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Water Resources Data
Iowa
Water Year 2000

Volume 2. Surface Water—Missouri River Basin, and Ground Water

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

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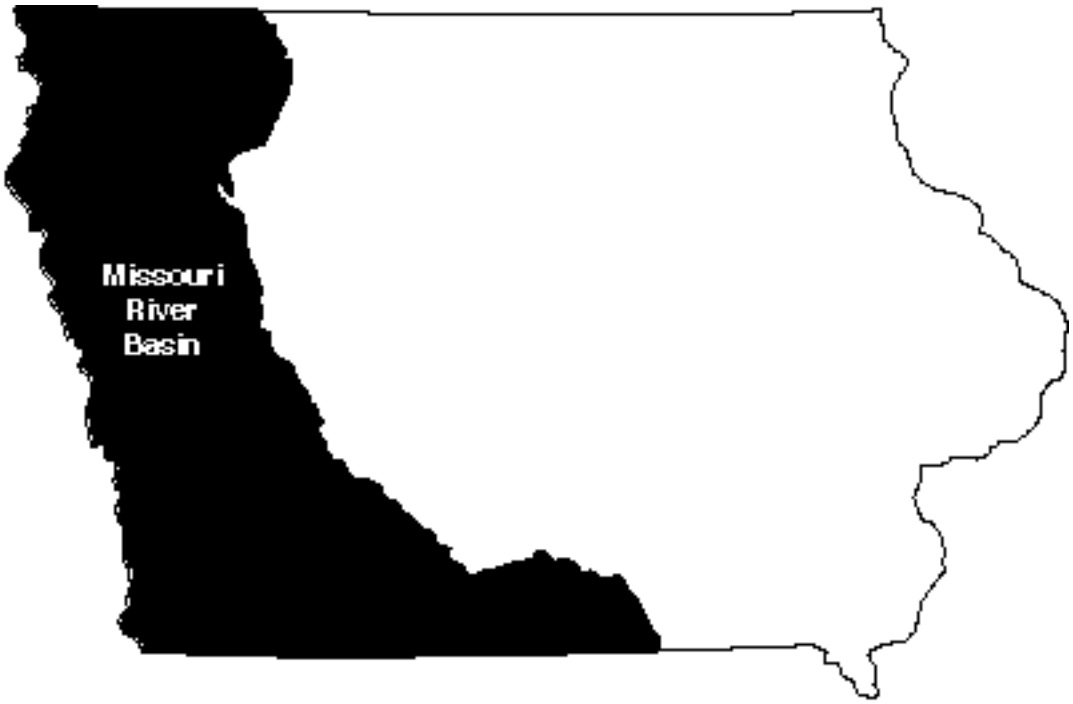

Prepared in cooperation with the Iowa Department of Natural Resources (Geological Survey Bureau), Iowa Department of Transportation, and with Federal agencies

UNITED STATES DEPARTMENT OF THE INTERIOR

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U.S. GEOLOGICAL SURVEY

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District Chief, Water Resources Division
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P.O. Box 1230
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2001

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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13. ABSTRACT *(Maximum 200 words)*
Water resources data for Iowa for the 2000 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 30 gaging stations; stage or contents for 3 lakes; water quality for 1 stream-gaging station, and sediment records for 3 stream-gaging stations. Also included are data for 34 crest-stage partial record stations and ground-water levels for 167 wells. Additional water data were collected at various sites, but are not part of the systematic data collection program and are published as miscellaneous discharge and miscellaneous water-quality analyses.

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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}

SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS ARE PUBLISHED IN THIS VOLUME

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 page of this report.

[(d), discharge station; (e), elevation (stage only) station; *, currently operated as crest-stage partial-record station]

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
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
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
Iowa River near Iowa Falls, Ia. (d)	05450000	665	1911-14
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
Black Hawk Creek at Hudson, Ia. (d)	05463500	303	1952-95
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
Wolf Creek near Dysart, Ia (d)	05464220	299	1996-98
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
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.

[Type of record: Chem.–chemical quality, Cond.–specific conductance, Temp.–water temperature, Sed.–sediment, Bio.–biological; *, periodic data available subsequent to period of daily record]

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	05412070	1.15	Chem.	1986-92
Turkey River at Garber, Ia.	05412500	1,545	Temp.*, Sed.*	1957-62
Mississippi River at Dubuque, Ia.	05414700	81,600	Chem.	1969-73
Maquoketa River near Maquoketa, Ia	05418500	1,553	Sed., Temp., Cond.	1978-82; 1995-97
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
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.

Water resources data for water year 2000 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 126 gaging stations; stage or contents records for 9 lakes and reservoirs; water-quality records for 4 gaging stations; sediment records for 12 gaging stations; and water levels for 167 ground-water observation wells. Also included are peak-flow data for 93 crest-stage partial-record stations, water-quality data from 45 municipal wells, and precipitation data collected at 6 gaging stations and 2 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-00-1." 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 District Chief 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 2000 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
Limestone Bluffs RC&d
Van Buren County Board of Supervisors

City of Ames
City of Bettendorf
City of Bloomfield
City of Burlington
City of Cedar Rapids
City of Charles City
City of Clear Lake
City of Clinton
City of Coralville
City of Davenport
City of Decorah Water Department
City of Des Moines
City of Des Moines Water Works
City of Fort Dodge
City of Iowa City
City of Marshalltown
City of Milford
City of Mt. Pleasant
City of Ottumwa Water and Hydro Plant
City of Sioux City
City of Waterloo Water Pollution Control Plant
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 72 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, Union Electric Company.

Organizations that supplied data are acknowledged in the station descriptions.

SUMMARY OF HYDROLOGIC CONDITIONS

Surface Water

For water year 2000 (October 1, 1999 to September 30, 2000) climatological conditions were drier than normal and warmer than normal. Recorded precipitation for the year ranged from 11.62 inches below normal in the West-central Iowa Climatological District to 0.69 inches greater than normal in the Northeast Iowa Climatological District (fig. 1). Precipitation recorded for the State averaged 27.16 inches, which was 5.95 inches below normal, or 82 percent of the normal 33.11 inches for 1961-90 (table 1). Overall, water year 2000 was the 21st driest and the 6th warmest for 127 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., 2000)]

October was the 10th driest in 127 years of record. Statewide average precipitation was 2.53 inches, which was 31 percent of normal. Climatological Districts reported below average precipitation, ranging from 15 percent of normal in the Central and Southwest Districts to 43 percent of normal in the North Central and Southeast Districts. For the three index surface-water stations in Iowa, mean monthly discharge for 05464500 Cedar River at Cedar Rapids (East-central District), 05480500

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Figure 1. Precipitation record for the National Weather Service's designated Climatological Districts for water year 2000 (source: Harry Hillaker, State Climatologist, Iowa Department of Agriculture and Land Stewardship, written commun., 2000)

Table 1. Monthly and annual precipitation during the 2000 water year as a percentage of normal precipitation (1961-90).
[Source: Harry Hillaker, State Climatologist, Iowa Department of Agriculture and Land Stewardship, written commun., 2000]

National Weather Service Climatological District	1999			2000									
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Annual
Northwest	38	27	41	121	168	54	61	119	81	84	93	26	74
North-central	43	46	56	113	128	68	65	108	151	113	79	37	87
Northeast	39	77	54	113	99	51	83	143	216	92	99	62	102
West-central	19	67	78	70	169	53	49	61	99	82	45	29	62
Central	15	66	43	89	133	41	46	100	136	118	58	44	78
East-central	42	50	64	100	165	40	107	111	175	101	57	111	96
Southwest	15	66	47	27	182	50	55	46	139	135	47	33	71
South-central	30	74	48	55	159	31	55	46	189	87	76	72	79
Southeast	43	26	90	98	173	40	75	76	208	97	46	91	87
Statewide	31	56	59	88	150	47	66	90	152	101	67	56	82

Des Moines River at Fort Dodge (Central District), and 06810000 Nishnabotna River above Hamburg (Southwest District) was in the normal range (fig. 2). For the remainder of this section, these stations will be referred to as “Cedar Rapids,” “Fort Dodge,” and “Hamburg,” respectively. The location of all active continuous-record gaging stations in Iowa is shown in figure 3, and the location of all active crest-stage gaging stations is shown in figure 4.

November of this water year was the warmest reported for 127 years of record while precipitation statewide was 56 percent of normal. Climatological District reports ranged from 26 percent of normal in the Southeast District to 77 percent of normal in the Northeast District. Mean monthly discharge at Cedar Rapids and Hamburg was normal while discharge at Fort Dodge was below the normal range.

December precipitation was 59 percent of normal at 0.75 inches with all Climatological Districts reporting precipitation below normal. Average snowfall for the month was 6.2 inches. Cedar Rapids, Fort Dodge, and Hamburg index stations all experienced normal mean monthly discharge.

Precipitation increased slightly during January, averaging 88 percent of normal, with total precipitation of 0.76 inches. Precipitation ranged from 27 percent of normal in the Southwest Climatological District to 121 percent of normal in the Northwest District. Snowfall for the month was 8.3 inches which was 1.5 inches above normal. Index stations at Cedar Rapids, Fort Dodge, and Hamburg reported mean daily discharge in the normal range for the month.

Above average precipitation was experienced during February with the average precipitation of 1.38 inches being 150 percent of normal. Average precipitation was 99 percent of normal in the Northeast District and 182 percent of normal in the Southwest Climatological District. Snowfall for the month was 6.4 inches while above average temperatures made this the 10th warmest February for 128 years of record. Normal monthly mean discharge was experienced at Cedar Rapids, Fort Dodge, and Hamburg.

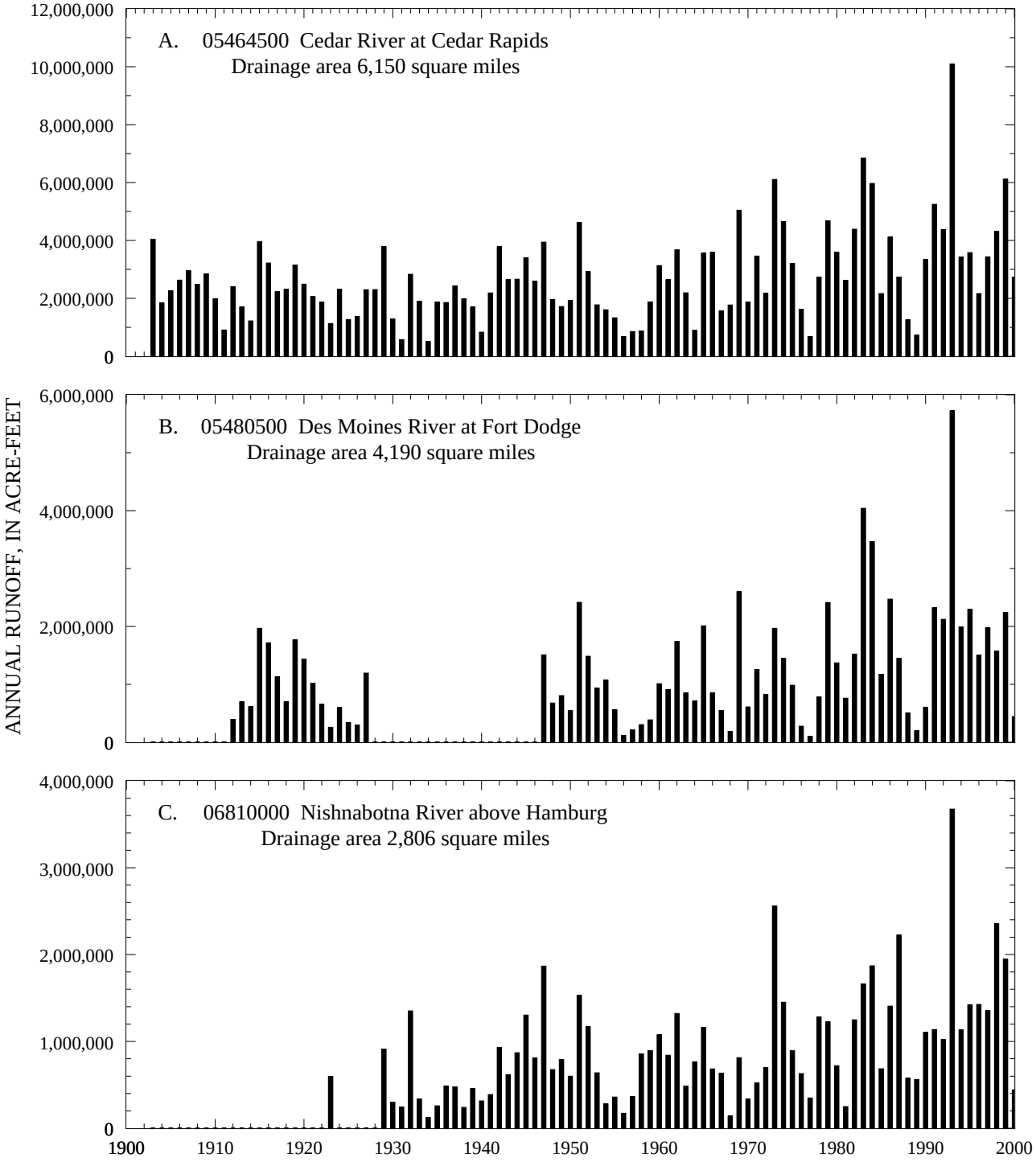

Figure 2. Annual runoff for period of record at index stations.

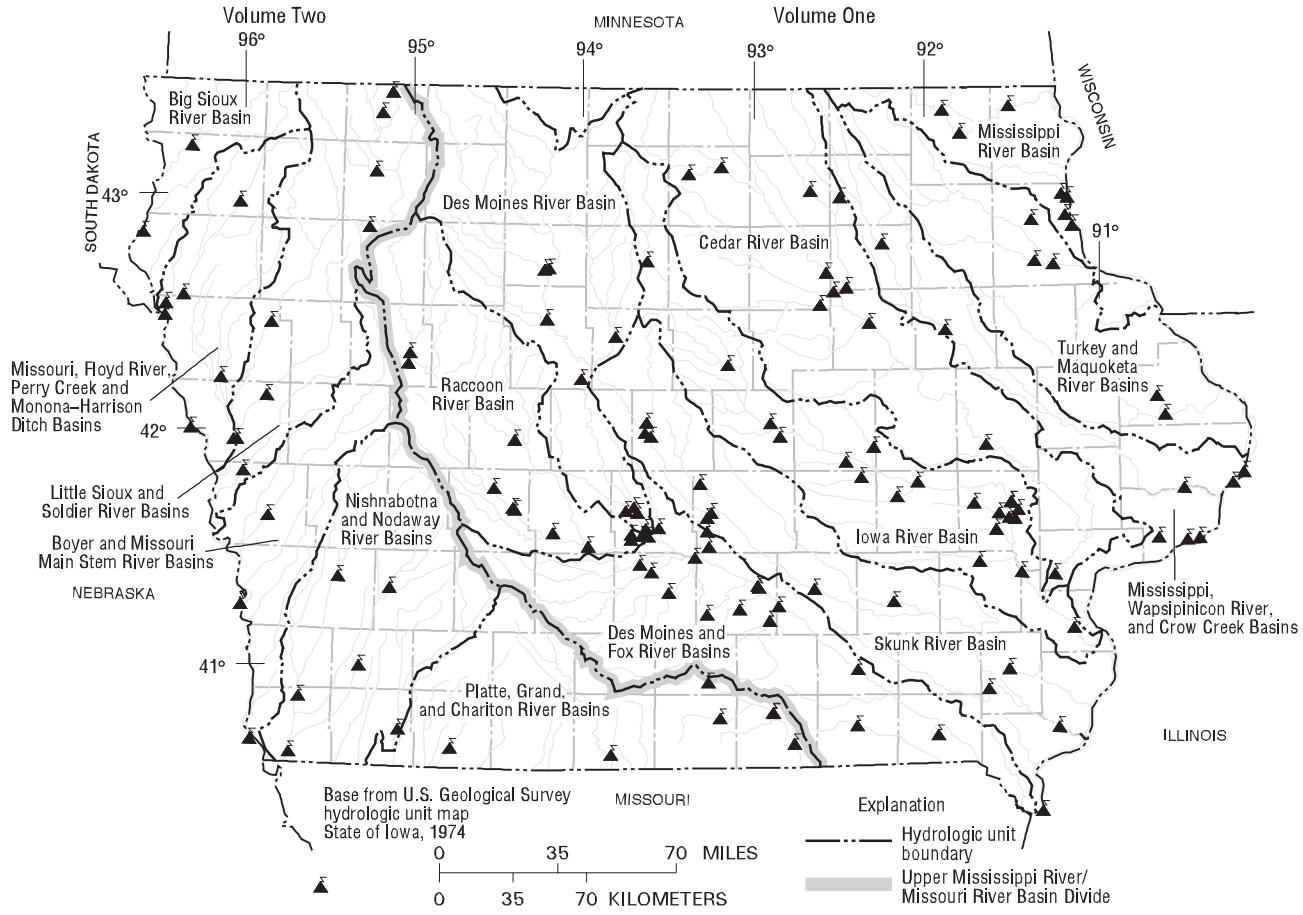

Figure 3. Location of active continuous-record gaging stations in Iowa, water year 2000.
[For gaging-station identification, see drainage basin maps in indicated volume.]

Temperatures for March averaged 43.2 degrees making this the 7th warmest March in 128 years of record. Precipitation was well below normal with a statewide average of 1.03 inches which was 47 percent of normal. All Climatological Districts reported precipitation below normal with a range of 31 percent of normal in the South Central District to 68 percent of normal in the North Central District. Monthly snowfall averaged 1.8 inches. Discharge at all three index stations was below normal for the month.

April precipitation remained below normal with an average statewide precipitation of 2.09 inches recorded. Precipitation ranged from 46 percent of normal in the Central District to 107 percent of normal in the East Central District. Average snowfall for the state was 2.0 inches. Mean monthly discharge for all index stations, Cedar Rapids, Fort Dodge, and Hamburg was below normal.

The statewide average precipitation for May was 3.60 inches, which was 90 percent of normal. Range of precipitation was 46 percent of normal in the Southwest and South Central Districts to 119 percent of normal in the Northwest District. Mean monthly discharge was below normal at index stations Cedar Rapids, Fort Dodge, and Hamburg.

During June, statewide average precipitation was above normal, averaging 6.71 inches or 152 percent of normal. Differences for Climatological Districts were 81 percent of normal in the Northwest District to 216 percent of normal in the Northeast District. All index stations were in the below normal range for the fouth consecutive month.

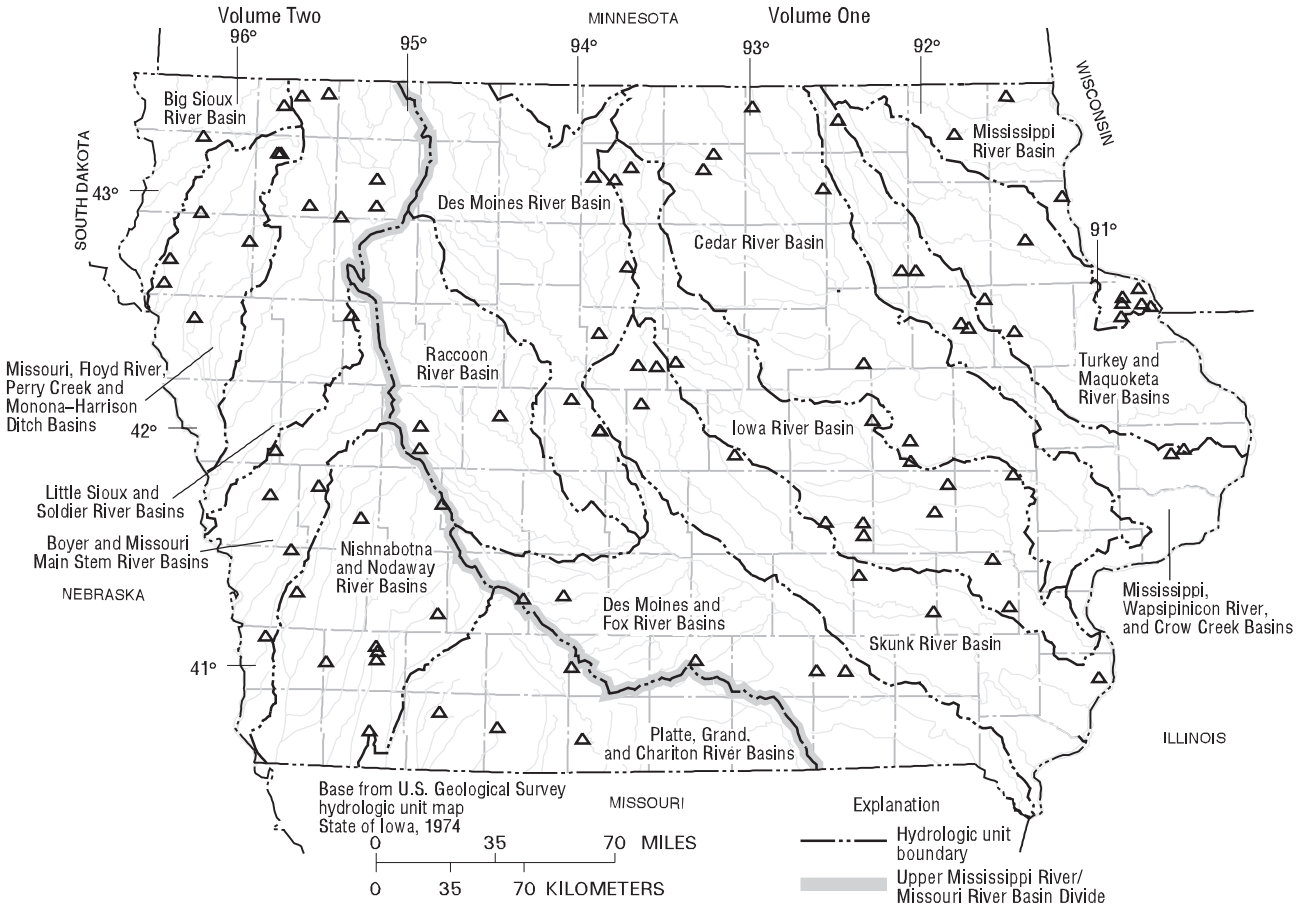

Figure 4. Location of active crest-stage gaging stations in Iowa, water year 2000.
[See indicated volume and page number for gaging-station identification.]

Total July statewide precipitation averaged 4.18 inches or 101 percent of nomal. Range of precipitation was 82 percent of normal in the West Central District and 135 percent of normal in the Southwest District. Index stations at Cedar Rapids and Fort Dodge reported above normal mean monthly discharge while mean monthly discharge for Hamburg remained below normal for the month.

For August statewide average precipitation was below normal. Total precipitaion of 2.72 inches was reported which was 67 percent of normal. For the month, the West Central Climatological District reported monthly mean precipitation 45 percent of normal while precipitation was 99 percent of normal in the Northeast District. Mean monthly discharge at index stations Cedar Rapids and Fort Dodge was normal, while Hamburg experienced mean monthly discharge in the below normal range.

Dry conditions continued into September with an average statewide precipitation of 2.15 inches, which was 56 percent of normal. Climatological District precipitation ranged from 29 percent of normal in the West Central District to 111 percent of normal in the East Central District. This was the 29th driest September for 128 years of record. Normal mean monthly discharge was experienced at Cedar Rapids and Fort Dodge and in the below normal range at Hamburg .

The water-year 2000 runoff at Cedar Rapids was 2,724,000 acre-feet, which is equal to the mean annual runoff for the period of record, 2,724,000 acre-feet. The water-year 2000 runoff at Fort Dodge was 443,200 acre-feet, which is 828,800 less

than the mean for the period of record, 1,272,000 acre-feet. The water-year 2000 runoff at Hamburg was 443,400 acre-feet,which is 476,400 less than the mean for the period of record, 919,800 acre-feet.

Suspended Sediment

Daily suspended-sediment discharge data (hereafter referred to as sediment discharge in this report) were collected at 12 streamflow-gaging stations in Iowa during the 2000 water year. Four stations have 22 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; three stations on the Missouri River have 14 years of record: 06486000 Missouri River at Sioux City, Iowa, 06610000 Missouri River at Omaha, Nebraska, and 06807000 Missouri River at Nebraska City, Nebraska; two stations in northeast Iowa have 9 years of record: 05389400 Bloody Run Creek near Marquette and 05411400 Sny Magill Creek near Clayton; and three stations in central Iowa have 5 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 6 of 12 stations occurred between June 13-27, after a significant rain event. Three others peaked May 31.

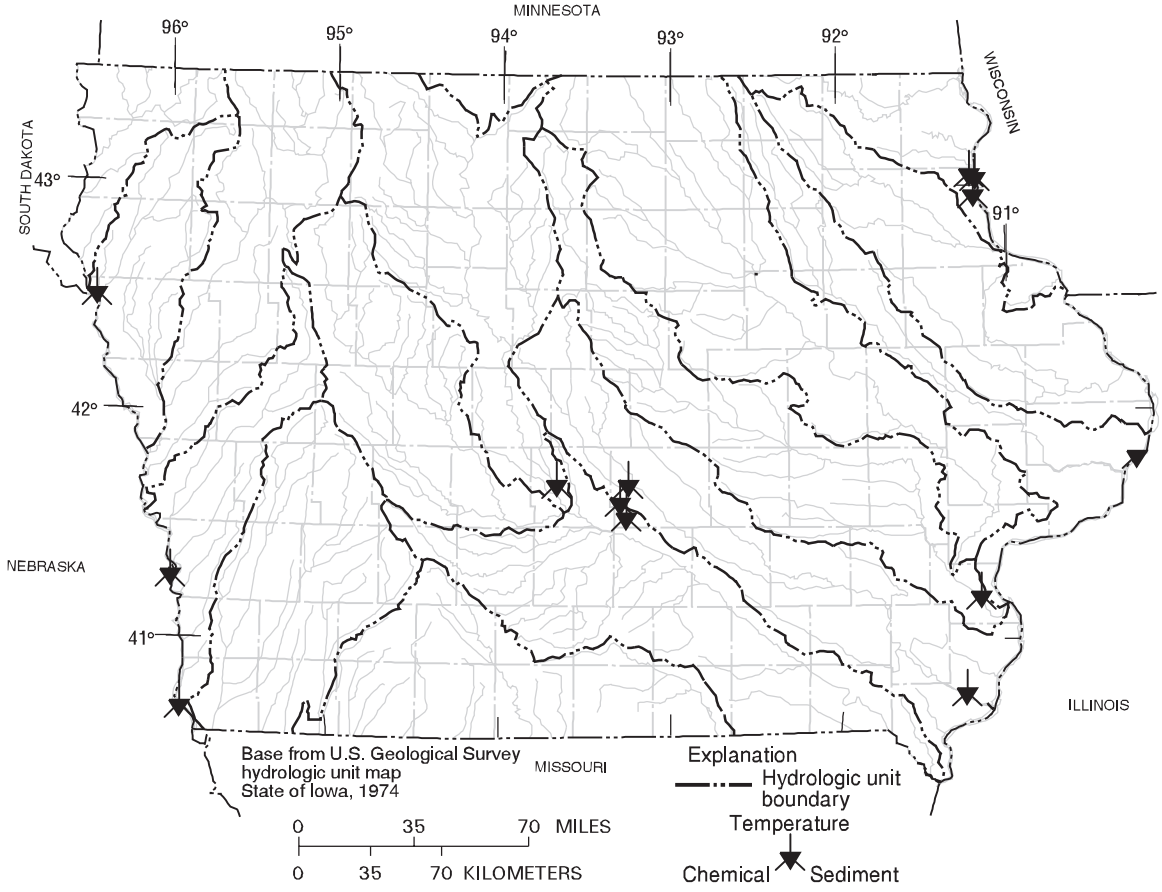

Figure 5. Location of active sediment and surface-water quality stations in Iowa, water year 2000.

Mississippi River at McGregor, which has most of its drainage basin in Minnesota and Wisconsin, had an annual sediment discharge of 799,000 tons, which was the fourth lowest sediment discharge in 25 years of record, and 47.5 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 2000 was 27,760 tons. This represents 11.3 percent of the 23-year mean sediment discharge. The mean annual sediment discharge since dam completion is 246,000 tons (fig. 6).

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 85 percent of normal precipitation. Wapello had an annual sediment discharge of 1.32 million tons. This represents 48.9 percent of the 22-year mean sediment discharge of 2.71 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 79 percent of normal for water year 2000. The 2000 annual sediment discharge for Skunk River at Augusta was 787,000 tons, which is 28.6 percent of the 25-year mean sediment discharge of 2.75 million tons (fig. 6).

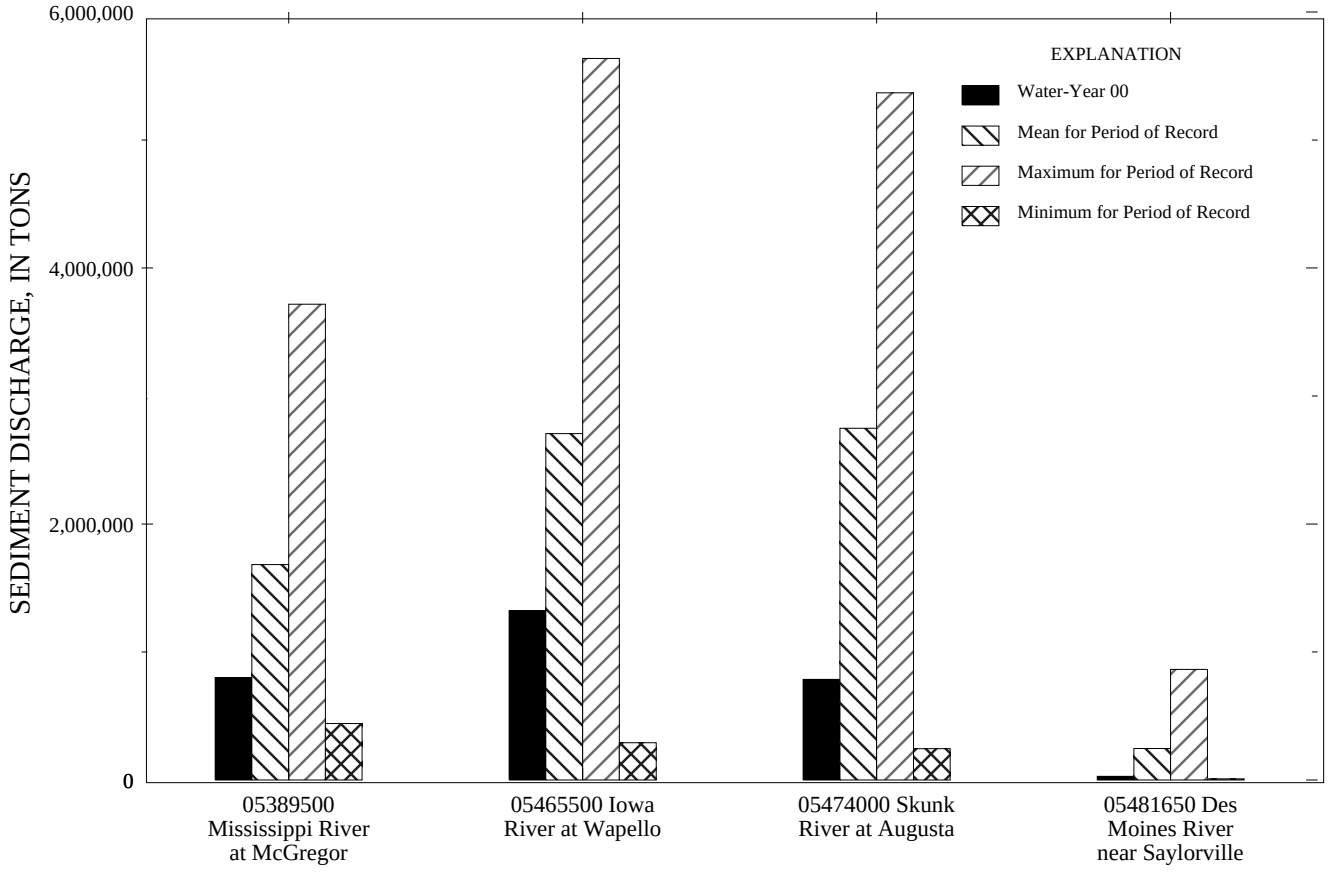

Figure 6. Comparison of annual sediment discharge for water year 2000 with mean, previous maximum, and previous minimum annual sediment discharges for periods of record at four long-term daily sediment stations in Iowa.

The 2000 annual sediment discharge for the two small drainage area stations located in northeast Iowa reflect the effect of precipitation patterns on small drainage basins. The annual sediment discharge for Bloody Run Creek near Marquette (05489400) was 1,536 tons, of which approximately 55.4 percent was measured during the month of February. The annual runoff was 35.1 percent of the 9-year mean sediment discharge of 4,372 tons. The annual sediment discharge for Sny Magill Creek near Clayton (05411400) was 2,443 tons. This runoff represents 51.2 percent of the 9-year mean sediment discharge of 4,771 tons. Forty-two percent of Sny Magill's annual sediment discharge was measured in February, and approximately 39 percent of the yearly total was measured on February 23. These stations are paired in a study on sediment-reduction techniques, with the Sny Magill Basin having the techniques implemented and the Bloody Run Basin not implemented.

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 2000 sediment discharge for Squaw Creek near Colfax (05471040) was 9,361 tons. Eighty percent of Squaw Creek's annual sediment discharge was measured on May 30. The 2000 sediment discharge for Walnut Creek near Prairie City (05487540) was 678 tons, while Walnut Creek near Vandalia (05487550) was 2,903 tons of annual sediment discharge. Vandalia has a drainage area approximately three times the size of Prairie City, but had about 4.3 times the amount of sediment discharge of Prairie City.

The three Missouri River stations (fig. 5) have large drainage areas, which the sediment discharges reflect. The annual sediment discharge at Sioux City was 6.97 million tons, which was 56.4 percent of the 14-year mean of 12.4 million tons. The sediment discharge at Omaha was 9.75 million tons, which was 45 percent of the 14-year mean of 21.6 million tons. The annual sediment discharge at Nebraska City was 14.2 million tons, which was 42 percent of the 14-year mean of 33.6 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 167 wells monitored on a quarterly, monthly, or intermittent basis in Iowa during water year 2000 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 specific projects may be obtained from the District Chief, Iowa District, 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 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 2000 water year. One well recorded a high historical water level (table 2). Five wells recorded low historical water levels (table 3).

Table 2. Historical high water level measured during the 2000 water year in a well completed in an unconsolidated aquifer.
[Water-level measurements are in feet below land surface]

County	Well number	Aquifer type	New historical high water level	Date measured	Previous historical high water level	Date measured
Pottawattamie	411359095171901	Buried Channel	122.74	05/11/2000	123.19	08/11/1999

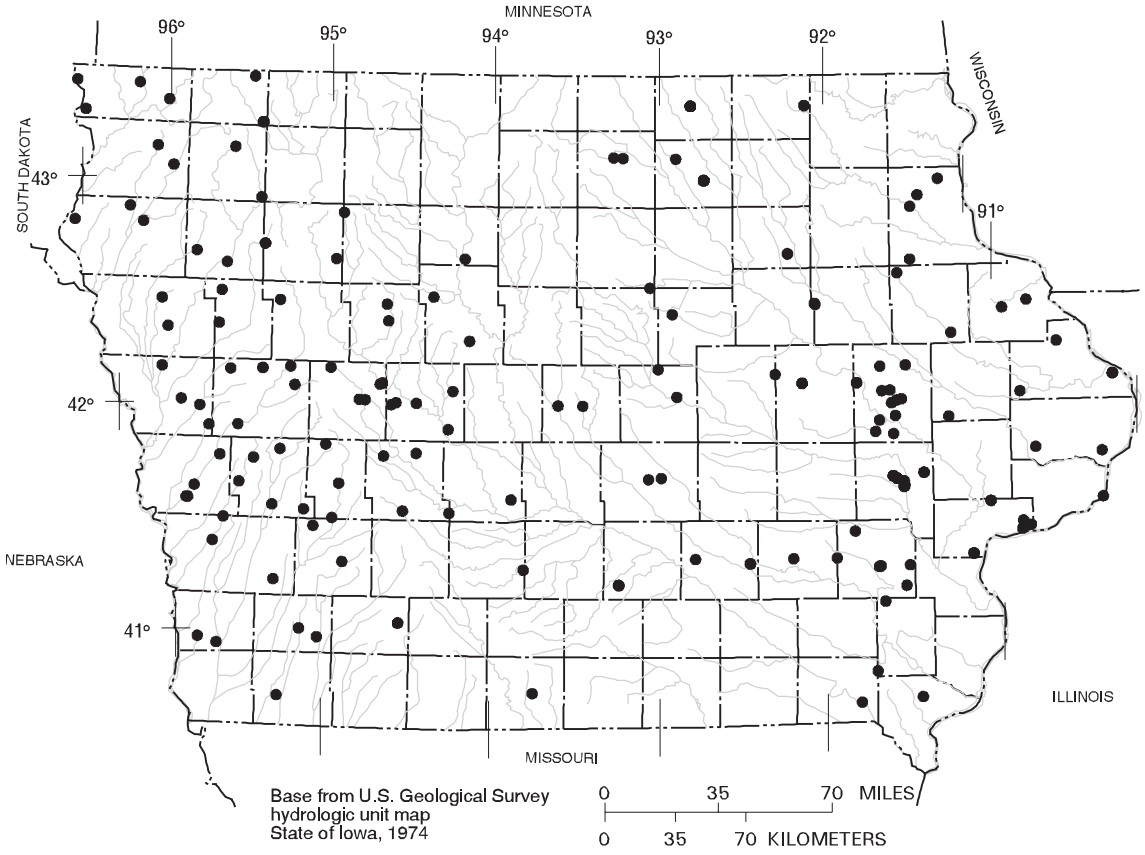

Figure 7. Location of wells in the ground-water-level observation network in Iowa, water year 2000

Table 3. Historical low water level measured during the 2000 water year in wells completed in unconsolidated 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
Adams	410248094324801	Glacial Drift	5.42	10/12/1999	3.08	12/06/1996
Crawford	421106095125501	Buried Channel	67.29	08/07/2000	66.41	08/09/1999
Floyd	430200092435301	Glacial Drift	7.40	02/14/2000	6.61	11/04/1996
Shelby	413953095302601	Glacial Drift	19.93	08/07/2000	19.38	11/04/1998
Story	420137093361501	Glacial Drift	76.06	08/08/2000	75.97	11/02/1995

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

Twenty-seven wells completed in bedrock aquifers recorded new historical water levels during the 2000 water year. Twenty-one wells recorded historical low water levels (table 4), and six wells recorded historical high water levels (table 5).

Table 4. Historical high water level measured during the 2000 water year in wells completed in bedrock aquifers.

[Water-level measurements are 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
Carroll	421058094582701	Cretaceous	179.65	08/08/2000	187.70	03/25/1948
Clayton	425736091260303	Cambrian-Ordovician	182.82	08/25/1999	183.04	05/18/1998
Ida	423107095383201	Mississippian	178.60	02/22/2000	180.25	08/09/1999
Linn	420200091363001	Cambrian-Ordovician	93.00	08/18/2000	260	04/21/1998
Mahaska	412020092471002	Cambrian-Ordovician	99.67	05/16/2000	215.38	05/11/1989
Woodbury	422830096000511	Cretaceous	198.60	11/09/1999	198.70	08/10/1999

Table 5. Historical low water level measured during the 2000 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
Calhoun	422339094375101	Cambrian-Ordovician	296	08/09/2000	287	02/10/1999
Cherokee	424132095480211	Cretaceous	156.77	08/07/2000	156.20	01/10/1990
Clayton	425433091285002	Cambrian-Ordovician	13.37	02/15/2000	10.86	08/25/1999
Clayton	425736091260303	Cambrian-Ordovician	185.57	05/01/2000	185.21	02/01/1989
Clinton	414921090450401	Silurian	97	05/15/2000 08/15/2000	95	08/07/1998
Decatur	404422093445602	Cambrian-Ordovician	443.10	05/11/2000 08/09/2000	442.66	08/12/1999
Henry	405010091424901	Mississippian	78.03	02/22/2000	77.21	10/27/1989
Howard	432158092065801	Cambrian-Ordovician	355	05/09/2000	340	08/02/1999
Johnson	414132091345502	Silurian	252.77	07/31/2000	252.30	07/30/1998
Johnson	414132091345503	Silurian	310	07/27/2000	309	07/28/1999
Lee	404306091270201	Cambrian-Ordovician	269.12	08/14/2000	266.61	08/06/1999
Madison	411727093483001	Mississippian	281.01	08/09/2000	280.26	08/19/1999
Mitchell	432156092484102	Devonian	12.44	02/14/2000	11.92	01/31/1994
Mitchell	432156092484103	Devonian	13.32	02/14/2000	12.65	05/07/1996
Mitchell	432156092484104	Devonian	16.52	05/09/2000	15.92	05/07/1996
Mitchell	432156092484105	Devonian	22.16	05/09/2000	21.81	11/04/1996
O’Brien	425610095250611	Cretaceous	37.26	08/08/2000	36.85	12/15/1980
Plymouth	424850096074801	Cambrian-Ordovician	102.64	08/07/2000	102.10	08/06/1980
Plymouth	425249096125001	Cretaceous	125.45	08/08/2000	124.71	11/02/1998
Shelby	413255095070401	Cretaceous	43.03	02/24/2000	42.86	09/24/1981
Sioux	430913096033201	Cretaceous	196.72	08/08/2000	196.30	11/07/1991

Surface-Water Quality

Surface-water-quality data were collected in Iowa during water year 2000 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) (fig. 5). The combined drainage area of the two stations is approximately 408,000 sq. miles. Land use throughout the two drainage basins is primarily agricultural. Fourteen water samples were collected at Missouri River at Omaha, and eleven water samples were collected at Mississippi River at Clinton during the 2000 water year.

Nearly all the samples collected at the two stations contained detectable concentrations of agricultural chemicals. Detections of dissolved nitrite plus nitrate as nitrogen (hereafter referred to as nitrate) were common during the 2000 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 0.330 mg/L on April 17 to 3.51 mg/L, June 29. However, the sample taken on September 11, bottle that includes the analysis for the nitrogen compounds, was ruined and unable to be analyzed. Nitrate concentrations at Omaha ranged from 0.062 mg/L August 15 to 1.13 mg/L, June 27. Nitrate concentrations in water samples did not exceed 10 mg/L, which is the U.S. Environmental Protection Agency (USEPA) Maximum Contaminant 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 25 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. Acetochlor and cyanazine were detected at least 10 times at Omaha and 9 times at Clinton.. The largest herbicide concentration was 1.51 ug/L (micrograms per liter) of atrazine in the water sample collected from the Mississippi River on June 6. The largest overall concentration of acetochlor, alachlor, atrazine, cynazine, and metolachlor in a single event was also on the Mississippi River on June 6. This water sample had 0.469 ug/L of acetochlor, 0.097 ug/L of alachlor, 1.51 ug/L of atrazine, 0.088 ug/L of cyanazine, and 0.435 ug/L of metolachlor. No concentrations for any herbicide exceeded USEPA MCL's (USEPA,1992, Fact sheet: EPA 570/9-91-012FS, December 1992). Herbicide concentrations were generally larger in samples collected during May, June, and July than in samples collected at other times during water year 2000. Water samples collected in September through February had the lowest overall concentrations of the five herbicides during the 2000 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 University of Iowa Hygienic Laboratory and 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. The sampling effort during the 2000 water year is the ninth year of this 10-year program to determine possible ground-water-quality trends.

Ground-Water Monitoring Network

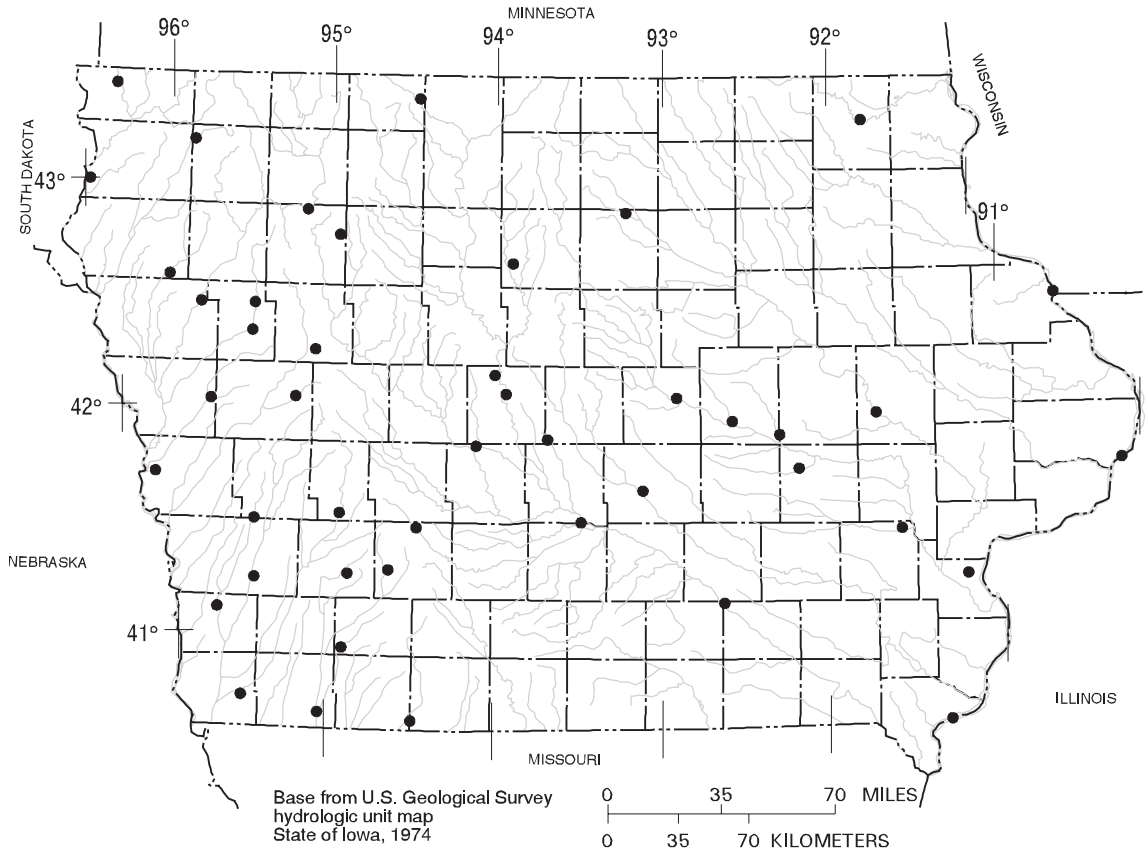

Figure 8. Location of active ground-water-quality monitoring wells in Iowa.

During the 2000 water year, a total of 45 ground-water samples were collected from municipal wells located in two types of surficial aquifers 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. Aquifer types 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. Samples were collected during June, July, and August 2000. All samples were analyzed by the University of Iowa Hygienic Laboratory. All samples were analyzed for common ions, nutrients, herbicides , and volatile organic compounds (VOC). 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.

A summary of results for nutrient and herbicide analyses are listed by compound in table 6. Nitrate or ammonia was detected in 41 of the 45 samples analyzed for these compounds, and one or more herbicides were detected in 7 of the 45 samples. The laboratory minimum reporting level (MRL) for ammonia and nitrate is 0.10 mg/L. The MRL's for the herbicides listed below are 0.10 µg/L. The MRL is the lowest concentration reliably measured by the laboratory.

Table 6. Summary of nitrogen species and herbicides detected in samples from the Ground-Water-Quality Monitoring project, water year 2000
[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 was detected	Median value	Maximum concentration detected
Acetochlor	45	0	<0.10 µg/L	<0.10 µg/L
Ammonia	45	28	.10 mg/L	6.6 mg/L
Alachlor	45	0	< .10 µg/L	< .10 µg/L
Atrazine	45	5	< .10 µg/L	.34 µg/L
Butylate	45	0	< .10 µg/L	< .10 µg/L
Cyanazine	45	0	< .10 µg/L	< .10 µg/L
Deethylatrazine	45	2	< .10 µg/L	.15 µg/L
Deisopropylatrazine	45	1	< .10 µg/L	.14 µg/L
Metolachlor	45	3	< .10 µg/L	1.60 µg/L
Metribuzin	45	0	< .10 µg/L	< .10 µg/L
Nitrate	45	25	< .60 mg/L	20.0 mg/L
Prometone	45	0	< .10 µg/L	< .10 µg/L
Trifluralin	45	0	< .10 µg/L	< .10 µg/L

Concentrations of nitrate greater than 3.0 mg/L generally can be attributed to human activities, whereas concentrations less than 3.0 mg/L may indicate ambient concentrations from naturally occurring soil nitrogen or geologic deposits (Madison, R.J., and Brunett, J.O., 1984, Overview of the occurrence of nitrate in ground water of the United States, *in* National Water Summary 1984 -- Water quality trends: U.S. Geological Survey Water-Supply Paper 2275, p. 93-105). Nitrate concentrations were greater than 3.0 mg/L in 14 of 45 samples. Concentrations in seven samples exceeded 10 mg/L, which is the U.S. Environmental Protection Agency (USEPA) Maximum Contaminant Level (MCL) for public drinking water. Of the 25 samples that contained detectable concentrations of nitrate, 92 percent were from wells completed in alluvial aquifers and 8 percent were from glacial drift and buried-channel aquifers. The median concentration of the 25 samples with detections was 3.8 mg/L. The median concentration of all samples was 0.6 mg/L. However, when all the wells are separated into categories based on well depth, the median nitrate concentrations vary from 2.1 mg/L in wells less than 50 feet deep to 1.8 mg/L in wells from 50 to 100 feet deep to <0.10 mg/L in wells greater than 100 feet deep. The maximum nitrate concentration was 20.0

mg/L. Twenty-three samples had detectable ammonia concentrations. Of these samples, 32 percent were collected from alluvial aquifers and 48 percent were from glacial drift and buried-channel aquifers.

Nine commonly used herbicides and two atrazine degradation products were sampled for during the 2000 water year. Water from 7 of the 45 wells sampled for herbicides contained detectable concentrations of one or more herbicides or herbicide degradation products. No sample contained herbicide concentrations that exceeded the MCL or proposed MCL of any of the analytes. Five of the seven samples contained atrazine or its degradates, deethylatrazine and deisopropylatrazine. Metolachlor was also detected in three of the samples. No detectable amounts of prometone, cyanazine, metribuzin, butylate, trifluralin, alachlor, or acetochlor were found in any of the samples. Six samples with detectable herbicide concentrations were from wells completed in alluvial aquifers and one sample was from the glacial drift aquifers.

Trends in Ground-Water Quality

In 2000, the herbicide detection frequency in all wells less than 100 feet deep was 20 percent. The detection frequency in the previous seven years is shown in figure 9. Variance in detection frequency may reflect several factors including changes in agricultural practices concerning use of herbicides, and climatic conditions.

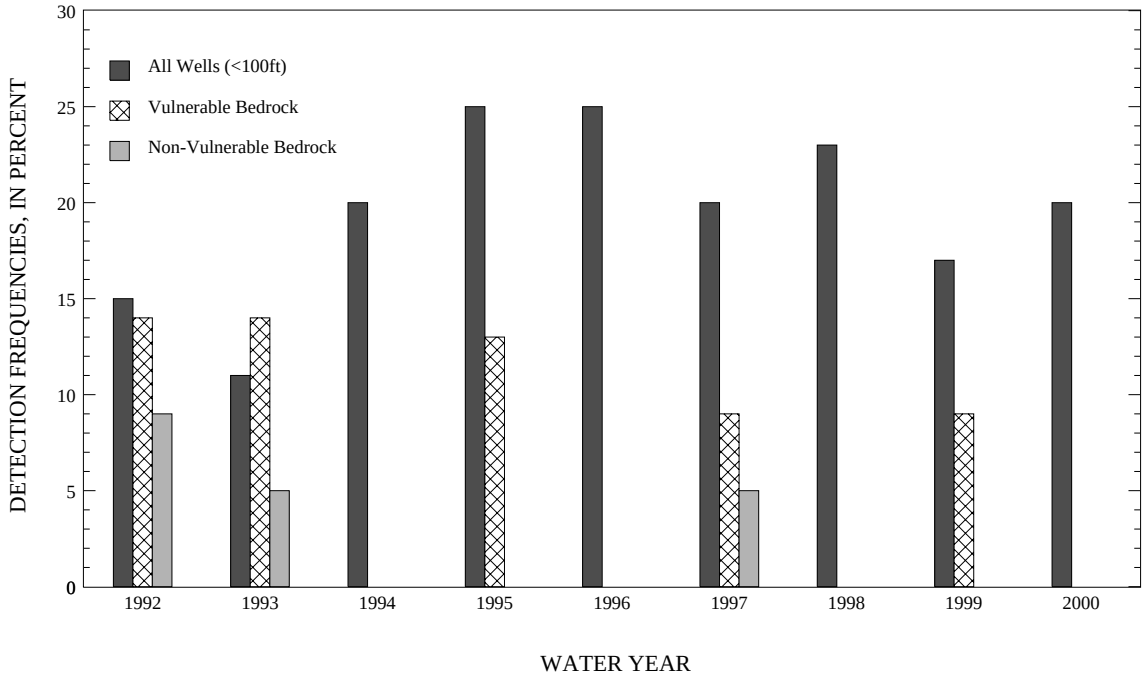

Figure 9. Herbicide detection frequencies in all wells less than 100 feet deep since 1992.

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 hydrology, including water quality, and related factors in 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.

National Stream-Quality Accounting Network (NASQAN) monitors the water quality of large rivers within four of the Nation's largest river basins--the Mississippi, Columbia, Colorado, and Rio Grande. The network consists of 39 stations. 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.

The National Atmospheric Deposition Program/National Trends Network (NADP/NTN) provides continuous measurement and assessment of the chemical climate of precipitation throughout the United States. As the lead federal agency, the USGS works together with over 100 organizations to accomplish the following objectives: (1) provide a long-term, spatial and temporal record of atmospheric deposition generated from a network of approximately 200 precipitation chemistry monitoring sites. (2) provide the mechanism to evaluate the effectiveness of the significant reduction in SO2 emissions that began in 1995 as implementation of the Clean Air Act Amendments (CAAA) occurred. (3) provide the scientific basis and nationwide evaluation mechanism for implementation of the Phase II CAAA emission reductions for SO2 and NOx scheduled to begin in 2000.

Data from the network, as well as information about individual sites, are available through the world wide web at:

`http://nadp.sws.uiuc.edu/`

The National Trends Network (NTN) is a 200-station network for sampling atmospheric deposition in the United States. The purpose of the network is to determine the variability, both in location and in time, of the composition of wet atmospheric deposition, which includes snow, rain, sleet, and hail. The core from which the NTN was built was the already-existing deposition-monitoring network of the National Atmospheric Deposition Program (NADP).

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 53 study units (major watersheds and aquifer systems) that represent a wide range of environmental settings nationwide and 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 is available through the world wide web at:

`http://wwwrvares.er.usgs.gov/nawqa/nawqa_home.html`

Radiochemical Programs is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Tritium Network is a network of stations which has been established to provide baseline information on the occurrence of tritium in the Nation's surface waters. In addition to the surface-water stations in the network, tritium data are also obtained at a number of precipitation stations. The purpose of the precipitation stations is to provide an estimate sufficient for hydrologic studies of the tritium input to the United States.

EXPLANATION OF THE RECORDS

The surface-water and ground-water records published in this report are for the 2000 water year that began October 1, 1999 and ended September 30, 2000. 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, 9, 10. 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. 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 locational 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. (See figure below.)

Latitude and longitude coordinates for wells:

1. 414315091252001
2. 414315091252002
3. 414316091251901

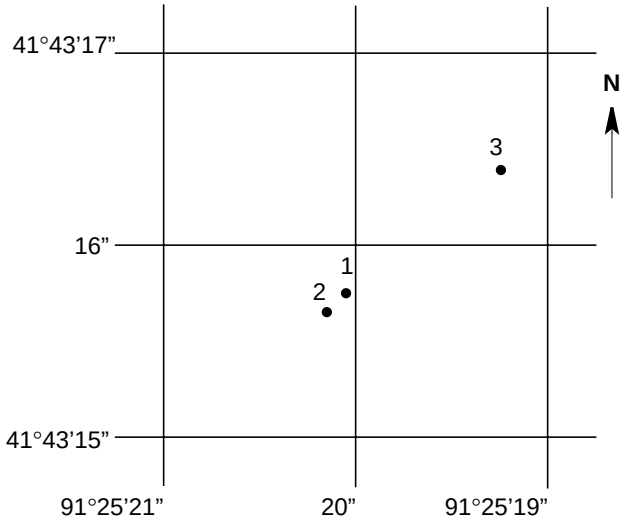

Figure 10. Latitude-longitude well number.

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. For maximum utility, latitude and longitude code numbers are determined to seconds in order that each well may have a unique number. The first six digits denote degrees, minutes, and seconds of north latitude; the next seven digits are degrees, minutes, and seconds of west longitude; and the last two numbers are a sequential number assigned in the order in which the wells are located in a 1-second quadrangle.

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. 11). 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.

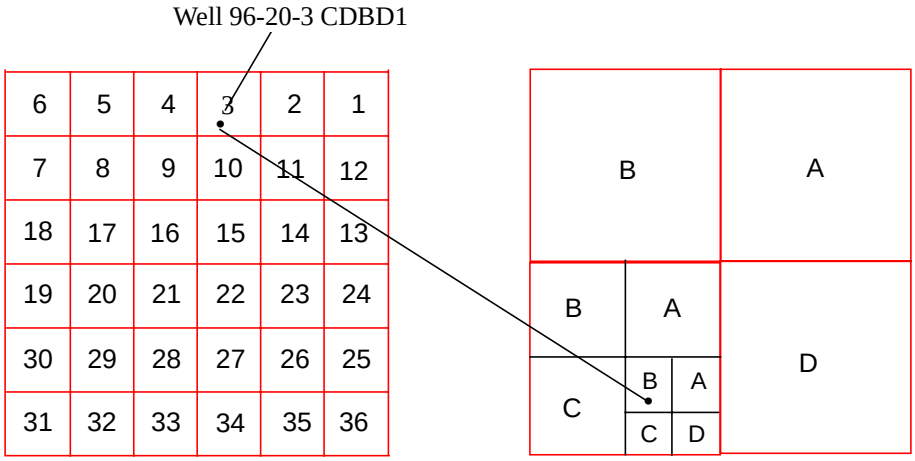

Figure 11. Local well-numbering system.

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 a critical error in published records is discovered, a revision is included in the first report published following discovery of the error.

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 of onsite measurements and for collecting, treating, and shipping samples are given in publications on "Techniques of Water-Resources Investigations," Book 1, Chap. C2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4. All of these references are listed on p. 54-56 of this report. Also, detailed information on collecting, treating, and shipping samples may be obtained from the Geological Survey District Office.

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

NOTE.--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/NTN Coordination Office, Colorado State University, Fort Collins, CO 80523 (Telephone: 303-491-5643).

Records of Ground-Water Levels

Ground-water level data from a network of observation wells in Iowa is 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 6. 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. 7).

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 are included for 59 wells which are representative of hydrologic conditions in the important aquifers in Iowa.

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, radionuclides 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	AQUI-FER CODE	DEPTH OF WELL, TOTAL (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 or 3-1/2 inch floppy 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

Terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. See also table for converting English units to International System (SI) Units on the inside of the back cover.

Acre-foot (AC-FT, acre-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, 325,851 gallons, or 1,233 cubic meters.

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 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, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equal to 43,560 cubic feet, 325,851 gallons, or 1,233 cubic meters

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.

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.

Bacteria are microscopic unicellular organisms, typically spherical, rodlike, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, while 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.

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 warm-blooded 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 mL of sample.

Fecal coliform bacteria are bacteria that are present in the intestine or feces of warm-blooded animals. They are often 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.

Enterococcus bacteria are commonly found in the feces of humans and other warm-blooded 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 and subsequent transfer to EIA medium. Enterococci include *Streptococcus feacalis, Streptococcus feacium, Streptococcus avium,* and their variants.

Escherichia coli (E. coli) are bacteria present in the intestine and feces of warm-blooded 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. Their concentrations are expressed as number of colonies per 100 mL of sample.

Base flow is flow in a channel sustained by ground-water discharge in the absence of direct runoff.

Bed material is the sediment mixture of which a streambed, lake, pond, reservoir, or estuary bottom is composed.

Bottom material: See "Bed material."

Chlorophyll refers to the green pigments of plants. Chlorophyll a and b are the two most common green pigments in plants.

Colloid is any substance with particles in such a fine state of subdivision dispersed in a medium (for example, water) that they do not settle out; but not in so fine a state of subdivision that they can be said to be truly dissolved.

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 that meets either of the following conditions:

1. Stage or streamflow are recorded at some interval on a continuous basis. The recording interval is usually 15 minutes, but may be less or more frequent.

2. Water-quality, sediment, or other hydrologic measure-ments are recorded at least daily.

Control designates a feature in the channel downstream from a gaging station that physically influences the water-surface elevation and thereby determines the stage-discharge relation at the station. 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, 448.8 gallons per minute, or 0.02832 cubic meters per second.

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, 1.9835 acre-feet, 646,317 gallons, or 2,447 cubic meters.

Daily record is a summary of streamflow, sediment, or water-quality values computed from data collected with sufficient frequency to obtain reliable estimates of daily mean values.

Daily record station is a site for which daily records of streamflow, sediment, or water-quality values are computed.

Datum, as used in this report, is an elevation above mean sea level to which all gage height readings are referenced.

Discharge, or flow, is the volume of water (or more broadly, volume of fluid including solid- and dissolved-phase material), that passes a given point in a given period of time.

Annual 7-day minimum is the lowest mean discharge for 7 consecutive days in a 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 discharge is the discharge at a particular instant of time.

Mean discharge (MEAN) is the arithmetic mean of individual daily mean discharges during a specific period.

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 agencies that collect water data. Determinations of “dissolved” constituents are made on subsamples of the filtrate.

Dissolved oxygen (DO) content of water in equilibrium with air 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, with small temperature changes having the more significant offset. Photosynthesis and respiration may cause diurnal variations in dissolved-oxygen concentration in water from some streams.

Dissolved-solids concentration of water 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 that analytical determination of dissolved solids, the bicarbonate (generally a major dissolved component of water) is converted to carbonate. Therefore, in the mathematical calculation of dissolved-solids concentration, the bicarbonate value, in milligrams per liter, is multiplied by 0.4926 to reflect the change. Alternatively, alkalinity concentration (as mg/L $CaCO_3$) can be converted to carbonate concentration by multiplying by 0.60.

Drainage area of a site on a stream is that area, measured in a horizontal plane, that has a common outlet at the site for its surface runoff. Figures of drainage area 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 is occupied by a drainage system with a common outlet for its surface runoff (see "Drainage area").

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 the elevation of the zero point of the reference gage from which gage height is determined as compared to sea level (see "Datum"). This elevation is established by a system of levels from known benchmarks, by approximation from topographic maps, or by geographical positioning system.

Gage height (G.H.) is the water-surface elevation referenced to the gage datum. Gage height is often used interchangeably with the more general term "stage," although gage height is more appropriate when used with a reading on a gage.

Gaging station is a site on a stream, canal, lake, or reservoir where systematic observations of stage, discharge, or other hydrologic data are obtained. When used in connection with a discharge record, the term is applied only to those gaging stations where a continuous record of discharge is computed.

Ground-water level is the elevation of the water table or another potentiometric surface at a particular location.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is attributable to the presence of alkaline earths (principally calcium and magnesium) and is expressed as the equivalent concentration of calcium carbonate ($CaCO_3$).

Hydrologic benchmark station is one that provides hydrologic data for a basin in which the hydrologic regimen will likely be governed solely by natural conditions. Data collected at a benchmark station may be used to separate effects of natural from human-induced changes in other basins that have been developed and in which the physiography, climate, and geology are similar to those in the undeveloped benchmark basin.

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 U.S. Geological Survey. Each hydrologic unit is identified by an 8-digit number.

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

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.

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.

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 mg/L and is based on the mass of dry sediment per liter of water-sediment mixture.

Miscellaneous site, or miscellaneous station, is a site where streamflow, sediment, and/or water-quality data are collected once, or more often on a random or discontinuous basis.

National Geodetic Vertical Datum of 1929 (NGVD of 1929) is a geodetic datum derived from a general adjustment of the first order level nets of the United States and Canada. It was formerly called “Sea Level Datum of 1929” or “mean sea level” in this series of reports. Although the datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts, 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*

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.

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 sediments. May be reported as dissolved organic carbon (DOC), suspended organic carbon (SOC), or total organic carbon (TOC).

Organism is any living entity.

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 U.S. Geological Survey 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 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

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. 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.

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, or volume.

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

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 are termed “acidic,” and solutions with a pH greater than 7 are termed “basic.” Solutions with a pH of 7 are neutral. The presence and concentration of many dissolved chemical constituents found in water are, in part, influenced by the hydrogen-ion activity of water. Biological processes including growth, distribution of organisms, and toxicity of the water to organisms are also influenced, in part, by the hydrogen-ion activity of water.

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

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

Radioisotopes are isotopic forms of an element 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.

Recoverable from 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.

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 non-exceedance 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 non-exceedances of the $7Q_{10}$ occur less than 10 years after the previous non-exceedance, half occur less than 7 years after, and about one-eighth occur more than 20 years after the previous non-exceedance. 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.

River mile is the distance of a point on a river measured in miles from the river's mouth along the low-water channel.

River mileage is the linear distance along the meandering path of a stream channel determined in accordance with Bulletin No. 14 (October 1968) of the Water Resources Council.

Runoff in inches (IN., in.) is the depth, in inches, to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

Sea level refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)—a geodetic datum derived from a general adjustment of the first-order level nets of the United States and Canada, formerly called Sea Level Datum of 1929. *See*: *http://www.co-ops.nos.noaa.gov/ glossary/gloss_n.html#NGVD*

Sediment is solid material that is transported by, suspended in, or deposited from water. It originates mostly from disintegrated rocks; it also 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 influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Bed load is the sediment that is transported in a stream by rolling, sliding, or skipping along or very close to the bed. In this report, bed load is considered to consist of particles in transit from the bed to an elevation equal to the top of the bed-load sampler nozzle (usually within 0.25 ft of the streambed).

Bed-load discharge (tons per day) is the quantity of sediment moving as bed load, reported as dry weight, that passes a cross section in a given time.

Suspended sediment is the sediment that is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

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 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L). The entire sample is used for the analysis.

Mean concentration of suspended sediment is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour day.

Suspended-sediment discharge (tons/day) is the quantity of sediment moving in suspension, reported as dry weight, 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.

Suspended-sediment load is a term that refers to material in suspension. 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.

Seven-day 10-year low flow (7Q10, $7Q_{10}$) is the minimum flow averaged over 7 consecutive days that is expected to occur on average, once in any 10-year period. The 7Q10 has a 10-percent chance of occurring in any given year.

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. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Solute is any substance that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current. It is expressed in microsiemens per centimeter at 25 °C. Specific conductance is related to the type and concentration of ions in solution 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.

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.

Surface area of a lake or impoundment is that area encompassed by the boundary of the lake or impoundment as shown on USGS topographic maps, or on other available maps or photographs. The computed surface areas reflect the water levels of the lakes or impoundments at the times when the information for the maps or photographs was obtained.

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of undissolved material in a water-sediment mixture. It is associated with 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-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 analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total recoverable concentrations of the constituent.

Suspended, total is the total amount of a given constituent in the part of a representative suspended-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 analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total concentrations of the constituent.

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.

Tons per acre-foot is the dry mass of dissolved solids in 1 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 the rate representing a mass of 1 ton of a constituent in streamflow passing a cross section in 1 day. It is equivalent to 2,000 pounds per day, or 0.9072 metric tons per day.

Total is the total amount of a given constituent in a representative suspended-sediment 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 suspended-sediment mixture and that the analytical method determined all of the constituent in the sample.)

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

Total recoverable is the amount of a given constituent that is in solution after a representative suspended-sediment 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, equivalent digestion procedures are required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Turbidity is a measurement of the collective optical properties of a water sample that cause light to be scattered and absorbed rather than transmitted in straight lines; the higher the intensity of scattered light, the higher the turbidity. Turbidity is expressed in nephelometric turbidity units (NTU) or Formazin turbidity units (FTU) depending on the method and equipment used.

Volatile organic compounds (VOC's) 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 VOC's are manmade 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 (U.S. Environmental Protection Agency, 1996).

Water level is the water-surface elevation or stage of the free surface of a body of water above or below any datum (see "Gage height"), or the surface of water standing in a well, usually indicative of the position of the water table or other potentiometric surface.

Water table is the surface of a ground-water body at which the water is at atmospheric pressure.

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

Water year in U.S. Geological Survey 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, 1999, is called the "1999 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.

Well is an excavation (pit, hole, tunnel), generally cylindrical in form and often walled in, drilled, dug, driven, bored, or jetted into the ground to such a depth as to penetrate water-yielding geologic material and allow the water to flow or to be pumped to the surface.

Wet weight refers to the weight of animal tissue or other substance including its contained water.

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

PUBLICATIONS ON 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 pages.

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 pages.

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 pages.

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

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 pages.

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

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 pages.

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 pages.

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 pages.

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

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

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

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

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

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

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 pages.

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

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 pages.

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 pages.

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

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

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

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

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

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 pages.

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

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

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

Section B. Ground-Water Techniques

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

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 pages.

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 pages.

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

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 pages.

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 pages.

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 pages.

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 pages.

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

Section C. Sedimentation and Erosion Techniques

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

3-C2. *Field methods for measurement of fluvial sediment*, by H.P. Guy and V.W. Norman: USGS–TWRI book 3, chap. C2. 1970. 59 pages.

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

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 pages.

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

Section B. Surface Water

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

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

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

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 pages.

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 pages.

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 pages.

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 pages.

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 pages.

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 pages.

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 pages.

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 pages.

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 pages.

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 pages.

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 pages.

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 pages.

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 pages.

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. 1996. 125 pages.

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 pages.

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 pages.

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 pages.

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 pages.

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

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 pages.

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 pages.

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 pages.

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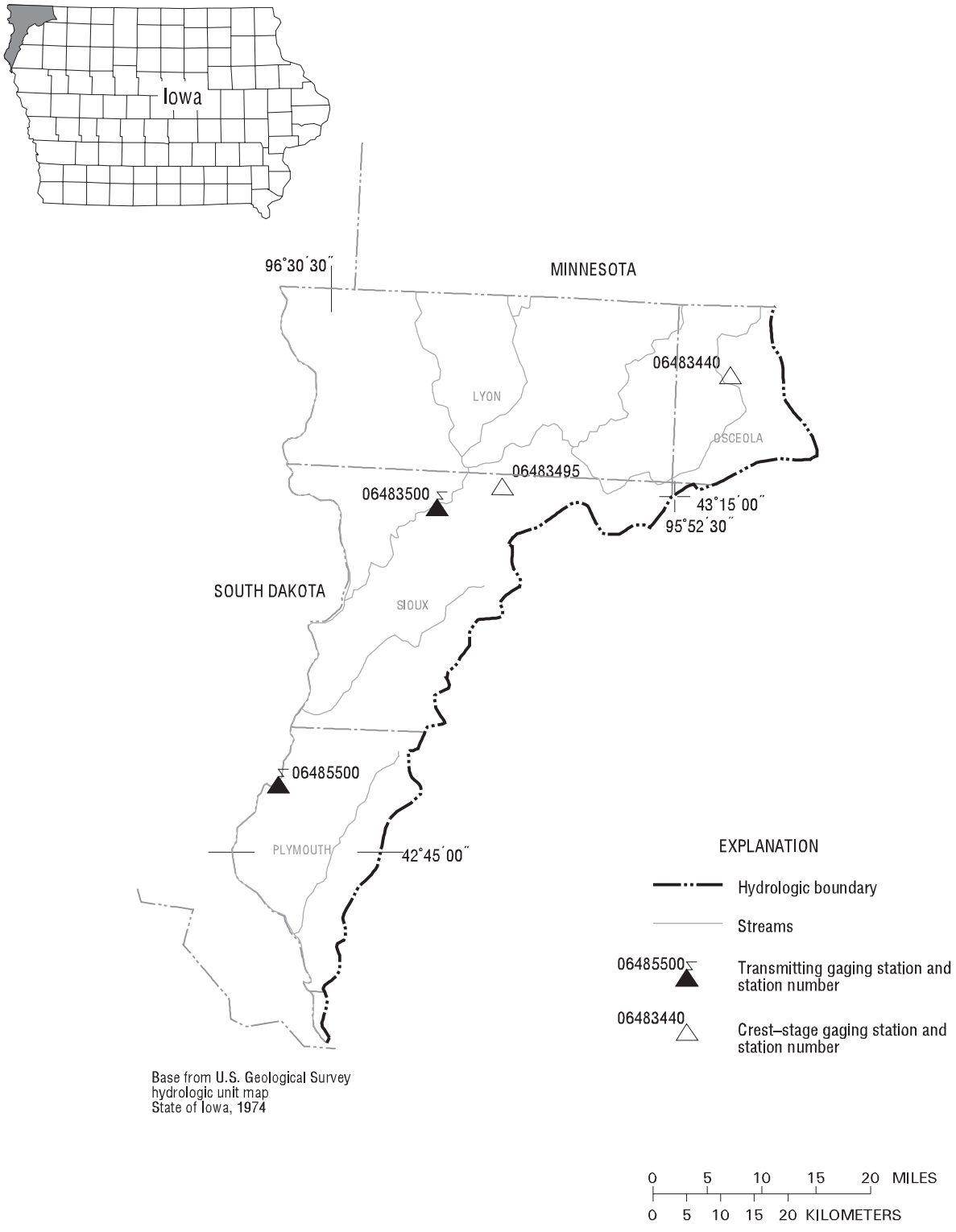
Iowa
96°30′30″
MINNESOTA
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LYON
OSCEOLA
06483495
06483500
43°15′00″
95°52′30″
SOUTH DAKOTA
SIOUX
06485500
PLYMOUTH
42°45′00″
EXPLANATION
Hydrologic boundary
Streams
06485500
Transmitting gaging station and station number
06483440
Crest–stage gaging station and station number
Base from U.S. Geological Survey
hydrologic unit map
State of Iowa, 1974
0 5 10 15 20 MILES
0 5 10 15 20 KILOMETERS

Gaging Stations

Crest Stage Gaging Stations

06483500 ROCK RIVER NEAR ROCK VALLEY, IA

LOCATION.--Lat 43°12'52", long 96°17'39", in $SW^1/_4$ $SW^1/_4$ sec.16, T.97 N., R.46 W., Sioux County, Hydrologic Unit 10170204, on left bank 15 ft upstream from bridge on county highway K30, 0.3 mi north of Rock Valley, and at mile 19.1.

DRAINAGE AREA.--1,592 mi^2.

PERIOD OF RECORD.--June 1948 to current year.

REVISED RECORDS.--WSP 1439: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,222.54 ft above sea level. Prior to Aug. 13, 1952, nonrecording gage with supplementary water-stage recorder operating above 6.2 ft gage height. June 4, 1949 to Aug. 12, 1952 and Aug. 13, 1952 to May 4, 1976, water-stage recorder, at site 3.2 mi downstream at datum 10.73 ft lower.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1897 reached a stage of 17.0 ft, former site and datum, discharge not determined, from information by State Highway Commission.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	70	75	80	e65	e28	214	85	200	493	233	99	66
2	76	74	80	e65	e30	184	83	177	444	215	91	65
3	80	76	80	e60	e32	161	82	163	407	197	84	64
4	84	75	79	e46	e34	148	79	151	405	190	78	61
5	84	73	82	e50	e31	138	79	143	505	209	88	59
6	86	73	e80	e50	e34	128	76	143	630	224	212	55
7	89	76	73	e48	e34	121	83	147	548	197	444	52
8	86	77	85	e48	e34	121	91	139	463	174	391	50
9	84	75	84	e50	e38	120	90	124	398	164	335	47
10	75	75	e70	e50	e40	121	93	249	354	316	277	46
11	72	74	e65	e48	e38	120	99	e220	320	314	231	45
12	71	77	e75	e46	e42	122	100	e180	293	366	184	43
13	70	76	e70	e40	e44	119	109	e190	300	428	154	42
14	70	75	e75	e44	e42	117	116	e170	318	421	132	40
15	71	75	e80	e46	e46	114	111	e120	324	355	115	39
16	71	75	e50	e40	e46	107	122	e140	327	296	107	38
17	71	74	e60	e42	e48	105	130	208	310	254	109	36
18	71	75	e60	e44	e48	108	125	790	290	222	99	35
19	75	75	e65	e40	e44	111	138	1550	268	207	96	35
20	76	76	e60	e36	e46	108	192	2670	250	194	97	35
21	76	80	e50	e34	e55	105	212	1530	232	172	93	35
22	74	80	e40	e36	e65	103	214	1070	213	155	93	43
23	75	82	e40	e32	e95	104	192	841	197	142	89	47
24	74	81	e44	e30	e120	109	173	678	231	132	84	47
25	72	78	e46	e31	e170	106	154	571	332	127	80	45
26	72	82	e48	e29	e230	104	141	498	459	146	77	42
27	73	82	e50	e28	e260	101	148	486	377	124	73	40
28	73	81	e55	e29	283	97	172	475	323	132	71	39
29	74	78	e60	e29	256	96	180	535	283	128	70	36
30	75	77	e65	e28	---	92	201	560	257	118	68	34
31	76	---	e65	e27	---	88	---	535	---	107	66	---
TOTAL	2346	2302	2016	1291	2313	3692	3870	15653	10551	6659	4287	1361
MEAN	75.7	76.7	65.0	41.6	79.8	119	129	505	352	215	138	45.4
MAX	89	82	85	65	283	214	214	2670	630	428	444	66
MIN	70	73	40	27	28	88	76	120	197	107	66	34
AC-FT	4650	4570	4000	2560	4590	7320	7680	31050	20930	13210	8500	2700
CFSM	.05	.05	.04	.03	.05	.07	.08	.32	.22	.13	.09	.03
IN.	.05	.05	.05	.03	.05	.09	.09	.37	.25	.16	.10	.03

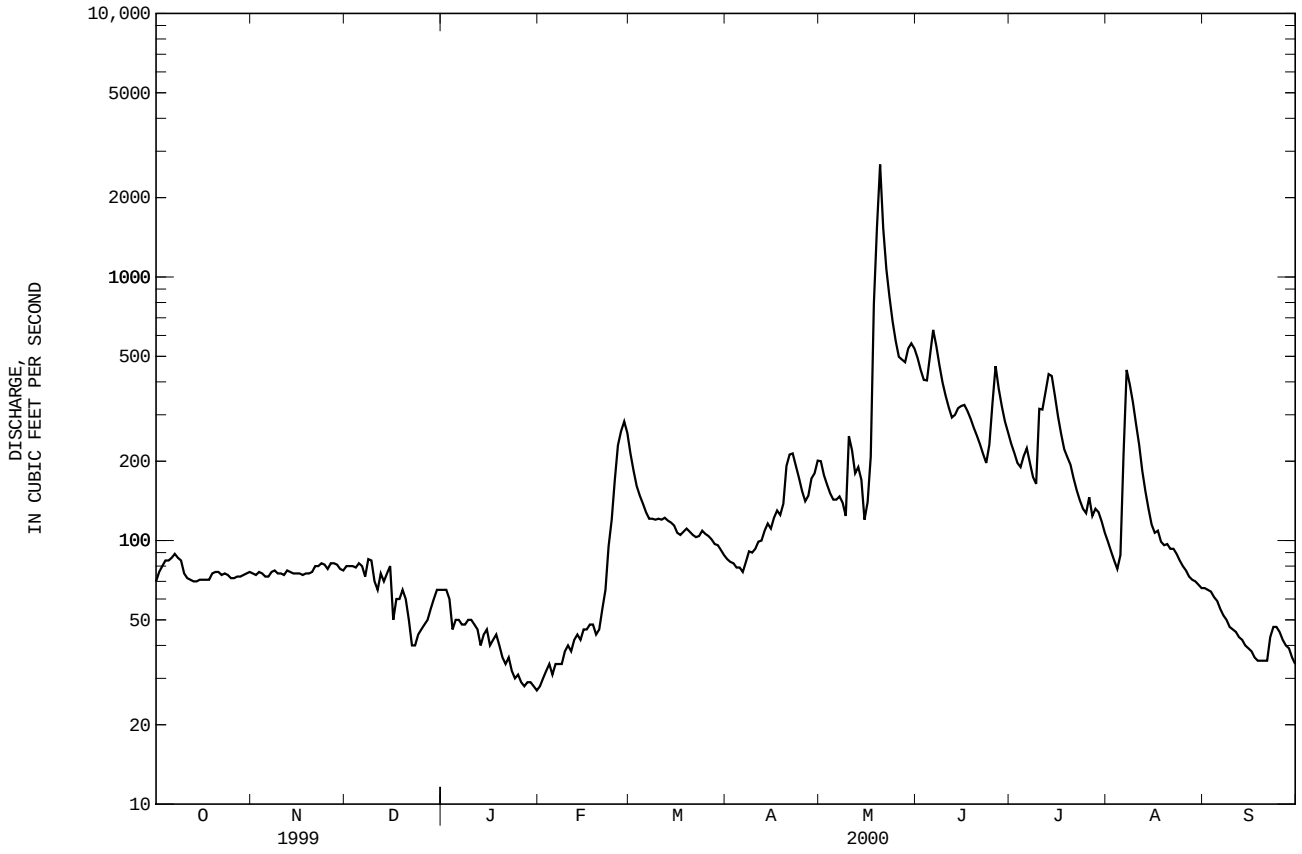
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 2000, BY WATER YEAR (WY)

MEAN	237	264	145	81.4	225	1024	1273	693	941	602	269	236
MAX	1232	2039	676	434	1059	4646	6507	3728	6495	9088	2251	2135
(WY)	1993	1980	1983	1996	1966	1997	1969	1993	1993	1993	1993	1986
MIN	2.39	9.70	3.22	.037	.30	35.1	35.9	44.4	46.3	21.9	6.79	3.26
(WY)	1959	1959	1959	1977	1959	1959	1959	1968	1964	1976	1976	1955

06483500 ROCK RIVER NEAR ROCK VALLEY, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1949 - 2000	
ANNUAL TOTAL	214415		56341			
ANNUAL MEAN	587		154		499	
HIGHEST ANNUAL MEAN					2656	1993
LOWEST ANNUAL MEAN					31.0	1968
HIGHEST DAILY MEAN	4430	Apr 10	2670	May 20	35400	Apr 7 1969
LOWEST DAILY MEAN	40	Dec 22	27	Jan 31	.00	Feb 20 1959a
ANNUAL SEVEN-DAY MINIMUM	45	Dec 21	28	Jan 26	.00	Feb 27 1959
INSTANTANEOUS PEAK FLOW			2900	May 20	40400	Apr 7 1969
INSTANTANEOUS PEAK STAGE			8.31	May 20	17.32	Apr 7 1969
ANNUAL RUNOFF (AC-FT)	425300		111800		361800	
ANNUAL RUNOFF (CFSM)	.37		.097		.31	
ANNUAL RUNOFF (INCHES)	5.01		1.32		4.26	
10 PERCENT EXCEEDS	1310		323		1140	
50 PERCENT EXCEEDS	340		84		134	
90 PERCENT EXCEEDS	72		40		16	

a Many days during winter periods in 1959 and 1977.
e Estimated



06485500 BIG SIOUX RIVER AT AKRON, IA

LOCATION.--Lat 42°50'14", long 96°33'41", in $SW^1/_4$ $SE^1/_4$ $SW^1/_4$ sec.30, T.93 N., R.48 W., Plymouth County, Hydrologic Unit 10170203, on left bank 15 ft downstream from Iowa Highway 403 bridge, 0.5 mi northwest of Akron, and 2.9 mi upstream from Union Creek.

DRAINAGE AREA.--8,424 mi^2, of which 1,487 mi^2 usually is noncontributing (213 mi^2 of the noncontributing area contributed runoff in the 1994-2000 water years).

PERIOD OF RECORD.--October 1928 to current year.

REVISED RECORDS.--WSP 1309: 1929(M), 1931-33(M), 1936(M), 1938(M), 1940(M). WSP 1389: Drainage area. WDR SD-84-1: Drainage area. WDR SD-94-1 only: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,118.90 ft above sea level. Prior to Dec. 3, 1934, nonrecording gage at bridge 0.5 mi downstream at same datum. From Dec. 3, 1934, to Oct. 31, 1985, water-stage recorder at site 0.6 mi downstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. U.S. Army Corps of Engineers satellite data-collection platform at station. Water temperature and specific conductance measured during the year are compiled in the Miscellaneous Temperature Measurements and Field Determinations section.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	537	456	414	e319	e300	682	521	677	1880	966	452	256
2	535	441	415	e308	e305	696	508	675	1800	918	432	254
3	555	441	414	e295	e310	686	497	645	1720	903	417	246
4	550	441	414	e290	e315	675	478	600	1900	863	394	235
5	548	437	413	e285	e312	676	478	548	2060	829	390	226
6	550	432	406	e286	e315	651	458	511	2200	810	388	220
7	558	434	397	e295	e320	610	444	485	2190	836	725	303
8	571	435	401	e300	e320	587	451	462	2040	772	1430	268
9	571	433	403	e297	e330	578	476	454	1850	697	1160	232
10	e545	428	397	e292	e335	561	509	942	1710	676	1110	217
11	e520	423	402	e285	e330	571	488	1310	1570	743	910	211
12	514	425	398	e290	e330	577	488	1320	1430	1030	719	194
13	520	421	356	e296	e325	578	496	1280	1570	1250	612	190
14	525	412	e335	e310	e320	587	505	1480	2250	1410	538	186
15	537	397	e322	e308	e330	597	514	1350	1480	1520	481	179
16	511	412	e310	e301	e330	575	542	1240	1410	1280	434	177
17	493	406	e306	e296	e330	565	576	1190	1280	1130	447	174
18	492	416	e298	e300	e325	563	620	2240	1200	1050	413	173
19	484	417	e297	e295	e325	564	654	2210	1130	961	379	170
20	483	412	e295	e290	e325	565	664	4220	1070	887	363	173
21	489	418	e297	e285	e350	561	735	5110	997	834	364	174
22	488	416	e299	e282	e400	550	750	4210	928	747	375	184
23	475	429	e303	e282	e500	546	722	3660	875	682	377	191
24	470	428	e308	e282	e600	560	684	3130	878	627	349	194
25	469	424	e316	e284	667	550	655	2650	1040	595	325	210
26	463	424	e322	e284	724	569	619	2310	1410	573	314	219
27	460	417	e330	e284	846	548	590	2080	1540	556	300	202
28	458	414	e331	e287	793	531	577	1950	1370	531	297	190
29	456	412	e330	e291	730	532	596	1900	1150	505	289	187
30	459	413	e327	e293	---	532	659	1870	1030	490	280	182
31	454	---	e323	e296	---	527	---	1870	---	481	272	---
TOTAL	15740	12714	10879	9088	12042	18150	16954	54579	44958	26152	15736	6217
MEAN	508	424	351	293	415	585	565	1761	1499	844	508	207
MAX	571	456	415	319	846	696	750	5110	2250	1520	1430	303
MIN	454	397	295	282	300	527	444	454	875	481	272	170
AC-FT	31220	25220	21580	18030	23890	36000	33630	108300	89170	51870	31210	12330

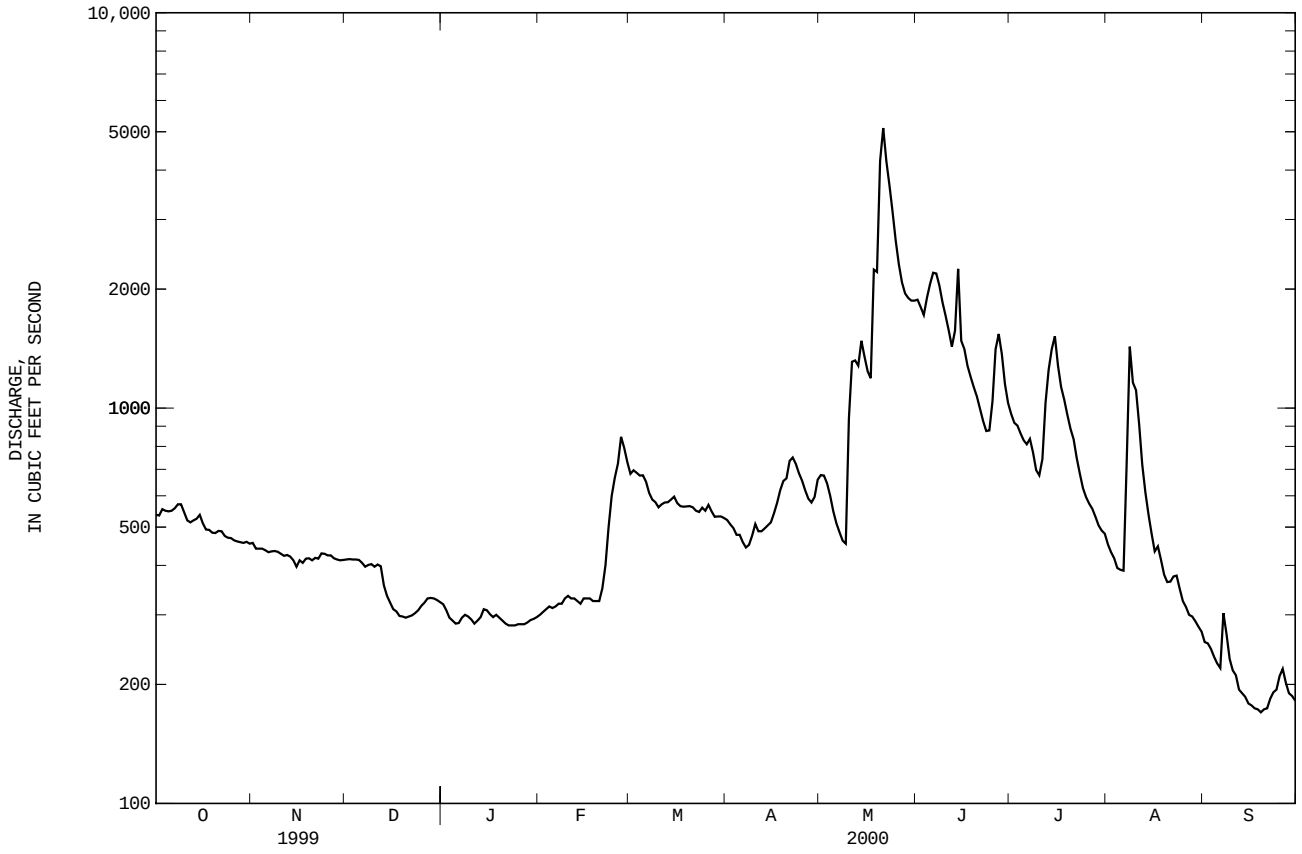
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2000, BY WATER YEAR (WY)

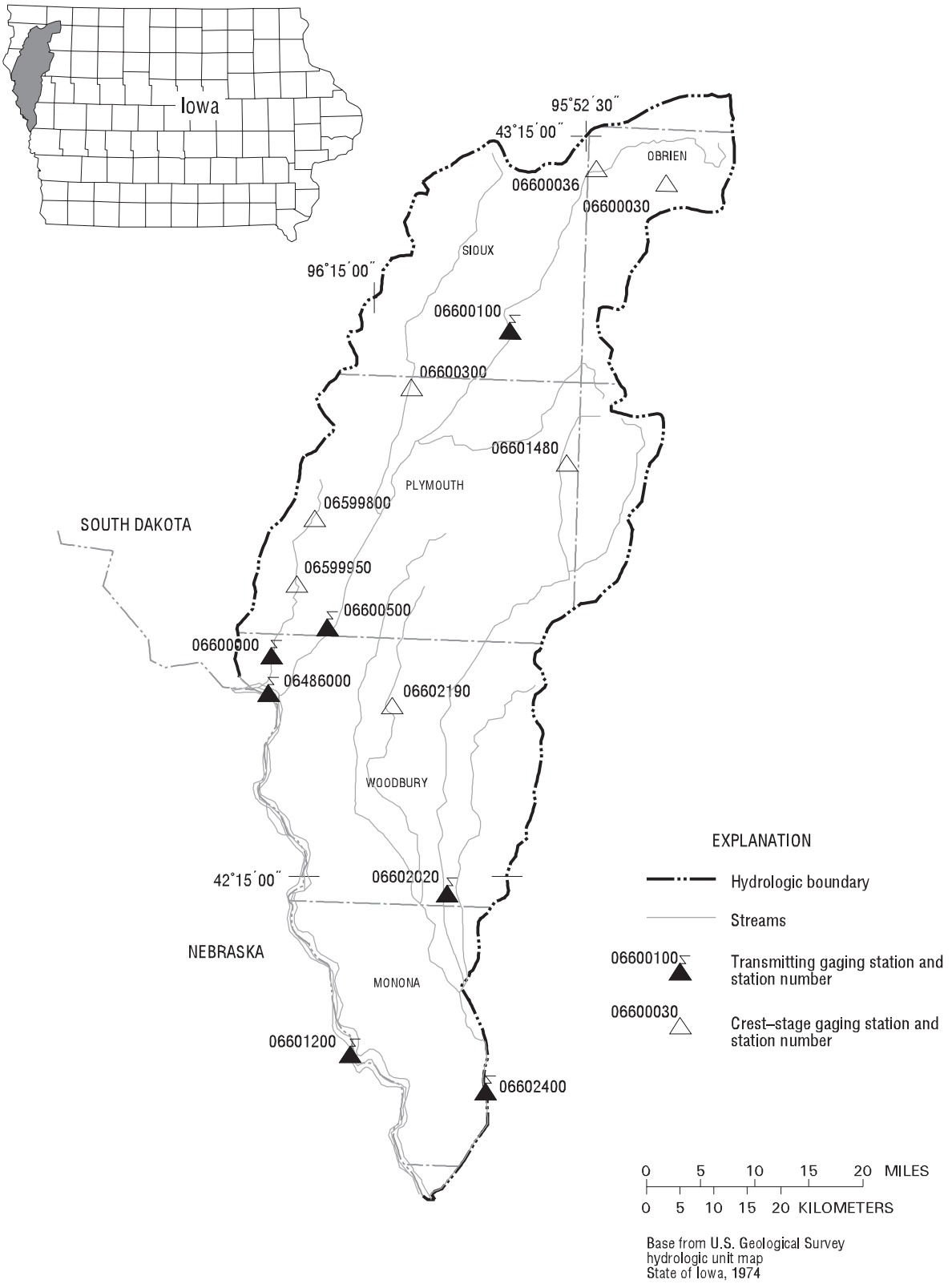
MEAN	535	527	353	211	517	2394	3256	1792	2148	1481	759	673
MAX	4039	3022	1987	920	2399	8866	20690	9499	15820	21740	6200	7313
(WY)	1987	1980	1999	1996	1966	1983	1969	1993	1984	1993	1993	1986
MIN	32.9	47.9	32.1	6.68	12.1	124	139	73.3	100	50.7	45.2	36.4
(WY)	1959	1959	1977	1977	1936	1931	1931	1934	1933	1931	1976	1976

06485500 BIG SIOUX RIVER AT AKRON, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1929 - 2000	
ANNUAL TOTAL	705799		243209			
ANNUAL MEAN	1934		665		1221a	
HIGHEST ANNUAL MEAN					6271	1993
LOWEST ANNUAL MEAN					120	1931
HIGHEST DAILY MEAN	10300	Apr 13	5110	May 21	77500	Apr 9 1969
LOWEST DAILY MEAN	295	Dec 20	170	Sep 19	4.0	Jan 17 1977
ANNUAL SEVEN-DAY MINIMUM	299	Dec 17	174	Sep 15	4.4	Jan 15 1977
INSTANTANEOUS PEAK FLOW			5280	May 21	80800	Apr 9 1969b
INSTANTANEOUS PEAK STAGE			13.85	May 21	23.05	May 10 1993c
ANNUAL RUNOFF (AC-FT)	1400000		482400		884600	
10 PERCENT EXCEEDS	4150		1380		2900	
50 PERCENT EXCEEDS	1160		480		396	
90 PERCENT EXCEEDS	414		284		70	

a Median of annual mean discharges, 810 ft^3/s.
b Gage height, 22.99 ft.
c From floodmark; discharge, 66,700 ft^3/s.
e Estimated.




Iowa
95°52´30˝
43°15´00˝
OBRIEN
06600036
06600030
SIOUX
96°15´00˝
06600100
06600300
06601480
PLYMOUTH
06599800
SOUTH DAKOTA
06599950
06600500
06600000
06486000
06602190
WOODBURY
42°15´00˝
06602020
NEBRASKA
MONONA
06601200
06602400
EXPLANATION
Hydrologic boundary
Streams
06600100 Transmitting gaging station and station number
06600030 Crest–stage gaging station and station number
0 5 10 15 20 MILES
0 5 10 15 20 KILOMETERS
Base from U.S. Geological Survey
hydrologic unit map
State of Iowa, 1974

Gaging Stations

Crest Stage Gaging Stations

06486000 MISSOURI RIVER AT SIOUX CITY, IA

LOCATION.--Lat. 42°29'09", long 96°24'49", in NW$^1/_4$ SE$^1/_4$ sec.16, T.29 N., R.9 E., sixth prinicipal meridian, Dakota County, Nebraska, Hydrologic Unit 10230001, on right bank on upstream side of bridge on U.S. Highway 20 and 77 at South Sioux City, Nebraska, 1.9 mi downstream from Big Sioux River, and at mile 732.2.

DRAINAGE.--314,600 mi^2, approximately. The 3,959 mi^2 in Great Divide basin are not included.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1897 to current year in reports of the U.S. Geological Survey. Prior to October 1928 and October 1931 to September 1938, monthly discharges only, published in WSP 1310. January 1879 to December 1890, monthly discharges only, in House Document 238, 73rd Congress, 2d session, Missouri River. Gage height records collected in this vicinity September 1878 to December 1899 are contained in reports of Missouri River Commission and since July 1889 are contained in reports of U.S. Weather Bureau.

REVISED RECORDS.--WSP 716: 1929-30. WSP 876: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,056.98 ft above sea level. Sept. 2, 1878 to Dec. 31, 1905, nonrecording gages at various locations within 1.7 mi of present site and at various datums. Jan. 1, 1906 to Feb. 14, 1935, nonrecording gage, and Feb. 15, 1935 to Sept. 30, 1969, water-stage recorder at site 227 ft downstream at datum 19.98 ft higher, and Oct. 1, 1969 to Sept. 30, 1970 at datum 20.00 ft higher. Oct. 1, 1970 to Jan. 30, 1981, water-stage recorder at site 227 ft downstream at present datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated by upstream main-stem reservoirs. Fort Randall Dam was completed in July 1952, with storage beginning in December 1952. Gavins Point Dam was completed in July 1955, with storage beginning in December 1955. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 441,000 ft^3/s Apr. 14, 1952, gage height, 24.28 ft, datum then in use; minimum, 2,500 ft^3/s Dec. 29, 1941; minimum gage height, 7.02 ft Jan. 19, 1996.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48100	46400	46200	23900	e19400	18400	29500	31900	36400	34800	33000	34400
2	48600	45700	46700	23800	e19400	18600	29100	31400	35800	34700	32700	34800
3	48100	45100	46400	23700	e19000	18500	29300	31300	35300	34500	31700	34600
4	47900	44500	44600	22800	e18500	18500	29400	31300	35600	34400	31000	34200
5	47600	44500	41400	22000	e18000	18300	30000	31000	36000	34500	31500	34000
6	47300	44900	38100	24300	18500	18600	30300	31000	35700	34200	31600	34100
7	47300	45600	34500	23300	18000	18800	31000	30900	35800	33600	30900	34300
8	47600	46000	31400	23500	17900	18900	31700	31000	35900	33800	31800	34600
9	47000	45600	28800	23300	18000	19200	31300	30900	35600	33500	32800	34900
10	46600	45200	26000	23200	18000	18500	31400	30600	36000	33500	32200	34700
11	46300	45300	24700	22700	17700	18200	31600	33100	36600	33500	32100	34700
12	46100	45600	24800	22100	17700	18300	31100	36700	36500	35600	32000	34800
13	46300	46100	24800	23200	17600	18500	30800	38500	37100	33800	31900	34700
14	46600	46500	24900	22900	17300	18500	30600	38000	39600	33700	31500	34700
15	46900	47000	25700	24500	17700	18600	30700	38200	38000	33800	31600	34600
16	46700	47000	24700	23300	17900	18400	31600	37700	37000	34300	31500	34400
17	46500	46900	24200	21500	17800	17300	31000	36600	36600	34400	32200	34500
18	46400	47000	24300	25100	17700	19100	30000	41000	36400	34000	32100	34500
19	46700	47000	24500	24600	17700	22200	30400	39400	36100	34500	31800	35200
20	46700	46400	24100	22500	17700	25000	30600	37700	36700	34600	32300	35300
21	46800	45800	22500	23400	17700	28200	30600	39200	36400	34400	31900	34900
22	46800	45700	23500	e24200	17900	30300	30300	39500	35700	34000	32400	35400
23	46900	45900	23900	e23700	18500	30000	30400	38900	35600	34500	32300	35300
24	46800	45500	e24500	e23400	19100	30000	30900	38800	36400	34100	32000	34800
25	46600	45100	e25000	e22600	18900	30000	31400	38400	37800	34600	31900	34600
26	46500	45000	e24400	e21800	19100	30000	31800	37900	38600	34800	31700	34100
27	46900	45000	e23800	e21300	19200	30200	32300	38000	35900	33900	31600	33800
28	47200	45100	24300	e20500	19000	30100	32000	37000	36100	33800	31700	33900
29	47200	45100	24500	e21000	19300	30300	31600	36400	35500	33800	31900	33900
30	46900	45600	24500	e20300	---	30400	31600	36800	35200	33500	32000	34100
31	46400	---	24300	e19800	---	30300	---	36500	---	33400	32700	---
TOTAL	1456300	1372100	896000	708200	530200	710200	924300	1105600	1091900	1058500	990300	1036800
MEAN	46980	45740	28900	22850	18280	22910	30810	35660	36400	34150	31950	34560
MAX	48600	47000	46700	25100	19400	30400	32300	41000	39600	35600	33000	35400
MIN	46100	44500	22500	19800	17300	17300	29100	30600	35200	33400	30900	33800
AC-FT	2889000	2722000	1777000	1405000	1052000	1409000	1833000	2193000	2166000	2100000	1964000	2056000
CFSM	.15	.15	.09	.07	.06	.07	.10	.11	.12	.11	.10	.11
IN.	.17	.16	.11	.08	.06	.08	.11	.13	.13	.13	.12	.12

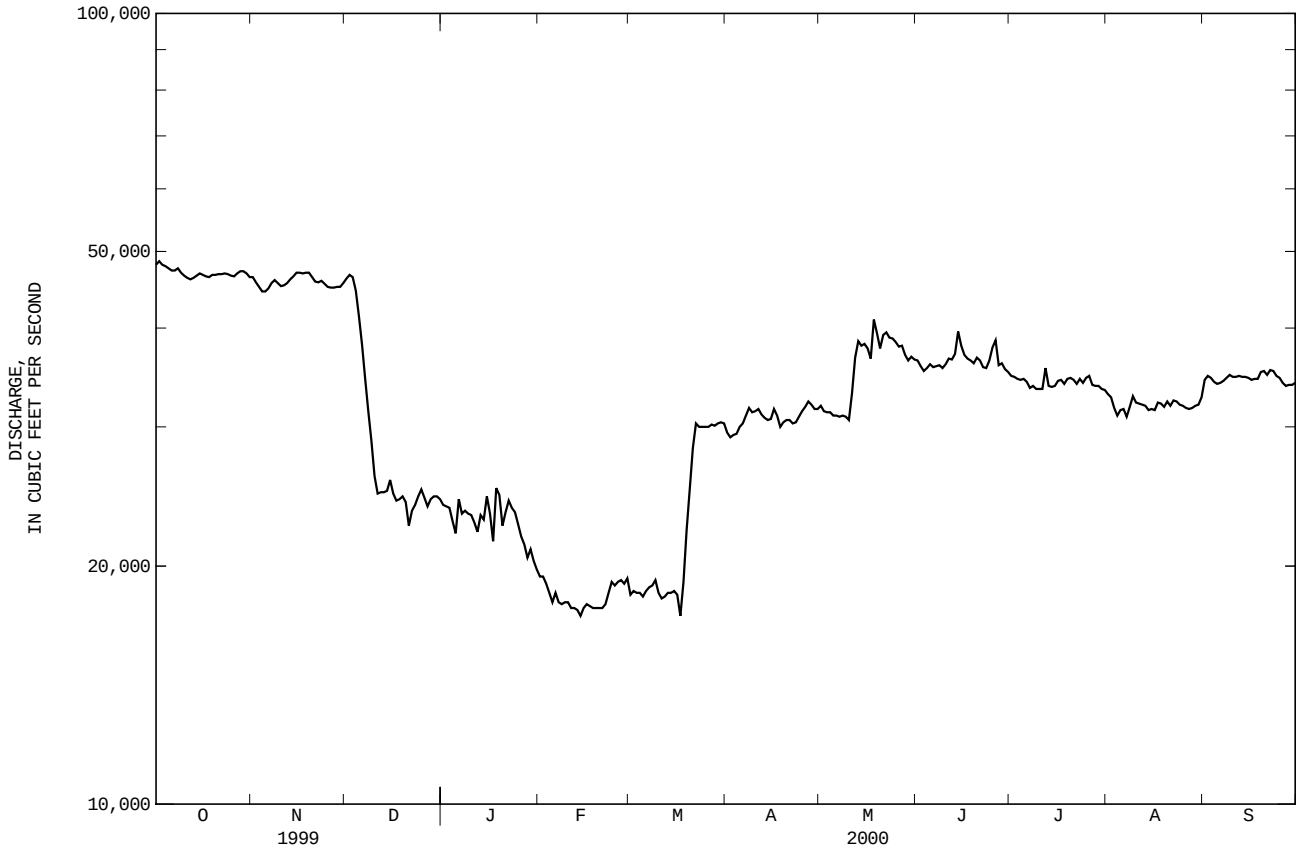
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 2000, BY WATER YEAR (WY)

MEAN	36340	31400	19060	16180	17360	23420	33340	34040	35850	36440	36790	36990
MAX	69300	71600	39880	27720	31120	47020	88040	78720	66400	65550	65360	66400
(WY)	1998	1998	1998	1987	1997	1997	1997	1997	1997	1997	1997	1997
MIN	14350	6951	8271	7316	6293	9135	17450	23820	23270	26890	24270	25790
(WY)	1962	1962	1962	1964	1963	1957	1957	1962	1960	1958	1993	1962

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1953 - 2000	
ANNUAL TOTAL	14231000		11880400			
ANNUAL MEAN	38990		32460		29810	
HIGHEST ANNUAL MEAN					55890	1997
LOWEST ANNUAL MEAN					19770	1957
HIGHEST DAILY MEAN	54500	Jul 22	48600	Oct 2	105000	Jun 25 1953
LOWEST DAILY MEAN	22500	Dec 21	17300	Feb 14	3000	Dec 11 1961
ANNUAL SEVEN-DAY MINIMUM	23900	Dec 17	17700	Feb 11	5430	Feb 22 1963
INSTANTANEOUS PEAK FLOW			48900	Oct 2	101000	Apr 3 1960
INSTANTANEOUS PEAK STAGE			18.82	Oct 2	30.65	Feb 19 1971
ANNUAL RUNOFF (AC-FT)	28230000		23560000		21600000	
ANNUAL RUNOFF (CFSM)	.12		.10		.095	
ANNUAL RUNOFF (INCHES)	1.68		1.40		1.29	
10 PERCENT EXCEEDS	48100		46400		46700	
50 PERCENT EXCEEDS	41900		32700		30300	
90 PERCENT EXCEEDS	25600		18900		11700	

a Post regulation
e Estimated



06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1971 to current year. Daily sediment loads October 1954 to September 1971 in reports of U.S. Army Corps of Engineers.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1972 to September 1976, November 1977 to September 1981, October 1991 to current year.
WATER TEMPERATURES: October 1971 to September 1976, November 1977 to September 1981, October 1991 to current year.
SUSPENDED-SEDIMENT DISCHARGE: October 1971 to September 1976, 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, 985 microsiemens Apr. 19, 1999; minimum daily, 410 microsiemens Mar. 22, 1978.
WATER TEMPERATURES: Maximum daily, 28.0°C July 30, 1976, Aug. 7, 1979, and July 28, 1997; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,420 mg/L May 18, 2000; minimum daily mean, 42 mg/L Dec. 29, 1975.
SEDIMENT LOADS: Maximum daily, 370,000 tons July 17, 1996; minimum daily, 2,150 tons Nov. 20, 1991.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 859 microsiemens June 5; minimum daily, 719 microsiemens Jan. 3.
WATER TEMPERATURES: Maximum daily, 27.5°C July 14; minimum daily, 0.0°C Feb. 1, 16.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,420 mg/L May 18; minimum daily mean, 104 mg/L Oct. 15.
SEDIMENT LOADS: Maximum daily, 272,000 tons May 18; minimum daily, 6,170 tons Mar. 6.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

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											
04...	1145	3	--	0	17	85	96	98	99	100	--
NOV											
01...	1120	3	--	0	11	68	86	94	97	99	100
DEC											
02...	1048	3	--	0	12	80	94	98	99	100	--
JAN											
10...	1220	3	--	0	12	73	96	99	99	100	--
FEB											
01...	1335	3	--	0	10	84	99	99	100	--	--
28...	1422	3	--	0	12	92	100	--	--	--	--
MAR											
06...	1230	3	--	0	14	91	99	100	--	--	--
APR											
03...	1230	3	--	0	12	87	99	100	--	--	--
MAY											
01...	1315	3	--	0	6	67	94	97	98	99	100
JUN											
12...	1400	3	--	0	7	60	93	98	99	100	--
JUL											
07...	1210	3	--	0	10	73	95	97	99	100	--
AUG											
03...	1210	3	0	1	18	82	97	99	99	100	--
SEP											
05...	1230	3	--	0	11	65	83	90	94	98	100

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued

SPECIFIC CONDUCTANCE MICROSIEMENS/CM AT 25 DEG C, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	830	---	---	807	---	---	816	817	---	---	813
2	---	---	816	---	---	---	---	---	---	---	---	---
3	---	---	---	719	---	---	825	---	---	833	834	---
4	815	---	---	---	---	---	---	814	---	---	---	---
5	---	841	---	---	---	---	---	---	859	---	---	816
6	810	---	817	---	---	774	---	---	---	---	---	---
7	---	---	---	---	787	---	800	---	---	837	822	---
8	---	844	---	---	---	---	---	811	---	---	---	810
9	---	---	830	---	---	---	---	---	820	---	---	---
10	---	841	---	775	---	---	817	---	---	843	816	---
11	---	---	---	---	---	---	---	---	---	---	---	808
12	820	---	---	---	---	---	---	810	---	---	---	---
13	---	---	836	---	---	805	---	---	---	---	---	---
14	---	---	---	---	---	786	825	---	---	835	805	---
15	823	841	---	---	---	---	---	808	---	---	---	811
16	---	---	---	---	805	---	---	---	---	---	---	---
17	---	---	---	---	---	---	814	---	---	836	---	---
18	823	---	---	---	---	---	---	794	---	---	817	814
19	---	825	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	799	---	---	---	---	---	---
21	825	---	---	---	---	---	809	---	---	846	822	---
22	---	813	---	---	792	---	---	806	---	---	---	804
23	---	---	---	---	---	---	---	---	820	---	---	---
24	---	832	---	---	---	792	815	---	---	848	812	---
25	---	---	---	---	---	---	---	805	---	---	---	816
26	821	---	---	---	---	---	---	---	825	---	---	---
27	---	---	773	---	---	820	---	---	---	838	---	---
28	---	---	743	---	790	---	821	---	---	---	806	813
29	826	820	---	---	---	---	---	---	831	---	---	---
30	---	---	---	---	---	---	---	819	---	---	---	---
31	---	---	---	---	---	809	---	---	---	837	---	---

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY INSTANTANEOUS VALUES

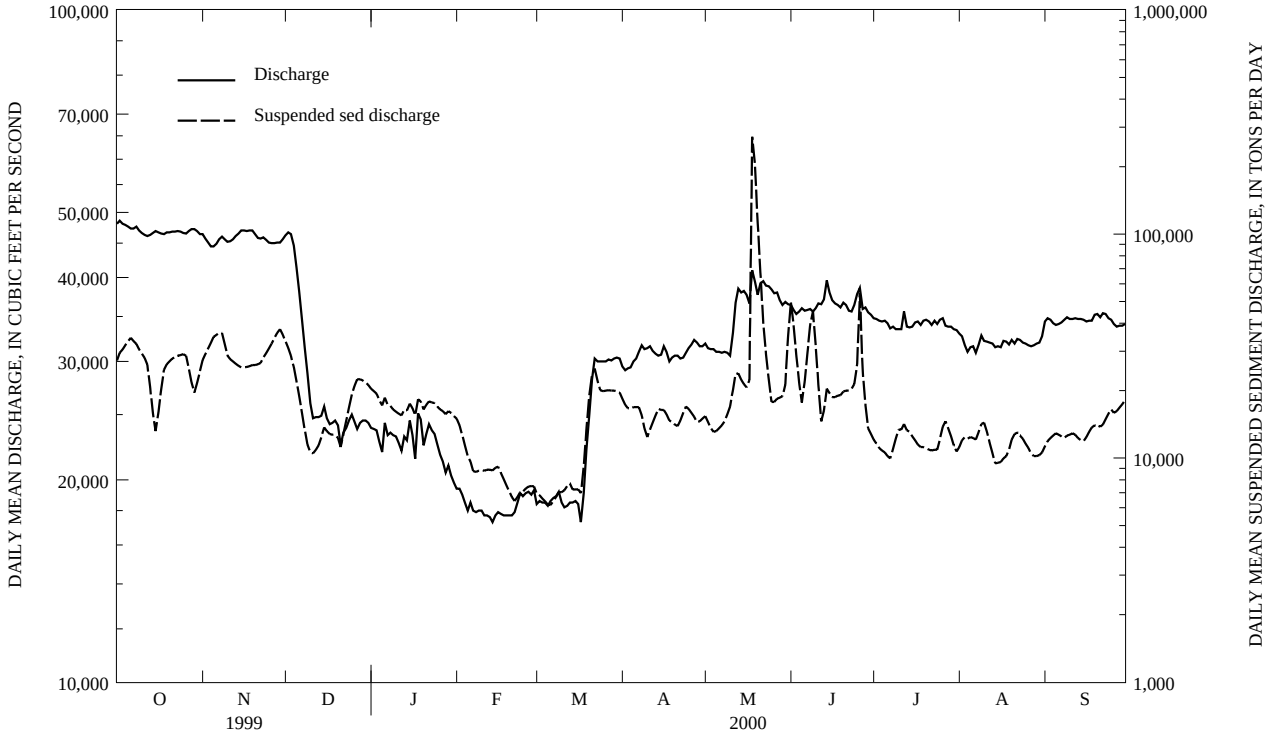
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	11.0	---	---	.0	---	---	13.4	17.7	---	---	22.1
2	---	---	6.5	---	---	---	---	---	---	---	---	---
3	---	---	---	1.8	---	---	8.0	---	---	24.5	25.4	---
4	10.5	---	---	---	---	---	---	15.9	---	---	---	---
5	---	9.5	---	---	---	---	---	---	17.5	---	---	20.8
6	14.0	---	4.0	---	---	11.6	---	---	---	---	---	---
7	---	---	---	---	1.7	---	7.7	---	---	25.8	27.0	---
8	---	13.5	---	---	---	---	---	18.4	---	---	---	22.0
9	---	---	6.0	---	---	---	---	---	23.0	---	---	---
10	---	10.0	---	2.0	---	---	8.5	---	---	27.4	26.0	---
11	---	---	---	---	---	---	---	---	---	---	---	22.6
12	17.0	---	---	---	---	---	---	18.0	---	---	---	---
13	---	---	3.0	---	---	4.9	---	---	---	---	---	---
14	---	---	---	---	---	13.0	12.5	---	---	27.5	27.4	---
15	14.5	9.0	---	---	---	---	---	15.8	---	---	---	19.8
16	---	---	---	---	.0	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	25.6	---	---
18	11.5	---	---	---	---	---	---	14.6	---	---	23.5	20.6
19	---	8.0	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	5.1	---	---	---	---	---	---
21	11.0	---	---	---	---	---	8.6	---	---	22.5	24.4	---
22	---	7.5	---	---	5.2	---	---	19.7	---	---	---	16.0
23	---	---	---	---	---	---	---	---	22.0	---	---	---
24	---	3.5	---	---	---	7.0	13.6	---	---	25.0	24.0	---
25	---	---	---	---	---	---	---	16.1	---	---	---	12.1
26	11.5	---	---	---	---	---	---	---	20.2	---	---	---
27	---	---	.9	---	---	10.3	---	---	---	24.7	---	---
28	---	---	2.7	---	2.9	---	12.2	---	---	---	24.5	15.0
29	10.0	6.0	---	---	---	---	---	---	21.2	---	---	---
30	---	---	---	---	---	---	---	21.2	---	---	---	---
31	---	---	---	---	---	11.4	---	---	---	24.9	---	---

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

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	210	27300	219	27400	266	33300	316	20400	287	15000	140	6930
2	225	29500	236	29100	246	31000	309	19900	268	14000	136	6830
3	235	30500	254	30900	228	28600	303	19400	247	12700	132	6600
4	247	31900	272	32700	212	25500	296	18100	228	11400	129	6420
5	258	33200	289	34800	198	22000	289	17200	210	10200	125	6200
6	269	34400	293	35500	184	18900	282	18600	193	9650	123	6170
7	261	33300	295	36300	170	15800	276	17300	180	8750	126	6430
8	251	32300	292	36200	157	13300	269	17100	179	8660	131	6710
9	242	30600	262	32300	148	11500	263	16500	181	8780	136	7040
10	233	29300	236	28700	152	10600	258	16100	182	8870	141	7040
11	224	28000	226	27600	157	10500	258	15800	184	8770	146	7180
12	209	26100	219	27000	163	10900	260	15500	185	8870	152	7490
13	165	20600	212	26400	170	11400	261	16400	187	8880	154	7700
14	126	15900	205	25800	184	12400	263	16300	188	8800	144	7240
15	104	13200	200	25400	198	13700	264	17500	190	9050	144	7240
16	127	16000	200	25400	198	13200	266	16700	189	9150	147	7260
17	161	20200	202	25500	196	12800	267	15500	179	8600	149	6980
18	198	24800	203	25700	194	12700	268	18300	168	8050	175	9110
19	208	26200	205	26000	192	12700	270	17900	158	7570	224	13500
20	214	27000	208	26000	189	12300	272	16500	149	7100	281	19000
21	220	27800	212	26200	184	11200	273	17300	140	6690	306	23400
22	223	28200	216	26600	202	12800	274	17900	133	6430	307	25100
23	226	28600	227	28100	227	14700	276	17700	134	6710	273	22100
24	228	28800	239	29400	254	16800	278	17600	137	7050	248	20100
25	231	29100	253	30800	285	19200	279	17000	139	7100	246	19900
26	228	28600	267	32400	319	21000	281	16500	142	7320	246	20000
27	199	25200	282	34300	350	22500	282	16200	144	7460	247	20100
28	171	21800	298	36200	343	22500	283	15700	146	7510	246	20000
29	153	19600	309	37600	336	22200	285	16200	143	7470	244	20000
30	170	21600	289	35600	329	21800	290	15900	---	---	243	19900
31	194	24300	---	---	322	21200	289	15400	---	---	240	19600
TOTAL	---	813900	---	901900	---	539000	---	530400	---	256590	---	389270

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	230	18400	179	15400	510	50100	129	12100	126	11200	122	11300
2	220	17300	171	14500	404	39000	124	11600	136	12000	126	11900
3	211	16700	162	13600	301	28700	119	11100	146	12400	131	12300
4	209	16600	155	13100	225	21600	116	10800	146	12200	136	12600
5	208	16900	158	13200	182	17700	113	10600	146	12400	141	12900
6	207	16900	163	13600	228	22000	110	10200	145	12300	138	12700
7	202	16900	168	14000	304	29400	110	9960	145	12100	134	12500
8	181	15500	174	14600	404	39200	121	11000	152	13100	132	12300
9	160	13600	188	15700	470	45200	135	12200	161	14200	133	12600
10	147	12400	206	17000	326	31700	148	13400	165	14400	136	12700
11	157	13400	224	20100	214	21100	149	13400	151	13100	137	12900
12	171	14400	239	23700	148	14600	147	14200	136	11700	135	12700
13	187	15500	230	23900	163	16300	146	13300	122	10500	132	12300
14	200	16600	218	22400	190	20400	144	13100	112	9480	129	12000
15	198	16400	208	21400	190	19500	137	12500	112	9530	127	11900
16	193	16400	204	20700	187	18700	130	12000	113	9610	133	12400
17	188	15700	225	22300	190	18700	124	11500	115	9960	140	13100
18	182	14700	2420	272000	193	19000	121	11200	118	10200	147	13700
19	176	14500	1920	204000	196	19100	120	11200	127	10900	148	14000
20	171	14100	1100	112000	200	19800	118	11100	139	12100	147	14000
21	168	13900	633	66900	204	20000	117	10900	149	12800	146	13800
22	179	14700	376	40200	208	20000	117	10800	148	13000	147	14100
23	193	15900	278	29200	212	20400	117	10900	145	12600	156	14900
24	204	17000	213	22300	218	21400	118	10900	141	12200	168	15800
25	196	16600	172	17800	253	26200	131	12200	135	11600	176	16500
26	186	15900	173	17800	527	54600	147	13800	129	11100	173	15900
27	176	15300	180	18400	254	24600	160	14600	124	10500	178	16200
28	169	14500	186	18600	178	17300	150	13600	119	10200	184	16800
29	172	14600	192	18900	142	13600	137	12500	119	10200	190	17400
30	176	15000	214	21300	134	12800	126	11400	120	10300	197	18100
31	---	---	352	34800	---	---	118	10700	120	10600	---	---
TOTAL	---	466300	---	1193400	---	742700	---	368760	---	358480	---	412300
YEAR		6973000										


Discharge
Suspended sed discharge
DAILY MEAN DISCHARGE, IN CUBIC FEET PER SECOND
DAILY MEAN SUSPENDED SEDIMENT DISCHARGE, IN TONS PER DAY
100,000
70,000
50,000
40,000
30,000
20,000
10,000
1,000,000
100,000
10,000
1,000
O
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1999
2000

06600000 PERRY CREEK AT 38th STREET, SIOUX CITY, IA

LOCATION.--Lat 42°32'08", long 96°24'39", in $SE^1/_4$ $SE^1/_4$ sec.8, T.89 N., R.47 W., Woodbury County, Hydrologic Unit 10230001, on left bank at downstream side of bridge on 38th Street in Sioux City, 1.9 mi downstream from West Branch, and 4.2 mi. upstream from mouth.

DRAINAGE AREA.--65.1 mi^2.

PERIOD OF RECORD.--October 1945 to September 1969, June 1981 to current year.

REVISED RECORDS.--WSP 1440: Drainage area. WDR IA-95-1: River mile.

GAGE.--Water-stage recorder. Datum of gage is 1,112.04 ft above sea level (City of Sioux City benchmark). Prior to May 20, 1954, nonrecording gage with supplementary water-stage recorder in operation above 5.0 ft gage height and May 20, 1954 to Sept. 30, 1969, water-stage recorder at present site at datum 5.0 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 7, 1944 reached a stage of about 30.5 ft from floodmarks, present datum, discharge, 9,600 ft^3/s, on basis of contracted-opening measurement of peak flow by U.S. Army Corps of Engineers.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	e14	17	17	12	14	27	19	20	12	8.0	6.1
2	18	e14	17	16	13	14	29	18	17	12	7.7	6.4
3	17	e14	17	14	18	14	27	19	17	12	7.5	6.0
4	16	e15	17	e9.0	14	15	23	18	37	13	7.7	5.7
5	15	e15	14	e9.5	12	15	27	17	18	13	10	5.8
6	15	e14	16	e11	17	15	25	17	16	14	7.7	5.3
7	17	e14	17	e12	13	16	35	17	15	13	6.8	5.5
8	17	e17	15	e13	13	20	32	32	14	13	7.3	5.5
9	15	e15	14	e15	19	18	30	31	13	12	7.4	6.3
10	13	e15	16	16	16	15	28	28	14	12	7.1	5.8
11	13	e14	16	11	e12	15	30	28	13	20	6.5	6.0
12	13	e14	17	14	e12	16	28	30	14	18	4.6	6.1
13	13	e15	18	10	13	16	29	31	21	9.4	4.8	6.5
14	14	e14	16	14	11	16	31	30	17	8.5	4.7	6.1
15	14	e14	14	17	18	20	28	32	15	8.2	4.5	6.3
16	13	e14	10	11	25	16	66	33	15	8.8	4.5	6.7
17	13	e15	e12	15	15	16	42	51	14	8.4	5.6	6.3
18	14	e15	e14	15	15	22	20	290	14	8.4	5.9	7.0
19	15	e14	16	e14	e15	21	17	38	14	9.2	6.4	8.1
20	15	e14	8.9	e12	20	19	16	29	17	9.3	8.2	7.4
21	15	e15	e6.0	e11	25	18	15	26	13	8.6	6.8	7.8
22	14	e15	e5.5	e12	29	17	15	19	12	8.1	12	14
23	15	e23	e11	e13	56	19	14	17	12	9.9	9.4	7.1
24	15	21	16	e12	39	22	14	16	13	8.1	5.7	5.3
25	15	17	17	12	22	20	14	16	25	9.1	5.2	5.8
26	14	18	18	9.0	22	17	20	23	19	8.8	5.2	5.9
27	14	17	17	10	14	19	30	31	16	8.2	5.1	5.9
28	14	15	17	11	14	19	25	26	15	8.1	5.5	6.0
29	15	14	20	e11	15	21	21	25	13	7.9	5.9	6.1
30	17	15	18	e10	---	23	20	81	12	7.7	5.9	6.5
31	e15	---	17	10	---	25	---	23	---	7.4	5.8	---
TOTAL	459	460	464.4	386.5	539	553	778	1111	485	326.1	205.4	195.3
MEAN	14.8	15.3	15.0	12.5	18.6	17.8	25.9	35.8	16.2	10.5	6.63	6.51
MAX	18	23	20	17	56	25	66	290	37	20	12	14
MIN	13	14	5.5	9.0	11	14	14	16	12	7.4	4.5	5.3
AC-FT	910	912	921	767	1070	1100	1540	2200	962	647	407	387
CFSM	.23	.24	.23	.19	.29	.27	.40	.55	.25	.16	.10	.10
IN.	.26	.26	.27	.22	.31	.32	.44	.63	.28	.19	.12	.11

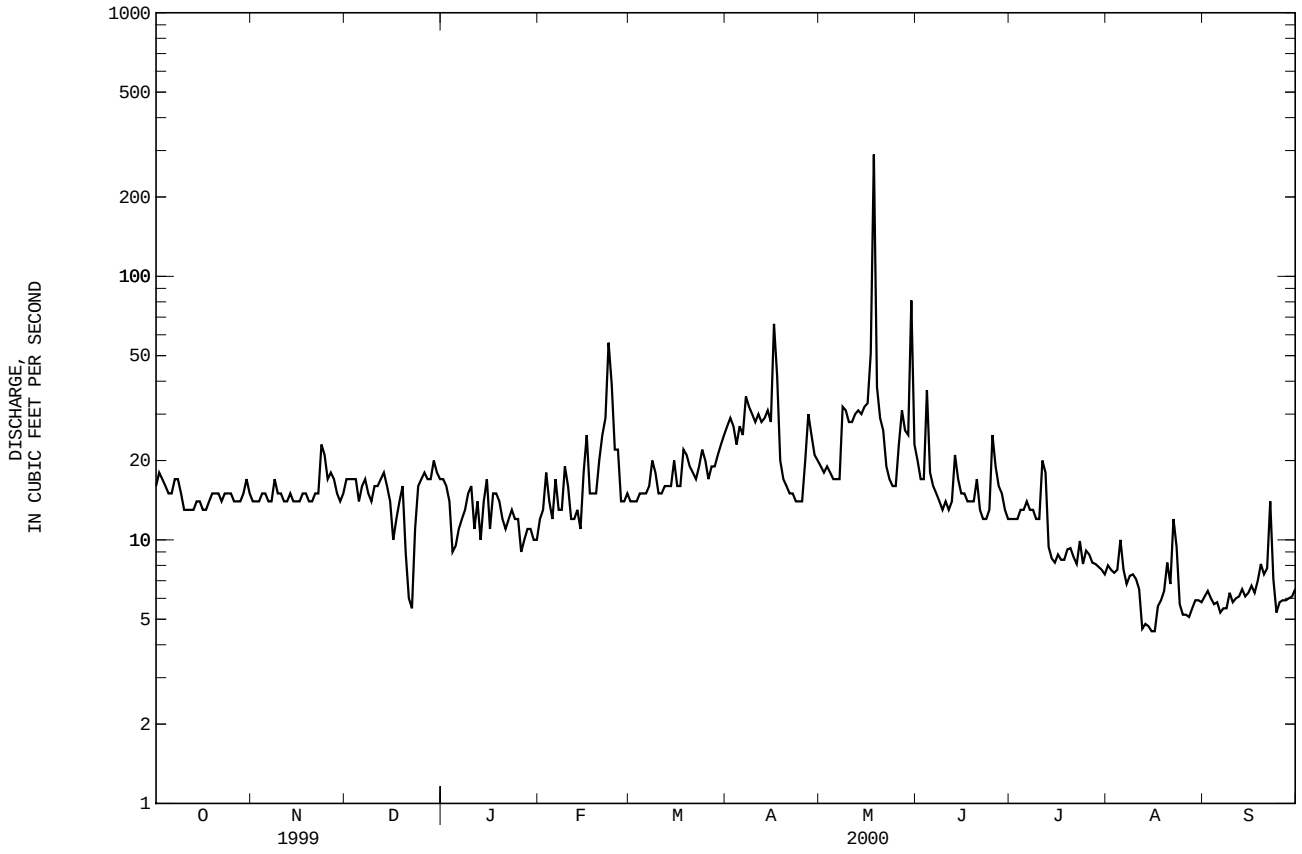
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2000, BY WATER YEAR (WY)

MEAN	8.61	8.62	7.00	7.32	20.2	44.4	25.9	24.4	31.7	22.5	13.5	12.8
MAX	29.5	31.9	22.6	47.5	78.4	188	123	140	125	99.6	85.5	147
(WY)	1993	1997	1999	1952	1948	1962	1985	1990	1984	1952	1951	1949
MIN	.38	.81	.48	.33	1.31	2.62	2.30	2.91	.94	.35	.30	.083
(WY)	1959	1982	1959	1982	1959	1964	1959	1968	1956	1946	1965	1958

06600000 PERRY CREEK AT 38th STREET, SIOUX CITY, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1946 - 2000	
ANNUAL TOTAL	9771.4		5962.7			
ANNUAL MEAN	26.8		16.3		19.0	
HIGHEST ANNUAL MEAN					38.6	1984
LOWEST ANNUAL MEAN					2.38	1968
HIGHEST DAILY MEAN	159	Jun 27	290	May 18	2260	May 19 1990
LOWEST DAILY MEAN	5.5	Dec 22	4.5	Aug 15	.00	Jul 14 1946a
ANNUAL SEVEN-DAY MINIMUM	10	Dec 16	4.9	Aug 12	.00	Sep 24 1958
INSTANTANEOUS PEAK FLOW			1200	May 18	8670	May 19 1990b
INSTANTANEOUS PEAK STAGE			12.60	May 18	28.54	May 19 1990
INSTANTANEOUS LOW FLOW			3.0	Dec 16		
ANNUAL RUNOFF (AC-FT)	19380		11830		13740	
ANNUAL RUNOFF (CFSM)	.41		.25		.29	
ANNUAL RUNOFF (INCHES)	5.58		3.41		3.96	
10 PERCENT EXCEEDS	46		26		32	
50 PERCENT EXCEEDS	22		15		6.8	
90 PERCENT EXCEEDS	14		6.3		.90	

a Many days 1946, 1958-1960.
b From rating curve extended above 1,700 ft^3/s on basis of slope-area measurements of peak flow.
e Estimated.



06600100 FLOYD RIVER AT ALTON, IA

LOCATION.--Lat 42°58'55", long 96°00'03", in NE$^1/_4$ NE$^1/_4$ sec.11, T.94 N., R.44 W., Sioux County, Hydrologic Unit 10230002, on left bank 270 ft downstream from South County Road at east edge of Alton, 34.3 mi upstream from West Branch Floyd River, and at mile 58.1.

DRAINAGE AREA.--268 mi^2.

PERIOD OF RECORD.--October 1955 to current year. Prior to December 1955, monthly discharge only, published in WSP 1730.

REVISED RECORDS.--WDR IA-82-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,269.55 ft above sea level.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1953 reached a discharge of about 45,500 ft^3/s, from information by U. S. Army Corps of Engineers.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e6.0	9.3	11	e9.0	e4.8	e25	9.0	9.0	12	21	e11	e4.8
2	e6.0	8.4	12	e9.0	e5.0	e21	8.5	8.3	15	19	e11	e4.8
3	e6.0	8.2	14	e8.5	e5.5	e19	8.4	8.4	16	18	e9.5	e4.8
4	e6.0	8.2	14	e6.5	e5.8	e17	8.5	8.8	16	17	e9.5	e4.8
5	e6.4	9.1	12	e7.0	e5.3	e16	7.8	8.6	16	16	e12	e4.4
6	e6.8	11	10	e7.0	e5.8	15	7.8	7.8	20	15	e11	e4.4
7	e6.9	11	9.8	e6.5	e5.8	14	8.4	7.7	18	15	e10	e4.4
8	e6.9	11	11	e6.5	e5.8	15	8.9	6.2	15	14	e14	e4.4
9	e7.3	10	12	e6.5	e6.5	15	11	5.3	13	12	e13	e4.0
10	e7.5	10	11	e7.0	e6.8	14	11	7.0	12	15	e10	e3.8
11	e7.4	12	9.9	e6.8	e6.5	13	12	8.3	11	30	e9.5	e3.8
12	e7.3	12	11	e6.5	e7.0	12	11	7.5	11	32	e8.7	e3.6
13	e7.3	13	10	e5.5	e7.5	12	11	6.8	14	31	e8.0	e3.6
14	e6.8	13	11	e6.0	e7.0	12	10	6.9	88	25	e7.5	e3.6
15	e7.1	12	11	e6.5	e7.8	12	10	7.1	192	22	e7.0	e3.4
16	e7.5	11	e7.5	e6.0	e7.8	11	11	8.0	137	20	e6.5	e3.4
17	e7.5	11	e9.0	e6.4	e8.2	11	12	9.3	90	18	e8.0	e3.4
18	e7.5	11	e9.0	e6.8	e8.3	12	12	69	67	15	e7.5	e3.2
19	e8.5	11	e9.5	e6.4	e7.5	13	12	58	53	14	e6.5	e3.4
20	e8.4	11	e9.0	e6.0	e8.0	13	12	28	45	13	e6.5	e3.8
21	e7.5	11	e7.5	e5.8	e9.0	13	11	21	38	12	e6.5	e3.8
22	e8.0	11	e6.2	e6.0	e10	12	10	18	33	11	e7.0	e4.5
23	e8.0	12	e5.5	e5.5	e13	12	12	15	28	12	e7.0	e5.0
24	8.5	12	e6.0	e5.2	e16	12	7.8	12	26	12	e6.0	e4.6
25	8.8	12	e6.3	e5.4	e20	12	6.7	11	30	14	e6.0	e4.6
26	8.3	12	e6.5	e5.0	e26	12	7.1	9.8	28	20	e5.7	e4.2
27	9.8	12	e7.0	e4.6	e29	11	7.5	10	28	30	e5.3	e4.0
28	11	12	e7.5	e5.0	e32	11	8.1	11	26	24	e5.3	e3.8
29	10	11	e8.0	e5.0	e28	10	9.2	11	26	15	e5.3	e3.4
30	9.9	11	e9.0	e4.8	---	9.6	9.5	11	23	e13	e5.3	e3.6
31	11	---	e9.0	e4.6	---	9.1	---	10	---	e12	e4.8	---
TOTAL	241.9	329.2	292.2	193.3	315.7	415.7	291.2	425.8	1147	557	250.9	121.3
MEAN	7.80	11.0	9.43	6.24	10.9	13.4	9.71	13.7	38.2	18.0	8.09	4.04
MAX	11	13	14	9.0	32	25	12	69	192	32	14	5.0
MIN	6.0	8.2	5.5	4.6	4.8	9.1	6.7	5.3	11	11	4.8	3.2
AC-FT	480	653	580	383	626	825	578	845	2280	1100	498	241
CFSM	.03	.04	.04	.02	.04	.05	.04	.05	.14	.07	.03	.02
IN.	.03	.05	.04	.03	.04	.06	.04	.06	.16	.08	.03	.02

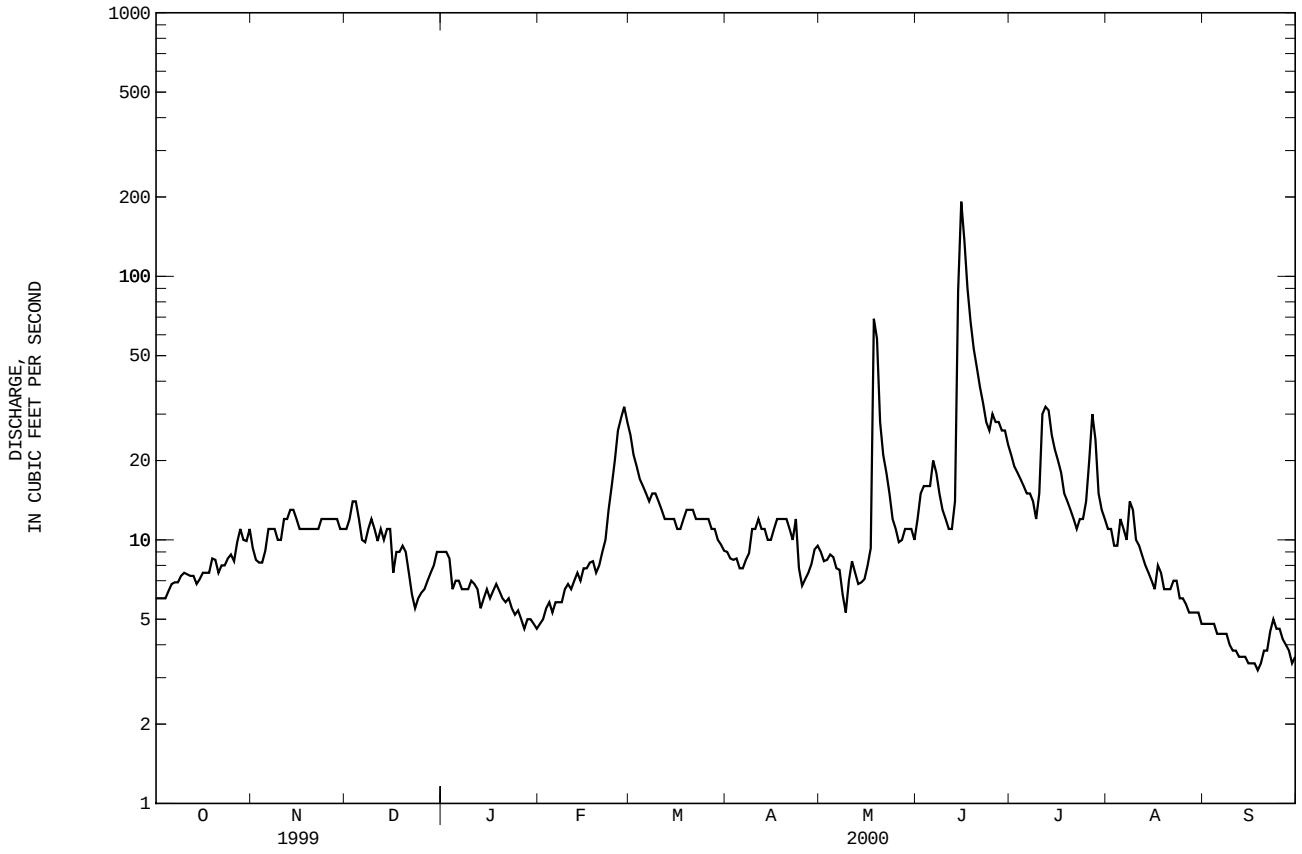
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 2000, BY WATER YEAR (WY)

MEAN	42.8	42.5	27.8	18.4	45.4	169	179	117	182	90.2	44.8	30.6
MAX	234	287	128	109	252	605	906	454	973	878	369	175
(WY)	1993	1980	1983	1973	1971	1979	1969	1995	1984	1993	1995	1993
MIN	.058	.30	.074	.048	.15	1.77	3.67	2.92	2.36	3.29	.37	.080
(WY)	1957	1959	1959	1959	1977	1959	1959	1968	1968	1958	1968	1958

06600100 FLOYD RIVER AT ALTON, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1956 - 2000	
ANNUAL TOTAL	26958.2		4581.2			
ANNUAL MEAN	73.9		12.5		82.4	
HIGHEST ANNUAL MEAN					323	1993
LOWEST ANNUAL MEAN					2.66	1968
HIGHEST DAILY MEAN	434	Jun 10	192	Jun 15	7160	Apr 4 1969
LOWEST DAILY MEAN	5.5	Dec 23	3.2	Sep 18	.00	Oct 14 1956a
ANNUAL SEVEN-DAY MINIMUM	6.0	Sep 28	3.4	Sep 13	.00	Oct 27 1956
INSTANTANEOUS PEAK FLOW			221	Jun 15	16300	Jun 20 1983b
INSTANTANEOUS PEAK STAGE			6.83	Jun 15	18.54	Jun 20 1983c
ANNUAL RUNOFF (AC-FT)	53470		9090		59700	
ANNUAL RUNOFF (CFSM)	.28		.047		.31	
ANNUAL RUNOFF (INCHES)	3.74		.64		4.18	
10 PERCENT EXCEEDS	198		20		189	
50 PERCENT EXCEEDS	32		9.5		22	
90 PERCENT EXCEEDS	7.3		5.0		1.4	

a No flow at times in 1956, 1958-59, 1965, 1968, 1977.
b From rating curve extended above 8,500 ft^3/s.
c From floodmark.
e Estimated.



06600500 FLOYD RIVER AT JAMES, IA

LOCATION.--Lat 42°34'36", long 96°18'43", in $SE^1/_4$ $SE^1/_4$ sec.30, T.90 N., R.46 W., Plymouth County, Hydrologic Unit 10230002, on left bank at upstream side of bridge on county highway C70, 0.2 mi east of James, 14.3 mi downstream from West Branch Floyd River, and at mile 7.5.

DRAINAGE AREA.--886 mi^2.

PERIOD OF RECORD.--December 1934 to current year.

REVISED RECORDS.--WSP 1240: 1935 (M), 1936, 1937-38 (M), 1942, 1945. WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,092.59 ft above sea level. Prior to Sept. 11, 1938, June 9 to Nov. 5, 1953, and Oct. 1, 1955, to May 22, 1957, nonrecording gage and May 23, 1957, to Sept. 30, 1970, water-stage recorder at same site at datum 10.0 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage and discharge since 1892, that of June 8, 1953, from information by U. S. Army Corps of Engineers.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	91	98	100	e85	e52	100	83	77	125	108	59	42
2	95	96	100	e85	e55	96	81	76	120	103	58	42
3	95	98	99	e75	e58	93	78	75	118	101	58	40
4	94	101	97	e65	e60	93	77	74	132	100	60	39
5	96	103	96	e70	e55	94	79	73	197	96	59	39
6	95	99	98	e75	e60	92	76	71	135	93	59	37
7	95	102	104	e70	e60	90	77	71	122	89	61	39
8	105	103	102	e65	e65	95	80	74	118	84	67	39
9	110	104	99	e70	e70	96	79	74	110	81	98	35
10	100	100	98	e75	e75	90	78	74	107	82	94	34
11	97	97	102	e75	e70	88	79	74	105	83	82	33
12	98	98	103	e70	e70	89	78	72	102	106	72	31
13	95	99	101	e60	e75	87	79	68	120	102	68	33
14	95	97	105	e65	e75	87	81	68	428	92	63	31
15	97	96	104	e70	e80	90	79	67	277	92	57	28
16	94	97	e80	e65	e85	87	96	67	283	96	53	31
17	92	97	e90	e70	e90	86	111	77	251	87	68	30
18	93	98	e100	e75	e90	90	96	868	210	82	76	29
19	96	97	e100	e70	e85	92	91	607	184	80	66	32
20	96	96	e90	e65	e75	89	83	323	173	80	64	33
21	98	98	e80	e60	e70	88	83	244	158	77	59	32
22	97	96	e70	e65	e80	86	84	204	145	75	58	41
23	96	102	e55	e60	e85	88	81	182	137	72	57	45
24	96	102	e60	e55	e95	93	77	165	130	69	54	39
25	100	100	e65	e60	e115	90	77	149	131	70	52	37
26	99	100	e70	e55	134	88	77	149	137	68	50	34
27	99	99	e70	e50	125	85	89	154	128	65	47	32
28	98	95	e75	e55	115	84	90	140	126	67	47	30
29	99	95	e80	e55	108	84	81	132	120	65	46	29
30	101	97	e90	e52	---	84	77	169	115	62	43	28
31	99	---	e95	e50	---	83	---	136	---	60	43	---
TOTAL	3011	2960	2778	2037	2332	2777	2477	4854	4744	2587	1898	1044
MEAN	97.1	98.7	89.6	65.7	80.4	89.6	82.6	157	158	83.5	61.2	34.8
MAX	110	104	105	85	134	100	111	868	428	108	98	45
MIN	91	95	55	50	52	83	76	67	102	60	43	28
MED	96	98	97	65	75	89	80	77	130	82	59	34
AC-FT	5970	5870	5510	4040	4630	5510	4910	9630	9410	5130	3760	2070
CFSM	.11	.11	.10	.07	.09	.10	.09	.18	.18	.09	.07	.04
IN.	.13	.12	.12	.09	.10	.12	.10	.20	.20	.11	.08	.04

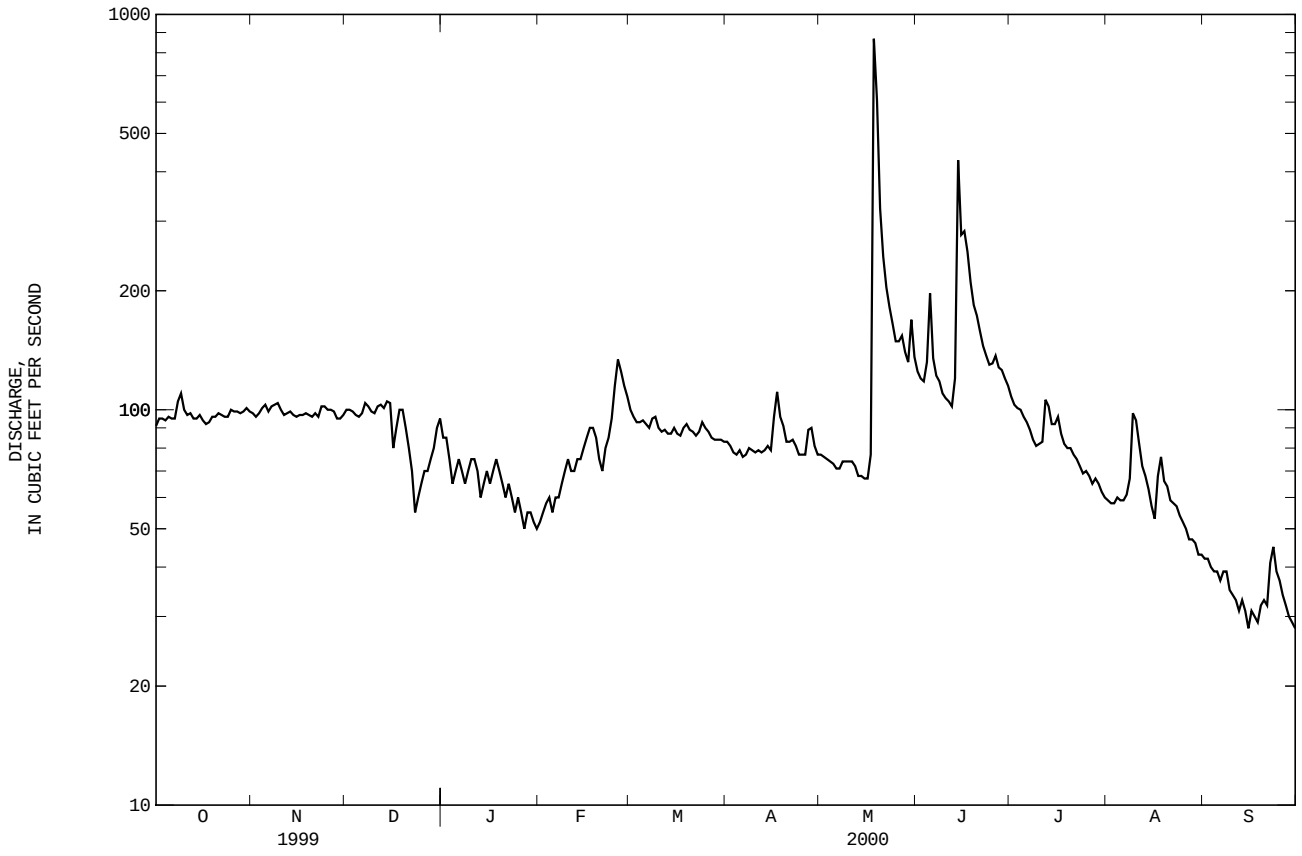
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 2000, BY WATER YEAR (WY)

MEAN	113	111	82.6	59.6	171	534	442	328	530	306	163	137
MAX	617	804	366	359	970	2080	2715	1393	2897	2196	1151	1353
(WY)	1993	1980	1980	1973	1952	1979	1969	1984	1984	1993	1951	1951
MIN	4.55	4.54	3.05	1.13	1.62	21.5	18.7	15.1	14.4	7.32	6.12	3.40
(WY)	1959	1959	1959	1977	1959	1964	1959	1968	1968	1936	1958	1958

06600500 FLOYD RIVER AT JAMES, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1936 - 2000	
ANNUAL TOTAL	125053		33499			
ANNUAL MEAN	343		91.5		248	
HIGHEST ANNUAL MEAN					958	1983
LOWEST ANNUAL MEAN					19.9	1956
HIGHEST DAILY MEAN	1780	Jul 3	868	May 18	32400	Jun 8 1953
LOWEST DAILY MEAN	55	Dec 23	28	Sep 15	.90	Jan 10 1977a
ANNUAL SEVEN-DAY MINIMUM	66	Dec 22	30	Sep 12	.90	Jan 10 1977
INSTANTANEOUS PEAK FLOW			1720	May 18	71500	Jun 8 1953b
INSTANTANEOUS PEAK STAGE			13.28	May 18	35.30	Jun 8 1953c
INSTANTANEOUS LOW FLOW			25	Sep 15		
ANNUAL RUNOFF (AC-FT)	248000		66450		179700	
ANNUAL RUNOFF (CFSM)	.39		.10		.28	
ANNUAL RUNOFF (INCHES)	5.25		1.41		3.80	
10 PERCENT EXCEEDS	783		121		543	
50 PERCENT EXCEEDS	261		85		82	
90 PERCENT EXCEEDS	96		50		12	

a Also Jan. 11-22, 1977.
b From rating curve extended above 16,000 ft^3/s on basis of contracted opening and flow-over-embankment measurement of peak flow.
c From floodmarks, current datum.
e Estimated.



06601200 MISSOURI RIVER AT DECATUR, NE

LOCATION.--Lat 42°00'26", long 96°14'29", in NE$^1/_4$ SW$^1/_4$ sec.36, T.24 N., R.10 E., Burt County, Hydrologic Unit 10230001, on right bank 0.1 mi upstream from Iowa Highway 175 bridge at Decatur, and at mile 691.0.

DRAINAGE AREA.--316,200 mi^2, approximately. The 3,959 mi^2 in Great Divide basin are not included.

PERIOD OF RECORD.--October 1987 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,010.00 ft above sea level, supplementary adjustment of 1954.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated by upstream main-stem reservoirs. Fort Randall Dam was completed in July 1952, with storage beginning in December 1952. Gavins Point Dam was completed in July 1955, with storage beginning in December 1955. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48500	47400	47100	24900	20100	19600	30900	32900	37300	35400	33800	33500
2	48600	47100	47100	24700	20100	19000	30800	33200	37000	35300	33800	34900
3	48600	46500	47600	24900	19900	19400	31000	32700	36300	35300	33400	34700
4	47800	46300	47200	24700	19400	19300	31400	32700	36200	35000	32200	34500
5	47600	46100	44700	23600	18800	19400	31300	32500	36700	35400	32200	34200
6	47200	46200	41800	24200	18800	19400	31800	32200	36900	35200	32700	34200
7	47400	46500	38400	25100	19100	19400	31600	32200	36400	34400	31700	34000
8	47900	46900	35200	24400	19000	19500	32500	32200	37100	34200	31600	34100
9	47900	46800	32700	24700	18900	19700	32400	32000	36800	34100	33400	34700
10	47600	46700	30200	24400	18900	19600	31700	31700	36700	34000	32900	34600
11	47700	46600	27800	24400	18900	19000	32100	32400	37100	33900	32600	34600
12	e47000	46600	27000	23500	18500	18700	32400	36000	36900	35700	32600	34700
13	e47200	47000	26700	23700	18600	18900	32300	39400	37100	35500	32500	34800
14	47700	47500	26400	23900	18300	19100	32300	39600	39300	34400	32000	34800
15	48100	47600	26800	24400	18100	19000	32500	39200	40100	34600	32000	34700
16	48000	47800	26800	24800	18600	19200	33100	39100	37900	34800	31900	34600
17	48000	47900	25900	23200	18600	18700	33900	37900	37400	35000	32100	34600
18	47500	47900	25700	23500	18600	18500	32200	40100	37100	34500	32600	34500
19	47600	47800	25700	25400	18600	21200	32100	42400	36800	34300	32000	35200
20	47300	47300	25900	24100	18600	23600	32800	39300	37000	34800	32200	35600
21	47200	47000	24800	23200	18600	26200	33300	39300	37400	34400	32500	35400
22	47300	46900	24300	23900	18700	29300	33200	40800	36600	34000	32400	35400
23	47600	47200	25000	24500	19000	30400	32100	40000	36200	34100	32900	35800
24	47800	47200	25600	24300	19600	30500	32100	38700	36800	34400	32400	35000
25	47900	46600	26000	23300	19700	30700	32300	e38600	40300	34300	32400	35000
26	47900	46400	25300	22800	19500	30600	32700	37900	45900	35400	32300	34600
27	47800	46800	25100	22200	19800	30800	33100	38100	36900	34400	32400	33800
28	48100	46700	24900	21700	19600	30800	32900	37500	36900	34100	32400	33800
29	47700	46800	25100	22000	19500	30900	32300	36900	36500	34300	32700	33900
30	47800	47000	25100	21200	---	31000	32300	37300	35800	34200	32400	33900
31	47500	---	25100	20800	---	31100	---	37800	---	34100	32500	---
TOTAL	1479800	1409100	953000	736400	552400	722500	967400	1132600	1123400	1073500	1007500	1038100
MEAN	47740	46970	30740	23750	19050	23310	32250	36540	37450	34630	32500	34600
MAX	48600	47900	47600	25400	20100	31100	33900	42400	45900	35700	33800	35800
MIN	47000	46100	24300	20800	18100	18500	30800	31700	35800	33900	31600	33500
AC-FT	2935000	2795000	1890000	1461000	1096000	1433000	1919000	2247000	2228000	2129000	1998000	2059000
CFSM	.15	.15	.10	.08	.06	.07	.10	.12	.12	.11	.10	.11
IN.	.17	.17	.11	.09	.06	.09	.11	.13	.13	.13	.12	.12

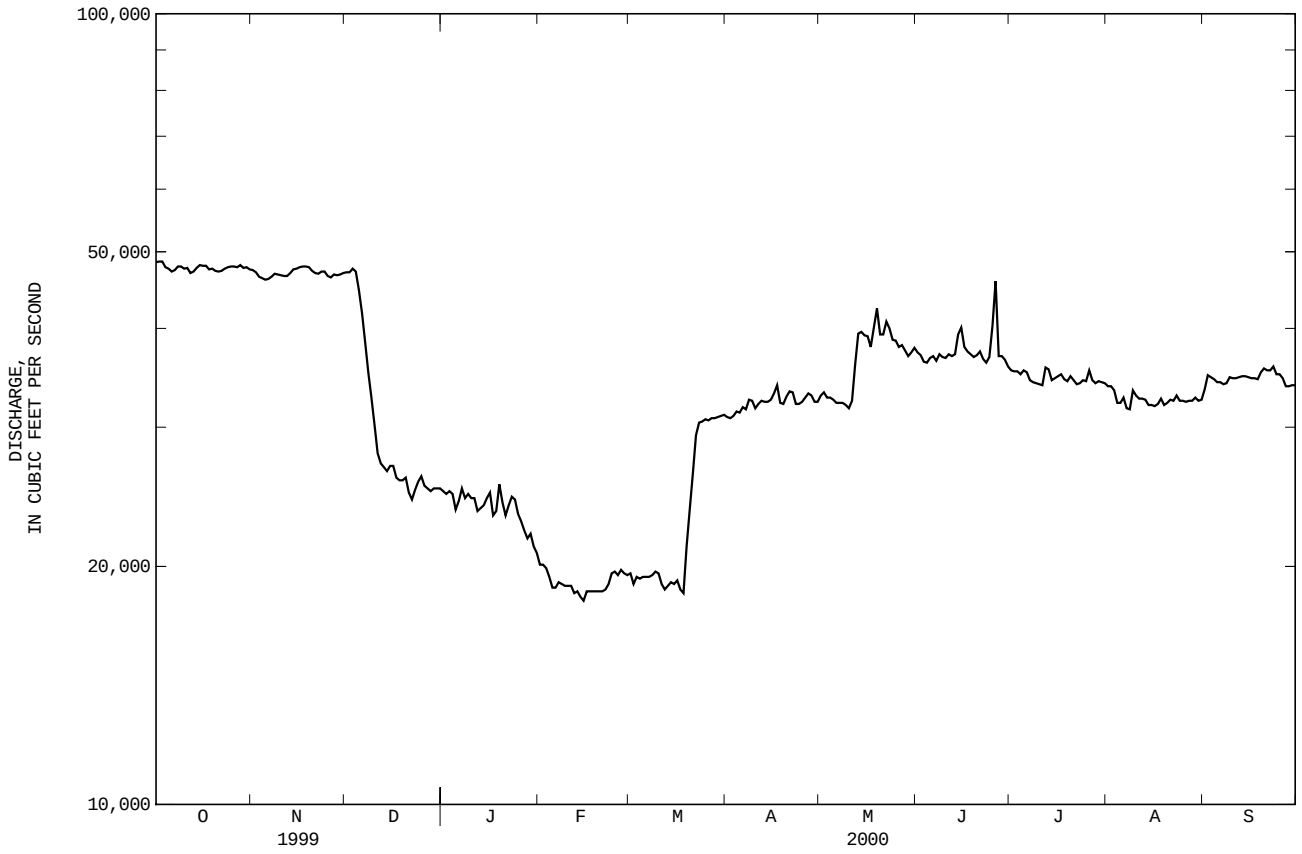
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 2000, BY WATER YEAR (WY)

MEAN	38830	33560	22870	19500	20970	26100	36850	38660	39860	40130	37900	39470
MAX	70150	72350	41350	26850	32380	49450	90050	80690	67970	66520	66170	67290
(WY)	1998	1998	1998	1998	1997	1997	1997	1997	1997	1997	1997	1997
MIN	24250	10470	12070	12360	12210	11580	24410	26130	28240	27680	25700	26750
(WY)	1993	1991	1991	1990	1991	1991	1991	1991	1991	1991	1993	1993

06601200 MISSOURI RIVER AT DECATUR, NE--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1988 - 2000	
ANNUAL TOTAL	14628600		12195700			
ANNUAL MEAN	40080		33320		32930	
HIGHEST ANNUAL MEAN					57440	1997
LOWEST ANNUAL MEAN					21450	1991
HIGHEST DAILY MEAN	56600	Jul 22	48600	Oct 2	99900	Apr 15 1997
LOWEST DAILY MEAN	24300	Dec 22	18100	Feb 15	7130	Dec 22 1990
ANNUAL SEVEN-DAY MINIMUM	25200	Dec 21	18500	Feb 12	9660	Dec 12 1990
INSTANTANEOUS PEAK FLOW			49400	Jun 26	100000	Apr 15 1997
INSTANTANEOUS PEAK STAGE			26.24	Jun 26	32.31	Jul 18 1996
ANNUAL RUNOFF (AC-FT)	29020000		24190000		23860000	
ANNUAL RUNOFF (CFSM)	.13		.11		.10	
ANNUAL RUNOFF (INCHES)	1.72		1.43		1.41	
10 PERCENT EXCEEDS	48800		47200		55300	
50 PERCENT EXCEEDS	42800		33400		31300	
90 PERCENT EXCEEDS	26700		19500		14300	

e Estimated



06602020 WEST FORK DITCH AT HORNICK, IA

LOCATION.--Lat 42°13'37", long 96°04'40", in $SW^1/_4$ $SW^1/_4$ sec.27, T.86 N., R.45 W., Woodbury County, Hydrologic Unit 10230004, on left bank at upstream side of State Highway 141 bridge, 1.0 mi east of Hornick, 9.2 mi upstream from Wolf Creek, and 13.5 mi north of Onawa.

DRAINAGE AREA.--403 mi^2.

PERIOD OF RECORD.-- April 1939 to September 1969 (published as "Holly Springs"), July 1974 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,045.82 ft above sea level.

REMARKS.--Records good except those for estimated daily discharges, which are poor. West Fork ditch is a dredged channel which diverts flow of West Fork Little Sioux River at Hornick 5.5 mi south, then southeast 6.5 mi to a point 1.2 mi west of Kennebec, where Wolf Creek enters from left. From this point, ditch roughly parallels the Little Sioux River and is known as Monona-Harrison ditch. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57	54	59	e50	e42	58	48	42	59	59	43	34
2	60	53	59	e48	e48	58	48	41	52	58	44	34
3	62	53	59	e46	e50	59	47	41	49	58	43	33
4	61	55	60	e40	e44	59	47	40	e55	59	45	32
5	60	55	57	e36	e42	58	46	39	e60	83	45	32
6	59	54	55	e40	e50	59	45	38	53	68	46	31
7	60	56	59	e46	e46	57	45	37	50	62	42	30
8	58	56	63	e50	e50	58	46	39	47	59	40	29
9	59	55	59	e55	e55	59	46	43	45	55	41	30
10	58	54	55	e55	e60	58	45	41	44	54	37	28
11	57	54	55	e50	e50	56	45	39	42	55	36	27
12	57	54	59	e55	e48	56	45	39	42	57	36	26
13	57	56	53	e48	e50	56	45	37	43	50	35	26
14	58	55	63	e55	e48	56	44	38	859	46	35	25
15	58	54	62	e55	e50	55	42	39	239	44	34	24
16	56	55	e40	e46	56	55	49	38	115	45	33	25
17	55	56	e44	e55	61	55	56	38	90	44	35	25
18	57	56	e48	e55	61	57	50	75	78	43	36	24
19	57	55	e50	e50	54	59	47	71	72	45	37	24
20	58	55	e34	e44	54	58	44	56	71	45	37	25
21	59	56	e25	e40	59	56	44	51	67	44	38	25
22	57	56	e23	e42	66	55	44	48	62	42	38	29
23	57	60	e30	e44	76	55	41	46	60	42	62	33
24	57	61	e40	e40	94	57	40	44	59	42	44	29
25	57	58	e42	e40	86	55	40	43	101	42	40	27
26	58	58	e44	e38	77	52	40	48	124	42	38	25
27	57	59	e46	e36	72	51	47	54	67	41	37	24
28	56	56	e50	e38	67	49	52	53	76	42	37	24
29	56	55	e55	e38	63	49	46	49	65	43	36	23
30	56	56	e55	e36	---	49	43	58	61	43	36	23
31	56	---	e55	e38	---	48	---	75	---	43	34	---
TOTAL	1790	1670	1558	1409	1679	1722	1367	1440	2907	1555	1220	826
MEAN	57.7	55.7	50.3	45.5	57.9	55.5	45.6	46.5	96.9	50.2	39.4	27.5
MAX	62	61	63	55	94	59	56	75	859	83	62	34
MIN	55	53	23	36	42	48	40	37	42	41	33	23
AC-FT	3550	3310	3090	2790	3330	3420	2710	2860	5770	3080	2420	1640
CFSM	.14	.14	.12	.11	.14	.14	.11	.12	.24	.12	.10	.07
IN.	.17	.15	.14	.13	.15	.16	.13	.13	.27	.14	.11	.08

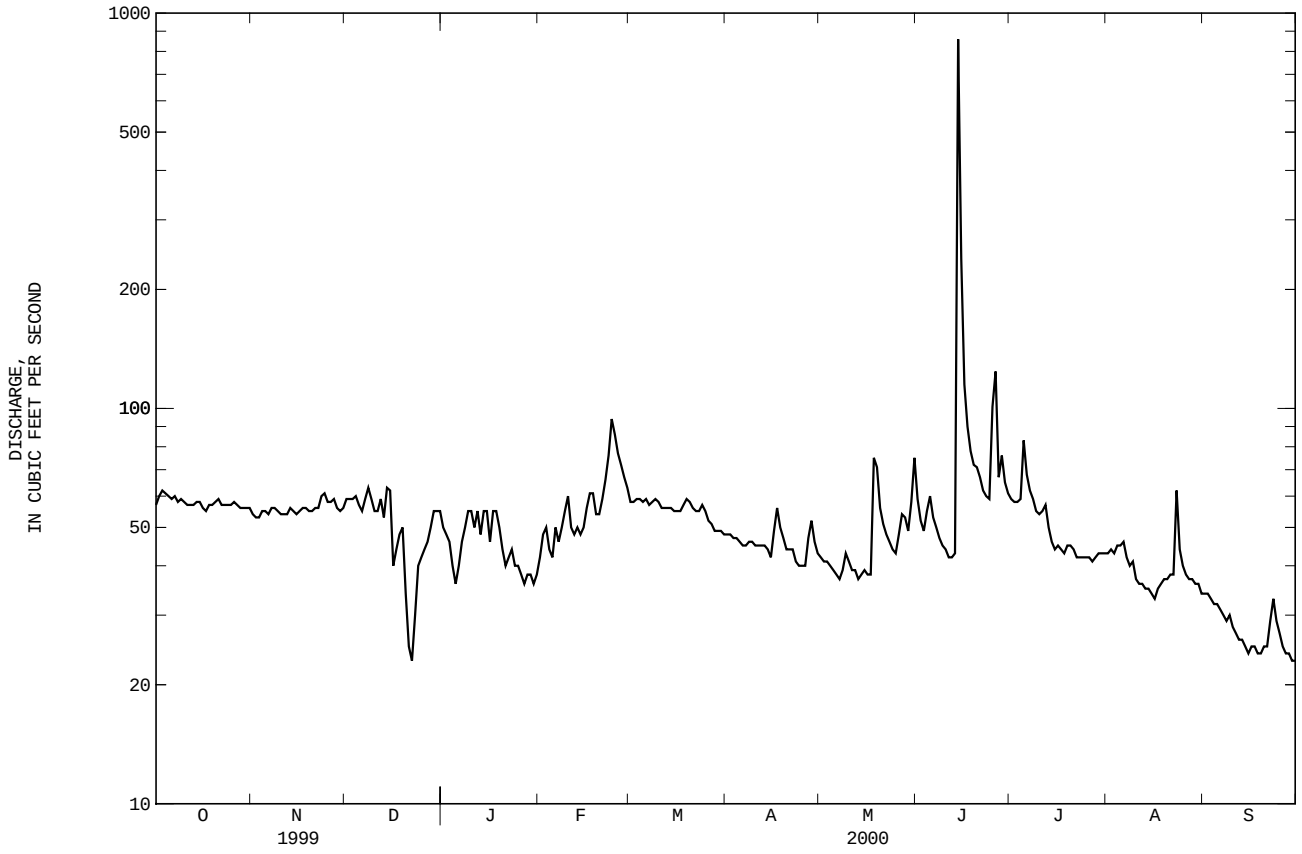
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2000, BY WATER YEAR (WY)

MEAN	61.9	55.8	45.4	36.6	108	223	178	155	279	150	104	70.4
MAX	369	281	199	127	522	813	837	585	2131	561	605	422
(WY)	1993	1980	1985	1952	1994	1962	1969	1983	1984	1993	1951	1951
MIN	2.08	4.06	2.60	2.26	2.41	8.41	9.80	11.5	7.71	11.5	2.92	2.23
(WY)	1957	1959	1959	1959	1940	1957	1957	1943	1956	1956	1956	1956

06602020 WEST FORK DITCH AT HORNICK, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1940 - 2000	
ANNUAL TOTAL	53118		19143			
ANNUAL MEAN	146		52.3		122	
HIGHEST ANNUAL MEAN					367	1984
LOWEST ANNUAL MEAN					9.28	1956
HIGHEST DAILY MEAN	895	Jun 11	859	Jun 14	9000	Mar 28 1962
LOWEST DAILY MEAN	23	Dec 22	23	Dec 22	.20	Jul 30 1956a
ANNUAL SEVEN-DAY MINIMUM	34	Dec 20	25	Sep 14	.53	Aug 23 1956
INSTANTANEOUS PEAK FLOW			1350	Jun 14	12400	Mar 28 1962
INSTANTANEOUS PEAK STAGE			12.86	Jun 14	25.87	Jun 22 1996
INSTANTANEOUS LOW FLOW			22	Sep 30		
ANNUAL RUNOFF (AC-FT)	105400		37970		88680	
ANNUAL RUNOFF (CFSM)	.36		.13		.30	
ANNUAL RUNOFF (INCHES)	4.90		1.77		4.13	
10 PERCENT EXCEEDS	256		61		247	
50 PERCENT EXCEEDS	125		50		47	
90 PERCENT EXCEEDS	55		34		10	

a Also Aug. 17, 1956.
e Estimated.



06602400 MONONA-HARRISON DITCH NEAR TURIN, IA

LOCATION.--Lat 41°57'52", long 95°59'30", in NW1/4 NE1/4 sec.32, T.83 N., R.44 W., Monona County, Hydrologic Unit 10230004, on left bank at upstream side of bridge on county highway E54, 1.0 mi west of gaging station on Little Sioux River near Turin, 4 mi southwest of Turin, 5.2 mi northeast of Blencoe, and 12.5 mi upstream from mouth.

DRAINAGE AREA.--900 mi^2.

PERIOD OF RECORD.--May 1942 to current year. Records for May 1942 to January 1958 not equivalent owing to diversion from Little Sioux River through equalizer ditch 1.5 mi upstream. Records prior to 1950 not equivalent owing to diversion to Little Sioux River through diversion ditch 10.2 mi upstream.

REVISED RECORDS: WSP 1440: Drainage area. WSP 1560: Drainage area. WDR IA-95-1: Period of record.

GAGE.--Water-stage recorder. Datum of gage is 1,015.00 ft above sea level (U.S. Army Corps of Engineers bench mark). May 7, 1942 to Oct. 13, 1953, nonrecording gage and Oct. 14, 1953 to Sept. 30, 1975, recording gage at same site at datum 5.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Monona-Harrison ditch is a dug channel and is a continuation of West Fork ditch, paralleling the Little Sioux River, and discharging into the Missouri River 1.5 mi upstream from the mouth of the Little Sioux River. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	140	137	152	136	e110	136	115	129	170	217	92	77
2	142	133	147	132	121	129	116	126	144	184	91	81
3	155	131	147	e120	121	127	111	124	135	161	91	83
4	157	139	147	e105	115	128	109	122	132	159	93	84
5	156	140	140	e90	e105	130	113	120	137	171	96	82
6	155	143	137	e100	e120	134	107	119	135	344	97	82
7	158	141	139	e110	e110	134	106	121	134	238	97	83
8	150	148	149	e120	125	133	108	127	126	164	89	82
9	147	156	144	e125	136	127	114	138	121	140	85	85
10	142	152	134	e125	136	125	113	129	117	132	84	83
11	138	145	133	e120	115	119	108	121	109	128	82	81
12	139	145	142	e115	119	118	111	111	108	175	82	75
13	134	146	132	e110	124	118	115	103	110	184	81	75
14	139	144	141	117	124	120	113	102	603	140	80	76
15	140	142	150	127	130	119	107	105	605	126	79	75
16	134	141	100	118	120	116	116	104	268	121	76	76
17	130	144	e75	108	125	115	178	110	200	119	78	78
18	133	152	e100	117	115	125	167	129	171	113	79	79
19	139	145	e120	e110	120	130	133	225	158	111	82	81
20	141	142	e100	e105	116	131	128	162	156	117	82	84
21	148	143	e75	e100	127	126	120	137	154	116	85	83
22	141	143	e70	e105	160	124	123	132	135	111	83	90
23	133	155	e85	e110	198	124	123	120	130	108	116	101
24	137	173	e100	e115	261	130	123	114	132	110	124	106
25	142	165	e110	e110	250	134	116	109	372	114	91	92
26	143	155	119	e105	206	127	120	119	1750	109	84	85
27	142	152	121	e110	173	116	137	169	962	103	81	80
28	143	149	127	112	160	108	168	175	620	99	80	74
29	144	141	134	114	149	111	149	148	415	96	79	70
30	143	147	136	e105	---	114	135	139	283	95	79	67
31	141	---	132	e105	---	114	---	183	---	94	79	---
TOTAL	4426	4389	3838	3501	4091	3842	3702	4072	8792	4399	2697	2450
MEAN	143	146	124	113	141	124	123	131	293	142	87.0	81.7
MAX	158	173	152	136	261	136	178	225	1750	344	124	106
MIN	130	131	70	90	105	108	106	102	108	94	76	67
AC-FT	8780	8710	7610	6940	8110	7620	7340	8080	17440	8730	5350	4860
CFSM	.16	.16	.14	.13	.16	.14	.14	.15	.33	.16	.10	.09
IN.	.18	.18	.16	.14	.17	.16	.15	.17	.36	.18	.11	.10

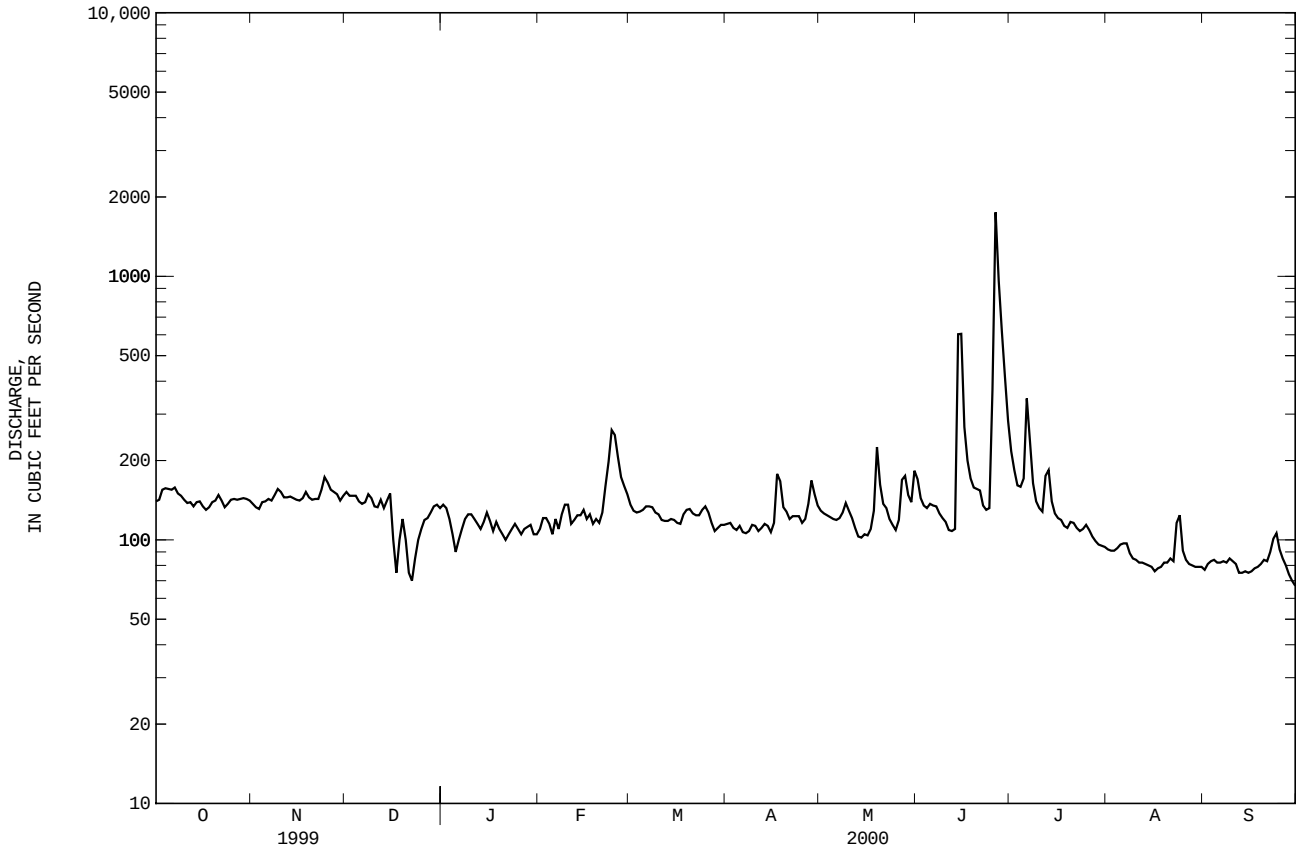
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2000, BY WATER YEAR (WY)

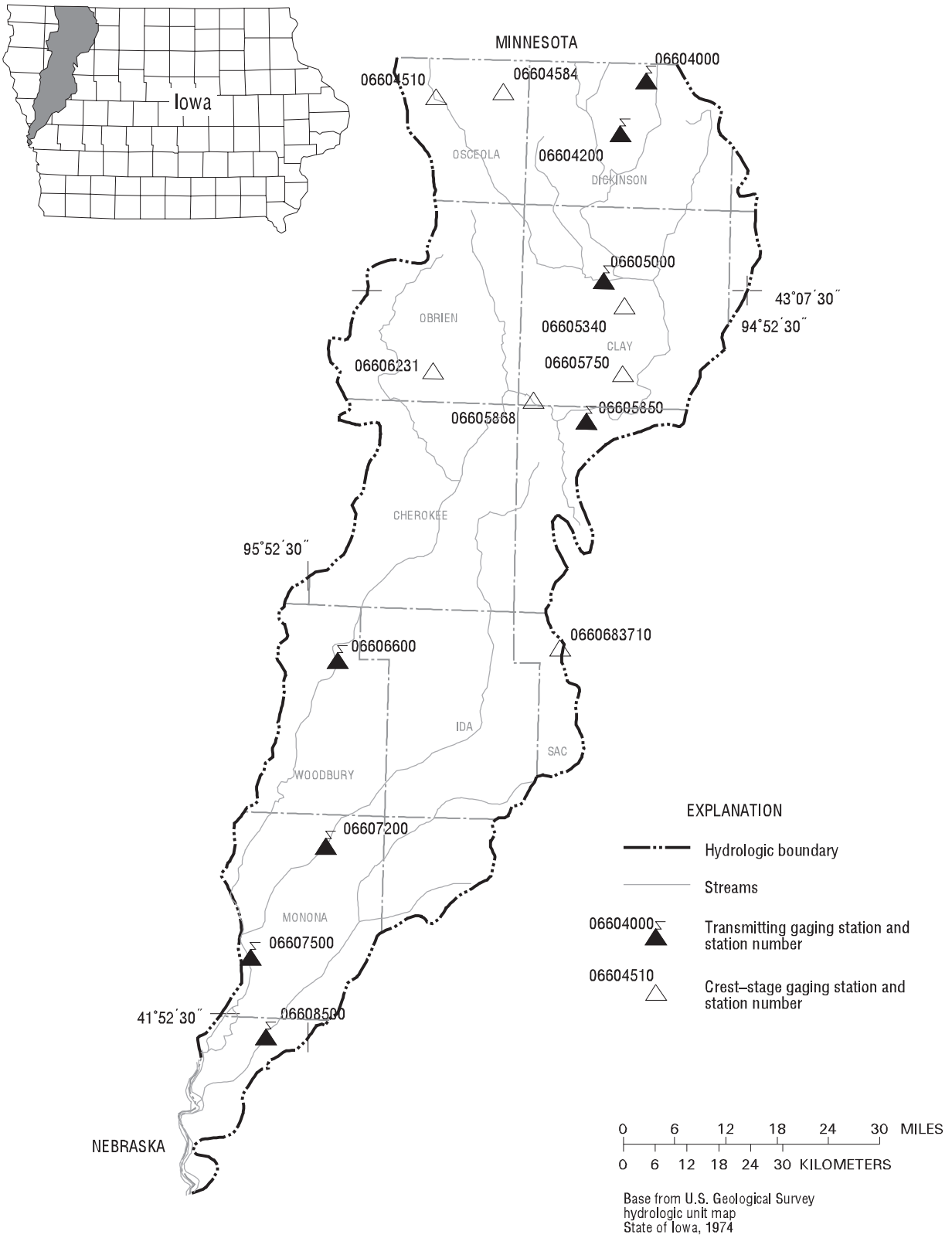
MEAN	153	138	115	95.8	229	481	444	384	596	354	191	145
MAX	831	415	421	398	1963	1707	1588	1157	3833	2107	883	576
(WY)	1993	1980	1985	1973	1971	1962	1965	1995	1984	1993	1996	1993
MIN	16.0	18.0	11.4	10.5	13.9	46.9	41.1	43.7	71.8	46.1	30.6	30.8
(WY)	1959	1959	1959	1959	1959	1968	1968	1968	1989	1976	1976	1981

06602400 MONONA-HARRISON DITCH NEAR TURIN, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1959 - 2000a	
ANNUAL TOTAL	123276		50199			
ANNUAL MEAN	338		137		277	
HIGHEST ANNUAL MEAN					798	1993
LOWEST ANNUAL MEAN					55.5	1968
HIGHEST DAILY MEAN	3520	Apr 22	1750	Jun 26	18000	Feb 19 1971
LOWEST DAILY MEAN	70	Dec 22	67	Sep 30	8.5	Jan 3 1959b
ANNUAL SEVEN-DAY MINIMUM	89	Dec 17	76	Sep 12	8.5	Jan 3 1959
INSTANTANEOUS PEAK FLOW			1930	Jun 26	19900	Feb 19 1971
INSTANTANEOUS PEAK STAGE					28.03	Feb 19 1971
INSTANTANEOUS LOW FLOW			67	Sep 30		
ANNUAL RUNOFF (AC-FT)	244500		99570		200600	
ANNUAL RUNOFF (CFSM)	.38		.15		.31	
ANNUAL RUNOFF (INCHES)	5.10		2.07		4.18	
10 PERCENT EXCEEDS	603		160		517	
50 PERCENT EXCEEDS	220		124		129	
90 PERCENT EXCEEDS	137		83		39	

a Post closure of diversion from Little Sioux River.
b Also Jan. 4-11, 1959.
e Estimated.




Iowa
MINNESOTA
06604000
06604584
06604510
OSCEOLA
06604200
DICKINSON
06605000
43°07′30″
94°52′30″
O'BRIEN
06605340
CLAY
06606231
06605750
06605868
06605850
CHEROKEE
95°52′30″
06606600
0660683710
IDA
SAC
WOODBURY
06607200
MONONA
06607500
41°52′30″
06608500
NEBRASKA
EXPLANATION
Hydrologic boundary
Streams
06604000 Transmitting gaging station and station number
06604510 Crest–stage gaging station and station number
0 6 12 18 24 30 MILES
0 6 12 18 24 30 KILOMETERS
Base from U.S. Geological Survey
hydrologic unit map
State of Iowa, 1974

Gaging Stations

Crest Stage Gaging Stations

06604000 SPIRIT LAKE NEAR ORLEANS, IA

LOCATION.--Lat 43°28'11", long 95°07'25", in NE$^{1}/_{4}$ NW$^{1}/_{4}$ sec.20, T.100N., R.36W., Dickinson County, Hydrologic Unit 10230003, 2.3 mi upstream from lake outlet, and 2.3 mi northwest of Orleans.

DRAINAGE AREA.--75.6 mi^{2}.

PERIOD OF RECORD.--May 1933 to September 1975 (fragmentary prior to 1951), April 1990 to current year. Prior to October 1949, published as "at Orleans".

GAGE.--Water-stage recorder. Datum of gage is 1,387.25 ft above sea level, 90.0 ft above Iowa Lake Survey datum, and 14.2 ft below crest of spillway. Prior to July 6, 1950, non-recording gage or water-stage recorder at various sites near outlet, all at present datum.

REMARKS.--A reliable record of stage was obtained for the year, except Dec. 19-27 and Jan. 21-25. Lake formed by concrete dam with ungated spillway at elevation 1,401.4 ft. above sea level. Dam constructed in 1969. A previous outlet works had been constructed in 1944. Lake is used for conservation and recreation. U.S. Geological Survey satellite data collection platform at station.

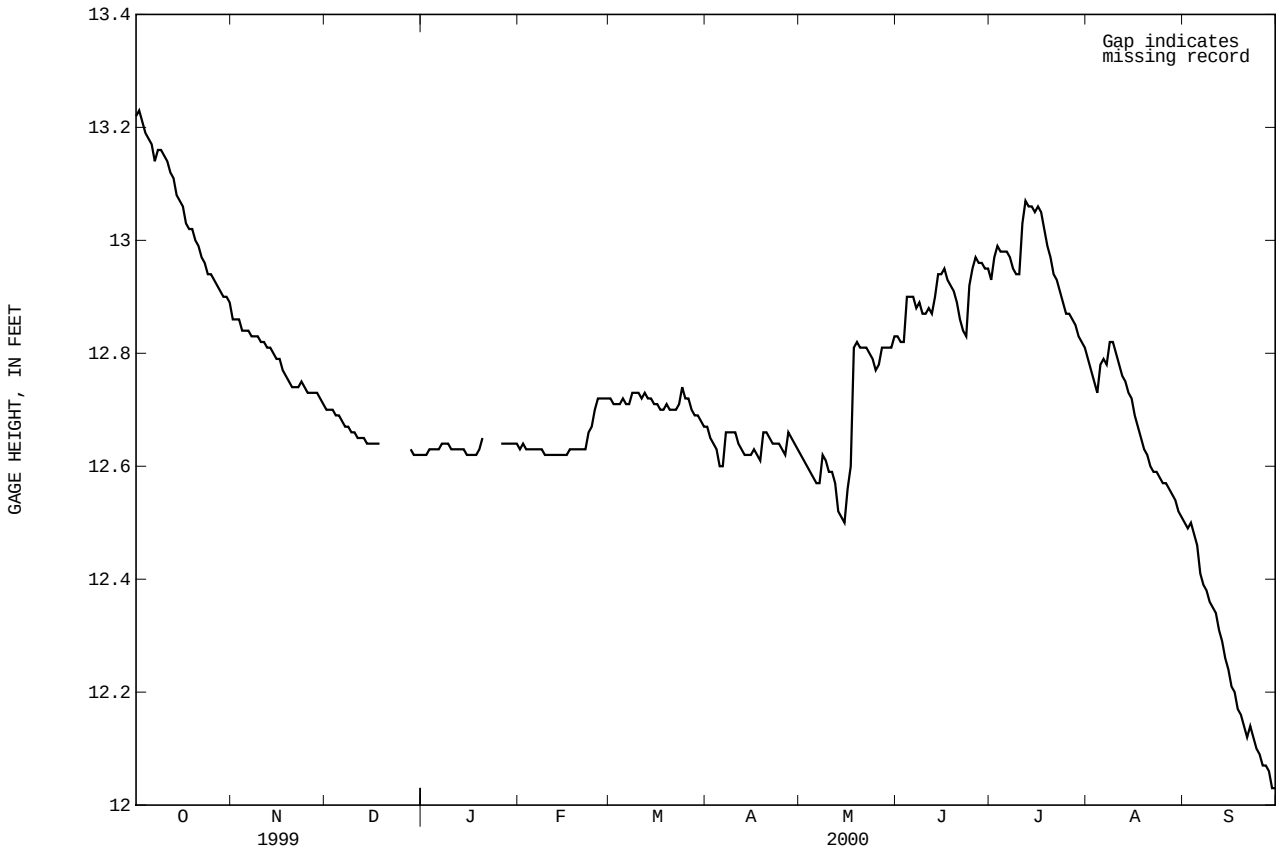
EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 18.79 ft. July 17-20, 1993; minimum observed, 6.75 ft. Oct. 20, 1935.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 13.24 ft. Oct. 1, 2; minimum, 12.00 ft. Sept. 29.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.22	12.86	12.70	12.62	12.63	12.72	12.67	12.62	12.83	12.93	12.79	12.50
2	13.23	12.86	12.70	12.62	12.64	12.71	12.65	12.61	12.82	12.97	12.77	12.49
3	13.21	12.86	12.70	12.63	12.63	12.71	12.64	12.60	12.82	12.99	12.75	12.50
4	13.19	12.84	12.69	12.63	12.63	12.71	12.63	12.59	12.90	12.98	12.73	12.48
5	13.18	12.84	12.69	12.63	12.63	12.72	12.60	12.58	12.90	12.98	12.78	12.46
6	13.17	12.84	12.68	12.63	12.63	12.71	12.60	12.57	12.90	12.98	12.79	12.41
7	13.14	12.83	12.67	12.64	12.63	12.71	12.66	12.57	12.88	12.97	12.78	12.39
8	13.16	12.83	12.67	12.64	12.63	12.73	12.66	12.62	12.89	12.95	12.82	12.38
9	13.16	12.83	12.66	12.64	12.62	12.73	12.66	12.61	12.87	12.94	12.82	12.36
10	13.15	12.82	12.66	12.63	12.62	12.73	12.66	12.59	12.87	12.94	12.80	12.35
11	13.14	12.82	12.65	12.63	12.62	12.72	12.64	12.59	12.88	13.03	12.78	12.34
12	13.12	12.81	12.65	12.63	12.62	12.73	12.63	12.57	12.87	13.07	12.76	12.31
13	13.11	12.81	12.65	12.63	12.62	12.72	12.62	12.52	12.90	13.06	12.75	12.29
14	13.08	12.80	12.64	12.63	12.62	12.72	12.62	12.51	12.94	13.06	12.73	12.26
15	13.07	12.79	12.64	12.62	12.62	12.71	12.62	12.50	12.94	13.05	12.72	12.24
16	13.06	12.79	12.64	12.62	12.62	12.71	12.63	12.56	12.95	13.06	12.69	12.21
17	13.03	12.77	12.64	12.62	12.63	12.70	12.62	12.60	12.93	13.05	12.67	12.20
18	13.02	12.76	12.64	12.62	12.63	12.70	12.61	12.81	12.92	13.02	12.65	12.17
19	13.02	12.75	---	12.63	12.63	12.71	12.66	12.82	12.91	12.99	12.63	12.16
20	13.00	12.74	---	12.65	12.63	12.70	12.66	12.81	12.89	12.97	12.62	12.14
21	12.99	12.74	---	---	12.63	12.70	12.65	12.81	12.86	12.94	12.60	12.12
22	12.97	12.74	---	---	12.63	12.70	12.64	12.81	12.84	12.93	12.59	12.14
23	12.96	12.75	---	---	12.66	12.71	12.64	12.80	12.83	12.91	12.59	12.12
24	12.94	12.74	---	---	12.67	12.74	12.64	12.79	12.92	12.89	12.58	12.10
25	12.94	12.73	---	---	12.70	12.72	12.63	12.77	12.95	12.87	12.57	12.09
26	12.93	12.73	---	12.64	12.72	12.72	12.62	12.78	12.97	12.87	12.57	12.07
27	12.92	12.73	---	12.64	12.72	12.70	12.66	12.81	12.96	12.86	12.56	12.07
28	12.91	12.73	12.63	12.64	12.72	12.69	12.65	12.81	12.96	12.85	12.55	12.06
29	12.90	12.72	12.62	12.64	12.72	12.69	12.64	12.81	12.95	12.83	12.54	12.03
30	12.90	12.71	12.62	12.64	---	12.68	12.63	12.81	12.95	12.82	12.52	12.03
31	12.89	---	12.62	12.64	---	12.67	---	12.83	---	12.81	12.51	---
MEAN	13.06	12.79	12.66	12.63	12.64	12.71	12.64	12.68	12.90	12.95	12.68	12.25
MAX	13.23	12.86	12.70	12.65	12.72	12.74	12.67	12.83	12.97	13.07	12.82	12.50
MIN	12.89	12.71	12.62	12.62	12.62	12.67	12.60	12.50	12.82	12.81	12.51	12.03

06604000 SPIRIT LAKE NEAR ORLEANS, IA--Continued



06604200 WEST OKOBOJI LAKE AT LAKESIDE LABORATORY NEAR MILFORD, IA

LOCATION.--Lat 43°22'43", long 95°10'52", in NE$^1/_4$ SW$^1/_4$ sec.23, T.99 N., R.37 W., Dickinson County, Hydrologic Unit 10230003, at pumping station of Lakeside Laboratory on west shore, 2.3 mi upstream from lake outlet, and 3.8 mi northwest of Milford.

DRAINAGE AREA.--125 mi^2.

PERIOD OF RECORD.--May 1933 to current year. Published as "Okoboji Lake at Arnold's Park" 1933-37 and as "Okoboji Lake at Lakeside Laboratory near Milford" 1937-66.

GAGE.--Water-stage recorder. Datum of gage is 1,391.76 ft above sea level, 94.51 ft above Iowa Lake Survey datum. Prior to June 17, 1938, nonrecording gage at State Pier at Arnolds Park at same datum.

REMARKS.--A reliable record of stage was obtained for the year. Lake formed by concrete dam with ungated spillway at elevation 1,395.8 ft above sea level. Lake is used for conservation and recreation. Area of lake is approximately 3,900 acres. U.S. Geological Survey satellite data collection platform at station.

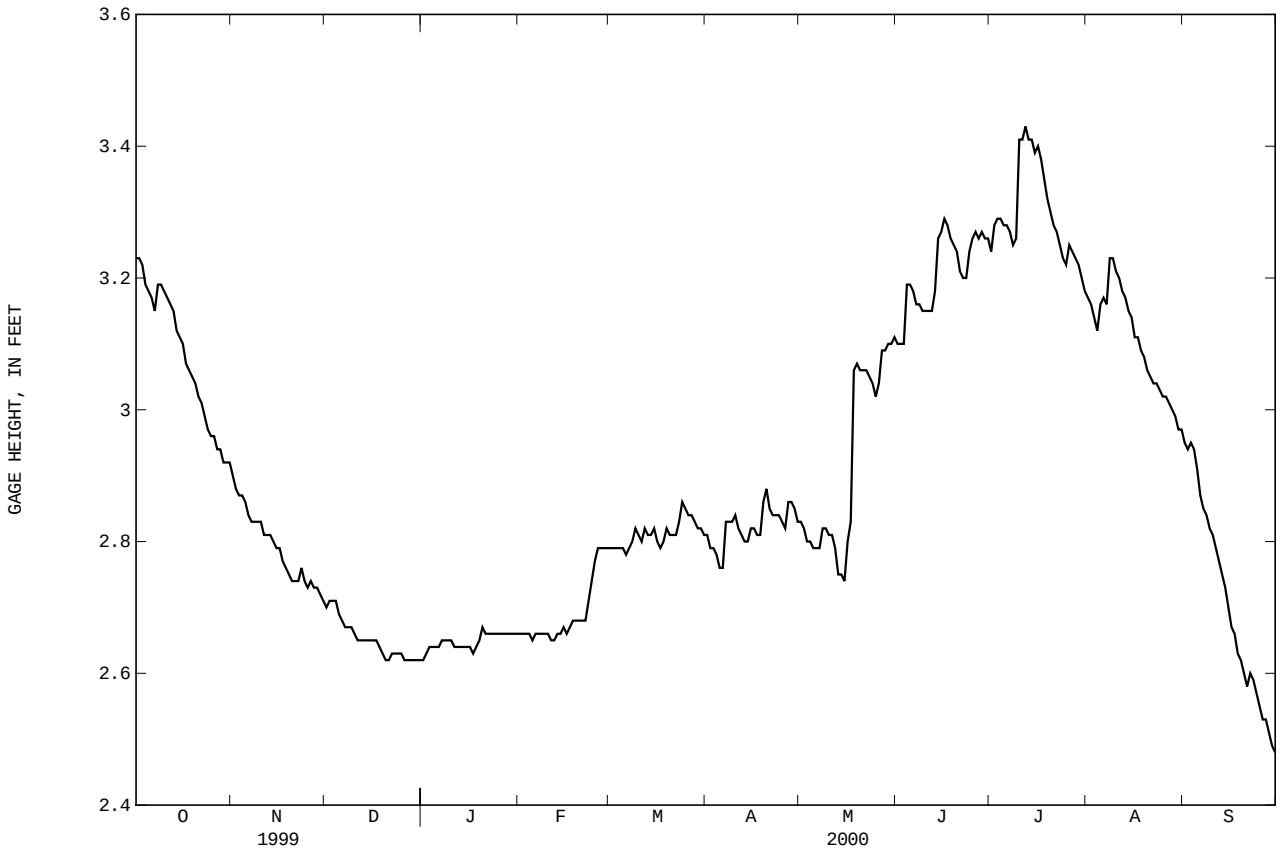
EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 8.70 ft July 17, 1993; minimum observed, 0.20 ft Sept. 20, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 3.46 ft July 11; minimum, 2.47 ft Sept. 29, 30.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.23	2.90	2.70	2.62	2.66	2.79	2.81	2.83	3.10	3.24	3.17	2.95
2	3.23	2.88	2.71	2.63	2.66	2.79	2.79	2.82	3.10	3.28	3.16	2.94
3	3.22	2.87	2.71	2.64	2.66	2.79	2.79	2.80	3.10	3.29	3.14	2.95
4	3.19	2.87	2.71	2.64	2.66	2.79	2.78	2.80	3.19	3.29	3.12	2.94
5	3.18	2.86	2.69	2.64	2.65	2.79	2.76	2.79	3.19	3.28	3.16	2.91
6	3.17	2.84	2.68	2.64	2.66	2.78	2.76	2.79	3.18	3.28	3.17	2.87
7	3.15	2.83	2.67	2.65	2.66	2.79	2.83	2.79	3.16	3.27	3.16	2.85
8	3.19	2.83	2.67	2.65	2.66	2.80	2.83	2.82	3.16	3.25	3.23	2.84
9	3.19	2.83	2.67	2.65	2.66	2.82	2.83	2.82	3.15	3.26	3.23	2.82
10	3.18	2.83	2.66	2.65	2.66	2.81	2.84	2.81	3.15	3.41	3.21	2.81
11	3.17	2.81	2.65	2.64	2.65	2.80	2.82	2.81	3.15	3.41	3.20	2.79
12	3.16	2.81	2.65	2.64	2.65	2.82	2.81	2.79	3.15	3.43	3.18	2.77
13	3.15	2.81	2.65	2.64	2.66	2.81	2.80	2.75	3.18	3.41	3.17	2.75
14	3.12	2.80	2.65	2.64	2.66	2.81	2.80	2.75	3.26	3.41	3.15	2.73
15	3.11	2.79	2.65	2.64	2.67	2.82	2.82	2.74	3.27	3.39	3.14	2.70
16	3.10	2.79	2.65	2.64	2.66	2.80	2.82	2.80	3.29	3.40	3.11	2.67
17	3.07	2.77	2.65	2.63	2.67	2.79	2.81	2.83	3.28	3.38	3.11	2.66
18	3.06	2.76	2.64	2.64	2.68	2.80	2.81	3.06	3.26	3.35	3.09	2.63
19	3.05	2.75	2.63	2.65	2.68	2.82	2.86	3.07	3.25	3.32	3.08	2.62
20	3.04	2.74	2.62	2.67	2.68	2.81	2.88	3.06	3.24	3.30	3.06	2.60
21	3.02	2.74	2.62	2.66	2.68	2.81	2.85	3.06	3.21	3.28	3.05	2.58
22	3.01	2.74	2.63	2.66	2.68	2.81	2.84	3.06	3.20	3.27	3.04	2.60
23	2.99	2.76	2.63	2.66	2.71	2.83	2.84	3.05	3.20	3.25	3.04	2.59
24	2.97	2.74	2.63	2.66	2.74	2.86	2.84	3.04	3.24	3.23	3.03	2.57
25	2.96	2.73	2.63	2.66	2.77	2.85	2.83	3.02	3.26	3.22	3.02	2.55
26	2.96	2.74	2.62	2.66	2.79	2.84	2.82	3.04	3.27	3.25	3.02	2.53
27	2.94	2.73	2.62	2.66	2.79	2.84	2.86	3.09	3.26	3.24	3.01	2.53
28	2.94	2.73	2.62	2.66	2.79	2.83	2.86	3.09	3.27	3.23	3.00	2.51
29	2.92	2.72	2.62	2.66	2.79	2.82	2.85	3.10	3.26	3.22	2.99	2.49
30	2.92	2.71	2.62	2.66	---	2.82	2.83	3.10	3.26	3.20	2.97	2.48
31	2.92	---	2.62	2.66	---	2.81	---	3.11	---	3.18	2.97	---
MEAN	3.08	2.79	2.65	2.65	2.69	2.81	2.82	2.92	3.21	3.30	3.10	2.71
MAX	3.23	2.90	2.71	2.67	2.79	2.86	2.88	3.11	3.29	3.43	3.23	2.95
MIN	2.92	2.71	2.62	2.62	2.65	2.78	2.76	2.74	3.10	3.18	2.97	2.48

06604200 WEST OKOBOJI LAKE AT LAKESIDE LABORATORY NEAR MILFORD, IA--Continued



06605000 OCHEYEDAN RIVER NEAR SPENCER, IA

LOCATION.--Lat 43°07'44", long 95°12'37", in SW$^1/_4$ SW$^1/_4$ sec.15, T.96N., R.37W., Clay County, Hydrologic Unit 10230003, on left bank 3 ft upstream from bridge on county highway M38, 3.4 mi west by southwest of Spencer, and at mile 4.1.

DRAINAGE AREA.--426 mi^2.

PERIOD OF RECORD.--October 1977 to current year. Occasional low-flow measurements, water years 1957-61, 1964, 1966-68, 1970, 1971, 1974-77.

GAGE.--Water-stage recorder. Datum of gage is 1,311.66 ft above sea level.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Geological Survey data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 8, 1953 reached a stage of 12.89 ft, discharge, 26,000 ft^3/s on basis of contracted-opening measurement of peak flow.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	14	9.3	e11	e4.6	20	16	20	86	102	28	12
2	18	13	9.6	e11	e5.0	19	15	19	78	93	27	12
3	18	13	9.8	e7.0	e5.2	19	16	18	72	85	e23	12
4	18	13	10	e7.7	e4.8	19	14	18	108	78	e22	12
5	18	13	e10	e7.6	e5.3	19	15	17	195	74	29	11
6	18	13	9.4	e7.3	e5.3	19	14	17	163	69	28	11
7	16	14	10	e7.3	e5.3	20	19	17	138	64	26	11
8	21	14	11	e7.8	e5.8	21	19	22	118	59	34	11
9	20	15	e10	e7.8	e6.0	22	21	20	101	57	31	9.7
10	17	14	9.9	e7.5	e5.8	21	21	19	93	85	25	9.3
11	17	14	9.8	e7.0	e6.5	22	22	19	85	95	e22	9.2
12	15	14	10	e6.0	e6.7	21	21	18	78	104	e21	8.8
13	11	14	10	e6.8	e6.5	20	21	17	163	97	e20	8.8
14	11	13	11	e7.0	e7.0	19	21	16	540	85	e18	8.9
15	12	13	e7.5	e6.0	e7.0	21	20	16	600	77	e17	8.1
16	12	13	e9.0	e6.4	e7.3	24	21	21	454	70	e16	8.2
17	11	12	e9.5	e6.7	e7.5	21	23	21	336	62	20	8.2
18	12	12	e10	e6.1	e6.8	20	22	99	273	58	18	7.7
19	13	11	e9.5	e5.5	e7.0	20	22	344	230	56	16	8.2
20	14	10	e8.5	e5.3	e8.5	19	23	247	204	51	16	9.3
21	14	11	e7.0	e5.5	e10	19	22	171	175	48	16	9.2
22	14	11	e6.8	e4.9	e12	19	21	132	151	44	17	11
23	14	12	e7.0	e4.6	e16	19	20	109	138	41	17	12
24	14	11	e7.2	e4.8	e20	22	19	93	138	39	15	11
25	14	14	e7.9	e4.5	e26	20	20	79	161	38	15	11
26	14	11	e8.5	e4.3	e28	19	20	78	151	51	14	10
27	14	10	e8.5	e4.4	e26	18	21	94	143	46	13	9.6
28	14	10	e9.0	e4.4	22	19	21	112	130	37	13	9.1
29	14	10	e9.5	e4.2	22	17	20	e105	118	35	13	8.0
30	15	10	e10	e4.2	---	16	20	e90	108	32	13	8.3
31	14	---	e11	e4.3	---	16	---	82	---	30	12	---
TOTAL	462	372	286.2	194.9	305.9	610	590	2150	5528	1962	615	295.6
MEAN	14.9	12.4	9.23	6.29	10.5	19.7	19.7	69.4	184	63.3	19.8	9.85
MAX	21	15	11	11	28	24	23	344	600	104	34	12
MIN	11	10	6.8	4.2	4.6	16	14	16	72	30	12	7.7
AC-FT	916	738	568	387	607	1210	1170	4260	10960	3890	1220	586
CFSM	.03	.03	.02	.01	.02	.05	.05	.16	.43	.15	.05	.02
IN.	.04	.03	.02	.02	.03	.05	.05	.19	.48	.17	.05	.03

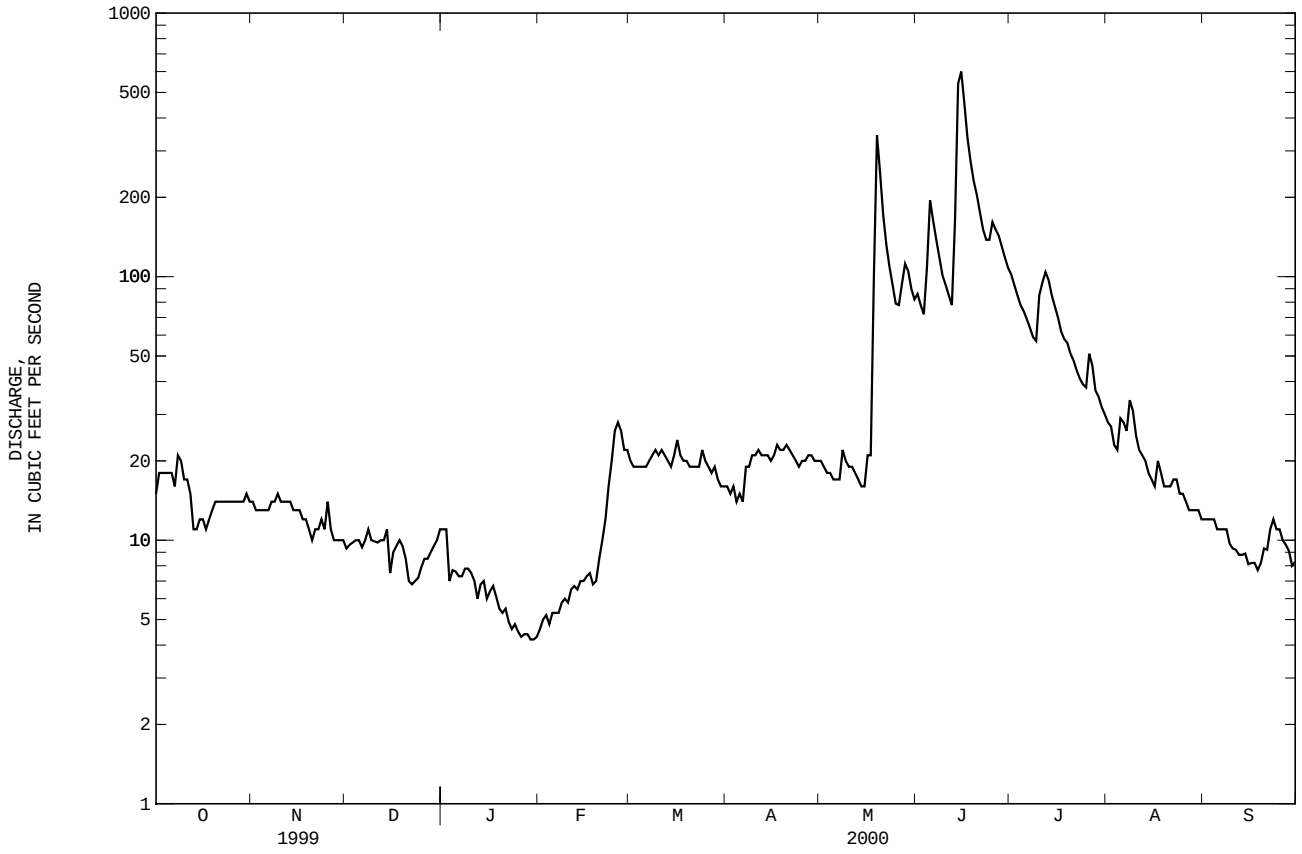
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 2000, BY WATER YEAR (WY)

MEAN	126	143	79.5	44.2	84.3	339	471	367	482	323	142	131
MAX	492	796	305	180	402	1019	1462	912	1973	2243	706	597
(WY)	1983	1980	1983	1983	1983	1983	1983	1993	1993	1993	1993	1979
MIN	9.23	8.11	1.91	.51	.000	14.0	19.7	54.9	33.8	33.4	15.3	9.85
(WY)	1990	1990	1990	1979	1979	1990	2000	1981	1989	1989	1989	2000

06605000 OCHEYEDAN RIVER NEAR SPENCER, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1978 - 2000	
ANNUAL TOTAL	59979.2		13371.6			
ANNUAL MEAN	164		36.5		228	
HIGHEST ANNUAL MEAN					763	1993
LOWEST ANNUAL MEAN					33.4	1989
HIGHEST DAILY MEAN	1590	Jun 6	600	Jun 15	5620	Jul 1 1993
LOWEST DAILY MEAN	6.8	Dec 22	4.2	Jan 29	.00	Jan 24 1979a
ANNUAL SEVEN-DAY MINIMUM	7.6	Dec 20	4.3	Jan 25	.00	Jan 24 1979
INSTANTANEOUS PEAK FLOW			524	Jun 15	6450	Jun 21 1983
INSTANTANEOUS PEAK STAGE			4.61	Jun 15	11.28	Jul 1 1993
INSTANTANEOUS LOW FLOW			4.1	Dec 7		
ANNUAL RUNOFF (AC-FT)	119000		26520		165100	
ANNUAL RUNOFF (CFSM)	.39		.086		.53	
ANNUAL RUNOFF (INCHES)	5.24		1.17		7.27	
10 PERCENT EXCEEDS	434		94		544	
50 PERCENT EXCEEDS	53		16		92	
90 PERCENT EXCEEDS	11		7.0		14	

a Also Jan. 25 to Mar. 9, 1979, Dec. 22, 1989 to Jan. 5, 1990.
e Estimated.



06605850 LITTLE SIOUX RIVER AT LINN GROVE, IA

LOCATION.--Lat 42°53'45", long 95°14'35", in SW$^1/_4$ SE$^1/_4$ SW$^1/_4$ sec.5, T.93 N., R.37 W., Buena Vista County, Hydrologic Unit 10230003, on right bank 500 ft upstream of concrete dam, 1300 ft upstream of bridge on County Highway M36, in Linn Grove, and at mile 122.5.

DRAINAGE AREA.--1,548 mi^2.

PERIOD OF RECORD.--October 1972 to current year.

REVISED RECORDS.--WDR IA-80-1: 1978-79.

GAGE.--Water-stage recorder. Datum of gage is 1,223.60 ft above sea level. Oct. 1, 1972 to Nov. 17, 1999, water-stage recorder, 0.25 mi downstream at current datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 10, 1953, gage height 20.96 ft; discharge, 22,500 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57	57	57	52	e26	139	66	71	343	335	99	73
2	62	55	59	55	26	129	65	68	333	333	93	69
3	64	54	61	55	26	111	62	67	303	381	87	69
4	64	51	62	e36	27	102	60	64	294	370	81	66
5	63	51	62	e38	28	95	57	62	368	330	86	62
6	62	55	59	42	28	90	57	59	470	285	103	58
7	58	55	49	39	30	88	61	59	500	255	112	57
8	59	55	59	39	31	90	67	66	466	224	146	55
9	58	55	71	40	32	94	80	73	436	199	166	52
10	65	55	55	41	35	97	82	81	399	241	162	48
11	66	54	50	e36	38	90	82	74	368	393	130	41
12	58	54	54	e38	39	87	85	69	345	427	102	37
13	56	54	51	e36	40	82	81	65	338	412	259	37
14	55	51	56	e37	41	80	79	62	484	378	270	41
15	55	50	59	37	41	83	82	60	1040	344	178	43
16	54	49	e32	e34	44	83	80	65	1300	315	133	38
17	53	54	e38	36	46	79	82	73	1180	293	236	33
18	52	58	49	35	46	77	91	84	954	272	311	32
19	51	60	52	e34	46	83	100	152	782	245	234	34
20	54	61	49	e32	48	86	94	540	656	231	178	34
21	56	59	42	e32	49	83	89	652	584	205	153	32
22	56	55	35	e32	55	81	86	567	511	190	147	35
23	55	62	34	e31	80	81	79	503	467	182	147	39
24	54	64	35	e29	114	83	73	452	440	163	144	42
25	55	64	36	e29	168	87	70	405	427	147	131	41
26	56	62	39	e28	237	84	66	365	436	149	115	39
27	56	60	42	e26	236	78	67	343	418	162	103	37
28	55	60	42	e24	226	74	66	351	416	154	92	37
29	55	59	45	e24	200	69	66	351	384	137	86	34
30	56	57	47	e25	---	66	72	339	357	126	81	32
31	58	---	50	e25	---	66	---	335	---	111	77	---
TOTAL	1778	1690	1531	1097	2083	2717	2247	6577	15799	7989	4442	1347
MEAN	57.4	56.3	49.4	35.4	71.8	87.6	74.9	212	527	258	143	44.9
MAX	66	64	71	55	237	139	100	652	1300	427	311	73
MIN	51	49	32	24	26	66	57	59	294	111	77	32
AC-FT	3530	3350	3040	2180	4130	5390	4460	13050	31340	15850	8810	2670
CFSM	.04	.04	.03	.02	.05	.06	.05	.14	.34	.17	.09	.03
IN.	.04	.04	.04	.03	.05	.07	.05	.16	.38	.19	.11	.03

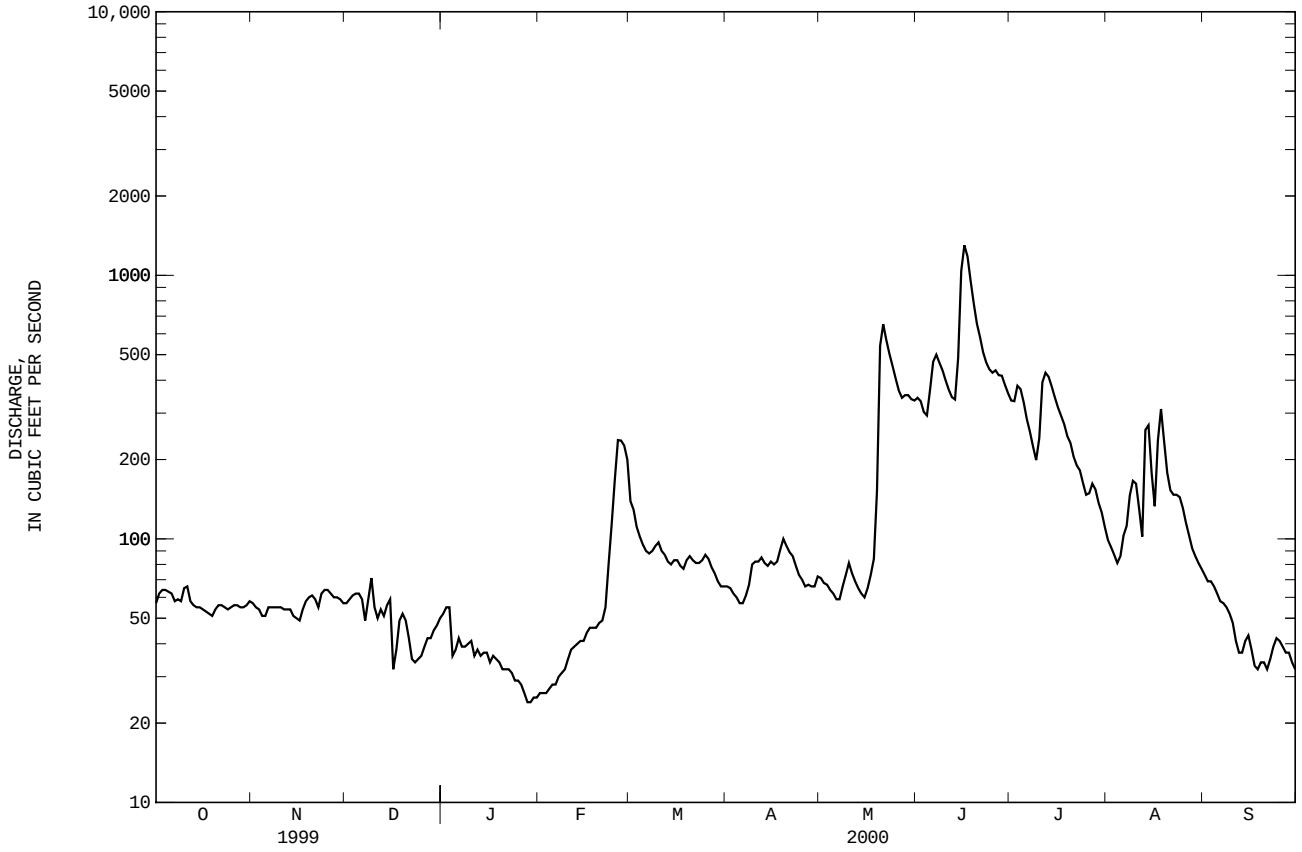
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 2000, BY WATER YEAR (WY)

MEAN	413	450	277	181	295	1104	1604	1265	1517	1066	483	403
MAX	2070	2050	1122	859	1161	3894	4952	3233	6898	7905	2906	2171
(WY)	1983	1980	1983	1983	1983	1983	1983	1993	1993	1993	1993	1993
MIN	21.3	22.0	6.08	3.12	5.92	75.9	74.9	69.4	60.3	36.3	26.4	22.7
(WY)	1977	1977	1990	1977	1977	1990	2000	1977	1977	1977	1976	1976

06605850 LITTLE SIOUX RIVER AT LINN GROVE, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1973 - 2000	
ANNUAL TOTAL	256929		49297			
ANNUAL MEAN	704		135		756	
HIGHEST ANNUAL MEAN					2763	1993
LOWEST ANNUAL MEAN					56.3	1977
HIGHEST DAILY MEAN	4640	Jun 15	1300	Jun 16	15000	Jul 2 1993
LOWEST DAILY MEAN	32	Dec 16	24	Jan 28	.70	Feb 4 1977
ANNUAL SEVEN-DAY MINIMUM	38	Dec 21	25	Jan 27	1.1	Jan 31 1977
INSTANTANEOUS PEAK FLOW			1320	Jun 16	16100	Jul 2 1993
INSTANTANEOUS PEAK STAGE			16.88	Jun 16	20.63	Jul 2 1993
ANNUAL RUNOFF (AC-FT)	509600		97780		547400	
ANNUAL RUNOFF (CFSM)	.45		.087		.49	
ANNUAL RUNOFF (INCHES)	6.17		1.18		6.63	
10 PERCENT EXCEEDS	1940		359		1970	
50 PERCENT EXCEEDS	245		66		320	
90 PERCENT EXCEEDS	54		35		41	

e Estimated



06606600 LITTLE SIOUX RIVER AT CORRECTIONVILLE, IA

LOCATION.--Lat 42°28'20", long 95°47'49", in NE$^1/_4$ NW$^1/_4$ sec.1, T.88 N., R.43 W., Woodbury County, Hydrologic Unit 10230003 on right bank 50 ft upstream from bridge on State Highway 31, 0.3 mi upstream from Bacon Creek, 0.5 mi west of Correctionville, 0.8 mi downstream from Pierson Creek, and at mile 56.0.

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

PERIOD OF RECORD.--May 1918 to July 1925, October 1928 to July 1932, June 1936 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--WSP 856: 1919. WSP 1240: 1924-25, 1931, 1932 (M), 1937, 1945 (M), 1947 (M), 1949 (M). WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,096.49 ft above sea level. May 28, 1918, to July 1, 1925 and Oct. 29, 1928 to July 15, 1929, nonrecording gage 0.2 mi downstream at datum 1.25 ft lower. July 16, 1929, to July 2, 1932, and June 15, 1936, to Nov. 7, 1938, nonrecording gage at present site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 23 or 24, 1891, reached a stage of 29.34 ft, present datum, from levels to floodmark by U.S. Soil Conservation Service (discharge not determined).

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	125	133	139	127	83	470	153	144	463	385	131	149
2	137	129	138	133	83	406	149	138	437	350	118	143
3	147	129	139	e120	85	320	146	132	421	352	110	137
4	145	132	139	e100	85	284	142	126	428	359	98	127
5	146	135	134	e90	88	262	137	120	412	396	100	117
6	146	133	126	e100	89	236	134	114	373	382	97	112
7	142	132	113	e115	92	225	133	110	421	335	86	109
8	142	135	123	126	95	220	133	126	562	285	93	103
9	141	139	145	126	102	212	140	136	606	249	134	95
10	141	139	110	122	109	203	142	118	574	227	159	88
11	138	136	94	110	102	199	145	115	525	212	170	84
12	136	137	115	118	106	198	154	113	466	239	177	74
13	140	137	102	109	107	195	160	107	429	381	163	70
14	141	136	121	112	108	190	166	101	461	457	140	63
15	137	132	134	113	116	191	165	99	496	470	156	59
16	133	131	e65	105	118	187	171	97	645	442	235	54
17	129	129	e80	111	120	179	176	101	1090	381	233	47
18	128	129	e100	108	120	184	177	141	1210	322	235	38
19	130	129	e85	104	122	192	177	132	1100	295	273	40
20	131	128	e75	97	124	187	180	135	969	280	344	58
21	133	129	e60	97	143	185	179	175	832	245	315	68
22	132	131	e70	98	172	184	180	487	730	225	272	89
23	128	152	79	94	211	188	176	760	654	212	263	96
24	127	156	86	89	276	197	168	730	583	197	250	84
25	133	147	87	90	403	194	160	678	532	185	232	75
26	134	150	89	88	553	189	153	633	488	177	224	73
27	135	153	94	81	543	180	169	619	447	178	210	75
28	135	149	97	75	522	175	168	546	451	163	196	71
29	137	142	108	77	518	168	156	478	425	156	181	67
30	138	138	116	81	---	163	149	515	412	159	167	58
31	136	---	118	82	---	158	---	497	---	148	156	---
TOTAL	4223	4107	3281	3198	5395	6721	4738	8523	17642	8844	5718	2523
MEAN	136	137	106	103	186	217	158	275	588	285	184	84.1
MAX	147	156	145	133	553	470	180	760	1210	470	344	149
MIN	125	128	60	75	83	158	133	97	373	148	86	38
AC-FT	8380	8150	6510	6340	10700	13330	9400	16910	34990	17540	11340	5000
CFSM	.05	.05	.04	.04	.07	.09	.06	.11	.24	.11	.07	.03
IN.	.06	.06	.05	.05	.08	.10	.07	.13	.26	.13	.09	.04

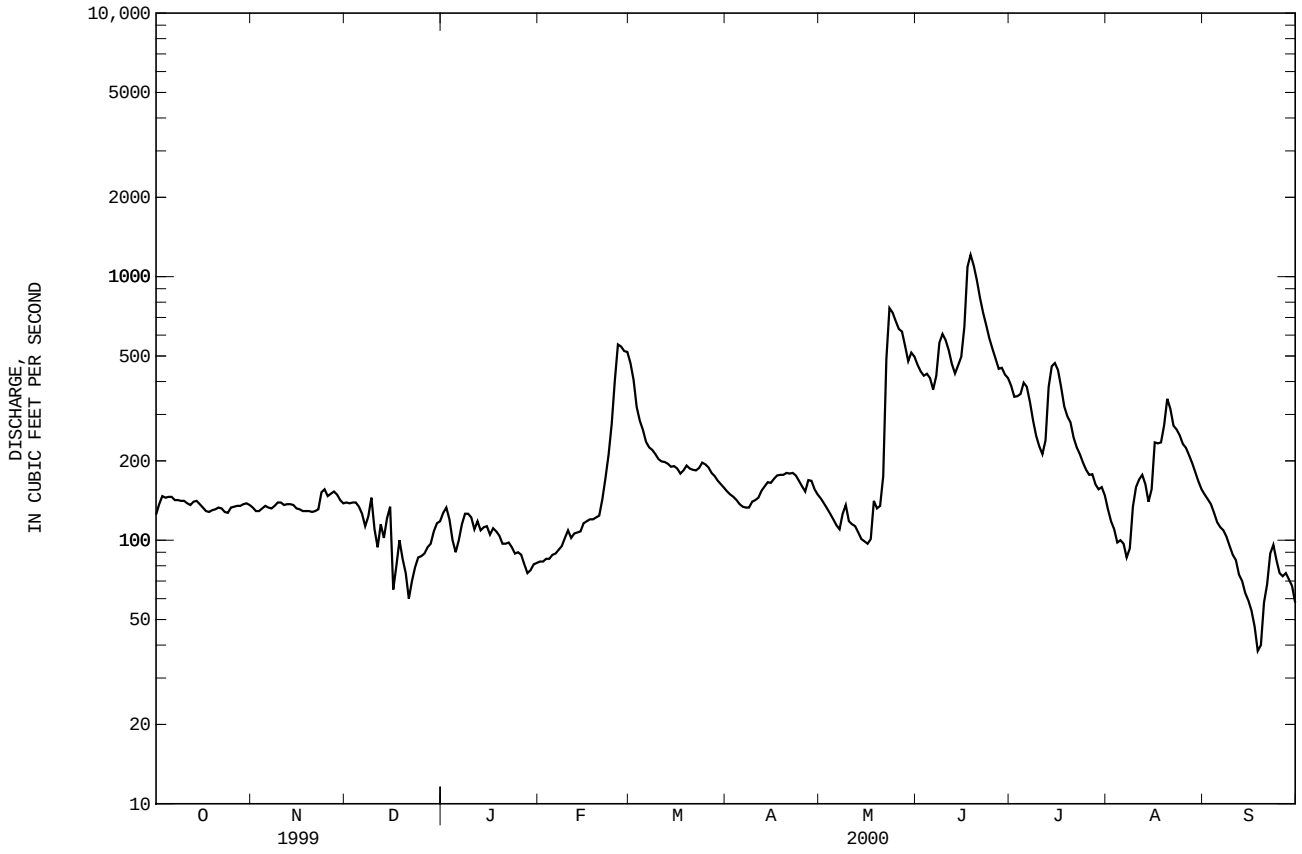
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 2000, BY WATER YEAR (WY)

MEAN	435	434	299	217	466	1463	1881	1386	1789	1230	604	505
MAX	2994	3079	1698	1323	2708	7328	8677	5002	10110	11600	4469	3671
(WY)	1983	1980	1983	1983	1971	1983	1983	1993	1993	1993	1993	1938
MIN	8.33	25.3	15.1	8.31	7.08	53.5	61.9	57.3	58.1	43.4	15.0	14.4
(WY)	1957	1959	1959	1959	1959	1931	1931	1931	1956	1956	1931	1958

06606600 LITTLE SIOUX RIVER AT CORRECTIONVILLE, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1919 - 2000	
ANNUAL TOTAL	414799		74913			
ANNUAL MEAN	1136		205		905	
HIGHEST ANNUAL MEAN					4304	1993
LOWEST ANNUAL MEAN					53.7	1931
HIGHEST DAILY MEAN	5460	Jun 17	1210	Jun 18	27900	Apr 7 1965
LOWEST DAILY MEAN	60	Dec 21	38	Sep 18	2.6	Jul 17 1936a
ANNUAL SEVEN-DAY MINIMUM	76	Dec 16	51	Sep 14	4.6	Oct 4 1956
INSTANTANEOUS PEAK FLOW			1220	Jun 18	29800	Apr 7 1965
INSTANTANEOUS PEAK STAGE			6.59	Jun 18	25.86	Apr 7 1965
INSTANTANEOUS LOW FLOW			37	Sep 18		
ANNUAL RUNOFF (AC-FT)	822800		148600		655300	
ANNUAL RUNOFF (CFSM)	.45		.082		.36	
ANNUAL RUNOFF (INCHES)	6.17		1.11		4.92	
10 PERCENT EXCEEDS	3040		453		2200	
50 PERCENT EXCEEDS	673		139		372	
90 PERCENT EXCEEDS	129		87		54	

a Also July 25, 1956, caused by construction of dam upstream.
e Estimated.



06607200 MAPLE RIVER AT MAPLETON, IA

LOCATION.--Lat 42°09'25", long 95°48'35", in SE$^1/_4$ SE$^1/_4$ sec.23, T.85 N., R.43 W., Monona County, Hydrologic Unit 10230005, on right bank at downstream side of bridge on State Highway 175, 1.0 mi downstream from Simmons Creek, 1.1 mi southwest of intersection of State Highways 175 and 141 in Mapleton, 2.1 mi upstream from McCleery Creek, and 16.0 mi upstream from mouth.

DRAINAGE AREA.--669 mi^2.

PERIOD OF RECORD.--October 1941 to current year.

REVISED RECORDS.--WSP 1310: 1942 (M), 1946 (M), 1948 (M). WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,080.86 ft above sea level. See WSP 1730 for history of changes prior to Sept. 20, 1956; Prior to Apr. 27, 2000, at datum 5.0 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	117	116	130	e90	e75	160	78	68	77	58	44	30
2	124	106	131	e85	e85	142	77	66	76	57	43	32
3	127	105	127	e85	e90	126	73	65	68	66	44	31
4	124	121	117	e80	e85	121	69	65	73	72	51	31
5	126	122	112	e70	e75	115	70	64	81	128	50	30
6	124	107	109	e75	e90	108	67	65	82	139	48	28
7	122	112	108	e80	e85	107	68	65	69	110	47	27
8	121	120	114	e85	e90	107	74	68	61	75	44	26
9	120	130	117	e90	e100	101	75	70	55	64	40	25
10	118	119	106	e95	e95	98	72	67	53	61	39	24
11	113	111	98	e95	e85	91	71	65	51	58	39	24
12	115	118	100	e90	e80	90	69	60	51	70	38	23
13	111	117	102	e85	e85	90	69	55	58	65	39	23
14	111	112	104	e90	e80	90	73	54	75	59	41	23
15	114	107	107	e95	e80	91	69	54	e80	56	35	27
16	110	110	56	e85	e80	90	93	55	85	61	34	24
17	103	111	76	e90	e85	85	104	56	77	64	35	24
18	105	118	e100	e95	e85	101	102	59	71	56	38	23
19	110	113	e90	e95	e80	113	95	59	65	57	39	23
20	113	116	e75	e85	e85	110	82	58	e62	59	39	26
21	117	123	e60	e75	142	102	77	59	61	56	37	26
22	111	125	e50	e75	189	99	78	53	56	54	39	33
23	102	130	e55	e80	250	104	76	50	54	53	46	35
24	103	130	e70	e75	274	122	69	49	52	51	42	34
25	110	130	e80	e75	282	116	65	48	86	53	39	33
26	110	129	e85	e70	260	104	66	64	85	52	36	32
27	112	125	e90	e70	207	94	84	94	71	49	34	30
28	109	125	e95	e70	171	87	85	99	91	47	34	27
29	111	118	e95	e70	158	83	77	86	79	47	33	25
30	114	123	e90	e70	---	82	70	78	66	46	32	23
31	120	---	e90	e70	---	79	---	75	---	45	30	---
TOTAL	3547	3549	2939	2540	3628	3208	2297	1993	2071	1988	1229	822
MEAN	114	118	94.8	81.9	125	103	76.6	64.3	69.0	64.1	39.6	27.4
MAX	127	130	131	95	282	160	104	99	91	139	51	35
MIN	102	105	50	70	75	79	65	48	51	45	30	23
AC-FT	7040	7040	5830	5040	7200	6360	4560	3950	4110	3940	2440	1630
CFSM	.17	.18	.14	.12	.19	.15	.11	.10	.10	.10	.06	.04
IN.	.20	.20	.16	.14	.20	.18	.13	.11	.12	.11	.07	.05

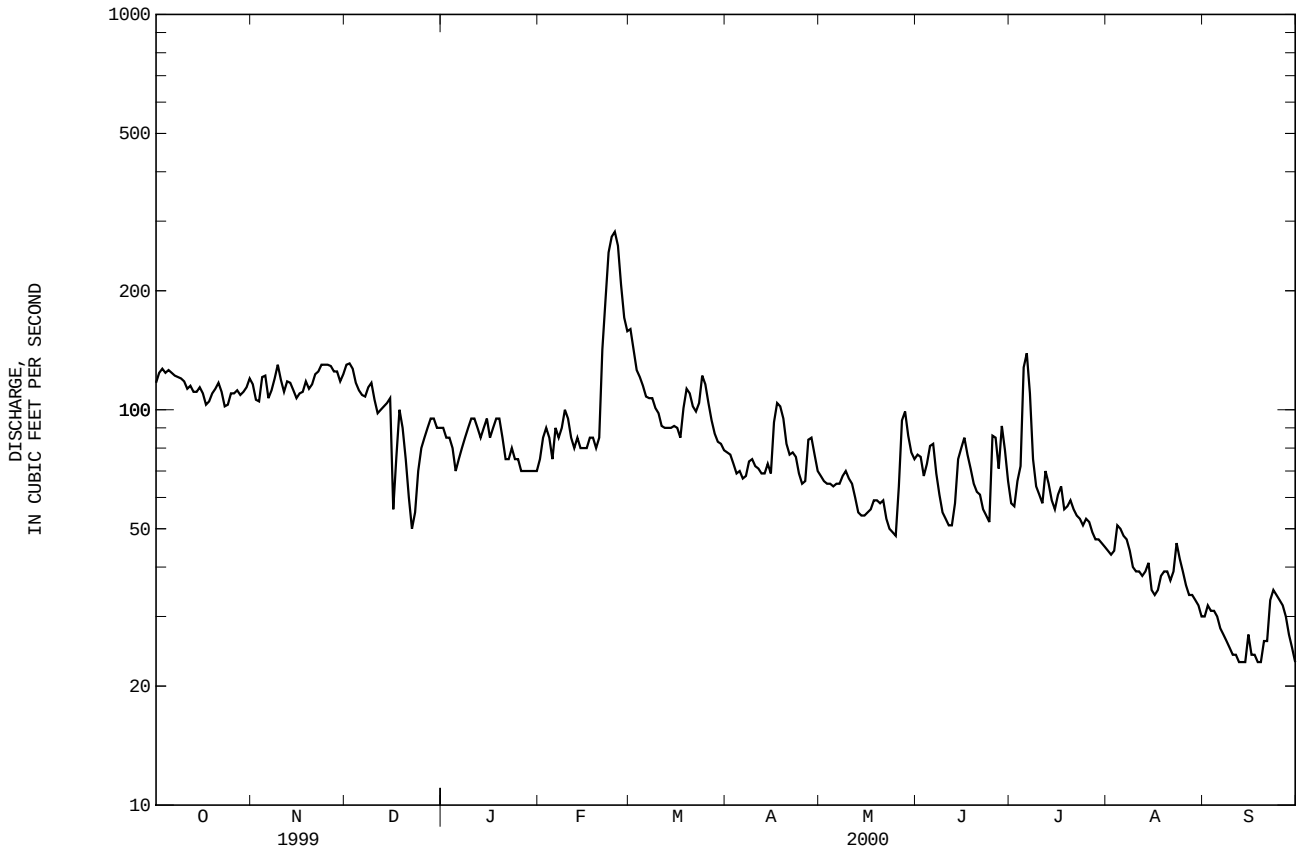
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 2000, BY WATER YEAR (WY)

MEAN	160	147	118	97.5	228	486	413	397	641	369	255	181
MAX	634	506	548	330	1016	1588	1889	1345	2856	1588	1230	1034
(WY)	1983	1993	1985	1983	1971	1983	1983	1984	1984	1993	1951	1951
MIN	9.36	14.6	5.74	3.25	3.64	25.6	19.9	35.9	48.5	33.3	12.6	5.48
(WY)	1957	1959	1959	1959	1959	1957	1957	1968	1955	1956	1956	1956

06607200 MAPLE RIVER AT MAPLETON, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1942 - 2000	
ANNUAL TOTAL	127565		29811			
ANNUAL MEAN	349		81.5		291	
HIGHEST ANNUAL MEAN					983	1983
LOWEST ANNUAL MEAN					24.5	1956
HIGHEST DAILY MEAN	2230	Apr 22	282	Feb 25	14400	Jun 21 1983
LOWEST DAILY MEAN	50	Dec 22	23	Sep 12b	.00	Sep 21 1945a
ANNUAL SEVEN-DAY MINIMUM	68	Dec 20	24	Sep 12	2.6	Feb 14 1959
INSTANTANEOUS PEAK FLOW			306	Feb 25	20800	Sep 12 1978
INSTANTANEOUS PEAK STAGE			1.03	Feb 25c	22.10	Jun 12 1950
INSTANTANEOUS LOW FLOW			20	Sep 30		
ANNUAL RUNOFF (AC-FT)	253000		59130		210700	
ANNUAL RUNOFF (CFSM)	.52		.12		.43	
ANNUAL RUNOFF (INCHES)	7.09		1.66		5.91	
10 PERCENT EXCEEDS	716		121		618	
50 PERCENT EXCEEDS	254		78		140	
90 PERCENT EXCEEDS	110		35		30	

a Also Sept. 22, 1945, caused by temporary ddam upstream.
b Many days during Sept.
c Gage datum in use.
e Estimated.



06607500 LITTLE SIOUX RIVER NEAR TURIN, IA

LOCATION.--Lat 41°57'52", long 95°58'21", in NW$^1/_4$ NE$^1/_4$ sec.33, T.83 N., R.44 W., Monona County, Hydrologic Unit 10230003, on left bank on downstream side of bridge on county highway E54, 1.0 mi east of gaging station on Monona-Harrison Ditch near Turin, 2.5 mi downstream from Maple River, 3.8 mi south of Turin, 6.2 mi northeast of Blencoe, and at mile 13.5.

DRAINAGE AREA.--3,526 mi^2.

PERIOD OF RECORD.--May 1942 to September 1957, January 1958 to current year. June 1942 to January 1958 at site 1,200 ft east on old river channel; records not equivalent owing to diversion into Monona-Harrison Ditch through equalizer ditch 1.5 mi upstream 1923 to 1958, and diversion with Monona-Harrison Ditch through diversion ditch 8.3 miles upstream since 1958.

REVISED RECORDS: WSP 1440: Drainage area. WSP 1560: Drainage area. WDR IA-95-1: Period of record.

GAGE.--Water-stage recorder. Datum of gage is 1,019.85 ft above sea level (U.S. Army Corps of Engineers bench mark). Prior to July 15, 1958, nonrecording gages near present site at different datums. July 15 to Sept. 3, 1958, nonrecording gage at present site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain gage and and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	307	328	338	e340	e230	652	323	241	541	638	242	194
2	311	314	334	e360	e250	598	319	231	520	675	237	200
3	323	314	339	e340	e280	550	297	225	506	677	216	191
4	337	318	340	e300	e260	496	283	229	507	684	220	179
5	349	327	315	e220	e240	469	298	230	517	699	217	172
6	344	315	304	e260	e260	454	280	227	522	896	207	169
7	353	320	313	e300	e280	435	286	227	504	742	205	169
8	338	329	313	e320	e270	425	282	233	527	534	201	157
9	329	334	302	e340	e300	375	291	220	636	469	188	164
10	332	324	302	e350	e330	370	289	220	655	422	196	150
11	328	312	297	e330	e280	364	292	223	595	345	223	140
12	331	320	293	e320	e280	363	286	195	560	405	245	128
13	317	326	291	e260	e290	352	303	179	532	402	243	128
14	323	324	303	e270	e270	366	318	186	486	478	247	119
15	331	315	300	e300	e290	369	305	186	513	540	223	118
16	323	315	e130	e240	e280	339	340	189	549	561	203	115
17	304	320	e190	e280	e290	333	368	182	643	549	267	118
18	302	327	e250	e300	e290	343	357	186	1030	478	298	115
19	307	306	e240	e280	e280	364	348	199	1170	442	294	110
20	314	305	e170	e250	e270	367	317	214	1110	425	312	111
21	326	314	e120	e230	e320	361	306	219	957	404	384	105
22	321	315	e120	e240	e380	354	315	229	849	372	382	117
23	303	369	e150	e230	468	361	314	360	786	345	345	122
24	307	373	e200	e230	590	378	295	600	761	338	346	121
25	325	366	e240	e220	622	381	285	608	922	344	310	121
26	328	353	e260	e200	715	370	279	615	1230	310	283	123
27	332	351	e280	e200	723	349	317	653	1440	285	262	120
28	323	341	e290	e210	720	324	308	636	1760	282	256	118
29	327	329	e300	e220	679	331	270	586	740	262	241	121
30	329	336	e320	e205	---	328	249	536	632	256	233	118
31	333	---	e320	e205	---	323	---	533	---	250	218	---
TOTAL	10057	9840	8264	8350	10737	12244	9120	9797	22700	14509	7944	4133
MEAN	324	328	267	269	370	395	304	316	757	468	256	138
MAX	353	373	340	360	723	652	368	653	1760	896	384	200
MIN	302	305	120	200	230	323	249	179	486	250	188	105
AC-FT	19950	19520	16390	16560	21300	24290	18090	19430	45030	28780	15760	8200
CFSM	.09	.09	.08	.08	.11	.11	.09	.09	.21	.13	.07	.04
IN.	.11	.10	.09	.09	.11	.13	.10	.10	.24	.15	.08	.04

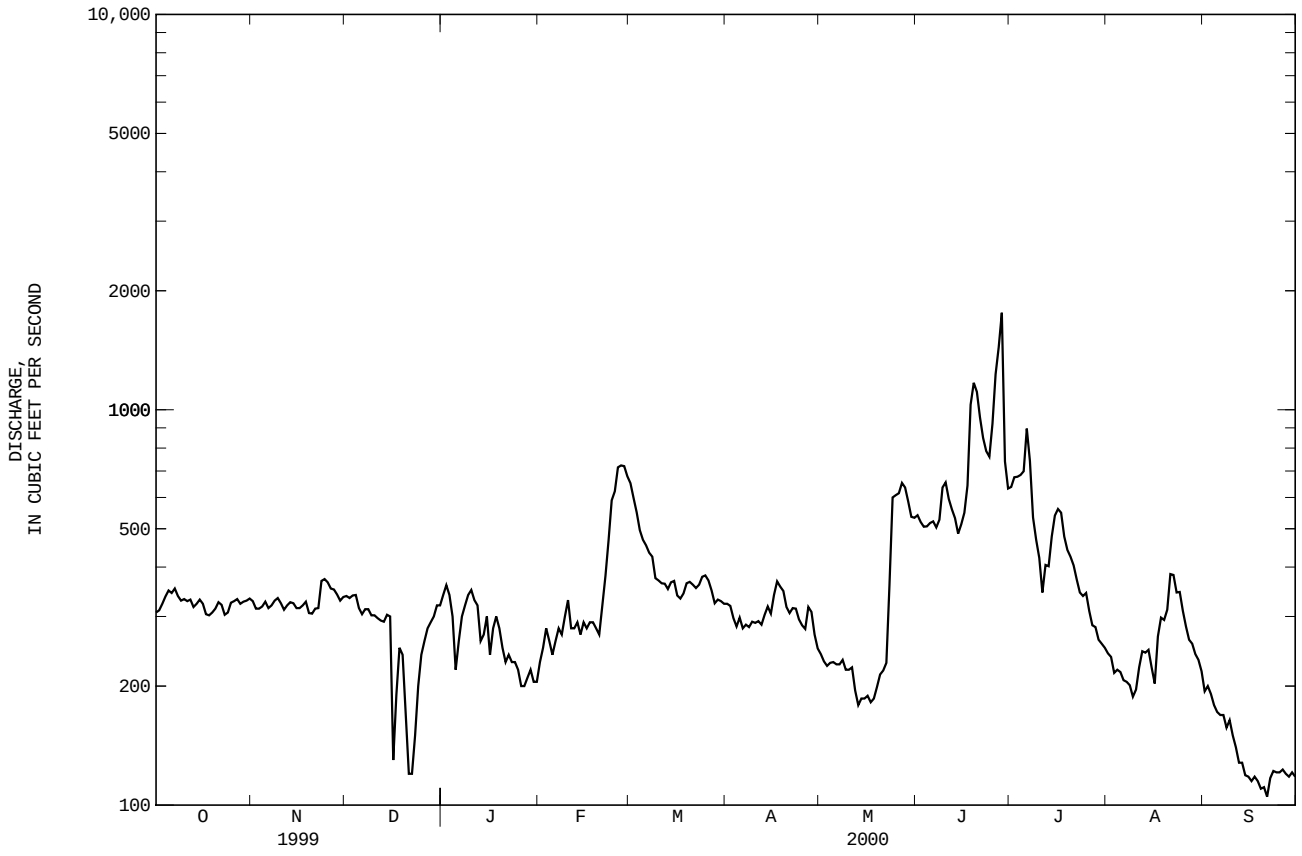
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2000, BY WATER YEAR (WY)

MEAN	821	831	660	483	852	2359	3140	2369	2967	2063	1055	855
MAX	3625	3612	2424	2250	3353	9054	10790	7938	15080	13110	5181	3980
(WY)	1983	1980	1983	1992	1971	1983	1965	1986	1984	1993	1993	1993
MIN	37.5	48.0	31.2	18.5	25.1	171	157	118	315	181	140	90.2
(WY)	1959	1959	1959	1977	1959	1964	1968	1968	1968	1968	1976	1976

06607500 LITTLE SIOUX RIVER NEAR TURIN, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1959 - 2000a	
ANNUAL TOTAL	600173		127695			
ANNUAL MEAN	1644		349		1539	
HIGHEST ANNUAL MEAN					5261	1993
LOWEST ANNUAL MEAN					167	1968
HIGHEST DAILY MEAN	6280	Jun 11	1760	Jun 28	28700	Jun 22 1996
LOWEST DAILY MEAN	120	Dec 21	105	Sep 21	17	Jan 18 1977b
ANNUAL SEVEN-DAY MINIMUM	174	Dec 16	113	Sep 16	17	Jan 27 1977
INSTANTANEOUS PEAK FLOW			2070	Jun 27	32000	Jun 22 1996
INSTANTANEOUS PEAK STAGE			9.23	Jun 27	27.44	Feb 19 1971c
INSTANTANEOUS LOW FLOW			97	Sep 20, 21		
ANNUAL RUNOFF (AC-FT)	1190000		253300		1115000	
ANNUAL RUNOFF (CFSM)	.47		.099		.44	
ANNUAL RUNOFF (INCHES)	6.33		1.35		5.93	
10 PERCENT EXCEEDS	4030		592		3670	
50 PERCENT EXCEEDS	1170		314		780	
90 PERCENT EXCEEDS	314		186		150	

a Post closure of diversion to Monona-Harrison Ditch.
b Also Jan. 19, 20, Jan. 28 to Feb. 1, 1977.
c Ice affected.
e Estimated.



06608500 SOLDIER RIVER AT PISGAH, IA

LOCATION.--Lat 41°49'50", long 95°55'52", in NW$^1/_4$ NE$^1/_4$ sec.14, T.81 N., R.44 W., Harrison County, Hydrologic Unit 10230001, on right bank at upstream side of bridge on county highway F20, at west edge of Pisgah, 0.4 mi downstream from Cobb Creek, 0.5 mi upstream from Mogger Ditch, and 13.1 mi upstream from mouth.

DRAINAGE AREA.--407 mi^2.

PERIOD OF RECORD.--March 1940 to current year.

REVISED RECORDS.--WSP 956: 1940 (M). WSP 1240: 1940, 1941 (M), 1947. WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,036.53 ft above sea level. Prior to Oct. 11, 1954, nonrecording gage at same site and datum with supplementary water-stage recorder operating above 8.2 ft gage height Mar. 2, 1946 to Sept. 24, 1953. Prior to Feb. 1954, on left bank at downstream side of bridge. Prior to June 21, 1989, at site 100 ft downstream at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	145	136	126	e120	e85	227	97	85	94	79	59	38
2	145	132	127	e120	e120	158	97	80	72	85	57	42
3	147	135	140	e110	e130	136	94	77	65	262	57	40
4	147	140	153	e95	e100	130	88	75	70	134	73	36
5	150	138	127	e85	e95	128	90	72	75	276	77	35
6	149	134	119	e95	e130	125	85	70	67	305	97	36
7	149	136	121	e110	e110	121	86	69	65	143	71	34
8	148	140	123	e120	e120	124	91	77	60	111	64	32
9	148	143	118	e130	e150	121	93	82	55	97	57	34
10	143	140	113	e140	131	111	93	76	54	95	53	31
11	138	131	117	e130	108	108	93	76	62	95	50	29
12	137	134	117	e130	107	107	88	72	64	127	50	26
13	132	135	111	e110	112	107	86	65	65	101	48	27
14	134	131	114	e120	101	106	85	64	71	84	47	26
15	137	125	118	e150	107	107	84	65	73	78	43	24
16	136	124	e85	e130	106	104	117	65	68	87	40	26
17	129	126	e90	e140	112	103	142	66	62	88	41	27
18	131	129	e100	e150	104	118	114	69	57	70	43	27
19	133	128	e110	e130	103	133	107	67	54	70	45	27
20	134	122	e75	e110	105	118	102	65	53	73	48	29
21	136	126	e49	e90	124	110	101	68	52	71	50	30
22	135	124	e45	e95	207	102	101	65	49	66	47	36
23	131	162	e65	e100	229	105	98	62	51	64	53	40
24	136	170	e85	e95	280	123	87	59	63	63	57	38
25	141	138	e110	e90	224	115	84	59	228	96	52	36
26	139	137	e130	e80	223	107	84	64	e392	71	47	34
27	139	139	e130	e80	155	103	111	102	e97	68	43	32
28	137	128	e140	e85	136	98	111	94	e167	74	44	30
29	138	121	e140	e85	148	100	91	73	e125	68	47	32
30	141	123	e130	e80	---	101	86	67	92	64	47	30
31	136	---	e130	e80	---	98	---	62	---	61	42	---
TOTAL	4321	4027	3458	3385	3962	3654	2886	2212	2622	3226	1649	964
MEAN	139	134	112	109	137	118	96.2	71.4	87.4	104	53.2	32.1
MAX	150	170	153	150	280	227	142	102	392	305	97	42
MIN	129	121	45	80	85	98	84	59	49	61	40	24
AC-FT	8570	7990	6860	6710	7860	7250	5720	4390	5200	6400	3270	1910
CFSM	.34	.33	.27	.27	.34	.29	.24	.18	.21	.26	.13	.08
IN.	.39	.37	.32	.31	.36	.33	.26	.20	.24	.29	.15	.09

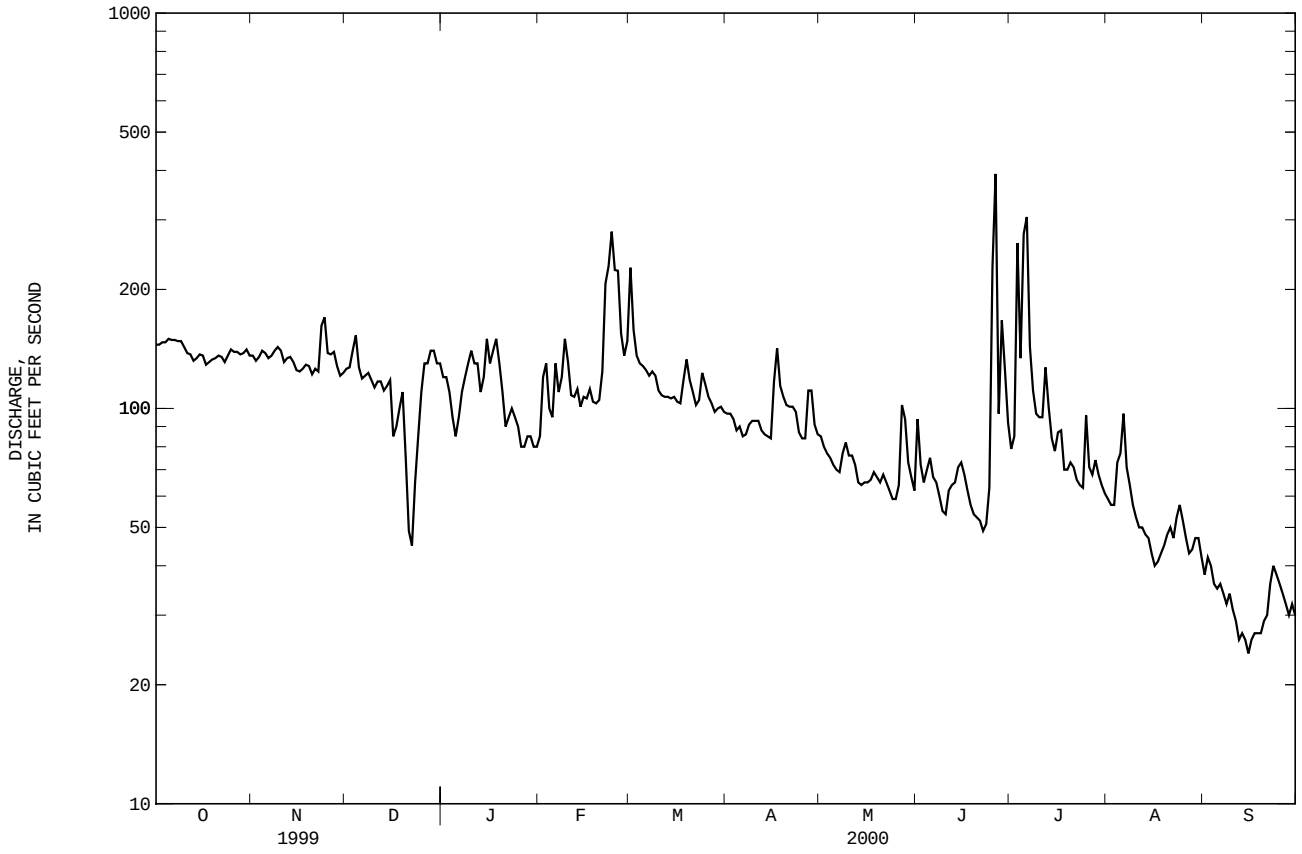
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2000, BY WATER YEAR (WY)

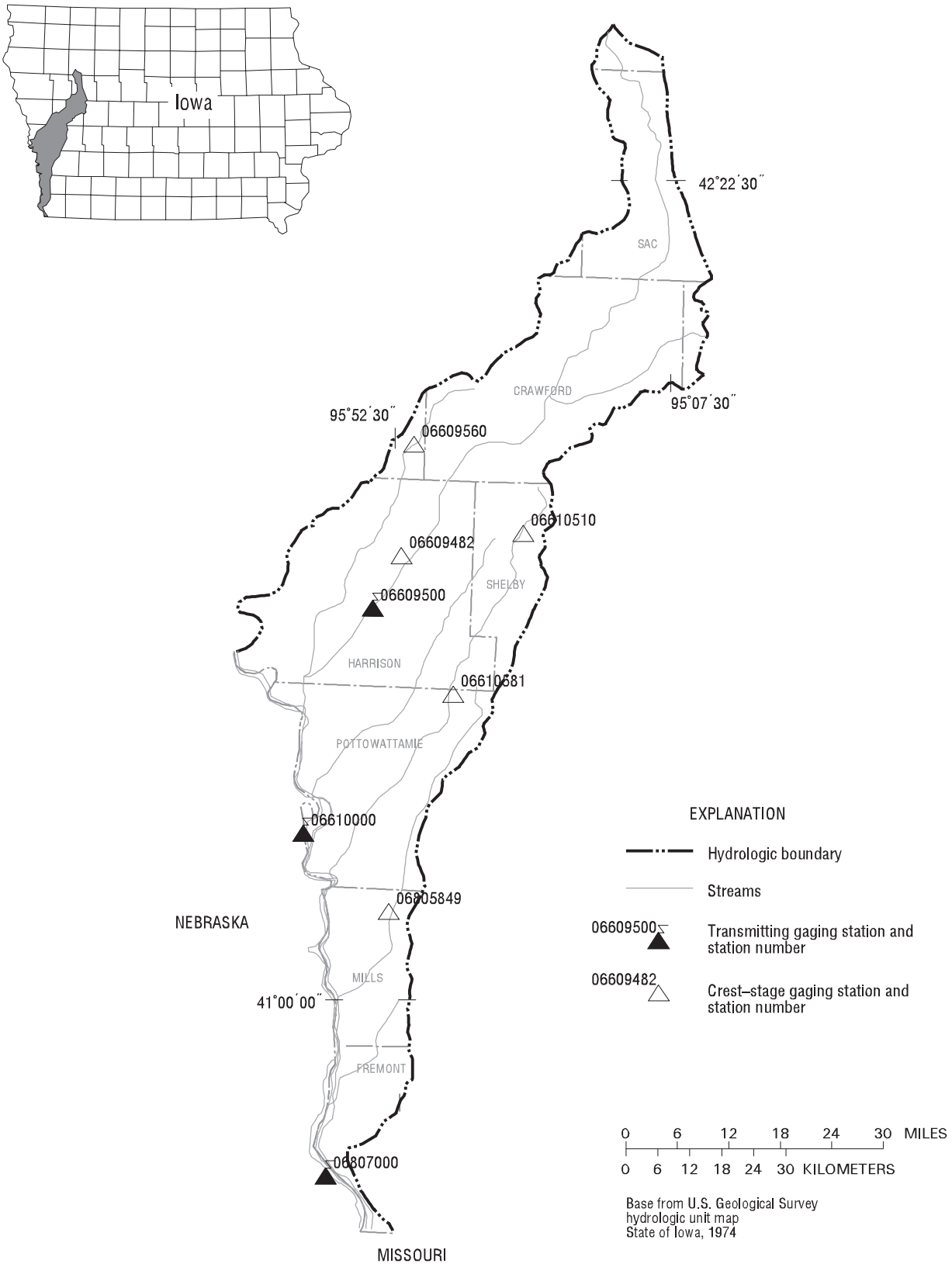
MEAN	82.2	76.0	67.7	67.0	157	265	168	197	310	202	144	112
MAX	330	274	281	431	653	897	623	555	1233	1607	632	482
(WY)	1994	1994	1985	1952	1971	1993	1983	1984	1991	1993	1993	1978
MIN	9.61	12.8	6.05	3.29	9.43	27.8	12.5	13.6	22.1	22.8	14.4	6.70
(WY)	1957	1959	1959	1959	1956	1957	1957	1957	1956	1970	1971	1956

06608500 SOLDIER RIVER AT PISGAH, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1941 - 2000	
ANNUAL TOTAL	100432		36366			
ANNUAL MEAN	275		99.4		154	
HIGHEST ANNUAL MEAN					487	1993
LOWEST ANNUAL MEAN					27.3	1956
HIGHEST DAILY MEAN	3530	Jul 2	392	Jun 26	20700	Jul 17 1996
LOWEST DAILY MEAN	45	Dec 22	24	Sep 15	2.0	Jan 2 1945a
ANNUAL SEVEN-DAY MINIMUM	76	Dec 18	26	Sep 12	2.0	Jan 2 1945
INSTANTANEOUS PEAK FLOW			1020	Jun 26	34700	Jul 17 1996
INSTANTANEOUS PEAK STAGE			6.41	Jun 26	28.87	Jul 17 1996
INSTANTANEOUS LOW FLOW			21	Sep 15		
ANNUAL RUNOFF (AC-FT)	199200		72130		111500	
ANNUAL RUNOFF (CFSM)	.68		.24		.38	
ANNUAL RUNOFF (INCHES)	9.18		3.32		5.14	
10 PERCENT EXCEEDS	476		140		286	
50 PERCENT EXCEEDS	186		98		73	
90 PERCENT EXCEEDS	123		44		16	

a Also Jan. 3-10, 1945.
e Estimated.




Iowa
42°22′30″
SAC
CRAWFORD
95°52′30″
95°07′30″
06609560
06610510
06609482
SHELBY
06609500
HARRISON
06610581
POTTOWATTAMIE
06610000
06805849
NEBRASKA
MILLS
41°00′00″
FREMONT
06807000
MISSOURI
EXPLANATION
Hydrologic boundary
Streams
06609500 Transmitting gaging station and station number
06609482 Crest–stage gaging station and station number
0 6 12 18 24 30 MILES
0 6 12 18 24 30 KILOMETERS
Base from U.S. Geological Survey
hydrologic unit map
State of Iowa, 1974

Gaging Stations

Crest Stage Gaging Stations

06609500 BOYER RIVER AT LOGAN, IA

LOCATION.--Lat 41°38'30", long 95°46'57", in SE$^1/_4$ NW$^1/_4$ sec.19, T.79 N., R.42 W., Harrison County, Hydrologic Unit 10230007, on left bank downstream side of county bridge on Eight Street in Logan, 0.5 mi downstream from Elk Grove Creek, 10.4 mi upstream from Willow Creek, and 15.7 mi upstream from mouth.

DRAINAGE AREA.--871 mi^2.

PERIOD OF RECORD.--May 1918 to November 1924, February 1925 to July 1925, November 1937 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--WSP 956: 1938-39. WSP 1240: 1918-19, 1920 (M), 1921, 1922 (M), 1924-25, 1938 (M), 1945. WSP 1440: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,009.38 ft above sea level (Chicago and Northwestern Railway Company bench mark). See WSP 1918 for history of changes prior to Oct. 18, 1960.

REMARKS.--Records are good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	200	198	160	e160	e100	258	135	111	93	81	54	53
2	199	188	163	e160	e150	239	127	96	98	97	50	47
3	208	193	168	e150	e170	207	128	92	85	308	56	41
4	208	193	192	e130	e140	192	120	91	105	217	83	41
5	211	199	171	e110	e130	184	118	87	90	163	78	44
6	207	186	153	e120	e170	175	115	85	e104	283	79	41
7	193	188	149	e140	e150	168	116	85	e86	309	74	43
8	198	191	152	e160	e160	171	120	106	e72	170	80	37
9	199	192	149	e190	e200	168	127	120	71	133	60	29
10	197	186	140	200	e180	165	127	115	67	119	54	28
11	199	174	138	184	e150	156	131	104	65	113	54	31
12	197	173	149	181	e150	152	124	101	72	129	51	23
13	197	171	144	e150	e160	153	118	93	94	118	53	25
14	198	170	143	e160	e140	151	112	94	109	102	56	24
15	200	168	156	178	e150	149	112	88	95	88	49	19
16	198	170	114	163	e150	144	133	90	86	87	44	21
17	190	172	117	174	e160	140	161	86	82	147	44	21
18	192	174	e140	181	162	149	145	84	81	98	49	24
19	198	174	e150	174	149	166	128	83	72	85	45	27
20	203	170	e110	e140	148	164	122	79	69	82	46	27
21	e211	169	e65	e110	165	154	116	77	65	81	49	19
22	e213	166	e60	e115	241	147	109	71	59	77	47	37
23	e203	201	e90	e120	328	147	107	69	56	71	62	41
24	199	239	e120	e110	384	160	104	66	68	67	63	43
25	206	193	e160	e100	372	159	102	62	162	85	59	39
26	204	180	e170	e95	343	148	103	69	500	78	61	37
27	198	175	e170	e95	268	141	120	96	187	71	56	36
28	e196	167	e180	e100	221	133	125	124	155	67	50	33
29	e205	159	e180	e100	216	127	118	106	178	63	59	28
30	e212	158	e170	e95	---	132	107	99	116	61	57	26
31	e203	---	e170	e95	---	156	---	95	---	60	58	---
TOTAL	6242	5437	4493	4340	5607	5055	3630	2824	3242	3710	1780	985
MEAN	201	181	145	140	193	163	121	91.1	108	120	57.4	32.8
MAX	213	239	192	200	384	258	161	124	500	309	83	53
MIN	190	158	60	95	100	127	102	62	56	60	44	19
AC-FT	12380	10780	8910	8610	11120	10030	7200	5600	6430	7360	3530	1950
CFSM	.23	.21	.17	.16	.22	.19	.14	.10	.12	.14	.07	.04
IN.	.27	.23	.19	.19	.24	.22	.16	.12	.14	.16	.08	.04

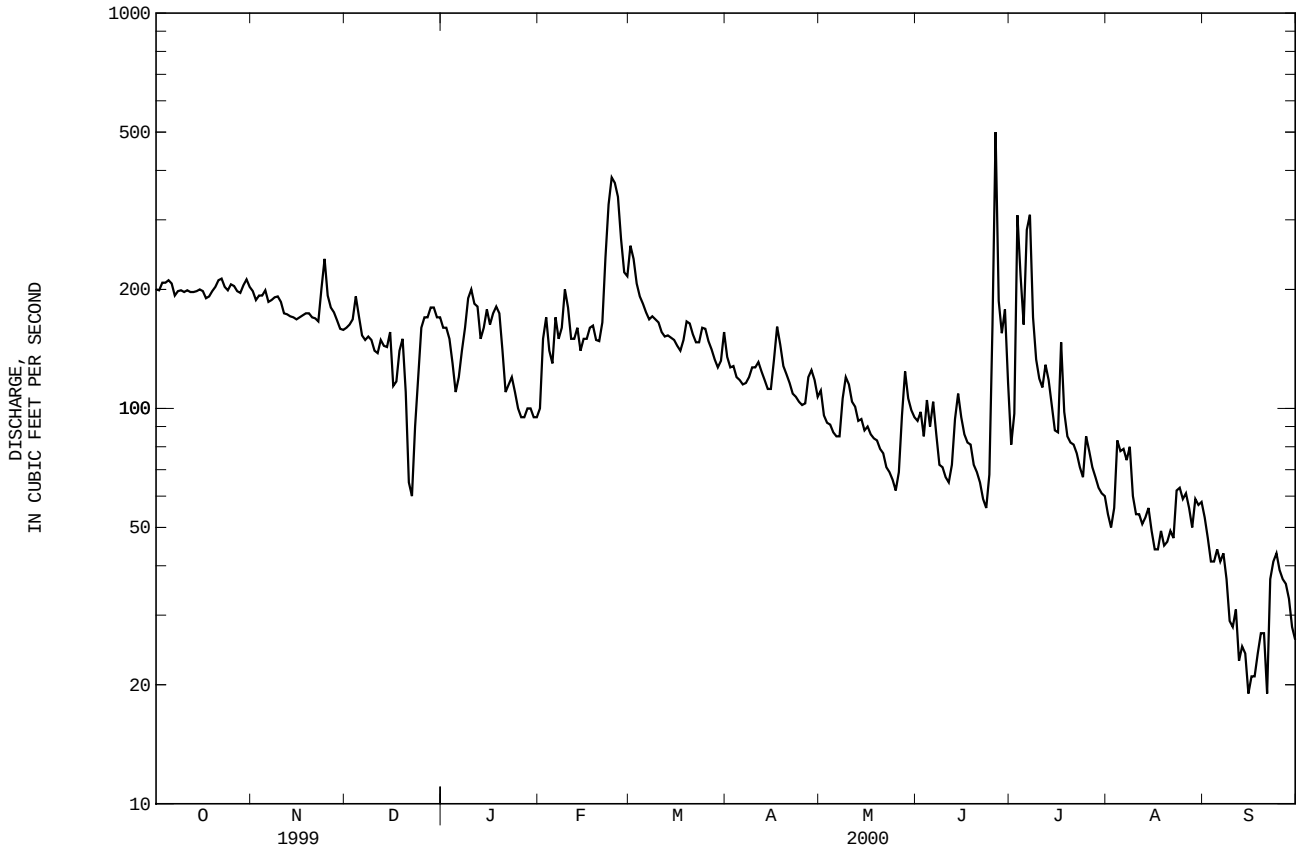
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 2000, BY WATER YEAR (WY)

MEAN	187	170	139	129	318	595	449	504	760	468	309	257
MAX	796	558	565	692	1209	2619	1988	1698	2541	3022	1636	1288
(WY)	1974	1974	1973	1973	1971	1979	1983	1984	1990	1993	1951	1978
MIN	11.1	8.33	6.68	3.06	3.55	40.4	23.3	39.9	33.3	51.0	34.5	11.6
(WY)	1957	1940	1938	1940	1940	1981	1957	1968	1956	1977	1976	1939

06609500 BOYER RIVER AT LOGAN, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1919 - 2000	
ANNUAL TOTAL	194655		47345			
ANNUAL MEAN	533		129		361	
HIGHEST ANNUAL MEAN					1018	1993
LOWEST ANNUAL MEAN					58.7	1956
HIGHEST DAILY MEAN	3280	Jul 2	500	Jun 26	24600	Jul 9 1993
LOWEST DAILY MEAN	60	Dec 22	19	Sep 15	1.5	Jul 16 1938
ANNUAL SEVEN-DAY MINIMUM	105	Dec 17	22	Sep 12	2.0	Jan 13 1940
INSTANTANEOUS PEAK FLOW			908	Jun 26	30800	Jun 17 1990
INSTANTANEOUS PEAK STAGE			5.58	Jun 26	25.22	Mar 1 1965a
INSTANTANEOUS LOW FLOW			17	Sep 15		
ANNUAL RUNOFF (AC-FT)	386100		93910		261300	
ANNUAL RUNOFF (CFSM)	.61		.15		.41	
ANNUAL RUNOFF (INCHES)	8.31		2.02		5.63	
10 PERCENT EXCEEDS	1120		199		757	
50 PERCENT EXCEEDS	323		127		165	
90 PERCENT EXCEEDS	167		49		32	

a Ice affected.
e Estimated



06610000 MISSOURI RIVER AT OMAHA, NE
(National stream-quality accounting network station)

LOCATION.--Lat 41°15'32", long 95°55'20", in SE$^1/_4$ NW$^1/_4$ sec.23, T.15 N., R.13 E., Douglas County, Hydrologic Unit 10230006, on right bank on left side of concrete floodwall, at foot of Douglas Street, 275 ft downstream from Interstate 480 Highway bridge in Omaha, and at mile 615.9.

DRAINAGE AREA.--322,800 mi^2, approximately. The 3,959 mi^2 in Great Divide basin are not included.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1928 to current year. April 1872 to December 1899 (gage heights only) in reports of the Missouri River Commission and since January 1875, (gage heights only) in reports of the U.S. Weather Bureau.

REVISED RECORDS.--WSP 761: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 948.24 ft above sea level. See WSP 1730 for history of changes prior to Sept. 30, 1936. Oct. 1, 1936 to Sept. 30, 1982 at datum 10.00 ft higher.

REMARKS.--No estimated daily discharge, records good. Flow regulated by upstream main-stem reservoirs. Fort Randall Dam was completed in July 1952, with storage beginning in December 1952. Gavins Point Dam was completed in July 1955, with storage beginning in December 1955. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 396,000 ft^3/s Apr. 18, 1952, gage height, 40.20 ft, present datum; minimum, about 2,200 ft^3/s Jan. 6, 1937; minimum gage height, 6.85 ft, present datum, Feb. 5, 1989, result of freezeup.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51500	50400	48500	28400	23600	22900	32500	33900	41400	39000	36500	34000
2	51000	50300	48400	28300	23000	22700	32100	34500	40700	38800	36300	34700
3	51300	50000	48100	28200	22700	21800	31700	34800	40600	39400	36300	35900
4	51200	49800	48500	28100	22400	21900	31700	34300	39800	39300	36100	35400
5	50100	49400	47200	27700	21800	21500	32200	34500	39300	38800	34900	34900
6	49500	49000	44900	26900	21100	21400	32400	34700	39800	40500	35000	34700
7	48600	48700	42300	27400	20900	21400	32800	34800	39900	40100	35600	35000
8	48700	48700	39100	28300	21200	21700	32900	35400	39000	38900	34600	35100
9	49100	48900	36700	27800	21000	22000	33900	34900	39300	38200	34700	35200
10	48800	49100	34500	27600	21000	22300	34200	34500	38800	37900	36200	35800
11	48500	49500	32100	27600	20900	22600	33400	34000	38800	37800	35700	35900
12	48600	49900	29900	27300	20900	22100	33300	34400	39400	38000	35100	36000
13	49400	49500	28900	26700	20600	21900	33600	37400	39000	39700	35300	36100
14	49600	49600	28500	26800	20700	22200	33600	40000	39400	39300	35200	36200
15	49600	50000	28300	27100	20500	22300	33700	40300	42400	38000	34300	36300
16	50000	50100	28600	27400	20500	22000	34200	39600	43000	38200	34600	36100
17	49900	50500	28300	27700	21100	22100	34900	38900	40900	38900	34400	36000
18	49800	50600	27600	26400	21600	21900	35500	38700	40500	39200	34900	36000
19	49700	50800	27500	26600	21700	21600	33800	41200	40800	38200	35800	35800
20	49400	51100	27600	28000	21800	24100	33400	43300	40800	38100	35100	36300
21	49200	50600	27600	27000	22100	26900	34100	41400	40700	38700	35200	36900
22	49000	50100	26700	26200	22300	29800	34600	41600	40700	38000	35700	36700
23	49200	50600	26400	26800	22900	33100	34600	43200	39900	37500	35800	36800
24	49600	50700	27000	27500	23300	34300	33700	42900	40100	37600	35900	36900
25	49600	49700	27800	27200	24100	34000	33700	42500	40600	38200	35300	36100
26	49300	49500	28300	26300	23900	34000	34200	42400	48600	37700	35200	36000
27	49000	48400	27600	25800	23400	33600	34800	42400	52300	38400	35000	35200
28	50100	48400	27600	25100	23300	33200	35200	42500	41700	37400	35000	34400
29	50500	48300	27700	24700	23000	32900	34800	41700	40900	36900	34500	34600
30	50700	48400	28000	24800	---	32800	34200	40800	39900	36900	34500	34900
31	50500	---	28200	24200	---	32800	---	40900	---	36800	33800	---
TOTAL	1541000	1490600	1028400	835900	637300	799800	1009700	1196400	1229000	1190400	1092500	1069900
MEAN	49710	49690	33170	26960	21980	25800	33660	38590	40970	38400	35240	35660
MAX	51500	51100	48500	28400	24100	34300	35500	43300	52300	40500	36500	36900
MIN	48500	48300	26400	24200	20500	21400	31700	33900	38800	36800	33800	34000
AC-FT	3057000	2957000	2040000	1658000	1264000	1586000	2003000	2373000	2438000	2361000	2167000	2122000
CFSM	.15	.15	.10	.08	.07	.08	.10	.12	.13	.12	.11	.11
IN.	.18	.17	.12	.10	.07	.09	.12	.14	.14	.14	.13	.12

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 2000, BY WATER YEAR (WY)

MEAN	38730	34300	21230	17810	19990	28220	38860	38680	42190	40840	39340	39290
MAX	74070	75040	44260	33250	40410	54660	93840	87620	76120	78560	68890	69770
(WY)	1998	1998	1998	1987	1997	1997	1997	1997	1997	1993	1997	1997
MIN	16920	8324	8296	8425	8162	10170	16480	26450	26890	27150	27280	28290
(WY)	1962	1962	1962	1964	1963	1957	1957	1961	1961	1958	1958	1958

06610000 MISSOURI RIVER AT OMAHA, NE--Continued
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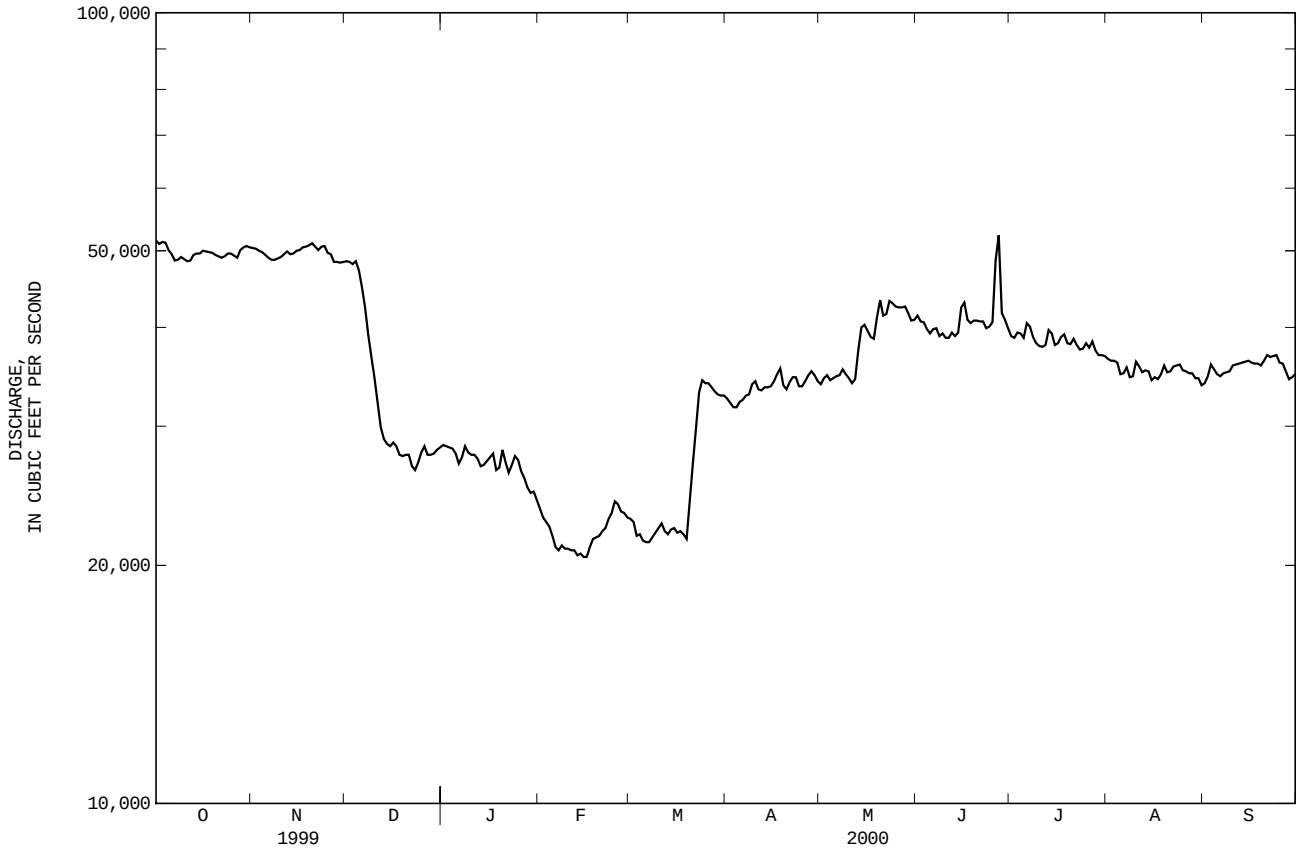
SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1953 - 2000a	
ANNUAL TOTAL	16425000		13120900			
ANNUAL MEAN	45000		35850		33330	
HIGHEST ANNUAL MEAN					62150	1997
LOWEST ANNUAL MEAN					20490	1957
HIGHEST DAILY MEAN	70900	Aug 7	52300	Jun 27	116000	Apr 4 1960
LOWEST DAILY MEAN	26400	Dec 23	20500	Feb 15b	2440	Dec 14 1961
ANNUAL SEVEN-DAY MINIMUM	27200	Dec 18	20700	Feb 10	4300	Nov 28 1955
INSTANTANEOUS PEAK FLOW			56600	Jun 27	120000	Apr 1 1960
INSTANTANEOUS PEAK STAGE			21.13	Jun 27	30.26	Jul 10 1993
INSTANTANEOUS LOW FLOW			20400	Feb 16		
ANNUAL RUNOFF (AC-FT)	32580000		26030000		24150000	
ANNUAL RUNOFF (CFSM)	.14		.11		.10	
ANNUAL RUNOFF (INCHES)	1.89		1.51		1.40	
10 PERCENT EXCEEDS	55700		49500		52900	
50 PERCENT EXCEEDS	48400		35300		32700	
90 PERCENT EXCEEDS	29600		22700		13600	

a Post regulation.
b Also Feb. 16.



06610000 MISSOURI RIVER AT OMAHA, NE--Continued
(National stream-quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Water quality samples were collected from Interstate 80 highway bridge 2.0 mi downstream from gaging station.

PERIOD OF RECORD.--July 1969 to 1976, 1978 to current year. Daily sediment loads for April 1939 to September 1971 are in reports of U.S. Army Corps of Engineers.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1972 to September 1976, January 1978 to September 1981, October 1991 to current year.
WATER TEMPERATURES: October 1971 to September 1976, January 1978 to September 1981, October 1991 to current year.
SUSPENDED-SEDIMENT DISCHARGE: October 1971 to September 1976, 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, 950 microsiemens Dec. 4, 5, 1980; minimum daily, 335 microsiemens Mar. 22, 1978.
WATER TEMPERATURES: Maximum daily, 32.0°C July 24, 1972; minimum daily, 0.0°C on many days during winter period.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 8,180 mg/L May 19, 1974; minimum daily mean, 71 mg/L Jan. 3, 1993.
SEDIMENT LOADS: Maximum daily, 1,470,000 tons Aug. 6, 1996; minimum daily, 2,560 tons Jan. 3, 1993.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 852 microsiemens July 24; minimum daily, 701 microsiemens June 27.
WATER TEMPERATURES: Maximum daily, 28.5°C July 10, 17, and Aug. 11; minimum daily, 0.0°C Feb. 1.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,130 mg/L June 27; minimum daily mean, 92 mg/L Mar. 7.
SEDIMENT LOADS: Maximum daily, 302,000 tons June 27; minimum daily, 5,320 tons Mar. 7.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

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)	TUR-BID-ITY (NTU) (00076)	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)
OCT												
12...	1130	48700	812	8.4	16.0	18.0	1.1	8.7	92	734	250	61.8
DEC												
08...	1100	35000	578	8.2	4.5	3.0	12	12.0	96	735	260	63.2
FEB												
15...	1130	20500	609	8.5	1.5	8.0	6.9	13.2	99	727	270	68.3
MAR												
07...	1030	21300	788	8.3	10.0	14.5	22	10.9	101	734	260	64.2
APR												
04...	1100	31500	668	8.6	10.0	7.5	16	11.1	102	739	260	62.6
18...	1030	35600	802	8.5	8.0	16.5	15	10.6	93	735	250	59.8
MAY												
02...	1100	33000	805	8.6	15.5	14.0	3.5	10.4	108	737	250	60.3
16...	1000	39600	802	8.5	15.5	16.5	5.2	9.3	97	731	250	61.6
JUN												
02...	1200	41200	817	8.4	20.5	19.5	20	8.8	101	743	260	63.9
13...	1030	38800	816	8.6	24.5	26.0	25	7.9	100	727	270	64.3
27...	0900	54800	684	8.1	23.0	18.0	520	5.7	69	740	210	51.9
AUG												
04...	1200	36400	836	8.5	26.0	24.5	28	7.7	99	736	170	42.0
15...	1000	34300	802	8.5	28.0	23.0	28	7.7	102	737	250	59.5
SEP												
05...	1100	34800	814	8.5	24.0	18.0	33	7.8	95	743	240	57.6

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	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)
OCT												
12...	23.5	72.6	2	5.5	159	0	193	231	12.7	.5	7.8	534
DEC												
08...	24.2	63.3	2	4.7	175	0	214	235	12.4	.5	7.3	533
FEB												
15...	24.9	60.9	2	5.8	186	0	227	216	13.9	.4	10.2	551
MAR												
07...	24.0	56.6	2	5.3	171	0	208	199	13.9	.5	10.7	519
APR												
04...	25.2	68.0	2	5.9	168	2	202	227	13.2	.5	8.1	536
18...	24.8	67.8	2	5.2	160	1	193	220	13.7	.5	7.4	520
MAY												
02...	25.1	71.1	2	5.6	160	9	176	227	13.5	.5	6.0	528
16...	24.0	68.3	2	4.9	154	3	181	224	13.8	.6	7.3	526
JUN												
02...	25.1	70.8	2	5.6	156	1	189	226	13.8	.4	8.4	533
13...	25.3	76.5	2	5.3	154	5	178	226	12.2	.5	6.4	521
27...	19.2	59.5	2	5.4	129	0	158	181	10.7	.4	6.5	439
AUG												
04...	16.6	49.0	2	3.6	149	3	176	238	13.8	.5	4.2	550
15...	24.6	69.8	2	5.0	146	2	174	226	12.9	.5	6.7	523
SEP												
05...	24.2	74.5	2	5.4	148	3	175	228	11.9	.5	6.5	524

06610000 MISSOURI RIVER AT OMAHA, NE--Continued
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WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	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)	PHOS-PHORUS ORTHO, 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)
OCT											
12...	.73	.325	<.010	<.020	.55	.009	.019	.144	297	39100	25
DEC											
08...	.72	.400	<.010	.031	.44	.015	.028	.144	238	22500	24
FEB											
15...	.75	.747	<.010	.174	.53	.036	.039	.125	221	12200	29
MAR											
07...	.71	.879	.011	.047	.53	.047	.051	.095	206	11800	28
APR											
04...	.73	.276	<.010	<.020	.53	.008	.009	.134	231	19600	23
18...	.71	.367	<.010	.031	.53	.010	.015	.093	298	28600	23
MAY											
02...	.72	.188	<.010	<.020	.46	<.001	E.004	.148	175	15600	0
16...	.72	.193	<.010	<.020	.58	.003	.008	.238	248	26500	34
JUN											
02...	.72	.462	.010	<.020	.64	.019	.026	.158	217	24100	36
13...	.71	.299	<.010	<.020	.74	.004	.009	.128	187	19600	37
27...	.60	1.13	.064	.085	4.7	.046	.060	2.12	2190	324000	93
AUG											
04...	.75	.085	.011	<.020	.55	.004	.009	.117	156	15300	34
15...	.71	.062	<.010	<.020	.65	.005	.010	.132	171	15800	34
SEP											
05...	.71	.085	<.010	<.020	.42	.008	.012	.154	253	23800	29

DATE	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)	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)
OCT											
12...	2.4	2	49	<1	<1.0	<.8	<1	2	<10	<1	53.8
DEC											
08...	2.3	--	--	--	--	--	--	--	<10	--	48.5
FEB											
15...	E1.9	--	--	--	--	--	--	--	<10	--	49.2
MAR											
07...	E1.9	6	58	<1	<1.0	<1.0	<1	2	<10	<1	45.1
APR											
04...	E2.0	--	--	--	--	--	--	--	<10	--	51.1
18...	E1.9	--	--	--	--	--	--	--	<10	--	50.4
MAY											
02...	3.3	--	--	--	--	--	--	--	<10	--	54.9
16...	2.2	14	44	<1	<1.0	<.8	<1	2	<10	<1	50.6
JUN											
02...	2.1	--	--	--	--	--	--	--	<10	--	52.5
13...	2.4	--	--	--	--	--	--	--	<10	--	54.4
27...	E2.0	--	--	--	--	--	--	--	<10	--	43.1
AUG											
04...	2.4	20	34	<1	<1.0	<.8	<1	3	<10	<1	37.5
15...	E1.8	--	--	--	--	--	--	--	<10	--	46.2
SEP											
05...	E2.0	--	--	--	--	--	--	--	<10	--	50.1

06610000 MISSOURI RIVER AT OMAHA, NE--Continued
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WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	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)	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)
OCT											
12...	<1	3	3	E2.0	<1	550	<10	1	4	E.010	8.3
DEC											
08...	--	--	--	E2.3	--	534	<10	--	--	E.008	8.2
FEB											
15...	--	--	--	2.6	--	601	<10	--	--	E.007	8.1
MAR											
07...	4	3	2	E2.3	<1	540	<10	2	4	E.008	8.2
APR											
04...	--	--	--	E1.8	--	569	<10	--	--	E.007	8.3
18...	--	--	--	E2.2	--	543	<10	--	--	E.011	8.3
MAY											
02...	--	--	--	E2.0	--	562	<10	--	--	E.010	8.4
16...	1	4	4	2.4	<1	547	<10	5	4	E.012	8.4
JUN											
02...	--	--	--	E2.0	--	547	<10	--	--	E.023	8.2
13...	--	--	--	E1.4	--	561	E9	--	--	E.018	8.5
27...	--	--	--	2.7	--	433	<10	--	--	E.070	7.9
AUG											
04...	<1	2	2	E1.9	<1	379	<10	6	3	E.017	8.4
15...	--	--	--	E1.5	--	554	<10	--	--	E.015	8.5
SEP											
05...	--	--	--	<2.4	--	555	<10	--	--	E.008	8.4

DATE	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)	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)
OCT											
12...	.23	3.4	1.0	<1	<.007	<.002	<.005	<.018	.009	<.003	171
DEC											
08...	.23	3.4	.7	--	<.007	<.002	<.005	E.007	.008	<.003	184
FEB											
15...	.38	3.3	.4	--	<.007	<.002	<.005	E.004	<.004	<.003	201
MAR											
07...	.25	3.3	1.4	<1	<.007	<.002	<.005	E.004	<.010	<.003	186
APR											
04...	.26	3.4	1.7	--	<.007	<.002	<.005	E.004	.005	<.003	180
18...	.30	3.6	1.0	--	<.007	<.002	.013	.050	.010	<.003	170
MAY											
02...	.24	3.5	1.0	--	<.007	<.002	<.006	E.008	<.008	<.003	174
16...	.25	3.6	1.1	<1	<.007	<.002	<.005	E.006	.007	<.003	169
JUN											
02...	.22	4.0	1.7	--	<.007	<.002	<.005	E.006	.018	<.003	183
13...	.26	3.7	2.8	--	<.007	<.002	E.003	E.005	.009	<.003	186
27...	.39	4.0	>12	--	<.007	<.002	.010	E.007	.165	E.004	140
AUG											
04...	.23	3.5	1.3	<1	<.007	<.002	<.005	E.006	.006	<.003	167
15...	.23	3.5	2.0	--	<.007	<.002	<.005	E.004	<.004	<.003	167
SEP											
05...	.19	3.2	1.1	--	<.007	<.002	<.005	E.004	<.004	<.003	166

06610000 MISSOURI RIVER AT OMAHA, NE--Continued
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WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	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)	ALA-CHLOR, WATER, DISS, REC, (UG/L) (46342)
OCT											
12...	<.002	<.006	<.004	<.004	<.001	.011	<.005	<.004	<.002	.026	<.002
DEC											
08...	<.002	<.006	<.004	<.004	<.001	.008	<.005	<.004	<.002	.022	<.002
FEB											
15...	<.002	<.006	<.004	<.004	<.001	.007	<.005	<.004	<.002	.020	<.002
MAR											
07...	<.002	<.006	<.004	<.004	<.001	.009	<.005	<.004	<.002	.019	<.002
APR											
04...	<.002	E.001	<.004	<.004	<.001	.008	<.005	<.004	<.002	.023	<.002
18...	<.002	<.006	<.004	<.004	<.001	.036	<.005	<.004	<.002	.096	<.004
MAY											
02...	<.002	<.006	<.004	<.004	<.001	.030	<.005	<.004	<.002	.041	<.002
16...	<.002	<.006	<.004	<.004	<.001	.033	<.005	<.004	<.002	.057	.008
JUN											
02...	<.002	<.006	<.004	<.004	<.001	.055	<.005	<.004	<.002	.151	.006
13...	<.002	E.002	<.004	<.004	<.001	.026	<.005	<.004	<.002	.179	E.003
27...	<.002	<.006	<.004	<.004	<.001	.490	<.005	<.004	.005	.916	.009
AUG											
04...	<.002	<.006	<.004	<.004	<.001	.023	<.005	<.004	<.002	.058	<.002
15...	<.002	<.006	<.004	<.004	<.001	.014	<.005	<.004	<.002	.064	.006
SEP											
05...	<.002	<.006	<.004	<.004	<.001	.008	<.005	<.004	<.002	.025	<.002

DATE	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)
OCT											
12...	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002	<.006	<.002	<.004
DEC											
08...	<.002	<.004	<.003	<.004	<.004	<.002	<.007	<.002	<.006	E.002	<.004
FEB											
15...	<.005	<.004	<.003	<.002	<.004	<.002	<.007	<.002	<.006	E.003	<.004
MAR											
07...	.013	<.004	<.003	<.002	<.004	<.002	<.007	<.002	<.006	.013	<.004
APR											
04...	.012	<.004	<.003	<.002	<.004	<.002	<.007	<.002	<.006	E.001	<.004
18...	.233	<.004	<.003	<.004	<.004	<.002	<.007	<.002	<.006	.032	<.004
MAY											
02...	.083	<.004	<.003	<.004	<.004	<.002	<.007	<.002	<.006	.157	<.004
16...	.053	<.004	<.003	<.002	<.004	<.002	<.007	<.002	<.006	.011	<.004
JUN											
02...	.042	<.004	<.003	<.002	<.004	<.002	<.007	<.002	<.006	E.003	<.004
13...	.019	<.004	<.003	<.002	<.004	<.002	<.007	<.002	<.006	.011	<.004
27...	.243	.042	<.003	.011	<.004	<.002	<.007	<.002	<.006	<.002	<.004
AUG											
04...	.006	<.004	<.003	<.002	<.004	<.002	<.007	<.002	<.006	<.002	<.004
15...	.019	<.004	<.003	<.002	<.004	<.002	<.007	<.002	<.006	<.002	<.004
SEP											
05...	<.002	<.004	<.003	<.002	<.004	<.002	<.007	<.002	<.006	<.002	<.004

06610000 MISSOURI RIVER AT OMAHA, NE--Continued
(National stream-quality accounting network station)

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	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)	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)
OCT											
12...	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003
DEC											
08...	E.002	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003
FEB											
15...	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003
MAR											
07...	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003
APR											
04...	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003
18...	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003
MAY											
02...	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003
16...	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003
JUN											
02...	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003
13...	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003
27...	E.006	<.004	<.003	<.002	E.006	<.013	<.003	<.017	<.001	<.004	<.003
AUG											
04...	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003
15...	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003
SEP											
05...	<.010	<.004	<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003

DATE	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)	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											
12...	<.002	<.002	<.004	<.003	<.013	<.001	<.005	785	121	97	129
DEC											
08...	<.002	<.002	<.004	<.003	<.013	<.001	<.005	802	108	97	113
FEB											
15...	<.002	<.002	<.004	<.003	<.013	<.001	<.005	840	114	104	111
MAR											
07...	<.002	<.002	<.004	<.003	<.013	<.001	<.005	772	93	95	101
APR											
04...	<.002	<.002	<.004	<.003	<.013	<.001	<.005	816	123	106	119
18...	<.002	<.002	<.007	<.003	<.013	<.001	<.005	801	107	87	115
MAY											
02...	<.002	<.002	<.005	<.003	<.013	<.001	<.005	796	108	88	124
16...	<.002	<.002	<.004	<.003	<.013	<.001	<.005	805	91	89	104
JUN											
02...	<.002	<.002	.005	<.003	<.013	<.001	<.005	809	116	96	118
13...	<.002	<.002	<.004	<.003	<.013	<.001	<.005	808	95	95	123
27...	<.002	<.002	.012	<.003	--	<.001	<.005	681	106	100	105
AUG											
04...	<.002	<.002	<.004	<.003	<.013	<.001	<.005	819	98	110	85
15...	<.002	<.002	<.004	<.003	<.013	<.001	<.005	778	101	98	134
SEP											
05...	<.002	<.002	<.004	<.003	<.013	<.001	<.005	782	88	87	126

06610000 MISSOURI RIVER AT OMAHA, NE--Continued
(National stream-quality accounting network station)

SPECIFIC CONDUCTANCE MICROSIEMENS/CM AT 25 DEG C, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	807	---	---	---	782	---	---	---	---	---	---	---
2	---	821	815	---	---	---	---	817	820	---	---	---
3	---	---	---	823	---	---	---	---	---	828	---	---
4	810	---	---	---	---	---	824	---	---	---	844	---
5	---	819	---	---	---	---	---	809	824	---	---	818
6	---	---	---	---	---	---	---	---	---	835	---	---
7	814	---	---	---	802	789	816	---	---	---	---	816
8	---	840	785	---	---	---	---	816	---	---	829	---
9	---	---	---	---	---	---	---	---	837	---	---	---
10	---	---	---	---	---	---	831	---	---	790	---	---
11	---	---	---	---	---	---	---	---	---	---	815	813
12	816	833	---	---	---	---	---	812	---	---	---	---
13	---	---	784	771	---	---	---	---	821	849	---	---
14	---	---	---	---	---	812	817	---	---	---	---	822
15	816	---	---	---	786	---	---	---	---	---	810	---
16	---	832	---	---	---	---	---	812	814	---	---	---
17	---	834	---	---	---	---	---	---	---	830	---	819
18	---	---	---	770	---	---	809	---	---	---	826	---
19	818	---	---	---	---	---	---	809	829	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	817	---	---	---	---	809	801	---	---	845	---	---
22	---	---	---	---	793	---	---	803	822	---	812	820
23	---	824	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	814	---	---	852	---	---
25	---	---	---	---	---	---	---	---	---	---	811	815
26	815	---	---	---	---	---	---	802	816	---	---	---
27	---	---	---	---	---	802	815	---	701	---	---	---
28	---	---	764	---	806	---	---	---	---	834	808	---
29	828	830	---	---	---	---	---	---	---	---	---	821
30	---	---	---	---	---	---	---	807	812	---	---	---
31	---	---	---	---	---	811	---	---	---	849	810	---
MAX	828	840	815	823	806	812	831	817	837	852	844	822
MIN	807	819	764	770	782	789	801	802	701	790	808	813

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

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)
OCT									
12...	1115	3	--	0	23	95	100	--	--
NOV									
05...	0845	3	--	0	25	96	100	--	--
DEC									
08...	1040	3	--	0	22	87	97	99	100
FEB									
15...	1135	3	--	0	28	98	100	--	--
MAR									
07...	0935	3	--	0	24	91	98	99	100
APR									
04...	1030	3	--	0	27	96	100	--	--
MAY									
02...	1015	3	--	0	22	92	98	100	--
JUN									
02...	1215	3	0	1	37	94	99	100	--
27...	0840	3	0	1	39	98	100	--	--
AUG									
04...	1105	3	0	1	30	95	100	--	--
SEP									
05...	1105	3	--	0	30	95	99	100	--

06610000 MISSOURI RIVER AT OMAHA, NE--Continued
(National stream-quality accounting network station)

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.0	---	---	---	.0	---	---	---	---	---	---	---
2	---	11.5	6.0	---	---	---	---	15.5	20.5	---	---	---
3	---	---	---	2.5	---	---	---	---	---	25.5	---	---
4	14.0	---	---	---	---	---	10.0	---	---	---	26.0	---
5	---	9.5	---	---	---	---	---	18.0	20.0	---	---	24.0
6	---	---	---	---	---	---	---	---	---	26.5	---	---
7	17.0	---	---	---	1.0	10.0	9.0	---	---	---	---	23.5
8	---	11.0	4.5	---	---	---	---	20.0	---	---	28.0	---
9	---	---	---	---	---	---	---	---	22.0	---	---	---
10	---	---	---	---	---	---	9.0	---	---	28.5	---	---
11	---	---	---	---	---	---	---	---	---	---	28.5	25.0
12	16.0	11.0	---	---	---	---	---	20.0	---	---	---	---
13	---	---	4.0	1.0	---	---	---	---	24.5	28.0	---	---
14	---	---	---	---	---	9.0	9.0	---	---	---	---	22.0
15	16.0	---	---	---	1.5	---	---	---	---	---	28.0	---
16	---	11.0	---	---	---	---	---	15.5	21.5	---	---	---
17	---	10.5	---	---	---	---	---	---	---	28.5	---	21.5
18	---	---	---	2.0	---	---	8.0	---	---	---	27.0	---
19	13.0	---	---	---	---	---	---	17.5	21.0	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	12.0	---	---	---	---	7.0	12.0	---	---	23.5	---	---
22	---	---	---	---	5.0	---	---	19.0	22.5	---	23.5	19.0
23	---	8.0	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	12.0	---	---	25.0	---	---
25	---	---	---	---	---	---	---	---	---	---	24.5	16.0
26	11.5	---	---	---	---	---	---	20.0	23.0	---	---	---
27	---	---	---	---	---	9.5	14.0	---	23.0	---	---	---
28	---	---	2.0	---	7.5	---	---	---	---	26.0	26.0	---
29	12.5	6.0	---	---	---	---	---	---	---	---	---	17.0
30	---	---	---	---	---	---	---	19.5	24.5	---	---	---
31	---	---	---	---	---	9.0	---	---	---	26.5	25.5	---
MAX	17.0	11.5	6.0	2.5	7.5	10.0	14.0	20.0	24.5	28.5	28.5	25.0
MIN	11.5	6.0	2.0	1.0	.0	7.0	8.0	15.5	20.0	23.5	23.5	16.0

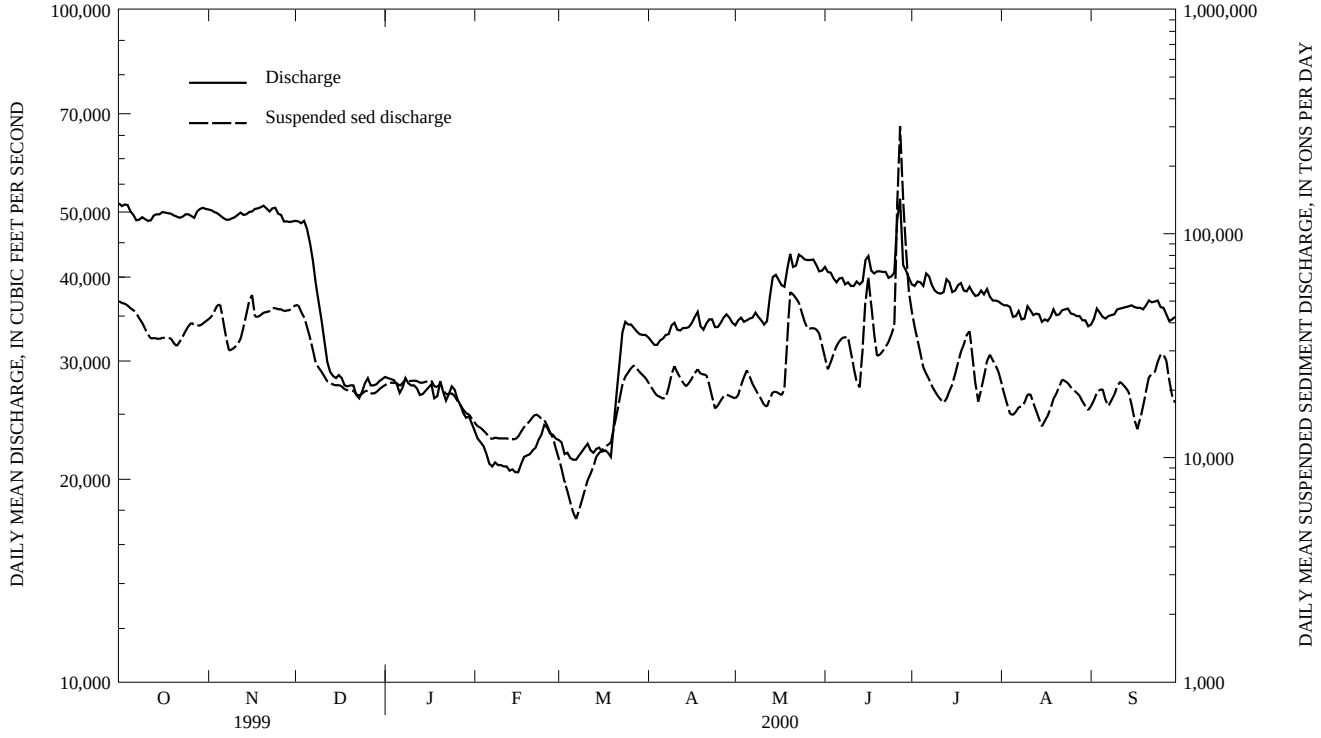
SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

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	360	50000	305	41500	366	48000	275	21100	224	14300	161	9930
2	356	49000	315	42700	367	47900	280	21400	222	13800	146	8920
3	351	48700	334	45100	345	44800	284	21600	221	13600	132	7780
4	347	47800	356	47900	323	42300	286	21600	219	13200	120	7060
5	344	46500	361	48100	302	38400	287	21500	218	12800	108	6300
6	341	45600	310	41000	283	34300	289	20900	216	12300	98	5680
7	335	44000	262	34400	265	30200	290	21500	215	12100	92	5320
8	318	41900	229	30100	251	26500	292	22300	215	12300	99	5830
9	302	40000	230	30400	255	25200	293	22000	216	12200	109	6450
10	286	37600	235	31100	260	24200	295	22000	216	12200	119	7150
11	271	35500	240	32100	266	23000	297	22100	216	12200	130	7930
12	259	34000	251	33900	271	21900	298	22000	216	12200	142	8470
13	256	34200	285	38100	276	21600	300	21600	216	12100	155	9160
14	254	34000	326	43600	276	21200	299	21600	217	12100	168	10100
15	253	33900	372	50200	274	21000	298	21800	218	12100	175	10500
16	254	34300	394	53200	273	21100	296	22000	223	12400	181	10800
17	255	34300	313	42700	272	20800	295	22100	229	13100	187	11200
18	255	34300	310	42500	271	20200	293	20800	235	13700	193	11400
19	254	34000	316	43300	270	20000	288	20700	242	14100	200	11700
20	243	32400	322	44400	268	20000	282	21400	248	14600	207	13500
21	238	31500	327	44700	267	19900	277	20200	255	15200	214	15600
22	249	32900	333	45000	266	19200	272	19200	258	15600	225	18200
23	261	34700	339	46400	265	18900	266	19300	248	15400	236	21200
24	275	36800	341	46600	264	19300	261	19400	237	14900	248	23000
25	289	38700	342	45900	263	19800	256	18800	226	14700	261	24000
26	300	40000	344	46000	262	19900	252	17900	216	13900	274	25100
27	295	39100	346	45100	260	19400	247	17200	206	13000	284	25800
28	288	39000	347	45400	260	19300	242	16400	195	12200	279	25000
29	284	38800	350	45600	263	19600	237	15800	178	11000	271	24100
30	290	39700	358	46800	267	20200	233	15600	---	---	264	23400
31	298	40600	---	---	271	20700	228	14900	---	---	256	22700
TOTAL	---	1203800	---	1273800	---	788800	---	626700	---	383300	---	423280

06610000 MISSOURI RIVER AT OMAHA, NE--Continued
(National stream-quality accounting network station)

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

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	247	21600	201	18400	251	28000	428	45100	219	21600	185	17000
2	238	20600	204	19000	226	24800	366	38300	196	19200	193	18100
3	229	19600	224	21000	244	26700	314	33500	176	17300	202	19500
4	221	18900	248	22900	271	29100	275	29200	162	15700	210	20100
5	215	18700	263	24500	297	31500	241	25300	164	15500	214	20200
6	210	18300	245	23000	308	33100	216	23700	170	16000	194	18100
7	210	18600	227	21300	318	34200	207	22400	175	16800	180	17000
8	232	20600	211	20200	328	34500	199	20900	181	16900	189	18000
9	257	23600	203	19100	325	34500	192	19800	188	17600	201	19100
10	278	25600	195	18200	281	29500	185	18900	196	19100	214	20700
11	266	24000	188	17200	240	25100	178	18200	200	19200	224	21800
12	252	22700	182	16900	205	21800	171	17600	186	17600	218	21200
13	238	21600	182	18400	195	20600	170	18300	171	16200	210	20500
14	229	20800	182	19600	284	30300	187	19800	157	14900	200	19600
15	236	21500	181	19700	430	49500	207	21200	149	13800	175	17200
16	244	22600	181	19400	554	64200	229	23600	156	14600	152	14800
17	252	23800	180	19000	434	48000	254	26600	166	15400	138	13400
18	260	24800	193	20200	327	35800	281	29700	176	16600	154	15000
19	260	23700	302	33900	259	28500	311	32000	190	18300	176	17000
20	261	23500	469	54800	262	28800	344	35300	204	19300	202	19800
21	254	23400	480	53600	272	29900	351	36700	219	20800	230	22900
22	227	21200	458	51500	285	31300	276	28300	232	22300	238	23600
23	200	18700	421	49200	306	32900	212	21500	228	22000	243	24100
24	183	16600	385	44600	328	35500	175	17800	222	21500	269	26800
25	188	17100	352	40400	352	38800	195	20100	216	20600	295	28800
26	194	18000	329	37700	961	136000	226	23000	211	20000	298	28900
27	200	18800	329	37700	2130	302000	260	27000	206	19500	285	27100
28	201	19100	331	37900	1280	144000	286	28800	200	18900	239	22200
29	201	18900	332	37400	779	86100	273	27200	192	17800	203	18900
30	201	18600	326	35800	510	54900	258	25800	183	17000	187	17600
31	---	---	288	31700	---	---	243	24100	178	16300	---	---
TOTAL	---	625500	---	904200	---	1549900	---	799700	---	558300	---	609000
YEAR		9746280										



06807000 MISSOURI RIVER AT NEBRASKA CITY, NE

LOCATION.--Lat 40°40'55", long 95°50'48", in NW$^1/_4$ NE$^1/_4$ sec.9, T.8 N., R.14 E., Otoe County, Hydrologic Unit 10240001, on right bank 1.0 mi upstream from Highway 2 Bridge at Nebraska City, and at mile 562.6.

DRAINAGE AREA.--410,000 mi^2, approximately. The 3,959 mi^2 in Great Divide basin are not included.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1929 to current year. Gage-height records collected in this vicinity from August 1878 to December 1899 are contained in reports of Missouri River Commission.

REVISED RECORDS.--WSP 761: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 905.36 ft above sea level, supplementary adjustment of 1954. See WSP 1918 or 1919 for history of changes prior to Apr. 1, 1963.

REMARKS.--Records good. Flow regulated by upstream main-stem reservoirs. Fort Randall Dam was completed in July 1952, with storage beginning in December 1952. Gavins Point Dam was completed in July 1955, with storage beginning in December 1955. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 414,000 ft^3/s Apr. 19, 1952; maximum gage height, 27.66 ft Apr. 18, 1952; minimum discharge, 1,600 ft^3/s Dec. 31, 1946 (discharge measurement); minimum gage height observed, -0.28 ft Dec. 24, 1960, result of freezeup.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	53200	51800	52300	34200	25500	30700	38900	37300	45600	42800	40700	35200
2	52900	52100	52400	33800	26000	30600	38200	37200	45200	41100	39600	35700
3	52800	52300	52700	33900	26300	29600	36700	37200	44900	43500	38900	36600
4	52800	52200	53200	33800	27600	28900	36600	37500	44500	41400	38600	37000
5	52200	52100	53300	33600	28200	28600	36400	37300	43800	40600	37700	36800
6	52700	51700	51400	31600	27300	28200	36500	37400	43300	45900	37100	36300
7	52100	52000	48800	31200	27100	28300	36600	37400	43200	49500	37100	36200
8	52300	52200	45800	31000	28500	28100	36600	38300	42500	52600	36500	36500
9	52700	52500	42400	31000	29900	28600	36600	38600	41700	47200	35800	36400
10	52800	52600	40500	32400	30500	28600	37000	38200	41400	45100	36300	36700
11	52700	52900	38500	32700	29900	28600	37700	38100	40500	43200	37000	37300
12	52600	53600	36400	32700	28300	28400	37100	38700	41100	42600	36200	37000
13	52900	53600	34700	31900	27400	27700	37100	39700	41400	42100	36100	37200
14	53400	53700	33900	31400	28200	26800	37800	41900	43300	44300	36100	37200
15	53400	54000	33200	31700	27600	27400	38000	43100	41600	41500	35800	37400
16	53400	54200	33900	31800	27500	26800	39100	43300	42800	40700	35400	37300
17	53000	54500	33700	32500	27800	27100	40000	42900	42100	39600	35900	37200
18	53500	54400	33000	31700	28200	27300	40500	43000	41000	41200	35800	37200
19	53500	54600	32200	30400	28700	27500	40500	44100	40700	41500	36700	36900
20	53300	54700	32100	32000	27900	27400	39400	46100	41800	39600	37700	37200
21	53200	54400	32000	32100	28300	30400	39600	46000	41200	39000	36500	37900
22	52700	54000	31200	30400	28600	32900	39500	45600	41100	39600	36600	37800
23	52800	55000	29000	30200	29500	34900	39600	46900	41400	38900	37900	38000
24	52600	54900	28600	30500	30100	37700	39300	46800	47900	38400	37700	38200
25	52600	54400	31000	30700	30900	38600	38400	45800	44300	39000	37000	38100
26	52200	53600	32200	30300	31700	39500	37900	46300	58500	39500	36400	37800
27	52100	52600	32800	30000	32100	39700	38000	46400	65600	40900	36300	37900
28	52400	52100	33600	29200	31200	40400	38400	46200	54000	41200	36200	37200
29	52800	51500	34200	27800	30300	40000	38500	46000	46700	39300	35800	37100
30	52900	51700	34200	25900	---	40300	38000	45700	44400	39700	35400	37400
31	52600	---	34300	25800	---	39600	---	45400	---	40000	35300	---
TOTAL	1637100	1595900	1187500	968200	831100	979200	1144500	1304400	1337500	1301500	1142100	1112700
MEAN	52810	53200	38310	31230	28660	31590	38150	42080	44580	41980	36840	37090
MAX	53500	55000	53300	34200	32100	40400	40500	46900	65600	52600	40700	38200
MIN	52100	51500	28600	25800	25500	26800	36400	37200	40500	38400	35300	35200
AC-FT	3247000	3165000	2355000	1920000	1648000	1942000	2270000	2587000	2653000	2582000	2265000	2207000
CFSM	.13	.13	.09	.08	.07	.08	.09	.10	.11	.10	.09	.09
IN.	.15	.14	.11	.09	.08	.09	.10	.12	.12	.12	.10	.10

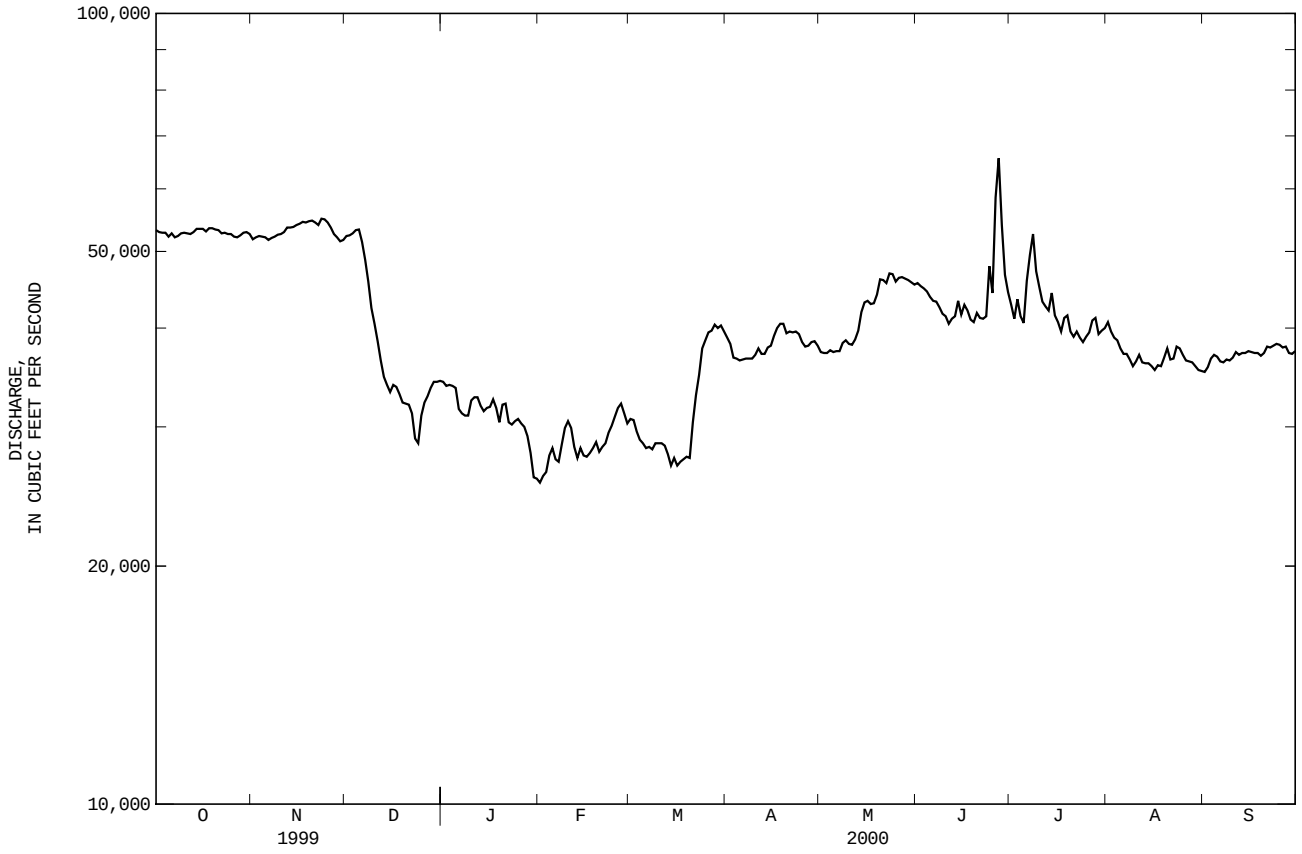
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 2000, BY WATER YEAR (WY)

MEAN	43050	39090	25760	21510	26740	38110	47840	47670	52680	46790	43030	42880
MAX	76760	79410	52410	39970	48630	66730	98960	90280	117500	116700	71540	73410
(WY)	1998	1998	1987	1987	1983	1983	1997	1997	1984	1993	1996	1997
MIN	22420	14380	10510	10160	12780	15310	21850	32470	33530	32760	29870	32560
(WY)	1962	1962	1956	1957	1957	1957	1957	1955	1958	1961	1955	1958

06807000 MISSOURI RIVER AT NEBRASKA CITY, NE--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1953 - 2000a	
ANNUAL TOTAL	19303100		14541700			
ANNUAL MEAN	52890		39730		39630	
HIGHEST ANNUAL MEAN					66450	1997
LOWEST ANNUAL MEAN					25370	1957
HIGHEST DAILY MEAN	102000	Jun 29	65600	Jun 27	188000	Jul 25 1993
LOWEST DAILY MEAN	28600	Dec 24	25500	Feb 1	4320	Jan 11 1957
ANNUAL SEVEN-DAY MINIMUM	30900	Dec 19	26400	Jan 29	5590	Nov 29 1955
INSTANTANEOUS PEAK FLOW			67800	Jun 27	196000	Jul 23 1993
INSTANTANEOUS PEAK STAGE			15.33	Jun 27	27.19	Jul 23 1993
INSTANTANEOUS LOW FLOW			25300	Feb 1		
ANNUAL RUNOFF (AC-FT)	38290000		28840000		28710000	
ANNUAL RUNOFF (CFSM)	.13		.097		.097	
ANNUAL RUNOFF (INCHES)	1.75		1.32		1.31	
10 PERCENT EXCEEDS	67700		52800		62100	
50 PERCENT EXCEEDS	53200		38100		37400	
90 PERCENT EXCEEDS	36000		28600		17600	

a Post regulation.



06807000 MISSOURI RIVER AT NEBRASKA CITY, NE.--Continued

WATER-QUALITY RECORDS

LOCATION.--Water quality samples were collected from Highway 2 bridge, 2.0 miles downstream of gage.

PERIOD OF RECORD.--May 1951 to current year. Daily sediment loads August 1957 to September 1971 in reports of U.S. Army Corps of Engineers.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: May 1951 to December 1977, October 1991 to current year.
WATER TEMPERATURES: May 1951 to December 1977, October 1991 to current year.
SUSPENDED SEDIMENT DISCHARGE: October 1971 to September 1976, 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, 994 microsiemens Dec. 17, 1962; minimum daily, 273 microsiemens June 17, 1964.
WATER TEMPERATURES: Maximum daily, 31.0°C July 26, 1977, and July 25, 1997; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 8,420 mg/L Aug. 7, 1996; minimum daily mean, 115 mg/L Jan. 3, 1993.
SEDIMENT LOADS: Maximum daily, 3,120,000 tons June 24, 1996; minimum daily, 4,050 tons Jan. 17, 1972.

EXTREMES FOR CURRENT YEAR.--
SPECIFIC CONDUCTANCE: Maximum daily, 863 microsiemens Jan. 31; minimum daily, 664 microsiemens June 27.
WATER TEMPERATURES: Maximum daily, 29.0°C July 10, 13; minimum daily, 0.0°C Jan. 31.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,770 mg/L June 27; minimum daily, 152 mg/L Aug. 31.
SEDIMENT LOADS: Maximum daily, 313,000 tons June 27; minimum daily, 14,500 tons Aug. 31.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

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											
04...	1135	3	0	1	19	68	88	96	99	100	--
NOV											
01...	1035	3	--	0	12	55	89	96	98	99	100
05...	1115	3	0	1	26	55	74	93	98	100	--
DEC											
06...	1240	3	--	0	27	51	86	96	99	100	--
JAN											
03...	1040	3	--	0	15	66	79	90	98	100	--
FEB											
22...	1100	3	--	0	4	29	56	82	93	97	100
MAR											
13...	1220	3	--	0	19	60	87	98	100	--	--
APR											
03...	1120	3	--	0	13	63	82	92	97	100	--
MAY											
01...	1030	3	--	0	10	52	92	98	99	100	--
JUN											
01...	1200	3	--	0	9	46	75	89	96	98	100
JUL											
03...	1155	3	--	0	16	59	86	97	99	100	--
AUG											
03...	0950	3	--	0	22	73	84	92	97	98	100
SEP											
05...	1135	3	--	0	19	53	80	94	97	98	100

06807000 MISSOURI RIVER AT NEBRASKA CITY, NE.--Continued

SPECIFIC CONDUCTANCE MICROSIEMENS/CM AT 25 DEG C, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY INSTANTANEOUS VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	819	---	---	---	---	---	795	797	---	---	---
2	---	---	817	---	---	---	---	---	---	---	---	---
3	---	---	---	826	---	---	817	---	---	773	815	---
4	810	---	---	---	---	---	---	---	---	---	---	---
5	---	814	---	---	---	---	---	789	786	---	---	810
6	---	---	810	---	---	790	---	---	---	---	---	---
7	814	---	---	---	841	---	808	---	---	776	835	818
8	---	---	---	---	---	---	---	797	---	---	---	---
9	---	831	---	---	---	---	---	---	822	---	---	---
10	---	---	---	---	---	---	818	---	---	741	---	---
11	---	---	---	---	---	---	---	---	---	---	819	813
12	---	826	---	---	---	---	---	797	816	---	---	---
13	820	---	---	---	---	794	---	---	---	806	---	---
14	---	---	842	---	---	---	824	---	---	---	814	821
15	817	831	---	---	838	---	---	804	---	---	---	---
16	---	---	---	---	---	---	---	---	817	---	---	---
17	---	---	---	---	---	---	800	---	---	810	---	---
18	816	828	---	822	---	---	---	---	---	---	810	820
19	---	---	---	---	---	---	---	776	817	---	---	---
20	---	---	---	---	---	817	---	---	---	---	---	---
21	---	---	---	---	---	---	803	---	---	825	862	---
22	815	---	---	---	813	---	---	790	820	---	---	835
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	818	---	---	---	---	811	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	837	797	803
26	823	---	---	---	---	---	---	796	---	---	---	---
27	---	---	802	---	---	784	810	---	664	---	---	---
28	---	---	---	---	792	---	---	---	---	833	804	---
29	817	814	---	---	---	---	---	---	---	---	---	821
30	---	---	---	---	---	811	---	785	759	---	---	---
31	---	---	---	863	---	---	---	---	---	832	809	---
MAX	823	831	842	863	841	817	824	804	822	837	862	835
MIN	810	814	802	822	792	784	800	776	664	741	797	803

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY INSTANTANEOUS VALUES

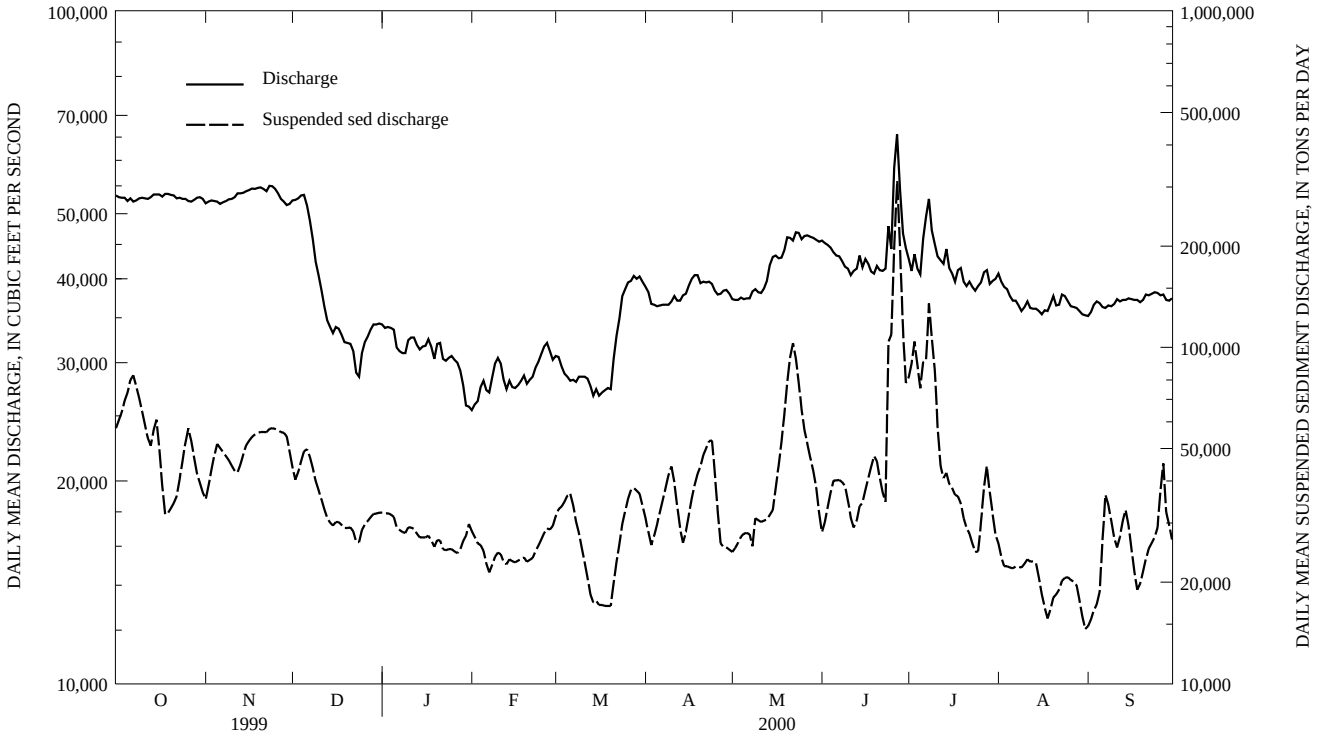
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	12.0	---	---	---	---	---	16.0	23.0	---	---	---
2	---	---	6.0	---	---	---	---	---	---	---	---	---
3	---	---	---	2.0	---	---	11.0	---	---	26.0	26.5	---
4	14.0	---	---	---	---	---	---	---	---	---	---	---
5	---	9.5	---	---	---	---	---	19.0	20.0	---	---	24.5
6	---	---	5.5	---	---	10.0	---	---	---	---	---	---
7	15.0	---	---	---	2.0	---	10.0	---	---	27.0	28.0	23.5
8	---	---	---	---	---	---	---	21.0	---	---	---	---
9	---	11.0	---	---	---	---	---	---	22.0	---	---	---
10	---	---	---	---	---	---	10.5	---	---	29.0	---	---
11	---	---	---	---	---	---	---	---	---	---	28.5	25.0
12	---	11.0	---	---	---	---	---	20.0	25.0	---	---	---
13	16.5	---	---	---	---	7.5	---	---	---	29.0	---	---
14	---	---	3.5	---	---	---	11.0	---	---	---	27.5	23.5
15	16.0	11.0	---	---	1.0	---	---	17.5	---	---	---	---
16	---	---	---	---	---	---	---	---	23.0	---	---	---
17	---	---	---	---	---	---	10.0	---	---	27.5	---	---
18	14.0	11.0	---	1.0	---	---	---	---	---	---	27.0	21.5
19	---	---	---	---	---	---	---	17.5	21.5	---	---	---
20	---	---	---	---	---	6.5	---	---	---	---	---	---
21	---	---	---	---	---	---	12.0	---	---	25.0	24.5	---
22	11.0	---	---	---	5.0	---	---	18.5	23.5	---	---	20.0
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	7.5	---	---	---	---	14.0	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	25.0	25.5	15.5
26	11.0	---	---	---	---	---	---	20.0	---	---	---	---
27	---	---	1.0	---	---	10.5	15.0	---	24.0	---	---	---
28	---	---	---	---	7.0	---	---	---	---	26.0	26.5	---
29	12.5	7.5	---	---	---	---	---	---	---	---	---	17.0
30	---	---	---	---	---	10.5	---	20.5	24.5	---	---	---
31	---	---	---	.0	---	---	---	---	---	27.0	26.0	---

06807000 MISSOURI RIVER AT NEBRASKA CITY, NE.--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

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	400	57500	252	35300	312	44000	349	32200	412	28400	379	31400
2	425	60700	276	38800	285	40400	350	32000	389	27300	399	33000
3	450	64200	305	43200	299	42600	350	32100	367	26100	421	33600
4	490	69400	338	47700	319	45800	348	31800	346	25800	444	34700
5	520	73300	366	51600	340	49000	345	31300	326	24800	468	36200
6	562	80000	359	50200	360	49800	342	29200	308	22700	482	36800
7	587	82500	348	48800	358	47200	340	28600	292	21400	442	33900
8	543	76700	336	47400	354	43700	337	28200	292	22500	400	30300
9	496	70600	325	46100	349	40000	334	28000	295	23800	362	28000
10	453	64500	312	44400	345	37600	332	29100	297	24500	328	25300
11	414	58800	300	42900	340	35300	329	29100	300	24200	297	22900
12	378	53700	293	42400	336	33000	326	28800	302	23000	268	20600
13	357	51000	310	44800	332	31100	324	27900	305	22600	246	18400
14	393	56700	331	48000	329	30100	321	27200	308	23400	241	17400
15	422	60900	351	51100	329	29500	319	27200	310	23100	238	17600
16	346	49900	360	52700	330	30200	316	27200	309	22900	236	17100
17	270	38600	367	54100	331	30200	314	27500	308	23200	234	17100
18	220	31800	374	55000	333	29600	311	26600	307	23400	231	17000
19	222	32200	377	55600	334	29000	310	25500	306	23700	229	17000
20	231	33200	379	56000	335	29000	309	26700	306	23000	229	17000
21	239	34400	381	56000	336	29100	308	26600	305	23300	242	19900
22	253	36000	383	55900	337	28300	306	25100	305	23600	258	23000
23	285	40600	385	57200	338	26400	305	24900	310	24700	275	26000
24	324	46000	387	57500	339	26300	304	25100	316	25700	293	29800
25	367	52100	390	57200	340	28600	303	25100	322	26800	312	32500
26	407	57400	392	56700	342	29700	302	24700	327	28000	332	35400
27	375	52700	394	55900	343	30400	301	24400	333	28900	350	37600
28	331	46900	396	55700	344	31200	318	25000	342	28700	350	38200
29	295	42100	391	54400	345	31900	353	26500	359	29400	346	37400
30	276	39500	351	49000	346	32000	393	27500	---	---	338	36700
31	261	37000	---	---	348	32200	428	29800	---	---	316	33800
TOTAL	---	1650900	---	1511600	---	1073200	---	860900	---	718900	---	855600

DAY	MEA CON TRA (MG	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)	MEAN CONCE TRATI (MG/L	LOAD (TONS/ DAY)	MEAN CONCE TRATI (MG/L	LOAD (TONS/ DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	294	31000	244	24600	229	28200	707	81500	238	26100	155	14800
2	274	28200	252	25300	248	30200	808	89600	223	23800	161	15500
3	261	25800	261	26200	276	33500	887	104000	212	22300	166	16500
4	279	27500	270	27300	308	37000	793	88700	214	22300	172	17200
5	303	29700	277	27900	339	40100	690	75600	217	22100	189	18700
6	328	32400	277	28000	344	40200	727	90600	219	22000	274	26800
7	357	35200	275	27800	346	40300	675	91600	222	22300	373	36400
8	388	38300	247	25600	347	39700	950	135000	225	22200	346	34100
9	422	41800	298	31000	343	38600	836	106000	228	22100	309	30400
10	443	44200	296	30600	314	35000	709	86300	232	22700	275	27200
11	389	39600	294	30200	284	31100	494	57600	235	23400	253	25400
12	335	33500	291	30500	262	29100	385	44300	236	23000	274	27300
13	288	28800	286	30700	272	30500	359	40800	237	23100	303	30500
14	257	26200	280	31700	288	33700	354	42300	233	22800	327	32800
15	276	28300	282	32800	305	34400	350	39200	213	20600	291	29400
16	302	31800	326	38100	326	37600	347	38100	192	18400	249	25100
17	329	35600	383	44300	359	40800	341	36400	174	16800	214	21500
18	356	39000	449	52200	398	44100	324	36000	161	15600	189	19000
19	384	42000	529	63100	433	47500	306	34300	168	16600	198	19800
20	415	44200	630	78500	405	45800	290	31000	177	18000	214	21500
21	447	47800	751	93400	367	40800	275	29000	186	18400	230	23500
22	469	50100	840	103000	333	37000	261	27900	193	19000	246	25200
23	491	52600	731	92600	310	34700	249	26100	198	20200	256	26200
24	498	52800	620	78300	799	104000	237	24600	203	20600	264	27200
25	406	42100	526	65100	905	109000	235	24700	208	20700	283	29100
26	316	32400	452	56600	1240	198000	282	30200	207	20300	368	37500
27	254	26100	411	51500	1770	313000	348	38400	205	20100	441	45100
28	245	25400	376	46900	1350	197000	400	44400	200	19600	321	32300
29	244	25400	344	42800	904	114000	350	37100	183	17700	296	29600
30	244	25000	311	38300	653	78300	298	31900	165	15800	265	26800
31	---	---	263	32200	---	---	256	27700	152	14500	---	---
TOTAL	---	1062800	---	1407100	---	1963200	---	1690900	---	633100	---	792400
YEAR		14220600										


Discharge
Suspended sed discharge
DAILY MEAN DISCHARGE, IN CUBIC FEET PER SECOND
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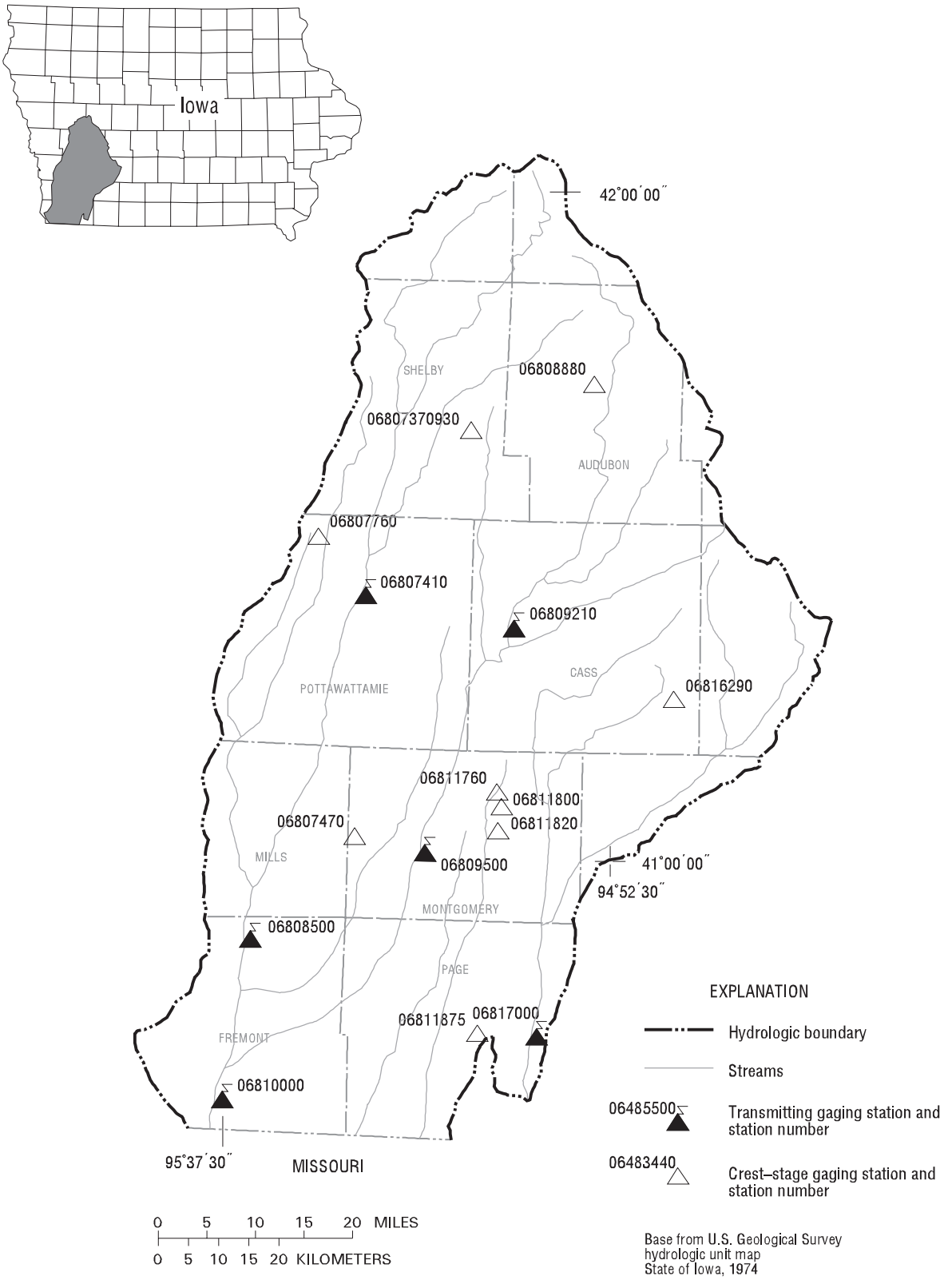
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EXPLANATION
Hydrologic boundary
Streams
06485500 Transmitting gaging station and station number
06483440 Crest–stage gaging station and station number
Base from U.S. Geological Survey hydrologic unit map State of Iowa, 1974

Gaging Stations

Crest Stage Gaging Stations

06807410 WEST NISHNABOTNA RIVER AT HANCOCK, IA

LOCATION.--Lat 41°23'24",long 95°22'17",in NW$^{1}/_{4}$ NE$^{1}/_{4}$ sec.18, T.76 N., R.39 W., Pottawattamie County, Hydrologic Unit 10240002, on right bank at upstream side of bridge on county highway G30, 0.6 mi west of Hancock school, 3.0 mi downstream from Jim Creek, 59.6 mi upstream from confluence with East Nishnabotna River, and at mile 75.1 mi upstream from mouth of Nishnabotna River.

DRAINAGE AREA.--609 mi^{2}.

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,085.83 ft above sea level. Prior to Sept. 15, 1980, on downstream end of right pier at same datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	191	172	144	e138	e84	144	90	71	58	83	53	29
2	188	166	143	e133	e110	137	88	69	56	83	52	27
3	190	168	143	e120	e130	126	85	67	54	92	52	26
4	191	168	140	e105	e120	122	82	66	72	133	125	25
5	192	166	135	e95	e110	119	82	63	59	100	74	25
6	190	162	128	e100	e117	116	81	63	57	140	73	24
7	189	162	136	e110	e130	112	81	62	55	181	60	23
8	188	162	137	e118	e139	113	81	92	53	110	57	23
9	194	161	134	e130	e150	111	85	78	51	91	54	23
10	194	158	127	e140	156	108	90	74	51	84	49	22
11	191	155	128	e130	e120	106	100	69	52	82	47	21
12	188	155	134	e126	e120	105	89	65	53	101	45	20
13	187	155	128	e110	131	105	83	59	60	84	47	20
14	185	152	129	e120	e110	104	82	59	72	75	49	21
15	188	150	135	e130	e119	104	80	60	66	70	43	20
16	185	150	e90	e110	e120	100	89	59	64	70	39	20
17	180	151	e95	e110	e120	101	95	60	60	69	39	20
18	179	150	e110	e116	e115	106	92	77	59	74	39	21
19	184	149	e130	e110	117	111	86	73	56	76	38	20
20	185	145	e95	e97	117	109	81	67	59	71	41	22
21	183	148	e65	e95	147	104	80	60	57	67	42	21
22	179	148	e60	e98	157	101	80	58	54	62	41	27
23	174	180	e73	e90	190	101	77	56	56	60	46	28
24	176	186	e95	e90	198	106	74	54	60	58	47	26
25	179	161	e120	e90	190	101	73	53	89	75	39	26
26	176	157	e145	e87	184	96	72	61	256	68	38	25
27	177	153	e140	e85	156	93	82	75	189	60	35	24
28	174	148	e154	e88	137	89	82	76	100	56	34	24
29	175	143	e152	e90	135	89	75	67	129	56	33	23
30	187	143	e145	e85	---	90	71	64	106	55	31	23
31	184	---	e145	e81	---	88	---	62	---	54	30	---
TOTAL	5723	4724	3835	3327	3929	3317	2488	2039	2263	2540	1492	699
MEAN	185	157	124	107	135	107	82.9	65.8	75.4	81.9	48.1	23.3
MAX	194	186	154	140	198	144	100	92	256	181	125	29
MIN	174	143	60	81	84	88	71	53	51	54	30	20
AC-FT	11350	9370	7610	6600	7790	6580	4930	4040	4490	5040	2960	1390
CFSM	.30	.26	.20	.18	.22	.18	.14	.11	.12	.13	.08	.04
IN.	.35	.29	.23	.20	.24	.20	.15	.12	.14	.16	.09	.04

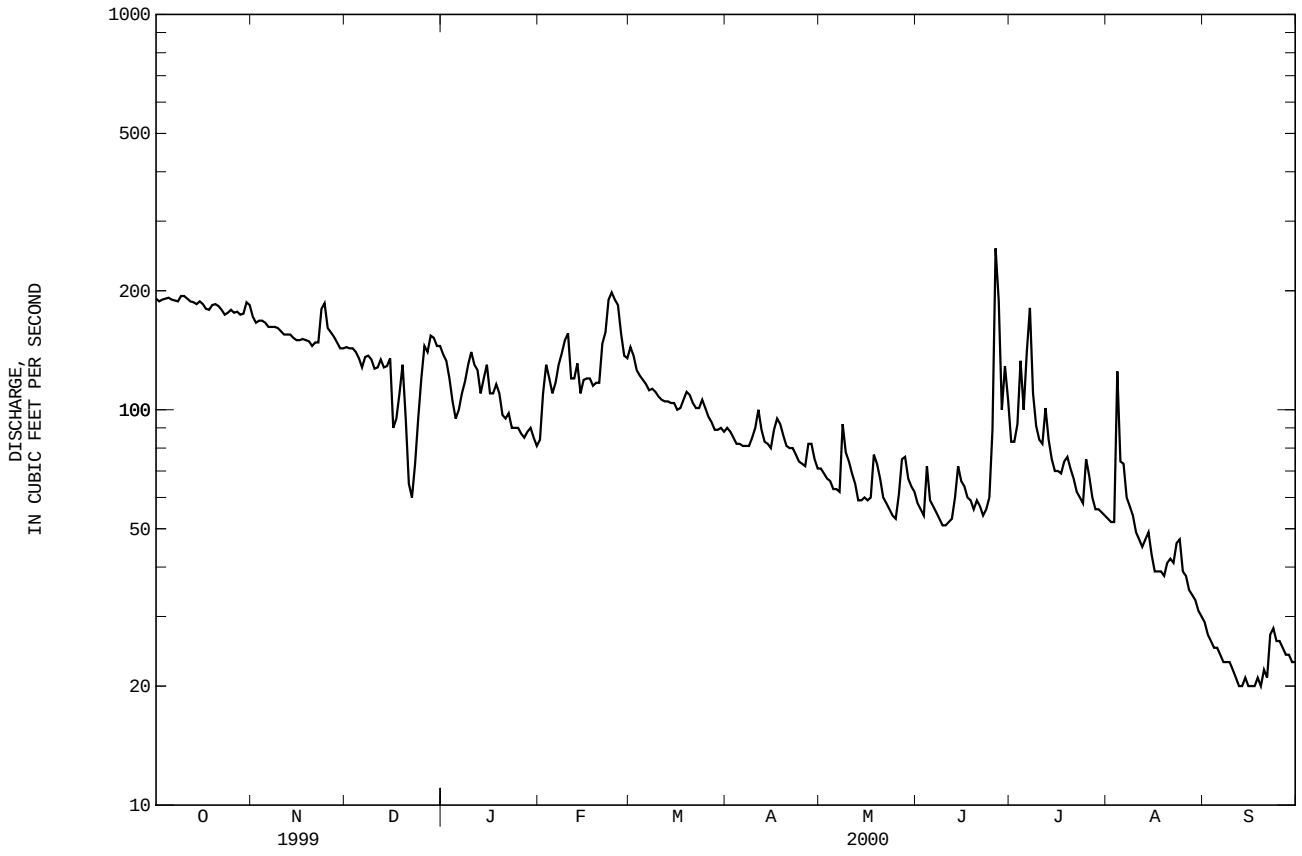
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2000, BY WATER YEAR (WY)

MEAN	197	185	160	126	281	522	436	505	603	429	248	298
MAX	998	910	628	625	993	1946	1295	1586	2228	2925	1073	2412
(WY)	1987	1973	1973	1973	1983	1979	1983	1973	1998	1993	1996	1972
MIN	35.3	32.1	17.9	4.58	27.2	40.3	45.6	30.1	26.7	38.4	26.4	14.7
(WY)	1972	1971	1971	1971	1967	1968	1968	1967	1977	1970	1968	1971

06807410 WEST NISHNABOTNA RIVER AT HANCOCK, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1960 - 2000	
ANNUAL TOTAL	176306		36376			
ANNUAL MEAN	483		99.4		332	
HIGHEST ANNUAL MEAN					966	1993
LOWEST ANNUAL MEAN					42.4	1968
HIGHEST DAILY MEAN	3880	Jul 3	256	Jun 26	23300	Sep 12 1972
LOWEST DAILY MEAN	60	Dec 22	20	Sep 12b	2.2	Feb 8 1971a
ANNUAL SEVEN-DAY MINIMUM	90	Dec 17	20	Sep 11	2.5	Feb 4 1971
INSTANTANEOUS PEAK FLOW			389	Jun 26	30100	Jul 10 1993
INSTANTANEOUS PEAK STAGE			3.18	Jun 26	23.52	Jul 10 1993
INSTANTANEOUS LOW FLOW			19	Sep 16c		
ANNUAL RUNOFF (AC-FT)	349700		72150		240700	
ANNUAL RUNOFF (CFSM)	.79		.16		.55	
ANNUAL RUNOFF (INCHES)	10.77		2.22		7.41	
10 PERCENT EXCEEDS	1040		176		737	
50 PERCENT EXCEEDS	263		90		163	
90 PERCENT EXCEEDS	145		38		36	

a Also Feb. 9, 1971.
b Also Sept. 13, 15-17 and 19.
c Also Sept. 19.
e Estimated.



06808500 WEST NISHNABOTNA RIVER AT RANDOLPH, IA

LOCATION.--Lat 40°52'23", long 95°34'48", in NE$^1/_4$ NE$^1/_4$ sec.17, T.70 N., R.41 W., Fremont County, Hydrologic Unit 10240002, on right bank at upstream side of bridge on State Highway 184, 0.3 mi downstream from Deer Creek, 0.5 mi west of Randolph, and 16.0 mi upstream from confluence with East Nishnabotna River, and at mile 31.5 upstream from mouth of Nishnabotna River.

DRAINAGE AREA.--1,326 mi^2.

PERIOD OF RECORD.--June 1948 to current year.

REVISED RECORDS.--WSP 1440: Drainage area. WDR IA-74-1: 1973 (M). WDR IA-76-1: 1975 (P).

GAGE.--Water-stage recorder. Datum of gage is 932.99 ft above sea level, unadjusted. Prior to Aug. 26, 1955, nonrecording gage with supplementary water-stage recorder operating above 8.4 ft. June 30, 1949 to Aug. 25, 1955 at same site and datum.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Geological Survey satellite data collection platform and rain gage at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1947 reached a stage of about 24 ft, discharge not determined, from information by local residents.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	516	517	425	e413	e232	418	285	236	239	429	e320	173
2	503	485	429	e395	e241	401	288	232	222	387	e280	174
3	499	476	438	e375	e320	384	276	227	214	432	e250	177
4	499	480	439	e333	e370	365	260	224	229	495	e400	170
5	496	482	417	e295	e340	355	264	221	252	428	e460	160
6	492	479	405	e270	e320	348	267	211	233	1210	e380	154
7	480	481	398	e290	e340	347	267	214	218	535	e340	150
8	468	486	407	e320	371	347	264	227	214	542	320	148
9	470	490	407	e340	413	328	263	290	208	465	297	152
10	459	487	396	374	394	316	267	260	206	432	280	142
11	443	471	389	360	358	308	302	242	212	420	263	142
12	444	471	389	363	339	307	320	255	256	403	254	131
13	442	475	391	e330	363	306	292	238	589	375	244	129
14	436	468	382	299	339	308	280	208	3120	348	253	128
15	434	457	394	383	356	309	274	204	607	323	251	122
16	435	454	376	340	350	300	294	200	444	318	230	122
17	431	450	e280	342	341	291	318	209	392	311	218	120
18	427	456	e290	351	350	295	308	213	364	427	209	121
19	422	453	376	344	324	315	300	227	343	391	219	116
20	420	436	e320	283	312	313	298	251	363	359	248	129
21	421	435	e250	e275	341	309	289	227	353	327	228	130
22	418	e440	e190	e276	376	306	270	219	322	308	234	143
23	414	e500	e180	e279	425	303	262	214	306	298	241	150
24	428	527	e225	e259	498	317	256	219	370	289	250	142
25	424	493	e290	e260	523	314	249	210	371	353	233	136
26	411	463	e360	e252	532	303	249	229	1480	399	216	131
27	407	451	e410	e248	461	291	253	280	679	1300	202	124
28	444	438	e400	e246	417	279	259	277	602	881	196	120
29	501	425	e440	e252	394	272	262	263	456	524	187	116
30	541	422	e426	e251	---	275	245	258	416	429	183	109
31	530	---	e420	e244	---	276	---	249	---	388	180	---
TOTAL	14155	14048	11339	9642	10740	9906	8281	7234	14280	14526	8066	4161
MEAN	457	468	366	311	370	320	276	233	476	469	260	139
MAX	541	527	440	413	532	418	320	290	3120	1300	460	177
MIN	407	422	180	244	232	272	245	200	206	289	180	109
AC-FT	28080	27860	22490	19120	21300	19650	16430	14350	28320	28810	16000	8250
CFSM	.34	.35	.28	.23	.28	.24	.21	.18	.36	.35	.20	.10
IN.	.40	.39	.32	.27	.30	.28	.23	.20	.40	.41	.23	.12

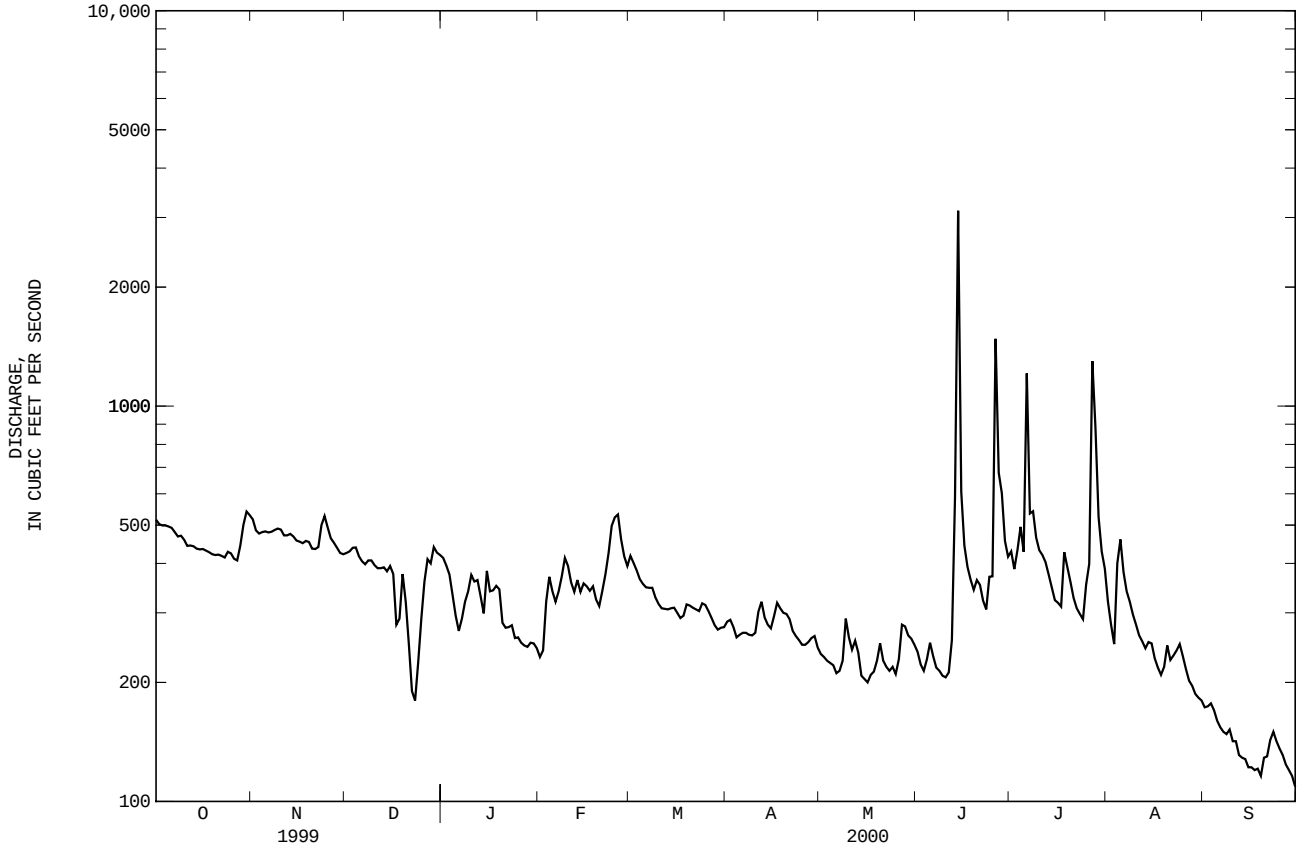
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 2000, BY WATER YEAR (WY)

MEAN	388	358	308	272	551	954	815	1052	1262	897	602	536
MAX	2002	1277	1140	1201	1777	3877	2867	3227	5031	6357	2610	2531
(WY)	1987	1973	1973	1973	1973	1979	1973	1973	1998	1993	1993	1972
MIN	27.1	33.6	20.6	17.4	19.4	67.8	42.7	97.3	65.6	71.2	30.1	41.0
(WY)	1956	1956	1956	1956	1956	1956	1956	1967	1956	1954	1955	1955

06808500 WEST NISHNABOTNA RIVER AT RANDOLPH, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1949 - 2000	
ANNUAL TOTAL	466598		126378			
ANNUAL MEAN	1278		345		666	
HIGHEST ANNUAL MEAN					1985	1993
LOWEST ANNUAL MEAN					111	1968
HIGHEST DAILY MEAN	21800	Aug 8	3120	Jun 14	25800	Jun 15 1998
LOWEST DAILY MEAN	180	Dec 23	109	Sep 30	10	Dec 17 1955a
ANNUAL SEVEN-DAY MINIMUM	259	Dec 20	123	Sep 13	11	Dec 16 1955
INSTANTANEOUS PEAK FLOW			5490	Jun 14	40800	May 26 1987
INSTANTANEOUS PEAK STAGE			14.99	Jun 14	24.80	Mar 5 1949b
INSTANTANEOUS LOW FLOW			108	Sep 30		
ANNUAL RUNOFF (AC-FT)	925500		250700		482800	
ANNUAL RUNOFF (CFSM)	.96		.26		.50	
ANNUAL RUNOFF (INCHES)	13.09		3.55		6.83	
10 PERCENT EXCEEDS	2570		480		1440	
50 PERCENT EXCEEDS	625		320		350	
90 PERCENT EXCEEDS	406		199		90	

a Also Dec. 18-21, 1955.
b From graph based on gage readings, backwater from ice.
e Estimated.



06809210 EAST NISHNABOTNA RIVER NEAR ATLANTIC, IA

LOCATION.--Lat 41°20'46", long 95°04'36", in NW$^1/_4$ NW$^1/_4$ sec.35, T.76 N., R.37 W., Cass County, Hydrologic Unit 10240003, on left bank at downstream side of bridge on county highway, 1.6 mi upstream from Turkey Creek, 5.2 mi southwest of junction of U.S. Highway 6 and State Highway 83 in Atlantic, 69.1 mi upstream from confluence with West Nishnabotna River, and at mile 84.6 upstream from mouth of Nishnabotna River.

DRAINAGE AREA.--436 mi^2.

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,105.83 ft above sea level. Prior to Oct. 1, 1970, at site 2.2 mi upstream at datum 5.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 2, 1958 reached a stage of 22.49 ft, from floodmark, discharge, 34,200 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	95	93	75	e73	e50	93	55	43	45	86	37	22
2	92	88	76	e70	e65	85	54	43	41	77	37	22
3	94	88	77	e65	e76	79	51	41	40	138	69	22
4	99	89	74	e56	e69	75	50	41	47	118	67	21
5	98	87	70	e51	e64	72	49	39	42	98	51	22
6	94	86	68	e52	e68	71	48	39	41	113	44	21
7	91	86	70	e57	e76	69	48	40	39	102	38	21
8	88	87	71	e61	e81	69	49	58	38	80	38	20
9	89	88	69	e68	e88	67	50	52	36	70	38	19
10	90	84	66	e74	77	65	62	49	34	66	35	19
11	89	86	66	e72	71	63	75	45	34	65	33	19
12	91	81	68	e70	e70	63	64	44	37	71	31	18
13	88	85	66	e65	e74	63	56	41	46	63	34	18
14	89	81	65	e70	e65	63	52	42	83	58	34	22
15	91	77	e69	e75	66	62	48	43	71	55	32	18
16	88	78	e55	e65	64	59	50	42	53	57	30	18
17	85	78	e60	e65	64	59	55	43	46	56	29	18
18	88	81	e65	e68	73	62	55	47	44	62	28	19
19	91	77	e75	e65	61	64	51	58	41	62	28	18
20	91	76	e42	e57	68	64	47	53	46	57	30	20
21	91	78	e30	e55	75	62	47	45	45	52	31	20
22	89	78	e28	e58	88	61	46	43	40	48	32	24
23	85	101	e37	e53	125	60	46	43	40	44	33	22
24	87	98	e47	e53	142	61	46	42	43	41	32	22
25	90	84	e60	e52	134	59	44	41	151	40	29	21
26	90	81	e76	e51	139	57	43	59	839	54	27	20
27	90	78	e74	e50	105	54	50	68	241	70	26	20
28	89	75	e80	e51	88	52	51	63	138	54	26	19
29	97	74	e79	e53	87	52	46	53	120	46	25	19
30	125	74	e75	e49	---	52	43	49	100	42	24	18
31	109	---	e75	e48	---	52	---	47	---	39	23	---
TOTAL	2863	2497	2008	1872	2373	1989	1531	1456	2661	2084	1071	602
MEAN	92.4	83.2	64.8	60.4	81.8	64.2	51.0	47.0	88.7	67.2	34.5	20.1
MAX	125	101	80	75	142	93	75	68	839	138	69	24
MIN	85	74	28	48	50	52	43	39	34	39	23	18
AC-FT	5680	4950	3980	3710	4710	3950	3040	2890	5280	4130	2120	1190
CFSM	.21	.19	.15	.14	.19	.15	.12	.11	.20	.15	.08	.05
IN.	.24	.21	.17	.16	.20	.17	.13	.12	.23	.18	.09	.05

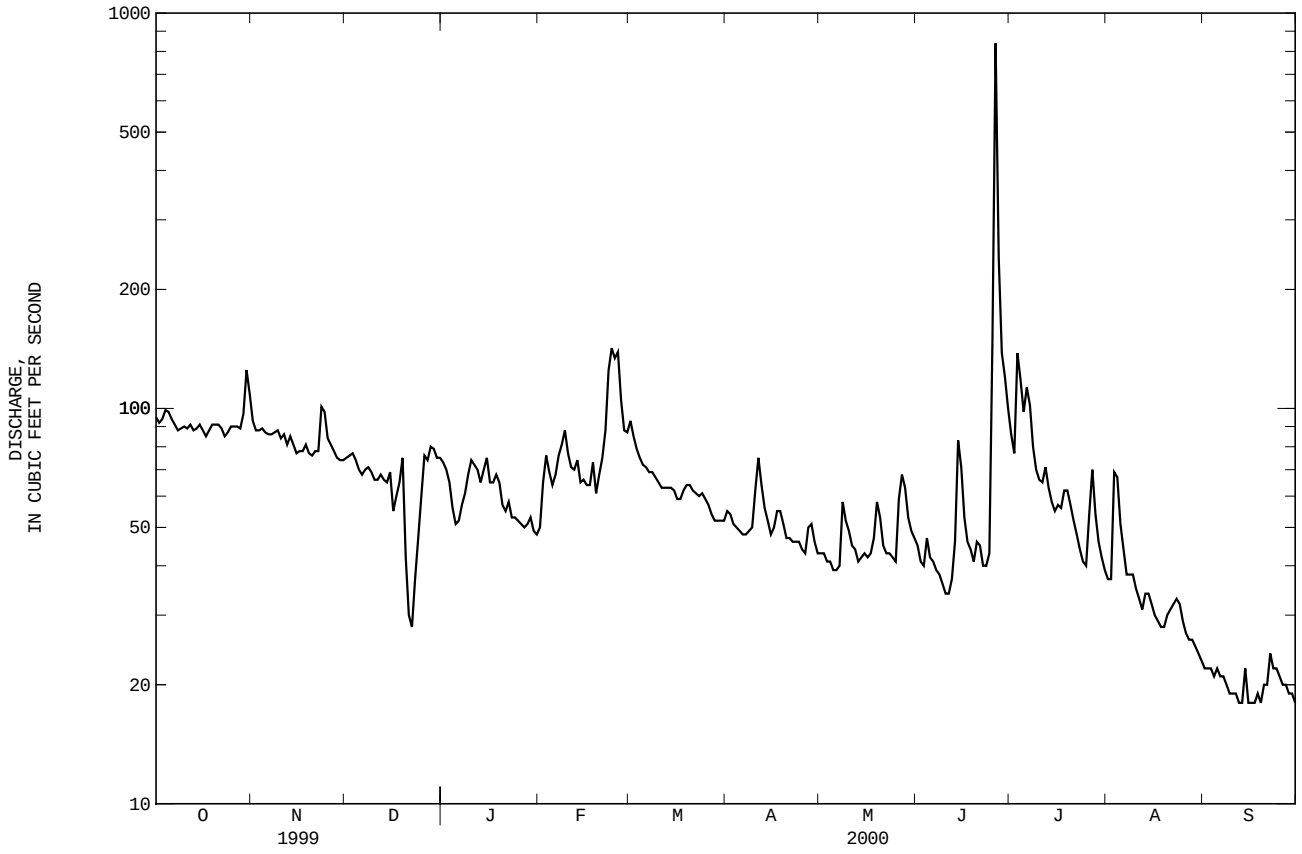
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 2000, BY WATER YEAR (WY)

MEAN	144	138	113	92.5	207	405	376	421	519	357	180	214
MAX	1069	757	529	529	812	1378	1138	1208	3125	2747	1394	1855
(WY)	1987	1973	1993	1973	1971	1965	1973	1986	1998	1993	1993	1972
MIN	21.0	20.3	10.6	7.68	18.7	28.4	27.9	15.0	23.5	15.6	13.4	14.8
(WY)	1967	1969	1964	1971	1968	1968	1981	1967	1977	1968	1968	1971

06809210 EAST NISHNABOTNA RIVER NEAR ATLANTIC, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1961 - 2000	
ANNUAL TOTAL	172478		23007			
ANNUAL MEAN	473		62.9		264	
HIGHEST ANNUAL MEAN					842	1993
LOWEST ANNUAL MEAN					23.7	1968
HIGHEST DAILY MEAN	5600	Jul 9	839	Jun 26	32300	Jun 15 1998
LOWEST DAILY MEAN	28	Dec 22	18	Sep 12	2.5	Jul 10 1977
ANNUAL SEVEN-DAY MINIMUM	46	Dec 19	19	Sep 11	7.0	Dec 17 1963
INSTANTANEOUS PEAK FLOW			1540	Jun 26	41400	Jun 15 1998
INSTANTANEOUS PEAK STAGE			6.61	Jun 26	22.81	Sep 12 1972
INSTANTANEOUS LOW FLOW			17	Sep 12a		
ANNUAL RUNOFF (AC-FT)	342100		45630		191100	
ANNUAL RUNOFF (CFSM)	1.08		.14		.60	
ANNUAL RUNOFF (INCHES)	14.72		1.96		8.22	
10 PERCENT EXCEEDS	1070		90		580	
50 PERCENT EXCEEDS	212		59		109	
90 PERCENT EXCEEDS	78		28		24	

a Also Sept. 13.
e Estimated.



06809500 EAST NISHNABOTNA RIVER AT RED OAK, IA

LOCATION.--Lat 41°00'31", long 95°14'29", in NW$^1/_4$ SE$^1/_4$ sec.29, T.72 N., R.38 W., Montgomery County, Hydrologic Unit 10240003, on upstream side of Coolbaugh Street and 200 ft left of left end of Coolbaugh Street bridge in Red Oak, 0.2 mi upstream from Red Oak Creek, 38.0 mi upstream from confluence with West Nishnabotna River, and at mile 53.6 upstream from mouth of Nishnabotna River.

DRAINAGE AREA.--894 mi^2.

PERIOD OF RECORD.--May 1918 to November 1924, February 1925 to July 1925, May 1936 to current year. Monthly discharge only for some periods, published in WSP 1310.

REVISED RECORDS.--WSP 1240: 1921, 1922-23 (M), 1924, 1942 (M), 1944 (M), 1946. WSP 1440: Drainage area. WSP 1710: 1957.

GAGE.--Water-stage recorder. Datum of gage is 1,005.45 ft above sea level. Prior to July 5, 1925, nonrecording gage at present site at datum 4.60 ft higher. May 29, 1936 to Nov. 13, 1952, nonrecording gage with supplementary water-stage recorder in operation above 3.2 ft gage height. July 30, 1939 to Nov. 13, 1952, and Nov. 14, 1952 to June 13, 1966, water-stage recorder, all at site 0.5 mi upstream at datum 5.00 ft higher. June 14, 1966 to Sept. 30, 1969, at present site at datum 5.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	226	197	187	204	e109	219	139	122	96	236	116	67
2	221	183	189	200	e112	218	141	118	93	222	112	67
3	221	181	189	193	e150	201	137	117	88	238	111	67
4	222	181	189	181	e160	191	132	115	97	291	145	66
5	224	183	183	e150	e140	183	129	113	108	253	153	64
6	221	182	179	e135	e140	176	129	112	100	253	122	65
7	215	182	178	e142	e150	173	128	112	98	244	113	63
8	212	183	181	e155	e160	171	127	122	94	218	104	63
9	209	184	179	173	166	171	128	151	92	191	99	62
10	207	184	176	170	168	166	130	136	88	178	101	62
11	204	180	171	165	135	161	149	126	85	171	92	61
12	201	181	174	e155	133	157	165	123	93	180	88	60
13	201	182	175	e149	151	158	151	103	149	177	86	61
14	197	182	169	143	e140	158	139	98	375	161	93	60
15	197	180	172	160	e140	158	135	98	225	153	88	62
16	197	179	148	148	e150	155	136	96	165	149	80	61
17	190	180	140	144	e140	150	136	96	135	147	78	60
18	189	181	161	149	e140	151	137	97	121	160	78	59
19	192	182	187	150	150	157	136	100	114	158	80	60
20	194	177	e160	133	e140	159	137	112	117	152	83	66
21	196	179	e120	e127	155	157	129	109	117	143	81	63
22	193	184	e95	e126	172	154	128	98	110	136	80	68
23	189	215	e90	e128	205	150	127	91	108	129	84	72
24	187	229	e109	e123	249	154	125	88	110	124	81	71
25	186	230	e133	e120	274	151	123	86	118	128	78	69
26	187	196	e170	e118	279	147	121	97	1200	124	74	66
27	185	192	e199	e114	259	144	125	121	898	197	72	65
28	183	188	e191	e115	215	139	131	125	403	255	72	64
29	184	187	e218	e118	203	136	129	117	307	156	71	61
30	210	182	221	e119	---	135	124	107	265	133	69	59
31	225	---	212	e113	---	136	---	100	---	123	67	---
TOTAL	6265	5626	5245	4520	4885	5036	4003	3406	6169	5580	2851	1914
MEAN	202	188	169	146	168	162	133	110	206	180	92.0	63.8
MAX	226	230	221	204	279	219	165	151	1200	291	153	72
MIN	183	177	90	113	109	135	121	86	85	123	67	59
AC-FT	12430	11160	10400	8970	9690	9990	7940	6760	12240	11070	5650	3800
CFSM	.23	.21	.19	.16	.19	.18	.15	.12	.23	.20	.10	.07
IN.	.26	.23	.22	.19	.20	.21	.17	.14	.26	.23	.12	.08

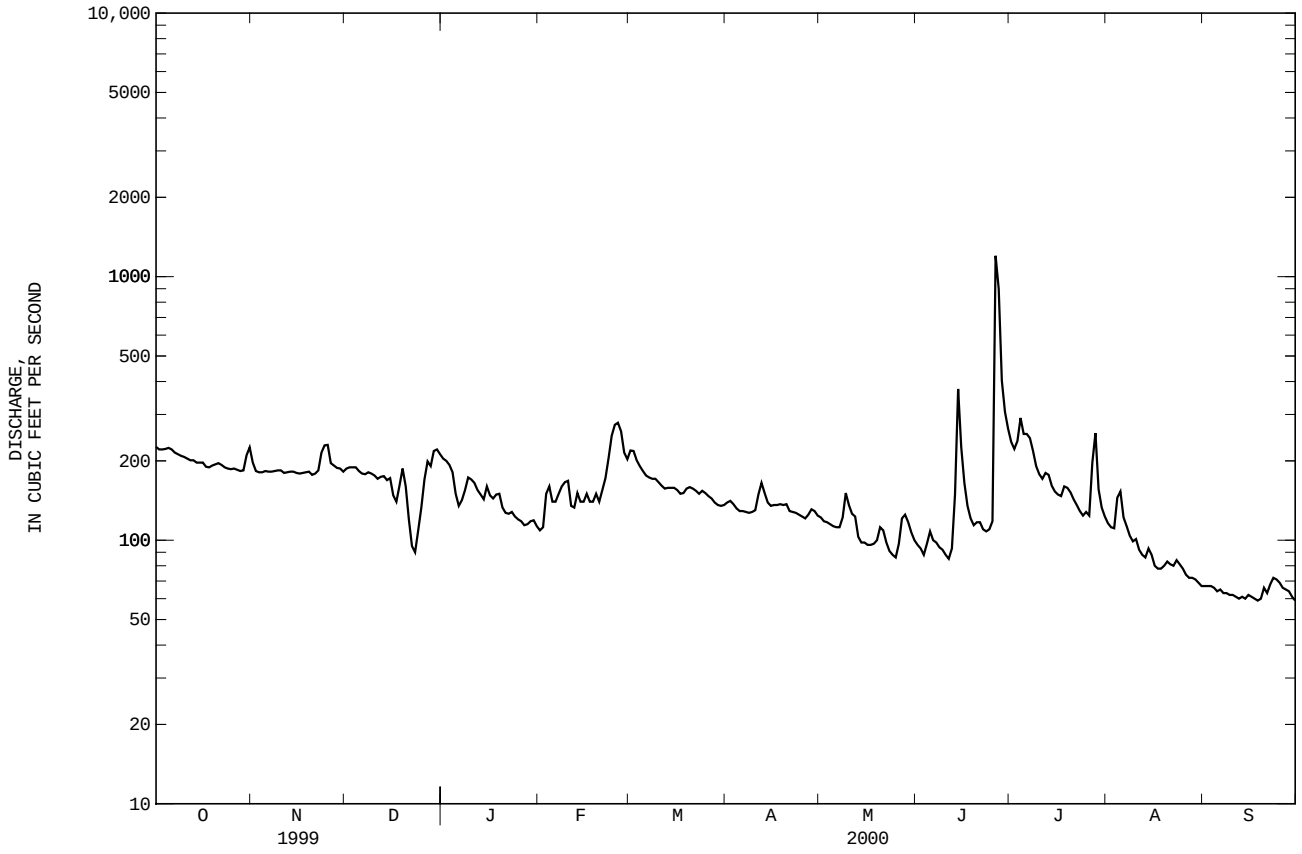
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 2000, BY WATER YEAR (WY)

MEAN	229	217	172	160	369	676	584	720	915	576	362	362
MAX	1816	1335	1038	1078	1438	2596	2194	2538	5330	6971	2821	3074
(WY)	1987	1973	1993	1973	1973	1965	1973	1999	1998	1993	1993	1972
MIN	16.5	19.9	14.6	12.3	17.2	32.3	30.4	35.2	40.5	24.5	17.0	14.9
(WY)	1938	1940	1938	1940	1940	1938	1956	1939	1968	1936	1936	1937

06809500 EAST NISHNABOTNA RIVER AT RED OAK, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1919 - 2000	
ANNUAL TOTAL	342413		55500			
ANNUAL MEAN	938		152		449	
HIGHEST ANNUAL MEAN					1842	1993
LOWEST ANNUAL MEAN					54.9	1968
HIGHEST DAILY MEAN	12300	May 17	1200	Jun 26	45100	Jun 15 1998
LOWEST DAILY MEAN	90	Dec 23	59	Sep 18	6.0	Aug 18 1936
ANNUAL SEVEN-DAY MINIMUM	125	Dec 20	60	Sep 12	8.1	Dec 15 1937
INSTANTANEOUS PEAK FLOW			2210	Jun 26	60500	Jun 15 1998
INSTANTANEOUS PEAK STAGE			9.60	Jun 26	29.39	Jun 15 1998
INSTANTANEOUS LOW FLOW			57	Sep 18a		
ANNUAL RUNOFF (AC-FT)	679200		110100		325400	
ANNUAL RUNOFF (CFSM)	1.05		.17		.50	
ANNUAL RUNOFF (INCHES)	14.25		2.31		6.83	
10 PERCENT EXCEEDS	2190		213		969	
50 PERCENT EXCEEDS	386		144		184	
90 PERCENT EXCEEDS	180		77		42	

a Also Sept. 19 and 30.
e Estimated.



06810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA

LOCATION.--Lat 40°37'57", long 95°37'32", in SW$^1/_4$ SE$^1/_4$ sec.11, T.67 N., R.42 W., Fremont County, Hydrologic Unit 10240004, on left bank 1.7 mi downstream from confluence of East Nishnabotna and West Nishnabotna Rivers, 2 mi northeast of Hamburg, and at mile 13.8.

DRAINAGE AREA.--2,806 mi^2.

PERIOD OF RECORD.--March 1922 to September 1923, October 1928 to current year. Monthly discharge only for some periods published in WSP 1310.

REVISED RECORDS.--WSP 1240: 1923, 1929-37, 1938-40 (M), 1943 (M). WSP 1440: Drainage area. WDR IA-74-1: 1973.

GAGE.--Water-stage recorder. Datum of gage is 894.17 ft above sea level. See WSP 1730 for history of changes prior to Nov. 16, 1950.

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 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	866	820	710	e950	e400	862	498	429	422	840	628	248
2	834	749	707	892	e440	844	511	412	393	751	582	268
3	827	708	731	825	e650	826	495	392	370	802	567	280
4	809	709	729	649	e700	771	477	394	359	920	560	238
5	772	702	719	e550	e650	725	471	395	407	838	562	238
6	759	705	698	e500	e600	702	449	396	433	2240	730	225
7	726	703	697	e550	e650	678	445	403	384	1450	582	223
8	e720	687	733	e600	e700	670	450	446	366	1060	528	222
9	e730	648	735	e650	e750	648	446	474	351	968	496	220
10	e725	657	797	750	e700	617	441	576	339	855	464	215
11	e700	677	851	672	e600	603	476	514	330	805	448	205
12	e700	677	804	635	574	596	545	456	352	851	423	191
13	e700	678	782	598	621	595	554	468	428	868	404	185
14	765	677	800	549	604	593	511	413	3180	796	397	185
15	742	649	765	697	631	596	469	402	1510	710	405	175
16	720	621	696	633	628	586	491	396	919	660	353	172
17	701	626	636	598	613	568	563	403	735	659	321	179
18	702	661	531	660	637	563	537	405	599	754	314	175
19	706	667	551	658	607	614	505	399	530	978	333	175
20	724	672	e800	518	579	616	495	447	541	798	409	194
21	708	672	e500	428	623	602	539	441	541	704	397	202
22	672	696	e320	e550	669	587	470	430	472	634	350	218
23	728	891	e340	e460	796	576	450	402	498	604	373	234
24	705	912	e440	e500	929	615	439	378	759	571	393	221
25	705	865	e550	e460	1030	602	428	361	663	639	388	214
26	717	833	e700	e460	1080	568	432	385	1770	785	343	199
27	719	769	e850	e440	1000	533	442	492	2040	1940	315	192
28	701	730	e900	e420	926	507	438	516	1640	1630	293	190
29	702	706	e950	e420	841	493	449	499	1080	1250	281	183
30	765	708	e1000	e440	---	487	436	482	885	874	271	177
31	821	---	e1000	e440	---	482	---	452	---	712	261	---
TOTAL	22871	21475	22022	18152	20228	19325	14352	13458	23296	28946	13171	6243
MEAN	738	716	710	586	698	623	478	434	777	934	425	208
MAX	866	912	1000	950	1080	862	563	576	3180	2240	730	280
MIN	672	621	320	420	400	482	428	361	330	571	261	172
MED	720	699	729	550	650	602	470	413	514	805	397	204
AC-FT	45360	42600	43680	36000	40120	38330	28470	26690	46210	57410	26120	12380
CFSM	.26	.26	.25	.21	.25	.22	.17	.15	.28	.33	.15	.07
IN.	.30	.28	.29	.24	.27	.26	.19	.18	.31	.38	.17	.08

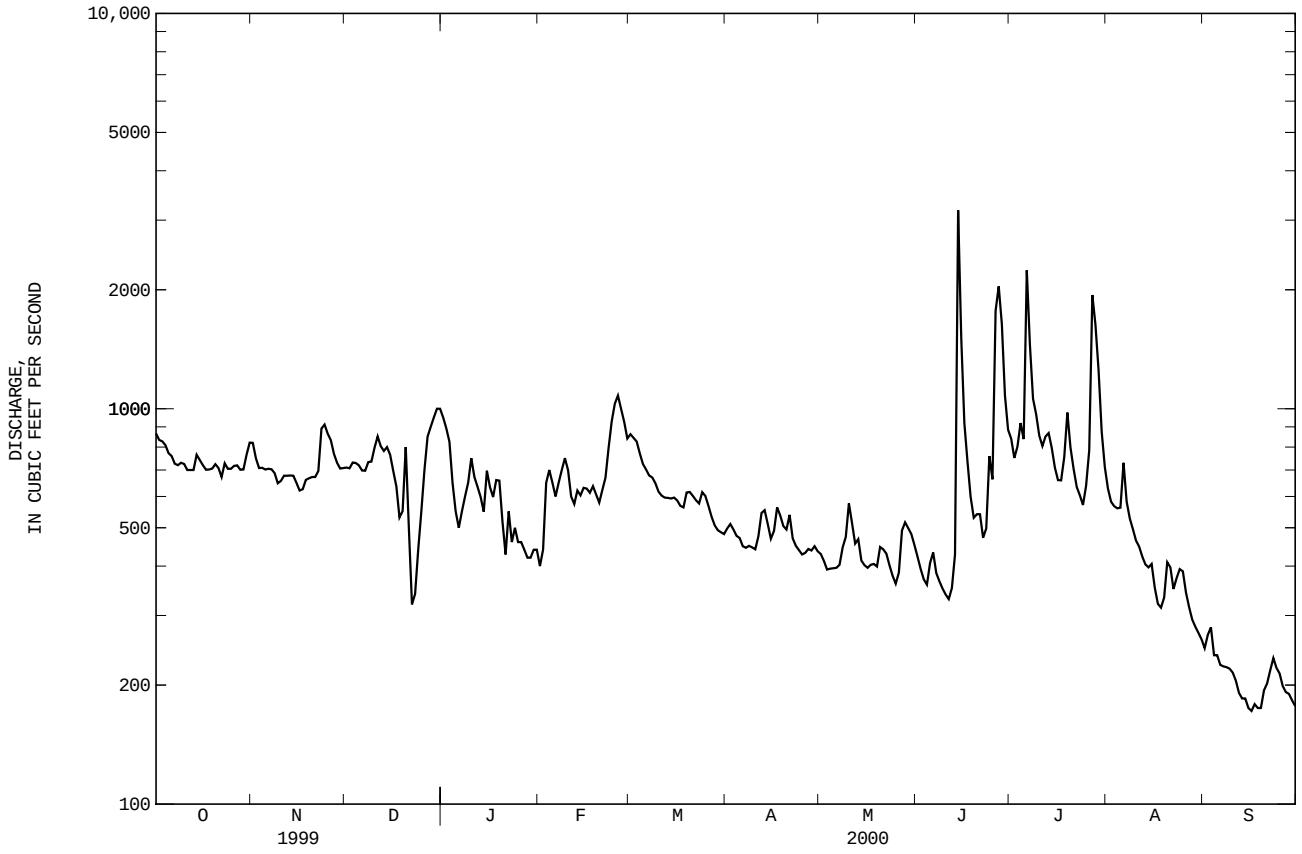
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1922 - 2000, BY WATER YEAR (WY)

MEAN	680	679	566	565	1050	1823	1520	1905	2587	1705	1113	1009
MAX	5004	3083	2557	3585	4720	7229	5866	6621	16430	17780	6266	7385
(WY)	1987	1973	1973	1973	1973	1979	1973	1995	1947	1993	1993	1993
MIN	39.5	42.9	27.1	21.3	30.3	115	89.7	68.2	151	52.8	16.8	44.1
(WY)	1938	1938	1938	1940	1940	1931	1956	1934	1956	1936	1934	1937

06810000 NISHNABOTNA RIVER ABOVE HAMBURG, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1922 - 2000	
ANNUAL TOTAL	957642		223539			
ANNUAL MEAN	2624		611		1270	
HIGHEST ANNUAL MEAN					5062	1993
LOWEST ANNUAL MEAN					170	1934
HIGHEST DAILY MEAN	22500	Aug 8	3180	Jun 14	53700	Jun 17 1998
LOWEST DAILY MEAN	320	Dec 22	172	Sep 16	4.5	Aug 30 1934
ANNUAL SEVEN-DAY MINIMUM	497	Dec 18	178	Sep 13	9.9	Aug 24 1934
INSTANTANEOUS PEAK FLOW			4710	Jun 14	65100	Jun 17 1998
INSTANTANEOUS PEAK STAGE			16.33	Jun 14	33.18	Jun 17 1998
INSTANTANEOUS LOW FLOW			163	Sep 30		
ANNUAL RUNOFF (AC-FT)	1899000		443400		919800	
ANNUAL RUNOFF (CFSM)	.94		.22		.45	
ANNUAL RUNOFF (INCHES)	12.70		2.96		6.15	
10 PERCENT EXCEEDS	6030		852		2910	
50 PERCENT EXCEEDS	1130		598		600	
90 PERCENT EXCEEDS	695		318		120	

e Estimated



06813500 MISSOURI RIVER AT RULO, NE

LOCATION.--Lat 40°03'13", long 95°25'19", in NW$^1/_4$ NW$^1/_4$ sec.17, T.1 N., R.18 E., Richardson County, Hydrologic Unit 10240005, on right bank at downstream side of bridge on U.S. Highway 159 at Rulo, 3.2 mi upstream from Big Nemaha River, and at mile 498.0.

DRAINAGE AREA.--414,900 mi^2, approximately. The 3,959 mi^2 in Great Divide basin are not included.

PERIOD OF RECORD.--October 1949 to current year in reports of U.S. Geological Survey. Gage- height record collected at site 80 ft upstream January 1886 to December 1899 published in reports of Missouri River Commission; September 1929 to September 1950 in files of Kansas City office of U.S. Army Corps of Engineers.

GAGE.--Water-stage recorder. Datum of gage is 837.23 ft above sea level. Oct. 1949 to Sept. 12, 1950, nonrecording gage at site 80 ft upstream and Sept. 13, 1950 to Apr. 19, 1983, recording gage on downstream end of middle pier, all at same datum.

REMARKS.--Records good, except those for estimated daily discharges, which are poor. Flow regulated by upstream main-stem reservoirs. Fort Randall Dam was completed in July 1952, with storage beginning in December 1952. Gavins Point Dam was completed in July 1955, with storage beginning in December 1955. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers satellite data collection platform at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 358,000 ft^3/s Apr. 22, 1952, gage height, 25.60 ft; minimum daily discharge, 4,420 ft^3/s Jan. 13, 1957; minimum gage height, -0.19 ft Dec. 25, 1990, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1881 reached a stage of 22.9 ft, from floodmark, discharge not determined.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55100	57300	55500	37600	28600	32800	40500	40100	47400	44600	41900	35800
2	55900	57200	56000	37100	28300	33100	40400	39600	47400	43000	41400	36000
3	56000	57700	55500	36900	28600	32900	39300	39500	47000	43600	40900	36800
4	57100	58200	55800	36900	29200	31700	39000	39400	46800	48800	40400	37700
5	57100	58300	56000	36400	30300	31400	38400	39400	45800	47100	40200	37800
6	57300	57500	55400	35200	29800	31100	38300	39300	45200	45000	39400	37400
7	58000	57500	52400	33900	28900	30900	38800	39200	44800	51500	39200	37000
8	57100	57900	49600	33100	29100	30800	38800	39000	44700	55200	39100	37100
9	57500	58000	46000	32700	31000	31000	38600	40000	44100	51500	38300	37100
10	57300	58200	43600	33100	31800	31300	39200	39500	43700	47200	38000	37000
11	56800	57800	42200	33800	31500	31600	39500	39200	43300	46100	38400	37100
12	56400	58100	40400	33900	30300	31700	39700	39000	43200	44900	38400	37100
13	56600	58400	38900	33400	28900	31300	38900	39500	44200	44500	37400	37200
14	56200	58100	38000	32900	28600	30300	38900	40800	47000	44800	37500	37500
15	56500	58200	37600	33400	29200	29600	39600	42600	47200	45100	37000	37800
16	57200	58000	37300	33900	28400	28900	39900	43600	45300	42500	36200	38300
17	57100	58200	38000	34400	28400	28700	41000	43900	45000	42000	36200	38300
18	57200	58400	37400	34700	29400	28500	41800	43700	43800	41900	36800	38400
19	58100	57700	36800	33600	30300	28300	42000	44100	43100	44100	37400	38600
20	58200	57800	36600	34000	30300	28000	41000	46500	43100	43100	39000	38800
21	58300	57500	36400	35300	30300	29700	40700	47600	43600	42000	38900	39100
22	57700	57000	36100	34100	31000	32700	41000	46900	43000	42200	38200	39800
23	57400	58000	34700	33300	31700	35200	40800	47500	43600	42300	38400	39600
24	57100	58300	32600	33300	32400	38400	41100	48100	e54000	41400	39100	39800
25	57000	57600	33600	33500	32600	40200	40200	47100	e52000	42400	38400	40000
26	57000	57200	36100	33100	33700	40900	39900	47600	e70000	42800	37600	39500
27	56600	56800	36400	32700	34500	41600	39600	48400	67600	44000	37100	39200
28	55700	55900	37000	32500	34200	41500	40300	48300	59400	45100	36800	38900
29	56600	55400	37700	31400	33000	41500	40600	48200	49800	44100	36600	38300
30	57200	55300	37900	29700	---	40900	40500	47700	46100	41400	36000	38300
31	57400	---	37800	28700	---	40700	---	47500	---	41200	36000	---
TOTAL	1766700	1727500	1305300	1048500	884300	1037200	1198300	1342800	1431200	1385400	1186200	1141300
MEAN	56990	57580	42110	33820	30490	33460	39940	43320	47710	44690	38260	38040
MAX	58300	58400	56000	37600	34500	41600	42000	48400	70000	55200	41900	40000
MIN	55100	55300	32600	28700	28300	28000	38300	39000	43000	41200	36000	35800
AC-FT	3504000	3426000	2589000	2080000	1754000	2057000	2377000	2663000	2839000	2748000	2353000	2264000
CFSM	.14	.14	.10	.08	.07	.08	.10	.10	.11	.11	.09	.09
IN.	.16	.15	.12	.09	.08	.09	.11	.12	.13	.12	.11	.10

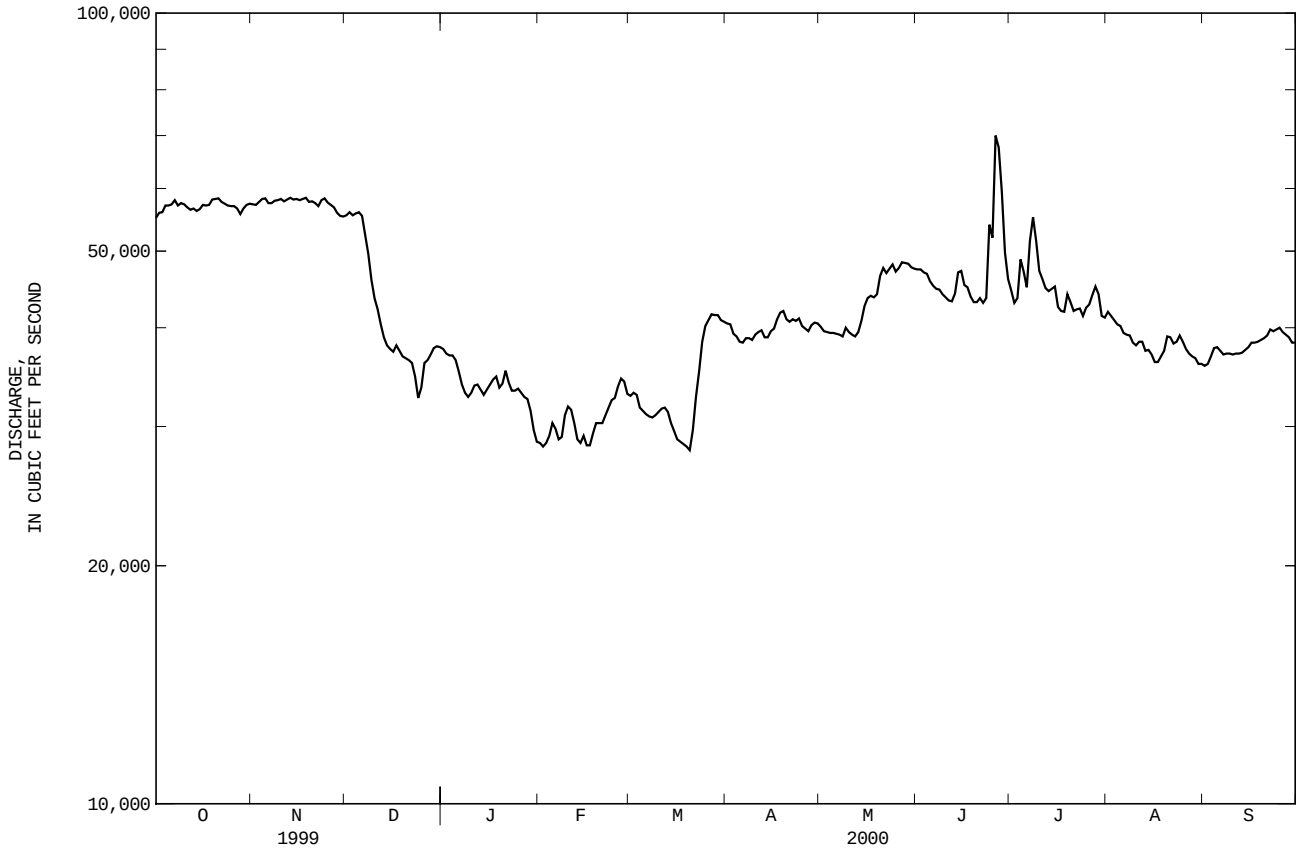
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 2000, BY WATER YEAR (WY)

MEAN	45070	41210	27510	22850	28760	41380	51490	51910	57190	51380	45340	45490
MAX	80050	83880	57380	42280	53140	79590	106100	97280	130600	164800	78730	76410
(WY)	1998	1998	1998	1973	1997	1979	1997	1997	1984	1993	1996	1997
MIN	25580	17000	9953	10800	13220	15380	21820	33790	33710	33860	29820	34140
(WY)	1962	1962	1956	1957	1957	1957	1957	1956	1956	1963	1955	1991

06813500 MISSOURI RIVER AT RULO, NE--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1953 - 2000a	
ANNUAL TOTAL	21748700		15454700			
ANNUAL MEAN	59590		42230		42500	
HIGHEST ANNUAL MEAN					71880	1997
LOWEST ANNUAL MEAN					26340	1957
HIGHEST DAILY MEAN	122000	Jun 29	70000	Jun 26	289000	Jul 24 1993
LOWEST DAILY MEAN	32600	Dec 24	28000	Mar 20	4420	Jan 13 1957
ANNUAL SEVEN-DAY MINIMUM	35100	Dec 21	28800	Mar 15	5560	Nov 30 1955
INSTANTANEOUS PEAK FLOW			72100	Jun 26	307000	Jul 24 1993
INSTANTANEOUS PEAK STAGE			15.63	Jun 26	25.37	Jul 24 1993
INSTANTANEOUS LOW FLOW			27700	Mar 20		
ANNUAL RUNOFF (AC-FT)	43140000		30650000		30790000	
ANNUAL RUNOFF (CFSM)	.14		.10		.10	
ANNUAL RUNOFF (INCHES)	1.95		1.39		1.39	
10 PERCENT EXCEEDS	84100		57200		67000	
50 PERCENT EXCEEDS	57300		39800		39000	
90 PERCENT EXCEEDS	38000		31400		18700	

a Post regulation.
e Estimated.



06817000 NODAWAY RIVER AT CLARINDA, IA

LOCATION.--Lat 40°44'19", long 95°00'47", in SW$^1/_4$ NE$^1/_4$ sec.32, T.69 N., R.36 W., Page County, Hydrologic Unit 10240009, near left abutment on downstream side of bridge on State Highway 2 (city route), 0.5 mi downstream from North Branch, 1.2 mi east of city square of Clarinda, and 7.5 mi upstream from East Nodaway River.

DRAINAGE AREA.--762 mi^2.

PERIOD OF RECORD.--May 1918 to July 1925, May 1936 to current year. Monthly discharge only for some periods, published in WSP 1310. No winter records 1918-1925.

REVISED RECORDS.--WSP 1240: 1918-20 (M), 1921, 1922-25 (M), 1936-38, 1942, 1943-45 (M), 1948. WSP 1440: Drainage area. WSP 1710: 1958, 1959 (P).

GAGE.--Water-stage recorder. Datum of gage is 955.36 ft above sea level. Prior to July 5, 1925, and May 28, 1936 to Mar. 26, 1957, nonrecording gage at same site, and prior to Oct. 1, 1987, at datum 5.00 ft. higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Clarinda municipal water supply is taken from Nodaway River, 500 ft upstream from station. Average daily pumpage was 1.49 ft^3/s. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Geological Survey and satellite data collection platform at station.

COOPERATION.--Average pumpage provided by City of Clarinda water works.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1903 reached a stage of 25.4 ft, from floodmarks, discharge not determined.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	62	52	62	64	e27	134	60	58	52	183	88	42
2	54	42	70	65	e30	134	63	59	43	155	84	46
3	48	47	71	61	35	120	58	57	37	997	97	40
4	52	53	63	e46	46	108	53	52	46	789	90	32
5	61	58	56	e40	48	105	60	50	44	743	82	28
6	63	61	48	e42	42	102	53	52	37	1740	e70	27
7	64	62	57	e46	52	98	49	54	42	505	e60	35
8	60	62	56	e50	55	88	49	49	39	368	62	38
9	60	66	53	e55	64	68	56	53	31	298	63	37
10	58	63	49	56	59	66	47	58	33	255	61	38
11	51	57	51	e54	35	63	56	68	35	217	57	34
12	53	65	56	e50	39	60	67	50	64	298	56	25
13	49	64	49	e48	47	61	87	36	64	219	56	27
14	48	62	44	e46	43	63	79	37	928	184	54	31
15	57	58	50	e51	49	62	62	43	700	159	57	26
16	49	60	25	e48	39	56	65	38	356	148	52	28
17	44	57	33	34	39	57	67	37	247	139	48	34
18	39	62	45	54	34	59	67	38	186	131	50	27
19	40	49	44	43	38	75	74	35	159	308	50	23
20	46	53	e38	35	39	75	95	36	164	190	140	36
21	55	60	e33	37	48	81	112	38	143	141	65	37
22	52	61	e24	47	58	78	77	42	128	117	56	56
23	45	112	e18	e38	93	70	71	37	160	104	67	55
24	45	124	e26	e34	238	91	60	35	247	92	77	46
25	48	104	e32	e34	365	88	50	31	301	92	61	43
26	50	81	44	e28	388	82	54	50	2080	91	60	36
27	56	71	43	e26	296	68	61	74	1060	129	53	37
28	57	66	61	e27	167	54	79	73	487	411	50	33
29	61	61	54	28	130	57	68	75	332	203	45	29
30	59	56	63	e27	---	57	62	70	246	124	42	27
31	58	---	68	e28	---	56	---	61	---	103	42	---
TOTAL	1644	1949	1486	1342	2643	2436	1961	1546	8491	9633	1995	1053
MEAN	53.0	65.0	47.9	43.3	91.1	78.6	65.4	49.9	283	311	64.4	35.1
MAX	64	124	71	65	388	134	112	75	2080	1740	140	56
MIN	39	42	18	26	27	54	47	31	31	91	42	23
AC-FT	3260	3870	2950	2660	5240	4830	3890	3070	16840	19110	3960	2090
CFSM	.07	.09	.06	.06	.12	.10	.09	.07	.37	.41	.08	.05
IN.	.08	.10	.07	.07	.13	.12	.10	.08	.41	.47	.10	.05

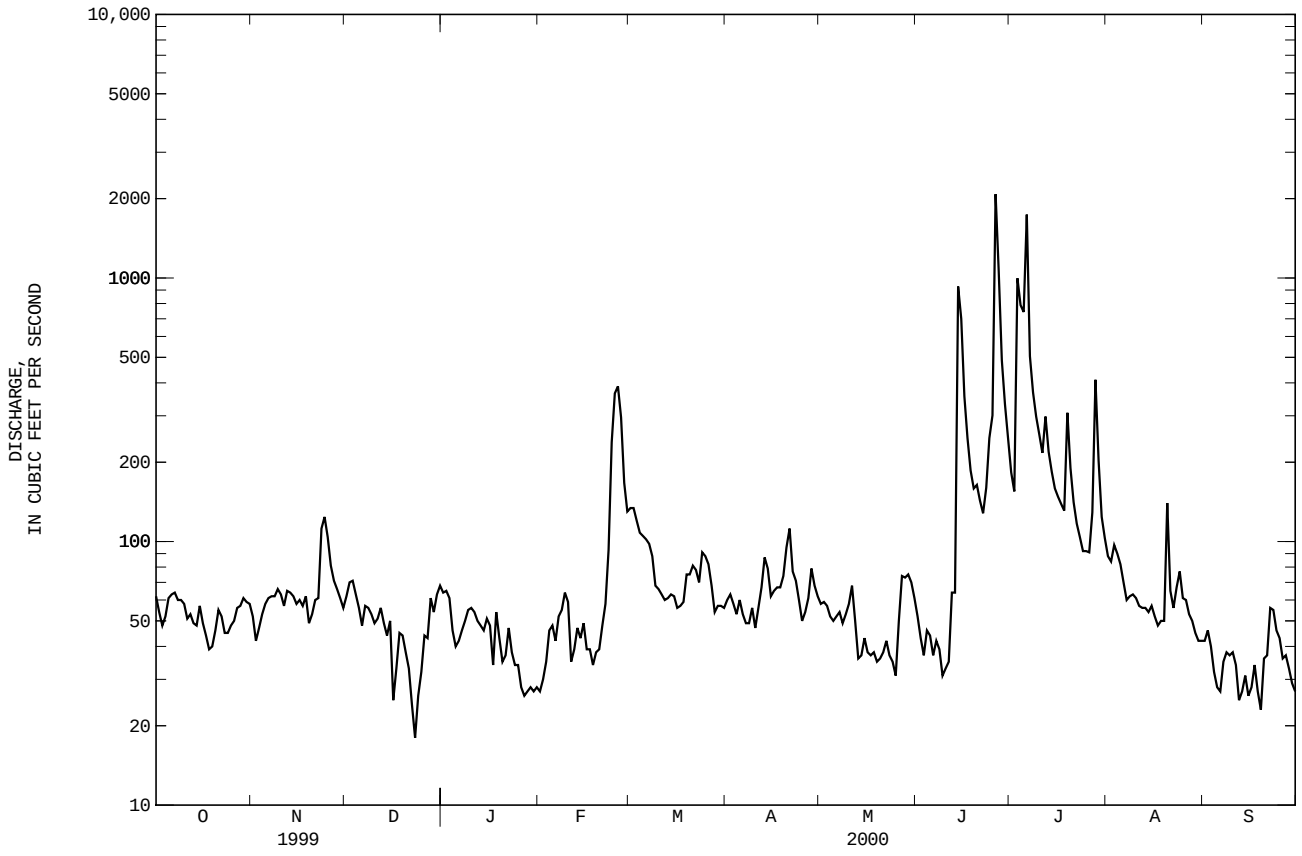
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 2000, BY WATER YEAR (WY)

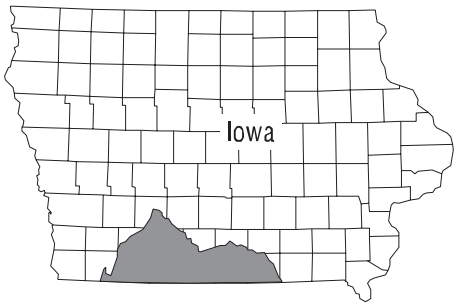
MEAN	175	175	139	131	315	562	567	697	768	442	235	318
MAX	1658	1602	1090	853	1857	2456	2450	2489	4779	6778	1953	3019
(WY)	1974	1973	1993	1974	1973	1979	1973	1996	1947	1993	1987	1972
MIN	7.52	8.27	2.10	6.00	11.3	14.0	14.4	10.3	20.0	17.3	9.81	6.83
(WY)	1938	1938	1924	1924	1940	1938	1956	1939	1968	1954	1936	1937

06817000 NODAWAY RIVER AT CLARINDA, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1919 - 2000	
ANNUAL TOTAL	201385		36179			
ANNUAL MEAN	552		98.8		383	
HIGHEST ANNUAL MEAN					1577	1993
LOWEST ANNUAL MEAN					36.8	1968
HIGHEST DAILY MEAN	17200	May 21	2080	Jun 26	25500	Sep 13 1972
LOWEST DAILY MEAN	18	Dec 23	18	Dec 23	1.0	Dec 9 1923a
ANNUAL SEVEN-DAY MINIMUM	31	Dec 19	27	Jan 26	1.3	Dec 25 1923
INSTANTANEOUS PEAK FLOW			4800	Jul 6	31100	Jun 13 1947b
INSTANTANEOUS PEAK STAGE			11.91	Jul 6	25.30	Jun 13 1947c
INSTANTANEOUS LOW FLOW			13	Dec 16		
ANNUAL RUNOFF (AC-FT)	399400		71760		277300	
ANNUAL RUNOFF (CFSM)	.72		.13		.50	
ANNUAL RUNOFF (INCHES)	9.83		1.77		6.83	
10 PERCENT EXCEEDS	1290		159		836	
50 PERCENT EXCEEDS	175		56		103	
90 PERCENT EXCEEDS	52		34		20	

a Also Dec. 27-31, 1923.
b From rating curve extended above 15,000 ft^3/s on basis of an overflow profile and extended channel rating.
c From floodmark.
e Estimated.





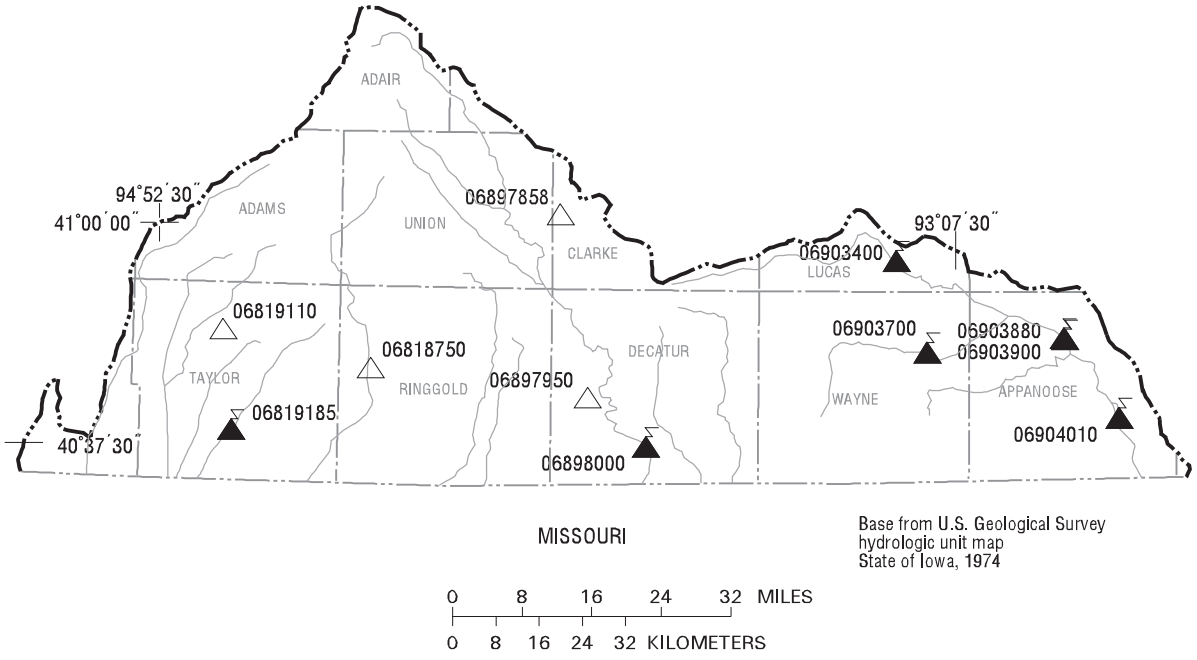
EXPLANATION

Hydrologic boundary

Streams

05449600 Transmitting gaging station and station number

05448600 Crest–stage gaging station and station number



Base from U.S. Geological Survey hydrologic unit map State of Iowa, 1974

0 8 16 24 32 MILES

0 8 16 24 32 KILOMETERS

Gaging Stations

Crest Stage Gaging Stations

06819185 EAST FORK ONE HUNDRED AND TWO RIVER AT BEDFORD, IA

LOCATION.--Lat 40°39'38", long 94°42'59", in NE$^{1}/_{4}$ sec.35, T.68 N., R.34 W., Taylor County, Hydrologic Unit 10240013, on left bank at downstream side of bridge of county highway N44, 0.1 mi south of Bedford, 0.4 mi upstream from concrete stablization dam, and 3.0 mi upstream from Daugherty creek.

DRAINAGE AREA.--85.4 mi^{2}.

PERIOD OF RECORD.--October 1983 to current year. September 1959 to September 1983, at site 2 mi downstream published as "near Bedford" (station 06819190) not equivalent because of difference in drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,069.16 ft above sea level.

REMARKS.--Records are fair, except those for estimated daily discharges, which are poor. Slight regulation at low flow by low dam used for water supply in Bedford. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Geolocial Survey satellite data collection platform and a U.S. National Weather Service Limited Automatic Remote Collector (LARC) at station.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.85	.59	1.6	6.2	e.80	60	5.5	7.2	2.7	19	2.1	.99
2	e.80	.54	4.0	6.8	e.95	25	5.9	6.3	2.8	17	1.7	.90
3	e.70	.56	3.1	8.1	e1.3	14	5.4	6.1	2.0	44	2.8	.92
4	e.75	.60	.98	e3.2	e1.6	9.5	3.8	5.1	6.3	30	2.4	1.1
5	e.85	.63	.92	e1.0	e1.7	7.9	3.9	3.9	6.3	20	1.9	1.3
6	e.70	.67	.74	e1.1	e1.4	6.7	3.1	3.7	4.4	80	1.6	1.8
7	e.60	.70	.75	1.3	e1.8	6.6	3.2	3.8	2.8	48	1.3	1.9
8	e.50	.74	.77	1.1	e1.9	6.0	3.1	3.5	2.9	25	1.3	1.3
9	e.55	.81	.75	1.0	e2.2	5.5	3.0	5.0	2.5	12	1.5	.46
10	e.60	.89	.76	2.8	e2.0	4.1	2.7	3.9	2.3	7.3	1.2	.37
11	e.55	.89	.75	e2.6	e1.4	3.7	3.1	3.0	11	4.8	1.0	.35
12	e.46	.92	.80	e2.3	e1.2	3.3	2.0	3.0	3.8	8.9	1.0	.25
13	e.42	.95	.86	e.75	e1.5	4.0	1.3	2.4	16	4.4	1.2	.19
14	e.38	.98	1.0	e.80	e1.4	3.7	1.2	2.0	129	3.1	.96	.20
15	e.38	.99	2.9	.87	e1.6	4.0	1.2	2.3	40	2.9	.57	.25
16	e.40	1.0	e.70	e.80	e1.3	3.4	1.4	2.0	25	3.5	.70	.29
17	e.36	1.1	e.90	.93	e1.3	3.0	1.2	1.5	12	18	.58	.34
18	e.30	1.1	1.1	1.0	e1.1	4.2	1.1	2.0	7.4	5.7	.69	.39
19	e.25	1.1	e2.5	3.3	e1.4	8.5	1.1	2.3	5.6	3.3	1.9	.45
20	e.26	1.2	e1.2	2.3	e1.7	13	78	1.8	7.3	2.9	11	1.9
21	e.27	1.3	e.65	.93	e2.1	8.9	60	1.5	5.6	2.5	1.5	1.2
22	e.25	5.4	e.46	.98	5.5	7.5	23	1.6	3.4	2.0	1.3	1.9
23	e.23	25	e.70	.87	26	7.4	15	1.8	12	1.8	2.6	2.0
24	e.23	8.0	e.80	.67	73	33	10	1.0	153	1.6	3.7	1.8
25	e.28	3.7	e.95	.65	45	24	5.9	.51	518	1.8	1.3	1.6
26	e.31	2.8	2.7	e.60	40	12	3.0	5.7	765	1.9	1.2	1.1
27	e.36	1.5	3.3	e.60	14	8.7	16	6.9	104	1.8	1.2	.64
28	e.40	.90	2.9	e.80	7.5	6.1	19	4.4	59	12	1.1	.56
29	e.38	.92	4.8	e.70	13	5.6	8.6	3.5	43	2.7	1.1	.55
30	.62	.86	6.0	e.60	---	4.5	7.1	3.7	31	2.6	.77	.55
31	.55	---	6.6	e.70	---	3.9	---	3.2	---	1.9	.87	---
TOTAL	14.54	67.34	56.94	56.35	255.65	317.7	298.8	104.61	1986.1	392.4	54.04	27.55
MEAN	.47	2.24	1.84	1.82	8.82	10.2	9.96	3.37	66.2	12.7	1.74	.92
MAX	.85	25	6.6	8.1	73	60	78	7.2	765	80	11	2.0
MIN	.23	.54	.46	.60	.80	3.0	1.1	.51	2.0	1.6	.57	.19
AC-FT	29	134	113	112	507	630	593	207	3940	778	107	55
CFSM	.01	.03	.02	.02	.10	.12	.12	.04	.78	.15	.02	.01
IN.	.01	.03	.02	.02	.11	.14	.13	.05	.87	.17	.02	.01

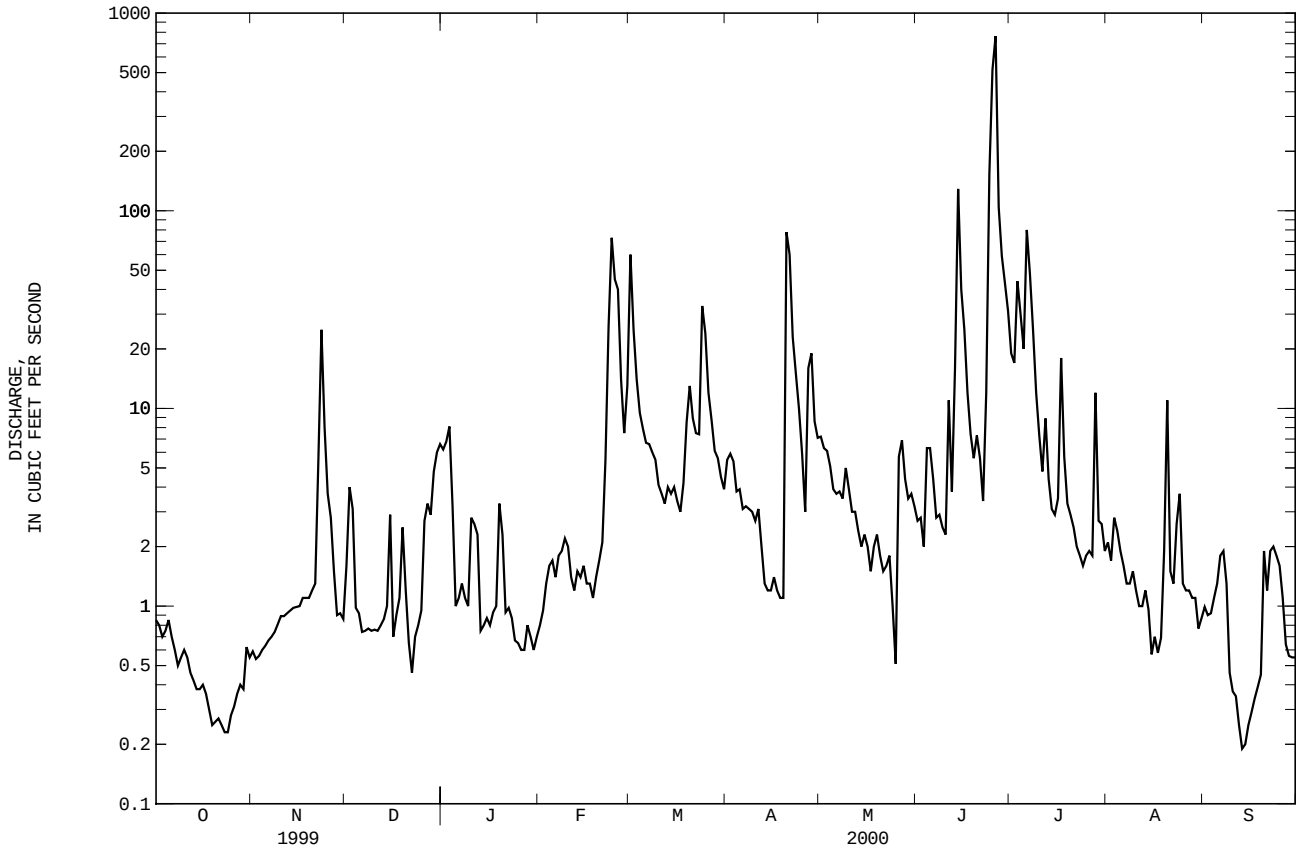
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 2000, BY WATER YEAR (WY)

MEAN	24.7	30.9	28.0	11.6	41.0	73.2	102	147	109	121	23.5	51.9
MAX	159	202	181	50.2	149	276	289	488	255	889	173	260
(WY)	1987	1993	1993	1998	1997	1998	1984	1995	1995	1993	1987	1993
MIN	.26	.78	.47	.50	.17	2.13	.82	.67	1.90	1.97	.63	.31
(WY)	1992	1991	1989	1991	1989	1989	1989	1989	1988	1988	1991	1991

06819185 EAST FORK ONE HUNDRED AND TWO RIVER AT BEDFORD, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1984 - 2000	
ANNUAL TOTAL	19936.62		3632.02			
ANNUAL MEAN	54.6		9.92		63.7	
HIGHEST ANNUAL MEAN					200	1993
LOWEST ANNUAL MEAN					9.92	2000
HIGHEST DAILY MEAN	2290	Jun 13	765	Jun 26	7600	Jul 5 1993
LOWEST DAILY MEAN	.23	Oct 23	.19	Sep 13	.00	Jul 6 1989a
ANNUAL SEVEN-DAY MINIMUM	.25	Oct 19	.25	Oct 19	.00	Aug 3 1989
INSTANTANEOUS PEAK FLOW			3560	Jun 25	9570	Jul 14 1986
INSTANTANEOUS PEAK STAGE			20.26	Jun 25	23.85	Jul 5 1993
INSTANTANEOUS LOW FLOW			.17	Sep 13		
ANNUAL RUNOFF (AC-FT)	39540		7200		46150	
ANNUAL RUNOFF (CFSM)	.64		.12		.75	
ANNUAL RUNOFF (INCHES)	8.68		1.58		10.13	
10 PERCENT EXCEEDS	86		14		103	
50 PERCENT EXCEEDS	9.3		1.8		8.0	
90 PERCENT EXCEEDS	.64		.55		.70	

a Many days between July 6 and Dec. 24, 1989.
e Estimated.



06898000 THOMPSON RIVER AT DAVIS CITY, IA

LOCATION.--Lat 40°38'25", long 93°48'29", in SE$^1/_4$ SE$^1/_4$ sec.35, T.68 N., R.26 W., Decatur County, Hydrologic Unit 10280102, on right bank 15 ft downstream from bridge on U.S. Highway 69 at Davis City, 3.1 mi. upstream from Dickersons Branch, and 5.8 mi. upstream from Iowa-Missouri State line.

DRAINAGE AREA.--701 mi^2.

PERIOD OF RECORD.--May 1918 to July 1925, July 1941 to current year. Monthly discharge only for some periods, published in WSP 1310. No winter records 1921-25. Prior to October 1918, published as "Grand River".

REVISED RECORDS.--WSP 1240: 1918, 1920-21 (M), 1922-24, 1925 (M), 1946-47 (M). WSP 1440: Drainage area. WSP 1710: 1957.

GAGE.--Water-stage recorder. Datum of gage is 874.04 ft above sea level. May 14, 1918 to July 2, 1925, July 14, 1941 to Feb. 24, 1942, nonrecording gage, and Feb. 25, 1942 to Feb. 8, 1967, water-stage recorder at same site at datum 2.00 ft higher.

REMARKS.--Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Geological Survey satellite data collection platform and U.S. National Weather Service Limited Automatic Remote Collector (LARC) at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Aug. 8, 1885, reached a stage of 22.8 ft, datum in use prior to Feb. 9, 1967, from floodmark, discharge, 30,000 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	11	19	e15	e11	58	16	25	8.1	94	22	5.2
2	29	11	17	e20	e10	51	16	21	7.5	75	19	5.0
3	25	12	16	25	11	52	15	19	6.8	69	49	4.9
4	22	11	17	27	11	44	13	18	8.8	64	53	5.0
5	20	11	16	e21	e10	43	14	16	7.9	91	34	4.6
6	18	13	15	e22	14	38	14	15	6.3	132	30	4.2
7	17	15	16	e24	14	34	14	14	5.2	93	54	4.0
8	16	13	16	e30	e16	31	12	13	4.7	66	25	3.9
9	16	13	17	e44	17	27	12	14	4.3	54	19	3.6
10	14	13	15	e38	19	25	13	13	5.0	46	15	3.5
11	13	12	13	e32	18	23	13	15	6.2	40	13	3.5
12	13	13	16	e30	18	22	13	17	7.5	37	11	3.0
13	12	16	14	e24	20	21	14	13	7.8	33	11	2.7
14	11	12	13	e30	19	20	16	11	24	32	13	2.8
15	14	12	16	e32	20	20	18	9.5	233	35	10	2.7
16	15	13	11	e25	22	19	17	9.3	160	34	9.1	2.8
17	13	12	12	e30	21	18	18	8.8	77	36	8.7	2.8
18	10	13	13	e27	27	18	16	8.0	44	35	7.9	2.5
19	9.3	13	16	e28	28	21	16	7.5	28	30	8.7	2.5
20	9.3	12	11	e22	23	23	17	7.1	22	29	11	5.4
21	9.9	13	9.3	e18	29	25	16	7.3	16	31	9.2	5.4
22	9.3	14	e8.5	e19	35	26	135	7.1	14	36	8.9	7.4
23	8.8	27	e11	e28	51	28	75	6.5	14	38	9.6	11
24	8.7	32	e9.5	e22	85	28	46	6.0	31	28	9.6	13
25	15	39	e10	12	106	25	35	5.1	70	23	8.1	18
26	16	42	e14	e10	104	22	27	6.9	850	21	8.1	15
27	13	45	e15	e9.0	111	19	24	8.6	847	19	7.5	14
28	11	33	e13	e10	91	18	22	7.3	425	18	7.3	9.4
29	9.8	25	e17	e12	70	16	22	7.3	223	17	7.0	6.0
30	8.6	21	e20	e10	---	15	24	8.7	131	16	6.6	5.0
31	10	---	e17	e9.5	---	16	---	8.8	---	19	5.5	---
TOTAL	446.7	542	443.3	705.5	1031	846	723	353.8	3295.1	1391	510.8	178.8
MEAN	14.4	18.1	14.3	22.8	35.6	27.3	24.1	11.4	110	44.9	16.5	5.96
MAX	30	45	20	44	111	58	135	25	850	132	54	18
MIN	8.6	11	8.5	9.0	10	15	12	5.1	4.3	16	5.5	2.5
AC-FT	886	1080	879	1400	2040	1680	1430	702	6540	2760	1010	355
CFSM	.02	.03	.02	.03	.05	.04	.03	.02	.16	.06	.02	.01
IN.	.02	.03	.02	.04	.05	.04	.04	.02	.17	.07	.03	.01

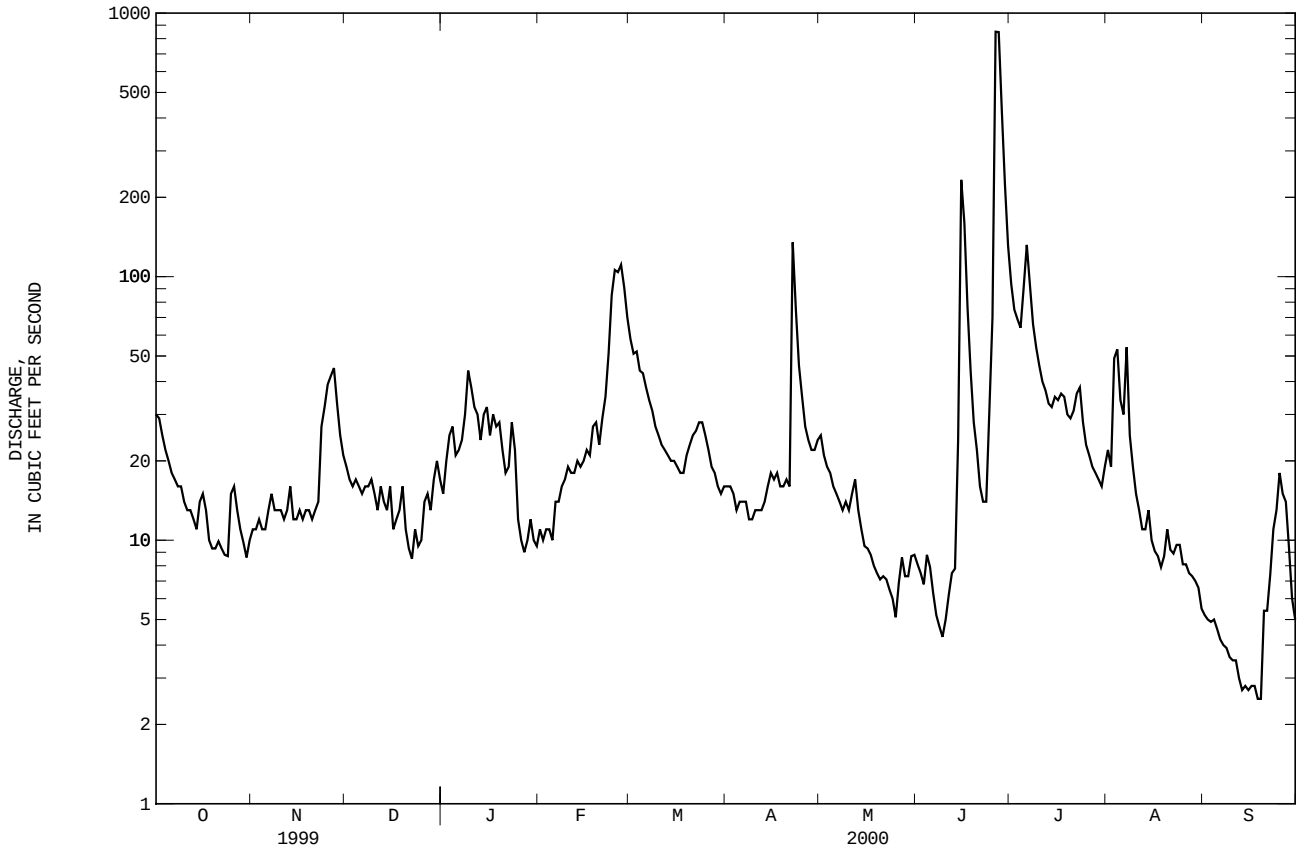
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 2000, BY WATER YEAR (WY)

MEAN	189	218	151	156	336	645	699	700	657	429	187	337
MAX	2138	1462	1299	1292	1849	2375	2586	3364	4750	7239	2255	5178
(WY)	1974	1962	1983	1960	1973	1979	1973	1996	1947	1993	1987	1992
MIN	1.41	2.07	.94	.62	1.14	10.7	2.55	1.19	3.08	1.98	9.35	4.13
(WY)	1957	1956	1956	1956	1956	1954	1956	1956	1956	1977	1955	1953

06898000 THOMPSON RIVER AT DAVIS CITY, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1919 - 2000	
ANNUAL TOTAL	125719.0		10467.0			
ANNUAL MEAN	344		28.6		395	
HIGHEST ANNUAL MEAN					1469	1993
LOWEST ANNUAL MEAN					28.6	2000
HIGHEST DAILY MEAN	5670	Apr 16	850	Jun 26	52900	Sep 16 1992
LOWEST DAILY MEAN	8.5	Dec 22	2.5	Sep 18a	.10	Jun 25 1956
ANNUAL SEVEN-DAY MINIMUM	9.3	Oct 18	2.7	Sep 13	.36	Jun 19 1956
INSTANTANEOUS PEAK FLOW			1200	Jun 26	57000	Sep 16 1992
INSTANTANEOUS PEAK STAGE			3.21	Jun 26	24.29	Sep 16 1992
INSTANTANEOUS LOW FLOW			1.8	Sep 18		
ANNUAL RUNOFF (AC-FT)	249400		20760		285800	
ANNUAL RUNOFF (CFSM)	.49		.041		.56	
ANNUAL RUNOFF (INCHES)	6.67		.56		7.65	
10 PERCENT EXCEEDS	909		44		846	
50 PERCENT EXCEEDS	72		16		82	
90 PERCENT EXCEEDS	13		7.0		9.7	

a Also Sept. 19.
e Estimated.



06903400 CHARITON RIVER NEAR CHARITON, IA

LOCATION.--Lat 40°57'12", long 93°15'37", in SW$^1/_4$ NE$^1/_4$ sec.15, T.71 N., R.21 W., Lucas County, Hydrologic Unit 10280201, on right bank 15 ft downstream from bridge on County Highway S43, 0.1 mi downstream from Wolf Creek, and 5.0 mi southeast of Chariton.

DRAINAGE AREA.--182 mi^2.

PERIOD OF RECORD.--October 1965 to current year. Occasional low-flow measurements, water years 1958-60, 1962, 1964.

GAGE.--Water stage recorder. Datum of gage is 917.90 ft above sea level (U.S. Army Corps of Engineers bench mark).

REMARKS.--Records poor. Beaver activity the entire year. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in March 1960 reached a stage of about 23 ft, discharge, about 15,000 ft^3/s and flood of June 5, 1947 reached a stage of 21.65 ft, from floodmark, discharge, 11,000 ft^3/s. A discharge of 0.08 ft^3/s was measured on Oct. 30, 1963.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e2.0	e.75	e.32	e.60	e.36	e2.3	e.85	e2.9	e2.4	e36	e3.6	e.51
2	e1.3	e.70	e.36	e.70	e.38	e1.9	e1.0	e3.1	e2.2	e16	e2.6	e.48
3	e1.4	e.55	e.38	e.85	e.40	e1.6	e1.1	e3.0	e2.3	e36	e1.9	e.60
4	e1.2	e.44	e.40	e1.0	e.44	e1.4	e1.0	e2.5	e5.0	e110	e1.4	e.60
5	e1.1	e.36	e.40	e1.3	e.48	e1.3	e.95	e2.1	e8.5	e210	e1.1	e.50
6	e1.3	e.39	e.40	e1.2	e.50	e1.2	e.90	e2.0	e6.5	e400	e1.2	e.55
7	e1.2	e.42	e.36	e1.1	e.55	e1.1	e1.0	e1.7	e4.6	e190	e3.6	e.60
8	e1.3	e.38	e.32	e1.0	e.55	e1.0	e1.2	e1.4	e2.7	e110	e53	e.65
9	e1.4	e.34	e.30	e1.7	e.60	e.95	e1.4	e1.6	e1.9	e70	e30	e.65
10	e1.2	e.36	e.38	e2.2	e.65	e.90	e1.6	e1.8	e1.2	e39	e13	e.70
11	e1.3	e.40	e.44	e2.8	e.75	e.90	e1.9	e2.0	e2.2	e20	e6.5	e.80
12	e1.3	e.32	e.36	e2.4	e.85	e.85	e1.7	e1.9	e26	e15	e3.6	e.75
13	e1.5	e.26	e.30	e2.0	e1.0	e.95	e1.5	e1.8	e100	e23	e6.0	e.73
14	e1.1	e.21	e.28	e1.3	e1.3	e.90	e1.4	e1.7	e280	e18	e9.5	e.56
15	e1.2	e.25	e.28	e.90	e2.3	e.85	e1.2	e1.7	e130	e15	e7.0	e.50
16	e1.4	e.22	e.21	e1.1	e2.2	e.90	e1.2	e1.6	e38	e14	e3.8	e.50
17	e1.3	e.21	e.20	e.90	e2.1	e.95	e1.4	e1.6	e21	e13	e2.3	e.46
18	e1.6	e.24	e.19	e1.0	e2.0	e1.0	e1.3	e1.6	e13	e12	e1.7	e.55
19	e2.1	e.27	e.22	e1.1	e1.8	e1.2	e3.0	e1.6	e7.5	e14	e1.3	e.60
20	e1.4	e.20	e.25	e1.1	e1.7	e1.4	e13	e1.5	e4.6	e17	e1.0	e.65
21	e.90	e.17	e.22	e.95	e3.2	e1.7	e26	e1.5	e3.5	e12	e.95	e.62
22	e.80	e.16	e.20	e.85	e4.8	e2.0	e17	e1.5	e3.7	e10	e1.1	e.78
23	e.85	e1.1	e.19	e.75	e9.5	e2.1	e8.5	e1.4	e3.6	e8.0	e1.2	e1.8
24	e.90	e5.0	e.18	e.65	e32	e1.8	e4.8	e1.3	e145	e6.5	e.90	e2.5
25	e.85	e3.6	e.20	e.50	e21	e1.5	e3.0	e1.4	e165	e5.0	e.80	e2.3
26	e.80	e2.0	e.25	e.46	e12	e1.2	e2.2	e1.6	e1270	e4.3	e.70	e2.6
27	e.84	e1.2	e.36	e.40	e7.0	e1.0	e2.4	e2.2	e680	e4.8	e.60	e2.1
28	e.80	e.85	e.38	e.36	e4.2	e.85	e2.6	e4.0	e493	e3.8	e.90	e1.5
29	e.80	e.65	e.42	e.38	e3.2	e.75	e2.7	e4.6	e210	e2.8	e.70	e.65
30	e.80	e.50	e.48	e.42	---	e.75	e2.4	e4.0	e100	e1.8	e.75	e.50
31	e.95	---	e.55	e.34	---	e.70	---	e3.2	---	e1.9	e.65	---
TOTAL	36.89	22.50	9.78	32.31	117.81	37.90	110.20	65.8	3733.4	1438.9	163.35	27.29
MEAN	1.19	.75	.32	1.04	4.06	1.22	3.67	2.12	124	46.4	5.27	.91
MAX	2.1	5.0	.55	2.8	32	2.3	26	4.6	1270	400	53	2.6
MIN	.80	.16	.18	.34	.36	.70	.85	1.3	1.2	1.8	.60	.46
CFSM	.01	.00	.00	.01	.02	.01	.02	.01	.68	.26	.03	.00
IN.	.01	.00	.00	.01	.02	.01	.02	.01	.76	.29	.03	.01

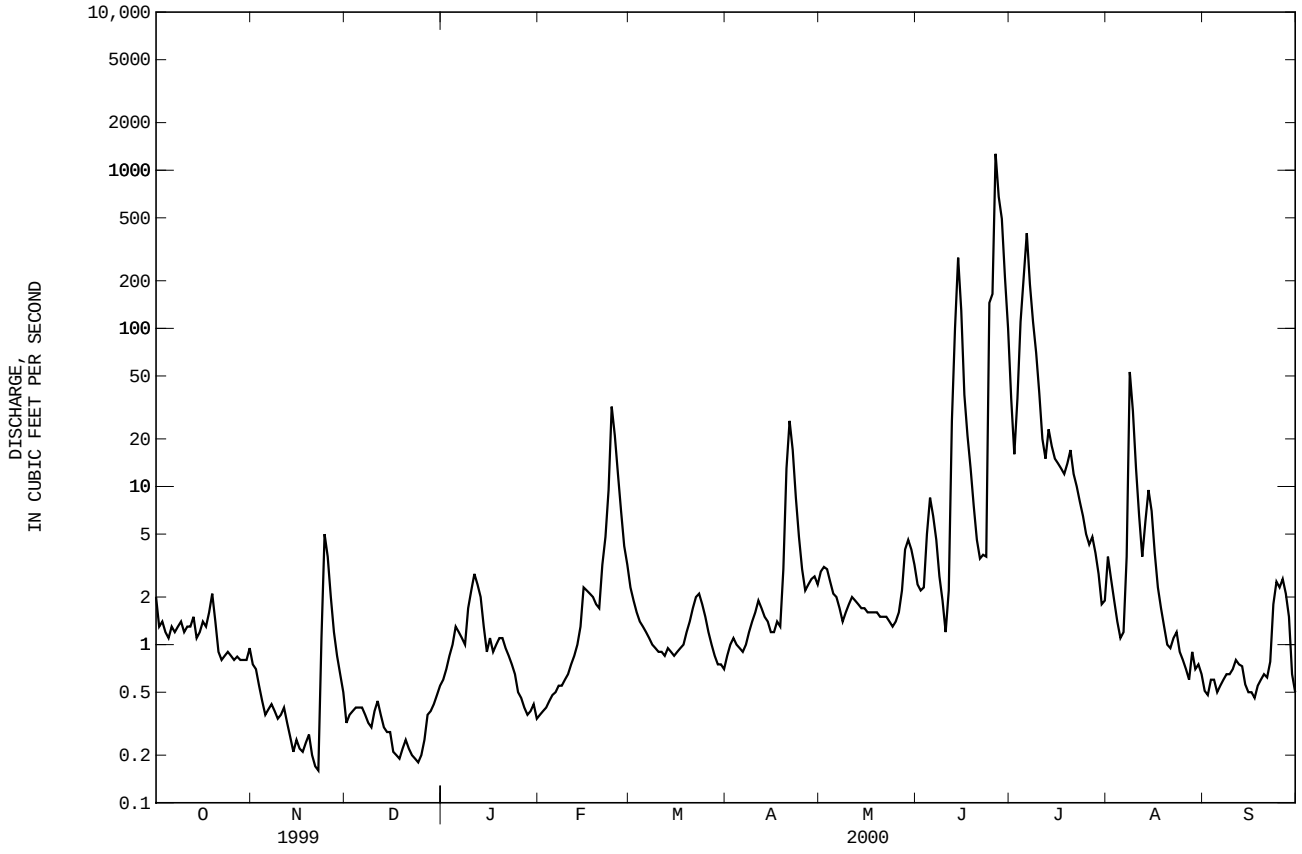
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 2000, BY WATER YEAR (WY)

MEAN	81.0	59.8	61.5	36.5	86.9	178	248	233	158	164	70.4	126
MAX	568	294	408	340	403	761	1093	1097	856	1711	618	1704
(WY)	1974	1993	1983	1974	1997	1979	1991	1995	1967	1993	1987	1992
MIN	.005	.003	.000	.23	.22	1.22	.068	2.12	.38	.000	.10	.086
(WY)	1990	1990	1990	1977	1989	2000	1989	2000	1988	1988	1989	1991

06903400 CHARITON RIVER NEAR CHARITON, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1966 - 2000	
ANNUAL TOTAL	40893.67		5796.13			
ANNUAL MEAN	112		15.8		125	
HIGHEST ANNUAL MEAN					345	1993
LOWEST ANNUAL MEAN					9.71	1989
HIGHEST DAILY MEAN	2160	Apr 16	1270	Jun 26	24600	Sep 15 1992
LOWEST DAILY MEAN	.16	Nov 22	.16	Nov 22	.00	Aug 1 1977
ANNUAL SEVEN-DAY MINIMUM	.21	Dec 18	.21	Dec 18	.00	Jun 21 1988
INSTANTANEOUS PEAK FLOW			1490	Jun 26	37700	Sep 15 1992
INSTANTANEOUS PEAK STAGE			16.26	Jun 26	29.32	Sep 15 1992
ANNUAL RUNOFF (CFSM)	.62		.087		.69	
ANNUAL RUNOFF (INCHES)	8.36		1.18		9.35	
10 PERCENT EXCEEDS	229		14		276	
50 PERCENT EXCEEDS	19		1.3		13	
90 PERCENT EXCEEDS	.38		.36		.60	

e Estimated



06903700 SOUTH FORK CHARITON RIVER NEAR PROMISE CITY, IA

LOCATION.--Lat 40°48'02", long 93°11'32", in $SW^1/_4$ $SW^1/_4$ sec.5, T.69 N., R.20 W., Wayne County, Hydrologic Unit 10280201, on right bank 20 ft downstream from bridge on County Highway S50, 1.3 mi downstream from Jordan Creek, and 4.3 mi northwest of Promise City.

DRAINAGE AREA.--168 mi^2.

PERIOD OF RECORD.--October 1967 to current year. Occasional low-flow measurements, water years 1958-66, published as "near Bethlehem". Monthly discharge measurements for March 1965 to September 1967 available in files of Iowa City District Office.

GAGE.--Water-stage recorder. Datum of gage is 913.70 ft above sea level (U.S. Army Corps of Engineers bench mark).

REMARKS.--Records good except those for estimated daily discharges, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers satellite data collection platform at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Sept. 21, 1965, reached a stage of 25.5 ft, from floodmarks, discharge, about 18,000 ft^3/s.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.86	1.7	.89	e1.2	e.85	6.3	1.5	2.8	.43	12	1.5	e.90
2	.62	1.5	1.2	e1.3	e.95	5.3	1.5	2.7	.59	7.6	1.4	e.90
3	1.4	1.6	1.0	e1.2	e1.1	4.4	1.5	3.1	.34	9.1	1.4	e.80
4	1.3	1.6	1.1	e1.1	e1.2	4.1	1.4	2.8	9.3	12	1.7	e.70
5	1.0	1.8	1.2	e1.0	e1.2	3.7	1.5	2.6	50	86	1.5	e.65
6	.80	1.8	1.3	e.95	e1.2	3.3	1.3	2.8	8.7	46	1.8	e.60
7	.79	1.8	1.7	e.85	e1.2	3.1	1.5	2.6	2.8	20	1.8	e.60
8	.67	1.9	1.1	e.95	e1.5	2.9	1.6	2.4	1.5	13	9.3	e.55
9	.57	1.7	1.1	e1.1	e1.7	2.2	1.5	2.2	.94	9.2	13	e.48
10	.46	1.4	.96	e1.2	e1.9	2.1	1.6	2.1	.59	6.0	5.7	e.40
11	.36	1.2	e.90	e1.3	e2.1	1.9	1.7	2.6	.58	4.8	3.9	e.32
12	.49	1.3	e.80	e1.2	e1.5	1.7	1.6	1.9	1.3	7.4	3.0	e.25
13	.85	1.4	e.70	e1.1	e1.6	1.7	1.6	1.5	2.7	12	3.1	e.18
14	.88	1.4	e.75	e1.0	e1.7	1.7	1.6	.98	38	8.1	3.5	e.19
15	1.5	1.3	e.95	e.95	e1.7	1.8	1.5	.68	40	5.6	3.8	e.18
16	3.0	1.4	e.70	e1.1	e1.6	1.9	1.6	.50	13	4.8	3.6	e.20
17	2.3	1.4	e.55	e1.0	e2.2	1.7	1.6	.53	4.4	4.3	3.1	e.22
18	2.8	1.4	e.60	e1.1	e2.6	1.7	1.5	.48	2.4	6.0	2.4	e.19
19	2.7	1.1	e.65	e1.2	e3.1	2.8	2.4	.35	1.2	11	2.4	e.19
20	2.1	1.1	e.70	e1.3	e3.9	3.9	36	.32	1.0	10	2.9	e.32
21	2.1	1.1	e.75	e1.4	e6.5	4.0	54	.40	1.2	5.9	3.0	e.50
22	1.8	1.6	e.65	e1.3	e11	3.7	14	.37	1.1	4.5	e3.0	e.60
23	1.6	11	e.55	e1.2	e16	3.1	7.2	.30	1.5	3.4	e3.2	e.75
24	1.5	12	e.60	e1.1	57	2.9	4.8	.32	440	3.7	e3.2	e.65
25	1.4	3.1	e.70	e1.0	36	2.5	3.7	.20	553	3.8	e2.5	e.60
26	1.4	2.1	e.90	e.90	50	1.9	3.0	.41	1900	4.1	e1.9	e.44
27	1.4	1.5	e.85	e.75	23	1.9	3.8	4.1	201	3.6	e1.7	e.38
28	1.5	1.1	e.80	e.70	10	1.6	4.2	13	69	2.8	e1.5	e.32
29	1.6	.89	e.90	e.70	7.2	1.7	3.9	2.0	36	2.4	e1.3	e.30
30	1.6	.82	e1.0	e.80	---	2.0	3.1	.93	20	1.7	e1.1	e.27
31	1.6	---	e1.1	e.90	---	1.4	---	.62	---	1.6	e1.0	---
TOTAL	42.95	65.01	27.65	32.85	251.50	84.9	167.7	58.59	3402.57	332.4	94.2	13.63
MEAN	1.39	2.17	.89	1.06	8.67	2.74	5.59	1.89	113	10.7	3.04	.45
MAX	3.0	12	1.7	1.4	57	6.3	54	13	1900	86	13	.90
MIN	.36	.82	.55	.70	.85	1.4	1.3	.20	.34	1.6	1.0	.18
AC-FT	85	129	55	65	499	168	333	116	6750	659	187	27
CFSM	.01	.01	.01	.01	.05	.02	.03	.01	.68	.06	.02	.00
IN.	.01	.01	.01	.01	.06	.02	.04	.01	.75	.07	.02	.00

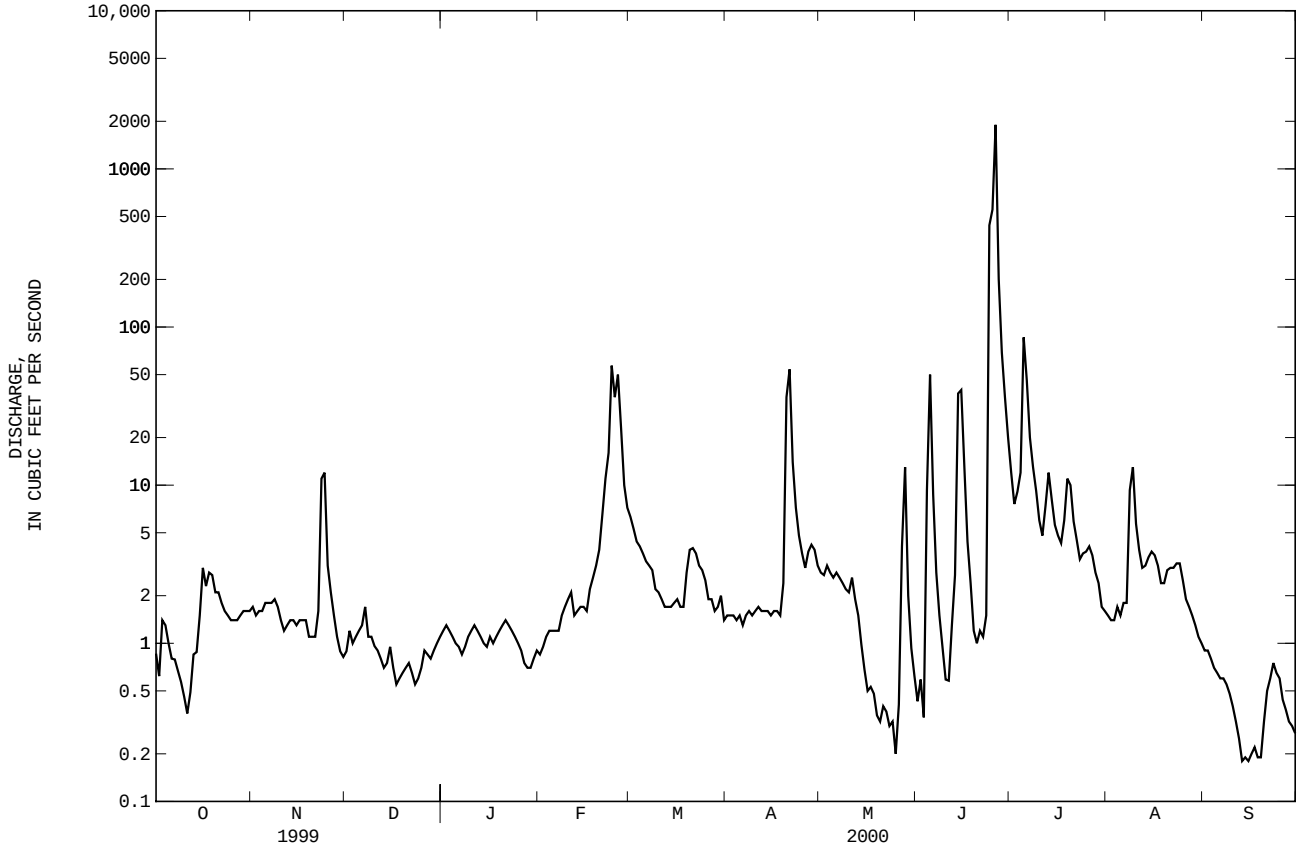
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 2000, BY WATER YEAR (WY)

MEAN	100	59.8	63.8	37.2	90.2	179	242	228	154	187	48.3	142
MAX	498	357	440	335	360	853	730	1043	580	2351	300	2227
(WY)	1978	1993	1983	1974	1997	1979	1991	1995	1980	1993	1993	1992
MIN	.15	.39	.40	.19	.88	2.74	1.21	1.89	1.18	.24	.76	.45
(WY)	1989	1990	1977	1977	1989	2000	1989	2000	1988	1977	1984	2000

06903700 SOUTH FORK CHARITON RIVER NEAR PROMISE CITY, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1968 - 2000	
ANNUAL TOTAL	42064.66		4573.95			
ANNUAL MEAN	115		12.5		128	
HIGHEST ANNUAL MEAN					446	1993
LOWEST ANNUAL MEAN					10.7	1989
HIGHEST DAILY MEAN	3750	May 31	1900	Jun 26	34700	Sep 15 1992
LOWEST DAILY MEAN	.36	Oct 11	.18	Sep 13a	.00	Jul 6 1977b
ANNUAL SEVEN-DAY MINIMUM	.59	Oct 6	.19	Sep 13	.00	Aug 16 1989
INSTANTANEOUS PEAK FLOW			2850	Jun 26	70600	Sep 15 1992
INSTANTANEOUS PEAK STAGE			14.99	Jun 26	34.84	Sep 15 1992
INSTANTANEOUS LOW FLOW			.07	May 25		
ANNUAL RUNOFF (AC-FT)	83440		9070		92490	
ANNUAL RUNOFF (CFSM)	.69		.074		.76	
ANNUAL RUNOFF (INCHES)	9.31		1.01		10.32	
10 PERCENT EXCEEDS	197		9.2		201	
50 PERCENT EXCEEDS	15		1.5		14	
90 PERCENT EXCEEDS	1.0		.55		.94	

a Also Sept. 15.
b Also July 7, 21-24, 28 to Aug. 1, 1977, July 9, 10, and Aug. 14, 18-22, 1989.
e Estimated.



06903880 RATHBUN LAKE NEAR RATHBUN, IA

LOCATION.--Lat 40°49'30", long 92°53'33", in NW$^1/_4$ NE$^1/_4$ sec.35, T.70 N., R.18 W., Appanoose County, Hydrologic Unit 10280201, at control tower of Rathbun Dam, 1.8 mi north of Rathbun, 3.9 mi upstream from Walnut Creek, and at mile 142.3.

DRAINAGE AREA.--549 mi^2.

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder. Datum of gage is sea level.

REMARKS.--Reservoir is formed by earthfill dam completed in 1969. Storage began in November 1969. Release is controlled by two hydraulically controlled slide gages, 6 ft wide and 12 ft high, into forechamber of an 11-ft diameter horseshoe conduit through the dam. No dead storage. Maximum design discharge through gates is 5,000 ft^3/s. Uncontrolled notch spillway is concrete overflow section 500 ft in length, located about 3,000 ft west of the right abutment of the dam and provides emergency discharge into the adjacent drainage area of Little Walnut Creek. Uncontrolled notch spillway is at elevation 926 ft, contents 545,621 acre-ft, surface area, 20,974 acres. Conservation pool level is at elevation 904.0 ft, contents 199,830 acre-ft, surface area, 10,989 acres. Reservoir is used for flood control, low-flow augumentation, conservation and recreation.

COOPERATION.--Records provided by U.S. Army Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 570,000 acre-ft July 28, 1993; maximum elevation, 927.16 ft July 28, 1993; minimum daily contents, 100 acre-ft Oct. 1- 15, Nov. 17-21, 1969; minimum elevation, 855.40 ft Oct. 6-10, 1969.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 206,500 acre-ft July 12-16; maximum elevation 904.58 ft July 12, 13; minimum daily contents, 181,700 acre-ft June 10, 11; minimum elevation, 902.32 ft June 10, 11.

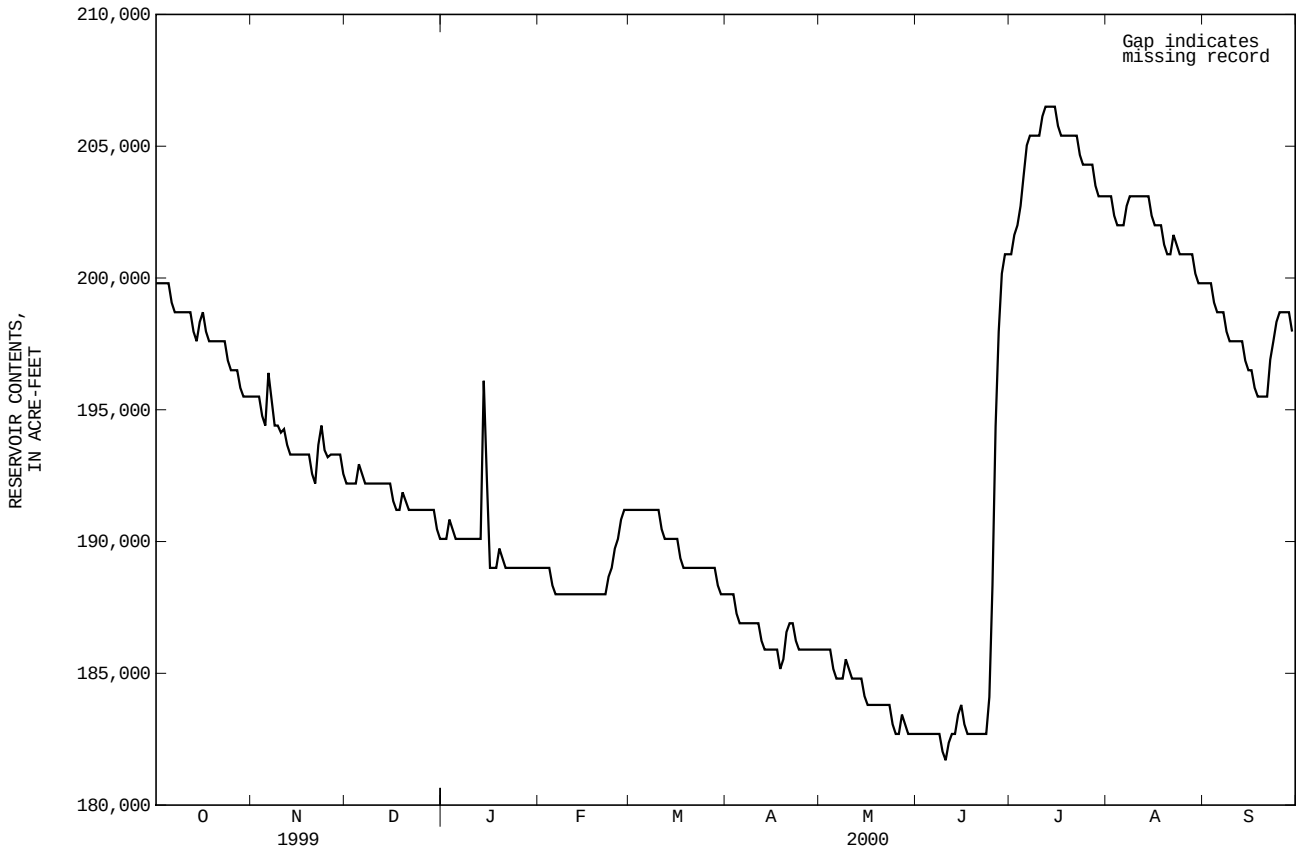
Capacity table (elevation in feet, contents in acre-feet)

860	150	870	5,870	885	52,700	900	158,800	915	345,000
862	226	875	17,000	890	80,300	905	211,000	920	428,900
865	950	880	31,900	895	115,600	910	272,600	925	524,900

RESERVOIR STORAGE (ACRE-FEET), WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY OBSERVATION AT 0800 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	199800	195500	192200	190100	189000	191200	188000	185900	182700	200900	203100	199800
2	199800	195500	192200	190100	189000	191200	188000	185900	182700	200900	203100	199800
3	199800	195500	192200	190100	189000	191200	188000	185900	182700	202000	203100	199800
4	199800	195500	192200	191200	189000	191200	188000	185900	182700	202000	202000	199800
5	199800	194400	192200	190100	189000	191200	186900	185900	182700	203100	202000	198700
6	199800	194400	193300	190100	188000	191200	186900	184800	182700	204300	202000	198700
7	198700	197400	192200	190100	188000	191200	186900	184800	182700	205400	202000	198700
8	198700	194400	192200	190100	188000	191200	186900	184800	182700	205400	203100	198700
9	198700	194400	192200	190100	188000	191200	186900	184800	182700	205400	203100	197600
10	198700	194400	192200	190100	188000	191200	186900	185900	181700	205400	203100	197600
11	198700	194000	192200	190100	188000	191200	186900	184800	181700	205400	203100	197600
12	198700	194400	192200	190100	188000	190100	186900	184800	182700	206500	203100	197600
13	198700	193300	192200	190100	188000	190100	185900	184800	182700	206500	203100	197600
14	197600	193300	192200	190100	188000	190100	185900	184800	182700	206500	203100	197600
15	197600	193300	192200	199100	188000	190100	185900	184800	183800	206500	203100	196500
16	198700	193300	192200	189000	188000	190100	185900	183800	183800	206500	202000	196500
17	198700	193300	191200	189000	188000	190100	185900	183800	182700	205400	202000	196500
18	197600	193300	191200	189000	188000	189000	185900	183800	182700	205400	202000	195500
19	197600	193300	191200	189000	188000	189000	184800	183800	182700	205400	202000	195500
20	197600	193300	192200	190100	188000	189000	185900	183800	182700	205400	200900	195500
21	197600	192200	191200	189000	188000	189000	186900	183800	182700	205400	200900	195500
22	197600	192200	191200	189000	188000	189000	186900	183800	182700	205400	200900	195500
23	197600	194400	191200	189000	188000	189000	186900	183800	182700	205400	202000	197600
24	197600	194400	191200	189000	189000	189000	185900	183800	182700	204300	200900	197600
25	196500	193000	191200	189000	189000	189000	185900	182700	184800	204300	200900	198700
26	196500	193300	191200	189000	190100	189000	185900	182700	190100	204300	200900	198700
27	196500	193300	191200	189000	190100	189000	185900	182700	196500	204300	200900	198700
28	196500	193300	191200	189000	191200	189000	185900	183800	198700	204300	200900	198700
29	195500	193300	191200	189000	191200	189000	185900	182700	200900	203100	200900	198700
30	195500	193300	191200	189000	---	188000	185900	182700	200900	203100	199800	197600
31	195500	---	190100	189000	---	188000	---	182700	---	203100	199800	---
MEAN	198000	194000	192000	190000	189000	190000	187000	184000	185000	205000	202000	198000
MAX	200000	197000	193000	199000	191000	191000	188000	186000	201000	206000	203000	200000
MIN	196000	192000	190000	189000	188000	188000	185000	183000	182000	201000	200000	196000

06903880 RATHBUN LAKE NEAR RATHBUN, IA--Continued



06903900 CHARITON RIVER NEAR RATHBUN, IA

LOCATION.--Lat 40°49'22", long 92°53'22", in $SE^1/_4$ $NE^1/_4$ sec.35, T.70 N., R.18 W., Appanoose County, Hydrologic Unit 10280201, on left bank 600 ft downstream from outlet of Rathbun Dam, 1.8 mi north of Rathbun, 3.7 mi upstream from Walnut Creek, and at mile 142.1.

DRAINAGE AREA.--549 mi^2.

PERIOD OF RECORD.--October 1956 to current year. Monthly discharge only for some periods, published in WSP 1730.

REVISED RECORDS.--WSP 1560: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 847.92 ft above sea level. Prior to Nov. 16, 1960, nonrecording gage and Nov. 17, 1960 to Sept. 30, 1969, recording gage, at site 3.1 mi downstream at datum 4.65 ft lower.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,800 ft^3/s Mar. 31, 1960, gage height, 25.3 ft from floodmark, site and datum then in use.

REMARKS.--Records good except for those periods of estimated daily discharge, which are poor. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Army Corps of Engineers data collection platform with telephone modem at station. Flow regulated by Rathbun Lake (station 06903880) since Nov. 21, 1969. Records of discharge include diversion of:

Diversions

Oct. 1-8	10 ft^3/s	Oct. 9 to July 10	9.0 ft^3/s	July 11 to Sept. 30	13 ft^3/s

The diversion goes from the reservoir through fish ponds on left bank downstream from dam. Diverted flow returns to stream 0.1 mi downstream from gage. Rathbun Regional Water Association permit No. 0400900 allows withdrawal from Rathbun Dam discharge immediately downstream from gage for maximum rate of 4,200 gpm (9.36 ft^3/s). In the 1999 water year 1.66 billion gallons were withdrawn from the river.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	22	22	20	21	20	20	21	22	21	25	25
2	22	22	23	20	21	20	20	21	25	21	25	25
3	22	22	22	20	21	19	19	22	26	21	25	25
4	22	22	22	19	21	19	19	22	28	21	25	25
5	22	22	22	20	21	19	20	22	27	e21	25	26
6	22	21	23	20	21	19	20	22	25	e22	25	25
7	22	22	22	19	21	19	19	22	25	e21	25	26
8	22	23	22	18	20	19	19	22	24	e20	26	26
9	21	22	23	18	20	19	19	24	25	e21	25	27
10	21	21	23	18	20	19	19	23	24	e21	25	26
11	21	21	23	18	20	19	20	23	25	26	25	26
12	21	21	22	18	20	19	20	22	25	26	26	24
13	21	21	22	18	20	19	20	22	21	26	25	25
14	20	21	22	18	20	19	20	22	22	26	25	25
15	21	22	22	18	20	19	19	21	21	25	26	25
16	21	22	22	18	20	19	19	21	21	26	26	26
17	21	24	22	19	20	19	20	21	21	26	25	26
18	21	24	21	19	20	19	20	21	22	26	25	26
19	21	22	22	19	20	18	20	22	23	26	25	28
20	21	22	21	22	20	19	20	22	22	26	25	29
21	21	22	21	19	20	19	21	20	21	26	25	25
22	21	22	23	19	20	19	23	21	20	26	26	26
23	22	22	23	19	20	20	23	20	20	25	26	27
24	21	22	22	19	20	20	24	20	e22	26	26	27
25	21	22	22	19	20	20	24	20	e21	26	26	28
26	21	22	21	19	20	20	24	22	e21	26	26	28
27	21	22	21	20	20	20	24	23	20	25	26	27
28	21	22	21	21	20	20	21	22	21	24	27	26
29	21	22	21	21	20	20	20	23	21	24	27	25
30	20	22	20	21	---	20	21	22	21	24	28	25
31	21	---	20	21	---	20	---	21	---	25	28	---
TOTAL	658	659	678	597	587	599	617	672	682	746	795	780
MEAN	21.2	22.0	21.9	19.3	20.2	19.3	20.6	21.7	22.7	24.1	25.6	26.0
MAX	22	24	23	22	21	20	24	24	28	26	28	29
MIN	20	21	20	18	20	18	19	20	20	20	25	24
AC-FT	1310	1310	1340	1180	1160	1190	1220	1330	1350	1480	1580	1550

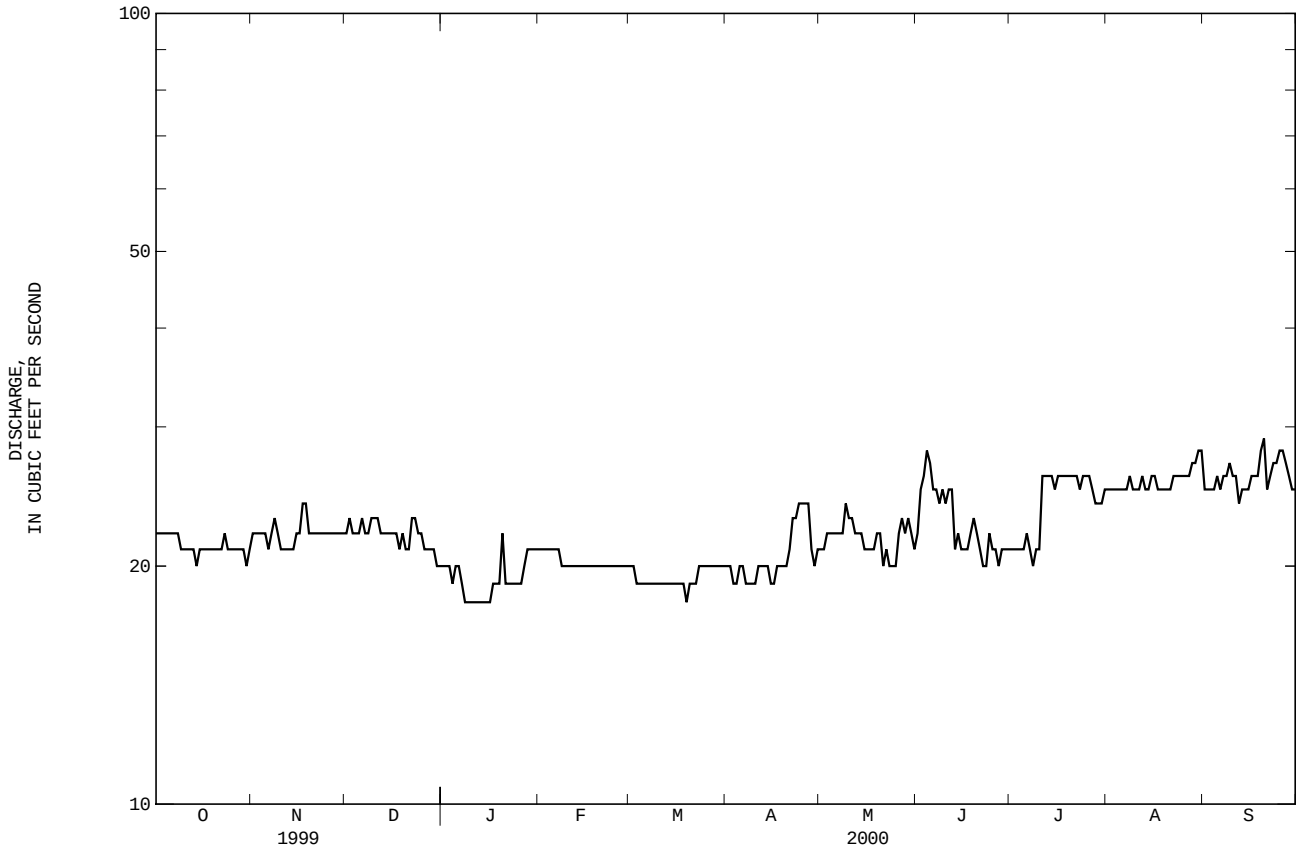
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 2000, BY WATER YEAR (WY)

MEAN	279	292	424	250	329	443	341	422	469	565	502	321
MAX	1790	1828	1364	1546	1550	1271	1132	1281	1573	1162	1826	1707
(WY)	1994	1994	1993	1993	1993	1993	1993	1973	1973	1991	1993	1993
MIN	11.5	9.97	5.54	8.98	5.60	9.40	6.74	19.3	16.6	6.53	9.10	11.0
(WY)	1975	1975	1970	1970	1970	1970	1970	1977	1988	1970	1970	1974

06903900 CHARITON RIVER NEAR RATHBUN, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1970 - 2000a	
ANNUAL TOTAL	131821		8070			
ANNUAL MEAN	361		22.0		387	
HIGHEST ANNUAL MEAN					1164	1993
LOWEST ANNUAL MEAN					20.4	1989
HIGHEST DAILY MEAN	1250	Jul 17	29	Sep 20	1950	Oct 17 1993
LOWEST DAILY MEAN	20	Apr 11	18	Jan 8b	.00	Oct 26 1977
ANNUAL SEVEN-DAY MINIMUM	20	Apr 8	18	Jan 8	1.0	Apr 1 1970
INSTANTANEOUS PEAK FLOW			49	Jun 12	2780	Dec 14 1993
INSTANTANEOUS PEAK STAGE			4.33	Jun 26c	14.94	Dec 14 1993
ANNUAL RUNOFF (AC-FT)	261500		16010		280600	
10 PERCENT EXCEEDS	1040		26		1190	
50 PERCENT EXCEEDS	204		21		60	
90 PERCENT EXCEEDS	21		19		16	

a Post regulation.
b Also Jan. 9-16.
c Backwater from Walnut Creek downstream.
e Estimated.



06904010 CHARITON RIVER NEAR MOULTON, IA

LOCATION.--Lat 40°41'30", long 92°46'15", in SE$^1/_4$ NE$^1/_4$ sec.14, T.68 N., R.17 W., Appanoose County, Hydrologic Unit 10280201, on right bank 6 ft downstream from bridge on County Highway J45 (543rd St.), 0.7 mi downstream from Hickory Creek, 5.0 mi west of Moulton, 8.0 mi upstream from Iowa-Missouri border, 20.8 mi downstream from Rathbun Dam, and at mile 121.5.

DRAINAGE AREA.--740 mi^2.

PERIOD OF RECORD--August 1979 to current year.

GAGE--Water stage recorder. Datum of gage is 800.00 ft above sea level (U.S. Army Corps of Engineers bench mark).

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated by Rathbun Reservoir (station 06903880) 20.8 mi upstream. Periodic observations of water temperature and specific conductance are published in this report as miscellaneous water quality data. U.S. Geological Survey satellite and telephone modem data collection platform and U.S. Army Corps of Engineers rain gage at station.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1947 reached a stage of about 45 ft, discharge unknown, from information by U.S. Army Corps of Engineers.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	31	37	41	e38	63	41	32	29	57	38	32
2	36	31	34	39	e38	58	39	31	35	45	37	31
3	37	31	38	39	e38	50	40	30	38	93	37	30
4	44	31	42	56	e38	50	39	30	59	273	38	31
5	39	31	52	e48	e38	50	39	29	103	934	37	31
6	38	31	61	e44	e38	51	38	29	75	1240	37	31
7	35	32	51	e38	e38	43	45	28	55	286	38	31
8	30	34	50	e34	e36	44	41	28	41	131	102	32
9	29	33	56	e36	e34	45	37	34	37	81	86	31
10	26	37	60	45	e32	43	36	53	35	63	50	31
11	29	35	51	e50	e32	41	40	40	37	65	40	33
12	30	33	47	e46	e32	40	39	36	821	94	38	34
13	30	33	43	e42	e30	41	39	32	335	75	42	30
14	30	32	43	e46	e33	44	38	31	666	53	44	32
15	29	32	41	e38	e34	42	38	30	344	43	39	33
16	48	35	e34	e34	e34	40	37	29	119	39	36	30
17	51	33	e30	e38	e36	39	36	28	68	37	35	30
18	35	34	e32	e30	e44	42	36	28	51	106	34	30
19	31	33	e29	e32	e42	49	36	27	42	296	34	31
20	31	33	e36	e36	e38	49	50	27	38	107	34	36
21	30	36	e40	e38	e36	46	75	26	34	61	35	41
22	35	35	e44	e36	81	46	65	27	31	51	35	44
23	32	94	e50	e34	92	45	55	27	30	46	38	165
24	32	115	55	e34	207	44	49	26	252	44	40	101
25	30	66	55	e34	199	44	42	23	630	42	36	179
26	30	49	55	e34	122	42	37	26	1910	41	35	133
27	30	43	53	e36	101	44	40	69	713	40	33	67
28	30	44	55	e38	79	41	43	44	186	39	33	45
29	30	41	e44	e38	61	41	35	35	100	40	32	34
30	30	42	e42	e38	---	38	32	33	72	39	31	30
31	30	---	e40	e38	---	37	---	30	---	39	33	---
TOTAL	1034	1220	1400	1210	1701	1392	1257	998	6986	4600	1257	1469
MEAN	33.4	40.7	45.2	39.0	58.7	44.9	41.9	32.2	233	148	40.5	49.0
MAX	51	115	61	56	207	63	75	69	1910	1240	102	179
MIN	26	31	29	30	30	37	32	23	29	37	31	30
AC-FT	2050	2420	2780	2400	3370	2760	2490	1980	13860	9120	2490	2910
CFSM	.05	.05	.06	.05	.08	.06	.06	.04	.31	.20	.05	.07
IN.	.05	.06	.07	.06	.09	.07	.06	.05	.35	.23	.06	.07

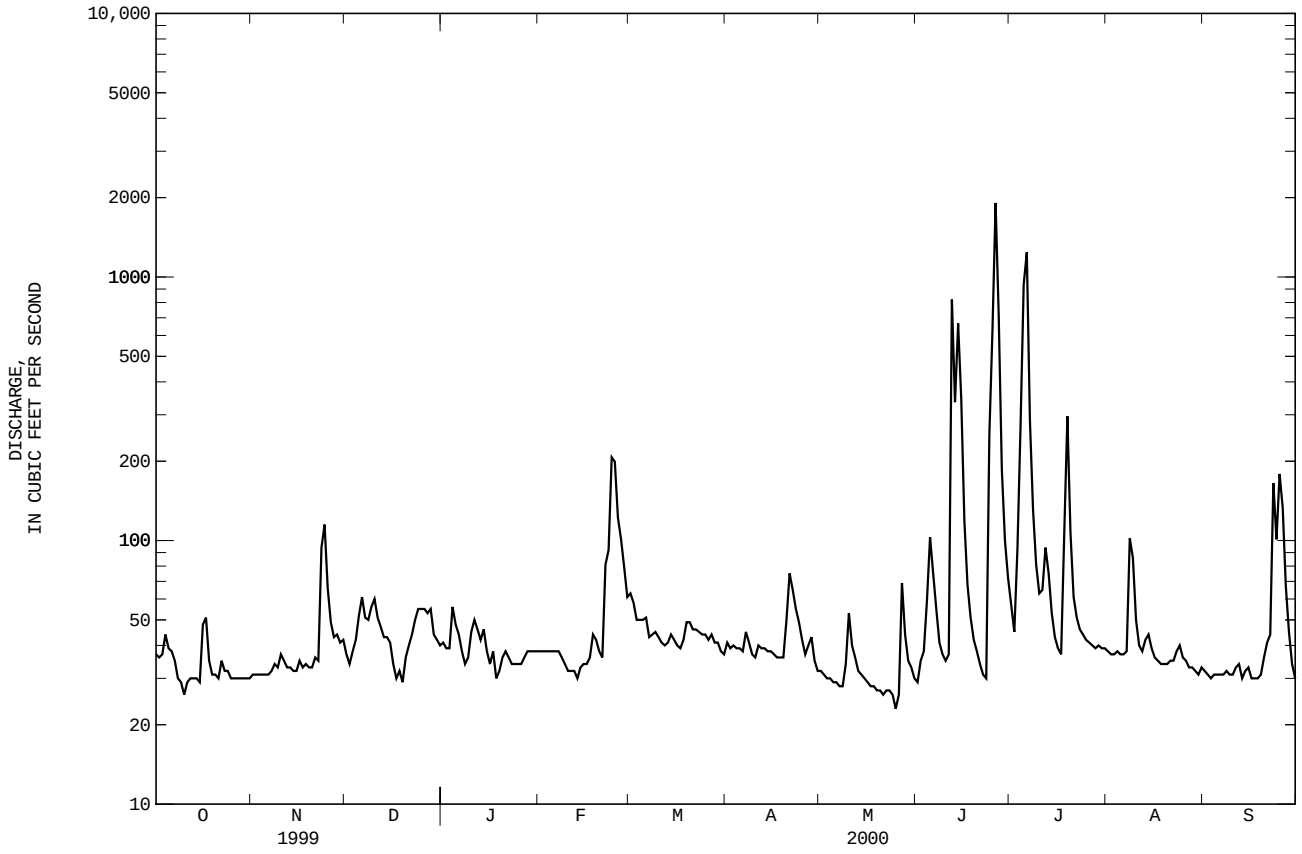
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2000, BY WATER YEAR (WY)

MEAN	422	416	539	332	458	676	622	690	657	915	685	485
MAX	1874	1931	1557	1696	1772	1831	1481	1421	1341	2849	2004	1976
(WY)	1994	1994	1983	1993	1983	1993	1993	1995	1980	1982	1993	1993
MIN	24.2	23.0	20.1	22.2	20.6	24.3	22.7	32.2	20.3	17.9	21.0	26.6
(WY)	1989	1989	1990	1989	1989	1989	1989	2000	1988	1988	1988	1988

06904010 CHARITON RIVER NEAR MOULTON, IA--Continued

SUMMARY STATISTICS	FOR 1999 CALENDAR YEAR		FOR 2000 WATER YEAR		WATER YEARS 1980 - 2000	
ANNUAL TOTAL	180373		24524			
ANNUAL MEAN	494		67.0		576	
HIGHEST ANNUAL MEAN					1555	1993
LOWEST ANNUAL MEAN					43.6	1989
HIGHEST DAILY MEAN	2720	May 17	1910	Jun 26	8720	Jul 17 1982
LOWEST DAILY MEAN	26	Oct 10	23	May 25	14	Jun 22 1988a
ANNUAL SEVEN-DAY MINIMUM	29	Oct 9	26	May 20	15	Jun 22 1988
INSTANTANEOUS PEAK FLOW			2240	Jun 26	11200	Jul 16 1982
INSTANTANEOUS PEAK STAGE			28.49	Jun 26	36.83	Jul 16 1982
ANNUAL RUNOFF (AC-FT)	357800		48640		417300	
ANNUAL RUNOFF (CFSM)	.67		.091		.78	
ANNUAL RUNOFF (INCHES)	9.07		1.23		10.58	
10 PERCENT EXCEEDS	1200		81		1340	
50 PERCENT EXCEEDS	397		38		302	
90 PERCENT EXCEEDS	32		30		27	

a Also June 23, 27 and July 9, 1988.
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 2000 maximum			Period of record maximum		
			Date	Gage height (ft)	Discharge (ft^3/s)	Date	Gage height (ft)	Discharge (ft^3/s)
BIG SIOUX RIVER BASIN								
Dawson Creek near Sibley, IA (06483440)	Lat 43°23′23″, long 95°42′53″, near NW corner sec.20, T.99 N., R.41 W., Osceola County, Hydrologic Unit 10170204, at culvert on County Highway A30, 2 mi southeast of Sibley. Drainage area 4.35 mi^2.	1952-	2000	(a)	(+)	06-29-93	8.84	(+)
Burr Oak Creek near Perkins, IA (06483495)	Lat 43°14′43″, long 96°10′38″, in SE1/4, sec.5, T.97 N., R.45 W., Sioux County, Hydrologic Unit 10170204, at bridge on U.S. Highway 75, 4 mi north of Perkins. Drainage area 30.9 mi^2.	1966-	2000	(a)	<78.3	06-20-83	88.37	(+)
PERRY CREEK BASIN								
Perry Creek near Merrill, IA (06599800)	Lat 42°43′15″, long 96°20′33″, in NW1/4, sec.12, T.91, N., R.47 W., Plymouth County, Hydrologic Unit 10230001, at bridge on County Highway C44, 5 mi west of Merrill. Drainage area 8.17 mi^2.	1953-1995, 1996-	05-18-00	8.52	285	03-27-62	12.22	(+)
Perry Creek near Hinton, IA (06599950)	Lat 42°37′11″, long 96°22′20″, in NE1/4, sec.15, T.90 N., R.47 W., Plymouth County, Hydrologic Unit 10230001, at bridge on county highway, 4 mi west of Hinton. Drainage area 33.1 mi^2.	1953-	05-18-00	26.12	250	06-14-81	38.68	[d]5,500
FLOYD RIVER BASIN								
Little Floyd River near Sanborn, IA (06600030)	Lat 43°11′10″, long 95°43′30″, in NE1/4, sec.31, T.97 N., R.41 W., O'Brien County, Hydrologic Unit 10230002, at bridge on U.S. Highway 18, 3.5 mi west of Sanborn. Drainage area 8.44 mi^2.	1966-	2000	(a)	<104	03-02-70	89.04	(+)
Sweeney Creek tributary near Sheldon, IA	Lat 43°11′10″, long 95°44′38″, in SW1/4, sec.25, T.97 N., R.42 W., O'Brien County, Hydrologic Unit 10230002, at culvert on U.S. Highway 18, 4.8 mi east of Sheldon. Drainage area 0.62 mi^2.	1991-	2000	(a)	(+)	07-14-93	99.27	(+)
West Branch Floyd River near Struble, IA (06600300)	Lat 42°55′26″, long 96°10′36″, in SE1/4, sec.29, T.94 N., R.45 W., Sioux County, Hydrologic Unit 10230002, at bridge on county highway B62, 0.1 mi west of U.S. Highway 75, 2.2 mi northeast of Struble. Drainage area 180 mi^2	1996-	05-18-00	12.39	2,060	03-04-94	15.86	8,920
MONONA-HARRISON DITCH BASIN								
Big Whiskey Slough near Remsen, IA (06601480)	Lat 42°48′28″, long 95°53′21″, in NW1/4, sec.11, T.92 N., R.43 W., Plymouth County, Hydrologic Unit 10230004, at bridge on State Highway 3, 4.2 mi east of Remsen. Drainage area 12.9 mi^2.	1966-	2000	(a)	(+)	03-22-79	94.87	(+)

Station name and number	Location and drainage area	Period of record	Water year 2000 maximum			Period of record maximum		
			Date	Gage height (ft)	Discharge (ft^3/s)	Date	Gage height (ft)	Discharge (ft^3/s)
MONONA-HARRISON DITCH BASIN--continued								
Elliott Creek at Lawton, IA (06602190)	Lat 42°28′30″, long 96°11′22″, in NW1/4, sec.3, T.88 N., R.46 W. Woodbury County, Hydrologic Unit 10230004, at bridge on U.S. Highway 20, at west edge of Lawton. Drainage area 34.8 mi^2.	1966-	2000	(a)	<356	06-12-84	86.14	3,150
LITTLE SIOUX RIVER BASIN								
Ocheyedan River near Ocheyedan, IA (06604510)	Lat 43°25′58″, long 95°36′41″, in NE1/4, sec.6, T.99 N., R.40 W., Osceola County, Hydrologic Unit 10230003, at bridge on State Highway 9, 4 mi northwest of Ocheyedan. Drainage area 73.5 mi^2.	1966-	2000	(a)	<350	06-29-93	86.79	2,200
Dry Run Creek near Harris, IA (06604584)	Lat 43°26′42″, long 95°27′21″, in NE1/4, sec.33, T.100 N., R.39 W., Osceola County, Hydrologic Unit 10230003, at culvert on county highway M12, 1 mi west of Harris. Drainage area 4.30 mi^2.	1990-	05-18-00	11.41	38.8	06-29-93	16.44	419
Prairie Creek near Spencer, IA (06605340)	Lat 43°05′16″, long 95°09′40″, in SE1/4, sec.36, T.96 N., R.37 W., Clay County, Hydrologic Unit 10230003, at bridge on U.S. Highway 71, 4 mi south of Spencer. Drainage area 22.3 mi^2.	1966-	2000	(a)	(+)	07-04-71	90.77	2,200
Willow Creek near Cornell, IA (06605750)	Lat 42°58′21″, long 95°09′40″, in SE1/4, sec.12, T.94 N., R.37 W., Clay County, Hydrologic Unit 10230003, at bridge on U.S. Highway 71, 2 mi northwest of Cornell. Drainage area 78.6 mi^2.	1966-	2000	(a)	<340	03-22-79	91.49	4,200
Little Sioux River tributary near Peterson, IA (06605868)	Lat 42°55′25″, long 95°21′55″, in NW1/4, sec.32, T.94 N., R.38 W., Clay County, Hydrologic Unit, 10230003, at culvert on State Highway 10, 1.2 mi northwest of Peterson. Drainage area 0.29 mi^2.	1991-	2000	(a)	(+)	05-31-93	91.81	(+)
Willow Creek near Calumet, IA (06606231)	Lat 42°58′05″, long 95°32′56″ in NE1/4, sec. 15, T.94 N., R.40 W., Sac County, Hydrologic Unit 10230003, at culvert on State Highway10, 1.2 mi north of Calumet. Drainage area 4.13 mi^2.	1991-	2000	(a)	(+)	07-14-93	100.92	(+)
Halfway Creek at Schaller, IA (0660683710)	Lat 42°30′18″, long 95°17′19″, in SW1/4, sec.24, T.89 N., R.38 W., Sac County, Hydrologic Unit 10230005, at culvert on State Highway 110, 0.1 mi north of Schaller. Drainage area 1.74 mi^2.	1990-	2000	(a)	(+)	07-14-92	94.11	(+)
BOYER RIVER BASIN								
Boyer River tributary at Woodbine, IA (06609482)	Lat 41°43′58″, long 95°43′19″, in SE1/4, sec.15, T.80 N., R.42 W., Harrison County, Hydrologic Unit 10230007, at culvert on county highway F32, 0.5 mi west of Woodbine. Drainage area 0.67 mi^2.	1990-	06-26-00	84.43	(+)	05-18-91	90.84	(+)
Willow Creek near Soldier, IA (06609560)	Lat 41°55′17″, long 95°42′05″, near S1/4 corner sec.11, T.82 N., R.42 W., Monona County, Hydrologic Unit 10230001, at bridge on State Highway 37, 6 mi southeast of Soldier. Drainage area 29.1 mi^2.	1966-	06-25-00	68.46	256	07-09-93	84.66	6,840

Station name and number	Location and drainage area	Period of record	Water year 2000 maximum			Period of record maximum		
			Date	Gage height (ft)	Discharge (ft^3/s)	Date	Gage height (ft)	Discharge (ft^3/s)
MOSQUITO CREEK BASIN								
Moser Creek near Earling, IA (06610510)	Lat 41°46′35″, long 95°26′55″, in NE1/4, sec.1, T.80 N., R.40 W., Shelby County, Hydrologic Unit 10230006, at bridge on State Highway 37, 1.5 mi west of Earling. Drainage area 21.6 mi^2.	1966-	2000	(a)	(+)	06-15-84	87.89	(+)
Mosquito Creek tributary near Neola, IA (06610581)	Lat 41°30′06″, long 95°35′44″, in NE1/4, sec.6, T.77 N., R.41 W., Pottawattamie County, Hydrologic Unit 10230006, at culvert on State Highway 191, 3.8 mi north of Neola. Drainage area 3.22 mi^2.	1991-	2000	(a)	(+)	08-07-99	82.44	(+)
Keg Creek tributary near Mineola, IA (06805849)	Lat 41°07′53″, long 95°43′31″, in SW1/4, sec.7, T.73 N., R.42 W., Mills County, Hydrologic Unit 10240001, at culvert on county highway H12, 2.4 mi southwest of Mineola. Drainage area 2.01 mi^2.	1991-	06-13-00	77.14	62.7	07-10-99	82.97	602
NISHNABOTNA RIVER BASIN								
Elm Creek near Jacksonville, IA (0680737930)	Lat 41°38′44″, long 95°12′18″, in SW1/4, sec.18, T.79 N., R.37 W., Shelby County, Hydrologic Unit 10240002, at culvert on State Highway 44, 2.8 mi west of Jacksonville. Drainage area 9.43 mi^2.	1990-	2000	(a)	(+)	06-17-90	95.01	(+)
Indian Creek near Emerson, IA (06807470)	Lat 41°01′50″, long 95°22′51″, in NW1/4, sec.19, T.72 N., R.39 W., Montgomery County, Hydrologic Unit 10240002, at bridge on U.S. State Highway 34, 1 mi east of Emerson. Drainage area 37.3 mi^2.	1966-	2000	(a)	1,450	06-15-82 08-07-99	92.63 94.32	15,800 13,600
Middle Silver Creek near Oakland, Ia (06807760)	Lat 41°19′28″, long 95°33′19″, in E1/4 corner, sec.4, T.75 N., R.41 W., Pottawattamie County, Hydrologic Unit 10240002, at bridge on county highway, 8.5 mi northwest of Oakland. Drainage area 25.7 mi^2.	1953-	06-26-00 Revised 07-14-98	5.91 Record: 15.63	<150 2,540	07-14-98	15.63	2,540
Bluegrass Creek at Audubon, IA (06808880)	Lat 41°42′46″, long 94°44′46″, in NW1/4, sec.28, T.80 N., R.35 W., Audubon County, Hydrologic Unit 10240003, at bridge on U.S. Highway 71, near south edge of Audubon. Drainage area 15.4 mi^2.	1966-	06-26-00	76.30	456	07-09-93	88.55	(+)
TARKIO RIVER BASIN								
Tarkio River near Elliott, IA (06811760)	Lat 41°06′06″, long, 95°06′09″, near NE corner sec.28, T.73 N., R.37 W., Montgomery County, Hydrologic Unit 10240005, at bridge on county highway, 4.5 mi southeast of Elliott. Drainage area 10.7 mi^2.	1952-	2000	(a)	<374	08-29-93	12.98	4,640
East Tarkio Creek near Stanton, IA (06811800)	Lat 41°04′48″, long 95°05′34″, in W1/2 sec.34, T.73 N., R.37 W., Montgomery County, Hydrologic Unit 10240005, at bridge on county highway H24, 7 mi north of Stanton. Drainage area 4.66 mi^2.	1952-	2000	(a)	<471	06-09-67	13.74	4,790
Tarkio River tributary near Stanton, IA (06811820)	Lat 41°02′38″, long 95°05′55″, in NE1/4 sec.16, T.72 N., R.37 W., Montgomery County, Hydrologic Unit 10240005, at box culvert on county highway H63, 4 mi north of Stanton. Drainage area 0.67 mi^2.	1952-	2000	(a)	(+)	06-23-99	5.56	1,070

Station name and number	Location and drainage area	Period of record	Water year 2000 maximum			Period of record maximum		
			Date	Gage height (ft)	Discharge (ft^3/s)	Date	Gage height (ft)	Discharge (ft^3/s)
TARKIO RIVER BASIN--continued								
Snake Creek near Yorktown, IA (06811875)	Lat 40°44′33″, long 95°07′46″, in NW1/4, sec.32, T.69 N., R.37 W., Page County, Hydrologic Unit 10240005, at bridge on State Highway 2, 1.5 mi northeast of Yorktown. Drainage area 9.10 mi^2.	1966-1991 1997-	2000	(a)	<343	07-09-87	95.24	3,080
NODAWAY RIVER BASIN								
West Nodaway River at Massena, IA (06816290)	Lat 41°14′44″, long 94°45′27″, in SE1/4, sec.33, T.75 N., R.34 W., Cass County, Hydrologic Unit 10240009, at bridge on State Highway 148, at southeast corner of Massena. Drainage area 23.4 mi^2.	1966-	2000	(a)	223	02-01-73	82.39	(+)
PLATTE RIVER BASIN								
Platte River near Diagonal, IA (06818750)	Lat 40°46′02″, long 94°24′46″, in NW1/4, sec. 22, T.69 N., R.31 W., Ringgold County, Hydrologic Unit 10240012, at bridge on county highway, 2.2 mi upstream from Turkey Creek, 4.6 mi. southwest of Diagonal, and 4.9 mi downstream from Gard Creek. Drainage area 217 mi^2.	1968-1991 1997-	07-06-00	10.24	1,230	09-09-89	23.60	8,630
Middle Branch 102 River near Gravity, IA (06819110)	Lat 40°49′40″, long 94°44′18″, in SE1/4, sec.27, T.70 N., R.34 W., Taylor County, Hydrologic Unit 10240013, at bridge on State Highway 148, 4.8 mi north of Gravity. Drainage area 34.5 mi^2.	1966-	06-26-00	64.87	1,220	02-01-73 07-05-93	c83.65 76.83	(+) [d]4,790
GRAND RIVER BASIN								
Sevenmile Creek, near Thayer, IA (06897858)	Lat 41°01′37″, long 94°00′03″, in SE1/4, sec.18, T.72 N., R.27 W., Clarke County, Hydrologic Unit 10280102, at culvert on U.S. Highway 34, 2.6 mi east of Thayer, Drainage area 6.61 mi^2.	1991-	2000	(a)	(+)	09-15-92	24.92	[d]1,330
Elk Creek near Decatur City, IA (06897950)	Lat 40°43′18″, long 93°56′12″, in SE1/4, sec. 34, T.69 N., R.27 W., Decatur County, Hydrologic Unit 10280102, at bridge on county Highway, 1,000 ft. downstream from West Elk Creek, 5.8 mi. upstream from mouth, and 5.5 mi. (Revised) west of Decatur City. Drainage area 52.5 mi^2.	1968-	06-26-00	15.13	1,410	07-05-93	29.93	32,800

The following water temperature and specific conductance measurements were made at the indicated sites during water year 2000.

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)
06483500 - Rock River near Rock Valley, IA				
OCT				
19...	1320	75	8.0	782
DEC				
01...	0755	80	3.0	863
JAN				
25...	1015	31	.0	1010
MAR				
07...	0840	120	9.0	805
APR				
19...	1020	134	11.5	732
JUN				
01...	1020	502	18.0	793
JUL				
10...	1725	326	30.0	509
AUG				
22...	1135	94	20.0	606
06600000 - Perry Creek at 38th Street, Sioux City, IA				
OCT				
21...	1155	14	7.5	868
NOV				
29...	1410	12	4.0	802
JAN				
24...	1310	12	.0	852
MAR				
06...	1050	15	9.0	794
APR				
19...	1820	17	19.0	759
MAY				
18...	1130	426	14.0	309
MAY				
18...	1131	366	14.0	309
18...	1132	325	14.0	309
18...	1133	328	14.0	309
18...	1134	277	14.0	309
18...	1135	263	14.0	309
18...	1136	218	14.0	309
JUN				
01...	1740	19	18.0	766
JUL				
12...	0825	23	21.5	653
AUG				
23...	0920	7.8	21.0	458
06600100 - Floyd River at Alton, IA				
OCT				
20...	0835	8.4	5.5	919
DEC				
01...	1110	11	4.5	1040
JAN				
25...	1350	5.3	.0	1300
MAR				
06...	1720	14	13.0	973
APR				
19...	1350	12	15.0	915
JUN				
01...	1320	12	19.5	878
JUL				
10...	1440	16	30.0	722
AUG				
22...	1820	6.9	24.0	1030
06600500 - Floyd River at James, IA				
OCT				
20...	1155	95	6.5	1020
DEC				
14...	1210	116	1.0	1090
JAN				
27...	0950	52	.0	1260
MAR				
14...	0935	88	5.0	1040
APR				
24...	0900	76	13.0	963
JUN				
15...	0920	288	16.0	698
JUL				
18...	1110	82	20.5	884
AUG				
23...	1545	56	27.5	1020
06601200 - Missouri River at Decatur, NE				
OCT				
01...	1100	46700	17.0	800
13...	1228	46000	14.4	774
27...	1100	47800	12.0	811
NOV				
17...	1000	49000	10.0	830
22...	1415	47700	8.3	832
DEC				
09...	1000	33000	5.0	--
29...	1325	25100	2.0	840
JAN				
10...	1235	24500	.5	807
FEB				
08...	0750	19000	.0	914
16...	1255	18600	2.0	814
29...	1300	19500	5.1	786
MAR				
13...	0935	17600	7.7	771
14...	1305	18500	10.0	744
21...	0715	25900	5.2	807
23...	0855	30400	8.0	805
29...	0930	30900	9.0	810
APR				
11...	1120	32000	8.7	837
25...	1300	32400	13.5	818
MAY				
03...	1250	32700	16.5	802
09...	0715	30400	15.3	777
17...	1115	38000	16.9	756
24...	1030	38700	22.5	640
31...	0740	37900	19.7	719
JUN				
06...	0645	37100	16.0	800
14...	1340	39200	21.1	862
21...	1440	36500	22.0	814
26...	1630	44600	21.3	800
JUL				
03...	1615	35400	25.5	835
10...	1330	33300	29.5	755
17...	1310	35100	26.6	811
24...	1316	34600	22.7	820
31...	0940	32800	25.3	764
AUG				
08...	1225	30100	27.0	822
14...	1250	32000	27.6	830
22...	1730	32000	22.3	801
29...	0815	32800	21.5	806
SEP				
05...	1305	35300	22.8	756
11...	0940	34600	25.8	715
19...	1130	34900	20.3	775
25...	1015	35100	14.5	821

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)
06602020 - West Fork Ditch at Hornick, IA									
NOV					APR				
02...	1005	53	4.0	712	26...	0925	40	12.0	700
DEC					JUN				
15...	1315	66	2.0	890	06...	1305	53	20.5	728
JAN					JUL				
28...	1010	38	.0	634	12...	1120	58	24.0	616
MAR					AUG				
15...	0945	56	8.0	745	23...	1840	56	26.5	497
06602400 - Monona-Harrison Ditch near Turin, IA									
NOV					APR				
04...	0905	135	5.0	749	28...	0930	168	13.0	692
DEC					JUN				
16...	1150	97	.0	783	16...	1055	270	18.0	483
JAN					JUL				
28...	1215	114	1.0	832	17...	1230	119	26.0	681
MAR					AUG				
17...	1100	114	4.0	773	24...	1245	124	24.0	591
06605000 - Ocheyedan River near Spencer, IA									
OCT					APR				
19...	0840	12	5.0	725	18...	1450	22	18.5	812
NOV					MAY				
29...	1155	11	4.0	806	31...	1520	84	18.0	769
JAN					JUL				
26...	1135	4.3	.0	852	11...	1320	95	25.0	767
MAR					AUG				
07...	1720	21	19.5	844	16...	1745	16	24.0	743
06605850 - Little Sioux River at Linn Grove, IA									
OCT					APR				
18...	1600	52	10.5	605	18...	1235	91	8.0	646
NOV					MAY				
30...	1020	56	4.0	720	31...	1255	339	20.0	722
JAN					JUL				
26...	1420	29	.0	881	11...	1605	393	26.5	527
MAR					AUG				
08...	0920	90	12.0	737	21...	1350	151	21.0	627
08...	1005	90	12.5	737					
06606600 - Little Sioux River at Correctionville, IA									
OCT					APR				
18...	1335	128	8.5	674	24...	1135	169	16.0	683
DEC					JUN				
15...	1035	153	.0	880	15...	1120	502	20.0	706
JAN					JUL				
27...	1200	78	.0	1030	18...	1415	323	24.0	611
MAR					AUG				
14...	1130	191	7.0	780	23...	1300	258	23.5	593
06607200 - Maple River at Mapleton, IA									
NOV					APR				
02...	1205	106	6.0	690	26...	1100	68	15.0	663
DEC					JUN				
13...	1300	102	1.0	758	14...	1200	75	18.0	658
JAN					JUL				
26...	1250	72	.0	838	17...	1530	62	31.5	458
MAR					AUG				
15...	1130	93	8.0	734	24...	0915	42	20.0	660
06607500 - Little Sioux River near Turin, IA									
NOV					JUN				
02...	1420	312	7.5	759	14...	0940	506	20.0	676
DEC					JUL				
16...	0950	79	.0	582	17...	1315	564	27.5	518
JAN					AUG				
28...	1405	212	.0	900	24...	1100	350	23.5	573
MAR									
17...	0950	320	3.0	708					

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)
06608500 - Soldier River at Pisgah, IA				
NOV				
01...	1050	137	9.0	723
DEC				
10...	1025	117	.0	791
17...	1055	91	.0	847
21...	1115	49	-1.0	800
30...	1035	128	.0	717
JAN				
05...	1130	84	.0	820
10...	1435	140	.0	708
18...	1440	148	4.5	663
25...	1415	93	.0	811
31...	1200	83	.0	782
FEB				
08...	1240	116	.0	709
16...	0905	99	.0	693
MAR				
10...	1230	113	5.0	738
APR				
25...	1140	87	13.5	662
JUN				
09...	1115	57	23.5	628
JUL				
18...	0940	69	21.5	654
AUG				
22...	1425	47	27.0	658
SEP				
15...	1010	26	13.0	658
06609500 - Boyer River at Logan, IA				
NOV				
01...	1320	198	11.0	712
DEC				
10...	1235	140	1.0	779
JAN				
25...	1015	100	.0	872
MAR				
10...	1015	167	3.0	693
APR				
25...	0930	101	13.5	694
JUN				
09...	1330	65	28.0	686
JUL				
20...	1000	83	20.5	669
AUG				
23...	0925	61	23.5	580
SEP				
15...	1220	20	19.5	840
06807410 - West Nishnabotna River at Hancock, IA				
OCT				
27...	1200	174	10.0	660
DEC				
09...	1335	130	3.0	625
JAN				
18...	0910	116	.0	223
MAR				
01...	1000	144	4.5	598
APR				
13...	0925	84	7.5	604
MAY				
25...	0950	54	18.0	607
JUN				
28...	1050	98	20.5	472
AUG				
14...	1105	50	25.0	573
SEP				
25...	1045	26	10.5	631
06808500 - West Nishnabotna River at Randolph, IA				
OCT				
28...	1310	494	12.0	636
DEC				
06...	0945	406	1.0	624
JAN				
19...	0920	347	2.0	608
MAR				
02...	1335	398	6.5	595
APR				
12...	0900	330	6.5	574
MAY				
23...	1420	219	25.0	578
JUN				
14...	1120	3310	19.0	214
JUL				
05...	1005	415	26.0	532
AUG				
16...	0925	228	24.0	532
SEP				
26...	1000	132	11.0	591
06809210 - East Nishnabotna River near Atlantic, IA				
OCT				
27...	1010	90	8.0	552
DEC				
09...	1055	69	2.5	533
JAN				
18...	1135	68	.5	534
MAR				
01...	1210	95	7.5	496
APR				
13...	1120	54	11.5	546
MAY				
24...	1420	41	25.0	584
JUN				
28...	1250	135	21.0	423
AUG				
14...	1320	35	28.0	423
SEP				
25...	1310	22	15.5	560
06809500 - East Nishnabotna River at Red Oak, IA				
OCT				
28...	1030	182	11.0	528
DEC				
06...	1310	179	3.0	506
JAN				
19...	1235	142	1.0	497
MAR				
02...	1040	220	6.0	442
APR				
12...	1140	167	8.5	381
MAY				
24...	0935	88	21.0	526
JUL				
05...	1240	242	27.5	372
AUG				
16...	1255	80	27.0	445
SEP				
28...	1140	63	16.0	498

06810000 - Nishnabotna River above Hamburg, IA

DATE	TIME	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPERATURE WATER (DEG C) (00010)	SPECIFIC CONDUCTANCE (US/CM) (00095)
OCT				
29...	0910	702	11.0	534
DEC				
08...	1135	728	3.0	519
FEB				
22...	1250	656	8.0	546
APR				
11...	1055	472	8.0	496
MAY				
23...	1115	401	22.5	450
JUN				
30...	1430	875	26.5	380
AUG				
17...	1055	326	26.0	404
SEP				
26...	1335	190	16.0	514

06813500 - Missouri River at Rulo, NE

DATE	TIME	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPERATURE WATER (DEG C) (00010)	SPECIFIC CONDUCTANCE (US/CM) (00095)
OCT				
07...	1035	58100	15.0	803
14...	1130	56400	16.5	803
21...	1020	58500	12.0	808
28...	1000	55500	12.0	810
NOV				
03...	1135	57600	11.0	815
09...	1230	58200	11.5	829
18...	1050	56300	11.0	833
23...	1100	60000	8.4	815
30...	0925	59300	7.0	817
DEC				
07...	1215	56800	6.0	813
14...	1025	41000	4.5	817
20...	1225	39500	.5	824
27...	1115	39200	1.0	851
JAN				
04...	1100	37000	1.8	817
11...	1155	33700	2.0	812
19...	1140	33700	4.0	793
31...	1145	--	.0	846
FEB				
09...	0945	31100	3.0	821
17...	1100	28300	3.0	819
22...	1010	31100	5.0	812
29...	1030	33300	8.0	788
MAR				
06...	1200	31100	9.0	692
13...	1145	31400	7.5	812
20...	1005	28000	7.0	803
27...	1100	42000	10.5	787
APR				
05...	1040	38400	11.2	823
12...	1130	39900	10.0	815
19...	1030	45700	11.5	808
21...	1110	40500	11.0	800
26...	1050	39900	13.0	798
MAY				
03...	1317	39500	17.7	702
10...	1200	37600	20.0	771
15...	1035	42700	18.5	782
24...	1030	48100	21.0	775
31...	1020	47800	22.0	770
JUN				
06...	1015	45100	20.5	782
12...	1220	43100	26.0	802
19...	1045	43100	22.0	795
26...	1135	71300	24.0	608
JUL				
05...	1215	47400	27.0	770
11...	1220	46000	29.5	742
18...	1130	41800	29.0	787
26...	1005	42700	26.0	811
AUG				
01...	1000	41500	28.0	818
09...	1140	38200	29.3	807
16...	1150	36200	29.0	803
21...	1210	39000	25.5	796
29...	1040	36500	27.5	788
SEP				
06...	1000	37600	25.0	797
12...	1035	37200	25.0	798
19...	1040	38700	22.0	817
26...	1215	39400	16.0	800

06817000 - Nodaway River at Clarinda, IA

DATE	TIME	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPERATURE WATER (DEG C) (00010)	SPECIFIC CONDUCTANCE (US/CM) (00095)
OCT				
26...	1530	66	10.0	406
DEC				
08...	0825	56	1.0	426
JAN				
20...	1255	36	.0	404
FEB				
29...	0755	124	8.0	396
APR				
11...	0750	55	7.3	402
MAY				
23...	0750	34	22.0	341
JUN				
30...	1050	260	24.5	369
AUG				
10...	1045	63	27.5	335
SEP				
28...	0825	30	15.5	334

06819185 - East Fork 102 River at Bedford, IA

DATE	TIME	DISCHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPERATURE WATER (DEG C) (00010)	SPECIFIC CONDUCTANCE (US/CM) (00095)
OCT				
26...	1320	.32	13.0	474
DEC				
07...	1505	.75	6.0	468
JAN				
24...	1050	.65	2.0	641
FEB				
28...	1500	6.2	9.5	403
APR				
10...	1710	2.6	10.0	426
MAY				
22...	1640	1.9	20.0	388
JUN				
30...	0835	28	23.0	342
AUG				
10...	0820	1.6	26.5	382
SEP				
27...	1615	.56	18.0	480

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)
06898000 - Thompson River at Davis City, IA				
OCT				
26...	1030	17	8.0	546
DEC				
07...	1210	16	3.5	502
JAN				
24...	1440	22	.5	548
FEB				
28...	1150	91	8.0	397
APR				
10...	1355	12	11.0	508
MAY				
22...	1340	7.5	25.0	520
JUN				
29...	1525	199	26.0	263
AUG				
09...	1450	20	32.0	297
SEP				
27...	1245	14	17.0	503
06903400 - Chariton River near Chariton, IA				
OCT				
13...	0940	1.7	13.4	489
NOV				
22...	1145	.16	7.0	512
JAN				
21...	1153	--	.0	529
FEB				
15...	1000	2.3	.5	584
APR				
04...	1018	2.8	7.5	517
MAY				
10...	1053	1.9	16.7	580
JUN				
21...	1536	3.6	24.9	399
26...	1335	1450	19.9	149
AUG				
01...	1435	3.7	24.7	388
SEP				
13...	1123	.74	20.4	410
06903700 - South Fork Chariton River near Promise City, IA				
OCT				
13...	0802	.97	13.0	525
NOV				
22...	1407	1.6	5.9	541
JAN				
11...	0817	1.3	.0	343
FEB				
15...	0805	1.7	.0	607
APR				
04...	0828	1.5	5.2	576
MAY				
10...	0900	2.1	13.8	484
JUN				
21...	1351	1.4	25.0	417
26...	1200	2190	20.0	164
AUG				
01...	1236	1.5	25.7	446
SEP				
13...	0957	.18	18.7	453
06903900 - Chariton River near Rathbun, IA				
OCT				
12...	1240	--	16.3	258
NOV				
23...	0920	12	10.2	266
DEC				
08...	1600	13	6.7	262
JAN				
10...	1245	9.5	2.7	259
FEB				
14...	1400	11	2.8	252
APR				
03...	1515	11	10.0	259
MAY				
09...	1445	13	14.3	271
JUN				
21...	0912	11	22.2	299
AUG				
01...	0950	12	23.2	284
SEP				
13...	0718	12	22.4	261
06904010 - Chariton River near Moulton, IA				
OCT				
12...	1509	30	18.4	333
NOV				
22...	1618	32	8.5	380
JAN				
10...	1524	46	1.5	421
FEB				
14...	1210	33	.3	500
APR				
03...	1318	42	11.6	397
MAY				
10...	0721	55	15.4	409
JUN				
21...	1126	34	23.5	412
26...	1545	2220	22.4	225
AUG				
01...	0715	39	22.6	387
SEP				
12...	1635	35	24.6	313

ADAMS COUNTY

410247094324801. Local number, 72-32-09 CBCC.
LOCATION.--Lat 41°02'48", long 94°32'48", Hydrologic Unit 10240010, on the east side of county road, approximately 4 mi northeast of the City of Prescott. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Glacial drift of Pleistocene age (might be in Albany buried-channel).
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 276 ft, screened 266-276 ft, gravel packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,220 ft above sea level, from topographic map. Measuring point: Top of casing, 1.40 ft above land-surface datum.
REMARKS.--Well SW-78.
PERIOD OF RECORD.--October 1987 to November 1987, June 1990, and November 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured,1.38 feet below land-surface datum, May 09, 1996; lowest measured, 3.08 ft below land-surface datum, December 06, 1996.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 12	2.63	FEB 25	2.41	MAY 11	3.36	AUG 09	2.49

WATER YEAR 2000 HIGHEST 2.41 FEB 25, 2000 LOWEST 3.36 MAY 11, 2000

410248094324801. Local number, 72-32-09 CCBB.
LOCATION.--Lat 41°02'48", long 94°32'48", Hydrologic Unit 10240010, on the east side of county road, approximately 4 mi northeast of the City of Prescott. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 136 ft, screened 130-136 ft, gravel packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,220 ft above sea level, from topographic map. Measuring point: Top of casing, 2.65 ft above land-surface datum.
REMARKS.--Well SW-83.
PERIOD OF RECORD.--August 1988, June 1990, and November 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.72 feet below land-surface datum, February 3, 1994; lowest measured, 5.42 ft below land-surface datum, August 4, 1997.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 12	5.42	FEB 25	5.24	MAY 11	5.25	AUG 09	5.37

WATER YEAR 2000 HIGHEST 5.24 FEB 25, 2000 LOWEST 5.42 NOV 12, 1999

APPANOOSE COUNTY

404103092404001. Local number, 68-16-15 DDAD.
LOCATION.--Lat 40°41'03", long 92°40'29", Hydrologic Unit 10280201, located approximately 4 mi south of State Highway 2 on State Highway 202 beneath water tower in the Town of Moulton. Owner: Town of Moulton.
AQUIFER.--Cambrian/Ordovician.
WELL CHARACTERISTICS.-- Drilled observation water-table well, diameter 8 and 12.75 in., depth 2377 ft, screened 1713-1736 ft.
INSTRUMENTATION.-- Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 992.00 ft above sea level, by unknown method. Measuring point: Top of well cover, 1.07 ft above land-surface datum.
REMARKS.-- Moulton Town Well.
PERIOD OF RECORD.--October 1996 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 381.37 feet below land surface datum, October 10, 1996; lowest measured, 389.00 feet below land-surface datum February 08, 1999.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	385.29	FEB 23	385.43	MAY 16	385.79	AUG 14	386.63

WATER YEAR 2000 HIGHEST 385.29 NOV 04, 1999 LOWEST 386.63 AUG 14, 2000

AUDUBON COUNTY

413044094565601. Local number, 78-36-35 ADCC1.
LOCATION.--Lat 41°30'44", long 94°56'56", Hydrologic Unit 10240003, 2.5 mi south of the Town of Brayton on Highway 71, and 0.3 mi west on the north side of County Road F-67. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 115 ft, screened 94-101 ft, open hole 101-115 ft., gravel-packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,230 ft above sea level, from topographic map. Measuring point: Top of casing, 2.37 ft above land-surface datum.
REMARKS.--Well WC-69.
PERIOD OF RECORD.--June 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 29.43 ft below land-surface datum, August 11, 1993; lowest measured, 53.55 ft below land-surface datum, April 12, 1990.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	44.41	FEB 24	47.55	MAY 10	48.98	AUG 07	50.23

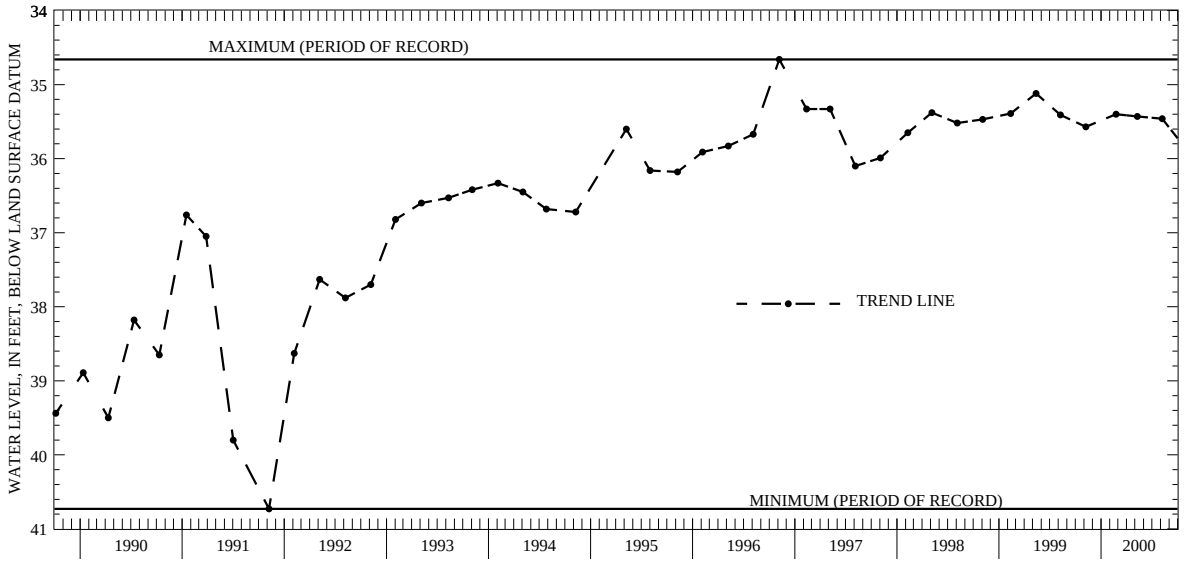
WATER YEAR 2000 HIGHEST 44.41 NOV 08, 1999 LOWEST 50.23 AUG 07, 2000

413958094544501. Local number, 79-35-10 CABB.
LOCATION.--Lat 41°39'59", long 94°54'45", Hydrologic Unit 10240003, approximately 0.3 mi west of the Town of Hamlin, on the south side of Highway 44. Owner: Geological Survey Bureau/DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 221 ft, screened 168-188 ft, open hole 210-221 ft, gravel-packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,280 ft above sea level, from topographic map. Measuring point: Top of casing, 5.37 ft above land-surface datum.
REMARKS.--Well WC-17.
PERIOD OF RECORD.--August 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 34.66 ft below land-surface datum, November 6, 1997 and May 09, 1995; lowest measured, 40.73 ft below land-surface datum, November 8, 1991.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	35.57	FEB 24	35.40	MAY 10	35.43	AUG 07	35.46

WATER YEAR 2000 HIGHEST 35.40 FEB 24, 2000 LOWEST 35.57 NOV 08, 1999



AUDUBON COUNTY--Continued

415023094593801. Local number, 81-36-12 CBCA
LOCATION.--Lat 41°50′23″, long 94°59′38″, Hydrologic Unit 10240002, approximately 0.5 mi west of the Town of Gray on the east side of County Road N-14, south of the Gray Cemetery. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 315 ft, screened 279-295 ft, gravel-packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,393 ft above sea level, from topographic map. Measuring point: Top of casing, 1.40 ft above land-surface datum.
REMARKS.--Well WC-18.
PERIOD OF RECORD.--August 1981 to current year.
REVISION.--Measuring point revised February 13, 1990 to August 4, 1992.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 159 ft below land-surface datum, August 05, 1998; lowest measured, 168.52 ft below land-surface datum, October 6, 1987.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	160.60	FEB 24	160.48	MAY 10	160.60	AUG 07	161.17

WATER YEAR 2000 HIGHEST 160.48 FEB 24, 2000 LOWEST 161.17 AUG 07, 2000

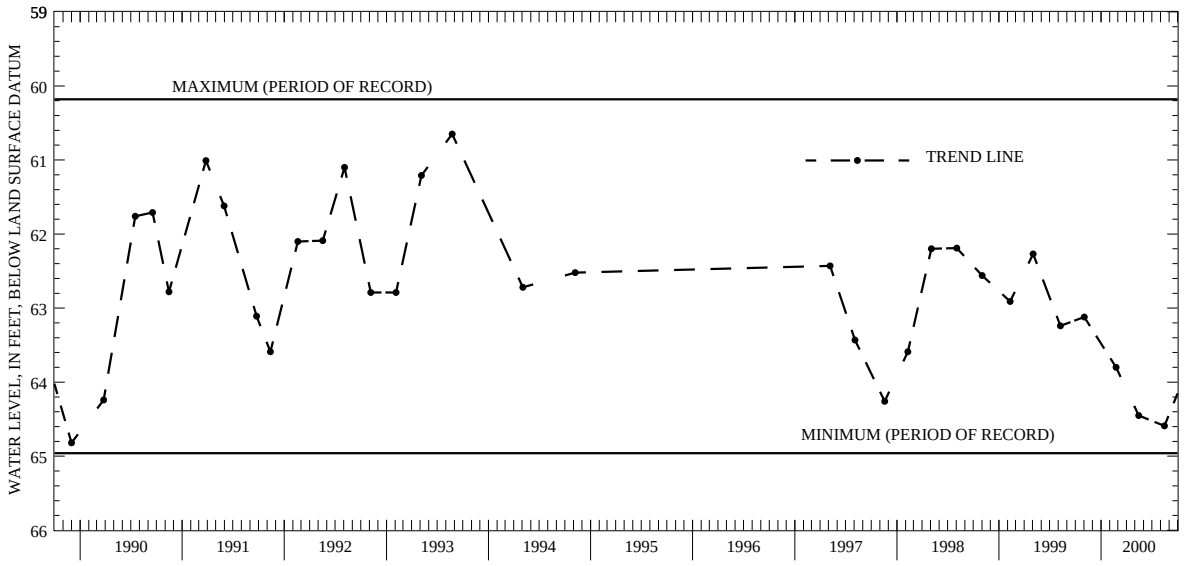
BENTON COUNTY

420731092083801. Local number, 85-11-33 CCBC1.
LOCATION.--Lat 42°07′31″, long 92°08′38″, Hydrologic Unit 07080205, approximately 1 mi south of the Town of Garrison, just east of County Road V-56. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Devonian: Cedar Valley limestone of Middle Devonian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 0.75 in., depth 237 ft, cement plug 97-100 ft, screened below cement plug, open hole 170-237 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 905 ft above sea level, from topographic map. Measuring point: Top of 6 in. casing, 2.20 ft above land-surface datum.
REMARKS.--Garrison 170 well; Garrison wells 109 and 340 also in this hole.
PERIOD OF RECORD.--June 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 60.18 ft below land-surface datum, April 19, 1983; lowest measured, 64.96 ft below land-surface datum, August 2, 1994.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	63.12	FEB 24	63.80	MAY 15	64.45	AUG 15	64.59

WATER YEAR 2000 HIGHEST 63.12 NOV 02, 1999 LOWEST 64.59 AUG 15, 2000



BENTON COUNTY--Continued

420731092083803. Local number, 85-11-33 CCBC3.
LOCATION.--Lat 42°07'31", long 92°08'38", Hydrologic Unit 07080205, approximately 1 mi south of the Town of Garrison, just east of County Road V-56. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Devonian: Cedar Valley limestone of Middle Devonian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 6 in., depth 97 ft, open hole 90-97 ft, cement plug 97-100 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 905 ft above sea level, from topographic map. Measuring point: Top of 6 in. casing, 2.20 ft above land-surface datum.
REMARKS.--Garrison 109 well; Garrison wells 170 and 340 also in this hole.
PERIOD OF RECORD.--June 1977 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 60.63 ft below land-surface datum, March 23, 1979; lowest measured, 66.87 ft below land-surface datum, August 4, 1997.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	63.69	FEB 24	63.82	MAY 15	64.47	AUG 15	64.60

WATER YEAR 2000 HIGHEST 63.69 NOV 02, 1999 LOWEST 64.60 AUG 15, 2000

420731092083802. Local number 85-11-33 CCBC.
LOCATION.--Lat 42°07'31", long 92°08'38", Hydrologic Unit 07080205, approximately 1 mi south of the Town of Garrison, just east of County Road V-56. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Silurian
WELL CHARACTERISTCS.-- Drilled observation artesian water well, diameter 6in., depth 538 ft, casing information unknown
IINSTRUMENTATION.-- Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 905 ft above sea level, from topographic map. Measuring point: Top of 6 in. casing, 2.20 ft above land-surface datum.
REMARKS.--Garrison 340 well; Garrison wells 170 and 109 also in this hole.
PERIOD OF RECORD.--October 1975 to March 1981; November 1982 to November 1990; November 1993 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 67.50 ft below land-surface datum, August 4 1997; lowest measured, 104.94 ft below land-surface datum, August 21, 1985.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	84.73	FEB 24	87.05	MAY 15	86.47	AUG 15	83.74

WATER YEAR 2000 HIGHEST 83.74 AUG 15, 2000 LOWEST 87.05 FEB 24, 2000

BREMER COUNTY

424224092133901. Local number, 91-12-11 DBB.
LOCATION.--Lat 42°42'15", long 92°13'29", Hydrologic Unit 07080102, located in the town of Readlyn, approximately 0.5 mi south of State Highway 3, in the northwest corner of town limits. Owner: Town of Readlyn.
AQUIFER.--Silurian, Alexanderian Series dolomite.
WELL CHARACTERISTICS.--Drilled public-use well, diameter 16 in, depth 154 ft, casing open from 99-154 ft.
INSTRUMENTATION.--Quarterly measurement with airline by USGS personnel
DATUM.--Elevation of land-surface is 1038 feet above sea level, by topographic map.
REMARKS.--Readlyn No. 2
PERIOD OF RECORD.--August 1997 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 86 feet below land-surface datum, November 05, 1998, lowest measured, 92 feet below land-surface datum, May 05, 1998.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	89	FEB 14	89	MAY 09	91	AUG 07	88

WATER YEAR 2000 HIGHEST 88 AUG 07, 2000 LOWEST 91 MAY 09, 2000

BUENA VISTA COUNTY

424023095571401. Local number, 91-35-26 BCCC
LOCATION.--Lat 42°40'09", long 94°57'15", Hydrologic Unit 07100006, approximately 2.7 mi west and 0.5 mi north of the village of Varina. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: in sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in., depth 357 ft, cased tp 357 ft. screened interval 338-347 ft. Paleozoic rock present at 347 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by U.S.G.S. personnel.
DATUM.--Elevation of land-surface datum is 1,291 ft above sea level, from topographic map. Measuring point: Top of casing, 2.00 ft above land-surface datum.
REMARKS.--Well D-24.
PERIOD OF RECORD.--December 1978 to August 1994, November 1996 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.04 ft below land-surface datum, January 7,1980; lowest measured, 96.16 ft below land-surface datum, August 04, 1999.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	96.27	FEB 15	96.22	MAY 08	96.48	AUG 08	97.14

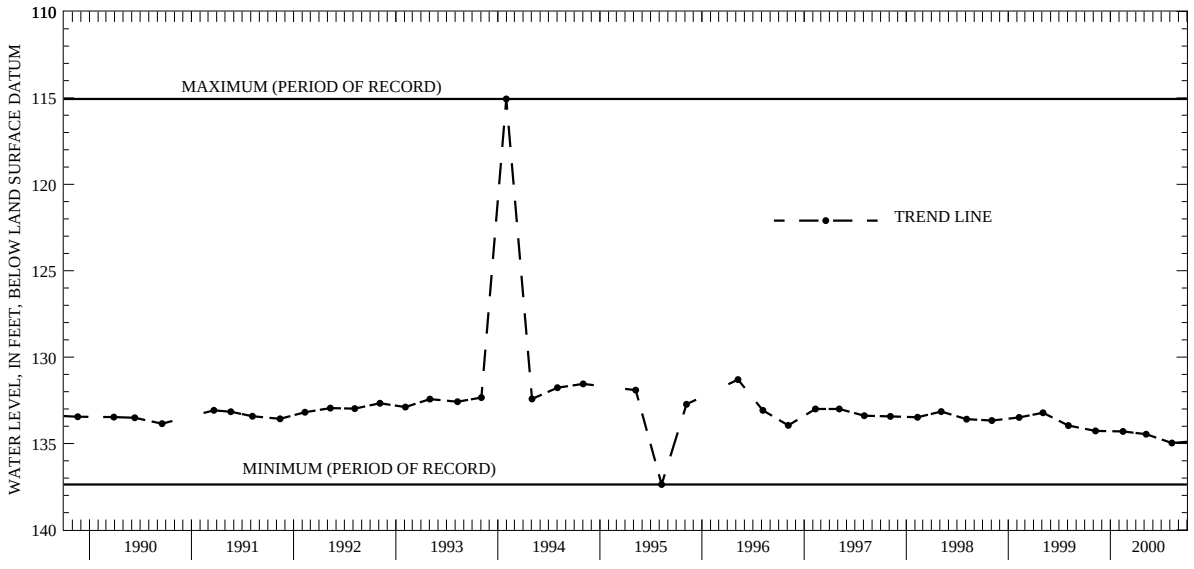
WATER YEAR 2000 HIGHEST 96.22 FEB 15, 2000 LOWEST 97.14 AUG 08, 2000

425233094545001. Local number, 93-35-13 ADAA.
LOCATION.--Lat 42°52'33", long 94°54'49", Hydrologic Unit 07100006, south of the Chicago, Rock Island and Pacific Railroad track, approximately 3.5 mi east and 0.75 mi north of the Town of Marathon. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 1.50 in., depth 381 ft, screened 350-360 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,330 ft above sea level, from topographic map. Measuring point: Top of casing, 3.00 ft above land-surface datum.
REMARKS.--Well D-36.
PERIOD OF RECORD.--February 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 115.06 ft below land-surface datum, January 31, 1994; lowest measured, 137.37 ft below land-surface datum, August 10, 1995.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	134.27	FEB 15	134.30	MAY 08	134.46	AUG 08	134.97

WATER YEAR 2000 HIGHEST 134.27 NOV 09, 1999 LOWEST 134.97 AUG 08, 2000



CALHOUN COUNTY

422812094383501. Local number, 88-32-01 BACD.
LOCATION.--Lat 42°28'12", long 94°38'35", Hydrologic Unit 07100006, located approximately 4.5 mi north of Rockwell City, in a trailer park at the south end of North Twin Lake in Twin Lakes State Park. Owner: Pauline Goins.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Dug unused water-table well, diameter 24 in., depth 35 ft, casing interval unknown.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,222 ft above sea level, from topographic map. Measuring point: Top of casing, 1.12 ft above land-surface datum.
REMARKS.--Twin Lakes (33F2) well.
PERIOD OF RECORD.--May 1989 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.86 ft below land-surface datum, April 19, 1991; lowest measured, 16.96 ft below land-surface datum, February 28, 1990.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	12.28	FEB 17	11.42	MAY 08	10.06	AUG 09	12.02

WATER YEAR 2000 HIGHEST 10.06 MAY 08, 2000 LOWEST 12.28 NOV 16, 1999

422339094375101. Local number, 88-33-36 ADAA.
LOCATION.-- Lat 42°23'46", long 94°37'56", Hydrologic Unit 07100006, located at the corner of main and 3rd street, three blocks south of U.S. Highway 20. Owner: City of Rockwell.
AQUIFER.-- Cambrian/Ordovician: Prairie du Chen Formation dolomite
WELL CHARACTERISTICS.-- Drilled public supply well, diameter 16 in., depth 1970 ft., casing interval 1592-1970? ft, gravel packed.
INSTRUMENTATION.-- Quarterly measurements with airline by USGS personnel.
DATUM.-- Elevation of land-surface datum is 1,227 ft above sea level, from topographic map.
REMARKS.--Rockwell City Well No. 4
PERIOD OF RECORD.--February 1997 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 199 ft below land-surface datum, Oct. 07, 1997 and Feb. 10, 1998; lowest measured, 296 ft below land-surface datum, August 09, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	269	FEB 17	282	MAY 08	280	AUG 09	296

WATER YEAR 2000 HIGHEST 269 NOV 16, 1999 LOWEST 296 AUG 09, 2000

CARROLL COUNTY

420230094455101. Local number, 84-34-35 DAAA.
LOCATION.--Lat 42°02'31", long 94°45'51", Hydrologic Unit 07100007, on the south side of county road, approximately 1 mi east of Arthur N. Neu County Airport. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Alluvial and glacial drift: Middle Raccoon River sand and gravel and glacial drift of Quaternary age.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 40 ft, screened 28-40 ft, gravel packed. Glacial till 31-36 ft and 37-40 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,185 ft above sea level, from topographic map. Measuring point: Top of casing, 2.35 ft above land-surface datum.
REMARKS.--Well WC-146.
PERIOD OF RECORD.--August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.50 feet below land-surface datum, May 10, 1995; lowest measured, 8.27 ft below land-surface datum, November 07, 1995.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	6.74	FEB 16	7.32	MAY 08	7.24	AUG 08	5.12

WATER YEAR 2000 HIGHEST 5.12 AUG 08, 2000 LOWEST 7.32 FEB 16, 2000

CARROLL COUNTY--Continued

420233094475901. Local number, 83-35-34 BCDC.
LOCATION.--Lat 42°02'33", long 94°47'59", Hydrologic Unit 07100007, approximately 3.5 mi west and 1.5 mi south of the Town of Glidden near the airport, west of County Road N-38. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 100 ft, screened 72-76 ft; gravel packed, open hole 99-100 ft. Pennsylvanian rock 80-100 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,225 ft above sea level, from topographic map. Measuring point: Top of casing, 2.85 ft above land-surface datum.
REMARKS.--Well WC-148.
PERIOD OF RECORD.--October 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.56 ft below land-surface datum, May 4, 1983; lowest measured, 23.72 ft below land-surface datum, November 07, 1995.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	22.12	FEB 16	22.86	MAY 08	23.22	AUG 08	22.88

WATER YEAR 2000 HIGHEST 22.12 NOV 10, 1999 LOWEST 23.22 MAY 08, 2000

420643094403701. Local number, 84-33-03 CADA.
LOCATION.--Lat 42°06'43", long 94°40'37", Hydrologic Unit 07100006, 3.5 mi north and 2.5 mi east of the Town of Glidden, on the west side of County Road N-50. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Alluvial: North Raccoon River sand and gravel of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 15 ft, screened 13-15 ft, gravel-packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,090 ft above sea level, from topographic map. Measuring point: Top of casing, 2.31 ft above land-surface datum.
REMARKS.--Well WC-131.
PERIOD OF RECORD.--September 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 7.06 ft below land-surface datum, July 10, 1990; lowest measured, 11.99 ft below land-surface datum, May 07, 1996.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	10.75	FEB 16	11.67	MAY 08	11.98	AUG 08	11.94

WATER YEAR 2000 HIGHEST 10.75 NOV 10, 1999 LOWEST 11.98 MAY 08, 2000

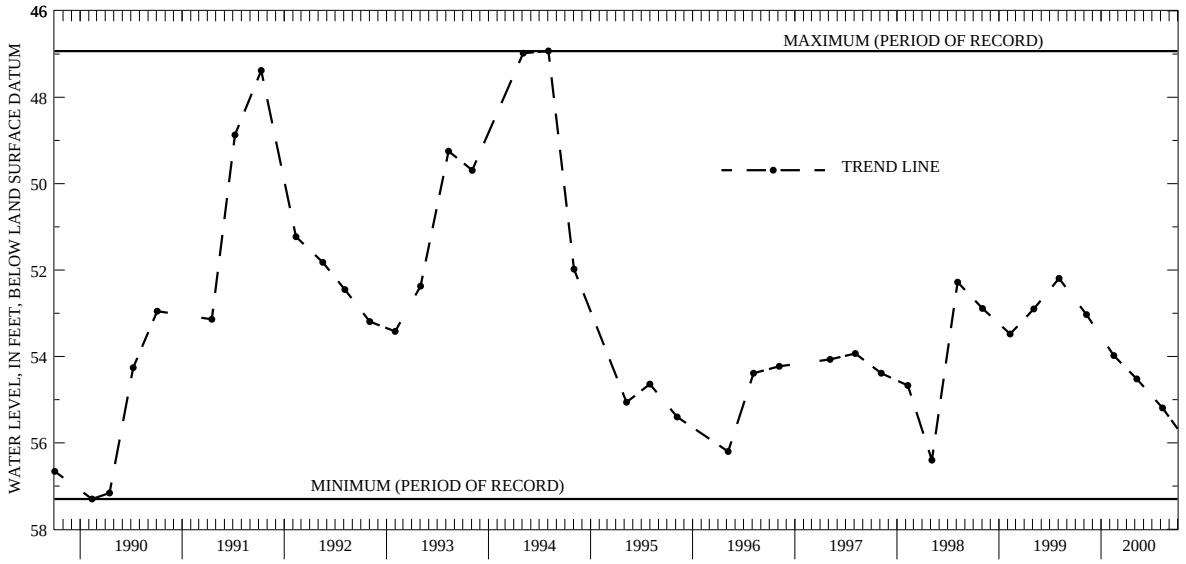
CARROLL COUNTY--Continued

420705094394501. Local number, 84-33-02 BDBA.
LOCATION.--Lat 42°07′05″, long 94°39′45″, Hydrologic Unit 07100006, 3.75 mi north and 3.25 mi east of the Town of Glidden, east of County Road N-50 and the Kendal Bridge. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 76 ft., screened 73-76 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,110 ft above sea level, from topographic map. Measuring point: Top of casing, 2.00 ft above land-surface datum.
REMARKS.--Well WC-132.
PERIOD OF RECORD.--September 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 46.93 ft below land-surface datum, August 3, 1994; lowest measured, 57.30 ft below land-surface datum, February 13, 1990.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	53.03	FEB 16	53.98	MAY 08	54.52	AUG 08	55.19

WATER YEAR 2000 HIGHEST 53.03 NOV 10, 1999 LOWEST 55.19 AUG 08, 2000



421058094582701. Local number, 85-35-07 CCCC.
LOCATION.--Lat 42°10′58″, long 94°58′29″, Hydrologic Unit 07100006, approximately 1 block north of Iowa Highway 217, next to the town maintenance building, Breda. Owner: Town of Breda.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled municipal artesian water well, diameter 10 in., depth 340 ft, screened 320-340 ft. Original depth 349 ft.
INSTRUMENTATION.--Quarterly measurement with chalked taped by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,362 ft above sea level, from topographic map. Measuring point: Vent pipe, 1.60 ft above land-surface datum.
REMARKS.--City of Breda Well No. 3, previously referred to as Town Well No. 2.
PERIOD OF RECORD.--March 1942 to August 1966, March 1968 to November 1971, June 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 179.65 ft below land-surface datum, August 08, 2000; lowest measured, 250.40 ft below land-surface datum, May 24, 1977.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	206.1	FEB 16	200.85	MAY 08	207.48	AUG 08	179.65

WATER YEAR 2000 HIGHEST 179.65 AUG 08, 2000 LOWEST 207.48 MAY 08, 2000

CASS COUNTY

411900094530101. Local number, 75-35-07 BBAB.
LOCATION.--Lat 41°19'00", long 94°55'30", Hydrologic Unit 10240003, approximately 3 mi north and 2.9 mi west of the Town of Cumberland, 2 mi south of County Road G-35 and 2.9 mi west of County Road N-28. Owner: Geological Survey Bureau/DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in., depth 218 ft, screened 189-209 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,295 ft above sea level, from topographic map. Measuring point: Top of casing, 2.35 ft above land-surface datum.
REMARKS.--Well SW-17.
PERIOD OF RECORD.--July 1986 to October 1987, February 1990 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 111.65 ft below land-surface datum, August 5, 1993; lowest measured, 125.75 ft below land-surface datum, March 14, 1990.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	116.65	MAY 11	118.87	AUG 09	119.30

WATER YEAR 2000 HIGHEST 116.65 NOV 10, 1999 LOWEST 119.30 AUG 09, 2000

412832095033501. Local number, 77-37-13 BBBB.
LOCATION.--Lat 41°28'32", long 95°03'35", Hydrologic Unit 10240003, approximately 1 mi south of U.S. Interstate 80, and east of Highway 173. Approximately 2 mi north and 3 mi east of the Town of Marne. Owner: Geological Survey Bureau/DNR and U.S. Geological Survey.
AQUIFER.--Pennsylvanian: limestone of Pennsylvanian age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 2 in., depth 201 ft, screened 196-201 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,298 ft above sea level, from topographic map. Measuring point: Top of casing, 2.20 ft above land-surface datum.
REMARKS.--Well SW-18.
PERIOD OF RECORD.--July 1986 to October 1987, February 1990 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 113.50 ft below land-surface datum, November 4, 1993; lowest measured, 128.40 ft below land-surface datum, March 14, 1990.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	117.05	FEB 24	119.00	AUG 07	121.12	MAY 10	120.10

WATER YEAR 2000 HIGHEST 117.05 NOV 08, 1999 NOV 08, 1999 LOWEST 121.12 AUG 07, 2000

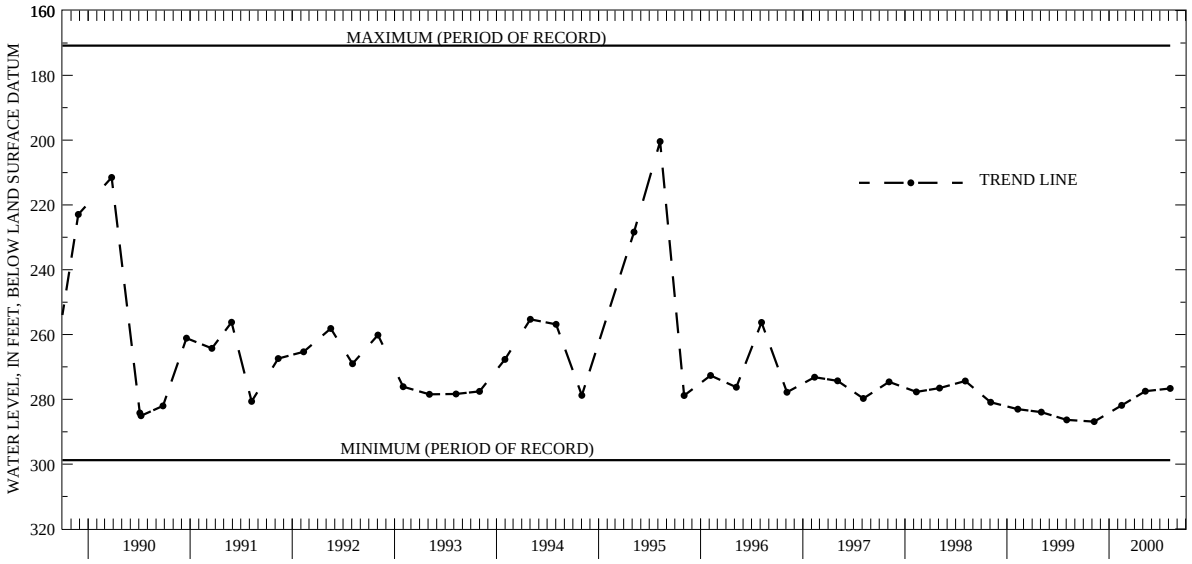
CERRO GORDO COUNTY

430757093131801. Local number,96-20-17 DAAD.
LOCATION.--Lat 43°07'57", long 93°13'18", Hydrologic Unit 07080203, in southwest Mason City, 1 mi west of Highway 65 and south of the Iowa Terminal Rail-yard. Owner: AMPI Creamery (formerly State Brand Creameries).
AQUIFER.--Cambrian-Ordovician: sandstone of Late Cambrian age and sandy dolomite of Early Ordovician age.
WELL CHARACTERISTICS.--Unused drilled industrial artesian water well, diameter 10 to 6 in. from 0-1080 ft, depth 1,336 ft, open hole from 1,080-1,336 ft.
INSTRUMENTATION.--Quarterly measurement with electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,162 ft above sea level, from topographic map. Measuring point: Top of casing, 1.50 ft above land-surface datum.
REMARKS.--State Brand Creameries Well #1. Records for 1968-1971 and 1973-1989 are unpublished and available in the files of the Iowa District Office.
PERIOD OF RECORD.--October 1968 to March 1971, and March 1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 170.80 ft below land-surface datum, August 4, 1977; lowest measured, 298.80 ft below land-surface datum, October 22, 1968.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	286.88	FEB 15	281.85	MAY 10	277.52	AUG 07	276.65

WATER YEAR 2000 HIGHEST 276.65 AUG 07, 2000 LOWEST 286.88 NOV 09, 1999



430806093164501. Local number, 96-21-13 BCCB.
LOCATION.--Lat 43°08'04", long 93°16'46", Hydrologic Unit 07080203, south of the County Home, just north of Iowa Highway 106, east of the City of Clear Lake. Owner: Mason City and Clear Lake Railroad.
AQUIFER.--Devonian: Cedar Valley limestone of Middle Devonian age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 5 in., depth 198 ft. Casing information is not available.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,165 ft above sea level, from topographic map. Measuring point: Top of well curb, 1.30 ft above land-surface datum.
PERIOD OF RECORD.--November 1940 to August 1971, March 1973 to current year.
REMARKS:--Mason City and Clear Lake Railroad well.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.44 ft below land-surface datum, February 12, 1982; lowest measured, 17.26 ft below land-surface datum, November 18, 1955.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	6.71	FEB 15	7.45	MAY 10	6.88	AUG 07	6.16

WATER YEAR 2000 HIGHEST 6.16 AUG 07, 2000 LOWEST 7.45 FEB 15, 2000

CHEROKEE COUNTY

423833095365701. Local number, 90-40-06 BDCD.
LOCATION.--Lat 42°38′33″, long 95°36′57″, Hydrologic Unit 10230003, approximately 3.1 mi west of U.S. Highway 59 and 0.55 mi north of Iowa Highway 31 along the Illinois Central Railroad track. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 1.25 in., depth 253 ft, sandpoint 252-253 ft.
INSTRUMENTATION.--Quarterly measurements with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,182 ft above sea level, from topographic map. Measuring point: Top of casing, 3.93 ft above land-surface datum.
REMARKS.--Well D-6.
PERIOD OF RECORD.--December 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 28.38 ft below land-surface datum, August 27, 1983; lowest measured, 40.85 ft below land-surface datum, January 15, 1991.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	33.30	FEB 22	33.55	MAY 09	34.61	AUG 07	35.65

WATER YEAR 2000 HIGHEST 33.30 NOV 08, 1999 LOWEST 35.65 AUG 07, 2000

424132095480211. Local number, 91-42-16 DDDD11.
LOCATION.--Lat 42°41′32″, long 95°48′02″, Hydrologic Unit 10230004, approximately 2 mi north of the Village of Fielding at the junction of County Roads L-36 and C-44. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 390 ft, screened 386-390 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,320 ft above sea level, from topographic map. Measuring point: Top of casing, 1.50 ft above land-surface datum.
REMARKS.--Well D-11.
PERIOD OF RECORD.--March 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 141.67 ft below land-surface datum, May 5, 1993; lowest measured, 156.77 ft below land-surface datum, August 07, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	156.01	FEB 23	155.95	MAY 09	156.45	AUG 07	156.77

WATER YEAR 2000 HIGHEST 155.95 FEB 23, 2000 LOWEST 156.77 AUG 07, 2000

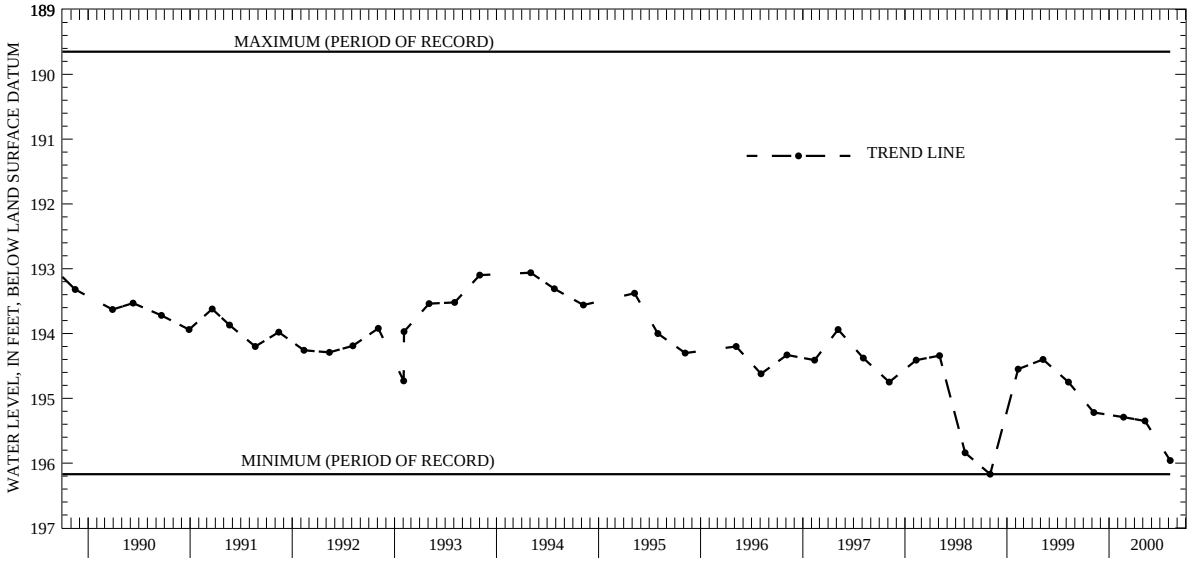
CHEROKEE COUNTY--Continued

424348095231601. Local number, 91-39-01 ADAD1.
LOCATION.--Lat 42°43'48", long 95°23'15", Hydrologic Unit 10230005, approximately 2 mi east and 0.5 mi north of the Town of Aurelia at the Larson Lake County Park. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Cambrian-Ordovician: sandstone of Cambrian age and dolomite of Ordovician age.
WELL CHARACTERISITICS.--Drilled observation artesian water well, diameter 6 in. to 236 ft, 5 in. to 486 ft, 2 in. to 1,126 ft, depth 1,545 ft, open hole 1,126 to 1,545 ft.
INSTRUMENTATION.--Quarterly measurement with electric line or chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,370 ft above sea level, from topographic map. Measuring point: Top of casing, 1.55 ft above land-surface datum.
REMARKS.--Well D-28.
PERIOD OF RECORD.--September 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 189.65 ft below land-surface datum, December 19, 1984; lowest measured, 196.17 ft below land-surface datum, November 02, 1998.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATE LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	195.22	FEB 22	195.29	MAY 09	195.35	AUG 07	195.96

WATER YEAR 2000 HIGHEST 195.22 NOV 08, 1999 LOWEST 195.96 AUG 07, 2000



424348095231602. Local number, 91-39-01 ADAD2.
LOCATION.--Lat 42°43'48", long 95°23'15", Hydrologic Unit 10230005, approximately 2 mi east and 0.5 mi north of the Town of Aurelia at the Larson Lake County Park. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 4 in., depth 340 ft, screened 235-240 ft.
INSTRUMENTATION.--Quarterly measurement with electric line or chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,370 ft above sea level, from topographic map. Measuring point: Top of casing, 1.75 ft above land-surface datum.
REMARKS.--Well D-29.
PERIOD OF RECORD.--September 1979 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 188.65 ft below land-surface datum, April 20, 1988; lowest measured, 194.15 ft below land-surface datum, August 24, 1982.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	191.98	FEB 22	192.52	MAY 09	192.51	AUG 07	192.98

WATER YEAR 2000 HIGHEST 191.98 NOV 08, 1999 LOWEST 192.98 AUG 07, 2000

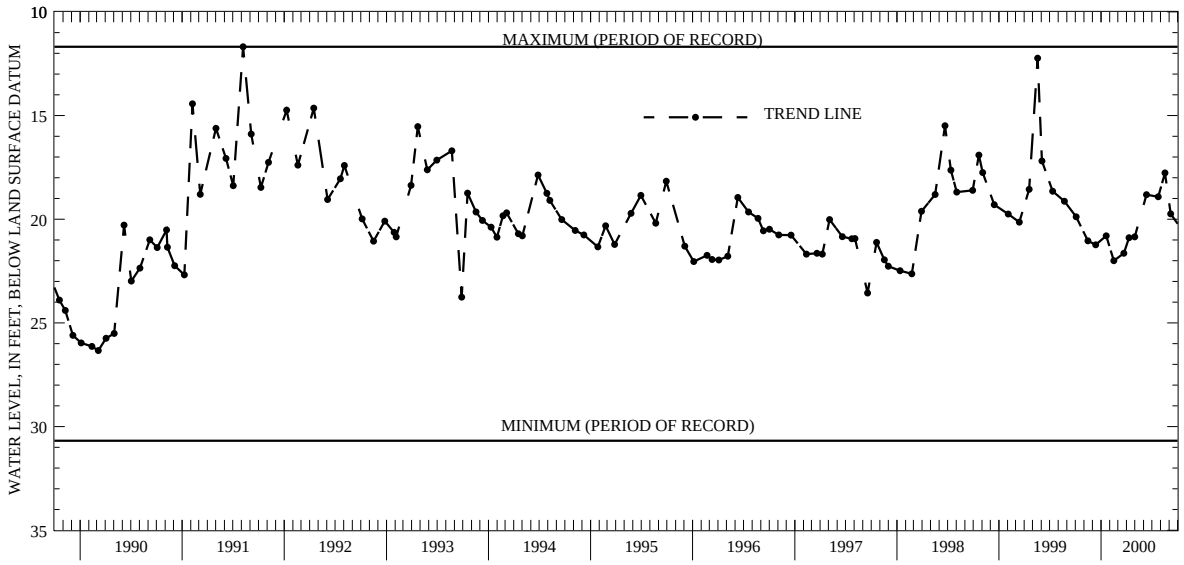
CLAYTON COUNTY

4240230912912O1. Local number, 91-05-30 BBBB.
LOCATION.--Lat 42°40'23", long 91°29'12", Hydrologic Unit 07060006, 5 mi northwest of the City of Edgewood, or 2 mi northwest of the junction of Iowa Highways 3 and 13, east of Strawberry Point. Owner: Harold Knight.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Dug unused water-table well, diameter 36 in., depth 36 ft. Casing information not available.
INSTRUMENTATION.--Intermittent measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,233 ft above sea level, from topographic map. Measuring point: Hole in pump base at land-surface datum.
PERIOD OF RECORD.--June 1957 to current year.
REMARKS:--Harold Knight well.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.68 ft below land-surface datum, August 7, 1991; lowest measured, 30.68 ft below land-surface datum, January 12, 1959.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 04	19.88	JAN 20	20.80	APR 10	20.89	JUL 24	18.92
NOV 15	21.04	FEB 16	22.00	MAY 01	20.85	AUG 17	17.77
DEC 13	21.23	MAR 23	21.64	JUN 12	18.82	SEP 06	19.74

WATER YEAR 2000 HIGHEST 18.82 JUN 12, 2000 LOWEST 22.00 FEB 16, 2000



425433091285002. Local number, 94-05-31 DACC2.
LOCATION.--Lat 42°54'38", long 91°28'25", Hydrologic Unit 07060004, located at entrance to Big Spring Fish Hatchery 4.5 mi west and 1.25 mi south of the Town of St. Olaf. Owner: Geological Survey Bureau, DNR, and U.S. Geological Survey.
AQUIFER.--Cambrian-Ordovician: Galena dolomite of Middle Ordovician age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 5 in., depth 85 ft, open hole 61-85 ft.
INSTRUMENTATION.--Intermittent measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 855 ft above sea level, from topographic map. Measuring point: Top of recorder platform, 2.23 ft above land-surface datum.
REMARKS.--Well BS1-B. Historical water-level data published in OFR 91-63 and OFR 92-67.
PERIOD OF RECORD.--December 1988 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 0.62 ft above land-surface datum, August 20, 1993 (revised); lowest water level recorded 13.37 ft below land-surface datum, February 15, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	13.18	FEB 15	13.37	MAY 01	5.25	AUG 16	5.44

WATER YEAR 2000 HIGHEST 5.25 MAY 01, 2000 LOWEST 13.37 FEB 15, 2000

CLAYTON COUNTY--Continued

430156091182901. Local number, 95-04-22 BCBD.
LOCATION.--Lat 43°01'56", long 91°18'29", Hydrologic Unit 07060001, approximately 2 mi north of the junction of U.S. Highway 18 and U.S. Highway 52-Iowa Highway 13, near Spook Cave. Owner: Gerald Mielke.
AQUIFER.--Cambrian-Ordovician: St. Peter sandstone of Middle Ordovician age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 6 in., depth 49 ft. Casing information not available.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 940 ft above sea level, from topographic map. Measuring point: Top of casing, 1.00 ft above land-surface datum.
PERIOD OF RECORD.--October 1957 to current year.
REMARKS.--USGS 22E1
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 13.98 ft below land-surface datum, December 7, 1983; lowest measured, 27.88 ft below land-surface datum, March 4, 1968.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 15	24.05	FEB 15	24.11	MAY 02	23.18	AUG 16	23.37

WATER YEAR 2000 HIGHEST 23.18 MAY 02, 2000 LOWEST 24.11 FEB 15, 2000

425736091260303. Local Number 94-05-03 A.
Location. --Lat 42°57'36", long 91°26'03", Hydrologic Unit 07060004, approximately 100 feet south of Robert's Creek on County Highway X16
Aquifer.--Cambrian-Ordovician: St. Peter Sandstone
Well Characteristics. --Drilled observation well, diameter 4 in.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
Datum. -- Elevation of land-surface datum is 1030 ft above sea level, from topographic map. Measuring point: Top of casing, 2.50 ft above land-surface datum.
PERIOD OF RECORD.--January 1989 to April 1989, May 1997 to current year.
REMARKS.--BS2-G
EXTREMES OF PERIOD OF RECORD.--Highest water level measured, 182.82 ft below land surface datum, August 25, 1999, lowest measured, 185.57 ft below land-surface datum, May 01, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	183.91	MAY 01	185.57	AUG 16	184.65
FEB 15	184.33	10	185.57		

WATER YEAR 2000 HIGHEST 183.91 NOV 16, 1999 LOWEST 185.57 MAY 01, 2000

CLINTON COUNTY

414921090450401. Local number 81-02E-17 ACA.
LOCATION.--Lat 41°49'32", long 90°45'08", Hydrologic Unit 07080103, located below water tower near sub-station in the Town of Claims. Owner: Town of Calamus.
AQUIFER.--Silurian
WELL CHARACTERISTICS.--Drilled pumping well, diameter 12 in. to 90 ft, 10 in. to 190 ft, depth 278 ft.
INSTRUMENTATION.--Quarterly measurements with airline by USGS personnel.
DATUM.--Elevation of land-surface datum is 712 feet above sea level, by topographic map.
PERIOD OF RECORD.--August 1997 to current year.
REMARKS.--Calamus No.1
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 43 feet below land-surface datum, August 06, 1997; lowest measured, 97 ft below land-surface datum, May 15, 2000 and August 15, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	47	FEB 24	47	MAY 15	97.0	AUG 15	97

WATER YEAR 2000 HIGHEST 47 NOV 03, 1999 FEB 24, 2000 LOWEST 97.0 MAY 15, 2000 AUG 15, 2000

414806090212301. Local number 81-05E-22 DDD.
LOCATION.--Lat 41°48'03", long 90°21'26", Hydrologic Unit 07080101, approximately 1 mile south of the intersection of U.S. Interstate 30 and county road 36, on the northwest corner of intersection. Owner: Town of Low Moor.
AQUIFER.--Silurian, Alexanderian Series
WELL CHARACTERISTICS.--Drilled public-use well, diameter 12 in. to 62 ft, 8 in. to 62 ft, depth 322 ft, open hole from 85-322 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 651 feet above sea level, by topographic map.
PERIOD OF RECORD.--August 1997 to current year
REMARKS.--Low Moor No.2
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 19.99 feet below land-surface datum, February 09, 1999; lowest measured, 30.50 ft below land-surface datum, May 03, 1999.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	23.04	FEB 22	23.15	MAY 17	22.72	AUG 16	39.58

WATER YEAR 2000 HIGHEST 22.72 MAY 17, 2000 LOWEST 39.58 AUG 16, 2000

CRAWFORD COUNTY

415514095312001. Local number, 82-40-17 AABB.
LOCATION.--Lat 41°55'14", long 95°31'20", Hydrologic Unit 10230007, approximately 1.5 mi west of the Town of Dow City on the south side of U.S. Highway 30. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 141 ft, screened 123-141 ft, gravel-packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,150 ft above sea level, from topographic map. Measuring point: Top of casing, 2.50 ft above land-surface datum.
REMARKS.--Well WC-9.
PERIOD OF RECORD.--June 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 38.15 ft below land-surface datum, May 3, 1983; lowest measured, 43.86 ft below land-surface datum, June 11, 1981.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	42.38	FEB 22	42.33	MAY 09	42.95	AUG 07	43.10

WATER YEAR 2000 HIGHEST 42.33 FEB 22, 2000 LOWEST 43.10 AUG 07, 2000

420608095111701. Local number, 84-37-08 BCCB.
LOCATION.--Lat 42°06'08", long 95°11'14", Hydrologic Unit 10230007, approximately 3 mi north of the Town of Vail on the east side of County Road E-25. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Fremont buried channel: sand and gravel of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 541 ft, screened 527-541 ft, gravel-packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,380 ft above sea level, from topographic map. Measuring point: Top of casing, 1.65 ft above land-surface datum.
REMARKS.--Well WC-226.
PERIOD OF RECORD.--August 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 208.35 ft below land-surface datum, July 17, 1988; lowest measured, 217.70 ft below land-surface datum, February 11, 1999.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	213.82	FEB 22	213.46	MAY 10	213.58	AUG 07	214.12

WATER YEAR 2000 HIGHEST 213.46 FEB 22, 2000 LOWEST 214.12 AUG 07, 2000

421005095342801. Local number, 85-41-13 CCCC.
LOCATION.--Lat 42°10'05", long 95°34'28", Hydrologic Unit 10230001, approximately 7 mi west of the Town of Schleswig, northeast of the junction of County Roads L-51 and E-16. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota and glacial drift: sandstone of Cretaceous age and sand and gravel of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 361 ft, screened 307-322 ft, gravel-packed. Open to Dakota 320-361 ft.
INSTRUMENTATION.--Quarterly measurement with electric line or chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,375 ft above sea level, from topographic map. Measuring point: Top of casing, 3.49 ft above land-surface datum.
REMARKS.--Well WC-6.
PERIOD OF RECORD.--May 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 244.23 ft below land-surface datum, July 28, 1981; lowest measured, 249.05 ft below land-surface datum, February 5, 1982.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	247.54	FEB 22	247.30	MAY 10	247.46	AUG 07	248.31

WATER YEAR 2000 HIGHEST 247.30 FEB 22, 2000 LOWEST 248.31 AUG 07, 2000

CRAWFORD COUNTY--Continued

421031095225601. Local number, 85-39-16 ADDD1.
LOCATION.--Lat 42°10'31", long 95°22'56", Hydrologic Unit 10230007, approximately 2.5 mi east and 0.5 mi north of the Town of Schleswig on the west side of County Road M-27. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 5 in., depth 351 ft, screened 315-330 ft, gravel-packed. Open to Pennsylvanian rock 344-351 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,370 ft above sea level, from topographic map. Measuring point: Top of casing, 3.14 ft above land-surface datum.
REMARKS.--Well WC-7A.
PERIOD OF RECORD.--June 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 232.61 ft below land-surface datum, October 7, 1986; lowest measured, 239.65 ft below land-surface datum, August 2, 1995.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	235.44	FEB 22	235.50	MAY 10	235.63	AUG 07	235.89

WATER YEAR 2000 HIGHEST 235.44 NOV 08, 1999 LOWEST 235.89 AUG 07, 2000

421031095225602. Local number, 85-39-16 ADDD2.
LOCATION.--Lat 42°10'31", long 95°22'56", Hydrologic Unit 10230007, approximately 2.5 mi east and 0.5 mi north of the Town of Schleswig on the west side of County Road M-27. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Mississippian: limestone of Mississippian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 561 ft, screened 543-561 ft, gravel-packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,370 ft above sea level, from topographic map. Measuring point: Top of casing, 3.14 ft above land-surface datum.
REMARKS.--Well WC-7B.
PERIOD OF RECORD.--June 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 296.63 ft below land-surface datum, May 07, 1996, lowest measured, 307.64 ft below land-surface datum, October 4, 1983.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	WATER DATE	LEVEL	WATER DATE	LEVEL	WATER DATE	LEVEL
NOV 03	304.81	FEB 11	304.47	MAY 10	304.25	AUG 09	304.51

WATER YEAR 2000 HIGHEST 304.25 MAY 10, 1999 LOWEST 304.81 NOV 03, 1998

CRAWFORD COUNTY--Continued

421106095125501. Local number, 85-38-12 DCBA.
LOCATION.--Lat 42°11'06", long 95°12'55", Hydrologic Unit 10230007, approximately 5.5 mi east of the Town of Kiron on the south side of County Road E-16 near the Town of Boyer. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Fremont buried channel: sand and gravel of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 341 ft, screened 300-310 ft, open hole from 315-341 ft., gravel packed. Open to Pennsylvanian limestone and shale 331-341 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,225 ft above sea level, from topographic map. Measuring point: Top of casing, 3.70 ft above land-surface datum.
REMARKS.--Well WC-14.
PERIOD OF RECORD.--July 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.---Highest water level measured, 62.76 ft below land-surface datum, April 16, 1987; lowest measured, 67.29 ft below land-surface datum, August 07, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	66.97	FEB 22	67.00	MAY 10	66.82	AUG 07	67.29

WATER YEAR 2000 HIGHEST 66.82 MAY 10, 2000 LOWEST 67.29 AUG 07, 2000

DALLAS COUNTY

413613093530401. Local number, 79-26-33 CDBA.
LOCATION.-- Lat 40°36'13", long 93°53'05", Hydrologic Unit 07100006, approximately 0.5 miles south of the Town of Waukee on county road R-22, 100 ft east of roadway, well located inside 48 in concrete culvert. Owner: Town of Waukee.
AQUIFER.-- Cambrian/Ordovician, Jordan sandstone.
WEL CHARACTERISTICS.-- Drilled public use well, diameter 16 in., depth 2730 ft, casing interval unknown, gravel packed.
INSTRUMENTATION.-- Quarterly measurement with airline by USGS personnel.
DATUM.-- Elevation of land-surface datum is 1012 ft above sea level, from topographic map.
REMARKS.-- Waukee Well No. 2
PERIOD OF RECORD.--May 1996 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 389 ft below land-surface datum, May 9, 1997; lowest measured 428 ft below land-surface datum, February 09,1998.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	402	FEB 16	398	MAY 11	397	AUG 08	403

WATER YEAR 2000 HIGHEST 397 MAY 11, 2000 LOWEST 403 AUG 08, 2000

DECATUR COUNTY

404422093445602. Local number, 69-25-29 DDDD
LOCATION.-- Lat 40°44'24", long 93°44'58", Hydrologic Unit 10280102, approximately 7 mi east of Interstate 35 in the City of Leon, within open field between Iowa Highway 2 and NW 2nd Ave. on NW School St. Owner: City of Leon.
AQUIFER.-- Cambrian/Ordovician: Jordan sandstone.
WELL CHARCTREISTICS.--Drilled public use well, diameter 8 in, depth 2853 ft, screened 2740-2790 ft, gravel packed.
INSTRUMENTATION.-- Quarterly measurement with chalked tape by USGS personnel.
DATUM.-- Elevation of land-surface datum is 1105.60 ft above sea level, from levels. MEasuring point: Top of casing, 3.70 ft above land-surface datum.
REMARKS.-- Leon City Well No. 4
PERIOD OF RECORD.--May 1996 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 439.80 ft below land-surface datum, May 30, 1996; lowest measured, 443.10 ft below land-surface datum, May 11, 2000 and August 09, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	442.99	FEB 24	442.97	MAY 11	443.1	AUG 09	443.1

WATER YEAR 2000 HIGHEST 442.99 NOV 10, 1999 LOWEST 443.10 MAY 11, 2000 AUG 09, 2000

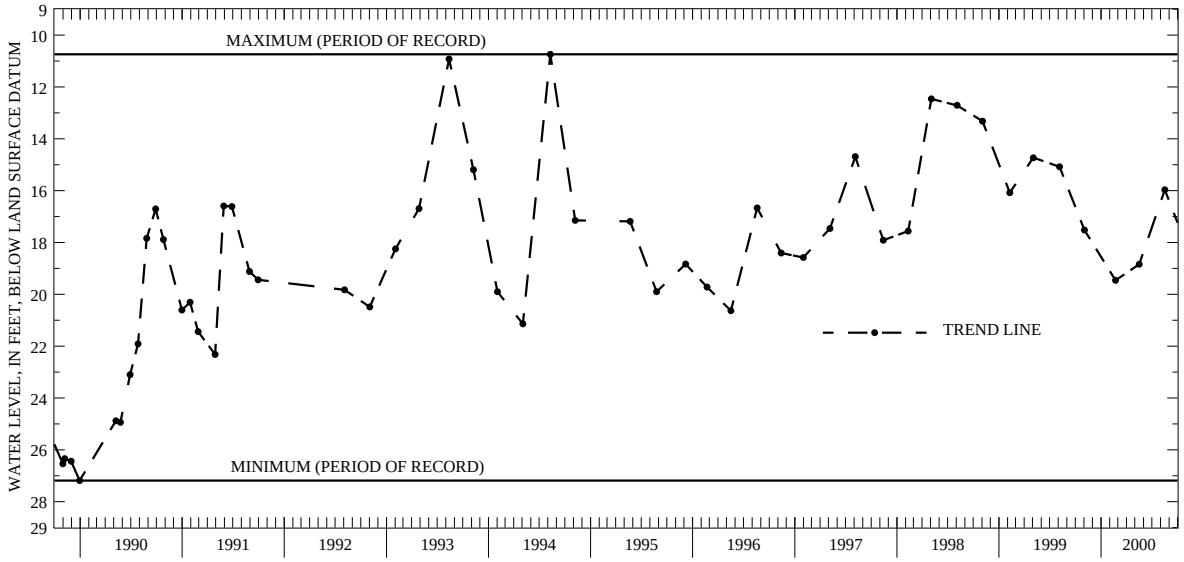
DELAWARE COUNTY

422029091144302. Local number, 87-03-18 CBCD2.
LOCATION.--Lat 42°20'37", long 91°14'47", Hydrologic Unit 07060006, behind the municipal utilities building in downtown Hopkinton. Owner: Town of Hopkinton.
AQUIFER.--Silurian: dolomite of Silurian age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 8 in., depth 86 ft. Casing information not available.
INSTRUMENTATION.--Quarterly measurement with chalked tape by observer.
DATUM.--Elevation of land-surface datum is 863 ft above sea level, from topographic map. Measuring point: Nipple welded to plate on top of casing, 2.46 ft above land- surface datum.
REMARKS.--Hopkinton #1 well. Water levels affected by pumping of a nearby well.
PERIOD OF RECORD.--December 1984 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 10.74 ft below land-surface datum, August 10, 1994; lowest measured, 27.19 ft below land-surface datum, December 30, 1989.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	17.52	FEB 22	19.46	MAY 17	18.84	AUG 16	15.97

WATER YEAR 2000 HIGHEST 15.97 AUG 16, 2000 LOWEST 19.46 FEB 22, 2000



DUBUQUE COUNTY

422901090471901. Local number, 89-01-36 ABC.
LOCATION.--Lat 42°28'55", long 90°47'18", Hydrologic Unit 07060005, located within white shed northeast of Amoco plant main office on Old Fairground Road, 4 mi east of Centralia on County Highway 966. Owner: Julien Standard Oil.
AQUIFER.--Cambrian/Ordovician.
WELL CHARACTERISTICS.-- Drilled observation artesian water well, diameter 13 in., depth 1230 ft, casing open 499-1230 ft, gravel packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 899.00 ft above sea level, from levels. Measuring point: Top of vent cap, 2.90 above land-surface datum.
REMARKS.--Standard Oil No.2
PERIOD OF RECORD.--January 1997 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 240.38 ft below land-surface datum, January 31, 1997; lowest measured, 248.02 ft below land-surface datum, May 04, 1999.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	241.12	FEB 22	242.32	MAY 17	242.99	AUG 16	242.98

WATER YEAR 2000 HIGHEST 241.12 NOV 03, 1999 LOWEST 242.99 MAY 17, 2000

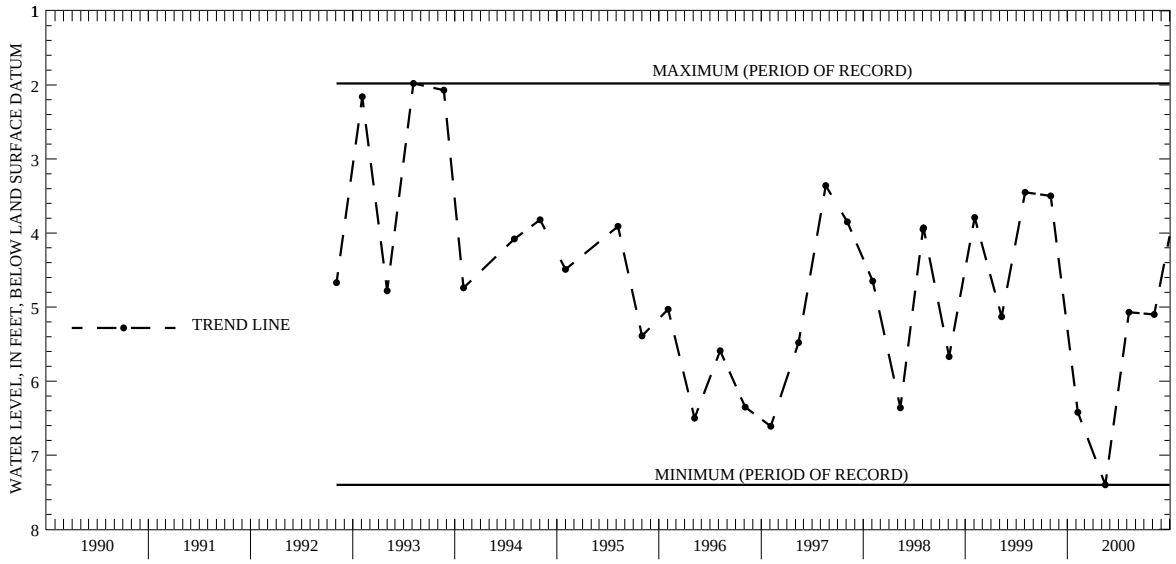
FLOYD COUNTY

430200092435301. Local number, 95-16-22 BCA1.
LOCATION.--Lat 43°02'02', long 92°43'55", Hydrologic Unit 07080201, approximately 2 mi southwest of Charles City, 1.7 mi south of Highway 14 on County Road T47. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in., depth 29 ft, screened 10-29 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,105 ft above sea level, from topographic map. Measuring point: Top of casing, 1.92 ft above land-surface datum.
REMARKS.--Well FM-3 (T).
PERIOD OF RECORD.--August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.98 ft above land-surface datum, May 6, 1993; lowest measured, 7.40 ft below land-surface datum, February 14, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	6.42	FEB 14	7.40	MAY 09	5.07	AUG 07	5.10

WATER YEAR 2000 HIGHEST 5.07 MAY 09, 2000 LOWEST 7.40 FEB 14, 2000



430200092435303. Local number, 95-16-22 BCA3.
LOCATION.--Lat 43°02'02', long 92°43'55", Hydrologic Unit 07080201, approximately 2 mi southwest of Charles City, 1.7 mi south of Highway 14 on County Road T47. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Devonian: dolomite of Devonian age.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1 in., depth 103 ft, screened 91-103 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,105 ft above sea level, from topographic map. Measuring point: Top of casing, 2.94 ft above land-surface datum.
REMARKS.--Well FM-3 (1).
PERIOD OF RECORD.--August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 36.01 ft above land-surface datum, November 01, 1994; lowest measured, 82.06 ft below land-surface datum, February 6, 1996.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	74.43	FEB 14	81.92	MAY 09	79.16	AUG 07	72.71

WATER YEAR 2000 HIGHEST 72.71 AUG 07, 2000 LOWEST 81.92 FEB 14, 2000

FLOYD COUNTY--Continued

430200092435304. Local number, 95-16-22 BCA4.
LOCATION.--Lat 43°02′02', long 92°43′55″, Hydrologic Unit 07080201, approximately 2 mi southwest of Charles City, 1.7 mi south of Highway 14 on County Road T47. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Devonian: dolomite of Devonian age.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.5 in., depth 207 ft, screened 167-207 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,105 ft above sea level, from topographic map. Measuring point: Top of casing, 2.77 ft above land-surface datum.
REMARKS.--Well FM-3 (2).
PERIOD OF RECORD.--August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 56.05 ft above land-surface datum, August 23, 1993; lowest measured, 88.43 ft below land-surface datum, February 6, 1996.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	79.43	FEB 14	88.03	MAY 09	84.74	AUG 07	77.20

WATER YEAR 2000 HIGHEST 77.20 AUG 07, 2000 LOWEST 88.03 FEB 14, 2000

430200092435305. Local number, 95-16-22 BCA5.
LOCATION.--Lat 43°02′02', long 92°43′55″, Hydrologic Unit 07080201, approximately 2 mi southwest of Charles City, 1.7 mi south of Highway 14 on County Road T47. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Devonian: dolomite of Devonian age.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.5 in., depth 297 ft, screened 257-297 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,105 ft above sea level, from topographic map. Measuring point: Top of casing, 2.73 ft above land-surface datum.
REMARKS.--Well FM-3 (3).
PERIOD OF RECORD.--August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 55.21 ft above land-surface datum, August 23, 1993; lowest measured, 82.61 ft below land-surface datum, February 6, 1996.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	74.33	FEB 14	81.77	MAY 09	79.21	AUG 07	72.57

WATER YEAR 2000 HIGHEST 72.57 AUG 07, 2000 LOWEST 81.77 FEB 14, 2000

FLOYD COUNTY-Continued

430200092435306. Local number, 95-16-22 BCA6.
LOCATION.--Lat 43°02′02', long 92°43′55″, Hydrologic Unit 07080201, approximately 2 mi southwest of Charles City, 1.7 mi south of Highway 14 on County Road T47. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Devonian: dolomite of Devonian age.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.5 in., depth 360 ft, screened 340-360 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,105 ft above sea level, from topographic map. Measuring point: Top of casing, 2.53 ft above land-surface datum.
REMARKS.--Well FM-3 (4).
PERIOD OF RECORD.--August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 56.23 ft above land-surface datum, August 23, 1993; lowest measured, 88.44 ft below land-surface datum, February 6, 1996.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	79.44	FEB 14	88.07	MAY 09	84.83	AUG 07	77.17

WATER YEAR 2000 HIGHEST 77.17 AUG 07, 2000 LOWEST 88.07 FEB 14, 2000

430800092540301. Local number, 96-17-18 CDBA.
LOACATION.--Lat 43°07′47″, long 92°54′06″, Hydrologic Unit 07080202, on the north side of city street approximately 0.5 miles east of county road T-26 in the Town of Rude. Owner: Town of Rude
AQUIFER.-- Cambrian/Ordovician: Jordan sandstone and Prairie du Chien Formation dolomite.
WELL CHARACTERISTICS.--Drilled public well, diameter 8 in., depth 1290 ft, screened 846-855 ft, gravel-packed.
INSTRUMENTATION.-- Quarterly measurement by airline by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,123 ft above sea level, by altimeter.
REMARKS.--Rudd Town Well No.2
PERIOD OF RECORD.-- February 1997 to current year.
EXTREMES FOR PERIOD OF RECORD.-- Highest water level measured, 161 ft below land surface datum, August 5, 1997; lowest measured 198 ft below land-surface datum, August 03, 1999.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	188	FEB 14	189	MAY 09	187	AUG 07	196

WATER YEAR 2000 HIGHEST 187 MAY 09, 2000 LOWEST 196 AUG 07, 2000

GREENE COUNTY

420116094363001. Local number, 83-32-08 BBBC.
LOCATION.--Lat 42°01'16", long 94°36'33", Hydrologic Unit 07100006, approximately 3 mi west of the Town of Scranton, south of U.S. Highway 30. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Hardin Creek buried channel: sand and gravel of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 181 ft, screened 161-171 ft, gravel-packed. Open to Pennsylvanian shale and siltstone 171-181 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,135 ft above sea level, from topographic map. Measuring point: Top of casing, 2.20 ft above land-surface datum.
REMARKS.--Well WC-229.
PERIOD OF RECORD.--September 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 39.44 ft below land-surface datum, August 19, 1993; lowest measured, 51.03 ft below land-surface datum, July 8, 1985.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	41.20	FEB 16	41.13	MAY 08	42.30	AUG 08	45.55

WATER YEAR 2000 HIGHEST 41.13 FEB 16, 2000 LOWEST 45.55 AUG 08, 2000

420146094272301. Local number, 83-31-04 ADDB.
LOCATION.--Lat 42°01'47", long 94°27'23", Hydrologic Unit 07100006, approximately 4 mi west of the City of Jefferson and 0.5 mi south of U.S. Highway 30, on the west side of County Road P-14. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 54 ft, screened 40-51 ft, gravel-packed. Open to Pennsylvanian shale 51-54 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,000 ft above sea level, from topographic map. Measuring point: Top of casing, 2.10 ft above land-surface datum.
REMARKS.--Well WC-120.
PERIOD OF RECORD.--August 1982 to July 1987, February 1990 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.39 ft below land-surface datum, July 5, 1983; lowest measured, 19.57 ft below land-surface datum, November 06, 1997.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	18.85	FEB 16	19.09	MAY 08	19.28	AUG 08	19.43

WATER YEAR 2000 HIGHEST 18.85 NOV 10, 1999 LOWEST 19.43 AUG 08, 2000

415449094155601. Local number, 82-29-18 DBAA.
LOCATION.--Lat 41°54'49", long 94°15'56", Hydrologic Unit 07100006, approximately 3.25 mi west and 1.5 mi south of the Town of Rippey, south of County Road E-57. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 90 ft, screened 65-75 ft, gravel-packed; open hole from 75-90 ft. Pleistocene glacial till 75-86 ft, and Pennsylvanian shale and siltstone 86-90 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,005 ft above sea level, from topographic map. Measuring point: Top of casing, 1.85 ft above land-surface datum.
REMARKS.--Well WC-117.
PERIOD OF RECORD.--August 1982 to November 1995.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 32.20 ft below land-surface datum, August 17, 1993; lowest measured, 40.13 ft below land-surface datum, February 13, 1990.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	36.17	FEB 16	36.92	MAY 10	37.13	AUG 08	36.70

WATER YEAR 2000 HIGHEST 36.17 NOV 10, 1999 LOWEST 37.13 MAY 10, 2000

GREENE COUNTY--Continued

420149094344701. Local number, 83-32-04 ACCC.
LOCATION.--Lat 42°01'49", long 94°34'47", Hydrologic Unit 07100006, 1.5 mi west of the Town of Scranton south of U.S. Highway 30, adjacent to the Scranton Cemetery. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 240 ft, screened 220-240 ft, gravel-packed. Open to Pennsylvanian shale 234-240 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,202 ft above sea level, from topographic map. Measuring point: Top of casing, 2.10 ft above land-surface datum.
REMARKS.--Well WC-228.
PERIOD OF RECORD.--July 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 151.44 ft below land-surface datum, February 8, 1996; lowest measured, 155.48 ft below land-surface datum, April 17, 1991.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	152.51	FEB 16	153.00	MAY 08	152.12	AUG 08	152.34

WATER YEAR 2000 HIGHEST 152.12 MAY 08, 2000 LOWEST 153.00 FEB 16, 2000

420507094141901. Local number, 84-29-16 CBAB.
LOCATION.--Lat 42°05'07", long 94°14'19", Hydrologic Unit 07100006, approximately 1.5 mi south of the Town of Dana, east of Iowa Highway 144 near the Chicago and Northwestern Railroad. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Beaver buried channel: sand and gravel of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 181 ft, screened 161-176 ft, gravel-packed. Open to Pennsylvanian shale 177-181 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,075 ft above sea level, from topographic map. Measuring point: Top of casing, 1.80 ft above land-surface datum.
REMARKS.--Well WC-233.
PERIOD OF RECORD.--August 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 38.63 ft below land-surface datum, April 2, 1985; lowest measured, 43.28 ft below land-surface datum, October 2, 1989.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	41.70	FEB 16	41.30	MAY 08	41.26	AUG 08	42.06

WATER YEAR 2000 HIGHEST 41.26 MAY 08, 2000 LOWEST 42.06 AUG 08, 2000

GRUNDY COUNTY

422611092552501. Local number, 88-18-14 BCCB.
LOCATION.--Lat 42°26′07″, long 92°55′27″, Hydrologic Unit 07080205, located on county road T-19 0.5 miles north of county road D-25 in the City of Wellsburg. Owner: City of Wellsburg
AQUIFER.-- Cambrian: Jordan Formation sandstone
WELL CHARACTERISTICS.-- Drilled public artesian water well, diameter 12 in., depth 2050 ft, casing open 1536-2050 ft
INSTRUMENTATION.--Quarterly measurement with airline by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,094 ft above sea level, from topographic map.
REMARKS.--Wellsburg Well No. 1
PERIOD OF RECORD.--November 1996 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 275 ft below land-surface datum, February 11, 1997; lowest measured, 296 ft below land-surface datum, August 02, 1999.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	277	FEB 14	292	MAY 10	282	AUG 07	283

WATER YEAR 2000 HIGHEST 277 NOV 08, 1999 LOWEST 292 FEB 14, 2000

GUTHRIE COUNTY

413223094150801. Local number, 78-29-24 CAAB
LOCATION.--Lat 41°32′23″, long 94°15′08″, Hydrologic Unit 07100007, approximately 0.5 mi west and 1.5 north of the Town of Dexter. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drill observation artesian water well, diameter 2 in., depth 72 ft, screened 60-68 ft, gravel-packed. Open to Pennsylvanian shale 65-72 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,020 ft above sea level, from topographic map. Measuring point: Top of casing, 2.10 ft above land-surface datum.
REMARKS.--Well WC-238.
PERIOD OF RECORD.--August 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 38.20 ft below land-surface datum, May 10, 1995; lowest measured, 48.82 ft below land-surface datum, April 10, 1986.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	41.02	FEB 16	40.25	MAY 10	40.88	AUG 08	41.79

WATER YEAR 2000 HIGHEST 40.25 FEB 16, 2000 LOWEST 41.79 AUG 08, 2000

413248094314301. Local number, 78-32-21 AAAA.
LOCATION.--Lat 41°32′48″, long 94°31′43″, Hydrologic Unit 07100008, approximately 2.25 mi north of the Town of Casey. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 161 ft, cased to 135 ft, slotted 125-135 ft, gravel-packed. Open to Pennsylvanian shale and siltstone 158-161 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,250 ft above sea level, from topographic map. Measuring point: Top of casing, 1.90 ft above land-surface datum.
REMARKS.--Well WC-239.
PERIOD OF RECORD.--August 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 70.50 ft below land-surface datum, January 12, 1988; lowest measured, 74.38 ft below land-surface datum, January 9, 1985.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	73.02	FEB 16	73.40	MAY 10	72.74	AUG 08	72.90

WATER YEAR 2000 HIGHEST 72.74 MAY 10, 2000 LOWEST 73.40 FEB 16, 2000

GUTHRIE COUNTY--Continued

414728094385301. Local number, 81-33-26 DDDD.
LOCATION.--Lat 41°47'29", long 94°38'54", Hydrologic Unit 07100007, approximately 5 mi south and 1.25 mi east of the Town of Coon Rapids on the north side of County Road F-24. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 80 ft, screened 60-65 ft, gravel-packed, open hole 67-80 ft. Open to Pennsylvanian shale 67-80 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,205 ft above sea level, from topographic map. Measuring point: Top of casing, 2.20 ft above land-surface datum.
REMARKS.--Well WC-93.
PERIOD OF RECORD.--July 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 36.76 ft below land-surface datum, May 4, 1994; lowest measured, 40.98 ft below land-surface datum, January 3, 1983.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	38.47	FEB 16	39.25	MAY 09	39.58	AUG 08	39.76

WATER YEAR 2000 HIGHEST 38.47 NOV 10, 1999 LOWEST 39.76 AUG 08, 2000

414821094271301. Local number, 81-31-22 CCCC.
LOCATION.--Lat 41°48'21", long 94°27'12", Hydrologic Unit 07100007, approximately 2.5 mi south and 1 mi west of the Town of Bagley, north of Spring Brook State Park. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 153 ft, screened 143-153 ft, gravel-packed. Open to Pennsylvanian shale 149-153 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,190 ft above sea level, from topographic map. Measuring point: Top of casing, 1.45 ft above land-surface datum.
REMARKS.--Well WC-105.
PERIOD OF RECORD.--August 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 46.84 ft below land-surface datum, August 3, 1994; lowest measured, 69.88 ft below land-surface datum, December 9, 1982.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	56.54	FEB 16	57.98	MAY 10	58.35	AUG 08	59.43

WATER YEAR 2000 HIGHEST 56.54 NOV 10, 1999 LOWEST 59.43 AUG 08, 2000

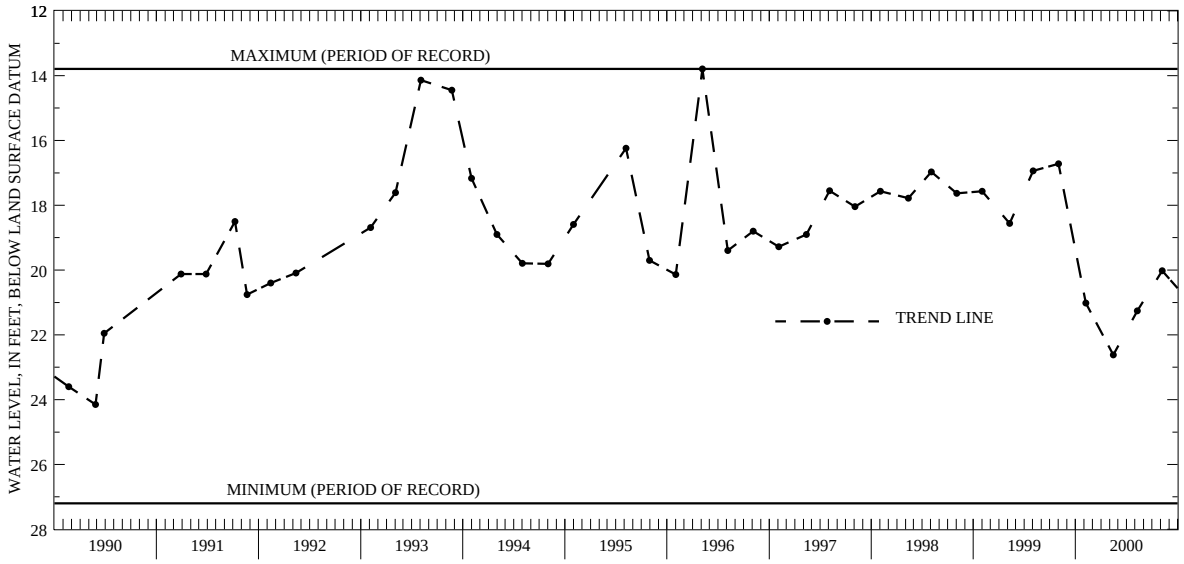
HARDIN COUNTY

423310093032802. Local number, 89-19-02 BDAC2.
LOCATION.--Lat 42°33'08", long 93°03'31", Hydrologic Unit 07080205, 0.35 south and 0.10 mi west of the intersection of U.S. Highway 20 and County Road S-56. Well is in a shed at the west end of 2nd Avenue adjacent to railroad tracks. Owner: City of Ackley.
AQUIFER.--Mississippian: limestone and dolomite of Mississippian age.
WELL CHARACTERISTICS.--Drilled unused public-supply artesian well, diameter 10 in., depth 134 ft, screened 57-60 ft, open hole 68-134 ft. Open to Devonian rock 131-134 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Analog digital water-level recorder, 60 minute punch, to October, 1992.
DATUM.--Elevation of land-surface datum is 1,085 ft above sea level, from topographic map. Measuring point: Top of recorder base, 0.8 ft above land-surface datum.
REMARKS.--Ackley No. 5 well.
PERIOD OF RECORD.--September 1988 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 13.79 ft below land-surface datum, February 5, 1996; lowest measured, 27.20 ft below land-surface datum, February 25, 1990.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	21.02	FEB 14	22.62	MAY 10	21.26	AUG 07	20.02

WATER YEAR 2000 HIGHEST 20.02 AUG 07, 2000 LOWEST 22.62 FEB 14, 2000



HARRISON COUNTY

413024095353901. Local number, 78-41-31 DDDD.
LOCATION.--Lat 41°30′24″, long 95°35′39″, Hydrologic Unit 10230006, approximately 4.5 mi south of the Town of Persia and west of Iowa Highway 191 to the north of the Tri-County High School. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Glacial drift: sand and gravel of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 129 ft, screened 109-119 ft, gravel-packed. Open to Pennsylvanian shale and limestone 118-129 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,158 ft above sea level, from topographic map. Measuring point: Top of casing, 2.05 ft above land-surface datum.
REMARKS.--Well WC-27.
PERIOD OF RECORD.--January 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 55.26 ft below land-surface datum, July 7, 1982; lowest measured, 60.54, July 5, 1989.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	57.55	FEB 24	57.93	MAY 10	57.68	AUG 07	57.90

WATER YEAR 2000 HIGHEST 57.55 NOV 08, 1999 LOWEST 57.93 FEB 24, 2000

413523095483101. Local number, 78-43-05 ACDD.
LOCATION.--Lat 41°35′23″, long 95°48′30″, Hydrologic Unit 10230007, approximately 3.25 mi south of the Town of Logan and 1.5 mi east of U.S. Highway 30. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 179 ft, screened 168-175 ft, gravel-packed. Open to Pennsylvanian shale 175-179 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,080 ft above sea level, from topographic map. Measuring point: Top of casing, 2.35 ft above land-surface datum.
REMARKS.--Well WC-33.
PERIOD OF RECORD.--May 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 66.20 ft below land-surface datum, March 21, 1990; lowest measured, 74.90 ft below land-surface datum, February 16, 1988.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	72.03	FEB 22	72.15	MAY 10	72.16	AUG 08	72.67

WATER YEAR 2000 HIGHEST 72.03 NOV 09, 1999 LOWEST 72.67 AUG 08, 2000

413524095490601. Local number, 78-43-05 BCDD.
LOCATION.--Lat 41°35′24″, long 95°49′06″, Hydrologic Unit 10230007, approximately 2 mi north and 3.5 mi east of the Town of Missouri Valley and 1 mi east of U.S. Highway 30. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Alluvial: Boyer River sand and gravel of Holocene age.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 51 ft, screened 48-51 ft, gravel-packed.
INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,010 ft above sea level, from topographic map. Measuring point: Top of casing, 3.40 ft above land-surface datum.
REMARKS.--Well WC-32.
PERIOD OF RECORD.--May 1982 to current year.
REVISION.--Measuring point revised September 4, 1990 to September 29, 1992.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.68 ft below land-surface datum, July 07, 1998; lowest measured, 7.00 ft below land-surface datum, September 9, 1988, October 18, 1990 and December 5, 1990.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	4.37	FEB 22	4.26	MAY 10	4.36	AUG 08	5.10
NOV 09	4.29	MAR 14	4.10	JUN 26	3.68		
JAN 18	4.23	APR 27	4.13	JUL 27	4.65		

WATER YEAR 2000 HIGHEST 4.10 MAR 14, 2000 LOWEST 5.10 AUG 08, 2000

HARRISON COUNTY--Continued

413838095462001. Local number, 79-42-19 AADB.
LOCATION.--Lat 41°38′38″, long 95°46′20″, Hydrologic Unit 10230007, approximately 0.5 mi east of the Town of Logan, north of U.S. Highway 30. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Mississippian: dolomite of Mississippian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 628 ft, screened 588-628 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,045 ft above sea level, from topographic map. Measuring point: Top of casing, 4.40 ft above land-surface datum.
REMARKS.--Well WC-22.
PERIOD OF RECORD.--November 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.33 ft above land-surface datum, June 19, 1987; lowest measured, 16.37 ft below land-surface datum, June 3, 1982.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	5.56	FEB 22	5.56	MAY 09	5.38	AUG 08	5.19

WATER YEAR 2000 HIGHEST 5.19 AUG 08, 2000 LOWEST 5.56 NOV 09, 1999 FEB 22, 2000

414700095373001. Local number, 81-41-33 CAAA.
LOCATION.--Lat 41°47′00″, long 95°37′30″, Hydrologic Unit 10230007, approximately 4.5 mi south of the Town of Dunlap, and 2 mi east of U.S. Highway 30. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 169 ft, screened 145-154 ft, gravel-packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,182 ft above sea level, from topographic map. Measuring point: Top of casing, 2.90 ft above land-surface datum.
REMARKS.--Well WC-52.
PERIOD OF RECORD.--June 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 70.50 ft below land-surface datum, August 12, 1993; lowest measured, 85.03 ft below land-surface datum, June 4, 1982.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	73.12	FEB 24	74.33	MAY 09	75.19	AUG 08	76.07

WATER YEAR 2000 HIGHEST 73.12 NOV 09, 1999 LOWEST 76.07 AUG 08, 2000

HENRY COUNTY

405010091424901. Local number, 70-07-30 BCDD.
LOCATION.--Lat 40°50'10", long 91°42'49", Hydrologic Unit 07080107, in the Hillsboro City Park adjacent to water tower. Owner: City of Hillsboro.
AQUIFER.--Mississippian: limestone of Mississippian age.
WELL CHARACTERISTICS.--Drilled unused test hole, diameter 6 in., depth 365 ft, cased to 74.8 ft, open hole 74.8-365 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 733 ft above sea level, from topographic map. Measuring point: Hole in top of casing, 1.15 ft above land-surface datum.
REMARKS.--Hillsboro Test 1.
PERIOD OF RECORD.--August 1989 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 70.12 ft below land-surface datum, February 23, 1996, May 6, 1994; lowest measured, 78.03 ft below land-surface datum, February 22, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	72.34	FEB 22	78.03	MAY 17	71.93	AUG 14	77.00

WATER YEAR 2000 HIGHEST 71.93 MAY 17, 2000 LOWEST 78.03 FEB 22, 2000

410852091394301. Local number, 73-07-09 AABD.
LOCATION.--Lat 41°08'51", long 91°39'43", Hydrologic Unit 07080107, north of Main Street near the water tower, Wayland. Owner: Town of Wayland.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Dug unused water-table well, diameter 4 ft, depth 52 ft. Casing information not available.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 735 ft above sea level, from topographic map. Measuring point: Hole in top of casing, 0.21 ft above land-surface datum.
REMARKS.--Wayland Town Well
PERIOD OF RECORD.--August 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.30 ft below land-surface datum, September 1, 1965; lowest measured, 14.69 ft below land-surface datum, February 15, 1977.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	10.61	FEB 22	9.70	MAY 17	9.89	AUG 14	10.15

WATER YEAR 2000 HIGHEST 9.70 FEB 22, 2000 LOWEST 10.61 NOV 02, 1999

HOWARD COUNTY

432158092065801. Local number, 99-11-26 BCA.
LOCATION.--Lat 43°21'58", long 92°06'58", Hydrologic Unit 07060004, located approximately 1 mi west of the town of Cresco, 0.5 mi south from state highway 9 on county road V-58. Owner: Town of Cresco.
AQUIFER.-- Cambrian/Ordovician.
WELL CHARACTERISTICS.--Drilled public use artesian well, diameter 16 in, depth 1120 ft., Casing information not available.
INSTRUMENTATION.--Quarterly measurement using an airline by USGS personnel.
DATUM.--Elevation of land-surface datum is 1288 ft above sea level, from topographic map.
REMARKS.--Cresco Well No. 4.
PERIOD OF RECORD.--February 1997 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 318 ft below land surface datum, May 20, 1997; lowest measured, 355 ft below land-surface datum, May 09, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	353	FEB 14	352	MAY 09	355	AUG 07	352

WATER YEAR 2000 HIGHEST 352 FEB 14, 2000 AUG 07, 2000 LOWEST 355 MAY 09, 2000

HUMBOLDT COUNTY

424039094103601. Local number, 91-28-20 CAAA.
LOCATION.--Lat 42°40'29", long 94°10'47", Hydrologic Unit 07100004, approximately 3 mi south of the Town of Dakota City, on the west side of County Road P-56. Owner: Elmer Gravdlund.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Unused water-table well, diameter 3 ft, cribbed with field stone, depth 24.5 ft, casing information unavailable.
INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,135 ft above sea level, from topographic map. Measuring point: Top of casing, 0.30 ft above land-surface datum.
REMARKS: Gravdlund/G-1 well.
PERIOD OF RECORD.--July 1988 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.40 ft below land-surface datum, April 26, 1991; lowest measured, 19.29 ft below land-surface datum, March 12, 1990.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 04	9.77	JAN 18	12.40	APR 11	12.84	JUL 10	10.67
NOV 10	11.07	FEB 15	12.83	MAY 11	13.00	AUG 07	10.48
DEC 06	11.60	MAR 02	12.60	JUN 15	10.93	SEP 13	11.74

WATER YEAR 2000 HIGHEST 9.77 OCT 04, 1999 LOWEST 13.00 MAY 11, 2000

IDA COUNTY

422215095390811. Local number, 87-41-05 CCCC11.
LOCATION.--Lat 42°22'15", long 95°39'08", Hydrologic Unit 10230005, approximately 0.75 mi east and 6.5 mi south of the Village of Cushing. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 490 ft, screened 301-305 ft. Original depth 510 ft, cemented back to 490 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,344 ft above sea level, from topographic map. Measuring point: Top of casing, 2.18 ft above land-surface datum.
REMARKS.--Well D-10.
PERIOD OF RECORD.--June 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 202.55 ft below land-surface datum, June 4, 1980; lowest measured, 206.69 ft below land-surface datum, November 03, 1998.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	206.73	FEB 22	206.89	MAY 09	207.09	AUG 07	207.84

WATER YEAR 2000 HIGHEST 206.73 NOV 08, 1999 LOWEST 207.84 AUG 07, 2000

423107095383201. Local number, 89-41-13 CCCC.
LOCATION.--Lat 42°31'07", long 95°38'28", Hydrologic Unit 10230003, at a roadside park on County Road D-15, approximately 1.5 mi east and 3.5 mi north of the Village of Cushing. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Mississippian: limestone of Mississippian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 469 ft, sand point 465-468 ft, open hole 468-469 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,320 ft above sea level, from topographic map. Measuring point: Top of casing, 2.11 ft above land-surface datum.
REMARKS.--Well D-9.
PERIOD OF RECORD.--December 1978 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 178.00 ft below land-surface datum, February 22, 2000; lowest measured, 244.55 ft below land-surface datum, July 9, 1980.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	180.85	FEB 22	178.00	AUG 07	181.26

WATER YEAR 2000 HIGHEST 178.00 FEB 22, 2000 LOWEST 181.26 AUG 07, 2000

JACKSON COUNTY

420842090165701. Local number, 85-6E-29 ACAD1.
LOCATION.--Lat 42°08'41", long 90°16'56", Hydrologic Unit 07060005, 1 mi east of U.S. Highway 52, 2 mi southeast of the Village of Green Island beside the Chicago, Milwaukee, St. Paul and Pacific Railroad tracks in the Upper Mississippi River Wildlife and Fish Refuge. Owner: U.S. Geological Survey.
AQUIFER.--Dresbach: Mt. Simon sandstone of Early Cambrian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 1,804 ft, screened 1,705-1,725 ft, open hole 1,725-1,804 ft.
INSTRUMENTATION.--Quarterly measurement with engineers rule by USGS personnel.
DATUM.--Elevation of land-surface datum is 610 ft above sea level, from topographic map. Measuring point: Mark on angle iron attached to well house, 6.05 ft above land- surface datum.
REMARKS.--Flowing well. Green Island #1.
PERIOD OF RECORD.--May 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.81 ft above land-surface datum, May 16, 1988; lowest measured, 9.23 ft above land-surface datum, September 02, 1998.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	8.90	FEB 22	8.91	MAY 17	9.14	AUG 16	9.18

WATER YEAR 2000 HIGHEST 8.90 NOV 03, 1999 LOWEST 9.18 AUG 16, 2000

420842090165702. Local number, 85-06E-29 ACAD2.
LOCATION.--Lat 42°08'41", long 90°16'56", Hydrologic Unit 07060005, 1 mi east of U.S. Highway 52, 2 mi southeast of the Village of Green Island beside the Chicago, Milwaukee, St. Paul and Pacific Railroad tracks in the Upper Mississippi River Wildlife and Fish Refuge. Owner: U.S. Geological Survey.
AQUIFER.-- Cambrian-Ordovician, Wonewoc sandstone of Late Cambrian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 1,275 ft, screened 1,204.4-1,224.4 ft, open hole 1,224.4-1,275 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 610 ft above sea level, from topographic map. Measuring point: Top of casing, 2.0 ft above land-surface datum
REMARKS.--Green Island No. 2 well. Well pumped during winter to supply water to goose pond. Water levels for water years 1986 to 1989 affected by oil in the well.
PERIOD OF RECORD.--July 1982 to November 1983, September 1986 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, +0.01 ft above land-surface datum, May 04, 1999; lowest measured, 3.88 below land-surface datum, November 4, 1982.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
(MEASUREMENTS ABOVE LAND SURFACE INDICATED BY "+")

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	.74	FEB 22	.93	MAY 17	.20	AUG 16	.66

WATER YEAR 2000 HIGHEST .20 MAY 17, 2000 LOWEST .93 FEB 22, 2000

420842090165703. Local number, 85-6E-29 ACAD3
LOCATION.--Lat 42°08'41", long 90°16'56", Hydrologic Unit 07060005, 1 mi east of U.S. Highway 52, 2 mi southeast of the Village of Green Island beside the Chicago, Milwaukee, St. Paul and Pacific Railroad tracks in the Upper Mississippi River Wildlife and Fish Refuge. Owner: U.S. Geological Survey.
AQUIFER.--Cambrian-Ordovician: Prairie du Chien dolomite of Early Ordovician age and St. Peter sandstone of Middle Ordovician age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 910 ft, screened 604.2-624.2 ft, open hole 624.2-910 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 610 ft above sea level, from topographic map. Measuring point: Top of casing, 2.00 ft above land-surface datum.
REMARKS.--Green Island No. 3.
PERIOD OF RECORD.--May 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.19 ft below land-surface datum, January 8, 1986; lowest measured 9.90 ft below land-surface datum, August 31, 1983.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	6.91	FEB 22	7.53	MAY 17	6.52	AUG 16	6.68

WATER YEAR 2000 HIGHEST 6.52 MAY 17, 2000 LOWEST 7.53 FEB 22, 2000

JACKSON COUNTY--Continued

420433090502401. Local number, 84-01E 22
LOCATION.--Lat 42°04'34", long 90°50'23", Hydrologic Unit 07060006, located just east of the water-tower in the Town of Baldwin. Owner: Town of Baldwin.
AQUIFER.--Devonian/Silurian
WELL CHARACTERISTICS.--Drilled public-use well, diameter 14 in., depth 190 ft, open hole from 80-190 ft.
INSTRUMENTATION.--Quarterly measurement using airline by USGS personnel.
DATUM.--Elevation of land-surface is 760 feet above sea level, by topographic map.
REMARKS.--Baldwin No. 2
PERIOD OF RECORD.--August 1997 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 59.74 feet below land-surface datum, May 03, 1999; lowest measured, 64.22 feet below land-surface datum, February 09, 1999.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	62.66	FEB 22	63.01	MAY 17	63.30	AUG 15	62.92

WATER YEAR 2000 HIGHEST 62.66 NOV 03, 1999 LOWEST 63.30 MAY 17, 2000

420842090165704. Local number, 85-6E-29 ACAD4.
LOCATION.--Lat 42°08'41", long 90°16'56", Hydrologic Unit 07060005, 1 mi east of U.S. Highway 52, 2 mi southeast of the Village of Green Island beside the Chicago, Milwaukee, St. Paul and Pacific Rail- road tracks in the Upper Mississippi River Wildlife and Fish Refuge. Owner: U.S. Geological Survey.
AQUIFER.--Cambrian-Ordovician: Galena dolomite of Middle Ordovician age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 400 ft, screened 300-320 ft, open hole 320-400 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 610 ft above sea level, from topographic map. Measuring point: Top of casing, 2.00 ft above land-surface datum.
REMARKS.--Green Island No. 4.
PERIOD OF RECORD.--May 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.39 ft below land-surface datum April 27, 1993; lowest measured, 19.46 ft below land-surface datum, September 20, 1988.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	16.54	FEB 22	16.96	MAY 17	16.80	AUG 16	17.32

WATER YEAR 2000 HIGHEST 16.54 NOV 03, 1999 LOWEST 17.32 AUG 16, 2000

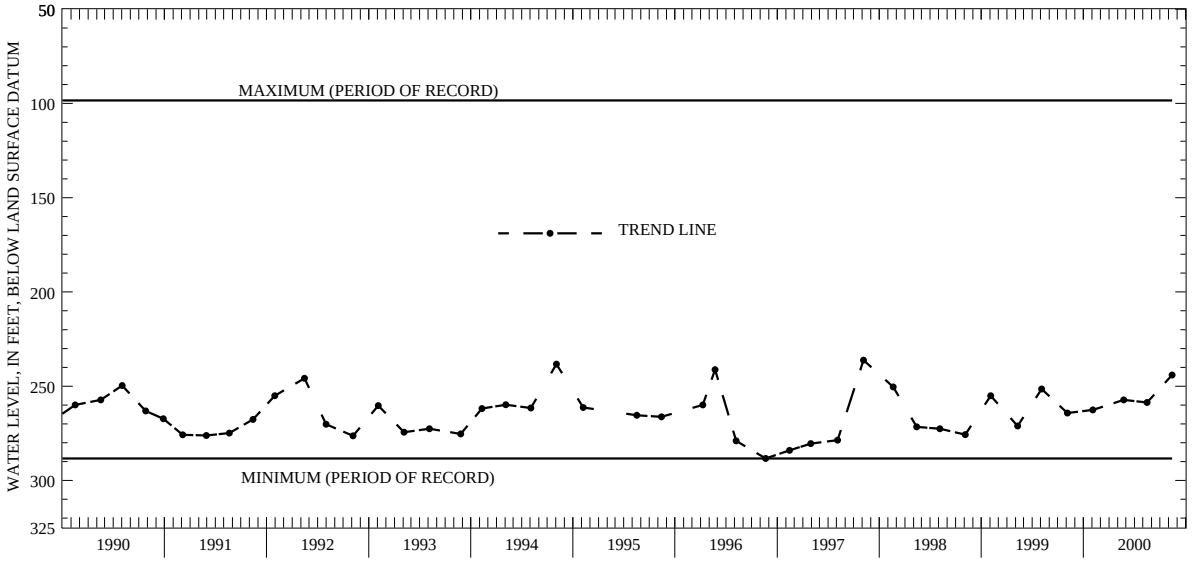
JASPER COUNTY

414147093035401. Local number, 80-19-33 ACAC.
LOCATION.--Lat 41°41'50", long 93°03'54", Hydrologic Unit 07080105, 231 West 10th Street, Newton. Owner: John Coppess.
AQUIFER.--Cambrian-Ordovician: sandstone and sandy dolomite of Late Cambrian and Early Ordovician age.
WELL CHARACTERISTICS.--Drilled unused private artesian water well, diameter 12 to 6 in., depth 2,567 ft, cased to 1,750 ft, open hole 1,750-2,567 ft. Open to 461 ft of Early Ordovician Prairie du Chien formation, 262 ft of Late Cambrian St. Lawrence formation, and 94 ft of Middle Cambrian Franconia formation.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 915 ft above sea level, from topographic map. Measuring point: Plug in cement well cover, 0.50 ft above land-surface datum.
REMARKS.--John Coppess well
PERIOD OF RECORD.--September 1963 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 98.43 ft below land-surface datum, June 14, 1966; lowest measured, 288.3 ft below land-surface datum, August 21, 1996.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	262.56	FEB 23	257.29	MAY 16	258.6	AUG 14	244.09

WATER YEAR 2000 HIGHEST 244.09 AUG 14, 2000 LOWEST 262.56 NOV 04, 1999



414210092592001. Local number, 80-18-31 ABBB.
LOCATION.--Lat 41°42'10", long 92°59'20", Hydrologic Unit 07080105, approximately 3 mi east of the City of Newton just south of U.S. Highway 6. Owner: P.W. Beukema.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Dug stock water-table well, diameter 36 in., depth 37 ft, cribbed with brick.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 940 ft above sea level, from topographic map. Measuring point: Top of cement platform, 0.70 ft above land-surface datum.
REMARKS.--Beukema well
PERIOD OF RECORD.--February 1940 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.67 ft below land-surface datum, June 10, 1947; lowest measured, 27.15 ft below land-surface datum, December 18, 1948.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	12.42	FEB 23	12.51	MAY 16	10.71	AUG 14	4.86

WATER YEAR 2000 HIGHEST 4.86 AUG 14, 2000 LOWEST 12.51 FEB 23, 2000

JOHNSON COUNTY

413925091324001. Local number, 79-06-09 DDBC.
LOCATION.--Lat 41°39′34″, long 91°32′42″, Hydrologic Unit 07080209, at the Quadrangle Dormitory, University of Iowa, Iowa City. Owner: University of Iowa.
AQUIFER.--Silurian: dolomite of Silurian age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 12 in., depth 430.5 ft, cased to 225 ft, open hole 225-430.5 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel, measured twice per month as part of project 461908100.
DATUM.--Elevation of land-surface datum is 714 ft above sea level, from topographic map. Measuring point: Nipple welded to plate on top of casing, 1.81 ft above land- surface datum.
REMARKS.--University of Iowa Quadrangle Dormitory. Water levels affected by nearby wells pumping in late spring, summer, and early fall.
PERIOD OF RECORD.--April 1975 to current year.
REVISED RECORDS.--WDR IA-84-1, WDR IA-88-1.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 74.63 ft below land-surface datum, March 21, 1979; lowest measured, 174.62 ft below land-surface datum, September 5, 1995.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 18	125.98	MAR 09	112.56	JUN 01	115.65	AUG 10	145.81
NOV 22	132.96	APR 06	118.70	15	119.93	24	143.28
DEC 16	118.51	20	112.21	28	136.56	SEP 07	141.60
JAN 13	113.04	MAY 04	124.79	JUL 18	144.80	21	132.54
FEB 10	109.86	18	117.63	27	152.69		

WATER YEAR 2000 HIGHEST 109.86 FEB 10, 2000 LOWEST 152.69 JUL 27, 2000

414132091345502. Local number, 80-06-31 ADBC1.
LOCATION.--Lat 41°41′45″, long 91°35′00″, Hydrologic Unit 07080209, located in the City of Coralville, north of U.S. Interstate 80. Owner: City of Coralville.
AQUIFER.--Silurian: dolomite of Silurian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 5 in. to 130 ft, 2 in. to 300 ft, depth 500 ft, open hole 300-500 ft.
INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel, measured twice per month March 1995 to September 1997.
DATUM.--Elevation of land-surface datum is 795 ft above sea level, from topographic map. Measuring point: top of casing, 1.03 ft above land-surface datum.
REMARKS.--Coralville Observation No. 3, North.
PERIOD OF RECORD.--June 1988 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest level measured, 169.04 ft below land-surface datum, June 21, 1988; lowest water level measured, 252.77 ft. below land-surface datum, July 31, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 12	241.20	JAN 06	228.30	APR 20	237.21	JUL 27	251.96
13	244.71	13	234.25	MAY 04	240.01	31	252.77
18	241.67	13	229.11	18	240.99	AUG 01	250.98
NOV 22	242.66	FEB 10	229.07	JUN 01	240.94	10	249.07
DEC 16	228.42	MAR 09	234.47	15	239.83	24	248.08
JAN 03	232.64	APR 06	235.92	28	245.03	SEP 07	248.53
06	229.30	20	236.82	JUL 18	248.82	21	247.74

WATER YEAR 2000 HIGHEST 228.3 JAN 06, 2000 LOWEST 252.77 JUL 31, 2000

414107091322901. Local number, 79-06-04 AAAA.
LOCATION.--Lat 41°41′07″, long 91°32′29″, Hydrologic Unit 07080209, at Forest View Trailer Court, northern edge of Iowa City. Owner: Forest View Trailer Court.
AQUIFER.--Silurian: limestone of Silurian age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 6 in., depth 280 ft, cased to 96 ft, open hole 96-280 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel, measured twice per month March 1995 to October 1995. Graphic water-level recorder May 1971 to October 1986.
DATUM.--Elevation of land-surface datum is 735 ft above sea level, from topographic map. Measuring point: Nipple on plate welded to top of casing, 1.62 ft above land- surface datum.
REMARKS.--Forest View Trailer Court. Water levels affected by wells in the area pumping in late spring, summer, and early fall. The large number of water-level measurements in June 1996 are a result of the well being used as an observation well for a nearby pump test.
PERIOD OF RECORD.--May 1971 to current year.
REVISED RECORDS.--WDR IA-84-1.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 96.93 ft below land-surface datum, March 23, 1979; lowest measured, 153.24 ft below land-surface datum, July 30, 1998.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 18	138.50	MAR 09	133.32	JUN 01	135.92	AUG 10	140.65
NOV 22	138.62	APR 06	133.32	15	135.45	24	140.65
DEC 16	136.22	20	134.05	28	139.19	SEP 07	140.48
JAN 13	134.64	MAY 04	138.23	JUL 18	142.67	21	140.51
FEB 10	136.81	18	136.82	27	145.02		

WATER YEAR 2000 HIGHEST 133.32 APR 06, 2000 LOWEST 145.02 JUL 27, 2000

JOHNSON COUNTY--Continued

414132091345503. Local number, 80-06-31 ADBD1.
LOCATION.--Lat 41°41′44″, long 91°34′35″, Hydrologic Unit 07080209, located in the City of Coralville, north of U.S. Interstate 80. Owner: City of Coralville.
AQUIFER.--Silurian: dolomite of Silurian age.
WELL CHARACTERISTICS.--Drilled public-supply water well, 12 in. diameter, depth 500 ft, cased 0-200 ft, open hole 200-500 ft.
INSTRUMENTATION.--Monthly airline measurement by USGS personnel, measured twice per month March 1995 to October 1995.
DATUM.--Elevation of land-surface datum is 795 ft above sea level, from topographic map. Measuring point: airline gauge, 2.88 ft above land-surface datum.
REMARKS.--Coralville Production No. 9.
PERIOD OF RECORD.--June 1988 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 204 ft below land-surface datum, July 25, 1988; lowest water level measured, 310 ft below land-surface datum, July 27, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAY 04	296	JUN 15	294	JUL 27	310	SEP 07	304
18	296	28	301	AUG 10	304	21	302
JUN 01	296	JUL 18	305	24	303		

WATER YEAR 2000 HIGHEST 294 JUN 15, 2000 LOWEST 310 JUL 27, 2000

414145091350101. Local number, 80-06-31 ADC.
LOCATION.--Lat 41°41′45″, long 91°35′01″. Hydrologic unit 07080209, located in the city of Coralville., north of U.S. Interstate 80. Owner: City of Coralville.
AQUIFER.--Cambrian- Jordan sandstone.
WELL CHARACTERISTICS.--Drilled public-supply water well, diameter 16 in, depth 1710 ft., casing information not available.
INSTRUMENTATION.--Bi-monthly measurements using airline by USGS personnel.
DATUM.--Elevation of land-surface datum is 740 ft above sea level, from unknown method.
REMARKS.--Coralville No. 10.
PERIOD OF RECORD.--June 1996 to current year.
EXTREMES FOR PERIOD OF RECORD.--highest water level measured, 318 ft below land-surface datum, May 07, 1997; lowest water level measured, 419 ft. below land surface datum, December 19, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 18	401	APR 06	395	JUN 15	402	AUG 10	407
NOV 22	403	MAY 04	402	28	410	24	407
DEC 16	338	18	403	JUL 18	410	SEP 07	410
MAR 09	396	JUN 01	405	27	411	21	407

WATER YEAR 2000 HIGHEST 338 DEC 16, 1999 LOWEST 411 JUL 27, 2000

414315091252001. Local number, 80-05-22 CBCB1.
LOCATION.--Lat 41°43′15″, long 91°25′18″, Hydrologic Unit 07080209, along the Chicago, Rock Island and Pacific Railroad track, southeast of the overpass on Rapid Creek Road over the track, approximately 5.5 mi northeast of the junction of Interstate 80 and Iowa Highway 1. Owner: Chicago, Rock Island and Pacific Railroad Co.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 2.25 in., depth 18.43 ft, screened 16.43-18.43 ft. Depth originally 20 ft, depth of 18.43 ft measured June 23, 1989.
INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel. Graphic water-level recorder February 1942 to October 1965, measured twice per month March 1995 to October 1995.
DATUM.--Elevation of land-surface datum is 753 ft above sea level, from topographic map. Measuring point: Nipple welded to casing, 4.47 ft above land-surface datum.
REMARKS.--At the site of the former Elmira depot.
PERIOD OF RECORD.--May 1941 to September 1956, January 1958 to current year.
REVISED RECORDS.--WDR IA-88-1.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.84 ft below land-surface datum, April 29, 1947 (revised); lowest measured, dry, November 10, 15, 20, 25, and 30, 1964, December 5, 10, 15, 20, 25 and 31, 1964, December 1 and 10, 1975, October 21, November 23, and December 17, 1976, and January 20 and February 18, 1977.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 01	11.83	FEB 11	15.07	MAY 19	16.11	JUL 28	14.44
19	12.35	MAR 10	15.52	JUN 02	16.08	AUG 10	14.46
NOV 23	13.28	APR 07	15.83	16	15.62	25	14.56
DEC 17	13.86	21	15.98	29	14.93	SEP 08	14.67
JAN 14	14.48	MAY 05	16.01	JUL 19	14.49	22	14.80

WATER YEAR 2000 HIGHEST 11.83 OCT 01, 1999 LOWEST 16.11 MAY 19, 2000

JOHNSON COUNTY--Continued

414221091361101. Local number, 80-07-25 DBAC1.
LOCATION.--Lat 41°42′24″, long 91°36′16″, Hydrologic Unit 07080209, located at the Iowa Department of Natural Resources/ Geological Survey Bureau's Oakdale core repository. Owner: Geological Survey Bureau/DNR.
AQUIFER.--Silurian: dolomite of Silurian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 6 in. to 164 ft, 5 in. to 319 ft, 4 in. 319-361.5 ft, liner set 310-361.5 ft, depth 532 ft, open hole 361.5-532 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel, measured twice per month March 1995 to October 1995.
DATUM.--Elevation of land-surface datum is 790 ft above sea level, from topographic map. Measuring point: top of recorder platform, 2.65 ft above land-surface datum.
REMARKS.--Oakdale No. 1 (ODW-1).
PERIOD OF RECORD.--April 1990 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 126.23 ft below land-surface datum, July, 31 1997; lowest water level measured, 245.93 ft below land-surface datum, July 26, 1991.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 18	230.29	MAR 09	221.97	JUN 01	229.52	AUG 10	237.21
NOV 22	225.49	APR 06	221.73	15	229.24	24	234.07
DEC 16	226.98	20	221.94	28	230.58	SEP 07	233.65
JAN 13	223.30	MAY 04	227.60	JUL 18	234.12	21	234.68
FEB 10	220.31	18	229.15	27	236.82		

WATER YEAR 2000 HIGHEST 220.31 FEB 10, 2000 LOWEST 237.21 AUG 10, 2000

414221091361102. Local number, 80-07-25 DBAC2.
LOCATION.--Lat 41°42′24″, long 91°36′16″, Hydrologic Unit 07080209, located at the Iowa Department of Natural Resources/ Geological Survey Bureau's Oakdale core repository. Owner: Geological Survey Bureau/DNR.
AQUIFER.--Devonian: limestone and dolomite of Devonian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 5 in., depth 301 ft, cased 0-175 ft, open hole 175-301 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel, measured twice per month March 1995 to October 1995.
DATUM.--Elevation of land-surface datum is 790 ft above sea level, from topographic map. Measuring point: top of recorder platform, 2.55 ft above land-surface datum.
REMARKS.--Oakdale No. 2, (ODW-2).
PERIOD OF RECORD.--April 1990 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 198.65 ft below land-surface datum, June 2 and 7, 1996; lowest water level measured, 227.09 ft below land-surface datum, August 28, 1991.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 18	214.65	MAR 09	206.09	JUN 01	213.83	AUG 10	219.21
NOV 22	211.10	APR 06	207.42	15	213.37	24	214.64
DEC 16	211.17	20	207.39	28	213.79	SEP 07	216.79
JAN 13	208.75	MAY 04	211.72	JUL 18	216.12	21	217.71
FEB 10	206.50	18	213.47	27	218.26		

WATER YEAR 2000 HIGHEST 206.09 MAR 09, 2000 LOWEST 219.21 AUG 10, 2000

JOHNSON COUNTY--Continued

413950091322402. Local number, 79-06-10 BCCD.
LOCATION.--Lat 41°39'57", long 91°32'14", Hydrologic Unit 07080209, located on the northeast corner of the terminal end of North Madison Street just north of the Iowa City water treatment plant, approximately 0.5 miles north of Burlington St. Owner: The city of Iowa City.
AQUIFER.--Cambrian/Ordovician. Dolomite from the Prairie Du Chien Formation
WELL CHARACTERISTICS.--Drilled public use well, diameter 26 in, depth 1570 ft, open interval from 1000-1570 ft.
INSTRUMENTATION.--Bi-weekly measurements using an airline by USGS personnel.
DATUM.--Elevation of land-surface datum is 650 ft above sea level, from topographic map.
REMARKS.--Iowa City Well No. 1
PERIOD OF RECORD.--April 1996 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 154 ft below land-surface datum, September 25, 1996, May 07, 1997, June 18, 1997, July 02,1997; lowest water level measured, 360 ft below land-surface datum, May 12, 1999.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 18	180	MAR 09	193	JUN 01	278	AUG 10	182
NOV 22	177	APR 06	318	15	282	24	276
DEC 16	176	20	315	28	295	SEP 07	182
JAN 13	176	MAY 04	318	JUL 18	209	21	182
FEB 10	312	18	279	27	192		

WATER YEAR 2000 HIGHEST 176 DEC 16, 1999 JAN 13, 2000 LOWEST 318 APR 06, 2000 MAY 04, 2000

413929091322401. Local number 79-06-10 CCCB.
LOCATION.--Lat 41°39'30", long 91°32'25". Hydrologic Unit 07080209, located at University of Iowa water treatment plant. Owner: University of Iowa.
AQUIFER.--Cambrian-Jordan sandstone.
WELL CHARACTERISTICS.--Drilled artesian well used for withdrawal and testing, diameter 20 in, depth 1550 ft, casing open from 1063-1550 ft.
INSTRUMENTATION.--Bi-weekly measurements using airline by USGS personnel
DATUM.--Elevation of land-surface datum is 654.51 ft. above sea level, by levels run to accuracy of 0.01 ft. Measuring point is airline connection, 0.85 ft. above land surface datum.
REMARKS.--SUI water treatment plant
PERIOD OF RECORD.--May 17, 1995 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 160 ft below land-surface datum, June 04, 1997; lowest water level measured, 216 ft. below land-surface datum, April 30, 1998.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 18	152	MAR 09	145	JUN 01	166	AUG 10	152
NOV 22	151	APR 06	172	15	161	24	156
DEC 16	150	20	164	28	203	SEP 07	148
JAN 13	150	MAY 04	172	JUL 18	183	21	148
FEB 10	157	18	168	27	157		

WATER YEAR 2000 HIGHEST 145 MAR 09, 2000 LOWEST 203 JUN 28, 2000

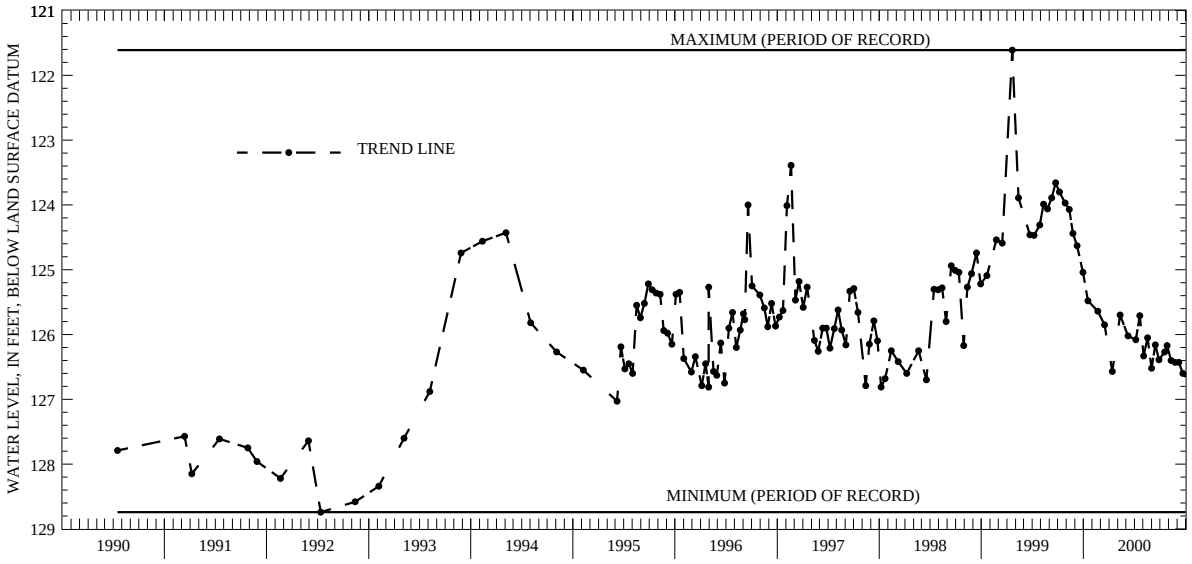
JOHNSON COUNTY--Continued

414221091361103. Local number, 80-07-25 DBAD1.
LOCATION.--Lat 41°42'24", long 91°36'16", Hydrologic Unit 07080209, located at the Iowa Department of Natural Resources/ Geological Survey Bureau's Oakdale core repository. Owner: Geological Survey Bureau/DNR.
AQUIFER.--Buried channel: sand and gravel of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 4 in., depth 171 ft, screened 153-171. ft.
INSTRUMENTATION.-- Quarterly measurement with chalked tape by USGS personnel, measured twice per month March 1995 to October 1995.
DATUM.--Elevation of land-surface datum is 790 ft above sea level, from topographic map. Measuring point: top of recorder platform, 2.55 ft above land-surface datum.
REMARKS.--Oakdale No. 3 (ODW-3).
PERIOD OF RECORD.--April 1990 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 121.61 ft below land-surface datum, January 20, 1999; lowest water level measured, 128.74 ft below land-surface datum, April 12, 1992.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 18	125.48	MAR 09	126.02	JUN 01	126.52	AUG 10	126.40
NOV 22	125.64	APR 06	126.08	15	126.16	24	126.43
DEC 16	125.85	20	125.71	28	126.39	SEP 07	126.43
JAN 13	126.57	MAY 04	126.33	JUL 18	126.27	21	126.60
FEB 10	125.70	18	126.05	27	126.17		

WATER YEAR 2000 HIGHEST 125.48 OCT 18, 1999 LOWEST 126.60 SEP 21, 2000



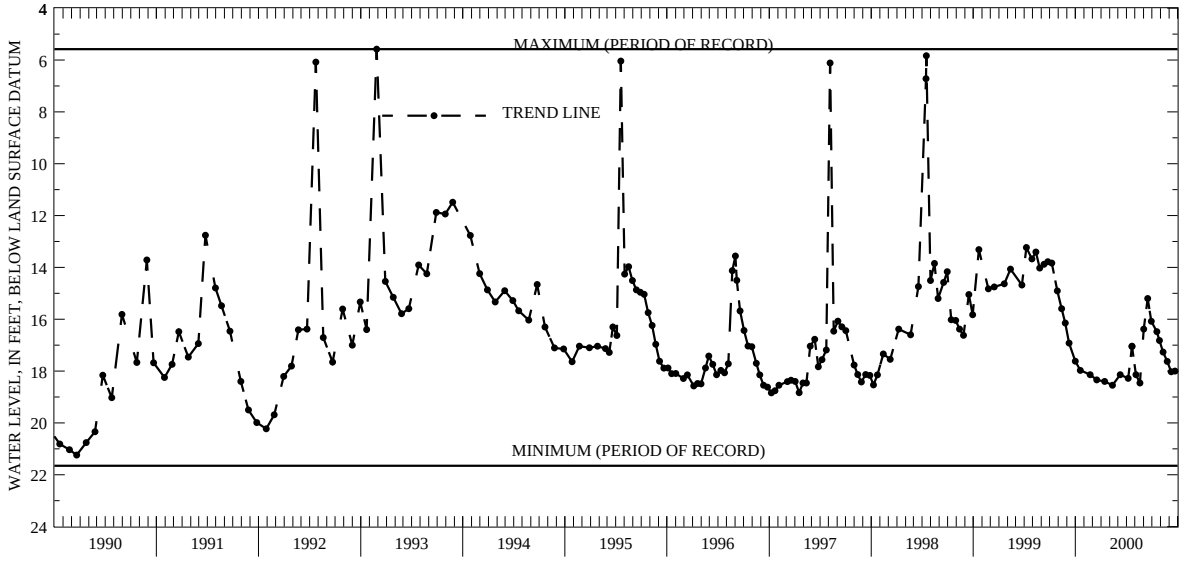
JOHNSON COUNTY--Continued

414315091252002. Local number, 80-05-22 CBCB2.
LOCATION.--Lat 41°43'15", long 91°25'18", Hydrologic Unit 07080209, along the Chicago, Rock Island and Pacific Railroad track, southeast of the overpass on Rapid Creek Road over the track, approximately 5.5 mi northeast of the junction of Interstate 80 and Iowa Highway 1. Owner: Chicago, Rock Island and Pacific Railroad Co.
AQUIFER.--Devonian: Cedar Valley limestone of Middle Devonian age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 5 in., depth 82.5 ft. Casing information not available.
INSTRUMENTATION.--Intermittant measurement with chalked tape by USGS personnel. Shaft encoder and data collection platform (dcp) installed July, 1998.
DATUM.--Elevation of land-surface datum is 753 ft above sea level, from topographic map. Measuring point: Nipple welded to plate on top of casing, 4.01 ft above land- surface datum.
REMARKS.--At the site of the former Elmira depot.
PERIOD OF RECORD.--December 1941 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.58 ft below land-surface datum, November 27, 1992; lowest measured, 21.65 ft below land-surface datum, August 21, 1989.

MEASURED WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 01	17.62	MAR 10	18.14	JUN 02	16.38	AUG 25	17.63
19	17.97	APR 07	18.28	16	15.20	SEP 08	18.03
NOV 23	18.14	21	17.05	29	16.08	22	18.00
DEC 17	18.34	21	17.04	JUL 19	16.48		
JAN 14	18.40	MAY 05	18.14	28	16.82		
FEB 11	18.55	19	18.46	AUG 10	17.27		

WATER YEAR 2000 HIGHEST 15.20 JUN 16, 2000 LOWEST 18.55 FEB 11, 2000



JONES COUNTY

415808091160501. Local number, 83-04-25 CBBB.
LOCATION.--Lat 41°58'08", long 91°16'05", Hydrologic Unit 07080103, 4 mi north of the Town of Mechanicsville and 1 mi west of County Road X-40. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Silurian: dolomite of Silurian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 6 in. to 41 ft, 5 in. 41-517 ft, depth 517 ft, open hole 41-517 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 811 ft above sea level, from topographic map. Measuring point: Nipple welded to plate on top of casing, 2.16 ft above land- surface datum.
REMARKS.--White Oak Creek well.
PERIOD OF RECORD.--July 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.78 ft below land-surface datum, May 3, 1993; lowest measured, 6.21 ft below land-surface datum, September 11, 1989.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	4.92	FEB 22	5.37	MAY 15	4.79	AUG 15	4.09

WATER YEAR 2000 HIGHEST 4.09 AUG 15, 2000 LOWEST 5.37 FEB 22, 2000

KEOKUK COUNTY

412030092121601. Local number, 76-12-35 DBDC
LOCATION.--Lat 41°20'27", long 92°12'22", Hydrologic Unit 07080106, approximately 0.25 mi north of the town of Sigourney, 0.25 mi north of Highway 92. Owner: City of Sigourney.
AQUIFER.--Mississippian: limestone and dolomite of Mississippian age.
WELL CHARACTERISTICS.--Drilled unused public-supply artesian well, diameter 14 in., depth 300 ft, cased to 128 ft, open hole 128-300 ft.
INSTRUMENTATION.-- Quarterly measurement with chalked tape by USGS personnel. Analog digital water-level recorder January 1989 to September 1992.
DATUM.--Elevation of land-surface datum is 769 ft above sea level, from topographic map. Measuring point: Top of recorder base, 1.56 ft above land-surface datum.
REMARKS.--Sigourney South Rock Island No. 1 well. Water levels affected by nearby pumping.
PERIOD OF RECORD.--July 1988 to present.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 80.99 ft below land-surface datum, May 17, 1995; lowest measured, 118.29 ft below land-surface datum, August 31, 1991.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	88.10	FEB 23	83.16	MAY 16	86.08	AUG 14	83.85

WATER YEAR 2000 HIGHEST 83.16 FEB 23, 2000 LOWEST 88.10 NOV 04, 1999

LEE COUNTY

404306091270201. Local number, 68-05-05 DAAC.
LOCATION.--Lat 40°43'06", long 91°27'01", Hydrologic Unit 07080104, located on the south side of State Highway 2 approximately 7 mi east of Donnellson and 6 mi south of West Point.
AQUIFER.--Cambrian-Jordan sandstone
WELL CHARACTERISTICS.--Drilled public-use well, diameter 20 to 10 in., depth 1910 ft, open hole from 1290-1910 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 763 ft., from topographic map. Measuring point: Top of casing 3.00 ft above land-surface datum.
REMARKS.--West Point No. 3
PERIOD OF RECORD.--November 15, 1996 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 262.04 ft below land-surface datum, January 28, 1997; lowest measured, 269.12 ft. below land-surface datum, August 14, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	266.81	FEB 22	266.20	MAY 17	267.55	AUG 14	269.12

WATER YEAR 2000 HIGHEST 266.20 FEB 22, 2000 LOWEST 269.12 AUG 14, 2000

LINN COUNTY

415343091360101. Local number, 82-07-25 AAAB.
LOCATION.--Lat 41°53′43″, long 91°36′01″, Hydrologic Unit 07080208, 0.5 mi northwest of the Town of Ely at the southwest corner of the junction of County Roads E-70 and W-6E. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Silurian: limestone and dolomite of Silurian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 6 in., depth 401 ft, cased to 121.5 ft, open hole 121.5-401 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Graphic water-level recorder April 1978 to October 1979. Intermittent measurement with chalked tape by USGS personnel May 1976 to April 1978.
DATUM.--Elevation of land-surface datum is 772 ft above sea level, from topographic map. Measuring point: Top of casing, 1.76 ft above land-surface datum.
REMARKS.--Ely (Northwest) Railroad well. Records for May 1976 to September 1988 are unpublished and available in the files of the Iowa District Office.
PERIOD OF RECORD.--May 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 3.03 ft below land-surface datum, August 26, 1993; lowest measured, 19.96 ft below land-surface datum, June 14, 1977.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	12.63	FEB 22	13.88	MAY 15	15.44	AUG 15	13.97

WATER YEAR 2000 HIGHEST 12.63 NOV 02, 1999 LOWEST 15.44 MAY 15, 2000

420200091363001. Local number 83-07-01 BADC.
LOCATION.--Lat 42°02′00″, long 91°36′36″, Hydrologic Unit 07080206, located in the town of Marion. Owner: Town of Marion
AQUIFER.--Cambrian-Trempealeau Group
WEL CHARACTERISTCS.--Drilled public-use well, depth 1570, casing information not available.
INSTRUMENTATION.--Quarterly measurements using airline by an observer.
DATUM.--Elevation of land-surface datum is 793 ft above sea level, from topographic map.
REMARKS.--Marion No.4
PERIOD OF RECORD.--August 1997 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 93 ft below land-surface datum, August 18, 2000; lowest measured 325 ft below land-surface datum, August 325, 1999

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL
MAY 22	309	AUG 18	93

WATER YEAR 2000 HIGHEST 93 AUG 18, 2000 LOWEST 309 MAY 22, 2000

420219091344101. Local number 84-06-32 BCBC.
LOCATION.--Lat 42°02′45″, long 91°34′43″, Hydrologic Unit 07080206, located in the town of Marion near Tauber park on the corner of 31st St. and 23rd Ave. Owner: Town of Marion.
AQUIFER.--Cambrian/Ordovician- Jordan sandstone.
WELL CHARACTERISTICS.--Drilled public-use well, diameter 24 to 12.5 in., depth 1660 ft, open hole from 1150-1660 ft.
INSTRUMENTATION.--Quarterly measurements using airline by an observer.
DATUM.--Elevation of land-surface datum is 863 ft above sea level, from topographic map.
REMARKS.--Marion No. 5.
PERIOD OF RECORDS.--January 1997 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 330 ft. below land surface datum, January 28, 1997 and April 21, 1997; lowest measured, 384 ft. below land-surface datum, August 18, 1999.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL
MAY 22	350	AUG 18	350

WATER YEAR 2000 HIGHEST 350 MAY 22, 2000 AUG 18, 2000 LOWEST 350 MAY 22, 2000 AUG 18, 2000

LINN COUNTY--Continued

415422091422601. Local number, 82-07-18 CDCD.
LOCATION.--Lat 41°54′22″, long 91°42′29″, Hydrologic Unit 07080205, on 76th Avenue SW, approximately 1.5 mi west of U.S. Highway 218, Cedar Rapids. Owner: Edwin J. Hynek.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Dug unused water-table well, diameter 4 ft, depth 13.5 ft, cribbed with brick.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Graphic water-level recorder July 1959 to September 1987.
DATUM.--Elevation of land-surface datum is 835 ft above sea level, from topographic map. Measuring point: Base of recorder shelter, 0.37 ft above land-surface datum.
REMARKS.--Well previously owned by Lester Petrak.
PERIOD OF RECORD.--July 1959 to current year.
REVISED RECORDS.--WDR IA-84-1.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 1.09 ft below land-surface datum, August 4, 1968; lowest recorded, 11.75 ft below land-surface datum, February 8, 1977.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	11.75	FEB 24	10.45	MAY 15	7.43	AUG 15	6.67

WATER YEAR 2000 HIGHEST 6.67 AUG 15, 2000 LOWEST 11.75 NOV 02, 1999

415725091410101. Local number, 83-07-32 ACDC.
LOCATION.--Lat 41°57′25″, long 91°41′01″, Hydrologic Unit 07080205, northwest corner of 22nd Avenue SW and 11th Street SW, Cedar Rapids. Owner: Floyd Fetter.
AQUIFER.--Silurian: limestone of Silurian age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 5 in., depth 282 ft. Casing information not available.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 805 ft above sea level, from topographic map. Measuring point: Plug in well cover at land-surface datum.
REMARKS.--Water levels may be affected by pumping of near by wells.
PERIOD OF RECORD.--July 1940 to current year.
REVISED RECORDS.--WDR IA-88-1.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 75.88 ft below land-surface datum, January 26, 1942; lowest measured, 107.00 ft below land-surface datum, September 16, 1976.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	88.89	FEB 24	88.26	MAY 15	90.56	AUG 15	91.72

WATER YEAR 2000 HIGHEST 88.26 FEB 24, 2000 LOWEST 91.72 AUG 15, 2000

LINN COUNTY--Continued

415834091351601. Local number, 83-06-30 ABBA.
LOCATION.--Lat 41°58'34", long 91°35'14", Hydrologic Unit 07080206, approximately 200 ft west of 5201 Mount Vernon Road SE, Cedar Rapids. Owner: Vulcan Auto Yard. Formerly owned by B.L. Anderson.
AQUIFER.--Silurian-Devonian: dolomite of Silurian and limestone and dolomite of Devonian age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 6 in., depth 76.5 ft. Casing information not available.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 755 ft above sea level, from topographic map. Measuring point: Hole in pump base, 0.50 ft above land-surface datum.
REMARKS.--Katz well.
PERIOD OF RECORD.--May 1940 to current year.
EXTREMES OF PERIOD OF RECORD.--Highest water level measured, 37.68 ft below land-surface datum, August 24, 1993; lowest measured, 53.90 ft below land-surface datum, December 21, 1970.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	49.49	FEB 24	50.25	MAY 15	50.52	AUG 15	49.80

WATER YEAR 2000 HIGHEST 49.49 NOV 02, 1999 LOWEST 50.52 MAY 15, 2000

420300091325801. Local number, 84-06-33 ABBB.
LOCATION.--Lat 42°03'00", long 91°32'58", Hydrologic Unit 07080206, near the City of Marion on the east side of Iowa Highway 13, approximately 1 mi north of U.S. Highway 151. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Silurian: dolomite of Silurian age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 6 in. to 142 ft, 5 in. 142-161 ft, depth 481 ft, open hole 161-481 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 838 ft above sea level, from topographic map. Measuring point: Top of casing, 0.90 ft above land-surface datum.
REMARKS.--Marion well.
PERIOD OF RECORD.--June 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 42.15 ft below land-surface datum, June 18, 1986; lowest measured, 50.26 ft below land-surface datum, December 1, 1989.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	46.98	FEB 24	47.52	MAY 15	47.88	AUG 15	46.65

WATER YEAR 2000 HIGHEST 46.65 AUG 15, 2000 LOWEST 47.88 MAY 15, 2000

LINN COUNTY--Continued

420508091395811. Local number, 84-07-16 DBBB.
LOCATION.--Lat 42°05'15", long 91°40'04", Hydrologic Unit 07080205, approximately 0.5 mi south of County Road E-34, north of the Town of Robins. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Silurian: dolomite of Silurian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 6 in. to 60.6 ft, 5 in. to 173 ft, depth 520 ft, open hole 173-520 ft. Open to Devonian rock 173-197, Silurian 196.5-510 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Graphic water-level recorder November 1975 to September 1979. Intermittent measurement with chalked tape by USGS personnel April 1975 to November 1975.
DATUM.--Elevation of land-surface datum is 873 ft above sea level, from topographic map. Measuring point: Top of casing, 1.20 ft above land-surface datum.
REMARKS.--Robins well. Records for April 1975 to September 1988 are unpublished and available in the files of the Iowa District Office.
PERIOD OF RECORD.--April 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 36.33 ft below land-surface datum, August 24, 1993; lowest measured, 57.50 ft below land-surface datum, December 1, 1989.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	49.66	MAY 10	48.78	AUG 04	45.35
FEB 24	51.13	15	49.10	15	46.41
APR 24	49.40	JUN 27	44.95	SEP 06	48.40

WATER YEAR 2000 HIGHEST 44.95 JUN 27, 2000 LOWEST 51.13 FEB 24, 2000

420526091370701. Local number, 84-07-13 BCBB.
LOCATION.--Lat 42°05'26", long 91°37'07", Hydrologic Unit 07080206, approximately 0.25 mi south of the junction of County Roads W-58 and E-34, on the east side of the road, or approximately 3.75 mi north of the City of Marion. Owner: U.S. Geological Survey.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 1.25 in., depth 17 ft, screened 15-17 ft.
INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 882 ft above sea level, from topographic map. Measuring point: Nipple welded to casing, 1.24 ft above land-surface datum.
REMARKS.--USGS13E2 well.
PERIOD OF RECORD.--September 1948 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.93 ft below land-surface datum, May 18, 1982; lowest measured, 15.19 ft below land-surface datum, January 20, 1977.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 21	7.14	JAN 25	6.36	APR 13	6.46	JUL 14	3.55
NOV 17	7.14	FEB 15	6.44	MAY 24	5.10	AUG 15	5.15
DEC 16	7.09	MAR 21	4.74	JUN 16	3.34	SEP 21	6.85

WATER YEAR 2000 HIGHEST 3.34 JUN 16, 2000 LOWEST 7.14 OCT 21, 1999 NOV 17, 1999

420730091490401. Local number, 85-08-31 DDCD1.
LOCATION.--Lat 42°07'29", long 91°49'01", Hydrologic Unit 07080205, at the fenced north end of Pleasant Creek Reservoir near the beach house in the beach area. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Silurian: dolomite of Silurian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 6 in. to 53.5 ft, 5 in. to 214 ft, depth 481 ft, open hole 214-481 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Graphic water-level recorder May 1975 to December 1979.
DATUM.--Elevation of land-surface datum is 833 ft above sea level, from topographic map. Measuring point: Top of casing, 1.17 ft above land-surface datum.
REMARKS.--Pleasant Creek Reservoir/Silurian well. Records for May 1975 to September 1988 are unpublished and available in the files of the Iowa District Office.
PERIOD OF RECORD.--May 1975 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 20.73 ft below land-surface datum, May 03, 1999; lowest measured, 108.49 ft below land-surface datum, August 4, 1997.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	28.40	FEB 24	28.12	MAY 15	35.79	AUG 15	37.92

WATER YEAR 2000 HIGHEST 28.12 FEB 24, 2000 LOWEST 37.92 AUG 15, 2000

LINN COUNTY--Continued

420730091490402. Local number, 85-08-31 DDCD2.
LOCATION.--Lat 42°07'29", long 91°49'01", Hydrologic Unit 07080205, at the fenced north end of Pleasant Creek Reservoir near the beach house in the beach area. Owner: Geological Survey Bureau, DNR, and U.S. Geological Survey.
AQUIFER.--Devonian: limestone and dolomite of Devonian age.
WELL CHARACTERISTICS.--Drilled observation artesian well, diameter 5 in., depth 205 ft, cased to 52 ft, open hole 52-205 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Graphic water-level recorder May 1975 to December 1979.
DATUM.--Elevation of land-surface datum is 841 ft above sea level, from topographic map. Measuring point: Top of casing, 2.38 ft above land-surface datum.
REMARKS.--Pleasant Creek Reservoir/Devonian well. Records for May 1975 to September 1989 are unpublished and available in the Iowa District Office.
PERIOD OF RECORD.--May 1975 to May 1980, April 1984 to present.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 14.60 ft below land-surface datum, May 31, 1991; lowest measured, 48.55 ft below land-surface datum, November 12, 1976.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	19.42	MAY 15	35.79	AUG 15	20.39
FEB 24	19.36	15	20.15		

WATER YEAR 2000 HIGHEST 19.36 FEB 24, 2000 LOWEST 35.79 MAY 15, 2000

421149091403301. Local number, 85-07-04 CCCC.
LOCATION.--Lat 42°11'51", long 91°40'33", Hydrologic Unit 07080205, approximately 5 mi east of the Town of Center Point, north side of County Road E-16. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Silurian-Devonian: dolomite of Silurian age and limestone and dolomite of Devonian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 6 in. to 41 ft, 5 in 129-147 ft, depth 435 ft, open hole 41-129 ft and 147-435 ft. Devonian rock 23-139 ft, Silurian rock 139-431 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Graphic water-level recorder March 1974 to December 1979. Intermittent measurement with chalked tape by USGS personnel July 1973 to March 1974.
DATUM.--Elevation of land-surface datum is 912 ft above sea level, from topographic map. Measuring point: Nipple welded to plate on top of casing, 1.21 ft above land- surface datum.
REMARKS.--Alice well.
PERIOD OF RECORD.--July 1973 to current year.
REVISED RECORDS.--WDR IA-84-1.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 17.06 ft below land-surface datum, June 10, 1974; lowest measured, 34.27 ft below land-surface datum, December 1, 1989.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	30.38	FEB 24	30.36	MAY 15	30.59	AUG 15	27.49

WATER YEAR 2000 HIGHEST 27.49 AUG 15, 2000 LOWEST 30.59 MAY 15, 2000

421207091312201. Local number, 85-06-03 DABB.
LOCATION.--Lat 42°12'07", long 91°31'24", Hydrologic Unit 07080102, located east of State Highway 13 in the Town of Central City. Owner: Town of Central City.
AQUIFER.--Silurian
WELL CHARCTERISTICS.--Drilled pumping well, diameter 6 in., depth 106 ft., casing information not available.
INSTRUMENTATION.--Quarterly measurements with airline by USGS personnel.
DATUM.--Elevation of land-surface datum is 825 ft, by topographic map.
REMARKS.--Central City Well
PERIOD OF RECORD.--August 1997 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 10 feet below land-surface datum, August 09, 1999 and Aug. 03, 1998; lowest measured, 22 ft below land-surface datum, February 23, 1998.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	16	FEB 24	15	MAY 15	14	AUG 15	15

WATER YEAR 2000 HIGHEST 14.0 MAY 15, 2000 LOWEST 16 NOV 02, 1999

LYON COUNTY

431812096302701. Local number, 98-48-16 DDAD.
LOCATION.--Lat 43°18′21″, long 96°30′29″, Hydrologic Unit 10170203, approximately 3.5 mi east of the City of Canton, S.D., south of U.S. Highway 18. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 358 ft, screened 335-355 ft. Open to Late Precambrian Sioux quartzite 353-358 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,268 ft above sea level, from topographic map. Measuring point: Top of casing, 2.00 ft above land-surface datum.
REMARKS.--Well D-20.
PERIOD OF RECORD.--December 1978 to December 1980, May 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 91.89 ft below land-surface datum, July 8, 1986; lowest measured, 107.60 ft below land-surface datum, November 7, 1991.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	105.94	FEB 23	105.07	MAY 08	104.65	AUG 08	105.14

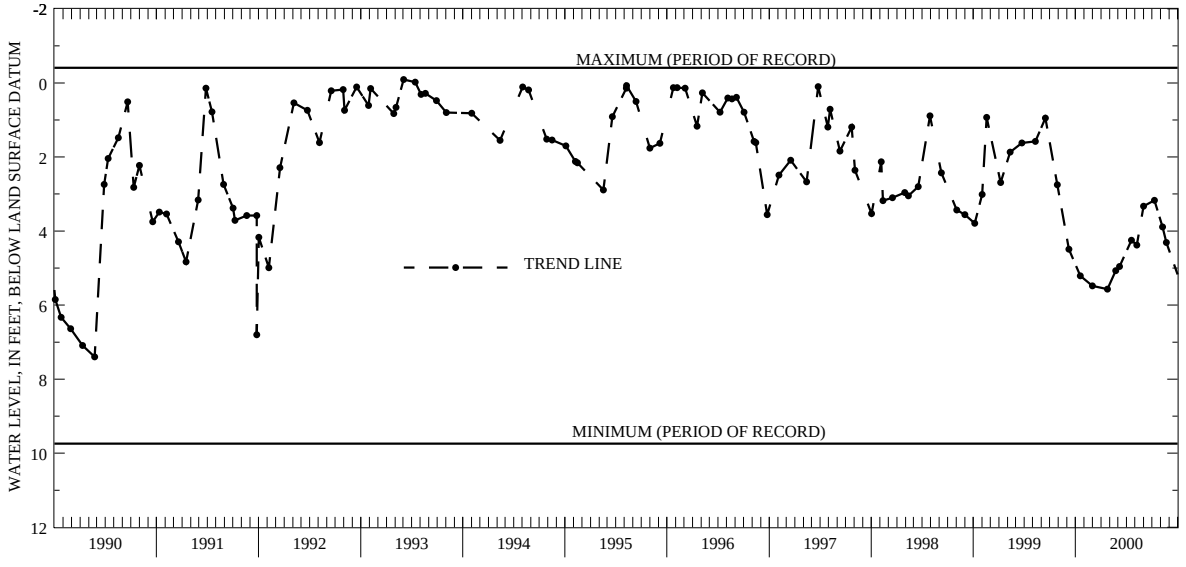
WATER YEAR 2000 HIGHEST 104.65 MAY 08, 2000 LOWEST 105.94 NOV 09, 1999

432140095595301. Local number, 99-44-26 DDDD.
LOCATION.--Lat 43°21′40″, long 95°59′53″, Hydrologic Unit 10170204, 1 mi north of the City of George, west of Iowa Highway 339. Owner: State of Iowa.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 20 in., depth 38 ft, lined with tile.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,400 ft above sea level, from topographic map. Measuring point: Plug in well cover, 2.01 ft above land-surface datum.
REMARKS.--Well No. 26R1.
PERIOD OF RECORD.--October 1940 to June 1943, May 1947 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, -0.41 ft above land-surface datum, May 10, 1995; lowest measured, 9.74 ft below land-surface datum, October 24, 1940.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 19	5.21	FEB 23	5.07	MAY 08	4.38	AUG 08	3.89
DEC 01	5.48	MAR 07	4.96	JUN 01	3.33	22	4.31
JAN 24	5.57	APR 19	4.25	JUL 10	3.17		

WATER YEAR 2000 HIGHEST 3.17 JUL 10, 2000 LOWEST 5.57 JAN 24, 2000



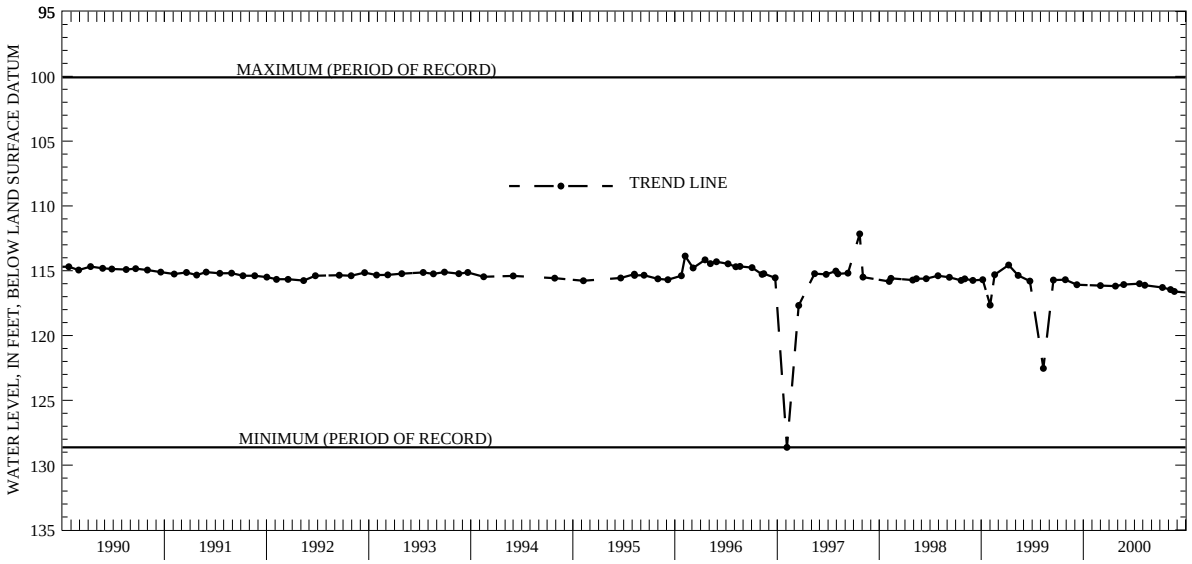
LYON COUNTY--Continued

432553096105701. Local number, 99-45-05 ABAC.
LOCATION.--Lat 43°25'53", long 96°10'57", Hydrologic Unit 10170204, 0.05 mi south of Iowa Highway 9 on 2nd Street, Rock Rapids. Owner: City of Rock Rapids.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 10 in., depth 375 ft, cased to 296 ft, open hole 296-375 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,368 ft above sea level, from topographic map. Measuring point: Plug in cover over casing, 1.00 ft above land-surface datum.
REMARKS.--City test well No. 3.
PERIOD OF RECORD.--August 1960 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 100.08 ft below land-surface datum, July 27, 1964; lowest measured, 128.62 ft below land-surface datum, November 5, 1996.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 01	116.15	FEB 23	116.07	MAY 08	116.12	AUG 08	116.45
JAN 24	116.19	APR 19	116.00	JUL 10	116.29	22	116.60

WATER YEAR 2000 HIGHEST 116.00 APR 19, 2000 LOWEST 116.60 AUG 22, 2000



432601096335511. Local number, 100-48-31 CCCC11.
LOCATION.--Lat 43°26'01", long 96°33'55", Hydrologic Unit 10170203, 0.5 mi west and 2.5 mi south of the Village of Granite. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 657 ft, screened 450-455 ft and 630-650 ft. Dakota 437-653 ft, Sioux Quartzite 653-657 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,417 ft above sea level, from topographic map. Measuring point: Top of casing at land-surface datum.
REMARKS.--Well D-19.
PERIOD OF RECORD.--December 1978 to December 1980, May 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 151.57 ft below land-surface datum, February 11, 1994; lowest measured, 158.25 ft below land-surface datum, April 11, 1990.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	155.30	FEB 23	155.53	MAY 08	155.66	AUG 08	155.90

WATER YEAR 2000 HIGHEST 155.30 NOV 09, 1999 LOWEST 155.90 AUG 08, 2000

MADISON COUNTY

411727093483001. Local number, 75-26-23 AAAC.
LOCATION.--Lat 41°17′26″, long 93°48′36″, Hydrologic Unit 07100008, near the shelter house in the city park, St. Charles. Owner: City of St. Charles.
AQUIFER.--Mississippian: limestone of Mississippian age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 8 in., depth 867 ft, cased to 657 ft, open hole 657-867 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,067 ft above sea level, from topographic map. Measuring point: Plug in well cover, 1.20 ft above land-surface datum.
REMARKS.--City well No. 1.
PERIOD OF RECORD.--November 1962 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 261.76 ft below land-surface datum, November 20, 1962; lowest measured, 281.01 ft below land-surface datum, August 09, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 07	280.31	DEC 07	280.49	JUN 29	280.93
NOV 10	280.42	MAY 11	280.16	AUG 09	281.01

WATER YEAR 2000 HIGHEST 279.71 MAR 04, 1999 LOWEST 281.01 AUG 09, 2000

MAHASKA COUNTY

411912092273601. Local number, 75-14-10 BAAC.
LOCATION.--Lat 41°19′13″, long 92°27′36″, Hydrologic Unit 07080106, approximately 0.5 mi south of Iowa Highway 92 in the town of Rose Hill. Owner: City of Rose Hill.
AQUIFER.--Mississippian: limestone and dolomite of Mississippian age.
WELL CHARACTERISTICS.--Drilled unused public-supply artesian well, diameter 6 in., depth 370 ft, casing information not available.
INSTRUMENTATION.-- Quarterly measurement with chalked tape by USGS personnel. Analog digital water-level recorder July 1990 to October 1992. Intermittent measurement with chalked tape by USGS personnel May 1989 to June 1989.
DATUM.--Elevation of land-surface datum is 815 ft above sea level, from topographic map. Measuring point: Top of recorder platform, 1.63 ft above land-surface datum.
REMARKS.--Rose Hill No. 2 well.
PERIOD OF RECORD.--May 1989 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 100.69 ft below land-surface datum, July 30, 1992; lowest measured, 107.51 ft below land-surface datum, February 08, 1999.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	100.80	FEB 23	100.80	MAY 16	100.86	AUG 14	100.90

WATER YEAR 2000 HIGHEST 100.80 NOV 04, 1999 FEB 23, 2000 LOWEST 100.90 AUG 14, 2000

MAHASKA COUNTY--Continued

411914092274701. Local number, 75-14-10 BABC.
LOCATION.--Lat 41°19'14", long 92°27'47", Hydrologic Unit 07080106, approximately 0.45 mi south of Iowa Highway 92, behind City Hall in the Town of Rose Hill. Owner: City of Rose Hill.
AQUIFER.--Mississippian: limestone and dolomite of Mississippian age.
WELL CHARACTERISTICS.--Drilled unused public-supply artesian well, diameter 5 in., depth 273 ft, cased to 106 ft, open hole 106-273 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 817 ft above sea level, from topographic map. Measuring point: Top of casing, 1.56 ft above land-surface datum.
REMARKS.--Rose Hill No. 4 well.
PERIOD OF RECORD.--September 1988 to current year.
REVISION.--Site identification number. Previously published as 411914092273001.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 99.56 ft below land-surface datum, May 17, 1995; lowest measured, 106.03 ft below land-surface datum, May 05, 1999.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	100.40	FEB 23	100.41	MAY 16	100.46	AUG 14	100.44

WATER YEAR 2000 HIGHEST 100.40 NOV 04, 1999 LOWEST 100.46 MAY 16, 2000

412020092471002. Local number, 76-17-35 CADB.
LOCATION.--Lat 41°20'26", long 92°47'09", Hydrologic Unit 07100009, 150 ft east of the old treatment plant near a retirement village on the north end of the Town of Leighton. Owner: Town of Leighton.
AQUIFER.--Cambrian-Ordovician: sandstone of Late Cambrian and sandstone and sandy dolomite of Early Ordovician age.
WELL CHARACTERISTICS.--Drilled unused public-supply artesian well, diameter 8 in. to 383 ft, 5 in. 383-1778 ft, depth 2200 ft, open 1778-2200 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 820 ft above sea level, from topographic map. Measuring point: Top of casing, 5.43 ft above land-surface datum.
REMARKS.--Leighton No. 4 well.
PERIOD OF RECORD.--May 1989 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 99.67 ft below land-surface datum, May 16, 2000; lowest measured, 282.96 ft below land-surface datum, August 20, 1996.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	221.01	FEB 23	210.20	MAY 16	99.67	AUG 14	193.46

WATER YEAR 2000 HIGHEST 99.67 MAY 16, 2000 LOWEST 221.01 NOV 04, 1999

MARION COUNTY

411323093142601. Local number, 74-21-11 DBCB1.
LOCATION.--Lat 41°13'25", long 93°14'27", Hydrologic Unit 07100008, north of the water tower in the town square. Owner: Town of Melcher.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 18 in., depth 9.7 ft, lined with tile. Depth originally 25 ft, depth measured in 1981 and 1991 at 12.2 ft.
INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 948 ft above sea level, from topographic map. Measuring point: Top of tile casing at land-surface datum.
REMARKS.--Town well No. 2.
PERIOD OF RECORD.--March 1950 to current year.
REVISION.--Highest water level measured, 0.20 ft below land-surface datum, October 10, 1973; lowest measured, 15.27 ft below land-surface datum, October 22, 1953.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.20 ft below land-surface datum, October 10, 1973; lowest measured, 15.27 ft below land-surface datum, October 22, 1953.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 13	7.07	JAN 11	8.27	MAY 10	5.90	AUG 02	5.58
NOV 04	7.30	FEB 15	7.48	16	6.51	SEP 14	6.58
DEC 16	7.21	APR 04	6.60	JUN 22	5.57		

WATER YEAR 2000 HIGHEST 5.57 JUN 22, 2000 LOWEST 8.27 JAN 11, 2000

411328093143503. Local number, 74-21-11 CAAD3.
LOCATION.--Lat 41°13'30", long 93°14'33", Hydrologic Unit 07100008, northeast corner of the junction of West 1st Street and North A Street, Melcher. Owner: Town of Melcher.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 1.25 in., depth 96.5 ft, screened 78-80 ft, open hole 80-96.5 ft.
INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 944 ft above sea level, from topographic map. Measuring point: Nipple welded to casing, 0.51 ft above land-surface datum.
REMARKS.--Town well No. 5, well 11L1.
PERIOD OF RECORD.--August 1953 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 8.29 ft below land-surface datum, May 7, 1996; lowest measured (nearby well pumping), 55.16 ft, revised, below land-surface datum, March 4, 1954.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	13.69	FEB 23	13.98	MAY 16	13.44	AUG 14	12.40

WATER YEAR 2000 HIGHEST 12.40 AUG 14, 2000 LOWEST 13.98 FEB 23, 2000

411329093142902. Local number, 74-21-11 DBBB2.
LOCATION.--Lat 41°13'33", long 93°14'29", Hydrologic Unit 07100008, southeast corner of the T junction of North B Street and Main Street, Melcher. Owner: Town of Melcher.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 6 in., depth 119 ft, cased to 76 ft, open hole 76-119 ft.
INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 943 ft above sea level, from topographic map. Measuring point: Nipple welded to plate on top of casing, 1.82 ft above land- surface datum.
REMARKS.--Town well No. 3, well 11K1.
PERIOD OF RECORD.--July 1945 to December 1955, October 1976 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.16 ft below land-surface datum, May 07, 1996; lowest measured (nearby well pumping), 108.85 ft below land-surface datum, December 4, 6-7, 1949.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	21.97	FEB 23	21.48	MAY 16	21.94	AUG 14	21.12

WATER YEAR 2000 HIGHEST 21.12 AUG 14, 2000 LOWEST 21.97 NOV 04, 1999

MARSHALL COUNTY

420355092534701. Local number, 84-18-24 CDCA.
LOCATION.--Lat 42°03′55″, long 92°53′47″, Hydrologic Unit 07080208, east of Riverview Park and south of the sewage treatment plant, Marshalltown. Owner: City of Marshalltown.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 8 in., depth 200 ft, screened 190-200 ft.
INSTRUMENTATION.--Quarterly measurement with electric line or chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 871 ft above sea level, from topographic map. Measuring point: Top of casing, 0.22 ft above land-surface datum.
REMARKS.--Marshalltown city well.
PERIOD OF RECORD.--May 1949 to August 1971, March 1973 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 4.92 ft below land-surface datum, July 13, 1951; lowest measured, 61.04 ft below land-surface datum, November 2, 1995.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	60.12	FEB 14	49.52	MAY 10	59.15	AUG 07	52.68

WATER YEAR 2000 HIGHEST 49.52 FEB 14, 2000 LOWEST 60.12 NOV 08, 1999

MILLS COUNTY

405641095365101. Local number, 71-42-24 AAAA.
LOCATION.--Lat 40°56'41", long 95°36'51", Hydrologic Unit 10240002, at the intersection of County Roads M-16 and H-46, approximately 5 mi southeast of the City of Malvern. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Buried channel of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 255 ft, screened 240-250 ft, gravel packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,102 ft above sea level, from topographic map. Measuring point: Top of casing, 2.20 ft above land-surface datum.
REMARKS.--Well SW-41.
PERIOD OF RECORD.--June 1990 and August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 135.50 feet below land-surface datum, August 5, 1993; lowest measured, 144.30 ft below land-surface datum, June 13, 1990.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	139.46	FEB 25	139.39	MAY 11	140.57	AUG 10	140.09

WATER YEAR 2000 HIGHEST 139.39 FEB 25, 2000 LOWEST 140.57 MAY 11, 2000

405813095433201. Local number, 71-42-07 BBCD.
LOCATION.--Lat 40°58'13", long 95°43'32", Hydrologic Unit 10240001, on the west side of the T-intersection of county roads, approximately 5.5 mi south of the City of Glenwood. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Buried channel: sand and gravel of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 351 ft, screened 332-342 ft, gravel packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,122 ft above sea level, from topographic map. Measuring point: Top of casing, 1.80 ft above land-surface datum.
REMARKS.--Well SW-40.
PERIOD OF RECORD.--August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 165.70 feet below land-surface datum, August 5, 1993; lowest measured, 171.94 ft below land-surface datum, November 10, 1994.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	170.36	FEB 25	170.46	MAY 11	171.04	AUG 10	170.65

WATER YEAR 2000 HIGHEST 170.36 NOV 10, 1999 LOWEST 171.04 MAY 11, 2000

MITCHELL COUNTY

432156092484101. Local number, 95-17-23 DAA1.
LOCATION.--Lat 43°22'42", long 92°48'41", Hydrologic Unit 07080201, approximately 4 mi southwest of Staceyville, at the intersection of Highway 218 and County Road T40. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.-- Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in., depth 27 ft, screened 10-27 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,210 ft above sea level, from topographic map. Measuring point: Top of casing, 2.41 ft above land-surface datum.
REMARKS.--Well FM-2T.
PERIOD OF RECORD.--August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.46 ft above land-surface datum, May 6, 1993; lowest measured, 6.46 ft below land-surface datum, February 14, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	5.08	FEB 14	6.46	MAY 09	4.36	AUG 07	3.36

WATER YEAR 2000 HIGHEST 3.36 AUG 07, 2000 LOWEST 6.46 FEB 14, 2000

432156092484102. Local number, 95-17-23 DAA2.
LOCATION.--Lat 43°22'42", long 92°48'41", Hydrologic Unit 07080201, approximately 4 mi southwest of Staceyville, at the intersection of Highway 218 and County Road T40. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.-- Devonian: dolomite of Devonian age.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1 in., depth 70 ft, screened 55-70 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,210 ft above sea level, from topographic map. Measuring point: Top of casing, 2.58 ft above land-surface datum.
REMARKS.--Well FM-2 (1).
PERIOD OF RECORD.--August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.89 ft above land-surface datum, August 23, 1993; lowest measured, 12.44 ft below land-surface datum, February 14, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	11.28	FEB 14	12.44	MAY 09	12.18	AUG 07	9.84

WATER YEAR 2000 HIGHEST 9.84 AUG 07, 2000 LOWEST 12.44 FEB 14, 2000

432156092484103. Local number, 95-17-23 DAA3.
LOCATION.--Lat 43°22'42", long 92°48'41", Hydrologic Unit 07080201, approximately 4 mi southwest of Staceyville, at the intersection of Highway 218 and County Road T40. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.-- Devonian: dolomite of Devonian age.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.5 in., depth 150 ft, screened 110-150 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,210 ft above sea level, from topographic map. Measuring point: Top of casing, 2.55 ft above land-surface datum.
REMARKS.--Well FM-2 (2).
PERIOD OF RECORD.--August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 6.78 ft above land-surface datum, August 23, 1993; lowest measured, 13.32 ft below land-surface datum, February 14, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	11.86	FEB 14	13.32	MAY 09	13.31	AUG 07	10.14

WATER YEAR 2000 HIGHEST 10.14 AUG 07, 2000 LOWEST 13.32 FEB 14, 2000

MITCHELL COUNTY--Continued

432156092484104. Local number, 95-17-23 DAA4.
LOCATION.--Lat 43°22'42", long 92°48'41", Hydrologic Unit 07080201, approximately 4 mi southwest of Staceyville, at the intersection of Highway 218 and County Road T40. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.-- Devonian: dolomite of Devonian age.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.5 in., depth 250 ft, screened 188-250 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,210 ft above sea level, from topographic map. Measuring point: Top of casing, 2.44 ft above land-surface datum.
REMARKS.--Well FM-2 (3).
PERIOD OF RECORD.--August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 5.54 ft above land-surface datum, May 6, 1993; lowest measured, 16.52 ft below land-surface datum, May 9, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	13.98	FEB 14	16.28	MAY 09	16.52	AUG 07	11.61

WATER YEAR 2000 HIGHEST 11.61 AUG 07, 2000 LOWEST 16.52 MAY 09, 2000

432156092484105. Local number, 95-17-23 DAA5.
LOCATION.--Lat 43°22'42", long 92°48'41", Hydrologic Unit 07080201, approximately 4 mi southwest of Staceyville, at the intersection of Highway 218 and County Road T40. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.-- Devonian: dolomite of Devonian age.
WELL CHARACTERISTICS.--Drilled observation well, diameter 1.5 in., depth 348 ft, screened 278-348 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,210 ft above sea level, from topographic map. Measuring point: Top of casing, 2.37 ft above land-surface datum.
REMARKS.--Well FM-2 (4).
PERIOD OF RECORD.--August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 10.04 ft above land-surface datum, August 23, 1993; lowest measured, 22.16 ft below land-surface datum, May 09, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	18.50	FEB 14	16.81	MAY 09	22.16	AUG 07	15.61

WATER YEAR 2000 HIGHEST 15.61 AUG 07, 2000 LOWEST 22.16 MAY 09, 2000

MONONA COUNTY

415456095414101. Local number, 82-42-14 ADCA.
LOCATION.--Lat 41°54'56", long 95°41'41", Hydrologic Unit 10230007, approximately 6 mi southeast of the Town of Soldier, on the north side of Iowa Highway 37. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 341 ft, slotted 311-336 ft, gravel-packed, open 336-341 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,340 ft above sea level, from topographic map. Measuring point: Top of casing, 2.02 ft above land-surface datum.
REMARKS.--Well WC-4.
PERIOD OF RECORD.--May 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 240.25 ft below land-surface datum, January 10, 1984; lowest measured, 246.69 ft below land-surface datum, July 28, 1981.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	243.82	FEB 22	244.07	AUG 08	245.29
09	244.09	MAY 09	244.38		

WATER YEAR 2000 HIGHEST 243.82 NOV 03, 1999 LOWEST 245.29 AUG 08, 2000

420004095451501. Local number, 83-42-17 ACDD.
LOCATION.--Lat 41°00'04", long 95°45'15", Hydrologic Unit 10230001, approximately 1.75 mi northeast of the Town of Soldier, 0.25 mi west of Iowa Highway 183. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 161 ft, screened 149-154 ft. Open to Pennsylvanian shale and limestone 153-161 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,160 ft above sea level, from topographic map. Measuring point: Top of casing, 2.20 ft above land-surface datum.
REMARKS.--Well WC-176.
PERIOD OF RECORD.--May 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 54.50 ft below land-surface datum, November 6, 1991; lowest measured, 64.09 ft below land-surface datum, September 7, 1983.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	59.05	FEB 23	61.10	MAY 09	59.69	AUG 08	59.93

WATER YEAR 2000 HIGHEST 59.05 NOV 09, 1999 LOWEST 61.10 FEB 23, 2000

420139095155701. Local number, 83-43-04 CBCB.
LOCATION.--Lat 41°01'39", long 95°51'57", Hydrologic Unit 10230005, approximately 5.5 mi northwest of the Town of Soldier and 1.5 mi north of Iowa Highway 37. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 321 ft, screened 297-315 ft, gravel-packed, open hole 315-321 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,235 ft above sea level, from topographic map. Measuring point: Top of casing, 2.53 ft above land-surface datum.
REMARKS.--Well WC-5.
PERIOD OF RECORD.--May 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 183.60 ft below land-surface datum, November 3, 1993; lowest measured, 189.96 ft below land-surface datum, February 2, 1982.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	184.89	FEB 23	185.03	MAY 09	185.09	AUG 08	185.48

WATER YEAR 2000 HIGHEST 184.89 NOV 09, 1999 LOWEST 185.48 AUG 08, 2000

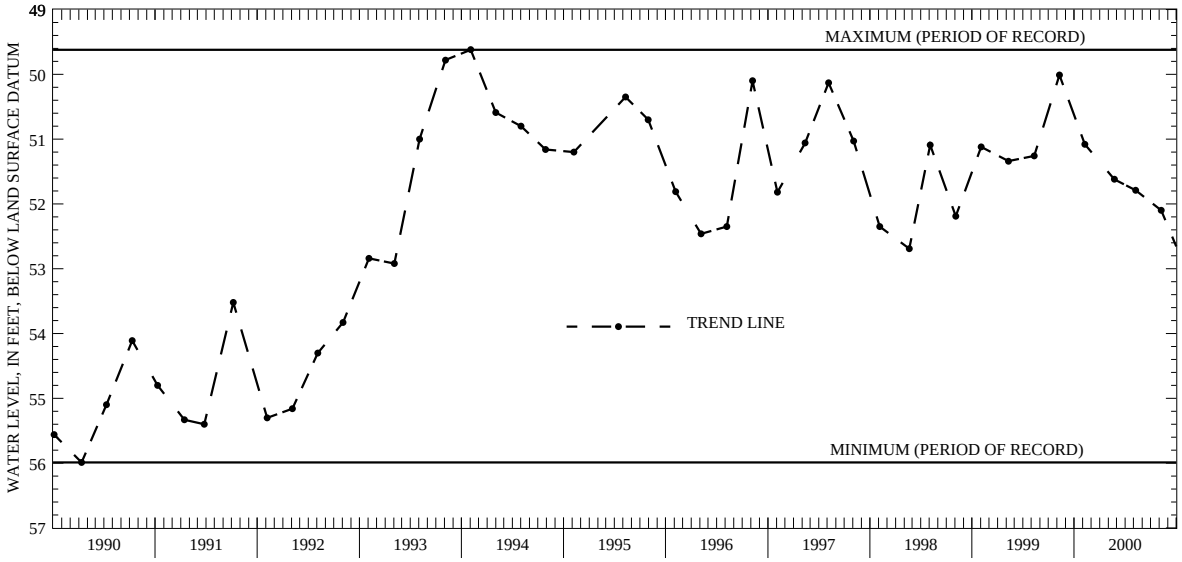
MONONA COUNTY--Continued

421018095591301. Local number, 85-44-17 DCAA.
LOCATION.--Lat 41°10′18″, long 95°59′13″, Hydrologic Unit 10230003, approximately 2.5 mi southwest of the Town of Rodney on the north side of County Road L-12. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 135 ft, screened 115-125 ft, gravel-packed.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,110 ft above sea level, from topographic map. Measuring point: Top of casing, 2.70 ft above land-surface datum.
REMARKS.--Well WC-158.
PERIOD OF RECORD.--October 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 49.62 ft below land-surface datum, November 3, 1993; lowest measured, 55.99 ft below land-surface datum, January 11, 1990.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	51.08	FEB 23	51.62	MAY 09	51.79	AUG 08	52.10

WATER YEAR 2000 HIGHEST 51.08 NOV 09, 1999 LOWEST 52.1 AUG 08, 2000



MONTGOMERY COUNTY

405841095012702. Local number, 71-36-06 DADA2.
LOCATION.--Lat 40°58′41″, long 95°01′27″, Hydrologic Unit 10240009, located east of dam at Viking Lake State Park, approximately 0.3 mi south of Iowa Highway 34 on the west side of road. Owner: Geological Survey Bureau, DNR, and U.S. Geological Survey.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 36 ft, screened 33-36 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by observer and U.S.G.S. personnel.
DATUM.--Elevation of land-surface datum is 1,080 ft above sea level, from topographic map. Measuring point: Top of casing, 2.28 ft above land-surface datum.
REMARKS.--Viking Lake No. 2 (6J2) well.
PERIOD OF RECORD.--June 1989 to present.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.51 ft below land-surface datum, September 9, 1989; lowest measured, 17.15 ft below land-surface datum, August 15, 1989.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 12	16.60	FEB 25	14.94	MAY 11	15.15

WATER YEAR 2000 HIGHEST 14.94 FEB 25, 2000 LOWEST 16.60 NOV 12, 1999

MONTGOMERY COUNTY--continued

410057095075101. Local number, 72-37-29 BABA.
LOCATION.--Lat 41°00'57", long 95°07'50", Hydrologic Unit 10240005, approximately 4.35 mi east of the City of Red Oak, just south of County Road H-34. Owner: John Ogden.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Bored observation water-table well, diameter 3 in., depth 40 ft, screened interval unavailable.
INSTRUMENTATION.--Intermittent measurement with chalked tape by USGS personnel. Submersible pressure transducer and transmitting data collection platform (dcp) installed July, 1998.
DATUM.--Elevation of land-surface datum is 1,275 ft above sea level, from topographic map. Measuring point: Top of casing, 1.20 ft above land-surface datum.
PERIOD OF RECORD.--June 1937 to current year.
REVISION.--Measuring point revised May 10, 1990 to September 10, 1992.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.14 ft below land-surface datum, July 22, 1993; lowest measured, dry, July 8, 1963 and February 3, 1964.

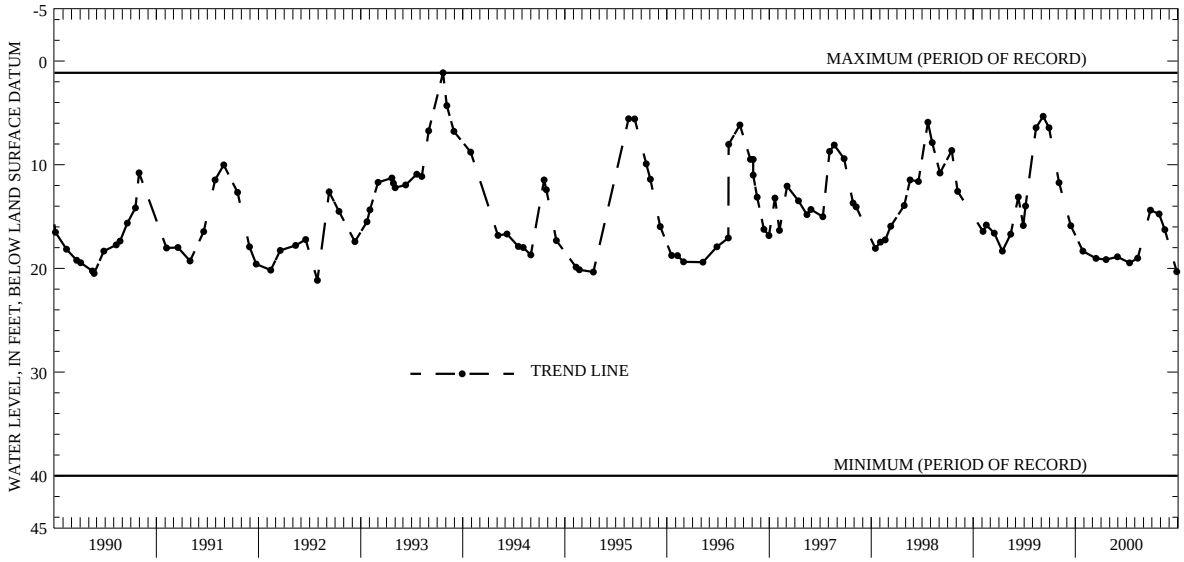
MEASURED WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 28	18.33	FEB 29	18.88	JUN 26	14.39	SEP 28	20.31
DEC 14	19.04	APR 12	19.46	JUL 27	14.75		
JAN 19	19.15	MAY 11	19.01	AUG 16	16.26		

WATER YEAR 2000 HIGHEST 14.39 JUN 26, 2000 LOWEST 20.31 SEP 28, 2000

DEPTH BELOW LAND SURFACE (WATER LEVEL) (FEET), WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.59	18.12	18.21	18.32	18.42	17.90	18.35	17.98	16.79	16.26	17.02	17.80
2	17.63	18.14	18.13	18.26	18.41	17.98	18.34	18.01	16.68	16.28	17.05	17.84
3	17.69	18.13	18.14	18.32	18.33	17.99	18.34	18.06	16.43	16.24	17.16	17.87
4	17.69	18.12	18.23	18.38	18.47	17.98	18.35	18.07	16.44	16.01	17.21	17.99
5	17.65	18.16	18.21	18.39	18.53	17.99	18.26	18.16	16.53	15.46	17.22	18.05
6	17.68	18.21	18.27	18.38	18.47	17.99	18.33	18.17	16.57	15.47	17.22	18.07
7	17.68	18.21	18.20	18.42	18.47	17.99	18.37	18.20	16.58	15.67	17.22	18.07
8	17.67	18.15	18.25	18.32	18.48	17.98	18.46	18.20	16.59	15.81	17.22	18.07
9	17.70	18.09	18.25	18.23	18.38	18.08	18.40	18.23	16.67	15.92	17.22	18.07
10	17.74	18.13	18.29	18.16	18.39	18.19	18.40	18.23	16.76	15.72	17.28	18.07
11	17.84	18.26	18.26	18.38	18.51	18.21	18.44	18.16	16.87	15.56	17.32	18.07
12	17.79	18.23	18.21	18.40	18.51	18.21	18.48	18.20	16.91	15.68	17.33	18.15
13	17.82	18.15	18.23	18.52	18.41	18.20	18.37	18.35	16.56	15.82	17.34	18.18
14	17.83	---	18.19	18.50	18.47	18.20	18.34	18.39	14.53	15.93	17.37	18.18
15	17.78	---	18.18	18.32	18.44	18.18	18.33	18.39	14.42	16.04	17.43	18.24
16	17.85	18.23	18.30	18.43	18.57	18.24	18.38	18.39	15.05	16.17	17.52	18.25
17	17.93	18.19	18.34	18.43	18.54	18.27	18.43	18.37	15.65	16.30	17.53	18.25
18	17.93	18.11	18.38	18.38	18.42	18.25	18.43	18.36	15.84	16.37	17.55	18.25
19	17.95	18.19	18.29	18.30	18.51	18.16	18.32	18.47	15.98	16.47	17.57	18.25
20	17.97	18.26	18.29	18.38	18.54	18.16	17.69	18.48	16.01	16.54	17.58	18.25
21	17.91	18.19	18.36	18.39	18.47	18.27	17.15	18.48	16.16	16.58	17.58	18.31
22	17.93	18.23	18.36	18.34	18.36	18.30	17.11	18.42	16.34	16.68	17.59	18.09
23	18.02	18.18	18.33	18.36	18.09	18.28	17.23	18.43	16.47	16.78	17.62	17.78
24	18.04	18.30	18.38	18.40	17.83	18.14	17.42	18.46	16.25	16.79	17.66	17.79
25	18.03	18.27	18.30	18.39	17.57	18.20	17.58	18.56	15.67	16.82	17.67	17.79
26	18.02	18.13	18.27	18.46	17.57	18.19	17.65	18.57	15.69	16.85	17.67	17.80
27	18.02	18.25	18.27	18.48	17.75	18.14	17.67	18.52	15.89	16.86	17.68	17.85
28	18.02	18.36	18.17	18.48	17.86	18.21	17.78	18.54	15.99	16.90	17.69	17.96
29	18.02	18.42	18.19	18.47	17.82	18.29	17.94	18.57	16.08	16.92	17.74	17.98
30	18.07	18.35	18.27	18.38	---	18.32	17.98	18.57	16.17	16.95	17.77	17.98
31	18.15	---	18.35	18.36	---	18.34	---	17.73	---	17.00	17.77	---
MEAN	17.86	---	18.26	18.38	18.30	18.16	18.08	18.31	16.15	16.29	17.45	18.04
MAX	18.15	---	18.38	18.52	18.57	18.34	18.48	18.57	16.91	17.00	17.77	18.31
MIN	17.59	---	18.13	18.16	17.57	17.90	17.11	17.73	14.42	15.46	17.02	17.78


WATER LEVEL, IN FEET, BELOW LAND SURFACE DATUM
-5
0
10
20
30
40
45
MAXIMUM (PERIOD OF RECORD)
TREND LINE
MINIMUM (PERIOD OF RECORD)
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000

MUSCATINE COUNTY

412120091080401. Local number, 76-02-30 CBAA1.
LOCATION.--Lat 41°21′20″, long 91°08′01″, Hydrologic Unit 07080101, west of the Town of Fruitland on an Iowa State University Agricultural Experiment Farm. Owner: U.S. Geological Survey.
AQUIFER.--Alluvial: Mississippi River sand and gravel of Holocene age.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 6 in., depth 27 ft, screened 24-27 ft.
INSTRUMENTATION.--Intermittent measurement with chalked tape by USGS personnel. Graphic water-level recorder May 1966 to October 1987.
DATUM.--Elevation of land-surface datum is 546 ft above sea level, from topographic map. Measuring point: Top of casing, 3.40 ft above land-surface datum.
REMARKS.--Fruitland/30M4 well.
PERIOD OF RECORD.--May 1966 to current year.
REVISED RECORDS.--WDR IA-84-1.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 7.15 ft below land-surface datum, September 7, 1993; lowest measured, 17.86 ft below land-surface datum, August 2, 1989.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	16.21	FEB 22	17.09	MAY 17	15.95	AUG 16	15.45

WATER YEAR 2000 HIGHEST 15.45 AUG 16, 2000 LOWEST 17.09 FEB 22, 2000

412120091080402. Local number, 76-02-30 CBAA.
LOCATION.--Lat 41°21′20″, long 91°08′04″, Hydrologic Unit 07080101, west of the Town of Fruitland on an Iowa State University Agricultural Experiment Farm. Owner: U.S. Geological Survey.
AQUIFER.--Silurian-Devonian: limestone of Silurian and Devonian age.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 189 ft, screened 169-189 ft.
INSTRUMENTATION.--Intermittent measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 546 ft above sea level, from topographic map. Measuring point: Top of casing, 3.01 ft above land-surface datum.
REMARKS.--Fruitland 13B well.
PERIOD OF RECORD.--October 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 7.12 ft below land-surface datum, August 24, 1993; lowest measured, 16.73 ft below land-surface datum, February 22, 1996.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	16.16	FEB 22	17.00	MAY 17	15.91	AUG 16	15.37

WATER YEAR 2000 HIGHEST 15.37 AUG 16, 2000 LOWEST 17.00 FEB 22, 2000

412120091080403. Local number, 76-02-30 CBAA.
LOCATION.--Lat 41°21′20″, long 91°08′04″, Hydrologic Unit 07080101, west of the Town of Fruitland on an Iowa State University Agricultural Experiment Farm. Owner: U.S. Geological Survey.
AQUIFER.--Alluvial: Mississippi River sand and gravel of Quarternary age.
WELL CHARACTERISTICS.--Drilled observation water-table well, diameter 2 in., depth 100 ft, screened 90-100 ft.
INSTRUMENTATION.--Intermittent measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 546 ft above sea level, from topographic map. Measuring point: Top of casing, 3.13 ft above land-surface datum.
REMARKS.--Fruitland 13C well.
PERIOD OF RECORD.--October 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 7.20 ft below land-surface datum, September 10, 1993; lowest measured, 16.84 ft below land-surface datum, February 22, 1996.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	16.26	FEB 22	17.13	MAY 17	16.00	AUG 16	15.56

WATER YEAR 2000 HIGHEST 15.56 AUG 16, 2000 LOWEST 17.13 FEB 22, 2000

MUSCATINE COUNTY--Continued

413520091013701. Local number, 78-02-01 ACCD.
LOCATION.--Lat 41°35'20", long 91°01'35", Hydrologic Unit 07080206, located approximately one block east of water treatment plant. Owner: City of Wilton Junction.
AQUIFER.--Silurian
WELL CHARACTERISTICS.--Drilled public-supply well, diameter 8 in., depth 450 ft., steel casing to 315 ft., open hole from 315-450 ft.
INSTRUMENTATION.--Quarterly measurements with airline by USGS personnel.
DATUM.--Elevation of land-surface datum is 692 ft above sea level, from topographic map.
REMARKS.--Wilton No.1
PERIOD OF RECORD.--March 1968 to current year.
EXTREMES FOR PERIOD OF RECORD. --Highest water level measured, 33 ft below land-surface datum, March 14, 1968; lowest measured 63, August 19, 1998.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
DEC 28	43.0	APR 18	49.0	AUG 03	41.0

WATER YEAR 2000 HIGHEST 41.0 AUG 03, 2000 LOWEST 49.0 APR 18, 2000

O'BRIEN COUNTY

425610095250611. Local number, 94-39-26 BADB11.
LOCATION.--Lat 41°56'10", long 95°25'06", Hydrologic Unit 10230003, near a dead-end road just south of the Little Sioux River, 0.9 mi north of Iowa Highway 10, approximately 5 mi southeast of the Town of Sutherland. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2.5 in, depth 352 ft, screened 291-295 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,212 ft above sea level, from topographic map. Measuring point: Top of casing, 2.30 ft above land-surface datum.
REMARKS.--Well D-3.
PERIOD OF RECORD.--April 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 34.94 ft below land-surface datum, May 09, 1995; lowest measured, 37.26 ft below land-surface datum, August 08, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	36.81	FEB 15	36.86	MAY 09	37.03	AUG 08	37.26

WATER YEAR 2000 HIGHEST 36.81 NOV 09, 1999 LOWEST 37.26 AUG 08, 2000

430930095350401. Local number, 96-40-05 DDDA1.
LOCATION.--Lat 43°09'28", long 95°35'06", Hydrologic Unit 10230003, approximately 3 mi east of the Town of Sanborn and 2 mi south of U.S. Highway 18. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Ordovician and Dakota: sandy shale of Ordovician age and sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 701 ft, screened 661-701 ft. Dakota 487-688 ft, Ordovician 688-701 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,560 ft above sea level, from topographic map. Measuring point: Top of casing, 4.00 ft above land-surface datum.
REMARKS.--Well D-41.
PERIOD OF RECORD.--June 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 358.39 ft below land-surface datum, July 8, 1986; lowest measured, 364.74 ft below land-surface datum, November 7, 1991.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	361.79	FEB 23	361.46	MAY 08	361.64	AUG 08	362.09

WATER YEAR 2000 HIGHEST 361.46 FEB 23, 2000 LOWEST 362.09 AUG 08, 2000

OSCEOLA COUNTY

431613095251801. Local number, 98-39-26 CDCC.
LOCATION.--Lat 43°16'13", long 95°25'18", Hydrologic Unit 10230003, 3.5 mi south and 2.5 mi east of the Village of May City. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 500 ft, screened 490-500 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,398 ft above sea level, from topographic map. Measuring point: Top of casing, 2.70 ft above land-surface datum.
REMARKS.--Well D-39.
PERIOD OF RECORD.--June 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 189.99 ft below land-surface datum, June 17, 1980; lowest measured, 196.85 ft (nearby well pumping) below land-surface datum, September 6, 1984.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	192.94	FEB 15	192.77	MAY 09	192.71	AUG 09	193.26

WATER YEAR 2000 HIGHEST 192.71 MAY 09, 2000 LOWEST 193.26 AUG 09, 2000

431620095250501. Local number, 98-39-26 CDAD1.
LOCATION.--Lat 43°16'18", long 95°25'01", Hydrologic Unit 10230003, 3.5 mi south and 2.5 mi east of the Village of May City. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Cambrian-Ordovician: St. Peter sandstone of Middle Ordovician age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 662 ft, screened 622-662 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,402 ft above sea level, from topographic map. Measuring point: Top of low pipe, 1.47 ft above land-surface datum.
REMARKS.--Well D-38, Deep Hibbing; in same borehole as well D-38 Shallow Hibbing.
PERIOD OF RECORD.--June 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 192.96 ft below land-surface datum, November 20, 1989; lowest measured, 202.43 ft below land-surface datum, February 07, 1996.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	199.07	FEB 15	198.85	MAY 09	198.99	AUG 09	199.87

WATER YEAR 2000 HIGHEST 198.85 FEB 15, 2000 LOWEST 199.87 AUG 09, 2000

OSCEOLA COUNTY--Continued

431620095250511. Local number, 98-39-26 CDAD11.
LOCATION.--Lat 43°16′18″, long 95°25′01″, Hydrologic Unit 10230003, 3.5 mi south and 2.5 mi east of the Village of May City. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 345 ft, screened 335-345 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,402 ft above sea level, from topographic map. Measuring point: Top of high pipe, 2.60 ft above land-surface datum.
REMARKS.--Well D-38, Shallow Hibbing; in same borehole as well D-38 Deep Hibbing.
PERIOD OF RECORD.--June 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 192.20 ft below land-surface datum, September 10, 1981; lowest measured, 197.03 ft below land-surface datum, May 05, 1999.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	194.99	FEB 15	194.89	MAY 09	195.13	AUG 09	195.15

WATER YEAR 2000 HIGHEST 194.89 FEB 15, 2000 LOWEST 195.15 AUG 09, 200

432828095283611. Local number, 100-39-17 DCCB11.
LOCATION.--Lat 43°28′33″, long 95°28′35″, Hydrologic Unit 10230003, approximately 2 mi west and 2 mi north of the Town of Harris, east of County Road M-12. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 5 in. to 461 ft, 4 in. 440-760 ft, depth 760 ft, screened 680-700 ft.
INSTRUMENTATION.--Quarterly measurement with electric line or chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,560 ft above sea level, from topographic map. Measuring point: Top of casing, 3.00 ft above land-surface datum.
REMARKS.--Well D-13.
PERIOD OF RECORD.--July 1980 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 341.80 ft below land-surface datum, August 5, 1980; lowest measured, 350.68 ft below land-surface datum, November 05, 1997.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	345.27	FEB 15	345.16	MAY 09	345.25	AUG 09	345.33

WATER YEAR 2000 HIGHEST 345.16 FEB 15, 2000 LOWEST 345.33 AUG 09, 2000

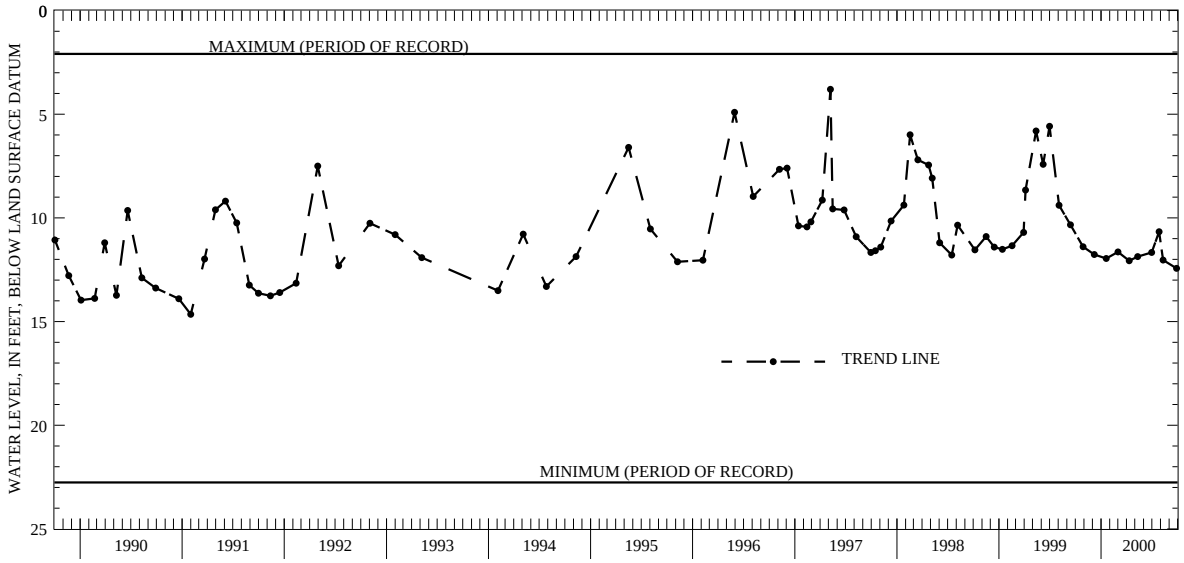
PAGE COUNTY

404257095150801. Local number, 68-38-07 CCAA.
LOCATION.--Lat 40°42'57", long 95°15'08", Hydrologic Unit 10240005, approximately 2 mi south of the Village of Norwich and 1.5 mi west of County Road M-48. Owner: William Brayman.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 12 in., depth 44 ft, lined with tile.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,087 ft above sea level, from topographic map. Measuring point: Top of well, 1.20 ft below original land-surface datum.
REMARKS.--Braymen Farm Well. Terracing of the farm land surrounding well has lowered the land surface below the original measuring point.
PERIOD OF RECORD.--January 1938 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.09 ft below land-surface datum, March 26, 1946; lowest measured, 22.76 ft below land-surface datum, June 23, 1947.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	11.39	MAR 02	11.64	JUN 30	11.67	SEP 27	12.43
DEC 08	11.77	APR 11	12.07	JUL 27	10.67		
JAN 20	11.96	MAY 11	11.87	AUG 10	12.03		

WATER YEAR 2000 HIGHEST 10.67 JUL 27, 2000 LOWEST 12.43 SEP 27, 2000



PLYMOUTH COUNTY

424833096324701. Local number, 92-48-06 DDDA.
LOCATION.--Lat 42°48'35", long 96°32'49", Hydrologic Unit 10170203, just south of the curve on Iowa Highway 3, 1 mi south of the Town of Akron. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: in sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 4 in. to 184 ft, 2 in. to 581 ft, depth 581 ft, screened 430-434 ft and 510-515 ft. Paleozoic rock 576-581 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel,.
DATUM.--Elevation of land-surface datum is 1,282 ft above sea level, from topographic map. Measuring point: Top of casing, 4.50 ft above land-surface datum.
REMARKS.--Well D-35.
PERIOD OF RECORD.--December 1979 to December 1980, May 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 135.73 ft below land-surface datum, February 10, 1999; lowest measured, 159.82 ft below land-surface datum, August 06, 1980.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	136.95	FEB 23	136.99	MAY 08	136.98	AUG 07	137.27

WATER YEAR 2000 HIGHEST 136.95 NOV 09, 1999 LOWEST 137.27 AUG 07, 2000

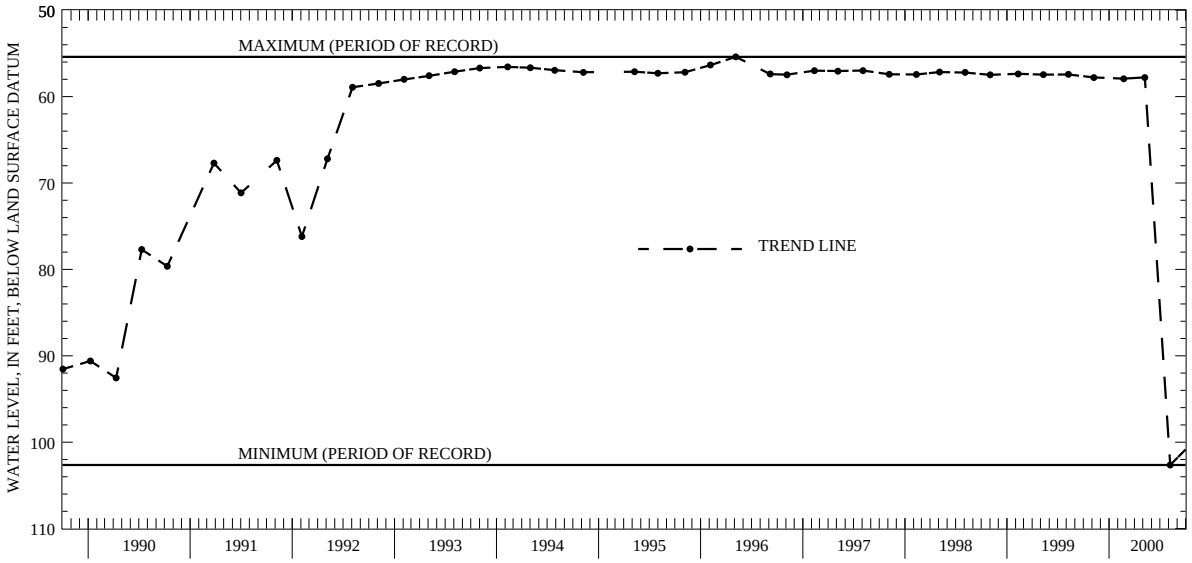
PLYMOUTH COUNTY--Continued

424850096074801. Local number, 92-45-02 CBCB.
LOCATION.--Lat 42°48'50", long 96°08'02", Hydrologic Unit 10230002, approximately 3.8 mi west and 0.6 mi south of the Village of Oyens. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Cambrian-Ordovician: dolomite of Cambrian and Ordovician age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 5 in. to 161 ft, 4 in. to 598 ft, 2 in. to 1,340 ft, depth 1,340 ft, cased to 598 ft, open hole 598-1,340 ft. Well deepened from 1,089 ft to 1,340 ft in May, 1984. Ordovician rock 568-782 ft, Cambrian rock 782-1062 ft, Precambrian 1062-1340 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,245 ft above sea level, from topographic map. Measuring point: Top of casing, 2.80 ft above land-surface datum.
REMARKS.--Well D-21.
PERIOD OF RECORD.--May 1979 to January 1981, May 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 55.40 ft below land-surface datum, May 06, 1996; Lowest measured, 102.64 ft below land-surface datum, August 07, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	57.79	FEB 23	57.93	MAY 08	57.79	AUG 07	102.64

WATER YEAR 2000 HIGHEST 57.79 NOV 08, 1999 MAY 08, 2000 LOWEST 102.64 AUG 07, 2000



425249096125001. Local number, 93-46-12 DDDD.
LOCATION.--Lat 42°52'49", long 96°12'50", Hydrologic Unit 10230002, 1 mi west and 1 mi south of the Village of Struble. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2.5 in., depth 570 ft, screened 356-360 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,280 ft above sea level, from topographic map. Measuring point: Top of coupling, 2.25 ft above land-surface datum.
REMARKS.--Well D-2.
PERIOD OF RECORD.--March 1980 to December 1980, May 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 117.78 ft below land-surface datum, April 9, 1980; lowest measured, 125.45 ft below land-surface datum, August 08, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	124.43	FEB 23	121.10	MAY 08	124.25	AUG 08	125.45

WATER YEAR 2000 HIGHEST 121.10 FEB 23, 2000 LOWEST 125.45 AUG 08, 2000

POTTAWATTAMIE COUNTY

411359095171901. Local number, 74-39-01 CCCC.
LOCATION.--Lat 41°13'59", long 95°17'19", Hydrologic Unit 10240002, approximately 6.5 mi east of the Town of Carson, on the northeast corner of the junction of Iowa Highway 92 and County Road M-41. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Buried channel: sand and gravel of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation well, diameter 2 in., depth 216 ft, screened 189-206 ft, gravel-packed, open to Pennsylvanian shale 207-216 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,245 ft above sea level, from topographic map. Measuring point: Top of casing, 2.50 ft above land-surface datum.
REMARKS.--Well SW-21.
PERIOD OF RECORD.--July 1986 to current year.
REVISION.--Lowest water level measured, 129.38 ft below land-surface datum, August 20, 1986.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 122.74 ft below land-surface datum, May 11, 2000; lowest measured, 129.38 ft below land-surface datum, August 20, 1986.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	123.07	FEB 24	122.92	MAY 11	122.74	AUG 09	123.84

WATER YEAR 2000 HIGHEST 122.74 MAY 11, 2000 LOWEST 123.84 AUG 09, 2000

412407095391201. Local number, 76-42-10 ADBC.
LOCATION.--Lat 41°24'01", long 95°39'17", Hydrologic Unit 10230006, approximately 1 mi east of the Town of Underwood, behind structure at reststop on eastbound Interstate 80. Owner: Iowa Highway Commission
AQUIFER.-- Cambrian: sandstone and dolomite. from the Jordan and Prairie du Chen formations.
WELL CHARACTERISTICS.-- Drilled public use well, diameter 16 in., depth 2520 ft, screened 2420-2460 ft, gravel packed.
INSTRUMENTATION.-- Quarterly measurement with chalked tape by USGS personnel.
DATUM.-- Elevation of land-surface datum is 1,093 ft above sea level, from topographic map. Measuring point: Top of casing, 1.72 ft above land-surface datum.
REMARKS.-- Underwood Well
PERIOD OF RECORD.-- October 1996 to current year.
EXTREMES FOR PERIOD OF RECORD.-- Highest water level measured, 72.86 ft below land surface datum, August 06, 1998; lowest measured, 74.18 ft below land surface datum, October 28, 1996.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	72.75	FEB 24	72.38	MAY 12	72.35

WATER YEAR 2000 HIGHEST 72.35 MAY 12, 2000 LOWEST 72.75 NOV 10, 1999

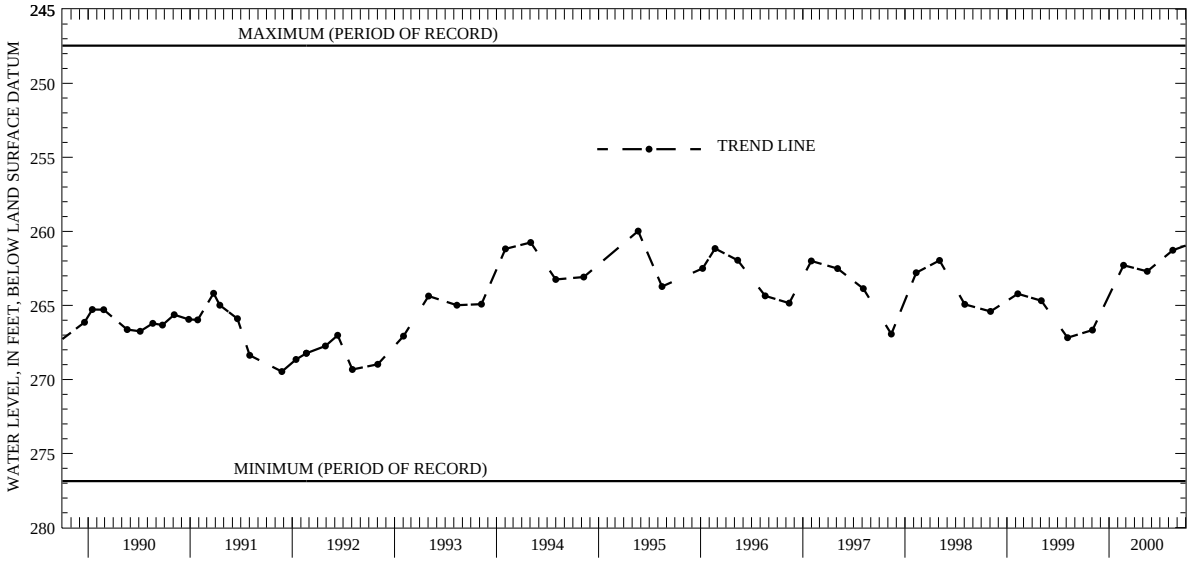
SCOTT COUNTY

413544090212901. Local number, 78-5E-03 AADA.
LOCATION.--Lat 41°35'44", long 91°21'29", Hydrologic Unit 07080101, at the Bridgeview Elementary School corner of 12th and Davenport Streets, Le Claire. Owner: City of Le Claire.
AQUIFER.--Cambrian-Ordovician: sandstone of Late Cambrian and sandstone and sandy dolomite of Early Ordovician age.
WELL CHARACTERISTICS.--Drilled unused municipal artesian water well, diameter 16 to 10 in., depth 1,607 ft, cased to 1,300 ft, open hole 1,300-1,607 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel. Graphic water-level recorder July 1975 to December 1984.
DATUM.--Elevation of land-surface datum is 703 ft above sea level, from topographic map. Measuring point: Nipple on plate welded to casing, 2.11 ft above land-surface datum.
REMARKS.--Le Claire Well No. 3.
PERIOD OF RECORD.--July 1975 to current year.
REVISED RECORDS.--WRD IA-84-1, WDR IA-88-1.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 247.46 ft below land-surface datum, July 8, 1975; lowest recorded, 276.86 ft below land-surface datum, September 1, 1978.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 03	266.67	FEB 22	262.29	MAY 17	262.70	AUG 16	261.27

WATER YEAR 2000 HIGHEST 261.27 AUG 16, 2000 LOWEST 266.67 NOV 03, 1999



SHELBY COUNTY

413255095070401. Local number, 78-37-17 DDDD.
LOCATION.--Lat 41°32'55", long 95°07'04", Hydrologic Unit 10240003, 3 mi south and 3 mi west of the Town of Elkhorn on the east side of County Road M-56 near Elkhorn Creek. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota and Pennsylvanian: sandstone of Cretaceous age and shale and limestone of Pennsylvanian age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 181 ft, screened 121-179 ft, gravel-packed, open to Dakota 121-140 ft, Pennsylvanian 140-181 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,208 ft above sea level, from topographic map. Measuring point: Top of casing, 2.80 ft above land-surface datum.
REMARKS.--Well WC-16.
PERIOD OF RECORD.--August 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 36.60 ft below land-surface datum, August 11, 1993; lowest measured, 43.03 ft below land-surface datum, February 24, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	41.39	FEB 24	43.03	MAY 10	42.67	AUG 07	42.99

WATER YEAR 2000 HIGHEST 41.39 NOV 08, 1999 LOWEST 43.03 FEB 24, 2000

413359095182701. Local number, 78-39-11 CCBC.
LOCATION.--Lat 41°33'59", long 95°18'27", Hydrologic Unit 10240002, approximately 5.5 mi south of the City of Harlan, 0.75 mi south of County Road F-58, and 1.5 mi east of U.S. Highway 59. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Fremont buried channel: sand and gravel of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 541 ft, screened 520-535 ft, gravel-packed. Pennsylvanian shale 537-541 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,310 ft above sea level, from topographic map. Measuring point: Top of casing, 1.65 ft above land-surface datum.
REMARKS.--Well WC-227.
PERIOD OF RECORD.--July 1983 to current year.
REVISION.--Lowest water level measured, 153.32 below land-surface datum, April 12, 1990.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 146.61 ft below land-surface datum, September 6, 1983; lowest measured, 153.32 ft below land-surface datum, April 12, 1990.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	151.64	FEB 24	151.48	MAY 10	151.61	AUG 07	152.07

WATER YEAR 2000 HIGHEST 151.48 FEB 24, 2000 LOWEST 152.07 AUG 07, 2000

SHELBY COUNTY--Continued

413953095302601. Local number, 79-40-09 DBCA.
LOCATION.--Lat 41°39'53", long 95°30'26", Hydrologic Unit 10230006, east of State Highway 191, approximately 1 mi northeast of the Town of Portsmouth. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 210 ft, screened 160-175 ft, gravel packed, open hole 200-210 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,205 ft above sea level, from topographic map. Measuring point: Top of casing, 4.10 ft above land-surface datum.
REMARKS.--Well WC-15.
PERIOD OF RECORD.--August 1992 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 18.29 feet below land-surface datum, May 9, 1995; lowest measured, 19.93 ft below land-surface datum, August 07, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	19.76	FEB 24	19.64	MAY 10	19.68	AUG 07	19.93

WATER YEAR 2000 HIGHEST 19.64 FEB 24, 2000 LOWEST 19.93 AUG 07, 2000

414624095252301. Local number, 80-39-06 AADC.
LOCATION.--Lat 41°46'24", long 95°25'22", Hydrologic Unit 10230006, west of the Town of Earling on the north side of Iowa Highway 37 near the junction of Iowa Highways 37 and 191. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 370 ft, screened 332-347 ft, open to Pennsylvanian sandstone, shale, and limestone 347-370 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,305 ft above sea level, from topographic map. Measuring point: Top of casing, 2.60 ft above land-surface datum.
REMARKS.--Well WC-10.
PERIOD OF RECORD.--June 1981 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 89.91 ft below land-surface datum, April 10, 1984; lowest measured, 131.70 ft below land-surface datum, April 12, 1990.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	107.60	FEB 24	106.99	MAY 10	107.79	AUG 07	107.50

WATER YEAR 2000 HIGHEST 106.99 FEB 24, 2000 LOWEST 107.79 MAY 10, 2000

414856095160101. Local number, 81-38-21 ADAD
LOCATION.--Lat 41°48'56", long 95°16'01", Hydrologic Unit 10240002, approximately 3.75 mi east of the Town of Defiance on the west side of County Road M-36. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Fremont buried channel: sand and gravel of Pleistocene age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 535 ft, screened 525-535 ft, gravel-packed. Open to Pennsylvanian shale 530-535 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,370 ft above sea level, from topographic map. Measuring point: Top of casing, 2.90 ft above land-surface datum.
REMARKS.--Well WC-222.
PERIOD OF RECORD.--August 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 208.09 ft below land-surface datum, April 15, 1987; lowest measured, 212.97 ft below land-surface datum, October 11, 1990.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 10	210.90	FEB 24	210.74	MAY 10	210.79	AUG 07	211.32

WATER YEAR 2000 HIGHEST 210.74 FEB 24, 2000 LOWEST 211.32 AUG 07, 2000

SIOUX COUNTY

430140095573101. Local number, 95-43-07 AAAA.
LOCATION.--Lat 43°04'10", long 95°57'32", Hydrologic Unit 10230002, just south of County Road B-40, 1 mi east of the Village of Newkirk. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 681 ft, screened 641-681 ft. Open to Paleozoic rock from 674-681 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,390 ft above sea level, from topographic map. Measuring point: Top of casing, 3.70 ft above land-surface datum.
REMARKS.--Well D-43.
PERIOD OF RECORD.--July 1980 to December 1980, May 1982 to current year.
REVISED RECORDS.--WDR IA-88-1.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 213.66 ft below land-surface datum, March 13, 1984; lowest measured, 219.57 ft below land-surface datum, February 5, 1996.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	219.23	FEB 23	218.76	MAY 08	218.78	AUG 08	219.40

WATER YEAR 2000 HIGHEST 218.76 FEB 23, 2000 LOWEST 219.40 AUG 08, 2000

430913096033201. Local number, 96-44-08 ADAA.
LOCATION.--Lat 43°09'13", long 96°03'32", Hydrologic Unit 10230002, west side of County Road K-64, approximately 2.5 mi west of the Town of Boyden and approximately 2.2 mi south of U.S. Highway 18. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 682 ft, screened 647-667 ft. Open to Paleozoic rock 681-682 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,373 ft above sea level, from topographic map. Measuring point: Top of casing, 3.70 ft above land-surface datum.
REMARKS.--Well D-44.
PERIOD OF RECORD.--August 1980 to December 1980, May 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 187.85 ft below land-surface datum, October 16, 1984; lowest measured, 196.72 ft below land-surface datum, August 08, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	196.48	FEB 23	196.27	MAY 08	196.10	AUG 08	196.72

WATER YEAR 2000 HIGHEST 196.1 MAY 08, 2000 LOWEST 196.72 AUG 08, 2000

STORY COUNTY

420129093273701. Local Number, 83-22-06 CDBD.
LOCATION.-- Lat 42°01'30", long 93°27'33", Hydrologic Unit 07080105, approximately one mile north of Highway 30 near 1st and N Ave. Owner: City of Nevada.
AQUIFER.--Cambrian/Ordovician.
WEL CHARACTERISTICS.--Drilled observation public supply well, diameter 16 in, depth 2630 ft, open hole 2015-2630 ft.
INSTRUMENTATION.--Quarterly measurement using airline by USGS personnel.
DATUM.--Elevation of land-surface datum is 991 ft above sea level, from topographic map.
REMARKS.--Nevada Well No. 4
PERIOD OF RECORD.--February 1997 to current year
EXTREMES FOR PERIOD OF RECORD.-- Highest water level measured, 295 ft below land-surface datum, February 08, 1999 and August 4, 1997; lowest measured, 373 ft below land surface datum, February 11, 1997.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	300	FEB 14	310	MAY 10	305	AUG 08	380

WATER YEAR 2000 HIGHEST 300 NOV 08, 1999 LOWEST 380 AUG 08, 2000

STORY COUNTY-Continued

420137093361501. Local number, 83-24-02 DABC.
LOCATION.--Lat 42°01'32", long 93°36'21", Hydrologic Unit 07080105, in Ames, north of the Chicago and Northwestern Railroad and County Road E-41, approximately 0.75 mi east of U.S. Highway 69. Owner: City of Ames.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled municipal well, depth 124 ft, casing information unavailable.
INSTRUMENTATION.--Quarterly measurement with chalked tape or electric line by USGS personnel.
DATUM.--Elevation of land-surface datum is 926 ft above sea level, from topographic map. Measuring point: Top of casing, 0.82 ft above land-surface datum.
REMARKS.--Ames city well No. 4.
PERIOD OF RECORD.--September 1987 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 49.98 ft below land-surface datum, March 14, 1991; lowest measured, 76.06 ft below land-surface datum, August 08, 2000.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	62.12	FEB 14	65.13	MAY 10	58.01	AUG 08	76.06

WATER YEAR 2000 HIGHEST 58.01 MAY 10, 2000 LOWEST 76.06 AUG 08, 2000

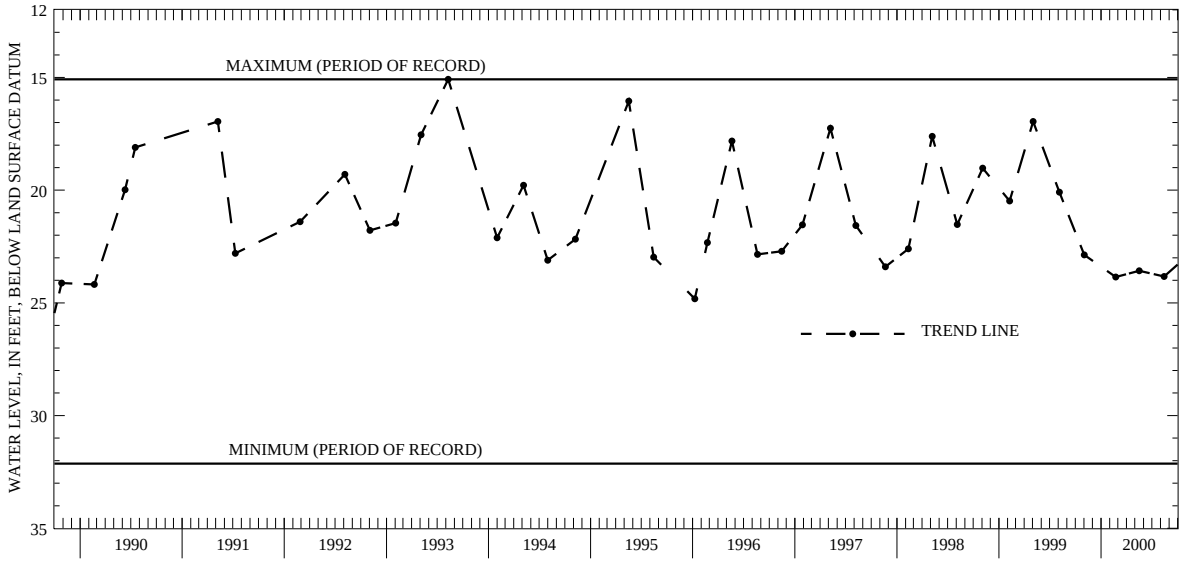
VAN BUREN COUNTY

404150091483001. Local number, 68-08-08 CDD.
LOCATION.--Lat 40°41'53", long 91°48'20", Hydrologic Unit 07100009, located at the west end of the park in the City of Bonaparte, south of County Road J-40. Owner: City of Bonaparte.
AQUIFER.--Mississippian: limestone and dolomite of Mississippian age.
WELL CHARACTERISTICS.--Drilled unused semi-confined public-supply well, diameter 6 in., depth 205 ft, cased to 18 ft, open hole 18-205 ft.
INSTRUMENTATION.--Intermittent measurement with chalked tape by USGS personnel. Graphic water-level recorder December 1988 to July 1990. Intermittent measurement with chalked tape by USGS personnel August 1988 to December 1988.
DATUM.--Elevation of land-surface datum is 552 ft above sea level, from topographic map. Measuring point: Top of recorder platform, 0.65 ft above land-surface datum.
REMARKS.--Bonaparte No. 1 well. Recorder removed July 17, 1990.
PERIOD OF RECORD.--August 1988 to present.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 15.08 ft below land-surface datum, August 10, 1993; lowest measured, 32.13 ft below land-surface datum, August 16, 1989.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	22.87	FEB 23	23.85	MAY 17	23.58	AUG 14	23.83

WATER YEAR 2000 HIGHEST 22.87 NOV 02, 1999 LOWEST 23.85 FEB 23, 2000



WASHINGTON COUNTY

411300091320701. Local number, 74-06-15 BDAC.
LOCATION.--Lat 41°12'59", long 91°32'07", Hydrologic Unit 07080107, in the water treatment plant, beneath the water tower in Crawfordsville. Owner: Town of Crawfordsville.
AQUIFER.--Mississippian: dolomite of Mississippian age.
WELL CHARACTERISTICS.--Drilled unused municipal artesian water well, diameter 6.5 in., depth 215 ft, cased to 132 ft, open hole 132-215 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 725 ft above sea level, from topographic map. Measuring point: Nipple on plate welded to casing, 1.10 ft above land-surface datum.
PERIOD OF RECORD.--September 1983, March 1987 to current year.
REMARKS: Crawfordsville North.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 69.23 ft below land-surface datum, March 25, 1987; lowest measured, 78.09 ft below land-surface datum, August 05, 1999.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	72.06	FEB 23	71.30	MAY 17	71.39	AUG 16	72.62

WATER YEAR 2000 HIGHEST 71.30 FEB 23, 2000 LOWEST 72.62 AUG 16, 2000

412750091495201. Local number, 77-09-24 AADA.
LOCATION.--Lat 41°27'53", long 91°49'47", Hydrologic Unit 07080209, north of the city sewage treatment plant and west of First Avenue SE, Wellman. Owner: City of Wellman.
AQUIFER.--Mississippian: dolomite of Mississippian age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 10 in. to 27 ft, 8 in. to 47 ft, depth 110 ft, cased to 47 ft, open hole 47 to 110 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 695 ft above sea level, from topographic map. Measuring point: Nipple on plate welded to casing, 1.87 ft above land-surface datum.
REMARKS.--City test well No. 1.
PERIOD OF RECORD.--May 1963 to October 1971, May 1973 to current year.
REVISED RECORDS.--WDR IA-84-1, WDR IA-88-1.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.59 ft above land-surface datum, November 04, 1998; lowest measured, 6.80 ft below land-surface datum, October 20, 1964.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
(READINGS ABOVE LAND SURFACE INDICATED BY "+")

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 04	3.71	FEB 23	2.27	MAY 16	2.67	AUG 14	2.00

WATER YEAR 2000 HIGHEST 2.00 AUG 14, 2000 LOWEST 3.71 NOV 04, 1999

421829091304701. Local number, 75-06-14 ABBB.
LOCATION.--Lat 41°18'28", long 91°30'47", Hydrologic Unit 07080209, 1 mi north and 1.5 mi east of the junction of U.S. Highway 218 and Iowa Highway 92. Owner: Mrs. David Armstrong.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Bored unused water-table well, diameter 12 in., depth 45 ft, lined with tile.
INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 745 ft above sea level, from topographic map. Measuring point: Nipple welded to barrel, 4.08 ft above land-surface datum.
PERIOD OF RECORD.--November 1983 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.29 ft below land-surface datum, April 16, 1999; lowest measured, 12.65 ft below land-surface datum, November 1, 1988.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 10	8.82	NOV 17	9.48	DEC 16	9.71	JAN 25	8.84
FEB 15	7.79	APR 13	4.42	JUN 16	2.44	AUG 15	5.10
MAR 21	3.92	MAY 24	5.88	JUL 14	2.63	SEP 21	7.36

WATER YEAR 2000 HIGHEST 2.44 JUN 16, 2000 LOWEST 9.71 DEC 16, 1999

WASHINGTON COUNTY--Continued

411822091411001. Local number, 75-07-17 ABCA.
LOCATION.--Lat 41°18'23", long 91°41'13", Hydrologic Unit 07080107, located on north side of railroad tracks on county road within the Town of Washington. Owner: The Town of Washington.
AQUIFER.--Cambrian/Ordovician- Jordan sandstone.
WELL CHARACTERISTICS.--Drilled public-use well, diameter 26 in, depth 1900 ft., casing open from 1400-1900 ft.
INSTRUMENTATION.--Quarterly measurements using an airline by USGS personnel.
DATUM.--Elevation of land-surface 757 feet above sea level, by topographic map.
REMARKS.--Washington No.6
PERIOD OF RECORD.--April 1997 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 249 feet below land-surface datum, May 10, 1999; lowest measured, 304 feet below land-surface datum, April 24, 1997.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL
AUG 14	253

411812091412601. Local number, 75-07-17 BCCC
LOCATION.--Lat 41°18'09", long 91°41'50", Hydrologic Unit 07080107, located in the Town of Washington approximately.5 miles east and.10 mile north of Washington Well No. 5. Owner: Town of Washington.
AQUIFER.--Cambrian/Ordovician-Trempealeau Group
WELL CHARACTERISTICS.--Drilled public-use well, diameter 26 to 13.375 in., depth 1825, cased to 1450 ft, open from 1450-1825 ft.
INSTRUMENTATION.--Quarterly measurements using an airline by USGS personnel.
DATUM.--Elevation of land-surface is 748 feet above sea level, by topographic map.
REMARKS.--Washington Well No. 7
PERIOD OF RECORD.--October 1996 to current year
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 240 feet below land-surface datum, November 04, 1998; lowest measured 259 ft below land-surface datum, October 11, 1996.

WATER LEVELS, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	WATER LEVEL
AUG 14	259

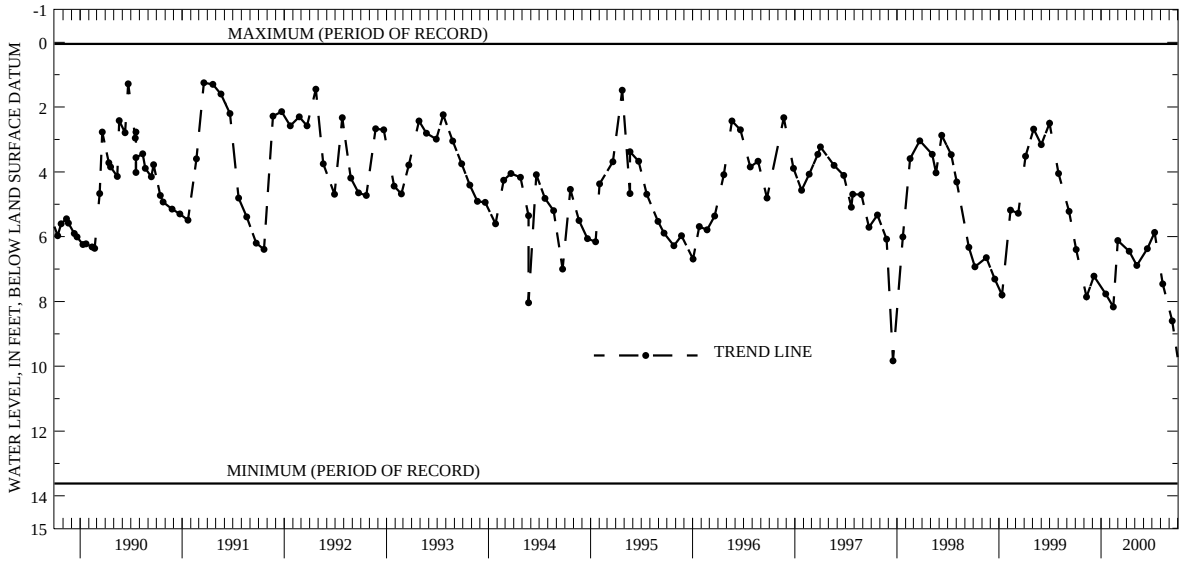
WEBSTER COUNTY

421837094083601. Local number, 87-28-29 CCCD.
LOCATION.--Lat 41°18'38", long 94°08'36", Hydrologic Unit 07100006, 3 mi north and 2 mi east of the Town of Harcourt. Owner: Grace Helms.
AQUIFER.--Glacial drift of Pleistocene age.
WELL CHARACTERISTICS.--Drilled unused water-table well, diameter 12 in., depth 42 ft, lined with tile.
INSTRUMENTATION.--Monthly measurement with chalked tape by USGS personnel. Graphic water-level recorder October 1942 to December 1976.
DATUM.--Elevation of land-surface datum is 1,165 ft above sea level, from topographic map. Measuring point: Top of casing, 1.29 ft above land-surface datum.
PERIOD OF RECORD.--October 1942 to June 1956, March 1958 to current year.
REMARKS.--Sometimes called Harcourt well.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 0.05 ft below land-surface datum, August 1, 1972; lowest measured, 13.62 ft below land-surface datum, March 12, 1956.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 04	6.40	JAN 18	7.77	APR 11	6.45	JUL 11	5.87
NOV 10	7.86	FEB 14	8.17	MAY 08	6.89	AUG 09	7.46
DEC 07	7.22	MAR 01	6.12	JUN 15	6.37	SEP 12	8.60

WATER YEAR 2000 HIGHEST 5.87 JUL 11, 2000 LOWEST 8.60 SEP 12, 2000



423018094214701. Local number, 89-30-23 CCBB.
LOCATION.--Lat 42°30'18", long 94°21'47", Hydrologic Unit 07100004, 75 ft west of the new school addition, Barnum. Owner: Johnson Township Consolidated School.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused artesian water well, diameter 4 in., depth 208 ft, screened 203-208 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,174 ft above sea level, from topographic map. Measuring point: Top of casing at land-surface datum.
PERIOD OF RECORD.--October 1942 to September 1945, May 1947 to current year.
REVISED RECORDS.--WDR IA-88-1.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 30.36 ft below land-surface datum, October 21, 1942; lowest measured, 45.85 ft below land-surface datum, July 28, 1980.

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM, WATER YEARS OCTOBER 1997 TO SEPTEMBER 1998

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 16	44.31	FEB 17	44.50	MAY 08	44.82	AUG 09	45.08

WATER YEAR 2000 HIGHEST 44.31 NOV 16, 1999 LOWEST 45.08 AUG 09, 2000

WOODBURY COUNTY

422058095573701. Local number, 87-44-15 CBBB.
LOCATION.--Lat 42°20'58", long 95°57'37", Hydrologic Unit 10230003, approximately 3.5 mi west and 5.5 mi north of the Village of Oto. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 2 in., depth 197 ft, screened 185-189 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,165 ft above sea level, from topographic map. Measuring point: Top of casing, 1.50 ft above land-surface datum.
REMARKS.--Well D-34.
PERIOD OF RECORD.--April 1980 to December 1980, May 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured,51.54 ft below land-surface datum, August 7, 1996; lowest measured, 63.56 ft below land-surface datum, November 02, 1982.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	52.97	MAY 09	53.52	AUG 08	54.97

WATER YEAR 2000	HIGHEST	52.97	NOV 09, 1999	LOWEST	198.08	FEB 23, 2000

422830096000511. Local number, 88-44-16 BAAB11.
LOCATION.--Lat 42°28'30", long 96°00'31", Hydrologic Unit 10230004, approximately 3 mi east and 0.5 mi south of the Town of Moville. Owner: Geological Survey Bureau, DNR and U.S. Geological Survey.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled observation artesian water well, diameter 4 in. to 235 ft, 2 in. to 337 ft, depth 337 ft, screened 332-337 ft.
INSTRUMENTATION.--Quarterly measurement with chalked tape by USGS personnel.
DATUM.--Elevation of land-surface datum is 1,340 ft above sea level, from topographic map. Measuring point: Top of casing, 3.50 ft above land-surface datum.
REMARKS.--Well D-33. Damaged March 1998
PERIOD OF RECORD.--October 1979 to December 1980, May 1982 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 198.60 ft below land-surface datum, November 09, 1999; lowest measured, 202.90 ft below land-surface datum, October 17, 1979.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 1998 TO SEPTEMBER 1999

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 09	198.60	MAY 09	198.87	AUG 08	199.19

WATER YEAR 2000	HIGHEST	198.60	NOV 09, 1999	LOWEST	199.19	AUG 08, 2000

GROUND WATER QUALITY MONITORING

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

STATION NUMBER	STATION NAME	COUNTY	DATE	TIME	GEO-LOGIC UNIT	DEPTH OF WELL, TOTAL (FEET) (72008)
411727094374001075N33W15DDBB	1976Fontanelle 5	Adair	07-11-00	1245	111ALVM	39
412852094275101077N31W07CAAB	1977Menlo 3	Adair	07-11-00	1530	111ALVM	30
405632094534401071N35W20AACB	1990Nodaway 4	Adams	07-10-00	1500	111ALVM	35
413234094552401078N35W19BCDB	1976Brayton 1	Audubon	07-14-00	1000	111ENRV	41
420451093561301084N27W13DCAA	1940Boone 20	Boone	08-24-00	1030	111ALVM	63.7
420959094001901085N27W16CCDC	1967Pilot Mound 3	Boone	07-13-00	0830	112PLSC	30
424708094570801092N35W14BCCC	1949Albert City 1	Buena Vista	06-07-00	1200	112PLSC	190
425344095090401093N37W01DDDD	1977Sioux Rapids 2	Buena Vista	06-07-00	1030	111ALVM	50
411622094520901075N35W27BBAB	1921Cumberland 1	Cass	07-11-00	1045	112PLSC	155
414652090153201081N06E33ADA	1956Camanche 2	Clinton	06-12-00	1315	111ALVM	61.2
420336095115601084N37W30BDAD	1936Vail (1),2	Crawford	06-08-00	1030	111SDRV	32
415057094065301081N28W09ABBB	1987Perry 9R	Dallas	07-13-00	1300	111ALVM	45
423135090383201089N03E18AADD	1969Dubuque 9	Dubuque	08-23-00	1030	111ALVM	125
432349094285201099N31W14BBCD	1995Armstrong 7	Emmet	08-25-00	1030	112PLSC	136
425341093132501093N20W05DDAB	1956Sheffield 2	Franklin	08-24-00	1400	111ALVM	27
404327095284801068N40W07BCAA	1980Farragut 79-2 (North)	Fremont	07-10-00	1200	111ALVM	65
414236096012501080N45W25DABD	1951Mondamin 2, South	Harrison	07-25-00	0845	111ALVM	90
422106095280201087N40W14ACBB	1965Ida Grove 3	Ida	06-07-00	1630	112plsc	65
422915095323504089N39W33CDDD	1985Holstein 3	Ida	06-07-00	1430	111ALVM	54
414520092112001080N12W12ADDC	1952Ladora 1	Iowa	08-31-00	1015	112PLSC	72.5
413913093070001079N20W13ADDA	1955Newton 13	Jasper	07-19-00	1400	111ALVM	45
403745091174701067N04W02CBBC	1991Fort Madison 4	Lee	06-13-00	0915	111ALVM	147
420005091431201083N08W13ACDB	1970Cedar Rapids S6	Linn	08-22-00	0900	111ALVM	65
411644091110703075N03W22DCBD	1975Grandview 3	Louisa	06-13-00	1200	112AFNN	174
432608096201503100N47W36DCBD	1988Lester (4) 2	Lyon	06-06-00	1830	111SDRV	32
420405092545601084N18W23CACA	1977Marshalltown 8	Marshall	07-19-00	1100	112PLSC	223
410656095380201073N42W23AAAC	1978Silver City 3	Mills	07-10-00	0900	111ALVM	60
420241095422001084N42W35CABB	1974Ute 3	Monona	06-08-00	1215	111SDRV	58
431151095505101097N42W30ABDD	1929Sheldon 2	O'Brien	06-07-00	0745	111ALVM	27
403906095015001067N37W01AAAA	1985Shambaugh 3	Page	07-11-00	0830	111ALVM	30
423537095583901090N43W19CCBB	1956Kingsley 1	Plymouth	06-06-00	1230	110QRNR	37
411501095251301075N40W35CBCA	1975Carson (5) 3	Pottawattamie	07-25-00	1445	111ALVM	25
421617095051001086N36W07CDBB	1971Wall Lake (3),2	Sac	06-08-00	0845	112PLSC	43
413049095254501078N39W34ACCD	1968Shelby 5	Shelby	07-25-00	1200	111ALVM	48.5
430017096285301095N48W35BDDC	1931Hawarden 2	Sioux	06-06-00	1500	110QRCU	36
415252093411401082N24W30DCBB	1945Slater 1	Story	07-13-00	1100	112PLSC	180
415417092180101082N13W24AAAD	1961Belle Plaine 4	Tama	08-22-00	1115	111ALVM	42
415753092350201083N15W27CDD	1966Tama 5	Tama	07-19-00	0845	111ALVM	43
403659094285301067N32W12CAAD	1960Blockton 1	Taylor	07-10-00	1700	112PLSC	271
410907092375301073N15W06CADA	1995Eddyville 3	Wapello	07-20-00	1135	111ALVM	35
413040093290501078N23W34DDBD	1979Carlisle 5	Warren	07-20-00	0900	111ALVM	30
412850091342901077N06W17BBA	1961Riverside 5	Washington	06-13-00	1430	112PLSC	250
431828091473201098N08W16ACBC	1972Decorah 6	Winneshiek	08-23-00	1430	111ALVM	82
422831095465102089N42W34DDDD	1927Correctionville 1 W	Woodbury	06-06-00	0930	111ALVM	26
423954093535801091N26W27CAAD	1952Eagle Grove 3	Wright	08-24-00	1600	112PLSC	70

*Geologic unit abbreviations used in this table:

Geological Unit Abbrev.	Geological Unit
110QRCU	Quarternary-Cretaceous Undifferentiated
110QRNR	Quarternary System
111ALVM	Holocene Alluvium
111ENRV	East Nishnabotna River Alluvial
111SDRV	Soldier River Alluvial
112AFNN	Aftonian Interglacial Deposits
112PLSC	Pleistocene Series

GROUND WATER QUALITY MONITORING

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

STATION NUMBER	DATE	FLOW RATE (G/M) (00058)	PUMP OR FLOW PERIOD PRIOR TO SAM-PLING (MIN) (72004)	TEMPER-ATURE WATER (DEG C) (00010)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	OXYGEN, DIS-SOLVED (MG/L) (00300)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	ALKA-LINITY LAB (MG/L AS CACO3) (90410)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
411727094374001	07-11-00	70	45	12.0	665	7.0	.2	330	270	360
412852094275101	07-11-00	7	60	11.5	506	7.1	1.2	240	190	320
405632094534401	07-10-00	50	30	12.5	497	6.7	.5	240	150	330
413234094552401	07-14-00	55	30	12.5	845	6.6	.3	400	310	500
420451093561301	08-24-00	250	>30	19.0	601	7.4	.7	300	180	370
420959094001901	07-13-00	35	30	11.5	722	7.2	.3	380	290	470
424708094570801	06-07-00	150	30	10.0	1390	7.3	.5	660	390	980
425344095090401	06-07-00	290	30	10.5	994	7.2	2.6	480	310	530
411622094520901	07-11-00	30	45	13.5	343	6.9	3.0	170	170	200
414652090153201	06-12-00	210	40	13.1	396	7.6	6.8	190	120	240
420336095115601	06-08-00	150	30	14.0	863	7.1	1.3	410	270	520
415057094065301	07-13-00	350	30	11.5	752	7.1	.2	390	290	470
423135090383201	08-23-00	--	>30	13.5	442	7.1	.2	210	210	260
432349094285201	08-25-00	280	>30	10.0	1170	7.2	.2	550	330	790
425341093132501	08-24-00	120	30	14.0	580	7.3	5.3	280	200	350
404327095284801	07-10-00	200	>30	14.0	633	6.8	1.3	310	240	390
414236096012501	07-25-00	200	>30	12.5	1220	7.1	.2	560	530	740
422106095280201	06-07-00	125	>60	14.0	1160	7.0	.7	510	360	680
422915095323504	06-07-00	110	30	12.0	868	7.2	4.7	440	280	500
414520092112001	08-31-00	--	>30	12.2	1020	7.4	.3	370	370	660
413913093070001	07-19-00	100	>30	12.2	673	6.9	5.4	370	280	410
403745091174701	06-13-00	515	>30	13.7	496	7.1	1.3	210	210	270
420005091431201	08-22-00	900	>30	15.6	553	7.0	.3	280	230	330
411644091110703	06-13-00	30	30	12.8	446	7.1	.5	230	240	250
432608096201503	06-06-00	40	>30	11.0	1170	7.2	.5	620	350	800
420405092545601	07-19-00	789	>30	10.7	699	7.1	.3	340	290	420
410656095380201	07-10-00	125	30	12.0	969	7.3	.2	470	340	560
420241095422001	06-08-00	140	30	12.5	905	7.2	--	460	320	540
431151095505101	06-07-00	60	>30	9.0	768	7.3	.6	400	270	470
403906095015001	07-11-00	30	90	12.5	470	6.4	.5	200	150	290
423537095583901	06-06-00	180	30	12.0	926	7.2	6.8	480	310	560
411501095251301	07-25-00	50	30	11.5	738	7.1	.6	380	310	370
421617095051001	06-08-00	240	30	11.0	847	7.2	.6	440	280	530
413049095254501	07-25-00	15	>30	12.0	520	7.0	8.2	260	160	300
430017096285301	06-06-00	120	30	11.5	919	7.3	7.2	460	300	570
415252093411401	07-13-00	70	30	12.0	788	7.8	.2	260	430	450
415417092180101	08-22-00	175	>30	17.4	722	10.8	.2	230	110	360
415753092350201	07-19-00	430	30	11.2	637	7.2	2.4	320	240	410
403659094285301	07-10-00	70	30	14.0	1750	7.8	.4	140	420	1120
410907092375301	07-20-00	180	90	12.6	767	6.8	1.8	370	250	480
413040093290501	07-20-00	325	>30	11.8	596	7.1	.9	310	240	370
412850091342901	06-13-00	--	40	15.6	665	7.5	.2	240	350	380
431828091473201	08-23-00	430	30	11.6	642	6.9	2.8	340	280	380
422831095465102	06-06-00	25	30	12.0	828	7.3	6.6	420	300	480
423954093535801	08-24-00	285	25	11.5	729	7.3	.3	380	370	430

GROUND WATER QUALITY MONITORING

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

STATION NUMBER	DATE	IRON, DIS-SOLVED (UG/L AS FE) (01046)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)
411727094374001	07-11-00	20000	830	89	17	11	2.2	.25	21	12
412852094275101	07-11-00	<20	200	73	12	14	<1.0	.30	23	9.9
405632094534401	07-10-00	440	70	60	19	11	<1.0	.25	17	4.8
413234094552401	07-14-00	5900	1000	100	31	22	<1.0	.40	15	45
420451093561301	08-24-00	<20	30	68	27	19	4.0	.50	22	27
420959094001901	07-13-00	2500	200	95	31	7.1	2.3	.35	32	12
424708094570801	06-07-00	4400	130	170	54	66	7.6	.30	30	1.3
425344095090401	06-07-00	<20	30	130	36	21	2.5	.25	26	99
411622094520901	07-11-00	<20	<20	46	12	8.1	1.2	.30	22	<1.0
414652090153201	06-12-00	<20	<20	45	17	10	1.1	<.10	21	20
420336095115601	06-08-00	<20	<20	120	28	27	1.2	.25	25	45
415057094065301	07-13-00	2100	420	110	29	6.4	1.7	.35	22	11
423135090383201	08-23-00	2000	2800	50	20	11	2.7	.15	14	15
423249094285201	08-25-00	2300	530	150	46	57	4.2	.30	31	1.6
425341093132501	08-24-00	<20	<20	78	26	4.3	1.0	.15	25	9.5
404327095284801	07-10-00	880	120	76	23	17	2.7	.40	24	13
414236096012501	07-25-00	10000	460	160	51	53	7.2	.40	30	26
422106095280201	06-07-00	<20	370	150	30	58	2.7	.20	25	110
422915095323504	06-07-00	30	<20	120	31	15	1.4	.30	21	22
414520092112001	08-31-00	1400	20	86	31	100	2.8	.60	15	5.0
413913093070001	07-19-00	<20	<20	95	35	7.6	1.1	.30	23	17
403745091174701	06-13-00	5300	2500	55	19	10	2.7	.15	22	18
420005091431201	08-22-00	60	560	75	22	11	2.5	.25	15	20
411644091110703	06-13-00	2000	80	65	18	7.8	<1.0	.25	23	1.0
432608096201503	06-06-00	1500	760	160	50	24	2.5	.45	18	28
420405092545601	07-19-00	2300	60	94	35	16	2.7	.40	17	18
410656095380201	07-10-00	3800	550	120	36	21	2.1	.30	18	66
420241095422001	06-08-00	<20	30	120	39	9.7	4.3	.30	24	31
431151095505101	06-07-00	1100	780	100	37	14	1.7	.50	35	20
403906095015001	07-11-00	3000	380	55	12	20	<1.0	.20	24	23
423537095583901	06-06-00	<20	<20	130	36	10	2.5	.35	28	16
411501095251301	07-25-00	1000	1400	110	31	9.6	1.2	.45	10	16
421617095051001	06-08-00	800	570	120	33	17	3.9	.40	24	31
413049095254501	07-25-00	140	<20	69	21	8.3	1.1	.35	19	14
430017096285301	06-06-00	<20	<20	130	36	17	4.4	.30	27	19
415252093411401	07-13-00	6900	120	66	24	68	6.2	.40	10	2.2
415417092180101	08-22-00	<20	<20	93	<1.0	16	2.2	.65	35	44
415753092350201	07-19-00	<20	40	94	26	13	1.6	.25	27	23
403659094285301	07-10-00	550	40	36	11	350	2.1	.85	12	96
410907092375301	07-20-00	30	110	120	29	14	1.8	.20	17	25
413040093290501	07-20-00	520	370	84	26	13	1.7	.40	25	24
412850091342901	06-13-00	970	50	59	20	61	2.7	.10	15	2.6
431828091473201	08-23-00	<20	<20	99	19	9.7	2.2	.15	14	22
422831095465102	06-06-00	<20	<20	110	32	13	2.0	.20	23	18
423954093535801	08-24-00	2900	320	100	33	13	2.5	.30	25	1.8

GROUND WATER QUALITY MONITORING

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

STATION NUMBER	DATE	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, ORGANIC DIS-SOLVED (MG/L AS N) (00607)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	ATRA-ZINE WATER UNFLTRD REC (UG/L) (39630)	CYAN-AZINE TOTAL (UG/L) (81757)
411727094374001	07-11-00	37	.6	<.1	.3	.3	.6	1.9	<.10	<.10
412852094275101	07-11-00	42	<.1	4.5	.2	.2	.2	<1.0	<.10	<.10
405632094534401	07-10-00	100	<.1	.8	.2	.2	<.1	<1.0	<.10	<.10
413234094552401	07-14-00	67	<.1	<.1	.3	.3	.2	1.8	<.10	<.10
420451093561301	08-24-00	71	<.1	1.9	<.1	.2	.1	2.4	.18	<.10
420959094001901	07-13-00	79	.2	<.1	.3	.4	<.1	1.6	<.10	<.10
424708094570801	06-07-00	440	1.9	<.1	<.1	1.9	<.1	2.4	<.10	<.10
425344095090401	06-07-00	32	.2	2.6	.1	.3	<.1	<1.0	<.10	<.10
411622094520901	07-11-00	11	<.1	<.1	.1	.1	<.1	<1.0	<.10	<.10
414652090153201	06-12-00	30	<.1	5.6	<.1	<.1	<.1	<1.0	<.10	<.10
420336095115601	06-08-00	92	<.1	6.1	.2	.3	.1	<1.0	<.10	<.10
415057094065301	07-13-00	99	<.1	<.1	.4	.4	<.1	1.6	<.10	<.10
423135090383201	08-23-00	19	.4	<.1	.2	.6	.3	4.3	<.10	<.10
432349094285201	08-25-00	240	.7	<.1	<.1	.7	<.1	2.4	<.10	<.10
425341093132501	08-24-00	18	<.1	15.0	<.1	<.1	<.1	<1.0	<.10	<.10
404327095284801	07-10-00	71	<.1	.6	.3	.3	.2	<1.0	<.10	<.10
414236096012501	07-25-00	99	1.4	<.1	.2	1.6	<.1	2.7	<.10	<.10
422106095280201	06-07-00	72	<.1	1.8	<.1	<.1	<.1	<1.0	<.10	<.10
422915095323504	06-07-00	59	<.1	20.0	<.1	<.1	<.1	<1.0	.21	<.10
414520092112001	08-31-00	180	4.4	<.1	<.1	4.0	.3	4.7	<.10	<.10
413913093070001	07-19-00	39	<.1	7.8	1.4	.2	.1	<1.0	<.10	<.10
403745091174701	06-13-00	9.3	4.0	<.1	.6	.7	1.0	4.6	<.10	<.10
420005091431201	08-22-00	28	.1	.9	<.1	.1	<.1	1.9	.34	<.10
411644091110703	06-13-00	<1.0	.7	<.1	<.1	<.1	.3	1.9	<.10	<.10
432608096201503	06-06-00	280	.1	.1	.2	.3	<.1	1.8	<.10	<.10
420405092545601	07-19-00	70	1.2	<.1	.4	1.4	<.1	1.5	<.10	<.10
410656095380201	07-10-00	78	.2	<.1	.9	.9	.2	1.3	<.10	<.10
420241095422001	06-08-00	55	.1	16.0	3.8	3.8	<.1	<1.0	<.10	<.10
431151095505101	06-07-00	110	.1	<.1	.3	.5	<.1	1.3	<.10	<.10
403906095015001	07-11-00	47	<.1	<.1	.4	.5	.3	1.6	<.10	<.10
423537095583901	06-06-00	110	<.1	14.0	.1	.2	.1	<1.0	<.10	<.10
411501095251301	07-25-00	60	<.1	1.1	<.1	<.1	<.1	<1.0	<.10	<.10
421617095051001	06-08-00	120	.2	.4	<.1	.3	<.1	1.6	<.10	<.10
413049095254501	07-25-00	20	<.1	15.0	<.1	<.1	<.1	<1.0	<.10	<.10
430017096285301	06-06-00	110	<.1	14.0	.5	.6	<.1	<1.0	<.10	<.10
415252093411401	07-13-00	<1.0	6.6	<.1	<.1	5.8	<.1	18	<.10	<.10
415417092180101	08-22-00	67	.6	5.3	.1	.5	<.1	<1.0	.11	<.10
415753092350201	07-19-00	64	<.1	3.8	.4	.4	.1	<1.0	<.10	<.10
403659094285301	07-10-00	310	2.0	<.1	1.6	1.6	.4	13	<.10	<.10
410907092375301	07-20-00	110	<.1	3.0	.1	.5	<.1	<1.0	<.10	<.10
413040093290501	07-20-00	50	.2	1.0	.1	.1	<.1	<1.0	<.10	<.10
412850091342901	06-13-00	15	3.8	<.1	<.1	.1	.3	2.1	<.10	<.10
431828091473201	08-23-00	25	<.1	3.5	<.1	<.1	<.1	1.4	<.10	<.10
422831095465102	06-06-00	58	<.1	15.0	.2	.2	<.1	<1.0	<.10	<.10
423954093535801	08-24-00	23	.6	<.1	<.1	.6	<.1	<1.0	<.10	<.10

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STATION NUMBER	DATE	METOLA-CHLOR WATER UNFLTRD REC (UG/L) (39356)	ALA-CHLOR TOTAL RECOVER (UG/L) (77825)	METRI-BUZIN IN WHOLE WATER (UG/L) (81408)	BUTYL-ATE WATER WHLREC (UG/L) (30236)	TRI-FLURA-LIN TOTAL RECOVER (UG/L) (39030)	ACETO-CHLOR, WATER, UNFLTRD REC (UG/L) (49259)	DEETHYL ATRA-ZINE, WATER, WHOLE, TOTAL (UG/L) (75981)	DE-ISO PROPYL ATRAZIN WATER, WHOLE, TOTAL (UG/L) (75980)	PROME-TONE TOTAL (UG/L) (39056)
411727094374001	07-11-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
412852094275101	07-11-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
405632094534401	07-10-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
413234094552401	07-14-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
420451093561301	08-24-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
420959094001901	07-13-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
424708094570801	06-07-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
425344095090401	06-07-00	1.50	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
411622094520901	07-11-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
414652090153201	06-12-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
420336095115601	06-08-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
415057094065301	07-13-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
423135090383201	08-23-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
432349094285201	08-25-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
425341093132501	08-24-00	<.10	<.10	<.10	<.10	<.10	<.10	.15	.14	<.10
404327095284801	07-10-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
414236096012501	07-25-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
422106095280201	06-07-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
422915095323504	06-07-00	1.60	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
414520092112001	08-31-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
413913093070001	07-19-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
403745091174701	06-13-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
420005091431201	08-22-00	<.10	<.10	<.10	<.10	<.10	<.10	.11	<.10	<.10
411644091110703	06-13-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
432608096201503	06-06-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
420405092545601	07-19-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
410656095380201	07-10-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
420241095422001	06-08-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
431151095505101	06-07-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
403906095015001	07-11-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
423537095583901	06-06-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
411501095251301	07-25-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
421617095051001	06-08-00	.54	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
413049095254501	07-25-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
430017096285301	06-06-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
415252093411401	07-13-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
415417092180101	08-22-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
415753092350201	07-19-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
403659094285301	07-10-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
410907092375301	07-20-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
413040093290501	07-20-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
412850091342901	06-13-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
431828091473201	08-23-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
422831095465102	06-06-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10
423954093535801	08-24-00	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10	<.10

GROUND WATER QUALITY MONITORING

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

STATION NUMBER	DATE	BENZENE TOTAL (UG/L) (34030)	CARBON TETRA-CHLO-RIDE TOTAL (UG/L) (32102)	1,2-DI-CHLORO-ETHANE TOTAL (UG/L) (32103)	ETHYL-BENZENE TOTAL (UG/L) (34371)	METHYL ENE CHLO-RIDE TOTAL (UG/L) (34423)	TETRA-CHLORO-ETHYL-ENE TOTAL (UG/L) (34475)	TOLUENE TOTAL (UG/L) (34010)	1,1,1-TRI-CHLORO-ETHANE TOTAL (UG/L) (34506)	XYLENE WATER UNFLTRD REC (UG/L) (81551)
411727094374001	07-11-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
412852094275101	07-11-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
405632094534401	07-10-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
413234094552401	07-14-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
420451093561301	08-24-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
420959094001901	07-13-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
424708094570801	06-07-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
425344095090401	06-07-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
411622094520901	07-11-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
414652090153201	06-12-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
420336095115601	06-08-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
415057094065301	07-13-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
423135090383201	08-23-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
432349094285201	08-25-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
425341093132501	08-24-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
404327095284801	07-10-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
414236096012501	07-25-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
422106095280201	06-07-00	9.3	<.5	<.5	<.5	<1.0	.8	<.5	<.5	<.5
422915095323504	06-07-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
414520092112001	08-31-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
413913093070001	07-19-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
403745091174701	06-13-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
420005091431201	08-22-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
411644091110703	06-13-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
432608096201503	06-06-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
420405092545601	07-19-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
410656095380201	07-10-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
420241095422001	06-08-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
431151095505101	06-07-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
403906095015001	07-11-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
423537095583901	06-06-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
411501095251301	07-25-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
421617095051001	06-08-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
413049095254501	07-25-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
430017096285301	06-06-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
415252093411401	07-13-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
415417092180101	08-22-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	1.5
415753092350201	07-19-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
403659094285301	07-10-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
410907092375301	07-20-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
413040093290501	07-20-00	<.5	<.5	<.5	<.5	<1.0	3.1	<.5	<.5	<.5
412850091342901	06-13-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
431828091473201	08-23-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
422831095465102	06-06-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5
423954093535801	08-24-00	<.5	<.5	<.5	<.5	<1.0	<.5	<.5	<.5	<.5

405747093233201 MCNAY RESEARCH STATION NEAR CHARITON, IOWA

LOCATION.--Lat 40`57'47", long 93`23'34", in SW1/4 NE1/4 sec. 9, T.71 N., R.23 W., Lucas County, Hydrologic Unit 10280201, 3.1 mi east and 2.0 mi north of Derby, Iowa, 3.4 mi west and 2.8 mi south of Chariton, Iowa.

OWNER.--U.S. Geological Survey.

PERIOD OF RECORD.--September 1984 to current year.

INSTRUMENTATION.--Wet/dry precipitation collector, weighing-bucket type recording rain gage with alter wind shield and event recorder. National Weather Service standard 8-inch rain and snow gage (back-up only).

REMARKS.--Samples collected by Jim Secor and Steve Goben.

EXTREMES FOR PERIOD OF RECORD.--Maximum field pH, 7.07, April 19-26, 1988; minimum field pH, 3.84, February 12-19, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum field pH, 7.0, June 27 to July 4; minimum field pH, 4.4, Mar. 14-21.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	PH FIELD ATM DEP WET T (UNITS) (83106)	SPEC. CONDUC-TANCE FIELD ATM DEP WET TOT (US/CM) (83154)	CALCIUM ATM DEP WET DIS (MG/L) (82932)	MAG-NESIUM ATM DEP WET DIS (MG/L) (83002)	POTAS-SIUM ATM DEP WET DIS (MG/L) (83120)	SODIUM ATM DEP WET DIS (MG/L) (83138)	NI-TROGEN AMMON. ATM DEP WET DIS AS N (MG/L) (83044)	NI-TROGEN NITRATE ATM DEP WET DIS AS N (MG/L) (83068)	CHLO-RIDE ATM DEP WET DIS (MG/L) (82944)	SULFATE ATM DEP WET DIS AS SO4 (MG/L) (83160)	PHOS-PHORUS ORTHO ATM DEP WET DIS AS P (MG/L) (83108)
OCT 05-12	--	--	--	--	--	--	--	--	--	--	--
OCT 12-19	5.4	27	3.0	.13	.05	.09	.49	.54	.11	2.1	<.001
OCT 19-26	--	--	--	--	--	--	--	--	--	--	--
OCT 26-NOV 02	--	--	--	--	--	--	--	--	--	--	--
NOV 02-09	--	--	--	--	--	--	--	--	--	--	--
NOV 09-16	--	--	--	--	--	--	--	--	--	--	--
NOV 16-23	5.3	13	.57	.07	.02	.03	.52	.34	.06	1.8	<.001
NOV 23-30	--	--	--	--	--	--	--	--	--	--	--
NOV 30-DEC 07	5.0	17	.61	.05	.03	.12	.61	.66	.16	1.6	<.001
DEC 07-14	--	--	--	--	--	--	--	--	--	--	--
DEC 14-21	4.6	14	.47	.03	.01	.03	.25	.60	.09	.74	<.001
DEC 21-29	--	--	--	--	--	--	--	--	--	--	--
DEC 29 1999-JAN 04 2000	4.6	15	.47	.02	.03	.12	.63	.66	1.82	.12	<.001
JAN 04-11	5.0	28	.27	.02	.05	.06	1.93	1.23	.11	3.0	<.001
JAN 11-18	--	--	--	--	--	--	--	--	--	--	--
JAN 18-25	--	--	2.1	.10	.06	.18	1.92	2.03	.22	4.5	<.001
JAN 25-FEB 01	--	--	.35	.03	<.01	.03	<.01	.78	.09	.21	<.001
FEB 01-08	--	--	--	--	--	--	--	--	--	--	--
FEB 08-15	--	--	1.2	.06	.07	.09	1.33	1.66	.16	2.7	<.001
FEB 15-22	4.7	16	.34	.03	.01	.08	.28	.45	.08	1.3	<.001
FEB 22-29	5.5	8	.24	.02	.02	.10	.51	.21	.15	1.1	<.001
FEB 29-MAR 07	5.1	38	3.1	.20	.16	.86	.99	1.09	.93	3.9	<.001
MAR 07-14	--	--	--	--	--	--	--	--	--	--	--
MAR 14-21	4.4	34	.25	.02	.02	.03	.72	.80	.09	2.9	<.001
MAR 21-28	4.8	23	1.0	.09	.14	.04	.67	.73	.16	3.0	.016
MAR 28-APR 04	--	--	--	--	--	--	--	--	--	--	--
APR 04-11	5.0	20	1.7	.10	.06	.10	.91	.61	.17	3.4	<.001
APR 11-18	5.1	13	.95	.06	.04	.02	.67	.33	.06	1.3	<.001
APR 18-25	6.0	24	2.0	.14	.13	.15	.28	.47	.16	1.7	<.001
APR 25-MAY 02	5.5	17	.70	.03	.03	.04	1.07	.57	.09	1.9	<.001
MAY 02-09	5.3	8	.23	.03	.04	.05	.51	.25	.06	.58	<.001
MAY 09-16	5.6	8	.19	.02	.02	.02	.68	.25	.05	.55	<.001

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	PH FIELD ATM DEP WET T (UNITS) (83106)	SPEC. CONDUC-TANCE FIELD ATM DEP WET TOT (US/CM) (83154)	CALCIUM ATM DEP WET DIS (MG/L) (82932)	MAG-NESIUM ATM DEP WET DIS (MG/L) (83002)	POTAS-SIUM ATM DEP WET DIS (MG/L) (83120)	SODIUM ATM DEP WET DIS (MG/L) (83138)	NI-TROGEN AMMON. ATM DEP WET DIS AS N (MG/L) (83044)	NI-TROGEN NITRATE ATM DEP WET DIS AS N (MG/L) (83068)	CHLO-RIDE ATM DEP WET DIS (MG/L) (82944)	SULFATE ATM DEP WET DIS AS SO4 (MG/L) (83160)	PHOS-PHORUS ORTHO ATM DEP WET DIS AS P (MG/L) (83108)
MAY 16-23	5.3	49	3.7	.19	.28	.27	1.91	1.67	.43	4.8	<.001
MAY 23-30	5.1	10	.16	.01	.05	.02	.20	.26	.04	.86	<.001
MAY 30-JUN 06	5.3	8	.39	.03	.02	.03	.44	.28	.06	.98	<.001
JUN 06-13	5.3	9	.35	.02	.23	.04	1.04	.31	.11	.90	.059
JUN 13-20	5.8	7	.33	.03	.03	.08	.24	.22	.11	.79	<.001
JUN 20-27	5.6	4	.08	.01	.01	.04	.09	.13	.05	.29	<.001
JUN 27-JUL 04	7.0	7	.48	.03	.02	.06	.27	.25	.07	.87	<.001
JUL 04-11	5.7	7	.31	.03	.04	.12	.20	.21	.14	.98	<.001
JUL 11-18	4.9	9	.22	.02	.01	.01	.33	.27	.03	1.1	<.001
JUL 18-25	6.0	12	.78	.06	.02	.03	.57	.46	.07	1.6	<.001
JUL 25-AUG 01	6.5	12	.86	.11	.02	.01	.44	.38	.05	1.6	<.001
AUG 01-08	5.5	9	.44	.03	.03	.05	.40	.31	.07	1.0	<.001
AUG 08-15	6.5	19	1.4	.09	.09	.29	.73	.90	.38	1.9	<.001
AUG 15-22	5.6	18	1.1	.07	.16	.14	.74	.83	.30	2.3	<.001
AUG 22-29	6.2	28	1.3	.09	.12	.20	1.29	1.21	.32	3.4	<.001
AUG 29-SEP 05	--	--	--	--	--	--	--	--	--	--	--
SEP 05-12	--	--	3.6	.11	.14	.10	.71	.85	.19	2.8	<.003
SEP 12-19	5.9	15	.85	.06	.06	.04	.75	.56	.10	1.7	<.001
SEP 19-26	5.5	9	.43	.03	.03	.04	.40	.30	.06	1.1	<.001
SEP 26-OCT 03	--	--	--	--	--	--	--	--	--	--	--

425435091281101 BIG SPRING FISH HATCHERY NEAR ELKADER, IOWA

LOCATION.--Lat 42`54'35", long 91`28'11", in SE1/4 NE 1/4 SE1/4 sec. 31, T.94 N., R.5 W., Clayton County, Hydrologic Unit 07060004, 3.0 mi north and 2.8 mi west of Elkader, Iowa.

OWNER.--U.S. Geological Survey.

PERIOD OF RECORD.--August 1984 to current year.

INSTRUMENTATION.--Wet/dry precipitation collector, weighing-bucket type recording rain gage with alter wind shield and event recorder and National Weather Service standard 8-inch rain and snow gage (back-up only).

REMARKS.--Samples Collected by Robert Zach.

EXTREMES FOR PERIOD OF RECORD.--Maximum field pH, 6.9, April 2-9 1996; minimum field pH, 3.7, August 31 to September 7, 1999.

EXTREMES FOR CURRENT YEAR.--Maximum field pH, 6.7, Oct. 26 to Nov. 2; minimum field pH, 4.6, May 23-30.

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	PH FIELD ATM DEP WET T (UNITS) (83106)	SPEC. CONDUC-TANCE FIELD ATM DEP WET TOT (US/CM) (83154)	CALCIUM ATM DEP WET DIS (MG/L) (82932)	MAG-NESIUM ATM DEP WET DIS (MG/L) (83002)	POTAS-SIUM ATM DEP WET DIS (MG/L) (83120)	SODIUM ATM DEP WET DIS (MG/L) (83138)	NI-TROGEN AMMON. ATM DEP WET DIS AS N (MG/L) (83044)	NI-TROGEN NITRATE ATM DEP WET DIS AS N (MG/L) (83068)	CHLO-RIDE ATM DEP WET DIS (MG/L) (82944)	SULFATE ATM DEP WET DIS AS SO4 (MG/L) (83160)	PHOS-PHORUS ORTHO ATM DEP WET DIS AS P (MG/L) (83108)
OCT 05-12	4.8	19	.87	.12	.04	.04	.83	.48	.09	3.4	<.001
OCT 12-19	--	--	--	--	--	--	--	--	--	--	--
OCT 19-26	--	--	--	--	--	--	--	--	--	--	--
OCT 26-NOV 02	6.7	35	3.5	.25	.11	.17	1.06	1.01	.26	4.1	<.001
NOV 02-09	--	--	--	--	--	--	--	--	--	--	--
NOV 09-16	--	--	--	--	--	--	--	--	--	--	--
NOV 16-23	4.9	12	.14	.02	.03	.01	.29	.25	.03	1.2	<.001
NOV 23-30	5.3	8	.16	.02	.01	.01	.24	.14	.03	.74	<.001
NOV 30-DEC 07	5.4	9	.32	.03	.02	.13	.35	.21	.19	1.0	<.001
DEC 07-14	--	--	--	--	--	--	--	--	--	--	--
DEC 14-21	4.8	21	.66	.08	.02	.06	.69	.99	.19	1.4	<.001
DEC 21-28	5.7	5	.19	.03	<.01	.04	.16	.16	.07	.20	<.001
DEC 28 1999-JAN 04 2000	5.4	12	.59	.04	.03	.07	.44	.46	1.30	.09	<.001
JAN 04-11	4.9	19	.09	.01	.01	.01	.55	.49	.05	1.5	<.001
JAN 11-18	5.7	19	1.3	.20	.03	.10	.54	1.05	.30	1.6	<.001
JAN 18-25	5.5	5	.28	.04	<.01	.04	.09	<.01	.07	.55	<.001
JAN 25-FEB 01	--	--	--	--	--	--	--	--	--	--	--
FEB 01-08	--	--	1.8	.12	.03	.20	.61	.76	.28	.99	<.001
FEB 08-15	4.8	14	.30	.05	<.01	.02	.19	.62	.08	.33	<.001
FEB 15-22	5.3	5	.23	.04	<.01	.02	.09	.27	.05	.20	<.001
FEB 22-29	5.4	11	.25	.05	.05	.13	.47	.32	.14	1.4	<.001
FEB 29-MAR 07	--	--	4.7	.35	.17	.57	1.01	1.34	.72	5.1	<.001
MAR 07-14	6.3	15	1.3	.11	.25	.11	.57	.35	.15	1.0	.010
MAR 14-21	4.8	13	.14	.02	.02	.01	.37	.39	.05	1.0	<.001
MAR 21-28	4.8	25	.88	.12	.21	.07	.93	.72	.16	3.7	<.001
MAR 28-APR 04	--	--	--	--	--	--	--	--	--	--	--
APR 04-11	6.0	8	.35	.06	.03	.05	.42	.21	.04	.64	<.001
APR 11-18	5.6	20	1.1	.12	.16	.05	.89	.63	.11	2.7	<.001
APR 18-25	6.2	15	.78	.07	.06	.10	.71	.48	.09	2.2	<.001
APR 25-MAY 02	--	--	--	--	--	--	--	--	--	--	--
MAY 02-09	6.2	18	.99	.11	.14	.21	.83	.47	.19	1.5	<.001
MAY 09-16	6.3	20	1.1	.12	.08	.18	1.03	.58	.21	2.6	<.001

WATER-QUALITY DATA, WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000

DATE	PH FIELD ATM DEP WET T (UNITS) (83106)	SPEC. CONDUC-TANCE FIELD ATM DEP WET TOT (US/CM) (83154)	CALCIUM ATM DEP WET DIS (MG/L) (82932)	MAG-NESIUM ATM DEP WET DIS (MG/L) (83002)	POTAS-SIUM ATM DEP WET DIS (MG/L) (83120)	SODIUM ATM DEP WET DIS (MG/L) (83138)	NI-TROGEN AMMON. ATM DEP WET DIS AS N (MG/L) (83044)	NI-TROGEN NITRATE ATM DEP WET DIS AS N (MG/L) (83068)	CHLO-RIDE ATM DEP WET DIS (MG/L) (82944)	SULFATE ATM DEP WET DIS AS SO4 (MG/L) (83160)	PHOS-PHORUS ORTHO ATM DEP WET DIS AS P (MG/L) (83108)
MAY 16-23	5.8	12	.73	.07	.06	.12	.55	.39	.15	2.0	<.001
MAY 23-30	4.6	20	.27	.05	.05	.02	.44	.44	.05	1.7	<.001
MAY 30-JUN 06	5.5	14	.74	.09	.06	.08	.74	.58	.12	2.2	<.001
JUN 06-13	5.6	11	.46	.06	.04	.04	.49	.38	.07	1.0	<.001
JUN 13-20	5.6	5	.23	.03	.02	.05	.20	.18	.08	.68	<.001
JUN 20-27	5.6	6	.19	.03	.03	.02	.37	.31	.05	.45	<.001
JUN 27-JUL 04	6.3	11	.82	.14	.14	.03	.34	.23	.05	.67	<.001
JUL 04-11	5.4	6	.25	.03	.05	.04	.20	.21	.06	.77	<.001
JUL 11-18	--	--	--	--	--	--	--	--	--	--	--
JUL 18-25	5.5	19	1.3	.11	.06	.02	.93	.81	.14	1.5	<.001
JUL 25-AUG 01	5.7	12	.56	.10	.05	.01	.52	.38	.05	1.7	<.001
AUG 01-08	5.6	9	.55	.08	.03	.01	.33	.20	.03	1.1	<.001
AUG 08-15	5.8	25	1.3	.14	.14	.17	1.10	.97	.29	2.7	<.001
AUG 15-22	5.0	16	.66	.07	.06	.04	.46	.53	.08	2.1	<.001
AUG 22-29	4.8	23	.56	.10	.06	.05	.79	.70	.13	3.0	<.001
AUG 29-SEP 05	5.4	12	.78	.06	.06	.03	.51	.34	.06	1.7	<.001
SEP 05-12	6.0	19	2.4	.18	.18	.04	.58	.56	.10	2.0	.004
SEP 12-19	6.2	49	4.4	.32	.27	.10	1.91	1.43	.23	4.6	.004
SEP 19-26	5.6	8	.29	.03	.02	.02	.32	.22	.05	1.3	<.001
SEP 26-OCT 03	--	--	--	--	--	--	--	--	--	--	--