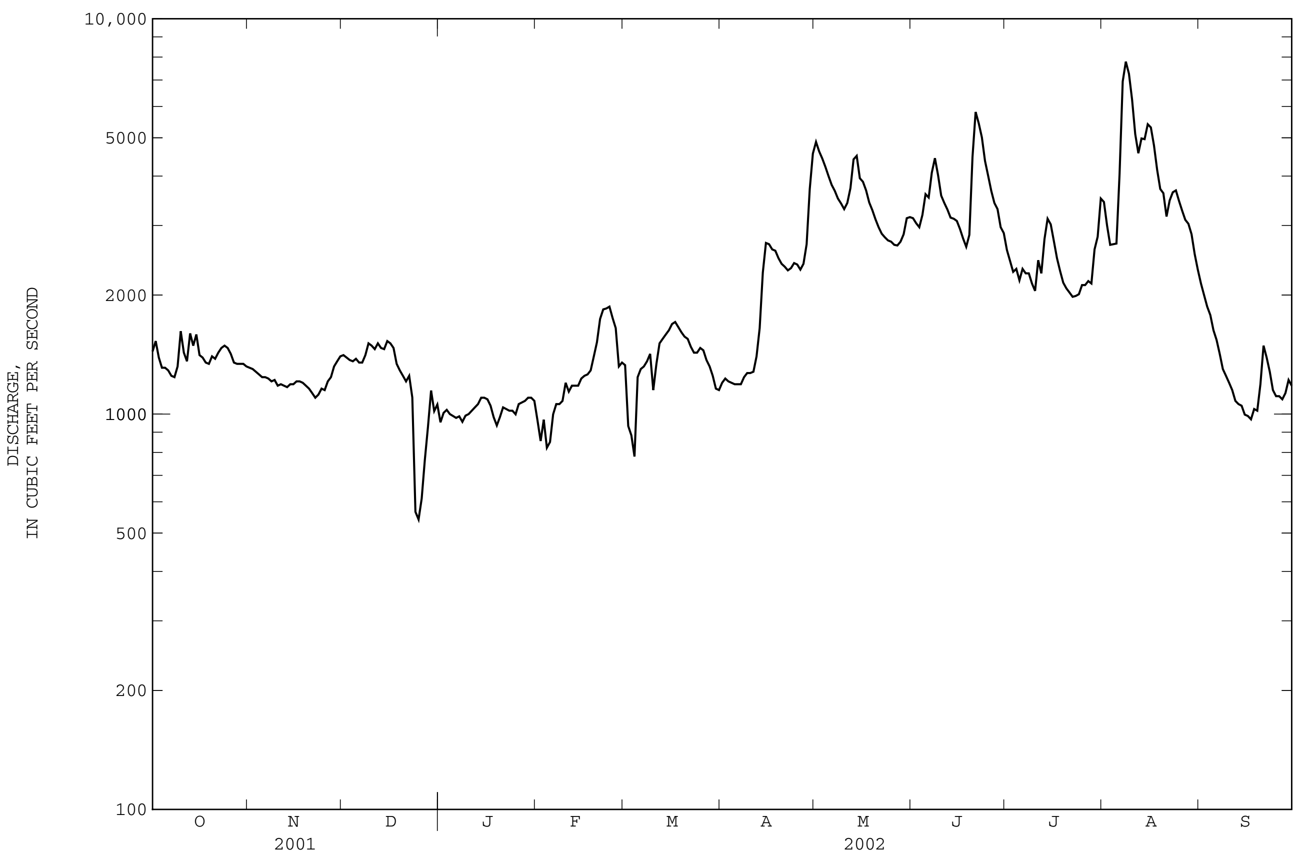
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	2104	2056	1541	1227	1780	5530	6374	4804	5406	4104	2726	2039
MAX	8499	7434	6891	5479	9448	13760	24940	19010	18320	21210	18770	9258
(WY)	1987	1973	1983	1973	1984	1973	1993	1991	1993	1993	1993	1993
MIN	364	370	266	252	188	687	741	732	474	455	328	387
(WY)	1990	1990	1990	1959	1959	1964	1957	1977	1977	1989	1989	1955

05464000 CEDAR RIVER AT WATERLOO, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1941 - 2002	
ANNUAL TOTAL	1765377		747787			
ANNUAL MEAN	4837		2049		3312	
HIGHEST ANNUAL MEAN					10580	1993
LOWEST ANNUAL MEAN					636	1977
HIGHEST DAILY MEAN	41900	Apr 15	7790	Aug 8	74000	Mar 29 1961
LOWEST DAILY MEAN	520	Jan 2	541	Dec 25	152	Jan 28 1959
ANNUAL SEVEN-DAY MINIMUM	577	Jan 17	797	Dec 24	173	Feb 13 1959
MAXIMUM PEAK FLOW			7820	Aug 8	76700	Mar 29 1961
MAXIMUM PEAK STAGE			7.63	Aug 8	21.86	Mar 29 1961
ANNUAL RUNOFF (AC-FT)	3502000		1483000		2399000	
ANNUAL RUNOFF (CFSM)	0.94		0.40		0.64	
ANNUAL RUNOFF (INCHES)	12.76		5.41		8.74	
10 PERCENT EXCEEDS	13200		3690		7600	
50 PERCENT EXCEEDS	1510		1460		1790	
90 PERCENT EXCEEDS	678		1030		567	

e Estimated



05464220 WOLF CREEK NEAR DYSART, IA

LOCATION.--Lat 42°15'06", long 92°17'55", in $SE^1/_4$ $NE^1/_4$ $NE^1/_4$ sec.24, T.86 N., R.13 W., Tama County, Hydrologic Unit 07080205, on bank 20 ft upstream of right bank side of bridge on County Highway V37, 10.0 miles upstream of confluence with the Cedar River, and 5.0 miles north of Dysart.

DRAINAGE AREA.--299 mi^2.

WATER DISCHARGE RECORDS.

PERIOD OF RECORD.--October 24, 1995 to September 30, 1998. May 16, 2001 to current year.

GAGE.--Water stage recorder. Datum of gage is 835 ft above NGVD of 1929, from map.

REMARKS.--Records good except those for estimated daily discharges, which is poor. U.S. Geological Survey rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

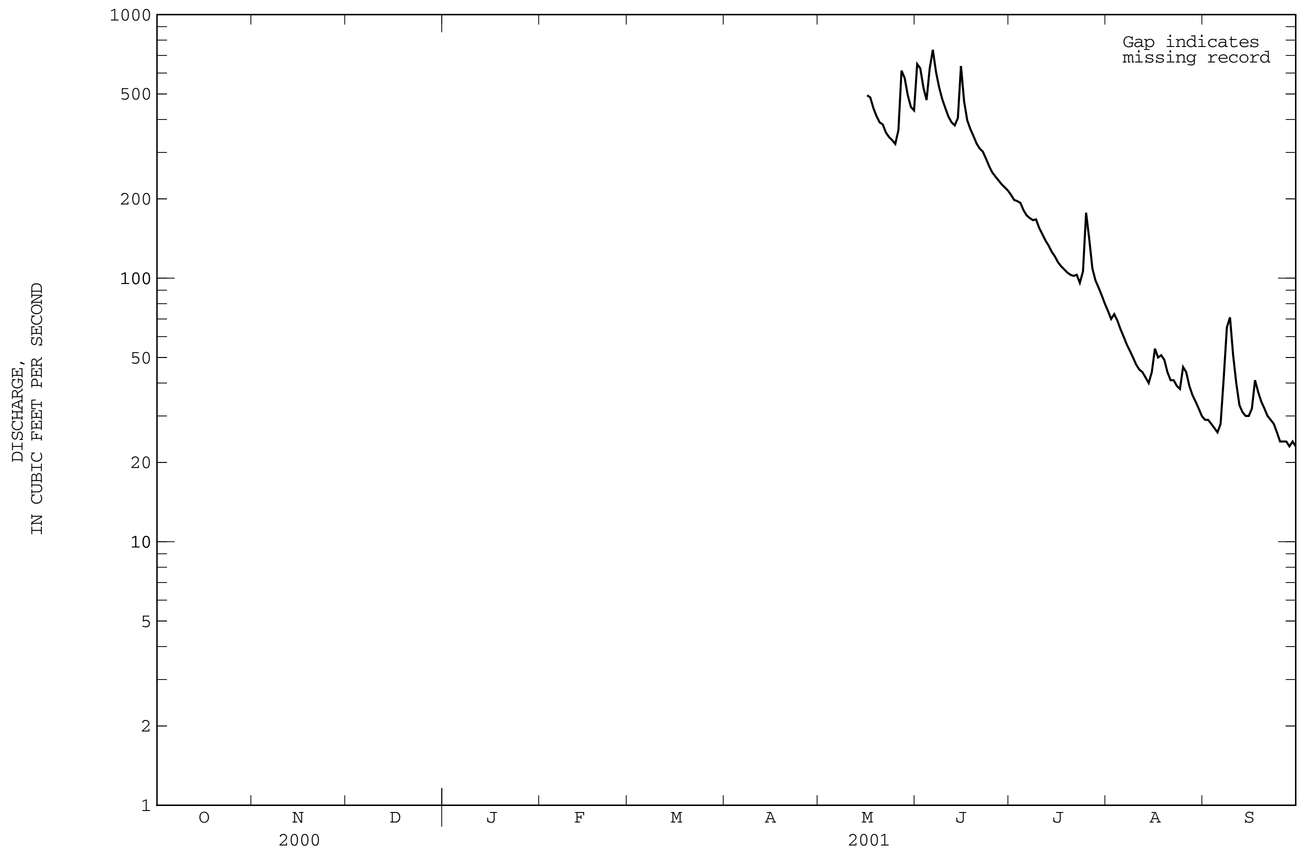
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	649	207	75	29
2	---	---	---	---	---	---	---	---	625	198	70	29
3	---	---	---	---	---	---	---	---	528	196	73	28
4	---	---	---	---	---	---	---	---	474	193	69	27
5	---	---	---	---	---	---	---	---	624	181	64	26
6	---	---	---	---	---	---	---	---	735	173	60	28
7	---	---	---	---	---	---	---	---	608	169	56	42
8	---	---	---	---	---	---	---	---	531	166	53	65
9	---	---	---	---	---	---	---	---	478	167	50	71
10	---	---	---	---	---	---	---	---	442	155	47	51
11	---	---	---	---	---	---	---	---	410	147	45	40
12	---	---	---	---	---	---	---	---	390	139	44	33
13	---	---	---	---	---	---	---	---	380	133	42	31
14	---	---	---	---	---	---	---	---	405	126	40	30
15	---	---	---	---	---	---	---	---	638	121	44	30
16	---	---	---	---	---	---	---	494	469	115	54	32
17	---	---	---	---	---	---	---	485	397	111	50	41
18	---	---	---	---	---	---	---	442	368	108	51	37
19	---	---	---	---	---	---	---	412	346	105	49	34
20	---	---	---	---	---	---	---	390	324	103	44	32
21	---	---	---	---	---	---	---	383	310	102	41	30
22	---	---	---	---	---	---	---	357	302	103	41	29
23	---	---	---	---	---	---	---	343	284	96	39	28
24	---	---	---	---	---	---	---	334	266	106	38	26
25	---	---	---	---	---	---	---	323	252	177	46	24
26	---	---	---	---	---	---	---	364	243	141	44	24
27	---	---	---	---	---	---	---	613	235	109	39	24
28	---	---	---	---	---	---	---	574	227	98	36	23
29	---	---	---	---	---	---	---	494	221	92	34	24
30	---	---	---	---	---	---	---	446	215	86	32	23
31	---	---	---	---	---	---	---	433	---	80	30	---
TOTAL	---	---	---	---	---	---	---	---	12376	4203	1500	991
MEAN	---	---	---	---	---	---	---	---	412.5	135.6	48.39	33.03
MAX	---	---	---	---	---	---	---	---	735	207	75	71
MIN	---	---	---	---	---	---	---	---	215	80	30	23
AC-FT	---	---	---	---	---	---	---	---	24550	8340	2980	1970
CFSM	---	---	---	---	---	---	---	---	1.38	0.45	0.16	0.11
IN.	---	---	---	---	---	---	---	---	1.54	0.52	0.19	0.12

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 2001, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	151.8	78.16	77.39	60.67	279.0	239.5	301.6	276.8	733.4	257.5	79.52	43.14
MAX	267	101	119	92.6	513	440	695	344	1773	584	163	62.9
(WY)	1999	1997	1998	1998	1997	1998	1998	1998	1998	1998	1998	1998
MIN	42.5	36.6	17.2	19.9	104	71.9	51.8	200	327	136	45.1	33.0
(WY)	1997	1996	1996	1996	1996	1996	1996	1996	1997	2001	1997	2001

05464220 WOLF CREEK NEAR DYSART, IA--Continued

SUMMARY STATISTICS	WATER YEARS 1995 - 2001	
ANNUAL MEAN	280.7	
HIGHEST ANNUAL MEAN	394	1998
LOWEST ANNUAL MEAN	168	1997
HIGHEST DAILY MEAN	4810	Jun 12 1998
LOWEST DAILY MEAN	10	Dec 10 1995
ANNUAL SEVEN-DAY MINIMUM	12	Jan 5 1996
MAXIMUM PEAK FLOW	5800	Jun 12 1998
MAXIMUM PEAK STAGE	13.33	Jun 12 1998
INSTANTANEOUS LOW FLOW	18	Oct 19 1996
ANNUAL RUNOFF (AC-FT)	203400	
ANNUAL RUNOFF (CFSM)	0.94	
ANNUAL RUNOFF (INCHES)	12.76	
10 PERCENT EXCEEDS	453	
50 PERCENT EXCEEDS	113	
90 PERCENT EXCEEDS	29	



05464220 WOLF CREEK NEAR DYSART, IA--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	50	23	e10	23	e18	27	109	129	62	38	54
2	24	53	22	e14	e19	e17	28	102	124	60	31	49
3	22	47	22	e12	e15	e17	25	91	121	56	28	43
4	20	38	23	e14	e12	e19	24	82	199	54	29	37
5	21	30	24	e15	e10	e22	25	77	188	57	33	33
6	21	30	25	e14	e13	e25	24	78	146	57	41	30
7	21	31	23	e13	e15	e30	24	74	129	85	39	29
8	21	29	23	e15	e17	e37	31	65	118	69	29	27
9	22	27	20	e15	e21	e48	36	69	112	58	24	25
10	30	26	22	e13	e28	e69	35	68	107	58	24	24
11	34	27	21	e12	e26	e75	34	78	114	67	23	22
12	29	26	23	e10	e23	e60	37	232	118	68	23	21
13	28	27	24	e9.3	e21	52	36	246	140	59	26	20
14	33	28	22	e8.2	e29	54	37	203	165	58	28	20
15	37	28	21	e7.1	e35	44	35	175	129	53	33	20
16	30	26	24	e8.1	47	38	33	162	115	49	26	19
17	26	25	25	e9.1	41	34	34	146	106	47	25	19
18	27	25	23	e9.8	46	33	33	131	110	45	22	22
19	27	26	21	e9.8	54	33	38	122	127	43	21	34
20	27	26	15	e11	59	34	36	114	125	41	19	34
21	27	25	18	e12	64	33	41	107	107	39	20	27
22	32	26	27	e13	57	22	45	102	99	36	107	20
23	58	27	19	e12	60	30	47	102	93	34	587	18
24	64	28	e15	e11	56	36	49	98	86	32	410	17
25	49	27	e12	e10	52	29	49	100	81	30	221	18
26	40	26	e11	e15	e28	27	46	101	83	26	156	19
27	36	27	e13	e18	e26	28	52	99	89	35	124	18
28	35	26	e14	e22	e22	27	92	101	77	42	97	20
29	35	26	e13	28	---	27	132	142	70	67	81	20
30	34	24	e12	24	---	25	127	212	65	91	70	20
31	40	---	e11	20	---	25	---	155	---	51	61	---
TOTAL	974	887	611	414.4	919	1068	1312	3743	3472	1629	2496	779
MEAN	31.42	29.57	19.71	13.37	32.82	34.45	43.73	120.7	115.7	52.55	80.52	25.97
MAX	64	53	27	28	64	75	132	246	199	91	587	54
MIN	20	24	11	7.1	10	17	24	65	65	26	19	17
AC-FT	1930	1760	1210	822	1820	2120	2600	7420	6890	3230	4950	1550
CFSM	0.11	0.10	0.07	0.04	0.11	0.12	0.15	0.40	0.39	0.18	0.27	0.09
IN.	0.12	0.11	0.08	0.05	0.11	0.13	0.16	0.47	0.43	0.20	0.31	0.10

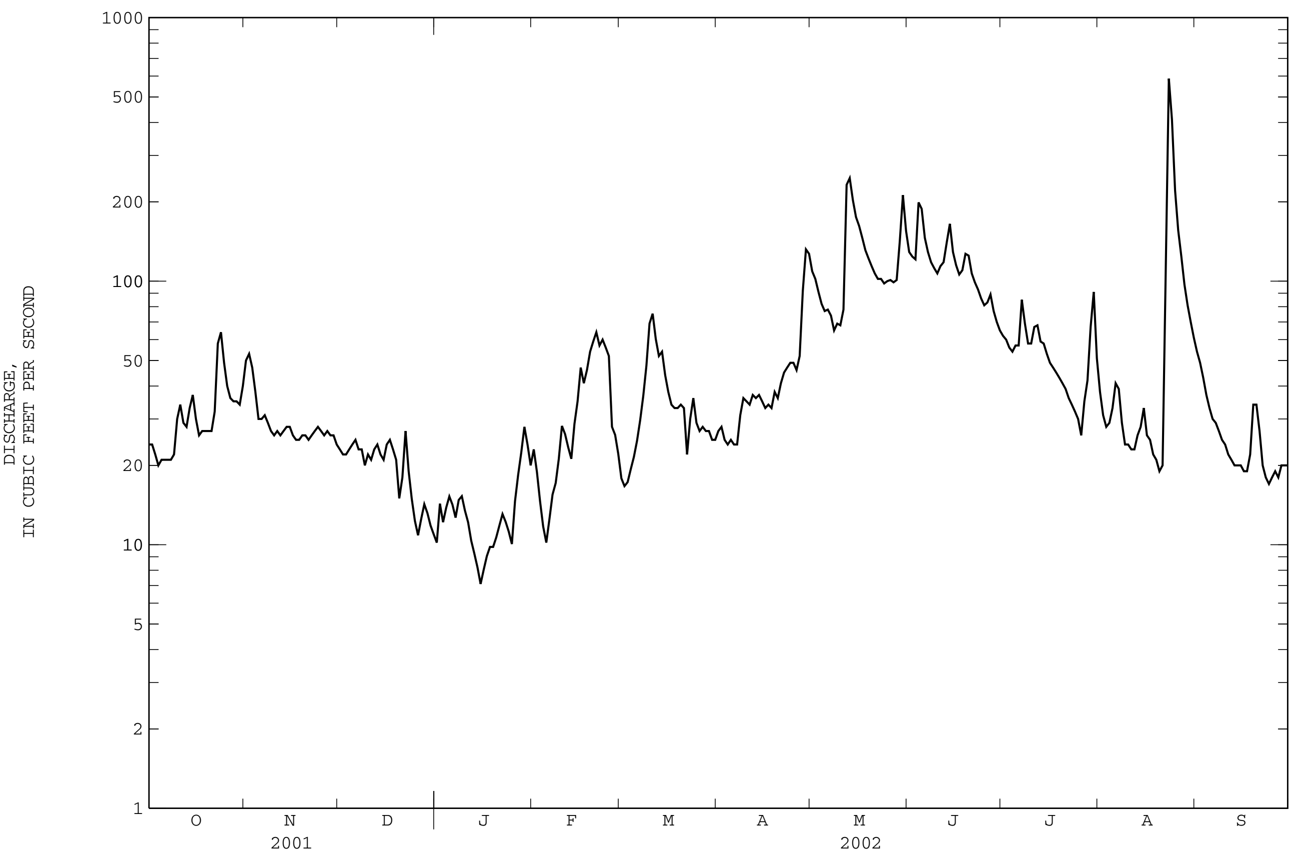
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	121.7	66.01	62.97	48.84	218.0	188.3	237.2	237.8	609.8	216.5	79.72	39.71
MAX	267	101	119	92.6	513	440	695	344	1773	584	163	62.9
(WY)	1999	1997	1998	1998	1997	1998	1998	1998	1998	1998	1998	1998
MIN	31.4	29.6	17.2	13.4	32.8	34.5	43.7	121	116	52.5	45.1	26.0
(WY)	2002	2002	1996	2002	2002	2002	2002	2002	2002	2002	1997	2002

05464220 WOLF CREEK NEAR DYSART, IA--Continued

SUMMARY STATISTICS	FOR 2002 WATER YEAR		WATER YEARS 1995 - 2002	
ANNUAL TOTAL	18304.4			
ANNUAL MEAN	50.15		203.8	
HIGHEST ANNUAL MEAN			394	1998
LOWEST ANNUAL MEAN			50.1	2002
HIGHEST DAILY MEAN	587	Aug 23	4810	Jun 12 1998
LOWEST DAILY MEAN	7.1	Jan 15a	7.1	Jan 15 2002a
ANNUAL SEVEN-DAY MINIMUM	8.8	Jan 13	8.8	Jan 13 2002
MAXIMUM PEAK FLOW	725	Aug 23	5800	Jun 12 1998
MAXIMUM PEAK STAGE	4.61	Aug 23	13.33	Jun 12 1998
INSTANTANEOUS LOW FLOW			18	Oct 19 1996
ANNUAL RUNOFF (AC-FT)	36310		147700	
ANNUAL RUNOFF (CFSM)	0.17		0.68	
ANNUAL RUNOFF (INCHES)	2.28		9.26	
10 PERCENT EXCEEDS	111		390	
50 PERCENT EXCEEDS	30		85	
90 PERCENT EXCEEDS	15		23	

a Ice affected
e Estimated



05464500 CEDAR RIVER AT CEDAR RAPIDS, IA

LOCATION.--Lat 41°58'14", long 91°40'01", in SE$^1/_4$ NW$^1/_4$ sec.28, T.83 N., R.7 W., Linn County, Hydrologic Unit 07080205, on right bank 400 ft upstream from bridge on Eighth Avenue in Cedar Rapids, 2.7 mi upstream from Prairie Creek, and at mile 112.7 upstream from mouth of Iowa River.

DRAINAGE AREA.--6,510 mi^2.

PERIOD OF RECORD.--October 1902 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 955: 1924. WSP 1308: 1904, 1906-13, 1915, 1917, 1919-24, 1928, 1930,. WSP 1438: Drainage area. WSP 1558: 1915-18 (M), 1920 (M), 1922 (M), 1929, 1933, 1943.

GAGE.--Water-stage recorder. Datum of gage is 700.47 ft above NGVD of 1929. Prior to Aug. 20, 1920, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow affected by city hydroelectric dam 0.5 mile upstream since June 1979. U. S. Army Corps of Engineers rain gage and satellite data collection platform and U.S. Geological Survey data collection platform with telephone modem at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1851 reached a stage of about 20 ft, discharge, 65,000 ft^3/s, estimated.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

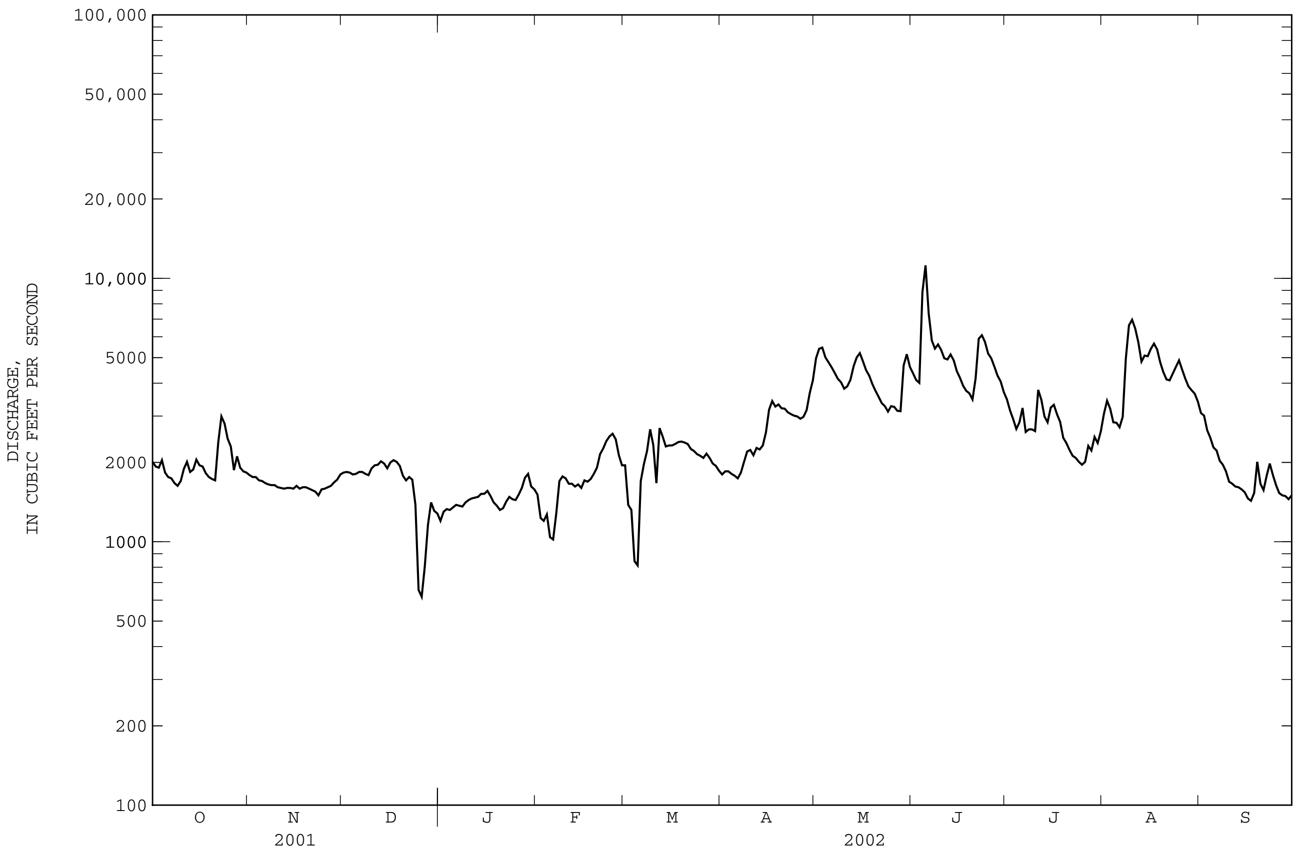
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2010	1790	1830	1200	1510	1950	1800	4970	4360	3470	3060	3080
2	1930	1760	1840	1300	1230	1380	1850	5400	4110	3150	3430	3010
3	1910	1760	1830	1330	1200	1320	1850	5460	4010	2920	3200	2650
4	2040	1710	1800	1320	1270	844	1810	5010	8850	2680	2840	2480
5	1830	1700	1810	1350	1040	813	1780	4800	11200	2840	2830	2280
6	1760	1670	1840	1380	1020	1700	1740	4590	7360	3220	2720	2220
7	1740	1650	1840	1370	1280	1970	1830	4370	5810	2610	2980	2030
8	1670	1640	1810	1360	1700	2210	2010	4150	5410	2670	4960	1960
9	1630	1640	1790	1410	1770	2670	2200	4030	5610	2670	6630	1850
10	1700	1610	1900	1440	1740	2330	2230	3810	5340	2630	6960	1690
11	1890	1600	1950	1460	1660	1670	2130	3890	4970	3770	6450	1660
12	2010	1590	1960	1470	1660	2700	2270	4120	4920	3460	5710	1620
13	1840	1600	2020	1480	1620	2510	2240	4630	5140	2990	4830	1610
14	1880	1600	1980	1520	1650	2300	2320	5010	4880	2840	5090	1580
15	2050	1590	1900	1520	1600	2320	2600	5200	4440	3230	5060	1540
16	1950	1630	2000	1560	1710	2320	3170	4840	4190	3310	5400	1460
17	1930	1590	2040	1490	1690	2350	3420	4480	3910	3050	5650	1430
18	1820	1610	2010	1410	1730	2390	3260	4270	3740	2850	5370	1530
19	1760	1610	1940	1370	1810	2400	3320	3970	3660	2480	4790	2010
20	1730	1590	1780	1320	1910	2380	3210	3740	3470	2370	4400	1660
21	1710	1570	1710	1340	2150	2350	3200	3550	4170	2230	4130	1570
22	2390	1550	1760	1420	2260	2250	3100	3360	5900	2120	4100	1780
23	2990	1500	1720	1480	2410	2210	3050	3270	6080	2080	4350	1980
24	2810	1580	1380	1450	2510	2150	3010	3120	5730	2010	4610	1790
25	2460	1590	656	1440	2570	2120	2990	3270	5180	1960	4880	1640
26	2300	1610	618	1510	2450	2080	2930	3250	4970	2010	4500	1530
27	1870	1630	808	1600	2130	2160	2980	3140	4620	2310	4160	1500
28	2110	1680	1160	1750	1950	2080	3160	3130	4270	2220	3890	1490
29	1910	1720	1410	1810	---	1980	3670	4670	4060	2500	3760	1450
30	1850	1800	1310	1620	---	1940	4100	5150	3700	2370	3650	1500
31	1830	---	1280	1580	---	1860	---	4610	---	2620	3410	---
TOTAL	61310	49170	51682	45060	49230	63707	79230	131260	154060	83640	137800	55580
MEAN	1978	1639	1667	1454	1758	2055	2641	4234	5135	2698	4445	1853
MAX	2990	1800	2040	1810	2570	2700	4100	5460	11200	3770	6960	3080
MIN	1630	1500	618	1200	1020	813	1740	3120	3470	1960	2720	1430
MED	1890	1610	1810	1440	1700	2160	2760	4270	4900	2670	4400	1660
AC-FT	121600	97530	102500	89380	97650	126400	157200	260400	305600	165900	273300	110200
CFSM	0.30	0.25	0.26	0.22	0.27	0.32	0.41	0.65	0.79	0.41	0.68	0.28
IN.	0.35	0.28	0.30	0.26	0.28	0.36	0.45	0.75	0.88	0.48	0.79	0.32

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1903 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	2350	2422	1863	1582	2487	6650	6913	5337	5910	4296	3017	2399
MAX	10570	9327	8675	8529	12230	17420	35320	24500	23420	33910	28700	13990
(WY)	1987	1973	1983	1973	1984	1929	1993	1991	1947	1993	1993	1993
MIN	463	410	290	299	304	664	1045	527	350	533	377	466
(WY)	1990	1990	1990	1911	1940	1934	1957	1934	1934	1989	1934	1934

05464500 CEDAR RIVER AT CEDAR RAPIDS, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1903 - 2002	
ANNUAL TOTAL	2252722		961729			
ANNUAL MEAN	6172		2635		3771	
HIGHEST ANNUAL MEAN					15130	1993
LOWEST ANNUAL MEAN					689	1934
HIGHEST DAILY MEAN	40800	Apr 17	11200	Jun 5	71500	Mar 31 1961
LOWEST DAILY MEAN	618	Dec 26	618	Dec 26	140	Nov 18 1989
ANNUAL SEVEN-DAY MINIMUM	883	Jan 16	1030	Dec 25	224	Dec 20 1989
MAXIMUM PEAK FLOW			13000	Jun 5	73000	Mar 31 1961
MAXIMUM PEAK STAGE			7.02	Jun 5	20.00	Mar 18 1929
ANNUAL RUNOFF (AC-FT)	4468000		1908000		2732000	
ANNUAL RUNOFF (CFSM)	0.95		0.40		0.58	
ANNUAL RUNOFF (INCHES)	12.87		5.50		7.87	
10 PERCENT EXCEEDS	15200		4810		8410	
50 PERCENT EXCEEDS	2410		2040		2150	
90 PERCENT EXCEEDS	1160		1450		684	



05464942 HOOVER CREEK AT HOOVER NATIONAL HISTORIC SITE AT WEST BRANCH, IA

LOCATION.--Lat 41°40'10", long 91°21'02", in NW$^1/_4$ NE$^1/_4$ NE$^1/_4$ sec.7, T.79 N., R.4 W., Cedar County, Hydrologic Unit 07080206, on right bank, at footbridge about 0.25 mi upstream of Hoover Presidental Library, at Hoover National Historic Site, at West Branch.

DRAINAGE AREA.--2.58 mi^2.

PERIOD OF RECORD.--April 27, 2000 to current year.

GAGE.--Water-stage recorder. Datum of gage is 700.0 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 7, 1967 reached a stage of 711.41 ft NGVD, discharge 1,500 ft^3/s from indirect discharge measurement, based on floodmarks at Downey Street bridge 1,100 ft downstream; flood of August 16, 1993 reached a stage of 715,3 ft, discharge 1,650 ft^3/s from indirect discharge measurement, based on floodmarks at Hoover National Historic Site.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.08	0.91	0.54	e0.27	0.49	e0.77	1.8	3.9	3.4	1.1	1.5	0.78
2	0.09	0.82	0.55	e0.44	e0.44	e0.74	1.8	3.8	4.5	1.0	1.1	0.78
3	0.08	0.77	0.55	e0.39	e0.39	e0.75	1.7	3.3	3.8	0.96	0.90	0.66
4	0.43	0.75	0.52	e0.49	e0.34	e0.76	1.7	3.1	13	0.92	0.83	0.62
5	0.25	0.74	0.55	e0.53	e0.29	e0.79	1.7	3.0	7.4	0.86	5.8	0.54
6	0.15	0.74	0.52	e0.51	e0.34	0.84	1.7	2.7	5.5	0.93	2.1	0.51
7	0.14	0.70	0.50	e0.49	e0.39	0.86	2.1	2.5	4.9	0.92	1.6	0.44
8	0.14	0.72	0.49	0.57	e0.41	3.0	5.7	2.9	4.3	1.1	1.4	0.40
9	0.15	0.73	0.49	0.55	e0.49	4.9	7.1	5.5	3.8	0.90	1.2	0.38
10	3.6	0.71	0.49	e0.50	e0.61	3.6	5.0	3.5	3.4	0.96	1.1	0.38
11	0.86	0.68	0.48	e0.45	e0.56	3.3	4.4	14	3.6	4.1	0.95	0.40
12	0.56	0.68	0.84	e0.39	e0.51	3.0	4.3	12	3.0	1.4	0.90	0.38
13	1.0	0.70	1.1	e0.34	e0.48	2.8	3.8	6.9	3.2	1.1	0.90	0.37
14	0.70	0.68	0.91	e0.30	e0.64	2.7	3.5	5.3	2.6	0.96	0.85	0.37
15	0.57	0.64	0.84	e0.27	0.76	2.5	3.3	4.6	2.3	0.86	0.79	0.35
16	0.51	0.64	0.91	e0.30	0.72	2.3	3.0	6.0	2.1	0.76	0.74	0.30
17	0.47	0.65	0.88	e0.33	0.67	2.3	2.8	5.0	2.0	0.73	0.69	0.31
18	0.44	0.69	0.89	e0.36	0.68	2.2	2.9	4.3	1.8	1.4	0.68	0.35
19	0.41	0.72	0.86	e0.36	1.4	2.2	2.7	3.9	1.7	1.2	1.1	0.50
20	0.38	0.71	0.83	e0.39	1.5	2.1	2.6	3.6	1.6	0.77	0.55	0.58
21	0.36	0.74	0.81	e0.43	1.4	2.0	3.0	3.3	1.5	0.70	4.3	0.40
22	4.4	0.67	1.1	e0.46	1.2	2.0	2.7	3.1	1.4	0.73	1.5	0.36
23	4.1	0.65	e0.89	e0.44	1.2	2.0	2.7	3.0	1.3	0.66	41	0.35
24	2.1	0.83	e0.67	e0.43	1.2	1.9	2.7	2.7	1.2	0.63	5.3	0.48
25	1.7	0.62	e0.54	e0.42	1.1	1.8	2.5	4.6	1.1	0.65	3.2	0.61
26	1.4	0.63	e0.39	0.49	e0.94	1.8	2.4	3.8	3.3	0.62	2.3	0.63
27	1.2	0.59	e0.42	0.50	e0.90	1.8	6.2	3.5	1.9	28	1.7	0.60
28	1.1	0.55	e0.45	0.50	e0.84	1.9	6.0	3.4	1.5	2.3	1.4	0.60
29	0.98	0.57	e0.40	0.49	---	1.9	4.6	6.3	1.4	7.4	1.2	0.63
30	1.0	0.59	e0.32	0.48	---	1.8	4.0	4.6	1.3	3.2	1.0	0.67
31	0.96	---	e0.27	0.52	---	1.8	---	4.0	---	2.1	0.88	---
TOTAL	30.31	20.82	20.00	13.39	20.89	63.11	100.4	142.1	93.8	69.92	89.46	14.73
MEAN	0.978	0.694	0.645	0.432	0.746	2.036	3.347	4.584	3.127	2.255	2.886	0.491
MAX	4.4	0.91	1.1	0.57	1.5	4.9	7.1	14	13	28	41	0.78
MIN	0.08	0.55	0.27	0.27	0.29	0.74	1.7	2.5	1.1	0.62	0.55	0.30
AC-FT	60	41	40	27	41	125	199	282	186	139	177	29

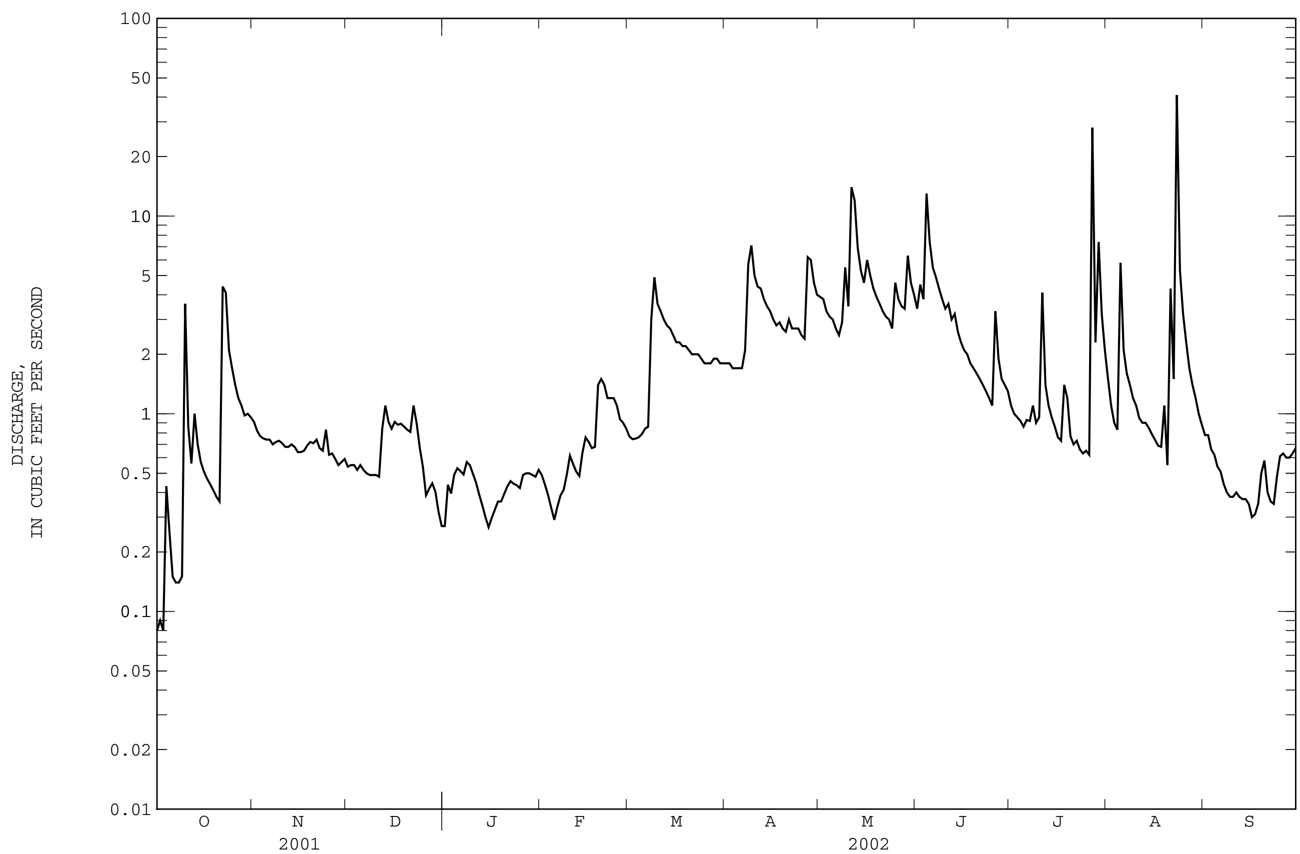
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2000 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	0.630	0.539	0.432	0.487	4.104	3.657	3.632	5.625	4.056	1.775	1.128	0.291
MAX	0.98	0.69	0.65	0.54	7.46	5.28	3.92	7.60	5.51	2.26	2.89	0.49
(WY)	2002	2002	2002	2001	2001	2001	2001	2001	2001	2002	2002	2002
MIN	0.28	0.38	0.22	0.43	0.75	2.04	3.35	4.58	3.13	1.10	0.16	0.11
(WY)	2001	2001	2001	2002	2002	2002	2002	2002	2002	2001	2001	2001

05464942 HOOVER CREEK AT HOOVER NATIONAL HISTORIC SITE AT WEST BRANCH, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 2000 - 2002	
ANNUAL TOTAL	1020.95		678.93			
ANNUAL MEAN	2.797		1.860		2.268	
HIGHEST ANNUAL MEAN					2.68	2001
LOWEST ANNUAL MEAN					1.86	2002
HIGHEST DAILY MEAN	55	Feb 24	41	Aug 23	78	May 31 2000
LOWEST DAILY MEAN	0.00	Sep 5	0.08	Oct 1	0.00	Sep 5 2001
ANNUAL SEVEN-DAY MINIMUM	0.01	Aug 30	0.17	Oct 1	0.01	Aug 30 2001
MAXIMUM PEAK FLOW			326	Aug 23	207	May 31 2000
MAXIMUM PEAK STAGE			7.45	Aug 23	7.45	Aug 23 2002
INSTANTANEOUS LOW FLOW			0.06	Oct 1a	0.00	Sep 4 2001b
ANNUAL RUNOFF (AC-FT)	2030		1350		1640	
10 PERCENT EXCEEDS	6.5		4.0		5.0	
50 PERCENT EXCEEDS	0.88		0.90		0.77	
90 PERCENT EXCEEDS	0.08		0.39		0.14	

a Also Oct. 3, 4.
b Also Sept. 5, 6, 2001.
e Estimated.



05465000 CEDAR RIVER NEAR CONESVILLE, IA

LOCATION.--Lat 41°24'36", long 91°17'06", in SW1/4 SW1/4 sec.2, T.76 N., R.4 W., Muscatine County, Hydrologic Unit 07080206, on right bank 10 ft downstream from bridge on county highway G28, 3.4 mi northeast of Conesville, 5.2 mi downstream from Wapsinonoc Creek, 10.7 mi upstream from mouth, and at mile 39.8 upstream from mouth of Iowa River.

DRAINAGE AREA.--7,785 mi^2.

PERIOD OF RECORD.--September 1939 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1708: 1956.

GAGE.--Water-stage recorder. Datum of gage is 581.95 ft above NGVD of 1929. Prior to Feb. 2, 1940, and Apr. 11, 1952, to July 1, 1954, nonrecording gage, Feb. 2, 1940, to Apr. 10, 1952, and July 2, 1954, to Sept. 16, 1963, water-stage recorder, at site 150 ft downstream on left bank at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1929 reached a stage of 15.8 ft, from information by local residents to U.S. Army Corps of Engineers.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2150	2420	2160	e1670	e1800	2450	2380	5200	6840	5040	3350	3500
2	2080	2380	2210	e1540	e1750	2410	2330	5710	6400	4740	3310	3310
3	2000	2310	2220	e1610	e1470	e1970	2310	6150	6090	4540	3550	3240
4	1980	2250	2230	e1630	e1400	e1540	2290	6230	6230	4280	3540	3080
5	2100	2210	2230	e1650	e1510	e1290	2270	5970	15100	4090	3680	2840
6	2070	2180	2220	e1670	e1350	e1500	2230	5750	23100	3980	3610	2700
7	1890	2150	2240	e1680	e1320	1980	2260	5560	15000	4890	3280	2580
8	1840	2130	2220	e1670	1490	2660	2450	5310	9730	4430	3130	2510
9	1800	2100	2200	e1660	1690	3230	3730	5330	8270	4050	3740	2410
10	1800	2050	2160	e1720	1980	3850	4530	5250	7930	4080	5580	2330
11	1960	2040	2190	e1750	2160	3480	4110	5180	7910	4460	6340	2260
12	1980	2020	2270	e1780	2120	2920	3790	7450	7500	8210	6150	2130
13	2090	2020	2450	e1770	2090	2820	3690	7280	7670	6650	5700	2060
14	2090	2050	2590	e1810	2050	3330	3560	6700	7720	5210	5180	2020
15	2020	2070	2530	e1800	2020	3050	3540	6750	7970	4590	4690	1970
16	2050	2050	2480	e1810	2030	2890	3490	7060	6920	4490	4720	1900
17	2100	2020	2460	e1850	1990	2820	3750	7550	6370	4560	4770	1820
18	2090	2010	2520	e1770	2020	2810	4090	6600	5990	4360	5110	1800
19	2020	2010	2510	e1700	2100	2810	4190	6140	5690	5630	5150	1810
20	1960	2000	2460	e1630	2300	2830	4100	5810	5440	7000	5150	2340
21	1930	1980	2340	e1620	2460	2830	4140	5470	5250	4700	4430	2390
22	1920	1960	2280	e1630	2510	2750	4190	5180	5270	3790	4150	2040
23	3120	1930	2410	e1740	2600	2680	4110	4960	6370	3360	5510	1940
24	4940	1980	e2330	e1770	2690	2640	4100	4830	6940	3140	7000	2000
25	4220	2010	e1670	e1720	2800	2590	4290	4820	6760	2910	5510	2000
26	3520	2050	e1050	e1680	2840	2540	4140	5040	6450	2730	5170	1940
27	3070	2020	e991	1790	2800	2510	4120	5040	6390	3560	4740	1830
28	2850	2040	e1390	1850	2550	2520	5140	4940	5970	5660	4250	1810
29	2540	2060	e1620	1920	---	2590	5170	4800	5590	3780	3940	1740
30	2540	2110	e1790	2070	---	2510	5080	6820	5300	4000	3740	1750
31	2480	---	e1710	e1900	---	2430	---	7940	---	3730	3630	---
TOTAL	73200	62610	66131	53860	57890	81230	109570	182820	234160	140640	141800	68050
MEAN	2361	2087	2133	1737	2068	2620	3652	5897	7805	4537	4574	2268
MAX	4940	2420	2590	2070	2840	3850	5170	7940	23100	8210	7000	3500
MIN	1800	1930	991	1540	1320	1290	2230	4800	5250	2730	3130	1740
AC-FT	145200	124200	131200	106800	114800	161100	217300	362600	464500	279000	281300	135000
CFSM	0.30	0.27	0.27	0.22	0.27	0.34	0.47	0.76	1.00	0.58	0.59	0.29
IN.	0.35	0.30	0.32	0.26	0.28	0.39	0.52	0.87	1.12	0.67	0.68	0.33

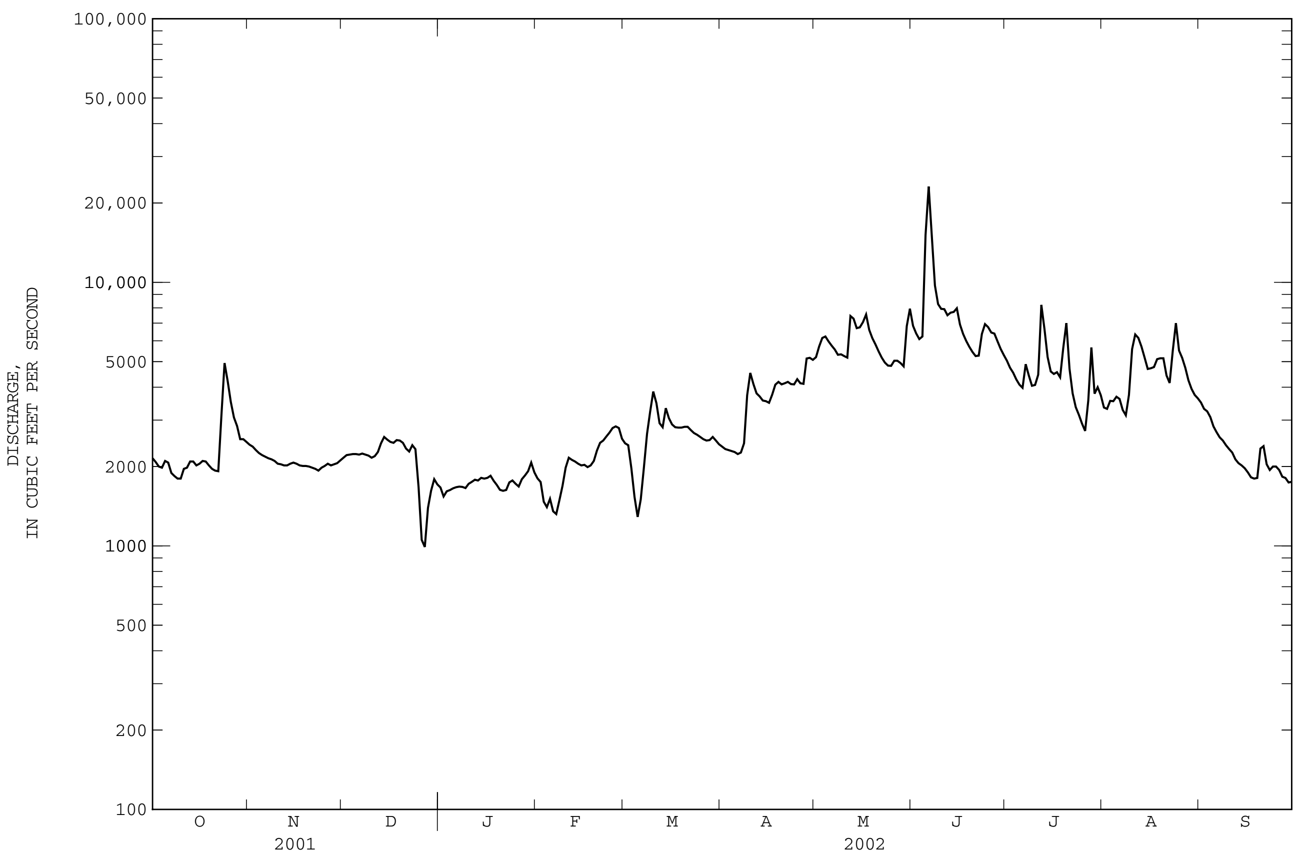
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	3106	3297	2583	2372	3239	7988	9605	7653	8309	6507	4224	3273
MAX	12380	10240	11110	11860	12000	17590	36790	24440	27780	42110	34190	19530
(WY)	1987	1973	1983	1973	1984	1948	1993	1991	1993	1993	1993	1993
MIN	599	590	429	365	359	1056	1244	1219	768	815	700	620
(WY)	1957	1956	1990	1977	1940	1954	1957	1940	1977	1989	1989	1955

05465000 CEDAR RIVER NEAR CONESVILLE, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1940 - 2002	
ANNUAL TOTAL	2588701		1271961			
ANNUAL MEAN	7092		3485		5184	
HIGHEST ANNUAL MEAN					18710	1993
LOWEST ANNUAL MEAN					1176	1956
HIGHEST DAILY MEAN	37600	Apr 19	23100	Jun 6	69800	Apr 6 1993
LOWEST DAILY MEAN	850	Jan 20	991	Dec 27	250	Nov 28 1955
ANNUAL SEVEN-DAY MINIMUM	990	Jan 16	1460	Dec 25	329	Jan 30 1940
MAXIMUM PEAK FLOW			24200	Jun 6	74000	Apr 6 1993
MAXIMUM PEAK STAGE			13.81	Jun 6	17.11	Apr 6 1993
ANNUAL RUNOFF (AC-FT)	5135000		2523000		3756000	
ANNUAL RUNOFF (CFSM)	0.91		0.45		0.67	
ANNUAL RUNOFF (INCHES)	12.37		6.08		9.05	
10 PERCENT EXCEEDS	17800		6180		12000	
50 PERCENT EXCEEDS	2850		2580		3150	
90 PERCENT EXCEEDS	1460		1750		940	

e Estimated



05465500 IOWA RIVER AT WAPELLO, IA

LOCATION.--Lat 41°10'41", long 91°10'55", in NW$^1/_4$ SE$^1/_4$ sec.27, T.74 N., R.3 W., Louisa County, Hydrologic Unit 07080209, on right bank, 1200 ft. downstream from bridge on State Highway 99 at east edge of Wapello, 13.2 mi downstream from Cedar River, and at mile 15.8.

DRAINAGE AREA.--12,499 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1914 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1917, 1923-30, 1932. WSP 1438: Drainage area. WSP 1558: 1918, 1923-25 (M), 1929. WSP 1708: 1955(P), 1956. WDR IA-95-1:location.

GAGE.--Water-stage recorder. Datum of gage is 538.17 ft above NGVD of 1929; Oct. 1, 1914 to Apr. 15, 1934, nonrecording gage and Apr. 16, 1934 to Sept. 30, 1972, water-stage recorder at datum 10.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated by Coralville Lake (station 05453510) 67.3 mi upstream, since Sept. 17, 1958. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum instantaneous discharge, 111,000 ft^3/s, July 8, 1993, gage height, 29.53 ft; minimum daily discharge, 300 ft^3/s, Nov. 28, 1955.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3160	3730	3110	e2420	e2700	3970	3510	8960	10200	7840	6860	6590
2	3080	3610	3180	e2380	e2600	3880	3510	8770	8930	7270	6230	6290
3	2920	3440	3210	e2420	e2500	3770	3450	9060	8530	6740	5770	5930
4	2770	3260	3220	e2450	e2340	3180	3430	9380	8690	6160	5570	5700
5	2960	3190	3280	e2470	e2160	2500	3400	9470	11800	5740	5590	5190
6	3050	3130	3290	e2500	e1990	3210	3360	9060	23900	5450	5780	4760
7	2830	3080	3400	e2540	e1950	4440	3390	8700	27500	5430	5850	4420
8	2640	3090	3460	e2570	e2060	3980	3620	8340	18600	6340	5740	4170
9	2550	3210	3800	e2580	2100	5120	5880	7840	13800	5760	5600	3980
10	2500	3240	4280	e2620	2370	7010	8090	7760	12000	5670	6400	3840
11	2470	3220	4350	e2650	2820	6870	8060	7870	11300	5970	8030	3650
12	2720	3190	4430	e2660	3240	5910	7140	14500	11100	8670	9180	3430
13	2620	3090	4710	e2730	3220	5030	6340	19100	14500	11000	9180	3370
14	2660	3090	5030	e2730	3150	5040	5990	15800	14400	8760	8530	3230
15	2580	3020	5010	e2720	3120	5350	5780	12500	15300	7200	7770	3140
16	2510	2980	4630	e2720	3200	5040	5580	11100	14500	6410	7530	3070
17	2590	2930	4350	e2760	3210	4820	5430	12400	13100	6310	7370	3060
18	2600	2910	4260	e2720	3190	4650	5620	12700	11800	6340	7520	3090
19	2620	2860	3980	e2660	3230	4500	5830	10900	10100	6460	8120	3050
20	2610	2870	3850	e2590	3440	4320	5900	9770	9320	8870	8490	3090
21	2570	2930	3770	e2560	3870	4180	5840	8780	8920	8310	8320	3860
22	2600	2950	3730	e2580	4140	4100	5870	8010	9170	6230	7840	3870
23	4290	2950	3790	e2590	4190	4020	5930	7610	9860	5560	8780	3520
24	7360	3020	e3650	e2560	4160	3950	5920	7280	10900	5110	14000	3410
25	8000	2990	e3110	e2460	4150	3920	6570	7250	10700	4640	13800	3520
26	6870	3060	e2190	e2430	4200	3880	6440	7830	9910	4210	11700	3590
27	5840	3050	e2000	e2490	4230	3830	5970	7810	9900	4160	10100	3480
28	4870	3010	e2280	e2540	4220	3870	7770	7510	9640	6770	8790	3340
29	4130	3050	e2440	e2640	---	3910	10300	7200	8930	8180	8060	3280
30	3800	3070	e2530	e2740	---	3850	9720	7910	8360	7280	7580	3240
31	3810	---	e2460	e2860	---	3630	---	11800	---	7400	6960	---
TOTAL	108580	93220	110780	80340	87750	135730	173640	302970	365660	206240	247040	118160
MEAN	3503	3107	3574	2592	3134	4378	5788	9773	12190	6653	7969	3939
MAX	8000	3730	5030	2860	4230	7010	10300	19100	27500	11000	14000	6590
MIN	2470	2860	2000	2380	1950	2500	3360	7200	8360	4160	5570	3050
AC-FT	215400	184900	219700	159400	174100	269200	344400	600900	725300	409100	490000	234400
CFSM	0.28	0.25	0.29	0.21	0.25	0.35	0.46	0.78	0.98	0.53	0.64	0.32
IN.	0.32	0.28	0.33	0.24	0.26	0.40	0.52	0.90	1.09	0.61	0.74	0.35

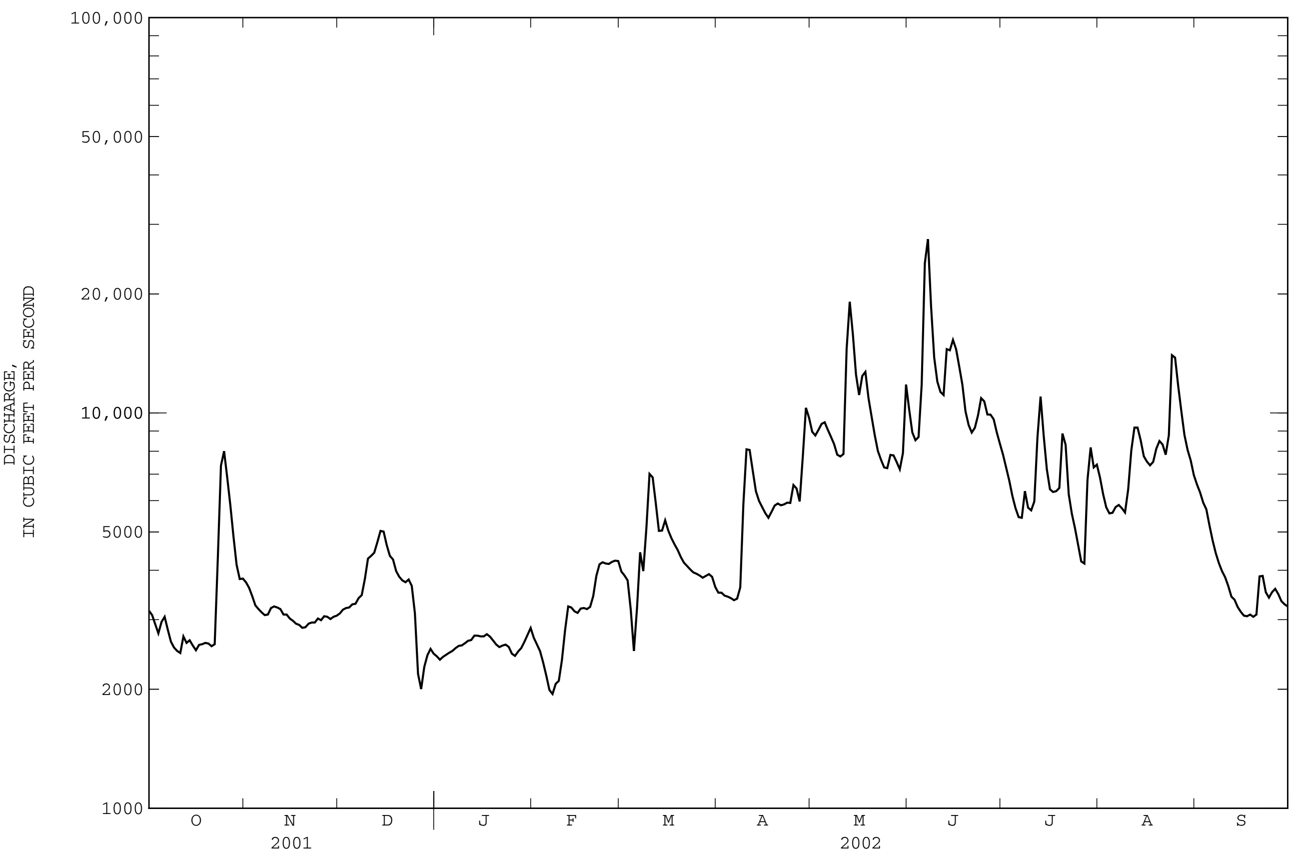
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	5410	6019	5221	4400	6206	13460	16380	13920	14140	12370	7921	5984
MAX	17200	16080	18150	20420	17080	26130	45840	33030	36630	77320	61750	37270
(WY)	1987	1993	1983	1973	1984	1982	1993	1993	1993	1993	1993	1993
MIN	926	882	664	533	661	2273	2536	1709	1022	1019	873	982
(WY)	1990	1990	1990	1977	1977	1977	1977	1977	1977	1989	1989	1988

05465500 IOWA RIVER AT WAPELLO, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1959 - 2002a	
ANNUAL TOTAL	4090600		2030110			
ANNUAL MEAN	11210		5562		9294	
HIGHEST ANNUAL MEAN					30550	1993
LOWEST ANNUAL MEAN					1908	1989
HIGHEST DAILY MEAN	42600	Apr 15	27500	Jun 7	106000	Jul 8 1993
LOWEST DAILY MEAN	1400	Jan 1	1950	Feb 7b	460	Jan 21 1977
ANNUAL SEVEN-DAY MINIMUM	1710	Jan 1	2140	Feb 4	470	Jan 20 1977
MAXIMUM PEAK FLOW			28800	Jun 7	111000	Jul 8 1993
MAXIMUM PEAK STAGE			19.13	Jun 7	29.53	Jul 7 1993
ANNUAL RUNOFF (AC-FT)	8114000		4027000		6733000	
ANNUAL RUNOFF (CFSM)	0.90		0.44		0.74	
ANNUAL RUNOFF (INCHES)	12.17		6.04		10.10	
10 PERCENT EXCEEDS	29200		9810		21200	
50 PERCENT EXCEEDS	4710		4190		5970	
90 PERCENT EXCEEDS	2400		2580		1750	

a Post regulation.
b Ice affected
e Estimated.



WATER-QUALITY RECORDS

LOCATION -- Samples collected at bridge on State Highway 99, 1200 ft. upstream of gage.

PERIOD OF RECORD.--January 1978 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: January 1978 to current year.
WATER TEMPERATURE: January 1978 to current year.
SUSPENDED-SEDIMENT DISCHARGE: April 1978 to current year.

REMARKS.--During periods of ice effect samples are collected in open water channel or through ice cover. Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 920 microsiemens Dec. 17, 1988; minimum daily, 168 microsiemens June 21, 1990.
WATER TEMPERATURES: Maximum daily, 33.0°C July 25, 1987; minimum daily, 0.0°C on many days during winter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 4,970 mg/L June 25, 1981; minimum daily mean, 1 mg/L Jan. 21, 22, 1981.
SEDIMENT LOADS: Maximum daily 604,000 tons June 20, 1990; minimum daily, 4.7 tons Dec. 23, 24, 1989.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 646 microsiemens Jan. 9; minimum daily, 309 microsiemens June 6.
WATER TEMPERATURES: Maximum daily, 28.8°C, July 3; minimum daily, 0.1°C Jan. 9.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,050 mg/L June 7; minimum daily mean, 21 mg/L Feb. 14.
SEDIMENT LOADS: Maximum daily, 78,000 tons June 7; minimum daily, 131 tons Feb. 7.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	TEMPER-ATURE WATER (DEG C) (00010)	TEMPER-ATURE AIR (DEG C) (00020)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	AGENCY COL-LECTING SAMPLE (CODE NUMBER) (00027)	AGENCY ANA-LYZING SAMPLE (CODE NUMBER) (00028)	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	GAGE HEIGHT (FEET) (00065)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	SAMPLE TREAT-MENT (CODES) (00115)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)
OCT													
04...	1020	17.7	11.0	749	1028	80020	2870	11.58	429	1	9.8	105	8.6
NOV													
07...	0857	11.1	17.0	753	1028	80020	3090	11.64	490	1	12.3	113	8.6
DEC													
05...	0930	10.7	20.0	744	1028	1028	3280	11.75	555	1	11.8	106	8.6
JAN													
09...	0915	.1	--	736	1028	80020	2580	12.00	707	1	13.8	95	8.1
FEB													
13...	0942	1.2	2.7	754	1028	80020	3230	11.87	632	1	13.1	93	8.2
APR													
10...	1049	10.3	20.0	755	1028	80020	8260	14.07	470	1	10.2	90	8.0
MAY													
02...	0845	11.5	3.5	744	1028	80020	8850	14.46	498	1	10.9	103	8.3
JUN													
06...	1050	18.7	--	748	1028	80020	24600	18.14	289	1	6.5	71	7.6
JUL													
03...	0950	28.8	30.0	748	1028	80020	6740	13.15	536	1	8.5	113	8.3
AUG													
05...	0933	27.9	26.7	749	1028	80020	5620	12.60	399	1	7.3	94	8.6

Date	PH WATER WHOLE LAB (STAND-ARD UNITS) (00403)	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	NITRO-GEN, ORGANIC DIS-SOLVED (MG/L AS N) (00607)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	PHOS-PHATE, TOTAL (MG/L AS PO4) (00650)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CYANIDE TOTAL (MG/L AS CN) (00720)
OCT													
04...	--	6	113	--	<.04	.015	2.0	1.01	--	--	<.02	--	--
NOV													
07...	--	4	170	--	<.04	.009	2.3	2.08	--	.31	<.02	--	--
DEC													
05...	--	2	224	--	<.04	.014	2.0	2.82	--	.48	.03	--	--
JAN													
09...	--	0	278	--	.16	.015	1.3	5.93	--	.30	.17	--	--
FEB													
13...	--	0	240	--	<.04	.029	.79	4.89	--	.26	.13	--	--
APR													
10...	--	0	164	--	.06	.049	3.0	5.22	--	.79	.11	--	--
MAY													
02...	--	0	182	--	<.040	.022	1.6	5.85	--	.390	.040	--	--
JUN													
06...	--	0	116	--	<.04	.056	3.5	4.97	--	1.26	.11	--	--
JUL													
03...	8.0	2	131	.06	<.04	.052	1.9	7.04	.390	.28	.07	1.8	<.01
AUG													
05...	--	4	122	--	--	--	--	--	--	--	--	--	--

05465500 IOWA RIVER AT WAPELLO, IA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	HARD- NESS TOTAL (MG/L AS CACO3) (00900)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SIO2) (00955)	GROSS ALPHA, DIS- SOLVED (PCI/L AS U-NAT) (01515)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137) (03515)	TER- BUTHYL- AZINE, WATER, DISS, REC (UG/L) (04022)	PROPA- CHLOR, WATER, DISS, REC (UG/L) (04024)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)
OCT 04...	--	34.2	43.5	--	--	--	--	U	<.010	<.002	E.002	E.01	E.064
NOV 07...	--	37.8	42.1	--	--	--	--	U	<.010	<.002	<.011	E.01	E.056
DEC 05...	--	37.2	44.2	--	--	--	--	U	<.010	<.002	<.011	M	E.049
JAN 09...	--	43.3	49.1	--	--	--	--	U	<.010	<.002	<.005	<.01	E.044
FEB 13...	--	41.2	45.5	--	--	--	--	U	<.010	<.002	<.005	E.01	E.035
APR 10...	--	30.0	30.8	--	--	--	--	--	<.010	<.002	.005	E.01	E.024
MAY 02...	--	28.1	34.1	--	--	--	--	--	<.010	<.002	.009	E.01	E.087
JUN 06...	--	11.2	13.6	--	--	--	--	--	<.010	<.002	.097	.02	E.510
JUL 03...	310	28.5	33.0	.13	14.0	<1.9	11.2	--	<.010	<.002	.011	E.01	E.199
AUG 05...	--	29.0	32.6	--	--	--	--	--	<.010	<.002	.007	.03	E.086

Date	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	FONOFOS WATER DISS REC (UG/L) (04095)	RADIUM 226, DIS- SOLVED (PCI/L) (09503)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	P,P' DDE DISSOLV (UG/L) (34653)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	ALKA- LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	LINDANE DIS- SOLVED (UG/L) (39341)	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	MALA- THION, DIS- SOLVED (UG/L) (39532)	PARA- THION, DIS- SOLVED (UG/L) (39542)	DI- AZINON, DIS- SOLVED (UG/L) (39572)
OCT 04...	<.018	<.003	--	<.005	<.003	<.005	103	<.004	<.005	.058	E.012	<.007	<.005
NOV 07...	<.018	<.003	--	<.005	<.003	<.005	145	<.004	<.005	.039	<.027	<.007	<.005
DEC 05...	<.018	<.003	--	<.005	<.003	<.005	187	<.004	<.005	.035	<.027	<.007	<.005
JAN 09...	<.018	<.003	--	<.005	<.003	<.005	230	<.004	<.005	.048	<.027	<.010	<.005
FEB 13...	<.018	<.003	--	<.005	<.003	<.005	198	<.004	<.005	.030	<.027	<.010	<.005
APR 10...	<.018	<.003	--	<.005	<.003	<.005	135	<.004	<.005	.092	<.027	<.010	<.005
MAY 02...	<.018	<.003	--	<.005	<.003	<.005	151	<.004	<.005	.197	<.027	<.010	<.005
JUN 06...	.020	<.003	--	<.005	<.003	.007	96	<.004	<.005	2.52	<.027	<.010	.039
JUL 03...	<.018	<.003	M	<.005	<.003	<.005	111	<.004	<.005	.153	<.027	<.010	<.005
AUG 05...	<.018	<.003	--	<.005	<.003	<.005	107	<.004	<.005	.060	<.027	<.010	<.005

Date	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	ALA- CHLOR, WATER, DISS, REC, (UG/L) (46342)	ACETO- CHLOR, WATER FLTRD REC (UG/L) (49260)	PURPOSE SITE VISIT, (CODE) (50280)	TUR- BID- ITY FIELD WATER UNFLTRD (NTU) (61028)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)	SAMPLE PURPOSE CODE (71999)	ELEV. OF LAND SURFACE DATUM (FT. ABOVE NGVD) (72000)	SEDI- MENT, SUS- PENDED (MG/L) (80154)	DRAIN- AGE AREA (SQ. MI.) (81024)	TUR- BID- ITY LAB (NTU) (82079)	SAM- PLING METHOD, CODES (82398)	METRI- BUZIN SENCOR WATER DISSOLV (UG/L) (82630)
OCT 04...	.116	<.002	.008	1001	--	--	15.00	538.17	57	12500	--	10	<.006
NOV 07...	.098	<.002	<.004	1001	--	--	15.00	538.17	71	12500	--	30	<.006
DEC 05...	.082	<.002	<.004	1001	49	--	15.00	538.17	98	12500	--	10	<.006
JAN 09...	.058	<.004	<.006	1001	12	--	15.00	538.17	26	12500	--	30	<.006
FEB 13...	.058	<.004	<.006	1001	18	--	15.00	538.17	77	12500	--	10	<.006
APR 10...	.251	.012	.059	1001	290	--	15.00	538.17	453	12500	--	10	.009
MAY 02...	.839	<.008	.145	1001	--	--	15.00	538.17	185	12500	--	10	.009
JUN 06...	5.77	.079	1.54	1001	--	--	15.00	538.17	890	12500	--	10	.019
JUL 03...	1.43	<.004	.037	1001	--	390	15.00	538.17	124	12500	22	10	<.006
AUG 05...	.345	<.004	.011	1001	--	--	15.00	538.17	209	12500	--	10	<.006

05465500 IOWA RIVER AT WAPELLO, IA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	2,6-DI-ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	TRI-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	ETHAL-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	TER-BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	LIN-URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	METHYL PARA-THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	PEB-ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	MOL-INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	ETHO-PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	BEN-FLUR-ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)
OCT													
04...	<.002	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.002	E.01	<.002	<.005	<.010
NOV													
07...	<.002	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.002	<.02	<.002	<.005	<.010
DEC													
05...	<.002	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.002	<.02	<.002	<.005	<.010
JAN													
09...	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02	<.002	<.005	<.010
FEB													
13...	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02	<.002	<.005	<.010
APR													
10...	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02	<.002	<.005	<.010
MAY													
02...	<.006	<.009	<.009	<.011	<.034	<.035	<.006	.006	<.004	<.02	<.002	<.005	<.010
JUN													
06...	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	E.01	<.002	<.005	<.010
JUL													
03...	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02	<.002	<.005	<.010
AUG													
05...	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02	<.002	<.005	<.010

Date	CARBO-FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	TER-BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	PRON-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	DISUL-FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	TRIAL-LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	PRO-PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	CAR-BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	THIO-BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	PENDI-METH-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	NAPROP-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PRO-PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	METHYL AZIN-PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)
OCT													
04...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.010	<.007	<.02	<.050
NOV													
07...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.010	<.007	<.02	<.050
DEC													
05...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.010	<.007	<.02	<.050
JAN													
09...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050
FEB													
13...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050
APR													
10...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050
MAY													
02...	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050
JUN													
06...	E.032	<.02	<.004	<.02	<.002	<.011	E.008	<.005	<.003	.025	<.007	<.02	<.050
JUL													
03...	<.020	<.02	<.004	<.02	.007	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050
AUG													
05...	<.020	<.02	<.004	<.02	.003	<.011	<.041	<.005	<.003	<.022	<.007	<.02	<.050

Date	PER-METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	SAMPLER TYPE (CODE) (84164)	SPE-CIFIC CON-DUCT-ANCE LAB (US/CM) (90095)	ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410)	DIAZ-INON D10 SRG WAT FLT 0.7 U GF, REC PERCENT (91063)	HCH ALPHA D6 SRG WAT FLT 0.7 U GF, REC PERCENT (91065)	QUALITY ASSUR-ANCE DATA INDICA-TOR CODE (99111)	SET NUMBER SCHED-ULE 2001 (NO.) (99818)	SAMPLE VOLUME SCHED-ULE 2001 (ML) (99856)
OCT									
04...	<.006	3039	--	--	113	88.5	--	2.00E+08	946
NOV									
07...	<.006	3039	--	--	88.6	85.7	--	2.00E+08	950
DEC									
05...	<.006	3039	576	--	101	93.0	--	2.00E+08	879
JAN									
09...	<.006	3060	708	--	88.1	80.8	--	2.00E+08	924
FEB									
13...	<.006	3039	641	--	98.1	90.6	--	2.00E+08	947
APR									
10...	<.006	3053	479	--	92.7	92.7	--	--	915
MAY									
02...	<.006	3051	497	--	122	102	--	--	938
JUN									
06...	<.006	3053	289	--	E122	106	--	--	907
JUL									
03...	<.006	3053	512	340	115	93.3	30	--	835
AUG									
05...	<.006	3050	--	--	108	105	--	--	945

05465500 IOWA RIVER AT WAPELLO, IA--Continued

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	TEMPER-ATURE WATER (DEG C) (00010)	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT						
04...	1245	17.7	2870	76	589	99
NOV						
07...	1000	12.2	3090	75	626	96
FEB						
13...	1010	1.2	3230	65	567	88
APR						
10...	1130	10.4	8260	485	10800	96
MAY						
02...	0930	11.5	8830	211	5030	90
JUN						
06...	1130	18.8	24600	866	57500	90
JUL						
03...	1005	28.8	6740	143	2600	92
AUG						
05...	1020	28.2	5620	214	3250	93

Date	Time	NUMBER OF SAM-PLING POINTS (COUNT) (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)	BED MAT. SIEVE DIAM. % FINER THAN 32.0 MM (80173)
OCT												
04...	1245	5	1	4	10	21	60	80	91	100	--	--
NOV												
07...	1000	4	1	3	8	18	50	74	88	96	97	100
DEC												
05...	0930	4	1	3	9	18	62	86	95	100	--	--
FEB												
13...	1010	3	2	5	9	16	56	80	87	92	94	100
MAY												
02...	0945	5	--	0	10	48	71	93	99	100	--	--
JUN												
06...	1130	4	--	0	15	64	89	98	100	--	--	--
JUL												
03...	1010	5	0	1	7	34	70	90	98	100	--	--
AUG												
07...	1020	5	0	1	9	35	66	85	96	100	--	--

SPECIFIC CONDUCTANCE, in MICROSIEMENS/CM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	526	---	---	---	---
3	---	---	---	---	---	---	---	---	---	535	---	---
4	417	---	---	---	---	---	---	---	---	---	---	---
5	---	---	506	---	---	---	---	---	---	---	417	---
6	---	462	---	---	---	---	---	---	309	---	---	---
7	---	470	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	646	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	520	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	614	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	508	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---

05465500 IOWA RIVER AT WAPELLO, IA--Continued

WATER TEMPERATURE, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	11.5	---	---	---	---
3	---	---	---	---	---	---	---	---	---	28.8	---	---
4	17.7	---	---	---	---	---	---	---	---	---	---	---
5	---	---	10.7	---	---	---	---	---	---	---	27.9	---
6	---	12.2	---	---	---	---	---	---	18.8	---	---	---
7	---	11.1	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	0.1	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	10.4	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	1.2	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	9.6	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

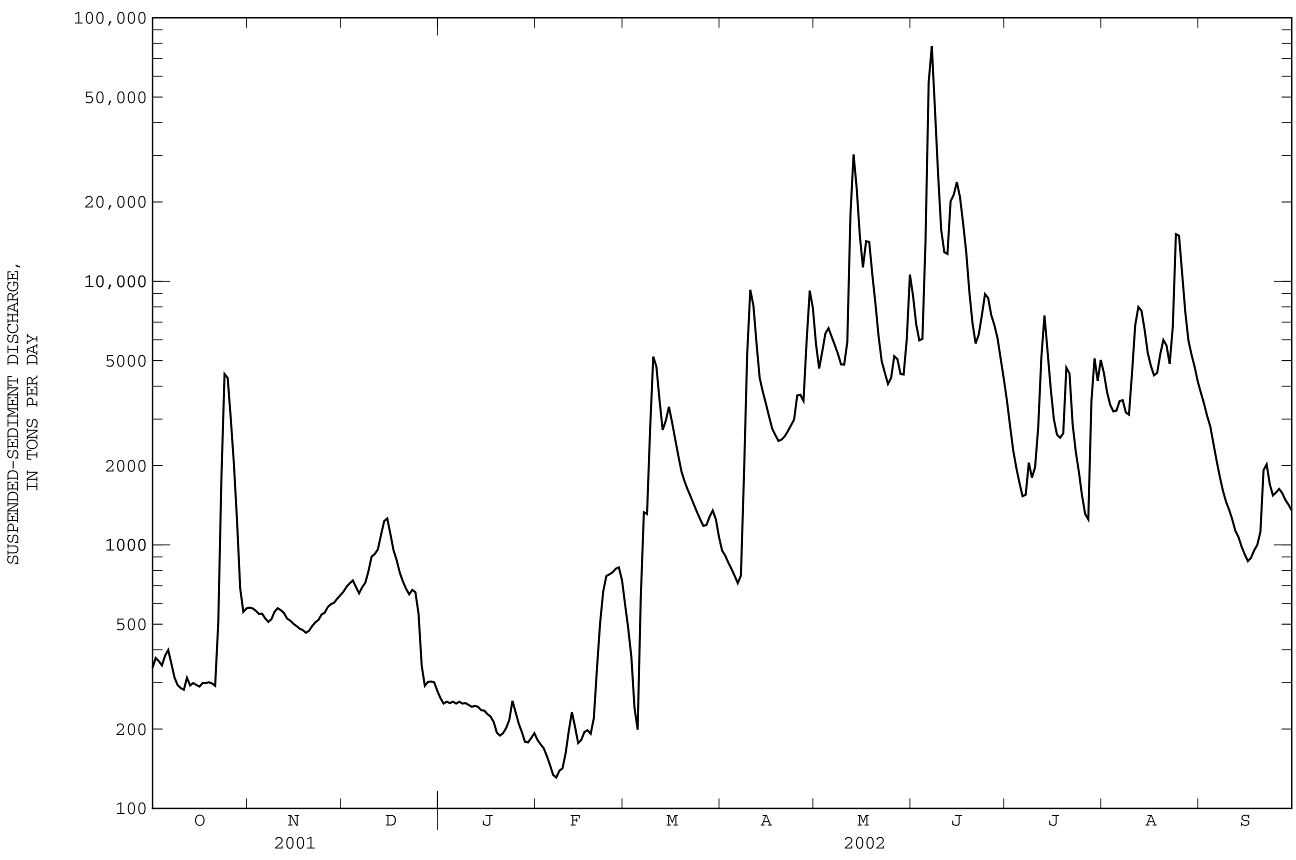
DAY	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	40	342	57	578	79	664	40	262	25	182	55	593
2	45	372	59	574	81	694	39	250	25	175	46	482
3	46	362	60	562	82	715	39	254	25	169	37	375
4	47	349	62	547	84	733	38	251	25	158	28	241
5	47	380	64	548	78	692	38	254	25	146	30	199
6	48	399	62	526	74	655	37	250	25	134	71	629
7	46	355	61	510	75	691	37	254	25	131	111	1330
8	44	314	63	523	77	719	36	250	25	139	121	1310
9	43	294	64	558	78	796	36	251	25	142	198	2770
10	42	286	66	575	78	903	35	247	25	162	273	5180
11	42	282	65	565	79	923	34	243	26	197	255	4740
12	43	313	64	551	80	962	34	245	26	232	221	3540
13	41	293	63	525	85	1090	33	243	23	204	201	2730
14	42	299	62	516	91	1230	32	236	21	177	218	2960
15	42	294	62	502	93	1260	32	235	22	182	231	3340
16	43	290	61	492	88	1100	31	228	23	195	215	2920
17	43	299	61	481	81	954	30	223	23	198	194	2520
18	43	299	61	475	76	875	29	213	22	192	173	2180
19	42	301	60	464	73	784	27	194	25	220	156	1900
20	42	298	61	472	70	726	27	189	36	339	150	1740
21	42	292	62	492	67	682	28	193	48	503	143	1620
22	71	507	64	508	65	649	29	202	60	666	137	1520
23	149	1790	65	519	66	675	31	217	67	762	131	1420
24	222	4450	67	544	67	661	37	256	69	773	125	1330
25	198	4300	68	553	65	546	35	232	70	787	119	1250
26	162	3010	70	581	59	348	32	210	72	812	112	1180
27	128	2020	72	596	54	292	29	195	72	821	115	1190
28	93	1230	74	603	49	302	26	179	65	735	122	1280
29	61	685	76	625	46	303	25	178	---	---	128	1350
30	54	557	78	644	44	301	25	185	---	---	120	1250
31	56	574	---	---	42	279	25	193	---	---	109	1070
TOTAL	---	25836	---	16209	---	22204	---	7012	---	9533	---	56139

05465500 IOWA RIVER AT WAPELLO, IA--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	APRIL MEAN CONCEN-TRATION (MG/L)	APRIL LOAD (TONS/DAY)	MAY MEAN CONCEN-TRATION (MG/L)	MAY LOAD (TONS/DAY)	JUNE MEAN CONCEN-TRATION (MG/L)	JUNE LOAD (TONS/DAY)	JULY MEAN CONCEN-TRATION (MG/L)	JULY LOAD (TONS/DAY)	AUGUST MEAN CONCEN-TRATION (MG/L)	AUGUST LOAD (TONS/DAY)	SEPTEMBER MEAN CONCEN-TRATION (MG/L)	SEPTEMBER LOAD (TONS/DAY)
1	100	951	238	5770	320	8820	166	3530	242	4480	217	3770
2	96	910	197	4670	285	6880	144	2830	227	3800	207	3430
3	92	855	221	5420	259	5970	126	2290	218	3400	197	3080
4	87	810	250	6340	258	6050	118	1960	213	3210	188	2810
5	83	763	260	6640	412	14300	111	1720	214	3230	178	2420
6	79	716	252	6160	875	57000	104	1530	225	3510	168	2090
7	83	764	244	5730	1050	78000	106	1550	225	3540	158	1820
8	189	1870	236	5310	891	45200	120	2050	206	3180	149	1610
9	325	5270	228	4840	683	25600	116	1800	207	3120	141	1460
10	424	9280	230	4830	482	15700	129	1970	262	4530	137	1360
11	371	8080	275	5880	423	12900	173	2790	316	6820	133	1250
12	300	5800	445	17900	422	12700	217	5140	324	7990	128	1130
13	251	4300	587	30300	509	20100	249	7420	314	7730	124	1070
14	235	3810	528	22500	545	21300	228	5410	287	6560	120	984
15	220	3430	439	14900	574	23800	201	3910	257	5350	116	920
16	204	3070	378	11300	535	20900	173	3000	237	4780	112	867
17	188	2760	425	14200	468	16600	154	2620	223	4400	115	893
18	172	2610	410	14100	401	12900	149	2550	223	4490	122	953
19	157	2480	360	10600	335	9130	152	2650	244	5290	130	999
20	158	2510	310	8190	275	6940	195	4700	264	5990	143	1120
21	164	2580	260	6180	241	5810	198	4470	257	5710	194	1920
22	170	2700	230	4970	254	6280	170	2870	233	4860	205	2020
23	177	2840	219	4490	279	7440	150	2260	285	6710	190	1700
24	187	2990	208	4080	304	8940	137	1890	400	15100	179	1540
25	206	3690	219	4300	300	8650	123	1540	402	14900	179	1580
26	210	3710	246	5200	278	7440	115	1310	342	10700	180	1630
27	212	3520	240	5070	256	6820	111	1250	283	7640	180	1570
28	271	5940	220	4450	233	6080	179	3500	256	5970	176	1480
29	331	9210	228	4430	211	5090	230	5100	246	5260	173	1420
30	301	7920	281	6020	189	4270	214	4190	236	4730	166	1350
31	---	---	331	10600	---	---	252	5030	226	4160	---	---
TOTAL	---	106139	---	265370	---	487610	---	94830	---	181140	---	50246

YEAR 1322268



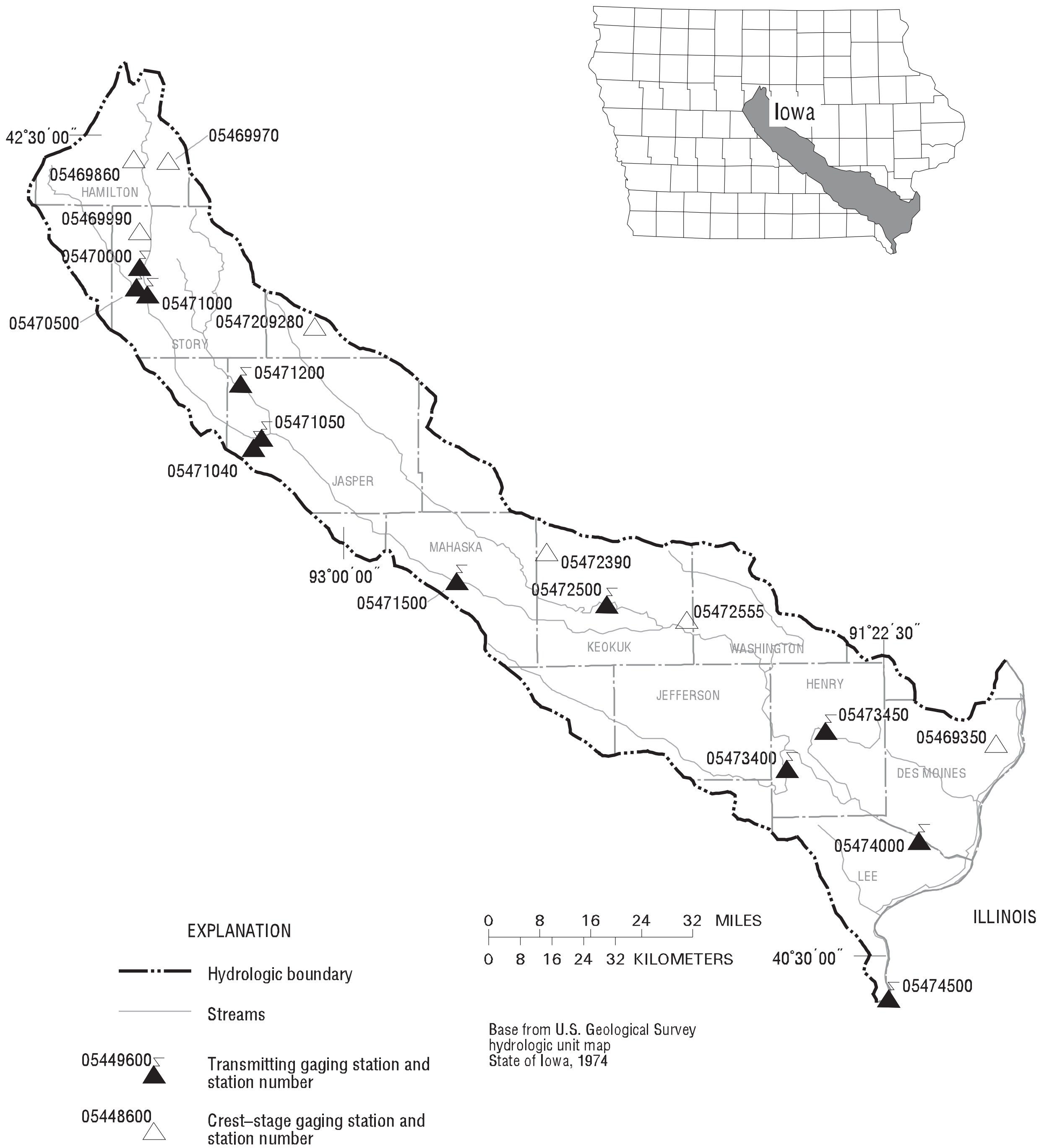


Figure 16. Locations of active continuous-record and crest-stage gaging stations in the Skunk River drainage basin.

Gaging Stations

05470000 South Skunk River near Ames, IA. 224
05470500 Squaw Creek at Ames, IA. 226
05471000 South Skunk River below Squaw Creek near Ames, IA. 228
05471040 Squaw Creek near Colfax, IA. 230
05471050 South Skunk River at Colfax, IA. 236
05471200 Indian Creek near Mingo, IA. 238
05471500 South Skunk River near Oskaloosa, IA 240
05472500 North Skunk River near Sigourney, IA 242
05473400 Cedar Creek near Oakland Mills, IA 244
05473450 Big Creek near Mt. Pleasant. 246
05474000 Skunk River at Augusta, IA 248
05474500 Mississippi River at Keokuk, IA. 254

Crest Stage Gaging Stations

05469350 Haight Creek at Kingston, IA 356
05469860 Mud Lake Drainage Ditch 71 at Jewell, IA 356
05469970 Long Dick Creek near Ellsworth, IA 356
05469990 Keigley Branch near Story City, IA 356
0547209280 Snipe Creek Tributary at Melbourne, IA 356
05472390 Middle Creek near Lacey, IA. 356
05472555 Skunk River Tributary near Richland, IA. 356

05470000 SOUTH SKUNK RIVER NEAR AMES, IA

LOCATION.--Lat 42°04'06", long 93°37'09", in NW$^1/_4$ SW$^1/_4$ sec.23, T.84 N., R.24 W., Story County, Hydrologic Unit 07080105, on left bank 2.5 mi north of Ames, 3.5 mi downstream from Keigley Branch, 5.2 mi upstream from Squaw Creek, and at mile 228.1 upstream from mouth of Skunk River.

DRAINAGE AREA.--315 mi^2.

PERIOD OF RECORD.--July 1920 to September 1927, October 1932 to September 1995, October 1, 1996 to current year. Monthly discharge only for some periods, published in WSP 1308. Prior to October 1966, published as "Skunk River near Ames".

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1308: 1921, 1925-26, 1934-35 (M), 1937 (M), 1939 (M), 1947-50 (M). WDR IA-67-1: 1965. WDR IA-74-1: 1973 (P).

GAGE.--Water-stage recorder. Concrete control since July 21, 1934. Datum of gage is 893.61 ft above NGVD of 1929 (Iowa Highway Commission benchmark). Prior to Aug. 25, 1921, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey data collection platform with phone modem at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 17, 1996 reached about 14,000 ft^3/s, from rating curve extension, gage height 15.89 ft, from highwater mark.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	49	106	25	e23	71	49	e561	177	59	18	25
2	20	48	93	e14	33	48	50	e485	235	52	15	24
3	18	43	87	e16	e29	57	49	e401	587	48	13	e23
4	17	39	83	e24	e24	66	45	e332	434	76	16	21
5	17	37	82	29	37	e57	44	e275	335	e62	33	19
6	17	38	80	e17	36	e80	45	e249	286	e120	43	18
7	16	39	77	29	33	e87	46	e230	262	e207	71	15
8	16	38	75	28	35	e94	49	e210	e240	e174	54	12
9	16	38	72	34	40	87	51	e210	223	116	40	11
10	21	39	71	e26	e34	71	48	e174	401	135	29	11
11	22	38	70	e36	e44	88	49	e274	422	465	25	12
12	22	35	69	e28	e52	94	67	e1940	383	495	30	9.9
13	25	36	67	39	59	e84	83	1010	312	307	55	11
14	31	36	64	e38	e55	e78	89	733	262	208	193	9.6
15	48	e37	62	36	64	e77	88	543	229	155	164	9.4
16	47	36	60	36	67	e72	85	e470	210	119	98	9.2
17	41	34	59	34	76	75	82	360	193	97	76	9.9
18	38	34	58	e25	73	74	77	324	180	81	92	e9.1
19	38	34	56	35	80	71	e85	293	180	e74	113	18
20	38	32	48	37	110	e65	e77	267	182	64	78	109
21	35	e35	48	e30	174	e56	e104	250	153	55	56	112
22	37	39	61	42	166	53	e108	241	139	46	53	72
23	61	40	36	39	147	70	e118	236	127	39	202	55
24	73	49	e33	34	137	76	e122	214	116	34	139	47
25	67	62	e44	35	124	64	e116	224	104	30	110	42
26	60	88	e34	39	104	57	e106	231	97	28	82	37
27	54	115	31	40	78	57	e122	223	88	39	65	37
28	52	157	33	38	105	60	e567	213	81	40	52	35
29	51	131	31	35	---	58	e1030	206	74	42	42	36
30	49	117	28	e23	---	54	e760	202	67	30	35	34
31	48	---	26	29	---	51	---	189	---	23	29	---
TOTAL	1117	1593	1844	970	2039	2152	4411	11770	6779	3520	2121	893.1
MEAN	36.03	53.10	59.48	31.29	72.82	69.42	147.0	379.7	226.0	113.5	68.42	29.77
MAX	73	157	106	42	174	94	1030	1940	587	495	202	112
MIN	16	32	26	14	23	48	44	174	67	23	13	9.1
AC-FT	2220	3160	3660	1920	4040	4270	8750	23350	13450	6980	4210	1770
CFSM	0.11	0.17	0.19	0.10	0.23	0.22	0.47	1.21	0.72	0.36	0.22	0.09
IN.	0.13	0.19	0.22	0.11	0.24	0.25	0.52	1.39	0.80	0.42	0.25	0.11

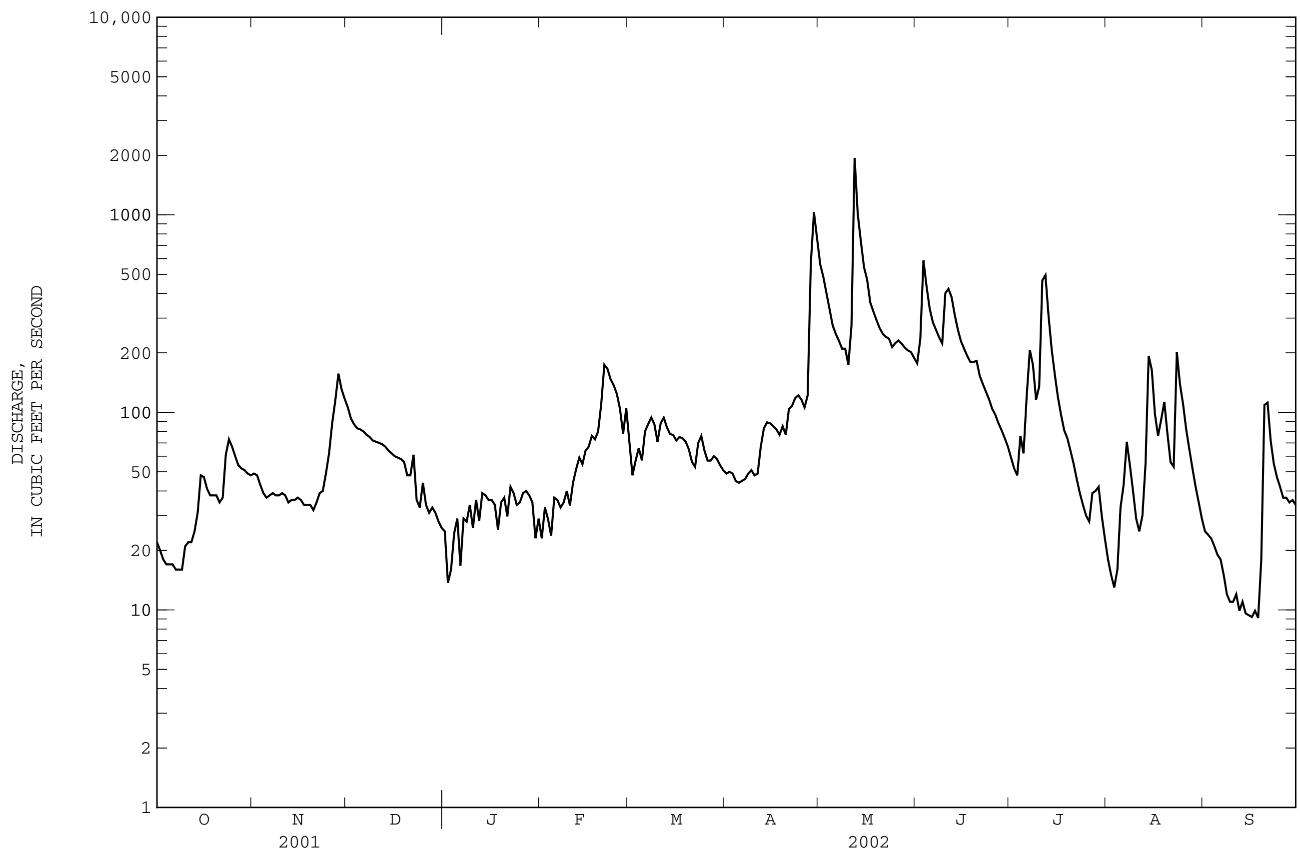
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	92.96	96.96	69.65	49.09	117.7	311.4	280.6	281.5	386.6	220.8	111.8	93.61
MAX	723	726	537	315	623	1034	1208	1193	1900	2628	1782	577
(WY)	1987	1973	1983	1973	1984	1979	1965	1944	1947	1993	1993	1926
MIN	0.12	0.14	0.000	0.000	0.31	6.35	5.44	2.28	0.011	0.017	0.087	0.081
(WY)	1954	1956	1977	1977	1956	1981	2000	1934	1977	1977	1934	1976

05470000 SOUTH SKUNK RIVER NEAR AMES, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1921 - 2002	
ANNUAL TOTAL	59753.7		39209.1			
ANNUAL MEAN	163.7		107.4		176.1	
HIGHEST ANNUAL MEAN					752	1993
LOWEST ANNUAL MEAN					5.58	1956
HIGHEST DAILY MEAN	1860	Mar 22	1940	May 12	8980	Jul 9 1993
LOWEST DAILY MEAN	2.3	Jan 30	9.2	Sep 16	0.00	Jun 20 1934
ANNUAL SEVEN-DAY MINIMUM	2.6	Jan 29	9.7	Sep 12	0.00	Jun 20 1934a
MAXIMUM PEAK FLOW			1070	May 13	11200	Aug 16 1993
MAXIMUM PEAK STAGE			4.56	May 13	14.23	Aug 16 1993
INSTANTANEOUS LOW FLOW			8.6	Sep 16	0.00	Jun 20 1934
ANNUAL RUNOFF (AC-FT)	118500		77770		127600	
ANNUAL RUNOFF (CFSM)	0.52		0.34		0.56	
ANNUAL RUNOFF (INCHES)	7.06		4.63		7.59	
10 PERCENT EXCEEDS	453		235		430	
50 PERCENT EXCEEDS	44		57		57	
90 PERCENT EXCEEDS	3.3		23		2.4	

a Many days in 1934, 1953-56, 1976-77.
e Estimated.



05470500 SQUAW CREEK AT AMES, IA

LOCATION.--Lat 42°01'21", long 93°37'45", in $NE^1/_4$ $NW^1/_4$ sec.10, T.83 N., R.24 W., Story County, Hydrologic Unit 07080105, on left bank 65 ft downstream from Lincoln Way Bridge in Ames, 0.2 mi downstream from College Creek, and 2.4 mi upstream from mouth.

DRAINAGE AREA.--204 mi^2.

PERIOD OF RECORD.--May 1919 to September 1927, May 1965 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: Drainage area, 1920-22 (M), 1923, 1924-25 (M), 1926, 1927 (M), WDR IA-66-1: 1965, WDR IA-71-1: 1970 (M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 881.00 ft. above NGVD of 1929 (levels by Iowa State University). Prior to Mar. 11, 1925, nonrecording gage at site 0.6 mi upstream at different datum. Mar. 11, 1925 to Apr. 30, 1927, nonrecording gage at site 65 ft. upstream at datum about 4 ft. higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey data collection platform with phone modem at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 4, 1918 reached a stage of 14.5 ft. from floodmarks, site and datum used 1919-25, discharge, 6,900 ft^3/s. Flood of Mar. 1, 1965 reached a stage of 10.7 ft. from graph based on gage readings, at present site and datum, discharge, 4,200 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	24	46	e15	e11	31	27	225	136	33	e2.2	9.4
2	9.9	23	41	e6.5	21	25	28	205	179	29	3.3	7.6
3	9.2	20	40	e9.6	20	34	26	180	285	26	3.1	6.0
4	9.1	19	39	e13	e14	56	23	156	227	73	17	4.8
5	9.1	19	41	17	26	e32	24	142	182	56	265	4.0
6	9.0	19	39	e8.5	17	e38	24	142	159	58	84	3.3
7	8.8	22	36	19	18	e41	27	129	142	53	47	2.7
8	8.1	20	34	e15	19	46	30	124	130	e39	33	2.0
9	9.0	18	32	22	e26	55	27	116	122	29	23	1.6
10	20	18	e34	e16	e21	42	23	104	116	207	17	1.5
11	15	18	32	23	e29	51	44	322	166	164	13	1.4
12	12	17	34	e15	36	60	40	e830	195	104	26	0.89
13	23	18	33	23	33	74	41	663	258	70	29	0.72
14	23	19	30	e17	35	74	42	484	177	54	23	1.0
15	26	18	30	19	42	67	43	350	145	42	19	1.1
16	22	17	30	21	43	54	41	308	128	35	13	0.68
17	21	16	29	19	37	50	49	260	118	29	36	0.57
18	20	16	28	e12	46	50	41	232	111	25	18	20
19	20	16	28	20	57	47	46	214	103	24	13	4.1
20	20	17	23	21	64	46	41	197	104	21	10	2.3
21	19	16	26	e14	76	41	65	180	84	e19	8.6	1.5
22	34	17	35	22	68	31	67	174	77	11	21	1.5
23	29	24	14	e17	67	47	67	178	72	7.1	260	0.95
24	34	37	e17	e12	63	44	71	156	65	5.5	108	0.54
25	28	31	e23	e15	55	35	64	191	61	4.5	57	0.53
26	25	47	e18	e20	30	34	57	191	56	4.8	e40	0.51
27	23	54	e21	24	36	32	121	e180	50	17	26	1.4
28	23	60	e22	20	55	33	563	167	46	4.3	20	0.88
29	23	53	e20	e16	---	33	389	163	42	2.3	16	0.77
30	23	50	e18	e11	---	28	271	155	38	e1.9	14	0.69
31	23	---	e17	15	---	29	---	143	---	e1.5	11	---
TOTAL	589.2	763	910	517.6	1065	1360	2422	7261	3774	1249.9	1276.2	84.93
MEAN	19.01	25.43	29.35	16.70	38.04	43.87	80.73	234.2	125.8	40.32	41.17	2.831
MAX	34	60	46	24	76	74	563	830	285	207	265	20
MIN	8.1	16	14	6.5	11	25	23	104	38	1.5	2.2	0.51
AC-FT	1170	1510	1800	1030	2110	2700	4800	14400	7490	2480	2530	168
CFSM	0.09	0.12	0.14	0.08	0.19	0.22	0.40	1.15	0.62	0.20	0.20	0.01
IN.	0.11	0.14	0.17	0.09	0.19	0.25	0.44	1.32	0.69	0.23	0.23	0.02

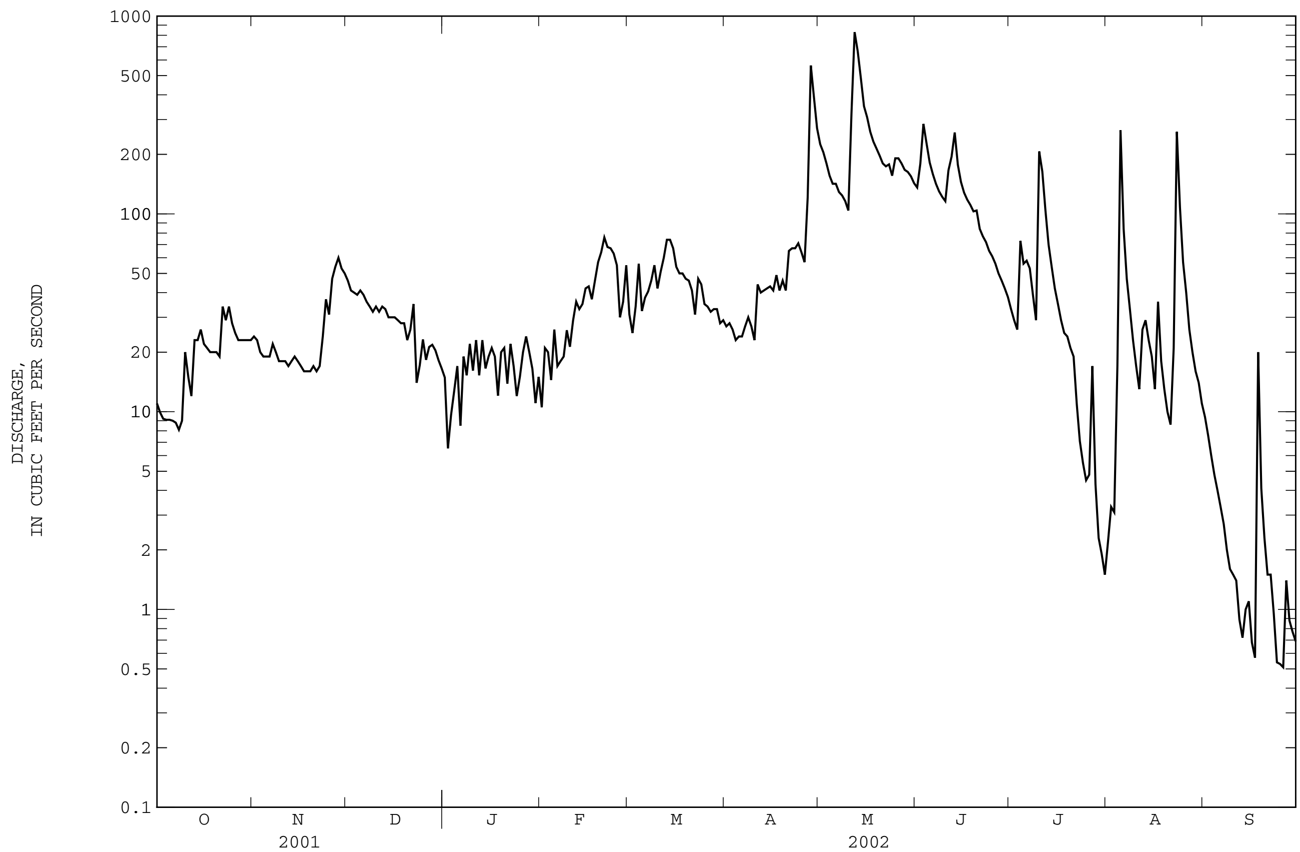
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1920 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	77.69	82.41	59.30	39.08	96.02	206.1	219.0	233.6	316.3	168.8	83.02	78.25
MAX	505	491	372	275	465	777	796	817	1107	2128	1177	568
(WY)	1974	1973	1983	1973	1973	1979	1999	1990	1975	1993	1993	1926
MIN	0.30	0.63	0.001	0.000	0.093	2.51	4.32	1.42	2.97	3.61	0.95	0.071
(WY)	2001	1967	1977	1977	1977	1981	1977	1981	1977	1927	1989	1971

05470500 SQUAW CREEK AT AMES, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1920 - 2002	
ANNUAL TOTAL	34709.12		21272.83			
ANNUAL MEAN	95.09		58.28		138.7	
HIGHEST ANNUAL MEAN					528	1993
LOWEST ANNUAL MEAN					13.6	1981
HIGHEST DAILY MEAN	1070	Mar 20	830	May 12	12200	Jul 9 1993
LOWEST DAILY MEAN	0.00	Jan 1	0.51	Sep 26	0.00	Jul 31 1925a
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 9	0.76	Sep 24	0.00	Oct 7 1971
MAXIMUM PEAK FLOW			1620	May 12	24300	Jul 9 1993
MAXIMUM PEAK STAGE			5.08	May 12	18.54	Jul 9 1993
INSTANTANEOUS LOW FLOW			0.30	Sep 24b	0.00	Jul 31 1925
ANNUAL RUNOFF (AC-FT)	68850		42190		100500	
ANNUAL RUNOFF (CFSM)	0.47		0.29		0.68	
ANNUAL RUNOFF (INCHES)	6.33		3.88		9.24	
10 PERCENT EXCEEDS	279		161		340	
50 PERCENT EXCEEDS	23		29		45	
90 PERCENT EXCEEDS	0.12		5.8		1.6	

a Many days in 1925, 1971, 1972, 1976, 1977, 1988, 2000, and 2001.
b Also Sept. 26.
e Estimated.



05471000 SOUTH SKUNK RIVER BELOW SQUAW CREEK NEAR AMES, IA

LOCATION.--Lat 42°00'24", long 93°35'43", in NE$^1/_4$ NW$^1/_4$ sec.13, T.83 N., R.24 W., Story County, Hydrologic Unit 07080105, on right bank 500 ft downstream from bridge on county highway, 0.2 mi downstream from Squaw Creek, 200 ft upstream from bridge on U.S. Highway 30, 2 mi southeast of Ames, and at mile 222.6 upstream from mouth of Skunk River.

DRAINAGE AREA.--556 mi^2.

PERIOD OF RECORD.--October 1952 to December 1979, October 1991 to current year. Prior to October 1966, published as "Skunk River below Squaw Creek near Ames".

REVISED RECORDS.--WDR IA-95-1: Location.

GAGE.--Water-stage recorder. Datum of gage is 857.10 ft above NGVD of 1929. Prior to Oct. 1, 1973, at datum 10.00 ft higher. Prior to Oct. 1991, at site 500 ft upstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Low flows are affected by pumpage by City of Ames from surficial aquifer and do not represent the natural flow of the stream. U.S. Geological Survey data collection platform with telephone modem at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 19, 1944, reached a stage of 13 ft, from floodmarks, discharge, 10,000 ft^3/s, datum then in use.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	69	146	e47	e50	e124	78	786	307	100	27	e55
2	28	68	133	e39	e57	e95	77	690	369	87	22	e48
3	25	63	122	e45	e51	e103	70	581	703	78	18	e38
4	25	58	118	e47	e49	e120	66	488	597	100	23	e32
5	23	56	121	e52	e60	e110	65	417	462	136	398	28
6	22	56	115	e43	e58	e131	e66	391	400	105	154	26
7	22	59	110	e46	e54	e142	69	359	363	278	136	23
8	21	60	105	e42	e54	e152	73	334	336	221	103	18
9	20	59	101	e54	e57	e145	74	e326	312	155	77	16
10	41	56	99	e45	e51	e134	70	278	404	351	57	16
11	30	56	98	e56	e60	e160	e64	596	563	529	45	15
12	27	55	99	e46	e66	e156	107	2580	529	579	66	13
13	46	56	96	e59	e78	e161	116	1720	560	373	104	13
14	47	56	91	e46	e77	e146	125	1230	426	270	176	12
15	64	54	88	e57	e81	140	130	1020	367	217	190	11
16	67	52	86	e53	e87	120	125	841	330	184	125	11
17	61	49	84	e51	e96	108	144	674	305	157	139	11
18	56	48	83	e44	e94	108	116	580	286	132	106	44
19	54	48	81	e43	140	103	131	520	270	118	136	19
20	54	49	73	e47	155	101	118	474	287	104	103	67
21	51	46	73	e43	215	97	169	434	257	91	79	111
22	86	46	93	e53	202	82	175	419	228	79	98	72
23	83	55	76	e54	187	99	185	418	213	62	489	54
24	100	81	e61	e38	179	106	193	374	199	e53	281	44
25	93	77	e69	e53	162	93	180	406	187	45	204	40
26	83	122	e64	e60	124	82	163	403	175	42	162	36
27	77	141	e61	e61	129	82	243	383	161	e58	128	30
28	74	195	e63	e58	e157	82	1130	363	146	e65	105	29
29	73	175	e60	e51	---	83	1420	358	131	56	86	28
30	71	159	e55	e43	---	79	1030	354	e121	42	74	26
31	71	---	e50	e60	---	78	---	329	---	34	e65	---
TOTAL	1628	2224	2774	1536	2830	3522	6772	19126	9994	4901	3976	986
MEAN	52.52	74.13	89.48	49.55	101.1	113.6	225.7	617.0	333.1	158.1	128.3	32.87
MAX	100	195	146	61	215	161	1420	2580	703	579	489	111
MIN	20	46	50	38	49	78	64	278	121	34	18	11
AC-FT	3230	4410	5500	3050	5610	6990	13430	37940	19820	9720	7890	1960
CFSM	0.09	0.13	0.16	0.09	0.18	0.20	0.41	1.11	0.60	0.28	0.23	0.06
IN.	0.11	0.15	0.19	0.10	0.19	0.24	0.45	1.28	0.67	0.33	0.27	0.07

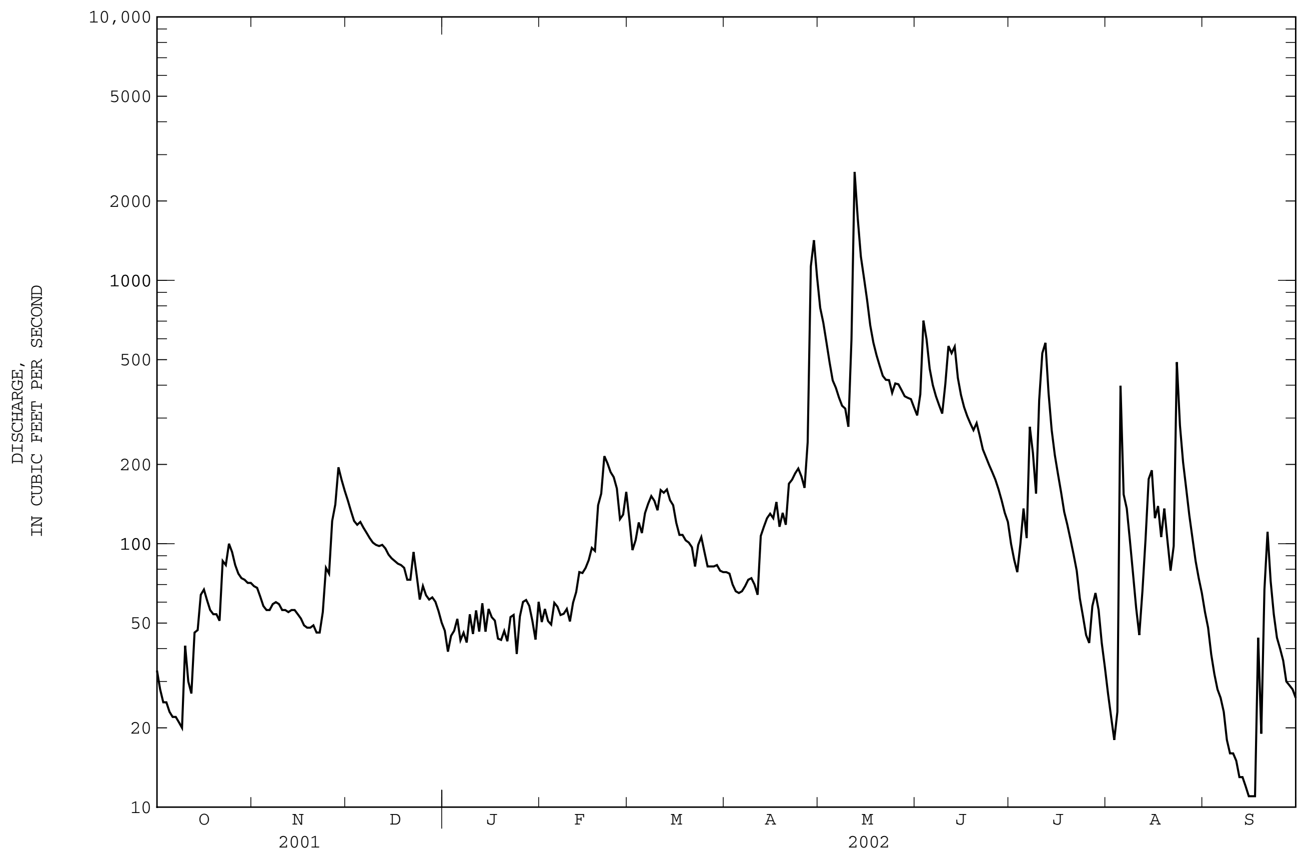
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	160.8	175.0	119.1	80.50	179.9	532.5	542.3	533.2	804.5	483.9	277.8	157.6
MAX	1079	1270	438	599	919	2026	2037	1421	2818	5220	3921	1157
(WY)	1974	1973	1997	1973	1973	1979	1965	1974	1998	1993	1993	1993
MIN	0.000	0.005	0.003	0.000	0.000	8.71	3.62	6.71	0.000	0.000	0.032	0.029
(WY)	1957	1977	1977	1956	1956	1956	1956	1967	1977	1956	1956	2000

05471000 SOUTH SKUNK RIVER BELOW SQUAW CREEK NEAR AMES, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1953 - 2002	
ANNUAL TOTAL	103057.60		60269			
ANNUAL MEAN	282.3		165.1		337.1	
HIGHEST ANNUAL MEAN					1475	1993
LOWEST ANNUAL MEAN					5.95	1956
HIGHEST DAILY MEAN	3170	Mar 22	2580	May 12	20500	Jul 9 1993
LOWEST DAILY MEAN	0.00	Jan 1	11	Sep 15b	0.00	Dec 17 1953a
ANNUAL SEVEN-DAY MINIMUM	0.00	Jan 1	12	Sep 11	0.00	Jan 11 1954
MAXIMUM PEAK FLOW			3020	May 12	26500	Jul 9 1993
MAXIMUM PEAK STAGE			17.12	May 12	25.57	Jun 27 1975
INSTANTANEOUS LOW FLOW			10	Sep 17	0.00	Dec 17 1953
ANNUAL RUNOFF (AC-FT)	204400		119500		244200	
ANNUAL RUNOFF (CFSM)	0.51		0.30		0.61	
ANNUAL RUNOFF (INCHES)	6.90		4.03		8.24	
10 PERCENT EXCEEDS	768		394		815	
50 PERCENT EXCEEDS	72		86		106	
90 PERCENT EXCEEDS	0.00		37		1.1	

a Many days in 1953-56, 1963-68, 1976-77, 2000, 2001.
b Also Sept. 17.
e Estimated.



05471040 SQUAW CREEK NEAR COLFAX, IA

LOCATION.--Lat 41°39'33", long 93°16'14", in NE$^1/_4$ NE$^1/_4$ sec.15, T.79 N., R.21 W., Jasper County, Hydrologic Unit 07080105, on right bank at downstream side of bridge on county road S44 Ave. W., 2 mi southwest of Colfax.

DRAINAGE AREA.--18.4 mi^2.

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--May 1995 to current year.

GAGE.--Water-stage recorder. Datum of gage is 785.96 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

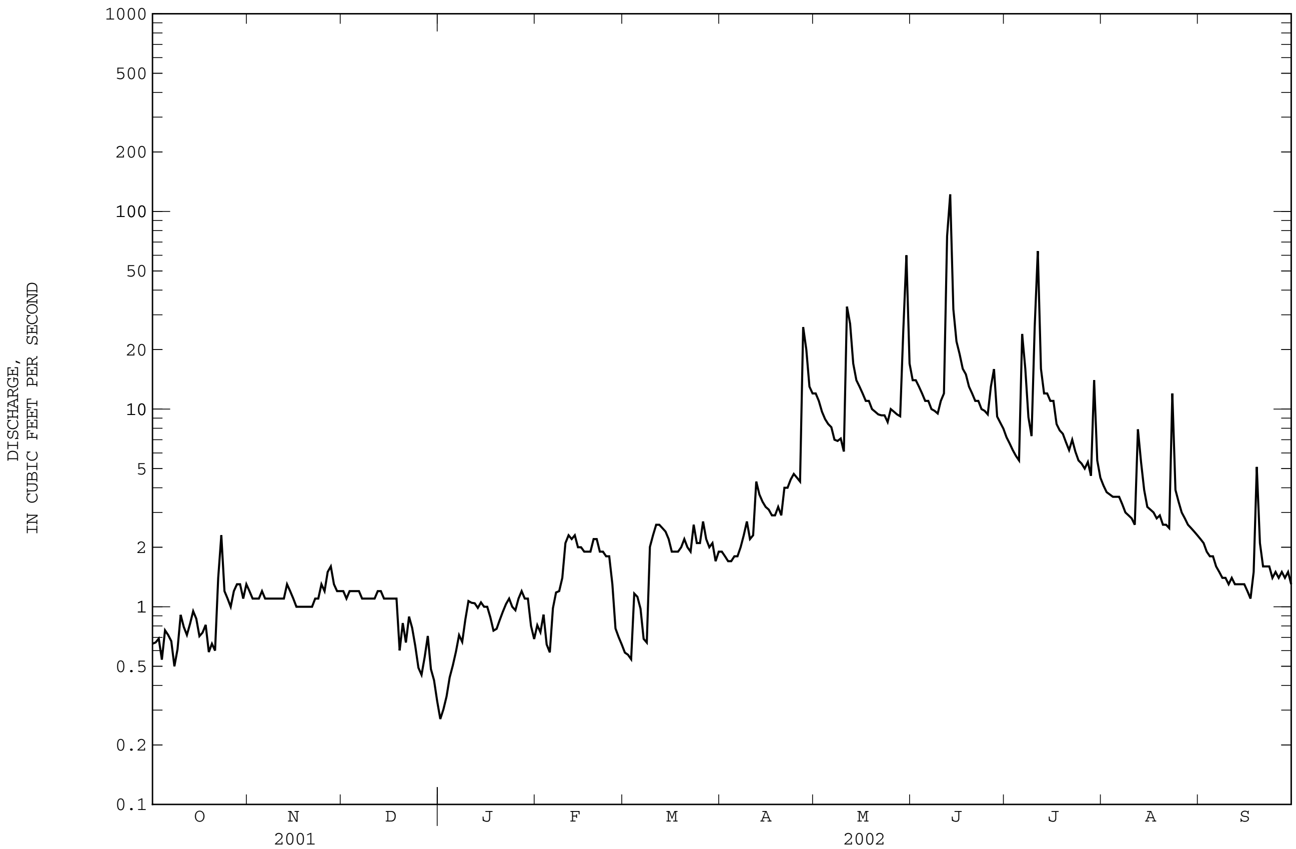
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.65	1.2	1.2	e0.27	e0.81	e0.59	1.9	12	14	7.2	4.1	2.2
2	0.66	1.1	1.1	e0.30	e0.74	e0.57	1.8	11	14	6.7	3.8	2.1
3	0.69	1.1	1.2	e0.35	e0.91	e0.54	1.7	9.7	13	6.2	3.7	1.9
4	0.54	1.1	1.2	e0.44	e0.64	e1.2	1.7	8.9	12	5.8	3.6	1.8
5	0.76	1.2	1.2	e0.51	e0.59	e1.1	1.8	8.4	11	5.5	3.6	1.8
6	0.72	1.1	1.2	e0.59	e0.98	e0.98	1.8	8.1	11	24	3.6	1.6
7	0.67	1.1	1.1	e0.72	e1.2	e0.69	2.0	7.0	10	16	3.3	1.5
8	0.50	1.1	1.1	e0.66	1.2	e0.66	2.3	6.9	9.8	9.1	3.0	1.4
9	0.61	1.1	1.1	e0.86	1.4	e2.0	2.7	7.1	9.5	7.3	2.9	1.4
10	0.91	1.1	1.1	e1.1	2.1	e2.3	2.2	6.1	11	26	2.8	1.3
11	0.79	1.1	1.1	e1.0	2.3	2.6	2.3	33	12	63	2.6	1.4
12	0.72	1.1	1.2	e1.0	2.2	2.6	4.3	27	75	16	7.9	1.3
13	0.82	1.3	1.2	e0.99	2.3	2.5	3.7	17	122	12	5.4	1.3
14	0.95	1.2	1.1	e1.1	2.0	2.4	3.4	14	32	12	3.9	1.3
15	0.87	1.1	1.1	1.0	2.0	2.2	3.2	13	22	11	3.2	1.3
16	0.71	1.0	1.1	1.0	1.9	1.9	3.1	12	19	11	3.1	1.2
17	0.74	1.0	1.1	e0.88	1.9	1.9	2.9	11	16	8.4	3.0	1.1
18	0.81	1.0	1.1	e0.76	1.9	1.9	2.9	11	15	7.8	2.8	1.5
19	0.59	1.0	e0.60	e0.77	2.2	2.0	3.2	10	13	7.5	2.9	5.1
20	0.65	1.0	e0.83	e0.86	2.2	2.2	2.9	9.7	12	6.8	2.6	2.1
21	0.60	1.0	e0.66	e0.94	1.9	2.0	4.0	9.4	11	6.2	2.6	1.6
22	1.4	1.1	e0.89	e1.0	1.9	1.9	4.0	9.3	11	7.0	2.5	1.6
23	2.3	1.1	e0.78	1.1	1.8	2.6	4.4	9.3	10	6.1	12	1.6
24	1.2	1.3	e0.63	1.0	1.8	2.1	4.7	8.6	9.8	5.5	3.9	1.4
25	1.1	1.2	e0.49	0.96	e1.3	2.1	4.5	10	9.4	5.3	3.4	1.5
26	1.0	1.5	e0.45	1.1	e0.78	2.7	4.3	9.7	13	5.0	3.0	1.4
27	1.2	1.6	e0.56	1.2	e0.70	2.2	26	9.4	e16	5.4	2.8	1.5
28	1.3	1.3	e0.71	1.1	e0.64	2.0	20	9.2	e9.2	4.6	2.6	1.4
29	1.3	1.2	e0.48	1.1	---	2.1	13	25	e8.5	14	2.5	1.5
30	1.1	1.2	e0.42	e0.80	---	1.7	12	60	e8.0	5.5	2.4	1.3
31	1.3	---	e0.33	e0.69	---	1.9	---	17	---	4.5	2.3	---
TOTAL	28.16	34.5	28.33	26.15	42.29	56.13	148.7	419.8	559.2	338.4	111.8	49.4
MEAN	0.908	1.150	0.914	0.844	1.510	1.811	4.957	13.54	18.64	10.92	3.606	1.647
MAX	2.3	1.6	1.2	1.2	2.3	2.7	26	60	122	63	12	5.1
MIN	0.50	1.0	0.33	0.27	0.59	0.54	1.7	6.1	8.0	4.5	2.3	1.1
AC-FT	56	68	56	52	84	111	295	833	1110	671	222	98
CFSM	0.05	0.06	0.05	0.05	0.08	0.10	0.27	0.74	1.01	0.59	0.20	0.09
IN.	0.06	0.07	0.06	0.05	0.09	0.11	0.30	0.85	1.13	0.68	0.23	0.10

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	3.452	4.209	3.391	3.286	16.90	15.50	14.07	32.09	32.32	12.51	5.757	1.868
MAX	8.91	11.3	9.33	9.52	65.0	48.4	45.4	65.7	83.0	34.3	15.8	3.80
(WY)	1998	1999	1998	1998	1996	2001	1998	1996	1998	1998	1999	1998
MIN	0.90	1.02	0.82	0.84	1.51	1.81	3.03	13.5	12.5	6.78	1.90	0.98
(WY)	1996	2001	2001	2002	2002	2002	2000	2001	1997	2001	2001	2001

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1995 - 2002	
ANNUAL TOTAL	3884.93		1842.86			
ANNUAL MEAN	10.64		5.049		12.30	
HIGHEST ANNUAL MEAN					25.4	1998
LOWEST ANNUAL MEAN					5.05	2002
HIGHEST DAILY MEAN	167	Mar 14	122	Jun 13	847	Jun 18 1998
LOWEST DAILY MEAN	0.33	Dec 31	0.27	Jan 1	0.27	Jan 1 2002
ANNUAL SEVEN-DAY MINIMUM	0.49	Dec 25	0.37	Dec 29	0.37	Dec 29 2001
MAXIMUM PEAK FLOW			509	Jun 12	7020	Jun 18 1998
MAXIMUM PEAK STAGE			9.26	Jun 12	13.94	Jun 18 1998
ANNUAL RUNOFF (AC-FT)	7710		3660		8910	
ANNUAL RUNOFF (CFSM)	0.58		0.27		0.67	
ANNUAL RUNOFF (INCHES)	7.85		3.73		9.08	
10 PERCENT EXCEEDS	25		12		29	
50 PERCENT EXCEEDS	1.6		1.9		4.6	
90 PERCENT EXCEEDS	0.73		0.71		0.98	

e Estimated



05471040 SQUAW CREEK NEAR COLFAX, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--May 1995 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: May 1995 to current year.
WATER TEMPERATURES: May 1995 to current year.
SUSPENDED-SEDIMENT DISCHARGE: May 1995 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 680 microsiemens Jan. 4, 2002; minimum daily, 170 microsiemens May 24, 1996.
WATER TEMPERATURES: Maximum daily, 32.0°C July 29, 1999; minimum daily, 0.0°C many days during winter.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 3,270 mg/L May 24, 1996; minimum daily mean, 6.0 mg/L Apr. 22, 1996.
SEDIMENT LOADS: Maximum daily, 11,400 tons June 18, 1998; minimum daily, 0.01 tons Jan. 6, 7, 1996, and Oct. 4, 8, 2001.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 680 microsiemens Jan. 4; minimum daily, 417 microsiemens Jan. 14.
WATER TEMPERATURES: Maximum daily, 26.0°C July 21, July 31 to Aug. 2, and Sept. 7, 8; minimum daily, 0.0°C many days during winter.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 507 mg/L July 11; minimum daily mean, 7.0 mg/L Mar. 31.
SEDIMENT LOADS: Maximum daily, 189 tons June 13; minimum daily, 0.01 tons Oct. 4 and 8.

SPECIFIC CONDUCTANCE, in MICROSIEMENS/CM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	559	586	574	---	504	484	516	558	574	570	578	---
2	585	592	445	609	539	563	495	562	571	568	501	533
3	588	542	533	612	459	539	504	539	561	579	---	570
4	607	585	544	680	479	466	541	533	520	---	580	585
5	582	578	494	603	---	506	508	552	505	---	488	---
6	599	553	553	---	543	522	510	551	450	---	602	---
7	607	559	496	619	515	512	---	---	454	489	524	---
8	590	---	553	585	---	477	512	---	---	577	484	464
9	596	---	516	476	---	---	521	---	---	592	569	580
10	577	---	491	455	475	500	540	528	544	373	---	481
11	581	---	495	495	536	500	528	---	570	531	---	534
12	608	547	564	526	489	485	539	575	535	567	436	572
13	583	572	571	485	509	522	---	564	547	---	557	557
14	579	557	542	417	515	530	533	570	567	---	595	---
15	579	550	---	522	483	504	538	441	---	---	570	---
16	602	555	---	494	501	539	534	552	---	571	566	487
17	591	---	567	518	505	517	529	549	567	---	---	470
18	595	---	570	466	504	539	542	561	533	---	---	543
19	603	---	567	---	522	496	533	---	571	---	---	514
20	560	532	530	---	553	536	547	562	524	---	---	552
21	593	493	504	536	504	---	562	531	546	524	---	---
22	548	575	505	504	475	551	567	559	---	578	---	574
23	593	590	556	548	---	525	526	---	---	585	---	588
24	612	578	599	466	542	519	503	566	---	567	---	482
25	613	532	562	---	532	526	523	539	---	465	---	---
26	612	564	520	---	537	528	478	551	---	560	542	---
27	524	557	556	481	467	548	---	557	---	---	479	---
28	563	609	553	509	531	529	560	565	---	534	521	---
29	538	549	503	520	---	527	555	575	---	---	495	560
30	579	537	579	462	---	520	544	---	---	583	545	553
31	560	---	604	487	---	530	---	580	---	585	---	---

05471040 SQUAW CREEK NEAR COLFAX, IA--Continued

WATER TEMPERATURE, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.0	15.0	5.0	---	0.0	0.0	8.0	13.0	20.0	25.0	26.0	---
2	20.0	13.0	6.0	0.0	0.0	0.0	5.0	14.0	18.0	24.0	26.0	24.0
3	18.0	13.0	6.0	0.0	0.0	0.0	4.0	16.0	19.0	25.0	---	25.0
4	12.0	15.0	10.0	0.0	0.0	0.0	9.0	16.0	16.0	---	24.0	21.0
5	13.0	13.0	12.0	0.0	---	2.0	11.0	20.0	18.0	---	22.0	---
6	13.0	14.0	7.0	---	0.0	0.0	11.0	17.0	19.0	---	22.0	---
7	14.0	14.0	5.0	0.0	1.0	1.0	---	---	21.0	21.0	23.0	---
8	15.0	---	3.0	0.0	---	1.0	9.0	---	---	25.0	22.0	26.0
9	15.0	---	3.0	1.0	---	---	12.0	---	---	24.0	23.0	26.0
10	15.0	---	5.0	0.0	0.0	1.0	7.0	16.0	20.0	21.0	---	20.0
11	16.0	---	9.0	0.0	0.0	2.0	6.0	---	20.0	18.0	---	23.0
12	14.0	9.0	5.0	0.0	1.0	2.0	11.0	10.0	18.0	18.0	22.0	22.0
13	13.0	12.0	3.0	1.0	1.0	2.0	---	15.0	17.0	---	18.0	20.0
14	12.0	14.0	3.0	0.0	1.0	8.0	20.0	16.0	17.0	---	21.0	---
15	10.0	15.0	---	0.0	1.0	7.0	24.0	15.0	---	---	20.0	---
16	10.0	15.0	---	0.0	1.0	9.0	24.0	13.0	---	24.5	19.0	22.0
17	11.0	---	5.0	0.0	1.0	4.0	23.0	14.0	16.0	---	---	20.0
18	11.0	---	5.0	0.0	3.0	9.0	23.0	15.0	21.0	---	---	22.0
19	10.0	---	2.0	---	6.0	6.0	5.0	---	19.0	---	---	19.0
20	13.0	6.0	2.0	---	3.0	9.0	11.0	15.0	20.0	---	---	20.0
21	14.0	7.0	1.0	0.0	3.0	---	8.0	15.0	21.0	26.0	---	---
22	11.0	8.0	1.0	1.0	4.0	3.0	12.0	18.0	---	21.0	---	15.0
23	15.0	8.0	1.0	0.0	---	6.0	18.0	---	---	23.0	---	16.0
24	12.0	10.0	1.0	1.0	8.0	2.0	15.0	17.0	---	23.0	---	14.0
25	7.0	7.0	1.0	---	3.0	4.0	13.0	15.0	---	24.0	---	---
26	6.0	7.0	0.0	---	0.0	8.0	12.0	19.0	---	23.0	23.0	---
27	7.0	3.0	0.0	2.0	0.0	8.0	---	20.0	---	---	22.0	---
28	9.0	2.0	0.0	1.0	0.0	8.0	8.0	20.0	---	25.0	20.5	---
29	11.0	3.0	0.0	1.0	---	10.0	16.0	19.0	---	---	22.0	20.0
30	9.0	4.0	0.0	0.0	---	8.0	11.0	20.0	---	25.0	22.0	23.0
31	12.0	---	0.0	0.0	---	7.0	---	20.0	---	26.0	---	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

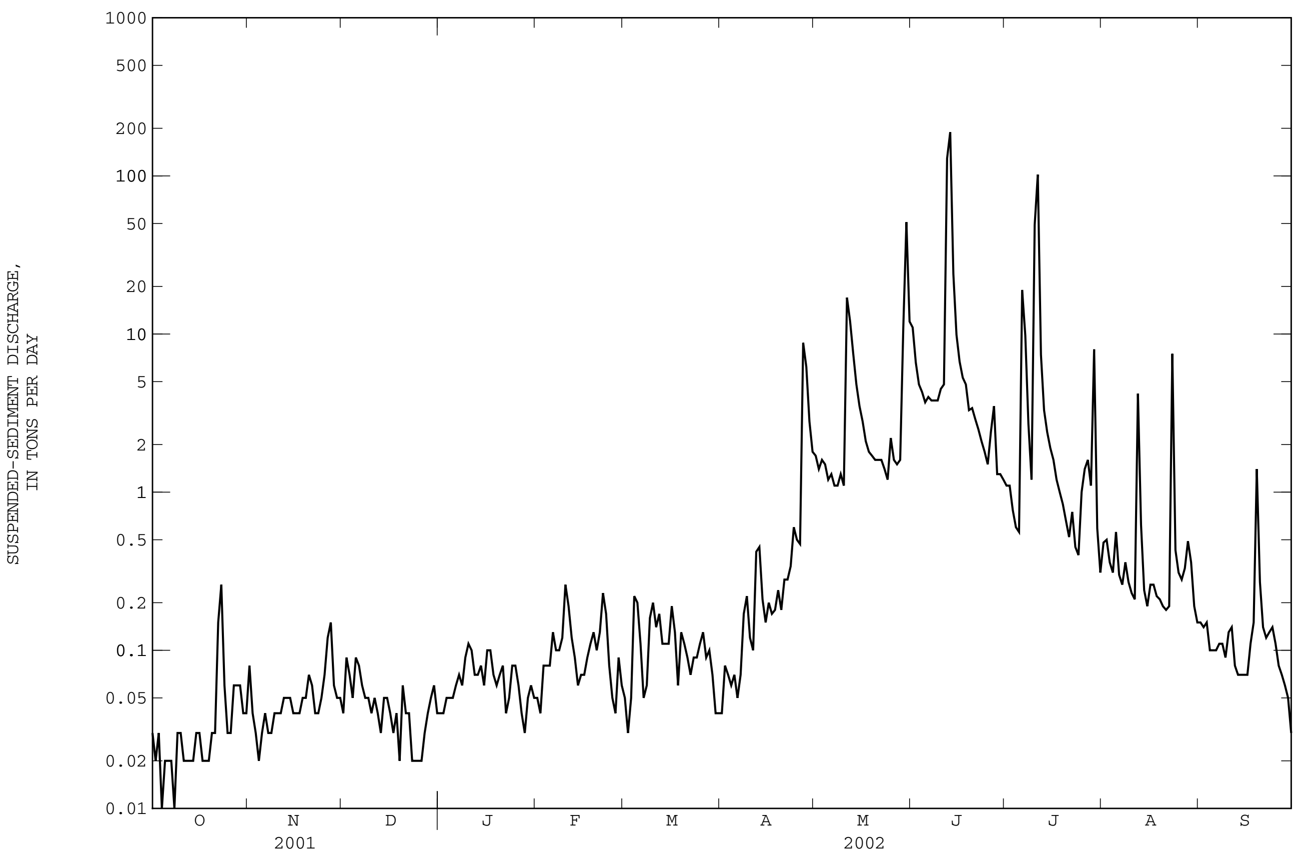
DAY	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	17	0.03	23	0.08	11	0.04	50	0.04	21	0.05	34	0.05
2	12	0.02	13	0.04	31	0.09	55	0.04	22	0.04	20	0.03
3	14	0.03	9.3	0.03	21	0.07	53	0.05	31	0.08	31	0.05
4	8.7	0.01	7.2	0.02	16	0.05	41	0.05	48	0.08	70	0.22
5	9.0	0.02	9.3	0.03	27	0.09	38	0.05	49	0.08	66	0.20
6	12	0.02	11	0.04	24	0.08	36	0.06	49	0.13	40	0.11
7	12	0.02	10	0.03	19	0.06	34	0.07	30	0.10	26	0.05
8	10	0.01	11	0.03	16	0.05	34	0.06	29	0.10	35	0.06
9	18	0.03	12	0.04	17	0.05	39	0.09	32	0.12	30	0.16
10	14	0.03	13	0.04	14	0.04	37	0.11	45	0.26	32	0.20
11	11	0.02	15	0.04	17	0.05	37	0.10	31	0.19	20	0.14
12	9.5	0.02	16	0.05	11	0.04	25	0.07	21	0.12	23	0.17
13	8.9	0.02	13	0.05	11	0.03	25	0.07	13	0.09	17	0.11
14	8.5	0.02	16	0.05	16	0.05	29	0.08	11	0.06	17	0.11
15	12	0.03	14	0.04	16	0.05	21	0.06	13	0.07	20	0.11
16	15	0.03	15	0.04	13	0.04	38	0.10	13	0.07	37	0.19
17	11	0.02	16	0.04	11	0.03	42	0.10	17	0.09	25	0.13
18	8.5	0.02	17	0.05	12	0.04	32	0.07	22	0.11	12	0.06
19	9.9	0.02	19	0.05	15	0.02	30	0.06	22	0.13	22	0.13
20	15	0.03	25	0.07	25	0.06	30	0.07	16	0.10	18	0.11
21	16	0.03	23	0.06	20	0.04	30	0.08	25	0.13	18	0.09
22	32	0.15	15	0.04	15	0.04	16	0.04	44	0.23	13	0.07
23	41	0.26	14	0.04	11	0.02	18	0.05	34	0.17	13	0.09
24	17	0.06	15	0.05	14	0.02	31	0.08	17	0.08	16	0.09
25	8.7	0.03	22	0.07	16	0.02	30	0.08	13	0.05	19	0.11
26	9.6	0.03	27	0.12	20	0.02	22	0.06	20	0.04	19	0.13
27	19	0.06	33	0.15	17	0.03	14	0.04	47	0.09	15	0.09
28	19	0.06	17	0.06	19	0.04	9.4	0.03	34	0.06	19	0.10
29	18	0.06	15	0.05	35	0.05	16	0.05	---	---	13	0.07
30	13	0.04	15	0.05	51	0.06	26	0.06	---	---	9.7	0.04
31	13	0.04	---	---	47	0.04	25	0.05	---	---	7.0	0.04
TOTAL	---	1.27	---	1.55	---	1.41	---	2.02	---	2.92	---	3.31

05471040 SQUAW CREEK NEAR COLFAX, IA--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	APRIL MEAN CONCENTRATION (MG/L)	APRIL LOAD (TONS/DAY)	MAY MEAN CONCENTRATION (MG/L)	MAY LOAD (TONS/DAY)	JUNE MEAN CONCENTRATION (MG/L)	JUNE LOAD (TONS/DAY)	JULY MEAN CONCENTRATION (MG/L)	JULY LOAD (TONS/DAY)	AUGUST MEAN CONCENTRATION (MG/L)	AUGUST LOAD (TONS/DAY)	SEPTEMBER MEAN CONCENTRATION (MG/L)	SEPTEMBER LOAD (TONS/DAY)
1	7.5	0.04	56	1.7	283	11.0	54	1.1	43	0.48	25	0.15
2	16	0.08	50	1.4	178	6.6	61	1.1	48	0.50	25	0.14
3	15	0.07	63	1.6	139	4.8	45	0.77	36	0.36	29	0.15
4	13	0.06	62	1.5	131	4.3	38	0.60	32	0.31	22	0.10
5	13	0.07	54	1.2	121	3.7	38	0.56	57	0.56	22	0.10
6	11	0.05	60	1.3	141	4.0	224	19.0	31	0.30	24	0.10
7	13	0.07	60	1.1	142	3.8	225	9.8	29	0.26	26	0.11
8	26	0.17	61	1.1	144	3.8	106	2.7	45	0.36	27	0.11
9	29	0.22	69	1.3	149	3.8	59	1.2	34	0.27	24	0.09
10	19	0.12	67	1.1	154	4.5	479	49.0	30	0.23	36	0.13
11	16	0.10	152	17.0	152	4.8	507	102	30	0.21	36	0.14
12	37	0.42	166	12.0	249	129	165	7.4	155	4.2	23	0.08
13	45	0.45	158	7.5	496	189	97	3.3	43	0.62	20	0.07
14	22	0.21	123	4.8	273	24.0	74	2.4	23	0.24	20	0.07
15	18	0.15	101	3.5	166	9.9	60	1.9	22	0.19	19	0.07
16	24	0.20	84	2.8	133	6.7	55	1.6	32	0.26	20	0.07
17	21	0.17	69	2.1	118	5.3	53	1.2	32	0.26	37	0.11
18	23	0.18	63	1.8	123	4.8	47	1.0	30	0.22	36	0.15
19	28	0.24	61	1.7	94	3.3	42	0.84	28	0.21	92	1.4
20	22	0.18	60	1.6	105	3.4	36	0.66	27	0.19	47	0.27
21	26	0.28	64	1.6	95	2.9	31	0.52	26	0.18	31	0.14
22	26	0.28	63	1.6	84	2.5	39	0.75	28	0.19	27	0.12
23	29	0.34	56	1.4	75	2.1	28	0.45	184	7.5	31	0.13
24	47	0.60	51	1.2	67	1.8	27	0.40	41	0.43	37	0.14
25	41	0.50	76	2.2	58	1.5	72	1.0	35	0.31	27	0.11
26	41	0.47	61	1.6	69	2.4	106	1.4	34	0.28	20	0.08
27	97	8.8	59	1.5	82	3.5	108	1.6	45	0.33	17	0.07
28	113	6.2	64	1.6	52	1.3	88	1.1	69	0.49	15	0.06
29	78	2.8	78	11.0	55	1.3	188	8.0	53	0.36	13	0.05
30	57	1.8	274	51.0	54	1.2	39	0.59	30	0.19	9.6	0.03
31	---	---	260	12.0	---	---	25	0.31	25	0.15	---	---
TOTAL	---	25.32	---	154.8	---	451.0	---	224.25	---	20.64	---	4.54

YEAR 893.03



05471040 SQUAW CREEK NEAR COLFAX, IA--Continued

PRECIPITATION RECORDS

PERIOD OF RECORD.--July 1995 to current year.

INSTRUMENTATION.--Tipping bucket rain gage.

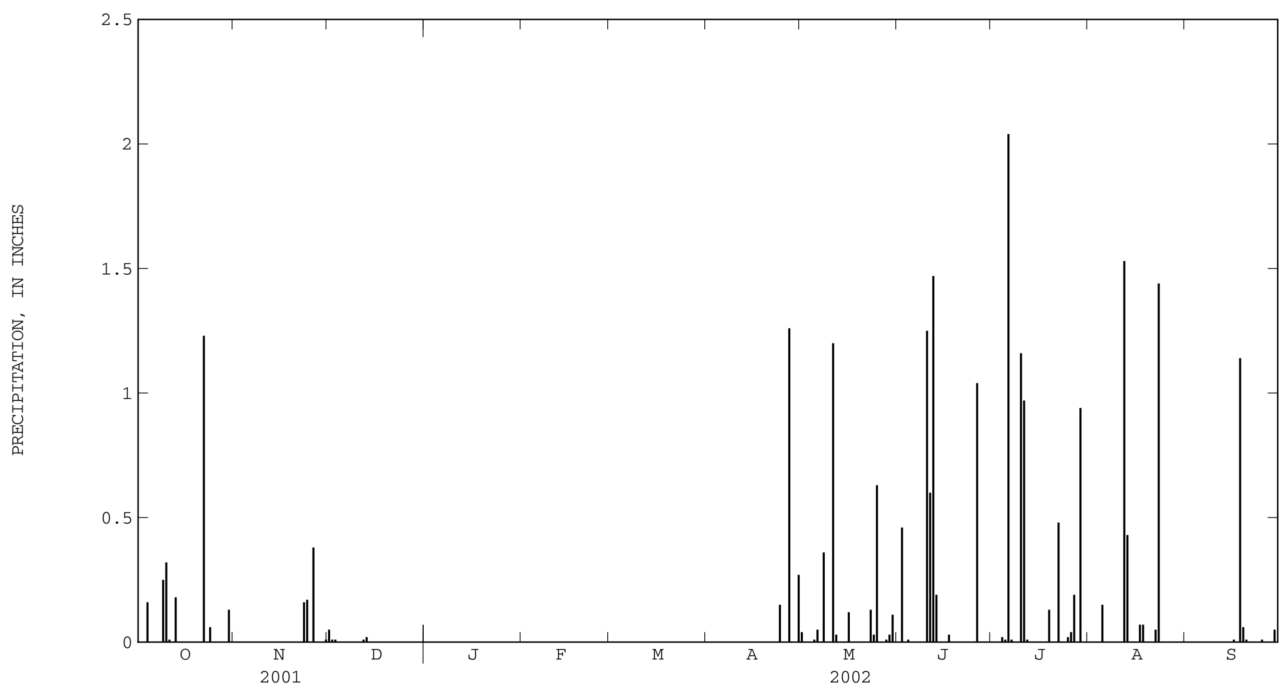
REMARKS.--Records good except for winter period, which is poor due to intermittent snow accumulation and subsequent melting.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily accumulation, 2.69 in., July 17, 1996.

EXTREMES FOR CURRENT YEAR.--Maximum daily accumulation, 1.53 in., Aug. 12.

PRECIPITATION from DCP, in INCHES, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.0	0.0	0.05	0.0	0.0	0.0	0.0	0.04	0.0	---	0.0	0.0
2	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.46	0.0	0.0	0.0
3	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.02	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.01	0.15	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.05	0.0	2.04	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.36	0.0	0.0	0.0	0.0
9	0.25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	0.32	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.25	1.16	0.0	0.0
11	0.01	0.0	0.0	0.0	0.0	0.0	0.0	1.20	0.60	0.97	0.0	0.0
12	0.0	0.0	0.01	0.0	0.0	0.0	0.0	0.03	1.47	0.01	1.53	0.0
13	0.18	0.0	0.02	0.0	0.0	0.0	0.0	0.0	0.19	0.0	0.43	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.12	0.0	0.0	0.0	0.01
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.03	0.0	0.07	0.0
18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.07	1.14
19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.13	0.0	0.06
20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01
21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	1.23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.48	0.05	0.0
23	0.0	0.16	0.0	0.0	0.0	0.0	0.0	0.13	0.0	0.0	1.44	0.0
24	0.06	0.17	0.0	0.0	0.0	0.0	0.15	0.03	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.63	0.0	0.02	0.0	0.01
26	0.0	0.38	0.0	0.0	0.0	0.0	0.0	0.0	1.04	0.04	0.0	0.0
27	0.0	0.0	0.0	0.0	0.0	0.0	1.26	0.0	---	0.19	0.0	0.0
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	---	0.0	0.0	0.0
29	0.0	0.0	0.0	0.0	---	0.0	0.0	0.03	---	0.94	0.0	0.05
30	0.13	0.01	0.0	0.0	---	0.0	0.27	0.11	---	0.0	0.0	0.0
31	0.0	---	0.0	0.0	---	0.0	---	0.0	---	0.0	0.0	---
TOTAL	2.34	0.72	0.10	0.0	0.0	0.0	1.68	2.75	---	---	3.74	1.28
MEAN	0.08	0.02	0.00	0.00	0.00	0.00	0.06	0.09	---	---	0.12	0.04
MAX	1.23	0.38	0.05	0.00	0.00	0.00	1.26	1.20	---	---	1.53	1.14
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	---	---	0.00	0.00



05471050 SOUTH SKUNK RIVER AT COLFAX, IA

LOCATION.--Lat 41°40'55", long 93°14'47", in $NE^1/_4$ $NE^1/_4$ $SW^1/_4$ sec.1, T.79 N., R.21 W., Jasper County, Hydrologic Unit 07080105, on left bank 15 ft downstream of bridge on State Highway 117 at north edge of Colfax, 1 mi downstream from Sugar Creek, 2.8 mi upstream from Indian Creek, and at mile 191 upstream from mouth of Skunk River.

DRAINAGE AREA.--803 mi^2.

PERIOD OF RECORD.--June 1974 to June 1977, (operated as a partial-record low-flow measurement site), October 1985 to current year.

REVISED RECORDS.--Daily discharge for Aug. 26, 27, and Sept. 6-30, 2000.

GAGE.--Water-stage recorder. Datum of gage is 770.00 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey data collection platform with telephone modem at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	77	123	208	e104	e109	e156	135	959	473	229	63	103
2	77	116	197	e100	e99	e142	135	840	499	210	57	90
3	74	112	185	e92	e95	e157	132	761	638	e190	52	82
4	72	e105	e189	e98	e93	e177	130	689	e885	174	48	70
5	73	e104	e181	e100	e101	e185	126	631	715	181	133	63
6	70	e104	173	e105	e96	e203	122	601	611	e260	349	59
7	68	e107	169	e96	e96	e185	130	574	551	e300	200	50
8	68	e108	e165	e100	e100	e177	136	542	510	352	157	48
9	68	e105	158	e96	e94	e190	137	e520	478	291	128	42
10	78	e102	158	e108	e103	e163	132	480	719	285	105	41
11	81	e102	155	e98	e109	229	131	531	971	719	84	42
12	79	e100	159	e110	e121	223	174	1900	1090	737	105	42
13	82	e101	e156	e99	e121	222	195	2540	e1500	615	118	41
14	87	102	153	e112	e124	239	191	e1750	1030	450	136	42
15	85	99	149	e95	e129	238	203	e1250	821	356	164	40
16	93	95	148	e100	e143	217	202	1070	701	295	204	40
17	99	94	142	e99	e132	196	199	940	627	256	159	39
18	100	93	139	e95	e125	183	208	811	e580	228	164	41
19	95	89	136	e91	e147	181	208	729	e495	208	133	58
20	93	87	133	e89	e176	175	213	667	487	184	153	54
21	91	90	124	e100	e195	166	230	616	495	162	131	52
22	102	92	130	e100	e185	161	269	581	449	150	106	108
23	161	93	146	e90	e176	154	286	571	412	133	240	91
24	161	103	e129	e100	e170	171	293	e575	385	117	432	81
25	153	121	e115	e106	e151	177	e300	550	e360	104	293	95
26	147	127	e122	e108	e126	161	e280	577	e330	95	230	83
27	139	163	e116	e104	e170	149	350	558	313	97	205	68
28	134	184	e114	e97	e189	148	533	533	287	105	174	67
29	130	226	e117	e89	---	144	1500	537	267	113	152	64
30	127	220	e113	e90	---	140	1230	560	e250	86	130	62
31	128	---	e109	e99	---	141	---	505	---	74	114	---
TOTAL	3092	3467	4588	3070	3675	5550	8510	24948	17929	7756	4919	1858
MEAN	99.74	115.6	148.0	99.03	131.2	179.0	283.7	804.8	597.6	250.2	158.7	61.93
MAX	161	226	208	112	195	239	1500	2540	1500	737	432	108
MIN	68	87	109	89	93	140	122	480	250	74	48	39
AC-FT	6130	6880	9100	6090	7290	11010	16880	49480	35560	15380	9760	3690
CFSM	0.12	0.14	0.18	0.12	0.16	0.22	0.35	1.00	0.74	0.31	0.20	0.08
IN.	0.14	0.16	0.21	0.14	0.17	0.26	0.39	1.16	0.83	0.36	0.23	0.09

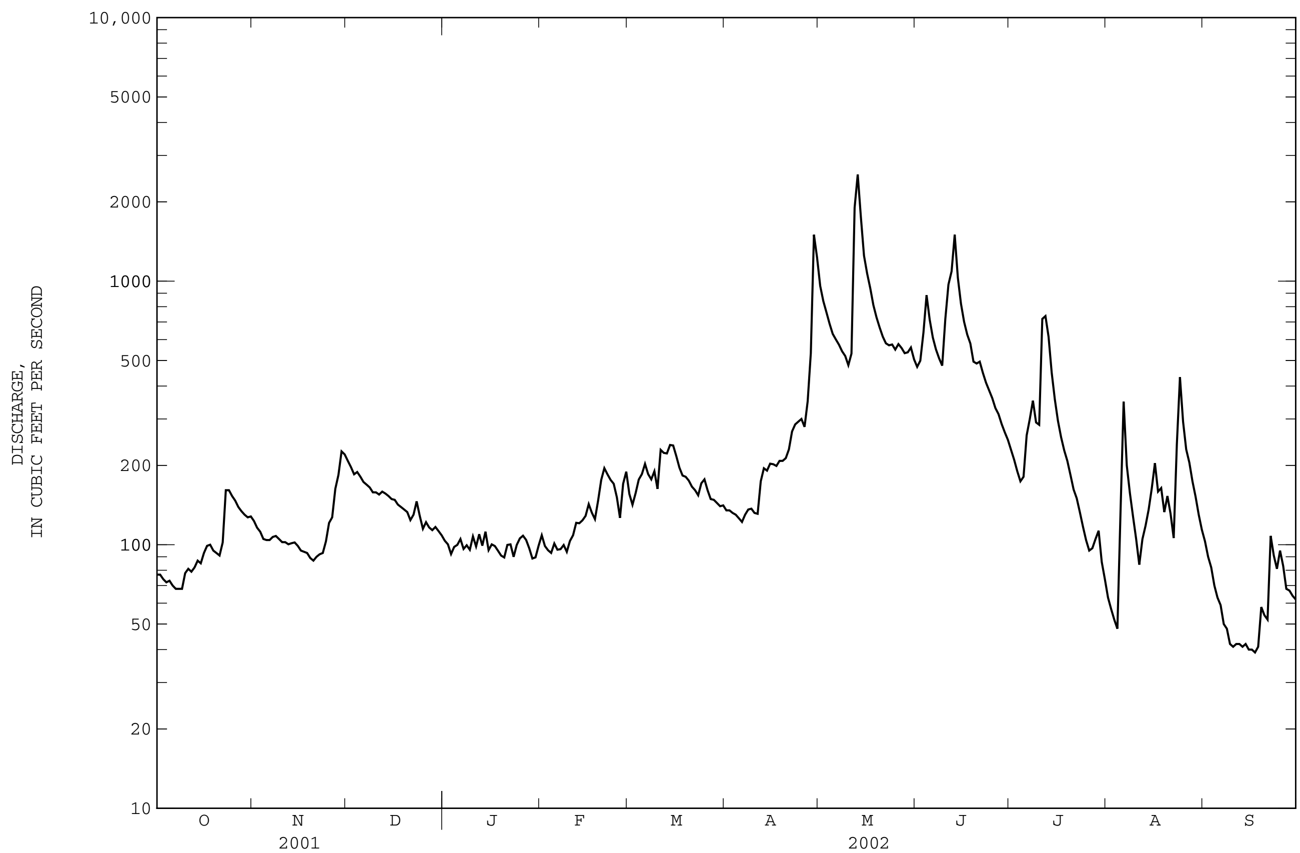
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	293.4	274.4	247.8	160.2	316.5	760.5	859.4	1065	1350	933.9	491.6	283.1
MAX	1807	981	626	451	849	2094	2435	2481	3844	5640	3549	1911
(WY)	1987	1997	1993	1992	1997	1993	1991	1991	1998	1993	1993	1993
MIN	11.9	17.5	12.4	12.3	16.2	77.5	57.0	113	96.7	31.8	12.6	6.75
(WY)	1989	1989	1989	1989	1990	2000	2000	2000	1988	1988	1988	1988

05471050 SOUTH SKUNK RIVER AT COLFAX, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1986 - 2002	
ANNUAL TOTAL	157762		89362			
ANNUAL MEAN	432.2		244.8		587.2	
HIGHEST ANNUAL MEAN					1831	1993
LOWEST ANNUAL MEAN					69.6	1989
HIGHEST DAILY MEAN	3490	Mar 22	2540	May 13	13100	Jul 12 1993
LOWEST DAILY MEAN	18	Feb 22	39	Sep 17	1.4	Aug 18 1988
ANNUAL SEVEN-DAY MINIMUM	24	Feb 17	41	Sep 12	3.2	Sep 8 1988
MAXIMUM PEAK FLOW			3100	May 12	14200	Jul 12 1993
MAXIMUM PEAK STAGE			13.09	May 12	21.53	Jul 12 1993
INSTANTANEOUS LOW FLOW			37	Sep 18	1.2	Aug 18 1988a
ANNUAL RUNOFF (AC-FT)	312900		177200		425400	
ANNUAL RUNOFF (CFSM)	0.54		0.30		0.73	
ANNUAL RUNOFF (INCHES)	7.31		4.14		9.94	
10 PERCENT EXCEEDS	1250		576		1430	
50 PERCENT EXCEEDS	139		141		250	
90 PERCENT EXCEEDS	38		78		36	

a Also Aug. 19, 1988.
e Estimated.



05471200 INDIAN CREEK NEAR MINGO, IA

LOCATION.--Lat 41°48'30", long 93°18'53", in $NW^1/_4$ $NW^1/_4$ sec.28, T.81 N., R.21 W., Jasper County, Hydrologic Unit 07080105, on left bank 20 ft downstream from bridge on State Highway 117, 0.7 mi downstream from Wolf Creek, 2.2 mi upstream from Byers Branch, 2.9 mi northwest of Mingo, and 11.3 mi upstream from South Skunk River.

DRAINAGE AREA.--276 mi^2.

PERIOD OF RECORD.--May 1958 to September 1975; October 1985 to current year.

REVISED RECORDS.--WSP 1728: 1958 (M), 1959 (M).

GAGE.--Water-stage recorder. Datum of gage is 810.47 ft above NGVD of 1929.

REMARKS.--Records fair except those for estimated daily discharge, which are poor. U.S. Geological Survey data collection platform with telephone modem at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 20, 1944, reached a stage of 21.4 ft, from information by local resident, discharge not determined.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e51	e161	e230	e11	e15	e33	e4.2	e512	195	123	23	31
2	e49	e133	e195	e16	e27	e30	e3.7	e460	263	111	21	30
3	e42	e104	e183	e20	e19	e29	e2.4	e400	348	101	20	26
4	e38	e96	e172	e19	e14	e32	e2.9	e325	295	93	20	23
5	e36	e92	e170	e18	e6.6	e34	e3.7	e250	251	89	71	21
6	e30	e91	e173	e17	e6.6	e49	e4.0	e190	225	213	69	20
7	e26	e89	e148	e24	e9.5	e48	e3.7	e150	207	391	70	18
8	e22	e79	e136	e27	e15	e55	e2.2	e143	192	260	58	16
9	e22	e69	e124	e22	e21	e58	1.8	e144	180	180	41	14
10	e73	e65	e125	e18	e29	e52	e2.0	e137	1330	342	35	14
11	e92	e60	e121	e15	e27	e59	e3.1	e286	1770	552	32	13
12	e61	e54	e122	e15	e36	e65	e11	e993	1610	404	36	12
13	e73	e63	e118	e15	e35	e79	e9.8	e841	2040	268	44	12
14	e99	e68	e110	e16	e42	e49	e11	e275	1080	195	52	12
15	e82	e66	e104	e17	e50	e35	e12	e204	751	165	42	11
16	e66	e58	e101	e20	e55	e16	e13	e200	581	140	36	11
17	e56	e47	e99	e22	e59	e9.9	e15	e198	481	122	37	11
18	e59	e42	e95	e20	e55	e10	e13	e196	e400	107	36	13
19	e52	e36	e90	e22	e49	e11	e16	e195	366	94	32	14
20	e50	e32	e63	e27	e44	e9.9	e9.0	e195	326	87	30	13
21	e46	e36	e64	e36	e48	e6.0	e29	e193	296	79	28	11
22	e90	e38	e58	e34	e44	e6.9	e57	e195	273	70	28	9.8
23	e546	e44	e44	e33	e43	e7.8	e90	196	250	62	77	9.4
24	e442	e75	e31	e35	e40	e9.4	e118	182	228	54	78	9.2
25	e343	e88	e25	e36	e38	e5.7	e131	209	210	49	78	9.3
26	e241	e85	e23	e40	e43	e4.5	e99	237	194	44	70	8.8
27	e197	e205	e25	e41	e21	e1.6	e234	e225	178	45	57	8.7
28	e182	e278	e28	e35	e38	e2.5	e631	214	162	47	48	8.8
29	e168	e262	e19	e26	---	e2.9	e625	232	e152	38	43	8.6
30	e162	e256	e15	e22	---	e3.1	e560	237	134	30	39	7.9
31	e160	---	e13	e4.9	---	e2.4	---	214	---	26	34	---
TOTAL	3656	2872	3024	723.9	929.7	816.6	2717.5	8628	14968	4581	1385	426.5
MEAN	117.9	95.73	97.55	23.35	33.20	26.34	90.58	278.3	498.9	147.8	44.68	14.22
MAX	546	278	230	41	59	79	631	993	2040	552	78	31
MIN	22	32	13	4.9	6.6	1.6	1.8	137	134	26	20	7.9
AC-FT	7250	5700	6000	1440	1840	1620	5390	17110	29690	9090	2750	846
CFSM	0.43	0.35	0.35	0.08	0.12	0.10	0.33	1.01	1.81	0.54	0.16	0.05
IN.	0.49	0.39	0.41	0.10	0.13	0.11	0.37	1.16	2.02	0.62	0.19	0.06

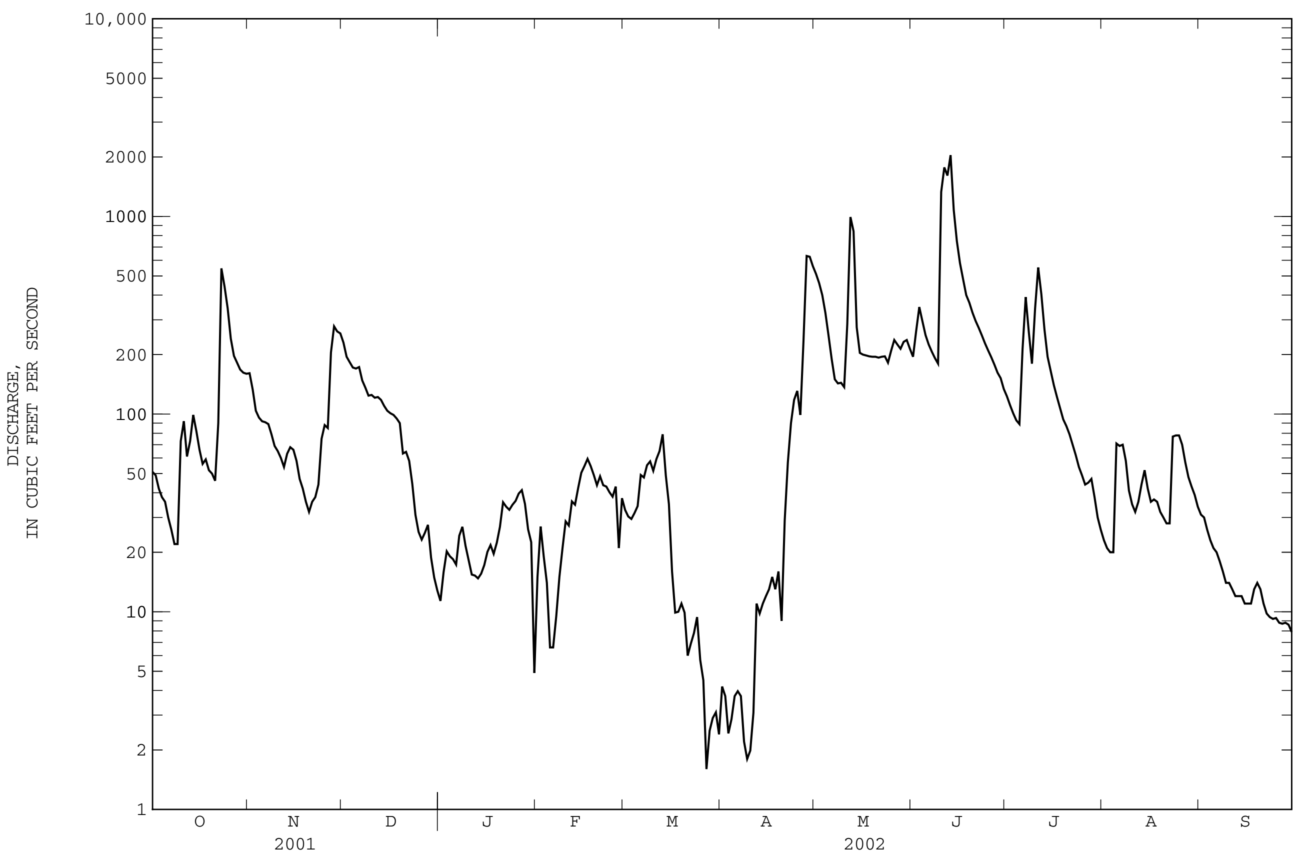
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	105.0	95.18	77.51	57.89	116.2	299.3	277.0	370.8	499.7	305.7	147.3	83.92
MAX	689	549	319	289	619	816	834	936	1732	2809	1500	678
(WY)	1987	1973	1973	1973	1971	1993	1965	1974	1998	1993	1993	1993
MIN	1.11	4.12	2.05	1.87	2.25	10.9	8.07	5.58	10.9	3.49	1.44	0.91
(WY)	1972	1968	1990	1968	1967	1968	1989	1967	1989	1988	1988	1988

05471200 INDIAN CREEK NEAR MINGO, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1959 - 2002	
ANNUAL TOTAL	71241.7		44728.2			
ANNUAL MEAN	195.2		122.5		203.2	
HIGHEST ANNUAL MEAN					751	1993
LOWEST ANNUAL MEAN					11.9	1989
HIGHEST DAILY MEAN	2420	Jun 13	2040	Jun 13	12000	Jul 10 1993
LOWEST DAILY MEAN	4.4	Feb 2	1.6	Mar 27	0.00	Aug 18 1989
ANNUAL SEVEN-DAY MINIMUM	5.0	Jan 21	2.9	Apr 4	0.15	Aug 16 1989
MAXIMUM PEAK FLOW			2920	Jun 13	23500	Jun 4 1991
MAXIMUM PEAK STAGE			11.41	Jun 13	19.16	Jun 4 1991
ANNUAL RUNOFF (AC-FT)	141300		88720		147200	
ANNUAL RUNOFF (CFSM)	0.71		0.44		0.74	
ANNUAL RUNOFF (INCHES)	9.60		6.03		10.00	
10 PERCENT EXCEEDS	503		262		480	
50 PERCENT EXCEEDS	85		49		70	
90 PERCENT EXCEEDS	7.4		9.8		4.9	

e Estimated



05471500 SOUTH SKUNK RIVER NEAR OSKALOOSA, IA

LOCATION.--Lat 41°21'21", long 92°39'24", in NW$^{1}/_{4}$ SW$^{1}/_{4}$ sec.25, T.76 N., R.16 W., Mahaska County, Hydrologic Unit 07080105, on left bank downstream from bridge on U.S. Highway 63, 0.3 mi downstream from Painter Creek, 4.0 mi north of Oskaloosa, 52.0 mi upstream from confluence with North Skunk River, and at mile 147.3 upstream from mouth of Skunk River. Gage was moved to the left bank on downstream side of the Highway 63 bridge on May 3, 1995.

DRAINAGE AREA.--1,635 mi^2.

PERIOD OF RECORD.--October 1945 to current year. Prior to October 1966, published as "Skunk River near Oskaloosa." Prior to October 1948, monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WDR IA-95-1: Location.

GAGE.--Water-stage recorder. Datum of gage is 685.50 ft above NGVD of 1929. Prior to Nov. 21, 1947, nonrecording gage at site 400 ft downstream at same datum. Accubar pressure sensor installed at site on May 3, 1995.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1944 reached a stage of 25.8 ft, from floodmarks, discharge, 37,000 ft^3/s, from rating curve extended above 18,000 ft^3/s on basis of velocity-area study.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	191	317	405	e176	e268	e262	252	1830	1210	636	284	227
2	188	308	390	e182	e258	e257	247	1550	1150	593	257	207
3	189	289	373	e196	e238	e265	239	1380	1200	552	238	189
4	185	272	361	e210	e195	e299	226	1270	1480	522	223	176
5	185	262	342	e217	e178	e349	228	1160	1570	504	223	162
6	178	254	341	e219	e192	e384	222	1060	1340	500	742	151
7	172	249	335	e214	e216	e407	221	1010	1180	778	e759	139
8	166	240	322	e221	e231	e442	252	958	1070	949	491	128
9	169	230	303	e234	e274	e484	330	1020	987	885	403	e116
10	172	232	295	e235	e294	409	293	922	939	772	358	e110
11	187	225	295	e225	e324	384	265	1400	2220	981	312	e107
12	211	220	301	e204	e304	434	334	2110	3140	1650	285	e104
13	205	224	312	e186	e296	446	369	3290	4450	1460	365	e101
14	201	235	297	e168	e311	435	374	3230	4150	1210	397	98
15	216	232	285	e163	343	426	352	2450	2740	947	363	96
16	217	218	290	e172	346	412	358	2130	2160	785	335	95
17	208	214	284	e182	340	381	346	1900	1830	668	364	89
18	214	215	272	e193	331	348	336	1660	1630	583	322	88
19	216	210	265	e198	365	336	369	1490	1480	523	331	289
20	214	199	254	e212	396	351	363	1360	1350	484	285	270
21	209	196	240	e223	413	332	381	1270	1260	443	272	158
22	235	195	248	e235	421	287	419	1200	1220	415	260	120
23	433	203	257	e216	458	274	454	1150	1100	403	402	131
24	553	206	e223	e206	468	296	492	1120	1020	355	1270	143
25	491	218	e200	e217	454	297	518	1170	948	328	895	129
26	425	237	e194	e251	416	298	519	1190	892	310	645	117
27	395	274	e216	e282	e308	288	674	1220	938	309	497	110
28	368	312	e220	e294	e277	277	1180	1180	827	325	386	104
29	355	355	e204	e262	---	272	1330	1300	749	306	322	105
30	339	404	e188	e253	---	264	2140	1460	689	415	281	104
31	324	---	e180	e256	---	256	---	1340	---	319	250	---
TOTAL	8011	7445	8692	6702	8915	10652	14083	46780	46919	19910	12817	4163
MEAN	258.4	248.2	280.4	216.2	318.4	343.6	469.4	1509	1564	642.3	413.5	138.8
MAX	553	404	405	294	468	484	2140	3290	4450	1650	1270	289
MIN	166	195	180	163	178	256	221	922	689	306	223	88
AC-FT	15890	14770	17240	13290	17680	21130	27930	92790	93060	39490	25420	8260
CFSM	0.16	0.15	0.17	0.13	0.19	0.21	0.29	0.92	0.96	0.39	0.25	0.08
IN.	0.18	0.17	0.20	0.15	0.20	0.24	0.32	1.06	1.07	0.45	0.29	0.09

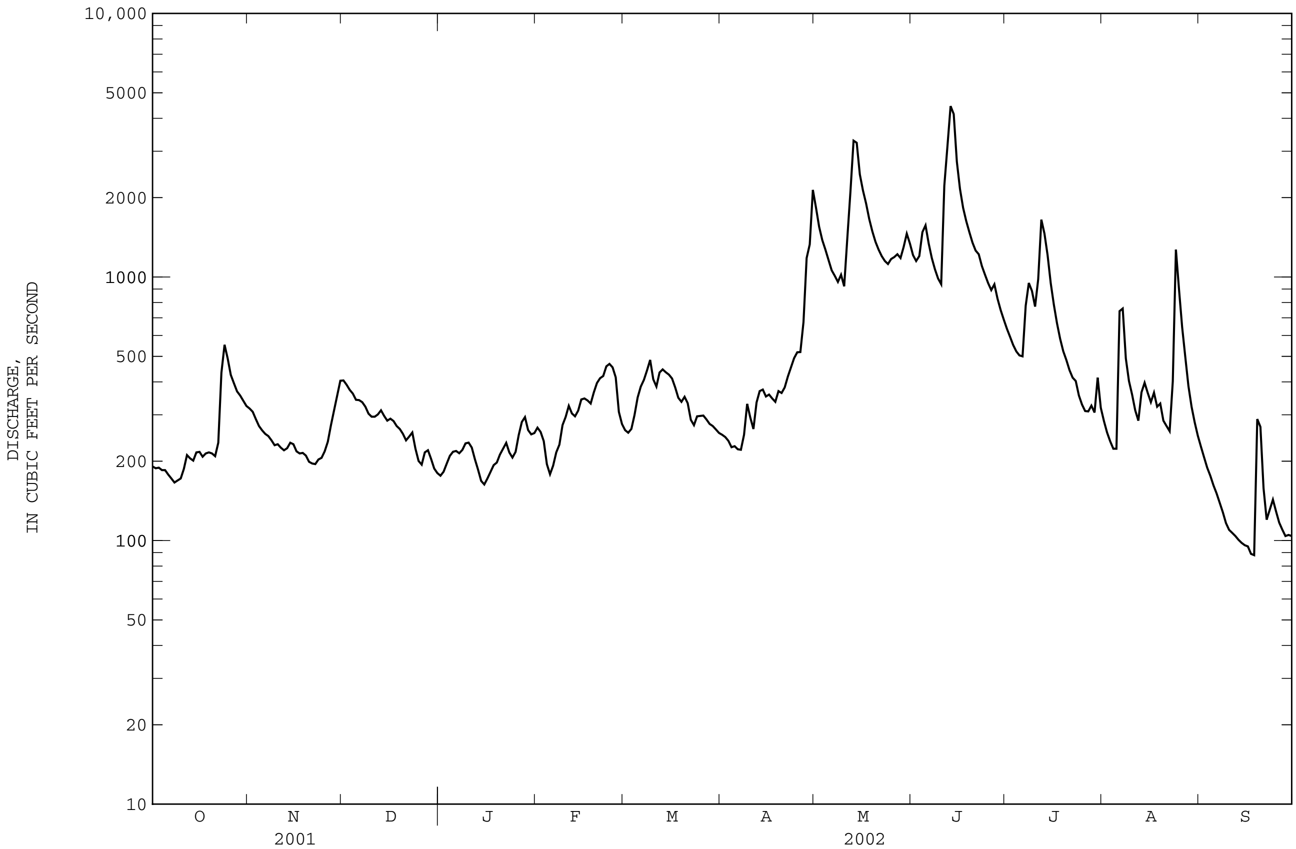
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	492.6	540.0	445.6	450.5	808.7	1606	1626	1713	2161	1404	652.1	465.0
MAX	3646	3576	2322	3906	3587	4841	5366	6168	9222	11770	7772	5140
(WY)	1987	1984	1983	1973	1973	1979	1983	1974	1947	1993	1993	1993
MIN	8.47	14.5	7.55	5.30	42.9	45.9	42.1	74.2	39.4	27.3	43.3	27.8
(WY)	1957	1957	1956	1956	1954	1954	1956	1956	1977	1977	1988	1956

05471500 SOUTH SKUNK RIVER NEAR OSKALOOSA, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1946 - 2002	
ANNUAL TOTAL	398060		195089			
ANNUAL MEAN	1091		534.5		1030	
HIGHEST ANNUAL MEAN					3884	1993
LOWEST ANNUAL MEAN					40.1	1956
HIGHEST DAILY MEAN	8600	Mar 16	4450	Jun 13	20400	Jul 15 1993
LOWEST DAILY MEAN	52	Jan 2	88	Sep 18	1.8	Oct 11 1956
ANNUAL SEVEN-DAY MINIMUM	68	Jan 1	96	Sep 12	2.0	Oct 7 1956
MAXIMUM PEAK FLOW			5890	Jun 13	20700	Jul 15 1993
MAXIMUM PEAK STAGE			17.71	Jun 13	24.78	Jul 15 1993
INSTANTANEOUS LOW FLOW			86	Sep 18		
ANNUAL RUNOFF (AC-FT)	789600		387000		746400	
ANNUAL RUNOFF (CFSM)	0.67		0.33		0.63	
ANNUAL RUNOFF (INCHES)	9.06		4.44		8.56	
10 PERCENT EXCEEDS	2950		1260		2570	
50 PERCENT EXCEEDS	360		310		442	
90 PERCENT EXCEEDS	130		181		57	

e Estimated



05472500 NORTH SKUNK RIVER NEAR SIGOURNEY, IA

LOCATION.--Lat 41°18'03", long 92°12'16", in NE$^1/_4$ SE$^1/_4$ sec.14, T.75 N., R.12 W., Keokuk County, Hydrologic Unit 07080106, on right bank 10 ft downstream from bridge on State Highway 149, 1.2 mi downstream from Cedar Creek, 2.2 mi south of Sigourney, 4.0 mi upstream from Bridge Creek, and 16.2 mi upstream from confluence with South Skunk River.

DRAINAGE AREA.--730 mi^2.

PERIOD OF RECORD.--October 1945 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1558: 1946-47 (M).

GAGE.--Water stage recorder. Datum of gage is 651.53 ft above NGVD of 1929. Prior to June 10, 1953, nonrecording gage at same site and datum.

REMARKS.--Records good except those estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in May 1944 reached a stage of 22.8 ft, from floodmark, discharge, 14,500 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	82	75	e27	e45	e49	102	508	1050	e251	137	108
2	40	82	72	e32	e42	e47	102	503	822	232	108	103
3	40	81	69	e30	e40	e51	99	454	678	215	98	99
4	43	77	68	e33	e34	e61	98	389	639	200	93	95
5	51	73	68	e36	e27	77	96	349	839	188	93	91
6	49	71	69	e33	e34	89	94	314	552	186	534	e86
7	45	71	68	e31	e39	95	96	293	463	272	537	e82
8	42	69	68	e33	e41	116	114	274	402	330	268	e76
9	42	69	69	e38	e47	192	257	325	373	245	188	e74
10	53	67	66	e36	e53	199	250	333	334	205	151	e71
11	55	66	63	e33	e50	159	219	872	361	193	133	e68
12	49	65	62	e31	e47	162	192	2590	536	211	122	e66
13	51	64	67	e29	e46	174	202	2120	851	228	117	e64
14	57	64	70	e28	e52	157	247	1140	2380	201	119	e63
15	56	65	75	e26	e64	152	217	836	2580	177	132	e62
16	51	69	72	e27	e66	136	192	794	1550	162	138	e61
17	54	68	68	e29	e65	127	173	832	981	152	122	e60
18	56	65	69	e29	e62	121	158	730	792	145	e111	e59
19	52	64	71	e29	e86	117	150	602	699	141	e101	e59
20	50	63	68	e31	112	117	143	533	688	137	110	e211
21	50	62	64	e32	118	120	165	477	e615	128	141	268
22	52	61	59	e34	113	122	168	431	e545	122	109	150
23	117	60	e49	e32	101	115	175	413	e504	116	110	109
24	231	63	e45	e31	91	100	184	380	e439	116	582	93
25	242	65	e38	e30	91	106	178	437	e388	115	699	e88
26	157	65	e33	e39	89	110	171	481	356	109	293	e87
27	114	67	e35	e49	e79	103	340	501	335	116	209	e86
28	96	68	e36	e45	e57	102	796	453	e314	127	177	e82
29	88	73	e34	e44	---	107	838	575	e296	124	147	e85
30	85	83	e30	e42	---	107	585	2100	e273	131	130	e83
31	83	---	e27	e42	---	105	---	799	---	126	118	---
TOTAL	2292	2062	1827	1041	1791	3595	6801	21838	21635	5401	6127	2789
MEAN	73.94	68.73	58.94	33.58	63.96	116.0	226.7	704.5	721.2	174.2	197.6	92.97
MAX	242	83	75	49	118	199	838	2590	2580	330	699	268
MIN	40	60	27	26	27	47	94	274	273	109	93	59
AC-FT	4550	4090	3620	2060	3550	7130	13490	43320	42910	10710	12150	5530
CFSM	0.10	0.09	0.08	0.05	0.09	0.16	0.31	0.97	0.99	0.24	0.27	0.13
IN.	0.12	0.11	0.09	0.05	0.09	0.18	0.35	1.11	1.10	0.28	0.31	0.14

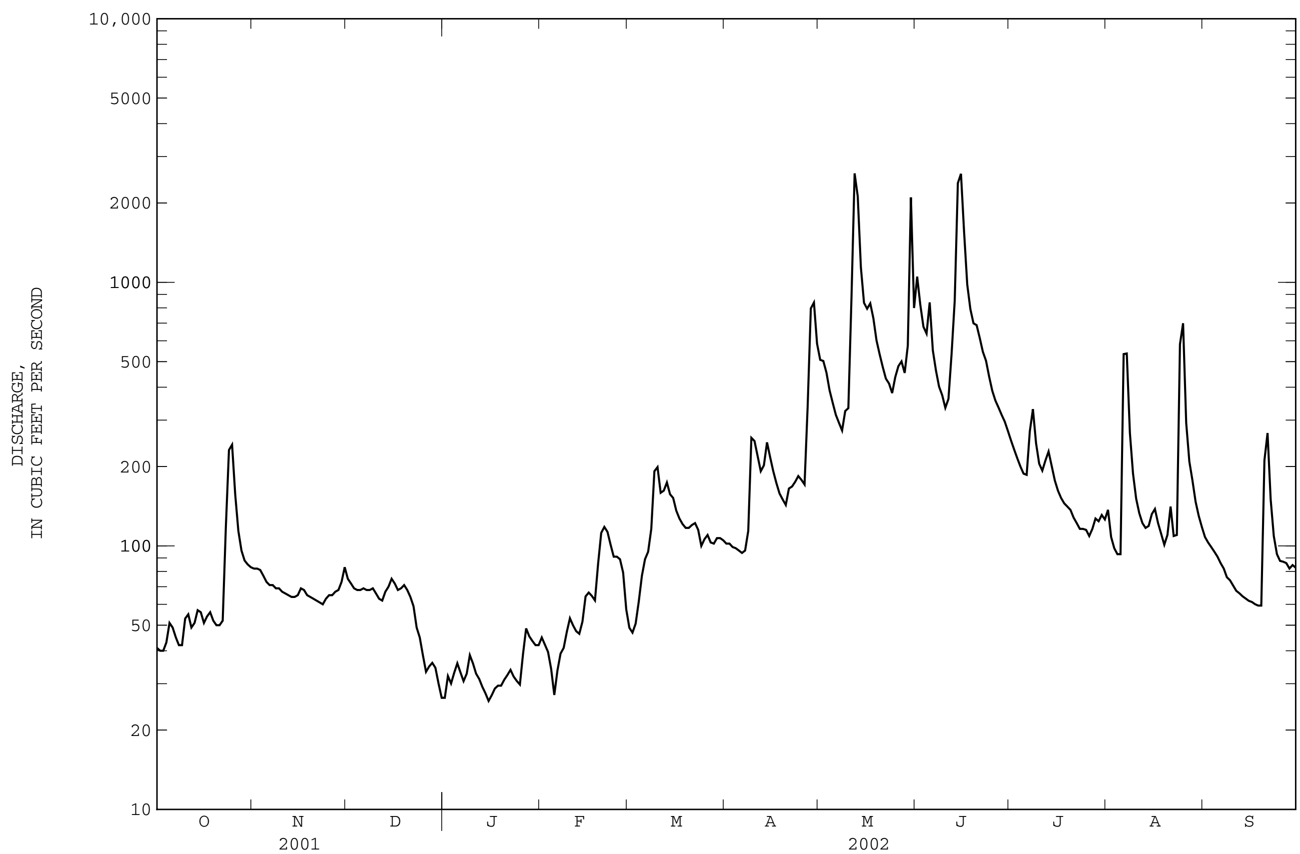
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	222.4	284.4	223.1	253.3	420.2	852.4	775.2	830.1	806.3	546.1	286.5	277.9
MAX	1603	1890	1208	1767	1311	2996	2826	4170	4145	5098	3668	2708
(WY)	1987	1962	1983	1946	1973	1979	1993	1974	1947	1993	1993	1993
MIN	0.13	3.38	2.58	2.26	12.8	17.0	11.2	14.4	20.1	11.2	7.90	4.35
(WY)	1957	1957	1956	1954	1954	1954	1956	1956	1977	1977	1955	1956

05472500 NORTH SKUNK RIVER NEAR SIGOURNEY, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1946 - 2002	
ANNUAL TOTAL	239824		77199			
ANNUAL MEAN	657.1		211.5		481.4	
HIGHEST ANNUAL MEAN					2041	1993
LOWEST ANNUAL MEAN					27.7	1956
HIGHEST DAILY MEAN	5820	Mar 16	2590	May 12	23200	Mar 31 1960
LOWEST DAILY MEAN	27	Dec 31	26	Jan 15	0.10	Oct 7 1956
ANNUAL SEVEN-DAY MINIMUM	33	Dec 25	28	Jan 13	0.10	Oct 7 1956
MAXIMUM PEAK FLOW			2720	May 12	27500	Mar 31 1960
MAXIMUM PEAK STAGE			13.35	May 12	25.33	Mar 31 1960
ANNUAL RUNOFF (AC-FT)	475700		153100		348700	
ANNUAL RUNOFF (CFSM)	0.90		0.29		0.66	
ANNUAL RUNOFF (INCHES)	12.22		3.93		8.96	
10 PERCENT EXCEEDS	1930		533		1190	
50 PERCENT EXCEEDS	124		101		167	
90 PERCENT EXCEEDS	45		39		19	

e Estimated



05473400 CEDAR CREEK NEAR OAKLAND MILLS, IA

LOCATION.--Lat. 40°55'20", long 91°40'10", in SE$^1/_4$ NW$^1/_4$ sec.28, T.71 N., R.7 W., Henry County, Hydrologic Unit 07080107, on left bank 30 ft upstream from bridge on county highway H46, 3.0 mi west of Oakland Mills, 2.9 mi upstream from Wolf Creek, and 4.3 mi upstream from mouth.

DRAINAGE AREA.--530 mi^2.

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1957 to 1977. July 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 565.07 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Occasional high-water measurements were made by U.S. Army Corps of Engineers in 1965, 1966, 1970, and 1974 and by U.S. Geological Survey in 1966 and 1967. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of April 22, 1973 reached a stage of 24.09 ft, discharge not determined. Flood of June 1905 reached a stage approximately 2 feet higher from information by local resident.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	75	27	e15	e27	e58	115	668	1510	54	16	7.0
2	11	72	27	e16	e24	e55	99	583	2500	48	14	6.3
3	9.9	67	26	e12	e22	e54	100	499	1120	37	13	5.7
4	9.8	57	26	e14	e21	e59	93	392	769	34	12	5.2
5	21	48	26	e15	e20	e59	76	318	534	e26	13	4.8
6	74	43	27	e14	e21	e67	68	280	424	e17	47	4.3
7	115	40	26	e12	e22	e110	80	278	340	16	39	4.2
8	54	38	27	e16	e23	e499	387	237	289	47	21	4.2
9	31	36	25	e19	e28	e1120	2470	705	258	e41	15	4.2
10	24	34	25	e22	e43	e723	1720	2000	232	e25	13	4.0
11	20	32	24	e25	e72	393	673	2370	1640	e20	11	3.6
12	18	30	25	29	e112	287	456	6490	6010	24	11	3.6
13	45	29	36	31	e148	231	533	6420	6500	29	12	3.5
14	37	29	101	32	e190	194	386	3580	e5680	25	13	3.9
15	26	29	81	31	e155	167	314	1110	e1510	22	17	4.1
16	25	29	63	e24	e141	141	264	866	e820	20	15	4.1
17	20	29	50	e23	127	116	212	942	e528	19	13	4.4
18	18	29	49	e22	98	99	176	945	338	19	11	4.6
19	18	28	48	e19	103	95	151	689	261	18	15	4.6
20	16	26	42	e21	208	91	137	556	206	17	15	5.3
21	15	26	36	e22	312	86	158	451	168	16	12	5.2
22	22	26	39	e23	217	78	232	387	135	16	13	6.1
23	1210	25	e38	e22	148	68	237	359	114	15	253	7.2
24	3060	29	e36	e20	120	64	231	2790	93	16	498	5.0
25	739	31	e33	e19	107	69	258	1980	81	15	115	4.3
26	375	36	e28	e24	93	71	360	4020	285	16	39	4.0
27	200	33	e27	e29	e71	67	494	1550	220	18	21	3.8
28	128	33	e25	e27	e60	65	3440	862	100	17	15	3.5
29	96	30	e21	e24	---	71	2970	673	79	20	11	3.7
30	82	28	e18	e21	---	93	954	533	68	19	9.2	4.4
31	74	---	e15	e22	---	149	---	436	---	17	7.8	---
TOTAL	6605.7	1097	1097	665	2733	5499	17844	43969	32812	743	1330.0	138.8
MEAN	213.1	36.57	35.39	21.45	97.61	177.4	594.8	1418	1094	23.97	42.90	4.627
MAX	3060	75	101	32	312	1120	3440	6490	6500	54	498	7.2
MIN	9.8	25	15	12	20	54	68	237	68	15	7.8	3.5
AC-FT	13100	2180	2180	1320	5420	10910	35390	87210	65080	1470	2640	275
CFSM	0.40	0.07	0.07	0.04	0.18	0.33	1.12	2.66	2.05	0.04	0.08	0.01
IN.	0.46	0.08	0.08	0.05	0.19	0.38	1.25	3.07	2.29	0.05	0.09	0.01

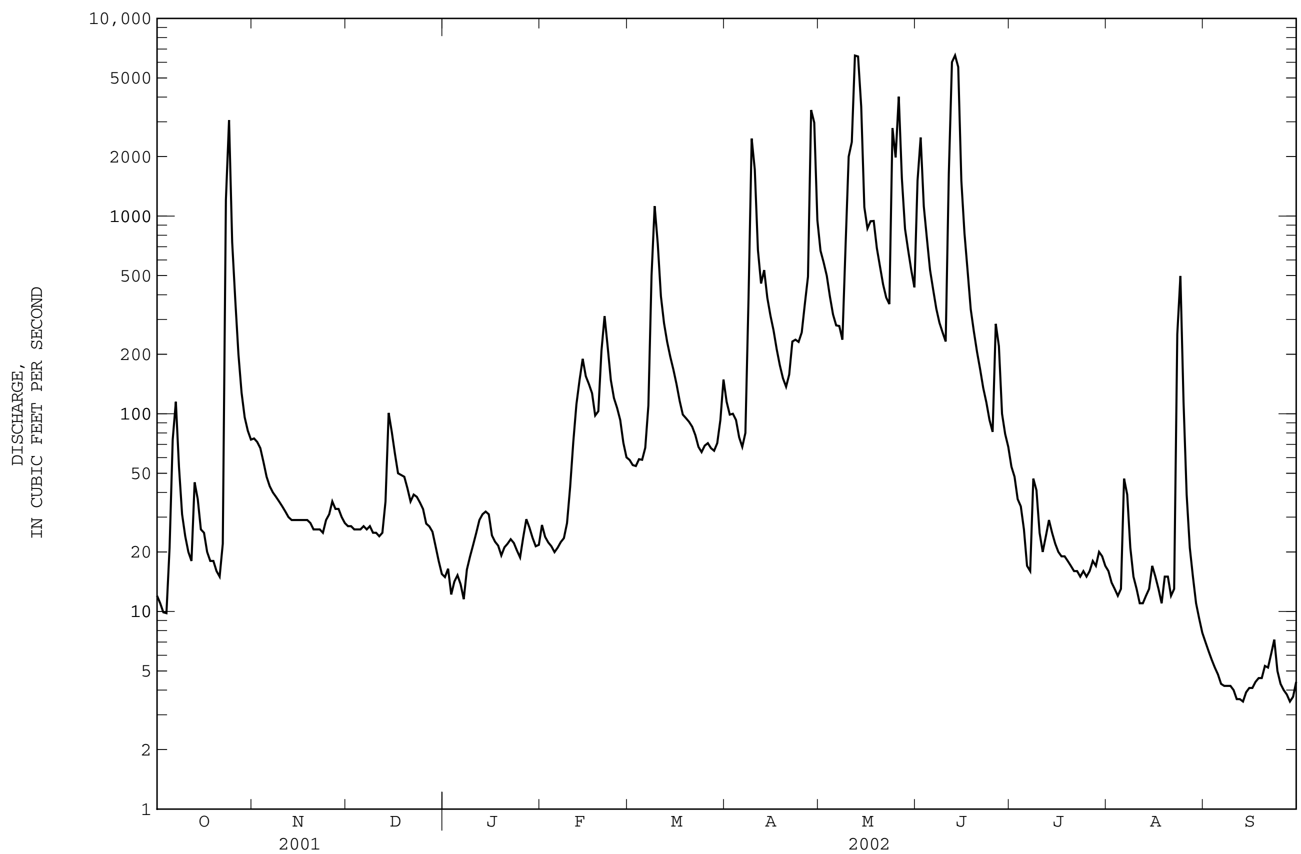
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	236.4	286.2	224.7	100.7	340.3	617.9	631.3	770.8	627.7	552.8	183.1	213.4
MAX	1711	1340	1364	545	1091	1987	1863	3116	2199	4565	2186	1245
(WY)	1987	1993	1983	1993	1985	1979	1983	1996	1990	1993	1993	1986
MIN	5.93	7.50	4.43	9.42	6.36	25.6	34.3	21.6	14.6	3.52	5.35	4.63
(WY)	1989	2000	1990	1997	1989	2000	2000	2000	1988	1988	1983	2002

05473400 CEDAR CREEK NEAR OAKLAND MILLS, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1978 - 2002	
ANNUAL TOTAL	201073.7		114533.5			
ANNUAL MEAN	550.9		313.8		398.8	
HIGHEST ANNUAL MEAN					1424	1993
LOWEST ANNUAL MEAN					73.0	1989
HIGHEST DAILY MEAN	7220	Mar 16	6500	Jun 13	11500	May 28 1996
LOWEST DAILY MEAN	9.8	Oct 4	3.5	Sep 13a	0.42	Sep 17 1988
ANNUAL SEVEN-DAY MINIMUM	13	Sep 11	3.8	Sep 10	0.55	Sep 14 1988
MAXIMUM PEAK FLOW			7160	May 12	12300	May 28 1996
MAXIMUM PEAK STAGE			18.40	May 12	21.27	Jul 9 1993
ANNUAL RUNOFF (AC-FT)	398800		227200		288900	
ANNUAL RUNOFF (CFSM)	1.03		0.59		0.75	
ANNUAL RUNOFF (INCHES)	14.03		7.99		10.17	
10 PERCENT EXCEEDS	1520		679		937	
50 PERCENT EXCEEDS	100		37		79	
90 PERCENT EXCEEDS	21		11		8.3	

a Also Sept. 28.
e Estimated



05473450 BIG CREEK NEAR MT. PLEASANT, IA

LOCATION.--Lat. 45°00'26", long 91°33'05", in NW$^1/_4$ SE$^1/_4$ sec.28, T.72 N., R.6 W., Henry County, Hydrologic Unit 07080107, on right bank 20 ft upstream from bridge on old U.S. highway 218 (Mt. Pleasant business route) about 2 miles north of Mt. Pleasant, 1.6 miles upstream from Brandy Wine Creek, and 2.3 miles upstream from Lynn Creek.

DRAINAGE AREA.--58 mi^2.

PERIOD OF RECORD.--Occasional low-flow measurements, water years 1957 to 1977. Oct. 1, 1997 to current year.

GAGE.--Water-stage recorder. Datum of gage is 643.00 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey data collection platform with telephone modem at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 21, 1973, discharge 9,580 ft^3/s, on basis of contracted-opening measurement.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.39	14	4.0	e2.4	e2.8	e14	14	64	1360	11	1.2	0.22
2	0.71	13	4.1	e3.9	e2.6	e15	17	53	641	9.7	1.1	0.21
3	0.68	9.5	3.2	e1.9	e2.2	e14	15	39	150	8.9	0.98	0.22
4	1.2	7.1	2.8	e3.4	e1.7	e14	12	34	114	8.2	1.0	0.18
5	e5.1	6.2	3.0	e5.7	e1.9	e15	12	31	84	7.1	1.1	0.16
6	e2.6	6.3	3.7	e4.7	e1.5	e18	12	34	64	5.8	1.3	0.13
7	e1.2	6.4	3.1	e3.3	e2.1	e33	17	30	53	4.6	1.2	0.11
8	0.69	7.2	2.8	e4.2	e3.7	e58	81	28	45	4.3	1.0	0.10
9	0.99	5.7	2.6	e6.4	e9.7	e188	294	52	39	3.3	0.87	0.09
10	1.3	4.4	2.5	e5.2	e26	e110	150	50	35	3.2	0.74	0.09
11	1.1	4.4	2.4	e4.3	e53	89	101	e364	61	6.3	0.70	0.07
12	0.79	4.6	4.0	4.0	e49	74	75	e777	390	3.3	0.86	0.06
13	0.82	3.6	8.4	4.0	e44	64	55	346	423	2.7	1.3	0.07
14	1.0	3.6	8.2	4.1	50	53	50	156	198	2.2	1.4	0.06
15	0.94	4.0	6.7	3.5	45	45	45	109	108	2.0	1.1	0.04
16	1.0	3.8	5.7	e2.3	e37	31	37	85	77	1.7	1.6	0.03
17	1.1	3.4	4.7	e1.7	e28	29	32	69	58	1.5	1.6	0.03
18	1.4	3.3	4.9	e1.8	24	28	29	56	47	1.4	1.2	0.02
19	1.4	3.1	4.8	e1.7	28	24	29	47	38	1.3	1.2	0.02
20	1.7	3.1	4.2	e2.4	e35	24	24	40	32	1.4	1.4	0.08
21	1.8	3.3	3.5	e2.6	70	21	37	34	e28	1.4	1.4	0.17
22	20	e4.2	e9.9	e2.7	47	15	51	33	25	1.3	1.7	0.23
23	189	e4.1	e8.9	e2.7	41	20	43	47	24	1.2	114	0.16
24	90	e5.7	e8.1	e2.8	37	21	45	79	22	1.1	15	0.13
25	91	8.6	e6.4	e2.3	31	17	47	270	20	1.1	1.5	0.16
26	41	7.6	e5.5	e2.6	e23	14	37	163	27	1.1	0.67	0.16
27	24	5.3	e7.0	e2.9	e20	13	73	101	22	1.2	0.44	0.20
28	16	3.8	e7.7	e2.7	e17	15	171	75	17	1.6	0.37	0.20
29	14	3.8	e5.9	e2.6	---	19	100	59	14	2.6	0.32	0.19
30	12	3.3	e4.6	e2.7	---	16	77	49	13	2.1	0.29	0.17
31	11	---	e2.8	e3.0	---	14	---	42	---	1.6	0.24	---
TOTAL	535.91	166.4	156.1	100.5	733.2	1125	1782	3416	4229	106.2	158.78	3.76
MEAN	17.29	5.547	5.035	3.242	26.19	36.29	59.40	110.2	141.0	3.426	5.122	0.125
MAX	189	14	9.9	6.4	70	188	294	777	1360	11	114	0.23
MIN	0.39	3.1	2.4	1.7	1.5	13	12	28	13	1.1	0.24	0.02
AC-FT	1060	330	310	199	1450	2230	3530	6780	8390	211	315	7.5
CFSM	0.30	0.10	0.09	0.06	0.45	0.63	1.02	1.90	2.43	0.06	0.09	0.00
IN.	0.34	0.11	0.10	0.06	0.47	0.72	1.14	2.19	2.71	0.07	0.10	0.00

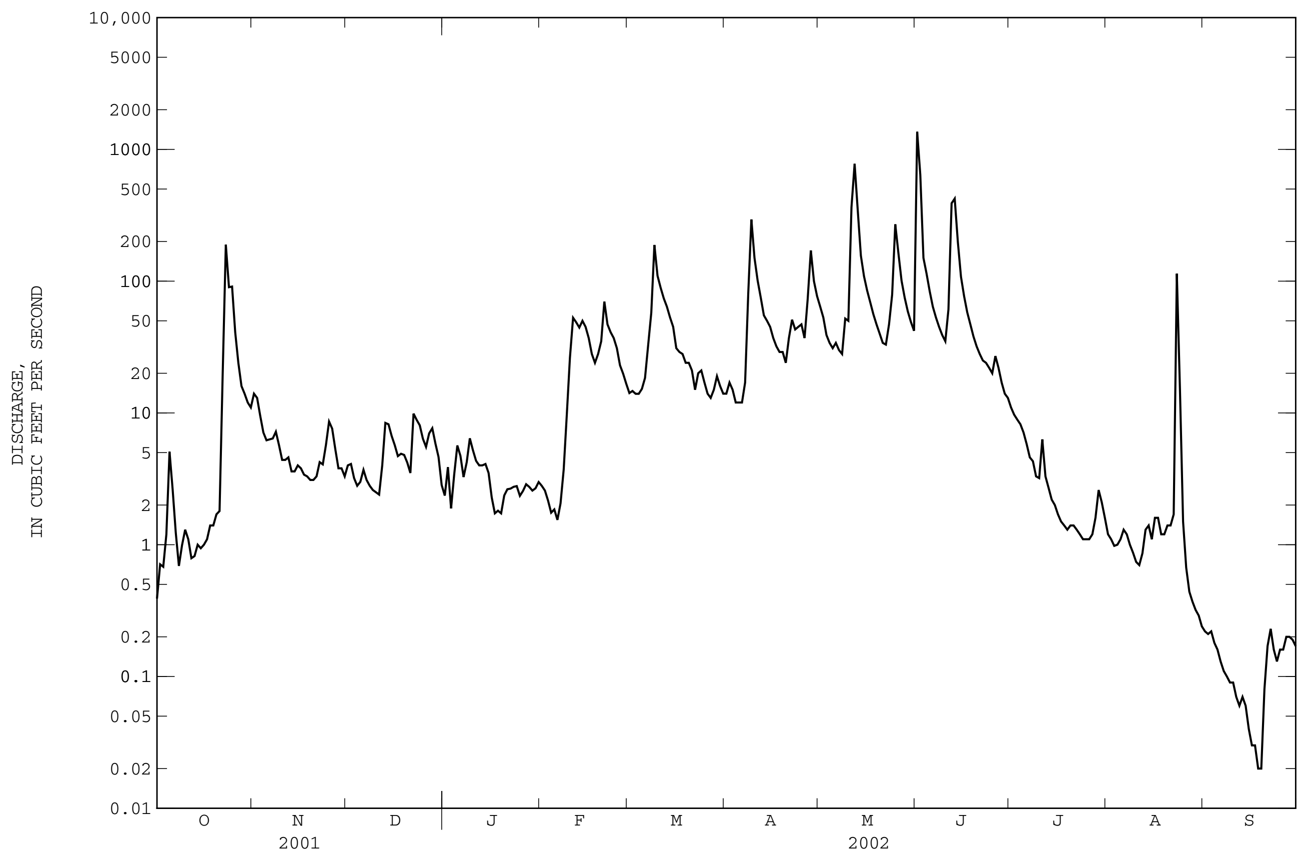
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	27.59	19.99	9.455	24.23	88.02	76.64	99.00	100.7	96.80	16.50	3.460	2.772
MAX	110	78.6	25.6	83.0	215	176	201	221	141	49.1	8.61	8.41
(WY)	1999	1999	1999	1998	2001	1998	1998	2001	2002	2000	1998	1998
MIN	0.56	0.71	0.68	0.84	14.8	8.30	26.0	26.2	47.2	2.67	0.53	0.13
(WY)	2000	2000	2000	2000	2000	2000	2000	2000	1999	1999	1999	2002

05473450 BIG CREEK NEAR MT. PLEASANT, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1997 - 2002	
ANNUAL TOTAL	24350.72		12512.85			
ANNUAL MEAN	66.71		34.28		46.70	
HIGHEST ANNUAL MEAN					68.1	1998
LOWEST ANNUAL MEAN					18.9	2000
HIGHEST DAILY MEAN	1440	Feb 25	1360	Jun 1	1600	Mar 31 1998
LOWEST DAILY MEAN	0.36	Sep 5	0.02	Sep 18	0.02	Sep 18 2002
ANNUAL SEVEN-DAY MINIMUM	0.46	Sep 25	0.04	Sep 13	0.04	Sep 13 2002
MAXIMUM PEAK FLOW			2450	Jun 1	2450	Jun 1 2002
MAXIMUM PEAK STAGE			12.20	Jun 1	14.29	Feb 9 2001
INSTANTANEOUS LOW FLOW			0.01	Sep 17a	0.01	Sep 17 2002
ANNUAL RUNOFF (AC-FT)	48300		24820		33830	
ANNUAL RUNOFF (CFSM)	1.15		0.59		0.81	
ANNUAL RUNOFF (INCHES)	15.62		8.03		10.94	
10 PERCENT EXCEEDS	159		74		107	
50 PERCENT EXCEEDS	11		5.7		11	
90 PERCENT EXCEEDS	0.87		0.58		0.55	

a Also Sept. 18, 19.
e Estimated



05474000 SKUNK RIVER AT AUGUSTA, IA

LOCATION.--Lat 40°45'13", long 91°16'40", in $NE^1/_4$ $NE^1/_4$ sec.26, T.69 N., R.4 W., Des Moines County, Hydrologic Unit 07080107, on left bank 300 ft upstream from bridge on State Highway 394 at Augusta, 2.0 mi upstream from Long Creek, and at mile 12.5.

DRAINAGE AREA.--4,303 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September to November 1913, October 1914 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1915 (M), 1919-27 (M), 1932-34 (M), 1936, 1937-38 (M), 1942 (M). WSP 1438: Drainage area. WDR IA-71-1: 1966 (M).

GAGE.--Water-stage recorder. Datum of gage is 521.24 ft above NGVD of 1929. Prior to Nov. 15, 1913, nonrecording gage at site 400 ft upstream at datum about 0.7 ft higher. May 27, 1915 to Jan. 14, 1935, nonrecording gage at site 400 ft upstream at present datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1, 1903, reached a stage of about 21 ft, discharge, about 45,000 ft^3/s. Stage and discharge for flood of April 1973 are believed to be the greatest since 1851.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	410	764	509	e288	e457	849	942	4960	8590	1680	632	710
2	392	738	555	e291	e362	e659	874	4800	12800	1510	644	635
3	373	703	608	e291	e348	e577	846	4690	7670	1350	655	577
4	362	677	644	e287	e327	e332	808	4130	5350	1250	601	520
5	423	644	647	e289	e309	e565	762	3560	4430	1170	566	477
6	636	615	646	e287	e258	769	699	3190	4020	1090	677	444
7	573	587	629	e271	e274	966	724	2920	4190	988	567	419
8	550	566	618	e283	e332	1770	1370	2680	4050	927	552	399
9	455	533	604	e307	e394	4370	3770	2830	3890	1010	1190	386
10	413	517	588	e322	e503	5270	3880	5140	3390	1350	1170	375
11	387	507	572	361	749	3310	3940	7920	4010	1570	925	332
12	363	488	571	389	933	2330	3080	20000	9910	1400	783	300
13	386	472	606	402	1060	1870	2490	20200	17500	1240	771	286
14	470	472	762	426	1110	1640	2230	16800	14200	1490	876	275
15	422	478	798	406	1140	1540	e2140	10100	10800	1960	701	268
16	416	477	776	e397	1190	1420	e2850	7360	8520	1810	748	258
17	405	475	741	e361	1160	1270	e2880	6570	7340	1560	640	251
18	384	483	700	e379	1030	1170	e2990	6520	5500	1310	636	263
19	378	482	671	e360	1000	1100	e3060	5390	4480	1180	657	253
20	376	457	645	e349	1220	1050	e2950	4600	3900	1040	597	283
21	377	442	619	e379	1580	985	e3020	4010	3470	936	592	279
22	389	432	e576	e406	1560	894	e3140	3620	3150	872	587	274
23	2780	427	e517	437	1370	851	e3230	3410	2850	821	2360	570
24	6350	460	e421	426	1230	853	e3300	5710	2600	775	2080	610
25	4070	484	e303	403	1160	851	e3630	6890	2390	731	1400	461
26	2240	477	e283	418	1090	819	e3620	9020	2360	713	1200	370
27	1620	479	e285	471	988	788	e3780	7310	3350	690	1950	320
28	1260	478	e282	489	899	789	e6320	4640	2220	666	1450	314
29	1010	475	e282	491	---	825	6910	3930	1940	760	1140	312
30	882	482	e281	e486	---	882	6430	3560	1840	674	952	297
31	810	---	e280	e485	---	939	---	4330	---	657	819	---
TOTAL	30362	15771	17019	11637	24033	42303	86665	200790	170710	35180	29118	11518
MEAN	979.4	525.7	549.0	375.4	858.3	1365	2889	6477	5690	1135	939.3	383.9
MAX	6350	764	798	491	1580	5270	6910	20200	17500	1960	2360	710
MIN	362	427	280	271	258	332	699	2680	1840	657	552	251
AC-FT	60220	31280	33760	23080	47670	83910	171900	398300	338600	69780	57760	22850
CFSM	0.23	0.12	0.13	0.09	0.20	0.32	0.67	1.50	1.32	0.26	0.22	0.09
IN.	0.26	0.14	0.15	0.10	0.21	0.36	0.75	1.73	1.47	0.30	0.25	0.10

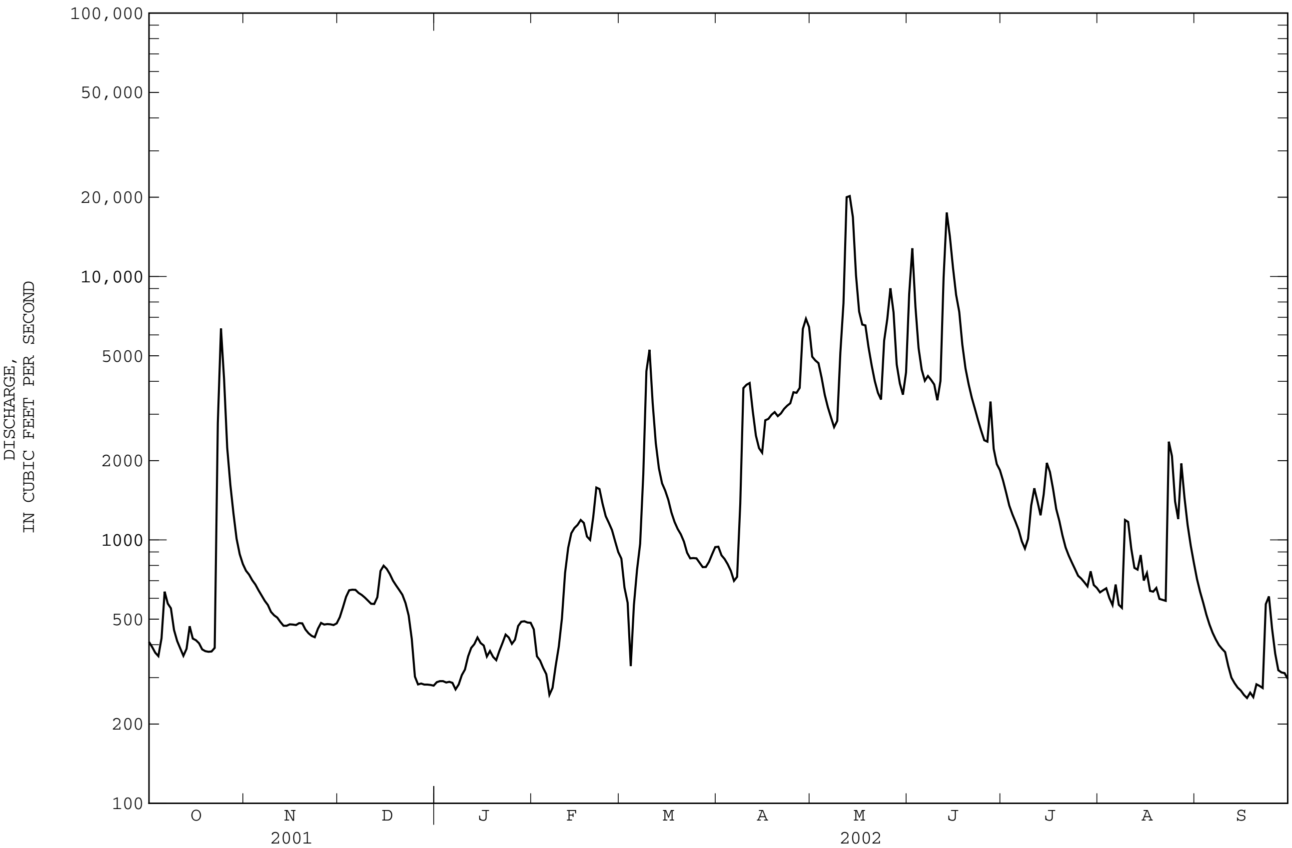
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1915 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1365	1538	1262	1290	2361	4345	4155	4167	4419	2838	1663	1592
MAX	11560	10020	8387	8090	7306	16560	18770	16780	19800	26860	18550	15460
(WY)	1987	1962	1983	1946	1984	1979	1973	1996	1947	1993	1993	1926
MIN	15.5	20.5	21.2	21.3	56.5	191	104	92.5	130	122	25.8	71.4
(WY)	1957	1957	1957	1940	1940	1957	1956	1934	1977	1988	1934	1953

05474000 SKUNK RIVER AT AUGUSTA, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1915 - 2002	
ANNUAL TOTAL	1397119		675106			
ANNUAL MEAN	3828		1850		2581	
HIGHEST ANNUAL MEAN					10200	1993
LOWEST ANNUAL MEAN					152	1934
HIGHEST DAILY MEAN	30300	May 15	20200	May 13	62600	Apr 23 1973
LOWEST DAILY MEAN	140	Jan 1	251	Sep 17	7.0	Aug 27 1934
ANNUAL SEVEN-DAY MINIMUM	153	Jan 6	264	Sep 14	7.4	Aug 26 1934
MAXIMUM PEAK FLOW			20800	May 13	66800	Apr 23 1973
MAXIMUM PEAK STAGE			15.61	May 13	27.05	Apr 23 1973
INSTANTANEOUS LOW FLOW			244	Sep 17a		
ANNUAL RUNOFF (AC-FT)	2771000		1339000		1870000	
ANNUAL RUNOFF (CFSM)	0.89		0.43		0.60	
ANNUAL RUNOFF (INCHES)	12.05		5.82		8.13	
10 PERCENT EXCEEDS	10700		4450		6800	
50 PERCENT EXCEEDS	980		764		1060	
90 PERCENT EXCEEDS	325		330		150	

a Also Sept. 18, 19.
e Estimated



05474000 SKUNK RIVER AT AUGUSTA, IA--Continued

WATER QUALITY RECORDS

LOCATION.--Samples collected at bridge on State Highway 394, 300 ft downstream from gage.

PERIOD OF RECORD.--October 1975 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1975 to current year.
WATER TEMPERATURES: October 1975 to current year.
SUSPENDED-SEDIMENT DISCHARGE: October 1975 to current year.

REMARKS.--During periods of ice effect, sediment samples are collected in open water channel. Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 950 microsiemens Dec. 20, 1979, Feb. 12, 1980; minimum daily, 149 microsiemens Mar. 6, 1993.
WATER TEMPERATURES: Maximum daily, 34.0°C July 20, 1980, Aug. 15-17, 1988, July 10-13, 1989, and July 15, 1995, and July 30, 1999; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 8,550 mg/L June 25, 1981; minimum daily mean, 1 mg/L Mar. 8, 9, 12, 1978, Jan. 5, 6, 1984.
SEDIMENT LOADS: Maximum daily, 499,000 tons Mar. 21, 1978; minimum daily, 1.4 tons Dec. 11, 1989.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 790 microsiemens Jan. 2; minimum daily, 259 microsiemens Aug. 23.
WATER TEMPERATURES: Maximum daily, 33.0°C July 8, 9, and Aug. 1; minimum daily, 0.0°C many days during winter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 3,770 mg/L June 12; minimum daily mean, 8.4 mg/L Mar. 4.
SEDIMENT LOADS: Maximum daily, 147,000 tons May 12; minimum daily, 7.5 tons Mar. 4.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	TEMPERATURE WATER (DEG C) (00010)	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	SEDIMENT, SUSPENDED (MG/L) (80154)	SEDIMENT, DISCHARGE, SUSPENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT						
16...	0910	8.7	423	42	48.0	69
NOV						
21...	0935	7.2	444	27	32.4	84
JAN						
15...	1550	.1	424	89	102	19
MAR						
27...	0825	4.8	787	50	106	32
MAY						
08...	0930	18.3	2730	197	1450	93
JUN						
19...	1040	22.8	4550	1790	22000	99
JUL						
30...	1345	28.0	668	92	166	97
SEP						
11...	0900	20.2	334	72	64.9	97

Date	Time	NUMBER OF SAMPLING POINTS (COUNT) (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)
OCT											
16...	0910	5	1	2	4	33	47	54	59	70	85
NOV											
21...	0935	4	--	0	2	39	64	73	79	88	96
MAR											
27...	0825	5	2	2	7	44	64	69	76	85	94
MAY											
08...	0930	5	--	0	7	71	92	92	93	93	100
JUN											
19...	1045	5	--	0	9	67	83	89	93	94	100
JUL											
30...	1345	4	1	1	10	50	64	72	82	92	100
SEP											
11...	0900	5	0	1	3	42	74	87	93	99	100

SPECIFIC CONDUCTANCE, in MICROSIEMENS/CM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	422	494	549	727	594	616	570	479	363	572	411	462
2	420	507	489	790	602	622	572	502	276	557	423	481
3	421	525	492	724	615	589	567	554	325	570	420	485
4	419	537	514	776	---	675	559	570	410	482	426	397
5	437	549	535	633	628	652	556	581	465	439	421	368
6	475	546	480	741	618	625	538	593	508	421	385	383
7	478	547	500	630	612	679	532	604	540	429	418	376
8	473	519	507	699	618	623	487	596	519	402	423	396
9	502	532	---	602	599	461	360	599	566	411	478	429
10	503	521	504	743	626	391	390	472	584	468	482	435
11	494	506	539	593	629	444	458	351	448	489	411	458
12	486	498	499	602	599	517	488	293	349	517	360	467
13	459	491	583	679	615	543	518	268	270	448	404	470
14	491	490	550	665	599	567	513	340	282	500	421	488
15	491	476	504	685	602	586	525	412	374	554	412	504
16	507	475	549	621	602	589	547	499	394	470	370	523
17	530	484	550	688	598	589	558	543	435	494	397	534
18	524	501	618	643	586	611	554	520	491	565	400	520
19	519	497	529	634	568	609	553	521	532	559	402	549
20	496	500	580	672	578	621	576	562	552	544	438	538
21	492	523	531	643	575	624	553	578	572	598	417	548
22	484	536	535	620	570	619	576	588	574	535	387	556
23	385	524	514	624	568	626	572	595	573	561	259	572
24	261	504	595	635	575	619	577	401	582	472	356	567
25	258	522	532	582	582	609	535	400	584	455	369	584
26	323	546	543	618	589	614	502	359	586	427	336	559
27	388	516	516	598	596	621	484	354	410	412	433	445
28	419	503	551	601	601	610	434	485	518	433	327	430
29	419	494	660	581	---	589	359	535	566	376	306	414
30	457	504	619	594	---	587	417	548	581	403	395	395
31	448	---	536	608	---	619	---	558	---	394	419	---

WATER TEMPERATURE, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22.0	15.0	6.0	0.0	2.0	2.0	9.0	13.0	23.0	30.0	33.0	29.0
2	22.0	14.0	5.0	0.0	0.0	0.0	8.0	13.0	21.0	30.0	32.0	27.0
3	21.0	14.0	9.0	0.0	1.0	0.0	7.0	15.0	24.0	31.0	32.0	29.0
4	16.0	13.0	11.0	2.0	---	0.0	8.0	17.0	23.0	31.0	31.0	28.0
5	13.0	12.0	13.0	0.0	1.0	3.0	10.0	19.0	21.0	30.0	32.0	28.0
6	15.0	14.0	10.0	0.0	2.0	5.0	11.0	21.0	22.0	30.0	29.0	28.0
7	15.0	16.0	7.0	0.0	1.0	5.0	9.0	20.0	23.0	30.0	29.0	27.0
8	16.0	11.0	6.0	2.0	4.0	8.0	9.0	22.0	25.0	33.0	28.0	29.0
9	17.0	10.0	---	2.0	5.0	4.0	10.0	19.0	23.0	33.0	28.0	30.0
10	15.0	12.0	5.0	1.0	3.0	4.0	12.0	18.0	25.0	28.0	26.0	29.0
11	16.0	10.0	4.0	1.0	2.0	5.0	15.0	13.0	22.0	25.0	27.0	26.0
12	15.0	10.0	5.0	0.0	3.0	7.0	13.0	12.0	23.0	26.0	29.0	25.0
13	16.0	13.0	4.0	0.0	2.0	9.0	14.0	12.6	20.0	28.0	27.0	25.0
14	13.0	14.0	5.0	0.0	4.0	12.0	14.0	14.0	20.0	28.0	27.0	24.0
15	11.0	15.0	5.0	0.0	5.0	7.0	20.0	16.0	22.0	29.0	28.0	23.0
16	10.0	16.0	5.0	0.0	5.0	7.0	22.0	15.0	22.0	29.0	26.0	25.0
17	13.0	15.0	5.0	0.0	5.0	6.0	24.0	13.0	21.0	29.0	28.0	24.0
18	13.0	14.0	5.0	0.0	7.0	8.0	25.0	15.0	23.0	30.0	27.0	25.0
19	13.0	10.0	4.0	0.0	7.0	8.0	22.0	14.0	23.0	31.0	27.0	25.0
20	15.0	9.0	4.0	0.0	5.0	9.0	16.0	15.0	25.0	32.0	24.0	23.0
21	17.0	10.0	3.0	2.0	4.0	5.0	13.0	15.0	26.0	31.0	28.0	25.0
22	16.0	9.0	6.0	3.0	5.0	5.0	14.0	17.0	27.0	31.0	29.0	22.0
23	17.0	10.0	2.0	1.0	8.0	8.0	16.0	17.0	27.0	30.0	23.0	22.0
24	14.0	11.0	0.0	2.0	6.0	5.0	13.0	16.0	29.0	30.0	27.0	20.0
25	10.0	9.0	0.0	3.0	4.0	3.0	14.0	17.0	26.0	30.0	27.0	21.0
26	8.0	8.0	0.0	4.0	2.0	8.0	13.0	15.0	26.0	30.0	28.0	22.0
27	13.0	5.0	0.0	4.0	0.0	9.0	11.0	15.0	26.0	31.0	28.0	20.0
28	7.0	5.0	0.0	5.0	4.0	11.0	10.0	20.0	27.0	30.0	28.0	21.0
29	12.0	5.0	0.0	2.0	---	11.0	13.0	21.0	28.0	29.0	27.0	22.0
30	11.0	5.0	0.1	0.0	---	10.0	12.0	23.0	28.0	31.0	28.0	20.0
31	12.0	---	0.1	2.0	---	7.0	---	25.0	---	31.0	26.0	---

05474000 SKUNK RIVER AT AUGUSTA, IA--Continued

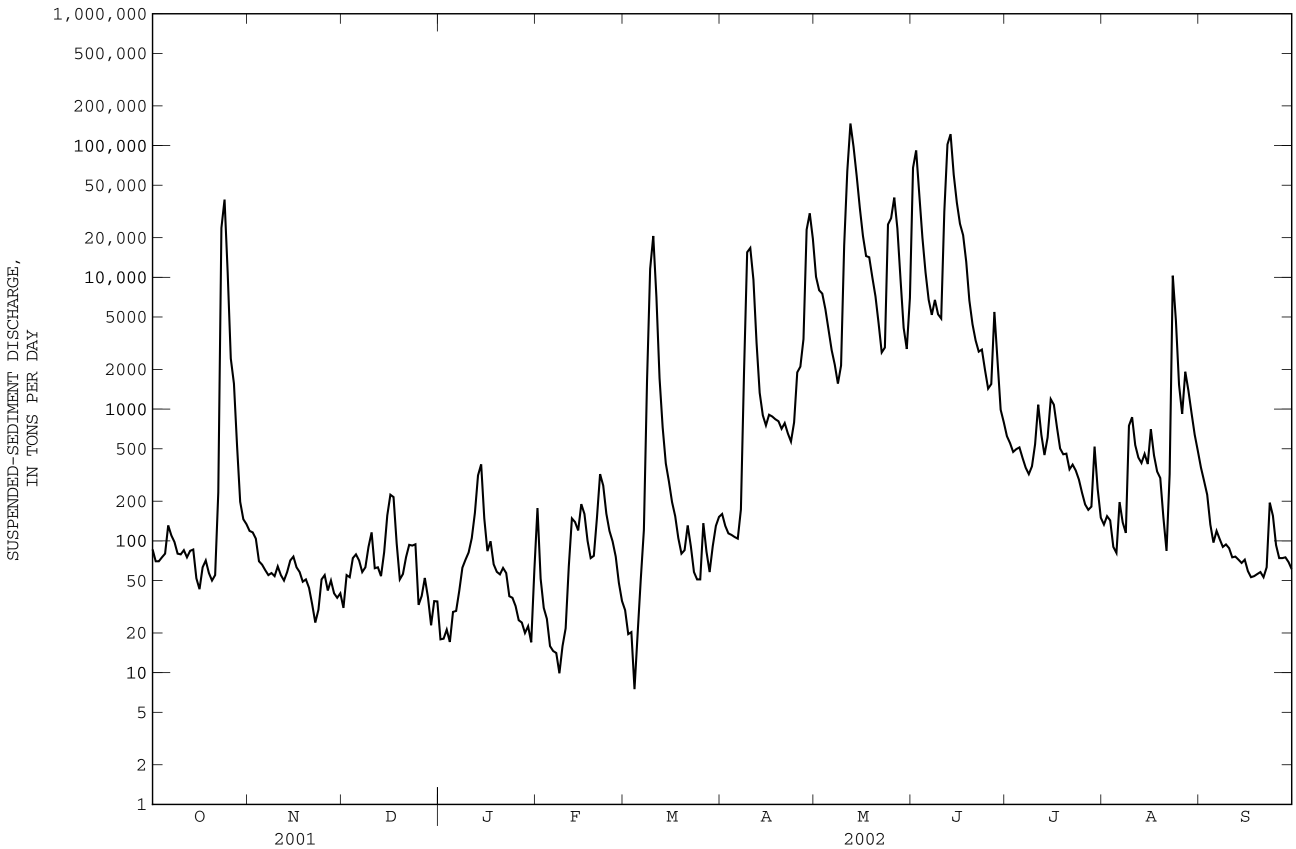
SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	78	86.3	58	119	22	31.0	23	17.9	143	177	13	29.8
2	67	70.0	58	116	36	55.0	23	18.1	53	51.7	11	19.6
3	70	70.0	55	104	32	53.0	27	21.2	33	31.0	13	20.3
4	77	75.0	39	70.0	43	74.0	22	17.1	29	25.6	8.4	7.5
5	70	80.0	38	66.0	45	79.0	37	28.9	19	15.9	13	19.8
6	76	131	36	60.0	41	71.0	38	29.4	21	14.6	24	51.0
7	71	110	34	55.0	34	58.0	57	41.7	19	14.1	45	121
8	66	98.0	37	57.0	38	63.0	82	62.6	11	9.9	301	1640
9	65	80.0	37	54.0	55	90.0	87	72.0	15	15.9	936	11600
10	71	79.0	46	64.0	73	116	94	81.7	16	21.7	1420	20600
11	81	85.0	40	55.0	40	62.0	108	105	32	64.0	759	7070
12	77	75.0	38	50.0	41	63.0	155	163	58	148	267	1720
13	81	84.0	45	58.0	33	54.0	287	314	48	139	143	727
14	68	86.0	55	71.0	40	82.0	331	381	40	120	87	387
15	46	52.0	59	76.0	72	156	135	148	62	190	68	282
16	38	43.0	49	63.0	107	224	78	83.6	50	160	51	197
17	58	63.0	45	58.0	108	215	102	99.4	32	100	45	154
18	69	71.0	38	49.0	51	96.0	65	66.4	27	74.0	33	105
19	56	57.0	39	51.0	28	51.0	60	58.2	29	77.0	27	80.0
20	50	50.0	36	44.0	32	56.0	59	55.7	45	150	30	85.0
21	54	55.0	27	33.0	45	75.2	61	62.3	75	321	49	131
22	220	233	20	24.0	60	93.3	52	57.0	62	263	38	91.0
23	2640	23700	26	30.0	66	92.1	33	38.0	44	161	25	58.0
24	2280	38900	41	51.0	83	94.2	32	37.0	36	119	22	51.0
25	914	10900	42	55.0	40	32.7	30	32.0	32	99.0	22	51.0
26	394	2420	33	42.0	50	38.2	22	25.0	26	76.0	62	136
27	356	1560	38	50.0	68	52.3	19	24.0	18	48.0	39	83.0
28	150	527	31	40.0	49	37.3	15	20.0	14	35.0	27	58.0
29	73	198	29	37.0	30	22.9	17	22.5	---	---	41	91.0
30	61	146	31	40.0	46	34.9	13	17.0	---	---	54	130
31	62	134	---	---	46	34.7	46	60.2	---	---	59	152
TOTAL	---	80318.3	---	1742.0	---	2356.8	---	2259.9	---	2721.4	---	45948.0

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN CONC TRAT (MG/	LOAD (TONS/ DAY)	MEAN CONCEN TRATIO (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN TRATIO (MG/L)	LOAD (TONS/ DAY)	MEAN CONCE TRATI (MG/L	LOAD (TONS DAY)	MEAN CONCEN TRATIO (MG/L)	LOAD (TONS/ DAY)	MEAN CONCE TRATI (MG/L	LOAD (TONS/ DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	62	160	751	10100	2730	67800	137	623	78	133	187	360
2	54	130	618	7980	2620	91900	136	552	88	154	166	285
3	49	114	594	7520	2020	42400	130	473	81	143	143	224
4	50	111	512	5720	1380	20000	147	497	55	90.0	94	133
5	51	107	415	4010	907	10900	161	512	53	81.0	75	97.0
6	53	104	323	2800	629	6740	145	426	110	197	100	119
7	84	173	273	2170	464	5190	135	359	90	138	91	103
8	439	1930	214	1560	623	6740	128	321	76	115	84	90.0
9	1490	15500	270	2140	504	5240	135	368	226	748	90	94.0
10	1570	16700	1220	17500	550	4870	147	541	275	868	87	88.0
11	879	9580	2850	64100	2770	31500	253	1080	224	534	84	75.0
12	369	3190	2750	147000	3770	102000	167	639	203	429	94	76.0
13	193	1330	1790	97600	2490	122000	133	448	187	390	93	72.0
14	149	897	1280	58500	1560	60100	150	608	193	457	91	68.0
15	130	752	1240	33600	1250	36900	225	1190	203	383	100	72.0
16	118	906	1030	20600	1110	25500	221	1080	351	703	85	59.0
17	113	879	818	14500	1050	20900	172	726	258	446	78	53.0
18	104	838	808	14200	878	13100	141	502	195	336	76	54.0
19	98	809	689	10000	548	6680	143	454	169	300	83	56.0
20	89	709	581	7160	418	4410	164	459	94	151	76	58.0
21	96	783	415	4470	354	3320	138	349	53	84.0	70	53.0
22	77	654	279	2690	320	2730	161	379	199	321	85	63.0
23	65	567	320	2930	368	2830	154	342	1550	10300	124	195
24	89	793	1580	25200	281	1980	139	292	831	4680	93	155
25	194	1900	1510	28100	221	1430	117	232	391	1530	74	93.0
26	215	2100	1660	40300	238	1550	98	189	284	920	74	74.0
27	334	3400	1160	23500	614	5460	92	172	366	1920	85	74.0
28	1350	23000	773	9670	380	2310	101	182	350	1380	88	75.0
29	1650	30600	392	4140	188	989	253	519	302	930	82	69.0
30	1100	19600	302	2860	159	795	137	248	248	640	77	61.0
31	---	---	563	6980	---	---	84	150	218	483	---	---
TOTAL	---	138316	---	679600	---	708264	---	14912	---	29984.0	---	3148.0

YEAR 1709570.4



05474500 MISSISSIPPI RIVER AT KEOKUK, IA

LOCATION.--Lat 40°23'37", long 91°22'27", in SE $^{1}/_{4}$ SW $^{1}/_{4}$ sec.30, T.65 N., R.4 W., Lee County, Hydrologic Unit 07080104, near right bank in tailwater of dam and powerplant of Union Electric Co. at Keokuk, 0.2 mi upstream from bridge on U.S. Highway 136, 2.7 mi upstream from Des Moines River, and at mile 364.2 upstream from Ohio River.

DRAINAGE AREA.--119,000 mi^2, approximately.

PERIOD OF RECORD.--January 1878 to current year.

GAGE.--Water-stage recorder. Datum of gage is 477.41 ft above NGVD of 1929 (levels by U.S. Army Corps of Engineers). Jan. 1, 1878 to May 1913, nonrecording gage at Galland (formerly Nashville), 8 mi upstream; zero of gage was set to low-water mark of 1864, or 496.52 ft above sea level.

REMARKS.--Discharge computed from records of operation of turbines in powerplant and spillway gates in dam. Minor flow regulation caused by powerplant since 1913 and navigation dams. Records for May 1913 to September 1937 adjusted for change in contents in Keokuk Reservoir, those after September 1937 unadjusted.

COOPERATION.--Records provided by Union Electric Co.

EXTREMES OUTSIDE PERIOD OF RECORD.--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 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45500	44400	63000	33800	44700	61700	54500	186000	103000	112000	73500	93900
2	39800	47800	68400	34400	39400	58600	66800	176000	110000	111000	65500	85700
3	37500	48000	71600	33400	41400	53100	69800	169000	95000	115000	65500	82000
4	35400	56000	68400	33900	36100	41700	69400	159000	88900	116000	61400	74500
5	38200	52300	58400	34200	36000	37900	76400	153000	120000	119000	65200	67600
6	39600	47600	57200	35800	35200	37800	72400	145000	146000	116000	70000	67100
7	40000	43900	54500	41900	35100	40200	75500	143000	172000	114000	63600	67400
8	37800	49900	60700	43300	37000	53700	83500	137000	190000	110000	65500	65000
9	33900	45500	64600	42400	38800	62600	97600	137000	199000	110000	65000	63300
10	31200	43900	70600	45800	40800	76000	115000	135000	188000	106000	64100	67900
11	32000	43900	69100	49000	49000	76300	106000	142000	180000	104000	67300	71800
12	35900	42100	67900	52400	54600	74900	104000	179000	177000	96600	68600	70400
13	42600	41600	71900	50500	54800	71100	102000	169000	190000	89100	71900	72000
14	44800	44000	73100	49500	53900	73700	98600	167000	183000	85900	74200	76300
15	44800	41000	72800	49900	47900	82400	99600	155000	170000	75700	74200	76900
16	46100	41800	74500	49000	46200	76800	99300	146000	159000	76900	82500	74700
17	40600	45200	64500	49600	50500	82700	108000	140000	146000	76900	65700	75700
18	43700	44000	60800	48400	42200	79500	104000	142000	131000	75800	67800	74500
19	49400	46500	58400	42800	44200	75800	113000	142000	116000	85100	62700	72500
20	40500	44600	55800	39200	44000	76200	119000	139000	109000	87400	69500	64100
21	42000	41700	61300	40700	52800	73300	129000	135000	104000	84800	69500	63800
22	47000	43100	58500	40900	65100	61300	134000	133000	102000	90900	71200	62900
23	61200	40900	54100	38500	62700	69500	146000	136000	96500	88000	97400	58000
24	74500	41900	54600	42500	65200	64800	156000	136000	95500	86700	112000	58900
25	61800	45200	48200	37600	65500	66100	162000	140000	91500	79500	115000	50000
26	62500	51200	40200	39900	68600	62800	169000	135000	91100	80200	107000	48700
27	74000	48200	29100	43700	70900	64300	179000	126000	90400	74300	95500	42500
28	50600	54800	27700	48400	70000	64300	185000	116000	98000	85600	87900	46900
29	56400	60600	28400	51600	---	63600	193000	111000	105000	78200	93100	52600
30	47900	59600	29200	51200	---	56000	191000	101000	104000	79900	93600	51400
31	41900	---	31000	51800	---	52200	---	93700	---	77300	95000	---
TOTAL	1419100	1401200	1768500	1346000	1392600	1990900	3478400	4423700	3950900	2887800	2400900	1999000
MEAN	45780	46710	57050	43420	49740	64220	115900	142700	131700	93150	77450	66630
MAX	74500	60600	74500	52400	70900	82700	193000	186000	199000	119000	115000	93900
MIN	31200	40900	27700	33400	35100	37800	54500	93700	88900	74300	61400	42500
AC-FT	2815000	2779000	3508000	2670000	2762000	3949000	6899000	8774000	7837000	5728000	4762000	3965000
CFSM	0.38	0.39	0.48	0.36	0.42	0.54	0.97	1.20	1.11	0.78	0.65	0.56
IN.	0.44	0.44	0.55	0.42	0.44	0.62	1.09	1.38	1.24	0.90	0.75	0.62

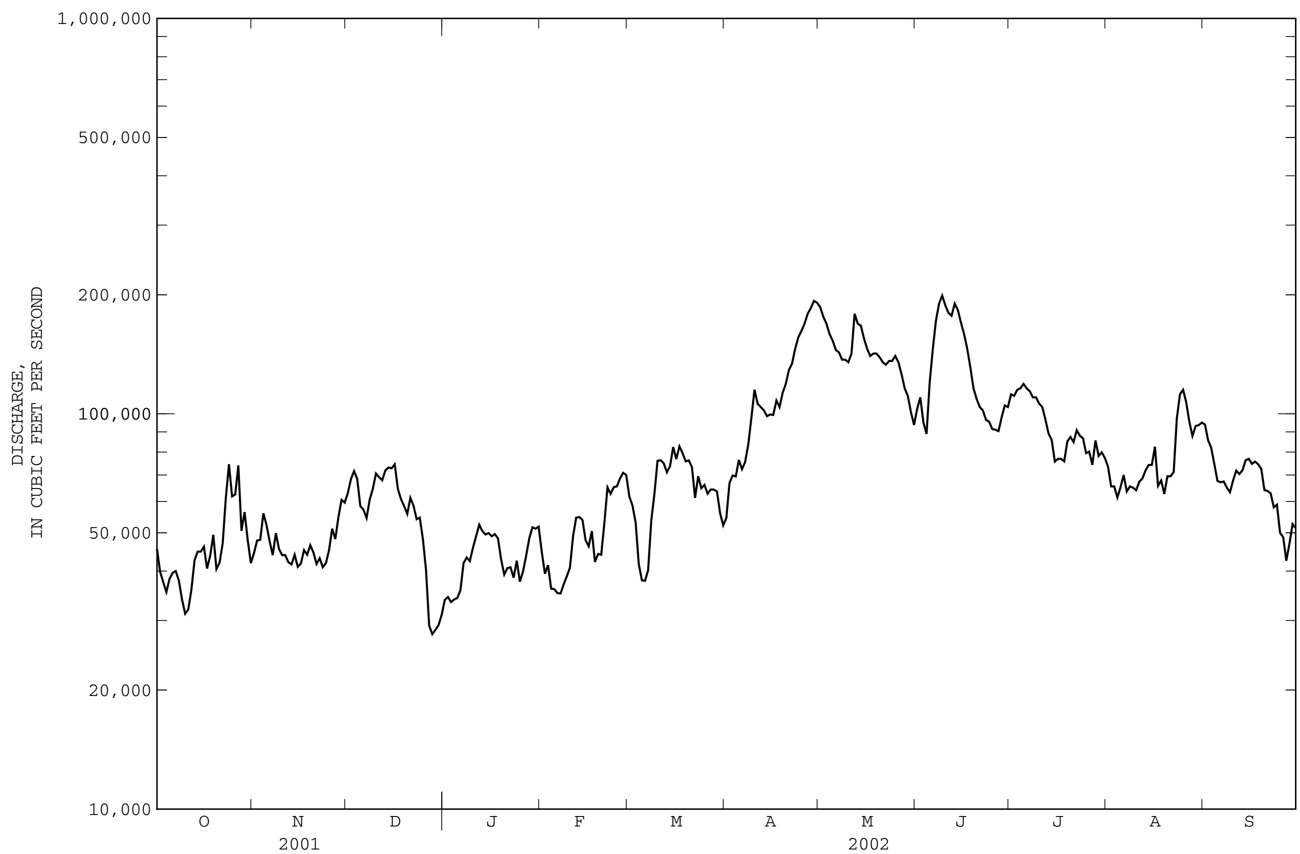
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1879 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	50850	51160	38710	36140	42910	80570	120200	109300	94620	75020	49960	47560
MAX	221100	211300	125600	101600	95620	185400	250100	260700	227300	385800	223000	163300
(WY)	1882	1882	1983	1973	1984	1973	1993	1888	1892	1993	1993	1993
MIN	16060	16020	13450	14650	15790	21780	32930	27600	17400	16280	13030	15530
(WY)	1934	1934	1934	1940	1899	1934	1895	1934	1934	1988	1936	1976

05474500 MISSISSIPPI RIVER AT KEOKUK, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1879 - 2002	
ANNUAL TOTAL	35518400		28459000			
ANNUAL MEAN	97310		77970		66460	
HIGHEST ANNUAL MEAN					162500	1993
LOWEST ANNUAL MEAN					21540	1934
HIGHEST DAILY MEAN	345000	May 15	199000	Jun 9	434000	Jul 10 1993
LOWEST DAILY MEAN	27700	Dec 28	27700	Dec 28	5000	Dec 27 1933
ANNUAL SEVEN-DAY MINIMUM	33400	Dec 25	30500	Dec 27	8270	Dec 25 1933
MAXIMUM PEAK FLOW					446000	Jul 10 1993
MAXIMUM PEAK STAGE					27.58	Jul 10 1993a
ANNUAL RUNOFF (AC-FT)	70450000		56450000		48150000	
ANNUAL RUNOFF (CFSM)	0.82		0.66		0.56	
ANNUAL RUNOFF (INCHES)	11.10		8.90		7.59	
10 PERCENT EXCEEDS	212000		140000		134000	
50 PERCENT EXCEEDS	60600		67600		51000	
90 PERCENT EXCEEDS	38100		40200		23000	

a From floodmark.



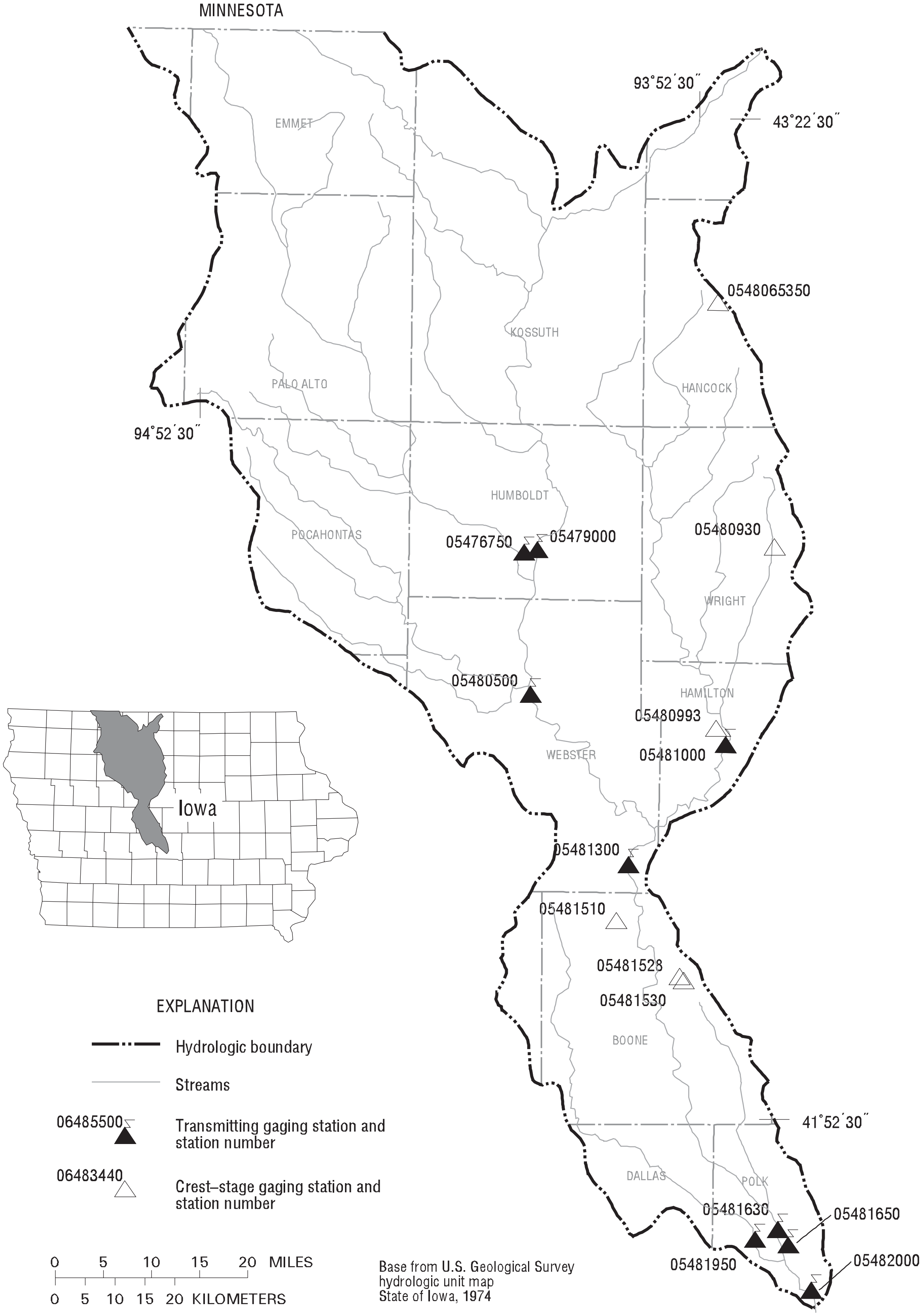


Figure 17. Locations of active continuous-record and crest-stage gaging stations in the Upper Des Moines River drainage basin.

Gaging Stations

05476750 Des Moines River at Humboldt, IA 258
05479000 East Fork Des Moines River at Dakota City, IA. 260
05480500 Des Moines River at Fort Dodge, IA 262
05481000 Boone River near Webster City, IA. 264
05481300 Des Moines River near Stratford, IA. 266
05481630 Saylorville Lake near Saylorville, IA. 268
05481650 Des Moines River near Saylorville, IA. 270
05481950 Beaver Creek near Grimes, IA 276
05482000 Des Moines River at Second Avenue at Des Moines, IA. 278

Crest Stage Gaging Stations

0548065350 Drainage Ditch 97 Tributary near Britt, IA 356
05480930 White Fox Creek at Clarion, IA 357
05480993 Brewers Creek Tributary near Webster City, IA. 357
05481510 Bluff Creek at Pilot Mound, IA 357
05481528 Peas Creek Tributary at Boone, IA. 357
05481530 Peas Creek at Boone, IA. 357

05476750 DES MOINES RIVER AT HUMBOLDT, IA

LOCATION.--Lat 42°43'12", long 94°13'06", in $SE^1/_4$ $SW^1/_4$ sec.1, T.91 N., R.29 W., Humboldt County, Hydrologic Unit 07100002 on left bank 5 ft downstream from First Avenue in city of Humboldt, .84 mi downstream of Reasoner Dam, about 700 ft downstream from City of Humboldt water plant, 3.2 mi upstream from Indian Creek, 3.9 mi upstream from East Fork Des Moines River, and at mile 334.3 upstream from mouth of Des Moines River.

DRAINAGE AREA.--2,256 mi^2.

PERIOD OF RECORD.--October 1964 to current year. Prior to October 1970, published as "West Fork Des Moines River at Humboldt."

GAGE.--Water stage recorder. Datum of gage is 1,053.54 ft above NGVD of 1929. Prior to Oct. 3, 1966, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Daily nonrecording gage readings made from Mar. 7, 1940 to Sept. 30, 1964, but discharge not published for this period because of extreme regulation at dam 700 ft upstream from gage. Power generation and streamflow regulation discontinued August 1964. Low-flow discharges occasionally affected by minor regulation at Reasoner Dam. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 23, 1947, reached a stage of 12.2 ft, discharge, 11,000 ft^3/s at present site and datum.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	120	100	351	229	167	247	558	1110	820	443	81	531
2	116	97	321	e160	184	163	637	1100	828	392	70	491
3	111	95	326	e172	173	228	714	1100	838	354	69	432
4	104	93	306	e175	e166	263	803	1040	891	317	166	365
5	103	100	353	190	e156	243	814	1100	915	292	196	316
6	97	94	384	e160	159	238	724	1090	915	269	234	289
7	99	94	391	e159	158	223	712	1040	857	251	309	243
8	99	109	387	182	162	e192	678	977	823	228	295	218
9	107	94	396	e159	162	e181	644	928	829	203	307	202
10	123	120	374	e142	e130	e180	630	883	822	206	304	188
11	124	85	366	197	e145	190	636	999	862	205	291	175
12	120	88	388	199	157	200	688	1420	1440	189	355	168
13	128	97	420	210	e152	222	823	1600	2140	183	564	165
14	132	102	418	214	163	270	841	1560	1850	168	572	171
15	122	99	415	215	180	270	839	1510	1500	156	456	168
16	117	96	391	209	198	269	828	1420	1280	148	370	164
17	111	92	377	216	222	324	821	1320	1110	140	520	158
18	109	95	393	208	244	446	849	1270	989	130	488	163
19	107	90	382	212	278	504	847	1200	892	123	377	169
20	106	85	339	208	292	493	817	1140	821	118	300	158
21	105	87	298	201	290	432	801	1070	766	114	265	146
22	114	103	e247	197	279	322	763	1020	728	144	328	148
23	122	124	188	197	283	501	769	977	683	107	496	149
24	122	162	132	e183	317	542	799	920	629	94	692	139
25	104	162	134	e184	290	371	778	913	609	100	847	144
26	94	221	198	190	129	324	757	856	610	100	792	152
27	92	358	221	199	155	331	771	781	618	112	769	156
28	98	460	255	189	233	347	824	767	606	104	760	155
29	98	447	e242	159	---	368	1000	815	555	102	707	157
30	94	407	274	e151	---	405	1100	891	499	96	639	154
31	98	---	255	159	---	494	---	861	---	91	579	---
TOTAL	3396	4456	9922	5825	5624	9783	23265	33678	27725	5679	13198	6434
MEAN	109.5	148.5	320.1	187.9	200.9	315.6	775.5	1086	924.2	183.2	425.7	214.5
MAX	132	460	420	229	317	542	1100	1600	2140	443	847	531
MIN	92	85	132	142	129	163	558	767	499	91	69	139
AC-FT	6740	8840	19680	11550	11160	19400	46150	66800	54990	11260	26180	12760
CFSM	0.05	0.07	0.14	0.08	0.09	0.14	0.34	0.48	0.41	0.08	0.19	0.10
IN.	0.06	0.07	0.16	0.10	0.09	0.16	0.38	0.56	0.46	0.09	0.22	0.11

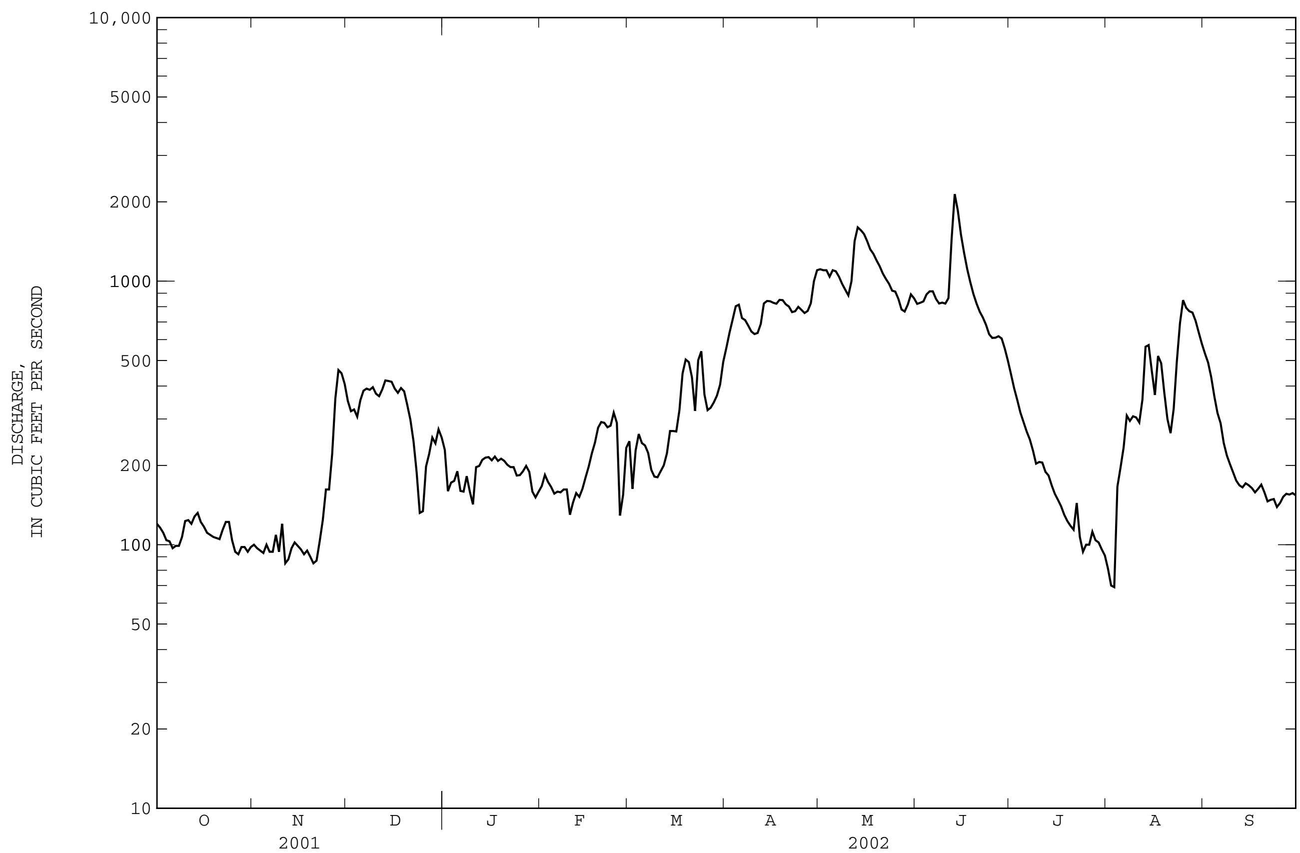
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	611.0	641.1	411.7	231.4	330.2	1263	2748	2003	1968	1556	694.7	507.4
MAX	3768	2656	1675	1078	1570	5110	8454	6428	9126	11540	4477	3097
(WY)	1987	1980	1983	1983	1983	1983	1969	2001	1993	1993	1993	1979
MIN	20.4	28.8	19.9	13.5	19.8	78.9	94.4	77.6	72.3	81.0	42.4	30.1
(WY)	1977	1977	1977	1977	1977	1968	1968	1968	1977	1976	1976	1976

05476750 DES MOINES RIVER AT HUMBOLDT, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1965 - 2002	
ANNUAL TOTAL	663462		148985			
ANNUAL MEAN	1818		408.2		1082	
HIGHEST ANNUAL MEAN					4136	1993
LOWEST ANNUAL MEAN					74.3	1977
HIGHEST DAILY MEAN	10500	May 4	2140	Jun 13	17800	Apr 14 1969
LOWEST DAILY MEAN	27	Feb 25	69	Aug 3	13	Nov 12 1976
ANNUAL SEVEN-DAY MINIMUM	32	Feb 20	88	Jul 28	13	Jan 12 1977
MAXIMUM PEAK FLOW			2220	Jun 13	19000	Jul 13 1993
MAXIMUM PEAK STAGE			6.00	Jun 13	15.40	Apr 14 1969
INSTANTANEOUS LOW FLOW			66	Aug 2a	13	Jan 12 1977
ANNUAL RUNOFF (AC-FT)	1316000		295500		783800	
ANNUAL RUNOFF (CFSM)	0.81		0.18		0.48	
ANNUAL RUNOFF (INCHES)	10.94		2.46		6.52	
10 PERCENT EXCEEDS	6510		891		2880	
50 PERCENT EXCEEDS	313		251		446	
90 PERCENT EXCEEDS	54		102		67	

a Also Aug. 3.
e Estimated.



05479000 EAST FORK DES MOINES RIVER AT DAKOTA CITY, IA

LOCATION.--Lat 42°43'26", long 94°11'30", in NW $^1/_4$ SE $^1/_4$ sec.6, T.91 N., R.28 W., Humboldt County, Hydrologic Unit 07100003, on right bank 50 ft upstream from old mill dam, in city park at east edge of Dakota City, 500 ft upstream from bridge on county highway P56, 0.6 mi downstream from bridge on State Highway 3, 3.4 mi upstream from confluence with Des Moines River, and at mile 333.8 upstream from mouth of Des Moines River.

DRAINAGE AREA.--1,308 mi^2.

PERIOD OF RECORD.--March 1940 to current year. Prior to October 1954, published as "near Hardy".

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1944, 1945-47 (M).

GAGE.--Water-stage recorder. Datum of gage is 1,038.71 ft above NGVD of 1929. Prior to Oct. 1, 1954, nonrecording gage at site 8 mi upstream at different datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of September 1938 reached a stage of 17.4 ft, discharge, about 22,000 ft^3/s, site and datum in use during the period 1940-54.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	46	189	74	65	98	161	508	355	180	64	304
2	41	45	171	76	76	e83	155	546	394	159	107	270
3	42	43	166	75	69	e72	145	546	361	141	109	240
4	41	42	158	75	73	103	134	525	350	126	157	210
5	38	41	170	77	68	94	129	484	370	117	197	183
6	37	43	205	75	63	94	122	467	356	107	261	162
7	37	44	203	76	63	92	121	434	369	102	502	152
8	37	43	198	77	64	91	126	406	e300	95	669	135
9	39	42	220	82	63	86	123	391	e275	85	727	124
10	44	42	241	e72	66	84	119	357	e250	84	753	114
11	45	42	190	86	69	102	125	401	333	111	746	105
12	42	42	175	82	74	112	150	694	524	107	716	98
13	46	45	164	84	68	130	203	820	842	89	1030	91
14	44	46	154	89	79	152	250	779	894	77	1000	87
15	44	44	149	81	84	177	283	743	876	86	784	88
16	46	43	140	88	95	172	297	700	794	94	826	85
17	46	42	138	73	107	190	291	634	677	78	1210	81
18	44	42	141	78	124	211	270	572	586	68	1150	82
19	43	42	123	80	137	254	256	515	525	60	837	83
20	43	39	121	78	143	e256	238	478	474	54	580	93
21	45	40	104	80	e153	e237	242	443	486	49	425	79
22	47	41	e98	82	e148	204	246	420	517	70	439	76
23	54	45	91	83	e143	241	243	407	469	73	653	75
24	52	68	82	72	e135	258	247	378	410	70	648	68
25	48	113	135	74	e131	250	247	367	357	73	536	68
26	44	139	114	82	e86	196	240	351	315	63	467	68
27	41	183	105	82	e100	184	240	331	277	57	419	72
28	42	246	101	67	143	175	295	320	249	47	408	70
29	42	215	92	63	---	179	404	315	225	46	353	76
30	42	198	84	58	---	174	454	309	199	46	331	70
31	43	---	82	77	---	168	---	312	---	53	327	---
TOTAL	1344	2146	4504	2398	2689	4919	6556	14953	13409	2667	17431	3509
MEAN	43.35	71.53	145.3	77.35	96.04	158.7	218.5	482.4	447.0	86.03	562.3	117.0
MAX	54	246	241	89	153	258	454	820	894	180	1210	304
MIN	37	39	82	58	63	72	119	309	199	46	64	68
AC-FT	2670	4260	8930	4760	5330	9760	13000	29660	26600	5290	34570	6960
CFSM	0.03	0.05	0.11	0.06	0.07	0.12	0.17	0.37	0.34	0.07	0.43	0.09
IN.	0.04	0.06	0.13	0.07	0.08	0.14	0.19	0.43	0.38	0.08	0.50	0.10

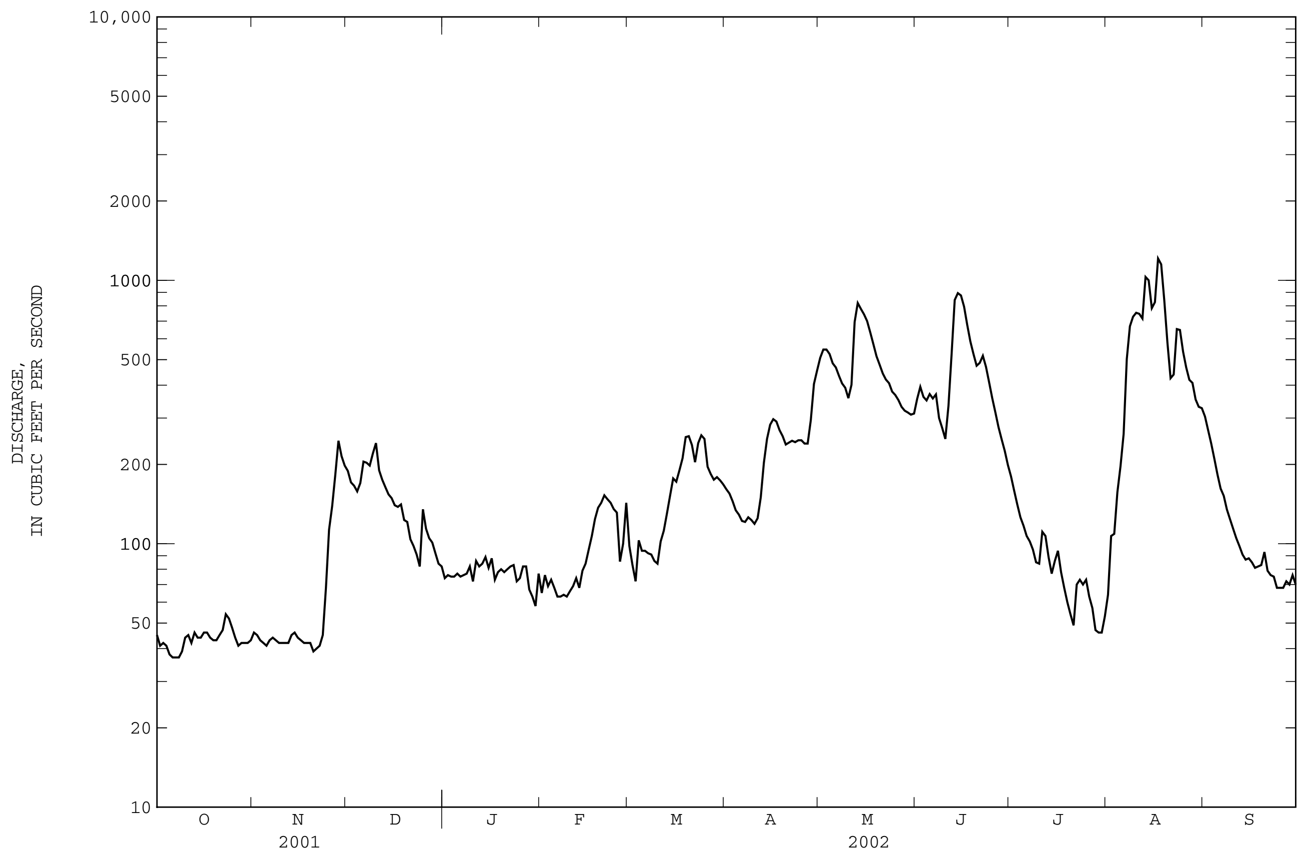
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	307.2	317.0	218.4	124.3	233.5	908.6	1597	1218	1384	895.2	401.7	320.5
MAX	1713	2042	1340	836	1602	4033	14300	12850	8143	6777	4114	2666
(WY)	1983	1942	1992	1992	1984	1983	2001	2001	2001	1993	1979	1979
MIN	12.0	14.2	8.45	5.12	10.4	39.4	58.8	75.7	36.3	13.7	15.5	7.40
(WY)	1959	1959	1977	1977	1959	1968	1977	1977	1977	1977	1976	1976

05479000 EAST FORK DES MOINES RIVER AT DAKOTA CITY, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1941 - 2002	
ANNUAL TOTAL	1283978		76525			
ANNUAL MEAN	3518		209.7		661.0	
HIGHEST ANNUAL MEAN					3559	2001
LOWEST ANNUAL MEAN					29.7	1977
HIGHEST DAILY MEAN	21000	May 4	1210	Aug 17	21000	May 4 2001
LOWEST DAILY MEAN	32	Feb 3	37	Oct 6a	4.8	Jan 11 1977
ANNUAL SEVEN-DAY MINIMUM	36	Feb 2	39	Oct 3	4.8	Jan 8 1977
MAXIMUM PEAK FLOW			1330	Aug 17	18800	Jun 21 1954
MAXIMUM PEAK STAGE			10.32	Aug 17	24.02	Jun 21 1954
INSTANTANEOUS LOW FLOW			34	Oct 8	4.8	Jan 11 1977b
ANNUAL RUNOFF (AC-FT)	2547000		151800		478900	
ANNUAL RUNOFF (CFSM)	2.69		0.16		0.51	
ANNUAL RUNOFF (INCHES)	36.52		2.18		6.87	
10 PERCENT EXCEEDS	13000		511		1730	
50 PERCENT EXCEEDS	312		122		210	
90 PERCENT EXCEEDS	40		44		24	

a Also Oct. 8.
b Also Jan. 12-14, 1977.
e Estimated.



05480500 DES MOINES RIVER AT FORT DODGE, IA

LOCATION.--Lat 42°30'22", long 94°12'04", in NW 1/4 SW 1/4 sec.19, T.89 N., R.28 W., Webster County, Hydrologic Unit 07100004, on right bank 400 ft upstream from Soldier Creek, 1,800 ft downstream from Illinois Central Railroad bridge in Fort Dodge, 2,000 ft downstream from Lizard Creek, and at mile 314.6.

DRAINAGE AREA.--4,190 mi^2.

PERIOD OF RECORD.--April 1905 to July 1906 (no winter records), October 1913 to September 1927 (published as "at Kalo"), October 1946 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1308: 1924, 1925 (M).

GAGE.--Water-stage recorder. Datum of gage is 969.38 ft above NGVD of 1929. See WSP 1728 for history of changes prior to Dec. 8, 1949.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Occasional minor regulation caused by dam 0.8 mi upstream from gage. U.S. Army Corps of Engineers satellite data collection platform and City of Fort Dodge gage-height telemeter at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	225	237	934	566	e334	e467	804	2200	1780	819	304	1170
2	217	234	834	502	e345	e445	870	2220	1840	750	309	1080
3	209	231	809	487	e335	e435	924	2240	1840	718	341	968
4	207	225	776	e472	e344	e477	995	2170	1800	681	550	844
5	208	220	732	469	e344	e509	1030	2130	1830	628	1060	742
6	204	230	914	467	e342	e497	979	2140	1810	597	1790	686
7	199	222	913	e447	e342	e441	936	2240	1720	571	2180	631
8	199	223	868	438	344	e431	948	2100	1660	526	2140	577
9	208	238	831	440	323	e442	906	2000	1590	490	1810	499
10	246	225	863	435	328	e433	892	1870	1520	518	1660	459
11	241	243	791	428	379	428	920	2410	1570	557	1570	426
12	237	211	769	411	321	451	992	4050	2050	613	1640	399
13	270	227	770	414	352	516	1130	4320	3190	625	3440	374
14	266	227	754	427	327	560	1250	3770	3070	535	3790	367
15	260	227	732	e416	355	647	1290	3400	2620	482	2810	354
16	262	222	718	411	387	598	1310	3200	2290	466	2210	339
17	251	214	685	e434	418	654	1310	2900	2000	437	2740	318
18	245	213	686	e410	470	695	1300	2670	1840	405	3410	325
19	242	215	674	e394	526	849	1300	2480	1640	379	2570	317
20	242	203	610	e418	561	876	1260	2320	1490	354	1950	310
21	240	204	574	e400	552	874	1270	2180	1410	338	1570	297
22	259	208	e494	393	539	603	1250	2080	1370	417	2070	273
23	297	254	407	385	559	794	1230	2020	1300	396	2930	266
24	283	380	428	374	573	947	1270	1900	1190	365	2880	249
25	265	463	471	368	565	795	1270	1850	1110	347	2510	245
26	241	608	493	e369	354	672	1240	1780	1070	345	2130	252
27	227	959	552	e362	332	657	1320	1670	1030	360	1870	268
28	225	1200	573	e353	487	667	1790	1620	1010	360	1720	268
29	235	1140	616	331	---	680	2140	1700	982	344	1550	270
30	228	1030	622	e324	---	706	2200	1940	872	327	1390	260
31	231	---	597	e335	---	749	---	1890	---	311	1270	---
TOTAL	7369	10933	21490	12880	11438	18995	36326	73460	50494	15061	60164	13833
MEAN	237.7	364.4	693.2	415.5	408.5	612.7	1211	2370	1683	485.8	1941	461.1
MAX	297	1200	934	566	573	947	2200	4320	3190	819	3790	1170
MIN	199	203	407	324	321	428	804	1620	872	311	304	245
AC-FT	14620	21690	42630	25550	22690	37680	72050	145700	100200	29870	119300	27440
CFSM	0.06	0.09	0.17	0.10	0.10	0.15	0.29	0.57	0.40	0.12	0.46	0.11
IN.	0.07	0.10	0.19	0.11	0.10	0.17	0.32	0.65	0.45	0.13	0.53	0.12

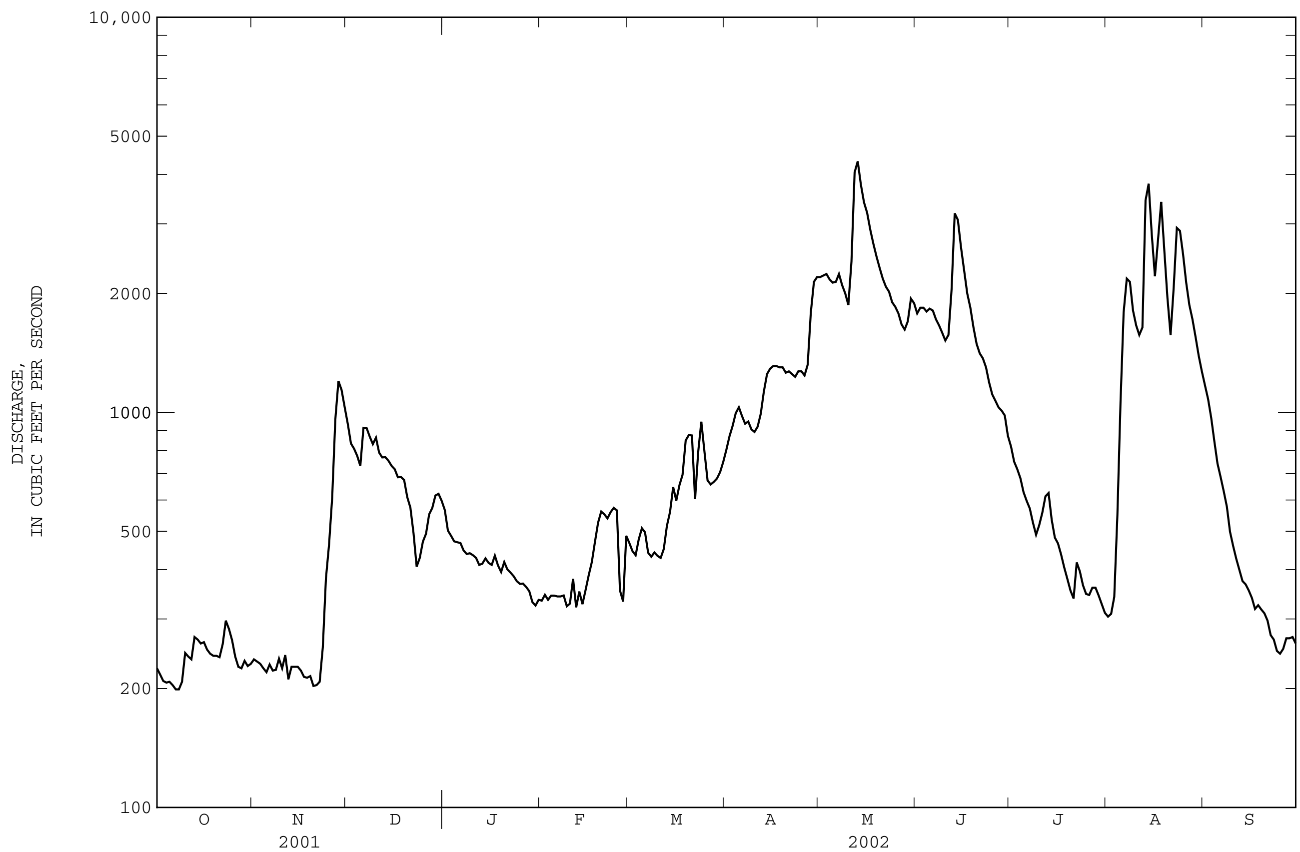
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1914 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	897.1	866.2	605.7	385.4	793.8	2554	4190	3082	3464	2378	1105	885.0
MAX	6120	4447	3698	2257	4352	11070	17530	12490	16150	21530	9264	6206
(WY)	1987	1983	1983	1983	1984	1983	1993	2001	1993	1993	1993	1979
MIN	32.8	54.5	34.7	24.0	35.5	141	224	149	138	75.2	69.0	49.9
(WY)	1957	1959	1977	1977	1959	1968	2000	1926	1977	1926	1976	1976

05480500 DES MOINES RIVER AT FORT DODGE, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1914 - 2002	
ANNUAL TOTAL	1273666		332443			
ANNUAL MEAN	3489		910.8		1768	
HIGHEST ANNUAL MEAN					7882	1993
LOWEST ANNUAL MEAN					143	1977
HIGHEST DAILY MEAN	23000	May 5	4320	May 13	35100	Apr 8 1965
LOWEST DAILY MEAN	120	Jan 16	199	Oct 7a	14	Nov 3 1955
ANNUAL SEVEN-DAY MINIMUM	126	Jan 14	205	Oct 3	23	Jan 13 1977
MAXIMUM PEAK FLOW			4440	May 12	35600	Apr 8 1965
MAXIMUM PEAK STAGE			5.66	May 12	19.62	Jun 23 1947
INSTANTANEOUS LOW FLOW			195	Oct 7b	14	Nov 3 1955
ANNUAL RUNOFF (AC-FT)	2526000		659400		1281000	
ANNUAL RUNOFF (CFSM)	0.83		0.22		0.42	
ANNUAL RUNOFF (INCHES)	11.31		2.95		5.73	
10 PERCENT EXCEEDS	11300		2130		4720	
50 PERCENT EXCEEDS	610		571		647	
90 PERCENT EXCEEDS	165		239		105	

a Also Oct. 8
b. Also Oct. 8, 9..
e Estimated.



05481000 BOONE RIVER NEAR WEBSTER CITY, IA

LOCATION.--Lat 42°26'01", long 93°48'12", in NW$^{1}/_{4}$ SE$^{1}/_{4}$ sec.18, T.88 N., R.25 W., Hamilton County, Hydrologic Unit 07100005, on right bank 100 ft upstream from bridge on State Highway 17, 2.5 mi south of Webster City, and 3.2 mi downstream from Brewers Creek.

DRAINAGE AREA.--844 mi^2.

PERIOD OF RECORD.--March 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1308: 1940 (M), WSP 1708: 1956.

GAGE.--Water-stage recorder. Datum of gage is 989.57 ft above NGVD of 1929. Prior to June 26, 1940, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1896, 19.1 ft about June 10, 1918, from floodmarks, from information by local resident, discharge, 21,500 ft^3/s. Flood of June 18, 1932, reached a stage of 16.0 ft, discharge, 15,000 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	69	390	e170	e80	e165	138	969	414	150	34	282
2	45	64	333	e95	e90	e150	145	887	463	132	31	237
3	36	57	295	e105	e86	e140	137	873	464	119	27	196
4	36	54	274	e125	e80	e185	128	879	424	130	193	168
5	36	54	263	e130	e82	e215	121	810	400	159	1290	144
6	34	53	273	e85	e83	e225	121	785	475	135	2100	126
7	34	54	556	e80	e80	e220	127	720	499	171	1920	112
8	32	50	540	e113	e84	e215	134	671	464	122	1200	100
9	31	45	453	e95	e88	e220	132	641	431	103	781	91
10	43	45	398	e80	e78	e210	124	638	401	184	525	84
11	42	47	364	e95	e100	e205	148	937	450	367	356	79
12	42	45	333	e88	118	236	298	1870	462	294	397	76
13	64	45	306	e105	115	259	441	1900	532	204	2180	73
14	88	47	281	e95	125	267	519	1540	642	152	2840	72
15	82	47	261	e92	e135	272	534	1260	590	120	2380	71
16	71	45	245	e98	e145	253	483	1060	520	100	1610	69
17	70	43	229	e120	e150	238	450	884	457	86	1540	67
18	68	41	221	e110	e170	222	402	750	950	76	2270	92
19	63	42	e200	e125	e220	239	367	658	624	72	1820	215
20	61	40	e180	e130	e210	230	332	601	510	63	1200	157
21	59	36	e150	e115	e212	204	348	581	463	55	856	124
22	71	38	e120	e122	e208	143	334	548	442	63	1190	111
23	89	46	e100	e105	e200	206	324	531	371	59	2350	104
24	96	82	e105	e95	e195	207	323	488	327	62	2160	99
25	83	157	e145	e100	e190	197	298	504	295	58	1660	96
26	76	270	e195	101	e135	168	271	484	265	49	1200	94
27	75	453	e215	106	e150	151	381	469	236	84	889	110
28	71	535	e230	e98	e180	156	1090	453	215	63	e671	102
29	67	513	e190	e95	---	154	1270	519	189	52	529	107
30	66	448	e200	e82	---	147	1120	491	169	58	425	109
31	66	---	e185	e88	---	145	---	447	---	45	343	---
TOTAL	1842	3565	8230	3243	3789	6244	11040	24848	13144	3587	36967	3567
MEAN	59.42	118.8	265.5	104.6	135.3	201.4	368.0	801.5	438.1	115.7	1192	118.9
MAX	96	535	556	170	220	272	1270	1900	950	367	2840	282
MIN	31	36	100	80	78	140	121	447	169	45	27	67
MED	64	48	245	100	130	207	324	671	454	100	1200	103
AC-FT	3650	7070	16320	6430	7520	12380	21900	49290	26070	7110	73320	7080
CFSM	0.07	0.14	0.31	0.12	0.16	0.24	0.44	0.95	0.52	0.14	1.41	0.14
IN.	0.08	0.16	0.36	0.14	0.17	0.28	0.49	1.10	0.58	0.16	1.63	0.16

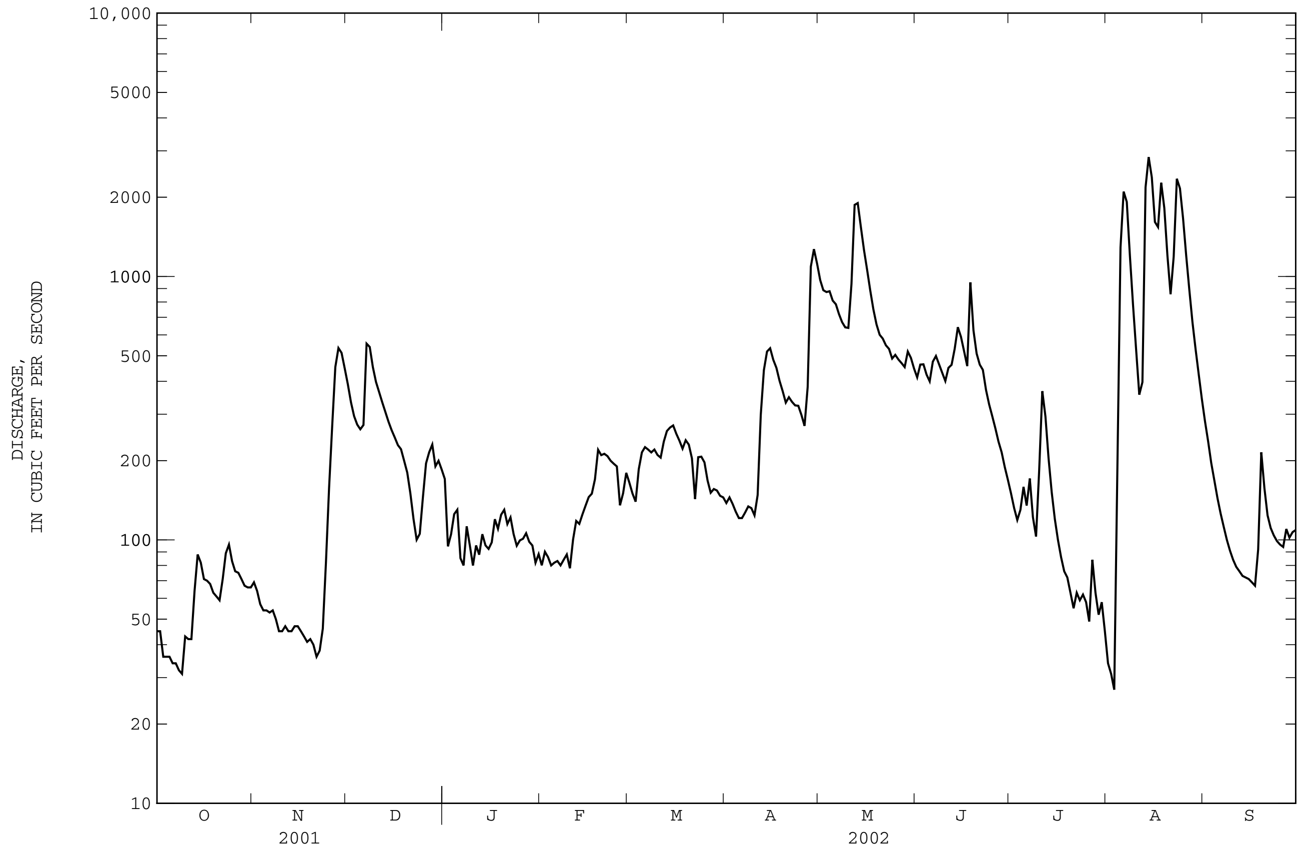
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	231.3	217.3	145.2	97.71	248.2	802.2	946.8	845.1	1073	578.0	263.0	209.3
MAX	1771	1395	1181	568	1847	2826	4307	4315	4239	4715	2942	2501
(WY)	1987	1993	1983	1983	1984	1973	1965	1991	1984	1993	1993	1965
MIN	6.66	11.0	4.62	0.32	3.60	32.5	33.7	46.0	14.1	8.66	9.79	6.48
(WY)	1950	1950	1977	1977	1950	1968	1957	1968	1977	1977	1949	1976

05481000 BOONE RIVER NEAR WEBSTER CITY, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1941 - 2002	
ANNUAL TOTAL	328700		120066			
ANNUAL MEAN	900.5		328.9		471.5	
HIGHEST ANNUAL MEAN					1861	1993
LOWEST ANNUAL MEAN					36.1	1956
HIGHEST DAILY MEAN	8220	May 5	2840	Aug 14	19500	Jun 22 1954
LOWEST DAILY MEAN	31	Oct 9	27	Aug 3	0.00	Feb 7 1977
ANNUAL SEVEN-DAY MINIMUM	34	Oct 3	34	Oct 3	0.01	Feb 1 1977
MAXIMUM PEAK FLOW			2890	Aug 14	20300	Jun 22 1954
MAXIMUM PEAK STAGE			6.40	Aug 14	18.55	Jun 22 1954
INSTANTANEOUS LOW FLOW			26	Aug 3a	0.00	Feb 7 1977
ANNUAL RUNOFF (AC-FT)	652000		238200		341600	
ANNUAL RUNOFF (CFSM)	1.07		0.39		0.56	
ANNUAL RUNOFF (INCHES)	14.49		5.29		7.59	
10 PERCENT EXCEEDS	3220		783		1210	
50 PERCENT EXCEEDS	143		159		138	
90 PERCENT EXCEEDS	45		54		17	

a Also Aug. 4
e Estimated



05481300 DES MOINES RIVER NEAR STRATFORD, IA

LOCATION.--Lat 42°15'04", long 93°59'52", in NW$^1/_4$ NE$^1/_4$ sec.21, T.86 N., R.27 W., Webster County, Hydrologic Unit 07100004, on right bank 6 ft downstream from bridge on State Highway 175, 0.1 mi downstream from Skillet Creek, 4.0 mi southwest of Stratford, 7.3 mi downstream from Boone River, and at mile 276.7.

DRAINAGE AREA.--5,452 mi^2.

PERIOD OF RECORD.--October 1967 to current year in reports of U.S. Geological Survey. Replacement station for 05481500 "near Boone", which operated April 1920 to September 1968. Records not necessarily equivalent.

GAGE.--Water-stage recorder. Datum of gage is 894.00 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Occasional minor regulation caused by dam at Fort Dodge. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of May 30, 1903, reached a stage of 25.4 ft, from high-water mark, site and datum then in use, discharge, 43,600 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	330	294	1190	e845	e562	e738	980	3820	2480	1160	322	1550
2	324	289	1100	e797	e577	e726	1050	3670	2700	1050	306	1370
3	319	288	996	e787	e566	e716	1120	3500	2970	950	304	1200
4	311	281	926	e769	e587	e710	1170	3460	2720	889	375	1050
5	301	274	890	e761	e594	e747	1240	3300	2570	1040	821	913
6	287	271	873	e752	e600	e821	1270	3230	2570	882	3480	809
7	273	271	976	e751	e597	e788	1230	3150	2550	983	4770	727
8	263	267	1150	e759	e613	e763	1220	3110	2430	867	4300	658
9	258	263	1180	e736	e605	e791	1220	2870	2320	763	3280	593
10	264	264	1130	e717	e616	e773	1190	2630	2210	842	2510	560
11	281	264	1100	e727	e649	e754	1180	2780	2330	1120	2090	535
12	288	269	1050	e709	e605	e769	1350	5040	2460	1220	1830	513
13	292	270	1000	e721	e611	e823	1530	7380	3420	1090	3470	495
14	316	266	965	e701	e595	e851	1810	6830	4400	945	7670	485
15	339	271	934	e701	e603	893	2010	5770	4080	779	6770	481
16	341	271	908	e678	e611	882	2050	5170	3610	676	4850	466
17	332	270	873	e702	e623	858	2020	4620	3190	611	3720	454
18	328	267	847	e671	e653	862	1940	4090	3120	565	5270	473
19	318	263	827	e684	e689	922	1870	3680	3000	527	5370	617
20	310	260	810	e694	e763	1080	1800	3350	2540	487	3840	565
21	305	258	794	e664	e756	1090	1800	3090	2380	457	2840	508
22	302	254	e734	e640	e734	1050	1790	2870	2280	429	2460	475
23	321	254	e675	e619	e740	828	1720	2730	2150	474	4920	440
24	352	282	e692	e581	e745	1010	1700	2620	1960	442	5770	428
25	351	368	e771	e561	e738	1160	1700	2480	1790	417	4970	414
26	337	475	e817	e567	e655	1020	1640	2410	1650	399	3980	406
27	320	627	e867	e553	e548	912	1670	2280	1550	416	3200	428
28	307	910	e888	e534	e532	884	3140	2140	1470	446	2680	440
29	294	1210	e878	e525	---	897	4050	2300	1390	395	2330	431
30	291	1270	e893	e518	---	906	4080	2820	1280	350	2010	434
31	297	---	e870	e561	---	932	---	2740	---	344	1750	---
TOTAL	9552	11341	28604	20985	17767	26956	52540	109930	75570	22015	102258	18918
MEAN	308.1	378.0	922.7	676.9	634.5	869.5	1751	3546	2519	710.2	3299	630.6
MAX	352	1270	1190	845	763	1160	4080	7380	4400	1220	7670	1550
MIN	258	254	675	518	532	710	980	2140	1280	344	304	406
AC-FT	18950	22490	56740	41620	35240	53470	104200	218000	149900	43670	202800	37520
CFSM	0.06	0.07	0.17	0.12	0.12	0.16	0.32	0.65	0.46	0.13	0.61	0.12
IN.	0.07	0.08	0.20	0.14	0.12	0.18	0.36	0.75	0.52	0.15	0.70	0.13

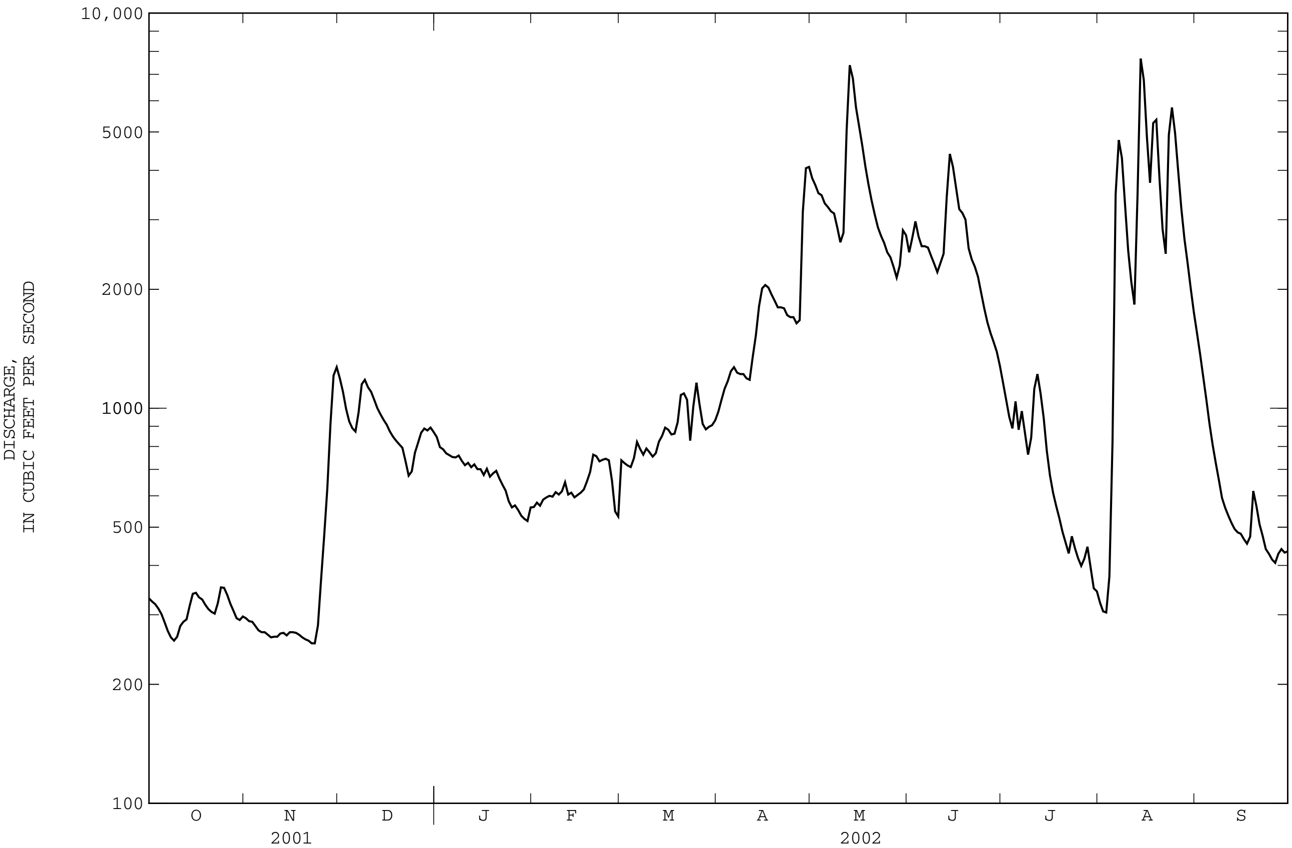
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1578	1661	1224	740.6	1258	4252	6643	5679	6038	4299	2000	1296
MAX	8763	5745	5267	3267	7061	13920	22020	17120	21310	27250	13500	7546
(WY)	1987	1993	1983	1992	1984	1983	1993	2001	1993	1993	1993	1993
MIN	69.4	96.3	44.4	18.7	57.7	204	348	296	177	156	122	69.5
(WY)	1977	1977	1977	1977	1977	1968	2000	1968	1977	1977	1976	1976

05481300 DES MOINES RIVER NEAR STRATFORD, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1968 - 2002	
ANNUAL TOTAL	1726288		496436			
ANNUAL MEAN	4730		1360		3060	
HIGHEST ANNUAL MEAN					10400	1993
LOWEST ANNUAL MEAN					254	1977
HIGHEST DAILY MEAN	32700	May 5	7670	Aug 14	41400	Apr 2 1993
LOWEST DAILY MEAN	220	Feb 3	254	Nov 22	13	Jan 23 1977a
ANNUAL SEVEN-DAY MINIMUM	254	Feb 17	261	Nov 17	14	Jan 22 1977
MAXIMUM PEAK FLOW			7900	Aug 14	423000	Apr 2 1993
MAXIMUM PEAK STAGE			11.14	Aug 14	25.68	Apr 2 1993
INSTANTANEOUS LOW FLOW			252	Nov 22	13	Jan 23 1977
ANNUAL RUNOFF (AC-FT)	3424000		984700		2217000	
ANNUAL RUNOFF (CFSM)	0.87		0.25		0.56	
ANNUAL RUNOFF (INCHES)	11.78		3.39		7.63	
10 PERCENT EXCEEDS	15600		3250		8400	
50 PERCENT EXCEEDS	830		821		1300	
90 PERCENT EXCEEDS	270		302		190	

a Also Jan. 24, 1977.
e Estimated.



05481630 SAYLORVILLE LAKE NEAR SAYLORVILLE, IA

LOCATION.--Lat 41°42'13", long 93°41'21", in SE $^{1}/_{4}$ SW $^{1}/_{4}$ sec.30, T.80 N., R.24 W., Polk County, Hydrologic Unit 07100004, in control tower of Saylorville Dam, 3.2 mi northwest of Saylorville, 4.2 mi upstream from Beaver Creek, and at mile 213.7.

DRAINAGE AREA.--5,823 mi^2.

PERIOD OF RECORD.--April 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is at NGVD of 1929 (levels by U.S. Army Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam completed in 1976. Storage began in April 1977. Release controlled at intake structure to forechamber of 22 ft diameter concrete conduit through dam. Ungated chute spillway 430 ft in length at right end of dam at elevation 884 ft, contents, 570,000 acre-ft. Conservation pool at elevation 836 ft, contents, 90,000 acre-ft, surface area, 5,950 acres. Flood pool elevation at 890 ft, contents, 586,000 acre-ft, surface area, 16,700 acres. Reservoir is used for flood control, low-flow augmentation, conservation and recreation. Storage tables for water years 1985-1986 published as day second-feet instead of acre-feet storage. Prior to October 1, 2000 published as contents in acre feet, and as elevation in feet NGVD thereafter.

COOPERATION.--Records provided by U.S. Army Corps of Engineers.

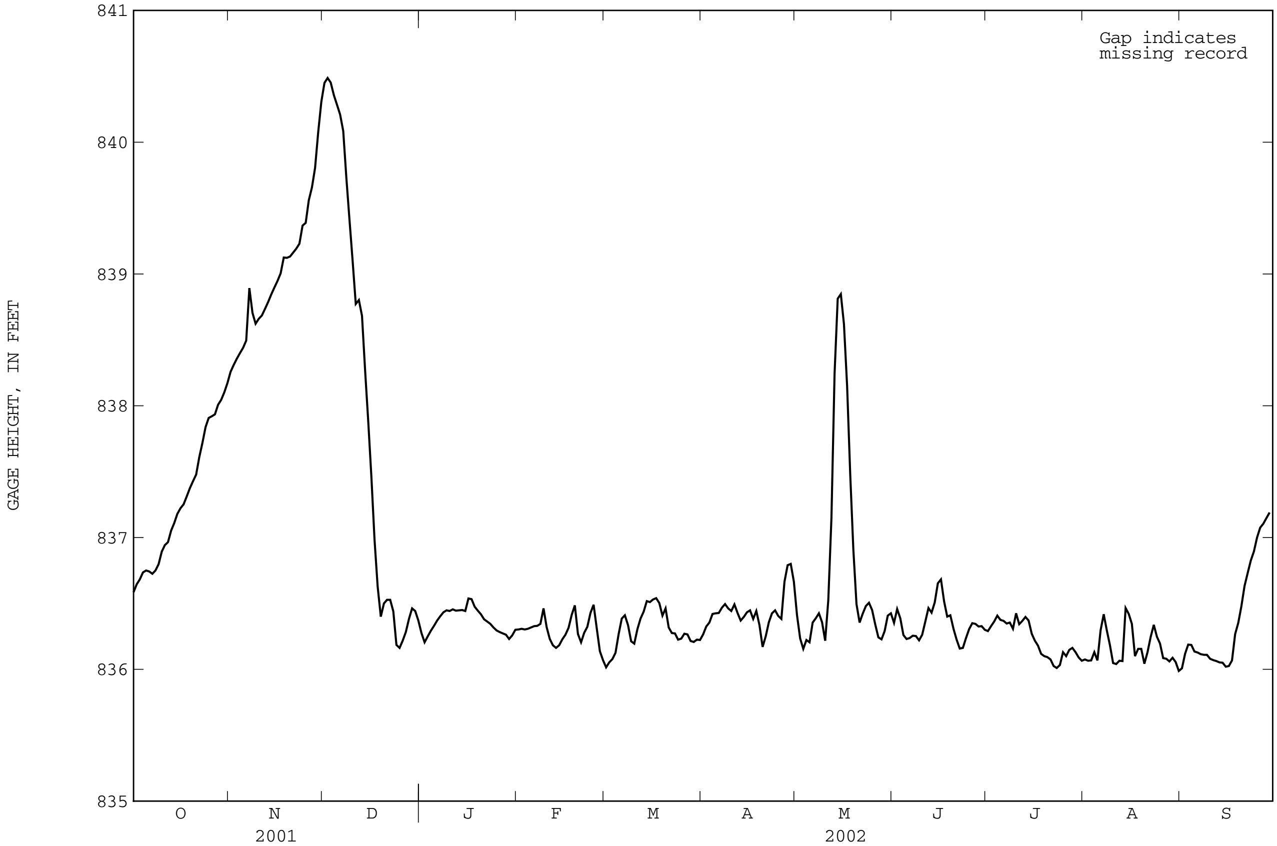
EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 892.00 ft July 14, 1993; minimum elevation, 832.61 ft Jan. 19, 1979.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 840.49 ft Dec. 3; minimum elevation, 835.97 ft Sept. 1.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY OBSERVATION AT 0600 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	836.54	838.19	840.36	836.35	836.31	836.06	836.22	836.62	836.42	836.29	836.06	835.97
2	836.60	838.28	840.48	836.25	836.30	836.00	836.28	836.34	836.33	836.29	836.08	836.02
3	836.66	838.32	840.49	836.19	836.31	836.07	836.34	836.20	836.50	836.34	836.06	836.15
4	836.69	838.37	840.44	836.27	836.30	836.08	836.36	836.14	836.35	836.37	836.07	836.20
5	836.75	838.41	840.33	836.30	836.31	836.14	836.44	836.25	836.23	836.42	836.15	836.18
6	836.75	838.45	840.27	836.34	836.32	836.31	836.42	836.19	836.23	836.36	836.04	836.12
7	836.74	838.51	840.19	836.38	836.33	836.41	836.43	836.41	836.24	836.37	836.38	836.13
8	836.72	839.02	840.05	836.41	836.33	836.41	836.48	836.38	836.26	836.34	836.43	836.11
9	836.76	838.60	839.62	836.44	836.35	836.31	836.50	836.44	836.25	836.36	836.25	836.11
10	836.81	838.63	839.34	836.45	836.50	836.18	836.45	836.33	836.21	836.29	836.16	836.11
11	836.92	838.67	839.02	836.44	836.26	836.20	836.44	836.18	836.28	836.47	836.01	836.07
12	836.95	838.69	838.69	836.46	836.22	836.34	836.51	836.64	836.39	836.30	836.05	836.07
13	836.97	838.75	838.84	836.44	836.17	836.40	836.40	837.32	836.49	836.39	836.07	836.06
14	837.08	838.80	838.63	836.45	836.16	836.45	836.36	838.55	836.41	836.40	836.06	836.05
15	837.12	838.86	838.14	836.45	836.19	836.54	836.41	838.90	836.54	836.36	836.60	836.05
16	837.20	838.91	837.79	836.44	836.24	836.50	836.44	838.83	836.69	836.24	836.36	836.01
17	837.23	838.96	837.35	836.57	836.27	836.54	836.45	838.55	836.68	836.21	836.34	836.03
18	837.26	839.02	836.86	836.52	836.33	836.54	836.36	838.02	836.46	836.17	836.02	836.08
19	837.33	839.16	836.55	836.46	836.44	836.49	836.47	837.30	836.38	836.10	836.20	836.33
20	837.39	839.11	836.35	836.44	836.50	836.38	836.29	836.78	836.42	836.10	836.14	836.36
21	837.44	839.14	836.55	836.41	836.19	836.49	836.13	836.40	836.27	836.09	836.01	836.52
22	837.49	839.17	836.52	836.37	836.21	836.26	836.29	836.34	836.21	836.07	836.17	836.67
23	837.65	839.20	836.53	836.36	836.30	836.28	836.38	836.45	836.14	836.01	836.27	836.75
24	837.74	839.24	836.41	836.34	836.33	836.27	836.44	836.49	836.17	836.01	836.36	836.85
25	837.87	839.41	836.11	836.31	836.46	836.21	836.45	836.51	836.26	836.04	836.21	836.91
26	837.92	839.38	836.18	836.29	836.50	836.24	836.39	836.43	836.32	836.16	836.19	837.03
27	837.92	839.62	836.23	836.28	836.25	836.28	836.38	836.31	836.36	836.08	836.05	837.09
28	837.94	839.67	836.30	836.27	836.10	836.26	836.76	836.22	836.34	836.17	836.09	837.11
29	838.03	839.85	836.41	836.26	---	836.20	836.80	836.23	836.32	836.16	836.05	837.16
30	838.05	840.15	836.48	836.22	---	836.21	836.80	836.31	836.33	836.12	836.10	837.20
31	838.12	---	836.43	836.27	---	836.23	---	836.44	---	836.08	836.04	---
MEAN	837.25	838.95	838.06	836.37	836.30	836.30	836.43	836.79	836.35	836.23	836.16	836.38
MAX	838.12	840.15	840.49	836.57	836.50	836.54	836.80	838.90	836.69	836.47	836.60	837.20
MIN	836.54	838.19	836.11	836.19	836.10	836.00	836.13	836.14	836.14	836.01	836.01	835.97

05481630 SAYLORVILLE LAKE NEAR SAYLORVILLE, IA--Continued



05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA

LOCATION.--Lat 41°40'50", long 93°40'05", SW$^1/_4$ NE$^1/_4$ NE$^1/_4$ sec.5, T.79 N., R.24 W., Polk County, Hydrologic Unit 07100004, on left bank 5 ft upstream of Fisher Bridge on county highway R6F, 2.0 mi west of Saylorville, 2.1 mi downstream from Rock Creek, 2.3 mi downstream from Saylorville Dam, 2.3 mi upstream from Beaver Creek, and at mile 211.4.

DRAINAGE AREA.--5,841 mi^2.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 787.42 ft above NGVD of 1929 (levels by U. S. Army Corps of Engineers). Prior to Aug. 6, 1970, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated by Saylorville Lake (Station 05481630) 2.3 mi upstream since Apr. 12, 1977. U.S. Army Corps of Engineers satellite data collection platform and U.S. National Weather Service Limited Automatic Remote Collector (LARC) at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 47,400 ft^3/s Apr. 10, 1965, gage height, 24.02 ft; minimum daily discharge, 13 ft^3/s Jan. 25, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1893, 24.5 ft June 24, 1954, from floodmarks, discharge, 60,000 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	204	171	993	1160	473	640	897	4910	3210	1370	315	2080
2	171	189	1160	983	470	e395	894	4480	3210	1090	259	1620
3	192	208	1270	699	468	e412	892	3950	3720	1000	261	1510
4	212	209	1270	e484	461	e340	893	3520	3840	1000	265	1500
5	211	210	1260	e478	460	297	1080	3320	3220	1170	849	1390
6	211	201	1240	e472	463	517	1200	3310	2920	1160	1290	1150
7	213	192	1560	e475	472	868	1200	3300	2810	1090	3140	990
8	214	186	2400	e478	477	1190	1200	3310	2810	1050	4960	927
9	207	186	2380	535	479	1270	1190	3290	2800	1030	4540	835
10	211	187	2370	587	820	882	1200	3070	2620	1160	3740	771
11	205	184	2400	618	840	e550	1200	2940	2530	2030	2930	680
12	195	186	1640	639	666	791	1340	3690	2850	1030	2390	629
13	196	187	1170	648	639	863	1440	4570	3430	1320	2390	605
14	195	187	2510	647	555	980	1440	5820	3800	1320	3580	587
15	197	187	2380	647	554	1020	1590	6770	4180	1330	7060	586
16	198	187	2380	406	554	1020	1910	6740	4160	1050	6930	516
17	201	185	2450	402	555	1070	2060	6690	4150	864	5280	311
18	204	184	2260	821	594	1190	2080	6640	3740	863	4460	201
19	203	181	1250	646	907	1350	2060	5940	3400	717	5190	385
20	205	180	928	652	1520	1420	2050	4990	3370	606	5610	371
21	203	181	985	658	1280	1390	1720	3930	3060	609	3960	198
22	209	183	987	663	848	1240	1470	3250	2710	604	3060	197
23	209	182	975	659	1010	1150	1640	3140	2430	461	3360	197
24	203	182	1030	665	1110	1140	1760	3120	2130	279	5160	196
25	199	181	618	672	1110	1140	1760	3140	1900	281	6070	197
26	199	182	176	673	1100	1140	1640	3140	1810	386	5380	260
27	203	514	269	679	986	1140	1600	3000	1810	462	4310	327
28	207	780	548	666	805	1140	2110	2680	1720	465	3500	339
29	206	781	840	655	---	1000	3420	2530	1550	547	2970	349
30	187	836	931	543	---	902	4760	2800	1550	534	2710	356
31	173	---	1000	471	---	903	---	3110	---	408	2490	---
TOTAL	6243	7789	43630	19481	20676	29350	49696	125090	87440	27286	108409	20260
MEAN	201.4	259.6	1407	628.4	738.4	946.8	1657	4035	2915	880.2	3497	675.3
MAX	214	836	2510	1160	1520	1420	4760	6770	4180	2030	7060	2080
MIN	171	171	176	402	460	297	892	2530	1550	279	259	196
AC-FT	12380	15450	86540	38640	41010	58220	98570	248100	173400	54120	215000	40190
CFSM	0.03	0.04	0.24	0.11	0.13	0.16	0.28	0.69	0.50	0.15	0.60	0.12
IN.	0.04	0.05	0.28	0.12	0.13	0.19	0.32	0.80	0.56	0.17	0.69	0.13

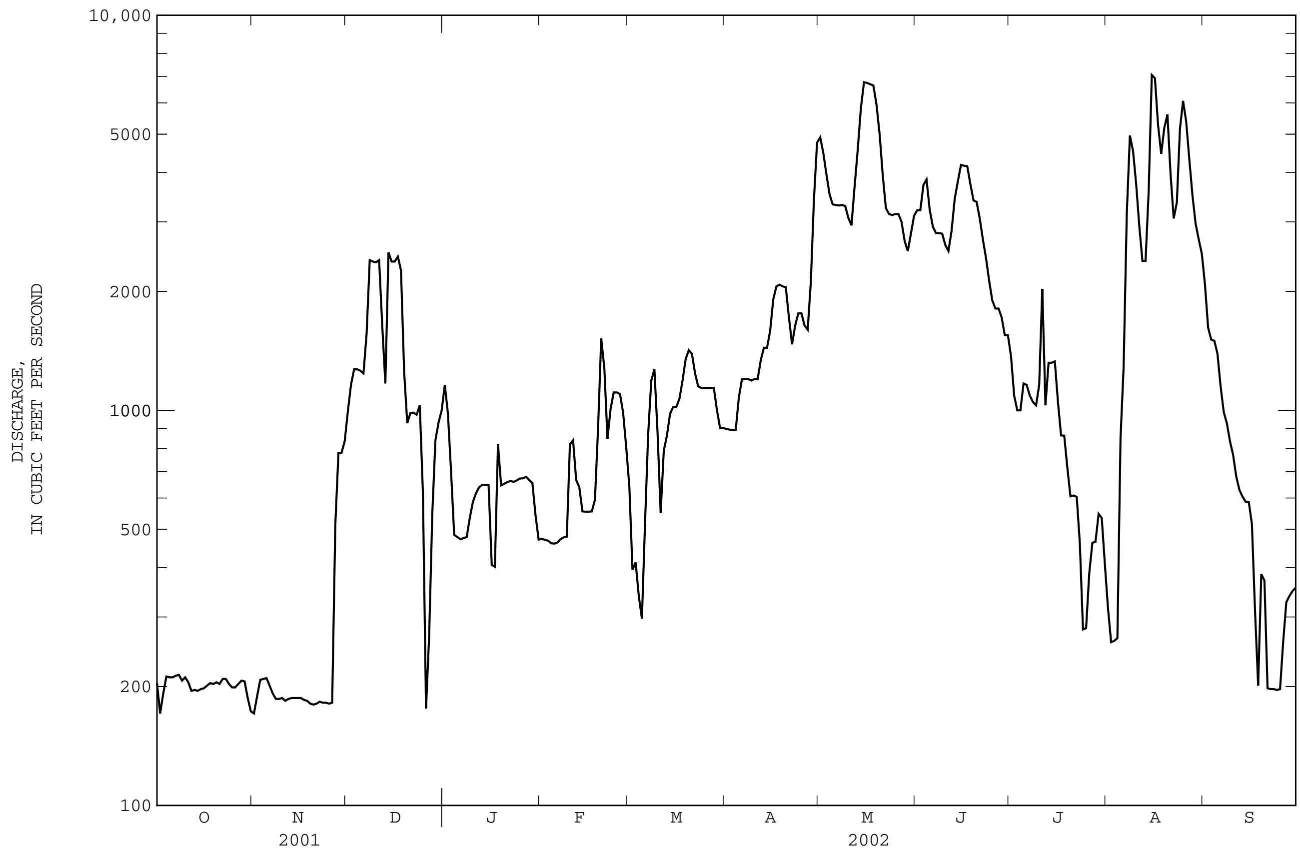
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 2002, BY WATER YEAR (WY)

MEAN	1711	2007	1663	920.8	1525	4317	6938	6583	7146	6388	3123	2000
MAX	7161	6210	5345	3605	6591	13800	17790	18170	19540	32820	15440	13450
(WY)	1987	1987	1983	1983	1984	1983	1993	1993	1991	1993	1993	1993
MIN	194	190	205	190	204	362	365	741	877	254	212	225
(WY)	1990	1990	1990	1991	2000	1981	2000	2000	1988	1988	1989	1988

05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1978 - 2002a	
ANNUAL TOTAL	1792667		545350			
ANNUAL MEAN	4911		1494		3701	
HIGHEST ANNUAL MEAN					11320	1993
LOWEST ANNUAL MEAN					487	1989
HIGHEST DAILY MEAN	16900	Apr 16	7060	Aug 15	44300	Jul 21 1993
LOWEST DAILY MEAN	164	Jan 27	171	Oct 2b	144	Nov 29 1977
ANNUAL SEVEN-DAY MINIMUM	181	Nov 19	181	Nov 19	165	Mar 5 1978
MAXIMUM PEAK FLOW			8160	Aug 16	45700	Jul 21 1993
MAXIMUM PEAK STAGE			9.42	Aug 16	24.22	Jul 21 1993
INSTANTANEOUS LOW FLOW			164	Nov 1		
ANNUAL RUNOFF (AC-FT)	3556000		1082000		2681000	
ANNUAL RUNOFF (CFSM)	0.84		0.26		0.63	
ANNUAL RUNOFF (INCHES)	11.42		3.47		8.61	
10 PERCENT EXCEEDS	14500		3540		11100	
50 PERCENT EXCEEDS	956		986		1830	
90 PERCENT EXCEEDS	195		198		234	

a Post regulation
b Also Nov. 1.
e Estimated.



05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD: October 1961 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: December 1967 to current year.
WATER TEMPERATURES: October 1961 to current year.
SUSPENDED-SEDIMENT DISCHARGE: October 1961 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis. During periods of partial ice cover, sediment samples are collected in open water channel.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 1,400 microsiemens Feb. 18, 1977; minimum daily, 90 microsiemens Feb. 19, 1971.
WATER TEMPERATURES: Maximum daily, 36.0°C June 29, 1971; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 5,400 mg/L May 14, 1970; minimum daily mean, 1 mg/L Jan. 8, 1965, Sept. 1, 1988, Feb. 9, July 8, 1990, Dec. 4, 5, and Dec. 9, 2000.
SEDIMENT LOADS: Maximum daily, 148,000 tons June 12, 1966; minimum daily, 0.56 tons Sept. 1, 1988.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 779 microsiemens Jan. 20; minimum daily, 241 microsiemens Sept. 4.
WATER TEMPERATURES: Maximum daily, 31.0°C July 18 and Aug. 4; minimum daily, 1.0°C Mar. 12.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 227 mg/L Feb. 4; minimum daily mean, 4.1 mg/L Dec. 22.
SEDIMENT LOADS: Maximum daily, 1,170 tons Aug. 26; minimum daily, 4.2 tons Nov. 23.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

Date	Time	TEMPER-ATURE WATER (DEG C) (00010)	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)
OCT						
29...	1450	11.0	214	--	--	--
NOV						
06...	1500	16.0	197	18	9.6	99
DEC						
13...	1310	6.3	533	23	33.1	81
MAR						
05...	1325	1.2	308	26	21.6	72
APR						
10...	1635	8.1	1220	24	79.1	74
MAY						
22...	1400	15.5	3180	40	343	66
JUL						
09...	1450	29.0	1030	19	52.8	98
AUG						
21...	1415	23.0	3820	74	763	93

SPECIFIC CONDUCTANCE, in MICROSIEMENS/CM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	518	542	553	---	---	---	646	628	---	621	---	521
2	514	536	552	---	---	---	597	619	608	637	---	---
3	510	538	553	---	---	---	655	625	595	644	---	565
4	509	534	558	616	---	---	674	627	622	624	598	241
5	513	533	570	710	647	637	---	---	611	633	588	481
6	512	545	---	---	719	580	676	650	619	627	597	573
7	505	539	583	---	639	576	---	---	589	---	585	509
8	512	532	568	699	---	693	649	651	604	628	587	---
9	508	538	570	614	---	---	663	636	---	622	589	532
10	510	546	586	516	---	---	607	640	---	583	591	594
11	508	---	609	673	---	653	671	639	618	605	---	593
12	509	---	---	710	---	576	662	---	626	618	596	589
13	507	539	---	641	712	661	649	662	618	---	584	576
14	509	538	605	614	708	651	---	625	619	614	575	555
15	510	547	603	642	649	572	665	657	625	608	580	---
16	516	541	618	608	729	659	570	646	564	592	597	589
17	518	548	624	713	583	---	646	640	604	626	608	575
18	519	544	627	---	671	601	597	620	638	596	601	580
19	525	---	631	657	648	603	635	---	625	592	606	584
20	---	---	618	779	605	593	---	544	---	---	568	600
21	---	549	627	622	601	---	---	---	---	592	538	582
22	---	---	---	692	614	682	623	565	---	600	548	---
23	---	551	---	665	571	615	639	699	578	596	607	581
24	---	547	---	---	608	643	608	594	674	601	---	583
25	---	547	---	669	562	586	638	616	571	596	---	586
26	517	---	---	654	---	574	632	---	672	597	485	592
27	---	---	---	689	---	643	630	---	652	---	611	589
28	---	---	---	613	630	---	635	683	652	---	483	584
29	521	560	---	---	---	595	630	622	583	---	607	591
30	519	560	---	603	---	637	588	612	623	---	516	588
31	516	---	---	---	---	647	---	627	---	---	---	---

05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA--Continued

WATER TEMPERATURE, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18.0	17.0	7.5	---	---	---	9.0	13.0	28.0	28.0	---	23.0
2	23.0	15.0	9.0	---	---	---	6.0	11.0	23.5	27.0	---	---
3	18.0	11.0	8.0	---	---	---	5.5	14.0	22.5	30.5	---	22.0
4	16.0	17.0	10.0	3.0	---	---	7.0	15.0	22.0	30.0	31.0	25.0
5	16.0	16.0	10.0	4.0	5.0	6.0	---	---	22.0	30.0	30.0	25.0
6	13.5	15.0	---	---	5.5	1.5	9.0	18.0	23.0	29.5	27.0	25.0
7	14.5	14.0	8.0	---	6.5	2.0	---	---	23.0	---	27.0	26.0
8	17.0	11.0	8.0	6.0	---	2.0	7.5	17.0	23.0	28.5	28.5	---
9	16.0	9.0	7.0	3.5	---	---	8.0	14.5	---	30.0	28.5	28.0
10	16.0	10.5	7.5	3.0	---	---	8.1	18.0	---	24.5	29.0	25.0
11	13.5	---	7.0	3.5	---	4.0	10.5	15.0	23.0	25.5	---	25.0
12	14.0	---	---	3.0	---	1.0	9.0	---	24.0	25.5	26.0	22.0
13	15.0	12.0	---	5.0	5.0	5.5	11.0	18.0	25.0	---	24.5	25.0
14	15.0	14.0	5.5	2.0	6.0	4.0	---	14.0	24.0	25.0	28.0	25.0
15	11.0	13.0	8.0	2.0	6.0	4.0	15.0	15.0	23.0	29.0	26.0	---
16	14.0	17.0	8.0	---	5.5	3.5	15.0	15.0	25.5	25.0	27.0	23.0
17	15.5	12.0	7.0	3.5	7.0	---	16.0	15.0	23.5	28.0	25.0	21.0
18	13.0	14.0	7.0	---	7.0	6.0	17.0	15.5	24.0	31.0	25.0	23.0
19	11.0	---	5.5	2.5	6.0	5.0	15.0	---	25.0	29.0	27.0	21.0
20	---	---	5.0	3.0	4.0	5.0	---	15.5	---	---	21.0	21.0
21	---	12.0	5.0	2.5	3.5	---	---	---	---	29.5	23.0	20.5
22	---	---	---	3.0	3.0	3.0	13.5	16.5	---	28.0	25.0	---
23	---	10.0	---	3.5	7.0	5.5	14.5	18.0	25.0	27.5	22.5	20.0
24	---	11.0	---	---	9.0	3.5	13.0	16.5	27.0	26.0	---	16.0
25	---	8.5	---	5.5	2.5	5.5	13.5	17.0	28.0	27.0	---	18.0
26	9.0	---	---	5.0	---	3.5	14.0	---	26.0	27.0	24.0	19.0
27	---	---	---	7.0	---	7.0	11.0	---	26.0	---	25.0	17.0
28	---	---	---	3.5	2.0	---	12.0	19.0	25.5	---	27.0	16.5
29	11.0	7.5	---	---	---	9.0	13.5	19.0	27.5	---	26.0	23.0
30	11.0	7.8	---	2.0	---	6.5	11.0	21.0	28.0	---	26.0	21.5
31	14.0	---	---	---	---	7.5	---	24.0	---	---	---	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

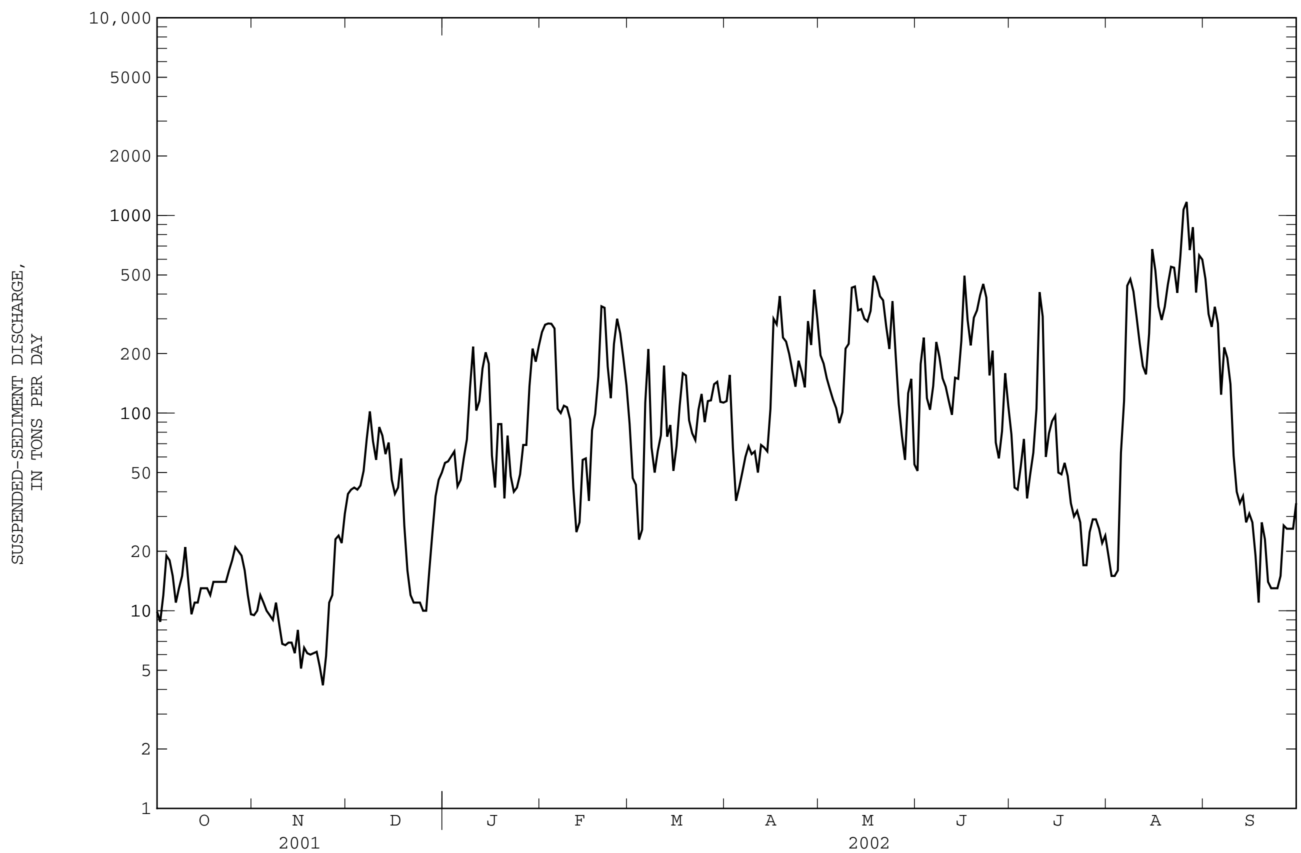
DAY	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	18	9.9	21	9.5	15	39.0	18	56.0	201	257	51	88.1
2	19	8.8	20	10.0	13	41.0	22	57.0	221	280	44	46.9
3	24	12.0	21	12.0	12	42.0	32	60.4	225	284	39	43.4
4	34	19.0	20	11.0	12	41.0	49	64.0	227	283	25	22.9
5	31	18.0	18	10.0	13	43.0	33	42.6	215	268	32	25.7
6	27	15.0	17	9.5	15	51.0	36	45.9	84	105	78	113
7	20	11.0	17	9.0	17	74.0	46	59.0	78	100	91	211
8	22	13.0	23	11.0	16	102	57	73.6	85	109	22	67.0
9	27	15.0	17	8.6	11	72.0	93	134	83	107	15	50.0
10	37	21.0	13	6.8	9.0	58.0	137	217	47	93.0	27	64.3
11	25	14.0	13	6.7	13	85.0	62	103	18	42.0	52	77.2
12	18	9.6	14	6.9	18	77.0	66	115	14	25.0	82	174
13	20	11.0	14	6.9	21	62.0	96	168	16	28.0	33	76.0
14	20	11.0	12	6.1	10	71.0	116	203	39	58.0	33	87.0
15	25	13.0	16	8.0	7.2	46.0	102	178	39	59.0	19	51.0
16	24	13.0	10	5.1	6.1	39.0	49	61.0	24	36.0	25	68.0
17	24	13.0	13	6.5	6.3	42.0	38	42.0	54	82.0	38	109
18	22	12.0	12	6.1	9.7	59.0	39	88.0	62	99.0	50	159
19	26	14.0	12	6.0	7.7	27.0	51	88.0	62	153	43	155
20	26	14.0	13	6.1	6.6	16.0	21	37.0	81	347	24	92.0
21	26	14.0	13	6.2	4.4	12.0	43	77.0	98	341	21	79.0
22	25	14.0	10	5.2	4.1	11.0	27	48.0	75	172	22	73.0
23	25	14.0	8.6	4.2	4.2	11.0	22	40.0	44	119	33	104
24	29	16.0	12	5.9	4.2	11.0	24	42.0	75	224	41	125
25	34	18.0	22	11.0	13	10.0	27	49.0	101	300	29	90.0
26	39	21.0	23	12.0	22	10.0	38	69.0	85	253	38	115
27	37	20.0	18	23.0	22	16.0	37	69.0	71	189	38	116
28	33	19.0	11	24.0	17	25.0	76	137	63	138	45	140
29	29	16.0	11	22.0	17	38.0	120	212	---	---	53	144
30	23	12.0	14	31.0	18	46.0	125	182	---	---	47	114
31	20	9.6	---	---	18	50.0	172	219	---	---	46	113
TOTAL	---	440.9	---	306.3	---	1327.0	---	3036.5	---	4551.0	---	2993.5

05481650 DES MOINES RIVER NEAR SAYLORVILLE, IA--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	47	115	15	196	5.8	51.0	21	78.0	22	19.0	84	477
2	65	156	15	178	20	177	14	42.0	22	15.0	72	317
3	28	67.0	14	150	24	241	15	41.0	22	15.0	67	273
4	15	36.0	14	132	11	119	20	54.0	23	16.0	85	345
5	14	42.0	13	117	12	104	24	74.0	27	63.0	76	283
6	15	50.0	12	106	17	137	12	37.0	33	115	41	124
7	18	60.0	9.9	89.0	30	229	17	49.0	59	441	80	215
8	21	68.0	11	101	25	192	22	63.0	36	476	76	190
9	19	62.0	24	212	20	150	38	105	34	412	62	140
10	20	64.0	27	224	19	136	141	409	30	306	30	61.0
11	16	50.0	54	431	17	115	59	308	28	225	22	40.0
12	19	69.0	45	437	13	98.0	22	60.0	27	173	20	35.0
13	17	67.0	27	331	16	151	22	79.0	24	157	23	38.0
14	17	64.0	22	336	15	149	25	91.0	25	252	17	28.0
15	24	105	16	300	21	232	27	97.0	35	675	19	31.0
16	58	300	16	291	44	495	17	50.0	28	526	21	28.0
17	51	281	18	329	26	296	21	49.0	24	346	22	19.0
18	70	391	28	495	22	220	24	56.0	25	296	21	11.0
19	43	241	28	457	33	304	25	48.0	24	345	27	28.0
20	41	230	29	390	36	331	22	35.0	30	448	23	23.0
21	43	199	35	372	49	395	19	30.0	56	550	26	14.0
22	41	164	31	274	62	450	20	32.0	66	544	25	13.0
23	31	136	25	211	58	384	23	28.0	45	406	24	13.0
24	39	184	44	368	27	155	23	17.0	45	624	24	13.0
25	34	161	24	199	40	207	22	17.0	66	1070	29	15.0
26	31	135	13	111	15	71.0	24	25.0	80	1170	39	27.0
27	68	292	9.4	77.0	12	59.0	24	29.0	58	668	30	26.0
28	40	221	8.0	58.0	18	81.0	23	29.0	92	871	28	26.0
29	46	421	18	126	38	159	18	26.0	51	407	27	26.0
30	23	298	20	149	26	109	15	22.0	86	628	37	35.0
31	---	---	6.7	55.0	---	---	22	24.0	89	598	---	---
TOTAL	---	4729.0	---	7302.0	---	5997.0	---	2104.0	---	12857.0	---	2914.0

YEAR 48558.2



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05481950 BEAVER CREEK NEAR GRIMES, IA

LOCATION.--Lat 41°41'18", long 93°44'06", in SW$^1/_4$ SW$^1/_4$ sec.35, T.80 N., R.25 W., Polk County, Hydrologic Unit 07100004, on left bank 10 ft upstream from bridge on Northwest 70th Avenue, 0.5 mi downstream from Little Beaver Creek, 2.5 mi east of Grimes, and 6 mi upstream from mouth.

DRAINAGE AREA.--358 mi^2.

PERIOD OF RECORD.--April 1960 to current year.

REVISED RECORDS.--WDR IA-77-1: 1974 (P), WDR IA-95-1:location.

GAGE.--Water stage recorder. Datum of gage is 806.98 ft above NGVD of 1929. Prior to Aug. 31, 1966, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.4	11	11	e12	e8.1	e21	24	274	351	62	4.1	15
2	3.0	11	10	e16	e9.4	e17	24	231	351	56	3.0	10
3	2.6	10	11	22	e8.4	e13	22	201	766	51	2.6	7.1
4	2.2	9.0	9.7	21	e7.7	37	22	176	622	48	2.5	5.2
5	3.0	8.6	10	21	e8.9	34	19	158	430	47	4.5	3.9
6	2.4	8.8	11	19	e10	32	19	148	314	45	5.9	2.9
7	1.8	9.9	9.5	21	e10	30	23	139	252	50	9.8	2.2
8	2.1	9.0	9.2	22	e9.0	29	26	128	219	49	9.0	1.5
9	2.1	8.1	9.1	15	e8.0	e29	29	119	196	42	12	1.0
10	6.9	8.4	9.6	8.1	e9.5	e31	28	106	178	72	14	0.77
11	4.4	8.5	8.5	e6.8	e8.0	e36	27	136	200	126	12	0.62
12	4.7	8.4	8.6	e6.0	e10	44	34	425	450	140	12	0.55
13	8.7	8.4	11	5.9	e8.5	45	35	853	663	91	23	0.45
14	7.3	7.9	11	6.4	e15	45	35	688	708	72	14	0.44
15	11	7.4	11	e4.7	e17	44	33	463	431	61	11	0.40
16	9.3	7.1	10	e5.8	e23	41	34	359	298	53	15	0.37
17	11	7.6	9.0	e11	e32	38	33	363	239	45	23	0.39
18	8.6	7.6	9.6	e8.0	e30	35	34	336	213	40	18	0.59
19	6.1	7.1	e4.0	e11	e28	34	41	266	190	36	12	1.8
20	4.4	6.7	e5.0	e13	e26	33	43	230	166	35	11	6.3
21	4.0	6.4	e4.4	e10	e24	31	46	205	149	32	11	4.6
22	6.8	6.9	e6.5	e7.0	e22	23	46	190	137	28	12	2.2
23	19	7.3	e4.0	e5.8	e25	30	53	187	127	23	54	1.5
24	24	9.2	e5.0	e4.0	30	29	59	174	116	18	83	0.85
25	16	10	e4.4	e6.4	28	31	57	180	107	16	77	0.72
26	14	12	e11	8.6	e20	30	51	177	100	13	60	0.53
27	12	13	17	11	e18	28	73	167	92	14	46	0.48
28	11	13	18	17	e24	28	140	160	83	22	37	0.53
29	11	11	e15	e16	---	26	317	153	77	17	32	0.50
30	9.3	11	e13	e14	---	28	331	752	73	12	27	0.43
31	9.6	---	e13	e12	---	27	---	552	---	6.4	20	---
TOTAL	241.7	270.3	299.1	367.5	477.5	979	1758	8696	8298	1422.4	677.4	73.82
MEAN	7.797	9.010	9.648	11.85	17.05	31.58	58.60	280.5	276.6	45.88	21.85	2.461
MAX	24	13	18	22	32	45	331	853	766	140	83	15
MIN	1.8	6.4	4.0	4.0	7.7	13	19	106	73	6.4	2.5	0.37
AC-FT	479	536	593	729	947	1940	3490	17250	16460	2820	1340	146
CFSM	0.02	0.03	0.03	0.03	0.05	0.09	0.16	0.78	0.77	0.13	0.06	0.01
IN.	0.03	0.03	0.03	0.04	0.05	0.10	0.18	0.90	0.86	0.15	0.07	0.01

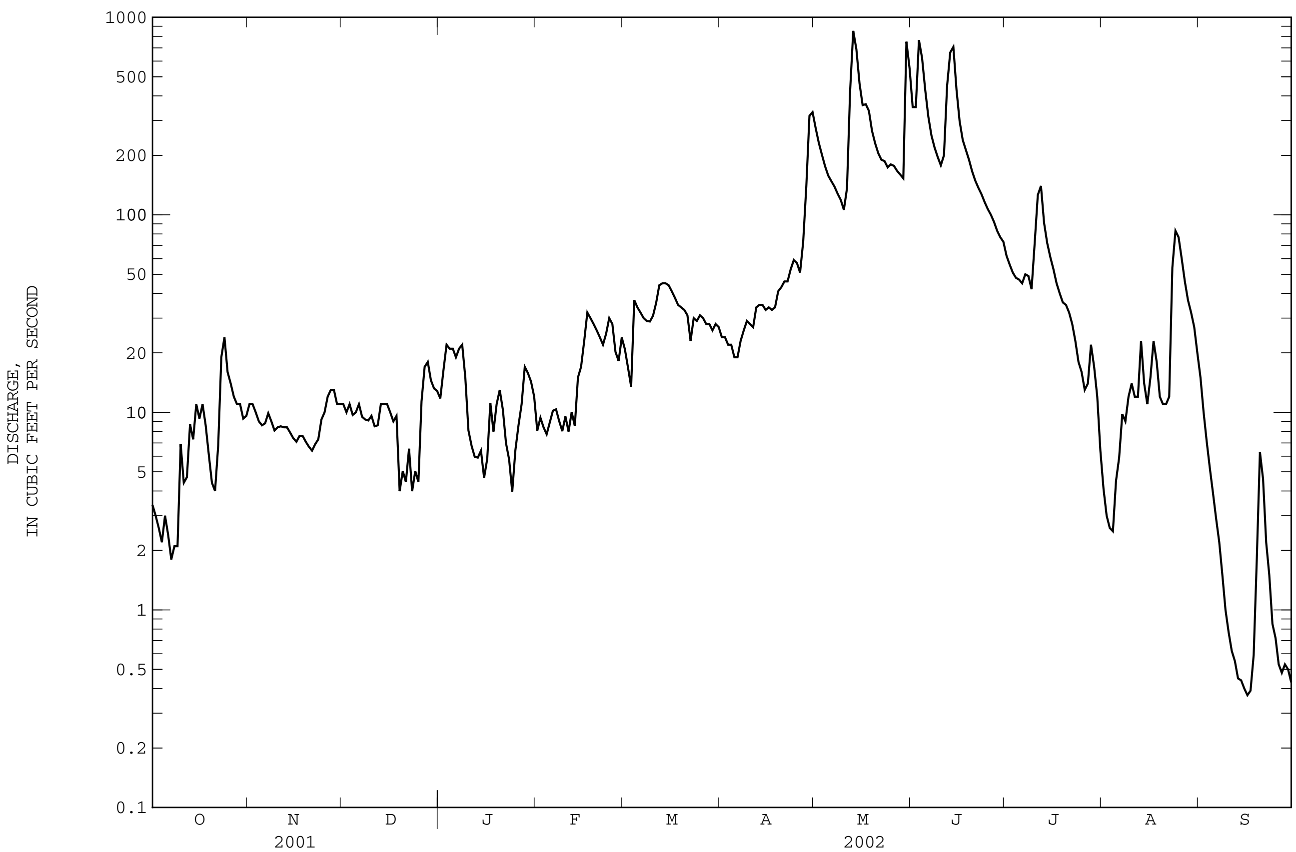
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	96.35	114.6	95.81	59.35	119.3	344.6	374.7	420.3	467.6	277.2	106.3	69.92
MAX	724	655	486	305	526	1171	1275	1419	1434	2160	695	654
(WY)	1974	1973	1983	1974	1973	1979	1965	1974	1998	1993	1993	1993
MIN	0.058	0.63	0.77	0.002	0.35	3.98	3.26	1.11	1.41	0.24	0.73	0.26
(WY)	1989	1967	1977	1977	1977	1981	1981	1981	1977	1977	1988	1988

05481950 BEAVER CREEK NEAR GRIMES, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1961 - 2002	
ANNUAL TOTAL	60240.15		23560.72			
ANNUAL MEAN	165.0		64.55		212.4	
HIGHEST ANNUAL MEAN					575	1993
LOWEST ANNUAL MEAN					17.3	1981
HIGHEST DAILY MEAN	2130	Mar 17	853	May 13	11500	Jul 10 1993
LOWEST DAILY MEAN	0.33	Sep 5	0.37	Sep 16	0.00	Sep 8 1970a
ANNUAL SEVEN-DAY MINIMUM	0.69	Aug 30	0.46	Sep 12	0.00	Oct 7 1971
MAXIMUM PEAK FLOW			912	May 30	14300	Jul 10 1993
MAXIMUM PEAK STAGE			7.70	May 13	16.58	Jul 10 1993
INSTANTANEOUS LOW FLOW			0.34	Sep 16		
ANNUAL RUNOFF (AC-FT)	119500		46730		153900	
ANNUAL RUNOFF (CFSM)	0.46		0.18		0.59	
ANNUAL RUNOFF (INCHES)	6.26		2.45		8.06	
10 PERCENT EXCEEDS	506		188		547	
50 PERCENT EXCEEDS	11		17		69	
90 PERCENT EXCEEDS	2.3		4.0		2.2	

a Also Sept. 11-13, 1970, Sept. 17, 18, Oct. 7-17, 1971, and many days during 1977.
e Estimated.



05482000 DES MOINES RIVER AT SECOND AVENUE AT DES MOINES, IA

LOCATION.--Lat 41°36'45", long 93°37'15", in NE 1/4 NE 1/4 sec.34, T.79 N., R.24 W., Polk County, Hydrologic Unit 07100004, on right bank 5 ft upstream from 2nd Avenue or State Highway 60 bridge in Des Moines, 1.8 miles upstream from Des Moines Electric Company dam, 2.8 miles upstream from Raccoon River, and 4.5 miles downstream from Beaver Creek.

DRAINAGE AREA.--6,245 mi^2.

PERIOD OF RECORD.--October 1902 to August 1903, October 1914 to February 1915 (gage heights and discharge measurements only); March 1915 to September 1961, October 1996 to current year.

REVISED RECORDS-- WSP 1308: 1915-19, 1921, 1923, 1933, 1943(M). WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 773.68 ft above NGVD of 1929 and at city datum. Prior to August 21, 1941, staff, chain, or recording gages at several sites within 3 mi of present site at various datums.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated by Saylorville Dam 6.8 mi. upstream, since Apr. 12, 1977. U.S. Army Corps of Engineers rain gage and U.S. Geological Survey satellite data collection platform, and U.S. Weather Service Limited Automated Remote Collector (LARC) at station.

EXTREMES FOR PERIOD OF RECORD--Maximum discharge 60,200 ft^3/sec on June 24, 1954, gage height 30.16; minimum unregulated daily discharge 24 ft^3/sec Jan. 29, 30, 1940.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e220	e180	1100	1040	464	696	972	5100	3550	1470	315	e2110
2	e190	e210	1240	938	473	403	955	4990	3510	1200	264	e1650
3	e200	e215	1450	650	467	421	944	4430	4240	1040	262	e1550
4	e230	e215	1470	539	463	341	956	4000	4620	1040	263	e1520
5	e225	e220	1510	528	470	314	1030	3600	3740	1110	e880	e1410
6	e225	206	1510	521	470	356	1240	3470	3240	1240	e1320	e1170
7	e230	198	1710	513	470	704	1280	3420	3080	1120	e3200	e1010
8	e230	194	2510	503	462	1090	1270	3420	3020	1090	e4970	e950
9	e220	202	2560	542	459	1340	1270	3400	3000	e1050	e4560	e860
10	e230	201	2580	608	e644	998	1280	3230	2870	e1230	e3770	e800
11	e220	203	2620	617	e842	565	1300	3200	2780	e2150	e2950	e700
12	e210	207	2150	641	e604	662	1390	3560	2930	e1060	e2400	e660
13	e210	214	1020	672	e566	815	1500	5020	3700	e1350	e2400	e640
14	e210	209	2830	649	533	950	1530	5730	4110	e1370	e3610	e610
15	e210	207	2720	640	518	1030	1590	7170	4550	e1370	6820	e610
16	e210	207	2650	e429	521	1030	1850	7320	4530	1150	7820	e570
17	e220	208	2740	e409	525	1050	2120	7250	4450	914	e5300	e360
18	e220	212	2610	e828	574	1120	2120	7200	4070	875	e4490	e220
19	e220	195	1570	e658	842	1270	2100	6560	3540	768	e5210	e400
20	e220	196	e945	651	1440	1370	2050	5500	3450	e660	5810	e390
21	e215	207	e997	631	1560	1340	1970	4490	3200	e665	3930	e210
22	e220	207	e1000	664	945	1300	1520	3630	2750	e660	e3090	e210
23	e220	211	e983	613	1040	1160	1600	3460	2560	468	e3390	e210
24	e215	222	e1050	627	1190	1160	1790	3410	2200	312	e5100	e210
25	e210	209	e647	657	1150	1160	1800	3520	1990	306	6260	e210
26	e210	221	e203	660	1130	1160	1740	3440	1850	e390	e5400	e280
27	e220	320	e264	649	1100	1170	1830	3290	1830	e490	e4370	e350
28	e225	617	e344	639	908	1180	2000	2980	1790	e495	e3550	e360
29	e215	647	e510	660	---	1130	2980	2740	1570	e560	e3000	e370
30	e200	819	e757	587	---	976	4720	3340	1550	e540	e2770	e370
31	e180	---	e938	472	---	966	---	3640	---	e430	e2530	---
TOTAL	6680	7779	47188	19435	20830	29227	50697	135510	94270	28573	110004	20970
MEAN	215.5	259.3	1522	626.9	743.9	942.8	1690	4371	3142	921.7	3549	699.0
MAX	230	819	2830	1040	1560	1370	4720	7320	4620	2150	7820	2110
MIN	180	180	203	409	459	314	944	2740	1550	306	262	210
AC-FT	13250	15430	93600	38550	41320	57970	100600	268800	187000	56670	218200	41590
CFSM	0.03	0.04	0.24	0.10	0.12	0.15	0.27	0.70	0.50	0.15	0.57	0.11
IN.	0.04	0.05	0.28	0.12	0.12	0.17	0.30	0.81	0.56	0.17	0.66	0.12

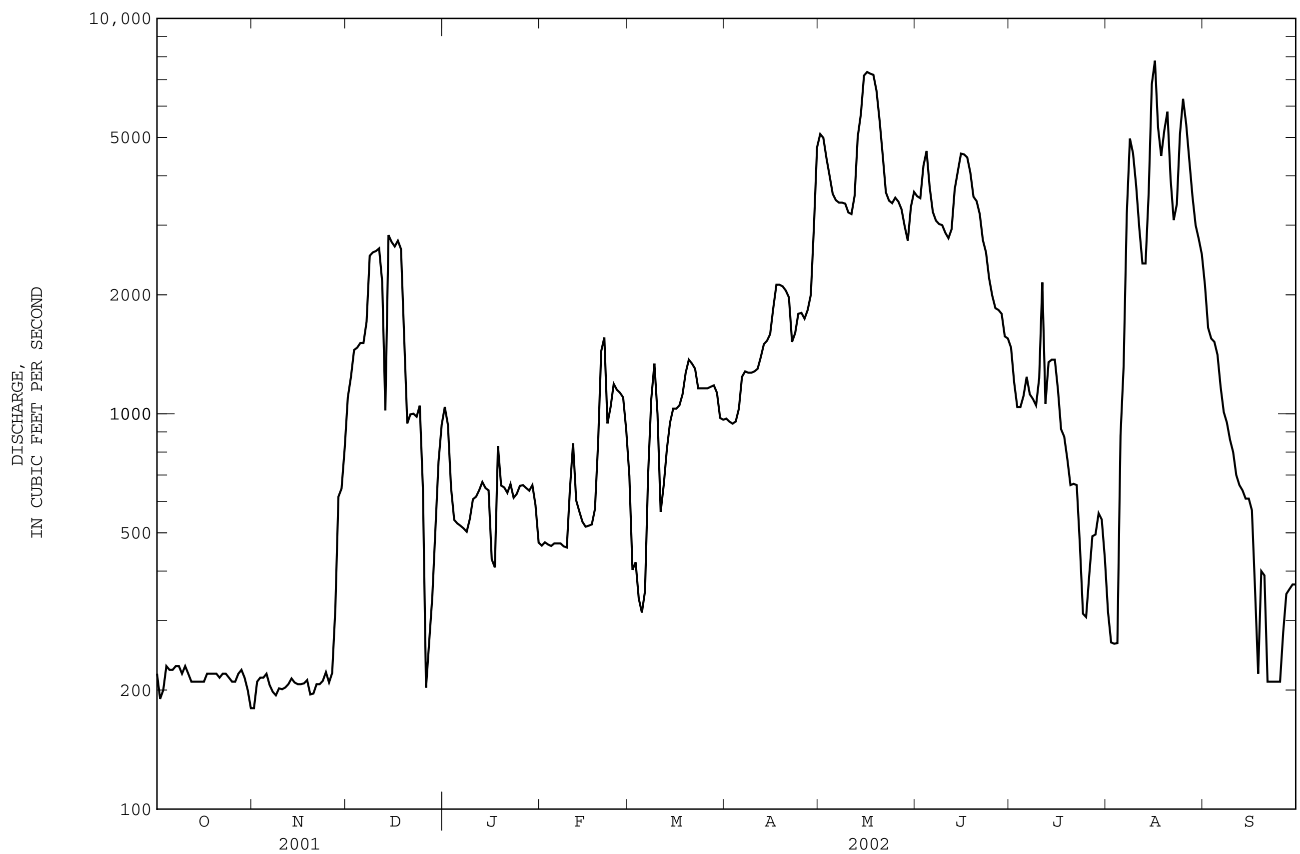
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	464.5	1182	1228	584.3	1509	3951	8275	7859	7561	5878	2251	476.8
MAX	818	2871	2696	1231	2775	9385	15940	15050	13760	8820	3549	699
(WY)	1999	1997	1997	1997	1997	1997	2001	2001	2001	1999	2002	2002
MIN	208	212	226	245	217	492	413	797	3142	922	914	289
(WY)	2000	2000	2000	2000	2000	2000	2000	2000	2002	2002	2000	2000

05482000 DES MOINES RIVER AT SECOND AVENUE AT DES MOINES, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1997 - 2002	
ANNUAL TOTAL	1951190		571163			
ANNUAL MEAN	5346		1565		3440	
HIGHEST ANNUAL MEAN					5301	2001
LOWEST ANNUAL MEAN					948	2000
HIGHEST DAILY MEAN	18300	Apr 16	7820	Aug 16	18300	Apr 16 2001
LOWEST DAILY MEAN	180	Jan 2	180	Oct 31a	160	Sep 18 2000
ANNUAL SEVEN-DAY MINIMUM	193	Jan 1	202	Nov 6	190	Dec 17 1999
MAXIMUM PEAK FLOW			8940	Aug 16	18500	Apr 17 2001
MAXIMUM PEAK STAGE			18.05	Aug 16	20.41	Apr 17 2001
ANNUAL RUNOFF (AC-FT)	3870000		1133000		2492000	
ANNUAL RUNOFF (CFSM)	0.86		0.25		0.55	
ANNUAL RUNOFF (INCHES)	11.62		3.40		7.48	
10 PERCENT EXCEEDS	16100		3720		12100	
50 PERCENT EXCEEDS	964		998		1200	
90 PERCENT EXCEEDS	210		212		220	

a Also Nov. 1.
e Estimated.



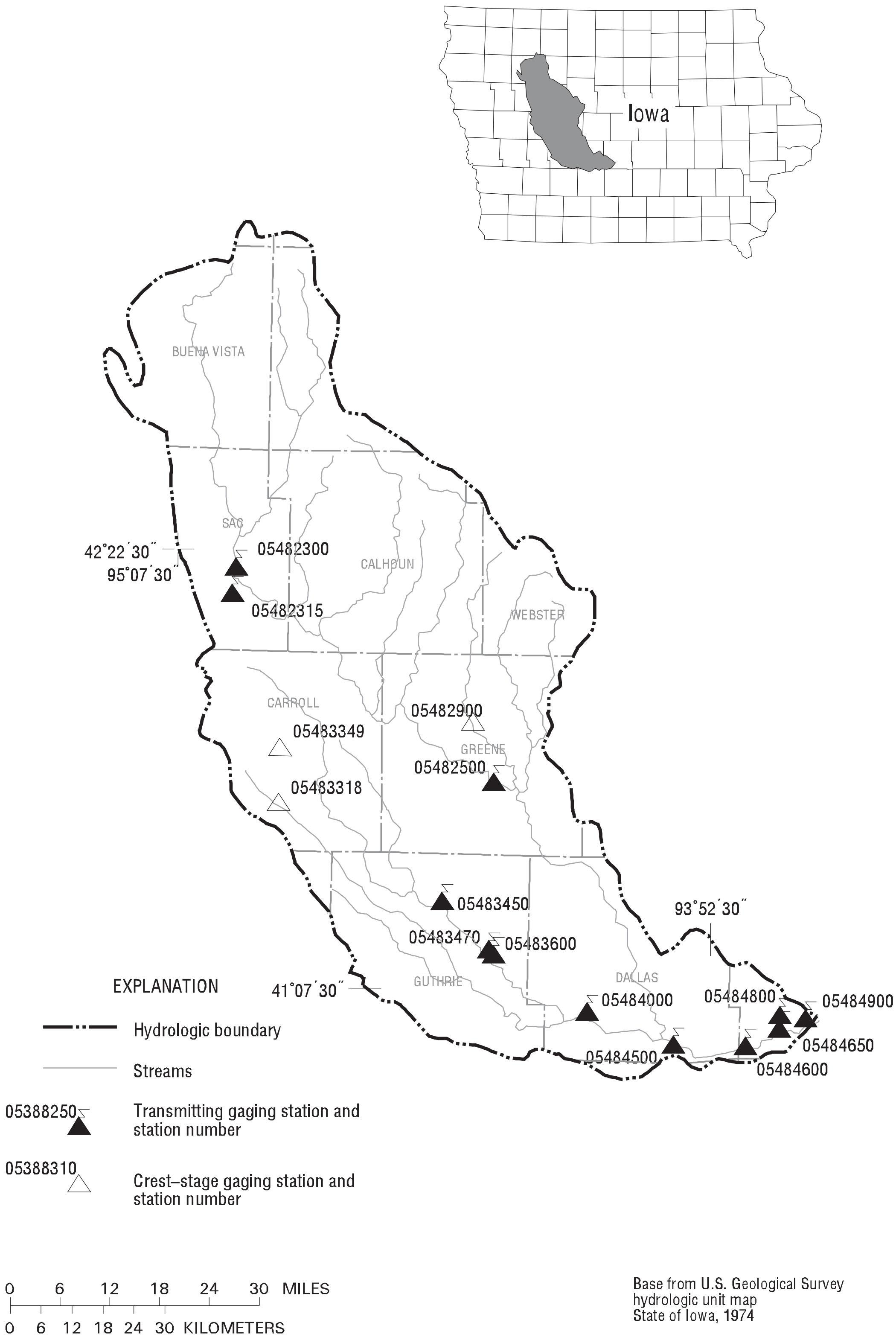


Figure 18. Locations of active continuous-record and crest-stage gaging stations in the Raccoon River drainage basin.

Gaging Stations

05482300	North Raccoon River near Sac City, IA.	282
05482315	Black Hawk Lake at Lake View, IA	284
05482500	North Raccoon River near Jefferson, IA	286
05483450	Middle Raccoon River near Bayard, IA	288
05483470	Lake Panorama at Panora, IA.	290
05483600	Middle Raccoon River at Panora, IA	292
05484000	South Raccoon River at Redfield, IA.	294
05484500	Raccoon River at Van Meter, IA	296
05484600	Raccoon River near West Des Moines, IA	298
05484650	Raccoon River at 63rd Street, Des Moines, IA	300
05484800	Walnut Creek at Des Moines, IA	302
05484900	Raccoon River at Fleur Drive, Des Moines, IA	304

Crest Stage Gaging Stations

05482900	Hardin Creek near Farlin, IA	357
05483318	Brushy Creek near Templeton, IA.	357
05483349	Middle Raccoon River Tributary at Carroll, IA.	357

05482300 NORTH RACCOON RIVER NEAR SAC CITY, IA

LOCATION.--Lat 42°21'16", long 94°59'26", in NW$^1/_4$ NW$^1/_4$ sec.13, T.87 N., R.36 W., Sac County, Hydrologic Unit 07100006, on right bank 5 ft downstream from bridge on county highway, 2.1 mi upstream from Indian Creek, 0.3 mi upstream from Drainage Ditch 73, 4.6 mi south of Sac City, 167.1 miles upstream of mouth of Raccoon River, and at mile 367.6 upstream from mouth of Des Moines River.

DRAINAGE AREA.--700 mi^2.

PERIOD OF RECORD.--June 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,146.03 ft above NGVD of 1929. Prior to Oct. 1, 1987 at site 1.7 miles downstream at datum 1.43 ft lower.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 21, 1954, reached a stage of 15.61 ft, from floodmark, discharge, 7,000 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66	86	264	e155	e69	e125	153	546	810	e151	31	243
2	66	81	236	e87	e79	e111	158	519	637	e134	30	209
3	66	77	222	e96	e73	e99	150	588	596	125	28	174
4	66	73	217	e117	e68	e116	141	531	543	122	51	145
5	68	73	218	e121	e71	e126	142	459	610	113	646	127
6	66	74	241	e79	e73	e139	140	1030	593	103	1610	115
7	65	75	250	e75	e71	e136	142	1220	512	94	997	103
8	65	73	237	e105	e76	e129	151	850	462	86	520	90
9	67	69	223	e96	e82	e136	141	664	427	80	307	86
10	76	70	219	e84	e69	e126	132	508	403	99	231	86
11	78	69	207	e91	e76	e119	143	837	517	109	188	86
12	77	68	201	e85	e89	e129	170	2710	1020	103	334	e80
13	84	69	189	e97	e93	e155	208	2160	1090	98	987	e75
14	105	69	187	e90	e110	e251	221	1610	785	83	849	e70
15	113	68	184	e87	e122	e239	221	1310	615	70	436	e65
16	106	66	175	e94	e134	e205	213	1140	529	62	281	e65
17	100	64	167	e114	e138	e204	214	919	466	58	298	67
18	100	63	165	e105	e141	e182	220	763	422	53	378	67
19	97	64	156	e118	e134	e212	232	674	381	51	294	69
20	94	63	146	e123	e135	e210	217	609	338	48	232	68
21	91	64	e140	e107	e130	e196	219	565	311	47	190	65
22	90	64	e123	e111	125	e142	223	548	298	52	1210	62
23	99	68	e90	e98	128	e199	220	526	281	e46	2680	61
24	e106	83	e98	e88	128	e204	225	457	261	e44	2020	61
25	e99	118	e129	e92	108	163	214	432	244	e42	1430	60
26	e93	182	e166	e92	e88	154	203	414	227	e40	1090	62
27	e92	395	e188	e95	e83	153	226	391	211	e39	726	63
28	e87	489	e196	e83	e136	161	586	384	195	e37	529	62
29	e84	358	e164	e76	---	178	846	777	178	e36	417	62
30	e83	299	e175	e68	---	170	657	1570	168	e34	340	60
31	83	---	e170	e76	---	161	---	1170	---	e33	285	---
TOTAL	2632	3534	5743	3005	2829	5030	7128	26881	14130	2292	19645	2708
MEAN	84.90	117.8	185.3	96.94	101.0	162.3	237.6	867.1	471.0	73.94	633.7	90.27
MAX	113	489	264	155	141	251	846	2710	1090	151	2680	243
MIN	65	63	90	68	68	99	132	384	168	33	28	60
AC-FT	5220	7010	11390	5960	5610	9980	14140	53320	28030	4550	38970	5370
CFSM	0.12	0.17	0.26	0.14	0.14	0.23	0.34	1.24	0.67	0.11	0.91	0.13
IN.	0.14	0.19	0.31	0.16	0.15	0.27	0.38	1.43	0.75	0.12	1.04	0.14

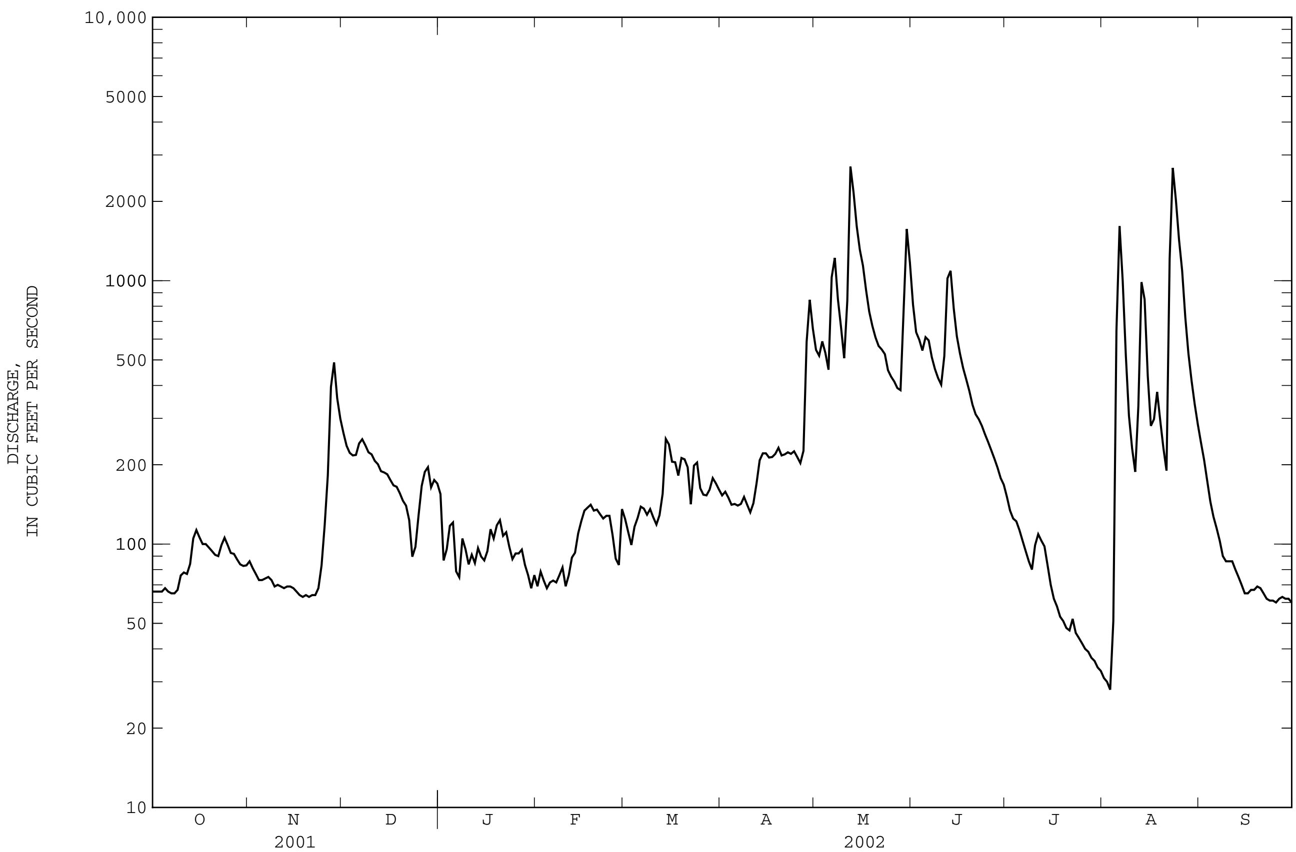
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	233.4	211.5	135.7	92.11	176.4	634.0	787.9	658.8	833.6	478.0	243.5	222.6
MAX	1782	1005	641	498	1038	2723	2726	2077	3344	3096	1188	1966
(WY)	1983	1984	1983	1983	1984	1983	1983	1991	1984	1993	1993	1962
MIN	6.39	9.44	4.39	0.87	1.16	27.2	22.7	28.2	24.7	23.0	9.29	7.80
(WY)	1959	1959	1959	1977	1959	1968	2000	2000	1977	1977	1976	1976

05482300 NORTH RACCOON RIVER NEAR SAC CITY, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1959 - 2002	
ANNUAL TOTAL	157453		95557			
ANNUAL MEAN	431.4		261.8		392.6	
HIGHEST ANNUAL MEAN					1331	1983
LOWEST ANNUAL MEAN					25.3	1977
HIGHEST DAILY MEAN	4290	Mar 22	2710	May 12	12400	Mar 23 1979
LOWEST DAILY MEAN	30	Feb 28	28	Aug 3	0.00	Jan 30 1977b
ANNUAL SEVEN-DAY MINIMUM	44	Jan 21	33	Jul 28	0.01	Jan 29 1977
MAXIMUM PEAK FLOW			2900	May 12	13100	Mar 23 1979
MAXIMUM PEAK STAGE			13.80	Aug 23	20.14	Jun 17 1990
INSTANTANEOUS LOW FLOW			28	Aug 3a		
ANNUAL RUNOFF (AC-FT)	312300		189500		284400	
ANNUAL RUNOFF (CFSM)	0.62		0.37		0.56	
ANNUAL RUNOFF (INCHES)	8.37		5.08		7.62	
10 PERCENT EXCEEDS	1140		609		1010	
50 PERCENT EXCEEDS	129		134		133	
90 PERCENT EXCEEDS	53		65		17	

a Also Aug. 4.
b Also Jan. 31 to Feb. 4, 1977.
e Estimated.



05482315 BLACK HAWK LAKE AT LAKE VIEW, IA

LOCATION.--Lat 42°18'15", long 95°02'30", in NW1/4 SE1/4 sec.33, T.87 N., R.36 W., Sac County, Hydrologic Unit 07100006, on south shore across from swimming beach at Lake View and 2 mi. upstream from lake outlet.

DRAINAGE AREA.--23.3 mi^2.

PERIOD OF RECORD.--April 1970 to September 1975; April 1978 to September 1992, October 1994 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,213.50 ft above NGVD of 1929 and 7.00 ft below crest of spillway of dam at outlet. Prior to June 25, 1970, nonrecording gage at lake outlet. Prior to Jan. 22, 2001, at datum 5.0 ft higher.

REMARKS.--Gage height was considered reliable for the year. Lake is formed by concrete dam with ungated overflow spillway at elevation 1,220.50 ft. above sea level. Lake is used for conservation and recreation. Area of lake is approximately 957 acres. U.S. Geological Survey satellite data collection platform at station.

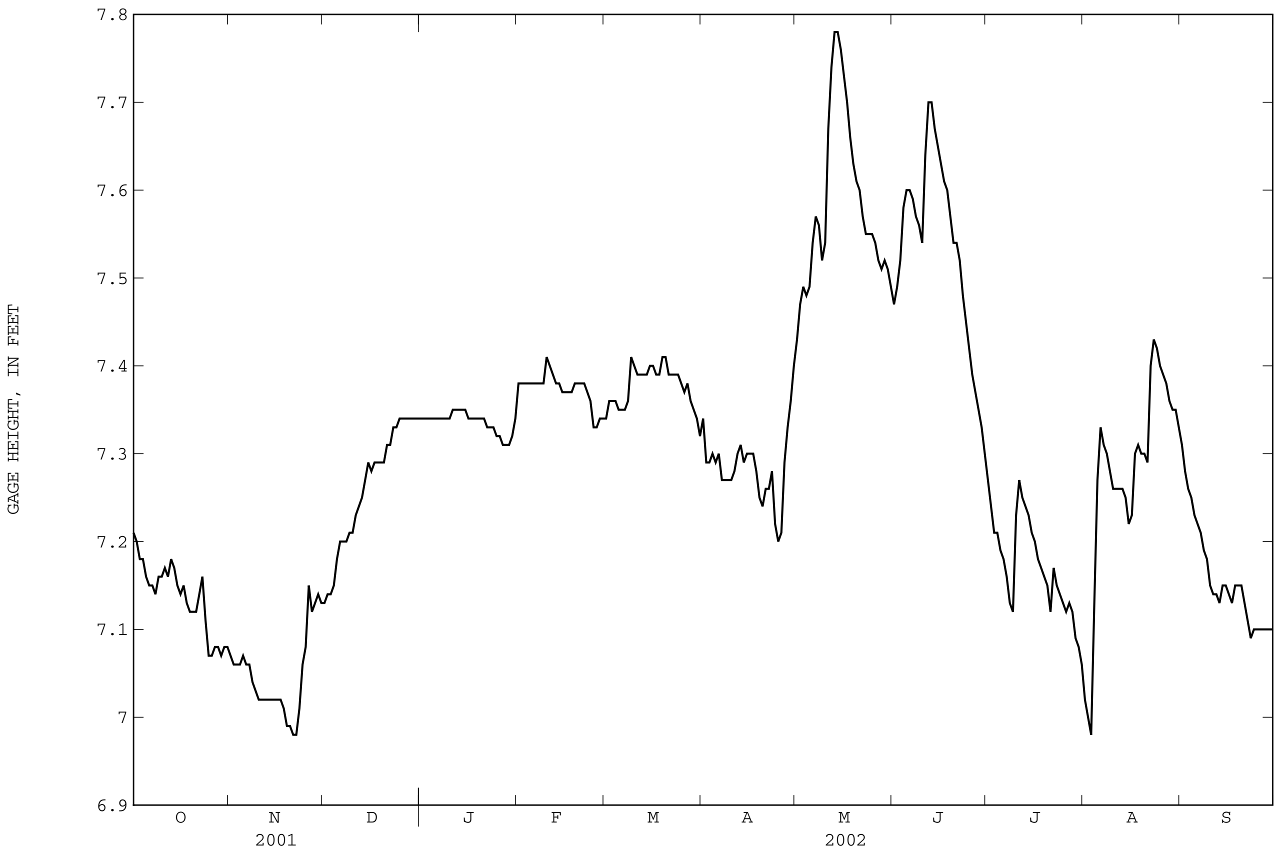
EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 4.34 ft June 22, 1996, datum then in use; minimum, 4.91 ft Jan. 25, 2001.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 7.89 ft May 11 (affected by wind); minimum, 6.94 ft Nov. 18, and Aug. 4.

GAGE HEIGHT from DCP, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.21	7.07	7.13	7.34	7.38	7.34	7.34	7.43	7.47	7.27	7.02	7.31
2	7.20	7.06	7.14	7.34	7.38	7.36	7.29	7.47	7.49	7.24	7.00	7.28
3	7.18	7.06	7.14	7.34	7.38	7.36	7.29	7.49	7.52	7.21	6.98	7.26
4	7.18	7.06	7.15	7.34	7.38	7.36	7.30	7.48	7.58	7.21	7.13	7.25
5	7.16	7.07	7.18	7.34	7.38	7.35	7.29	7.49	7.60	7.19	7.27	7.23
6	7.15	7.06	7.20	7.34	7.38	7.35	7.30	7.54	7.60	7.18	7.33	7.22
7	7.15	7.06	7.20	7.34	7.38	7.35	7.27	7.57	7.59	7.16	7.31	7.21
8	7.14	7.04	7.20	7.34	7.38	7.36	7.27	7.56	7.57	7.13	7.30	7.19
9	7.16	7.03	7.21	7.34	7.38	7.41	7.27	7.52	7.56	7.12	7.28	7.18
10	7.16	7.02	7.21	7.34	7.41	7.40	7.27	7.54	7.54	7.23	7.26	7.15
11	7.17	7.02	7.23	7.35	7.40	7.39	7.28	7.67	7.64	7.27	7.26	7.14
12	7.16	7.02	7.24	7.35	7.39	7.39	7.30	7.74	7.70	7.25	7.26	7.14
13	7.18	7.02	7.25	7.35	7.38	7.39	7.31	7.78	7.70	7.24	7.26	7.13
14	7.17	7.02	7.27	7.35	7.38	7.39	7.29	7.78	7.67	7.23	7.25	7.15
15	7.15	7.02	7.29	7.35	7.37	7.40	7.30	7.76	7.65	7.21	7.22	7.15
16	7.14	7.02	7.28	7.34	7.37	7.40	7.30	7.73	7.63	7.20	7.23	7.14
17	7.15	7.02	7.29	7.34	7.37	7.39	7.30	7.70	7.61	7.18	7.30	7.13
18	7.13	7.01	7.29	7.34	7.37	7.39	7.28	7.66	7.60	7.17	7.31	7.15
19	7.12	6.99	7.29	7.34	7.38	7.41	7.25	7.63	7.57	7.16	7.30	7.15
20	7.12	6.99	7.29	7.34	7.38	7.41	7.24	7.61	7.54	7.15	7.30	7.15
21	7.12	6.98	7.31	7.34	7.38	7.39	7.26	7.60	7.54	7.12	7.29	7.13
22	7.14	6.98	7.31	7.33	7.38	7.39	7.26	7.57	7.52	7.17	7.40	7.11
23	7.16	7.01	7.33	7.33	7.37	7.39	7.28	7.55	7.48	7.15	7.43	7.09
24	7.11	7.06	7.33	7.33	7.36	7.39	7.22	7.55	7.45	7.14	7.42	7.10
25	7.07	7.08	7.34	7.32	7.33	7.38	7.20	7.55	7.42	7.13	7.40	7.10
26	7.07	7.15	7.34	7.32	7.33	7.37	7.21	7.54	7.39	7.12	7.39	7.10
27	7.08	7.12	7.34	7.31	7.34	7.38	7.29	7.52	7.37	7.13	7.38	7.10
28	7.08	7.13	7.34	7.31	7.34	7.36	7.33	7.51	7.35	7.12	7.36	7.10
29	7.07	7.14	7.34	7.31	---	7.35	7.36	7.52	7.33	7.09	7.35	7.10
30	7.08	7.13	7.34	7.32	---	7.34	7.40	7.51	7.30	7.08	7.35	7.10
31	7.08	---	7.34	7.34	---	7.32	---	7.49	---	7.06	7.33	---
MEAN	7.14	7.05	7.26	7.34	7.37	7.38	7.29	7.58	7.53	7.17	7.28	7.16
MAX	7.21	7.15	7.34	7.35	7.41	7.41	7.40	7.78	7.70	7.27	7.43	7.31
MIN	7.07	6.98	7.13	7.31	7.33	7.32	7.20	7.43	7.30	7.06	6.98	7.09

05482315 BLACK HAWK LAKE AT LAKE VIEW, IA--Continued



05482500 NORTH RACCOON RIVER NEAR JEFFERSON, IA

LOCATION.--Lat 41°59'17", long 94°22'36", in $SW^1/_4$ $NW^1/_4$ sec.20, T.83 N., R.30 W., Greene County, Hydrologic Unit 07100006, on right bank 20 ft downstream from bridge on State Highway 4, 0.1 mi downstream from Drainage Ditch 33 and 40, 1.9 mi south of Jefferson, 4.7 mi upstream from Hardin Creek, 92.0 miles upstream of mouth of Raccoon River, and at mile 292.5 upstream from mouth of Des Moines River.

DRAINAGE AREA.--1,619 mi^2.

PERIOD OF RECORD.--March 1940 to current year. Prior to April 1940, monthly discharge only, published in WSP 1308. Prior to October 1955, published as "Raccoon River near Jefferson".

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1940 (M), 1950-51.

GAGE.--Water-stage recorder. Datum of gage is 967.09 ft above NGVD of 1929. Prior to Apr. 22, 1946, nonrecording gage at site 4 mi upstream at different datum. Apr. 22 to June 25, 1946, nonrecording gage, June 26, 1946 to Sept. 30, 1955, water-stage recorder, Oct. 1, 1955 to Apr. 30, 1958, nonrecording gage, at present site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	174	228	752	251	e190	e177	e345	1650	2030	403	e93	803
2	174	219	678	e223	e200	e151	321	1450	2200	370	85	698
3	161	219	604	239	e184	e190	305	1350	1780	340	83	592
4	149	201	571	246	e178	e229	307	1360	1520	317	143	509
5	150	188	544	252	e181	e270	296	1330	1360	293	264	447
6	145	188	561	e222	e184	301	287	1370	1280	272	648	405
7	159	188	754	e214	e180	302	288	1460	1270	266	e2000	379
8	146	175	778	e243	183	308	288	1900	1180	248	e1500	358
9	144	168	712	e218	203	e286	303	1560	1100	218	1070	336
10	160	164	649	e222	e192	e265	312	1370	1030	311	787	293
11	176	152	611	e228	e209	280	297	1490	1310	473	608	259
12	171	157	589	e220	232	287	294	3070	1680	505	494	234
13	192	166	551	e232	e236	326	328	4810	1960	423	733	219
14	187	167	514	e223	e241	e366	365	4200	1960	350	2090	203
15	195	167	515	e223	249	e470	426	3060	1700	302	2270	190
16	217	166	499	e236	e277	517	455	2540	1470	255	1590	182
17	239	160	469	e252	e305	527	449	2140	1310	219	1180	177
18	237	154	457	e242	323	474	469	1840	1190	191	973	203
19	227	129	424	253	331	429	417	1630	e1080	173	1020	233
20	235	124	394	251	328	483	417	1480	e961	169	953	193
21	230	127	338	e243	327	462	444	1370	849	152	802	168
22	227	124	342	e251	309	e421	437	1280	784	128	710	151
23	248	139	e150	e238	310	393	449	1230	729	138	1590	139
24	255	173	e114	e217	286	414	443	1190	682	141	4350	126
25	263	185	128	e220	278	e423	432	1120	633	130	3770	125
26	259	236	239	222	e158	397	433	1070	591	117	2660	124
27	240	374	e279	e235	95	369	476	1030	541	118	2040	130
28	234	676	e325	e218	189	355	717	992	502	116	1630	132
29	222	901	e293	e209	---	352	1520	969	467	e111	1340	141
30	224	846	303	e192	---	e342	1920	1180	439	e103	1120	146
31	233	---	267	e202	---	e358	---	2320	---	e98	924	---
TOTAL	6273	7261	14404	7137	6558	10924	14240	54811	35588	7450	39520	8295
MEAN	202.4	242.0	464.6	230.2	234.2	352.4	474.7	1768	1186	240.3	1275	276.5
MAX	263	901	778	253	331	527	1920	4810	2200	505	4350	803
MIN	144	124	114	192	95	151	287	969	439	98	83	124
AC-FT	12440	14400	28570	14160	13010	21670	28250	108700	70590	14780	78390	16450
CFSM	0.12	0.15	0.29	0.14	0.14	0.22	0.29	1.09	0.73	0.15	0.79	0.17
IN.	0.14	0.17	0.33	0.16	0.15	0.25	0.33	1.26	0.82	0.17	0.91	0.19

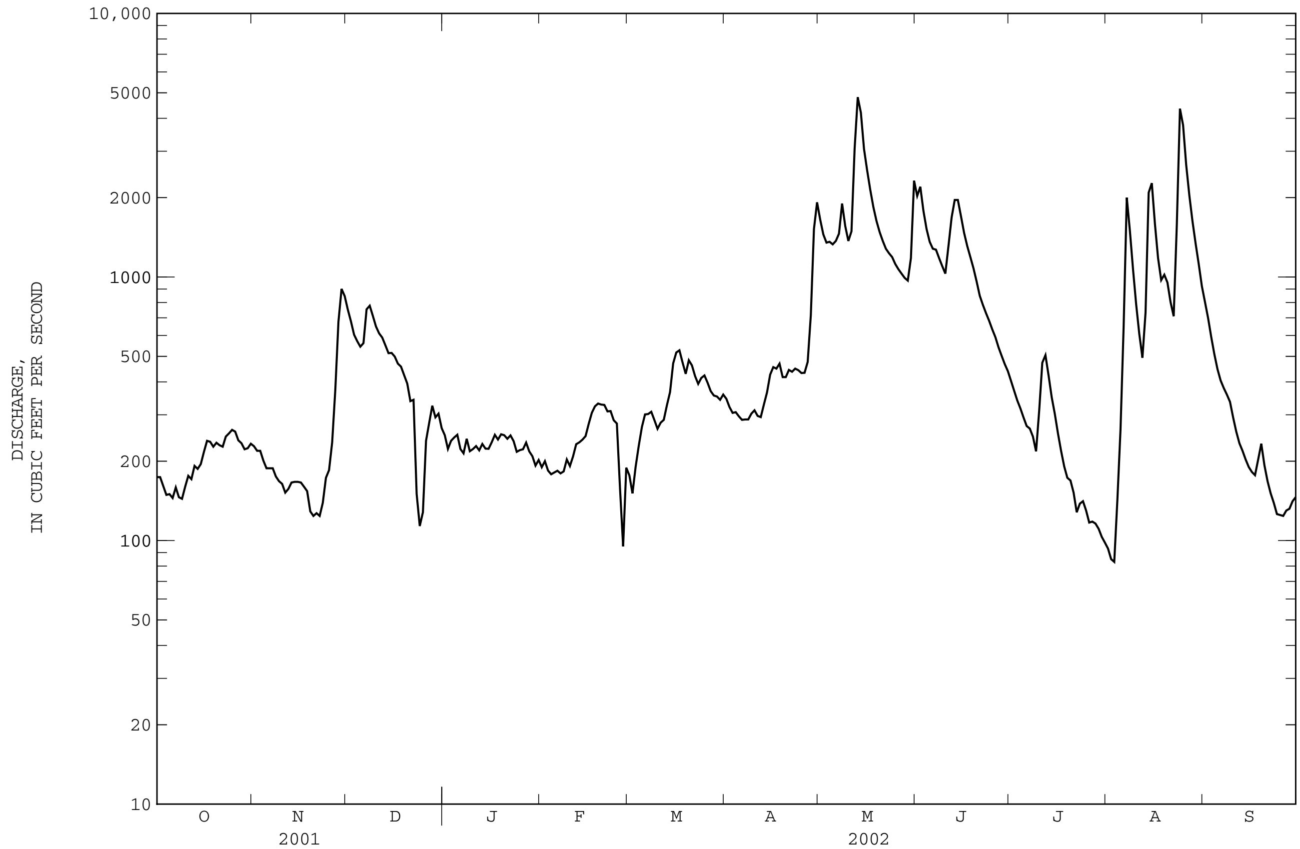
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	420.4	380.1	269.8	199.5	405.9	1271	1518	1441	1850	1021	509.8	386.6
MAX	3654	2011	1228	1045	2407	4990	5650	4702	6831	7584	3007	2823
(WY)	1974	1974	1974	1973	1984	1983	1983	1984	1984	1993	1993	1962
MIN	5.04	19.8	13.4	3.58	6.89	68.5	46.3	48.4	61.9	18.1	12.1	16.6
(WY)	1957	1956	1977	1977	1977	1956	1956	2000	1977	1956	1956	1955

05482500 NORTH RACCOON RIVER NEAR JEFFERSON, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1941 - 2002	
ANNUAL TOTAL	366197		212461			
ANNUAL MEAN	1003		582.1		806.6	
HIGHEST ANNUAL MEAN					2615	1993
LOWEST ANNUAL MEAN					32.8	1956
HIGHEST DAILY MEAN	11800	May 4	4810	May 13	23200	Jun 24 1947
LOWEST DAILY MEAN	27	Jan 1	83	Aug 3	0.60	Oct 5 1956
ANNUAL SEVEN-DAY MINIMUM	32	Jan 1	98	Jul 28	0.91	Oct 4 1956
MAXIMUM PEAK FLOW			5080	May 13	29100	Jun 23 1947
MAXIMUM PEAK STAGE			10.81	May 13	22.30	Jun 23 1947
INSTANTANEOUS LOW FLOW			11	Feb 27		
ANNUAL RUNOFF (AC-FT)	726400		421400		584400	
ANNUAL RUNOFF (CFSM)	0.62		0.36		0.50	
ANNUAL RUNOFF (INCHES)	8.41		4.88		6.77	
10 PERCENT EXCEEDS	2750		1460		2040	
50 PERCENT EXCEEDS	327		303		287	
90 PERCENT EXCEEDS	55		151		42	

e Estimated



05483450 MIDDLE RACCOON RIVER NEAR BAYARD, IA

LOCATION.--Lat 41°46'43", long 94°29'33", in SW$^1/_4$ SW$^1/_4$ sec.32, T.81 N., R.31 W., Guthrie County, Hydrologic Unit 07100007, on left bank 15 ft downstream from bridge on State Highway 25, 0.2 mi downstream from Battle Run Creek, 1.8 mi upstream from Springbrook Creek, 5.8 mi southeast of Bayard, 10.3 mi upstream from dam at Lake Panorama, at mile 78.0 mi. upstream from mouth of Raccoon River, and at mile 279.2 upstream from mouth of Des Moines River.

DRAINAGE AREA.--375 mi^2.

PERIOD OF RECORD.--March 1979 to current year. Occasional low-flow measurements, water years 1976, 1977.

GAGE.--Water-stage recorder. Datum of gage is 1,040.00 ft above NGVD of 1929. Prior to June 23, 1979, nonrecording gage at present site and datum.

REMARKS.--Records are good, except those for estimated daily discharges, which are poor. U.S. Geological Survey data collection platform with telephone modem and U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 3, 1973 reached a stage of 21.63 ft, from contracted-opening measurement, discharge, 14,600 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	50	90	e35	e27	e77	59	424	204	113	41	95
2	34	48	82	e31	e31	e67	60	384	235	106	38	87
3	34	45	77	e40	e28	e59	59	346	766	104	37	85
4	34	43	75	e63	e23	e72	56	308	410	113	158	73
5	35	42	73	e72	e30	e88	55	277	339	95	499	64
6	35	42	76	e56	e38	e92	55	456	295	89	569	59
7	35	43	110	e47	e42	e91	55	437	268	82	248	56
8	34	42	95	e70	e50	e96	60	320	248	80	152	53
9	34	41	86	e77	e55	e87	60	279	231	75	101	50
10	38	40	83	e65	e46	e72	54	240	218	157	78	48
11	44	42	81	e59	e61	85	55	546	792	415	65	46
12	40	41	81	e60	e56	87	65	1710	1470	441	56	46
13	44	41	81	e71	e65	106	70	1010	992	240	171	43
14	51	41	73	e59	82	133	59	725	558	173	365	43
15	49	41	72	e41	101	109	59	586	447	136	173	44
16	46	40	70	e38	126	87	58	508	380	114	104	42
17	45	38	68	e41	124	76	56	476	338	98	126	39
18	44	38	67	e22	111	75	192	409	313	87	90	52
19	45	39	66	e41	102	73	183	371	287	80	68	79
20	44	39	58	e38	99	84	108	342	270	74	64	57
21	43	39	67	e41	91	e62	110	319	245	66	58	47
22	45	40	74	e53	82	e56	141	303	228	59	60	42
23	52	42	e68	e25	78	74	140	296	210	62	1310	40
24	67	56	e55	e20	81	87	146	270	195	53	879	39
25	59	89	e44	e35	75	74	122	264	181	54	435	39
26	54	82	e39	e41	e62	70	107	256	170	54	306	40
27	51	107	e50	e43	e60	71	133	242	157	64	232	43
28	50	123	e46	e39	e85	65	779	235	143	52	179	43
29	50	103	e37	e32	---	66	663	229	135	48	145	42
30	50	95	e39	e29	---	64	485	227	124	45	121	40
31	49	---	e32	e36	---	60	---	215	---	42	105	---
TOTAL	1370	1612	2115	1420	1911	2465	4304	13010	10849	3471	7033	1576
MEAN	44.19	53.73	68.23	45.81	68.25	79.52	143.5	419.7	361.6	112.0	226.9	52.53
MAX	67	123	110	77	126	133	779	1710	1470	441	1310	95
MIN	34	38	32	20	23	56	54	215	124	42	37	39
AC-FT	2720	3200	4200	2820	3790	4890	8540	25810	21520	6880	13950	3130
CFSM	0.12	0.14	0.18	0.12	0.18	0.21	0.38	1.12	0.96	0.30	0.60	0.14
IN.	0.14	0.16	0.21	0.14	0.19	0.24	0.43	1.29	1.08	0.34	0.70	0.16

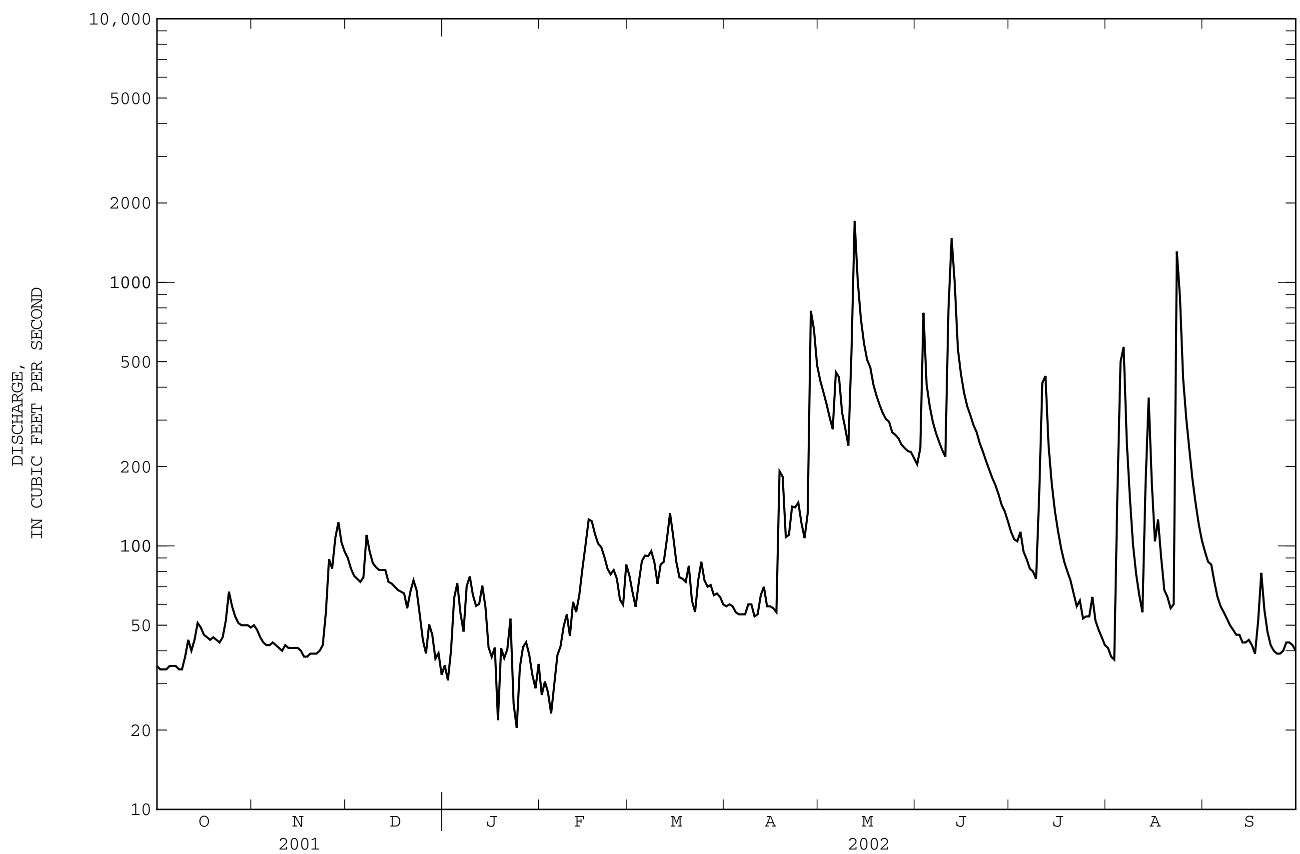
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	108.6	115.5	114.4	86.27	182.6	286.0	381.9	454.6	534.8	403.5	183.3	105.9
MAX	587	376	347	175	645	907	1035	993	1667	2653	673	466
(WY)	1987	1993	1993	1993	1983	1993	1991	1984	1990	1993	1993	1993
MIN	20.1	18.3	12.5	13.8	27.4	23.3	22.9	51.6	77.0	40.2	32.1	18.8
(WY)	1981	1981	1981	1981	1990	1981	1981	1981	2000	1980	2000	1980

05483450 MIDDLE RACCOON RIVER NEAR BAYARD, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1980 - 2002	
ANNUAL TOTAL	75217		51136			
ANNUAL MEAN	206.1		140.1		246.5	
HIGHEST ANNUAL MEAN					677	1993
LOWEST ANNUAL MEAN					54.1	1981
HIGHEST DAILY MEAN	2760	Mar 15	1710	May 12	18100	Jul 9 1993
LOWEST DAILY MEAN	13	Jan 1	20	Jan 24	5.5	Jun 13 1981
ANNUAL SEVEN-DAY MINIMUM	17	Jan 1	29	Jan 30	7.3	Jun 8 1981
MAXIMUM PEAK FLOW			2240	Aug 23	27500	Jul 9 1993
MAXIMUM PEAK STAGE			16.92	Aug 23	29.02	Jul 9 1993
ANNUAL RUNOFF (AC-FT)	149200		101400		178600	
ANNUAL RUNOFF (CFSM)	0.55		0.37		0.66	
ANNUAL RUNOFF (INCHES)	7.46		5.07		8.93	
10 PERCENT EXCEEDS	522		327		558	
50 PERCENT EXCEEDS	60		70		109	
90 PERCENT EXCEEDS	25		39		32	

e Estimated



05483470 LAKE PANORAMA AT PANORA, IOWA

LOCATION.--Lat 41°41'44", long 94°22'53", in SW$^{1}/_{4}$ NE$^{1}/_{4}$ sec.31, T.80 N., R.30 W., Guthrie County, Hydrologic Unit 07100007, in gate control building of dam on Middle Raccoon River, 0.5 mi upstream from State Highway 44, 1.0 mi west of Panora, 4.4 mi upstream from Bay Branch, 67.7 mi. upstream from mouth of Raccoon River, and at mile 268.8 upstream from mouth of Des Moines River.

DRAINAGE AREA.--433 mi^2.

PERIOD OF RECORD.--May 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,000.00 ft above NGVD of 1929.

REMARKS.--Lake is formed by earthfill dam with 100 ft bascule gate and concrete chute spillway, and 300 ft earthen emergency spillway. Low-flow outlet is 30-inch conduit and gate valve through dam. Dam was completed in August, 1970 and began filling April 27, 1971. Total storage, 60,000 acre-ft, surface area, 2,900 acres, at top of dam, elevation 1,068 ft. Storage unknown at top of spillway, elevation 1,048 ft. Normal storage, 19,700 acre-ft, surface area, 1,270 acres with bascule gate closed, elevation 1,045 ft. Dead storage unknown with bascule gate open, elevation 1,036 ft. Present lake classification is utility (industrial) but is also used for recreation. U.S. Geological Survey data collection platform with telephone modem at station.

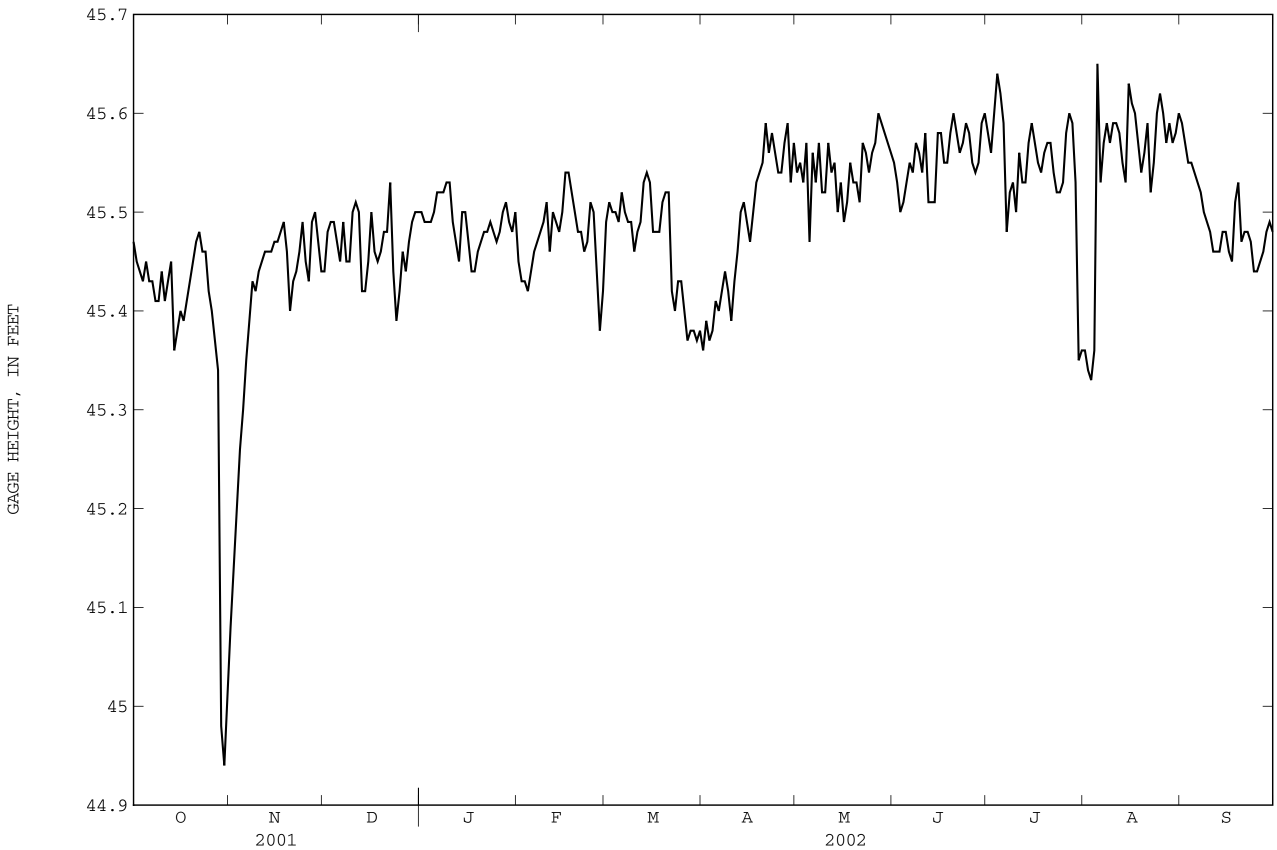
EXTREMES FOR PERIOD OF RECORD.--Maximum gage height,50.68 ft July 9, 1993; minimum, 41.56 ft Oct. 15, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 45.98 ft Aug. 23; minimum recorded, 44.87 ft Oct.29.

GAGE HEIGHT from dcp, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45.47	45.08	45.44	45.50	45.45	45.49	45.36	45.54	45.55	45.58	45.36	45.59
2	45.45	45.14	45.48	45.49	45.43	45.51	45.39	45.55	45.53	45.56	45.34	45.57
3	45.44	45.20	45.49	45.49	45.43	45.50	45.37	45.53	45.50	45.60	45.33	45.55
4	45.43	45.26	45.49	45.49	45.42	45.50	45.38	45.57	45.51	45.64	45.36	45.55
5	45.45	45.30	45.47	45.50	45.44	45.49	45.41	45.47	45.53	45.62	45.65	45.54
6	45.43	45.35	45.45	45.52	45.46	45.52	45.40	45.56	45.55	45.59	45.53	45.53
7	45.43	45.39	45.49	45.52	45.47	45.50	45.42	45.53	45.54	45.48	45.57	45.52
8	45.41	45.43	45.45	45.52	45.48	45.49	45.44	45.57	45.57	45.52	45.59	45.50
9	45.41	45.42	45.45	45.53	45.49	45.49	45.42	45.52	45.56	45.53	45.57	45.49
10	45.44	45.44	45.50	45.53	45.51	45.46	45.39	45.52	45.54	45.50	45.59	45.48
11	45.41	45.45	45.51	45.49	45.46	45.48	45.43	45.57	45.58	45.56	45.59	45.46
12	45.43	45.46	45.50	45.47	45.50	45.49	45.46	45.54	45.51	45.53	45.58	45.46
13	45.45	45.46	45.42	45.45	45.49	45.53	45.50	45.55	45.51	45.53	45.55	45.46
14	45.36	45.46	45.42	45.50	45.48	45.54	45.51	45.50	45.51	45.57	45.53	45.48
15	45.38	45.47	45.45	45.50	45.50	45.53	45.49	45.53	45.58	45.59	45.63	45.48
16	45.40	45.47	45.50	45.47	45.54	45.48	45.47	45.49	45.58	45.57	45.61	45.46
17	45.39	45.48	45.46	45.44	45.54	45.48	45.50	45.51	45.55	45.55	45.60	45.45
18	45.41	45.49	45.45	45.44	45.52	45.48	45.53	45.55	45.55	45.54	45.57	45.51
19	45.43	45.46	45.46	45.46	45.50	45.51	45.54	45.53	45.58	45.56	45.54	45.53
20	45.45	45.40	45.48	45.47	45.48	45.52	45.55	45.53	45.60	45.57	45.56	45.47
21	45.47	45.43	45.48	45.48	45.48	45.52	45.59	45.51	45.58	45.57	45.59	45.48
22	45.48	45.44	45.53	45.48	45.46	45.42	45.56	45.57	45.56	45.54	45.52	45.48
23	45.46	45.46	45.44	45.49	45.47	45.40	45.58	45.56	45.57	45.52	45.55	45.47
24	45.46	45.49	45.39	45.48	45.51	45.43	45.56	45.54	45.59	45.52	45.60	45.44
25	45.42	45.45	45.42	45.47	45.50	45.43	45.54	45.56	45.58	45.53	45.62	45.44
26	45.40	45.43	45.46	45.48	45.44	45.40	45.54	45.57	45.55	45.58	45.60	45.45
27	45.37	45.49	45.44	45.50	45.38	45.37	45.57	45.60	45.54	45.60	45.57	45.46
28	45.34	45.50	45.47	45.51	45.42	45.38	45.59	45.59	45.55	45.59	45.59	45.48
29	44.98	45.47	45.49	45.49	---	45.38	45.53	45.58	45.59	45.53	45.57	45.49
30	44.94	45.44	45.50	45.48	---	45.37	45.57	45.57	45.60	45.35	45.58	45.48
31	45.01	---	45.50	45.50	---	45.38	---	45.56	---	45.36	45.60	---
MEAN	45.38	45.41	45.47	45.49	45.47	45.47	45.49	45.54	45.55	45.54	45.55	45.49
MAX	45.48	45.50	45.53	45.53	45.54	45.54	45.59	45.60	45.60	45.64	45.65	45.59
MIN	44.94	45.08	45.39	45.44	45.38	45.37	45.36	45.47	45.50	45.35	45.33	45.44

05483470 LAKE PANORAMA AT PANORA, IOWA--Continued



05483600 MIDDLE RACCOON RIVER AT PANORA, IA

LOCATION.--Lat 41°41'14", long 94°22'15", in $NE^1/_4$ $NW^1/_4$ sec.5, T.79 N., R.30 W., Guthrie County, Hydrologic Unit 07100007, on left bank 15 ft downstream from bridge on Soldier Trail, 0.2 mi southwest of Panora, 1.5 mi upstream from Andy's Branch, 1.6 mi downstream from Lake Panorama, 18.1 mi upstream from mouth, 66.1 mi. upstream from mouth of Raccoon River, and at mile 267.2 upstream from mouth of Des Moines River.

DRAINAGE AREA.--440 mi^2.

PERIOD OF RECORD.--June 1958 to current year.

REVISED RECORDS.--WDR IA-74-1: 1973 (P).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 991.20 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. City of Panora diverts approximately 100 acre-ft/yr upstream of station. Flow regulated by dam on Lake Panorama since August 1970. U.S. Army Corps of Engineers rain gage and data collection platform at station. U.S. Geological Survey data collection platform with telephone modem at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 10, 1953, reached a stage of 14.3 ft, from floodmark, discharge, about 14,000 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	25	89	e40	e50	53	59	364	186	120	35	93
2	44	24	77	e39	54	60	65	337	223	101	33	90
3	44	26	80	e45	e47	33	48	271	466	79	32	71
4	41	26	92	51	e34	58	43	291	382	111	44	59
5	42	25	112	52	36	60	52	238	249	123	356	60
6	41	25	82	e47	41	78	52	359	232	293	529	60
7	42	29	116	e45	45	88	57	377	218	131	141	58
8	39	40	128	55	59	87	60	284	195	82	138	56
9	36	38	69	58	70	93	58	255	196	85	102	53
10	63	43	72	77	97	77	53	149	189	369	85	52
11	51	46	101	85	71	71	61	534	740	462	79	46
12	40	49	138	80	71	75	66	1850	1730	495	70	37
13	107	50	120	61	80	98	66	1090	1180	241	140	38
14	82	51	66	51	82	125	73	670	563	146	329	47
15	31	52	62	71	85	130	69	546	407	132	132	49
16	36	51	86	78	104	97	65	507	391	131	130	44
17	37	51	97	60	126	80	67	396	335	116	129	37
18	44	59	81	e41	125	72	82	371	281	90	126	56
19	46	75	65	e47	119	72	220	343	260	81	83	133
20	50	43	53	55	111	75	80	311	264	85	63	78
21	51	31	57	56	90	86	111	260	255	86	70	45
22	82	37	102	58	81	71	125	228	229	83	170	45
23	86	62	99	e52	71	65	138	328	199	69	1610	45
24	80	105	43	e47	81	73	159	220	181	60	829	41
25	74	111	29	54	86	76	89	274	180	66	317	40
26	50	94	56	57	72	68	88	207	174	67	269	44
27	69	93	e57	61	44	63	174	218	144	73	168	47
28	85	128	43	58	38	62	686	213	126	75	134	42
29	263	121	e40	48	---	63	610	208	117	143	122	48
30	24	114	e40	e41	---	62	458	204	124	44	97	48
31	24	---	e39	e54	---	65	---	193	---	35	90	---
TOTAL	1851	1724	2391	1724	2070	2336	4034	12096	10416	4274	6652	1662
MEAN	59.71	57.47	77.13	55.61	73.93	75.35	134.5	390.2	347.2	137.9	214.6	55.40
MAX	263	128	138	85	126	130	686	1850	1730	495	1610	133
MIN	24	24	29	39	34	33	43	149	117	35	32	37
AC-FT	3670	3420	4740	3420	4110	4630	8000	23990	20660	8480	13190	3300
CFSM	0.14	0.13	0.18	0.13	0.17	0.17	0.31	0.89	0.79	0.31	0.49	0.13
IN.	0.16	0.15	0.20	0.15	0.18	0.20	0.34	1.02	0.88	0.36	0.56	0.14

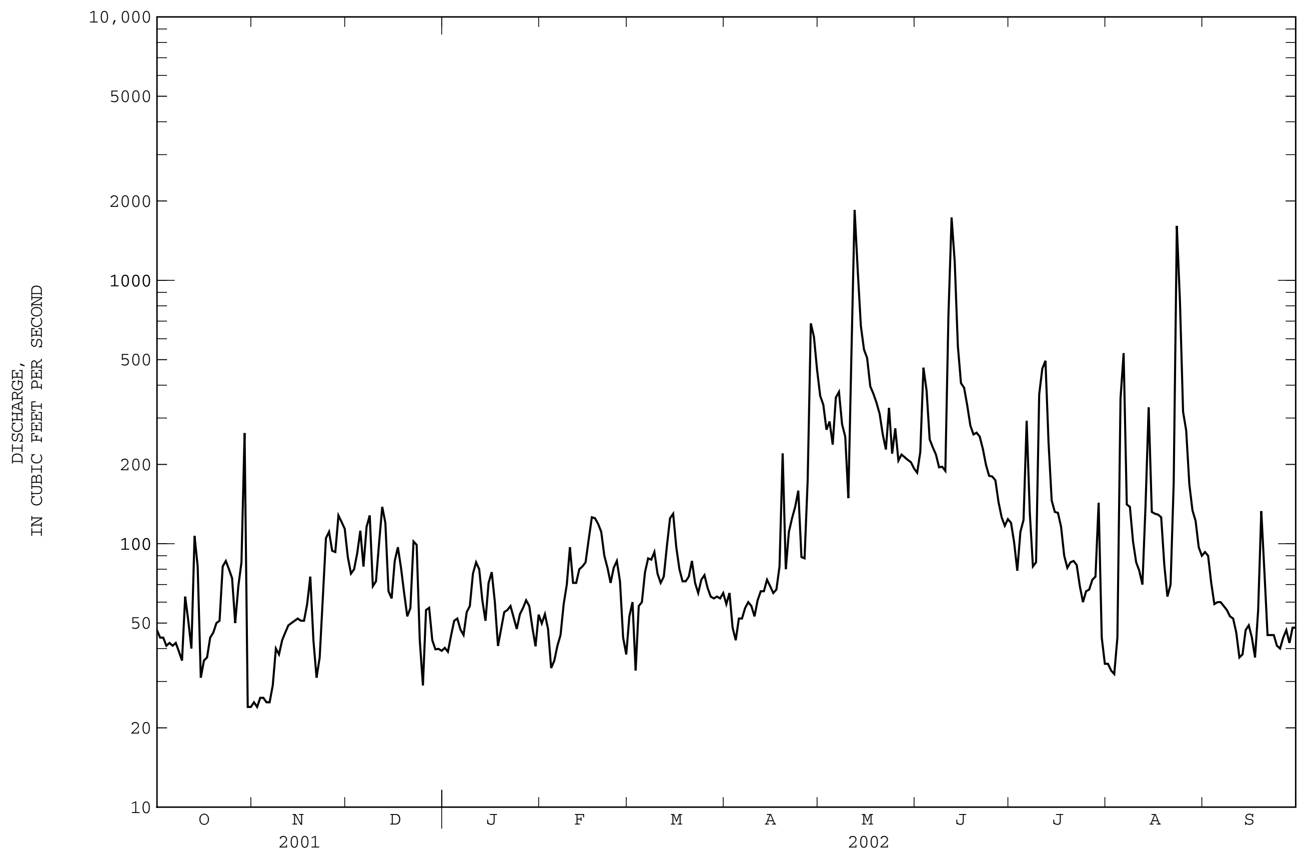
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1971 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	121.9	140.2	122.0	98.49	212.9	366.6	382.2	488.6	492.8	382.8	168.6	134.3
MAX	670	588	356	439	838	1479	1222	1458	1646	2731	668	528
(WY)	1987	1973	1993	1973	1971	1979	1984	1974	1990	1993	1996	1973
MIN	19.5	12.8	7.60	6.95	27.8	20.2	26.4	20.0	9.40	5.56	22.2	19.3
(WY)	1981	1971	1971	1971	1972	1981	1977	1977	1977	1977	1971	1980

05483600 MIDDLE RACCOON RIVER AT PANORA, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1971 - 2002b	
ANNUAL TOTAL	81440		51230			
ANNUAL MEAN	223.1		140.4		259.3	
HIGHEST ANNUAL MEAN					701	1973
LOWEST ANNUAL MEAN					38.6	1977
HIGHEST DAILY MEAN	2550	Mar 15	1850	May 12	17500	Jul 10 1993
LOWEST DAILY MEAN	16	Jan 9	24	Oct 30a	0.00	Jun 9 1977c
ANNUAL SEVEN-DAY MINIMUM	22	Jan 4	25	Oct 30	3.1	Jul 8 1977
MAXIMUM PEAK FLOW			4050	Aug 23	22400	Jul 9 1993
MAXIMUM PEAK STAGE			8.97	Aug 23	20.04	Jul 9 1993
INSTANTANEOUS LOW FLOW			12	Jul 30		
ANNUAL RUNOFF (AC-FT)	161500		101600		187900	
ANNUAL RUNOFF (CFSM)	0.51		0.32		0.59	
ANNUAL RUNOFF (INCHES)	6.89		4.33		8.01	
10 PERCENT EXCEEDS	524		300		577	
50 PERCENT EXCEEDS	80		77		106	
90 PERCENT EXCEEDS	32		40		31	

a Also Oct. 31 and Nov. 2
b Post regulation.
c Also June 10, 1977, result of gate operations at Lake Panorama.
e Estimated.



05484000 SOUTH RACCOON RIVER AT REDFIELD, IA

LOCATION.--Lat 41°35'22", long 94°09'04", in $SW^1/_4$ $NE^1/_4$ sec.2, T.78 N., R.29 W., Dallas County, Hydrologic Unit 07100007, on right bank 20 ft upstream from bridge on H Avenue, 3.4 mi. downstream from bridge on U.S. Highway 6, 3.4 mi. downstream from Middle Raccoon River, 14.3 mi. upstream from mouth, 44.6 miles upstream of mouth of Raccoon River, and at mile 245.6 upstream from mouth of Des Moines River.

DRAINAGE AREA.--994 mi^2.

PERIOD OF RECORD.--March 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1940, WDR IA-87-1:datum.

GAGE.--Water-stage recorder. Datum of gage is 888.88 ft above NGVD of 1929. Prior to June 12, 1946, nonrecording gage, June 12, 1946 to Sept. 30, 1986, water-stage recorder at site 2.4 mi upstream at datum 7.55 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	98	96	178	e53	e62	e57	122	569	340	236	86	165
2	95	94	147	e50	e69	e49	117	505	361	222	82	162
3	91	92	150	e63	e59	e47	119	450	675	197	79	155
4	93	92	153	e72	e51	e80	102	383	557	193	82	121
5	91	90	164	e75	e54	e104	104	413	433	223	286	117
6	88	91	148	e65	e63	e107	110	328	378	228	632	115
7	88	93	117	e62	e67	e104	111	662	369	428	318	115
8	91	95	168	e76	e78	e101	119	388	333	194	202	111
9	92	98	136	e83	e101	e100	124	372	329	177	168	109
10	104	99	114	e100	e95	e89	120	279	323	419	136	107
11	128	105	117	e95	e107	e84	121	596	600	501	134	105
12	101	109	156	e108	e113	e93	155	2550	2610	839	124	98
13	118	116	174	e111	e139	e135	142	1990	3180	437	184	93
14	189	118	136	e86	150	188	141	1280	1470	300	357	100
15	116	118	112	e85	155	200	143	945	807	240	207	105
16	90	117	114	e99	162	180	136	881	685	223	181	102
17	91	118	135	e90	187	144	132	725	585	205	172	97
18	95	122	132	e72	190	142	152	617	498	182	182	102
19	103	132	119	e84	190	142	389	582	445	157	165	189
20	106	129	98	e91	189	144	189	516	432	155	121	197
21	109	108	105	e96	156	147	184	487	418	150	122	120
22	113	104	113	e105	139	134	215	415	392	144	208	102
23	170	111	e91	e88	124	132	233	508	353	137	2950	98
24	149	158	e52	e69	121	136	263	445	325	122	2220	96
25	153	206	e42	e78	126	142	227	454	319	124	681	94
26	122	185	e68	e84	e81	140	179	409	311	125	442	97
27	114	165	e74	e87	e53	130	293	387	297	124	318	105
28	126	183	e59	e82	e47	127	842	384	262	133	235	108
29	293	191	e53	e73	---	127	1080	374	245	124	220	104
30	126	183	e53	e63	---	125	654	366	241	182	191	106
31	97	---	e50	e76	---	122	---	355	---	89	171	---
TOTAL	3640	3718	3528	2521	3128	3752	7018	19615	18573	7210	11656	3495
MEAN	117.4	123.9	113.8	81.32	111.7	121.0	233.9	632.7	619.1	232.6	376.0	116.5
MAX	293	206	178	111	190	200	1080	2550	3180	839	2950	197
MIN	88	90	42	50	47	47	102	279	241	89	79	93
AC-FT	7220	7370	7000	5000	6200	7440	13920	38910	36840	14300	23120	6930
CFSM	0.12	0.12	0.11	0.08	0.11	0.12	0.24	0.64	0.62	0.23	0.38	0.12
IN.	0.14	0.14	0.13	0.09	0.12	0.14	0.26	0.73	0.70	0.27	0.44	0.13

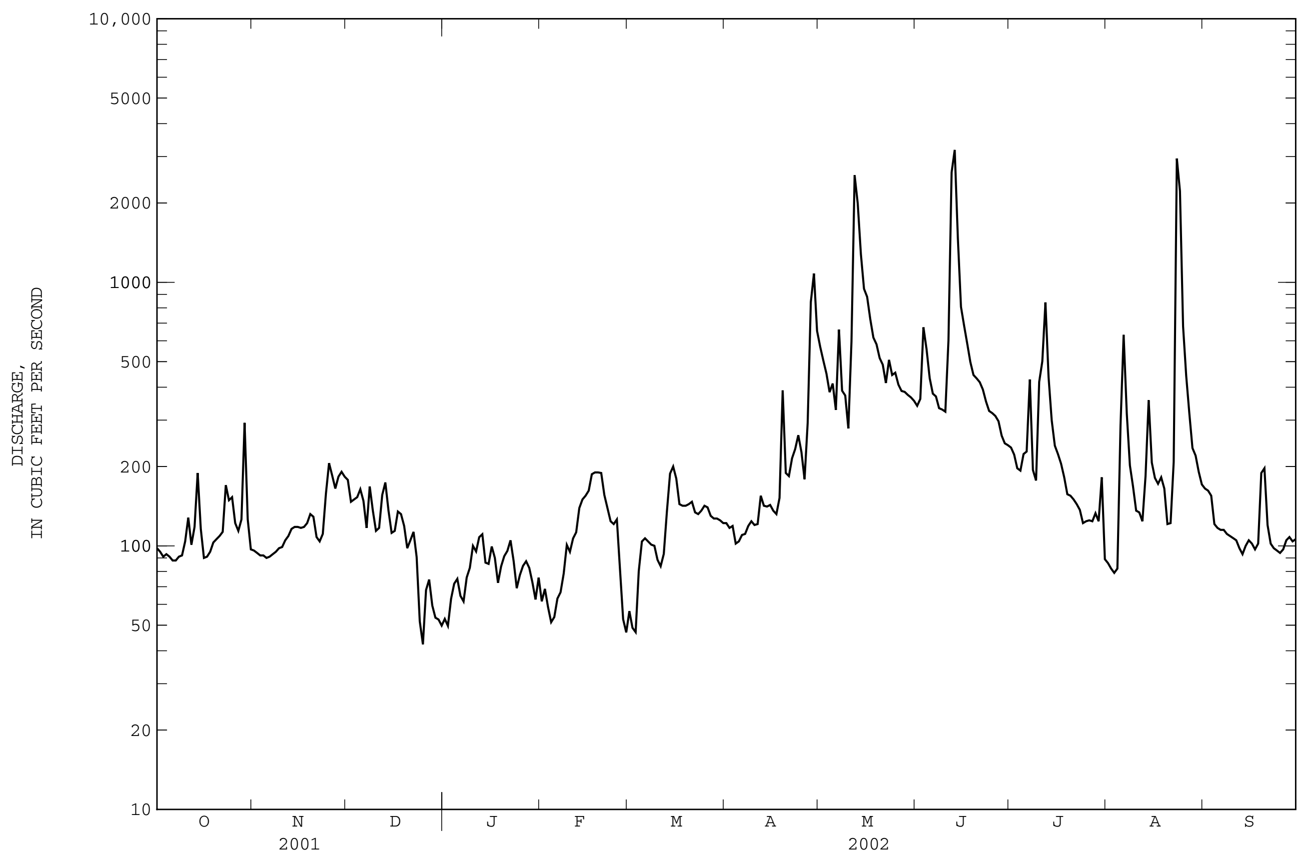
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2002, BY WATER YEAR (WY)

MEAN	231.2	234.0	191.9	173.7	391.0	822.3	757.0	874.3	1036	645.2	370.8	280.8
MAX	1501	1162	826	565	1785	3112	2474	3005	5017	5494	2745	1385
(WY)	1987	1973	1993	1983	1971	1979	1984	1974	1947	1993	1993	1993
MIN	28.6	36.2	32.4	30.4	35.5	74.2	50.0	62.9	43.2	57.4	37.8	36.0
(WY)	1941	1956	1956	1950	1956	1981	1956	1967	1977	1954	1955	1955

05484000 SOUTH RACCOON RIVER AT REDFIELD, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1941 - 2002	
ANNUAL TOTAL	164397		87854			
ANNUAL MEAN	450.4		240.7		500.7	
HIGHEST ANNUAL MEAN					1632	1993
LOWEST ANNUAL MEAN					91.4	1968
HIGHEST DAILY MEAN	5920	Mar 15	3180	Jun 13	33600	Jul 10 1993
LOWEST DAILY MEAN	32	Jan 1	42	Dec 25	17	Aug 4 1977
ANNUAL SEVEN-DAY MINIMUM	49	Jan 1	54	Dec 28	20	Jan 24 1954
MAXIMUM PEAK FLOW			4400	Aug 23	44000	Jul 10 1993
MAXIMUM PEAK STAGE			8.76	Aug 23	29.04	Jul 2 1958
ANNUAL RUNOFF (AC-FT)	326100		174300		362700	
ANNUAL RUNOFF (CFSM)	0.45		0.24		0.50	
ANNUAL RUNOFF (INCHES)	6.15		3.29		6.84	
10 PERCENT EXCEEDS	1180		447		1110	
50 PERCENT EXCEEDS	153		132		202	
90 PERCENT EXCEEDS	90		80		60	

e Estimated



05484500 RACCOON RIVER AT VAN METER, IA

LOCATION.--Lat 41°32'02", long 93°56'59", in SW$^1/_4$ SW$^1/_4$ sec.22, T.78 N., R.27 W., Dallas County, Hydrologic Unit 07100006, on right bank 10 ft downstream from bridge on county highway R16, 0.3 mi northeast of Van Meter, 0.7 mi upstream from small left bank tributary, 1.1 mi downstream from confluence of North and South Raccoon Rivers, 29.1 mi upstream from mouth, and at mile 230.5 upstream from mouth of Des Moines River.

DRAINAGE AREA.--3,441 mi^2.

PERIOD OF RECORD.--April 1915 to current year. Prior to October 1934, monthly discharge only, published in WSP 1308.

REVISED RECORDS.--WSP 1308: 1927 (M), WSP 1438: Drainage area, WSP 1508: 1915 (M), 1925 (M), 1926, 1933 (M), 1939 (M), 1947 (M), 1949 (M).

GAGE.--Water-stage recorder. Datum of gage is 841.16 ft above NGVD of 1929. See WSP 1308 for history of changes prior to Aug. 8, 1934.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	301	349	994	e555	e289	e264	510	2910	3520	910	298	1180
2	300	348	922	e461	e379	e182	502	2530	3180	855	281	1040
3	282	335	858	e492	e400	e246	488	2230	4120	795	272	928
4	265	335	812	e485	e340	346	470	1950	3520	747	276	827
5	261	334	788	e411	e362	418	454	1920	2910	738	322	740
6	249	326	786	e381	e379	464	455	1760	2500	724	842	668
7	255	325	751	e363	e369	487	451	2070	2280	931	1280	602
8	265	318	868	e383	e383	520	456	1900	2170	689	2020	553
9	273	317	964	e393	e373	535	457	2210	2010	589	2000	517
10	305	317	894	e404	e350	e532	455	1910	1880	592	1530	485
11	303	325	845	e421	e394	e523	468	1940	2180	980	1220	459
12	294	324	852	e437	e449	542	504	5070	5330	1430	1010	429
13	299	334	872	e447	e429	620	499	7460	7160	1190	926	403
14	390	343	828	e459	e449	617	492	7730	5090	995	1070	388
15	348	344	760	e446	e462	639	510	6700	3900	831	2470	383
16	289	342	730	e441	e484	662	528	5360	3280	728	2860	368
17	292	341	e657	e440	e491	673	555	4610	2810	657	2120	357
18	318	347	e666	e453	e520	671	574	3850	2460	592	1630	357
19	328	344	e624	e443	e616	663	750	3390	2190	544	1350	443
20	338	355	e539	e427	e654	606	693	3020	1990	511	1240	510
21	342	334	e505	e452	e626	617	613	2760	1850	488	1160	431
22	357	319	e446	e448	e558	618	664	2480	1710	460	1070	362
23	419	329	e419	e441	e591	594	695	2420	1560	431	3070	335
24	437	371	e363	e392	e560	582	731	2340	1430	403	4690	315
25	403	461	e309	e417	e485	560	732	2190	1340	405	5490	303
26	401	468	e457	e435	e255	626	646	2090	1270	408	4560	294
27	384	470	e509	e442	e297	601	785	1910	1200	408	3300	291
28	396	508	e540	e422	e325	545	1280	1830	1100	408	2460	303
29	456	672	e592	e371	---	524	2280	1770	1030	389	1960	296
30	480	926	e552	e296	---	513	2610	2120	965	422	1600	290
31	352	---	e543	e211	---	506	---	2390	---	345	1360	---
TOTAL	10382	11561	21245	13069	12269	16496	21307	94820	77935	20595	55737	14857
MEAN	334.9	385.4	685.3	421.6	438.2	532.1	710.2	3059	2598	664.4	1798	495.2
MAX	480	926	994	555	654	673	2610	7730	7160	1430	5490	1180
MIN	249	317	309	211	255	182	451	1760	965	345	272	290
AC-FT	20590	22930	42140	25920	24340	32720	42260	188100	154600	40850	110600	29470
CFSM	0.10	0.11	0.20	0.12	0.13	0.15	0.21	0.89	0.75	0.19	0.52	0.14
IN.	0.11	0.12	0.23	0.14	0.13	0.18	0.23	1.03	0.84	0.22	0.60	0.16

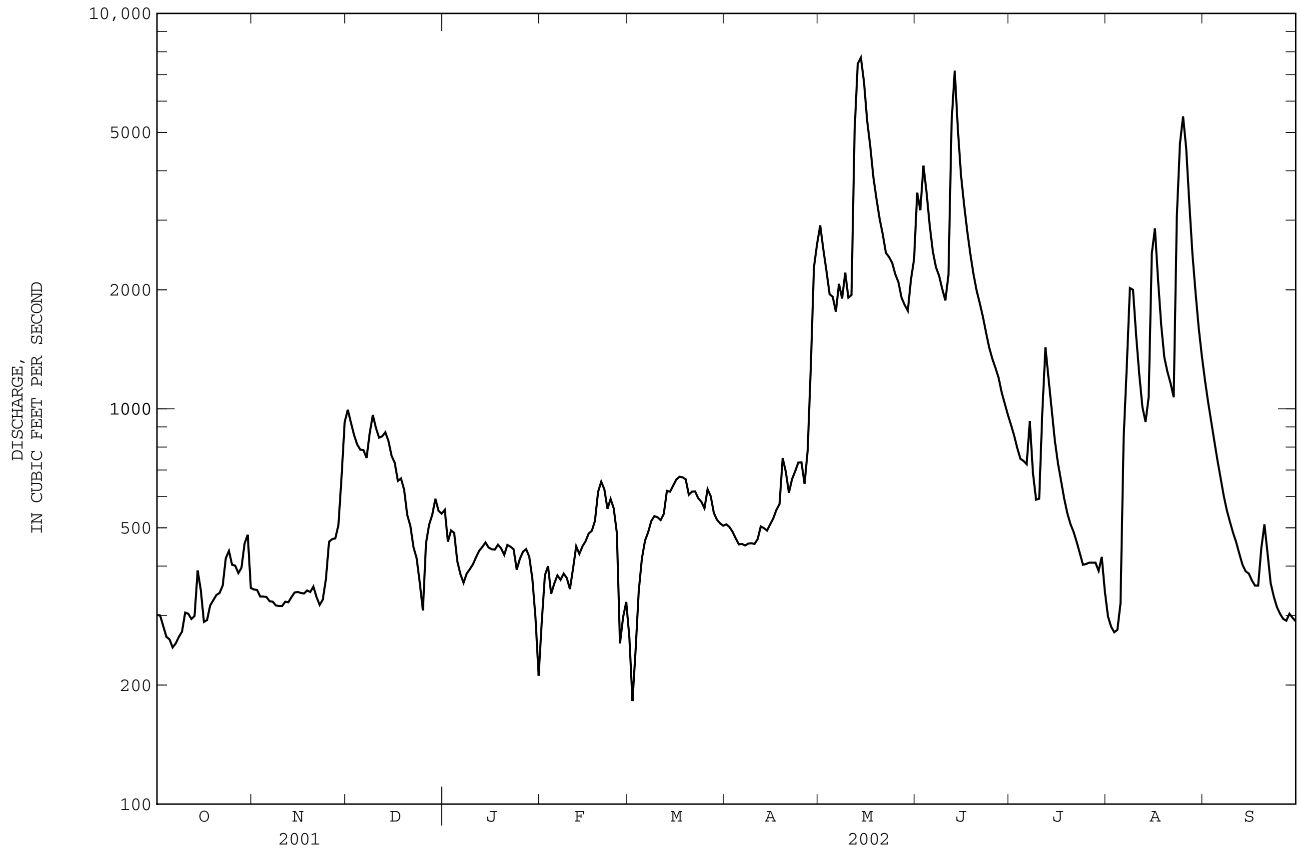
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1916 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	812.0	763.7	566.9	485.7	984.1	2603	2635	2657	3308	1880	1002	857.8
MAX	6840	4774	3085	3461	5438	10480	10630	9257	13970	17260	7414	7222
(WY)	1974	1973	1983	1932	1984	1979	1983	1984	1947	1993	1993	1926
MIN	48.6	51.5	31.0	17.2	31.5	146	125	121	112	68.1	28.1	43.1
(WY)	1940	1938	1938	1940	1940	1931	1956	1934	1977	1936	1936	1939

05484500 RACCOON RIVER AT VAN METER, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1916 - 2002	
ANNUAL TOTAL	705538		370273			
ANNUAL MEAN	1933		1014		1547	
HIGHEST ANNUAL MEAN					5717	1993
LOWEST ANNUAL MEAN					166	1956
HIGHEST DAILY MEAN	13900	May 6	7730	May 14	57500	Jul 10 1993
LOWEST DAILY MEAN	120	Jan 2	182	Mar 2	10	Jan 22 1940a
ANNUAL SEVEN-DAY MINIMUM	160	Feb 16	264	Oct 3	10	Jan 22 1940
MAXIMUM PEAK FLOW			8420	Jun 13	70100	Jul 10 1993
MAXIMUM PEAK STAGE			10.08	Jun 13	26.34	Jul 10 1993
ANNUAL RUNOFF (AC-FT)	1399000		734400		1121000	
ANNUAL RUNOFF (CFSM)	0.56		0.29		0.45	
ANNUAL RUNOFF (INCHES)	7.63		4.00		6.11	
10 PERCENT EXCEEDS	5600		2400		3920	
50 PERCENT EXCEEDS	620		523		600	
90 PERCENT EXCEEDS	200		317		116	

a Also Jan. 23-31, 1940.
e Estimated.



05484600 RACCOON RIVER NEAR WEST DES MOINES, IA

LOCATION.--Lat 41°31'54", long 93°46'54", in $SE^1/_4$ $NE^1/_4$ sec.30, T.78 N., R.25 W., Polk County, Hydrologic Unit 07100006, on right bank, 0.4 mile upstream of bridge on Interstate 35, 13.1 mi. upstream from mouth of Raccoon River, and at mile 215.9 upstream from mouth of Des Moines River.

DRAINAGE AREA.--3,500 mi^2.

PERIOD OF RECORD.--July 19, 2000 to current year.

GAGE.--Water-stage recorder. Datum of gage is 782.967 ft above NGVD of 1929.

REMARKS.--Records good. Discharge not published, low-flow use only. U.S. Geological Survey satellite data collection platform and rain gage at station.

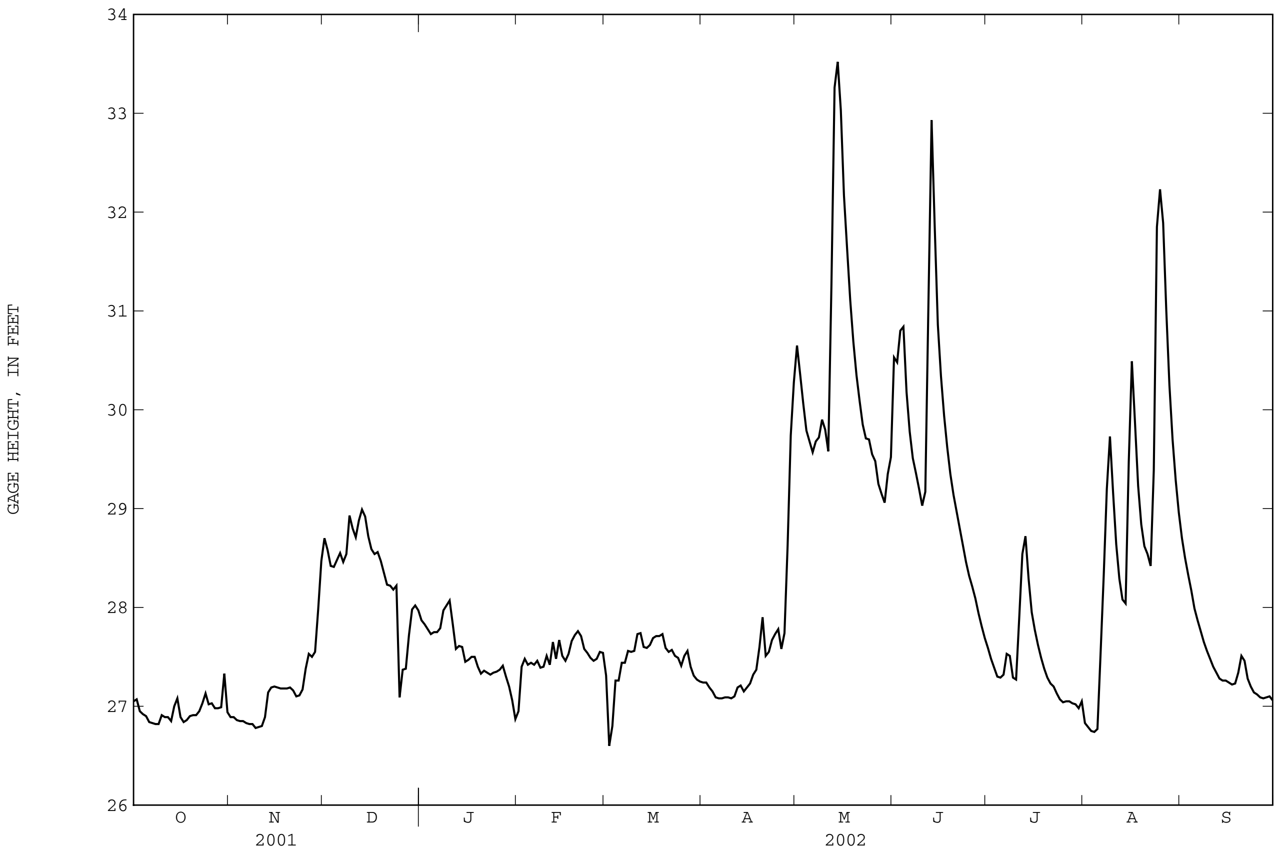
EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 37.33 ft. May 7, 2001; minimum gage height, 26.14 ft. Dec. 5,2000.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 33.61 ft. May 14; minimum gage height, 26.37 ft. Mar. 2.

GAGE HEIGHT from dcp, in FEET, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27.05	26.89	28.70	27.87	26.95	27.31	27.24	30.65	30.53	27.59	26.83	28.70
2	27.07	26.89	28.58	27.83	27.40	26.60	27.24	30.36	30.48	27.48	26.79	28.50
3	26.95	26.86	28.42	27.78	27.48	26.80	27.19	30.06	30.80	27.39	26.75	28.33
4	26.92	26.85	28.41	27.73	27.42	27.26	27.15	29.79	30.84	27.30	26.74	28.17
5	26.90	26.85	28.48	27.75	27.44	27.26	27.09	29.68	30.18	27.29	26.77	27.99
6	26.84	26.83	28.55	27.75	27.42	27.44	27.08	29.57	29.78	27.32	27.53	27.87
7	26.83	26.82	28.46	27.79	27.46	27.44	27.08	29.68	29.51	27.53	28.32	27.76
8	26.82	26.82	28.54	27.97	27.39	27.56	27.09	29.72	29.36	27.51	29.20	27.65
9	26.82	26.78	28.93	28.02	27.40	27.55	27.09	29.90	29.20	27.29	29.73	27.56
10	26.91	26.79	28.80	28.07	27.51	27.56	27.08	29.80	29.03	27.27	29.16	27.48
11	26.89	26.80	28.71	27.83	27.42	27.73	27.10	29.58	29.17	27.89	28.64	27.40
12	26.89	26.89	28.88	27.58	27.65	27.74	27.19	31.27	31.09	28.54	28.29	27.34
13	26.85	27.14	28.99	27.61	27.48	27.60	27.21	33.26	32.93	28.72	28.08	27.28
14	27.00	27.19	28.92	27.60	27.67	27.59	27.15	33.52	31.85	28.29	28.04	27.26
15	27.08	27.20	28.72	27.45	27.51	27.62	27.19	33.03	30.86	27.95	29.47	27.26
16	26.89	27.19	28.59	27.47	27.46	27.69	27.23	32.17	30.34	27.77	30.49	27.24
17	26.84	27.18	28.54	27.50	27.53	27.71	27.32	31.63	29.94	27.62	29.87	27.22
18	26.86	27.18	28.56	27.50	27.66	27.71	27.37	31.11	29.62	27.49	29.23	27.23
19	26.90	27.18	28.47	27.40	27.72	27.73	27.60	30.69	29.35	27.38	28.84	27.34
20	26.91	27.19	28.35	27.33	27.76	27.59	27.90	30.35	29.14	27.29	28.62	27.51
21	26.91	27.16	28.23	27.36	27.71	27.55	27.51	30.09	28.97	27.23	28.54	27.46
22	26.95	27.10	28.22	27.34	27.58	27.57	27.55	29.85	28.80	27.20	28.42	27.28
23	27.03	27.11	28.18	27.32	27.54	27.51	27.67	29.71	28.63	27.13	29.39	27.20
24	27.13	27.17	28.22	27.34	27.49	27.49	27.73	29.70	28.46	27.07	31.85	27.14
25	27.02	27.38	27.09	27.35	27.46	27.41	27.78	29.55	28.32	27.04	32.23	27.12
26	27.03	27.53	27.37	27.37	27.48	27.51	27.58	29.48	28.21	27.05	31.89	27.09
27	26.98	27.50	27.38	27.41	27.55	27.56	27.74	29.25	28.09	27.05	31.00	27.08
28	26.98	27.55	27.72	27.30	27.54	27.40	28.63	29.15	27.94	27.03	30.25	27.09
29	26.99	27.98	27.98	27.20	---	27.31	29.74	29.06	27.81	27.02	29.70	27.10
30	27.33	28.47	28.02	27.06	---	27.27	30.28	29.35	27.69	26.98	29.29	27.06
31	26.94	---	27.97	26.87	---	27.25	---	29.52	---	27.05	28.96	---
MEAN	26.95	27.15	28.35	27.54	27.50	27.46	27.56	30.34	29.56	27.44	29.00	27.49
MAX	27.33	28.47	28.99	28.07	27.76	27.74	30.28	33.52	32.93	28.72	32.23	28.70
MIN	26.82	26.78	27.09	26.87	26.95	26.60	27.08	29.06	27.69	26.98	26.74	27.06

05484600 RACCOON RIVER NEAR WEST DES MOINES, IA--Continued



05484650 RACCOON RIVER AT 63RD STREET, DES MOINES, IA

LOCATION.--Lat 41°33'49", long 93°42'13", in SW$^{1}/_{4}$ NE$^{1}/_{4}$ sec.14, T.78 N., R.25 W., Polk County, Hydrologic Unit 07100006, on left bank, at upstream side of bridge on State Highway 28, 2.9 mi. upstream from Walnut Creek, 8.6 mi. upstream from mouth of Raccoon River, and at mile 210.0 upstream from mouth of Des Moines River.

DRAINAGE AREA.-- 3,529 mi^2.

PERIOD OF RECORD.-- October 1991 to current year. October 1991 to September 1996 gage height record only.

GAGE.--Water-stage recorder. Datum of gage is 773.91 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. National Weather Service Limited Automatic Remote Collector (LARC) and U.S. Army Corps of Engineers rain gage and U.S. Geological Survey satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	316	350	935	e544	e272	e288	e480	2670	3030	1010	350	1230
2	319	326	909	e444	e335	e201	e474	2410	3160	968	330	1090
3	311	325	842	e475	e343	e240	e462	2140	3430	842	320	976
4	306	319	801	e473	e335	e333	e448	1940	3840	757	317	877
5	310	316	757	e400	e351	447	e422	1860	3010	743	325	780
6	287	313	747	e377	e375	510	e412	1840	2550	743	586	710
7	300	308	706	e356	e355	e500	e410	1870	2230	806	1000	650
8	283	303	703	e374	e370	e480	e434	1980	2050	846	1520	591
9	287	296	855	e387	e357	e504	e450	2040	1880	683	2090	547
10	348	293	817	e397	e333	519	e436	2030	1700	725	1670	504
11	327	289	761	e413	e370	634	498	1890	1810	935	1300	471
12	330	290	747	e435	e442	640	540	3320	3610	1230	1100	442
13	312	297	782	e451	e413	e633	543	6550	6370	1460	969	416
14	355	304	775	e443	e429	e655	525	7010	5030	1170	865	400
15	418	311	712	e430	e447	e682	536	6240	3690	1030	1630	388
16	345	308	651	e429	e474	e700	556	4880	3040	906	2770	378
17	322	311	622	e427	e493	e716	580	4280	2620	698	2270	365
18	328	317	624	e443	e519	e703	605	3780	2350	633	1710	370
19	347	320	599	e436	e604	e696	670	3310	2140	578	1390	427
20	347	325	e509	e420	e652	e651	820	2970	2040	536	1210	470
21	338	323	e458	e446	e619	e624	684	2770	1900	508	1150	460
22	360	309	e420	e435	e568	e644	680	2610	1760	494	1080	389
23	385	311	e376	e414	e604	e625	740	2440	1640	459	1650	353
24	430	334	323	e376	e573	e590	753	2400	1540	432	4500	332
25	389	382	263	e407	e459	e572	770	2340	1450	415	4810	321
26	384	439	441	435	e269	e574	695	2090	1390	421	4600	309
27	363	430	464	418	e296	e620	784	1840	1290	430	3630	303
28	366	427	513	414	e341	e534	1070	1730	1180	416	2740	304
29	374	534	587	404	---	e508	1730	1670	1110	416	2170	309
30	521	765	e531	331	---	e498	2250	1890	1050	391	1780	297
31	360	---	e531	246	---	e488	---	2060	---	440	1460	---
TOTAL	10768	10475	19761	12880	11998	17009	20457	88850	73890	22121	53292	15459
MEAN	347.4	349.2	637.5	415.5	428.5	548.7	681.9	2866	2463	713.6	1719	515.3
MAX	521	765	935	544	652	716	2250	7010	6370	1460	4810	1230
MIN	283	289	263	246	269	201	410	1670	1050	391	317	297
AC-FT	21360	20780	39200	25550	23800	33740	40580	176200	146600	43880	105700	30660
CFSM	0.10	0.10	0.18	0.12	0.12	0.16	0.19	0.81	0.70	0.20	0.49	0.15
IN.	0.11	0.11	0.21	0.14	0.13	0.18	0.22	0.94	0.78	0.23	0.56	0.16

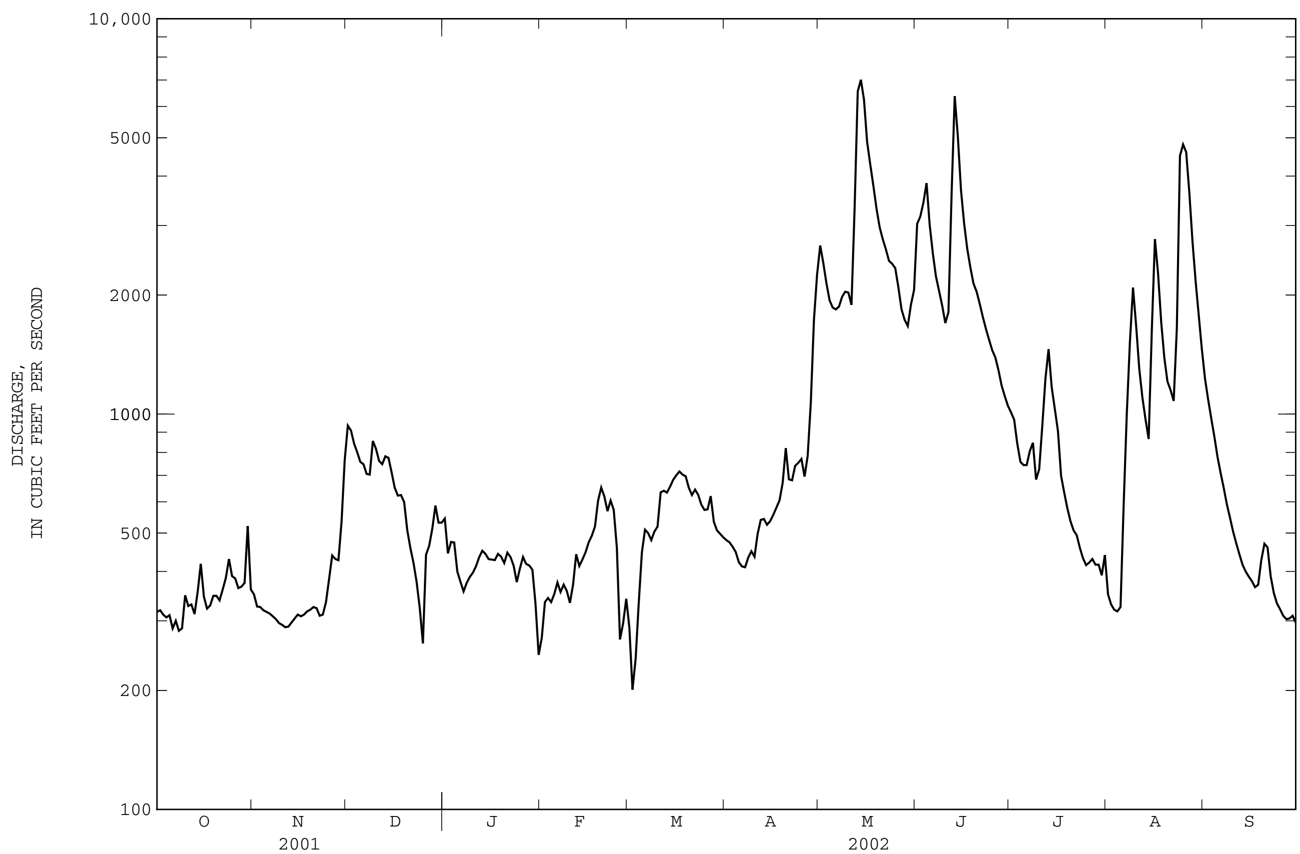
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	497.0	797.2	664.6	482.6	1210	2322	4062	4339	5109	2701	1182	442.6
MAX	1142	2484	1873	1236	3205	4914	9591	7830	12460	7560	2220	694
(WY)	1997	1997	1997	1997	1997	2001	1999	1999	1998	1998	1998	1998
MIN	124	246	148	200	211	407	281	334	603	714	339	164
(WY)	2001	2001	2001	2001	2001	2000	2000	2000	2000	2002	2000	2000

05484650 RACCOON RIVER AT 63RD STREET, DES MOINES, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1997 - 2002	
ANNUAL TOTAL	710772		356960			
ANNUAL MEAN	1947		978.0		1983	
HIGHEST ANNUAL MEAN					3352	1998
LOWEST ANNUAL MEAN					375	2000
HIGHEST DAILY MEAN	17100	May 7	7010	May 14	36300	Jun 16 1998
LOWEST DAILY MEAN	130	Jan 2	201	Mar 2	80	Dec 25 2000
ANNUAL SEVEN-DAY MINIMUM	169	Feb 17	281	Feb 26	94	Dec 20 2000
MAXIMUM PEAK FLOW			7470	Jun 13	40300	Jun 16 1998
MAXIMUM PEAK STAGE			28.55	Jun 13	40.77	Jul 11 1993
ANNUAL RUNOFF (AC-FT)	1410000		708000		1437000	
ANNUAL RUNOFF (CFSM)	0.55		0.28		0.56	
ANNUAL RUNOFF (INCHES)	7.49		3.76		7.64	
10 PERCENT EXCEEDS	5230		2260		5220	
50 PERCENT EXCEEDS	651		531		700	
90 PERCENT EXCEEDS	210		316		238	

e Estimated



05484800 WALNUT CREEK AT DES MOINES, IA

LOCATION.--Lat 41°35'14", long 93°42'11", in $SW^1/_4$ $SE^1/_4$ sec.2, T.78 N., R.25 W., Polk County, Hydrologic Unit 07100006, on left bank, 25 ft downstream from bridge on 63rd Street in Des Moines, and 2.2 mi upstream from Raccoon River.

DRAINAGE AREA.--78.4 mi^2.

PERIOD OF RECORD.--October 1971 to current year.

REVISED RECORDS.--WDR IA-73-1: 1972. WDR IA-75-1: 1973-74.

GAGE.--Water-stage recorder. Datum of gage is 801.04 ft above NGVD of 1929 (levels by Iowa Natural Resources Council).

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. National Weather Service Limited Automatic Remote Collector (LARC) and U.S. Geological Survey data collection platform with telephone modem at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.2	9.2	3.3	1.5	7.7	e2.0	5.6	39	73	16	3.8	4.6
2	2.9	7.1	2.9	1.6	8.8	e1.9	5.3	33	100	15	3.3	4.7
3	2.3	4.2	2.8	2.2	7.8	e1.4	4.3	26	62	14	3.1	4.4
4	8.0	3.6	2.9	2.7	4.3	4.3	3.5	23	51	13	4.1	4.1
5	7.3	3.3	14	4.3	4.6	13	3.4	21	44	26	4.1	4.0
6	3.1	3.5	8.2	4.4	4.9	11	3.4	25	39	20	3.4	3.5
7	2.5	3.9	4.6	3.5	6.0	7.8	17	21	36	19	3.1	3.3
8	2.3	3.2	3.6	3.8	e5.7	7.8	21	22	33	14	3.0	3.2
9	6.5	2.7	3.0	5.2	e5.0	e11	14	25	30	11	2.7	3.0
10	113	2.7	3.0	9.2	e11	e13	7.6	16	29	573	2.3	2.9
11	25	2.6	2.7	5.8	e9.4	e12	51	203	215	153	2.0	2.7
12	12	2.6	6.1	5.2	e11	9.5	35	80	198	43	8.0	2.5
13	14	9.0	6.5	4.4	e8.2	9.9	e15	52	529	25	67	2.5
14	7.4	3.9	4.7	4.1	e10	8.4	e8.2	40	133	17	13	4.2
15	5.2	3.5	4.0	3.3	6.7	8.0	6.2	35	81	13	7.6	4.4
16	4.2	3.4	5.2	3.0	5.9	6.6	5.7	37	61	11	5.7	3.6
17	3.7	3.0	4.0	2.7	5.4	6.0	5.4	32	53	8.9	8.9	3.4
18	3.9	3.2	3.9	2.7	6.1	6.2	16	28	49	8.0	5.9	45
19	3.7	3.9	e1.5	3.2	26	9.4	23	26	42	12	5.0	52
20	2.9	2.6	e2.5	3.1	17	7.5	11	24	37	10	4.4	10
21	3.0	2.5	e2.0	2.8	8.7	5.8	39	23	35	7.5	3.9	5.9
22	86	2.6	e4.5	3.0	6.0	5.2	15	22	33	13	13	4.3
23	40	7.4	e5.0	2.6	5.1	5.5	49	37	31	7.4	539	3.6
24	22	25	e4.0	2.3	4.5	5.4	41	23	28	6.0	29	3.3
25	11	11	2.6	1.7	3.7	5.5	24	109	27	9.0	12	6.0
26	6.7	24	2.2	1.8	3.7	5.4	17	42	25	6.9	6.6	3.6
27	4.5	11	2.6	1.8	2.8	5.3	237	34	23	21	7.1	3.2
28	4.3	5.6	2.7	1.8	3.2	5.7	75	36	21	7.1	6.1	3.1
29	4.8	4.0	2.3	1.6	---	9.0	44	32	20	11	5.6	3.3
30	7.3	3.5	1.9	2.3	---	5.9	55	292	18	5.8	5.2	3.3
31	7.6	---	1.6	4.2	---	6.7	---	116	---	4.7	4.8	---
TOTAL	430.3	177.7	120.8	101.8	209.2	222.1	857.6	1574	2156	1121.3	792.7	207.6
MEAN	13.88	5.923	3.897	3.284	7.471	7.165	28.59	50.77	71.87	36.17	25.57	6.920
MAX	113	25	14	9.2	26	13	237	292	529	573	539	52
MIN	2.3	2.5	1.5	1.5	2.8	1.4	3.4	16	18	4.7	2.0	2.5
AC-FT	854	352	240	202	415	441	1700	3120	4280	2220	1570	412
CFSM	0.18	0.08	0.05	0.04	0.10	0.09	0.36	0.65	0.92	0.46	0.33	0.09
IN.	0.20	0.08	0.06	0.05	0.10	0.11	0.41	0.75	1.02	0.53	0.38	0.10

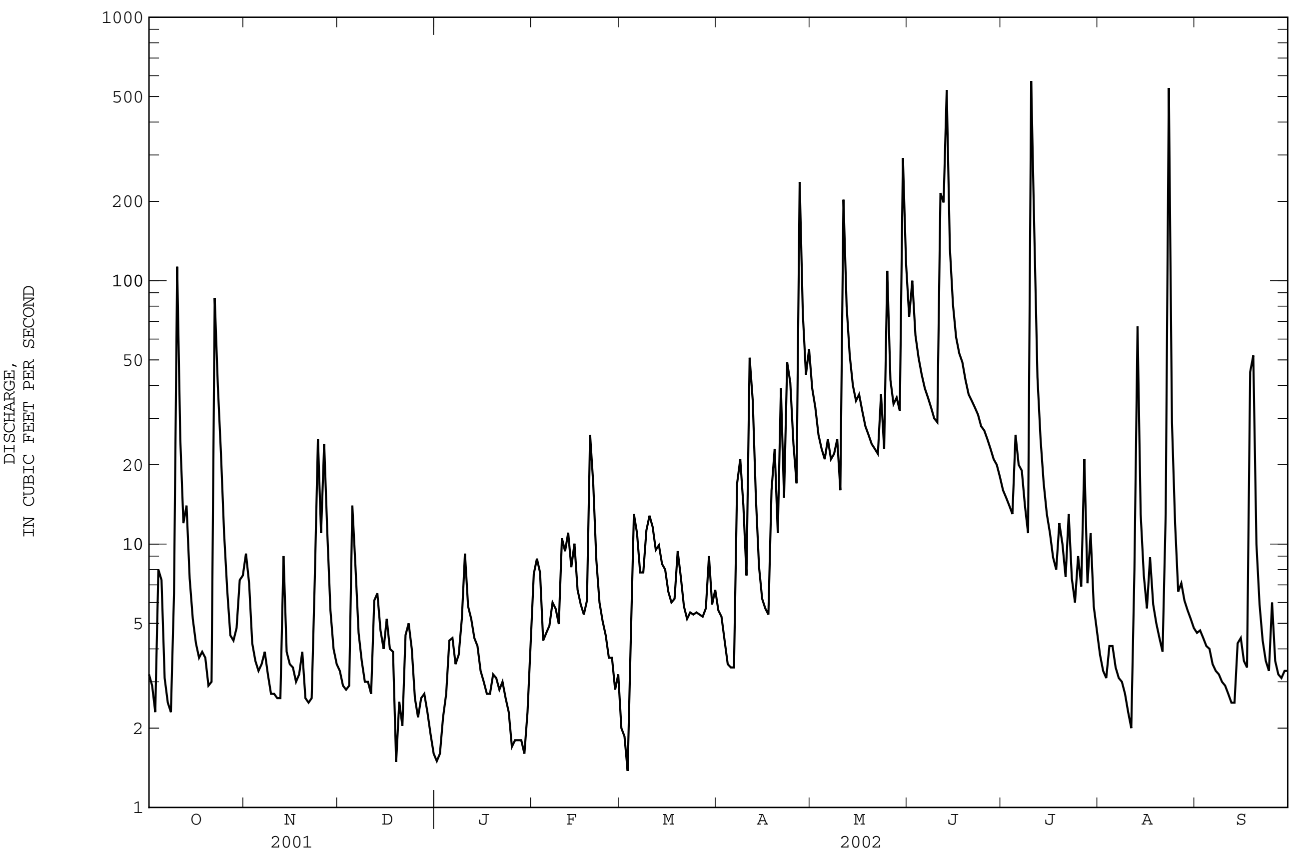
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1972 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	30.15	35.89	29.38	21.47	42.79	71.94	97.61	119.6	120.1	80.73	45.80	29.82
MAX	166	147	119	123	178	214	310	390	385	427	329	214
(WY)	1974	1973	1983	1974	1973	1990	1973	1996	1990	1993	1993	1993
MIN	1.33	0.88	0.17	0.001	0.48	3.17	2.71	6.36	7.62	2.96	4.37	0.57
(WY)	1972	1977	1977	1977	1977	1981	1981	1977	1977	1985	1976	1976

05484800 WALNUT CREEK AT DES MOINES, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1972 - 2002	
ANNUAL TOTAL	15416.48		7971.1			
ANNUAL MEAN	42.24		21.84		60.45	
HIGHEST ANNUAL MEAN					158	1993
LOWEST ANNUAL MEAN					10.3	1989
HIGHEST DAILY MEAN	624	Apr 9	573	Jul 10	4520	Jul 1 1973
LOWEST DAILY MEAN	0.00	Aug 14	1.4	Mar 3	0.00	Jan 3 1977a
ANNUAL SEVEN-DAY MINIMUM	0.16	Aug 8	1.9	Jan 24	0.00	Jan 3 1977
MAXIMUM PEAK FLOW			2460	Jul 10	12500	May 10 1986
MAXIMUM PEAK STAGE			11.08	Aug 23	18.32	May 10 1986
INSTANTANEOUS LOW FLOW			0.38	Jan 24		
ANNUAL RUNOFF (AC-FT)	30580		15810		43800	
ANNUAL RUNOFF (CFSM)	0.54		0.28		0.77	
ANNUAL RUNOFF (INCHES)	7.31		3.78		10.48	
10 PERCENT EXCEEDS	106		41		143	
50 PERCENT EXCEEDS	10		6.1		23	
90 PERCENT EXCEEDS	2.6		2.7		2.5	

a Many days in 1977, Aug. 21, 1994, many days in 2000, and Aug. 14, 2001.
e Estimated.



05484900 RACCOON RIVER AT FLEUR DRIVE, DES MOINES, IA

LOCATION.--Lat 41°34'54", long 93°38'34", in $NW^1/_4$ $NE^1/_4$ sec.8, T.78 N., R.24 W., Polk County, Hydrologic Unit 07100006, on downstream side of Fleur Drive bridge(SW 18th St.) attached to handrail 465 ft. from right edge of bridge, 3.0 miles downstream from Walnut Creek, 2.6 miles upstream from mouth, and at mile 204.1 above mouth of Des Moines River.

DRAINAGE AREA.-- 3,625 mi^2.

PERIOD OF RECORD.-- June 1984 to current year; June 1984 to September 1996 gage-height record only.

GAGE.--Water-stage recorder. Datum of gage is 780.70 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Discharges are affected by withdrawal by Des Moines Water Works. U.S. Geological Survey satellite data collection platform and U.S. National Weather Service Limited Automatic Remote Collector (LARC) at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	298	332	900	461	208	e326	467	3140	3070	866	239	1280
2	e295	327	868	450	354	e228	463	2940	3350	825	217	1100
3	e285	320	800	432	415	e282	448	2630	3430	780	208	940
4	e280	312	753	414	e340	e279	433	2350	3860	711	202	801
5	e290	312	705	366	e362	e308	398	2200	3040	675	210	700
6	259	308	693	346	e372	e400	400	2160	2600	645	414	640
7	252	299	667	335	e374	e545	401	2100	2290	e697	943	571
8	249	294	655	354	e386	e520	418	2330	2120	e858	1470	510
9	264	287	835	366	e381	e540	420	2330	1970	596	2170	461
10	478	286	819	379	e355	e587	388	2380	1830	1220	1730	417
11	360	287	677	386	e381	e661	446	2470	2180	1040	1320	390
12	285	287	648	400	e448	639	533	3430	3680	1200	1080	358
13	269	296	680	426	e412	631	475	6360	6490	1530	1020	334
14	294	298	675	441	e439	646	446	6910	5350	1160	845	321
15	349	303	615	414	e458	653	439	6280	3960	933	1510	313
16	295	299	573	412	e479	690	452	5180	3320	770	2840	308
17	269	294	555	412	e510	707	464	4550	2870	663	2440	295
18	272	299	558	420	e534	719	518	3990	2530	601	1810	342
19	288	307	e521	411	e620	725	605	3470	2230	531	1450	e380
20	297	307	e485	380	e666	677	844	3100	2010	477	1240	392
21	293	302	e418	386	e637	621	740	2800	1850	441	1170	396
22	393	287	e384	385	e572	648	662	2550	1710	432	1090	336
23	403	285	e356	383	e608	618	800	2400	1560	394	2000	295
24	404	324	e306	377	e582	578	798	2370	1430	363	4460	250
25	378	357	183	389	e513	558	819	2400	1300	338	4670	249
26	370	423	350	416	e321	561	730	2190	1230	336	4680	241
27	358	410	413	437	e340	622	1150	1950	1140	364	3780	226
28	356	401	471	399	e376	543	1320	1870	1050	330	2900	241
29	360	466	516	347	---	497	2090	1780	973	343	2270	245
30	478	683	456	245	---	484	2740	2220	925	298	1840	228
31	372	---	452	165	---	475	---	2220	---	339	1520	---
TOTAL	10093	9992	17987	11934	12443	16968	21307	95050	75348	20756	53738	13560
MEAN	325.6	333.1	580.2	385.0	444.4	547.4	710.2	3066	2512	669.5	1733	452.0
MAX	478	683	900	461	666	725	2740	6910	6490	1530	4680	1280
MIN	249	285	183	165	208	228	388	1780	925	298	202	226
AC-FT	20020	19820	35680	23670	24680	33660	42260	188500	149500	41170	106600	26900
CFSM	0.09	0.09	0.16	0.11	0.12	0.15	0.20	0.85	0.69	0.18	0.48	0.12
IN.	0.10	0.10	0.18	0.12	0.13	0.17	0.22	0.98	0.77	0.21	0.55	0.14

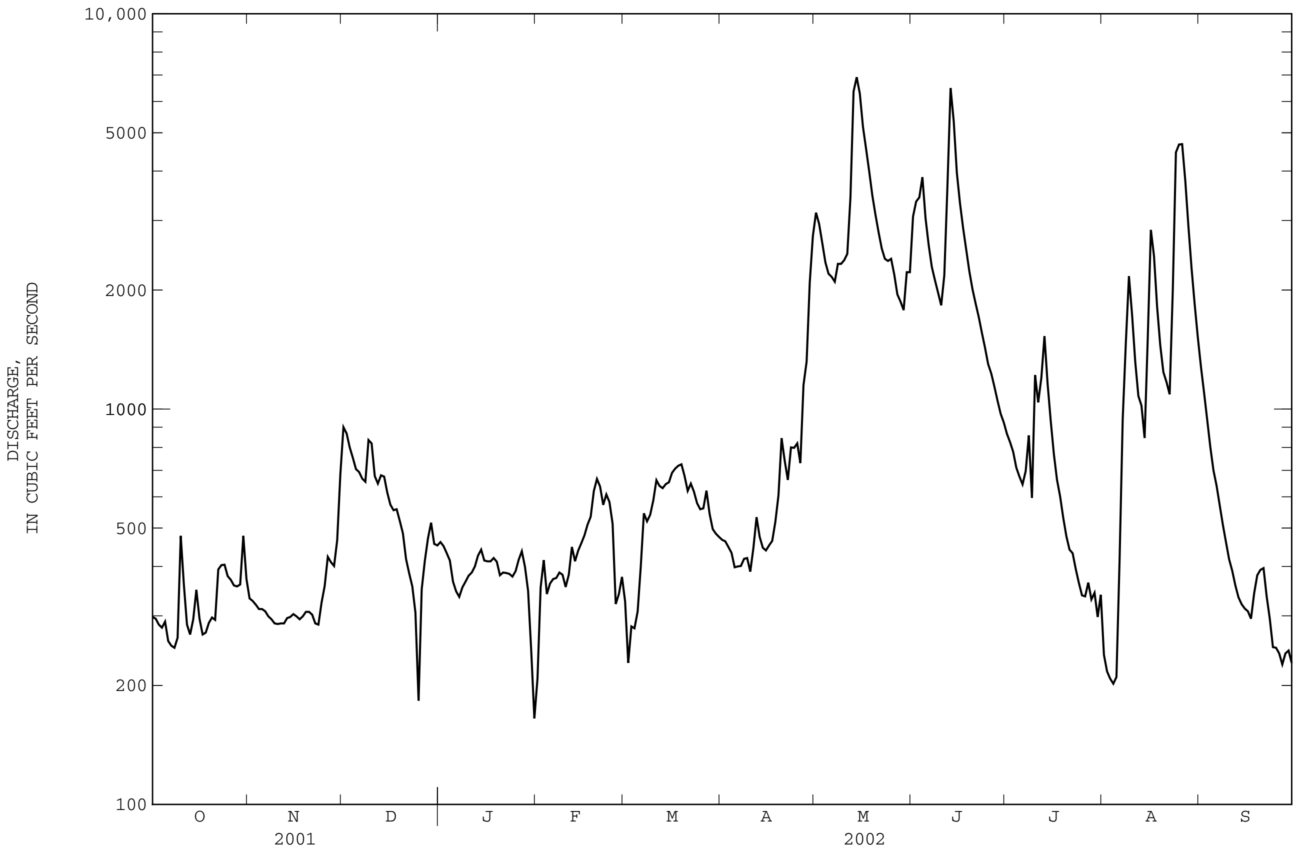
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	484.3	798.3	646.1	465.6	1221	2314	4180	4420	5209	2697	1177	416.1
MAX	1139	2527	1873	1235	3280	4877	9905	7915	12570	7266	2252	664
(WY)	1997	1997	1997	1997	1997	2001	1999	1999	1998	1998	1998	1998
MIN	120	265	177	169	224	349	277	370	671	670	334	124
(WY)	2001	2000	2001	2000	2000	2000	2000	2000	2000	2002	2000	2000

05484900 RACCOON RIVER AT FLEUR DRIVE, DES MOINES, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1997 - 2002	
ANNUAL TOTAL	717377		359176			
ANNUAL MEAN	1965		984.0		2001	
HIGHEST ANNUAL MEAN					3350	1998
LOWEST ANNUAL MEAN					381	2000
HIGHEST DAILY MEAN	15000	May 7	6910	May 14	40100	Jun 16 1998
LOWEST DAILY MEAN	150	Jan 2	165	Jan 31	73	Oct 4 2000
ANNUAL SEVEN-DAY MINIMUM	183	Feb 17	240	Sep 24	85	Sep 28 2000
MAXIMUM PEAK FLOW			7440	Jun 13	45000	Jun 16 1998
MAXIMUM PEAK STAGE			8.39	Jun 13	26.80	Jul 11 1993
ANNUAL RUNOFF (AC-FT)	1423000		712400		1450000	
ANNUAL RUNOFF (CFSM)	0.54		0.27		0.55	
ANNUAL RUNOFF (INCHES)	7.36		3.69		7.50	
10 PERCENT EXCEEDS	5500		2420		5350	
50 PERCENT EXCEEDS	595		479		663	
90 PERCENT EXCEEDS	220		289		220	

e Estimated



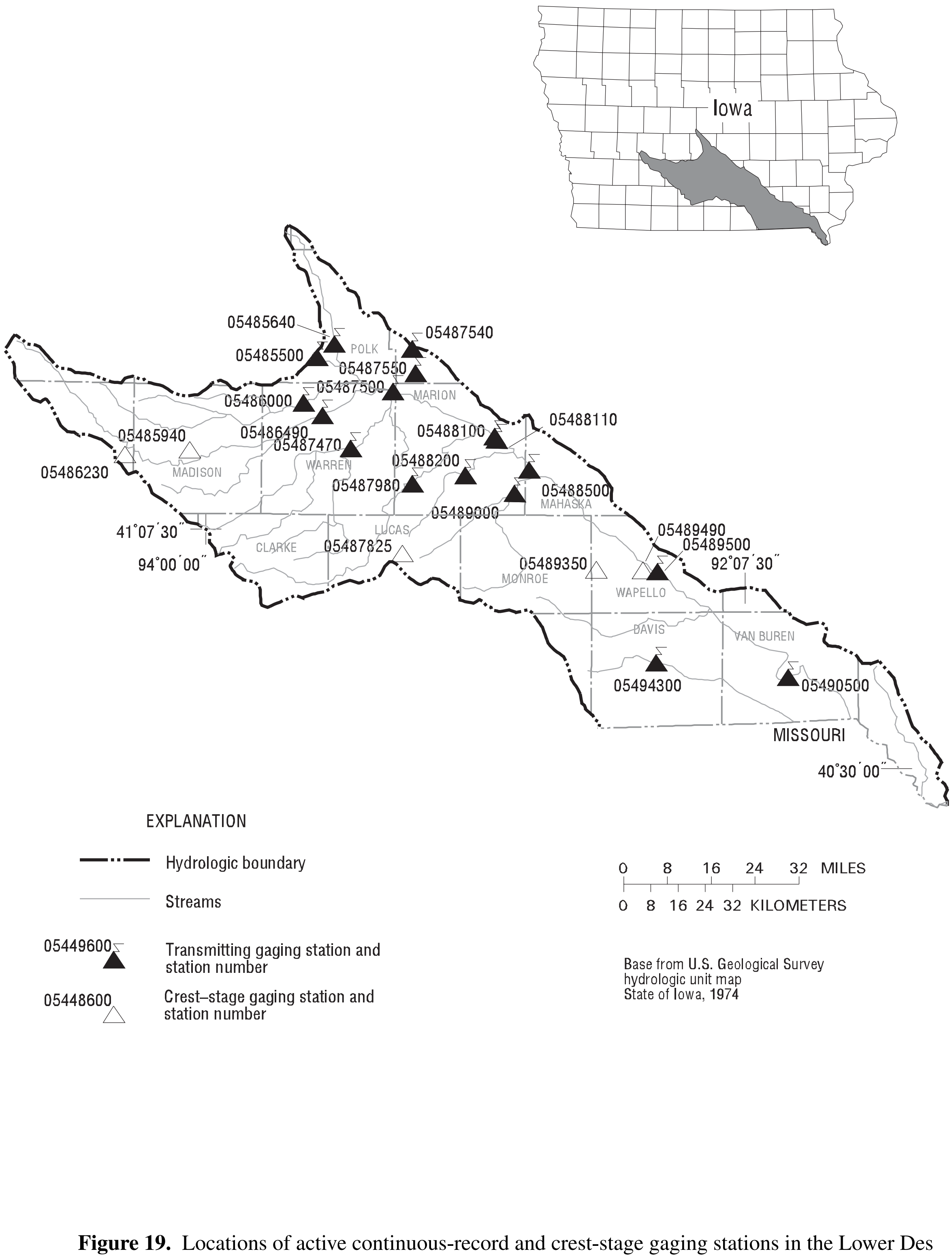


Figure 19. Locations of active continuous-record and crest-stage gaging stations in the Lower Des Moines River and Fox River drainage basins.

Gaging Stations

05485500	Des Moines River blw Raccoon River at Des Moines, IA	308
05485640	Fourmile Creek at Des Moines, IA	310
05486000	North River near Norwalk, IA	312
05486490	Middle River near Indianola, IA	314
05487470	South River near Ackworth, IA	316
05487500	Des Moines River near Runnells, IA	318
05487540	Walnut Creek near Prairie City, IA	320
05487550	Walnut Creek near Vandalia, IA	326
05487980	White Breast Creek near Dallas, IA	332
05488100	Lake Red Rock near Pella, IA	334
05488110	Des Moines River near Pella, IA	336
05488200	English Creek near Knoxville, IA	338
05488500	Des Moines River near Tracy, IA	340
05489000	Cedar Creek near Bussey, IA	342
05489500	Des Moines River at Ottumwa, IA	344
05490500	Des Moines River at Keosauqua, IA	346
05494300	Fox River at Bloomfield, IA	348

Crest Stage Gaging Stations

05485940	Cedar Creek Tributary No. 2 near Winterset, IA	358
05486230	Bush Branch Creek near Stanzel, IA	358
05487825	Little White Breast Creek Tributary near Chariton, IA	358
05489350	South Avery Creek near Blakesburg, IA	358
05489490	Bear Creek at Ottumwa, IA	358

05485500 DES MOINES RIVER BELOW RACCOON RIVER AT DES MOINES, IA

LOCATION.--Lat 41°34'40", long 93°36'19", in SW $^{1}/_{4}$ NE $^{1}/_{4}$ sec.10, T.78 N., R.24 W., Polk County, Hydrologic Unit 07100008, on left bank 40 ft downstream from bridge on Southeast 6th Street at Des Moines, 0.5 mi downstream from Raccoon River and Scott Street Dam, and at mile 201.0.

DRAINAGE AREA.--9,879 mi^2.

PERIOD OF RECORD.--April 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1943 (P).

GAGE.--Water-stage recorder. Datum of gage is 762.52 ft above NGVD of 1929. Prior to Oct. 1, 1951, and Oct. 1, 1953 to Sept. 30, 1959, water-stage recorder upstream of Scott Street Dam, 0.8 mi upstream at datum 11.16 ft higher. Oct. 1, 1951 to Sept. 30, 1953, Oct. 1, 1959 to April 24, 1997 water-stage recorder .3 mi downstream at current datum, and Oct. 1, 1959 to Sept. 30, 1961, nonrecording gage at present site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Des Moines municipal water supply is taken from infiltration galleries on Raccoon River, 3.5 mi upstream from station. At times, water is pumped from Raccoon River into recharge basins or into Waterworks Reservoir, capacity 4,800 acre-ft. Effluent from sewage treatment plant enters the river 2.3 mi downstream from station. Net effect of diversions not known. Flow regulated by Saylorville Lake (station 05481630) 12.7 mi upstream, since Apr. 12, 1977. U.S. Army Corps of Engineers rain gage and data collection platform, U.S. National Weather Service Limited Automatic Remote Collector (LARC), and U.S. Geological Survey data logger at station.

COOPERATION.--Average monthly pumpage from galleries provided by Des Moines Water Works.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 116,000 ft^3/s July 11,1993, gage height, 34.29; minimum daily discharge, 26 ft^3/s Jan. 16-29, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage 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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	496	505	2100	1430	570	1300	1410	7800	6390	2460	605	3350
2	434	516	2200	1220	683	640	1370	7250	6750	2160	508	2750
3	449	540	2290	e941	782	613	1340	6310	7380	1970	492	2450
4	478	532	2240	e884	728	596	1330	5700	8210	1910	498	2350
5	520	538	2210	869	757	634	1420	5390	6550	1990	893	2270
6	478	524	2190	e862	780	813	1620	5360	5660	2090	1780	2090
7	468	501	2350	e866	804	1280	1640	5200	5180	1990	3500	1840
8	470	480	2910	844	815	1710	1650	5440	4990	2090	6000	1710
9	478	472	3090	882	902	1980	1630	5350	4820	2070	6600	1540
10	776	474	3100	962	1290	1640	1580	5300	4530	2790	5420	1400
11	542	472	3060	985	1420	1220	1680	5430	4830	3390	4310	1260
12	508	470	2700	1030	1250	1450	1850	6790	6700	2460	3530	1120
13	511	486	1670	1080	1180	1550	1870	12000	11000	2980	3530	1040
14	519	486	3180	1080	1150	1710	1850	13700	10100	2660	3990	996
15	624	490	3070	1050	1200	1760	1920	14200	8530	2420	7790	958
16	549	480	2940	921	1220	1790	2170	12700	7680	2110	9730	872
17	505	475	3000	746	1250	1820	2380	11700	7130	1780	7560	696
18	514	480	2930	1290	1400	1910	2420	10900	6480	1670	6300	656
19	534	459	2100	1000	1760	2040	2520	9720	5730	1500	6200	839
20	548	462	1590	936	2290	2070	2700	8300	5470	1210	6810	887
21	543	472	1620	938	2370	2000	2480	6990	5080	1130	5280	681
22	807	450	1620	952	1780	1930	2060	5930	4540	1140	4170	577
23	801	454	1520	947	1850	1820	2320	5650	4210	962	5670	510
24	697	507	1170	936	1960	1790	2430	5580	3740	703	9130	484
25	599	511	973	959	1940	1780	2430	5730	3450	665	10600	482
26	589	655	630	1010	1900	1760	2300	5410	3230	712	10200	498
27	591	759	612	1040	1660	1820	2830	5090	3140	857	8150	538
28	592	1120	693	1010	1410	1740	3090	4740	3010	796	6270	556
29	1150	1230	1120	953	---	1600	4900	4420	2710	926	5160	551
30	705	1650	1280	762	---	1420	7220	5300	2630	853	4390	520
31	410	---	1480	568	---	1400	---	5710	---	773	3930	---
TOTAL	17885	17650	63638	29953	37101	47586	68410	225090	169850	53217	158996	36471
MEAN	576.9	588.3	2053	966.2	1325	1535	2280	7261	5662	1717	5129	1216
MAX	1150	1650	3180	1430	2370	2070	7220	14200	11000	3390	10600	3350
MIN	410	450	612	568	570	596	1330	4420	2630	665	492	482
AC-FT	35470	35010	126200	59410	73590	94390	135700	446500	336900	105600	315400	72340
CFSM	0.06	0.06	0.21	0.10	0.13	0.16	0.23	0.73	0.57	0.17	0.52	0.12
IN.	0.07	0.07	0.24	0.11	0.14	0.18	0.26	0.85	0.64	0.20	0.60	0.14

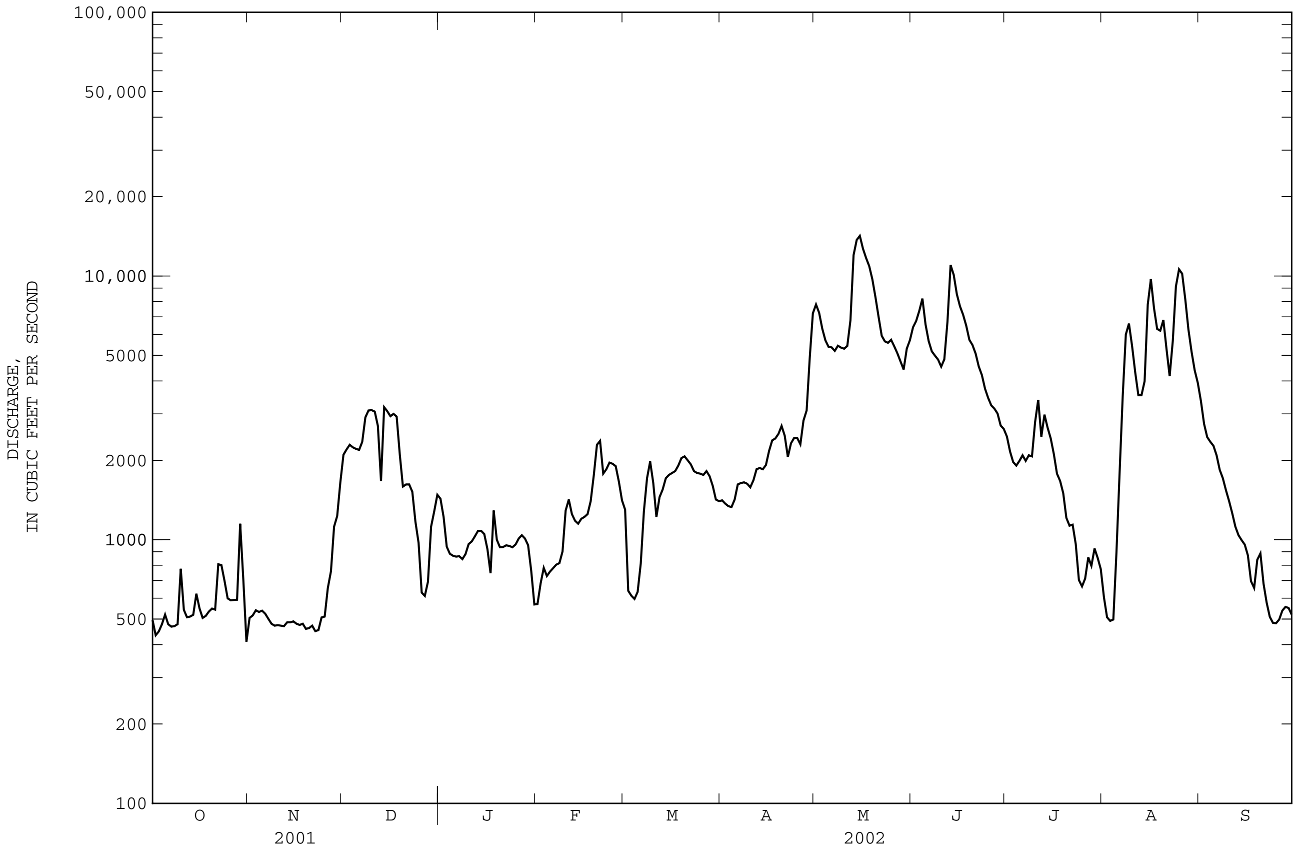
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	2944	3329	2888	1756	3088	7990	11740	11810	12890	10690	5102	3350
MAX	15060	10610	9045	6439	12400	23530	27620	28190	35250	55960	26050	21430
(WY)	1987	1993	1983	1983	1984	1983	1993	1993	1984	1993	1993	1993
MIN	293	363	342	310	343	560	627	1159	1716	739	441	406
(WY)	2001	1990	1990	1981	1978	1981	2000	2000	1988	1988	1988	2000

05485500 DES MOINES RIVER BELOW RACCOON RIVER AT DES MOINES, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1978 - 2002a	
ANNUAL TOTAL	2596685		925847			
ANNUAL MEAN	7114		2537		6475	
HIGHEST ANNUAL MEAN					19180	1993
LOWEST ANNUAL MEAN					1036	1989
HIGHEST DAILY MEAN	27500	Mar 25	14200	May 15	113000	Jul 11 1993
LOWEST DAILY MEAN	270	Jan 2	410	Oct 31	200	Mar 12 1978b
ANNUAL SEVEN-DAY MINIMUM	309	Jan 1	465	Nov 17	236	Mar 7 1978
MAXIMUM PEAK FLOW			14800	May 14	116000	Jul 11 1993
MAXIMUM PEAK STAGE			18.38	May 14	34.29	Jul 11 1993
INSTANTANEOUS LOW FLOW			308	Oct 2		
ANNUAL RUNOFF (AC-FT)	5151000		1836000		4691000	
ANNUAL RUNOFF (CFSM)	0.72		0.26		0.66	
ANNUAL RUNOFF (INCHES)	9.78		3.49		8.90	
10 PERCENT EXCEEDS	20800		6280		18200	
50 PERCENT EXCEEDS	1590		1630		3220	
90 PERCENT EXCEEDS	460		509		540	

a Post regulation.
b Also Mar. 13, 1978.
e Estimated.



05485640 FOURMILE CREEK AT DES MOINES, IA

LOCATION.--Lat 41°36'50", long 93°32'43", in NE$^{1}/_{4}$ NE$^{1}/_{4}$ sec.32, T.79 N., R.23 W., Polk County, Hydrologic Unit 07100008, on right bank 20 ft downstream from bridge on Easton Blvd., 4.4 mi downstream from Muchikinock Creek, and 5.0 mi upstream from Des Moines River.

DRAINAGE AREA.--92.7 mi^2.

PERIOD OF RECORD.--October 1971 to current year.

REVISED RECORDS.--WDR IA-75-1: 1974 (P).

GAGE.--Water-stage recorder. Datum of gage is 795.87 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey satellite data collection platform and U.S. National Weather Service Limited Automatic Remote Collector (LARC) at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.1	10	6.9	e4.1	e5.1	e11	8.5	79	35	12	5.6	5.1
2	4.2	9.6	6.9	e7.5	e6.0	e6.4	8.4	68	79	11	4.9	5.2
3	4.1	8.6	6.9	e14	e4.6	e3.9	7.8	56	109	10	4.7	5.6
4	5.3	7.8	7.0	e13	e5.4	e14	7.9	50	62	12	5.0	5.0
5	7.1	8.0	8.4	e13	e6.9	e18	7.1	45	47	12	9.0	5.2
6	5.7	8.4	10	e12	e8.1	e15	7.1	46	39	36	9.0	e5.0
7	5.9	7.4	7.6	e15	e8.5	e14	10	39	35	14	6.4	e4.6
8	6.1	7.0	7.0	e18	e7.5	e13	14	43	32	12	5.6	e4.3
9	7.0	7.0	7.0	e13	e6.4	e13	15	45	29	9.2	5.1	e4.0
10	42	6.5	6.8	e5.9	e8.0	e14	11	32	31	158	4.7	e3.8
11	16	7.0	6.6	e5.1	e6.8	e17	19	172	86	172	4.7	3.6
12	9.9	6.9	7.4	e4.5	e8.8	17	35	182	90	74	18	3.5
13	12	8.9	7.4	e4.3	e6.9	17	18	113	313	39	30	3.7
14	12	7.2	7.0	e4.7	12	15	15	83	122	27	12	3.2
15	10	6.0	7.0	e3.3	e18	15	15	71	73	21	8.4	3.6
16	9.7	6.0	8.2	e4.4	e24	13	14	76	57	17	7.4	3.4
17	9.7	6.4	7.9	e10	e30	12	14	60	50	15	6.7	3.6
18	9.5	7.1	7.0	e7.1	e25	12	15	51	45	12	7.0	14
19	8.3	6.8	e3.9	e9.2	19	13	43	46	42	12	6.0	17
20	8.9	5.8	e4.8	e11	22	11	20	42	37	11	4.6	6.8
21	8.7	5.5	e4.2	e9.1	16	10	33	39	32	8.6	3.6	4.8
22	33	6.0	e6.7	e6.6	15	e12	25	39	30	11	5.5	4.3
23	51	7.2	e3.5	e5.5	14	10	42	e50	26	7.7	225	4.1
24	e14	11	e4.8	e4.2	13	10	40	e42	24	6.5	19	4.2
25	13	8.3	e3.3	e5.5	e11	10	38	e80	22	6.5	11	4.7
26	12	14	e6.5	e7.1	e6.4	10	28	e47	21	6.2	8.3	4.1
27	11	13	e8.3	e9.9	e5.3	10	196	e25	18	11	7.1	4.1
28	11	8.5	e9.3	e11	e17	9.0	173	e20	16	6.9	6.2	4.2
29	10	7.9	e6.4	e9.5	---	11	99	e15	15	13	5.9	4.5
30	11	7.4	e4.9	e8.5	---	10	96	e43	14	6.3	5.4	4.4
31	12	---	e4.5	e7.1	---	11	---	38	---	5.8	4.6	---
TOTAL	385.2	237.2	204.1	263.1	336.7	377.3	1074.8	1837	1631	775.7	466.4	153.6
MEAN	12.43	7.907	6.584	8.487	12.03	12.17	35.83	59.26	54.37	25.02	15.05	5.120
MAX	51	14	10	18	30	18	196	182	313	172	225	17
MIN	4.1	5.5	3.3	3.3	4.6	3.9	7.1	15	14	5.8	3.6	3.2
AC-FT	764	470	405	522	668	748	2130	3640	3240	1540	925	305
CFSM	0.13	0.09	0.07	0.09	0.13	0.13	0.39	0.64	0.59	0.27	0.16	0.06
IN.	0.15	0.10	0.08	0.11	0.14	0.15	0.43	0.74	0.65	0.31	0.19	0.06

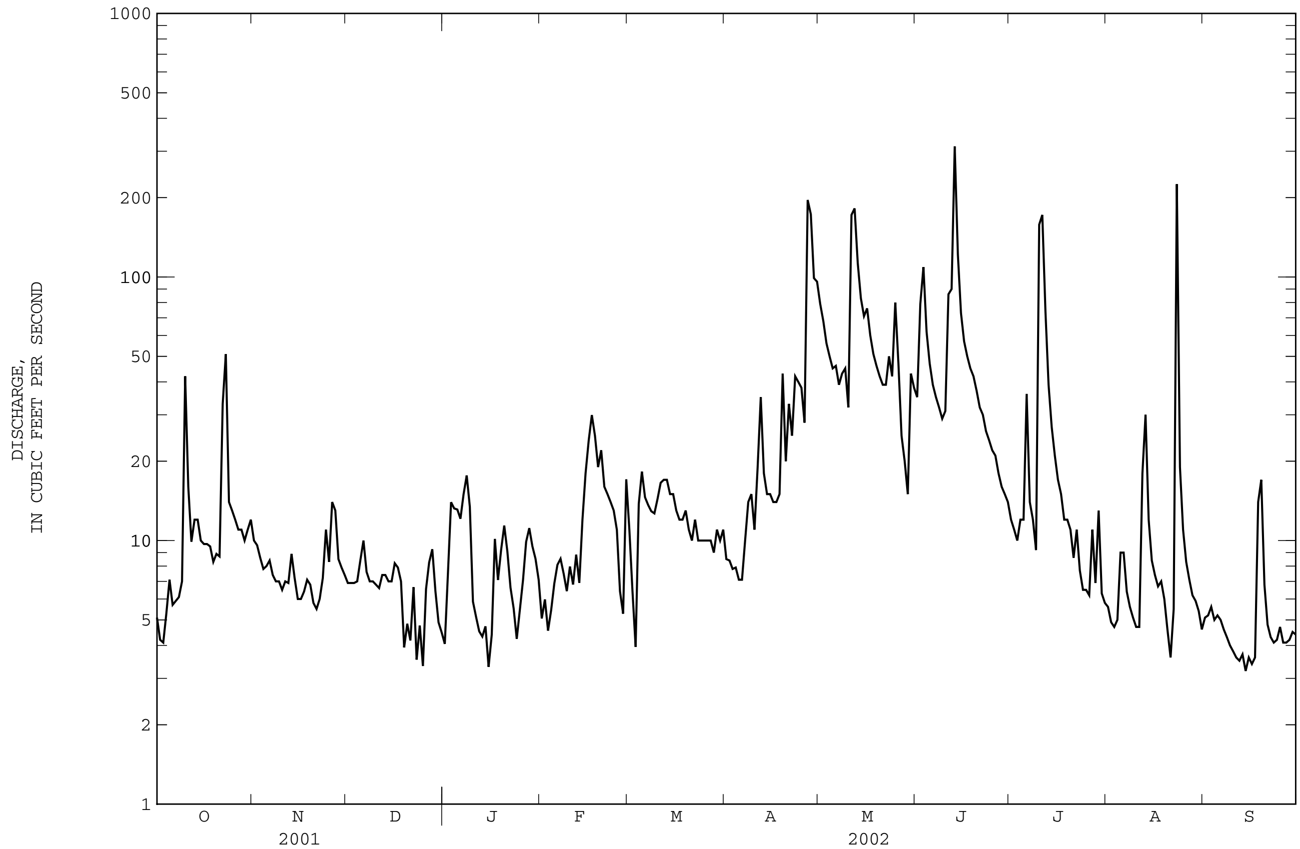
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1972 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	38.45	43.24	33.15	23.07	47.46	98.32	119.9	141.7	157.9	98.48	47.06	35.07
MAX	258	317	124	118	206	292	354	462	505	607	363	270
(WY)	1987	1984	1983	1974	1973	1979	1973	1974	1998	1993	1993	1993
MIN	1.36	1.57	0.25	0.001	0.55	4.04	3.67	6.67	0.73	0.074	1.66	1.37
(WY)	1989	1977	1977	1977	1977	1981	1981	1977	1977	1977	1988	1988

05485640 FOURMILE CREEK AT DES MOINES, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1972 - 2002	
ANNUAL TOTAL	22500.9		7742.1			
ANNUAL MEAN	61.65		21.21		73.68	
HIGHEST ANNUAL MEAN					204	1993
LOWEST ANNUAL MEAN					7.97	1981
HIGHEST DAILY MEAN	822	Apr 9	313	Jun 13	3570	Jun 9 1974
LOWEST DAILY MEAN	1.2	Aug 13	3.2	Sep 14	0.00	Jan 2 1977
ANNUAL SEVEN-DAY MINIMUM	1.9	Aug 8	3.5	Sep 11	0.00	Jan 2 1977
MAXIMUM PEAK FLOW			636	Jun 13	5600	Jun 18 1998
MAXIMUM PEAK STAGE			7.02	Jun 13	15.00	Jun 18 1998
INSTANTANEOUS LOW FLOW			2.2	Sep 15		
ANNUAL RUNOFF (AC-FT)	44630		15360		53380	
ANNUAL RUNOFF (CFSM)	0.67		0.23		0.79	
ANNUAL RUNOFF (INCHES)	9.03		3.11		10.80	
10 PERCENT EXCEEDS	150		46		173	
50 PERCENT EXCEEDS	13		10		25	
90 PERCENT EXCEEDS	5.5		4.6		3.1	

e Estimated



05486000 NORTH RIVER NEAR NORWALK, IA

LOCATION.--Lat 41°27'25", long 93°39'10", in NW$^1/_4$ SW$^1/_4$ sec.20, T.77 N., R.24 W., Warren County, Hydrologic Unit 07100008, on left bank 10 ft downstream from bridge on county highway R57, 1.7 mi southeast of Norwalk, 5.2 mi upstream from Middle Creek, and 6.2 mi downstream from Badger Creek.

DRAINAGE AREA.--349 mi^2.

PERIOD OF RECORD.--February 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1946. WDR IA-76-1: 1975 (P).

GAGE.--Water-stage recorder. Datum of gage is 788.45 ft above NGVD of 1929 (levels by U.S. Army Corps of Engineers). Prior to June 12, 1946, nonrecording gage at same site and datum. Jan. 7 to Oct. 11, 1960, nonrecording gage at site 2.1 mi upstream at different datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	8.5	8.0	8.5	e9.4	16	8.2	158	e90	10	6.2	6.1
2	2.6	6.8	8.1	8.3	e12	12	8.3	139	e75	8.7	5.8	6.2
3	2.8	5.9	8.1	8.3	e10	9.2	8.0	122	e65	8.2	5.3	7.1
4	3.6	e7.4	8.1	8.4	e9.2	8.2	7.7	100	59	7.9	5.0	8.3
5	3.9	e9.1	8.2	8.9	e11	8.7	7.4	84	55	7.7	4.7	8.4
6	4.2	e8.9	9.2	9.6	e13	8.9	7.3	74	51	7.8	4.3	8.6
7	4.1	e9.1	9.3	9.7	e14	10	7.4	67	48	7.8	4.2	8.5
8	4.3	e11	9.7	11	e11	e8.5	7.8	63	43	13	4.3	8.4
9	4.8	e8.4	10	e9.6	e9.8	e14	8.4	57	37	13	4.6	8.4
10	5.7	e7.6	9.8	e8.7	e17	e24	9.5	53	32	22	5.5	8.6
11	6.2	e7.0	9.4	e7.3	e16	e33	10	112	49	39	6.6	8.6
12	6.0	e6.7	13	e7.0	e18	e41	22	512	87	60	10	8.4
13	34	e6.7	14	e8.1	e16	56	28	580	118	117	11	8.4
14	28	e6.5	15	e8.8	e19	52	32	354	339	81	6.2	8.1
15	17	e6.5	15	e6.5	e24	55	33	265	241	47	16	7.8
16	14	e6.9	e14	e8.5	e28	45	26	219	144	28	11	7.9
17	36	e7.1	e13	e13	e32	36	21	197	111	17	7.6	7.8
18	26	e7.0	e11	e11	e30	30	10	174	90	10	7.6	7.8
19	18	e7.0	e7.1	e15	e29	23	8.4	144	78	8.4	7.8	12
20	13	e6.9	e9.2	e14	e26	21	8.1	126	68	7.8	6.8	13
21	8.5	e6.9	e8.0	e12	e24	18	8.4	112	60	7.7	6.5	15
22	8.6	e7.0	e11	e11	e21	15	12	101	53	7.4	6.7	10
23	6.9	e7.3	e10	e8.0	e24	9.5	23	96	47	7.0	31	9.2
24	6.5	e7.1	e12	e7.2	e26	12	31	95	41	6.8	8.0	9.2
25	13	e7.3	e11	e11	e21	8.8	39	112	34	6.6	24	10
26	8.3	e7.8	e12	e13	e18	8.2	43	121	28	6.4	47	10
27	7.2	e8.3	12	e16	15	8.1	85	116	24	6.3	22	9.4
28	8.1	e12	11	e18	13	8.6	133	98	20	6.4	8.8	9.7
29	6.8	9.7	10	e16	---	8.3	282	97	17	7.7	7.0	9.5
30	6.2	8.4	9.4	e13	---	8.1	220	e125	13	6.7	6.3	10
31	7.1	---	8.9	e12	---	8.2	---	e140	---	6.5	6.1	---
TOTAL	324.1	232.8	324.5	327.4	516.4	624.3	1154.9	4813	2217	596.8	313.9	270.4
MEAN	10.45	7.760	10.47	10.56	18.44	20.14	38.50	155.3	73.90	19.25	10.13	9.013
MAX	36	12	15	18	32	56	282	580	339	117	47	15
MIN	2.6	5.9	7.1	6.5	9.2	8.1	7.3	53	13	6.3	4.2	6.1
AC-FT	643	462	644	649	1020	1240	2290	9550	4400	1180	623	536
CFSM	0.03	0.02	0.03	0.03	0.05	0.06	0.11	0.44	0.21	0.06	0.03	0.03
IN.	0.03	0.02	0.03	0.03	0.06	0.07	0.12	0.51	0.24	0.06	0.03	0.03

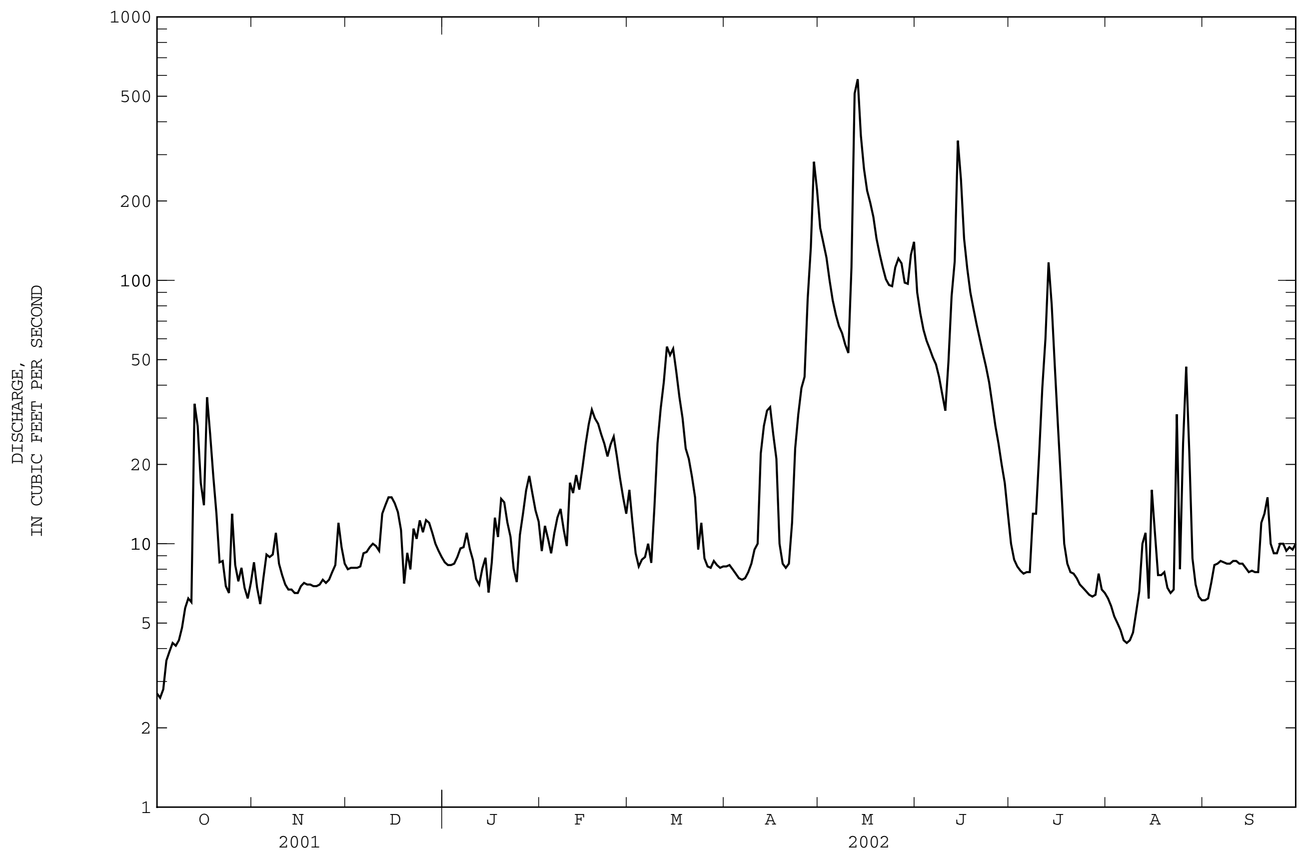
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	75.70	99.15	73.10	75.85	156.9	331.0	346.1	355.1	376.9	190.9	108.9	89.60
MAX	593	747	567	739	911	1041	1401	1699	3260	1722	1185	1007
(WY)	1987	1973	1993	1973	1973	1965	1973	1996	1947	1993	1993	1993
MIN	0.20	0.37	0.36	0.38	3.21	3.90	1.22	3.71	1.58	1.10	0.21	0.26
(WY)	1950	1956	1956	1954	1956	1954	1956	1967	1977	1977	1968	1957

05486000 NORTH RIVER NEAR NORWALK, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1941 - 2002	
ANNUAL TOTAL	49795.8		11715.5			
ANNUAL MEAN	136.4		32.10		189.8	
HIGHEST ANNUAL MEAN					709	1993
LOWEST ANNUAL MEAN					8.08	1968
HIGHEST DAILY MEAN	2010	Mar 16	580	May 13	21600	Jun 13 1947
LOWEST DAILY MEAN	2.0	Aug 14	2.6	Oct 2	0.00	Jul 20 1954a
ANNUAL SEVEN-DAY MINIMUM	2.5	Aug 11	3.4	Oct 1	0.00	Jul 25 1954
MAXIMUM PEAK FLOW			732	May 12	32000	Jun 13 1947b
MAXIMUM PEAK STAGE			12.28	May 12	25.30	Jun 13 1947c
INSTANTANEOUS LOW FLOW			2.4	Oct 2	0.00	Jul 20 1954
ANNUAL RUNOFF (AC-FT)	98770		23240		137500	
ANNUAL RUNOFF (CFSM)	0.39		0.092		0.54	
ANNUAL RUNOFF (INCHES)	5.31		1.25		7.39	
10 PERCENT EXCEEDS	384		88		436	
50 PERCENT EXCEEDS	14		10		43	
90 PERCENT EXCEEDS	4.1		6.5		2.5	

a Many days 1954-58, Oct. 7-9, 2001.
b From rating curve extended above 9,000 ft^3/s on basis of velocity-area studies.
c From floodmark.
e Estimated.



05486490 MIDDLE RIVER NEAR INDIANOLA, IA

LOCATION.--Lat 41°25'27", long 93°35'09", in SW$^1/_4$ SE$^1/_4$ sec.35, T.77 N., R.24 W., Warren County, Hydrologic Unit 07100008, on right bank 10 ft downstream from bridge on county highway, 0.4 mi upstream from Cavitt Creek, 1.5 mi upstream from bridge on U.S. Highway 69, and 4.6 mi northwest of Indianola.

DRAINAGE AREA.--503 mi^2.

PERIOD OF RECORD.--March 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1940 (M), 1941, 1944, 1946, 1949 (M).

GAGE.--Water-stage recorder. Datum of gage is 776.15 ft above NGVD of 1929 (U.S. Army Corps of Engineers bench mark). Prior to June 11, 1946, June 9, 1947 to Nov. 23, 1948, and Sept. 8, 1951 to Oct. 30, 1952, nonrecording gage; and June 11, 1946 to June 8, 1947 (destroyed by flood), Nov. 24, 1948 to Sept. 7, 1951, Oct. 31, 1952 to Sept. 30, 1962, water-stage recorder at site 1.6 mi downstream at datum 2.81 ft lower.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	14	19	e13	e12	e15	25	143	60	21	16	20
2	9.9	13	18	e16	e15	e13	24	124	59	20	16	18
3	9.6	13	17	e18	e13	e11	23	103	57	19	15	17
4	10	13	17	e18	e11	e20	23	87	55	19	15	16
5	11	12	17	e16	e13	e18	22	75	53	21	15	15
6	10	13	18	e16	e15	e16	22	68	50	21	15	15
7	10	14	17	e20	e16	e14	24	64	46	30	16	15
8	9.8	15	16	e21	e13	e12	24	59	42	24	18	14
9	9.9	13	16	e17	e12	e17	28	59	39	18	17	14
10	11	13	16	e9.7	e20	e32	25	59	37	21	25	13
11	11	13	16	e8.7	e19	51	25	317	52	53	24	12
12	12	13	19	e8.3	e21	56	40	1030	49	71	26	13
13	14	14	18	e9.1	e18	51	46	832	336	52	26	12
14	21	14	19	e9.9	e23	43	42	446	252	57	25	12
15	18	15	18	e7.8	e26	45	38	269	109	39	24	12
16	17	14	18	e10	e32	42	34	208	79	30	24	12
17	19	16	18	e15	e35	40	31	232	64	25	27	13
18	21	15	e17	e13	e33	38	28	180	55	23	27	13
19	18	14	e11	e16	e33	37	26	135	49	21	24	19
20	15	13	e12	e16	e29	36	24	112	43	20	22	17
21	14	13	e11	e15	e27	33	28	98	40	19	21	15
22	15	14	e13	e14	e26	33	31	88	37	18	21	12
23	43	15	e12	e13	e28	30	31	84	33	18	30	11
24	40	16	e14	e10	e30	29	33	83	31	17	28	11
25	24	16	e13	e13	e26	27	51	116	28	17	22	11
26	17	18	e14	e16	e23	27	49	126	27	17	25	10
27	15	21	e14	e19	e21	26	91	102	26	18	45	10
28	15	21	e14	e20	e21	27	386	89	25	18	34	10
29	14	23	e16	e18	---	26	181	80	23	23	28	9.9
30	14	21	e14	e16	---	25	173	71	22	18	24	10
31	15	---	e14	e14	---	25	---	64	---	16	21	---
TOTAL	494.2	452	486	446.5	611	915	1628	5603	1878	804	716	401.9
MEAN	15.94	15.07	15.68	14.40	21.82	29.52	54.27	180.7	62.60	25.94	23.10	13.40
MAX	43	23	19	21	35	56	386	1030	336	71	45	20
MIN	9.6	12	11	7.8	11	11	22	59	22	16	15	9.9
MED	14	14	16	15	21	27	30	102	48	21	24	13
AC-FT	980	897	964	886	1210	1810	3230	11110	3730	1590	1420	797
CFSM	0.03	0.03	0.03	0.03	0.04	0.06	0.11	0.36	0.12	0.05	0.05	0.03
IN.	0.04	0.03	0.04	0.03	0.05	0.07	0.12	0.41	0.14	0.06	0.05	0.03

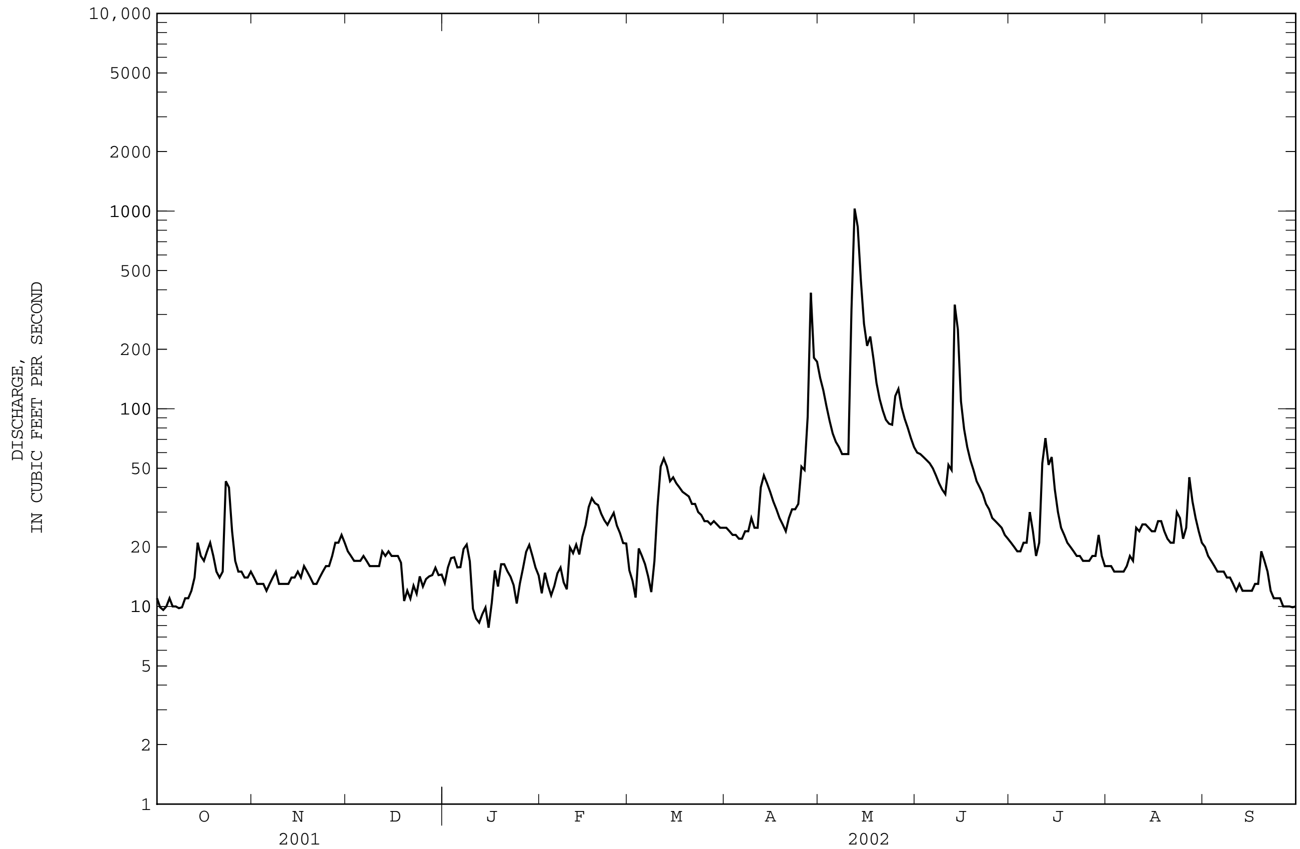
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	110.7	130.9	112.8	102.3	225.0	464.1	486.5	510.6	505.9	270.6	163.6	169.8
MAX	928	961	1070	646	1415	1417	1983	2053	4094	3121	1419	1460
(WY)	1974	1973	1983	1973	1973	1962	1973	1996	1947	1993	1993	1992
MIN	4.28	2.80	1.62	1.02	4.68	7.35	4.81	10.1	3.81	5.20	4.47	3.92
(WY)	1969	1956	1956	1977	1977	1954	1956	1956	1977	1977	1968	1968

05486490 MIDDLE RIVER NEAR INDIANOLA, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1941 - 2002	
ANNUAL TOTAL	85197.2		14435.6			
ANNUAL MEAN	233.4		39.55		270.8	
HIGHEST ANNUAL MEAN					1006	1993
LOWEST ANNUAL MEAN					17.8	1968
HIGHEST DAILY MEAN	3560	May 31	1030	May 12	21400	Jun 13 1947
LOWEST DAILY MEAN	8.5	Jan 2	7.8	Jan 15	0.11	Jul 2 1977
ANNUAL SEVEN-DAY MINIMUM	10	Oct 2	9.1	Jan 10	0.51	Jun 29 1977
MAXIMUM PEAK FLOW			1190	May 12	34000	Jun 13 1947
MAXIMUM PEAK STAGE			10.22	May 12	28.27	Jun 13 1947a
ANNUAL RUNOFF (AC-FT)	169000		28630		196200	
ANNUAL RUNOFF (CFSM)	0.46		0.079		0.54	
ANNUAL RUNOFF (INCHES)	6.30		1.07		7.32	
10 PERCENT EXCEEDS	627		64		600	
50 PERCENT EXCEEDS	24		20		68	
90 PERCENT EXCEEDS	12		12		9.0	

a From floodmark.
e Estimated.



05487470 SOUTH RIVER NEAR ACKWORTH, IA

LOCATION.--Lat 41°20'14", long 93°29'10", in $SE^1/_4$ $SE^1/_4$ sec.34, T.76 N., R.23 W., Warren County, Hydrologic Unit 07100008, on right bank 15 ft downstream from bridge on county highway, 0.5 mi downstream from Otter Creek, and 2.2 mi southwest of Ackworth.

DRAINAGE AREA.--460 mi^2.

PERIOD OF RECORD.--March 1940 to current year.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1941, 1945 (M), 1946.

GAGE.--Water-stage recorder. Datum of gage is 769.97 ft above NGVD of 1929. Prior to June 12, 1946, nonrecording gage, June 13, 1946 to Apr. 13, 1960, water-stage recorder, and Apr. 14, 1960 to Sept. 30, 1961, nonrecording gage, all at site 4.0 mi downstream at datum 8.06 ft lower.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1930 reached a stage of 24.5 ft, from information by local residents, discharge, about 30,000 ft^3/s, at site 4.0 mi downstream.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	30	13	e13	e11	14	30	199	52	8.6	4.7	4.2
2	12	27	13	16	e14	e13	27	164	51	7.6	4.6	4.0
3	10	25	13	18	e12	e11	23	128	52	7.0	4.7	3.8
4	13	23	13	18	e11	e20	20	101	46	7.2	4.9	3.5
5	60	22	16	16	e12	e19	19	85	41	7.0	5.6	3.3
6	46	21	16	16	e14	e17	18	81	36	14	6.8	3.3
7	31	21	15	20	e15	e15	23	78	32	38	8.6	3.2
8	21	19	15	21	e13	e13	35	72	29	21	7.1	3.1
9	16	17	12	e17	e12	e18	83	157	26	9.9	7.5	2.9
10	21	16	11	e10	e19	e34	83	101	24	57	6.8	3.1
11	18	16	11	e9.2	e18	e55	55	1380	58	97	6.4	3.2
12	16	15	15	e8.4	e20	70	226	1990	71	59	14	2.9
13	18	19	20	e8.9	e18	58	173	569	730	70	18	3.2
14	15	16	19	e9.7	e22	49	105	269	189	48	12	3.2
15	12	16	17	e7.3	e25	41	80	190	94	21	9.4	3.3
16	10	15	15	e9.9	e32	34	64	209	62	11	6.8	3.1
17	9.0	14	14	e15	e35	30	52	595	56	8.0	6.7	3.1
18	7.9	14	13	e13	e33	29	46	225	47	6.3	6.2	4.7
19	8.6	14	e8.0	16	e32	31	44	153	38	6.0	15	43
20	8.5	13	e10	16	e29	37	39	118	33	6.2	10	29
21	7.8	13	e8.5	e14	e27	35	63	99	28	5.3	9.3	13
22	105	13	e12	e12	e25	33	68	89	25	6.2	9.7	4.7
23	454	14	e11	e11	e27	24	59	87	22	5.7	36	3.8
24	168	20	e13	e8.7	29	27	69	84	19	4.9	38	3.2
25	83	19	e12	e11	25	27	89	165	15	5.5	21	3.0
26	60	23	e13	e14	23	27	70	278	15	5.7	10	2.7
27	46	22	14	e18	e20	30	604	138	14	11	6.1	2.5
28	40	16	14	e20	20	34	930	106	12	7.6	5.0	2.6
29	35	15	15	e17	---	35	266	89	10	17	4.6	2.8
30	36	14	e14	e15	---	32	186	72	9.5	6.5	4.5	2.5
31	34	---	e14	e14	---	32	---	62	---	4.9	4.3	---
TOTAL	1437.8	542	419.5	433.1	593	944	3649	8133	1936.5	590.1	314.3	173.9
MEAN	46.38	18.07	13.53	13.97	21.18	30.45	121.6	262.4	64.55	19.04	10.14	5.797
MAX	454	30	20	21	35	70	930	1990	730	97	38	43
MIN	7.8	13	8.0	7.3	11	11	18	62	9.5	4.9	4.3	2.5
AC-FT	2850	1080	832	859	1180	1870	7240	16130	3840	1170	623	345
CFSM	0.10	0.04	0.03	0.03	0.05	0.07	0.26	0.57	0.14	0.04	0.02	0.01
IN.	0.12	0.04	0.03	0.04	0.05	0.08	0.30	0.66	0.16	0.05	0.03	0.01

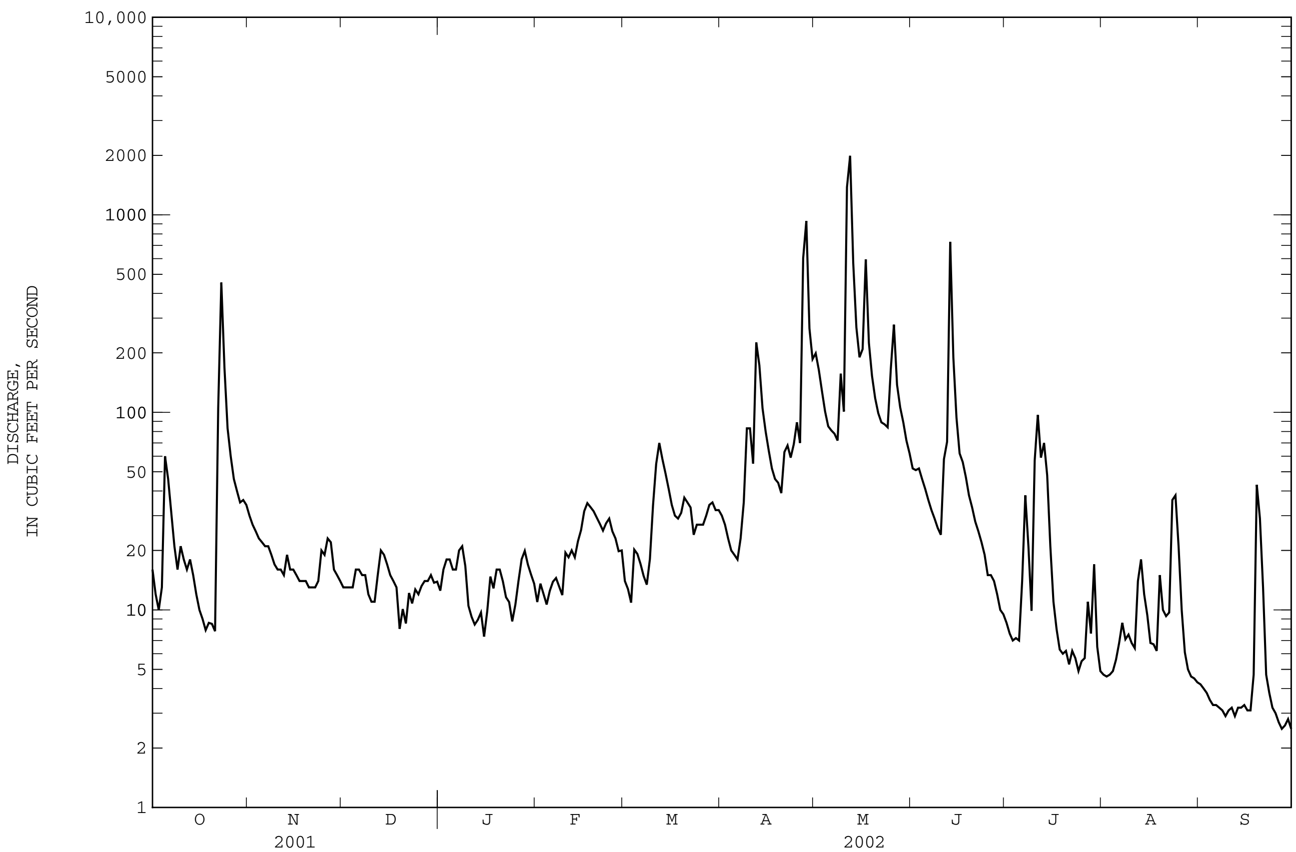
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2002, BY WATER YEAR (WY)

MEAN	108.1	123.6	107.4	100.0	211.6	443.1	456.3	472.0	471.5	254.6	127.2	149.7
MAX	1283	906	1022	901	1209	1568	1937	1962	4305	3870	1546	1332
(WY)	1974	1962	1983	1974	1973	1960	1973	1959	1947	1993	1993	1993
MIN	0.35	1.05	0.88	1.05	3.70	3.61	1.70	6.88	1.79	1.48	2.02	1.05
(WY)	1957	1957	1956	1956	1989	1957	1956	2000	1977	1977	1957	1957

05487470 SOUTH RIVER NEAR ACKWORTH, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1941 - 2002	
ANNUAL TOTAL	87338.3		19166.2			
ANNUAL MEAN	239.3		52.51		251.9	
HIGHEST ANNUAL MEAN					966	1993
LOWEST ANNUAL MEAN					16.1	1989
HIGHEST DAILY MEAN	6550	May 31	1990	May 12	31400	Jun 17 1990
LOWEST DAILY MEAN	4.8	Sep 5	2.5	Sep 27a	0.00	Sep 19 1956b
ANNUAL SEVEN-DAY MINIMUM	5.2	Aug 30	2.8	Sep 24	0.00	Sep 19 1956
MAXIMUM PEAK FLOW			3360	May 11	38100	Jun 17 1990
MAXIMUM PEAK STAGE			13.20	May 11	32.85	Jul 5 1981
INSTANTANEOUS LOW FLOW			2.0	Sep 30	0.00	Sep 19 1956b
ANNUAL RUNOFF (AC-FT)	173200		38020		182500	
ANNUAL RUNOFF (CFSM)	0.52		0.11		0.55	
ANNUAL RUNOFF (INCHES)	7.06		1.55		7.44	
10 PERCENT EXCEEDS	577		89		479	
50 PERCENT EXCEEDS	32		17		40	
90 PERCENT EXCEEDS	11		5.0		3.3	

a Also Sept. 30.
b Also Sept. 30 to Oct. 13, 1956.
e Estimated.



05487500 DES MOINES RIVER NEAR RUNNELLS, IA

LOCATION.--Lat 41°29'19", long 93°20'17", in SE$^1/_4$ NW$^1/_4$ sec.12, T.77 N., R.22 W., Polk County, Hydrologic Unit 07100008, on left bank 10 ft downstream from bridge on State Highway 316, 0.2 mi downstream from South River River, 0.5 mi upstream from Camp Creek, 2.2 mi southeast of Runnells, 37.2 mi upstream from Red Rock Dam, and at mi 179.5.

DRAINAGE AREA.--11,655 mi^2.

PERIOD OF RECORD.--October 1985 to current year.

GAGE.--Water-stage recorder. Datum of gage is 700.00 ft above NGVD of 1929 (U.S. Army Corps of Engineers bench mark).

REMARKS.--Records good except those for estimated daily discharge, which are poor. Flow regulated by Saylorville Lake (station 05481630) 34.2 mi upstream. Stage-discharge relation is affected at times by backwater from Lake Red Rock (05488100). U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods occurred on May 31, 1903; June 14, 1947; June 26, 1947; and June 24, 1954. No gage height or discharge was determined. Gage height and discharge information is available for these floods at other sites on the Des Moines River.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	592	762	e2430	e1810	e871	1670	1700	10300	6650	2790	e720	3880
2	571	728	e2540	e1730	850	e1160	1550	10200	7570	2420	e598	3040
3	446	735	e2620	e1470	922	e883	1510	8840	7600	2070	e652	e2750
4	487	725	e2580	e1300	e860	e844	1530	7900	9230	1960	e611	e2600
5	510	767	e2410	e1140	e890	e877	1520	6950	8150	1900	e870	e2480
6	584	757	e2360	e1120	e932	922	1840	6740	6740	2210	e1850	e2330
7	596	788	e2610	e1100	996	1040	1920	6450	6130	2390	e3580	e2160
8	675	e741	e3120	e1060	1020	1470	1990	6640	5840	2370	e6070	e1930
9	507	730	e3260	e1090	1110	2000	2150	6760	5670	2060	e6720	e1810
10	511	748	e3310	e1180	1200	2220	2160	6750	5840	3700	5780	e1580
11	734	e716	e3250	e1240	1710	1590	2100	7910	5960	5850	5120	e1450
12	e536	e708	e3140	e1330	1500	1350	2750	12300	7020	4790	4300	e1310
13	e525	e708	2150	e1340	1460	1550	2870	14600	12900	3070	4080	e1190
14	e562	e700	2990	1340	1460	1740	2700	15600	13200	3410	3710	e1120
15	e663	e708	4030	1320	1390	1740	2640	16700	10900	2910	5740	e1080
16	e615	e693	3790	1230	1430	1850	2850	15600	9540	2500	e9810	e1010
17	e525	e685	3890	1220	1520	1900	3190	14800	8660	1850	8120	e930
18	e551	e661	3910	1470	1670	1970	3260	13500	8060	1580	6780	e790
19	e570	e613	3390	1500	1880	2140	3340	12200	7060	1450	6180	e720
20	e581	e669	2040	1230	2520	2330	3450	10300	6640	1230	e6950	968
21	e573	e716	1940	1150	e2620	2150	3720	8690	6380	1060	6370	943
22	e832	e697	1970	1180	2470	2120	3000	6990	5620	989	5100	e770
23	1390	e712	1790	1130	2190	2000	3070	6350	5250	917	5990	e650
24	950	e642	e1390	1080	2420	1950	3360	6310	4620	699	7100	e610
25	e667	e942	e1180	1150	2290	1930	3500	6520	4200	557	10300	e570
26	e648	e1200	e812	1230	2170	1870	3400	6650	3840	506	10600	e550
27	670	e1560	e800	1280	e1960	1990	4240	6260	3660	726	9220	e560
28	791	2020	e1000	1250	e1790	2000	6820	6020	3500	737	6840	e610
29	692	2180	e1300	1240	---	1910	6320	5770	3180	883	5780	e630
30	1140	2310	e1530	1080	---	1690	9190	5740	2930	884	4980	e620
31	958	---	e1680	945	---	1610	---	6500	---	e843	4540	---
TOTAL	20652	27321	75212	38935	44101	52466	93640	282840	202540	61311	165061	41641
MEAN	666.2	910.7	2426	1256	1575	1692	3121	9124	6751	1978	5325	1388
MAX	1390	2310	4030	1810	2620	2330	9190	16700	13200	5850	10600	3880
MIN	446	613	800	945	850	844	1510	5740	2930	506	598	550
AC-FT	40960	54190	149200	77230	87470	104100	185700	561000	401700	121600	327400	82590
CFSM	0.06	0.08	0.21	0.11	0.14	0.15	0.27	0.78	0.58	0.17	0.46	0.12
IN.	0.07	0.09	0.24	0.12	0.14	0.17	0.30	0.90	0.65	0.20	0.53	0.13

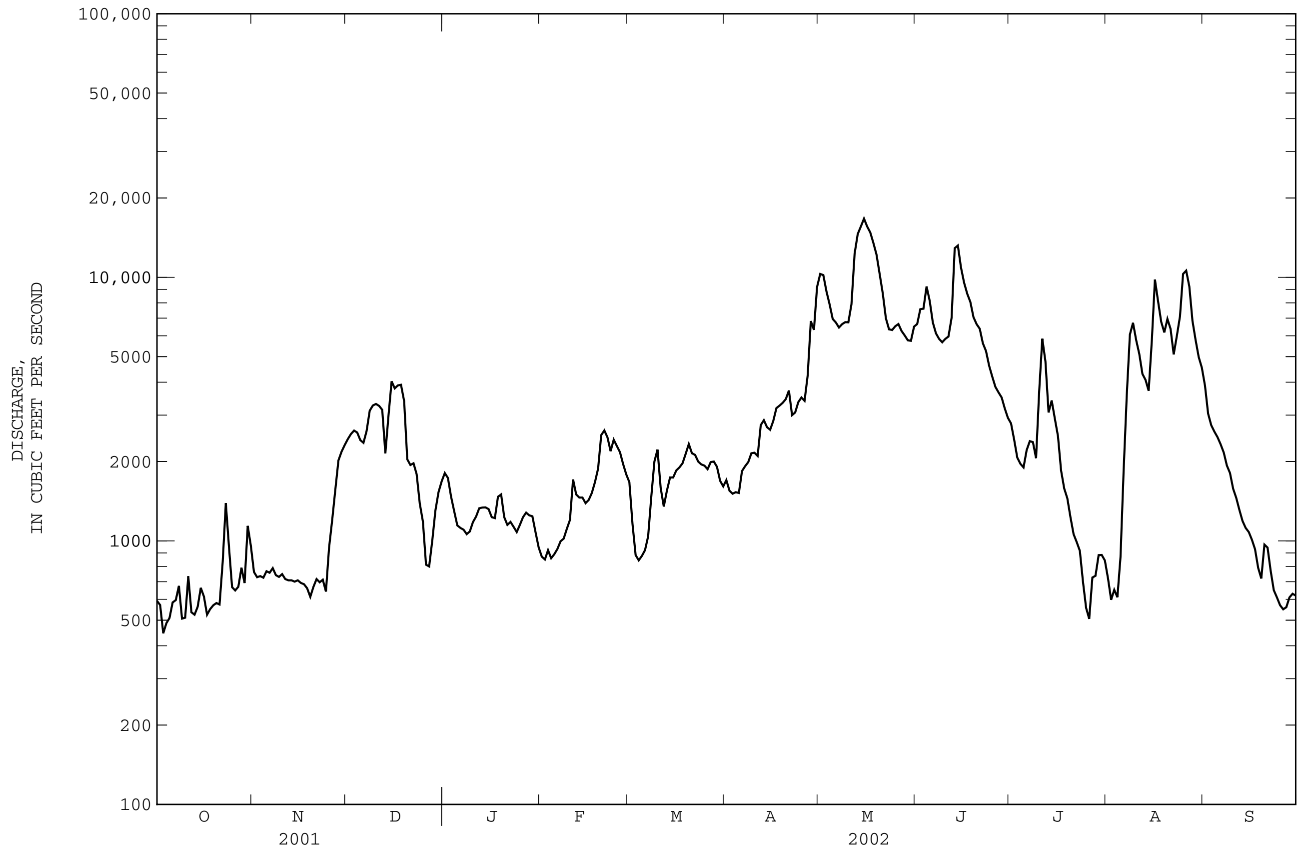
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	3444	3692	3409	1931	3288	9058	13380	14770	15930	13610	6625	3827
MAX	18040	12660	10000	6237	8557	18390	30380	32740	40530	68140	32990	26320
(WY)	1987	1993	1992	1992	1997	1993	1993	1993	1991	1993	1993	1993
MIN	352	524	473	450	500	1136	773	1272	1777	840	534	503
(WY)	2001	1990	1990	1990	1990	2000	2000	2000	1988	1988	1988	2000

05487500 DES MOINES RIVER NEAR RUNNELLS, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1986 - 2002	
ANNUAL TOTAL	3028295		1105720			
ANNUAL MEAN	8297		3029		7764	
HIGHEST ANNUAL MEAN					22980	1993
LOWEST ANNUAL MEAN					1200	1989
HIGHEST DAILY MEAN	34000	Mar 25	16700	May 15	133000	Jul 11 1993
LOWEST DAILY MEAN	340	Jan 2	446	Oct 3	297	Sep 17 2000
ANNUAL SEVEN-DAY MINIMUM	397	Jan 1	541	Oct 1	319	Oct 16 2000
MAXIMUM PEAK FLOW			16900	May 15	134000	Jul 11 1993
MAXIMUM PEAK STAGE			51.90	May 15	82.88	Jul 11 1993
ANNUAL RUNOFF (AC-FT)	6007000		2193000		5625000	
ANNUAL RUNOFF (CFSM)	0.71		0.26		0.67	
ANNUAL RUNOFF (INCHES)	9.67		3.53		9.05	
10 PERCENT EXCEEDS	24000		6950		21000	
50 PERCENT EXCEEDS	2150		1870		3770	
90 PERCENT EXCEEDS	580		665		638	

e Estimated



05487540 WALNUT CREEK NEAR PRAIRIE CITY, IA

LOCATION.--Lat 41°36'05", long 93°16'14", in NE$^1/_4$ NE$^1/_4$ sec.5, T.78 N., R.21 W., Jasper County, Hydrologic Unit 07100008, on left bank downstream side of bridge on Highway 163.

DRAINAGE AREA.--6.78 mi^2.

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--May 1995 to current year.

GAGE.--Water-stage recorder. Concrete control. Datum of gage is 826.33 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharge, which are poor. U.S. Geological Survey rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.36	0.55	0.43	e0.14	0.35	e0.77	1.1	6.2	3.8	4.6	2.3	0.59
2	0.33	0.47	0.41	e0.16	e0.29	0.69	1.1	5.3	4.1	4.2	2.0	0.55
3	0.30	0.45	0.43	e0.22	0.36	e0.63	2.3	4.9	4.0	4.0	2.0	0.46
4	0.32	0.46	0.45	e0.28	0.30	1.3	0.92	4.4	3.8	3.8	2.0	0.45
5	0.35	0.46	0.47	e0.32	e0.27	1.3	0.97	4.2	3.6	3.6	2.0	0.41
6	0.31	0.48	0.44	0.38	0.38	e1.1	0.95	4.0	3.4	16	1.9	0.40
7	0.30	0.47	0.43	0.34	0.41	e0.78	1.0	3.7	3.3	8.5	1.7	0.35
8	0.30	0.43	0.42	0.37	0.48	e0.71	1.3	3.9	3.2	5.0	1.5	0.31
9	0.30	0.43	0.40	0.41	0.64	e1.6	1.2	3.9	3.1	4.3	1.4	0.30
10	0.46	0.45	0.43	0.40	1.1	2.2	1.0	3.5	25	17	1.3	0.32
11	0.31	0.43	0.42	0.37	0.93	2.0	1.5	14	16	47	1.2	0.32
12	0.30	0.45	0.48	0.37	1.1	1.9	2.7	13	51	15	2.4	0.31
13	0.41	0.52	0.44	0.38	1.1	1.9	2.0	9.9	47	10	2.2	0.29
14	0.36	0.48	0.41	0.36	1.1	1.9	1.8	8.1	20	7.9	1.7	0.31
15	0.30	0.46	0.40	0.32	1.1	1.6	1.7	7.4	16	6.6	1.5	0.29
16	0.30	0.44	0.43	0.32	1.1	1.5	1.5	6.8	13	5.9	1.4	0.26
17	0.27	0.41	0.43	e0.23	0.93	1.5	1.4	6.1	12	5.3	1.4	0.24
18	0.30	0.43	0.44	e0.15	1.0	1.4	1.5	5.5	11	4.9	1.2	0.34
19	0.29	0.41	e0.22	e0.16	1.3	1.6	1.5	5.2	9.5	4.6	1.2	0.85
20	0.30	0.39	e0.28	e0.20	1.4	1.5	1.4	4.9	8.2	4.2	1.2	0.43
21	0.29	0.43	e0.25	e0.24	1.2	2.1	2.4	4.7	7.4	3.8	1.1	0.34
22	1.2	0.40	e0.40	e0.27	1.2	1.3	2.0	4.6	6.9	3.9	1.1	0.31
23	2.1	0.42	e0.32	0.31	1.2	1.5	2.4	4.5	6.2	3.5	3.6	0.30
24	1.2	0.49	e0.26	e0.16	1.2	1.3	2.4	4.1	5.7	3.2	1.6	0.27
25	0.85	0.40	e0.20	e0.12	1.1	1.2	2.2	5.8	5.4	3.0	1.3	0.29
26	0.72	0.57	e0.17	0.36	0.91	1.2	2.1	5.0	8.1	2.9	1.1	0.24
27	0.67	0.53	e0.26	0.38	0.94	1.2	14	4.7	8.9	2.9	1.0	0.25
28	0.68	0.44	0.36	0.33	e0.83	1.2	11	4.6	6.3	2.6	0.95	0.25
29	0.61	0.45	0.25	e0.26	---	1.2	7.3	4.4	5.6	5.2	0.91	0.26
30	0.61	0.45	e0.20	e0.23	---	1.1	6.5	4.3	5.2	2.8	0.86	0.23
31	0.60	---	e0.17	e0.21	---	1.1	---	4.0	---	2.5	1.1	---
TOTAL	16.00	13.65	11.10	8.75	24.22	42.28	81.14	175.6	326.7	218.7	48.12	10.52
MEAN	0.516	0.455	0.358	0.282	0.865	1.364	2.705	5.665	10.89	7.055	1.552	0.351
MAX	2.1	0.57	0.48	0.41	1.4	2.2	14	14	51	47	3.6	0.85
MIN	0.27	0.39	0.17	0.12	0.27	0.63	0.92	3.5	3.1	2.5	0.86	0.23
AC-FT	32	27	22	17	48	84	161	348	648	434	95	21
CFSM	0.08	0.07	0.05	0.04	0.13	0.20	0.40	0.84	1.61	1.04	0.23	0.05
IN.	0.09	0.07	0.06	0.05	0.13	0.23	0.45	0.96	1.79	1.20	0.26	0.06

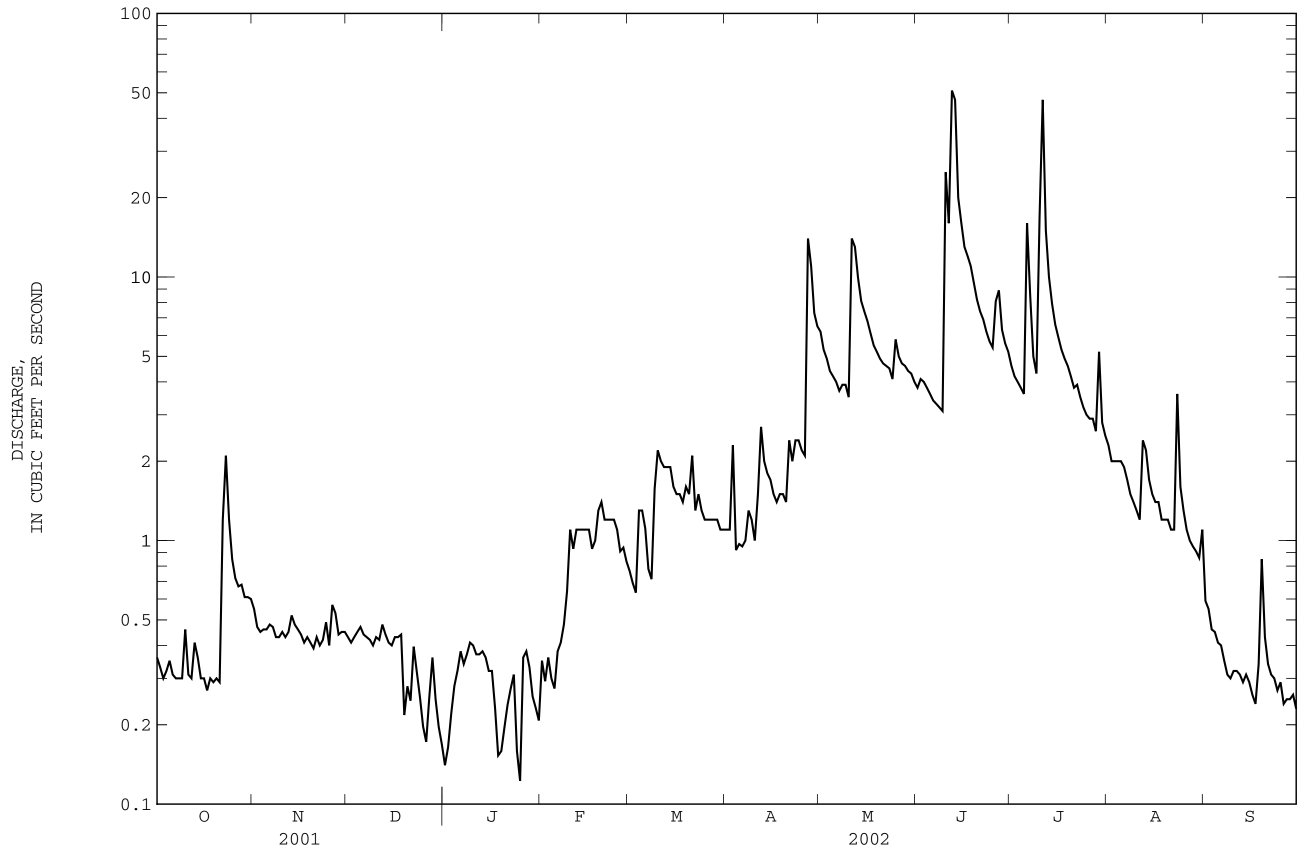
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	1.224	1.692	1.206	1.267	6.296	6.026	5.205	11.68	14.32	5.865	3.320	0.912
MAX	3.48	5.69	3.22	3.73	19.8	19.4	13.1	25.0	31.8	13.8	10.5	1.97
(WY)	1999	1999	1998	1998	1996	2001	1998	1996	1998	1998	1999	1999
MIN	0.20	0.36	0.12	0.28	0.87	1.29	1.41	3.95	6.61	2.67	1.07	0.28
(WY)	1996	2001	2001	2002	2002	2000	1996	2001	1997	2001	2001	2000

05487540 WALNUT CREEK NEAR PRAIRIE CITY, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1996 - 2002	
ANNUAL TOTAL	1578.11		976.78			
ANNUAL MEAN	4.324		2.676		4.901	
HIGHEST ANNUAL MEAN					9.24	1998
LOWEST ANNUAL MEAN					2.68	2002
HIGHEST DAILY MEAN	87	Feb 25	51	Jun 12	210	May 24 1996
LOWEST DAILY MEAN	0.10	Jan 1	0.12	Jan 25	0.04	Jan 7 1996
ANNUAL SEVEN-DAY MINIMUM	0.18	Jan 1	0.20	Dec 29	0.07	Dec 18 2000
MAXIMUM PEAK FLOW			329	Jun 12	1350	Jun 18 1998
MAXIMUM PEAK STAGE			6.82	Jun 12	9.66	Jun 18 1998
INSTANTANEOUS LOW FLOW			0.10	Dec 29	0.00	Nov 10 1995
ANNUAL RUNOFF (AC-FT)	3130		1940		3550	
ANNUAL RUNOFF (CFSM)	0.64		0.39		0.72	
ANNUAL RUNOFF (INCHES)	8.66		5.36		9.82	
10 PERCENT EXCEEDS	10		6.1		11	
50 PERCENT EXCEEDS	0.93		1.1		2.0	
90 PERCENT EXCEEDS	0.30		0.29		0.30	

e Estimated



05487540 WALNUT CREEK NEAR PRAIRIE CITY, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--April 1995 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: April 1995 to current year.
WATER TEMPERATURES: April 1995 to current year.
SUSPENDED-SEDIMENT DISCHARGE: May 1995 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 801 microsiemens Feb. 17, 1997; minimum daily, 159 microsiemens May 24, 1996.
WATER TEMPERATURES: Maximum daily, 31.5°C July 31, 2001; minimum daily, 0.0°C many days during winter.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,130 mg/L July 22, 1998; minimum daily mean, 3 mg/L Feb. 2, 21, 2001.
SEDIMENT LOADS: Maximum daily, 1,080 tons May 24, 1996; minimum daily, 0.003 tons Nov. 28, 1995, Dec. 10-13, 2000, Jan. 4-7, 11, 12, 19, 23, 26, 28, Feb. 2, and Dec. 20, 2001.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 601 microsiemens July 29; minimum daily, 374 microsiemens Oct. 22.
WATER TEMPERATURES: Maximum daily, 30.8°C June 3; minimum daily, 0.0°C many days during winter.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 339 mg/L Apr. 27; minimum daily mean, 3.1 mg/L Mar. 5.
SEDIMENT LOADS: Maximum daily, 47 tons June 12; minimum daily, 0.003 tons Dec. 20.

SPECIFIC CONDUCTANCE, in MICROSIEMENS/CM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	482	499	412	456	508	471	464	535	539	546	---	525
2	407	---	436	411	502	---	436	526	531	526	544	---
3	489	491	448	433	448	495	---	506	539	559	---	466
4	---	428	431	517	465	508	464	531	528	---	566	---
5	523	431	481	456	491	447	435	516	464	559	533	486
6	446	496	472	443	454	447	467	487	414	---	512	535
7	404	464	420	403	549	463	504	542	527	---	576	---
8	472	---	---	459	506	436	552	531	482	---	504	---
9	494	486	414	---	528	470	514	---	526	493	531	482
10	511	434	438	457	552	477	468	---	439	---	595	454
11	498	438	446	447	477	451	459	---	547	517	---	---
12	486	438	477	445	465	432	538	---	527	547	544	---
13	495	---	429	434	458	432	516	541	517	---	587	540
14	517	403	480	435	478	466	505	---	544	553	---	566
15	436	486	426	404	456	469	491	533	---	---	554	526
16	456	402	415	435	489	479	488	---	516	---	595	---
17	456	---	429	442	461	469	484	529	---	492	534	476
18	513	463	441	423	412	448	482	528	497	---	567	541
19	---	399	437	443	436	462	494	535	---	551	---	541
20	---	403	438	478	475	462	479	463	561	501	---	576
21	486	427	443	506	472	473	524	541	545	466	505	574
22	374	456	472	411	452	441	522	537	---	596	547	---
23	521	---	485	475	469	447	516	495	503	458	581	---
24	525	489	455	416	461	---	531	---	543	477	594	580
25	530	406	411	473	445	412	---	544	---	---	552	---
26	520	478	547	427	484	453	489	550	535	---	---	495
27	477	478	438	462	502	---	481	532	---	---	458	---
28	496	441	478	422	439	463	528	542	555	460	520	435
29	515	427	435	453	---	449	526	475	---	601	460	---
30	497	482	461	407	---	436	550	506	---	541	---	---
31	503	---	449	489	---	---	---	529	---	564	431	---

05487540 WALNUT CREEK NEAR PRAIRIE CITY, IA--Continued

WATER TEMPERATURE, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20.1	16.4	4.8	0.0	1.1	0.8	1.9	12.0	---	25.9	---	26.7
2	14.7	---	7.5	0.0	1.7	---	4.6	13.2	---	---	22.4	---
3	20.1	10.1	6.6	0.2	0.8	0.0	---	9.4	30.8	21.5	---	23.3
4	---	11.2	12.0	1.1	1.2	0.4	10.4	8.7	15.5	---	25.6	---
5	9.7	13.8	14.4	0.6	1.5	1.9	10.1	9.7	---	23.6	23.6	24.3
6	4.5	10.1	7.3	0.0	1.4	0.4	11.6	14.5	---	---	22.3	27.6
7	14.7	17.2	6.2	1.4	1.5	1.8	8.5	12.5	---	---	22.2	---
8	15.7	---	---	2.0	3.0	0.7	8.4	16.1	---	---	23.4	---
9	13.7	10.0	2.9	---	0.8	0.0	15.6	---	---	---	22.6	26.2
10	15.1	9.8	5.7	1.3	0.6	1.1	17.2	---	---	---	25.1	22.0
11	16.6	10.7	3.6	1.2	1.0	6.2	17.5	---	---	18.6	---	---
12	13.9	10.5	6.1	0.0	1.6	8.3	12.2	---	---	19.3	25.1	---
13	12.9	---	3.5	1.8	1.6	9.0	15.1	16.1	---	---	19.2	21.5
14	10.4	15.8	5.8	0.8	3.4	2.7	22.2	---	---	20.6	---	20.7
15	9.5	16.8	5.3	0.1	4.5	9.8	24.6	9.8	---	---	21.9	17.7
16	---	13.8	6.2	0.3	4.4	7.4	21.3	---	---	---	22.7	---
17	---	---	6.4	2.2	1.9	5.3	22.5	15.0	---	22.8	22.9	21.7
18	---	13.8	4.8	0.0	7.6	11.4	23.8	17.5	---	---	19.8	20.6
19	---	7.7	1.2	0.3	7.6	6.1	14.4	17.2	---	22.3	---	21.2
20	---	8.8	0.1	0.0	2.8	12.9	11.4	15.4	---	27.6	---	---
21	15.3	9.3	3.1	2.3	3.6	3.0	9.2	17.8	---	26.9	25.9	17.6
22	12.0	9.9	2.3	2.6	4.9	2.9	12.6	20.4	---	22.7	26.1	---
23	16.7	---	0.0	0.7	2.8	3.1	21.2	16.2	---	23.8	23.8	---
24	14.2	12.5	0.0	1.3	7.0	---	13.1	---	---	22.3	23.4	13.5
25	4.0	6.6	0.8	2.2	1.7	0.5	---	14.7	---	---	25.6	---
26	7.1	7.8	0.0	3.5	0.0	8.4	12.3	20.5	---	---	---	19.2
27	7.1	6.2	1.7	1.9	1.5	---	7.7	18.5	---	---	17.9	---
28	9.0	3.2	1.5	1.3	0.9	11.0	7.0	20.3	22.3	21.6	20.0	19.2
29	11.7	4.6	0.0	0.4	---	10.0	16.0	20.6	---	26.4	23.8	---
30	10.1	6.6	0.0	0.2	---	6.6	11.6	17.8	---	26.2	---	---
31	13.6	---	0.0	0.6	---	---	---	22.1	---	25.4	24.4	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

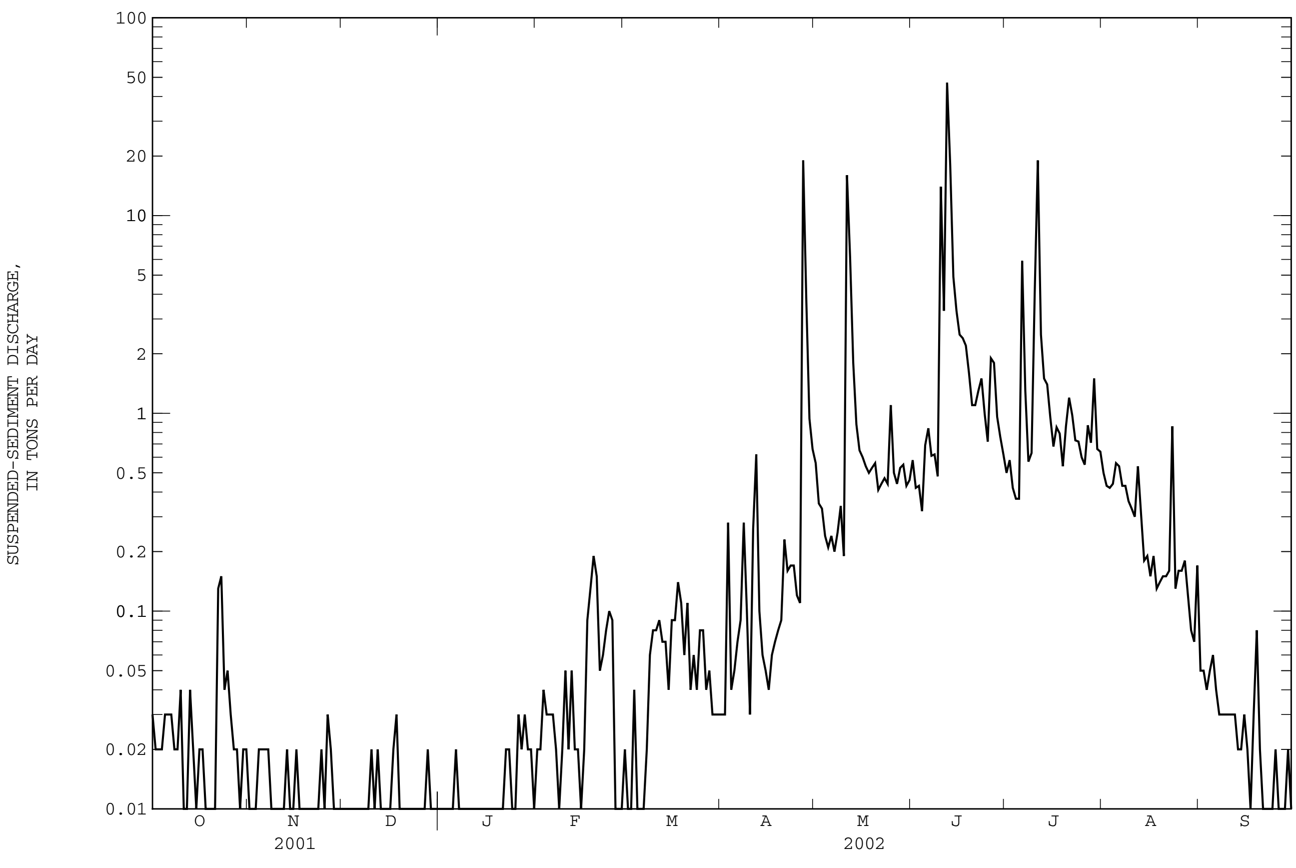
DAY	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	25	0.03	9.5	0.01	5.8	0.00	15	0.00	16	0.02	9.5	0.02
2	20	0.02	6.6	0.00	7.5	0.00	16	0.00	26	0.02	5.7	0.01
3	26	0.02	6.9	0.00	7.4	0.00	16	0.00	37	0.04	6.9	0.01
4	18	0.02	18	0.02	9.9	0.01	13	0.00	40	0.03	11	0.04
5	30	0.03	18	0.02	10	0.01	14	0.01	43	0.03	3.1	0.01
6	39	0.03	14	0.02	5.9	0.00	22	0.02	31	0.03	4.0	0.01
7	39	0.03	14	0.02	7.4	0.00	13	0.01	15	0.02	3.6	0.00
8	23	0.02	7.8	0.00	7.7	0.00	9.7	0.00	6.3	0.00	10	0.02
9	19	0.02	5.2	0.00	13	0.01	11	0.01	9.8	0.02	15	0.06
10	28	0.04	8.1	0.00	14	0.02	7.1	0.00	16	0.05	12	0.08
11	15	0.01	4.3	0.00	11	0.01	8.1	0.00	9.5	0.02	13	0.08
12	18	0.01	7.3	0.00	16	0.02	8.4	0.00	18	0.05	16	0.09
13	30	0.04	13	0.02	9.9	0.01	9.7	0.00	7.5	0.02	13	0.07
14	19	0.02	7.9	0.01	6.5	0.00	13	0.01	6.8	0.02	13	0.07
15	17	0.01	12	0.01	6.8	0.00	10	0.00	4.6	0.01	9.4	0.04
16	24	0.02	13	0.02	11	0.01	14	0.01	8.2	0.02	22	0.09
17	21	0.02	5.7	0.00	18	0.02	9.0	0.00	33	0.09	23	0.09
18	13	0.01	8.6	0.01	27	0.03	11	0.00	48	0.13	35	0.14
19	11	0.00	11	0.01	18	0.01	22	0.00	52	0.19	26	0.11
20	11	0.00	3.4	0.00	4.2	0.00	19	0.01	39	0.15	15	0.06
21	10	0.00	6.3	0.00	11	0.00	17	0.01	16	0.05	16	0.11
22	27	0.13	5.1	0.00	14	0.01	28	0.02	20	0.06	9.7	0.04
23	24	0.15	6.8	0.00	8.1	0.00	20	0.02	25	0.08	14	0.06
24	13	0.04	14	0.02	5.4	0.00	17	0.00	31	0.10	11	0.04
25	20	0.05	5.5	0.00	11	0.00	24	0.00	26	0.09	23	0.08
26	15	0.03	14	0.03	14	0.00	27	0.03	4.5	0.01	26	0.08
27	12	0.02	14	0.02	7.4	0.00	23	0.02	4.6	0.01	12	0.04
28	11	0.02	9.7	0.01	16	0.02	33	0.03	4.5	0.01	14	0.05
29	5.9	0.00	5.9	0.00	6.4	0.00	26	0.02	---	---	11	0.03
30	11	0.02	3.6	0.00	6.9	0.00	29	0.02	---	---	11	0.03
31	15	0.02	---	---	7.6	0.00	15	0.00	---	---	11	0.03
TOTAL	---	0.88	---	0.25	---	0.19	---	0.25	---	1.37	---	1.69

05487540 WALNUT CREEK NEAR PRAIRIE CITY, IA--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	APRIL MEAN CONCENTRATION (MG/L)	APRIL LOAD (TONS/DAY)	MAY MEAN CONCENTRATION (MG/L)	MAY LOAD (TONS/DAY)	JUNE MEAN CONCENTRATION (MG/L)	JUNE LOAD (TONS/DAY)	JULY MEAN CONCENTRATION (MG/L)	JULY LOAD (TONS/DAY)	AUGUST MEAN CONCENTRATION (MG/L)	AUGUST LOAD (TONS/DAY)	SEPTEMBER MEAN CONCENTRATION (MG/L)	SEPTEMBER LOAD (TONS/DAY)
1	11	0.03	33	0.56	57	0.58	40	0.50	82	0.50	30	0.05
2	9.2	0.03	25	0.35	37	0.42	51	0.58	79	0.43	30	0.05
3	25	0.28	25	0.33	40	0.43	39	0.42	78	0.42	36	0.04
4	18	0.04	20	0.24	31	0.32	36	0.37	84	0.44	38	0.05
5	21	0.05	18	0.21	72	0.69	38	0.37	106	0.56	52	0.06
6	28	0.07	22	0.24	90	0.84	75	5.9	106	0.54	37	0.04
7	31	0.09	20	0.20	69	0.61	57	1.3	95	0.43	36	0.03
8	71	0.28	24	0.25	72	0.62	42	0.57	104	0.43	34	0.03
9	29	0.10	31	0.34	58	0.48	55	0.63	97	0.36	39	0.03
10	10	0.03	20	0.19	140	14.0	63	4.0	90	0.33	34	0.03
11	38	0.26	291	16.0	75	3.3	126	19.0	91	0.30	33	0.03
12	78	0.62	175	6.1	146	47.0	61	2.5	75	0.54	32	0.03
13	19	0.10	65	1.8	136	18.0	55	1.5	51	0.31	31	0.02
14	11	0.06	40	0.88	89	4.9	66	1.4	40	0.18	29	0.02
15	10	0.05	33	0.65	79	3.3	53	0.95	47	0.19	32	0.03
16	10	0.04	33	0.60	72	2.5	43	0.68	39	0.15	24	0.02
17	16	0.06	33	0.54	74	2.4	59	0.85	50	0.19	20	0.01
18	17	0.07	34	0.50	77	2.2	59	0.79	37	0.13	30	0.03
19	20	0.08	38	0.53	64	1.6	44	0.54	44	0.14	33	0.08
20	23	0.09	42	0.56	48	1.1	77	0.86	46	0.15	19	0.02
21	34	0.23	32	0.41	55	1.1	114	1.2	50	0.15	14	0.01
22	30	0.16	35	0.44	70	1.3	90	0.98	55	0.16	13	0.01
23	25	0.17	39	0.47	92	1.5	78	0.73	76	0.86	14	0.01
24	25	0.17	40	0.44	66	1.0	83	0.72	32	0.13	17	0.01
25	21	0.12	69	1.1	49	0.72	73	0.60	46	0.16	21	0.02
26	20	0.11	37	0.50	70	1.9	70	0.55	54	0.16	11	0.00
27	339	19.0	35	0.44	73	1.8	110	0.87	64	0.18	12	0.00
28	112	3.7	43	0.53	56	0.96	102	0.71	47	0.12	19	0.01
29	47	0.94	46	0.55	50	0.76	92	1.5	33	0.08	24	0.02
30	37	0.66	36	0.43	44	0.62	87	0.66	31	0.07	11	0.00
31	---	---	43	0.46	---	---	96	0.64	52	0.17	---	---
TOTAL	---	27.69	---	36.84	---	116.95	---	52.87	---	8.96	---	0.79

YEAR 248.73



05487540 WALNUT CREEK NEAR PRAIRIE CITY, IA--Continued

PRECIPITATION RECORDS

PERIOD OF RECORD.--July 1995 to current year.

INSTRUMENTATION.--Tipping bucket rain gage.

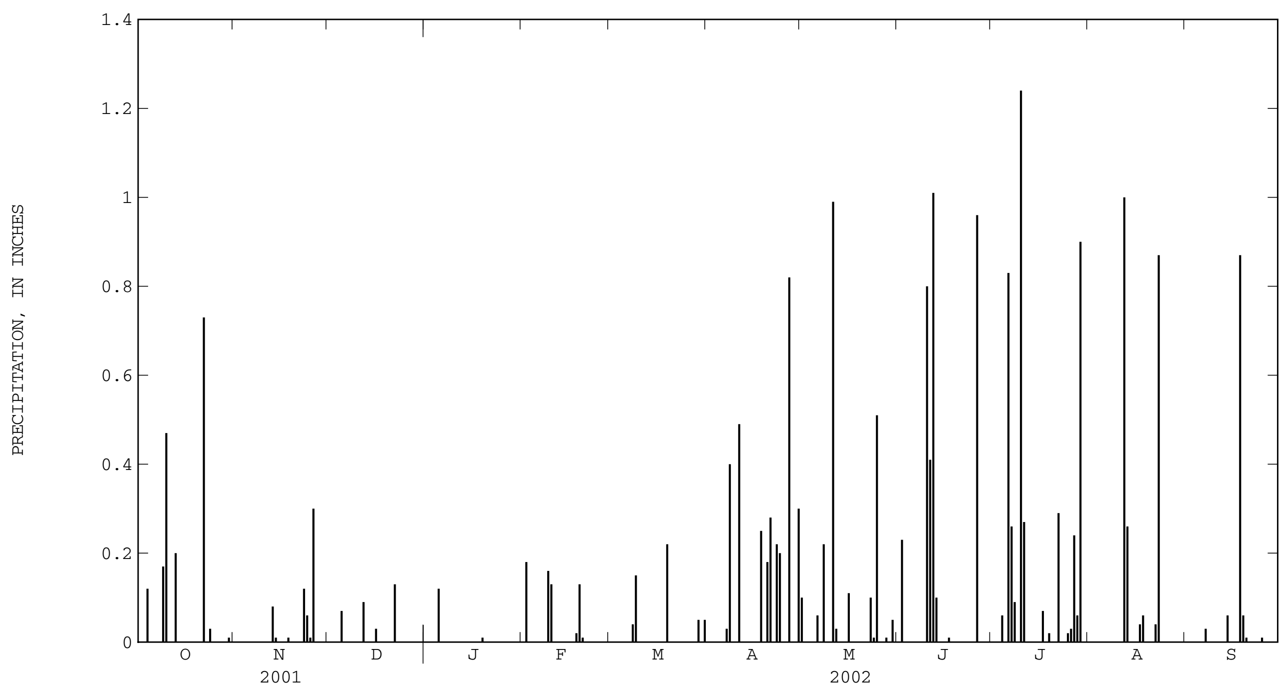
REMARKS.--Records good except for winter period, which is poor due to intermittent snow accumulation and subsequent melting.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily accumulation, 2.53 in., July 17, 1996.

EXTREMES FOR CURRENT YEAR.--Maximum daily accumulation, 1.24 in., July 10.

PRECIPITATION from DCP, in INCHES, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.10	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.18	0.0	0.0	0.0	0.23	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.06	0.0	0.0
5	0.0	0.0	0.07	0.12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.06	0.0	0.83	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.03	0.0	0.0	0.26	0.0	0.03
8	0.0	0.0	0.0	0.0	0.0	0.04	0.40	0.22	0.0	0.09	0.0	0.0
9	0.17	0.0	0.0	0.0	0.16	0.15	0.0	0.0	0.0	0.0	0.0	0.0
10	0.47	0.0	0.0	0.0	0.13	0.0	0.0	0.0	0.80	1.24	0.0	0.0
11	0.0	0.0	0.0	0.0	0.0	0.0	0.49	0.99	0.41	0.27	0.0	0.0
12	0.0	0.0	0.09	0.0	0.0	0.0	0.0	0.03	1.01	0.0	1.00	0.0
13	0.20	0.08	0.0	0.0	0.0	0.0	0.0	0.0	0.10	0.0	0.26	0.0
14	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.06
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.03	0.0	0.0	0.0	0.0	0.11	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.07	0.04	0.0
18	0.0	0.01	0.0	0.0	0.02	0.0	0.25	0.0	0.0	0.0	0.06	0.87
19	0.0	0.0	0.0	0.01	0.13	0.22	0.0	0.0	0.0	0.02	0.0	0.06
20	0.0	0.0	0.0	0.0	0.01	0.0	0.18	0.0	0.0	0.0	0.0	0.01
21	0.0	0.0	0.0	0.0	0.0	0.0	0.28	0.0	0.0	0.0	0.0	0.0
22	0.73	0.0	0.13	0.0	0.0	0.0	0.0	0.0	0.0	0.29	0.04	0.0
23	0.0	0.12	0.0	0.0	0.0	0.0	0.22	0.10	0.0	0.0	0.87	0.0
24	0.03	0.06	0.0	0.0	0.0	0.0	0.20	0.01	0.0	0.0	0.0	0.0
25	0.0	0.01	0.0	0.0	0.0	0.0	0.0	0.51	0.0	0.02	0.0	0.01
26	0.0	0.30	0.0	0.0	0.0	0.0	0.0	0.0	0.96	0.03	0.0	0.0
27	0.0	0.0	0.0	0.0	0.0	0.0	0.82	0.0	0.0	0.24	0.0	0.0
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0.0	0.06	0.0	0.0
29	0.0	0.0	0.0	0.0	---	0.05	0.0	0.0	0.0	0.90	0.0	0.0
30	0.01	0.0	0.0	0.0	---	0.0	0.30	0.05	0.0	0.0	0.0	0.0
31	0.0	---	0.0	0.0	---	0.05	---	0.0	---	0.0	0.0	---
TOTAL	1.73	0.59	0.32	0.13	0.63	0.51	3.17	2.19	3.52	4.38	2.27	1.04
MEAN	0.06	0.02	0.01	0.00	0.02	0.02	0.11	0.07	0.12	0.14	0.07	0.03
MAX	0.73	0.30	0.13	0.12	0.18	0.22	0.82	0.99	1.01	1.24	1.00	0.87
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



05487550 WALNUT CREEK NEAR VANDALIA, IA

LOCATION.--Lat 41°32'13", long 93°15'32", in NW$^1/_4$ NE$^1/_4$ sec.27, T.78 N., R.21 W., Jasper County, Hydrologic Unit 07100008, on right bank downstream side of bridge.

DRAINAGE AREA.--20.3 mi^2.

WATER DISCHARGE RECORDS

PERIOD OF RECORD.--October 1994 to current year.

GAGE.--Water-stage recorder. Concrete control. Datum of gage is 785.15 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharge, which are poor. U.S. Geological Survey rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	e5.2	1.5	0.20	1.2	e0.91	6.7	18	9.6	6.8	6.7	3.9
2	1.2	e4.7	1.4	0.21	0.96	e0.82	6.7	16	9.9	6.4	5.9	3.7
3	0.89	e4.4	1.4	0.27	1.1	e0.73	6.0	14	9.6	6.2	5.8	3.2
4	1.4	e4.3	1.4	0.38	0.78	e1.7	5.8	12	9.4	5.9	5.6	3.0
5	2.5	e3.9	1.7	0.57	0.76	e1.4	6.1	11	8.6	5.9	5.4	2.8
6	2.8	e3.8	1.9	0.69	1.2	e1.3	5.6	11	8.2	22	5.3	2.7
7	2.9	e3.7	1.1	0.89	1.3	e1.0	6.2	10	7.8	17	5.0	2.1
8	2.9	e3.5	1.4	0.74	1.7	e0.91	8.2	9.4	7.4	8.6	4.8	2.1
9	3.5	e3.3	1.1	1.0	2.5	e2.7	5.9	9.5	7.2	7.0	5.0	1.5
10	4.7	e2.9	1.3	1.4	e3.0	e3.6	4.5	7.9	37	50	5.0	1.6
11	4.9	e2.6	1.4	1.4	e3.8	e4.2	4.6	67	44	110	4.7	1.4
12	4.6	e2.3	1.7	1.4	4.5	5.0	11	37	55	35	18	1.4
13	5.1	e1.8	1.7	1.2	4.3	4.2	7.1	20	125	19	11	1.3
14	4.9	e1.6	1.5	1.4	4.3	4.1	6.3	16	50	15	7.8	1.6
15	4.7	1.1	1.1	1.0	4.3	3.9	5.9	14	32	12	6.2	1.4
16	4.7	1.1	1.4	0.92	e4.0	3.5	5.5	13	23	11	5.8	1.4
17	4.6	1.2	1.4	0.68	e4.2	3.7	4.9	12	19	15	5.5	1.0
18	3.9	0.91	1.4	0.56	e4.4	3.6	4.9	11	17	12	4.9	2.6
19	3.6	1.1	e0.51	0.59	4.8	3.7	5.6	10	14	11	6.1	7.7
20	4.1	1.1	e0.91	0.66	5.0	5.5	4.8	9.6	13	11	4.8	2.7
21	4.1	1.2	e0.67	0.83	4.1	5.5	7.3	9.5	11	9.5	4.7	2.0
22	5.6	1.2	e1.3	0.97	e2.3	5.7	7.0	9.4	10	9.8	4.5	1.3
23	7.3	1.1	e1.0	1.2	4.0	6.5	7.8	9.6	9.6	8.7	36	1.2
24	4.7	1.7	0.71	0.78	4.0	7.9	7.8	9.4	8.9	8.6	e7.0	1.2
25	4.7	1.7	0.40	0.70	e2.7	7.3	7.1	13	8.9	8.7	e2.6	0.94
26	4.8	2.0	0.36	1.2	e1.6	7.5	6.7	10	9.8	8.4	e3.2	2.4
27	4.8	2.8	0.54	1.8	e1.5	7.3	62	10	14	8.6	e3.2	2.6
28	4.2	1.9	0.79	1.8	e1.1	7.3	37	12	9.0	8.0	e3.0	3.5
29	5.6	1.5	0.65	1.4	---	7.4	20	9.3	8.1	29	3.3	3.6
30	5.5	1.5	0.34	0.96	---	7.0	19	13	7.5	8.9	3.5	3.3
31	e5.8	---	0.26	0.91	---	6.9	---	9.8	---	7.6	3.8	---
TOTAL	125.99	71.11	34.24	28.71	79.40	132.77	304.0	443.4	603.5	502.6	204.1	71.14
MEAN	4.064	2.370	1.105	0.926	2.836	4.283	10.13	14.30	20.12	16.21	6.584	2.371
MAX	7.3	5.2	1.9	1.8	5.0	7.9	62	67	125	110	36	7.7
MIN	0.89	0.91	0.26	0.20	0.76	0.73	4.5	7.9	7.2	5.9	2.6	0.94
AC-FT	250	141	68	57	157	263	603	879	1200	997	405	141
CFSM	0.20	0.12	0.05	0.05	0.14	0.21	0.50	0.70	0.99	0.80	0.32	0.12
IN.	0.23	0.13	0.06	0.05	0.15	0.24	0.56	0.81	1.11	0.92	0.37	0.13

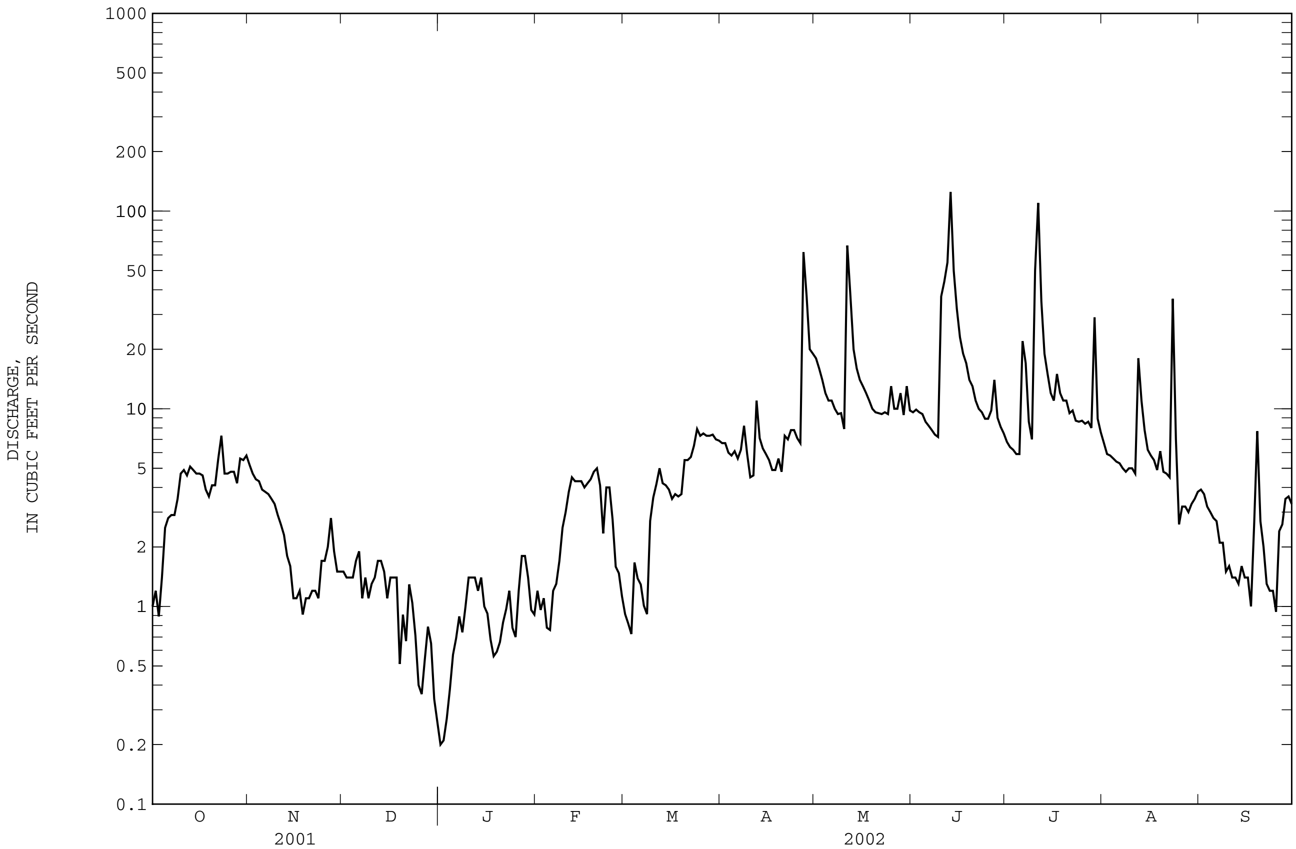
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	3.201	4.220	3.104	3.298	19.47	18.64	20.50	41.41	34.77	16.60	8.256	2.487
MAX	7.81	13.5	8.41	10.3	58.8	66.3	47.4	86.1	97.8	42.4	31.2	7.02
(WY)	1999	1999	1998	1998	1996	2001	1995	1996	1998	1998	1999	1999
MIN	0.21	0.49	0.27	0.93	2.84	3.82	5.62	14.3	15.2	6.40	2.44	0.89
(WY)	1995	1995	2001	2002	2002	2000	1996	2002	1995	2001	1997	1997

05487550 WALNUT CREEK NEAR VANDALIA, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1995 - 2002	
ANNUAL TOTAL	5539.85		2600.96			
ANNUAL MEAN	15.18		7.126		14.62	
HIGHEST ANNUAL MEAN					27.5	1998
LOWEST ANNUAL MEAN					7.13	2002
HIGHEST DAILY MEAN	255	Feb 25	125	Jun 13	573	May 24 1996
LOWEST DAILY MEAN	0.16	Sep 5	0.20	Jan 1	0.10	Dec 7 1994
ANNUAL SEVEN-DAY MINIMUM	0.35	Aug 31	0.32	Dec 30	0.14	Dec 18 2000
MAXIMUM PEAK FLOW			398	Jun 12	1380	Jun 14 1998
MAXIMUM PEAK STAGE			5.38	Jun 12	10.85	Jun 14 1998
INSTANTANEOUS LOW FLOW					0.01	Jan 8 1996
ANNUAL RUNOFF (AC-FT)	10990		5160		10590	
ANNUAL RUNOFF (CFSM)	0.75		0.35		0.72	
ANNUAL RUNOFF (INCHES)	10.15		4.77		9.78	
10 PERCENT EXCEEDS	38		13		32	
50 PERCENT EXCEEDS	4.3		4.4		5.6	
90 PERCENT EXCEEDS	0.80		0.93		0.69	

e Estimated



05487550 WALNUT CREEK NEAR VANDALIA, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--March 1995 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: March 1995 to current year.
WATER TEMPERATURES: March 1995 to current year.
SUSPENDED-SEDIMENT DISCHARGE: March 1995 to current year.

REMARKS.--Records of specific conductance are obtained from suspended-sediment samples at time of analysis.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 771 microsiemens Oct. 10, 1995; minimum daily, 137 microsiemens Feb. 18, 1997.
WATER TEMPERATURES: Maximum daily, 33.5°C Aug. 1, 2001; minimum daily, 0.0°C many days in winter.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 3,120 mg/L Mar. 30, 1998; minimum daily mean, 4.0 mg/L Feb. 15, 17, 19, 21, 2001.
SEDIMENT LOADS: Maximum daily, 4,600 tons Mar. 30, 1998; minimum daily, 0.01 tons Feb. 2-3, 1996, Dec. 23, 29-31, 2000, Jan. 1, 11, Sept. 5, 2001, Jan. 1, 3, 15, 17, and Sept. 25, 2002.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 568 microsiemens Dec. 28; minimum daily, 304 microsiemens Apr. 27.
WATER TEMPERATURES: Maximum daily, 29.4°C July 21; minimum daily, 0.0°C many days in winter.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,430 mg/L May 11; minimum daily mean, 5.1 mg/L Jan. 15.
SEDIMENT LOADS: Maximum daily, 583 tons June 13; minimum daily, 0.01 tons Jan. 1, 3, 15, 17, and Sept. 25.

SPECIFIC CONDUCTANCE, in MICROSIEMENS/CM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	409	423	385	493	490	523	428	462	481	539	543	---
2	443	---	363	459	448	---	449	470	---	541	499	---
3	443	451	384	393	442	459	---	---	486	537	---	503
4	---	406	378	420	456	441	391	476	484	539	488	518
5	438	435	391	536	517	455	415	459	483	533	494	511
6	418	418	404	468	444	440	441	---	494	---	516	421
7	408	428	420	452	458	435	441	---	476	---	463	475
8	458	413	355	382	491	431	432	461	469	509	561	---
9	421	418	370	---	487	429	431	---	498	343	563	444
10	---	414	381	405	380	471	437	---	390	---	545	438
11	436	414	416	408	508	442	438	---	334	328	---	484
12	413	412	386	422	462	453	481	458	510	504	347	---
13	441	---	406	387	443	443	454	465	445	513	493	518
14	421	412	444	440	456	449	440	---	---	519	532	416
15	459	380	367	446	419	444	438	483	---	---	548	441
16	456	387	393	411	414	451	424	---	518	524	498	---
17	484	---	393	468	441	461	443	469	518	488	529	505
18	459	404	377	409	442	410	439	477	---	---	---	471
19	---	370	463	443	417	438	430	482	---	---	514	390
20	---	444	433	400	429	437	---	490	522	544	506	466
21	474	361	405	389	455	449	434	---	529	522	---	---
22	431	382	---	413	458	437	468	483	543	516	442	---
23	453	---	---	406	472	456	430	476	533	550	---	---
24	481	434	438	407	443	---	447	482	513	510	498	---
25	499	419	480	429	458	428	464	445	---	---	509	---
26	493	432	458	441	467	454	419	---	---	---	---	---
27	491	416	485	371	466	---	304	488	525	---	503	480
28	441	411	568	419	453	---	450	408	529	546	497	489
29	440	436	468	421	---	---	457	479	544	315	415	487
30	466	427	415	414	---	433	442	447	---	535	481	---
31	443	---	503	460	---	433	---	478	---	533	420	---

05487550 WALNUT CREEK NEAR VANDALIA, IA--Continued

WATER TEMPERATURE, in (DEGREES C), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.7	18.6	4.5	0.0	1.3	0.5	3.0	14.3	---	28.3	29.0	---
2	18.8	---	6.1	0.1	1.2	---	6.6	15.4	---	27.1	25.6	---
3	21.6	11.9	6.9	0.5	0.5	0.2	---	---	23.1	24.8	---	23.4
4	---	12.1	11.1	1.1	0.5	0.6	9.3	10.6	17.8	26.4	23.6	20.6
5	11.1	12.4	15.4	1.0	2.3	1.7	11.4	13.5	---	26.0	22.7	22.9
6	5.7	10.4	7.4	0.2	0.8	0.3	11.5	---	---	---	20.3	25.6
7	16.0	17.1	5.9	1.6	2.5	0.9	10.0	---	---	---	21.7	25.9
8	18.0	11.2	5.1	1.3	1.1	0.9	10.1	13.5	---	24.2	24.7	---
9	13.9	9.4	3.1	---	0.7	0.0	14.5	---	---	---	24.1	25.7
10	---	10.5	3.7	0.5	0.4	1.0	19.6	---	---	---	25.4	22.8
11	17.8	5.6	2.9	0.6	1.0	3.0	17.9	---	---	18.5	---	17.3
12	16.2	11.0	5.8	0.0	1.1	6.9	12.5	10.1	---	20.5	22.7	---
13	13.6	---	3.2	3.4	1.7	10.5	14.8	16.9	---	18.3	19.3	20.3
14	10.1	15.7	4.8	0.6	1.3	3.5	22.1	---	---	23.7	23.1	18.9
15	9.4	13.6	5.2	0.3	1.4	8.9	25.3	11.3	---	---	22.7	18.0
16	---	12.5	5.8	0.1	3.2	7.6	24.6	---	---	26.5	21.6	---
17	---	---	4.6	1.4	1.7	5.6	22.2	12.8	---	24.6	21.6	20.3
18	---	13.7	4.2	0.0	1.9	10.8	24.6	18.4	---	---	---	19.6
19	---	9.6	1.5	0.3	5.4	6.6	17.9	14.7	---	---	22.6	20.5
20	---	8.7	0.0	0.0	2.9	11.7	---	14.8	---	28.7	18.3	18.4
21	---	9.2	3.8	2.4	3.5	4.2	9.4	---	---	29.4	---	---
22	---	6.3	---	0.6	4.5	4.1	16.7	18.5	---	24.1	26.4	---
23	---	---	---	1.6	2.6	3.5	20.4	18.2	---	25.6	---	---
24	---	12.3	0.0	1.3	7.6	---	12.4	14.5	26.8	22.9	23.7	---
25	8.3	7.4	0.3	2.7	0.5	0.2	11.5	16.1	---	---	24.7	---
26	6.6	7.4	0.0	2.5	0.0	8.3	15.2	---	---	---	---	---
27	5.9	5.1	0.0	3.6	1.8	---	8.6	16.9	25.5	---	20.4	15.6
28	7.3	3.4	1.6	0.9	2.7	---	9.3	23.0	25.3	25.7	24.0	17.4
29	12.2	4.3	0.0	0.4	---	---	17.9	19.5	23.1	23.7	23.3	16.8
30	10.0	5.6	0.0	0.0	---	9.0	11.6	22.1	---	26.2	21.2	---
31	13.9	---	0.5	0.7	---	6.7	---	25.2	---	---	22.9	---

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

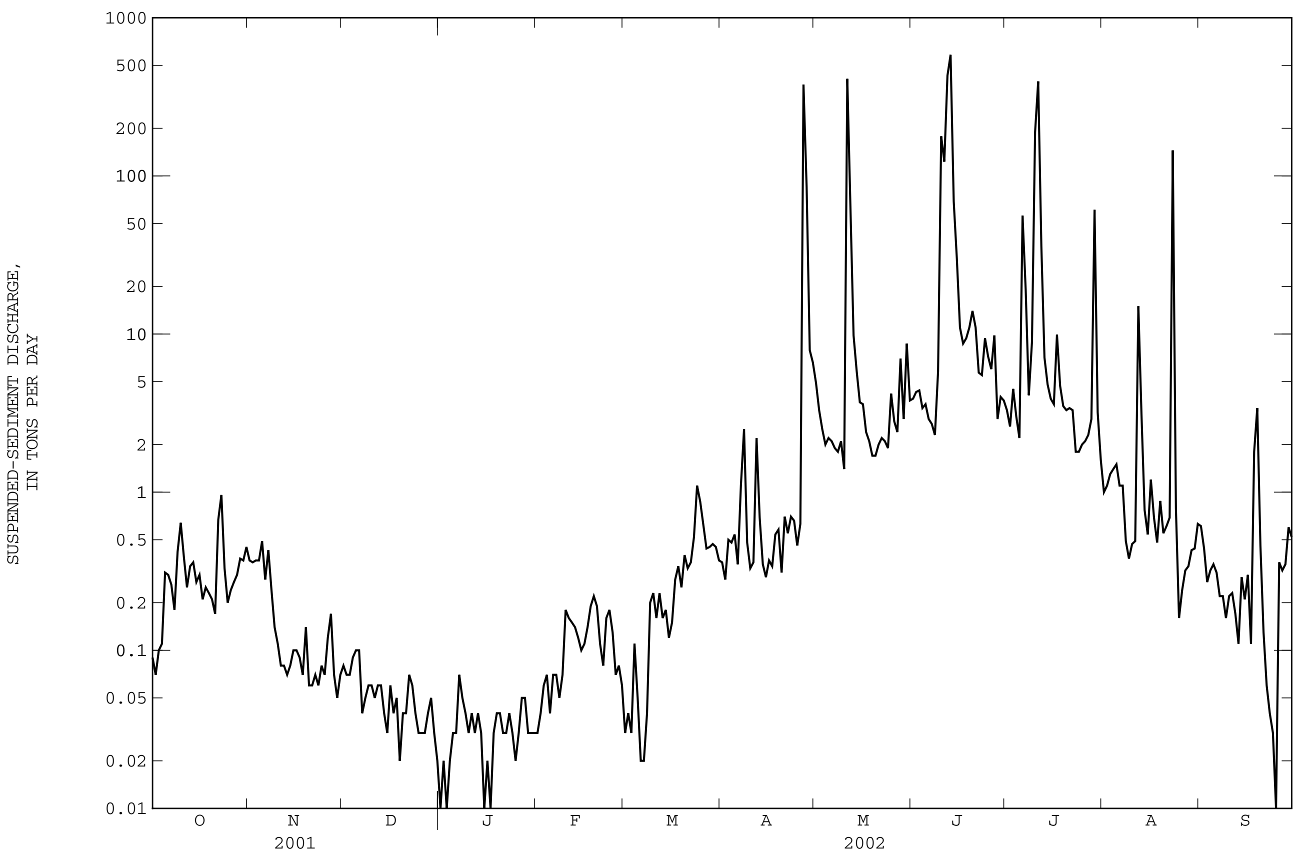
DAY	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	32	0.09	26	0.37	20	0.08	20	0.01	8.1	0.03	11	0.03
2	23	0.07	28	0.36	18	0.07	27	0.02	15	0.04	17	0.04
3	36	0.10	31	0.37	19	0.07	19	0.01	21	0.06	17	0.03
4	27	0.11	32	0.37	23	0.09	16	0.02	36	0.07	24	0.11
5	45	0.31	47	0.49	23	0.10	18	0.03	19	0.04	14	0.05
6	39	0.30	27	0.28	19	0.10	18	0.03	21	0.07	6.3	0.02
7	33	0.26	43	0.43	12	0.04	29	0.07	21	0.07	6.1	0.02
8	23	0.18	25	0.24	14	0.05	25	0.05	12	0.05	15	0.04
9	43	0.42	16	0.14	19	0.06	16	0.04	10	0.07	28	0.20
10	50	0.64	14	0.11	17	0.06	8.7	0.03	22	0.18	24	0.23
11	29	0.39	12	0.08	14	0.05	9.8	0.04	16	0.16	14	0.16
12	20	0.25	13	0.08	13	0.06	8.1	0.03	12	0.15	17	0.23
13	25	0.34	15	0.07	13	0.06	12	0.04	12	0.14	14	0.16
14	27	0.36	18	0.08	11	0.04	7.0	0.03	11	0.12	16	0.18
15	21	0.27	34	0.10	11	0.03	5.1	0.01	8.6	0.10	11	0.12
16	23	0.30	32	0.10	15	0.06	7.1	0.02	10	0.11	16	0.15
17	17	0.21	30	0.09	10	0.04	7.1	0.01	12	0.14	28	0.28
18	24	0.25	27	0.07	13	0.05	22	0.03	16	0.19	35	0.34
19	24	0.23	44	0.14	11	0.02	24	0.04	17	0.22	26	0.25
20	19	0.21	20	0.06	17	0.04	21	0.04	14	0.19	27	0.40
21	15	0.17	19	0.06	23	0.04	16	0.03	9.8	0.11	22	0.33
22	42	0.67	23	0.07	20	0.07	11	0.03	13	0.08	23	0.36
23	46	0.96	20	0.06	22	0.06	11	0.04	15	0.16	29	0.52
24	26	0.33	18	0.08	19	0.04	12	0.03	17	0.18	52	1.1
25	16	0.20	15	0.07	29	0.03	13	0.02	18	0.13	44	0.87
26	18	0.24	20	0.12	27	0.03	9.5	0.03	16	0.07	30	0.62
27	21	0.27	21	0.17	20	0.03	11	0.05	19	0.08	22	0.44
28	26	0.30	13	0.07	20	0.04	9.6	0.05	19	0.06	23	0.45
29	25	0.38	13	0.05	31	0.05	8.4	0.03	---	---	23	0.47
30	25	0.37	18	0.07	33	0.03	10	0.03	---	---	24	0.45
31	29	0.45	---	---	24	0.02	12	0.03	---	---	20	0.37
TOTAL	---	9.63	---	4.85	---	1.61	---	0.97	---	3.07	---	9.02

05487550 WALNUT CREEK NEAR VANDALIA, IA--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	APRIL MEAN CONCENTRATION (MG/L)	APRIL LOAD (TONS/DAY)	MAY MEAN CONCENTRATION (MG/L)	MAY LOAD (TONS/DAY)	JUNE MEAN CONCENTRATION (MG/L)	JUNE LOAD (TONS/DAY)	JULY MEAN CONCENTRATION (MG/L)	JULY LOAD (TONS/DAY)	AUGUST MEAN CONCENTRATION (MG/L)	AUGUST LOAD (TONS/DAY)	SEPTEMBER MEAN CONCENTRATION (MG/L)	SEPTEMBER LOAD (TONS/DAY)
1	20	0.36	98	4.9	149	3.9	180	3.3	57	1.0	58	0.61
2	16	0.28	76	3.3	160	4.3	153	2.6	70	1.1	44	0.44
3	31	0.50	66	2.5	168	4.4	270	4.5	83	1.3	31	0.27
4	30	0.48	62	2.0	133	3.4	186	3.0	94	1.4	40	0.32
5	33	0.54	72	2.2	156	3.6	137	2.2	99	1.5	46	0.35
6	23	0.35	72	2.1	130	2.9	385	56.0	76	1.1	43	0.31
7	62	1.1	69	1.9	130	2.7	350	19.0	82	1.1	40	0.22
8	127	2.5	70	1.8	116	2.3	174	4.1	38	0.49	39	0.22
9	30	0.48	80	2.1	300	5.8	471	8.9	28	0.38	40	0.16
10	27	0.33	67	1.4	1130	178	881	189	35	0.47	51	0.22
11	27	0.36	1430	411	689	123	1190	396	39	0.49	62	0.23
12	74	2.2	520	63.0	729	431	337	36.0	213	15.0	47	0.17
13	36	0.69	177	9.8	1240	583	137	7.1	104	3.1	32	0.11
14	20	0.35	136	5.8	501	69.0	120	4.8	35	0.77	65	0.29
15	18	0.29	101	3.7	333	30.0	121	3.9	32	0.54	54	0.21
16	25	0.37	100	3.6	187	11.0	122	3.6	77	1.2	58	0.30
17	26	0.34	76	2.4	168	8.7	195	9.9	47	0.69	42	0.11
18	41	0.54	72	2.1	211	9.4	142	4.7	36	0.48	71	1.8
19	37	0.58	62	1.7	285	11.0	120	3.5	51	0.88	122	3.4
20	24	0.31	68	1.7	426	14.0	116	3.3	43	0.55	57	0.46
21	35	0.70	77	2.0	352	11.0	133	3.4	49	0.61	23	0.13
22	29	0.55	86	2.2	203	5.7	123	3.3	57	0.69	17	0.06
23	33	0.70	81	2.1	216	5.5	76	1.8	512	145	13	0.04
24	32	0.66	75	1.9	390	9.4	76	1.8	42	0.79	9.3	0.03
25	24	0.46	118	4.2	300	7.2	84	2.0	23	0.16	5.6	0.01
26	35	0.63	103	2.8	225	6.0	93	2.1	28	0.24	45	0.36
27	1340	378	86	2.4	214	9.8	101	2.3	37	0.32	42	0.32
28	666	85.0	190	7.0	120	2.9	130	2.9	42	0.34	36	0.35
29	143	7.9	117	2.9	180	4.0	465	61.0	48	0.43	63	0.60
30	125	6.6	216	8.7	187	3.8	129	3.2	47	0.44	59	0.52
31	---	---	145	3.8	---	---	80	1.6	62	0.63	---	---
TOTAL	---	494.15	---	569.0	---	1566.7	---	850.8	---	183.19	---	12.62

YEAR 3705.61



05487550 WALNUT CREEK NEAR VANDALIA, IA--Continued

PRECIPITATION RECORDS

PERIOD OF RECORD.--April 1995 to current year.

INSTRUMENTATION.--Tipping bucket rain gage.

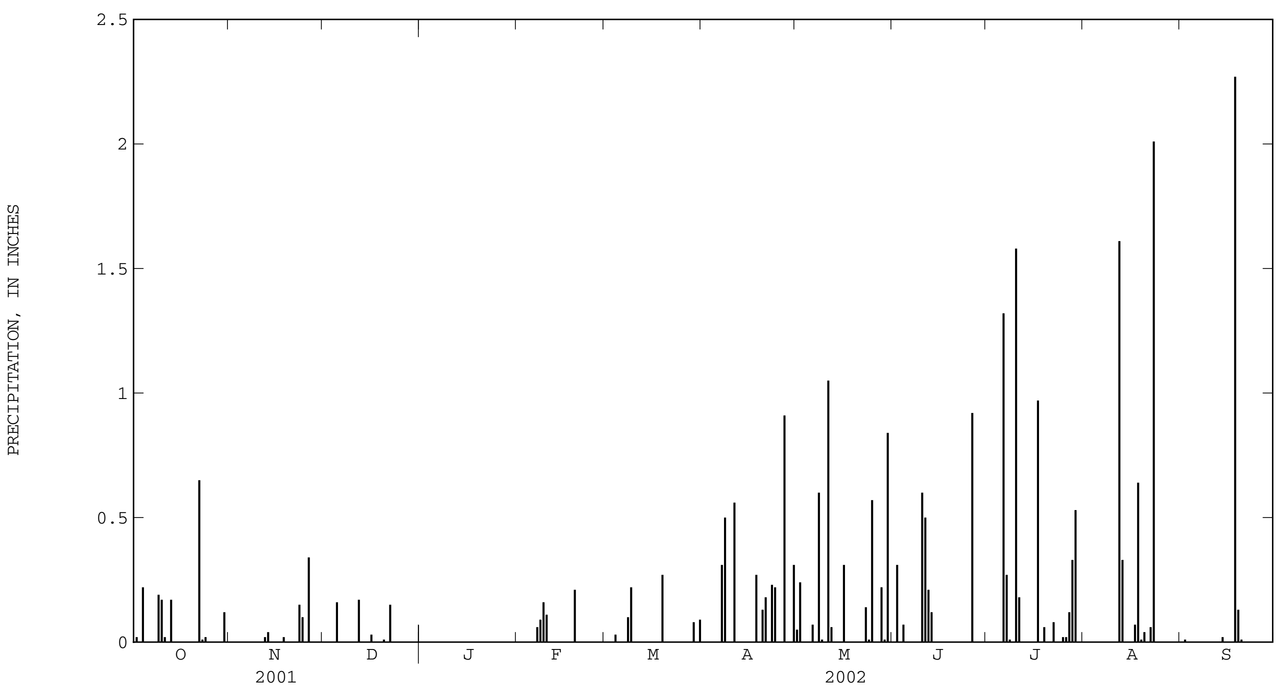
REMARKS.--Records good except for the winter period, which is poor due to intermittent snow accumulation and subsequent melting.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily accumulation, 4.72 in., May 9, 1996.

EXTREMES FOR CURRENT YEAR.--Maximum daily accumulation, 2.27 in., Sept. 18.

PRECIPITATION, in INCHES, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY SUM VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.05	0.0	0.0	0.0	0.0
2	0.02	0.0	0.0	0.0	0.0	0.0	0.0	0.24	0.31	0.0	0.0	0.01
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.22	0.0	0.0	0.0	0.0	0.03	0.0	0.0	0.07	0.0	0.0	0.0
5	0.0	0.0	0.16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.07	0.0	1.32	0.0	0.0
7	0.0	0.0	0.0	0.0	0.06	0.0	0.31	0.0	0.0	0.27	0.0	0.0
8	0.0	0.0	0.0	0.0	0.09	0.10	0.50	0.60	0.0	0.01	0.0	0.0
9	0.19	0.0	0.0	0.0	0.16	0.22	0.0	0.01	0.0	0.0	0.0	0.0
10	0.17	0.0	0.0	0.0	0.11	0.0	0.0	0.0	0.60	1.58	0.0	0.0
11	0.02	0.0	0.0	0.0	0.0	0.0	0.56	1.05	0.50	0.18	0.0	0.0
12	0.0	0.02	0.17	0.0	0.0	0.0	0.0	0.06	0.21	0.0	1.61	0.0
13	0.17	0.04	0.0	0.0	0.0	0.0	0.0	0.0	0.12	0.0	0.33	0.0
14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.02
15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	0.0	0.0	0.03	0.0	0.0	0.0	0.0	0.31	0.0	0.0	0.0	0.0
17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.97	0.07	0.0
18	0.0	0.02	0.0	0.0	0.0	0.0	0.27	0.0	0.0	0.0	0.64	2.27
19	0.0	0.0	0.0	0.0	0.21	0.27	0.0	0.0	0.0	0.06	0.01	0.13
20	0.0	0.0	0.01	0.0	0.0	0.0	0.13	0.0	0.0	0.0	0.04	0.01
21	0.0	0.0	0.0	0.0	0.0	0.0	0.18	0.0	0.0	0.0	0.0	0.0
22	0.65	0.0	0.15	0.0	0.0	0.0	0.0	0.0	0.0	0.08	0.06	0.0
23	0.01	0.15	0.0	0.0	0.0	0.0	0.23	0.14	0.0	0.0	2.01	0.0
24	0.02	0.10	0.0	0.0	0.0	0.0	0.22	0.01	0.0	0.0	0.0	0.0
25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.57	0.0	0.02	0.0	0.0
26	0.0	0.34	0.0	0.0	0.0	0.0	0.0	0.0	0.92	0.02	0.0	0.0
27	0.0	0.0	0.0	0.0	0.0	0.0	0.91	0.0	0.0	0.12	0.0	0.0
28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.22	0.0	0.33	0.0	0.0
29	0.0	0.0	0.0	0.0	---	0.08	0.0	0.01	0.0	0.53	0.0	0.0
30	0.12	0.0	0.0	0.0	---	0.0	0.31	0.84	0.0	0.0	0.0	0.0
31	0.0	---	0.0	0.0	---	0.09	---	0.0	---	0.0	0.0	---
TOTAL	1.59	0.67	0.52	0.0	0.63	0.79	3.62	4.18	2.73	5.49	4.77	2.44
MEAN	0.05	0.02	0.02	0.00	0.02	0.03	0.12	0.13	0.09	0.18	0.15	0.08
MAX	0.65	0.34	0.17	0.00	0.21	0.27	0.91	1.05	0.92	1.58	2.01	2.27
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



05487980 WHITE BREAST CREEK NEAR DALLAS, IA

LOCATION.--Lat 41°14'41", long 93°16'08", in $NW^1/_4$ $NW^1/_4$ sec.3, T.74 N., R.21 W., Marion County, Hydrologic Unit 07100008, on left bank 15 ft downstream from bridge on county highway, 0.5 mi downstream from Kirk Branch, and 1.7 mi northwest of Dallas.

DRAINAGE AREA.--342 mi^2.

PERIOD OF RECORD.--October 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is 759.21 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 11, 1962 reached a stage of 28.87 ft, from floodmark, discharge, about 12,000 ft^3/s. Flood of June 6, 1947 may have been slightly higher.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	43	21	e7.3	e19	e13	49	232	69	11	10	6.1
2	12	39	20	e11	e17	e13	44	e219	65	9.6	9.6	5.5
3	10	36	20	e9.2	e14	e15	38	e189	111	9.0	8.9	5.1
4	13	33	21	e12	e11	e20	34	147	57	9.0	8.5	4.9
5	55	32	21	e15	e7.8	22	33	119	59	11	8.3	13
6	31	31	25	e13	e12	41	32	111	54	20	8.1	24
7	29	30	23	e10	e14	42	35	100	40	88	7.7	24
8	20	28	21	e14	e16	70	70	88	33	39	7.7	23
9	16	26	20	e19	e21	255	260	e175	30	23	7.6	20
10	17	26	19	e17	e25	247	201	e54	57	611	8.0	18
11	18	25	19	e15	e23	125	130	e1680	811	893	7.8	16
12	15	24	22	e13	e20	96	303	3090	167	225	7.0	14
13	14	26	27	e11	e17	80	e155	809	905	239	7.7	12
14	14	25	27	e9.5	e24	69	e123	337	200	113	8.9	11
15	12	24	24	e7.6	e33	60	105	226	100	63	8.3	9.6
16	10	24	25	e9.6	e28	51	87	599	67	43	7.0	8.8
17	10	23	25	e11	e25	46	74	482	52	34	6.7	8.6
18	9.5	23	23	e12	e31	44	66	249	43	28	6.4	9.1
19	9.5	23	20	e12	49	44	59	169	36	24	16	135
20	8.9	21	18	e13	57	49	55	132	31	22	22	31
21	8.5	21	e17	e15	48	43	77	119	27	19	12	17
22	229	21	21	e16	37	36	97	109	24	19	11	12
23	1490	21	e17	e15	33	38	83	102	21	18	50	9.5
24	471	24	e15	e14	29	41	79	99	18	16	26	8.2
25	182	25	e12	e13	27	37	84	227	17	14	14	7.8
26	115	24	e9.4	e17	e18	40	65	326	17	14	12	7.2
27	78	30	e11	e25	e18	41	885	202	20	20	11	7.0
28	61	25	e12	e22	e16	41	1110	150	16	15	9.7	6.6
29	54	22	e9.8	e19	---	42	417	152	13	32	9.0	6.3
30	48	22	e8.2	e18	---	52	241	105	12	20	8.7	5.7
31	46	---	e7.3	e18	---	54	---	85	---	13	7.6	---
TOTAL	3121.4	797	580.7	433.2	689.8	1867	5091	10883	3172	2714.6	353.2	486.0
MEAN	100.7	26.57	18.73	13.97	24.64	60.23	169.7	351.1	105.7	87.57	11.39	16.20
MAX	1490	43	27	25	57	255	1110	3090	905	893	50	135
MIN	8.5	21	7.3	7.3	7.8	13	32	54	12	9.0	6.4	4.9
AC-FT	6190	1580	1150	859	1370	3700	10100	21590	6290	5380	701	964
CFSM	0.29	0.08	0.05	0.04	0.07	0.18	0.50	1.03	0.31	0.26	0.03	0.05
IN.	0.34	0.09	0.06	0.05	0.08	0.20	0.55	1.18	0.35	0.30	0.04	0.05

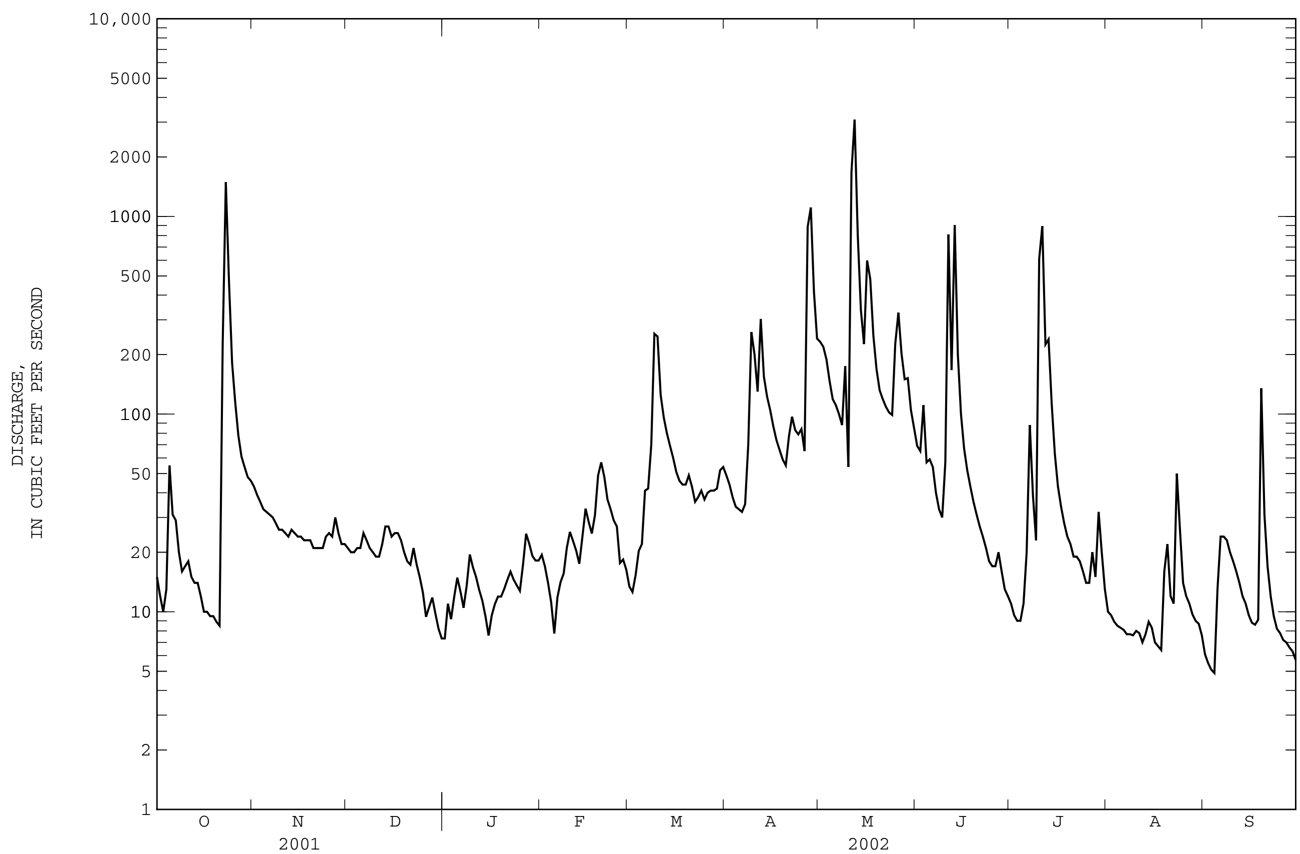
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	117.0	109.9	104.8	62.79	166.1	346.5	446.0	402.1	291.5	277.3	115.8	178.2
MAX	1153	756	718	601	718	1056	1592	1823	1146	3641	1202	1902
(WY)	1974	1984	1983	1974	1973	1998	1991	1996	1967	1993	1993	1992
MIN	1.16	1.35	0.80	0.49	1.82	4.05	3.85	6.44	5.13	1.47	2.09	1.11
(WY)	1990	1977	1964	1977	1964	1964	1989	1980	1977	1988	1971	1968

05487980 WHITE BREAST CREEK NEAR DALLAS, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1963 - 2002	
ANNUAL TOTAL	103494.0		30188.9			
ANNUAL MEAN	283.5		82.71		218.1	
HIGHEST ANNUAL MEAN					816	1993
LOWEST ANNUAL MEAN					17.1	1989
HIGHEST DAILY MEAN	4050	May 11	3090	May 12	24700	Sep 16 1992
LOWEST DAILY MEAN	3.1	Sep 5	4.9	Sep 4	0.02	Oct 14 1989
ANNUAL SEVEN-DAY MINIMUM	3.8	Aug 31	6.7	Aug 29	0.05	Aug 9 1989
MAXIMUM PEAK FLOW			4010	May 11	37300	Jul 16 1982
MAXIMUM PEAK STAGE			15.85	May 11	33.45	Jul 16 1982
ANNUAL RUNOFF (AC-FT)	205300		59880		158000	
ANNUAL RUNOFF (CFSM)	0.83		0.24		0.64	
ANNUAL RUNOFF (INCHES)	11.26		3.28		8.67	
10 PERCENT EXCEEDS	806		168		438	
50 PERCENT EXCEEDS	38		23		35	
90 PERCENT EXCEEDS	8.0		8.9		2.8	

e Estimated



05488100 LAKE RED ROCK NEAR PELLA, IA

LOCATION.--Lat 41°22'11", long 92°58'48", in NE1/4 NW1/4 sec.19, T.76 N., R.18 W., Marion County, Hydrologic Unit 07100008, at outlet works near right end of Red Rock Dam on Des Moines River, 1.4 mi upstream from Lake Creek, 4.5 mi southwest of Pella, and at mile 142.3.

DRAINAGE AREA.--12,323 mi^2.

PERIOD OF RECORD.--March 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is at NGVD 0f 1929 level (levels by U.S. Army Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam completed in 1969. Storage began in March 1969. Releases controlled through 14 concrete conduits extending through the concrete ogee spillway section into the stilling basin. Inlet invert elevation at 690 ft above sea level. Maximum design discharge through the conduits is 37,500 ft^3/s but normal flood control operation limits maximum outflow to 30,000 ft^3/s. Spillway section consists of 5 tainter gates, 41 ft wide and 45 ft high, on concrete ogee crest at elevation 736 ft. The storage capacity of the reservoir at full flood-control pool level, 780 ft, is 1,489,900 acre-ft, surface area, 65,440 acres. Conservation pool level, 742 feet, is 265,500 acre-feet, surface area, 19,100 acres. Reservoir is used for flood control, low-flow augmentation, conservation and recreation. Normal operation will maintain an elevation of 742 ft with minimum release of 300 ft^3/s and maximum release of 30,000 ft^3/s during the non-growing season, providing discharges at Ottumwa and Keosauqua do not exceed 30,000 ft^3/s and 35,000 ft^3/s respectively. Storage tables for water years 1985-1986 published as day second-feet instead of acre-feet storage. Prior to October 1, 2000 published as contents in acre feet, and as elevation in feet NGVD thereafter.

COOPERATION.--Records provided by U.S. Army Corps of Engineers.

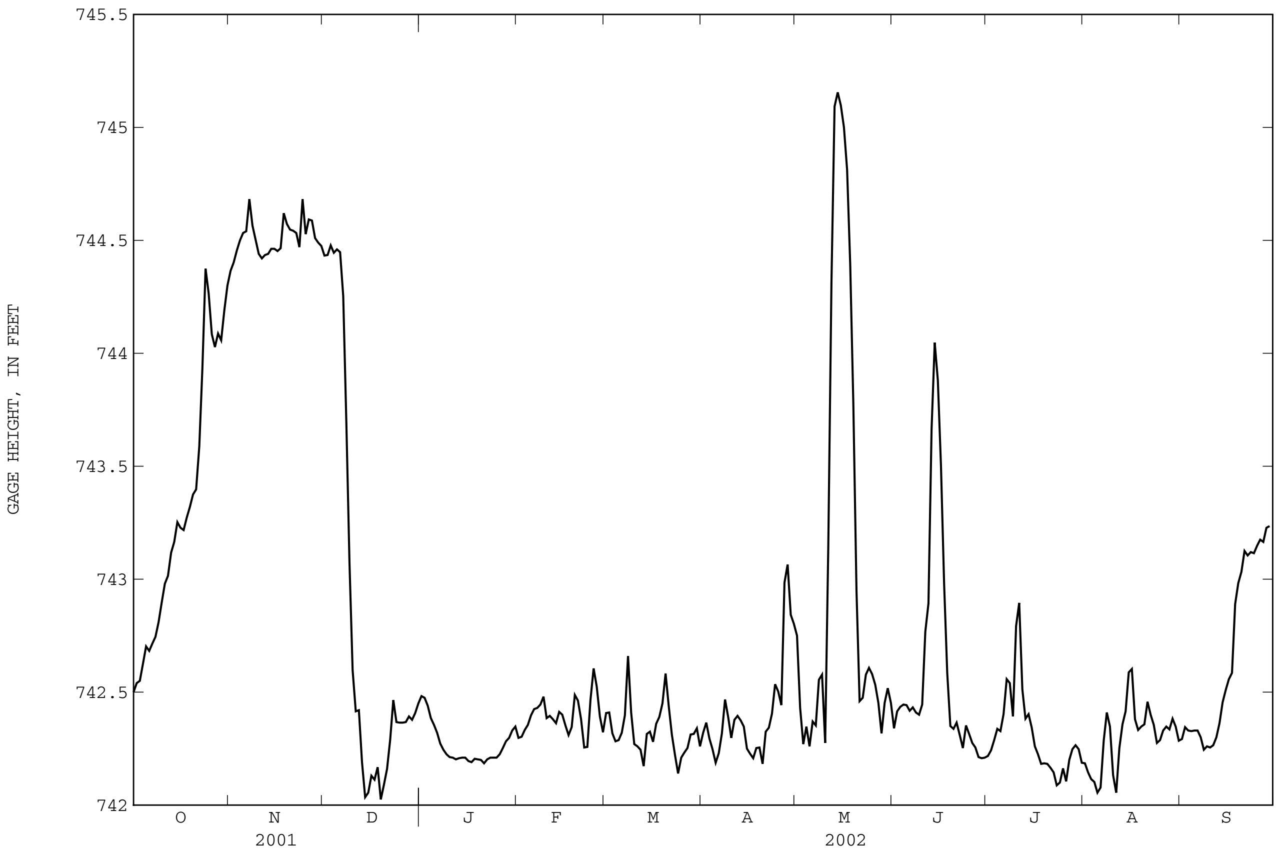
EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 782.67 ft July 13, 1993; minimum elevation, 719.68 ft Feb. 17, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 745.26 ft May 14; minimum elevation, 741.97 ft Dec.20.

ELEVATION (FEET (NGVD), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY OBSERVATION AT 0600 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	742.47	744.32	744.47	742.46	742.35	742.31	742.23	742.81	742.43	742.21	742.17	742.27
2	742.51	744.38	744.42	742.49	742.28	742.44	742.35	742.73	742.31	742.22	742.19	742.3
3	742.55	744.41	744.44	742.47	742.31	742.4	742.37	742.33	742.45	742.25	742.13	742.36
4	742.55	744.47	744.49	742.43	742.34	742.29	742.27	742.25	742.43	742.3	742.11	742.32
5	742.65	744.51	744.43	742.37	742.36	742.28	742.24	742.38	742.45	742.35	742.1	742.33
6	742.72	744.54	744.47	742.35	742.41	742.29	742.17	742.22	742.44	742.32	742.04	742.33
7	742.67	744.54	744.44	742.31	742.43	742.33	742.25	742.42	742.41	742.43	742.09	742.33
8	742.73	744.73	744.19	742.26	742.43	742.42	742.34	742.33	742.44	742.6	742.35	742.29
9	742.75	744.51	743.52	742.24	742.45	742.74	742.51	742.63	742.4	742.52	742.43	742.23
10	742.83	744.5	742.92	742.22	742.49	742.3	742.35	742.56	742.4	742.35	742.32	742.27
11	742.92	744.42	742.49	742.21	742.35	742.26	742.28	742.18	742.46	742.94	742.07	742.25
12	743	744.42	742.39	742.21	742.41	742.26	742.41	743.47	742.87	742.88	742.05	742.27
13	743.02	744.44	742.43	742.2	742.37	742.24	742.39	744.59	742.9	742.39	742.32	742.31
14	743.15	744.44	742.11	742.21	742.36	742.15	742.37	745.26	743.92	742.38	742.37	742.38
15	743.17	744.47	742.01	742.21	742.43	742.37	742.34	745.12	744.09	742.41	742.43	742.48
16	743.28	744.46	742.07	742.21	742.39	742.31	742.22	745.09	743.81	742.32	742.64	742.52
17	743.21	744.45	742.15	742.19	742.34	742.27	742.23	744.97	743.4	742.24	742.59	742.57
18	743.22	744.47	742.1	742.19	742.3	742.39	742.2	744.76	742.84	742.22	742.31	742.59
19	743.29	744.67	742.19	742.21	742.36	742.39	742.27	744.27	742.5	742.17	742.34	742.99
20	743.33	744.54	741.97	742.2	742.53	742.47	742.25	743.61	742.3	742.19	742.35	742.98
21	743.39	744.55	742.13	742.2	742.44	742.62	742.16	742.73	742.35	742.18	742.36	743.05
22	743.4	744.54	742.17	742.18	742.36	742.38	742.38	742.37	742.37	742.16	742.49	743.15
23	743.65	744.53	742.33	742.21	742.22	742.29	742.33	742.51	742.29	742.14	742.37	743.09
24	744.03	744.45	742.51	742.21	742.27	742.2	742.43	742.6	742.24	742.07	742.35	743.13
25	744.49	744.76	742.32	742.21	742.53	742.12	742.57	742.61	742.39	742.11	742.25	743.11
26	744.19	744.45	742.38	742.21	742.63	742.24	742.48	742.57	742.29	742.18	742.3	743.16
27	744.05	744.64	742.36	742.23	742.49	742.23	742.43	742.52	742.27	742.08	742.34	743.18
28	744.02	744.57	742.37	742.26	742.36	742.26	743.17	742.43	742.25	742.24	742.35	743.16
29	744.11	744.49	742.4	742.29	---	742.33	743.03	742.28	742.2	742.25	742.33	743.25
30	744.04	744.49	742.37	742.3	---	742.31	742.78	742.51	742.21	742.27	742.4	743.23
31	744.24	---	742.42	742.34	---	742.35	---	742.52	---	742.24	742.33	---
MEAN	743.28	744.51	742.89	742.27	742.39	742.33	742.39	743.08	742.60	742.31	742.30	742.66
MAX	744.49	744.76	744.49	742.49	742.63	742.74	743.17	745.26	744.09	742.94	742.64	743.25
MIN	742.47	744.32	741.97	742.18	742.22	742.12	742.16	742.18	742.20	742.07	742.04	742.23

05488100 LAKE RED ROCK NEAR PELLA, IA--Continued



05488110 DES MOINES RIVER NEAR PELLA, IA

LOCATION.--Lat 41°21'38", long 92°58'23", in $SW^{1}/_{4}$ $SW^{1}/_{4}$ $SE^{1}/_{4}$ sec.19, T.76 N., R.18 W., Marion County, Hydrologic Unit 07100009, on right bank, 0.4 mile downstream of outlet of Red Rock Reservoir, and 0.75 mile upstream of Lake Creek.

DRAINAGE AREA.--12,330 mi^2.

PERIOD OF RECORD.--October 1992 to current year.

GAGE.--Water-stage recorder. Datum of gage is 600.00 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are fair. Flow regulated by Lake Red Rock (station 05488100) 0.4 mi upstream. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	487	329	2250	1260	1120	1370	1790	9760	7410	2460	837	4070
2	339	326	2260	1560	876	860	1620	11100	7200	2170	569	3000
3	330	327	2250	1730	667	e870	1630	9560	7860	1620	579	2710
4	324	328	2660	1640	684	e877	1720	6820	8360	1610	578	2410
5	314	332	2960	1400	688	e880	1780	6400	e8190	1860	579	2250
6	321	629	2940	1280	813	888	1610	6390	e6930	1870	652	2250
7	329	918	4800	1330	905	885	1480	6480	6070	2320	595	2250
8	336	875	7610	1330	914	1910	1610	6430	5850	2900	3000	2260
9	331	908	8560	1310	1180	3190	2620	6370	5860	3100	6820	1780
10	321	907	7630	1290	1810	2780	2870	7060	5870	3470	7540	1430
11	322	791	5240	1310	1780	2170	2580	6970	6050	6190	5730	1160
12	322	708	4150	1290	1460	2030	2850	5460	7630	8620	3760	815
13	319	712	4100	1320	1490	1930	2960	6900	6760	5230	2390	504
14	311	711	3970	1280	1500	1820	2970	13200	8240	3040	2560	370
15	309	710	3640	1300	1480	1700	3280	15600	12300	3330	4390	368
16	298	710	3420	1300	1470	1740	2970	15600	12300	3150	8010	370
17	322	584	3390	1080	1500	1740	2950	15600	12200	2710	10200	371
18	318	410	3380	1130	1510	1860	2980	16200	10800	2030	7960	384
19	316	331	3030	1360	1490	2180	2930	16500	8830	1660	6110	869
20	319	490	2030	1360	2340	2650	2940	16400	6650	e1550	6430	717
21	321	591	1430	1360	2960	2690	2930	12600	5730	e1480	6250	331
22	324	595	1330	1240	2980	2650	2720	8000	5720	1490	5760	327
23	319	602	1310	1110	1930	2570	2570	6410	5330	1330	6400	355
24	910	599	1290	1130	1260	2180	2720	6750	4250	884	7860	385
25	1340	923	1020	1140	1480	1890	3060	7200	3730	589	9250	386
26	1100	1170	660	1150	1910	1920	3380	7380	3850	588	9750	382
27	647	1410	638	1150	1960	1910	3410	7380	3600	593	9260	373
28	390	1620	631	1130	1780	1920	5280	7380	3390	697	7280	368
29	327	1620	e631	1120	---	1900	7790	5720	3200	1020	5870	370
30	331	1840	e631	1140	---	1890	8790	5470	2760	1230	5290	377
31	334	---	e1010	1140	---	1890	---	6820	---	1230	4990	---
TOTAL	12931	23006	90851	39670	41937	57740	90790	285910	202920	72021	157249	33992
MEAN	417.1	766.9	2931	1280	1498	1863	3026	9223	6764	2323	5073	1133
MAX	1340	1840	8560	1730	2980	3190	8790	16500	12300	8620	10200	4070
MIN	298	326	631	1080	667	860	1480	5460	2760	588	569	327
AC-FT	25650	45630	180200	78690	83180	114500	180100	567100	402500	142900	311900	67420
CFSM	0.03	0.06	0.24	0.10	0.12	0.15	0.25	0.75	0.55	0.19	0.41	0.09
IN.	0.04	0.07	0.27	0.12	0.13	0.17	0.27	0.86	0.61	0.22	0.47	0.10

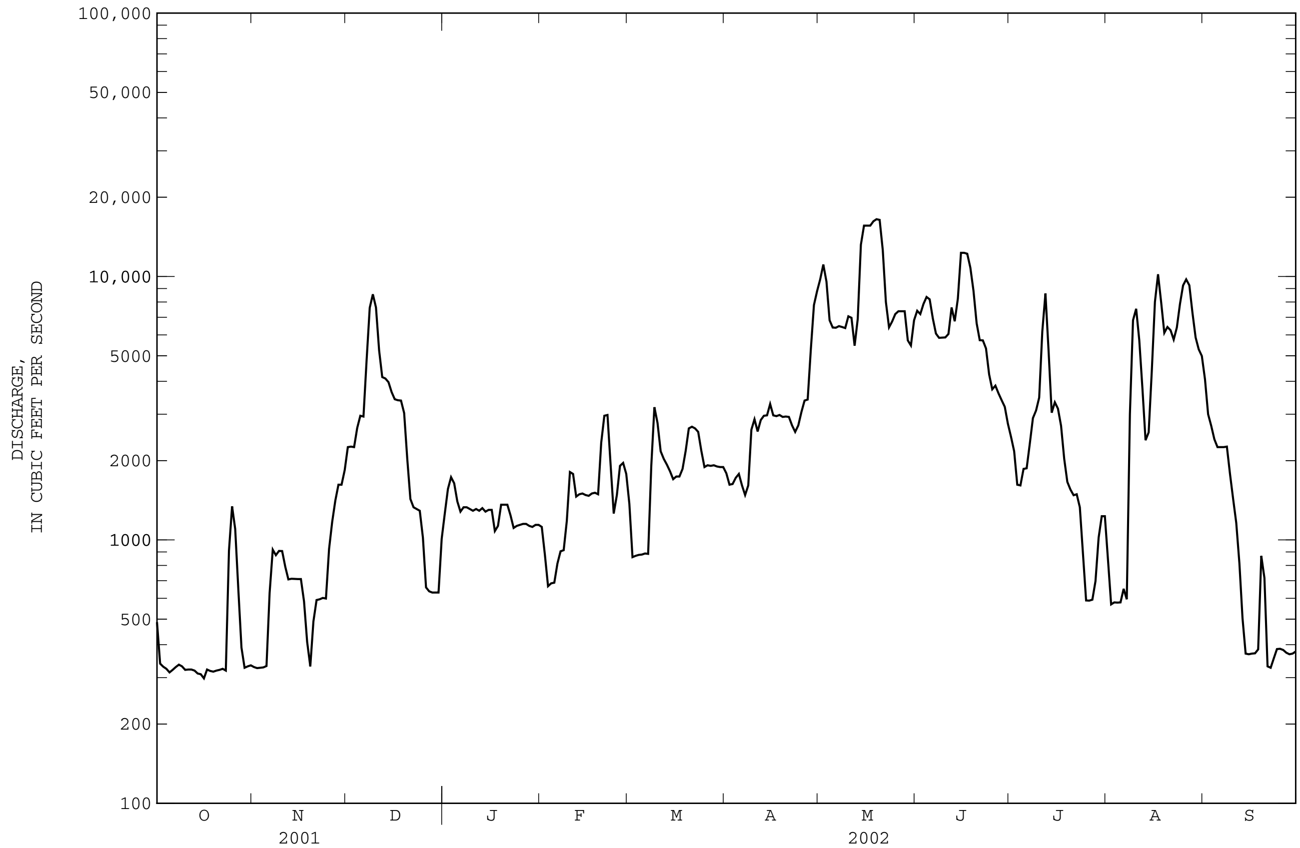
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	2930	3463	3854	1872	3848	8851	12690	13940	15920	20110	9208	4493
MAX	11150	11990	12380	3997	8246	17480	22040	28520	27950	79340	44600	33490
(WY)	1994	1993	1993	1993	1997	1993	1998	1993	1993	1993	1993	1993
MIN	285	327	654	642	824	930	916	1105	5516	2323	1498	451
(WY)	2001	2000	2000	2000	2000	2000	2000	2000	2000	2002	2000	2000

05488110 DES MOINES RIVER NEAR PELLA, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1993 - 2002	
ANNUAL TOTAL	3098931		1109017			
ANNUAL MEAN	8490		3038		8458	
HIGHEST ANNUAL MEAN					24360	1993
LOWEST ANNUAL MEAN					1731	2000
HIGHEST DAILY MEAN	29300	Apr 14	16500	May 19	104000	Jul 12 1993
LOWEST DAILY MEAN	298	Oct 16	298	Oct 16	248	Oct 15 2000
ANNUAL SEVEN-DAY MINIMUM	313	Oct 13	313	Oct 13	254	Oct 9 2000
MAXIMUM PEAK FLOW			16600	May 18a	105000	Jul 12 1993
MAXIMUM PEAK STAGE			92.78	May 18b	109.71	Jul 12 1993
ANNUAL RUNOFF (AC-FT)	6147000		2200000		6128000	
ANNUAL RUNOFF (CFSM)	0.69		0.25		0.69	
ANNUAL RUNOFF (INCHES)	9.35		3.35		9.32	
10 PERCENT EXCEEDS	23000		7460		21500	
50 PERCENT EXCEEDS	2850		1780		3980	
90 PERCENT EXCEEDS	501		369		631	

a Also May 19, 20.
b Also May 19, 20.
e Estimated



05488200 ENGLISH CREEK NEAR KNOXVILLE, IA

LOCATION.--Lat 41°18'02", long 93°02'43", in $NE^1/_4$ $SE^1/_4$ sec.16, T.75 N., R.19 W., Marion County, Hydrologic Unit 07100009, on left bank 30 ft from left upstream abutment of bridge on State Highway 92, 3 mi east of Knoxville, and 11.4 mi upstream from mouth at Des Moines River.

DRAINAGE AREA.--90.1 mi^2.

PERIOD OF RECORD.--July 1985 to current year.

REVISED RECORDS.--WDR IA-97:(M)

GAGE.--Water-stage recorder. Datum of gage is 721.79 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 16, 1982 reached a stage of 30.28 ft, gage datum, discharge 28,000 ft^3/s, from contracted-opening indirect computations.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e1.2	7.0	e3.8	e1.3	e4.2	e1.9	9.0	47	22	9.6	4.6	2.5
2	e1.1	6.5	e3.7	e1.9	e3.2	e1.7	10	48	23	7.8	3.4	3.6
3	e0.95	6.1	e3.5	e1.5	e2.3	e2.0	8.7	40	21	6.8	2.9	2.8
4	e1.2	5.7	e3.5	e2.2	e1.6	e3.3	6.9	29	19	7.9	2.5	2.3
5	e10	5.4	e3.7	e2.8	e1.2	4.9	5.9	25	16	8.1	2.2	1.1
6	e8.5	e5.2	e4.1	e2.0	e1.7	6.9	5.9	26	14	14	2.8	0.81
7	e2.6	e5.2	e4.2	e1.4	e2.2	12	6.9	30	12	109	1.9	0.74
8	e1.7	e4.9	e3.5	e2.3	e2.5	20	16	34	11	116	1.4	0.56
9	e1.5	e4.4	e3.0	e3.7	e5.4	37	100	186	10	24	1.3	0.43
10	e1.5	e3.7	e2.7	e3.0	e8.9	44	48	e98	12	540	1.4	0.33
11	e5.5	e3.3	e2.7	e2.5	e7.6	29	30	e485	776	1590	1.3	0.28
12	e4.7	e3.1	e3.2	e2.0	e6.2	20	59	901	760	323	1.1	0.24
13	e2.7	e3.3	e6.8	e1.6	e5.1	14	44	231	557	88	1.8	0.34
14	e2.4	e3.5	e11	e1.2	e8.5	13	29	96	260	47	1.9	0.39
15	e2.4	e3.5	e7.8	e1.1	e13	11	24	64	83	29	1.7	0.36
16	e1.8	e3.1	e5.5	e1.2	e11	12	21	83	52	22	1.4	0.36
17	e1.5	e2.7	e4.6	e1.4	e10	10	20	129	33	18	1.3	0.36
18	e1.4	e2.3	e4.1	e1.6	e12	8.7	15	60	28	16	0.97	2.3
19	e1.4	e2.3	e3.5	e1.6	18	8.8	13	42	24	14	1.5	195
20	e1.3	e1.9	e3.1	e1.7	25	9.6	11	34	20	13	1.9	19
21	e1.3	e1.8	e2.5	e1.9	18	10	18	29	18	12	3.9	4.4
22	e13	e1.8	e2.9	e2.4	11	7.6	30	26	16	14	2.7	1.6
23	185	e2.1	e4.3	e1.7	7.7	5.6	21	25	14	12	26	0.72
24	60	e2.4	e3.1	e1.6	9.1	6.4	20	24	13	9.8	12	0.53
25	30	e3.7	e2.4	e1.4	7.8	8.0	37	53	12	7.9	5.0	0.44
26	18	e4.5	e1.8	e3.7	e5.2	6.9	24	75	12	7.3	2.9	0.37
27	11	e5.5	e2.1	e7.3	e3.2	7.4	179	36	12	10	2.2	0.37
28	7.3	e6.3	e2.3	e6.2	e2.1	8.3	320	30	11	9.7	2.0	0.36
29	6.7	e4.3	e2.0	e4.9	---	8.5	78	43	11	7.7	2.6	0.36
30	6.8	e3.8	e1.5	e2.9	---	8.7	52	78	10	6.0	2.2	0.31
31	6.9	---	e1.3	e2.9	---	9.3	---	29	---	5.6	1.6	---
TOTAL	401.35	119.3	114.2	74.9	213.7	356.5	1262.3	3136	2882	3105.2	102.37	243.26
MEAN	12.95	3.977	3.684	2.416	7.632	11.50	42.08	101.2	96.07	100.2	3.302	8.109
MAX	185	7.0	11	7.3	25	44	320	901	776	1590	26	195
MIN	0.95	1.8	1.3	1.1	1.2	1.7	5.9	24	10	5.6	0.97	0.24
AC-FT	796	237	227	149	424	707	2500	6220	5720	6160	203	483
CFSM	0.14	0.04	0.04	0.03	0.08	0.13	0.47	1.12	1.07	1.11	0.04	0.09
IN.	0.17	0.05	0.05	0.03	0.09	0.15	0.52	1.29	1.19	1.28	0.04	0.10

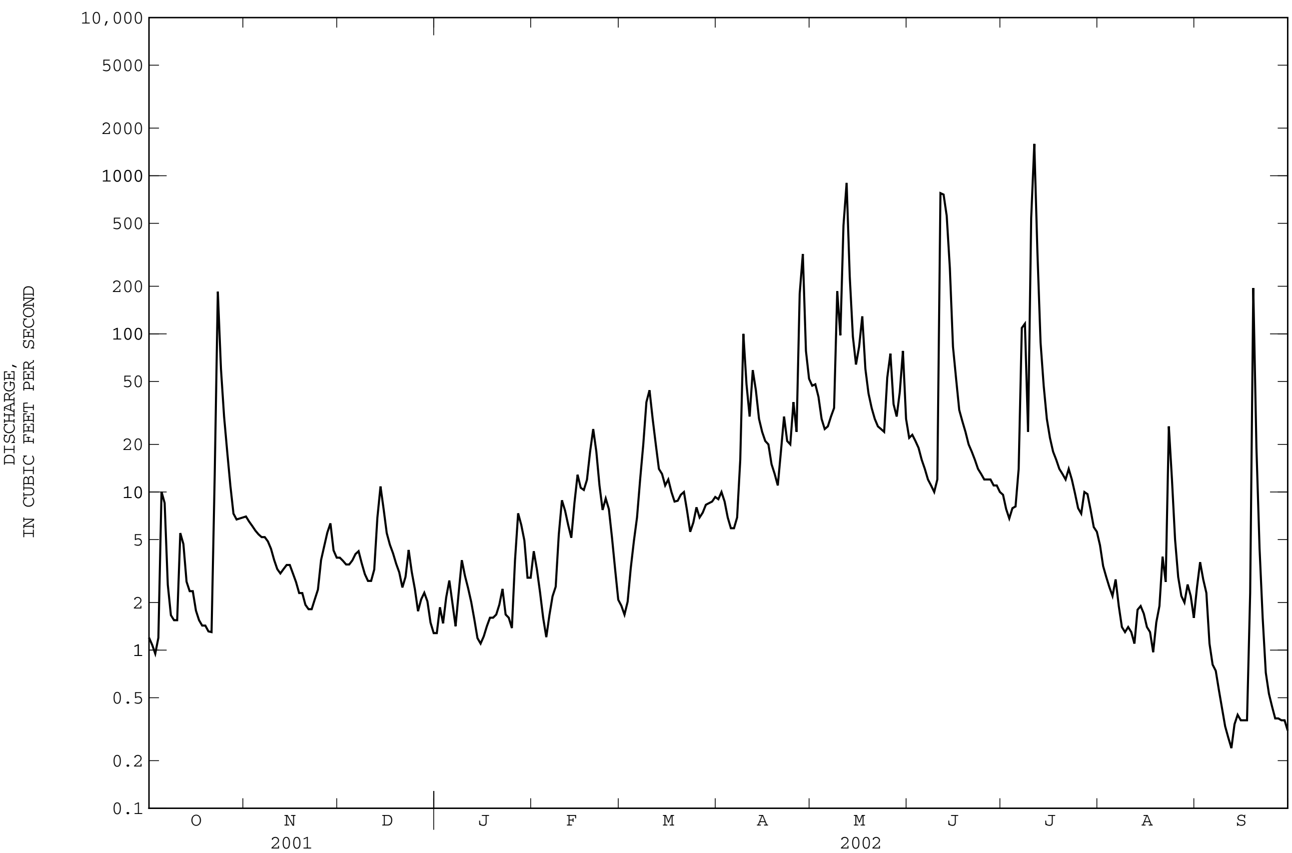
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	24.70	22.09	22.64	14.04	48.46	102.2	116.6	139.1	99.19	90.03	29.39	32.90
MAX	161	100	112	51.8	183	335	476	514	260	1039	285	159
(WY)	1987	1993	1993	1998	2001	1993	1991	1996	2000	1993	1993	1992
MIN	0.48	0.76	0.31	0.66	0.50	2.05	1.03	1.99	2.27	0.18	0.17	0.026
(WY)	1995	1989	1989	1989	1989	1989	1989	2000	1992	1988	1988	1991

05488200 ENGLISH CREEK NEAR KNOXVILLE, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1985 - 2002	
ANNUAL TOTAL	28092.39		12011.08			
ANNUAL MEAN	76.97		32.91		62.41	
HIGHEST ANNUAL MEAN					214	1993
LOWEST ANNUAL MEAN					6.71	1989
HIGHEST DAILY MEAN	1350	Feb 26	1590	Jul 11	8610	Jul 5 1993
LOWEST DAILY MEAN	0.32	Sep 15	0.24	Sep 12	0.00	Sep 12 1988a
ANNUAL SEVEN-DAY MINIMUM	0.39	Sep 13	0.33	Sep 10	0.00	Sep 25 1991
MAXIMUM PEAK FLOW			1870	Jul 11	18900	Jul 5 1993
MAXIMUM PEAK STAGE			19.89	Jul 11	27.88	Jul 5 1993
INSTANTANEOUS LOW FLOW			0.21	Sep 12		
ANNUAL RUNOFF (AC-FT)	55720		23820		45210	
ANNUAL RUNOFF (CFSM)	0.85		0.37		0.69	
ANNUAL RUNOFF (INCHES)	11.60		4.96		9.41	
10 PERCENT EXCEEDS	215		47		103	
50 PERCENT EXCEEDS	8.1		6.1		9.1	
90 PERCENT EXCEEDS	1.2		1.3		0.41	

a Also Aug. 8-13, Sept. 13-17, 1989; Sept.6-10, 21, and Sept. 25 to Oct. 3, 1991.
e Estimated



05488500 DES MOINES RIVER NEAR TRACY, IA

LOCATION.--Lat 41°16'53", long 92°51'34", in NW$^1/_4$ SE$^1/_4$ sec.19, T.75 N., R.17 W., Mahaska County, Hydrologic Unit 07100009, on right bank 250 ft upstream from abandoned Bellefountaine Bridge, 0.8 mi east of Tracy, 3.1 mi upstream from Cedar Creek, 3.8 mi downstream from bridge on newly located State Highway 92, 6.4 mi downstream from English Creek, and at mile 130.4.

DRAINAGE AREA.--12,479 mi^2.

PERIOD OF RECORD.--March 1920 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 1438: Drainage area. WSP 1508: 1920 (M), 1922 (M), 1933.

GAGE.--Water-stage recorder. Datum of gage is 670.91 ft above NGVD of 1929. Prior to June 26, 1940 and June 30, 1952 to Nov. 4, 1960 nonrecording gage, and June 27, 1940 to June 29, 1952 water-stage recorder, at site 250 ft downstream at same datum.

REMARKS.--Records good except those for periods of estimated daily discharges, which are fair. Flow regulated by Lake Red Rock (station 05488100) 11.9 mi upstream, since March 12, 1969. U.S. Army Corps of Engineers gage-height telemeter and satellite data collection platform at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 155,000 ft^3/s, June 14, 1947, gage height, 26.5 ft; minimum daily discharge, 40 ft^3/s Jan. 29 to Feb. 2, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1851, that of June 14, 1947. Flood of May 31, 1903, reached a stage of about 25 ft, discharge, about 130,000 ft^3/s. Minimum daily discharge since at least 1910, that of Jan. 29 to Feb. 1, 1940.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	587	348	2120	e1360	1180	1570	1870	9450	7660	3010	1300	4410
2	323	337	2150	e1430	1050	e929	1760	11100	7560	2820	887	3360
3	314	343	2150	e1680	778	e934	1750	10200	7920	2100	878	2940
4	340	351	2410	e1710	754	e944	1750	6850	8700	2090	873	2710
5	341	347	2870	1560	754	e947	1820	6150	8480	2270	869	2450
6	322	470	2870	1420	811	e952	1740	6150	7320	2460	912	2450
7	317	911	4060	e1460	945	946	1600	6240	6280	2670	877	2430
8	314	914	7120	1450	946	1430	1700	6190	6010	3520	2210	2430
9	333	919	8590	1420	1100	3290	2430	6410	6000	3630	6230	2120
10	329	920	7900	1360	1650	3020	3080	6800	6000	4060	7340	1610
11	314	863	5530	1330	1890	2210	2690	7880	7130	6940	6110	1460
12	314	730	4060	1340	1500	2090	2930	7320	8530	9540	4130	1100
13	324	737	4040	1330	1490	1940	3100	6680	8030	6540	2690	834
14	315	731	3940	1340	1490	1860	3070	12700	8010	3370	2730	581
15	314	729	3650	1330	1500	1740	3300	16100	12400	3590	4330	565
16	314	729	3420	1340	1490	1730	3070	16200	12400	3500	7180	544
17	313	677	3410	1220	1490	1730	3060	16400	12400	3080	10500	541
18	314	479	3400	1080	1490	1800	3070	16600	11400	2500	8580	544
19	314	380	3270	1370	1510	2100	3070	17000	9480	1950	6430	1170
20	314	430	2270	1370	2070	2610	3070	16900	7290	1850	6270	1270
21	314	609	1500	1370	2980	2800	3120	14000	5960	1730	6520	591
22	353	610	1390	1300	2980	2730	2980	9030	5950	1740	5830	547
23	427	613	1380	1170	2290	2580	2750	6670	5710	1680	6330	543
24	797	622	1380	1160	1320	2350	2890	6910	4910	1370	7780	571
25	1380	790	e1080	1160	1440	1910	3150	7480	4260	919	9270	582
26	1240	1140	e741	1170	1840	1940	3460	7800	4260	901	10000	583
27	819	1280	e713	1170	e2050	1910	3580	7710	4120	924	9800	570
28	470	1540	e709	1170	1760	1920	5030	7690	3850	951	7590	572
29	355	1550	e709	1180	---	1920	7160	6940	3740	1210	6220	574
30	351	1630	e709	1190	---	1920	8650	6000	3330	1510	5350	572
31	343	---	e1080	1200	---	1920	---	6870	---	1510	5130	---
TOTAL	13519	22729	90621	41140	42548	58672	92700	296420	215090	85935	161146	41224
MEAN	436.1	757.6	2923	1327	1520	1893	3090	9562	7170	2772	5198	1374
MAX	1380	1630	8590	1710	2980	3290	8650	17000	12400	9540	10500	4410
MIN	313	337	709	1080	754	929	1600	6000	3330	901	869	541
AC-FT	26810	45080	179700	81600	84390	116400	183900	587900	426600	170500	319600	81770
CFSM	0.03	0.06	0.23	0.11	0.12	0.15	0.25	0.77	0.57	0.22	0.42	0.11
IN.	0.04	0.07	0.27	0.12	0.13	0.17	0.28	0.88	0.64	0.26	0.48	0.12

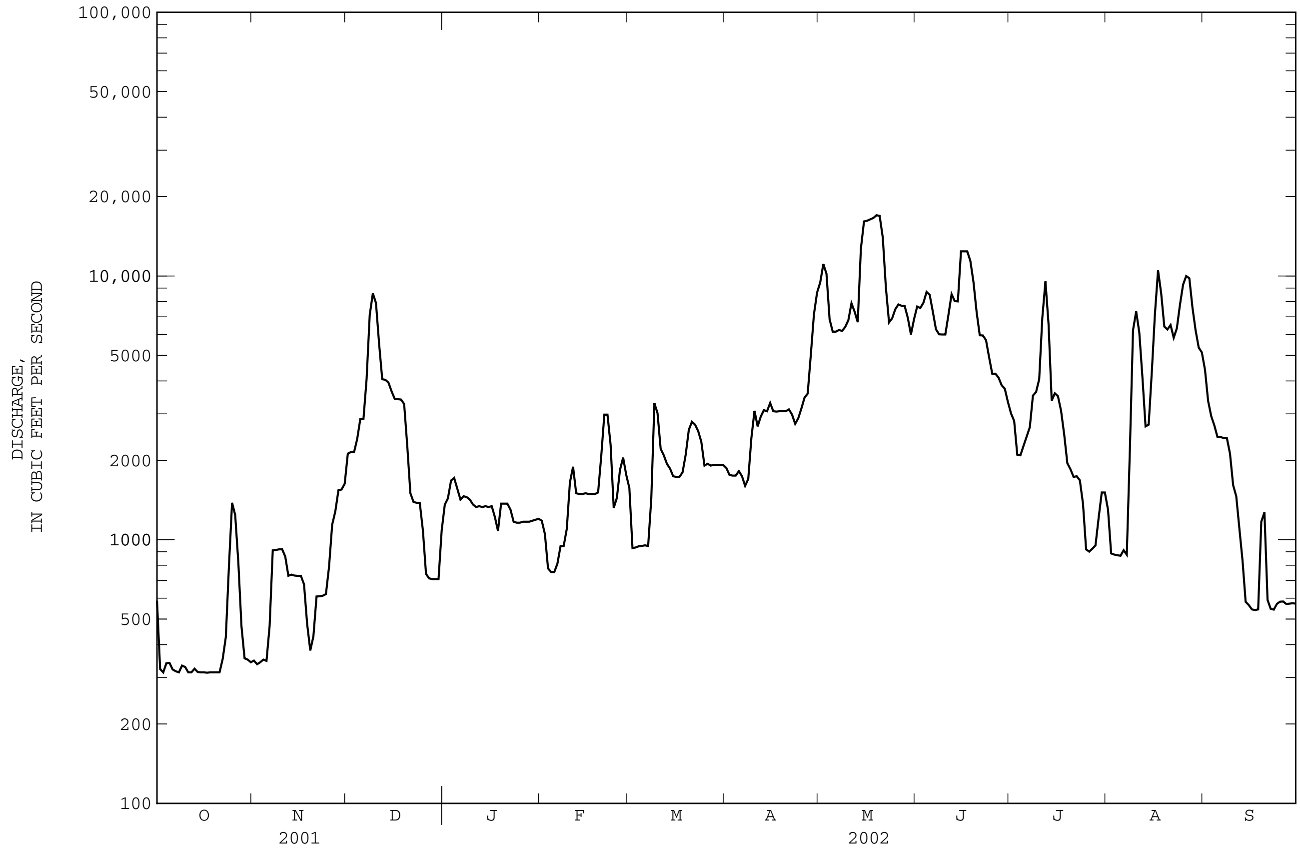
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	3444	4416	3791	2491	4302	9159	11840	11980	13290	13690	7805	4109
MAX	17190	19160	12540	11510	15560	21520	24370	28280	30260	80800	45240	33670
(WY)	1974	1987	1983	1973	1973	1983	1998	1993	1984	1993	1993	1993
MIN	318	340	344	305	276	746	866	425	277	220	591	342
(WY)	1977	1977	1977	1977	1977	1977	1977	1977	1977	1977	1989	1976

05488500 DES MOINES RIVER NEAR TRACY, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1970 - 2002a	
ANNUAL TOTAL	3221698		1161744			
ANNUAL MEAN	8827		3183		7542	
HIGHEST ANNUAL MEAN					24450	1993
LOWEST ANNUAL MEAN					898	1977
HIGHEST DAILY MEAN	29900	Apr 15	17000	May 19	107000	Jul 12 1993
LOWEST DAILY MEAN	313	Oct 17	313	Oct 17	165	Feb 20 1977
ANNUAL SEVEN-DAY MINIMUM	314	Oct 15	314	Oct 15	210	Oct 9 1980
MAXIMUM PEAK FLOW			17100	May 18b	109000	Jul 12 1993
MAXIMUM PEAK STAGE			8.95	May 18c	24.16	Jul 12 1993
ANNUAL RUNOFF (AC-FT)	6390000		2304000		5464000	
ANNUAL RUNOFF (CFSM)	0.71		0.26		0.60	
ANNUAL RUNOFF (INCHES)	9.60		3.46		8.21	
10 PERCENT EXCEEDS	23600		7700		19200	
50 PERCENT EXCEEDS	2940		1840		3840	
90 PERCENT EXCEEDS	540		542		550	

a Post regulation.
b Also May 19.
c Also May 19.
e Estimated.



05489000 CEDAR CREEK NEAR BUSSEY, IA

LOCATION.--Lat 41°13'09", long 92°54'38", at SW corner sec.11, T.74 N., R.18 W., Marion County, Hydrologic Unit 07100009, on left bank 10 ft downstream from bridge on State Highway 156, 0.8 mi downstream from North Cedar Creek, 1.6 mi northwest of Bussey, 3.0 mi upstream from Honey Creek, and 8.9 mi upstream from mouth.

DRAINAGE AREA.--374 mi^2.

PERIOD OF RECORD.--October 1947 to current year.

REVISED RECORDS.--WSP 1438: Drainage area.

GAGE.--Water stage recorder. Datum of gage is 682.15 ft above NGVD of 1929 (levels by U.S. Army Corps of Engineers). Prior to Feb. 21, 1949, nonrecording gage at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1946 reached a stage of 28.45 ft on upstream side and 28.05 ft on downstream side of bridge, levels to floodmarks by U.S. Army Corps of Engineers, discharge, 31,500 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	101	30	e3.5	e15	e21	71	282	143	27	13	6.0
2	18	79	29	e4.6	e12	e20	63	314	115	24	10	5.8
3	16	65	28	e4.1	e9.1	e25	51	233	99	22	8.8	5.3
4	19	58	28	e4.9	e6.5	35	38	169	91	21	8.3	4.9
5	248	54	29	e5.9	e4.8	33	35	141	96	20	8.2	5.0
6	215	52	31	e4.7	e8.5	46	36	130	73	20	8.0	5.7
7	85	52	32	e3.7	e14	96	38	138	62	149	7.4	5.9
8	50	49	28	e6.7	e18	153	93	121	55	410	6.8	5.1
9	39	44	25	e9.3	e25	250	1190	1960	49	96	6.0	4.9
10	39	40	23	e7.8	e29	168	421	621	56	1660	5.7	4.8
11	126	38	23	e6.7	e26	111	230	2770	784	1910	5.5	4.8
12	106	37	26	e5.7	e22	96	211	6630	361	518	5.3	4.5
13	58	38	52	e4.7	e19	80	240	2000	3400	296	6.7	4.7
14	48	39	104	e3.8	e38	69	166	607	1550	148	8.3	4.7
15	48	39	64	e3.6	e63	61	141	393	335	88	9.1	4.6
16	34	37	49	e4.0	e54	49	116	751	203	63	6.5	4.5
17	29	35	44	e4.4	e51	42	95	973	150	52	5.8	4.5
18	28	33	41	e5.2	e76	41	80	408	128	45	4.9	5.0
19	27	33	36	e7.2	121	41	77	285	106	39	118	22
20	25	31	32	e9.0	172	43	69	225	87	37	135	22
21	25	30	26	e11	149	41	127	188	73	37	43	10
22	241	30	29	e14	102	28	221	166	64	41	26	6.1
23	3530	31	e32	e10	83	25	141	168	56	35	109	4.7
24	1430	32	e26	e9.6	83	33	125	193	49	28	171	4.1
25	381	33	e17	e8.8	73	37	189	947	43	23	e60	4.2
26	211	34	e8.3	e19	55	33	129	941	42	22	e31	3.9
27	147	38	e9.9	e27	e26	35	1060	323	41	23	e18	4.0
28	118	42	e12	e24	e24	38	2250	221	39	28	12	4.6
29	103	33	e9.3	e20	---	46	508	363	33	26	9.1	4.7
30	89	30	e5.0	e14	---	129	305	383	30	20	7.1	4.5
31	95	---	e3.5	e12	---	99	---	213	---	16	6.1	---
TOTAL	7649	1287	932.0	278.9	1378.9	2024	8516	23257	8413	5944	879.6	185.5
MEAN	246.7	42.90	30.06	8.997	49.25	65.29	283.9	750.2	280.4	191.7	28.37	6.183
MAX	3530	101	104	27	172	250	2250	6630	3400	1910	171	22
MIN	16	30	3.5	3.5	4.8	20	35	121	30	16	4.9	3.9
AC-FT	15170	2550	1850	553	2740	4010	16890	46130	16690	11790	1740	368
CFSM	0.66	0.11	0.08	0.02	0.13	0.17	0.76	2.01	0.75	0.51	0.08	0.02
IN.	0.76	0.13	0.09	0.03	0.14	0.20	0.85	2.31	0.84	0.59	0.09	0.02

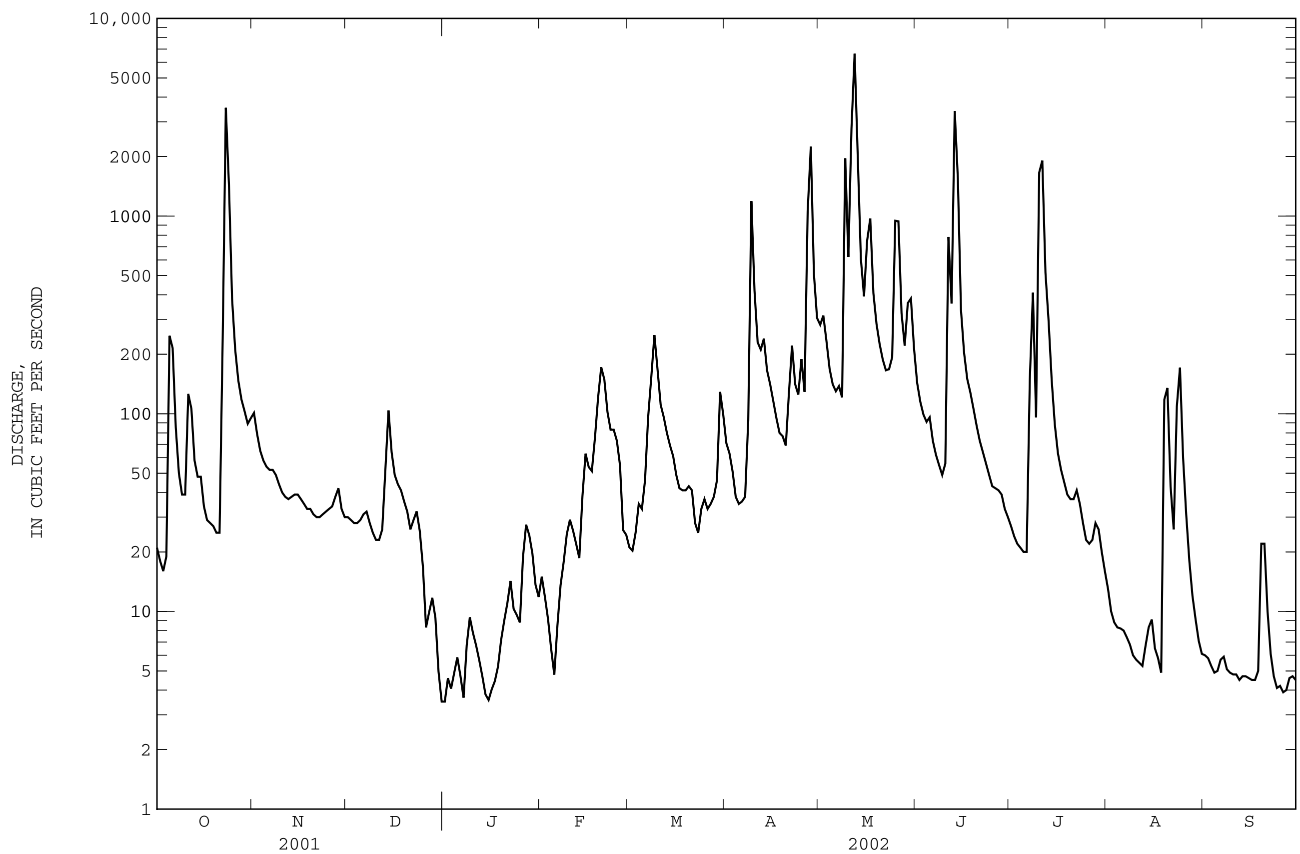
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1948 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	111.4	127.3	88.84	84.43	228.8	411.0	417.0	428.2	318.2	279.3	105.6	149.2
MAX	950	1331	844	894	952	1371	1552	1797	1258	3846	1070	1384
(WY)	1974	1962	1983	1974	1949	1960	1973	1996	1967	1982	1993	1992
MIN	0.18	0.33	0.39	0.20	2.29	3.78	0.79	7.19	2.74	2.26	2.51	0.60
(WY)	1957	1956	1956	1956	1954	1954	1956	1956	1977	1988	1953	1953

05489000 CEDAR CREEK NEAR BUSSEY, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1948 - 2002	
ANNUAL TOTAL	121717.7		60744.9			
ANNUAL MEAN	333.5		166.4		228.8	
HIGHEST ANNUAL MEAN					768	1993
LOWEST ANNUAL MEAN					29.4	1989
HIGHEST DAILY MEAN	5770	Mar 16	6630	May 12	42000	Jul 3 1982
LOWEST DAILY MEAN	3.4	Sep 4	3.5	Dec 31	0.00	Sep 6 1955a
ANNUAL SEVEN-DAY MINIMUM	3.7	Aug 31	4.3	Sep 24	0.00	Sep 6 1955
MAXIMUM PEAK FLOW			7340	May 12	96000	Jul 3 1982
MAXIMUM PEAK STAGE			20.12	May 12	34.61	Jul 3 1982
ANNUAL RUNOFF (AC-FT)	241400		120500		165800	
ANNUAL RUNOFF (CFSM)	0.89		0.44		0.61	
ANNUAL RUNOFF (INCHES)	12.11		6.04		8.31	
10 PERCENT EXCEEDS	861		283		410	
50 PERCENT EXCEEDS	56		38		37	
90 PERCENT EXCEEDS	9.5		5.2		2.7	

a Also Sept. 7-20, 1955, Oct. 11, 12, 1956, Aug. 12, 13, 1989.
e Estimated.



05489500 DES MOINES RIVER AT OTTUMWA, IA

LOCATION.--Lat 41°00'39", long 92°24'40", in SE$^1/_4$ NE$^1/_4$ sec.25, T.72 N., R.14 W., Wapello County, Hydrologic Unit 07100009, on right bank 15 ft downstream from Colorado and Eastern Railroad Bridge at Ottumwa, 0.4 mi downstream from Ottumwa powerplant, 6.5 mi upstream from Village Creek, 9.5 mi downstream from South Avery Creek, and at mile 94.1.

DRAINAGE AREA.--13,374 mi^2.

PERIOD OF RECORD.--March 1917 to current year (published as "at Eldon" October 1930 to March 1935). Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 525: 1917-20. WSP 1308: 1917-23 (M), 1925-27 (M), 1931. WSP 1438: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 622.00 ft above NGVD of 1929. Prior to Sept. 30, 1930, nonrecording gage at Market Street Bridge 1,700 ft upstream at datum 0.83 ft higher. Oct. 1, 1930 to Mar. 31, 1935, nonrecording gage at Eldon 15 mi downstream at different datum. Apr. 1, 1935 to Oct. 25, 1963, water-stage recorder at site 1,100 ft downstream at Vine Street Bridge at datum 0.77 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Prior to Dec. 12, 1958 and since Nov. 30, 1960, diurnal fluctuation at low and medium stages are caused by powerplant upstream of station about $^1/_2$ mile. Flow regulated by Lake Red Rock (station 05488100) 48.2 mi upstream since March 12, 1969. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 135,000 ft^3/s June 7, 1947, gage height, 20.2 ft, site and datum then in use; minimum daily discharge, 26 ft^3/s Oct. 25, 1990, when gates at dam in Ottumwa were closed.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1850, that of June 7, 1947. Flood of May 31, 1903, reached a stage of 19.4 ft, former site and datum at Vine Street Bridge or about 22 ft at Market Street Bridge, from information by U.S. Army Corps of Engineers and U.S. National Weather Service, discharge, about 140,000 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	538	822	2080	1070	e1400	e1860	1770	9780	8450	3250	1240	4480
2	614	644	2430	1390	e1260	e1320	2160	11500	8560	3100	1130	3560
3	505	459	2380	1390	e1120	e685	1680	12600	8210	2970	858	2710
4	288	875	2350	e1760	e725	e1000	1770	e11300	9190	2120	719	2550
5	854	560	3160	e1770	e897	e1080	1880	e9960	9270	2260	761	2440
6	576	482	3070	1580	e966	e1130	1830	8640	8420	2420	677	2210
7	538	960	3240	e1650	968	e1130	1870	7080	7250	2760	696	2130
8	403	1110	5270	1470	1220	e1420	2270	7460	6590	3390	943	2190
9	386	1130	8000	e1460	1140	3040	3750	9940	6350	3860	3320	2260
10	549	1080	8240	e1430	1640	3360	4370	9200	6480	4830	6800	1580
11	499	1100	6740	e1400	2180	2820	3490	15400	8550	8190	6880	1180
12	435	1150	4600	e1430	2070	2620	3350	18200	12000	10000	4820	1280
13	552	898	4240	e1410	1880	2390	3570	13400	13800	9140	3490	927
14	443	972	4280	e1320	1690	2340	3590	11200	11200	4340	2570	559
15	343	1100	4100	e1370	1970	1950	3500	17100	12400	3760	2830	319
16	484	921	3750	e1360	1940	1760	3700	17900	13600	3870	4500	543
17	285	838	3640	e1330	1840	1810	3470	18700	13400	3460	9120	417
18	265	858	3620	e1210	1900	1850	3470	17800	13200	3000	9240	382
19	381	692	3590	e1340	1920	1980	3510	18200	11000	2640	6790	623
20	248	639	3220	1720	2240	2180	3480	18100	8910	2140	5570	995
21	427	655	2270	1610	2800	2460	3580	17300	6750	1910	6440	1050
22	1340	820	1880	1740	3440	2610	3700	11800	6350	1820	5560	497
23	6470	810	1750	1520	3210	2340	3670	8860	6320	1630	5910	374
24	4750	833	1360	1320	2050	2380	3330	7560	5740	1860	6570	436
25	2620	835	e1230	1360	1580	2070	3860	9810	4720	1100	8010	497
26	2110	1060	e857	1360	1830	1680	3960	10100	4530	959	9240	446
27	1420	1430	e801	1510	1960	1760	7700	8850	4460	785	9300	416
28	1250	1580	e779	1340	e2120	1900	8840	8530	4180	1000	8220	434
29	927	1970	e746	1410	---	2050	8250	8510	4060	1000	6530	436
30	705	1730	732	1420	---	1890	9580	9930	3750	1050	5050	454
31	649	---	1020	1470	---	2160	---	7560	---	1600	4920	---
TOTAL	31854	29013	95425	44920	49956	61025	114950	372270	247690	96214	148704	38375
MEAN	1028	967.1	3078	1449	1784	1969	3832	12010	8256	3104	4797	1279
MAX	6470	1970	8240	1770	3440	3360	9580	18700	13800	10000	9300	4480
MIN	248	459	732	1070	725	685	1680	7080	3750	785	677	319
AC-FT	63180	57550	189300	89100	99090	121000	228000	738400	491300	190800	295000	76120
CFSM	0.08	0.07	0.23	0.11	0.13	0.15	0.29	0.90	0.62	0.23	0.36	0.10
IN.	0.09	0.08	0.27	0.12	0.14	0.17	0.32	1.04	0.69	0.27	0.41	0.11

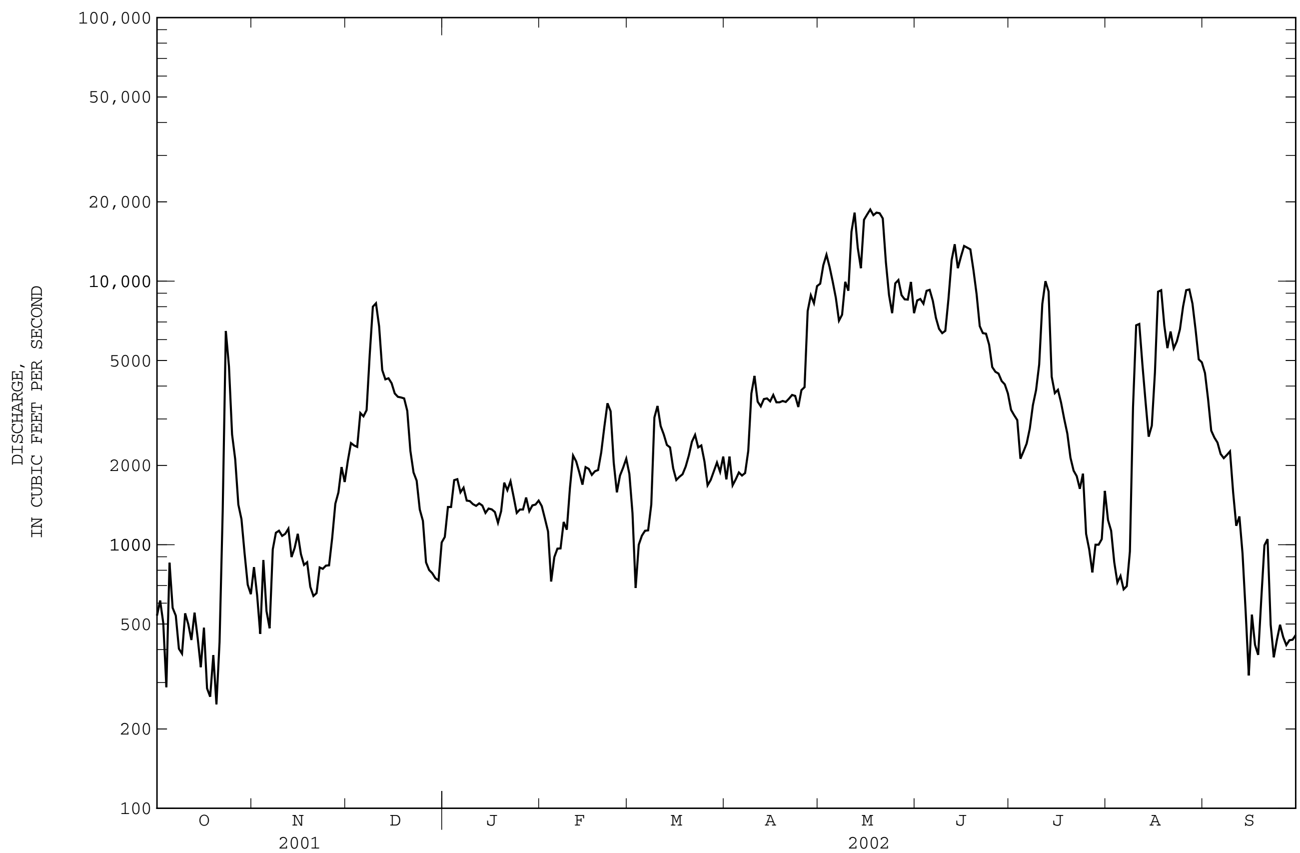
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	3829	4798	4211	2827	4725	9978	12660	13030	14040	14440	8197	4496
MAX	18390	19250	13980	12380	16470	21750	25330	29770	31980	85570	47380	34790
(WY)	1974	1987	1993	1973	1973	1983	1983	1993	1984	1993	1993	1993
MIN	307	327	381	290	328	891	962	519	282	238	610	366
(WY)	2001	1977	1977	1977	1977	1977	1977	1977	1977	1977	1988	1976

05489500 DES MOINES RIVER AT OTTUMWA, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1970 - 2002a	
ANNUAL TOTAL	3493783		1330396			
ANNUAL MEAN	9572		3645		8118	
HIGHEST ANNUAL MEAN					26350	1993
LOWEST ANNUAL MEAN					1120	1977
HIGHEST DAILY MEAN	31400	Mar 22	18700	May 17	110000	Jul 12 1993
LOWEST DAILY MEAN	248	Oct 20	248	Oct 20	26	Oct 25 1990b
ANNUAL SEVEN-DAY MINIMUM	348	Oct 15	348	Oct 15	182	Jul 7 1977
MAXIMUM PEAK FLOW			22900	May 11	112000	Jul 12 1993
MAXIMUM PEAK STAGE			8.22	May 11	22.15	Jul 12 1993
ANNUAL RUNOFF (AC-FT)	6930000		2639000		5881000	
ANNUAL RUNOFF (CFSM)	0.72		0.27		0.61	
ANNUAL RUNOFF (INCHES)	9.72		3.70		8.25	
10 PERCENT EXCEEDS	24600		9190		20500	
50 PERCENT EXCEEDS	3620		2050		4310	
90 PERCENT EXCEEDS	647		599		638	

a Post regulation.
b Gates at dam in Ottumwa closed.
e Estimated.



05490500 DES MOINES RIVER AT KEOSAUQUA, IA

LOCATION.--Lat 40°43'40", long 91°57'34", in SE $^1/_4$ SW $^1/_4$ sec.36, T.69 N., R.10 W., Van Buren County, Hydrologic Unit 07100009, on right bank 10 ft upstream from bridge on State Highway 1 at Keosauqua, 4.0 mi downstream from Chequest Creek, and at mile 51.3.

DRAINAGE AREA.--14,038 mi^2.

PERIOD OF RECORD.--May 1903 to July 1906, April to December 1910, August 1911 to current year. Monthly discharge only for some periods, published in WSP 1308.

REVISED RECORDS.--WSP 525: 1913-20. WSP 1438: Drainage area. WSP 1508: 1903, 1905-6, 1915- 18 (M), 1922 (M), 1924-26 (M), 1932-34 (M), 1937, 1942 (M).

GAGE.--Water-stage recorder. Datum of gage is 547.36 ft above NGVD of 1929. Prior to Dec. 24, 1933, nonrecording gage, and Dec. 25, 1933, to Sept. 30, 1972, water-stage recorder, at same site at datum 10.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Prior to Dec. 21, 1958, and since Nov. 30, 1960, some diurnal fluctuation at medium and low stages caused by power plant at Ottumwa. Flow regulated by Lake Red Rock (station 05488100) 91.0 mi upstream, since March 12, 1969. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 146,000 ft^3/s June 1, 1903, gage height, 27.85 ft, from floodmark, datum then in use; minimum daily discharge, 40 ft^3/s Jan. 30, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1, 1851, reached a stage of 24 ft, discharge not determined.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1220	902	1840	e1170	1470	e2070	2600	9950	8730	4120	1620	5060
2	928	904	2180	e1100	e1380	e1630	2180	10600	9420	3720	1440	4580
3	732	849	2560	e1560	e1230	e1160	2420	11900	9430	3460	1140	3480
4	820	647	2470	e1720	e942	e685	2020	11100	9210	3200	1020	2740
5	642	716	2560	e1910	e1010	e1180	2100	8160	10000	e2460	787	2650
6	1530	828	3470	e1880	912	e1280	2060	7620	9850	e2730	809	2440
7	970	531	3240	e1730	1380	e1500	2180	7480	8900	e3070	907	2230
8	1020	775	3660	e1660	886	e2040	3000	7460	7880	e3660	595	2140
9	523	1140	6860	e1710	1220	e3470	7660	10100	7340	e4180	968	2220
10	661	1230	8330	e1590	1240	4560	5530	11300	7390	4390	4750	2260
11	725	1120	7900	e1530	1810	3790	5160	17100	10000	8080	7100	1590
12	937	1130	6330	e1490	2600	3170	4210	30700	14300	9570	6470	1150
13	816	1170	4920	e1520	2100	2820	4450	18600	21100	10200	4670	1300
14	693	1100	4700	e1500	2000	2700	4300	12300	15900	8050	3610	1060
15	802	847	4590	e1460	1930	2640	4070	15200	11600	4180	2720	618
16	602	1160	4370	e1500	2060	2240	4030	17700	13900	4220	3260	453
17	684	957	3990	e1490	2060	2020	4050	18700	13600	4270	6240	377
18	606	920	3940	e1410	1930	2090	3760	18300	13500	3730	9510	481
19	470	891	3920	e1460	2110	2050	3830	18000	12400	3340	8370	392
20	528	949	3880	2010	2480	2410	3840	18000	10500	2770	6430	543
21	509	558	3230	2030	2770	2540	3980	17700	8680	2340	6010	949
22	594	600	2340	1810	3400	3020	4140	14800	7180	2150	6450	1120
23	6340	869	2010	1890	3660	3060	4110	11300	7070	2000	6210	625
24	6780	854	1790	1780	3200	2710	3960	10200	6900	1770	6230	417
25	5000	906	1320	1460	2200	2840	3780	11900	6130	2000	7360	378
26	2960	875	e961	1470	1630	2480	4150	13100	5270	1250	8580	420
27	2340	1100	e844	1330	e2160	2080	6360	11000	5190	1210	9240	485
28	1600	1490	e830	1500	e2240	2160	e15400	9780	5060	877	9100	447
29	1420	1740	e827	1350	---	2410	e10000	9730	4650	1220	7350	432
30	1200	1990	e818	1440	---	2500	9240	10700	4620	1110	6270	427
31	795	---	e1070	1580	---	2550	---	9340	---	1140	5240	---
TOTAL	45447	29748	101750	49040	54010	73855	138570	409820	285700	110467	150456	43464
MEAN	1466	991.6	3282	1582	1929	2382	4619	13220	9523	3563	4853	1449
MAX	6780	1990	8330	2030	3660	4560	15400	30700	21100	10200	9510	5060
MIN	470	531	818	1100	886	685	2020	7460	4620	877	595	377
AC-FT	90140	59010	201800	97270	107100	146500	274900	812900	566700	219100	298400	86210
CFSM	0.10	0.07	0.23	0.11	0.14	0.17	0.33	0.94	0.68	0.25	0.35	0.10
IN.	0.12	0.08	0.27	0.13	0.14	0.20	0.37	1.09	0.76	0.29	0.40	0.12

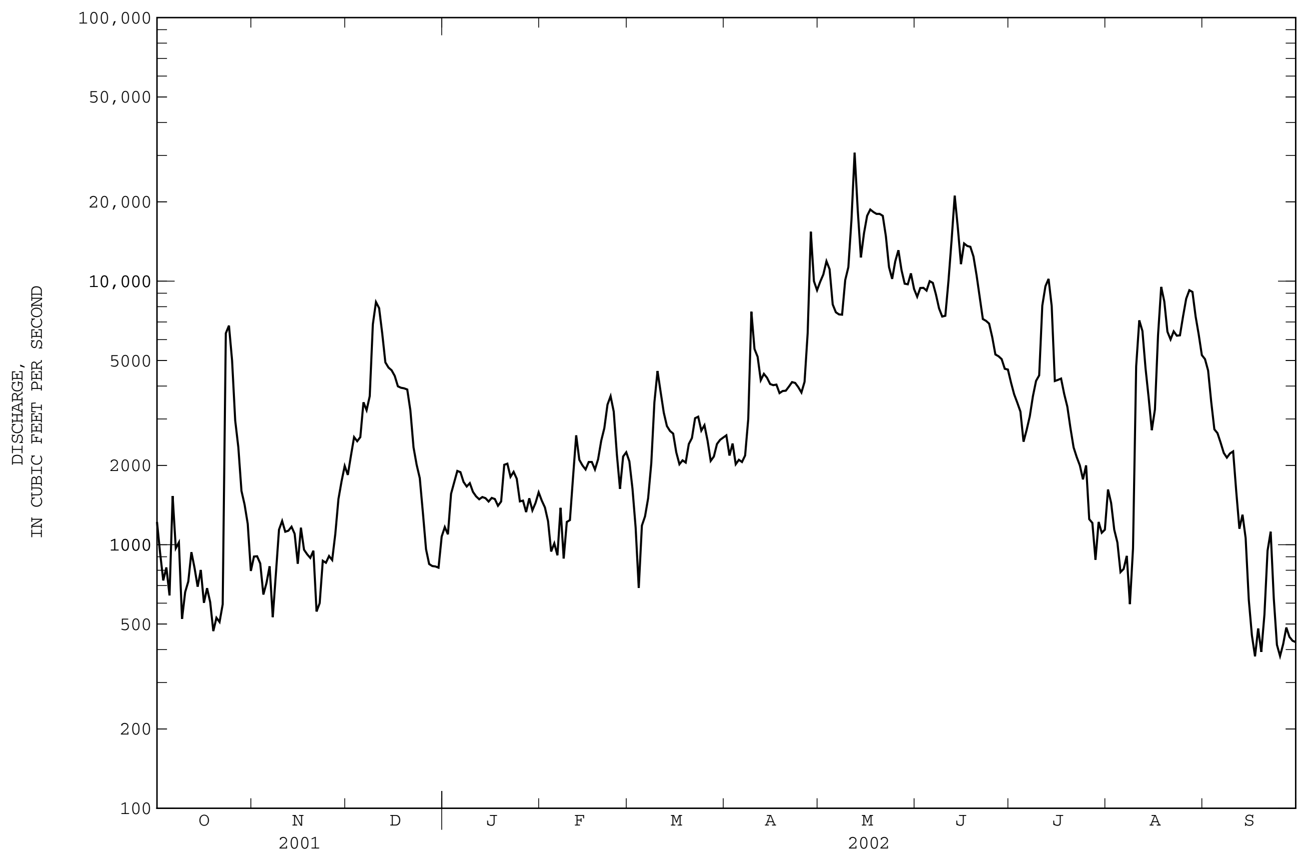
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	4048	4945	4427	2993	5032	10460	13300	13830	14430	14930	8440	4879
MAX	19850	19320	14510	13120	17370	22200	30030	31260	30900	86150	47320	35210
(WY)	1974	1987	1983	1973	1973	1983	1973	1993	1984	1993	1993	1993
MIN	383	332	385	291	331	1170	1224	696	300	258	528	362
(WY)	1977	1977	1977	1977	1977	1981	1977	1977	1977	1977	1989	1976

05490500 DES MOINES RIVER AT KEOSAUQUA, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1970 - 2002a	
ANNUAL TOTAL	3629457		1492327			
ANNUAL MEAN	9944		4089		8492	
HIGHEST ANNUAL MEAN					26920	1993
LOWEST ANNUAL MEAN					1303	1977
HIGHEST DAILY MEAN	41400	Mar 16	30700	May 12	108000	Jul 13 1993
LOWEST DAILY MEAN	470	Oct 19	377	Sep 17	115	Oct 27 1990b
ANNUAL SEVEN-DAY MINIMUM	570	Oct 16	429	Sep 24	204	Jul 3 1977
MAXIMUM PEAK FLOW			35500	May 12	111000	Jul 12 1993
MAXIMUM PEAK STAGE			19.92	May 12	32.66	Jul 13 1993
ANNUAL RUNOFF (AC-FT)	7199000		2960000		6152000	
ANNUAL RUNOFF (CFSM)	0.71		0.29		0.60	
ANNUAL RUNOFF (INCHES)	9.62		3.95		8.22	
10 PERCENT EXCEEDS	25600		10000		21300	
50 PERCENT EXCEEDS	3990		2340		4640	
90 PERCENT EXCEEDS	750		792		700	

a Post regulation.
b Gates at dam in Ottumwa closed
e Estimated.



05494300 FOX RIVER AT BLOOMFIELD, IA

LOCATION.--Lat 40°46'10", long 92°25'05", in $SW^1/_4$ $SE^1/_4$ sec.13, T.69 N., R.14 W., Davis County, Hydrologic Unit 0711000, on left bank 15 ft. downstream from bridge on county road V20, 1.3 miles north of county courthouse at Bloomfield, and 8.6 miles downstream from North Fox Creek.

DRAINAGE AREA.-- 87.7 mi^2

PERIOD OF RECORD.--October 1957 to September 1973; May 1997 to current year.

GAGE.--Water-stage recorder. Datum of gage is 755.57 ft above NGVD of 1929.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Geological Survey data collection platform with telephone modem at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 9, 1905 and June 18, 1946, exceeded all other known floods at this location, stage and discharge unknown. Also flood of May 6, 1960 reached a stage of 24.02 ft., gage datum; discharge 8,600 cfs (Slope-Area Measurement).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	19	e2.8	e1.6	e12	e16	21	55	23	20	e1.5	e1.1
2	2.2	15	e3.0	e4.2	e9.6	e14	18	43	18	21	e1.3	e0.95
3	1.9	12	e3.1	e2.2	e7.7	e16	14	32	16	24	e1.4	e0.90
4	2.7	12	e3.4	e4.2	e6.7	e17	12	26	13	25	e1.2	e0.57
5	11	11	e3.6	e5.7	e5.7	e18	11	24	11	27	e1.2	e0.56
6	8.4	10	e3.7	e3.7	e6.9	e29	10	54	11	30	1.1	e0.56
7	6.2	11	e3.9	e2.0	e8.9	e34	17	49	11	34	0.97	e0.57
8	4.2	10	e4.4	e4.2	e11	e114	311	31	14	57	e0.97	e0.52
9	4.6	8.7	e2.5	e6.6	e13	e188	488	250	12	22	e1.3	e0.48
10	5.1	8.0	e2.0	e8.9	e23	59	95	71	11	375	e1.5	e0.38
11	5.8	7.3	e2.9	e7.5	e21	35	46	2370	27	171	e1.4	e0.46
12	4.7	7.3	e5.3	e6.6	e18	27	294	722	71	67	e1.6	e0.42
13	4.2	6.1	e14	e5.1	e17	22	89	215	846	37	e1.9	e0.43
14	3.7	6.0	e11	e4.0	e21	18	46	103	107	18	e2.2	e0.47
15	5.5	5.8	e7.7	e2.5	e25	15	30	65	38	9.9	e1.9	e0.41
16	6.3	5.3	e6.6	e3.9	e24	12	21	55	23	6.5	e2.7	e0.45
17	6.4	4.6	e6.1	e5.2	e21	11	16	49	16	5.1	e2.8	e0.38
18	5.8	5.1	e5.4	e6.4	e21	11	13	40	12	20	e2.3	e0.45
19	5.9	4.3	e5.2	e7.0	41	10	11	30	10	12	e2.3	e0.45
20	5.9	3.0	e6.3	e8.8	157	10	9.3	26	9.5	6.7	e2.6	e0.48
21	5.3	3.1	e5.8	e11	63	8.9	32	24	6.6	4.2	e3.0	e0.61
22	9.2	3.2	e6.0	e12	39	9.9	36	23	4.9	3.4	e3.0	e0.74
23	364	3.0	e7.5	e14	32	8.5	19	123	3.3	e2.3	e13	e0.62
24	73	4.3	e2.3	e11	26	9.4	42	74	3.0	1.8	e4.8	e0.59
25	62	4.1	e2.1	e9.3	22	9.8	35	897	3.7	1.6	e1.6	e0.72
26	29	4.6	e1.4	e11	22	9.7	18	179	8.4	1.6	e1.3	e0.78
27	20	4.9	e2.3	e12	e20	10	785	68	10	2.2	e1.4	e0.87
28	17	e3.6	e3.0	e8.6	e20	e12	444	230	17	1.8	e1.3	e0.94
29	16	e3.3	e2.3	e5.5	---	e53	123	143	20	2.0	e1.3	e1.2
30	17	e3.3	e2.5	e5.7	---	63	72	53	22	1.6	e1.4	e1.2
31	20	---	e2.2	e8.1	---	27	---	32	---	1.4	e1.2	---
TOTAL	735.3	208.9	140.3	208.5	714.5	897.2	3178.3	6156	1398.4	1012.1	67.44	19.26
MEAN	23.72	6.963	4.526	6.726	25.52	28.94	105.9	198.6	46.61	32.65	2.175	0.642
MAX	364	19	14	14	157	188	785	2370	846	375	13	1.2
MIN	1.9	3.0	1.4	1.6	5.7	8.5	9.3	23	3.0	1.4	0.97	0.38
AC-FT	1460	414	278	414	1420	1780	6300	12210	2770	2010	134	38
CFSM	0.27	0.08	0.05	0.08	0.29	0.33	1.21	2.26	0.53	0.37	0.02	0.01
IN.	0.31	0.09	0.06	0.09	0.30	0.38	1.35	2.61	0.59	0.43	0.03	0.01

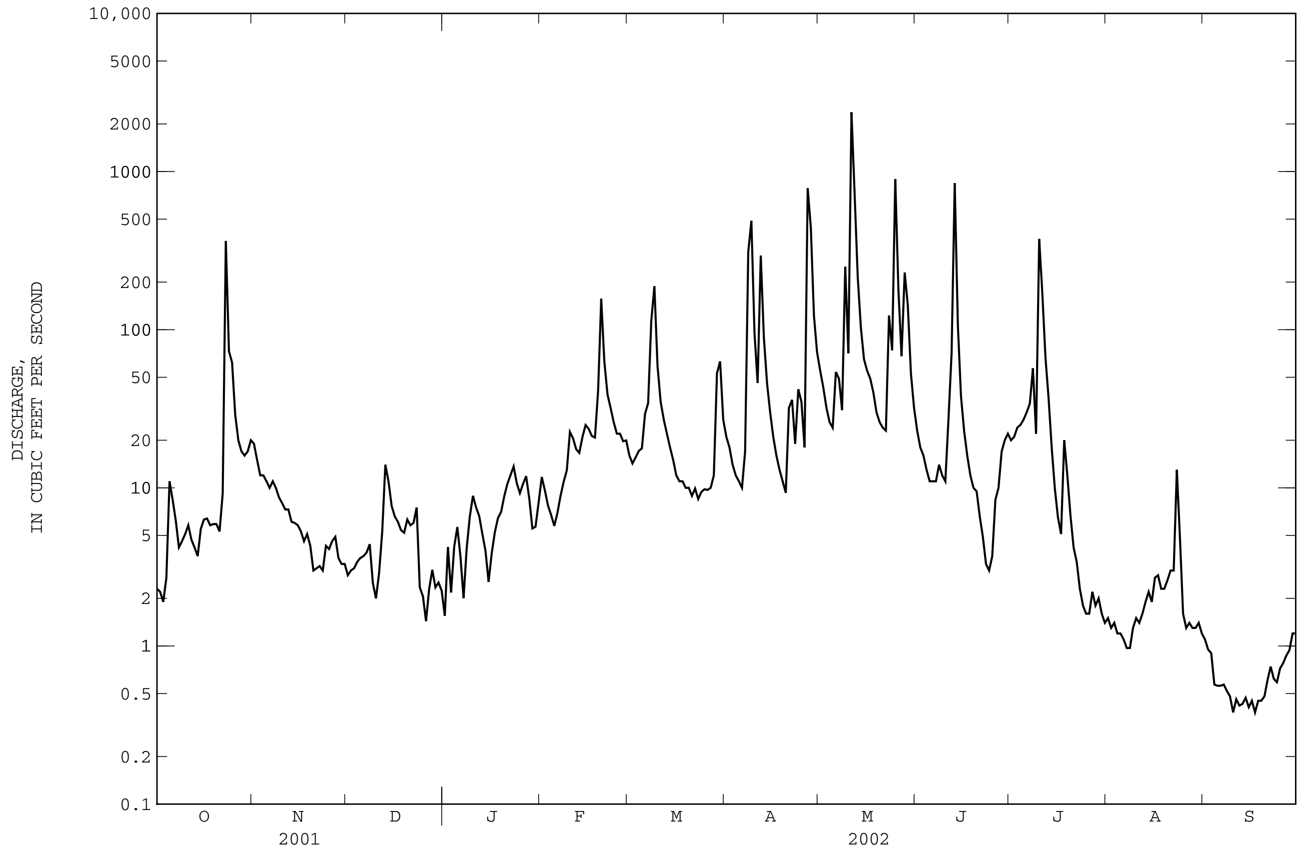
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1958 - 2002, BY WATER YEAR (WY)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
MEAN	33.79	24.29	20.67	29.62	60.27	104.5	102.0	86.29	45.48	27.04	30.11	40.09
MAX	178	222	115	127	158	291	370	325	257	163	254	377
(WY)	1960	1962	1971	1973	1959	1960	1973	1973	2001	1969	1970	1970
MIN	0.21	0.53	0.32	0.59	0.67	1.07	1.17	0.69	0.73	1.09	0.20	0.27
(WY)	1964	1965	1964	1964	1964	1964	2000	2000	1963	1972	1961	1999

05494300 FOX RIVER AT BLOOMFIELD, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1958 - 2002	
ANNUAL TOTAL	30164.8		14736.20			
ANNUAL MEAN	82.64		40.37		50.76	
HIGHEST ANNUAL MEAN					117	1973
LOWEST ANNUAL MEAN					8.40	1964
HIGHEST DAILY MEAN	2650	Mar 15	2370	May 11	4370	May 6 1960
LOWEST DAILY MEAN	1.2	Aug 2	0.38	Sep 10	0.00	Oct 1 1957
ANNUAL SEVEN-DAY MINIMUM	1.8	Sep 1	0.43	Sep 12	0.00	Oct 1 1957
MAXIMUM PEAK FLOW			5160	May 11	8600	May 6 1960
MAXIMUM PEAK STAGE			18.77	May 11	24.02	May 6 1960
INSTANTANEOUS LOW FLOW					0.00	Oct 1 1957
ANNUAL RUNOFF (AC-FT)	59830		29230		36770	
ANNUAL RUNOFF (CFSM)	0.94		0.46		0.58	
ANNUAL RUNOFF (INCHES)	12.80		6.25		7.86	
10 PERCENT EXCEEDS	171		62		77	
50 PERCENT EXCEEDS	12		9.2		5.2	
90 PERCENT EXCEEDS	2.3		1.3		0.50	

e Estimated



The following table contains annual maximum discharge for crest-stage stations. A crest-stage gage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained, but is not published herein. The years given in the period of record represent water years up to the current year for which the annual maximum has been determined.

MAXIMUM DISCHARGE AT CREST-STAGE PARTIAL-RECORD STATIONS

[+--not determined, a--peak stage did not reach bottom of gage, b--ice affected, c--old gage datum, d--estimate, e--peak affected by backwater]

Station name and number	Location and drainage area	Period of record	Water year 2002 maximum: Date	Gage height (ft)	Discharge (ft^3/s)	Period of record maximum: Date	Gage height (ft)	Discharge (ft^3/s)
	UPPER IOWA RIVER BASIN							
Dry Run Creek near Decorah, IA (05387490)	Lat 43°17’29”,long 91°48’33”in SE1/4, sec.20, T.98 N., R.8 W., Winneshiek County, Hydrologic Unit 07060002, on State Highway 9, 0.5 mi west of Decorah. Drainage area 21.0 mi^2.	1978-	05-9-02	18.23	1,710	08-16-93	20.80	4,620
			Revised Record:					
			07-22-78	19.06	2,460			
			1980	19.23	2,620			
			06-17-84	17.78	1,360			
			02-23-85	18.30	1,770			
			03-16-86	17.74	1,340			
			10-12-86	19.22	2,610			
			1988	(a)	<930			
			03-12-89	18.42	1,880			
			08-25-90	18.49	1,940			
			1992	(a)	<930			
Waterloo Creek near Dorchester, IA (05388310)	Lat 43°27’04”, long 91°30’18", in NW1/4, sec.25, T.100 N., R.6 W., Allamakee County, Hydrologic Unit 07060002, on State Highway 76, 1.4 mi south of Dorchester. Drainage area 46.6 mi^2.	1966-	06-15-02	(a)	<610	07-01-78	14.80	9,380
			Revised Record:					
			06-16-70	8.41	680			
			09-25-72	8.08	460			
			06-09-74	10.85	2,500			
			04-18-76	9.34	1,150			
			07-01-78	14.80	9,380			
			08-17-80	9.92	1,600			
			03-13-82	9.02	1000			
			1984	(a)	<700			
			02-23-85	9.08	1,050			
			09-17-86	10.32	1,900			
			10-14-86	10.15	1,800			
			1988	(a)	<120			
			03-12-89	[b]9.55	(+)			
			06-29-90	9.12	1,020			
			08-08-91	7.86	370			
			04-21-92	10.13	1,730			
			07-18-93	10.00	1,630			
			02-19-94	9.52	1,270			
			04-11-95	9.09	1,000			
			03-24-96	8.33	590			
			04-09-99	7.98	420			
	MISSISSIPPI RIVER BASIN							
Mississippi River tributary at McGregor, IA (05389501)	Lat 43°01’12”, long 91°11’25”, in N1/4, sec.27, T.95 N., R.3 W., Clayton County, Hydrologic Unit 07060001,at culvert on County Road X50, at intersection with U.S. Highway 18 (Business Route), in McGregor. Drainage area 0.72 mi^2.	1991-	2002	(a)	(+)	03-31-93	13.13	(+)
			Revised Record:					
			08-02-01	10.21	(+)			
	TURKEY RIVER BASIN							
French Hollow Creek near Elkader, IA (05412030)	Lat 42°50’19”, long 91°24’25”, in SW1/4, sec.26, T.93 N.,R.5 W., Clayton County, Hydrologic Unit 07060004, at culvert on State Highway 13, 1.1 mi south of Elkader. Drainage area 3.56 mi^2.	1991-	06-05-02	10.31	[d]270	05-17-99	[d]19.9	[d]3,100
	LITTLE MAQUOKETA RIVER BASIN							
Little Maquoketa River at Graf, IA (05414350)	Lat 42°30’09”, long 90°51’50”, in SE1/4 NW1/4, sec.20, T.89 N., R.1 E., Dubuque County, Hydrologic Unit 07060003, at bridge on county highway, 300 ft downstream from Illinois Central railroad bridge, 0.5 mi northeast of Graf. Drainage area 39.6 mi^2.	1951-	06-04-02	15.93	7,700	6-4-02	15.93	7,700

Station name and number	Location and drainage area	Period of record	Water year 2002 maximum Date	Gage height (ft)	Dis-charge (ft^3/s)	Period of record maximum Date	Gage height (ft)	Dis-charge (ft^3/s)
			LITTLE MAQUOKETA RIVER BASIN--continued					
Middle Fork Little Maquoketa River near Rickardsville, IA (05414400)	Lat 42°33'38", long 90°51'35", in SE1/4, sec.32, T.90 N., R.1 E., Dubuque County, Hydrologic Unit 07060003, at bridge on county highway, 2 mi southeast of Rickardsville. Drainage area 30.2 mi^2.	1951-	06-04-02	19.91	6,870	08-02-72	27.70	23,000
			Revised	Record:				
			1976	(a)	<666			
			02-25-77	13.61	1,220			
			06-16-78	16.59	3,470			
			03-29-79	14.37	1,630			
			08-17-80	16.78	3,670			
			06-15-81	16.07	2,970			
			02-22-82	15.33	2,330			
			1983	(a)	<666			
			06-22-84	13.13	1,000			
			02-23-85	15.02	2,090			
			09-21-86	16.50	3,380			
			08-26-87	14.96	2,040			
			1988	(a)	<666			
			08-25-90	15.31	2,310			
			04-13-91	21.81	13,400			
			04-20-92	13.72	1,270			
			07-05-93	17.98	5,280			
			04-25-94	18.86	6,750			
			05-10-95	14.29	1,580			
			06-06-96	15.24	2,260			
			02-21-97	13.69	1,250			
			03-31-98	16.56	3,440			
			05-17-99	20.62	10,400			
			2000	(a)	<642			
North Fork Little Maquoketa River near Rickardsville, IA (05414450)	Lat 42°35'09", long 90°51'20", near NW corner, sec.28, T.90 N., R.1 E., Dubuque County, Hydrologic Unit 07060003, at bridge on county highway, 1 mi northeast of Rickardsville. Drainage area 21.6 mi^2.	1951-	06-04-02	12.40	4,960	08-02-72	14.02	7,180
Little Maquoketa River tributary at Dubuque, IA (05414600)	Lat 42°32'38", long 90°41'38", near NW corner, sec.11, T.89 N., R.2 E, Dubuque County, Hydrologic Unit 07060003, at bridge on State Highway 386, near north city limits of Dubuque. Drainage area 1.54 mi^2.	1951-2002	06-04-02	14.50	559	07-31-57	[c]7.98	[d]1,650
Bloody Run tributary near Sherrill, IA (05414605)	Lat 42°37'13", long 90°45'44", in SE1/4, sec.7, T.90 N., R.2 E., Dubuque County, Hydrologic Unit 07060003, at culvert on county road 1.6 mi northeast of Sherrill. Drainage area 0.59 mi^2	1991-	08-22-02	14.90	[d]280	06-15-91	19.27	[d]692
			LAMONT CREEK BASIN					
Lamont Creek tributary at Lamont, IA (05416200)	Lat 42°35'22", long 91°38'52", in SE1/4, sec.22, T.90 N., R.7 W., Buchanan County, Hydrologic Unit 07060006, at culvert on State Highway 187, 0.8 mi southwest of Lamont. Drainage area 1.78 mi^2.	1991-	06-04-02	15.74	[d]138	06-01-00	20.13	[d]635
			MAQUOKETA RIVER BASIN					
Sand Creek near Manchester, IA (05416972)	Lat 42°26'57", long 91°28'50", in SE1/4, sec.12, T.88 N., R.6 W., Delaware County, Hydrologic Unit 07060006, at culvert on State Highway 13, 2.7 mi southwest of Manchester. Drainage area 11.0 mi^2.	1991-	06-04-02	19.31	[d]4,290	06-04-02	19.31	[d]4,290
Williams Creek near Charlotte, IA (05418645)	Lat 41°55'55", long 90°31'44", in SE1/4, sec.6, T.82 N., R.4 E., Clinton County, Hydrologic Unit 07060006, at culvert on County Road Y7, 2.1 mi north of County Highway E63, 5 mi southwest of Charlotte. Drainage area 1.77 mi^2.	1990-	06-04-02	12.25	[d]870	05-29-96	13.02	(+)

Station name and number	Location and drainage area	Period of record	Water year 2002 maximum: Date	Water year 2002 maximum: Gage height (ft)	Water year 2002 maximum: Discharge (ft^3/s)	Period of record maximum: Date	Period of record maximum: Gage height (ft)	Period of record maximum: Discharge (ft^3/s)
WAPSIPINICON RIVER BASIN								
Little Wapsipinicon River tributary near Riceville, IA (05420600)	Lat 43°21’31”, long 92°29’08”, near SW1/4 corner, sec. 27, T.99 N., R.14 W., Howard County, Hydrologic Unit 07080102, at culvert on county highway, 3.5 mi east of Riceville. Drainage area 1.10 mi².	1953-	04-12-02	2.65	11.1	06-14-00	7.66	[d]2,100
			Revised Record:					
			08-25-90	5.64	[d]2,230			
			05-18-91	5.26	1,240			
			07-20-94	4.10	150			
			03-25-96	3.30	30			
			03-11-97	[b]5.70	(+)			
			06-28-98	5.57	[d]2,010			
			07-21-99	5.70	[d]2,440			
			06-14-00	5.60	[d]2,100			
			04-12-01	3.54	50			
Little Wapsipinicon River near Oran, IA (05420850)	Lat 42°42’53”, long 92°02’29”, near NW corner, sec.9, T.91 N., R.10 W., Fayette County, Hydrologic Unit 07080102, at bridge on State Highway 3, 2 mi northeast of Oran. Drainage area 94.1 mi².	1966-	06-04-02	87.67	1,570	05-17-99	94.15	12,800
Buck Creek near Oran, IA (05420875)	Lat 42°42’53”, long 92°07’33”, in NE1/4, sec.10, T.91 N., R.11 W., Bremer County, Hydrologic Unit 07080102, at bridge on State Highway 3, 2.5 mi northwest of Oran. Drainage area 37.9 mi².	1966-	06-04-02	87.60	431	05-17-99	91.02	[d]5,600
			Revised Record:					
			06-15-67	86.13	100			
			06-27-69	89.05	1,020			
			03-03-70	87.68	610			
			1972	(a)	<96			
			04-16-73	88.09	770			
			03-21-75	87.89	690			
			04-17-76	88.35	880			
			1977	(a)	<96			
			04-06-78	87.73	620			
			05-22-82	87.58	490			
			06-18-96	87.96	550			
			05-17-99	91.02	[d]5,600			
Pine Creek tributary near Winthrop, IA (05421100)	Lat 42°29’17”, long 91°47’10”, in SW1/4, sec.27, T.89 N., R.8 W., Buchanan County, Hydrologic Unit 07080102, at culvert on county road, 2.5 mi northwest of Winthrop. Drainage area 0.33 mi².	1953-	06-04-02	6.46	[d]150	07-17-68	8.97	[d]334
Wapsipinicon River tributary at Winthrop, IA (05421300) (formerly published as: “Pine Creek trib. no. 2 at Winthrop”)	Lat 42°28’06”, long 91°44’33”, at N1/4 corner sec.2, T.88 N., R.8 W., Buchanan County, Hydrologic Unit 07080102, at culvert on State Highway 939, near west city limits of Winthrop. Drainage area 0.70 mi².	1953-	06-04-02	6.07	55	07-17-68	7.26	570
			Revised Record:					
			09-29-72	5.18	14			
			1988	(a)	<7			
			1990	(a)	<7			
			1991	(a)	<7			
			1992	(a)	<7			
			1994	(a)	<7			
			1995	(a)	<7			
			1996	(a)	<7			
Silver Creek at Welton, IA (05421890)	Lat 41°54’54”, long 90°36’00”, in NW1/4, sec.15, T.82 N., R.3 E., Clinton County, Hydrologic Unit 07080103, at bridge on U.S. Highway 61, at north edge of Welton. Drainage area 9.03 mi².	1966-	06-04-02	90.13	1,890	05-17-74	89.77	[d]4,820
IOWA RIVER BASIN								
Westmain drainage ditch 1 & 2 at Britt, IA (05448400) Low-flow site April 1958 to Sept. 1976	Lat 43°06’09”, long 93°47’04”, in SW1/4, sec.27, T.96 N., R.25 W., Hancock County, Hydrologic Unit 07080207, at bridge on U.S. Highway 18, near east city limits of Britt. Drainage area 21.2 mi².	1966-	2002	(a)	<53	04-28-75	83.59	372
			Revised Record:					
			03-16-71	81.77	190			
			03-10-73	81.71	185			
			1992	(a)	<53			
			1993	(a)	<53			
			1994	(a)	<50			
			05-28-95	81.18	100			
			1996	(a)	<50			
			06-24-98	82.62	160			
			05-05-99	80.60	80			
East Branch Iowa River above Hayfield, IA (05448600)	Lat 43°09’21”, long 93°41’21”, at S1/4 corner sec.4, T.96 N., R.24 W., Hancock County, Hydrologic Unit 07080207, at bridge on county highway, 1.5 mi southeast of Hayfield. Drainage area 2.23 mi².	1953-	2002	(a)	(+)	04-11-01	8.12	(+)

Station name and number	Location and drainage area	Period of record	Water year 2002 maximum Date	Gage height (ft)	Dis-charge (ft^3/s)	Period of record maximum Date	Gage height (ft)	Dis-charge (ft^3/s)
			IOWA RIVER BASIN--continued					
Honey Creek tributary near Radcliffe, IA (0545129280)	Lat 42°19′44″, long 93°25′28″, in SW1/4, sec.21, T.87 N., R.22 W., Hardin County, Hydrologic Unit 07080207, at culvert on county road highway S27, 1.1 mi northeast of Radcliffe. Drainage area 3.29 mi^2.	1991-	05-12-02	94.94	[d]110	05-10-95	100.14	[d]510
Stein Creek near Clutier, IA (05451955)	Lat 42°04′46″, long 92°18′00″, in NE1/4, sec.24, T.84 N., R.13 W., Tama County, Hydrologic Unit 07080208, at bridge on county highway E36, 5 mi east of Clutier. Drainage area 23.4 mi^2.	1971-	2002	(a)	<201	06-15-82	77.92	11,400
Price Creek at Amana, IA (05453200)	Lat 41°48′18″, long 91°52′23″, in SE1/4, sec.22, T.81 N., R.9 W., Iowa County, Hydrologic Unit 07080208, at bridge on State Highway 151, near north edge of Amana. Drainage area 29.1 mi^2.	1966-	06-13-02	85.20	1,890	06-17-90	88.80	5,080
			Revised Record:					
			1966	(a)	<1,400			
			1967	(a)	<1,400			
			08-05-68	83.17	1,440			
			07-18-69	83.94	1,720			
			03-02-70	85.87	2,410			
			02-19-71	84.57	1,940			
			1972	(a)	<1,400			
			04-20-73	83.94	1,500			
			08-12-74	86.16	2,630			
			03-19-75	84.43	1,460			
			08-18-77	85.81	2,340			
			06-29-78	86.42	2,840			
			03-19-79	84.35	1,420			
			1980	(a)	630			
			02-25-81	83.95	1,220			
			06-15-82	87.22	3,530			
			05-02-83	84.35	1,420			
			02-18-84	84.97	1,740			
			10-18-84	84.19	1,340			
			06-30-86	86.18	2,640			
			1987	(a)	<970			
			1988	(a)	<970			
			09-08-89	84.98	1,750			
			06-17-90	88.78	5,080			
			04-29-91	84.81	1,650			
			07-13-92	84.59	1,540			
			03-12-01	87.47	3,770			
North Fork tributary to Mill Creek near Solon, IA (05453430)	Lat 41°50′24″, long 91°30′04″ in NW1/4, sec.12, T.81 N., R.6 W., Johnson County, Hydrologic Unit 07080208, at culvert on State Highway 1, 2 mi north of Solon. Drainage area 0.78 mi^2.	1990-	04-27-02	12.26	[d]120	07-16-92	(+)	(+)
			Revised Record:					
			06-22-97	12.12	[d]100			
			02-27-98	11.99	[d]98			
			06-10-99	13.42	[d]190			
			06-13-00	12.27	[d]110			
			02-25-02	11.94	[d]96			
Clear Creek tributary near Williamsburg, IA (05454180)	Lat 41°41′16″, long 91°57′02″, in SE1/4, sec.36, T.80 N., R.10 W., Iowa County, Hydrologic Unit 07080209, at culvert on county road, 4 mi northeast of Williamsburg, 1 mi south of county highway F35. Drainage area 0.37 mi^2.	1990-	05-12-02	44.97	[d]15	06-17-90	48.76	[d]291
North English River near Montezuma, IA (05455140)	Lat 41°38′51″, long 92°34′16″, in SW1/4, sec.14, T.79 N., R.15 W., Poweshiek County, Hydrologic Unit 07080209, at bridge on county highway, 5.0 mi northwest of Montezuma. Drainage area 31.0 mi^2.	1972-	2002	(a)	<1,020	07-20-78	28.18	4,640
North English River at Guernsey, IA (05455210)	Lat 41°38′42″, long 92°21′28″, at NW corner sec.22, T.79 N., R.13 W., Poweshiek County, Hydrologic Unit 07080209, at bridge on State Highway 21, 1 mi southwest of Guernsey. Drainage area 81.5 mi^2.	1960, 1966-	2002	(a)	<1,940	06-15-82	87.43	7,460

Station name and number	Location and drainage area	Period of record	Water year 2002 maximum Date	Gage height (ft)	Discharge (ft^3/s)	Period of record maximum Date	Gage height (ft)	Discharge (ft^3/s)
			IOWA RIVER BASIN--continued					
Deep River at Deep River, IA (05455230)	Lat 41°35′29″, long 92°21′18″, in SW1/4, sec.3, T.78 N., R.13 W., Poweshiek County, Hydrologic Unit 07080209, at bridge on State Highway 21, 1 mi northeast of Deep River. Drainage area is 30.5 mi^2.	1960, 1966-	2002	(a)	<856	05-14-70	[c]83.85	6,200
			Revised	Record:				
			04-29-74	83.28	3,310			
			03-18-75	80.83	1,520			
			04-24-76	80.52	1,430			
			08-16-77	80.55	1,440			
			04-18-78	80.19	1,280			
			03-29-79	79.70	1,150			
			1980	(a)	<860			
			06-24-81	80.18	1,350			
			11-11-82	80.46	1,450			
			1984	(a)	<940			
			1985	(a)	<940			
			09-19-86	79.38	1,200			
			08-26-87	78.80	1,140			
			09-08-89	79.77	1,300			
			06-17-90	82.38	2,350			
			06-01-91	80.68	1,630			
			09-16-92	78.21	1,200			
			07-05-93	82.92	2,740			
			1994	(a)	<860			
			06-06-95	77.02	1,060			
			05-10-96	80.63	1,720			
			02-20-97	78.10	1,260			
			06-15-98	77.94	1,230			
			06-12-99	76.41	950			
			2000	(a)	<860			
Bulgers Run near Riverside, IA (05455550)	Lat 41°29′02″, long 91°37′36″, in SE1/4, sec.11, T.77 N., R.7 W., Washington County, Hydrologic Unit 07080209, at bridge on State Highway 22, 2.5 mi west of Riverside. Drainage area 6.31 mi^2.	1965-	05-12-02	87.68	1,180	09-21-65	89.04	3,080
			Revised	Record:				
			05-23-66	86.86	800			
			04-13-67	86.19	610			
			06-24-68	85.51	460			
			07-18-69	86.79	780			
			09-22-70	87.08	880			
			09-11-72	88.13	1,560			
			04-22-73	87.54	1,110			
			05-07-74	88.13	1,560			
			03-19-75	85.65	490			
			04-24-76	86.47	690			
			1977	(a)	<270			
			04-12-78	88.07	1,490			
			04-20-79	87.20	930			
			09-13-80	86.06	580			
			06-24-81	86.81	780			
			06-15-82	88.53	2,150			
			12-05-82	87.43	1,050			
			05-28-84	85.26	420			
			03-03-85	85.30	420			
			05-17-86	87.07	870			
			05-20-87	86.23	620			
			1988	(a)	<430			
			06-01-89	85.60	480			
			06-18-90	87.07	870			
			1991	(a)	<430			
			08-01-92	87.36	1,010			
			05-04-93	87.93	1,340			
			05-10-96	88.10	1,530			
			02-21-97	86.41	670			
Deer Creek near Carpenter, IA (05457440)	Lat 43°24′54″, long 92°59′05″, in NW1/4 sec.9, T.99 N., R.18 W., Mitchell County, Hydrologic Unit 07080201, at bridge on State Highway 105, 1.5 mi east of Carpenter. Drainage area 91.6 mi^2.	1966-	2002	(a)	<1,470	07-18-93	84.65	3,460
Gizzard Creek tributary near Bassett, IA (0545776680)	Lat 43°04′01″,long 92°34′31″, in SE1/4, sec.2, T.95 N., R.15 W., Floyd County, Hydrologic Unit 07080201, at culvert on U.S. Highway 18, 3.3 mi west of Bassett. Drainage area 3.42 mi^2.	1990-	08-05-02	97.95	(+)	07-21-99	103.00	(+)

Station name and number	Location and drainage area	Period of record	Water year 2002 maximum Date	Gage height (ft)	Discharge (ft^3/s)	Period of record maximum Date	Gage height (ft)	Discharge (ft^3/s)
			IOWA RIVER BASIN--continued					
Spring Creek near Mason City, IA (05459490)	Lat 43°12′48″, long 93°12′38″, in SE1/4, sec.16, T.97 N., R.20 W., Cerro Gordo County, Hydrologic Unit 07080203, at bridge on U.S. Highway 65, 4 mi north of Mason City. Drainage area 29.3 mi^2.	1966-	08-04-02	83.67	<138	07-21-99	91.05	2,030
			Revised Record:					
			1974	(a)	<160			
			04-28-75	88.19	2,050			
			1976	(a)	<140			
			1977	(a)	<140			
			06-15-78	86.16	610			
			08-23-79	86.93	840			
			05-30-80	90.32	2,800			
			05-28-81	88.34	1,500			
			06-28-83	86.81	830			
			06-16-84	86.81	830			
			03-18-86	87.25	1,000			
			10-12-86	86.07	590			
			08-25-90	88.94	1,820			
			1992	(a)	<115			
			06-19-93	89.65	2,300			
			06-23-94	87.47	1,000			
			05-28-95	85.67	420			
			06-17-96	83.83	140			
			1997	(a)	<90			
			1998	(a)	<90			
			07-21-99	91.05	2,030			
			06-14-00	86.61	420			
			04-11-01	87.66	640			
Willow Creek near Mason City, IA (05460100)	Lat 43°08′55″, long 93°16′07″, near center sec.12, T.96 N., R.21 W., Cerro Gordo County, Hydrologic Unit 07080203, at bridge on U.S. Highway 18, 3.5 mi west of Mason City. Drainage area 78.6 mi^2.	1966-	08-05-02	89.68	561	07-21-99	21.92	1,150
Miller Creek near Eagle Center, IA (05464025)	Lat 42°19′22″, long 92°20′50″, in NW1/4, sec.27, T.87 N., R.13 W., Black Hawk County, Hydrologic Unit 07080205, at culvert on State Highway 21, 1.3 mi southeast of Eagle Center. Drainage area is 9.14 mi^2.	1991-	06-04-02	40.94	(+)	06-11-98	47.60	(+)
Prairie Creek tributary near Van Horne, IA (05464535)	Lat 41°59′33″, long 92°05′06″, in NW1/4, sec.24, T.83 N., R.11 W., Benton County, Hydrologic Unit 07080205, at culvert on County Highway V66, 1.1 mi south of Van Horne. Drainage area is 0.94 mi^2.	1991-	2002	(a)	[d]<320	05-26-97	18.14	[d]571
			Revised Record:					
			04-19-90	15.02	[d]240			
Thunder Creek at Blairstown, IA (05464562)	Lat 41°54′12″, long 92°05′03″, in NE1/4, sec.23, T.82 N., R.11 W., Benton County, Hydrologic unit 07080205, at culvert on county highway V66, near city limits of Blairstown. Drainage area 0.96 mi^2.	1991-	06-13-02	14.57	280	08-16-93	16.12	[d]540
			Revised Record:					
			07-07-92	15.11	[d]130			
North Fork Long Creek at Ainsworth, IA (05465150)	Lat 41°16′51″, long 91°32′16″, Long Creek at in SW1/4, sec.22, T.75 N., R.6 W., Washington County, Hydrologic Unit 07080209, at bridge on U.S. Highway 218, 1 mi southeast of Ainsworth. Drainage area 30.2 mi^2.	1951, 1965-	05-12-02	89.73	2,110	05-10-96	93.40	(+)
			Revised Record:					
			06-13-67	88.77	1,110			
			03-03-70	87.43	480			
			05-08-72	87.57	510			
			05-29-73	88.43	800			
			04-30-74	88.31	750			
			03-19-75	87.70	550			
			03-04-76	87.42	480			
			08-08-77	88.29	740			
			07-22-78	87.92	610			
			03-18-79	88.60	940			
			09-13-80	88.20	710			
			04-14-81	88.80	1,140			
			07-18-82	89.21	1,620			
			05-03-84	87.60	520			
			05-17-86	89.42	1,880			
			03-16-87	89.11	1,510			
			06-20-90	90.66	[d]5,800			
			09-10-92	89.89	2,590			
			05-10-96	[e]93.40	(+)			
			06-15-98	88.93	920			
			10-05-98	89.22	1,260			
			06-14-00	89.22	1,260			

Station name and number	Location and drainage area	Period of record	Water year 2002 maximum			Period of record maximum		
			Date	Gage height (ft)	Discharge (ft^3/s)	Date	Gage height (ft)	Discharge (ft^3/s)
Yellow Spring Creek Basin								
Haight Creek at Kingston, IA (05469350)	Lat 40°58′14″, long 91°02′30″, in NW1/4, sec.12, T.71 N., R.2 W., Des Moines County, Hydrologic Unit 07080104, at culvert on State Highway 99, 0.5 mi south of Kingston. Drainage area 2.67 mi^2.	1990-	06-01-02	12.62	[d]740	06-16-90	15.18	[d]1,460
			Revised Record:					
			06-16-90	15.18	[d]1,460			
			1991	(a)	[d]<170			
			04-21-92	11.50	[d]430			
			08-10-93	13.71	[d]1,020			
			1994	(a)	[d]<170			
			05-24-95	12.94	[d]810			
			05-10-96	[d]13.10	[d]850			
			02-19-97	12.60	[d]710			
			07-07-98	[d]14.10	[d]1,130			
			10-18-98	12.23	[d]640			
			06-24-00	[d]13.03	[d]830			
			05-14-01	13.62	[d]950			
SKUNK RIVER BASIN								
Mud Lake drainage ditch 71, at Jewell, IA (05469860)	Lat 42°18′52″, long 93°38′23″, in SW1/4, sec.27, T.87 N., R.24 W., Hamilton County, Hydrologic Unit 07080105, at bridge on U.S. Highway 69, in Jewell. Drainage area 65.4 mi^2.	1966-	05-12-02	85.14	467	07-09-93	91.32	3,700
Long Dick Creek near Ellsworth, IA (05469970)	Lat 42°18′37″, long 93°32′06″, in NW1/4, sec.33, T.87 N., R.23 W., Hamilton County, Hydrologic Unit 07080105, at culvert on State Highway 175, 2.2 mi east of Ellsworth. Drainage area 6.08 mi^2.	1991-	05-12-02	(+)	(+)	08-17-93	94.73	(+)
Keigley Branch near Story City, IA (05469990)	Lat 42°09′01″, long 93°37′13″, in NW1/4, sec.26, T.85 N., R.24 W., Story County, Hydrologic Unit 07080105, at bridge on U.S. Highway 69, 3 mi south of Story City. Drainage area 31.0 mi^2.	1966-	2002	(a)	<228	06-17-96	92.26	[d]3,440
Snipe Creek tributary at Melbourne, IA (0547209280)	Lat 41°56′08″, long 93°05′08″, in SE1/4, sec.5, T.82 N., R.19 W., Marshall County, Hydrologic Unit 07080106, at culvert on county highway E63, 0.5 mi east of Melbourne. Drainage area 1.61 mi^2.	1990-	06-18-02	14.60	[d]180	06-17-90	17.39	[d]360
Middle Creek near Lacey, IA (05472390)	Lat 41°25′17″, long 92°23′04″, at N1/4 corner sec.1, T.76 N., R.16 W., Mahaska County, Hydrologic Unit 07080106, at bridge on U.S. Highway 63, 1.5 mi northwest of Lacey. Drainage area 23.0 mi^2.	1966-	2002	(a)	<170	04-24-76	90.06	9,650
Skunk River tributary near Richland, IA (05472555)	Lat 41°15′50″, long 91°57′52″, in NE1/4, sec.35, T.75 N., R.10 W., Keokuk County, Hydrologic Unit 07080107, at culvert on county highway W15, 4.9 mi north of Richland, 5.1 mi south of State Highway 92. Drainage area 0.19 mi^2.	1990-	06-13-02	13.05	[d]7.0	03-16-01	17.08	[d]120
DES MOINES RIVER BASIN								
Drainage Ditch 97 tributary near Britt, IA (0548065350)	Lat 43°06′42″, long 93°54′22″, in SW1/4, sec.22, T.96 N., R.26 W., Hancock County, Hydrologic Unit 07100005, at culvert on county road, 5.4 mi northwest of Britt. Drainage area 0.94 mi^2. (Revised)	1991-	2002	(a)	(+)	07-09-93	94.53	(+)

Station name and number	Location and drainage area	Period of record	Water year 2002 maximum Date	Gage height (ft)	Discharge (ft^3/s)	Period of record maximum Date	Gage height (ft)	Discharge (ft^3/s)
			DES MOINES RIVER BASIN					
White Fox Creek at Clarion, IA (05480930)	Lat 42°43′55″, long 93°42′26″, in NW1/4, sec.5, T.91 N., R.24 W., Wright County, Hydrologic Unit 07100005, at bridge on State Highway 3, 1.5 mi east of Clarion. Drainage area 13.3 mi^2.	1966-	08-14-02	88.73	205	06-29-95	93.27	[d]1,140
			Revised Record:					
			1966	(a)	<280			
			06-09-67	93.01	[d]1,240			
			1968	(a)	<280			
			1969	(a)	<280			
			1970	(a)	<280			
			03-16-71	89.57	330			
			07-14-79	90.23	440			
			06-15-80	90.55	480			
			06-24-81	91.81	680			
			06-16-84	93.11	[d]1,060			
			1989	(a)	<20			
			06-18-91	93.27	[d]1,140			
			06-23-94	91.52	600			
			06-29-95	[e]92.91	[d]980			
Brewers Creek tributary near Webster City, IA (05480993)	Lat 42°26′57″, long 93°51′59″, in NW1/4, sec.10, T.88 N., R.26, W., Hamilton County, Hydrologic Unit 07100005, at culvert on U.S. Highway 20, 2.5 mi southwest of Webster City. Drainage area 1.58 mi^2.	1990-	2002	(a)	[d]<32	06-04-91	99.25	[d]544
			Revised Record:					
			03-14-97	97.84	[d]296			
Bluff Creek at Pilot Mound, IA (05481510)	Lat 42°09′59″, long 94°01′11″, in NW1/4, sec.20 T.85 N., R.27 W., Boone County, Hydrologic Unit 07100004, at bridge on county road E18 at northwest edge of Pilot Mound. Drainage area 23.5 mi^2. (Revised)	1966-	2002	(a)	<40.0	07-09-93	89.25	1,120
			Revised Record:					
			09-26-73	85.46	530			
			06-04-91	88.58	960			
			1992	(a)	<240			
			07-09-93	89.25	1,120			
			02-18-94	85.77	420			
			1996	(a)	<240			
			06-21-97	85.03	310			
			06-15-98	86.19	480			
			06-12-99	85.71	410			
			2000	(a)	<240			
			05-05-01	86.96	620			
Peas Creek tributary at Boone, IA (05481528)	Lat 42°02′06″, long 93°51′13″, in SW1/4, sec.35, T.84 N., R.26 W., Boone County, Hydrologic Unit 07100004, at culvert on Corporal Rodger Snedden Drive, at intersection with U.S. Highway 30, at the south edge of Boone city limits. Drainage area 0.30 mi^2.	1990-	2002	(a)	[d]<29	06-17-90	95.19	[d]239
			Revised Record:					
			02-19-97	[b]92.97	(+)			
Peas Creek at Boone, IA (05481530)	Lat 42°02′04″, long 93°51′25″, in SE1/4, sec.34, T.84 N., R.26 W., Boone County, Hydrologic Unit 07100004, at culvert on U.S. Highway 30, at the southeast side of Boone city limits. Drainage area 1.69 mi^2.	1990-	08-23-02	(a)	[d]<74	06-15-98	103.05	[d]410
			Revised Record:					
			1991	(a)	[d]<15			
			07-16-92	98.42	[d]50			
			07-09-93	99.80	[d]130			
			02-18-94	99.04	[d]80			
			1995	(a)	[d]<15			
			06-17-96	102.51	[d]350			
			1997	(a)	[d]<15			
			06-15-98	103.05	[d]410			
			04-23-99	97.67	[d]20			
			2000	(a)	[d]<70			
			2001	(a)	[d]<70			
Hardin Creek near Farlin, IA (05482900)	Lat 42°05′34, long 94°25′39″, in NE1/4 NW1/4 NW1/4, sec. 14, T.84 N., R.31 W., Greene County, Hydrologic Unit 07100006, at bridge on county highway, 1.5 mi northeast of Farlin. Drainage area 101 mi^2.	1951-	2002	(a)	<577	07-09-93	13.97	3,010
Brushy Creek near Templeton, IA (05483318)	Lat 41°56′45″, long 94°52′45″, in SW1/4 NW 1/4 NW 1/4, sec.1, T.82 N., R.35 W., Carroll County, Hydrologic Unit 07100007, at bridge on U.S. Highway 71, 4 mi northeast of Templeton. Drainage area 45.0 mi^2.	1966-	08-23-02	75.02	3,430	07-09-93	93.48	19,000
Middle Raccoon River tributary at Carroll, IA (05483349)	Lat 42°02′30″, long 94°52′43″, in NW1/4 NW1/4 SW1/4, sec. 36, T. 84 N,.R.35 W., Carroll County Hydrologic Unit 07100007, at bridge on U.S. Highway 71, 1.1 mi south of Carroll. Drainage area 6.58 mi^2.	1966-	08-23-02	24.61	2,900	06-17-96	25.88	4,600

Station name and number	Location and drainage area	Period of record	Water year 2002 maximum: Date	Water year 2002 maximum: Gage height (ft)	Water year 2002 maximum: Discharge (ft^3/s)	Period of record maximum: Date	Period of record maximum: Gage height (ft)	Period of record maximum: Discharge (ft^3/s)
DES MOINES RIVER BASIN--continued								
Cedar Creek tributary No. 2 near Winterset, IA (05485940)	Lat 41°19′49″, long 94°03′05″, in SW1/4, sec.35, T.76 N., R.28 W., Madison County, Hydrologic Unit 07100008, at culvert on State Highway 92, 0.5 mi west of U.S. Highway 169, 1 mi west of Winterset. Drainage area 1.02 mi^2.	1990-	05-12-02 Revised Record: 1995 1997	(a) (a) (a)	[d]<30 [d]<24 [d]<29	05-24-96	98.58	[d]447
Bush Branch Creek near Stanzel, IA (05486230)	Lat 41°18′57″, long 94°16′42″, in SW1/4, sec.2, T.75 N., R.30 W., Adair County, Hydrologic Unit 07100008, at culvert on State Highway 92, 1 mi west of Stanzel. Drainage area is 3.02 mi^2.	1990-	05-12-02	(a)	(+)	09-15-92	97.06	(+)
Little White Breast Creek tributary near Chariton, IA (05487825)	Lat 41°03′36″, long 93°18′12″, in SW1/4, sec. 5, T.72 N., R.21 W., Lucas County, Hydrologic Unit 07100008, at culvert on State Highway 14, 2.0 mi north of Chariton. Drainage area 0.05 mi^2.	1990-	10-23-01	17.04	[d]14	08-19-93	18.93	[d]56.2
South Avery Creek near Blakesburg, IA (05489350)	Lat 41°00′59″, long 92°37′32″, in SE1/4, sec.19, T.72 N., R.15 W., Wapello County, Hydrologic Unit 07100009, at bridge on U.S. Highway 34, 3.5 mi north of Blakesburg. Drainage area 33.1 mi^2.	1965-	05-12-02	85.13	5,890	07-03-82	90.20	(+)
Bear Creek at Ottumwa, IA (05489490)	Lat 41°00′52″, long 92°27′44″, in NW1/4, sec.27, T.72 N., R.14 W., Wapello County, Hydrologic Unit 07100009, at bridge on U.S. Highway 34, near west edge of Ottumwa. Drainage area 22.9 mi^2.	1965-	05-11-02	89.30	2,670	09-21-65	92.80	4,000

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CONVERSION FACTORS

Multiply	By	To obtain
	Length	
inch (in.)	2.54×10^{1}	millimeter
	2.54×10^{-2}	meter
foot (ft)	3.048×10^{-1}	meter
mile (mi)	1.609×10^{0}	kilometer
	Area	
acre	4.047×10^{3}	square meter
	4.047×10^{-1}	square hectometer
	4.047×10^{-3}	square kilometer
square mile (mi^2)	2.590×10^{0}	square kilometer
	Volume	
gallon (gal)	3.785×10^{0}	liter
	3.785×10^{0}	cubic decimeter
	3.785×10^{-3}	cubic meter
million gallons (Mgal)	3.785×10^{3}	cubic meter
	3.785×10^{-3}	cubic hectometer
cubic foot (ft^3)	2.832×10^{1}	cubic decimeter
	2.832×10^{-2}	cubic meter
cubic-foot-per-second day [(ft^3/s) d]	2.447×10^{3}	cubic meter
	2.447×10^{-3}	cubic hectometer
acre-foot (acre-ft)	1.233×10^{3}	cubic meter
	1.233×10^{-3}	cubic hectometer
	1.233×10^{-6}	cubic kilometer
	Flow	
cubic foot per second (ft^3/s)	2.832×10^{1}	liter per second
	2.832×10^{1}	cubic decimeter per second
	2.832×10^{-2}	cubic meter per second
gallon per minute (gal/min)	6.309×10^{-2}	liter per second
	6.309×10^{-2}	cubic decimeter per second
	6.309×10^{-5}	cubic meter per second
million gallons per day (Mgal/d)	4.381×10^{1}	cubic decimeter per second
	4.381×10^{-2}	cubic meter per second
	Mass	
ton (short)	9.072×10^{-1}	megagram or metric ton

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