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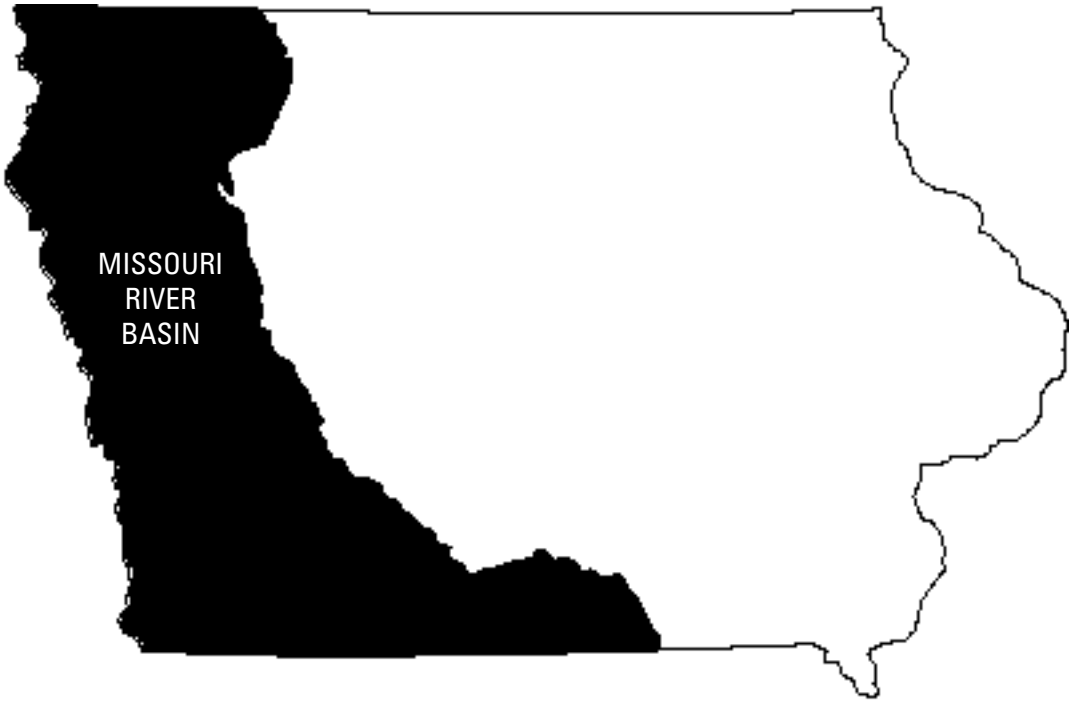
Water Resources Data
Iowa
Water Year 2002

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

Water-Data Report IA-02-2



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

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

CALENDAR FOR WATER YEAR 2002

2001

OCTOBER

S	M	T	W	T	F	S
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2002

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SEPTEMBER

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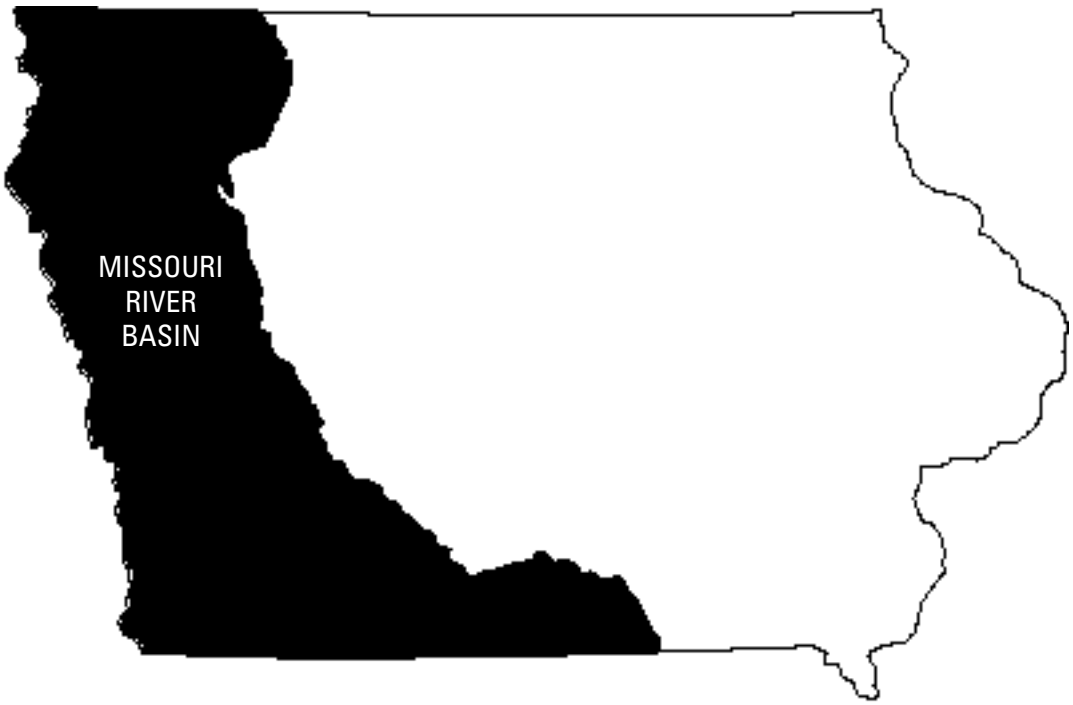
U.S. Department of the Interior
U.S. Geological Survey

Water Resources Data
Iowa
Water Year 2002

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

Water-Data Report IA-02-2



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

UNITED STATES DEPARTMENT OF THE INTERIOR

Gale A. Norton, Secretary

U.S. GEOLOGICAL SURVEY

Charles G. Groat, Director

For information on the water program in Iowa, write to:

Director, Water Resources Programs for the State of Iowa
U.S. Geological Survey
P.O. Box 1230
Iowa City, Iowa 52244

2003

PREFACE

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

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

Personnel in charge of the field units are:

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Robert D. Goodrich, Eastern Field Unit

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This report was prepared in cooperation with the State of Iowa and with other agencies under the general supervision of Greg M. Nalley, Chief Hydrologic Surveillence Section, and Robin G. Middlemis-Brown, Director, Water Resources Programs for the State of Iowa.

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13. ABSTRACT *(Maximum 200 words)*
Water resources data for Iowa for the 2002 water year consists of records of stage, discharge, and water quality of streams; stage, and/or contents of lakes and reservoirs; ground water levels and water quality of ground-water wells. This report volume contains discharge records for 31 gaging stations; stage or contents for 3 lakes; water quality for 1 stream-gaging station, and sediment records for 2 stream-gaging stations. Also included are data for 33 crest-stage partial record stations and ground-water levels for 157 wells.

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

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CONTENTS

ILLUSTRATIONS

TABLES

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

{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
Sny Magill Creek near Clayton, Ia. (d)	05411400	27.6	1992-01
Turkey River at Spillville, Ia. (d)	05411600	177	1957-73; 1978-91
Big Springs near Elkader, Ia. (d)	05411950	103	1938; 1982-83; 1988-95
Turkey River at Elkader, Ia. (d)	05412000	891	1932-42
Unnamed Creek near Luana, Ia. (d)	05412056	1.15	1986-92
Silver Creek near Luana, Ia (d)	05412060	4.39	1986-98
Roberts Creek at St. Olaf, Ia. (d)	05412100	70.7	1986-01
Little Maquoketa River near Durango, Ia. (d)	05414500	130	1934-82
Maquoketa River near Manchester, Ia. (d)	05417000	305	1933-73
Maquoketa River near Delhi, Ia. (d)	05417500	347	1933-40
Bear Creek near Monmouth, Ia. (d)	05417700	61.3	1957-76
Maquoketa River above North Fork Maquoketa River near Maquoketa, Ia. (d)	05418000	938	1913-14
North Fork Maquoketa River at Fulton, Ia. (d)	05418450	516	1977-91
Elk River near Almont, Ia. (d)	05420300	55.9	1995-97
Wapsipinicon River near Elma, Ia. (d)	05420560	95.2	1958-92
Wapsipinicon River at Stone City, Ia. (d)	05421500	1,324	1903-14
Crow Creek at Eldridge, Ia. (d)	05422420	2.20	1977-82
Crow Creek at Mt. Joy, Ia. (d)	05422450	6.90	1977-82
Pine Creek near Muscatine, Ia. (d)	05448150	38.9	1975-82
Eagle Lake Inlet near Britt, Ia. (e)	05448285	3.83	1975-80
Eagle Lake Outlet near Britt, Ia. (e)	05448290	11.3	1975-80
West Branch (West Fork) Iowa River near Klemme, Ia. (d)	05448500	112	1948-58
East Branch (East Fork) Iowa River near Klemme, Ia. (d)	05449000	133	1948-76; 1977-95
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
Fourmile Creek near Lincoln, Ia. (d)	05464130	13.8	1962-67; 1969-74; 1976-80
Half Mile Creek near Gladbrook, Ia. (d)	05464133	1.33	1962-67; 1969-74; 1976-80
Fourmile Creek near Traer, Ia. (d)	05464137	19.5	1962-74; 1975-80
Prairie Creek at Fairfax, Ia. (d)	05464640	178	1966-82
Lake Keomah near Oskaloosa, Ia. (e)	05472000	3.06	1936-71
Skunk River at Coppock, Ia. (d)	05473000	2,916	1913-44
Big Creek near Mount Pleasant, Ia. (d)	05473500	106	1955-79

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

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

DISCONTINUED SURFACE-WATER-QUALITY STATIONS

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

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

DISCONTINUED SURFACE-WATER-QUALITY STATIONS—Continued

Station name	Station number	Drainage area (mi^2)	Type of record	Period of record
Middle Raccoon River at Panora, Ia.	05483600	440	Cond.*, Temp.*, Sed.	1979-85
Raccoon River at Van Meter, Ia	05484500	3,441	Chem. Bio.	1974-79; 1986-94 1974-79
Raccoon River at Des Moines, Ia.	05485000	3,590	Chem., Temp.	1945-47
Des Moines River below Raccoon River at Des Moines, Ia.	05485500	9,879	Chem.* Temp.*, Sed.	1944-45 1944-47
Des Moines River below Des Moines, Ia.	05485520	9,901	Chem.	1971; 1974-81
Middle River near Indianola, Ia.	05486490	503	Temp.*, Sed.	1962-67
White Breast Creek near Dallas, Ia.	05487980	342	Chem. Temp.*, Sed.	1969-73 1967-73
Big Sioux River at Sioux City, Ia.	06485950	9,410	Chem.	1969-73
Missouri River at Sioux City, Ia.	06486000	314,600	Chem.	1972-86
			Sed.	1972-76; 1977-81; 1991-00
Floyd River at James, Ia.	06600500	886	Temp.*, Sed., Cond.*	1968-73
Floyd River at Sioux City, Ia.	06600520	921	Chem.	1969-73
Missouri River at Decatur, Neb.	06601200	316,160	Chem.	1974-81
Spirit Lake near Orleans, Ia.	06604000	75.6	Temp.	1968-75
Little Sioux River at Correctionville, Ia.	06606600	2,500	Chem.* Temp.* Sed.	1954-55 1951-62 1950-62
Little Sioux River near Kennebec, Ia.	06606700	2,738	Temp. Sed.	1951-55 1950-57
Little Sioux River at River Sioux, Ia.	06607513	3,600	Chem.	1969-73
Soldier River near Mondamin, Ia.	06608505	440	Chem.	1970-73
Steer Creek near Magnolia, Ia.	06609200	9.26	Temp., Sed., Cond.	1963-69
Thompson Creek near Woodbine, Ia.	06609590	6.97	Temp., Sed., Cond.	1963-69
Willow Creek near Logan, Ia.	06609600	129	Cond., Temp. Sed.	1972-75 1971-75
Missouri River at Omaha, Nebr.	06610000	322,800	Cond.*	1969-86
Mule Creek near Malvern, Ia.	06808000	10.6	Temp. Sed.	1958-69 1954-69
Davids Creek near Hamlin, Ia.	06809000	26.0	Temp.* Sed.	1952-53; 1965-68 1952-68
East Nishnabotna River at Red Oak, Ia.	06809500	894	Temp.*, Sed., Cond.*	1962-73
Nishnabotna River above Hamburg, Ia.	06810000	2,806	Chem. Temp.*, Cond. Bio.	1979-93 1979-81 1979-81
Nodaway River at Clarinda	06817000	762	Cond.*, Temp.*, Sed.	1976-92
Platte River near Diagonal, Ia.	06818750	217	Chem.	1969-73
Elk Creek near Decatur City, Ia.	06897950	52.5	Bio. Chem.	1970-72 1968-94
Thompson River at Davis City, Ia.	06898000	701	Chem. Temp.*, Sed., Cond.*	1967-73 1968-73
Weldon River near Leon, Ia.	06898400	104	Chem.	1968-73
Chariton River near Chariton, Ia.	06903400	182	Temp.*, Sed., Cond.*	1969-73
Honey Creek near Russell, Ia.	06903500	13.2	Sed.	1952-62
Chariton River near Rathbun, Ia.	06903900	549	Temp.*, Sed.*, Cond.*	1962-69

INTRODUCTION

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

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

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

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

Beginning with the 1971 water year, water data for streamflow, water quality, and ground water is published in official U.S. Geological Survey reports on a State-boundary basis. These official reports carry an identification number consisting of the two-letter State postal abbreviation, the last two digits of the water year, and the volume number. For example, this report is identified as "U.S. Geological Survey Water-Data Report IA-02-2." These water-data reports are for sale by the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161.

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

COOPERATION

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

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

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

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

City of Ames
City of 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
City of Cedar Falls
Ottumwa Water and Hydro Plant
City of Sioux City
City of Waterloo Water Pollution Control Plant
City of West Des Moines
City of Waverly

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

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

Organizations that supplied data are acknowledged in the station descriptions.

SUMMARY OF HYDROLOGIC CONDITIONS

Surface Water

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

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

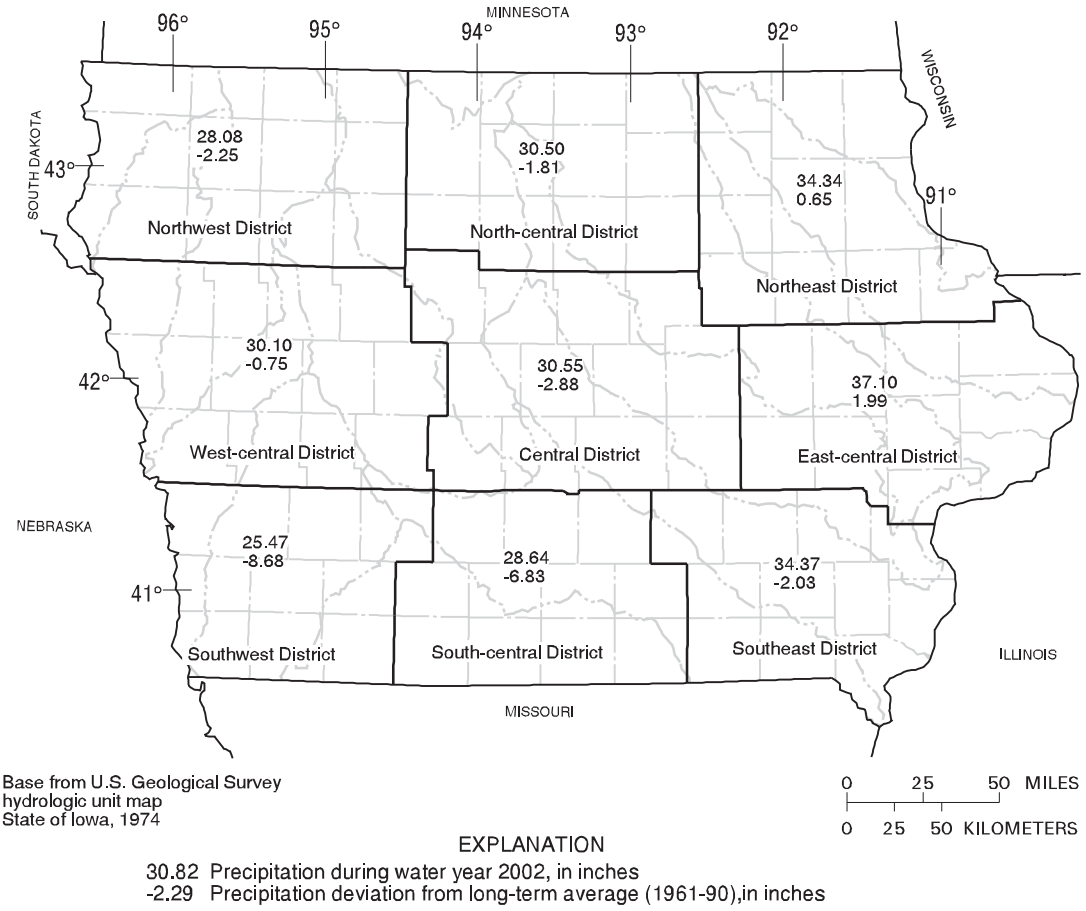

Figure 1. Precipitation record for the National Weather Service's designated Climatological Districts for water year 2002 (source: Harry Hillaker, State Climatologist, Iowa Department of Agriculture and Land Stewardship, written commun., 2002)

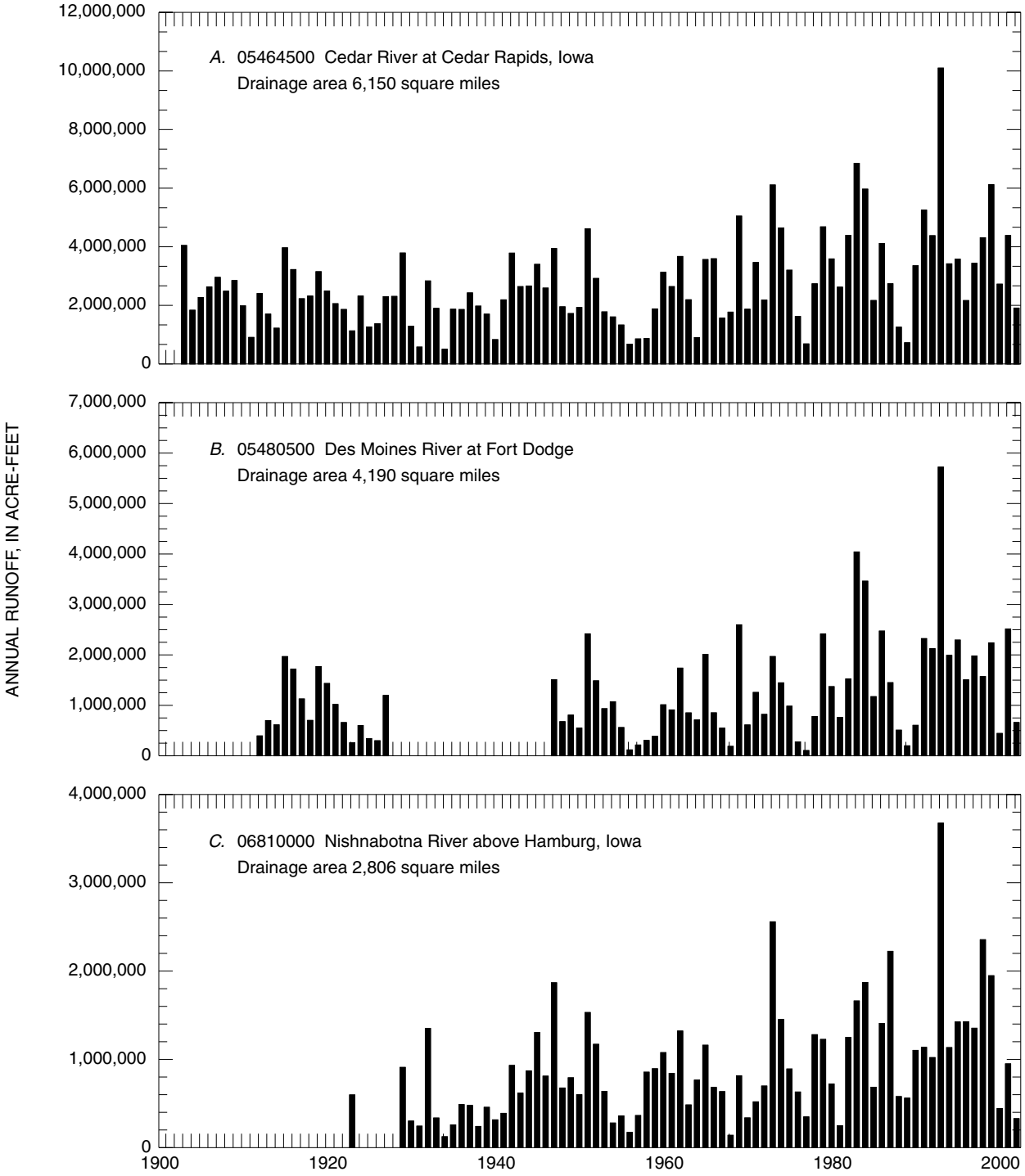

Figure 2. Annual runoff for period of record at index stations.

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

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

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

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

Suspended Sediment

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

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

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

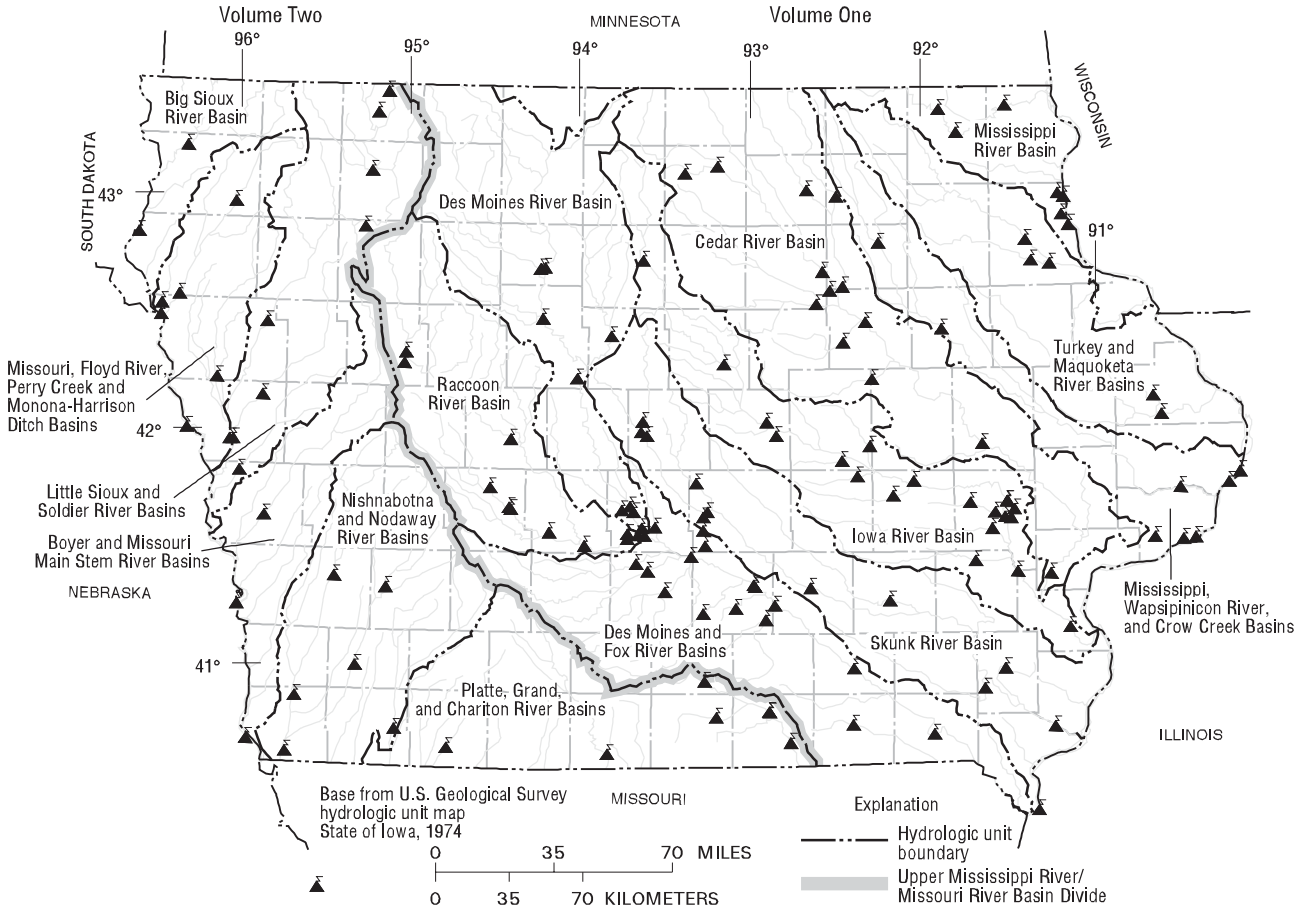

Figure 3. Location of active continuous-record gaging stations in Iowa, water year 2002. [See drainage basin maps in indicated volume for gaging-station identification.]

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

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

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

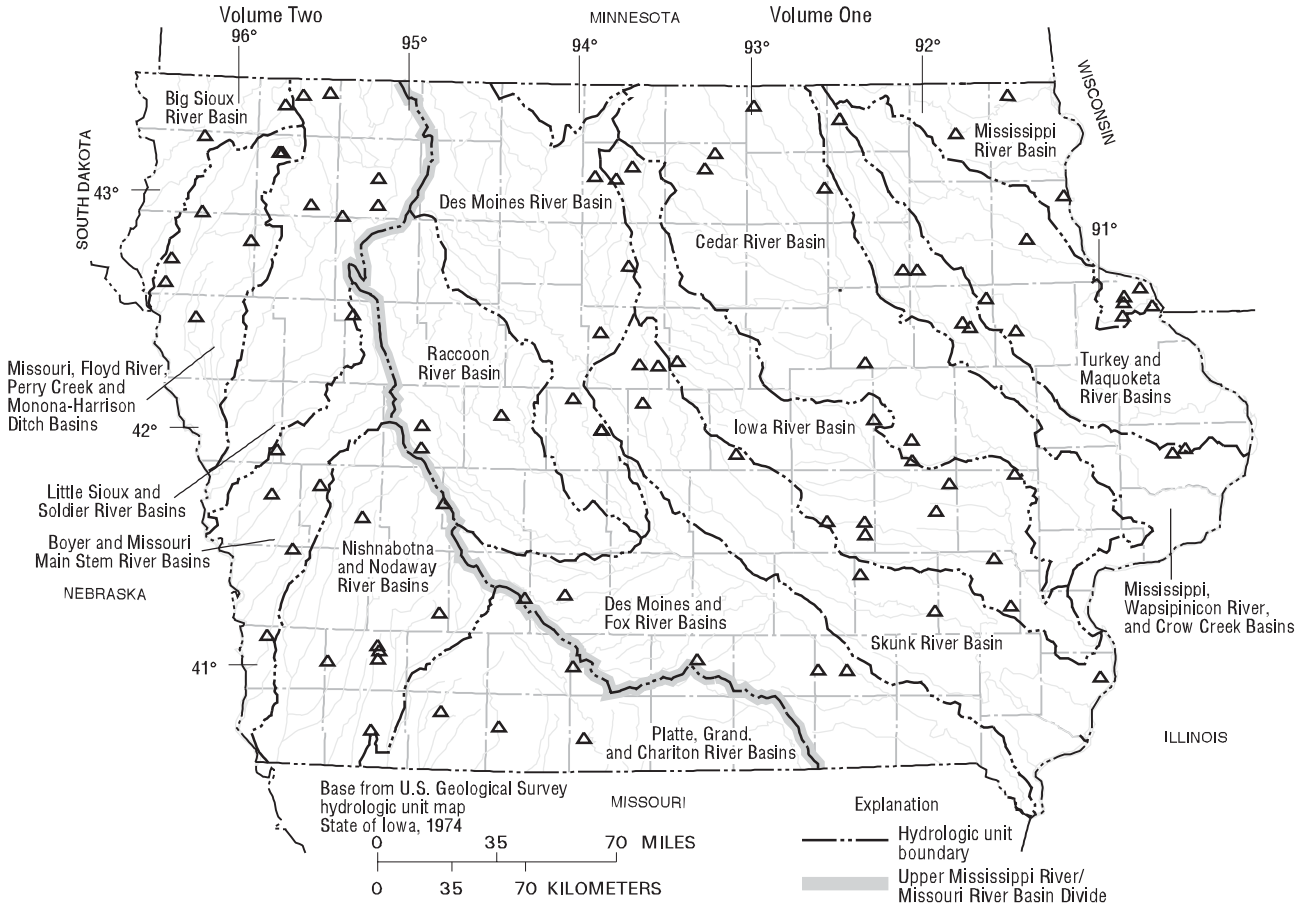

Figure 4. Location of active crest-stage gaging stations in Iowa, water year 2002. [See drainage basin maps in indicated volume for gaging-station identification.]

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

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

Ground-Water-Level Observation Network

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

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

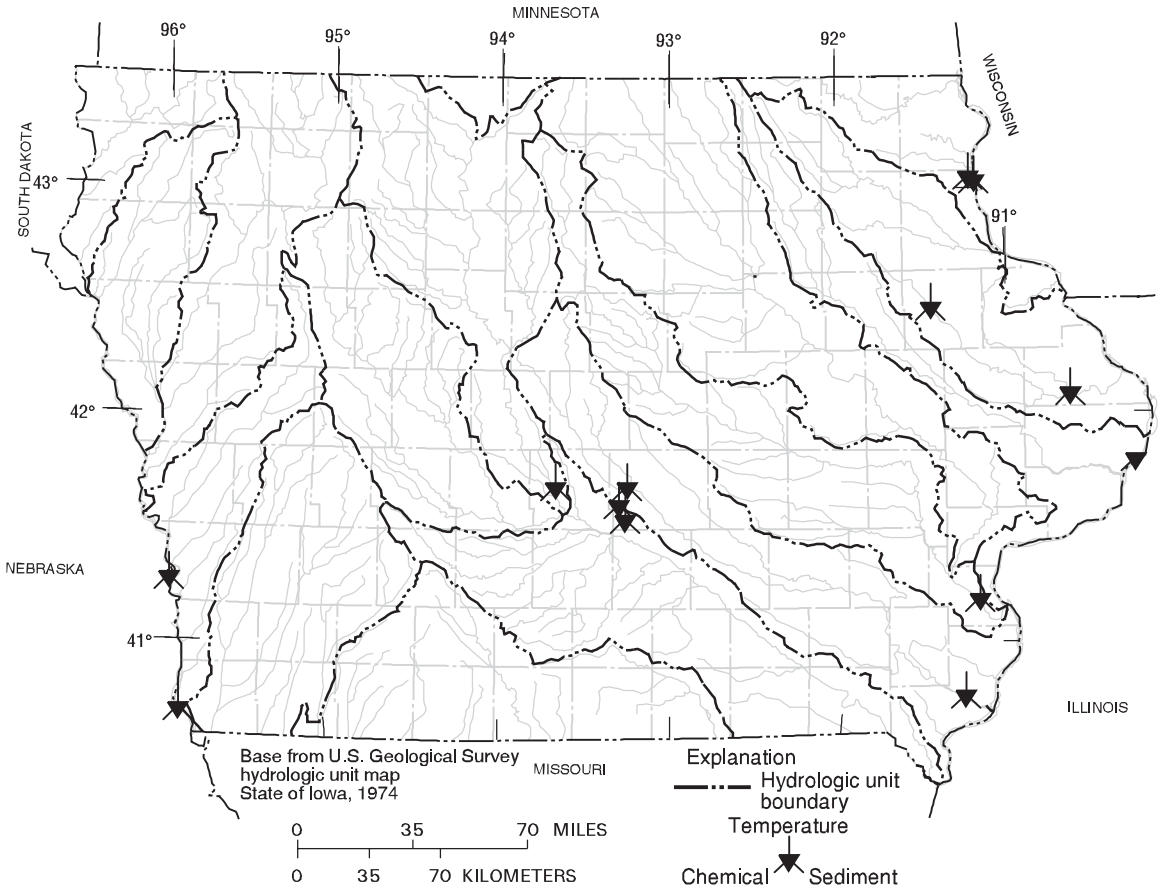

Figure 5. Location of active sediment and surface-water quality stations in Iowa, water year 2002.

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

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

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

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

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

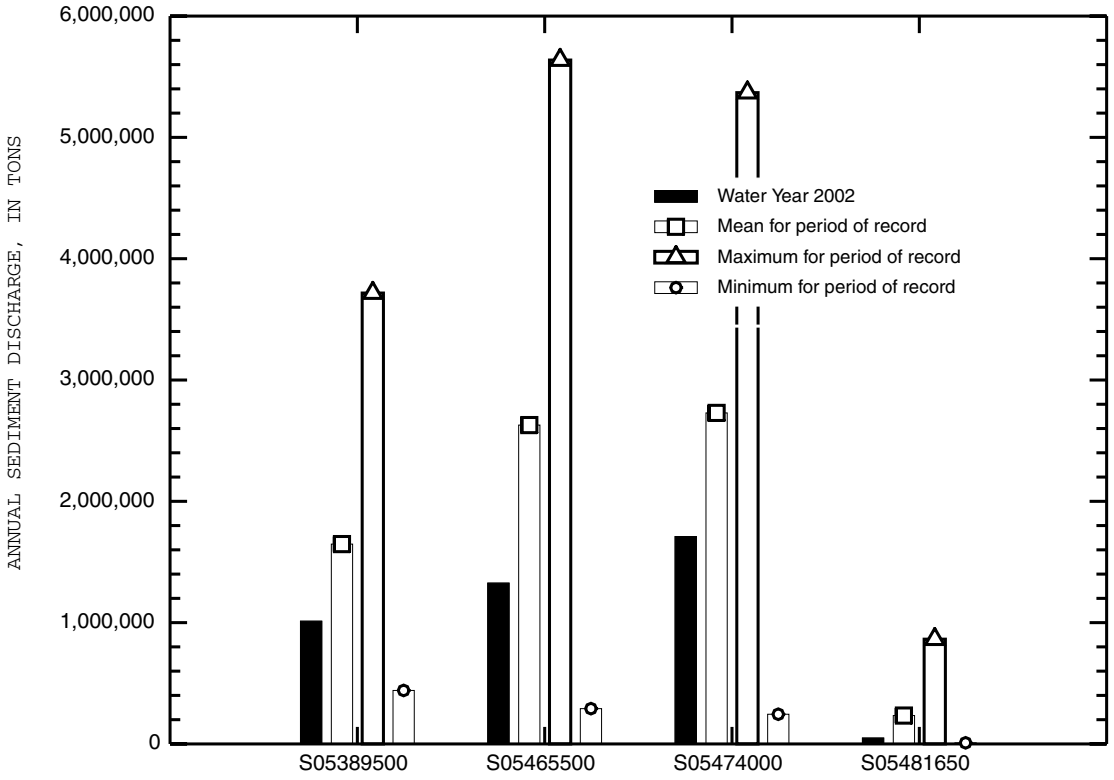

Figure 6. Comparison of annual sediment discharge for water year 2002 with mean, previous maximum, and previous minimum annual sediment discharges for periods of record at four long-term daily sediment stations

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

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

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

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

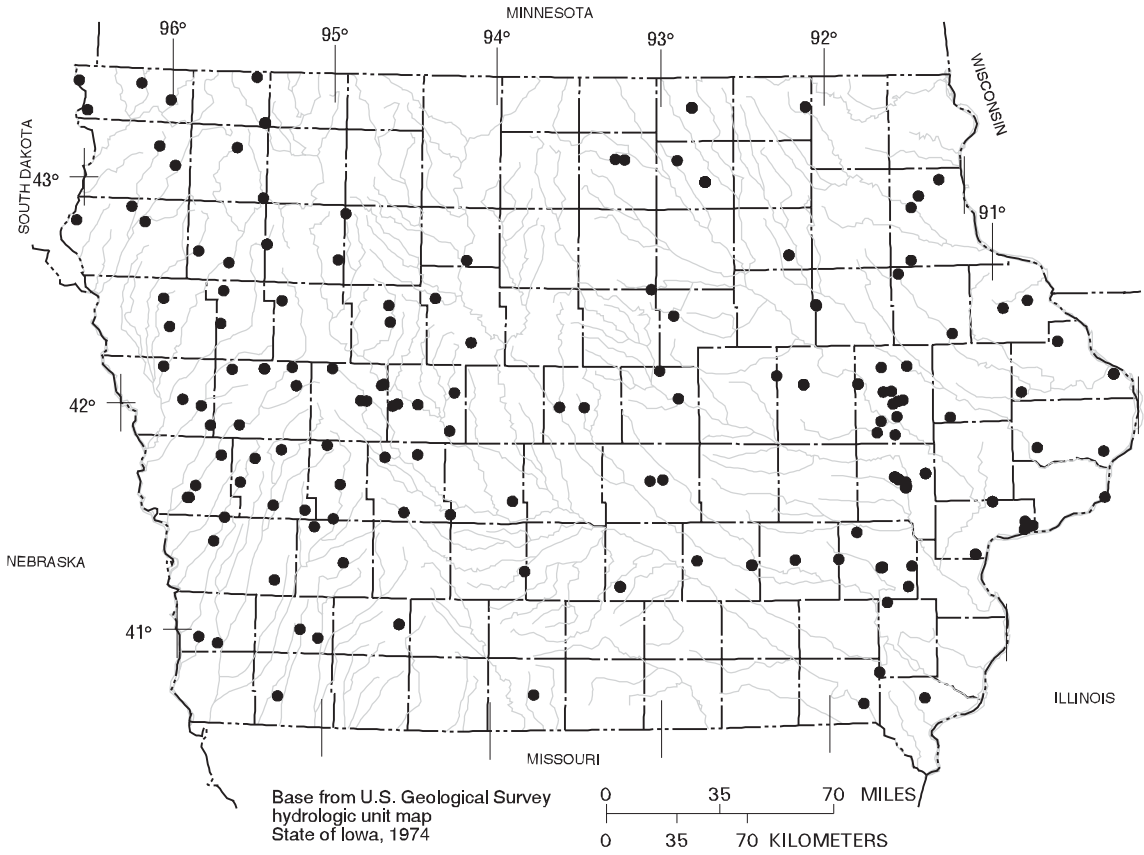

Figure 7. Location of wells in the ground-water-level observation network in Iowa, water year 2002.

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

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

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

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

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

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

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

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

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

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

Surface-Water Quality

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

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

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

Ground-Water Quality

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

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

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

Ground-Water Monitoring Network

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

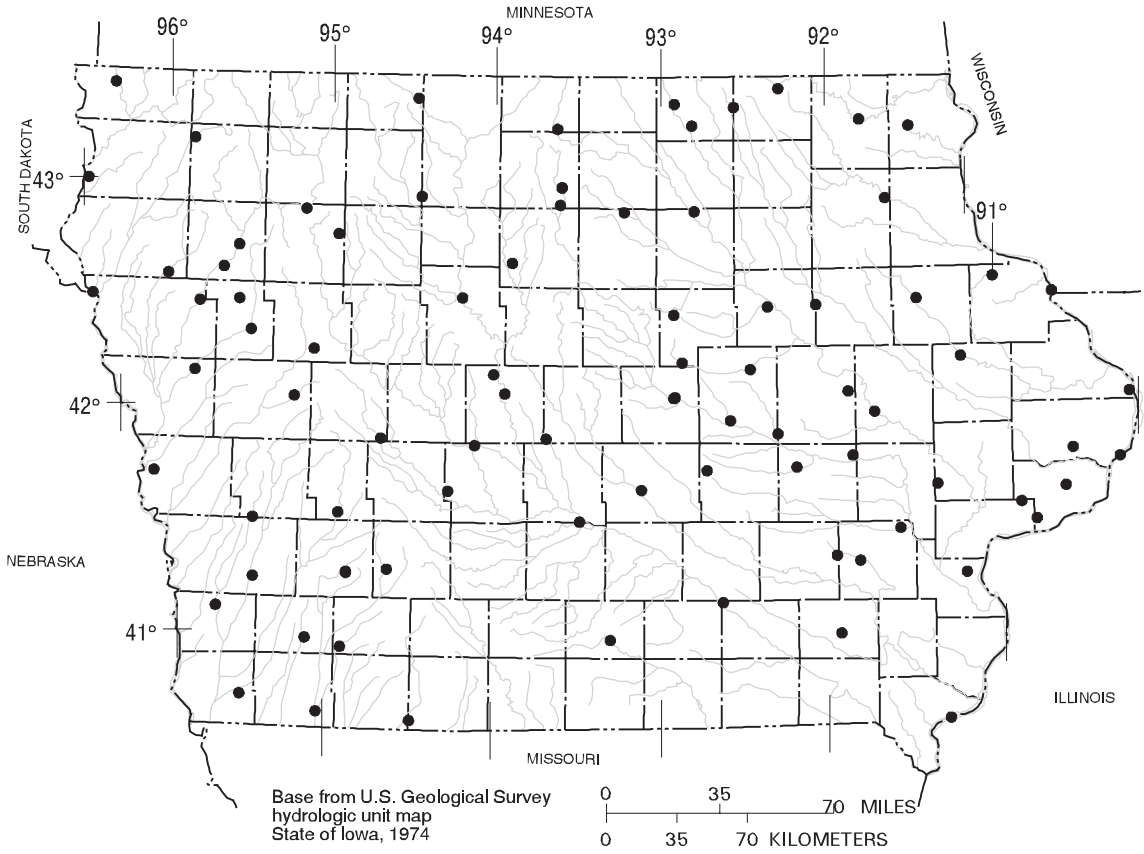

Figure 8. Location of active ground-water-quality monitoring wells in Iowa, water year 2002

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

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

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

SPECIAL NETWORKS AND PROGRAMS

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

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

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

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

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

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

EXPLANATION OF THE RECORDS

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

Station Identification Numbers

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

Downstream Order System

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

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

Latitude-Longitude System

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

Numbering System For Wells

Each well is identified by means of (1) a 15-digit number that is based on the grid system of latitude and longitude, and (2) a local number that is provided for continuity with older reports and for other use as dictated by local needs. The local well numbers are in accordance with the Bureau of Land Management's system of land subdivision. Each well number is made up of three segments. The first segment indicates the township, the second the range, and the third the section in which the well is

located (fig. 10). The letters after the section number, which are assigned in a counter-clockwise direction (beginning with "A" in the northeast quarter), represent subdivisions of the section. The first letter denotes a 160-acre tract, the second a 40-acre tract, the third a 10-acre tract, and the fourth a 2.5 acre tract. Numbers are added as suffixes to distinguish wells in the same tract. Thus, the number 96-20-3CDBD1 designates the well in the SE 1/4 NW 1/4 SE 1/4 SW 1/4 sec.3, T.96 N., R.20 W.

Latitude and longitude coordinates for wells:

1. 414315091252001
2. 414315091252002
3. 414316091251901

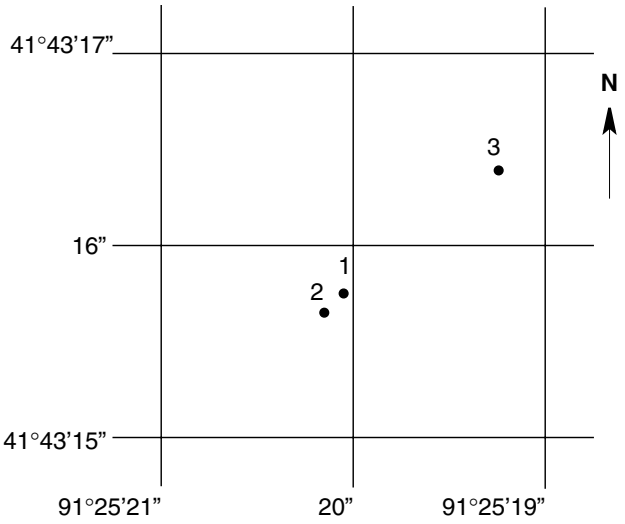

Figure 9. Latitude-longitude well number

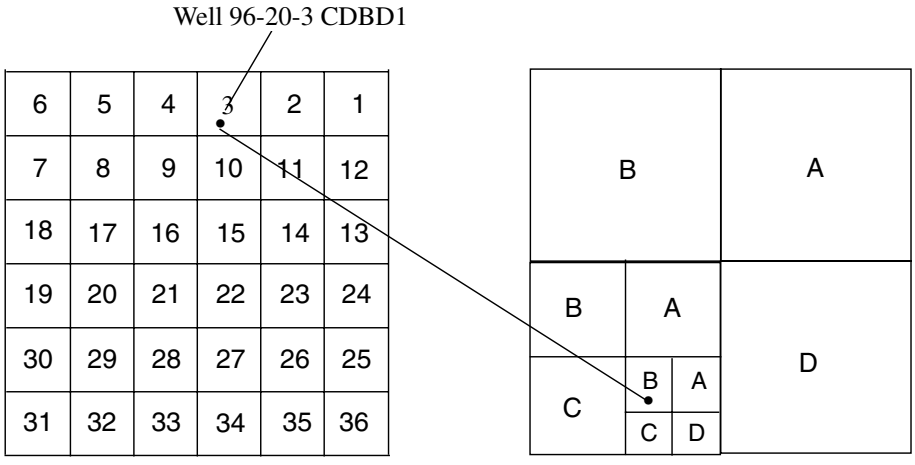

Figure 10. Local well-numbering system for well 96-20-3 CDBD1.

Records of Stage and Water Discharge

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

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

Data Collection and Computation

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

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

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

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

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

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

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

Data Presentation

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

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

Station Manuscript

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

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

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

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

REVISED RECORDS.--Because of new information, published records occasionally are found to be incorrect, and revisions are printed in later reports. Listed under this heading are all the reports in which revisions have been published for the station and the water years to which the revisions apply. If a revision did not include daily, monthly, or annual figures of

discharge, that fact is noted after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the most recently revised figure was first published is given

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

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

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

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

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

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

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

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

Headings for AVERAGE DISCHARGE, EXTREMES FOR PERIOD OF RECORD, and EXTREMES FOR CURRENT YEAR have been deleted, and the information contained in these paragraphs is now presented in the tabular summaries following the discharge table or in the REMARKS paragraph, as appropriate. EXTREMES FOR PERIOD OF RECORD are

now presented only for stations with significant flow regulation and where extremes occurred in pre-regulation periods. No changes have been made to the data presentations of lake contents or reservoir storage.

Data Table of Daily Mean Values

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

Statistics of Monthly Mean Data

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

Summary Statistics

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Data collected at partial-record stations follow the information for continuous-record sites. Data for partial-record discharge stations are presented in two tables. The first is a table of annual maximum stage and discharge at crest-stage

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

Identifying Estimated Daily Discharge

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

Accuracy of the Records

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

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

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

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

Other Records Available

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

Records of Surface-Water Quality

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

Classification of Records

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

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

Arrangement of Records

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

On-Site Measurements and Sample Collection

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

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

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

Water Temperature and Specific Conductance

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

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

Sediment

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

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

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

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

Laboratory Measurements

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

Data Presentation

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

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

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

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

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

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

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

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

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

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

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

Remarks Codes

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

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

Water Quality-Control Data

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

Blank Samples

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

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

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

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

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

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

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

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

Reference Samples

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

Replicate Samples

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

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

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

Spike Samples

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

Dissolved Trace-Element Concentrations

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

Change in National Trends Network Procedures

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

Records of Ground-Water Levels

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

Data Collection and Computation

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

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

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

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

Data Presentation

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

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

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

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

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

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

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

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

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

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

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

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

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

Records of Ground-Water Quality

Records of ground-water quality in this report differ from other types of records in that for most sampling sites, they consist of only one set of measurements for the water year. The quality of ground water ordinarily changes only slowly; therefore, for most general purposes: one annual sampling, or only a few samples taken at infrequent intervals during the year, is sufficient. Frequent measurement of the same constituents is not necessary unless one is concerned with a particular

problem, such as monitoring for trends in nitrate concentration. In the special cases where the quality of ground water may change more rapidly, more frequent measurements are made to identify the nature of the changes.

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

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

Data Presentation

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

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

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

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

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

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

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

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

ACCESS TO USGS WATER DATA

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

`http://www.usgs.gov`

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

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

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

DEFINITION OF TERMS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Base discharge (for peak discharge) is a discharge value, determined for selected stations, above which peak discharge data are published. The base discharge at each

station is selected so that an average of about three peak flows per year will be published. (See also "Peak flow")

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

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

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

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

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

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

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

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

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

Bottom material (See "Bed material")

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

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

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

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

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

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

Cfs-day (See "Cubic foot per second-day")

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

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

Clostridium perfringens *(C. perfringens)* is a spore-forming bacterium that is common in the feces of human and other warmblooded animals. Clostridial spores are being used experimentally as an indicator of past fecal contamination

and presence of microorganisms that are resistant to disinfection and environmental stresses. (See also "Bacteria")

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

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

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

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

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

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

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

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

Cubic foot per second-day (CFS-DAY, Cfs-day, [$(ft^3/s)/d$]) is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, 1.98347 acre-feet, 646,317 gallons, or 2,446.6 cubic meters. The daily mean discharges reported in the daily value data tables are numerically equal to the daily volumes in cfs-days, and the totals also represent volumes in cfs-days.

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

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

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

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

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

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

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

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

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

that passes the cross section in a given period of time (tons per day).

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Estimated (E) concentration value is reported when an analyte is detected and all criteria for a positive result are met. If the concentration is less than the method detection limit (MDL), an 'E' code will be reported with the value. If the analyte is qualitatively identified as present, but the quantitative determination is substantially more uncertain, the National Water Quality Laboratory will identify the

result with an 'E' code even though the measured value is greater than the MDL. A value reported with an 'E' code should be used with caution. When no analyte is detected in a sample, the default reporting value is the MDL preceded by a less than sign (<).

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Horizontal datum (See "Datum")

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Most probable number (MPN) is an index of the number of coliform bacteria that, more probably than any other number, would give the results shown by the laboratory examination; it is not an actual enumeration. MPN is determined

from the distribution of gas-positive cultures among multiple inoculated tubes.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Primary productivity (carbon method) is expressed as milligrams of carbon per area per unit time [mg C/(m^2/time)] for periphyton and macrophytes or per volume [mg C/(m^3/time)] for phytoplankton. The carbon method defines the amount of carbon dioxide consumed as measured by radioactive

carbon (carbon-14). The carbon-14 method is of greater sensitivity than the oxygen light and dark bottle method and is preferred for use with unenriched water samples. Unit time may be either the hour or day, depending on the incubation period. (See also "Primary productivity")

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

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

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

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

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

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

Return period (See "Recurrence interval")

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

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

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

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

Sea level, as used in this report, refers to one of the two commonly used national vertical datums (NGVD 1929 or NAVD 1988). See separate entries for definitions of these

datums. See conversion factors and vertical datum page (inside back cover) for identification of the datum used in this report.

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

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

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

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

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

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

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

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

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

Stage (See "Gage height")

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

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

Substrate is the physical surface upon which an organism lives.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the

composition of water resulting from the mixing of flow proportionally to the duration of the concentration.

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

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

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

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

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

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

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

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

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

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

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

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

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

Turbidity is the reduction in the transparency of a solution due to the presence of suspended and some dissolved substances. The measurement technique records the collective optical properties of the solution that cause light to be

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

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

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

Vertical datum (See "Datum")

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

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

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

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

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

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

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

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

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

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

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

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

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

Book 1. Collection of Water Data by Direct Measurement

Section D. Water Quality

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

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

Book 2. Collection of Environmental Data

Section D. Surface Geophysical Methods

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

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

Section E. Subsurface Geophysical Methods

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

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

Section F. Drilling and Sampling Methods

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

Book 3. Applications of Hydraulics

Section A. Surface-Water Techniques

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Section B. Ground-Water Techniques

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

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

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

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

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

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

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

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

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

Section C. Sedimentation and Erosion Techniques

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

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

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

Book 4. Hydrologic Analysis and Interpretation

Section A. Statistical Analysis

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

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

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

Section B. Surface Water

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

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

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

Section D. Interrelated Phases of the Hydrologic Cycle

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

Book 5. Laboratory Analysis

Section A. Water Analysis

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

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

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

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

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

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

Section C. Sediment Analysis

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

Book 6. Modeling Techniques

Section A. Ground Water

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

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

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

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

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

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

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

Book 7. Automated Data Processing and Computations

Section C. Computer Programs

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

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

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

Book 8. Instrumentation

Section A. Instruments for Measurement of Water Level

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

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

Section B. Instruments for Measurement of Discharge

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

Book 9. Handbooks for Water-Resources Investigations

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

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

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

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

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

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

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

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

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

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

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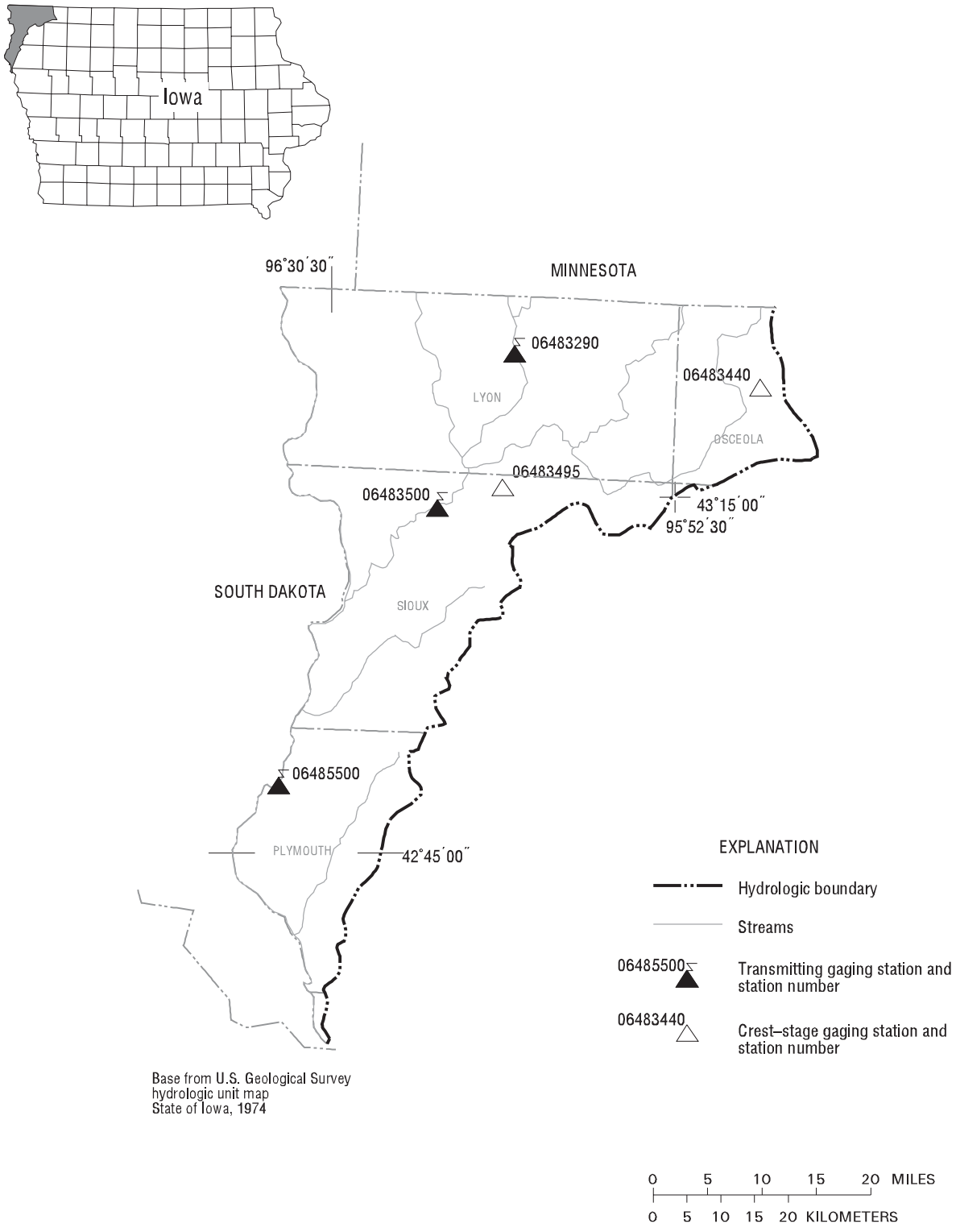


Figure 11. Locations of active continuous-record and crest-stage gaging stations in the Big Sioux River drainage basin.

Gaging Stations

Crest Stage Gaging Stations

06483290 ROCK RIVER BELOW TOM CREEK AT ROCK RAPIDS, IA

LOCATION.--Lat 43°25'23", long 96°09'52", in $SW^1/_4$ $NW^1/_4$ $SE^1/_4$ sec. 4, T.99 N., R.45 W., Lyon County, Hydrologic Unit 10170204, on right bank 5 ft downstream from bridge on gravel road in Campbell Park, near waterworks lift station, 200 ft east of Tama St and 8th Ave, 1.1 mi downstream of mouth of Tom Creek, and at mile 41.4.

DRAINAGE AREA.--853 mi^2.

PERIOD OF RECORD.--May 1, 2001 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,308.57 ft above NGVD of 1929.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 8, 1969 reached a stage of 10.23 ft, discharge 29,000 ft^3/s, at discontinued gaging station 1.4 mile upstream and above Tom Creek.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	63	169	e153	e69	e126	472	476	281	81	26	119
2	55	59	176	e78	e78	e113	337	412	255	74	25	e97
3	51	58	181	e88	e75	114	272	356	226	72	27	e75
4	51	58	204	e109	e70	111	227	308	220	68	34	e59
5	52	59	261	e114	e67	113	213	275	290	65	40	e52
6	49	61	366	e68	e72	110	204	254	278	63	36	e49
7	50	61	446	e63	e69	105	197	289	235	59	36	e44
8	51	58	395	e96	e73	101	199	510	224	55	46	e40
9	52	60	370	e78	e75	87	195	346	215	54	65	e39
10	59	61	379	e63	e70	82	185	326	204	83	57	e33
11	59	60	334	e78	107	88	201	443	194	61	46	e40
12	56	60	322	e71	111	98	229	508	178	56	69	e44
13	57	62	294	e88	e105	108	264	481	163	52	62	44
14	56	65	265	e79	e110	112	290	448	155	50	50	44
15	54	65	294	e76	e119	103	305	402	145	47	41	40
16	54	64	292	e82	e129	110	316	353	139	45	41	38
17	54	63	313	e104	e130	122	330	310	135	43	40	37
18	54	62	316	e94	e144	133	342	279	130	40	35	48
19	55	60	e182	e117	e192	143	317	255	127	39	32	44
20	54	60	e162	e121	e179	e143	278	236	135	38	30	40
21	55	61	e132	e105	e179	e111	280	223	134	36	258	37
22	55	61	e102	e112	e178	e88	287	217	140	34	899	35
23	56	75	e83	e95	e169	e126	296	211	163	32	969	33
24	54	185	e89	e79	e169	e128	284	199	164	34	724	33
25	51	360	e128	e84	e145	e115	267	194	149	38	462	34
26	52	390	e177	e86	e86	e103	240	189	136	33	339	37
27	51	241	e197	e91	e117	e126	264	190	121	31	266	37
28	56	160	e211	e84	e142	247	357	184	107	29	219	38
29	54	161	e171	e82	---	836	448	182	98	28	185	40
30	60	172	e182	e71	---	1070	499	271	89	27	171	39
31	63	---	e168	e78	---	788	---	295	---	28	150	---
TOTAL	1686	3085	7361	2787	3229	5960	8595	9622	5230	1495	5480	1389
MEAN	54.39	102.8	237.5	89.90	115.3	192.3	286.5	310.4	174.3	48.23	176.8	46.30
MAX	63	390	446	153	192	1070	499	510	290	83	969	119
MIN	49	58	83	63	67	82	185	182	89	27	25	33
AC-FT	3340	6120	14600	5530	6400	11820	17050	19090	10370	2970	10870	2760
CFSM	0.06	0.12	0.28	0.11	0.14	0.23	0.34	0.36	0.20	0.06	0.21	0.05
IN.	0.07	0.13	0.32	0.12	0.14	0.26	0.37	0.42	0.23	0.07	0.24	0.06

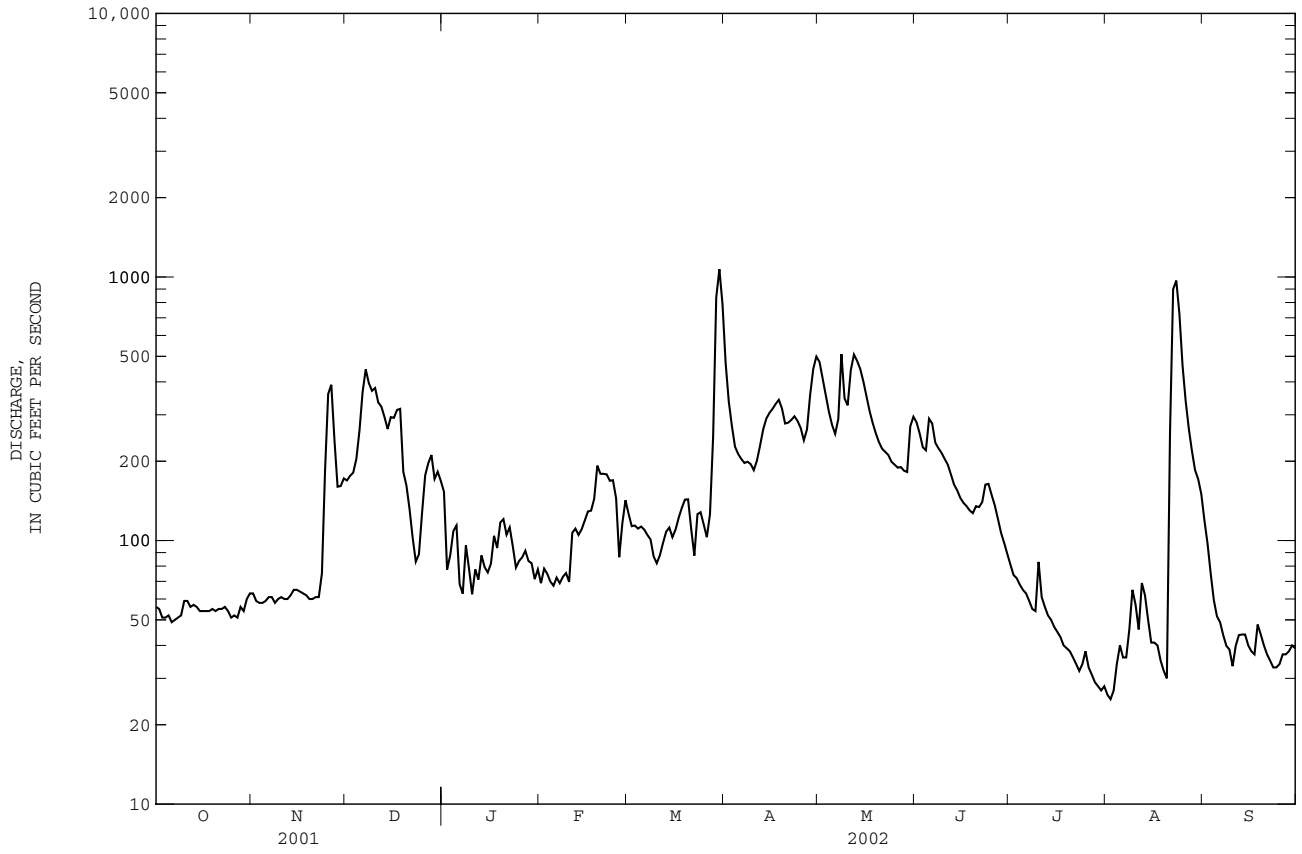
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 2001 - 2002, BY WATER YEAR (WY)

MEAN	54.39	102.8	237.5	89.90	115.3	192.3	286.5	763.1	734.4	304.5	165.1	54.65
MAX	54.4	103	237	89.9	115	192	286	1216	1295	561	177	63.0
(WY)	2002	2002	2002	2002	2002	2002	2002	2001	2001	2001	2002	2001
MIN	54.4	103	237	89.9	115	192	286	310	174	48.2	153	46.3
(WY)	2002	2002	2002	2002	2002	2002	2002	2002	2002	2002	2001	2002

06483290 ROCK RIVER BELOW TOM CREEK AT ROCK RAPIDS, IA--Continued

SUMMARY STATISTICS	FOR 2002 WATER YEAR		WATER YEARS 2001 - 2002	
ANNUAL TOTAL	55919			
ANNUAL MEAN	153.2		153.2	
HIGHEST ANNUAL MEAN			153	2002
LOWEST ANNUAL MEAN			153	2002
HIGHEST DAILY MEAN	1070	Mar 30	8870	Jun 13 2001
LOWEST DAILY MEAN	25	Aug 2	25	Aug 2 2002
ANNUAL SEVEN-DAY MINIMUM	27	Jul 28	27	Jul 28 2002
MAXIMUM PEAK FLOW	1110	Mar 30	12000	Jun 13 2001
MAXIMUM PEAK STAGE	9.95	Mar 30	19.30	Jun 13 2001
INSTANTANEOUS LOW FLOW	23	Aug 2		
ANNUAL RUNOFF (AC-FT)	110900		111000	
ANNUAL RUNOFF (CFSM)	0.18		0.18	
ANNUAL RUNOFF (INCHES)	2.44		2.44	
10 PERCENT EXCEEDS	319		784	
50 PERCENT EXCEEDS	105		126	
90 PERCENT EXCEEDS	40		45	

e Estimated



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 NGVD of 1929. 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. 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 FROM THE DCP, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	135	111	389	e237	e154	e237	757	844	606	200	76	201
2	135	111	356	e162	e164	e226	559	803	598	181	76	176
3	121	111	367	e173	e160	e214	442	721	582	175	78	152
4	111	110	393	e195	e155	e260	392	646	554	165	88	133
5	110	110	451	e199	e152	e292	362	586	540	151	80	120
6	108	111	646	e152	e157	e298	341	548	575	139	99	110
7	109	112	722	e148	e154	e294	331	516	552	128	86	102
8	111	110	737	e182	e159	e290	331	702	668	117	75	94
9	114	108	655	e163	e161	e295	329	780	593	111	81	84
10	129	110	670	e148	e156	282	322	715	565	172	100	81
11	127	110	632	e163	e185	285	344	760	567	163	94	78
12	124	111	593	e157	e195	299	395	980	538	138	107	74
13	124	115	566	e173	e195	337	437	1020	530	133	129	76
14	119	117	513	e164	e208	373	490	965	505	120	113	83
15	115	115	515	e161	e221	e383	517	893	469	111	92	76
16	114	113	524	e167	e235	e377	523	817	434	104	79	72
17	114	112	521	e189	e240	e355	549	744	419	97	80	69
18	113	111	525	e179	e275	e342	557	674	402	93	73	86
19	112	110	e267	e203	e315	e354	545	618	384	87	67	85
20	114	110	e248	e207	e302	e304	503	572	431	83	63	79
21	112	109	e218	e191	e302	e289	501	534	413	78	99	72
22	110	110	e187	e198	e297	e243	518	511	398	78	588	69
23	110	118	e168	e181	e286	e272	531	513	371	72	1150	67
24	109	268	e174	e164	e284	e267	530	479	370	72	1120	64
25	106	633	e213	e170	e271	e252	501	453	340	77	806	65
26	105	682	e263	e172	e194	e255	466	439	311	77	590	65
27	107	569	e282	e177	e223	294	479	445	288	75	457	68
28	108	454	e296	e169	e253	348	616	434	268	74	371	68
29	110	426	e256	e167	---	554	764	417	248	73	311	70
30	111	405	e268	e157	---	1060	836	454	224	73	269	69
31	112	---	e253	e163	---	1070	---	578	---	75	235	---
TOTAL	3559	6002	12868	5431	6053	11001	14768	20161	13743	3492	7732	2708
MEAN	114.8	200.1	415.1	175.2	216.2	354.9	492.3	650.4	458.1	112.6	249.4	90.27
MAX	135	682	737	237	315	1070	836	1020	668	200	1150	201
MIN	105	108	168	148	152	214	322	417	224	72	63	64
AC-FT	7060	11900	25520	10770	12010	21820	29290	39990	27260	6930	15340	5370
CFSM	0.07	0.13	0.26	0.11	0.14	0.22	0.31	0.41	0.29	0.07	0.16	0.06
IN.	0.08	0.14	0.30	0.13	0.14	0.26	0.35	0.47	0.32	0.08	0.18	0.06

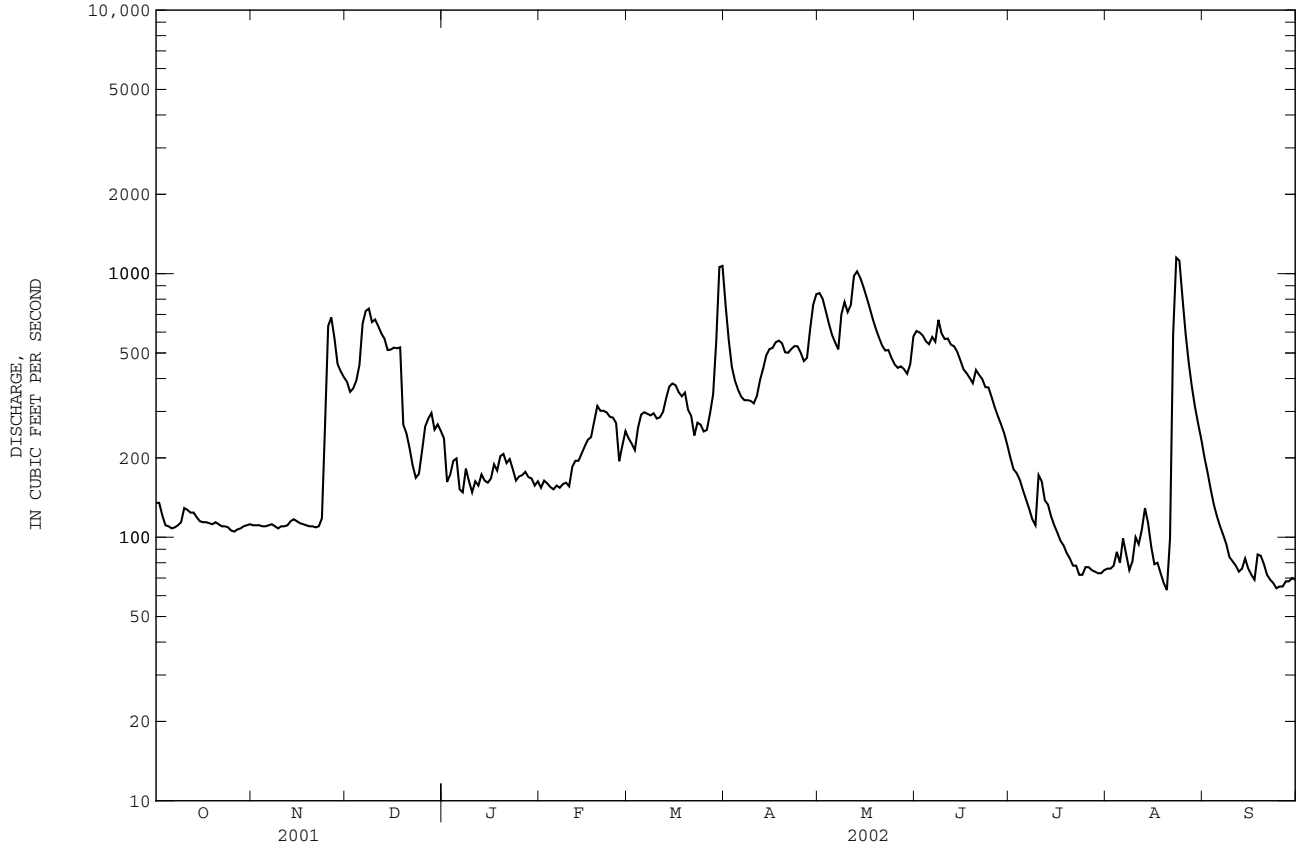
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 2002, BY WATER YEAR (WY)

MEAN	231.4	259.7	148.5	82.04	220.7	1008	1337	715.7	969.0	605.8	270.6	231.5
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	0.037	0.30	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 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1949 - 2002	
ANNUAL TOTAL	417949		107518			
ANNUAL MEAN	1145		294.6		506.7	
HIGHEST ANNUAL MEAN					2656	1993
LOWEST ANNUAL MEAN					31.0	1968
HIGHEST DAILY MEAN	18200	Jun 14	1150	Aug 23	35400	Apr 7 1969
LOWEST DAILY MEAN	16	Feb 3	63	Aug 20	0.00	Feb 20 1959a
ANNUAL SEVEN-DAY MINIMUM	17	Jan 29	67	Sep 22	0.00	Feb 27 1959
MAXIMUM PEAK FLOW			1250	Aug 24	40400	Apr 7 1969
MAXIMUM PEAK STAGE			6.06	Mar 31b	17.32	Apr 7 1969c
INSTANTANEOUS LOW FLOW			60	Aug 20d		
ANNUAL RUNOFF (AC-FT)	829000		213300		367100	
ANNUAL RUNOFF (CFSM)	0.72		0.19		0.32	
ANNUAL RUNOFF (INCHES)	9.77		2.51		4.32	
10 PERCENT EXCEEDS	2590		595		1150	
50 PERCENT EXCEEDS	267		207		136	
90 PERCENT EXCEEDS	19		80		16	

a Many days during winter periods in 1959 and 1977.
b Also Aug. 24.
c At location and datum then in use.
d Also Aug. 21
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 1994-2002 water years).

WATER-DISCHARGE RECORDS

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 NGVD of 1929. 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	570	560	1200	e1060	e575	e770	3490	2180	1300	689	297	669
2	563	560	1140	e1020	e610	e750	3530	2200	1310	633	282	612
3	555	555	1080	e970	e615	e750	3290	2170	1280	596	278	553
4	531	549	1110	e920	e600	e750	3060	2070	1330	567	294	503
5	516	550	1140	e880	e590	e770	2920	1930	1270	542	386	468
6	517	548	1260	e835	e570	e780	2860	1800	1240	515	448	432
7	506	548	1630	e800	e565	e765	2550	1690	1330	485	528	392
8	514	542	1790	e765	e585	e750	2110	1610	1330	462	617	365
9	543	536	1750	e755	e605	e730	1860	1750	1420	442	484	344
10	607	533	1620	e765	e595	e720	1720	1790	1380	484	439	328
11	598	533	1590	e765	e595	e725	1670	1780	1350	644	452	311
12	623	539	1600	e765	e585	e720	1700	2100	1340	845	462	303
13	625	539	1530	e775	e575	e740	1770	2890	1200	742	538	299
14	602	541	1510	e770	e580	e750	1800	3270	1130	574	642	297
15	597	542	1430	e750	e585	e760	1850	3390	1070	511	688	303
16	614	536	1370	e740	e600	e770	1900	3180	1010	469	564	309
17	600	532	1410	e720	e620	e810	1940	2780	968	439	585	301
18	592	556	1450	e705	e645	e820	1950	2460	924	411	503	282
19	592	529	1430	e685	e680	e740	1940	2230	886	394	465	286
20	583	524	1310	e655	e735	e690	1970	2030	910	380	433	291
21	579	525	1250	e665	e790	e670	1980	1870	916	370	429	317
22	577	547	1220	e680	e850	e630	1950	1740	862	349	560	285
23	573	545	e1230	e670	e920	854	1970	1670	838	330	2850	267
24	568	633	e1300	e670	977	915	1900	1590	809	324	2900	251
25	563	983	e1330	e650	951	914	1820	1510	861	384	2340	248
26	553	2260	e1320	e640	907	781	1750	1430	947	370	1780	242
27	547	2240	e1300	e680	838	734	1710	1390	965	362	1410	240
28	548	1730	e1270	e670	e800	790	1730	1370	927	414	1170	251
29	552	1310	e1210	e625	---	905	1950	1360	839	363	1040	255
30	552	1230	e1180	e570	---	1490	2120	1290	756	331	898	254
31	556	---	e1120	e540	---	2560	---	1250	---	312	772	---
TOTAL	17616	22855	42080	23160	19143	26303	64760	61770	32698	14733	25534	10258
MEAN	568.3	761.8	1357	747.1	683.7	848.5	2159	1993	1090	475.3	823.7	341.9
MAX	625	2260	1790	1060	977	2560	3530	3390	1420	845	2900	669
MIN	506	524	1080	540	565	630	1670	1250	756	312	278	240
AC-FT	34940	45330	83470	45940	37970	52170	128500	122500	64860	29220	50650	20350

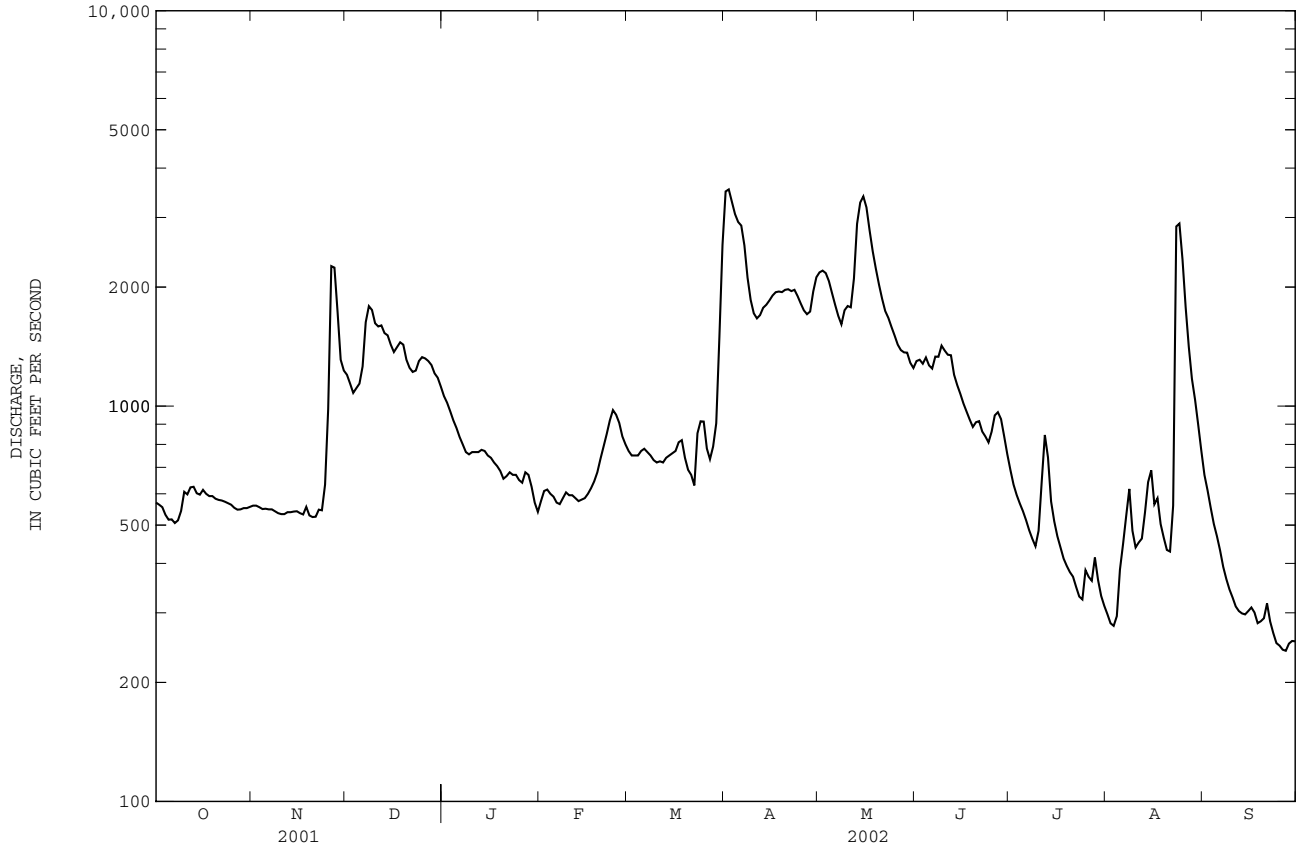
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2002, BY WATER YEAR (WY)

MEAN	531.3	528.0	364.5	217.3	514.6	2364	3406	1881	2195	1495	771.6	669.4
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 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1929 - 2002	
ANNUAL TOTAL	1246938		360910			
ANNUAL MEAN	3416		988.8		1245a	
HIGHEST ANNUAL MEAN					6271	1993
LOWEST ANNUAL MEAN					120	1931
HIGHEST DAILY MEAN	37800	Apr 26	3530	Apr 2	77500	Apr 9 1969
LOWEST DAILY MEAN	155	Jan 1	240	Sep 27	4.0	Jan 17 1977
ANNUAL SEVEN-DAY MINIMUM	161	Jan 1	249	Sep 24	4.4	Jan 15 1977
MAXIMUM PEAK FLOW			3660	Apr 2	80800	Apr 9 1969b
MAXIMUM PEAK STAGE			11.65	Apr 2	23.38	Apr 26 2001c
ANNUAL RUNOFF (AC-FT)	2473000		715900		902200	
10 PERCENT EXCEEDS	10700		1930		2950	
50 PERCENT EXCEEDS	1210		742		404	
90 PERCENT EXCEEDS	174		376		72	

a Median of annual mean discharges, 860 ft^3/s.
b Gage height, 22.99 ft.
c Discharge, 40,400 ft^3/s.
e Estimated.



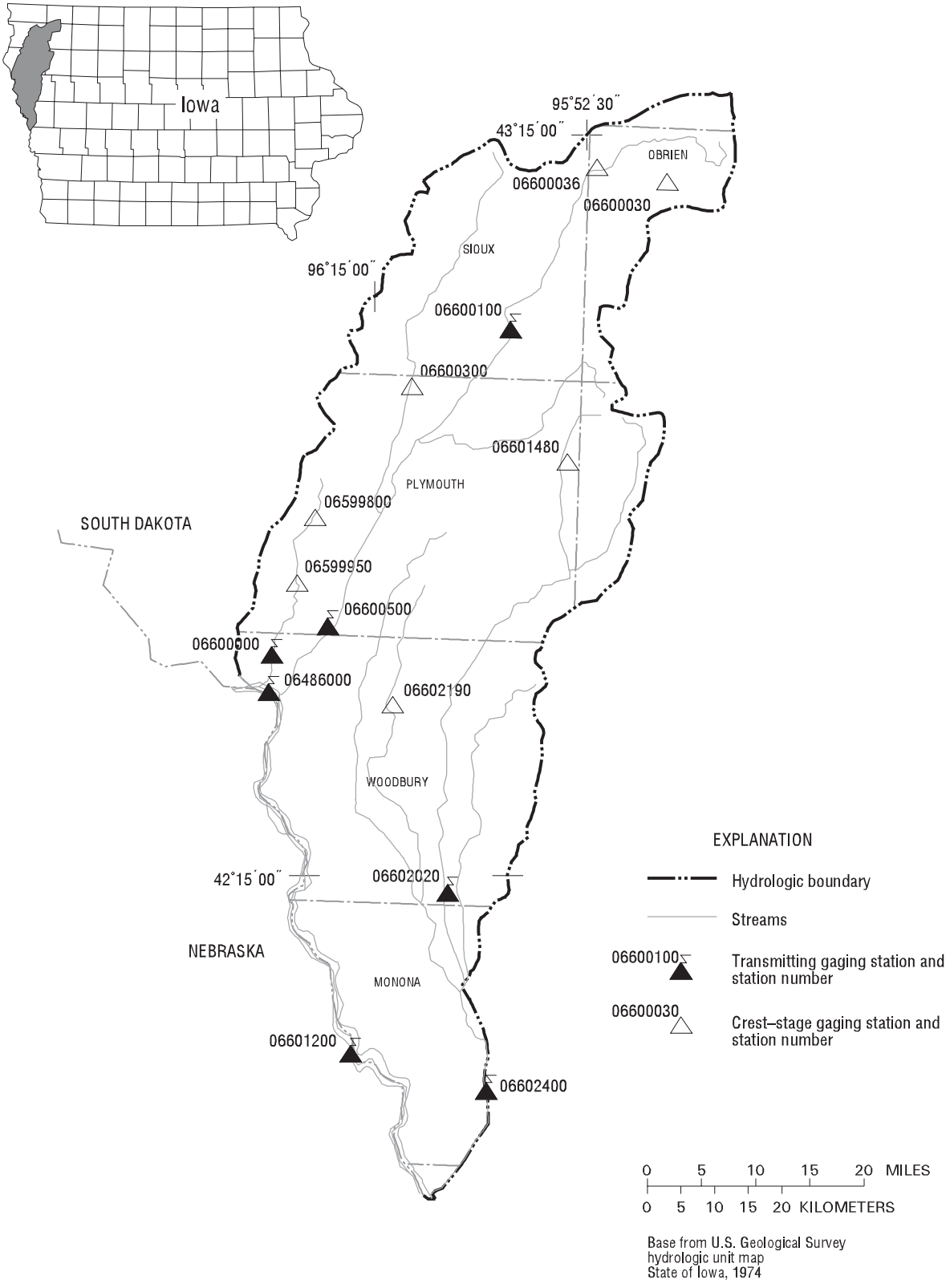


Figure 12. Locations of active continuous-record and crest-stage gaging stations in the Missouri River, Perry Creek, Floyd River, and Monona-Harrison Ditch drainage basins.

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.

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 NGVD of 1929. 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. 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 FROM THE DCP, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28000	30200	22100	16100	16100	17500	29200	26100	25800	26100	26000	30400
2	27900	30200	19500	16100	15700	15700	29500	26500	26000	26000	25800	31000
3	27900	30000	17700	16200	15800	17200	28100	25800	26500	26300	25700	31400
4	27700	30000	16900	16000	15300	17200	27400	25300	26700	26400	26300	31400
5	27400	30100	16800	18000	15100	18200	27300	25400	26400	26300	27400	31700
6	27500	30200	16600	16500	15600	16900	27100	25600	26100	26400	26400	31900
7	28300	30500	16400	15200	14900	15600	27400	25400	26500	26400	25900	31900
8	28400	30600	16600	15500	14900	15600	27300	25400	27300	26300	25800	31800
9	28600	30400	16600	15600	15300	15100	27600	25200	26300	26400	25800	32100
10	29200	30500	16500	15200	16400	14000	27500	24700	26300	28100	25900	32200
11	28900	30500	16300	15000	16800	15800	27600	25900	27200	27400	25600	32400
12	28600	30700	16300	15100	16800	16500	27200	26100	26800	26800	25800	32200
13	28800	30800	16300	15100	15300	15800	26200	25700	26600	26800	25900	32600
14	28800	30900	16200	15500	14900	15500	26500	25500	26400	26900	25400	32900
15	28700	31000	16100	15400	15000	15400	26300	24600	26700	26600	25700	31400
16	28900	30900	16400	15700	14900	15100	26300	25000	26600	26300	29700	30600
17	29400	30700	16400	16200	14900	15200	26800	25500	26500	26100	32700	31000
18	29500	30800	16300	15800	15000	15100	26300	24900	26400	26000	31400	30600
19	29700	30900	16200	14900	15300	16700	25900	24800	26300	26000	31100	30600
20	29500	30600	16000	15400	15200	19400	25900	24900	26700	25900	31000	30000
21	29500	30700	15700	15000	15000	22500	26300	25000	26500	26000	31700	29300
22	29400	30700	16200	14900	15100	24400	26500	25000	26300	26100	34200	28800
23	29400	31000	15800	14800	15800	26100	26400	25800	26100	25500	34700	28900
24	29400	31700	15000	14000	16600	26200	27200	25300	26100	25600	33700	29200
25	29500	27800	14900	14300	17300	26500	27000	25200	26100	27400	31700	30300
26	28900	25900	14800	14200	16000	26500	26400	24800	26700	26800	31500	30500
27	29100	27400	15300	14300	15400	26200	26900	24700	26800	26100	31400	31100
28	29300	26100	16500	14600	17400	26400	27700	24500	26600	26200	31100	31700
29	29300	24900	16500	14800	---	26500	26700	27300	26400	26300	30700	33300
30	29900	24100	16500	15100	---	26800	25800	26100	26200	26200	30300	33200
31	30100	---	16200	16000	---	27900	---	25400	---	26000	30000	---
TOTAL	895500	890800	511600	476500	437800	609500	810300	787400	793900	817700	896300	936400
MEAN	28890	29690	16500	15370	15640	19660	27010	25400	26460	26380	28910	31210
MAX	30100	31700	22100	18000	17400	27900	29500	27300	27300	28100	34700	33300
MIN	27400	24100	14800	14000	14900	14000	25800	24500	25800	25500	25400	28800
AC-FT	1776000	1767000	1015000	945100	868400	1209000	1607000	1562000	1575000	1622000	1778000	1857000
CFSM	0.09	0.09	0.05	0.05	0.05	0.06	0.09	0.08	0.08	0.08	0.09	0.10
IN.	0.11	0.11	0.06	0.06	0.05	0.07	0.10	0.09	0.09	0.10	0.11	0.11

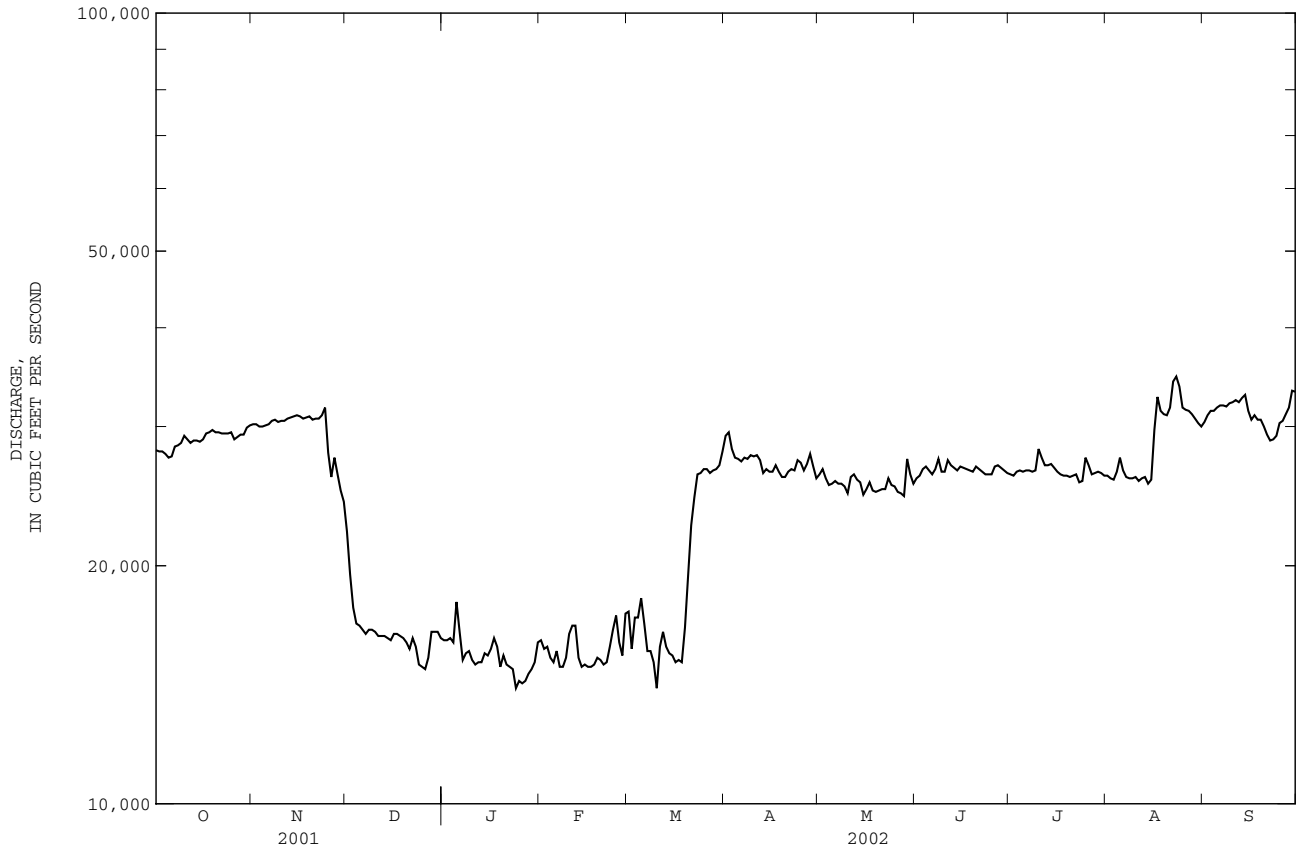
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 2002, BY WATER YEAR (WY)

MEAN	36150	31350	18920	16140	17280	23300	33380	33890	35540	36090	36470	36720
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	26380	24270	25790
(WY)	1962	1962	1962	1964	1963	1957	1957	1962	1960	2002	1993	1962

06486000 MISSOURI RIVER AT SIOUX CITY, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1953 - 2002a	
ANNUAL TOTAL	9722900		8863700			
ANNUAL MEAN	26640		24280		29650	
HIGHEST ANNUAL MEAN					55890	1997
LOWEST ANNUAL MEAN					19770	1957
HIGHEST DAILY MEAN	62000	Apr 28	34700	Aug 23	105000	Jun 25 1953
LOWEST DAILY MEAN	12600	Jan 20	14000	Jan 24	3000	Dec 11 1961
ANNUAL SEVEN-DAY MINIMUM	13600	Jan 20	14400	Jan 23	5430	Feb 22 1963
MAXIMUM PEAK FLOW			36100	Aug 22	101000	Apr 3 1960
MAXIMUM PEAK STAGE			16.55	Aug 22	30.65	Feb 19 1971
INSTANTANEOUS LOW FLOW			13200	Mar 10		
ANNUAL RUNOFF (AC-FT)	19290000		17580000		21480000	
ANNUAL RUNOFF (CFSM)	0.085		0.077		0.094	
ANNUAL RUNOFF (INCHES)	1.15		1.05		1.28	
10 PERCENT EXCEEDS	35900		30900		46400	
50 PERCENT EXCEEDS	28400		26200		30100	
90 PERCENT EXCEEDS	14900		15300		12000	

a Post regulation.



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 NGVD of 1929 (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. 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	8.7	13	e6.6	e6.9	e7.2	11	16	15	10	9.2	9.6
2	18	8.3	13	e6.3	8.3	e4.9	12	17	15	10	9.0	9.8
3	17	8.5	13	e8.0	8.2	e3.5	9.6	15	15	10	9.4	8.6
4	17	9.1	14	9.5	e6.0	e7.6	9.9	13	17	10	15	8.1
5	16	8.8	13	11	7.7	11	10	13	14	9.9	63	8.0
6	15	9.7	12	12	8.6	13	9.8	12	13	9.6	14	7.7
7	15	10	12	12	8.7	10	11	12	91	9.3	11	7.0
8	14	11	12	11	9.5	10	11	12	149	9.0	9.4	6.6
9	17	11	12	13	10	8.2	11	12	21	10	8.9	6.5
10	13	11	12	13	8.6	8.7	11	11	18	361	9.3	6.9
11	11	11	12	13	8.7	9.9	15	67	56	27	9.7	6.6
12	8.6	11	12	12	9.5	13	16	40	30	15	11	6.9
13	8.4	12	11	13	9.8	32	13	22	18	13	10	6.8
14	7.2	12	12	13	13	31	13	17	16	12	8.8	8.3
15	7.9	12	12	12	15	16	12	16	15	11	8.0	e7.6
16	7.7	11	12	12	15	27	15	14	14	11	46	7.3
17	6.6	10	11	11	14	23	13	14	14	10	18	6.9
18	6.1	11	12	e10	e15	29	11	14	15	10	9.6	10
19	6.5	11	10	11	16	22	9.4	13	13	10	8.7	9.8
20	6.8	11	11	12	15	16	9.4	13	14	9.9	8.4	6.7
21	6.8	12	12	11	13	e12	13	13	13	11	11	6.6
22	7.4	12	11	12	12	e13	13	13	13	11	295	6.8
23	7.9	16	9.5	11	13	18	12	13	13	9.5	70	6.5
24	7.8	57	11	10	14	12	11	12	12	11	20	6.8
25	7.4	30	e7.8	11	8.4	10	9.5	12	12	56	16	7.0
26	7.5	27	e9.0	12	e7.0	10	9.4	13	12	15	13	7.1
27	7.5	31	12	11	e5.8	11	18	13	11	12	12	7.3
28	7.6	16	e11	11	e10	14	21	17	12	11	11	7.3
29	8.1	14	e8.7	10	---	13	15	500	11	10	11	e7.4
30	8.2	13	e9.0	8.2	---	12	14	32	11	9.6	11	7.5
31	8.6	---	e5.7	7.9	---	11	---	18	---	9.5	9.9	---
TOTAL	320.6	436.1	347.7	336.5	296.7	439.0	369.0	1019	693	743.3	776.3	226.0
MEAN	10.34	14.54	11.22	10.85	10.60	14.16	12.30	32.87	23.10	23.98	25.04	7.533
MAX	18	57	14	13	16	32	21	500	149	361	295	10
MIN	6.1	8.3	5.7	6.3	5.8	3.5	9.4	11	11	9.0	8.0	6.5
AC-FT	636	865	690	667	589	871	732	2020	1370	1470	1540	448
CFSM	0.16	0.22	0.17	0.17	0.16	0.22	0.19	0.50	0.35	0.37	0.38	0.12
IN.	0.18	0.25	0.20	0.19	0.17	0.25	0.21	0.58	0.40	0.42	0.44	0.13

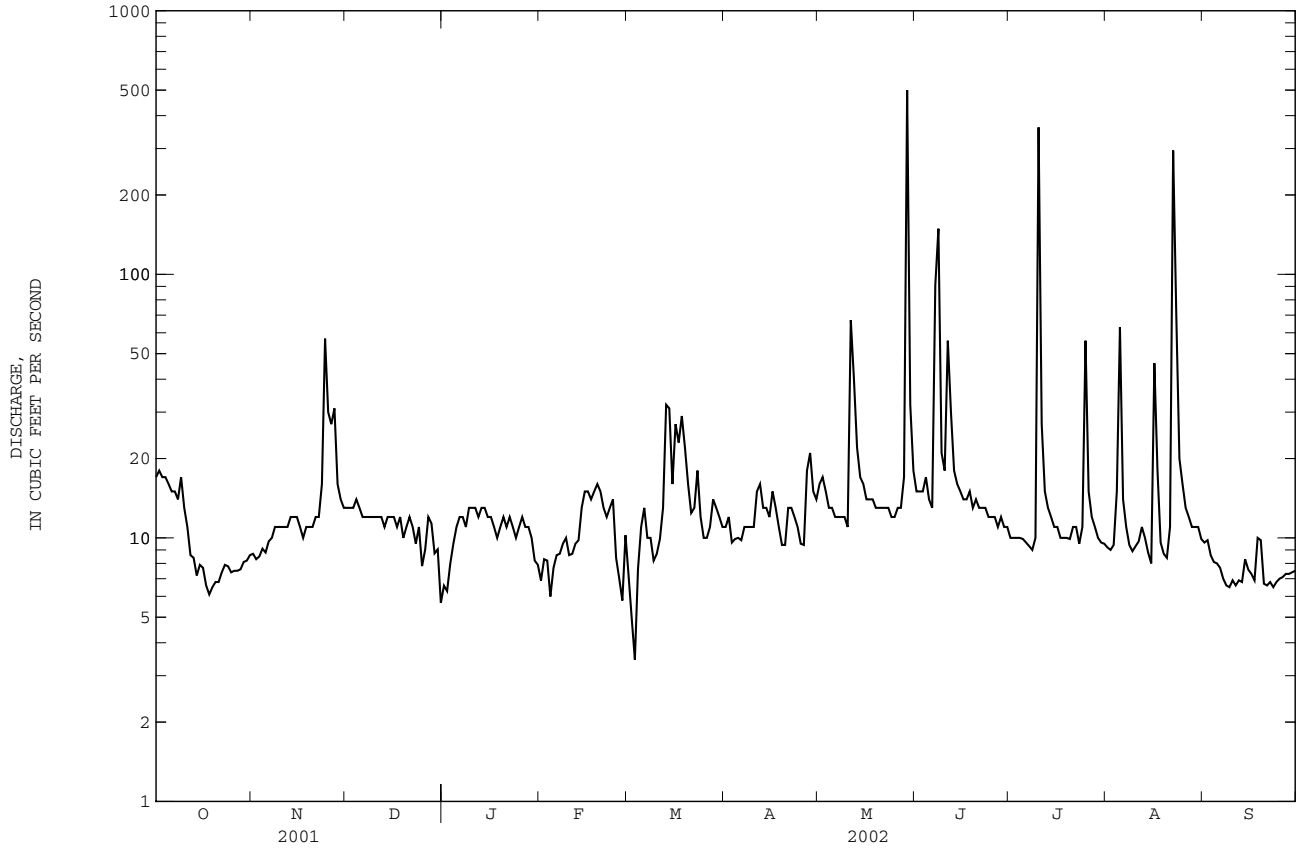
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2002, BY WATER YEAR (WY)

MEAN	8.590	8.749	7.129	7.463	19.75	44.28	25.85	24.73	31.34	22.40	13.97	12.82
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	0.38	0.81	0.48	0.33	1.31	2.62	2.30	2.91	0.94	0.35	0.30	0.083
(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 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1946 - 2002	
ANNUAL TOTAL	8396.0		6003.2			
ANNUAL MEAN	23.00		16.45		18.98	
HIGHEST ANNUAL MEAN					38.6	1984
LOWEST ANNUAL MEAN					2.38	1968
HIGHEST DAILY MEAN	390	Mar 20	500	May 29	2260	May 19 1990
LOWEST DAILY MEAN	5.2	Feb 27	3.5	Mar 3	0.00	Jul 14 1946a
ANNUAL SEVEN-DAY MINIMUM	5.9	Feb 16	6.6	Feb 26	0.00	Sep 24 1958
MAXIMUM PEAK FLOW			2280	May 29	8670	May 19 1990b
MAXIMUM PEAK STAGE			15.06	May 29	28.54	May 19 1990
INSTANTANEOUS LOW FLOW			3.5	Mar 25		
ANNUAL RUNOFF (AC-FT)	16650		11910		13750	
ANNUAL RUNOFF (CFSM)	0.35		0.25		0.29	
ANNUAL RUNOFF (INCHES)	4.80		3.43		3.96	
10 PERCENT EXCEEDS	34		17		32	
50 PERCENT EXCEEDS	15		11		7.2	
90 PERCENT EXCEEDS	7.6		7.4		1.0	

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 right bank, 15 ft downstream from road on 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 NGVD of 1929.

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

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

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e11	e13	30	15	e13	e21	57	113	62	38	5.7	6.1
2	e9.9	e9.9	26	15	e15	e13	52	110	62	34	5.5	5.8
3	e9.7	e8.8	26	e32	e15	e8.6	36	100	67	32	5.9	5.4
4	e9.4	e8.9	30	e42	e12	e17	38	93	66	30	7.9	5.2
5	e9.0	e9.9	40	e52	e16	e36	36	87	66	26	34	5.0
6	e7.3	e8.7	52	e35	e21	e33	32	85	62	24	20	4.8
7	e7.8	e8.9	49	e30	e24	e30	35	81	65	22	10	4.4
8	e10	e8.0	42	e52	e33	e25	38	81	77	20	8.3	4.2
9	e12	e7.8	34	e58	e32	e22	34	79	72	18	7.1	4.1
10	e28	e8.8	38	e49	e18	e20	32	73	71	35	6.7	4.0
11	e23	e9.4	33	e47	e25	e15	48	98	99	33	6.4	3.8
12	e21	e9.9	33	e52	e25	e14	60	157	257	22	9.2	3.6
13	e21	e11	30	e57	e43	52	61	164	264	20	15	3.8
14	e17	e12	28	e42	e61	63	64	147	181	18	12	4.2
15	e14	e13	29	e26	e72	70	63	133	149	17	9.3	4.5
16	e14	e10	29	e21	e88	85	60	123	129	15	19	4.5
17	e14	e7.9	25	e23	e79	93	64	111	117	13	28	4.4
18	e14	e8.3	24	e12	e78	88	57	101	108	12	14	5.7
19	e13	e5.1	16	e21	e69	86	53	94	101	11	9.8	10
20	e12	e5.5	15	e32	e65	88	48	88	105	10	8.4	9.1
21	e13	e6.5	e17	e38	e54	90	57	82	92	9.2	12	7.1
22	e13	e5.9	e21	e50	e43	89	62	82	86	8.6	73	6.2
23	e14	e27	e9.0	e12	e43	e111	60	92	81	7.5	30	5.6
24	e13	92	15	e15	e42	e123	61	82	75	7.3	21	5.5
25	e11	53	15	e24	e39	106	55	75	70	13	16	5.3
26	e11	44	13	e29	e17	105	51	73	65	9.9	12	5.6
27	e8.5	55	14	e27	e11	101	70	74	59	8.2	10	5.8
28	e12	53	16	e18	e26	e110	100	72	55	7.2	8.8	5.8
29	e12	43	15	e16	---	e126	120	72	49	6.6	8.2	5.8
30	e10	36	14	e14	---	e110	118	69	44	6.1	7.4	5.7
31	e12	---	14	e17	---	70	---	66	---	6.1	6.7	---
TOTAL	406.6	600.2	792.0	973	1079	2020.6	1722	2957	2856	539.7	447.3	161.0
MEAN	13.12	20.01	25.55	31.39	38.54	65.18	57.40	95.39	95.20	17.41	14.43	5.367
MAX	28	92	52	58	88	126	120	164	264	38	73	10
MIN	7.3	5.1	9.0	12	11	8.6	32	66	44	6.1	5.5	3.6
AC-FT	806	1190	1570	1930	2140	4010	3420	5870	5660	1070	887	319
CFSM	0.05	0.07	0.10	0.12	0.14	0.24	0.21	0.36	0.36	0.06	0.05	0.02
IN.	0.06	0.08	0.11	0.14	0.15	0.28	0.24	0.41	0.40	0.07	0.06	0.02

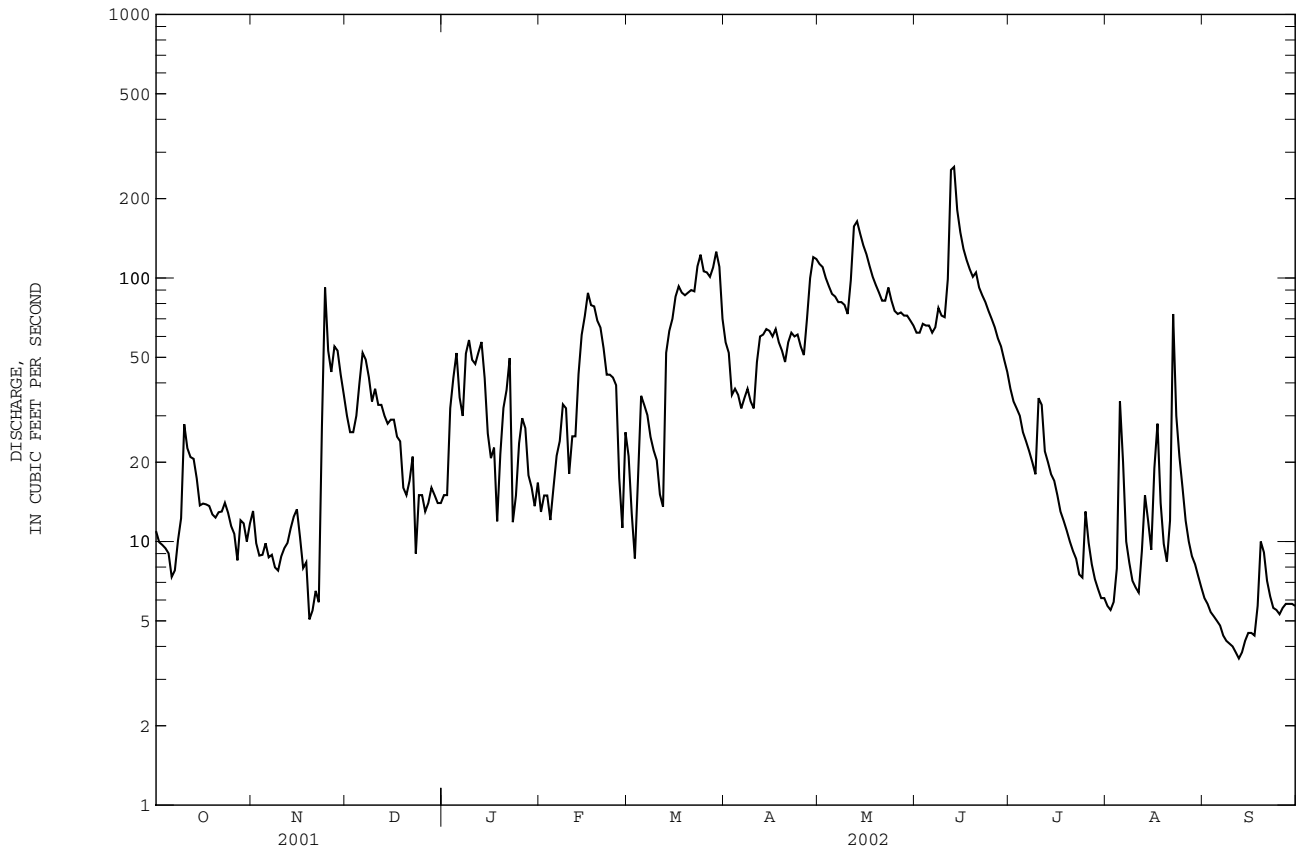
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 2002, BY WATER YEAR (WY)

MEAN	41.36	41.25	27.28	18.39	44.36	168.9	182.9	121.9	180.7	89.39	43.96	29.61
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	0.058	0.30	0.074	0.048	0.15	1.77	3.67	2.92	2.36	3.29	0.37	0.080
(WY)	1957	1959	1959	1959	1977	1959	1959	1968	1968	1958	1968	1958

06600100 FLOYD RIVER AT ALTON, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1956 - 2002	
ANNUAL TOTAL	48507.8		14554.4			
ANNUAL MEAN	132.9		39.88		82.50	
HIGHEST ANNUAL MEAN					323	1993
LOWEST ANNUAL MEAN					2.66	1968
HIGHEST DAILY MEAN	1510	Apr 24	264	Jun 13	7160	Apr 4 1969
LOWEST DAILY MEAN	1.8	Feb 18	3.6	Sep 12	0.00	Oct 14 1956a
ANNUAL SEVEN-DAY MINIMUM	2.0	Feb 16	4.0	Sep 8	0.00	Oct 27 1956
MAXIMUM PEAK FLOW			333	Jun 12	16300	Jun 20 1983b
MAXIMUM PEAK STAGE			7.42	Jun 12	18.54	Jun 20 1983c
INSTANTANEOUS LOW FLOW			3.5	Sep 12		
ANNUAL RUNOFF (AC-FT)	96220		28870		59770	
ANNUAL RUNOFF (CFSM)	0.50		0.15		0.31	
ANNUAL RUNOFF (INCHES)	6.73		2.02		4.18	
10 PERCENT EXCEEDS	391		92		191	
50 PERCENT EXCEEDS	21		26		22	
90 PERCENT EXCEEDS	3.2		6.5		1.5	

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 NGVD of 1929. 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. 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 FROM THE DCP, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	84	78	162	e86	e90	e91	182	260	211	198	69	107
2	83	75	149	e86	e92	e80	176	274	251	183	66	105
3	81	74	144	e105	e92	e74	160	258	221	174	65	91
4	79	74	143	e115	e89	e83	154	246	223	169	79	86
5	78	75	146	e125	e93	e102	152	235	226	160	168	83
6	76	73	158	e108	e98	e97	149	230	212	152	447	80
7	76	74	163	e103	e101	e96	148	224	209	144	187	76
8	77	71	158	e125	e110	e91	149	224	275	141	139	72
9	84	69	152	e131	e109	e86	146	222	312	137	115	70
10	97	71	154	e122	e95	e83	143	214	264	408	105	69
11	88	72	150	e120	e102	e80	149	260	910	240	99	67
12	86	71	146	e125	e102	e66	170	326	827	208	94	67
13	86	72	142	e130	e118	e148	176	390	658	184	99	66
14	83	73	138	e115	e138	e250	176	412	656	154	102	68
15	79	74	140	e99	e149	e209	179	405	554	142	90	70
16	79	71	136	e94	e165	e183	179	380	502	132	91	65
17	79	69	132	e96	e156	e184	183	356	462	125	98	63
18	79	69	131	e80	e155	e171	180	328	444	119	128	69
19	78	66	132	e94	e146	e254	166	307	415	113	104	161
20	78	66	128	e105	e142	e230	157	293	417	107	91	143
21	78	67	136	e110	e130	e172	163	282	421	99	91	106
22	78	67	137	e123	e120	e143	173	274	367	112	390	94
23	79	70	e80	e89	e120	209	178	273	327	92	635	90
24	78	97	e119	e92	e119	228	172	268	309	88	309	86
25	77	153	e95	e101	e113	170	163	251	286	118	228	86
26	76	180	e93	e107	e87	158	158	241	267	103	189	95
27	74	180	e103	e104	e78	169	171	240	251	94	160	90
28	77	185	e94	e95	e97	191	205	237	237	87	140	86
29	77	187	e90	e93	---	214	223	261	223	79	127	84
30	75	177	e94	e91	---	208	244	239	211	75	118	83
31	77	---	e86	e94	---	197	---	227	---	72	108	---
TOTAL	2476	2800	4031	3263	3206	4717	5124	8637	11148	4409	4931	2578
MEAN	79.87	93.33	130.0	105.3	114.5	152.2	170.8	278.6	371.6	142.2	159.1	85.93
MAX	97	187	163	131	165	254	244	412	910	408	635	161
MIN	74	66	80	80	78	66	143	214	209	72	65	63
MED	78	73	137	104	109	169	170	260	298	132	108	84
AC-FT	4910	5550	8000	6470	6360	9360	10160	17130	22110	8750	9780	5110
CFSM	0.09	0.11	0.15	0.12	0.13	0.17	0.19	0.31	0.42	0.16	0.18	0.10
IN.	0.10	0.12	0.17	0.14	0.13	0.20	0.22	0.36	0.47	0.19	0.21	0.11

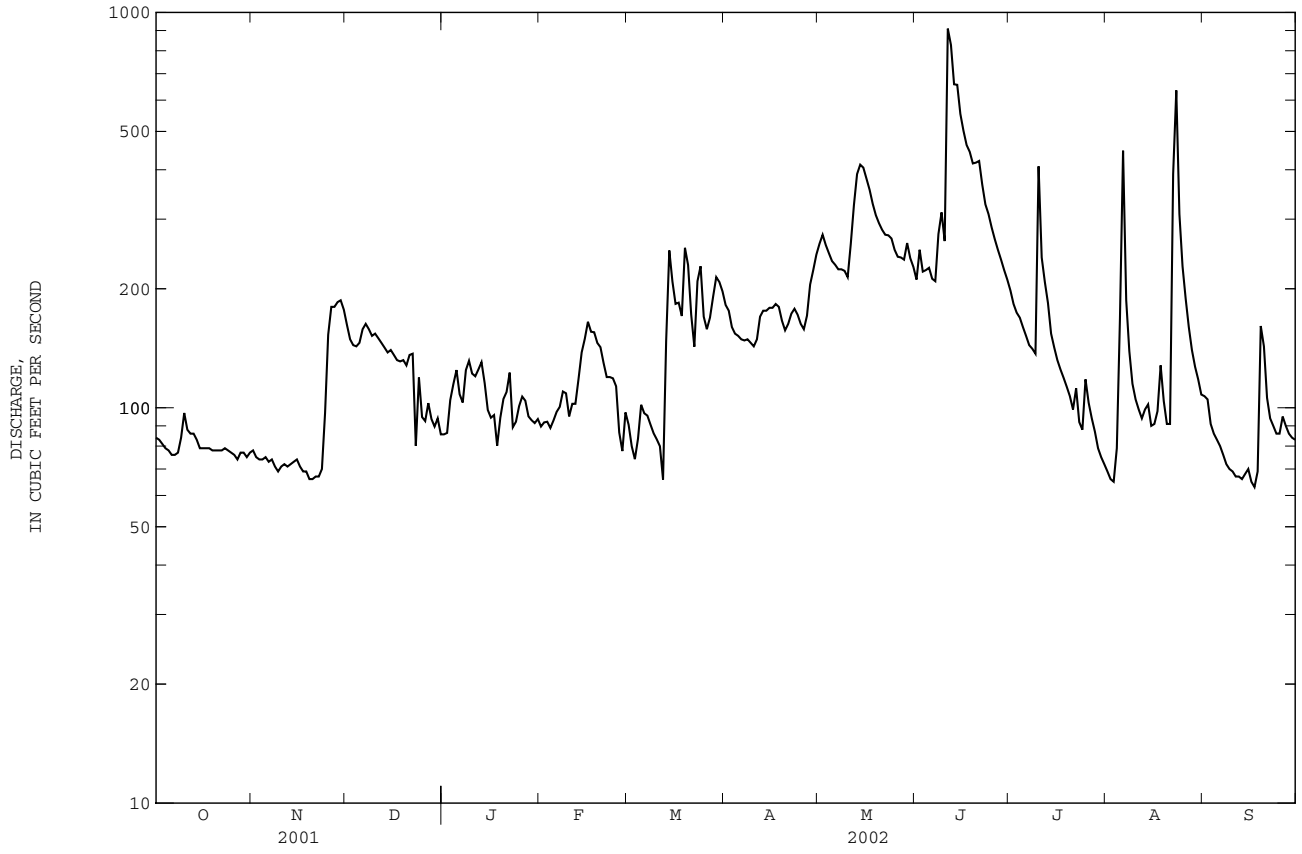
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 2002, BY WATER YEAR (WY)

MEAN	111.4	109.8	82.61	59.86	168.2	533.2	448.2	336.3	526.2	304.4	165.1	135.4
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 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1936 - 2002	
ANNUAL TOTAL	136785		57320			
ANNUAL MEAN	374.8		157.0		248.4	
HIGHEST ANNUAL MEAN					958	1983
LOWEST ANNUAL MEAN					19.9	1956
HIGHEST DAILY MEAN	4590	Mar 21	910	Jun 11	32400	Jun 8 1953
LOWEST DAILY MEAN	18	Feb 10	63	Sep 17	0.90	Jan 10 1977a
ANNUAL SEVEN-DAY MINIMUM	19	Feb 15	67	Sep 11	0.90	Jan 10 1977
MAXIMUM PEAK FLOW			1400	Jun 11	71500	Jun 8 1953b
MAXIMUM PEAK STAGE			12.79	Jun 11	35.30	Jun 8 1953c
INSTANTANEOUS LOW FLOW			61	Sep 17		
ANNUAL RUNOFF (AC-FT)	271300		113700		179900	
ANNUAL RUNOFF (CFSM)	0.42		0.18		0.28	
ANNUAL RUNOFF (INCHES)	5.74		2.41		3.81	
10 PERCENT EXCEEDS	1000		267		546	
50 PERCENT EXCEEDS	143		125		84	
90 PERCENT EXCEEDS	30		74		13	

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 NGVD of 1929, 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. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

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

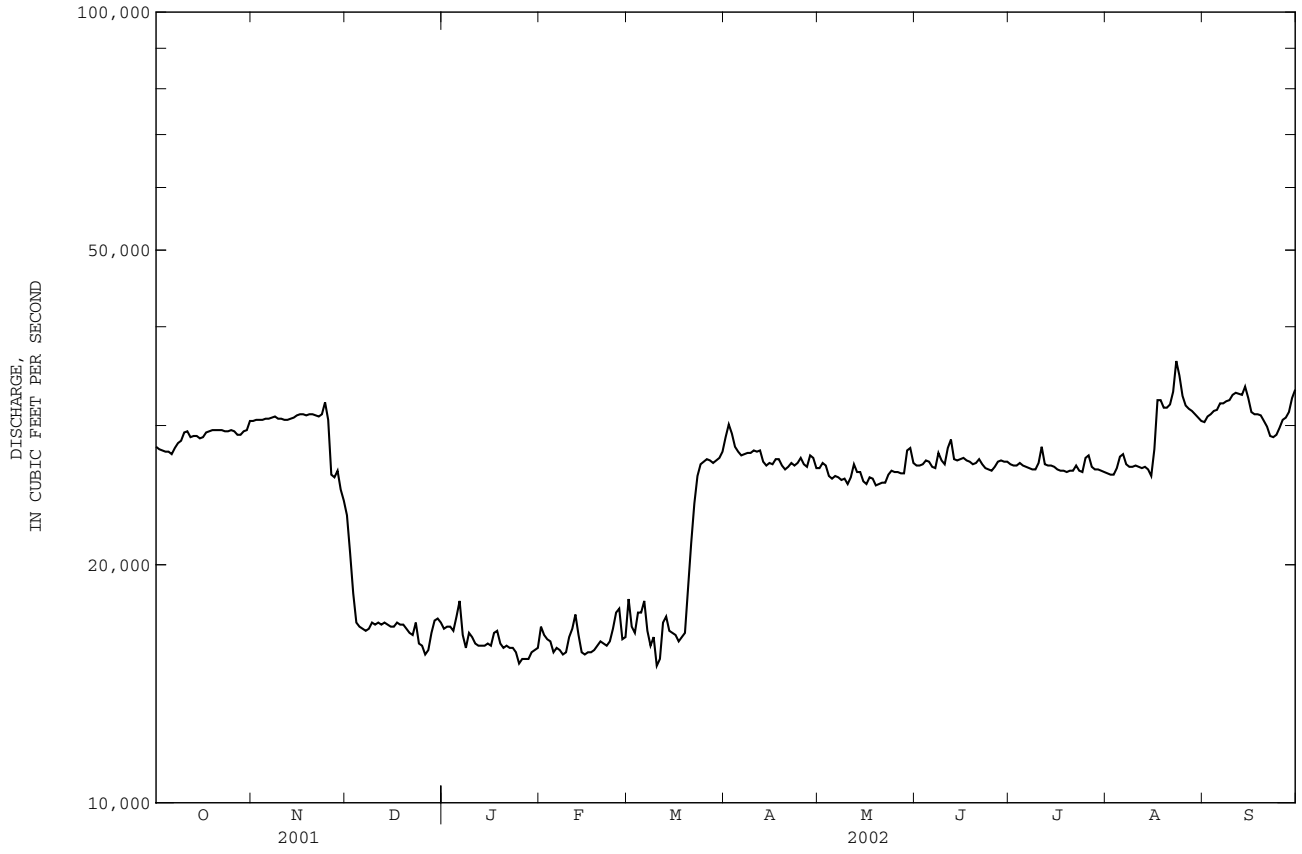
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28200	30400	23100	16600	16700	18100	29000	26500	26700	26800	26100	30300
2	28000	30500	20700	16700	16300	16700	30100	26900	26700	26700	26000	30800
3	27900	30500	18400	16700	16100	16400	29300	26700	26800	26700	26000	31000
4	27800	30500	16900	16500	16000	17400	28200	25900	27100	26900	26500	31300
5	27800	30600	16700	17200	15500	17400	27800	25700	27000	26700	27400	31400
6	27600	30600	16600	18000	15700	18000	27500	25900	26600	26600	27600	32000
7	28100	30700	16500	16300	15600	16500	27600	25800	26500	26500	26800	32000
8	28500	30800	16600	15700	15400	15800	27700	25600	27700	26400	26600	32200
9	28700	30600	16900	16400	15500	16200	27700	25700	27100	26400	26600	32300
10	29400	30600	16800	16200	16200	14900	27900	25300	26800	26900	26700	32800
11	29500	30500	16900	15900	16600	15200	27800	25800	28100	28200	26600	33000
12	29000	30500	16800	15800	17300	16900	27900	26800	28800	26800	26500	32900
13	29100	30600	16900	15800	16300	17200	27000	26200	27200	26700	26600	32800
14	29100	30700	16800	15800	15500	16500	26700	26200	27100	26700	26400	33600
15	28900	30900	16700	15900	15400	16400	26900	25500	27200	26600	25900	32500
16	29000	31000	16700	15800	15500	16300	26800	25300	27300	26400	28000	31200
17	29400	31000	16900	16400	15500	16000	27200	25800	27100	26300	32300	31000
18	29500	30900	16800	16500	15600	16200	27200	25700	27000	26300	32300	31000
19	29600	31000	16800	15900	15800	16400	26700	25200	26800	26200	31600	30900
20	29600	31000	16600	15700	16000	18700	26400	25300	26900	26300	31600	30400
21	29600	30900	16400	15800	15900	21300	26600	25400	27200	26300	31900	29900
22	29600	30800	16300	15700	15800	23900	26900	25400	26800	26700	33100	29100
23	29500	31000	16900	15700	16000	25900	26700	26000	26500	26300	36200	29000
24	29500	32100	15900	15500	16600	26800	26900	26300	26400	26200	34700	29200
25	29600	30500	15800	15000	17400	27000	27300	26200	26300	27300	32700	29800
26	29500	26000	15400	15200	17600	27200	26800	26200	26600	27500	31800	30500
27	29200	25800	15600	15200	16100	27100	26600	26100	27000	26600	31500	30700
28	29200	26300	16400	15200	16200	26900	27500	26100	27100	26400	31300	31200
29	29500	24900	17000	15500	---	27100	27300	27900	27000	26400	31000	32500
30	29600	24100	17100	15600	---	27300	26500	28100	27000	26300	30700	33300
31	30400	---	16900	15700	---	27800	---	26900	---	26200	30400	---
TOTAL	899900	896300	526800	495900	450100	621500	822500	808400	810400	825300	909400	940600
MEAN	29030	29880	16990	16000	16080	20050	27420	26080	27010	26620	29340	31350
MAX	30400	32100	23100	18000	17600	27800	30100	28100	28800	28200	36200	33600
MIN	27600	24100	15400	15000	15400	14900	26400	25200	26300	26200	25900	29000
AC-FT	1785000	1778000	1045000	983600	892800	1233000	1631000	1603000	1607000	1637000	1804000	1866000
CFSM	0.09	0.09	0.05	0.05	0.05	0.06	0.09	0.08	0.09	0.08	0.09	0.10
IN.	0.11	0.11	0.06	0.06	0.05	0.07	0.10	0.10	0.10	0.10	0.11	0.11

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 2002, BY WATER YEAR (WY)

MEAN	37930	33200	21980	19020	20280	25400	36550	37720	38380	38500	36730	38250
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	26080	27010	26620	25700	26750
(WY)	1993	1991	1991	1990	1991	1991	1991	2002	2002	2002	1993	1993

06601200 MISSOURI RIVER AT DECATUR, NE--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1988 - 2002	
ANNUAL TOTAL	9909400		9007100			
ANNUAL MEAN	27150		24680		32030	
HIGHEST ANNUAL MEAN					57440	1997
LOWEST ANNUAL MEAN					21450	1991
HIGHEST DAILY MEAN	62200	Apr 28	36200	Aug 23	99900	Apr 15 1997
LOWEST DAILY MEAN	13200	Jan 21	14900	Mar 10	7130	Dec 22 1990
ANNUAL SEVEN-DAY MINIMUM	14500	Jan 21	15300	Jan 24	9660	Dec 12 1990
MAXIMUM PEAK FLOW			36900	Aug 23	100000	Apr 15 1997
MAXIMUM PEAK STAGE			23.75	Aug 23	32.31	Jul 18 1996
INSTANTANEOUS LOW FLOW			14400	Mar 10		
ANNUAL RUNOFF (AC-FT)	19660000		17870000		23210000	
ANNUAL RUNOFF (CFSM)	0.086		0.078		0.10	
ANNUAL RUNOFF (INCHES)	1.17		1.06		1.38	
10 PERCENT EXCEEDS	36700		31000		53800	
50 PERCENT EXCEEDS	28700		26700		30400	
90 PERCENT EXCEEDS	15300		15900		14700	



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 NGVD of 1929.

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. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	58	56	102	e55	e44	e50	100	117	112	114	64	93
2	58	55	98	e55	e45	e41	97	123	109	109	62	86
3	57	54	94	e71	e45	e36	96	123	110	107	61	89
4	57	53	91	e83	e43	e46	91	118	118	106	76	80
5	59	54	89	e94	e47	e62	91	120	120	104	270	76
6	58	54	89	e76	e55	e61	92	118	109	100	190	72
7	58	54	88	e71	e56	e57	90	117	103	97	158	69
8	58	53	86	e91	e65	e53	89	114	101	94	106	66
9	59	53	85	e99	e65	e48	89	114	101	92	88	63
10	67	53	87	e91	e48	e47	88	111	99	135	85	62
11	67	53	86	e88	e54	e46	85	152	1450	245	78	62
12	62	54	83	e93	e55	e36	93	214	1110	153	78	62
13	61	54	82	e98	e59	e63	95	249	364	120	84	62
14	63	53	81	e82	e62	e130	91	223	269	108	84	77
15	60	53	83	e68	e66	e119	90	206	233	100	79	80
16	58	52	80	e64	e74	e95	91	194	212	95	147	76
17	59	52	78	e64	e69	91	110	180	199	91	187	69
18	58	53	78	e48	e70	100	110	166	192	87	96	71
19	58	53	75	e62	e69	112	102	158	182	85	79	130
20	58	52	73	e71	e69	121	97	152	212	82	72	156
21	58	53	73	e76	e68	e107	100	147	685	80	71	126
22	57	54	82	e87	e59	e98	103	144	198	98	78	109
23	57	56	e69	e56	e59	125	101	142	165	92	309	100
24	56	70	e65	e61	e58	114	93	137	152	79	408	96
25	56	92	e56	e70	e55	100	93	133	143	87	236	92
26	56	97	e54	e72	e42	94	92	130	138	83	179	91
27	56	106	e69	e71	e38	100	98	127	133	79	149	95
28	57	117	e61	e59	e55	106	118	126	129	74	130	92
29	57	114	e57	e57	---	116	122	127	124	74	117	90
30	56	107	e60	e47	---	112	118	127	119	69	107	89
31	57	---	e54	e52	---	104	---	118	---	67	100	---
TOTAL	1816	1934	2408	2232	1594	2590	2925	4527	7491	3106	4028	2581
MEAN	58.58	64.47	77.68	72.00	56.93	83.55	97.50	146.0	249.7	100.2	129.9	86.03
MAX	67	117	102	99	74	130	122	249	1450	245	408	156
MIN	56	52	54	47	38	36	85	111	99	67	61	62
AC-FT	3600	3840	4780	4430	3160	5140	5800	8980	14860	6160	7990	5120
CFSM	0.15	0.16	0.19	0.18	0.14	0.21	0.24	0.36	0.62	0.25	0.32	0.21
IN.	0.17	0.18	0.22	0.21	0.15	0.24	0.27	0.42	0.69	0.29	0.37	0.24

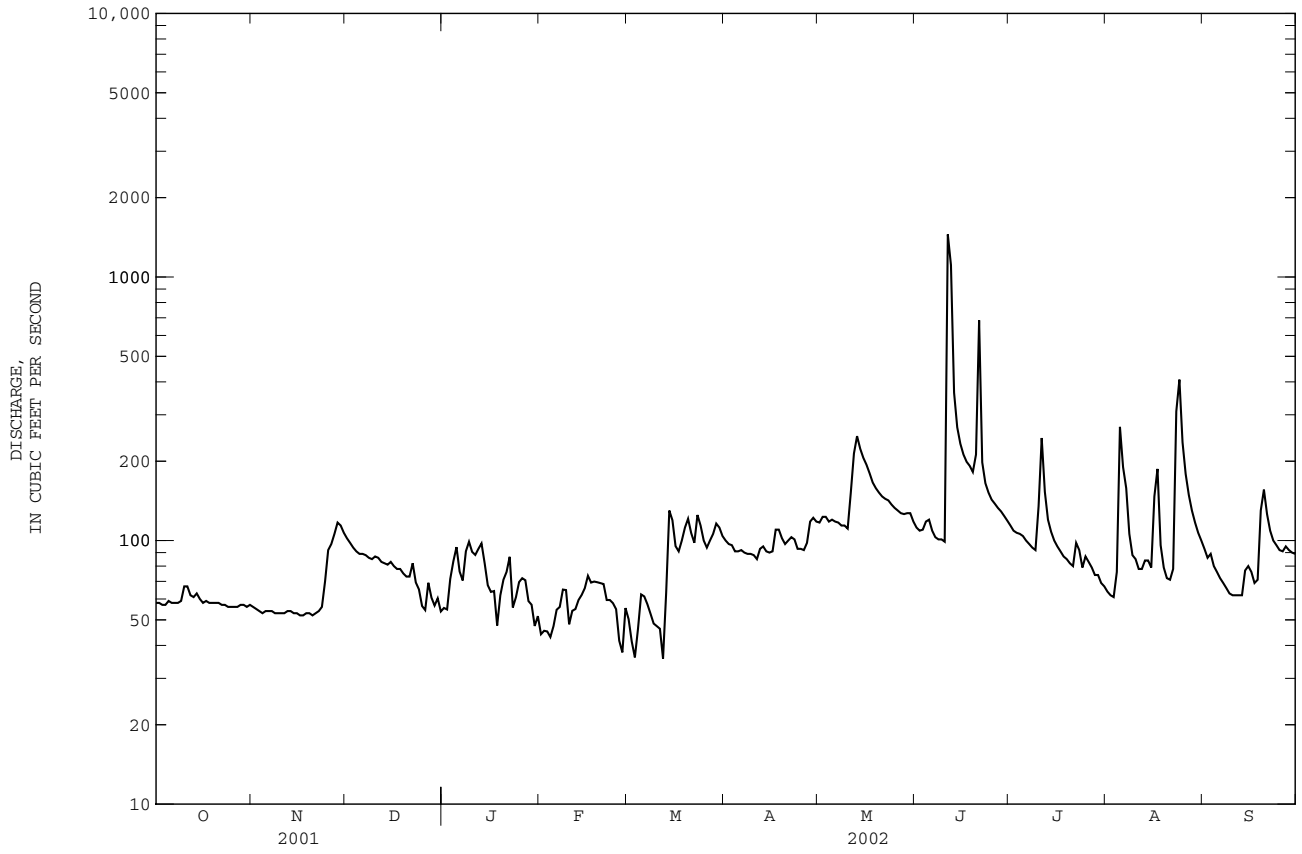
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 2002, BY WATER YEAR (WY)

MEAN	61.16	55.48	45.59	37.04	106.1	223.8	177.9	156.5	278.0	148.8	104.3	70.59
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 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1940 - 2002	
ANNUAL TOTAL	52502		37232			
ANNUAL MEAN	143.8		102.0		122.2	
HIGHEST ANNUAL MEAN					367	1984
LOWEST ANNUAL MEAN					9.28	1956
HIGHEST DAILY MEAN	3150	Mar 21	1450	Jun 11	9000	Mar 28 1962
LOWEST DAILY MEAN	12	Jan 20	36	Mar 3	0.20	Jul 30 1956a
ANNUAL SEVEN-DAY MINIMUM	18	Jan 17	44	Feb 26	0.53	Aug 23 1956
MAXIMUM PEAK FLOW			1930	Jun 12	12400	Mar 28 1962
MAXIMUM PEAK STAGE			14.94	Jun 12	25.87	Jun 22 1996
ANNUAL RUNOFF (AC-FT)	104100		73850		88560	
ANNUAL RUNOFF (CFSM)	0.36		0.25		0.30	
ANNUAL RUNOFF (INCHES)	4.85		3.44		4.12	
10 PERCENT EXCEEDS	253		148		245	
50 PERCENT EXCEEDS	83		86		49	
90 PERCENT EXCEEDS	26		54		11	

a Also Aug. 17, 1956.
e Estimated.



06602400 MONONA-HARRISON DITCH NEAR TURIN, IA

LOCATION.--Lat 41°57'52", long 95°59'30", in NW$^1/_4$ NE$^1/_4$ 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 NGVD of 1929 (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. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	114	113	172	e84	e85	e98	173	219	231	204	134	169
2	109	112	166	e83	e87	e91	166	267	224	195	126	161
3	103	110	161	e99	e89	e87	159	248	223	190	126	158
4	100	108	161	e106	e83	e110	153	219	229	190	151	153
5	102	109	165	e114	e87	e124	155	210	252	189	516	147
6	103	112	166	e101	e92	e119	157	232	229	182	538	142
7	101	113	157	e95	e97	e118	161	215	220	177	345	138
8	104	109	151	e104	e104	e117	157	209	218	173	234	134
9	108	110	148	e117	e104	e114	156	196	224	169	194	129
10	137	109	149	e109	e90	e109	157	192	215	188	182	125
11	172	110	149	e107	e97	109	154	907	1670	356	169	127
12	128	111	145	e111	e98	112	162	1160	2960	259	167	129
13	120	114	142	e119	e108	132	166	570	994	200	181	127
14	118	115	142	e109	e131	196	163	390	502	186	197	144
15	114	114	146	e94	142	185	163	345	377	177	197	165
16	108	112	143	e82	152	162	163	322	346	168	208	152
17	107	112	138	e86	e148	162	220	304	318	160	772	140
18	111	115	134	e71	e147	174	256	287	312	155	560	142
19	110	110	131	e88	e135	191	189	276	300	151	e428	199
20	110	110	122	e100	e129	204	173	270	291	148	e214	219
21	112	111	125	e105	e121	174	172	267	1140	145	178	188
22	112	114	136	e114	e105	166	183	268	445	155	181	168
23	113	119	e99	e83	e105	196	186	261	311	187	239	156
24	122	155	e115	e88	e105	188	174	252	270	153	421	150
25	105	305	e93	e97	e97	168	168	250	249	166	314	149
26	106	270	e91	e103	e80	155	162	249	237	199	262	144
27	108	300	e105	e100	e71	165	172	244	229	162	230	147
28	113	244	e96	e54	e109	182	230	241	223	151	211	149
29	113	199	e91	e97	---	211	249	256	219	156	193	145
30	112	180	e95	e85	---	201	220	332	211	147	186	145
31	114	---	e83	e90	---	181	---	248	---	141	177	---
TOTAL	3509	4225	4117	2995	2998	4701	5319	9906	13869	5579	8231	4541
MEAN	113.2	140.8	132.8	96.61	107.1	151.6	177.3	319.5	462.3	180.0	265.5	151.4
MAX	172	305	172	119	152	211	256	1160	2960	356	772	219
MIN	100	108	83	54	71	87	153	192	211	141	126	125
AC-FT	6960	8380	8170	5940	5950	9320	10550	19650	27510	11070	16330	9010
CFSM	0.13	0.16	0.15	0.11	0.12	0.17	0.20	0.36	0.51	0.20	0.30	0.17
IN.	0.15	0.17	0.17	0.12	0.12	0.19	0.22	0.41	0.57	0.23	0.34	0.19

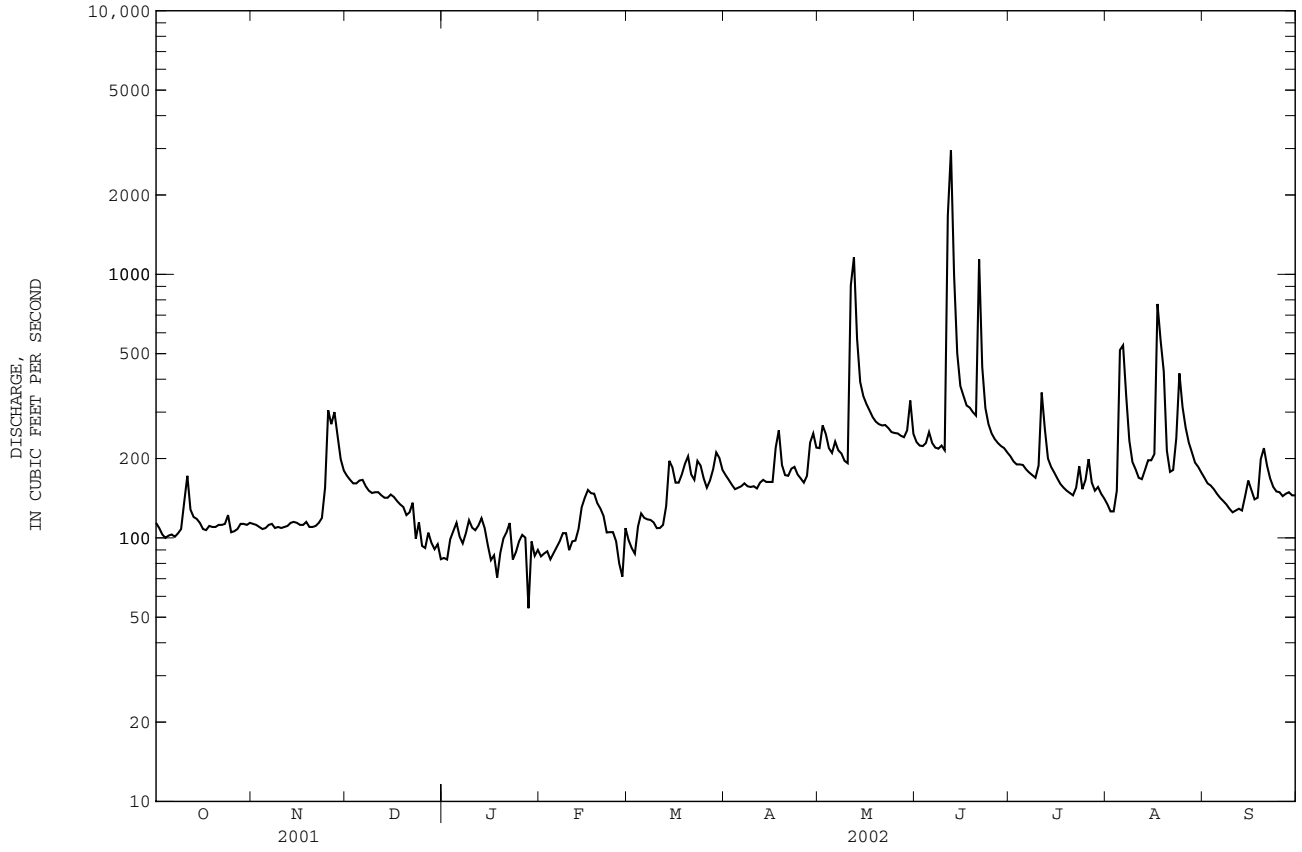
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2002, BY WATER YEAR (WY)

MEAN	150.7	136.7	114.8	95.12	222.3	480.2	439.0	392.7	590.0	347.0	192.7	144.7
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 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1959 - 2002a	
ANNUAL TOTAL	111402		69990			
ANNUAL MEAN	305.2		191.8		275.3	
HIGHEST ANNUAL MEAN					798	1993
LOWEST ANNUAL MEAN					55.5	1968
HIGHEST DAILY MEAN	4140	Mar 22	2960	Jun 12	18000	Feb 19 1971
LOWEST DAILY MEAN	47	Jan 20	54	Jan 28	8.5	Jan 3 1959b
ANNUAL SEVEN-DAY MINIMUM	54	Jan 20	84	Jan 28	8.5	Jan 3 1959
MAXIMUM PEAK FLOW			3540	Jun 12	19900	Feb 19 1971
MAXIMUM PEAK STAGE			14.19	Jun 12	28.03	Feb 19 1971
INSTANTANEOUS LOW FLOW			54	Jan 15		
ANNUAL RUNOFF (AC-FT)	221000		138800		199500	
ANNUAL RUNOFF (CFSM)	0.34		0.21		0.31	
ANNUAL RUNOFF (INCHES)	4.60		2.89		4.16	
10 PERCENT EXCEEDS	502		270		506	
50 PERCENT EXCEEDS	154		154		130	
90 PERCENT EXCEEDS	68		98		40	

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



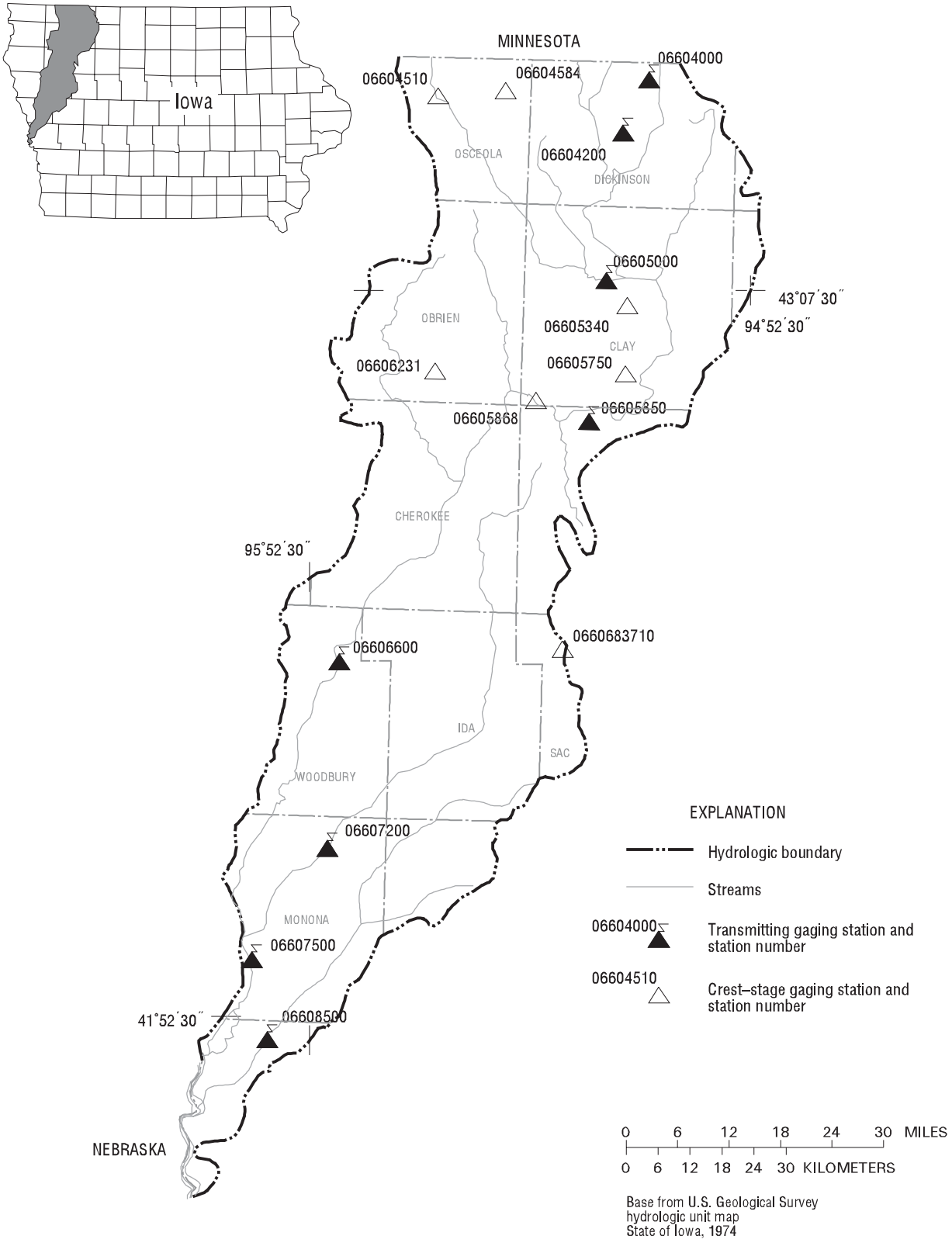


Figure 13. Locations of active continuous-record and crest-stage gaging stations in the Little Sioux River and Soldier River drainage basins.

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 NGVD of 1929, 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. 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.

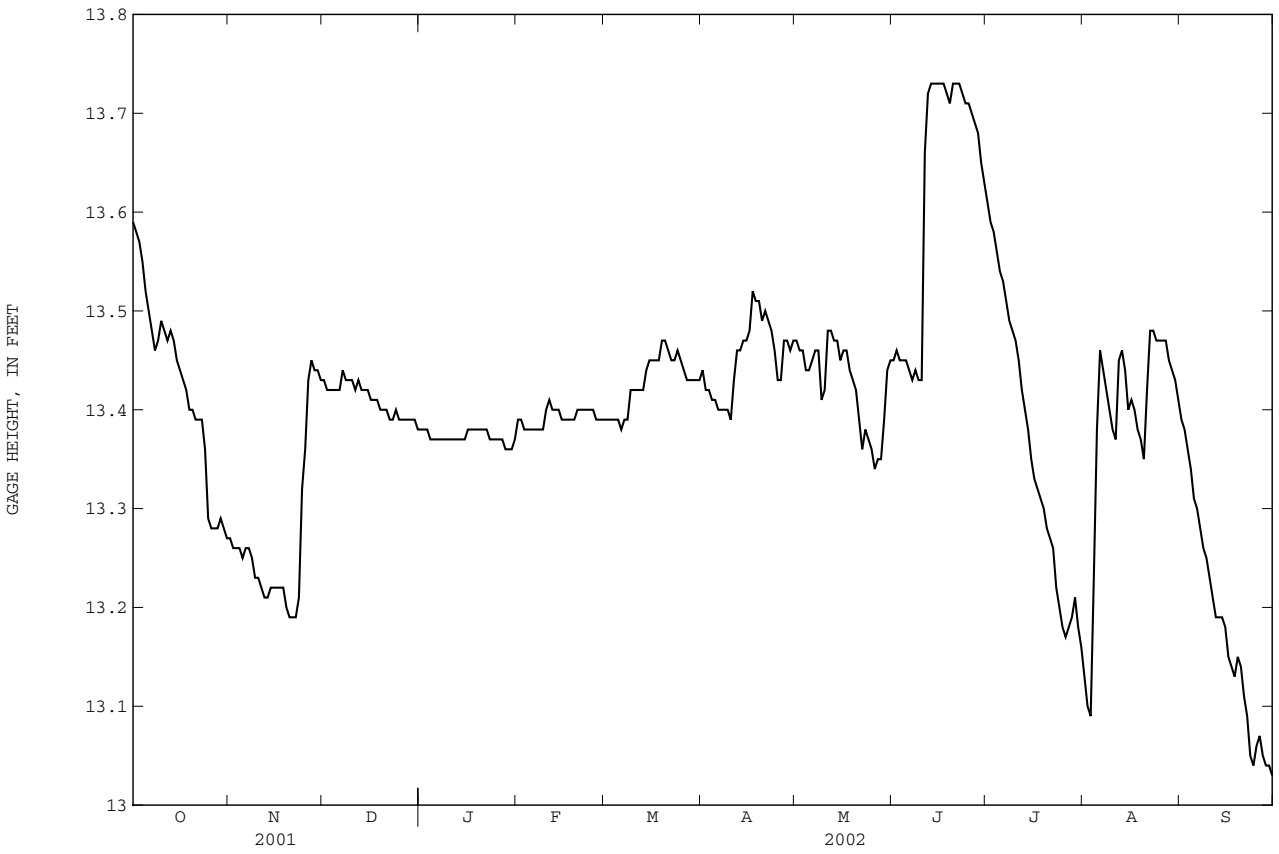
EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 18.79 ft. July 17-20, 1993; minimum observed, 6.75 ft. Oct. 20, 1935.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 13.76 ft. June 20, 21; minimum, 13.02 ft. Sept. 24, 30.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13.59	13.27	13.43	13.38	13.39	13.39	13.44	13.47	13.45	13.61	13.13	13.39
2	13.58	13.26	13.42	13.38	13.39	13.39	13.42	13.46	13.46	13.59	13.10	13.38
3	13.57	13.26	13.42	13.38	13.38	13.39	13.42	13.46	13.45	13.58	13.09	13.36
4	13.55	13.26	13.42	13.37	13.38	13.39	13.41	13.44	13.45	13.56	13.23	13.34
5	13.52	13.25	13.42	13.37	13.38	13.39	13.41	13.44	13.45	13.54	13.38	13.31
6	13.50	13.26	13.42	13.37	13.38	13.38	13.40	13.45	13.44	13.53	13.46	13.30
7	13.48	13.26	13.44	13.37	13.38	13.39	13.40	13.46	13.43	13.51	13.44	13.28
8	13.46	13.25	13.43	13.37	13.38	13.39	13.40	13.46	13.44	13.49	13.42	13.26
9	13.47	13.23	13.43	13.37	13.38	13.42	13.40	13.41	13.43	13.48	13.40	13.25
10	13.49	13.23	13.43	13.37	13.40	13.42	13.39	13.42	13.43	13.47	13.38	13.23
11	13.48	13.22	13.42	13.37	13.41	13.42	13.43	13.48	13.66	13.45	13.37	13.21
12	13.47	13.21	13.43	13.37	13.40	13.42	13.46	13.48	13.72	13.42	13.45	13.19
13	13.48	13.21	13.42	13.37	13.40	13.42	13.46	13.47	13.73	13.40	13.46	13.19
14	13.47	13.22	13.42	13.37	13.40	13.44	13.47	13.47	13.73	13.38	13.44	13.19
15	13.45	13.22	13.42	13.37	13.39	13.45	13.47	13.45	13.73	13.35	13.40	13.18
16	13.44	13.22	13.41	13.38	13.39	13.45	13.48	13.46	13.73	13.33	13.41	13.15
17	13.43	13.22	13.41	13.38	13.39	13.45	13.52	13.46	13.73	13.32	13.40	13.14
18	13.42	13.22	13.41	13.38	13.39	13.45	13.51	13.44	13.72	13.31	13.38	13.13
19	13.40	13.20	13.40	13.38	13.39	13.47	13.51	13.43	13.71	13.30	13.37	13.15
20	13.40	13.19	13.40	13.38	13.40	13.47	13.49	13.42	13.73	13.28	13.35	13.14
21	13.39	13.19	13.40	13.38	13.40	13.46	13.50	13.39	13.73	13.27	13.42	13.11
22	13.39	13.19	13.39	13.38	13.40	13.45	13.49	13.36	13.73	13.26	13.48	13.09
23	13.39	13.21	13.39	13.37	13.40	13.45	13.48	13.38	13.72	13.22	13.48	13.05
24	13.36	13.32	13.40	13.37	13.40	13.46	13.46	13.37	13.71	13.20	13.47	13.04
25	13.29	13.36	13.39	13.37	13.40	13.45	13.43	13.36	13.71	13.18	13.47	13.06
26	13.28	13.43	13.39	13.37	13.39	13.44	13.43	13.34	13.70	13.17	13.47	13.07
27	13.28	13.45	13.39	13.37	13.39	13.43	13.47	13.35	13.69	13.18	13.47	13.05
28	13.28	13.44	13.39	13.36	13.39	13.43	13.47	13.35	13.68	13.19	13.45	13.04
29	13.29	13.44	13.39	13.36	---	13.43	13.46	13.39	13.65	13.21	13.44	13.04
30	13.28	13.43	13.39	13.36	---	13.43	13.47	13.44	13.63	13.18	13.43	13.03
31	13.27	---	13.38	13.37	---	13.43	---	13.45	---	13.16	13.41	---
MEAN	13.42	13.27	13.41	13.37	13.39	13.43	13.45	13.43	13.62	13.36	13.39	13.18
MAX	13.59	13.45	13.44	13.38	13.41	13.47	13.52	13.48	13.73	13.61	13.48	13.39
MIN	13.27	13.19	13.38	13.36	13.38	13.38	13.39	13.34	13.43	13.16	13.09	13.03

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 NGVD of 1929, 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.

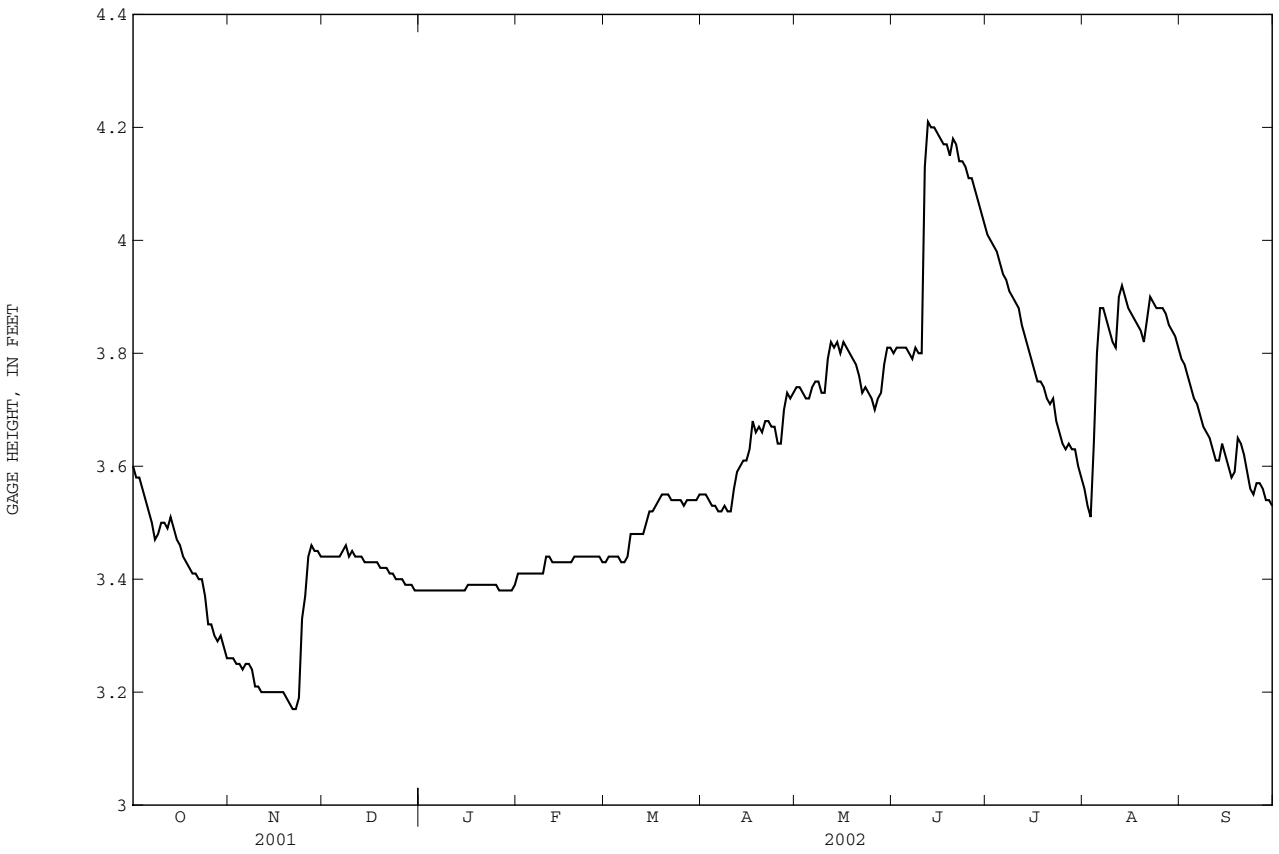
EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 8.70 ft July 17, 1993; minimum observed, 0.20 ft Sept. 20, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 4.23 ft June 12, 20; minimum, 3.16 ft Nov. 20-23.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.60	3.26	3.44	3.38	3.41	3.43	3.55	3.74	3.80	4.01	3.56	3.79
2	3.58	3.26	3.44	3.38	3.41	3.44	3.55	3.74	3.81	4.00	3.53	3.78
3	3.58	3.25	3.44	3.38	3.41	3.44	3.54	3.73	3.81	3.99	3.51	3.76
4	3.56	3.25	3.44	3.38	3.41	3.44	3.53	3.72	3.81	3.98	3.64	3.74
5	3.54	3.24	3.44	3.38	3.41	3.44	3.53	3.72	3.81	3.96	3.80	3.72
6	3.52	3.25	3.44	3.38	3.41	3.43	3.52	3.74	3.80	3.94	3.88	3.71
7	3.50	3.25	3.45	3.38	3.41	3.43	3.52	3.75	3.79	3.93	3.88	3.69
8	3.47	3.24	3.46	3.38	3.41	3.44	3.53	3.75	3.81	3.91	3.86	3.67
9	3.48	3.21	3.44	3.38	3.41	3.48	3.52	3.73	3.80	3.90	3.84	3.66
10	3.50	3.21	3.45	3.38	3.44	3.48	3.52	3.73	3.80	3.89	3.82	3.65
11	3.50	3.20	3.44	3.38	3.44	3.48	3.56	3.79	4.13	3.88	3.81	3.63
12	3.49	3.20	3.44	3.38	3.43	3.48	3.59	3.82	4.21	3.85	3.90	3.61
13	3.51	3.20	3.44	3.38	3.43	3.48	3.60	3.81	4.20	3.83	3.92	3.61
14	3.49	3.20	3.43	3.38	3.43	3.50	3.61	3.82	4.20	3.81	3.90	3.64
15	3.47	3.20	3.43	3.38	3.43	3.52	3.61	3.80	4.19	3.79	3.88	3.62
16	3.46	3.20	3.43	3.39	3.43	3.52	3.63	3.82	4.18	3.77	3.87	3.60
17	3.44	3.20	3.43	3.39	3.43	3.53	3.68	3.81	4.17	3.75	3.86	3.58
18	3.43	3.20	3.43	3.39	3.43	3.54	3.66	3.80	4.17	3.75	3.85	3.59
19	3.42	3.19	3.42	3.39	3.44	3.55	3.67	3.79	4.15	3.74	3.84	3.65
20	3.41	3.18	3.42	3.39	3.44	3.55	3.66	3.78	4.18	3.72	3.82	3.64
21	3.41	3.17	3.42	3.39	3.44	3.55	3.68	3.76	4.17	3.71	3.86	3.62
22	3.40	3.17	3.41	3.39	3.44	3.54	3.68	3.73	4.14	3.72	3.90	3.59
23	3.40	3.19	3.41	3.39	3.44	3.54	3.67	3.74	4.14	3.68	3.89	3.56
24	3.37	3.33	3.40	3.39	3.44	3.54	3.67	3.73	4.13	3.66	3.88	3.55
25	3.32	3.37	3.40	3.39	3.44	3.54	3.64	3.72	4.11	3.64	3.88	3.57
26	3.32	3.44	3.40	3.38	3.44	3.53	3.64	3.70	4.11	3.63	3.88	3.57
27	3.30	3.46	3.39	3.38	3.44	3.54	3.70	3.72	4.09	3.64	3.87	3.56
28	3.29	3.45	3.39	3.38	3.43	3.54	3.73	3.73	4.07	3.63	3.85	3.54
29	3.30	3.45	3.39	3.38	---	3.54	3.72	3.78	4.05	3.63	3.84	3.54
30	3.28	3.44	3.38	3.38	---	3.54	3.73	3.81	4.03	3.60	3.83	3.53
31	3.26	---	3.38	3.39	---	3.55	---	3.81	---	3.58	3.81	---
MEAN	3.44	3.26	3.42	3.38	3.43	3.50	3.61	3.76	4.03	3.79	3.82	3.63
MAX	3.60	3.46	3.46	3.39	3.44	3.55	3.73	3.82	4.21	4.01	3.92	3.79
MIN	3.26	3.17	3.38	3.38	3.41	3.43	3.52	3.70	3.79	3.58	3.51	3.53

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 NGVD of 1929.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e16	15	38	e17	e15	e25	60	113	151	52	24	35
2	e16	15	34	e17	e17	e17	57	105	131	50	23	33
3	e16	15	32	e37	e18	e12	51	98	121	50	23	31
4	e15	15	33	e47	e11	e29	51	89	118	48	32	30
5	e15	15	33	e56	e14	e46	47	83	116	45	68	29
6	e16	15	36	e40	e19	e47	45	82	111	43	62	28
7	e19	16	39	e34	e22	e43	45	80	109	40	51	27
8	e20	16	39	e56	e31	e38	46	80	108	38	43	26
9	23	15	48	e62	e30	e35	44	78	107	37	37	25
10	27	16	38	e54	e16	e33	41	71	103	38	34	24
11	26	16	36	e51	e23	e31	49	93	379	47	31	23
12	26	16	34	e56	e23	e33	60	152	736	49	38	21
13	26	17	33	e61	e39	e54	63	174	525	43	51	21
14	23	17	47	e47	e59	66	65	165	400	39	48	25
15	21	17	32	e31	67	67	62	150	304	36	40	21
16	20	17	30	e26	68	70	60	e140	247	35	36	20
17	19	17	29	e28	61	81	69	e130	214	33	45	18
18	19	17	30	e12	59	88	64	e121	197	33	46	18
19	18	17	e31	e25	51	103	61	e112	177	33	40	20
20	17	17	e27	e36	44	100	59	e105	163	32	34	18
21	16	18	e34	e42	e37	e80	63	e97	152	29	35	15
22	16	18	e40	e55	e28	e74	64	e89	146	29	46	15
23	16	20	e18	e21	28	e87	65	91	131	27	100	13
24	15	34	e35	e24	30	e95	66	80	e111	27	87	13
25	15	42	e27	e28	24	e86	62	78	e92	28	62	14
26	20	41	e24	e32	e15	e84	58	75	77	27	49	14
27	16	44	e35	e29	e24	e70	69	76	70	28	41	14
28	15	40	e25	e20	e36	e80	101	74	66	26	36	13
29	15	37	e22	e18	---	82	124	191	62	27	33	14
30	15	35	e25	e16	---	77	125	177	57	25	35	13
31	15	---	e17	e19	---	68	---	177	---	24	36	---
TOTAL	572	650	1001	1097	909	1901	1896	3426	5481	1118	1366	631
MEAN	18.45	21.67	32.29	35.39	32.46	61.32	63.20	110.5	182.7	36.06	44.06	21.03
MAX	27	44	48	62	68	103	125	191	736	52	100	35
MIN	15	15	17	12	11	12	41	71	57	24	23	13
AC-FT	1130	1290	1990	2180	1800	3770	3760	6800	10870	2220	2710	1250
CFSM	0.04	0.05	0.08	0.08	0.08	0.14	0.15	0.26	0.43	0.08	0.10	0.05
IN.	0.05	0.06	0.09	0.10	0.08	0.17	0.17	0.30	0.48	0.10	0.12	0.06

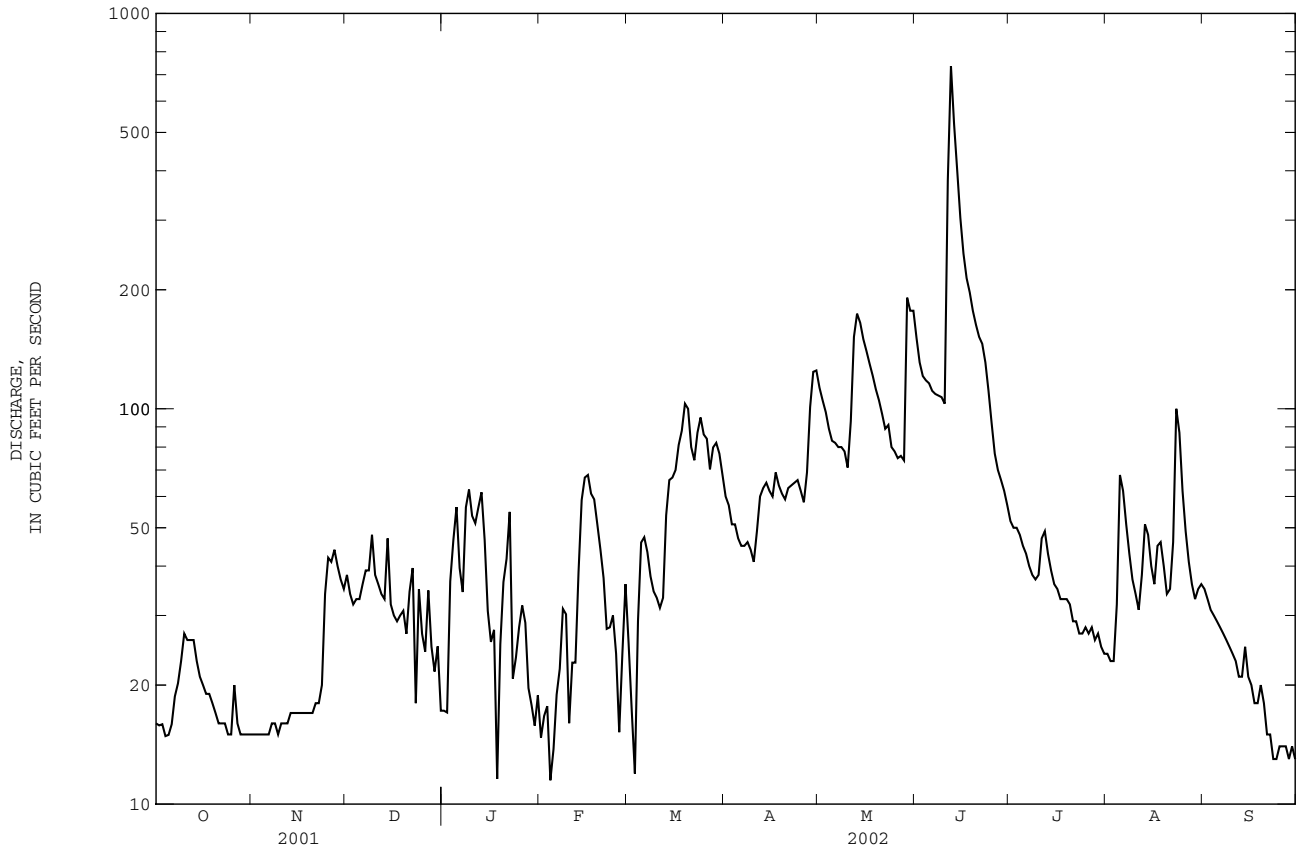
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 2002, BY WATER YEAR (WY)

MEAN	116.9	132.8	74.65	42.28	79.09	326.0	485.2	377.5	484.2	305.2	134.1	122.1
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	8.12	8.11	1.91	0.51	0.000	14.0	19.7	54.9	33.8	33.4	15.3	9.85
(WY)	2001	1990	1990	1979	1979	1990	2000	1981	1989	1989	1989	2000

06605000 OCHEYEDAN RIVER NEAR SPENCER, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1978 - 2002	
ANNUAL TOTAL	108214.2		20048			
ANNUAL MEAN	296.5		54.93		223.5	
HIGHEST ANNUAL MEAN					763	1993
LOWEST ANNUAL MEAN					33.4	1989
HIGHEST DAILY MEAN	5000	Jun 15	736	Jun 12	5620	Jul 1 1993
LOWEST DAILY MEAN	3.0	Jan 1	11	Feb 4	0.00	Jan 24 1979a
ANNUAL SEVEN-DAY MINIMUM	3.9	Jan 1	14	Sep 23	0.00	Jan 24 1979
MAXIMUM PEAK FLOW			860	Jun 12	6450	Jun 21 1983
MAXIMUM PEAK STAGE			5.86	Jun 12	11.28	Jul 1 1993
ANNUAL RUNOFF (AC-FT)	214600		39770		161900	
ANNUAL RUNOFF (CFSM)	0.70		0.13		0.52	
ANNUAL RUNOFF (INCHES)	9.45		1.75		7.13	
10 PERCENT EXCEEDS	978		107		544	
50 PERCENT EXCEEDS	33		36		85	
90 PERCENT EXCEEDS	5.8		16		12	

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 NGVD of 1929. Oct. 1, 1972 to Nov. 17, 1999, water-stage recorder, 0.25 mi downstream, below concrete dam, at current datum.

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

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

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	75	72	238	98	92	133	332	533	433	254	55	251
2	73	72	217	88	89	105	319	519	417	229	45	229
3	68	74	201	79	90	108	294	494	419	208	40	203
4	68	71	193	75	98	132	261	458	413	197	63	180
5	67	69	195	76	101	120	248	431	432	192	122	159
6	66	73	190	79	93	102	231	410	416	193	148	141
7	64	77	188	82	81	105	234	387	392	171	179	130
8	63	77	190	83	82	109	229	375	368	156	215	112
9	73	73	188	90	90	102	222	376	349	143	205	100
10	93	74	179	100	90	92	217	343	330	150	170	94
11	121	71	184	106	90	88	234	382	376	155	148	86
12	103	70	183	113	87	89	274	659	883	150	149	80
13	101	72	177	114	87	107	329	826	1630	153	197	78
14	100	74	172	118	94	123	355	800	e1700	135	198	84
15	99	76	162	120	100	130	354	740	e1430	118	202	92
16	90	75	167	113	111	141	347	689	e1240	108	193	91
17	87	77	164	108	125	161	361	634	1080	102	201	81
18	84	80	159	107	140	189	381	583	922	95	241	76
19	83	81	148	106	162	228	386	529	797	91	225	79
20	84	79	107	103	180	273	352	486	698	88	181	89
21	81	78	109	101	180	280	344	457	612	84	153	88
22	80	79	138	103	170	255	343	429	566	83	212	80
23	80	85	88	105	184	249	330	410	520	75	255	69
24	78	115	73	105	211	297	332	387	476	70	326	65
25	77	173	e64	98	135	267	319	370	434	74	407	67
26	76	226	146	97	107	255	294	341	387	72	383	72
27	74	294	136	102	94	294	297	e289	e347	69	369	72
28	72	342	129	112	134	301	341	e274	346	69	343	70
29	77	304	128	109	---	319	441	e308	319	64	318	69
30	76	261	120	97	---	351	515	406	288	60	291	65
31	74	---	107	86	---	346	---	483	---	61	270	---
TOTAL	2507	3444	4840	3073	3297	5851	9516	14808	19020	3869	6504	3152
MEAN	80.87	114.8	156.1	99.13	117.8	188.7	317.2	477.7	634.0	124.8	209.8	105.1
MAX	121	342	238	120	211	351	515	826	1700	254	407	251
MIN	63	69	64	75	81	88	217	274	288	60	40	65
AC-FT	4970	6830	9600	6100	6540	11610	18870	29370	37730	7670	12900	6250
CFSM	0.05	0.07	0.10	0.06	0.08	0.12	0.20	0.31	0.41	0.08	0.14	0.07
IN.	0.06	0.08	0.12	0.07	0.08	0.14	0.23	0.36	0.46	0.09	0.16	0.08

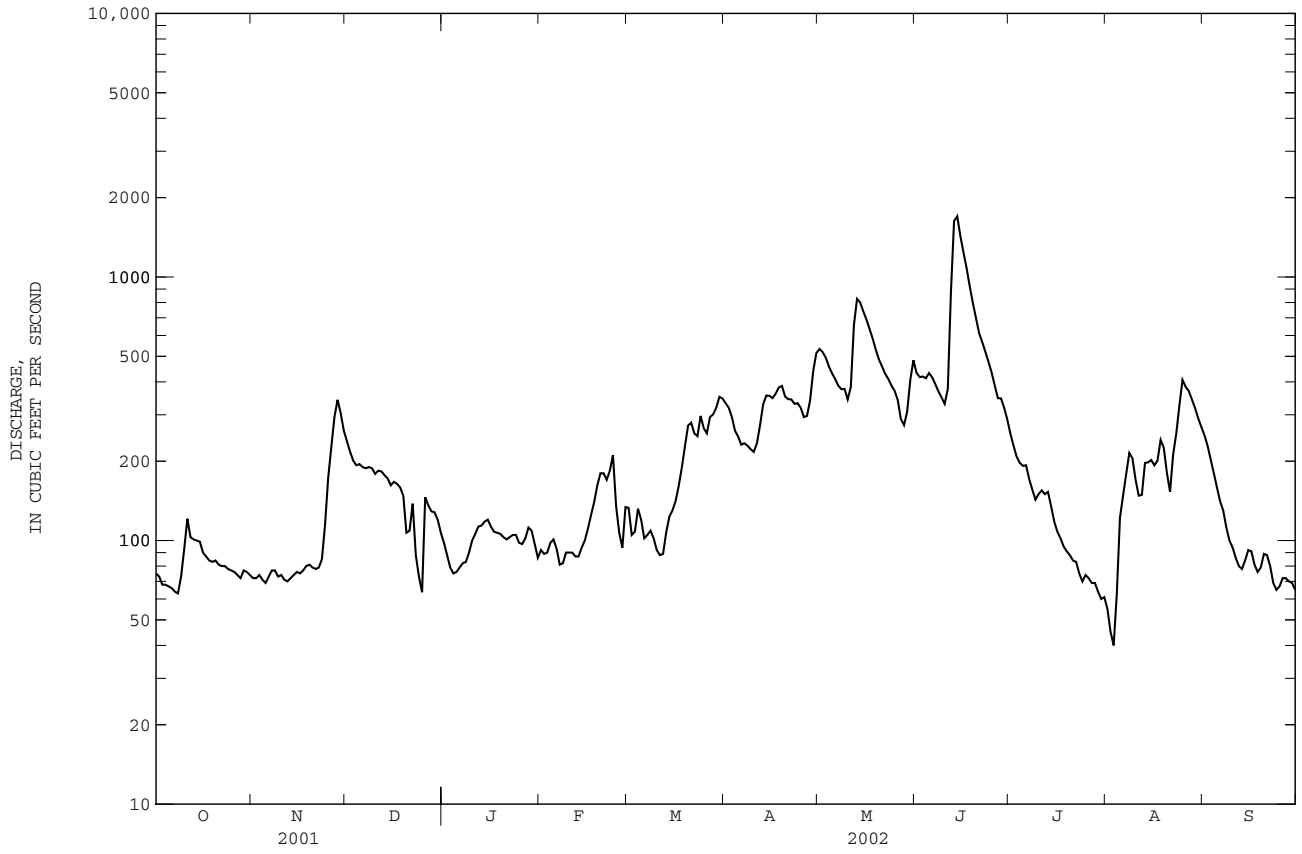
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 2002, BY WATER YEAR (WY)

MEAN	389.9	428.1	265.9	173.9	281.0	1063	1643	1302	1520	1028	465.5	383.5
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 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1973 - 2002	
ANNUAL TOTAL	370461		79881			
ANNUAL MEAN	1015		218.9		746.1	
HIGHEST ANNUAL MEAN					2763	1993
LOWEST ANNUAL MEAN					56.3	1977
HIGHEST DAILY MEAN	6400	Apr 15	1700	Jun 14	15000	Jul 2 1993
LOWEST DAILY MEAN	42	Jan 1	40	Aug 3	0.70	Feb 4 1977
ANNUAL SEVEN-DAY MINIMUM	47	Jan 30	55	Jul 29	1.1	Jan 31 1977
MAXIMUM PEAK FLOW			1850	Jun 14	16100	Jul 2 1993
MAXIMUM PEAK STAGE			17.33	Jun 14	20.63	Jul 2 1993
INSTANTANEOUS LOW FLOW			35	Aug 3		
ANNUAL RUNOFF (AC-FT)	734800		158400		540500	
ANNUAL RUNOFF (CFSM)	0.66		0.14		0.48	
ANNUAL RUNOFF (INCHES)	8.90		1.92		6.55	
10 PERCENT EXCEEDS	3540		418		1980	
50 PERCENT EXCEEDS	159		141		300	
90 PERCENT EXCEEDS	52		73		42	

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 NGVD of 1929. 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. 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 FROM THE DCP, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	175	160	521	e154	203	297	653	865	793	633	112	550
2	169	159	483	e144	199	255	636	942	841	608	104	514
3	167	155	450	e133	190	272	600	949	e807	580	99	478
4	163	154	434	e139	194	265	567	924	790	548	153	442
5	158	154	419	e139	190	254	546	893	830	525	957	407
6	153	157	402	e152	184	250	515	875	824	513	665	375
7	152	158	390	e157	187	246	501	837	814	500	520	345
8	151	156	379	e159	190	248	492	803	799	489	411	314
9	165	153	367	e170	201	210	482	774	772	e413	378	288
10	209	154	363	e186	204	212	466	752	749	e420	391	267
11	219	154	370	e191	205	210	472	858	1410	e452	391	249
12	219	156	363	e209	210	211	515	1050	1210	e392	379	231
13	225	158	357	e220	213	248	535	1160	1360	e365	414	223
14	229	158	350	e221	227	311	556	1380	1820	e317	437	255
15	212	158	343	e217	243	323	593	1400	2090	e290	411	286
16	202	159	347	e201	269	341	618	1360	2160	e270	427	254
17	197	163	330	e202	299	369	724	1280	2050	234	532	228
18	193	165	320	e182	347	408	721	1200	1710	217	544	312
19	186	160	309	e195	375	490	709	1120	1490	202	530	262
20	178	157	275	e204	390	520	696	1060	1340	187	480	246
21	176	158	260	e207	394	481	705	1000	1230	173	456	234
22	172	159	259	224	373	e461	700	953	1120	192	837	221
23	171	160	194	224	421	e596	679	918	1030	169	1510	220
24	167	213	e163	226	443	687	662	874	960	154	1180	208
25	158	277	e146	223	339	576	642	853	900	164	936	200
26	155	317	e235	222	220	561	633	819	850	171	825	198
27	152	387	e200	232	248	578	648	793	797	148	788	209
28	154	464	e183	225	289	590	696	770	750	141	724	203
29	157	520	e175	231	---	635	727	786	710	135	669	198
30	156	549	e167	225	---	646	771	736	670	125	628	194
31	155	---	e163	208	---	648	---	727	---	119	588	---
TOTAL	5495	6352	9717	6022	7447	12399	18460	29711	33676	9846	17476	8611
MEAN	177.3	211.7	313.5	194.3	266.0	400.0	615.3	958.4	1123	317.6	563.7	287.0
MAX	229	549	521	232	443	687	771	1400	2160	633	1510	550
MIN	151	153	146	133	184	210	466	727	670	119	99	194
AC-FT	10900	12600	19270	11940	14770	24590	36620	58930	66800	19530	34660	17080
CFSM	0.07	0.08	0.13	0.08	0.11	0.16	0.25	0.38	0.45	0.13	0.23	0.11
IN.	0.08	0.09	0.14	0.09	0.11	0.18	0.27	0.44	0.50	0.15	0.26	0.13

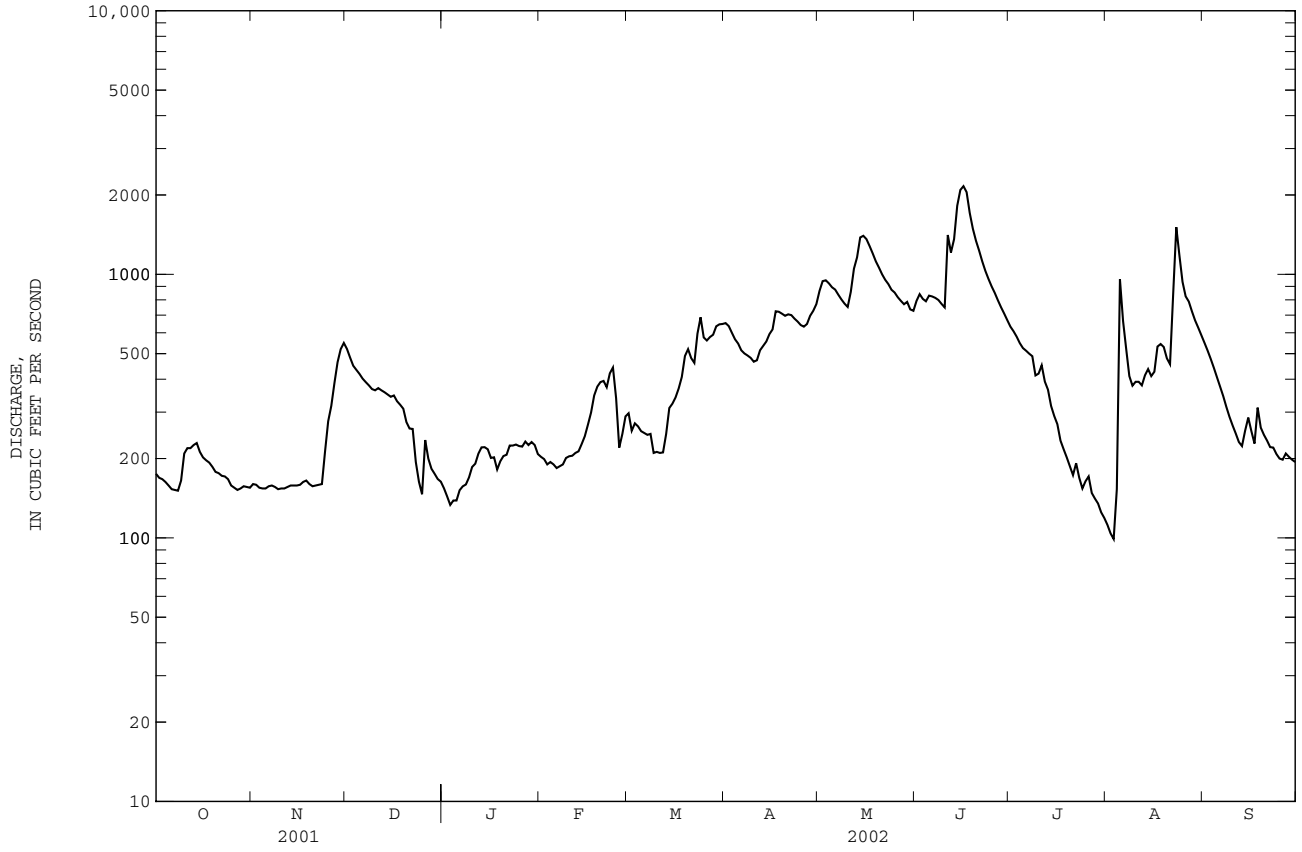
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 2002, BY WATER YEAR (WY)

MEAN	427.1	427.2	296.4	214.6	458.4	1451	1914	1427	1801	1219	602.5	498.6
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 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1919 - 2002	
ANNUAL TOTAL	563066		165212			
ANNUAL MEAN	1543		452.6		906.6	
HIGHEST ANNUAL MEAN					4304	1993
LOWEST ANNUAL MEAN					53.7	1931
HIGHEST DAILY MEAN	7300	Apr 13	2160	Jun 16	27900	Apr 7 1965
LOWEST DAILY MEAN	66	Jan 1	99	Aug 3	2.6	Jul 17 1936a
ANNUAL SEVEN-DAY MINIMUM	77	Jan 1	119	Jul 28	4.6	Oct 4 1956
MAXIMUM PEAK FLOW			2160	Jun 16	29800	Apr 7 1965
MAXIMUM PEAK STAGE			7.93	Jun 16	25.86	Apr 7 1965
INSTANTANEOUS LOW FLOW			98	Aug 3b		
ANNUAL RUNOFF (AC-FT)	1117000		327700		656800	
ANNUAL RUNOFF (CFSM)	0.62		0.18		0.36	
ANNUAL RUNOFF (INCHES)	8.38		2.46		4.93	
10 PERCENT EXCEEDS	5150		874		2220	
50 PERCENT EXCEEDS	350		330		370	
90 PERCENT EXCEEDS	95		157		55	

a Also July 25, 1956, caused by construction of dam upstream.
b Also Aug. 4.
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 NGVD of 1929. 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. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	92	93	178	e79	e78	e94	167	286	236	209	101	191
2	90	90	168	e78	e79	e85	157	295	277	200	92	173
3	84	89	158	e93	e80	e79	146	285	327	194	90	155
4	83	87	156	e104	e75	e95	136	270	296	191	144	141
5	87	87	157	e113	e78	e117	134	261	371	184	454	131
6	85	91	156	e97	e81	e112	130	269	291	182	644	125
7	85	91	149	e92	e84	e111	131	414	251	176	368	116
8	85	87	139	e101	e85	e109	132	319	233	173	249	108
9	88	86	133	e115	e85	e105	128	288	221	170	192	103
10	103	86	133	e106	e74	e102	130	264	213	240	163	99
11	97	86	131	e104	e80	e98	141	433	590	290	145	96
12	100	89	131	e106	e80	111	166	788	1080	226	132	95
13	120	93	125	e115	e90	195	170	739	679	191	126	95
14	115	92	122	e103	99	313	171	646	596	173	125	103
15	102	89	123	e82	109	248	168	573	520	160	119	116
16	98	87	121	e72	124	219	166	543	472	151	126	101
17	95	87	114	e73	e117	210	174	536	439	142	363	92
18	89	87	113	e54	e116	198	178	457	418	136	298	162
19	87	83	107	e65	e110	280	197	425	391	130	190	141
20	88	83	102	e74	e106	289	195	398	385	126	153	114
21	90	86	103	e80	e92	246	199	380	352	119	136	105
22	90	87	112	e88	e84	167	202	378	336	132	145	98
23	94	91	e85	e62	e83	214	202	362	316	129	526	90
24	93	137	e97	e71	e82	214	189	340	297	118	802	89
25	87	179	e81	e81	e81	184	178	328	282	127	791	92
26	86	164	e82	e90	e59	161	167	300	270	132	515	99
27	87	178	e92	98	e57	165	189	285	258	129	389	103
28	91	181	e85	86	e99	177	231	272	247	121	321	105
29	91	198	e81	e82	---	203	267	287	235	116	274	100
30	91	190	e84	e79	---	202	285	300	222	117	239	97
31	92	---	e77	e81	---	183	---	255	---	108	212	---
TOTAL	2865	3254	3695	2724	2467	5286	5226	11976	11101	4992	8624	3435
MEAN	92.42	108.5	119.2	87.87	88.11	170.5	174.2	386.3	370.0	161.0	278.2	114.5
MAX	120	198	178	115	124	313	285	788	1080	290	802	191
MIN	83	83	77	54	57	79	128	255	213	108	90	89
AC-FT	5680	6450	7330	5400	4890	10480	10370	23750	22020	9900	17110	6810
CFSM	0.14	0.16	0.18	0.13	0.13	0.25	0.26	0.58	0.55	0.24	0.42	0.17
IN.	0.16	0.18	0.21	0.15	0.14	0.29	0.29	0.67	0.62	0.28	0.48	0.19

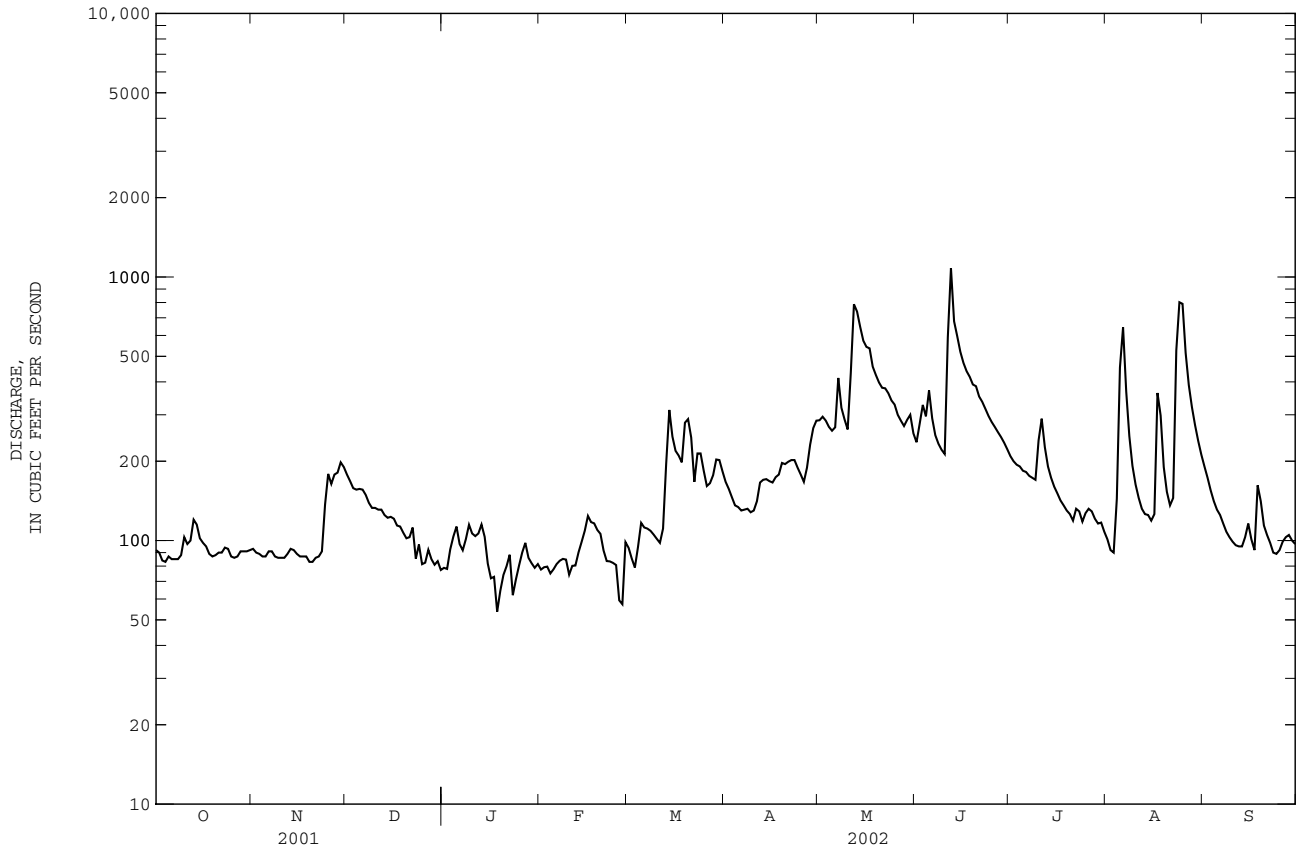
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 2002, BY WATER YEAR (WY)

MEAN	156.5	144.8	116.5	96.36	223.1	482.6	409.5	398.6	631.8	362.8	254.0	178.3
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 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1942 - 2002	
ANNUAL TOTAL	85148		65645			
ANNUAL MEAN	233.3		179.8		287.8	
HIGHEST ANNUAL MEAN					983	1983
LOWEST ANNUAL MEAN					24.5	1956
HIGHEST DAILY MEAN	2840	Mar 21	1080	Jun 12	14400	Jun 21 1983
LOWEST DAILY MEAN	27	Feb 10	54	Jan 18	0.00	Sep 21 1945a
ANNUAL SEVEN-DAY MINIMUM	35	Feb 16	71	Jan 18	2.6	Feb 14 1959
MAXIMUM PEAK FLOW			1400	Jun 12	20800	Sep 12 1978
MAXIMUM PEAK STAGE			8.85	Jun 12	22.10	Jun 12 1950
ANNUAL RUNOFF (AC-FT)	168900		130200		208500	
ANNUAL RUNOFF (CFSM)	0.35		0.27		0.43	
ANNUAL RUNOFF (INCHES)	4.73		3.65		5.85	
10 PERCENT EXCEEDS	484		338		608	
50 PERCENT EXCEEDS	129		128		140	
90 PERCENT EXCEEDS	41		83		30	

a Also Sept. 22, 1945, caused by temporary dam upstream.
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 NGVD of 1929 (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. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	346	315	786	e279	e320	e529	868	1030	1090	896	278	839
2	331	303	757	e274	e311	e431	830	1160	1180	843	257	764
3	307	305	709	e287	e311	e475	804	1240	1310	800	254	692
4	289	306	683	e313	e319	e472	766	1210	1260	759	309	656
5	295	307	681	e328	e306	e456	750	1200	1310	722	1200	617
6	290	317	648	e327	e311	e444	760	1200	1330	690	1980	580
7	291	317	615	e316	e309	e434	735	1210	1240	669	1200	535
8	297	289	594	e332	e317	e425	682	1200	1180	660	790	498
9	303	293	601	e342	e314	e383	657	1050	1150	642	620	452
10	361	295	588	e333	e323	e383	693	1020	1090	674	e595	421
11	371	295	600	e340	e331	e383	660	1330	1520	966	e589	406
12	366	311	580	e354	e333	e394	666	1760	3060	850	e581	382
13	399	320	559	e367	e346	e514	706	2040	2130	e694	e639	367
14	395	328	566	e359	e365	e633	739	2010	2230	e605	e628	372
15	387	320	584	e346	e389	e601	778	2120	2580	e563	e535	404
16	371	312	559	e346	e413	e605	840	2090	2740	e524	512	427
17	369	311	535	e342	e449	e657	817	2030	2680	467	1440	398
18	363	314	522	e324	e495	e712	900	1880	2440	428	996	470
19	346	290	497	e344	e521	880	837	1750	2190	406	800	716
20	347	289	481	e355	e555	903	857	1630	2050	392	717	464
21	346	300	435	e364	e560	826	881	1550	1910	378	664	394
22	336	309	432	e381	e518	714	894	1520	1740	383	644	383
23	346	327	e352	e342	e575	920	914	1430	1530	373	1340	358
24	327	413	e330	e366	e606	950	837	1360	1370	354	2380	350
25	297	547	e305	e359	e512	952	789	1340	1270	378	2190	358
26	287	559	e315	e368	e395	820	780	1310	1190	348	1890	342
27	291	569	e317	e372	e459	829	830	1260	1100	361	1640	346
28	315	609	e304	e335	e519	841	867	1220	1020	332	1490	353
29	305	696	e298	e368	---	847	942	1230	972	316	1190	355
30	313	760	e291	e342	---	880	991	1260	934	323	991	352
31	326	---	e277	e330	---	878	---	1130	---	306	910	---
TOTAL	10313	11226	15801	10535	11482	20171	24070	44770	48796	17102	30249	14051
MEAN	332.7	374.2	509.7	339.8	410.1	650.7	802.3	1444	1627	551.7	975.8	468.4
MAX	399	760	786	381	606	952	991	2120	3060	966	2380	839
MIN	287	289	277	274	306	383	657	1020	934	306	254	342
AC-FT	20460	22270	31340	20900	22770	40010	47740	88800	96790	33920	60000	27870
CFSM	0.09	0.11	0.14	0.10	0.12	0.18	0.23	0.41	0.46	0.16	0.28	0.13
IN.	0.11	0.12	0.17	0.11	0.12	0.21	0.25	0.47	0.51	0.18	0.32	0.15

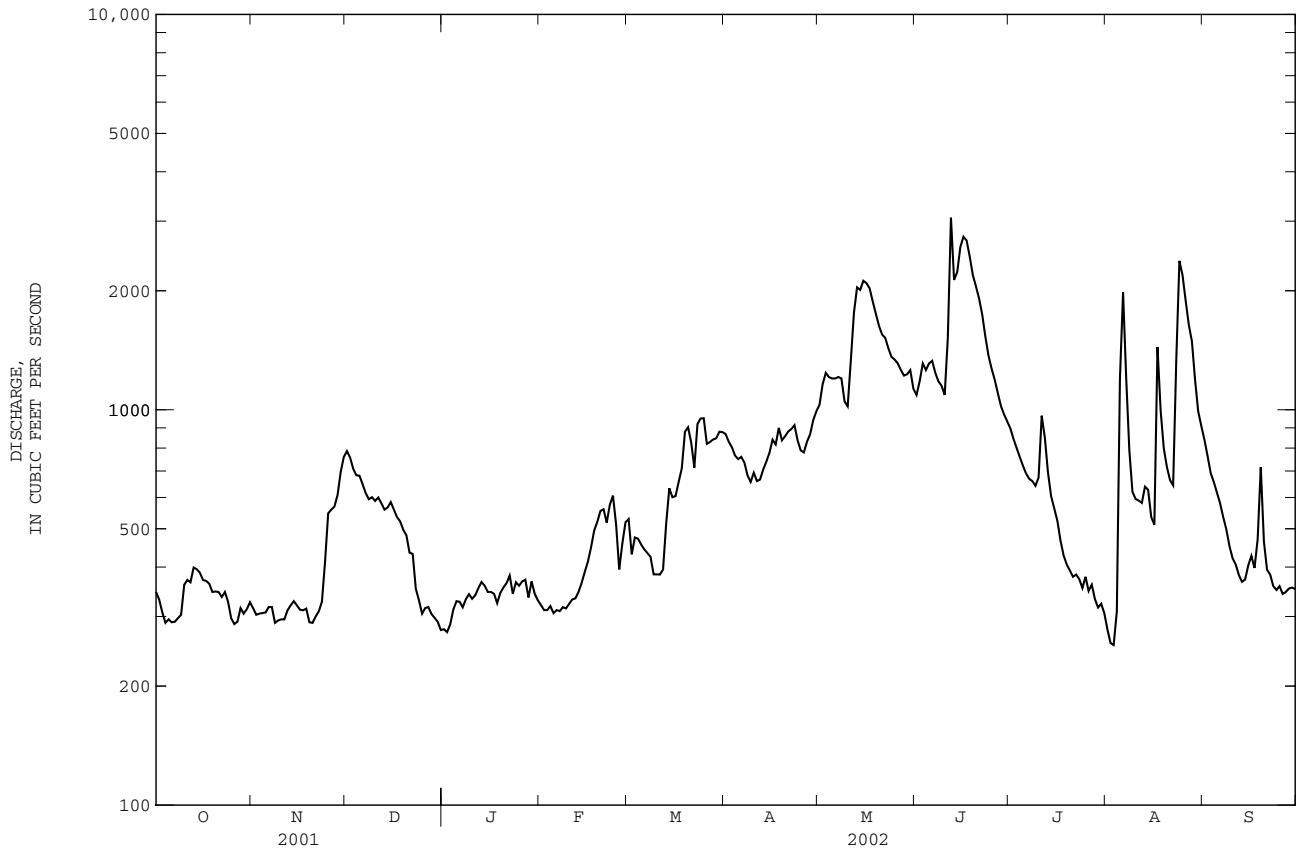
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 2002, BY WATER YEAR (WY)

MEAN	794.2	806.8	645.4	472.8	826.9	2319	3151	2419	2956	2021	1048	836.9
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 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1959 - 2002a	
ANNUAL TOTAL	673594		258566			
ANNUAL MEAN	1845		708.4		1525	
HIGHEST ANNUAL MEAN					5261	1993
LOWEST ANNUAL MEAN					167	1968
HIGHEST DAILY MEAN	8200	May 8	3060	Jun 12	28700	Jun 22 1996
LOWEST DAILY MEAN	120	Jan 1	254	Aug 3	17	Jan 18 1977b
ANNUAL SEVEN-DAY MINIMUM	138	Jan 1	287	Dec 28	17	Jan 27 1977
MAXIMUM PEAK FLOW			3430	Jun 12	32000	Jun 22 1996
MAXIMUM PEAK STAGE			11.24	Jun 12	27.44	Feb 19 1971c
INSTANTANEOUS LOW FLOW			197	Dec 23		
ANNUAL RUNOFF (AC-FT)	1336000		512900		1105000	
ANNUAL RUNOFF (CFSM)	0.52		0.20		0.43	
ANNUAL RUNOFF (INCHES)	7.11		2.73		5.88	
10 PERCENT EXCEEDS	5590		1330		3690	
50 PERCENT EXCEEDS	566		535		760	
90 PERCENT EXCEEDS	170		309		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 NGVD of 1929. 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. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	65	86	e43	e45	e48	94	135	71	78	56	54
2	54	60	82	e42	e47	e39	94	140	88	72	52	50
3	51	59	80	e60	e47	e34	89	128	202	70	51	47
4	50	60	78	e71	e44	e46	89	108	100	68	82	45
5	55	61	79	e83	e48	e63	87	101	90	68	825	44
6	53	62	82	e64	e54	e61	87	115	75	67	337	41
7	54	61	76	e59	e58	e58	86	123	68	67	171	40
8	57	59	73	e79	e66	e53	87	100	63	64	133	39
9	68	59	74	e87	e66	e49	83	90	59	62	114	37
10	111	60	74	e78	e51	e48	84	83	58	86	106	37
11	92	58	73	e76	e58	e99	86	573	1660	228	100	37
12	73	59	70	e80	e58	e192	123	503	706	127	95	38
13	91	62	70	e87	73	e335	107	223	393	105	102	39
14	90	59	68	e71	92	e400	95	178	227	95	92	45
15	72	59	72	e55	104	185	88	159	195	87	83	50
16	67	57	67	e51	121	139	82	143	178	79	77	45
17	64	58	66	e52	112	139	82	131	166	75	134	42
18	66	57	68	e35	111	129	81	114	163	74	120	100
19	62	57	67	e50	103	232	73	106	153	72	87	211
20	57	59	66	e59	100	213	73	99	142	70	78	87
21	55	62	69	e65	88	153	95	96	140	66	77	68
22	69	63	79	e79	78	e110	96	92	126	80	87	60
23	72	68	e71	e43	78	e133	98	108	114	86	204	56
24	77	148	e60	e49	77	126	88	104	104	68	114	55
25	65	219	e48	57	72	110	75	106	99	107	86	54
26	65	133	e46	61	e45	e100	72	95	94	93	76	55
27	62	128	e60	60	e39	e108	129	74	90	82	70	58
28	66	100	e51	50	e54	109	211	101	87	77	65	58
29	63	91	e46	49	---	107	143	186	85	69	62	53
30	62	89	e50	e47	---	102	126	138	82	64	61	52
31	67	---	e42	e50	---	96	---	94	---	60	58	---
TOTAL	2065	2292	2093	1892	1989	3816	2903	4546	5878	2566	3855	1697
MEAN	66.61	76.40	67.52	61.03	71.04	123.1	96.77	146.6	195.9	82.77	124.4	56.57
MAX	111	219	86	87	121	400	211	573	1660	228	825	211
MIN	50	57	42	35	39	34	72	74	58	60	51	37
AC-FT	4100	4550	4150	3750	3950	7570	5760	9020	11660	5090	7650	3370
CFSM	0.16	0.19	0.17	0.15	0.17	0.30	0.24	0.36	0.48	0.20	0.31	0.14
IN.	0.19	0.21	0.19	0.17	0.18	0.35	0.27	0.42	0.54	0.23	0.35	0.16

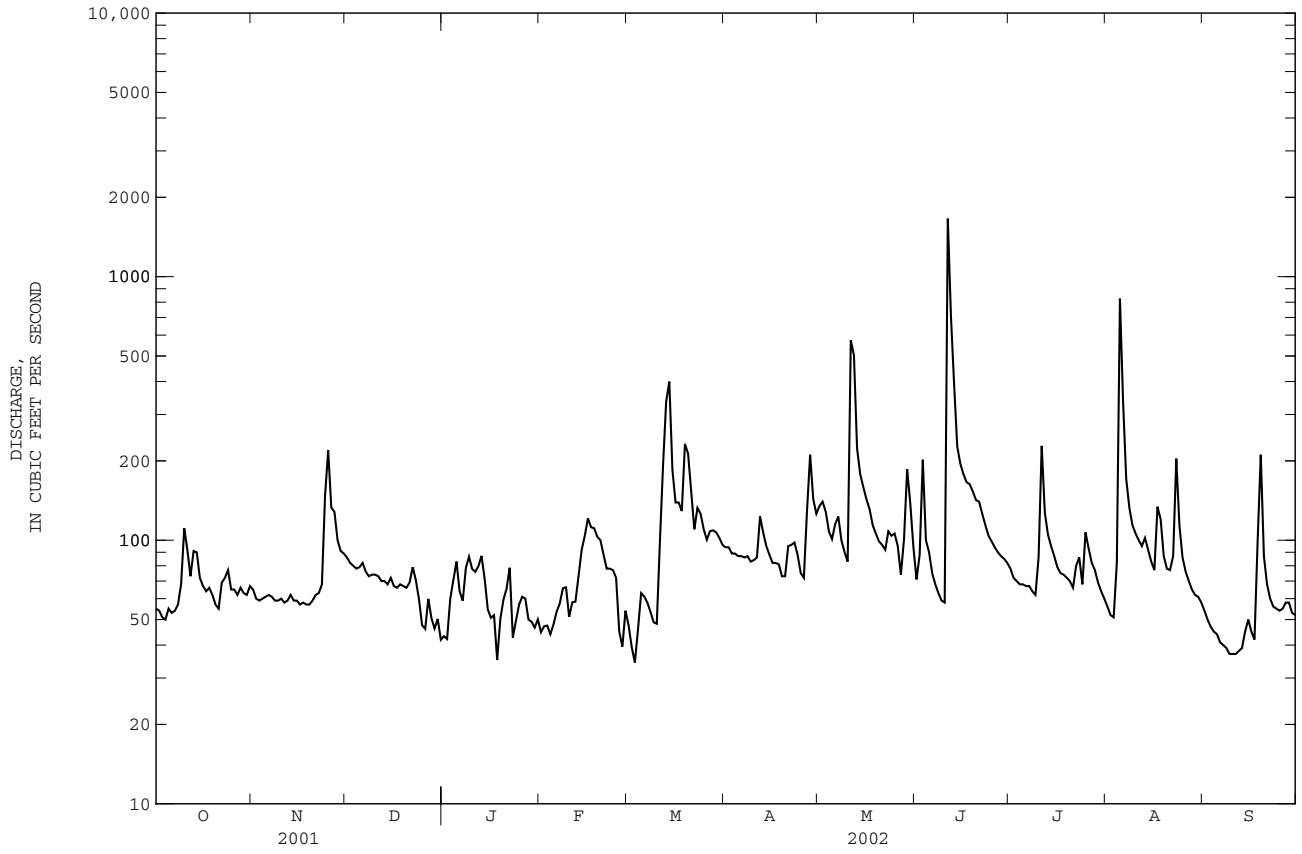
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 2002, BY WATER YEAR (WY)

MEAN	81.34	75.87	67.31	66.74	154.0	264.9	167.5	199.7	310.9	199.9	143.3	110.4
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 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1941 - 2002	
ANNUAL TOTAL	65315		35592			
ANNUAL MEAN	178.9		97.51		153.3	
HIGHEST ANNUAL MEAN					487	1993
LOWEST ANNUAL MEAN					27.3	1956
HIGHEST DAILY MEAN	5800	Jun 14	1660	Jun 11	20700	Jul 17 1996
LOWEST DAILY MEAN	34	Jan 1	34	Mar 3	2.0	Jan 2 1945a
ANNUAL SEVEN-DAY MINIMUM	44	Jan 1	38	Sep 7	2.0	Jan 2 1945
MAXIMUM PEAK FLOW			2950	Jun 11	34700	Jul 17 1996
MAXIMUM PEAK STAGE			9.93	Jun 11	28.87	Jul 17 1996
INSTANTANEOUS LOW FLOW			33	Jan 29		
ANNUAL RUNOFF (AC-FT)	129600		70600		111100	
ANNUAL RUNOFF (CFSM)	0.44		0.24		0.38	
ANNUAL RUNOFF (INCHES)	5.97		3.25		5.12	
10 PERCENT EXCEEDS	304		140		283	
50 PERCENT EXCEEDS	83		75		74	
90 PERCENT EXCEEDS	51		49		16	

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



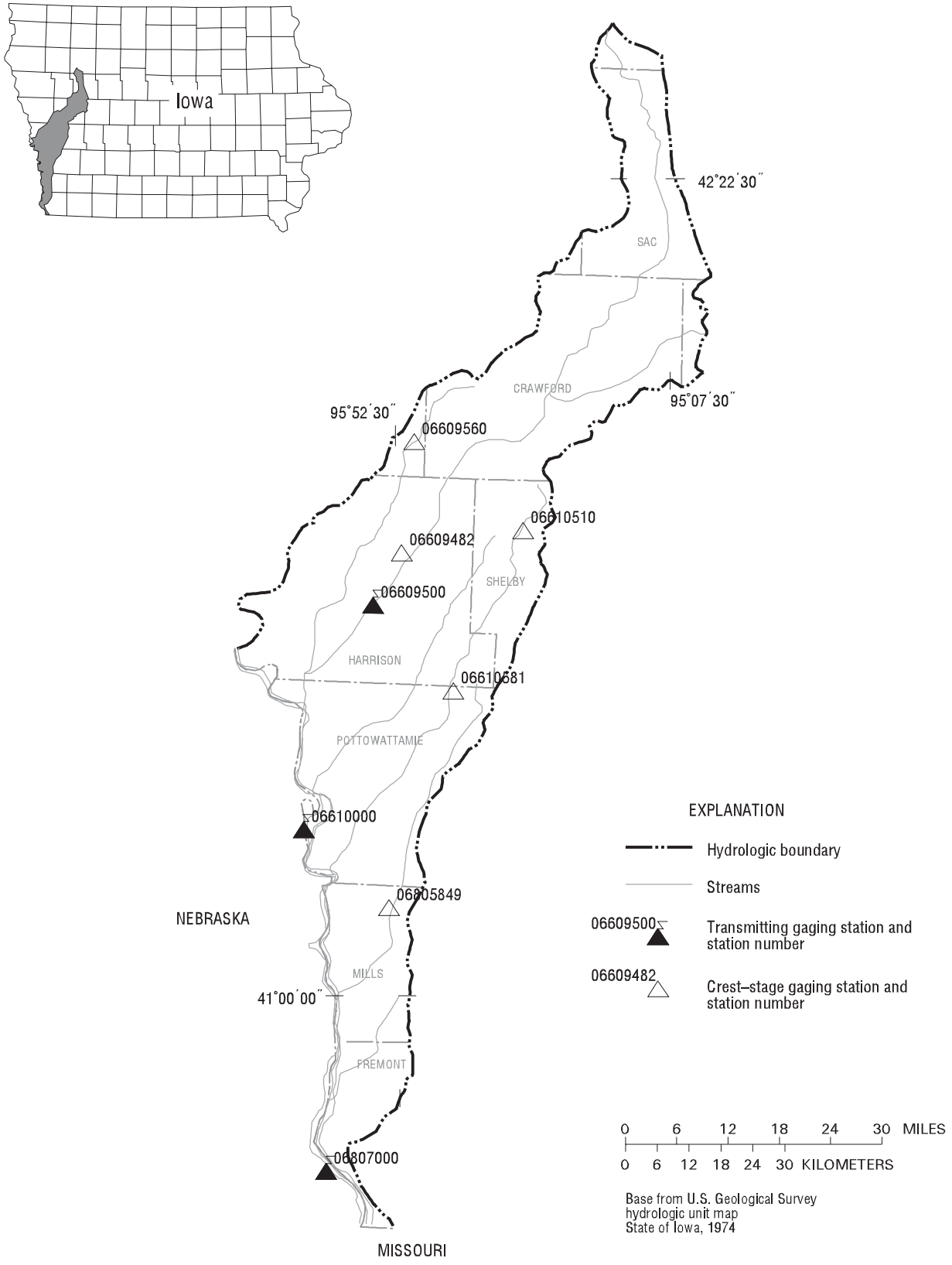


Figure 14. Locations of active continuous-record and crest-stage gaging stations in the Boyer River and Missouri River Main Stem drainage basins.

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 NGVD of 1929 (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. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	102	115	160	e109	e94	e95	143	296	304	244	120	198
2	99	112	155	e107	e96	e82	137	267	292	233	110	185
3	99	111	149	e118	e97	e74	132	256	809	223	104	169
4	95	110	150	e129	e93	e82	125	256	406	222	124	156
5	97	110	184	e143	e96	e95	133	243	344	219	272	146
6	98	114	297	e120	e103	e90	126	256	318	216	356	138
7	97	113	231	e115	e109	e87	129	371	312	220	509	125
8	98	109	197	e130	e112	e83	133	362	288	203	357	122
9	103	109	180	e140	e122	e77	131	289	279	193	263	116
10	116	111	174	e135	e106	e77	120	250	274	215	216	e108
11	115	108	171	e130	e115	e138	126	468	1310	344	189	e102
12	108	108	167	e134	e126	e227	140	1250	2060	270	173	e99
13	113	109	163	e139	e164	e372	148	960	1380	211	227	98
14	124	110	159	e126	e199	437	139	727	702	203	235	108
15	117	109	159	e111	e220	271	129	594	568	188	189	125
16	106	112	162	e104	252	225	123	523	504	180	177	117
17	103	115	158	e106	244	218	129	474	462	172	232	101
18	104	119	155	e94	229	204	138	438	438	165	298	184
19	102	115	150	e105	239	222	123	396	413	157	223	367
20	103	114	141	e111	233	236	116	373	389	151	192	181
21	105	116	137	e117	213	197	128	346	483	139	180	143
22	115	115	157	e129	193	e154	145	333	397	157	187	126
23	164	124	e145	e96	185	163	160	340	342	185	678	115
24	144	188	e129	e101	185	193	151	349	320	156	887	106
25	121	263	e116	e107	171	173	130	346	305	201	574	105
26	116	223	e112	e110	e109	146	116	349	296	173	427	108
27	114	220	e130	e106	e90	148	159	324	287	169	357	112
28	116	196	e117	e98	e102	152	366	334	268	157	298	115
29	119	173	e113	e96	---	152	346	400	261	151	267	108
30	114	167	e124	e94	---	153	305	410	253	137	230	100
31	112	---	e108	e99	---	150	---	351	---	128	211	---
TOTAL	3439	4018	4850	3559	4297	5173	4626	12931	15064	5982	8862	4083
MEAN	110.9	133.9	156.5	114.8	153.5	166.9	154.2	417.1	502.1	193.0	285.9	136.1
MAX	164	263	297	143	252	437	366	1250	2060	344	887	367
MIN	95	108	108	94	90	74	116	243	253	128	104	98
AC-FT	6820	7970	9620	7060	8520	10260	9180	25650	29880	11870	17580	8100
CFSM	0.13	0.15	0.18	0.13	0.18	0.19	0.18	0.48	0.58	0.22	0.33	0.16
IN.	0.15	0.17	0.21	0.15	0.18	0.22	0.20	0.55	0.64	0.26	0.38	0.17

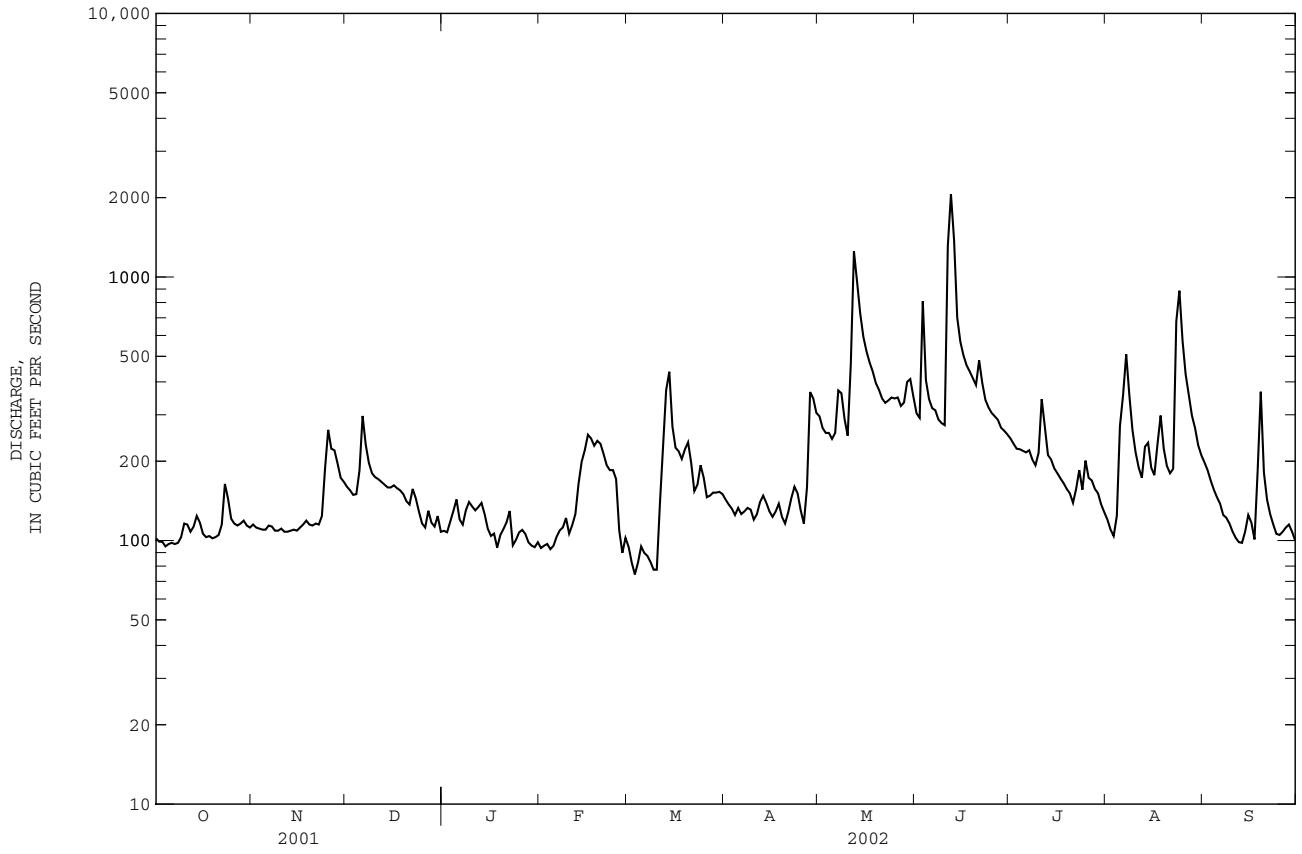
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 2002, BY WATER YEAR (WY)

MEAN	184.1	168.3	137.7	128.1	312.8	593.2	444.9	513.5	758.0	462.8	306.9	253.4
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 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1919 - 2002	
ANNUAL TOTAL	144595		76884			
ANNUAL MEAN	396.2		210.6		358.7	
HIGHEST ANNUAL MEAN					1018	1993
LOWEST ANNUAL MEAN					58.7	1956
HIGHEST DAILY MEAN	5660	May 3	2060	Jun 12	24600	Jul 9 1993
LOWEST DAILY MEAN	27	Jan 1	74	Mar 3	1.5	Jul 16 1938
ANNUAL SEVEN-DAY MINIMUM	33	Jan 1	84	Mar 3	2.0	Jan 13 1940
MAXIMUM PEAK FLOW			3900	Jun 12	30800	Jun 17 1990
MAXIMUM PEAK STAGE			9.81	Jun 12	25.22	Mar 1 1965a
ANNUAL RUNOFF (AC-FT)	286800		152500		259900	
ANNUAL RUNOFF (CFSM)	0.45		0.24		0.41	
ANNUAL RUNOFF (INCHES)	6.18		3.28		5.60	
10 PERCENT EXCEEDS	774		364		750	
50 PERCENT EXCEEDS	168		151		164	
90 PERCENT EXCEEDS	65		102		33	

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 NGVD of 1929. 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.--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. 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 freeze-up.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30600	31800	26700	17600	16200	17200	29200	28500	28200	29000	26900	31300
2	31200	31900	25900	17400	16900	18500	30100	28600	27800	28700	26800	31300
3	31000	31700	23900	17400	17000	17900	31000	29200	28100	28600	26800	31700
4	31200	31600	22000	17400	16800	17400	30400	29000	28400	28500	27200	31900
5	30900	31500	20700	17400	16700	18100	29300	28400	28600	28600	28100	31900
6	30400	31200	20200	17800	16300	18400	28900	28200	28600	28200	31700	31900
7	30000	31300	19900	19000	16200	19100	28600	28500	28100	28100	31400	32100
8	30000	31500	19500	17700	16400	17900	28900	28600	28100	27900	29600	32000
9	30200	31700	19300	16900	16100	17000	29000	28200	29300	27700	28600	32000
10	30400	31600	19300	17300	16400	16800	28900	28100	29000	27600	28300	32100
11	30700	31700	19200	17300	16800	15900	29200	28900	30500	28400	28300	32500
12	30600	31500	18900	17000	17400	15500	29200	32800	40000	30000	28500	32500
13	30200	31500	18700	16800	17800	17100	29200	33300	40000	28100	28200	32800
14	30100	31800	18700	16800	17400	18600	28400	31000	33000	27700	28200	32800
15	30100	31800	18500	16800	16500	18000	28000	30000	31600	27500	27800	33300
16	29700	32000	18200	16800	16500	17600	28300	29300	31800	27400	27400	32600
17	29900	32200	18000	16600	16600	17500	28600	29000	31700	27200	29800	31400
18	30200	32200	18000	16900	16700	17300	29300	29300	31300	27000	35300	31400
19	30400	32000	17900	17100	16800	17500	29200	29000	30900	27100	34400	31900
20	30600	31900	17800	16700	17100	18100	28700	28300	30400	26900	32900	32200
21	30600	31800	17700	16300	17200	19900	28400	28100	30400	26900	32800	31100
22	31000	31600	17500	16500	17200	22400	28600	27800	31600	27000	33400	30500
23	31000	31400	17300	16300	17000	24900	28900	27800	30200	27400	36200	29700
24	31000	32200	17400	16300	17100	27300	28500	28300	29500	27100	39400	29600
25	31100	33100	16800	16100	17600	28400	28400	28600	29300	27200	38600	29700
26	31200	31900	16600	15800	18000	28400	28700	28000	29100	28600	35500	30300
27	31400	28300	16500	16000	18200	28500	28800	27800	29300	28800	34000	31100
28	31200	28100	16600	15900	17300	28400	28900	28100	29500	27600	33300	31100
29	31100	28400	17100	15500	---	28300	29700	28100	29400	27200	32900	31700
30	31200	27500	17800	15700	---	28500	29400	29900	29200	27100	32400	32700
31	31100	---	17900	16000	---	28700	---	29800	---	27100	31800	---
TOTAL	950300	938700	590500	521100	474200	645100	870700	898500	912900	862200	966500	949100
MEAN	30650	31290	19050	16810	16940	20810	29020	28980	30430	27810	31180	31640
MAX	31400	33100	26700	19000	18200	28700	31000	33300	40000	30000	39400	33300
MIN	29700	27500	16500	15500	16100	15500	28000	27800	27800	26900	26800	29600
AC-FT	1885000	1862000	1171000	1034000	940600	1280000	1727000	1782000	1811000	1710000	1917000	1883000
CFSM	0.09	0.10	0.06	0.05	0.05	0.06	0.09	0.09	0.09	0.09	0.10	0.10
IN.	0.11	0.11	0.07	0.06	0.05	0.07	0.10	0.10	0.11	0.10	0.11	0.11

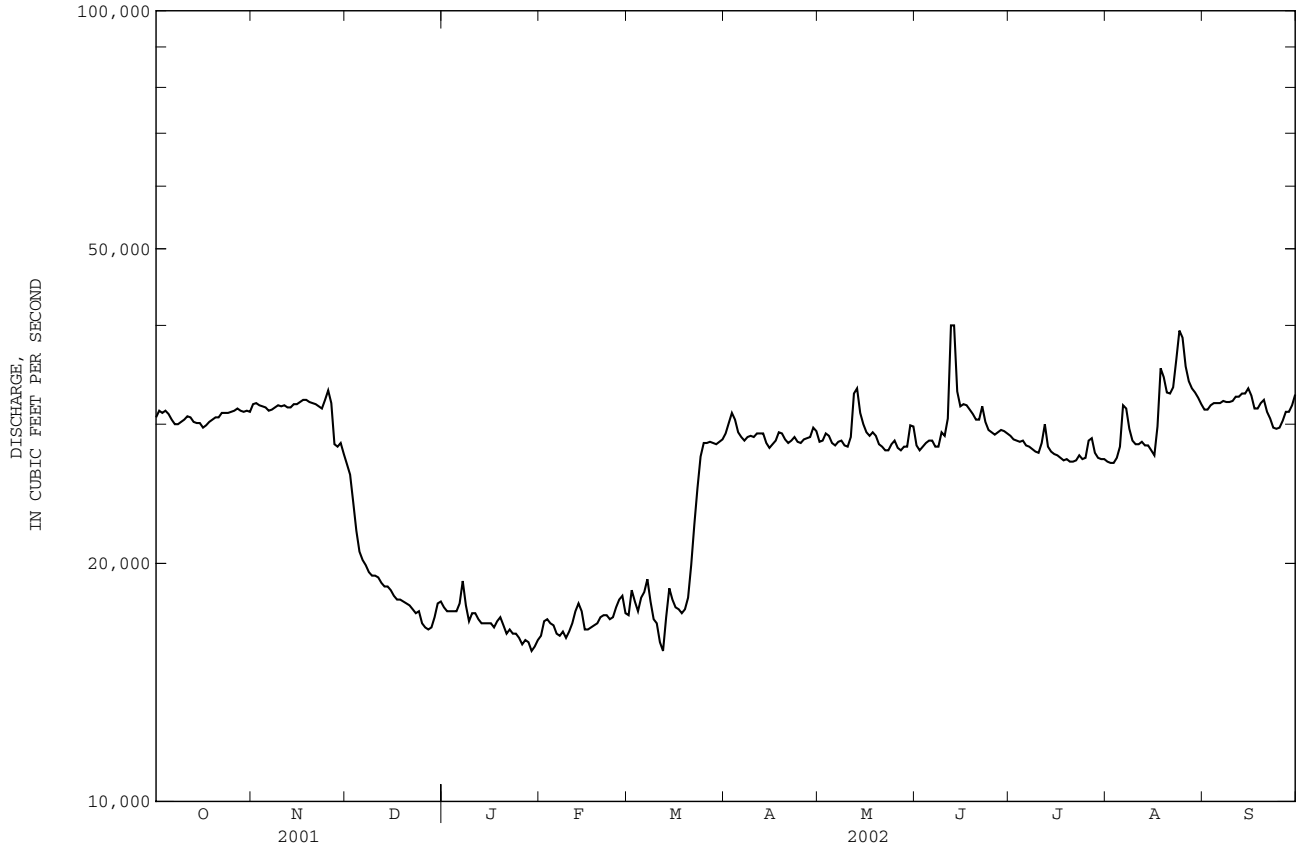
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 2002, BY WATER YEAR (WY)

MEAN	38510	34220	21100	17770	19850	28020	38860	38640	41850	40410	38990	38960
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
(National stream-quality accounting network station)

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1953 - 2002a	
ANNUAL TOTAL	11071900		9579800			
ANNUAL MEAN	30330		26250		33140	
HIGHEST ANNUAL MEAN					62150	1997
LOWEST ANNUAL MEAN					20490	1957
HIGHEST DAILY MEAN	68700	Apr 29	40000	Jun 12	116000	Apr 4 1960
LOWEST DAILY MEAN	14100	Jan 22	15500	Jan 29	2440	Dec 14 1961
ANNUAL SEVEN-DAY MINIMUM	15100	Jan 22	15900	Jan 25	4300	Nov 28 1955
MAXIMUM PEAK FLOW			42400	Jun 12	120000	Apr 1 1960
MAXIMUM PEAK STAGE			18.85	Jun 12	30.26	Jul 10 1993
INSTANTANEOUS LOW FLOW			15200	Mar 12		
ANNUAL RUNOFF (AC-FT)	21960000		19000000		24010000	
ANNUAL RUNOFF (CFSM)	0.094		0.081		0.10	
ANNUAL RUNOFF (INCHES)	1.28		1.10		1.39	
10 PERCENT EXCEEDS	44600		31900		52600	
50 PERCENT EXCEEDS	30700		28500		32500	
90 PERCENT EXCEEDS	16000		16800		14000	

a Post regulation.



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, 69 mg/L May 29, 2002.
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, 808 microsiemens Aug. 2; minimum daily, 686 microsiemens June 12.
WATER TEMPERATURES: Maximum daily, 29.5°C July 30; minimum daily, 1.5°C Mar. 7.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,960 mg/L June 12; minimum daily mean, 69 mg/L May 29.
SEDIMENT LOADS: Maximum daily, 214,000 tons June 12; minimum daily, 4,330 tons Feb. 10.

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

Date	Time	DIS-CHARGE, INST. CUBIC FEET PER SECOND (00061)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	TEMPER-ATURE WATER (DEG C) (00010)	TEMPER-ATURE AIR (DEG C) (00020)	TURBID-ITY LAB HACH 2100AN (NTU) (99872)	OXYGEN, DIS-SOLVED (MG/L) (00300)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION) (00301)	BARO-METRIC PRES-SURE (MM OF HG) (00025)	HARD-NESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)
OCT													
16...	1130	--	842	8.5	13.5	11.0	21	9.7	10	746	260	60.7	25.0
DEC													
05...	1300	20900	830	8.4	6.5	9.5	47	11.2	12	734	290	70.7	27.1
JAN													
17...	1130	16700	874	8.3	1.5	1.0	13	13.1	100	741	290	70.6	27.2
FEB													
11...	1330	16700	816	8.1	2.5	6.0	16	12.8	100	731	280	68.9	25.3
MAR													
27...	1100	28500	749	8.2	3.0	6.5	30	13.1	100	744	250	61.3	22.4
APR													
12...	1030	29500	768	8.3	11.0	17.5	31	10.3	100	741	250	61.1	23.7
24...	1200	28600	791	8.5	13.0	11.5	31	10.2	100	734	270	65.6	25.9
MAY													
07...	1130	28400	802	8.6	15.5	16.5	33	9.6	100	735	280	69.3	26.9
13...	1030	33500	713	8.3	12.0	14.5	290	8.9	100	741	240	59.5	22.7
JUN													
04...	1100	28400	780	8.5	23.0	19.5	120	7.3	100	735	260	62.5	24.6
12...	1300	41500	689	8.1	18.5	22.0	--	5.2	100	--	220	55.3	20.7
JUL													
02...	0930	28800	782	8.5	27.0	24.5	38	7.7	100	737	250	60.1	24.5
15...	1100	27500	788	8.5	26.0	23.0	41	7.8	100	738	230	57.0	22.3
AUG													
12...	1100	28200	779	8.6	26.5	25.5	22	8.0	100	732	250	60.0	23.7
SEP													
10...	1100	31900	770	8.5	25.0	19.5	25	7.9	100	739	240	56.0	23.3

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

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

Date	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	SODIUM AD-SORP-TION RATIO (00931)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	SOLIDS, DIS-SOLVED (TONS PER AC-FT) (70303)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)
OCT													
16...	73.9	2	6.33	163	2	195	235	14.5	.5	8.36	564	.77	.36
DEC													
05...	59.3	2	5.82	190	0	232	197	17.0	.5	10.4	552	.75	1.28
JAN													
17...	63.5	2	5.81	195	0	238	212	16.6	.5	11.5	568	.77	1.31
FEB													
11...	61.2	2	5.18	197	2	236	195	18.3	.6	12.6	534	.73	E1.16
MAR													
27...	56.1	2	4.96	169	1	204	188	13.6	.5	11.6	484	.66	1.02
APR													
12...	61.2	2	5.54	165	2	198	198	13.2	.4	9.15	497	.68	.72
24...	62.9	2	5.10	178	2	212	204	15.2	.6	7.14	522	.71	.62
MAY													
07...	60.2	2	5.27	176	3	209	205	15.3	.4	6.94	525	.71	1.12
13...	47.7	1	5.17	160	1	192	171	12.3	.4	8.29	457	.62	1.71
JUN													
04...	63.4	2	5.31	165	2	197	205	15.0	.5	5.27	509	.69	.84
12...	49.4	1	5.98	150	1	181	160	12.9	.6	7.14	437	.59	1.70
JUL													
02...	68.6	2	5.27	156	3	184	209	14.0	.4	7.18	517	.70	.12
15...	66.6	2	5.87	162	3	191	211	13.5	.5	6.46	517	.70	.33
AUG													
12...	71.9	2	5.48	154	3	181	212	13.4	.5	6.08	514	.70	.09
SEP													
10...	71.2	2	5.48	--	--	--	206	12.3	.6	7.53	509	.69	.08

Date	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	PHOS-PHORUS DIS-SOLVED (MG/L AS P) (00666)	PHOS-PHORUS TOTAL (MG/L AS P) (00665)	SEDI-MENT, SUS-PENDED (MG/L) (80154)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM (70331)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LITHIUM DIS-SOLVED (UG/L AS LI) (01130)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)
OCT													
16...	E.006	<.04	.55	.031	.036	.172	221	--	27	2.3	<10	53.6	2.8
DEC													
05...	.009	.29	1.1	.047	.060	.39	327	18500	61	2.0	<10	48.0	2.5
JAN													
17...	.011	.20	.78	.064	.071	.167	122	5500	43	2.2	<10	44.1	3.0
FEB													
11...	E.007	E.14	.48	.039	.048	.117	106	4780	50	1.9	<10	43.8	3.0
MAR													
27...	.011	.06	.44	.037	.044	.20	218	16800	34	2.3	<10	44.1	3.0
APR													
12...	.009	E.02	.63	.049	.060	.23	240	19100	32	2.2	<10	40.9	2.1
24...	.008	<.04	.69	.020	.028	.185	232	17900	27	2.4	<10	45.2	2.1
MAY													
07...	.008	<.04	.69	.014	.021	.169	183	14000	39	2.4	<10	48.9	2.8
13...	.024	.11	2.1	.054	.064	.74	799	72300	80	2.4	<10	36.4	2.5
JUN													
04...	.009	<.04	1.2	.025	.035	.32	318	24400	73	2.3	<10	48.9	3.4
12...	.072	.07	4.9	.086	.098	2.33	2150	241000	95	2.9	<10	47.0	3.0
JUL													
02...	.008	<.04	.65	.008	.015	.150	166	12900	47	2.5	<10	49.2	2.8
15...	.009	<.04	.66	.019	.025	.153	162	12000	54	2.5	<10	50.1	2.6
AUG													
12...	.008	<.04	.65	.015	.022	.162	373	28400	19	2.4	<10	45.3	2.2
SEP													
10...	.009	<.04	.54	.018	.025	.153	155	13400	41	2.5	<10	47.7	1.7

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

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

Date	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	VANA-DIUM, DIS-SOLVED (UG/L AS V) (01085)	DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040)	PH WATER WHOLE LAB (STAND-ARD UNITS) (00403)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC PARTIC-ULATE TOTAL (MG/L AS C) (00689)	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)
OCT													
16...	549	2.5	E.010	8.4	.28	3.8	--	<.010	<.002	<.011	<.01	<.018	<.003
DEC													
05...	576	2.2	E.007	8.0	.61	3.7	7.2	<.010	<.002	<.011	M	<.018	<.003
JAN													
17...	586	4.2	E.007	8.1	.59	3.5	1.5	<.010	<.002	<.005	M	<.018	<.003
FEB													
11...	559	1.9	<.010	8.2	.39	3.0	1.5	<.010	<.002	<.005	M	<.018	<.003
MAR													
27...	488	.7	E.004	8.1	.29	3.2	1.8	<.010	<.002	<.005	M	<.018	<.003
APR													
12...	502	3.6	E.004	8.2	.30	4.0	3.2	<.010	<.002	<.005	M	<.018	<.003
24...	518	3.0	E.005	8.4	.27	3.5	4.0	<.010	<.002	<.005	E.01	<.018	<.003
MAY													
07...	527	4.7	E.014	8.4	.29	3.3	2.7	<.010	<.002	<.005	E.01	<.018	<.003
13...	463	3.9	E.067	7.9	.56	3.9	11.1	<.010	<.002	.010	E.01	.040	<.003
JUN													
04...	502	4.8	E.031	8.3	.23	3.4	7.4	<.010	<.002	.005	M	E.005	<.003
12...	411	3.8	E.222	8.0	.43	4.2	36.2	<.010	<.002	.030	E.01	<.018	<.003
JUL													
02...	541	3.2	E.012	8.1	.19	3.1	3.6	<.010	<.002	<.005	E.01	<.018	<.003
15...	525	3.2	E.014	8.3	.24	3.0	2.8	<.010	<.002	<.005	E.01	E.005	<.003
AUG													
12...	511	3.9	E.012	8.5	.23	3.3	3.7	<.010	<.002	E.003	E.01	<.018	<.003
SEP													
10...	520	5.2	E.009	8.4	.23	3.2	2.3	<.010	<.002	<.005	E.01	<.018	<.003

Date	ALKA-LINITY WAT.DIS FET LAB CACO3 (MG/L) (29801)	ALPHA BHC DIS-SOLVED (UG/L) (34253)	P,P' DDE DISSOLV (UG/L) (34653)	CHLOR-PYRIFOS DIS-SOLVED (UG/L) (38933)	LINDANE DIS-SOLVED (UG/L) (39341)	DI-ELDRIN DIS-SOLVED (UG/L) (39381)	METO-LACHLOR WATER DISSOLV (UG/L) (39415)	MALA-THION, DIS-SOLVED (UG/L) (39532)	PARA-THION, DIS-SOLVED (UG/L) (39542)	DI-AZINON, DIS-SOLVED (UG/L) (39572)	ATRA-ZINE, WATER, DISS, REC (UG/L) (39632)	ALA-CHLOR, WATER, DISS, REC, (UG/L) (46342)	ACETO-CHLOR, WATER FLTRD REC (UG/L) (49260)
OCT													
16...	174	<.005	<.003	<.005	<.004	<.005	E.007	<.027	<.007	<.005	.057	<.002	<.004
DEC													
05...	212	<.005	<.003	<.005	<.004	<.005	E.012	<.027	<.007	<.005	.026	<.002	.011
JAN													
17...	217	<.005	<.003	<.005	<.004	<.005	E.005	<.027	<.010	<.005	.023	<.004	.009
FEB													
11...	202	<.005	<.003	<.005	<.004	<.005	E.005	<.027	<.010	<.005	.025	<.004	<.006
MAR													
27...	178	<.005	<.003	<.005	<.004	<.005	E.009	<.027	<.010	<.005	.021	<.004	<.006
APR													
12...	174	<.005	<.003	<.005	<.004	<.005	.016	<.027	<.010	<.005	.029	<.004	<.006
24...	187	<.005	<.003	<.005	<.004	<.005	.030	<.027	<.010	<.005	.084	<.004	.108
MAY													
07...	190	<.005	<.003	<.005	<.004	<.005	.039	<.027	<.010	<.005	.082	<.004	.078
13...	168	<.005	<.003	E.004	<.004	<.005	1.58	<.027	<.010	E.005	4.11	.007	3.75
JUN													
04...	174	<.005	<.003	<.005	<.004	<.005	.105	<.027	<.010	<.005	.636	<.004	.121
12...	164	<.005	<.003	.005	<.004	<.005	2.00	<.027	<.010	<.005	7.16	.063	.713
JUL													
02...	171	<.005	<.003	<.005	<.004	<.005	.014	<.027	<.010	<.005	.091	<.004	.008
15...	171	<.005	<.003	<.005	<.004	<.005	.018	<.027	<.010	<.005	.134	<.004	.011
AUG													
12...	168	<.005	<.003	<.005	<.004	<.005	.014	<.027	<.010	E.003	.050	<.004	.008
SEP													
10...	168	<.005	<.003	<.005	<.004	<.005	E.007	<.027	<.010	<.005	.028	<.004	<.006

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

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

Date	METRI-BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	2,6-DI-ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	TRI-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	ETHAL-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	TER-BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	LIN-URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	METHYL PARA-THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	PEB-ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	MOL-INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	ETHO-PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)
OCT													
16...	<.006	<.002	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.002	<.02	<.002	<.005
DEC													
05...	<.006	<.002	<.009	<.009	<.011	<.034	<.035	<.006	<.015	<.002	<.02	<.002	<.005
JAN													
17...	<.006	<.006	<.009	<.009	<.011	<.034	<.035	<.006	.005	<.004	<.02	<.002	<.005
FEB													
11...	<.006	<.006	<.009	<.009	<.011	<.034	<.035	<.006	.004	<.004	<.02	<.002	<.005
MAR													
27...	<.006	<.006	<.009	<.009	<.011	<.034	<.035	<.006	E.001	<.004	<.02	<.002	<.005
APR													
12...	<.006	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	M	<.002	<.005
24...	<.006	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02	<.002	<.005
MAY													
07...	<.006	<.006	<.009	<.009	<.011	<.034	<.035	<.006	.005	<.004	<.02	<.002	<.005
13...	.014	<.006	E.004	<.009	<.011	<.034	<.035	<.006	.013	<.004	<.02	<.002	<.005
JUN													
04...	<.006	<.006	E.004	<.009	<.011	<.034	<.035	<.006	E.002	<.004	<.02	<.002	<.005
12...	.011	<.006	.022	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02	<.002	<.005
JUL													
02...	<.006	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02	<.002	<.005
15...	<.006	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02	<.002	<.005
AUG													
12...	<.006	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02	<.002	<.005
SEP													
10...	<.006	<.006	<.009	<.009	<.011	<.034	<.035	<.006	<.002	<.004	<.02	<.002	<.005

Date	BEN-FLUR-ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	CARBO-FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	TER-BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	PRON-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	DISUL-FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	TRIAL-LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	PRO-PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	CAR-BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	THIO-BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	PENDI-METH-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	NAPROP-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PRO-PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)
OCT													
16...	<.010	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.010	<.007	<.02
DEC													
05...	<.010	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.010	<.007	<.02
JAN													
17...	<.010	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02
FEB													
11...	<.010	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02
MAR													
27...	<.010	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02
APR													
12...	<.010	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02
24...	<.010	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02
MAY													
07...	<.010	E.012	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02
13...	<.010	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	E.015	<.007	<.02
JUN													
04...	<.010	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02
12...	<.010	E.117	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	E.017	<.007	<.02
JUL													
02...	<.010	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02
15...	<.010	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02
AUG													
12...	<.010	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02
SEP													
10...	<.010	<.020	<.02	<.004	<.02	<.002	<.011	<.041	<.005	<.003	<.022	<.007	<.02

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

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

Date	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						
16...	<.050	<.006	821	117	85.4	116
DEC						
05...	<.050	<.006	825	97.1	92.6	112
JAN						
17...	<.050	<.006	836	100	93.8	134
FEB						
11...	<.050	<.006	809	109	102	108
MAR						
27...	<.050	<.006	748	105	96.3	100
APR						
12...	<.050	<.006	755	110	93.6	100
24...	<.050	<.006	750	104	95.3	110
MAY						
07...	<.050	<.006	781	117	99.0	107
13...	<.050	<.006	680	116	106	95
JUN						
04...	<.050	<.006	737	125	95.3	116
12...	<.050	<.006	667	118	90.2	119
JUL						
02...	<.050	<.006	762	101	94.4	105
15...	<.050	<.006	747	130	102	120
AUG						
12...	<.050	<.006	754	112	99.0	109
SEP						
10...	<.050	<.006	724	93.7	97.3	170

Date	Time	NUMBER OF SAM-PLING POINTS (COUNT) (00063)	BED MAT. SIEVE DIAM. % FINER THAN .062 MM (80164)	BED MAT. SIEVE DIAM. % FINER THAN .125 MM (80165)	BED MAT. SIEVE DIAM. % FINER THAN .250 MM (80166)	BED MAT. SIEVE DIAM. % FINER THAN .500 MM (80167)	BED MAT. SIEVE DIAM. % FINER THAN 1.00 MM (80168)	BED MAT. SIEVE DIAM. % FINER THAN 2.00 MM (80169)	BED MAT. SIEVE DIAM. % FINER THAN 4.00 MM (80170)	BED MAT. SIEVE DIAM. % FINER THAN 8.00 MM (80171)	BED MAT. SIEVE DIAM. % FINER THAN 16.0 MM (80172)
OCT											
10...	1255	3	--	0	19	93	99	100	--	--	--
NOV											
06...	1400	3	--	0	23	87	97	99	99	100	--
DEC											
05...	1245	3	--	0	18	83	96	99	100	--	--
JAN											
07...	1600	3	--	0	26	96	99	100	--	--	--
FEB											
11...	1320	3	--	0	27	92	99	100	--	--	--
MAR											
07...	1415	3	--	0	23	93	99	99	100	--	--
APR											
09...	1230	3	--	0	24	96	99	100	--	--	--
MAY											
03...	1100	3	--	0	22	95	99	99	99	100	--
JUN											
04...	1040	3	--	0	21	90	97	98	98	98	100
07...	1000	3	--	0	15	56	71	89	97	100	--
JUL											
05...	0745	3	--	0	19	91	98	100	--	--	--
AUG											
02...	1030	3	0	1	29	93	99	100	--	--	--

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

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	766	---	---	---	---	768	---	---	779	---	---
2	796	---	---	---	---	---	---	---	---	---	808	---
3	---	---	---	---	---	---	---	784	---	---	---	802
4	---	---	---	---	---	---	770	---	765	---	---	---
5	798	---	769	---	---	---	---	---	---	784	805	---
6	---	751	---	---	---	---	---	---	---	---	---	790
7	---	---	---	755	---	731	---	787	772	---	---	---
8	---	747	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	745	---	---	---	783	---
10	790	---	749	---	---	---	---	777	781	786	---	780
11	---	---	---	---	738	---	---	---	---	---	---	---
12	765	---	---	---	---	---	754	---	686	769	795	---
13	---	---	---	---	---	760	---	---	---	---	---	788
14	---	---	---	761	---	---	---	732	---	---	---	---
15	---	744	---	---	---	---	770	---	---	786	---	---
16	765	---	---	---	---	---	---	---	---	---	797	777
17	---	---	---	---	---	---	---	788	768	---	---	---
18	773	---	---	---	---	---	---	---	---	---	---	---
19	---	---	760	---	---	---	775	---	---	791	---	---
20	---	730	---	---	---	---	---	782	---	---	785	779
21	---	---	---	---	---	754	---	---	770	---	---	---
22	---	---	---	761	740	---	---	---	---	783	---	---
23	770	730	---	---	---	---	784	---	---	---	774	772
24	---	---	---	---	---	---	---	788	790	---	---	785
25	765	---	---	---	---	---	---	---	---	780	---	---
26	---	---	---	---	---	---	787	---	---	---	756	---
27	---	---	---	---	---	---	---	---	---	---	---	782
28	---	---	---	741	---	735	---	---	783	---	---	---
29	740	757	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	768	770	---	796	804	790
31	---	---	---	---	---	---	---	---	---	---	---	---

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	11.0	---	---	---	---	7.0	---	---	28.0	---	---
2	19.5	---	---	---	---	---	---	---	---	---	28.0	---
3	---	---	---	---	---	---	---	12.5	---	---	---	25.5
4	---	---	---	---	---	---	6.0	---	23.0	---	---	---
5	18.0	---	6.5	---	---	---	---	---	---	27.0	27.0	---
6	---	12.0	---	---	---	---	---	---	---	---	---	25.0
7	---	---	---	0.5	---	1.5	---	15.5	21.0	---	---	---
8	---	13.0	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	8.5	---	---	---	26.0	---
10	16.5	---	3.6	---	---	---	---	14.0	24.0	28.0	---	25.0
11	---	---	---	---	2.5	---	---	---	---	---	---	---
12	16.0	---	---	---	---	---	11.0	---	18.5	---	26.5	---
13	---	---	---	---	---	2.5	---	---	---	---	---	25.0
14	---	---	---	2.8	---	---	---	13.0	---	---	---	---
15	---	13.5	---	---	---	---	13.5	---	---	26.0	---	---
16	13.5	---	---	---	---	---	---	---	---	---	24.0	22.0
17	---	---	---	---	---	---	---	16.0	23.0	---	---	---
18	11.7	---	---	---	---	---	---	---	---	---	---	---
19	---	---	4.0	---	---	---	18.5	---	---	27.5	---	---
20	---	10.5	---	---	---	---	---	15.5	---	---	22.5	26.0
21	---	---	---	---	---	4.0	---	---	25.0	---	---	---
22	---	---	---	2.0	4.8	---	---	---	---	16.0	---	---
23	13.5	9.0	---	---	---	---	12.5	---	---	---	24.5	19.5
24	---	---	---	---	---	---	---	17.0	26.5	---	---	19.0
25	12.0	---	---	---	---	---	---	---	---	27.0	---	---
26	---	---	---	---	---	---	14.0	---	---	---	24.9	---
27	---	---	---	---	---	---	---	---	---	---	---	24.0
28	---	---	---	2.5	---	4.5	---	---	28.0	---	---	---
29	8.5	3.5	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	11.5	22.5	---	29.5	25.5	17.5
31	---	---	---	---	---	---	---	---	---	---	---	---

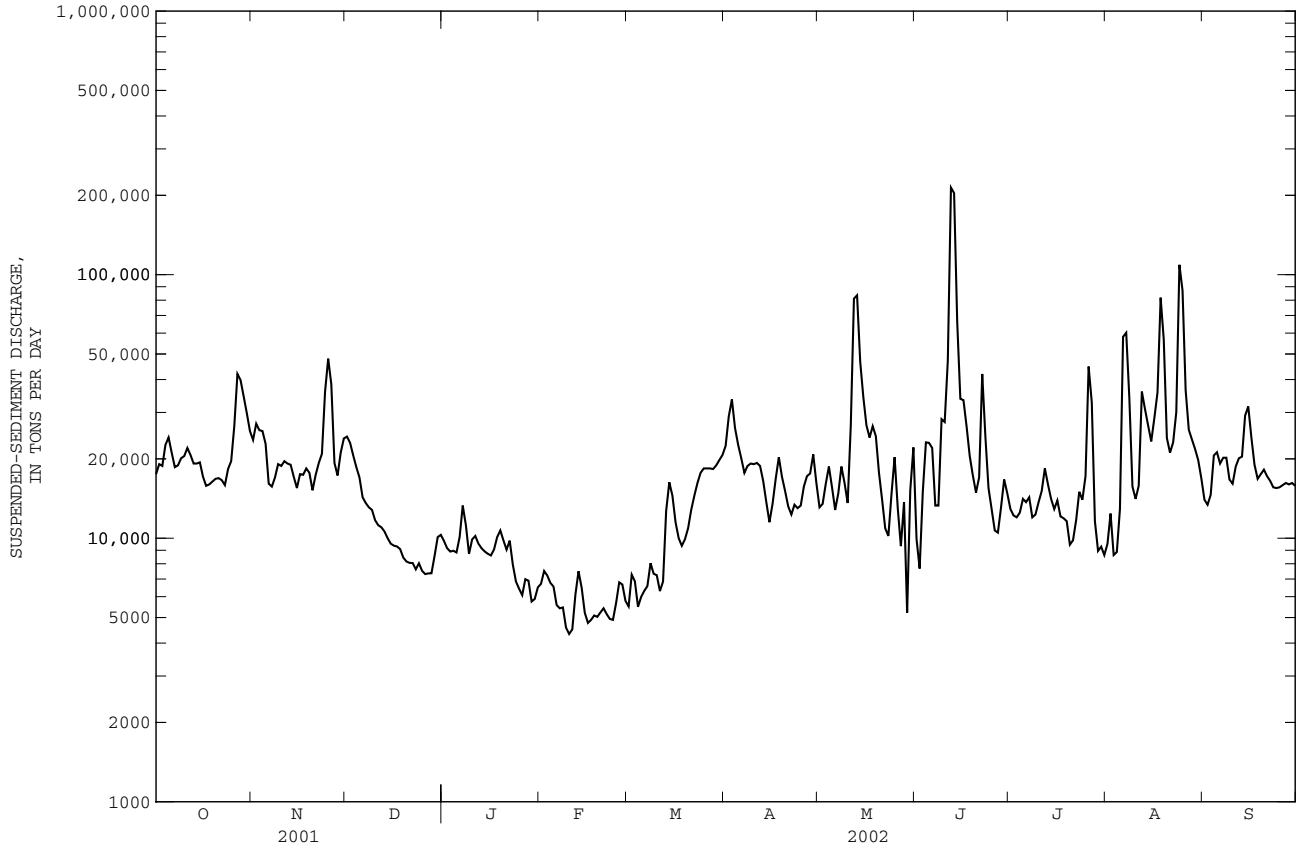
06610000 MISSOURI RIVER AT OMAHA, NE--Continued
(National stream-quality accounting network station)

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	212	17500	275	23600	337	24300	205	9760	153	6710	119	5510
2	227	19100	315	27200	329	23000	195	9170	164	7510	145	7270
3	225	18800	300	25700	319	20600	189	8900	157	7220	142	6860
4	268	22600	299	25500	314	18600	191	8960	149	6770	117	5490
5	289	24100	269	22800	304	17000	188	8830	145	6550	122	5990
6	258	21100	191	16100	263	14300	209	10100	127	5580	127	6310
7	229	18600	186	15700	252	13600	259	13300	124	5420	128	6580
8	234	18900	200	17000	249	13100	234	11200	123	5460	167	8040
9	246	20100	224	19100	244	12800	191	8720	105	4580	159	7330
10	249	20500	221	18800	224	11700	212	9890	98	4330	160	7240
11	265	22000	228	19600	217	11200	219	10200	99	4510	146	6300
12	251	20700	226	19200	215	11000	207	9540	130	6110	163	6850
13	236	19200	223	19000	210	10600	202	9160	156	7490	273	12700
14	237	19200	200	17100	199	10000	197	8910	138	6480	323	16300
15	239	19400	180	15500	191	9530	193	8730	117	5210	297	14500
16	213	17100	203	17500	191	9370	190	8600	107	4770	242	11500
17	196	15800	200	17400	191	9300	202	9070	109	4900	212	10000
18	196	16000	211	18400	187	9090	222	10100	113	5090	201	9360
19	199	16400	205	17700	174	8440	232	10700	111	5030	210	9910
20	203	16800	176	15200	170	8160	217	9810	114	5230	224	10900
21	205	16900	202	17400	169	8060	205	9050	116	5420	238	12800
22	199	16600	226	19300	170	8050	220	9790	111	5150	241	14500
23	191	15900	246	20900	163	7620	181	7940	108	4940	240	16200
24	218	18300	413	36000	171	8030	156	6850	106	4900	240	17700
25	234	19600	536	48000	165	7520	148	6430	119	5680	240	18400
26	315	26600	442	38400	163	7310	143	6080	139	6800	240	18400
27	496	42000	252	19300	165	7350	162	6990	136	6670	239	18400
28	472	39800	229	17300	165	7360	161	6900	124	5780	240	18300
29	411	34500	275	21100	186	8570	137	5750	---	---	247	18900
30	353	29800	323	23900	211	10100	139	5880	---	---	257	19800
31	303	25500	---	---	214	10300	151	6510	---	---	267	20700
TOTAL	---	669400	---	649700	---	355960	---	271820	---	160290	---	369040

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	285	22400	169	13100	131	9940	164	12900	131	9500	166	14000
2	356	29000	175	13500	102	7670	157	12200	171	12400	159	13400
3	402	33600	204	16100	197	15000	155	12000	119	8630	171	14600
4	319	26200	239	18700	301	23100	163	12500	121	8860	239	20600
5	286	22600	203	15600	298	23000	183	14100	169	12900	246	21200
6	258	20100	168	12800	285	22000	179	13700	673	58100	223	19200
7	230	17700	192	14800	175	13300	188	14300	710	60200	233	20200
8	240	18800	243	18700	175	13300	160	12000	426	34100	234	20200
9	245	19200	213	16200	357	28300	164	12300	203	15700	193	16700
10	245	19100	179	13600	352	27600	184	13700	185	14100	186	16100
11	245	19300	343	26900	568	47200	196	15100	206	15800	213	18700
12	239	18800	906	81100	1960	214000	227	18400	467	36000	229	20100
13	210	16500	927	83500	1880	204000	210	16000	405	30900	230	20400
14	179	13700	557	46700	729	65900	189	14100	352	26800	330	29200
15	153	11500	423	34300	396	33800	174	12900	309	23300	352	31600
16	176	13500	338	26800	389	33400	188	13900	386	28600	273	24100
17	217	16800	308	24100	310	26500	165	12100	441	35700	224	19000
18	257	20300	337	26600	242	20500	163	11900	853	81800	198	16800
19	217	17100	311	24400	208	17300	158	11600	609	56700	203	17500
20	195	15100	231	17700	182	14900	130	9450	270	24000	209	18200
21	172	13200	185	14000	207	17000	135	9820	238	21100	205	17200
22	159	12300	145	10900	490	42000	161	11700	256	23100	200	16500
23	171	13400	136	10200	298	24300	202	15000	306	30100	195	15600
24	169	13000	193	14700	195	15500	191	14000	1020	109000	195	15500
25	173	13300	262	20300	163	12900	233	17200	834	87100	195	15600
26	203	15700	172	13000	136	10700	577	44800	377	36400	194	15900
27	221	17200	124	9330	133	10500	418	32700	281	25800	194	16200
28	226	17600	180	13700	164	13100	156	11600	263	23700	191	16000
29	259	20800	69	5220	211	16700	122	8950	246	21800	189	16200
30	204	16200	186	15200	188	14800	127	9290	226	19800	179	15800
31	---	---	273	22100	---	---	118	8630	197	16900	---	---
TOTAL	---	544000	---	693850	---	1038210	---	448840	---	1008890	---	552300
YEAR		6762300										

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



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 NGVD of 1929, supplementary adjustment of 1954. See WSP 1918 or 1919 for history of changes prior to Apr. 1, 1963.

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. 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 FROM THE DCP, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33100	35500	33200	19100	19000	20500	33900	33600	34500	30500	27300	33800
2	33100	35500	31400	19100	17600	20800	34600	33200	33200	30100	27000	33800
3	33400	35800	29800	19100	18600	20300	35000	33300	32700	29700	26900	34400
4	33400	35900	28200	19100	18900	18300	35000	33600	33000	29700	27000	34000
5	33600	35600	27600	19500	18900	18700	34600	32900	32700	29500	27600	33800
6	33500	35600	27700	20000	19800	20700	34000	33000	32300	29400	29100	33700
7	33700	35400	27800	21600	20500	21700	32800	33400	32000	29200	32000	33800
8	33600	35700	27600	23000	22100	22700	33300	33800	31500	29100	30500	33800
9	34300	35700	26600	21700	23400	22200	33700	32900	31900	29200	29100	33700
10	35800	35800	26400	21300	24300	22100	33800	33100	32700	28900	28900	33600
11	35700	35800	26000	23300	24300	22500	34200	35000	33600	29300	28700	33700
12	35900	35600	25800	24300	24500	22900	35200	39400	40200	30800	28700	33700
13	38400	35700	25200	24900	24900	23900	34100	41600	50800	31000	31300	33800
14	36700	35900	25200	25500	25400	27900	34000	39500	45700	29400	29000	34200
15	35500	36300	25200	25900	24900	32900	33500	38000	39000	29200	29100	34400
16	35000	35800	24900	25100	24900	30900	34000	37600	37100	29000	29200	34600
17	34700	36300	24500	24100	25700	28200	34200	36700	36000	28600	30300	33600
18	34900	36100	24600	23400	25200	26800	34200	36300	35000	28200	34200	32900
19	35000	36000	24600	23900	25400	26400	34800	36300	34200	27900	37400	33400
20	35100	35700	24000	23500	25600	26300	34100	35400	33600	27700	38900	34000
21	34900	35500	24100	22400	25300	27000	33800	34800	33300	27400	36200	33500
22	34900	35800	23100	22200	24800	29100	33200	34100	33500	27200	39000	32600
23	36000	35800	23100	22500	24100	30200	33600	34200	33600	27500	51200	32100
24	35300	37400	23700	22300	23900	31200	33400	33900	32700	27700	43400	31400
25	35300	38900	22200	22100	24000	33100	32900	35000	31900	27800	40500	31300
26	35100	40500	20200	22400	24600	32900	32800	34200	31500	28100	37500	31600
27	34900	39700	19700	23100	23900	33300	33700	33700	31400	30100	35300	32400
28	35000	38000	19300	23900	21700	34100	33800	35000	31600	28900	34500	32500
29	34900	37200	19000	23300	---	34300	33900	35900	31400	27700	34000	32900
30	34900	35600	20100	21800	---	33600	34200	36100	31000	27600	35600	33800
31	34900	---	19500	21200	---	34000	---	36200	---	27400	34500	---
TOTAL	1080500	1090100	770300	694600	646200	829500	1018300	1091700	1033600	893800	1023900	1000800
MEAN	34850	36340	24850	22410	23080	26760	33940	35220	34450	28830	33030	33360
MAX	38400	40500	33200	25900	25700	34300	35200	41600	50800	31000	51200	34600
MIN	33100	35400	19000	19100	17600	18300	32800	32900	31000	27200	26900	31300
AC-FT	2143000	2162000	1528000	1378000	1282000	1645000	2020000	2165000	2050000	1773000	2031000	1985000
CFSM	0.09	0.09	0.06	0.05	0.06	0.07	0.08	0.09	0.08	0.07	0.08	0.08
IN.	0.10	0.10	0.07	0.06	0.06	0.08	0.09	0.10	0.09	0.08	0.09	0.09

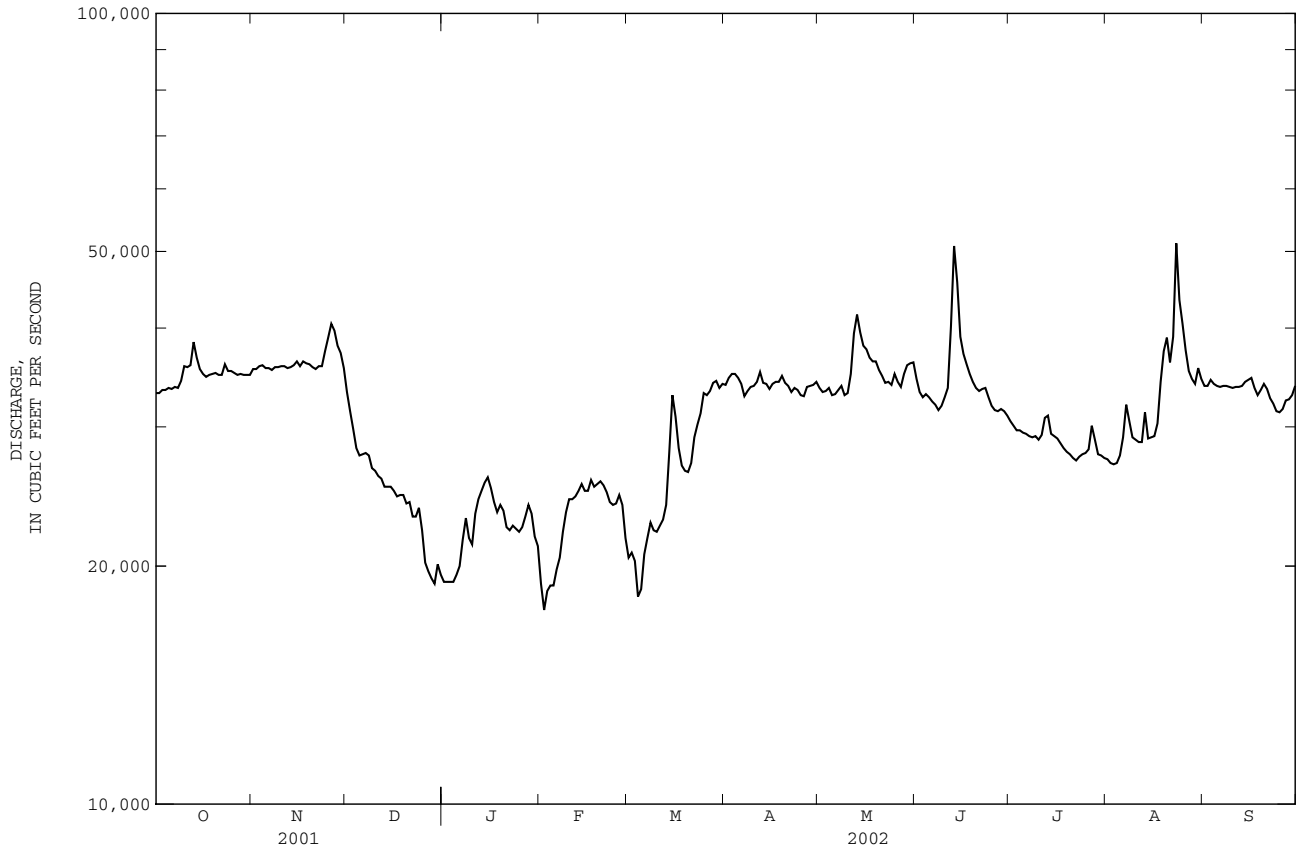
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 2002, BY WATER YEAR (WY)

MEAN	42820	39030	25620	21540	26570	37900	47820	47700	52170	46240	42650	42520
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	28830	29870	32560
(WY)	1962	1962	1956	1957	1957	1957	1957	1955	1958	2002	1955	1958

06807000 MISSOURI RIVER AT NEBRASKA CITY, NE--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1953 - 2002a	
ANNUAL TOTAL	13785000		11173300			
ANNUAL MEAN	37770		30610		39410	
HIGHEST ANNUAL MEAN					66450	1997
LOWEST ANNUAL MEAN					25370	1957
HIGHEST DAILY MEAN	95500	May 6	51200	Aug 23	188000	Jul 25 1993
LOWEST DAILY MEAN	18800	Feb 5	17600	Feb 2	4320	Jan 11 1957
ANNUAL SEVEN-DAY MINIMUM	20000	Dec 25	19000	Feb 1	5590	Nov 29 1955
MAXIMUM PEAK FLOW			58400	Aug 23	196000	Jul 23 1993
MAXIMUM PEAK STAGE			14.33	Aug 23	27.19	Jul 23 1993
INSTANTANEOUS LOW FLOW			17500	Feb 2		
ANNUAL RUNOFF (AC-FT)	27340000		22160000		28550000	
ANNUAL RUNOFF (CFSM)	0.092		0.075		0.096	
ANNUAL RUNOFF (INCHES)	1.25		1.01		1.31	
10 PERCENT EXCEEDS	57800		36000		61700	
50 PERCENT EXCEEDS	35400		32800		37100	
90 PERCENT EXCEEDS	21700		22200		18000	

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, 80 mg/L Aug. 3, 2002.
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, 840 microsiemens Aug. 30; minimum daily, 586 microsiemens June 14.
WATER TEMPERATURES: Maximum daily, 30.5°C July 8; minimum daily, 0.5°C Jan. 8.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,800 mg/L Aug. 23; minimum daily, 80 mg/L Aug. 3.
SEDIMENT LOADS: Maximum daily, 390,000 tons Aug. 23; minimum daily, 5,790 tons Aug. 3.

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

Date	Time	NUMBER OF SAMPLING POINTS (COUNT) (00063)	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										
10...	1025	3	0	17	61	70	86	98	100	--
NOV										
06...	1100	3	0	14	39	56	76	93	100	--
DEC										
10...	1601	3	0	8	48	75	87	93	99	100
JAN										
08...	1100	3	0	8	49	78	94	98	100	--
FEB										
13...	1500	3	0	20	68	83	91	97	100	--
20...	1415	3	0	19	67	90	98	100	--	--
MAR										
07...	1040	3	0	23	89	98	99	100	--	--
APR										
09...	0930	3	0	12	45	70	84	94	98	100
MAY										
03...	0920	3	0	18	62	81	94	99	100	--
JUL										
05...	0930	3	0	9	41	63	81	96	100	--
AUG										
02...	0850	3	0	13	47	71	90	98	100	--

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

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	749	---	---	---	---	682	---	---	792	---	---
2	748	---	---	---	---	---	---	---	---	---	818	---
3	---	---	---	---	---	---	---	758	753	---	---	779
4	---	---	---	---	---	---	772	---	---	---	---	---
5	771	---	---	---	---	---	---	---	---	807	823	---
6	---	745	---	---	---	---	---	---	---	---	---	782
7	---	---	---	---	---	754	---	---	775	---	---	---
8	---	742	---	776	---	---	---	771	---	809	---	---
9	---	---	---	---	---	---	733	---	---	---	766	783
10	766	---	737	---	---	---	---	759	797	---	---	---
11	---	---	---	---	---	---	746	---	---	---	---	---
12	752	---	---	---	---	739	---	---	---	800	---	---
13	---	---	---	---	703	---	---	---	---	---	744	794
14	---	---	---	---	---	---	---	677	586	---	---	---
15	---	715	---	---	---	---	759	---	---	---	---	---
16	736	---	---	723	---	---	---	---	---	818	805	---
17	---	---	---	---	---	---	---	749	762	---	---	773
18	747	---	---	---	---	---	---	---	---	---	---	---
19	---	---	763	---	---	---	757	---	---	803	---	---
20	---	714	---	---	699	---	---	775	---	---	698	780
21	---	---	---	---	---	---	---	---	796	---	---	---
22	---	---	---	---	---	695	---	---	---	802	---	---
23	727	720	---	746	---	---	780	---	---	---	578	---
24	---	---	---	---	---	---	---	790	785	---	---	---
25	763	---	---	---	---	---	---	---	---	796	---	---
26	---	---	---	---	---	---	780	---	---	---	744	---
27	---	---	---	---	---	---	---	---	---	---	---	792
28	---	---	---	679	---	---	---	---	788	---	---	---
29	734	---	---	---	---	661	---	---	---	---	---	---
30	---	708	---	---	---	---	754	713	---	787	840	779
31	---	---	---	---	---	---	---	---	---	---	---	---

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	12.0	---	---	---	---	8.0	---	---	28.5	---	---
2	19.5	---	---	---	---	---	---	---	---	---	27.5	---
3	---	---	---	---	---	---	---	13.5	23.0	---	---	26.0
4	---	---	---	---	---	---	6.0	---	---	---	---	---
5	18.0	---	---	---	---	---	---	---	---	27.5	27.5	---
6	---	12.0	---	---	---	---	---	---	---	---	---	26.0
7	---	---	---	---	---	1.5	---	---	21.5	---	---	---
8	---	13.0	---	0.5	---	---	---	17.5	---	30.5	---	---
9	---	---	---	---	---	---	8.5	---	---	---	26.0	26.5
10	16.5	---	3.9	---	---	---	---	15.5	23.5	---	---	---
11	---	---	---	---	---	---	12.0	---	---	---	---	---
12	16.5	---	---	---	---	2.5	---	---	---	27.0	---	---
13	---	---	---	---	2.5	---	---	---	---	---	26.0	25.0
14	---	---	---	---	---	---	---	13.5	23.5	---	---	---
15	---	12.5	---	---	---	---	14.0	---	---	---	---	---
16	13.0	---	---	2.0	---	---	---	---	---	27.0	24.5	---
17	---	---	---	---	---	---	---	16.5	23.0	---	---	22.0
18	12.5	---	---	---	---	---	---	---	---	---	---	---
19	---	---	4.5	---	---	---	18.5	---	---	28.0	---	---
20	---	10.5	---	---	5.5	---	---	16.5	---	---	22.0	25.5
21	---	---	---	---	---	---	---	---	26.0	---	---	---
22	---	---	---	---	---	3.0	---	---	---	15.0	---	---
23	13.0	9.0	---	2.0	---	---	13.5	---	---	---	24.0	---
24	---	---	---	---	---	---	---	17.0	26.5	---	---	---
25	12.5	---	---	---	---	---	---	---	---	28.0	---	---
26	---	---	---	---	---	---	14.0	---	---	---	25.7	---
27	---	---	---	---	---	---	---	---	---	---	---	23.0
28	---	---	---	2.0	---	---	---	---	28.5	---	---	---
29	9.0	---	---	---	---	7.0	---	---	---	---	---	---
30	---	3.5	---	---	---	---	12.5	22.0	---	29.5	26.0	18.0
31	---	---	---	---	---	---	---	---	---	---	---	---

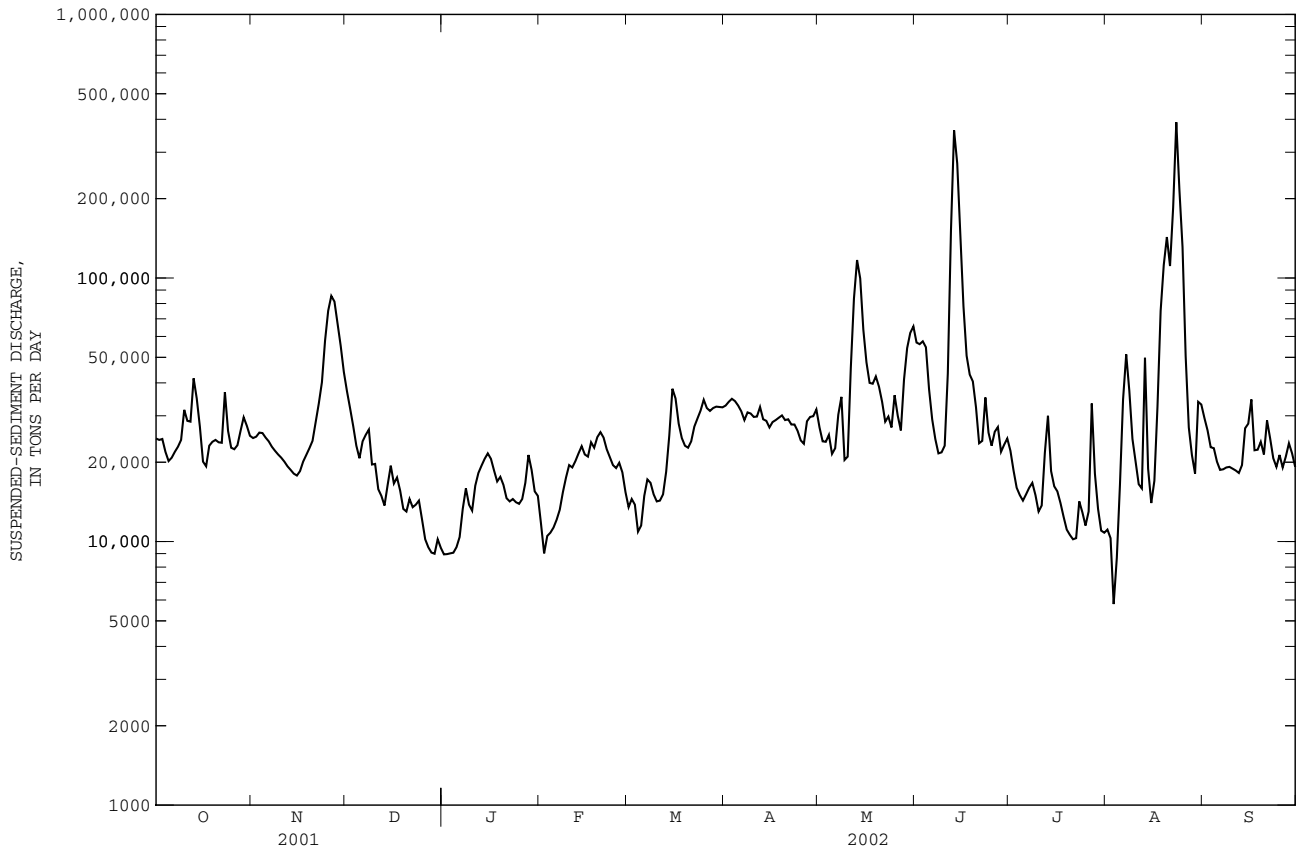
06807000 MISSOURI RIVER AT NEBRASKA CITY, NE.--Continued

SUSPENDED-SEDIMENT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DAY	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN-TRATION (MG/L)	LOAD (TONS/ DAY)
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	275	24600	257	24700	415	37200	173	8940	227	11700	244	13500
2	271	24300	261	25000	378	32000	174	8960	190	9020	258	14500
3	271	24500	268	25900	340	27400	175	9020	209	10500	250	13800
4	243	21900	266	25800	303	23100	176	9070	212	10800	220	10900
5	222	20200	258	24800	278	20700	181	9520	221	11300	228	11500
6	230	20800	250	24000	322	24000	193	10400	226	12100	266	14900
7	241	21900	240	22900	338	25400	227	13300	238	13200	294	17200
8	252	22900	230	22100	357	26600	257	15900	258	15400	272	16700
9	263	24300	222	21400	273	19600	235	13800	278	17500	253	15100
10	326	31600	215	20800	276	19700	228	13100	297	19500	238	14200
11	298	28700	208	20100	226	15800	259	16300	292	19100	235	14300
12	294	28500	201	19300	213	14900	278	18200	304	20200	244	15100
13	401	41600	194	18700	201	13700	289	19400	322	21600	286	18400
14	352	34900	187	18100	241	16400	299	20600	335	23000	336	25300
15	284	27300	181	17800	285	19400	309	21600	318	21400	427	38000
16	212	20100	192	18500	246	16600	304	20600	313	21000	418	34900
17	206	19300	205	20100	264	17500	286	18600	342	23800	368	28000
18	245	23100	219	21300	235	15600	267	16900	334	22700	341	24700
19	253	23900	232	22600	200	13300	273	17600	363	24900	325	23100
20	257	24300	250	24100	201	13000	259	16400	376	26000	320	22700
21	252	23800	296	28400	222	14500	241	14600	363	24800	328	24000
22	251	23700	346	33400	216	13500	237	14200	333	22400	348	27300
23	379	36900	415	40200	221	13800	238	14500	321	20900	360	29300
24	277	26300	572	57900	224	14300	234	14100	302	19500	373	31400
25	238	22700	714	75100	202	12100	233	13900	292	19000	386	34500
26	236	22400	782	85500	186	10200	239	14500	299	19900	362	32100
27	246	23200	759	81400	179	9510	268	16700	283	18300	348	31300
28	278	26300	655	67100	175	9080	330	21300	262	15400	348	32100
29	314	29600	550	55300	175	8990	298	18700	---	---	352	32500
30	292	27500	457	44000	188	10200	263	15500	---	---	357	32400
31	267	25200	---	---	180	9460	261	14900	---	---	352	32300
TOTAL	---	796300	---	1006300	---	537540	---	471110	---	514920	---	726000

DAY	MEA CON TRA (MG	LOAD (TONS/ DAY)	MEAN CONCEN TRATIO (MG/L)	LOAD (TONS/ DAY)	MEAN CONCEN TRATIO (MG/L)	LOAD (TONS/ DAY)	MEAN CONCE TRATI (MG/L	LOAD (TONS/ DAY)	MEAN CONCEN TRATIO (MG/L)	LOAD (TONS/ DAY)	MEAN CONCE TRATI (MG/L	LOAD (TONS/ DAY)
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	358	32800	299	27100	610	56900	268	22100	151	11100	321	29400
2	363	33900	268	24000	627	56100	228	18600	142	10300	290	26400
3	368	34800	266	23900	651	57500	200	16000	80	5790	245	22800
4	361	34100	281	25400	613	54600	187	15000	119	8680	246	22600
5	352	32800	242	21500	430	37900	179	14300	221	16400	220	20100
6	339	31200	254	22600	333	29100	190	15100	438	34600	206	18700
7	326	28900	335	30300	283	24500	203	16000	594	51300	206	18800
8	343	30900	388	35400	254	21600	212	16700	451	37300	209	19100
9	335	30600	230	20400	253	21800	190	15000	311	24500	211	19200
10	325	29700	235	21000	261	23100	166	13000	257	20100	208	18900
11	323	29800	474	45500	473	43400	173	13700	213	16500	204	18600
12	341	32400	781	83500	1310	151000	260	21700	205	15900	200	18200
13	316	29100	1040	117000	2650	363000	358	30000	585	49800	214	19500
14	313	28700	934	99600	2190	272000	233	18500	241	18900	291	26900
15	299	27100	621	63700	1380	146000	205	16200	179	14000	301	28000
16	308	28400	471	47900	778	78100	198	15500	215	17000	371	34600
17	313	28900	403	40000	522	50700	182	14000	396	32600	245	22200
18	320	29500	404	39700	455	43000	163	12400	807	75000	250	22300
19	321	30100	432	42300	438	40500	147	11100	1110	112000	265	23900
20	314	28900	404	38700	356	32300	142	10600	1350	143000	232	21400
21	318	29100	361	33900	263	23600	138	10200	1140	111000	318	28800
22	310	27800	309	28500	266	24100	140	10300	1740	185000	280	24600
23	307	27800	323	29800	389	35200	191	14200	2800	390000	239	20700
24	292	26300	297	27100	294	25900	173	12900	1840	216000	226	19200
25	272	24200	380	35900	268	23100	153	11500	1200	131000	252	21300
26	266	23500	325	30000	306	26100	171	13000	496	50600	224	19100
27	313	28600	290	26400	320	27200	410	33400	284	27100	240	21000
28	324	29700	432	41200	256	21900	231	18100	229	21300	269	23600
29	326	29900	558	54200	275	23300	178	13300	197	18100	243	21600
30	343	31700	635	61900	294	24600	147	11000	353	33900	210	19200
31	---	---	671	65500	---	---	146	10800	356	33100	---	---
TOTAL	---	891200	---	1303900	---	1858100	---	484200	---	1931870	---	670700
YEAR		11192140										

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



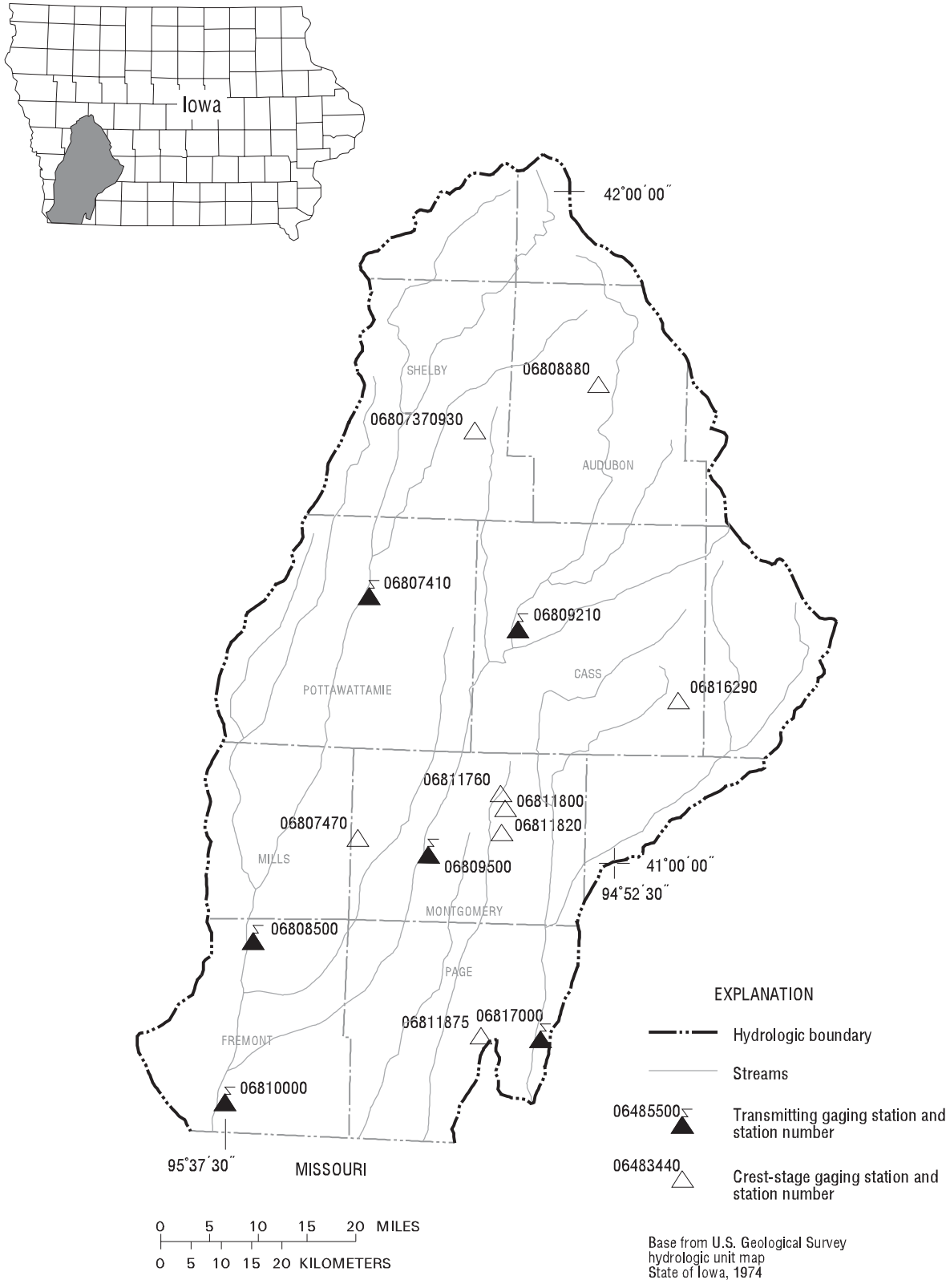


Figure 15. Locations of active continuous-record and crest-stage gaging stations in the Nishnabotna River, Nodaway River, and Missouri River Main Stem drainage basins.

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 NGVD of 1929. 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. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68	68	83	e44	e38	e29	67	242	200	155	78	90
2	68	65	83	e42	e41	e22	65	220	190	145	75	85
3	65	64	81	e60	e42	e18	62	200	195	141	74	78
4	65	65	81	e71	e39	e33	63	180	191	141	78	72
5	66	64	81	e83	e48	e51	65	172	188	138	119	68
6	65	65	89	e64	e58	e51	63	290	180	135	210	64
7	66	64	98	e59	e67	e47	65	257	174	129	161	59
8	66	62	88	e79	e75	e41	69	188	169	125	120	57
9	66	60	82	e87	e76	e38	70	170	165	122	107	54
10	72	63	85	e78	e70	e35	67	156	163	127	98	52
11	74	63	84	e76	e87	e66	70	443	273	173	91	51
12	72	63	88	e81	e91	e96	77	1060	971	190	86	50
13	80	65	84	e87	e114	e122	78	543	1130	158	113	49
14	78	65	80	e71	e123	166	72	431	494	136	190	53
15	72	64	81	e56	138	131	70	374	346	127	123	52
16	68	64	79	e51	156	103	67	345	305	121	102	50
17	66	64	74	e52	169	93	66	316	281	114	103	49
18	66	65	76	e34	163	88	623	287	267	110	99	65
19	65	61	73	e49	133	87	280	270	251	107	91	239
20	64	60	67	e61	111	86	141	258	233	104	88	109
21	65	63	68	e70	100	e60	131	248	223	99	86	81
22	69	65	82	e88	90	e55	132	241	216	102	99	70
23	84	68	78	e67	86	82	132	245	204	105	332	64
24	81	88	60	e91	83	83	182	233	193	98	582	61
25	69	102	e48	106	76	79	126	236	186	108	221	60
26	64	102	e46	104	e19	77	111	230	181	108	167	60
27	64	100	e59	103	e16	75	137	214	174	108	140	62
28	67	95	e51	89	e37	73	525	235	168	103	121	62
29	69	90	e46	e43	---	70	391	257	162	94	111	61
30	68	87	e50	e42	---	69	276	255	157	89	103	58
31	68	---	e42	e44	---	68	---	213	---	84	96	---
TOTAL	2140	2134	2267	2132	2346	2194	4343	9009	8230	3796	4264	2085
MEAN	69.03	71.13	73.13	68.77	83.79	70.77	144.8	290.6	274.3	122.5	137.5	69.50
MAX	84	102	98	106	169	166	623	1060	1130	190	582	239
MIN	64	60	42	34	16	18	62	156	157	84	74	49
AC-FT	4240	4230	4500	4230	4650	4350	8610	17870	16320	7530	8460	4140
CFSM	0.11	0.12	0.12	0.11	0.14	0.12	0.24	0.48	0.45	0.20	0.23	0.11
IN.	0.13	0.13	0.14	0.13	0.14	0.13	0.27	0.55	0.50	0.23	0.26	0.13

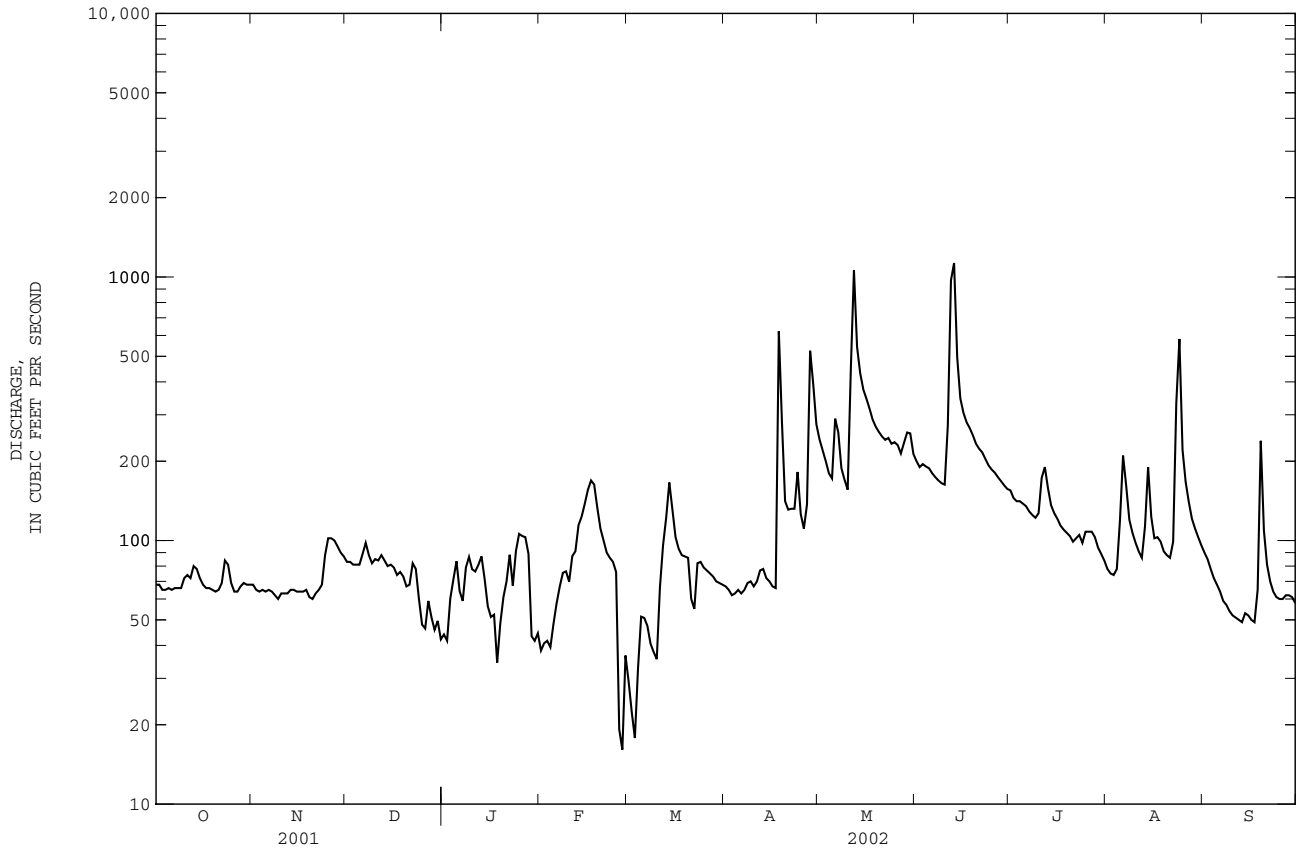
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 2002, BY WATER YEAR (WY)

MEAN	189.8	179.1	154.5	122.1	271.2	515.7	425.7	502.6	598.9	418.1	242.8	287.4
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	30.2	32.1	17.9	4.58	27.2	40.3	45.6	30.1	26.7	38.4	26.4	14.7
(WY)	2001	1971	1971	1971	1967	1968	1968	1967	1977	1970	1968	1971

06807410 WEST NISHNABOTNA RIVER AT HANCOCK, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1960 - 2002	
ANNUAL TOTAL	95936		44940			
ANNUAL MEAN	262.8		123.1		325.5	
HIGHEST ANNUAL MEAN					966	1993
LOWEST ANNUAL MEAN					42.4	1968
HIGHEST DAILY MEAN	4880	Mar 15	1130	Jun 13	23300	Sep 12 1972
LOWEST DAILY MEAN	17	Jan 1	16	Feb 27	2.2	Feb 8 1971a
ANNUAL SEVEN-DAY MINIMUM	23	Jan 1	25	Feb 26	2.5	Feb 4 1971
MAXIMUM PEAK FLOW			1860	Jun 13	30100	Jul 10 1993
MAXIMUM PEAK STAGE			6.14	Jun 13	23.52	Jul 10 1993
ANNUAL RUNOFF (AC-FT)	190300		89140		235800	
ANNUAL RUNOFF (CFSM)	0.43		0.20		0.53	
ANNUAL RUNOFF (INCHES)	5.86		2.75		7.26	
10 PERCENT EXCEEDS	632		235		721	
50 PERCENT EXCEEDS	97		83		160	
90 PERCENT EXCEEDS	30		51		36	

a Also Feb. 9, 1971.
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 NGVD of 1929, 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. 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	171	185	210	e165	e159	e105	180	446	372	290	169	163
2	168	182	203	e161	e162	e109	178	396	340	280	157	155
3	163	178	198	e178	e168	e125	172	360	319	277	148	145
4	169	176	200	e192	e162	e124	169	332	310	274	143	135
5	182	175	198	e202	e169	e138	166	307	312	276	143	128
6	173	175	197	e183	e177	e128	168	313	307	274	152	124
7	171	177	193	e178	e184	e137	174	335	299	265	229	121
8	171	172	204	e207	e187	e139	180	441	291	257	253	117
9	174	166	202	e219	e194	e134	184	306	282	254	191	115
10	183	164	195	e208	e183	e129	186	275	279	258	164	117
11	201	164	196	e206	e189	e125	191	420	851	300	150	116
12	188	169	213	e212	e205	e146	199	1150	873	317	144	118
13	224	171	210	e216	e224	e182	193	1360	1170	329	339	120
14	234	173	204	e201	e243	e240	195	807	1280	314	307	122
15	209	176	199	e186	e257	304	192	646	716	274	244	114
16	190	175	192	e177	262	272	183	569	538	254	220	107
17	183	173	192	e176	286	236	176	519	481	241	202	104
18	181	173	189	e152	303	219	171	472	455	225	200	105
19	180	171	185	e165	316	216	516	438	480	219	168	134
20	180	169	177	e173	296	214	463	417	420	212	265	215
21	179	172	178	e179	261	203	289	400	400	203	185	206
22	181	173	189	e184	244	193	250	389	385	196	280	141
23	230	176	190	e140	235	192	249	426	372	191	887	122
24	233	224	168	e151	226	191	244	411	355	193	492	112
25	213	282	e160	e186	219	207	271	417	342	241	719	108
26	194	256	e158	e207	181	197	239	406	336	384	378	104
27	184	239	e181	209	e134	204	241	396	330	294	284	111
28	184	226	e169	189	e136	197	333	380	320	255	240	117
29	184	220	e165	158	---	196	621	384	313	215	213	113
30	187	216	e169	e142	---	187	604	447	304	197	191	109
31	191	---	e162	e162	---	181	---	436	---	180	173	---
TOTAL	5855	5648	5846	5664	5962	5570	7577	14801	13832	7939	8030	3818
MEAN	188.9	188.3	188.6	182.7	212.9	179.7	252.6	477.5	461.1	256.1	259.0	127.3
MAX	234	282	213	219	316	304	621	1360	1280	384	887	215
MIN	163	164	158	140	134	105	166	275	279	180	143	104
AC-FT	11610	11200	11600	11230	11830	11050	15030	29360	27440	15750	15930	7570
CFSM	0.14	0.14	0.14	0.14	0.16	0.14	0.19	0.36	0.35	0.19	0.20	0.10
IN.	0.16	0.16	0.16	0.16	0.17	0.16	0.21	0.42	0.39	0.22	0.23	0.11

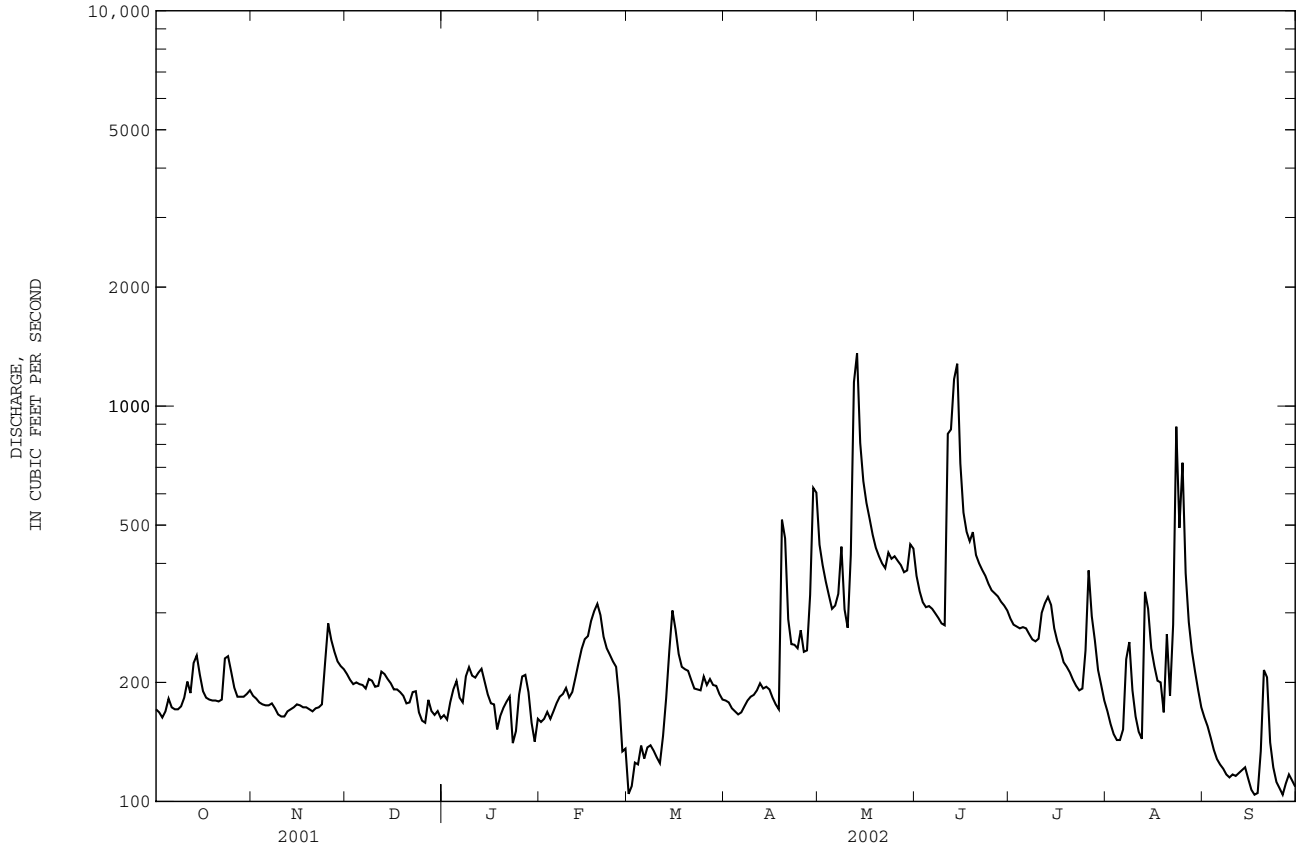
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 2002, BY WATER YEAR (WY)

MEAN	379.5	351.3	302.1	268.1	538.2	949.0	805.3	1047	1254	880.4	590.6	522.4
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 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1949 - 2002	
ANNUAL TOTAL	224558		90542			
ANNUAL MEAN	615.2		248.1		657.4	
HIGHEST ANNUAL MEAN					1985	1993
LOWEST ANNUAL MEAN					111	1968
HIGHEST DAILY MEAN	6680	Mar 15	1360	May 13	25800	Jun 15 1998
LOWEST DAILY MEAN	85	Jan 1	104	Sep 17	10	Dec 17 1955a
ANNUAL SEVEN-DAY MINIMUM	109	Jan 1	111	Sep 24	11	Dec 16 1955
MAXIMUM PEAK FLOW			1680	Jun 14	40800	May 26 1987
MAXIMUM PEAK STAGE			10.43	Jun 14	24.80	Mar 5 1949b
INSTANTANEOUS LOW FLOW			89	Mar 2		
ANNUAL RUNOFF (AC-FT)	445400		179600		476300	
ANNUAL RUNOFF (CFSM)	0.46		0.19		0.50	
ANNUAL RUNOFF (INCHES)	6.30		2.54		6.74	
10 PERCENT EXCEEDS	1500		400		1420	
50 PERCENT EXCEEDS	276		196		342	
90 PERCENT EXCEEDS	143		139		92	

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 NGVD of 1929. 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. 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 FROM THE DCP, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	35	55	e17	e17	e29	32	115	80	e59	31	40
2	29	33	57	e15	e14	e24	31	106	75	e56	29	37
3	28	30	54	e33	e20	e21	29	98	78	54	28	e34
4	30	31	45	e44	e18	e29	30	86	75	54	27	e32
5	31	32	34	e56	e23	e44	30	79	73	52	32	e30
6	29	33	30	e43	e28	e43	29	77	70	49	40	30
7	30	32	29	e37	e31	e39	31	84	66	51	41	28
8	30	31	32	e52	e36	e35	34	70	63	57	34	26
9	32	31	32	e64	e39	e31	36	63	61	50	30	24
10	45	31	34	e58	e25	e27	34	60	62	57	28	24
11	36	31	34	e55	e30	e35	35	287	87	158	26	24
12	35	31	38	e60	e34	50	38	700	527	133	26	24
13	55	32	39	e71	e47	61	39	366	261	94	67	23
14	51	33	36	e56	e51	67	36	258	238	72	49	24
15	42	32	37	e41	52	57	33	217	145	65	36	23
16	35	31	35	e32	62	51	31	195	123	59	31	24
17	33	30	34	e34	74	45	31	176	109	55	36	23
18	32	30	35	e21	67	41	62	154	102	51	34	26
19	32	29	31	e28	61	40	135	140	95	52	34	37
20	32	30	30	e35	59	40	56	130	86	51	40	34
21	32	31	32	e40	53	e19	56	121	82	47	34	27
22	40	32	39	e50	44	e16	52	115	81	48	52	24
23	48	33	28	e45	41	36	55	121	77	45	1730	23
24	46	50	e25	51	40	35	67	118	74	42	589	22
25	37	46	e21	56	34	33	53	119	70	48	218	22
26	34	55	e19	63	e24	37	47	110	69	46	127	21
27	32	67	e32	48	e21	38	74	99	66	47	85	24
28	34	65	e24	34	e35	35	242	95	e63	53	65	25
29	33	60	e19	27	---	33	193	99	e63	42	61	24
30	34	59	e23	e20	---	33	139	92	e61	36	49	23
31	35	---	e15	e26	---	34	---	85	---	34	44	---
TOTAL	1102	1126	1028	1312	1080	1158	1790	4635	3182	1817	3753	802
MEAN	35.55	37.53	33.16	42.32	38.57	37.35	59.67	149.5	106.1	58.61	121.1	26.73
MAX	55	67	57	71	74	67	242	700	527	158	1730	40
MIN	28	29	15	15	14	16	29	60	61	34	26	21
AC-FT	2190	2230	2040	2600	2140	2300	3550	9190	6310	3600	7440	1590
CFSM	0.08	0.09	0.08	0.10	0.09	0.09	0.14	0.34	0.24	0.13	0.28	0.06
IN.	0.09	0.10	0.09	0.11	0.09	0.10	0.15	0.40	0.27	0.16	0.32	0.07

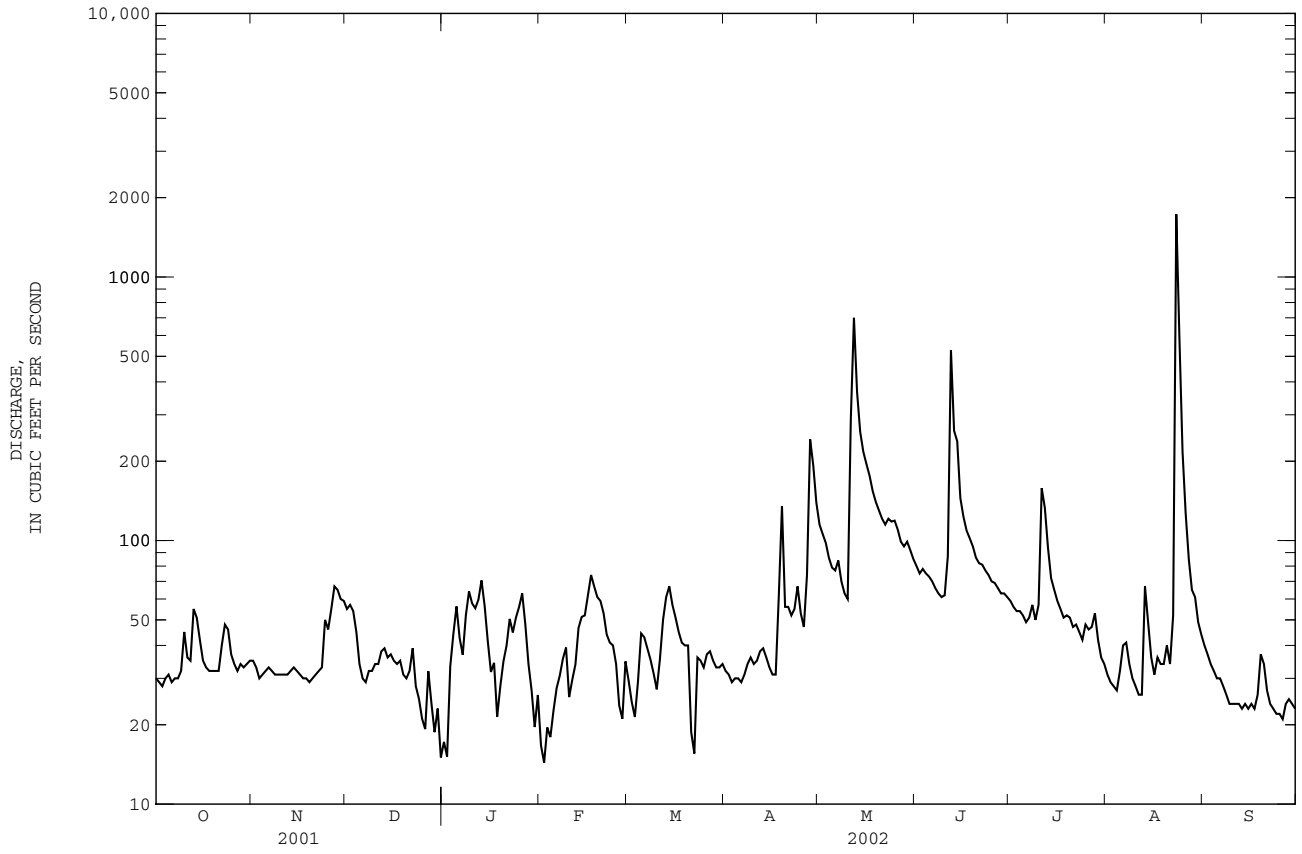
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 2002, BY WATER YEAR (WY)

MEAN	138.7	132.7	108.4	89.75	198.7	402.1	367.1	415.0	507.9	344.0	175.9	205.5
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 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1961 - 2002	
ANNUAL TOTAL	69033		22785			
ANNUAL MEAN	189.1		62.42		257.1	
HIGHEST ANNUAL MEAN					842	1993
LOWEST ANNUAL MEAN					23.7	1968
HIGHEST DAILY MEAN	2960	Mar 15	1730	Aug 23	32300	Jun 15 1998
LOWEST DAILY MEAN	13	Jan 1	14	Feb 2	2.5	Jul 10 1977
ANNUAL SEVEN-DAY MINIMUM	18	Jan 1	20	Jan 30	7.0	Dec 17 1963
MAXIMUM PEAK FLOW			3260	Aug 23	41400	Jun 15 1998
MAXIMUM PEAK STAGE			8.64	Aug 23	22.81	Sep 12 1972
INSTANTANEOUS LOW FLOW			12	Feb 26		
ANNUAL RUNOFF (AC-FT)	136900		45190		186300	
ANNUAL RUNOFF (CFSM)	0.43		0.14		0.59	
ANNUAL RUNOFF (INCHES)	5.89		1.94		8.01	
10 PERCENT EXCEEDS	503		99		571	
50 PERCENT EXCEEDS	52		39		103	
90 PERCENT EXCEEDS	27		24		24	

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 NGVD of 1929. 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. U.S. Army Corps of Engineers rain gage and satellite data collection platform at station.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	77	83	99	e62	e61	e69	84	255	188	115	71	98
2	77	81	96	e61	e59	e64	80	229	176	112	65	90
3	75	75	94	e76	e64	e61	78	205	165	112	61	84
4	75	78	94	e90	e62	e69	77	186	166	110	60	79
5	78	81	95	e103	e67	e84	77	165	162	107	59	75
6	77	83	94	e87	e72	e80	76	159	158	106	61	70
7	75	86	92	e81	e75	e77	77	147	149	104	66	66
8	75	84	90	e97	e80	e72	79	146	142	103	68	61
9	75	83	89	e109	e84	e67	80	123	135	109	61	57
10	86	84	87	e102	e70	e58	83	109	130	105	58	55
11	95	85	89	e100	e74	e56	89	235	438	128	55	56
12	82	87	94	e104	e78	e67	99	1570	392	208	65	53
13	88	89	93	e115	e95	e92	91	1320	715	192	104	53
14	111	91	94	e101	e111	136	91	781	487	153	105	56
15	104	91	91	e86	113	134	90	595	355	124	92	55
16	88	89	91	e76	114	117	80	494	285	113	74	54
17	80	88	88	e77	121	103	77	428	261	107	80	53
18	77	86	87	e54	127	90	75	376	322	103	73	56
19	76	84	86	e67	124	87	100	330	213	100	64	71
20	77	85	83	e79	115	86	162	297	191	96	67	99
21	77	86	83	e84	108	e71	107	266	175	92	70	79
22	81	88	87	e95	99	e70	97	251	170	91	97	60
23	118	90	73	e89	91	87	102	289	166	91	141	52
24	109	107	e65	96	86	92	102	273	163	88	2290	50
25	101	129	e57	90	81	89	111	282	153	134	582	49
26	88	124	e53	91	69	93	94	263	152	105	272	49
27	83	118	e74	93	e68	93	125	242	133	106	193	52
28	81	109	e67	82	e83	93	181	243	121	101	e150	61
29	83	105	e61	64	---	88	455	242	121	100	133	59
30	85	101	e66	e39	---	86	309	227	118	89	119	53
31	83	---	e60	e58	---	84	---	209	---	78	106	---
TOTAL	2637	2750	2572	2608	2451	2615	3428	10937	6702	3482	5562	1905
MEAN	85.06	91.67	82.97	84.13	87.54	84.35	114.3	352.8	223.4	112.3	179.4	63.50
MAX	118	129	99	115	127	136	455	1570	715	208	2290	99
MIN	75	75	53	39	59	56	75	109	118	78	55	49
AC-FT	5230	5450	5100	5170	4860	5190	6800	21690	13290	6910	11030	3780
CFSM	0.10	0.10	0.09	0.09	0.10	0.09	0.13	0.39	0.25	0.13	0.20	0.07
IN.	0.11	0.11	0.11	0.11	0.10	0.11	0.14	0.46	0.28	0.14	0.23	0.08

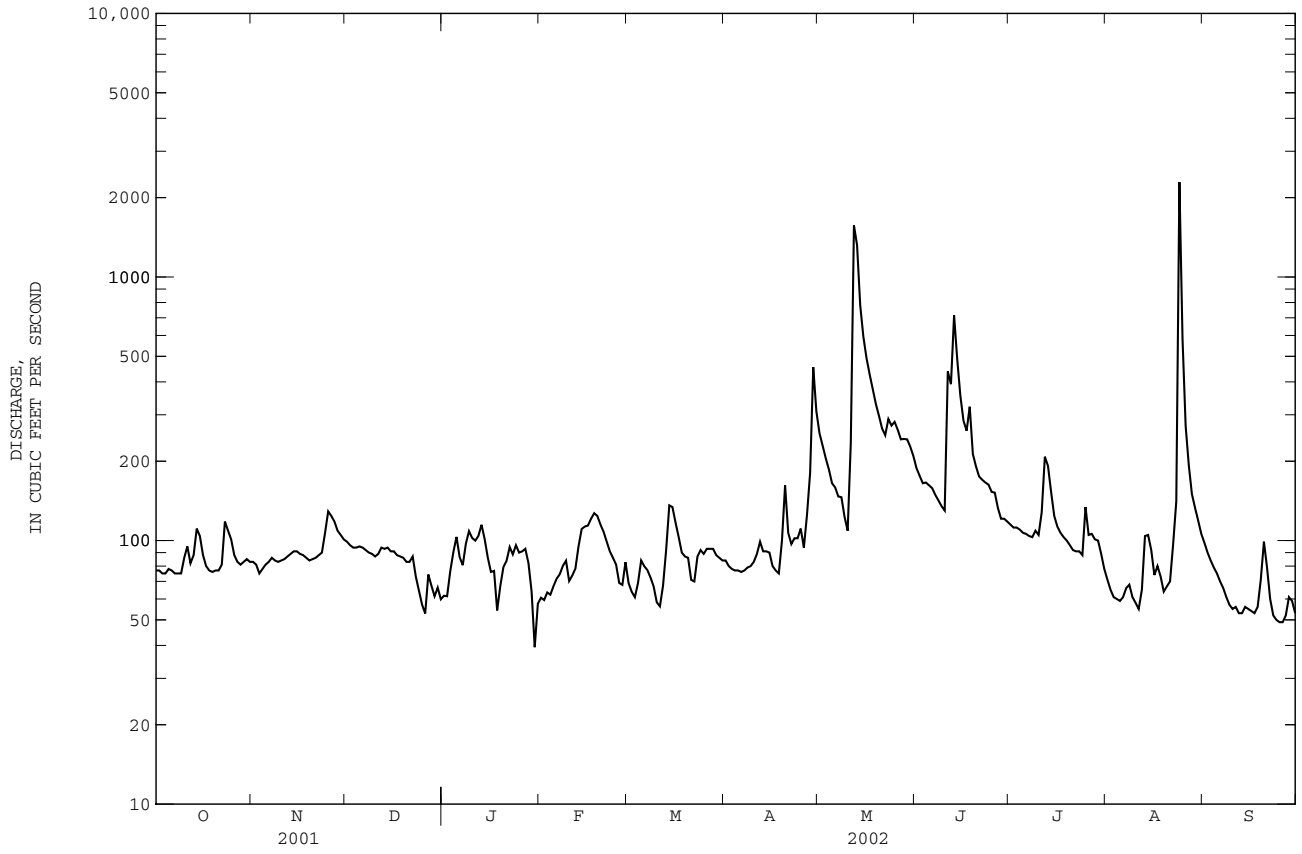
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 2002, BY WATER YEAR (WY)

MEAN	224.8	213.8	169.0	157.4	361.7	676.7	580.2	722.4	909.9	566.1	356.4	354.4
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 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1919 - 2002	
ANNUAL TOTAL	169354		47649			
ANNUAL MEAN	464.0		130.5		444.8	
HIGHEST ANNUAL MEAN					1842	1993
LOWEST ANNUAL MEAN					54.9	1968
HIGHEST DAILY MEAN	7460	Mar 15	2290	Aug 24	45100	Jun 15 1998
LOWEST DAILY MEAN	42	Jan 1	39	Jan 30	6.0	Aug 18 1936
ANNUAL SEVEN-DAY MINIMUM	57	Jan 1	53	Sep 23	8.1	Dec 15 1937
MAXIMUM PEAK FLOW			3240	Aug 24	60500	Jun 15 1998
MAXIMUM PEAK STAGE			10.16	Aug 24	29.39	Jun 15 1998
INSTANTANEOUS LOW FLOW			39	Mar 1		
ANNUAL RUNOFF (AC-FT)	335900		94510		322300	
ANNUAL RUNOFF (CFSM)	0.52		0.15		0.50	
ANNUAL RUNOFF (INCHES)	7.05		1.98		6.76	
10 PERCENT EXCEEDS	1340		211		964	
50 PERCENT EXCEEDS	120		90		181	
90 PERCENT EXCEEDS	72		61		43	

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 NGVD of 1929. 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 FROM THE DCP, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	346	355	375	e265	e240	e225	314	964	871	476	271	249
2	332	341	369	e260	e243	e222	307	860	831	445	255	236
3	307	327	369	e292	e254	e231	293	785	762	430	244	213
4	314	333	371	e319	e246	e243	293	709	723	422	237	201
5	380	316	374	e341	e257	e257	290	648	720	423	230	192
6	307	315	362	e306	e270	e246	295	786	703	414	229	179
7	285	330	410	e297	e280	e247	302	723	677	404	250	168
8	277	319	414	e341	e287	e243	306	791	646	389	329	156
9	280	307	392	e364	e299	e237	313	649	623	374	287	150
10	300	314	364	e347	e273	e228	320	560	599	377	249	148
11	322	318	363	e343	e298	e225	329	689	807	405	232	166
12	319	323	392	e353	e352	e300	355	1480	1880	478	219	165
13	342	328	437	e366	412	e360	358	2930	2250	533	254	169
14	424	330	407	e338	452	421	344	2160	2020	560	572	183
15	425	328	393	e310	466	473	343	1590	1650	480	339	181
16	367	325	360	e289	429	475	336	1350	1220	409	326	170
17	344	318	349	e290	426	420	317	1210	1040	374	266	159
18	324	311	360	e242	469	380	297	1100	963	353	270	155
19	329	307	353	e268	499	359	348	1020	1090	342	246	161
20	328	305	348	e288	481	349	797	958	903	324	269	213
21	333	308	339	e300	426	330	570	913	846	310	332	320
22	338	317	351	e316	384	298	473	889	799	296	560	233
23	370	328	299	e265	365	315	428	1190	737	285	1220	182
24	445	388	260	e284	345	307	462	1100	695	276	1080	157
25	441	509	e253	e313	311	315	459	1080	653	359	2110	126
26	397	501	e248	346	283	335	454	1020	622	637	1090	125
27	356	454	e292	363	e269	341	483	959	596	617	619	134
28	341	418	e274	303	e280	350	619	927	571	440	435	152
29	337	398	e264	242	---	334	786	882	541	357	354	146
30	345	382	e272	184	---	321	1220	900	508	317	306	138
31	367	---	e259	e257	---	315	---	931	---	298	273	---
TOTAL	10722	10453	10673	9392	9596	9702	12811	32753	27546	12604	13953	5327
MEAN	345.9	348.4	344.3	303.0	342.7	313.0	427.0	1057	918.2	406.6	450.1	177.6
MAX	445	509	437	366	499	475	1220	2930	2250	637	2110	320
MIN	277	305	248	184	240	222	290	560	508	276	219	125
MED	338	328	360	303	305	315	344	931	750	404	273	167
AC-FT	21270	20730	21170	18630	19030	19240	25410	64970	54640	25000	27680	10570
CFSM	0.12	0.12	0.12	0.11	0.12	0.11	0.15	0.38	0.33	0.14	0.16	0.06
IN.	0.14	0.14	0.14	0.12	0.13	0.13	0.17	0.43	0.37	0.17	0.18	0.07

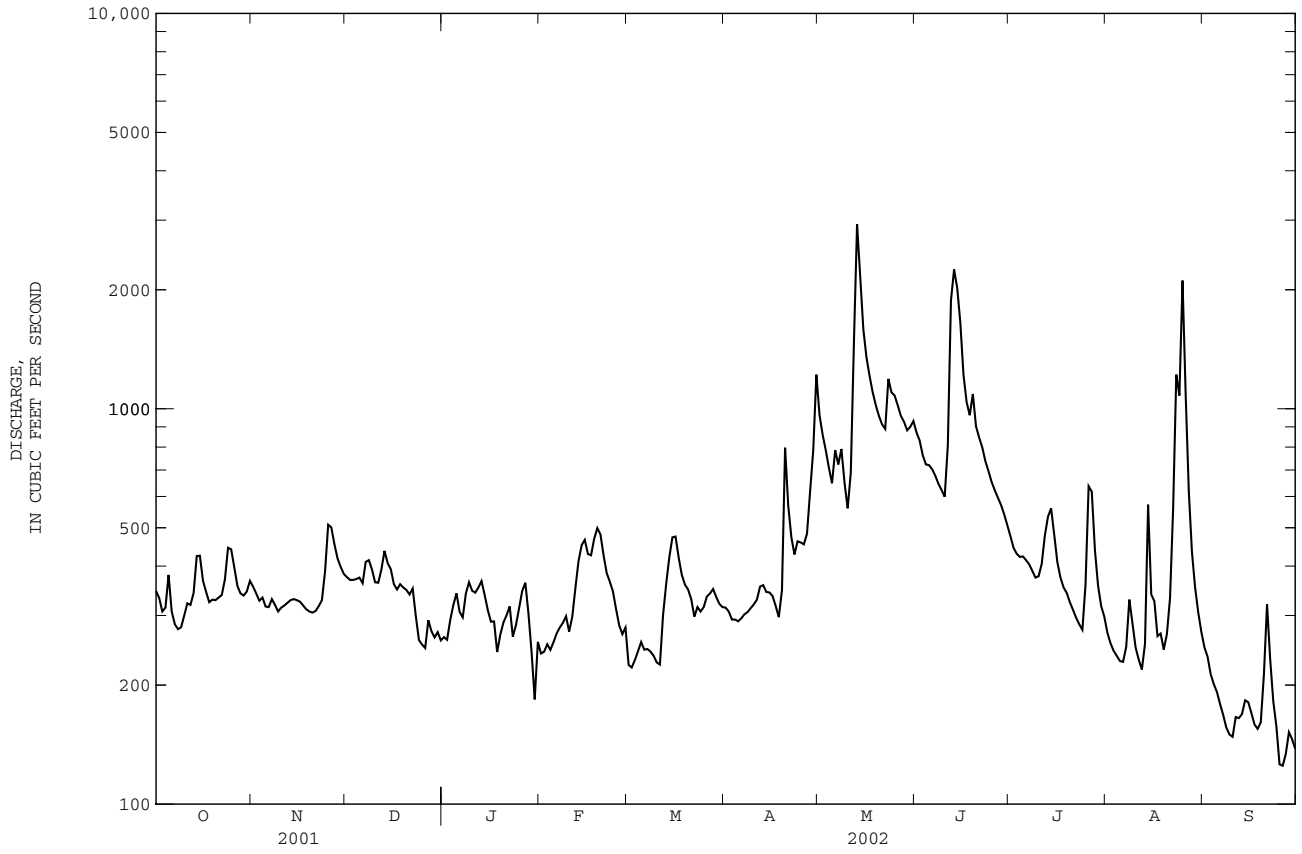
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1922 - 2002, BY WATER YEAR (WY)

MEAN	669.3	669.5	559.1	558.9	1032	1820	1513	1907	2577	1684	1097	990.9
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 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1922 - 2002	
ANNUAL TOTAL	485925		165532			
ANNUAL MEAN	1331		453.5		1259	
HIGHEST ANNUAL MEAN					5062	1993
LOWEST ANNUAL MEAN					170	1934
HIGHEST DAILY MEAN	12500	Mar 15	2930	May 13	53700	Jun 17 1998
LOWEST DAILY MEAN	180	Feb 2	125	Sep 26	4.5	Aug 30 1934
ANNUAL SEVEN-DAY MINIMUM	241	Jan 28	140	Sep 24	9.9	Aug 24 1934
MAXIMUM PEAK FLOW			3230	May 13	65100	Jun 17 1998
MAXIMUM PEAK STAGE			13.71	May 13	33.18	Jun 17 1998
INSTANTANEOUS LOW FLOW			119	Sep 25		
ANNUAL RUNOFF (AC-FT)	963800		328300		912400	
ANNUAL RUNOFF (CFSM)	0.47		0.16		0.45	
ANNUAL RUNOFF (INCHES)	6.44		2.19		6.10	
10 PERCENT EXCEEDS	3350		864		2900	
50 PERCENT EXCEEDS	509		341		597	
90 PERCENT EXCEEDS	280		233		123	

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 NGVD of 1929. 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. 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35000	35700	34700	21300	22100	22900	35100	35000	37100	31500	28000	35100
2	35100	36000	32300	21200	19800	22100	35500	34300	35400	31200	27800	34400
3	35500	36200	30600	21200	19200	22200	36200	34100	34600	30900	27600	34300
4	35600	36400	28800	21300	20000	21600	36800	34500	34400	30900	27600	34500
5	35700	36500	27900	21500	20200	20000	36200	34200	34300	30800	28000	34200
6	35600	36500	27900	21900	20200	20900	35600	36700	33800	30300	29200	34000
7	35300	36300	27900	22500	20900	22600	34700	36200	33400	30100	31000	34000
8	35100	36400	28100	24200	21700	23600	33500	34400	32900	30100	32700	34200
9	35000	36400	27700	24800	23300	24000	34200	33900	32200	30000	30900	34100
10	35700	36300	27100	23500	24600	23400	34300	33500	32600	30500	29900	34000
11	36800	36400	26700	23600	25300	23100	34500	34300	33100	30300	29900	33900
12	36200	36400	26600	25100	25300	23400	35200	41400	35300	30900	29700	34200
13	37400	36300	26200	25900	25800	23700	35600	44600	47300	32400	30400	34400
14	38500	36200	25700	26400	25900	25300	34700	43000	49800	31500	32200	34700
15	36900	36700	25800	26900	26500	30300	34500	39900	43300	29800	30300	34800
16	36100	36500	25800	26600	25800	33600	34400	38600	39000	29600	30200	35300
17	35800	36600	25400	25800	26100	30500	34700	38100	37900	29100	30600	34900
18	35500	36800	25000	24700	26700	28100	34700	37100	37100	28700	31800	34100
19	35500	36800	25200	24500	26600	26900	34800	37100	36000	28400	35300	33900
20	35600	36600	25000	24700	27000	26600	35100	35900	35300	28200	37600	34200
21	35400	36000	24800	24100	27000	26800	34700	35100	34600	27900	38300	34600
22	35000	36000	24800	23100	26600	28100	34400	34500	34300	27600	36700	33900
23	35700	36200	24100	23000	26000	30500	33800	34800	34500	27600	44400	33200
24	35800	36700	24200	23100	25500	31800	34000	35600	34000	27900	51500	32600
25	35500	38300	24300	22900	25300	33400	33800	36000	33300	28100	42900	32100
26	35500	39700	23300	23200	25400	34200	33200	37300	32500	28600	41100	32000
27	35300	40400	21900	23700	25500	33500	33200	35800	32000	29300	38400	32600
28	35300	38900	21700	24700	24700	33900	34400	35800	32100	30800	36600	33400
29	35400	38000	21300	25000	---	34900	34400	37700	32200	29400	35600	33400
30	35100	36800	21200	24000	---	34600	34800	37900	32000	28400	35300	33800
31	35100	---	21900	22900	---	34600	---	37400	---	28300	36100	---
TOTAL	1107000	1105000	803900	737300	679000	851100	1041000	1134700	1066300	919100	1047600	1018800
MEAN	35710	36830	25930	23780	24250	27450	34700	36600	35540	29650	33790	33960
MAX	38500	40400	34700	26900	27000	34900	36800	44600	49800	32400	51500	35300
MIN	35000	35700	21200	21200	19200	20000	33200	33500	32000	27600	27600	32000
AC-FT	2196000	2192000	1595000	1462000	1347000	1688000	2065000	2251000	2115000	1823000	2078000	2021000
CFSM	0.09	0.09	0.06	0.06	0.06	0.07	0.08	0.09	0.09	0.07	0.08	0.08
IN.	0.10	0.10	0.07	0.07	0.06	0.08	0.09	0.10	0.10	0.08	0.09	0.09

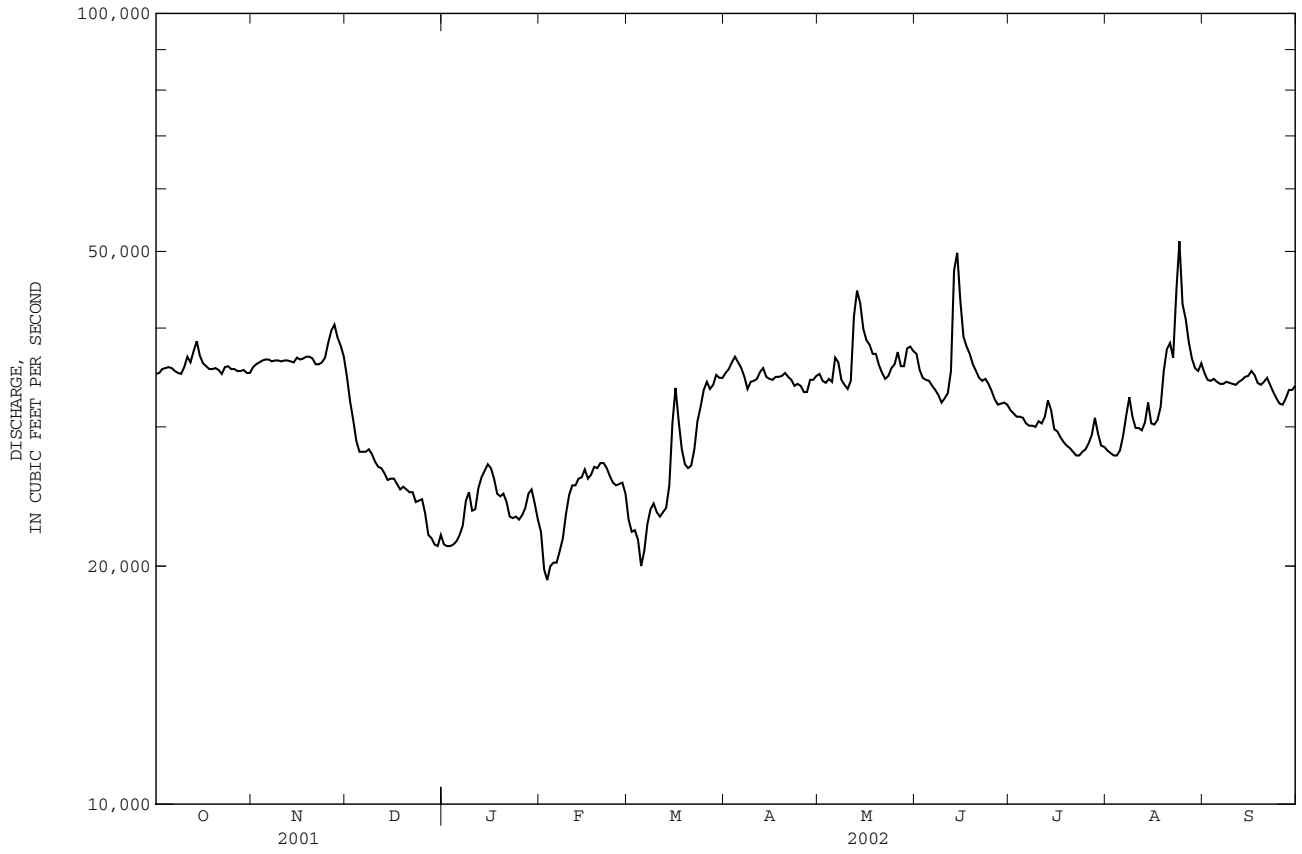
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 2002, BY WATER YEAR (WY)

MEAN	44780	41100	27350	22870	28600	41190	51370	51900	56710	50730	44890	45060
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	29650	29820	33960
(WY)	1962	1962	1956	1957	1957	1957	1957	1956	1956	2002	1955	2002

06813500 MISSOURI RIVER AT RULO, NE--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1953 - 2002a	
ANNUAL TOTAL	14811100		11510800			
ANNUAL MEAN	40580		31540		42250	
HIGHEST ANNUAL MEAN					71880	1997
LOWEST ANNUAL MEAN					26340	1957
HIGHEST DAILY MEAN	103000	May 6	51500	Aug 24	289000	Jul 24 1993
LOWEST DAILY MEAN	20600	Feb 19	19200	Feb 3	4420	Jan 13 1957
ANNUAL SEVEN-DAY MINIMUM	21700	Jan 31	20300	Feb 2	5560	Nov 30 1955
MAXIMUM PEAK FLOW			59500	Aug 24	307000	Jul 24 1993
MAXIMUM PEAK STAGE			13.71	Aug 24	25.37	Jul 24 1993
INSTANTANEOUS LOW FLOW			18900	Feb 3		
ANNUAL RUNOFF (AC-FT)	29380000		22830000		30610000	
ANNUAL RUNOFF (CFSM)	0.098		0.076		0.10	
ANNUAL RUNOFF (INCHES)	1.33		1.03		1.38	
10 PERCENT EXCEEDS	65600		36800		66900	
50 PERCENT EXCEEDS	36300		33500		38700	
90 PERCENT EXCEEDS	22700		23400		19000	

a Post regulation.



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 NGVD of 1929. 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 1.66 ft^3/s. 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	62	68	e30	e45	e46	58	201	e196	61	30	32
2	36	57	67	e27	e44	e44	49	209	e181	59	28	31
3	36	55	63	e32	e49	e42	46	184	e152	58	29	27
4	41	56	71	e37	e47	e48	50	164	e154	56	30	24
5	54	49	73	e44	e51	e62	52	151	e149	60	27	28
6	45	52	65	e36	e56	e60	51	253	e137	52	25	30
7	43	56	61	e32	e58	e56	53	163	123	54	27	29
8	39	50	60	e40	e63	e52	54	138	114	51	28	27
9	46	47	56	e50	e67	e48	57	122	105	46	32	26
10	60	51	54	e46	e58	e44	57	104	97	42	28	24
11	61	51	56	e45	e86	e41	62	639	369	65	29	23
12	64	49	63	e46	111	e48	106	2650	727	568	27	25
13	111	51	66	e58	132	e69	85	1130	864	197	104	27
14	142	56	64	e50	142	e107	94	747	634	126	77	31
15	101	60	69	e42	141	e105	82	595	362	76	57	32
16	76	57	64	e36	126	e83	71	536	274	59	48	27
17	62	54	58	e38	116	e68	69	474	224	55	52	24
18	57	53	53	e29	115	e50	68	387	203	53	43	40
19	50	45	53	e41	128	e47	54	326	188	51	37	76
20	51	43	50	e53	127	e47	49	284	171	50	38	68
21	56	48	49	e59	122	e44	59	252	153	45	36	45
22	53	53	54	74	105	51	62	240	139	38	84	38
23	62	57	36	78	99	65	70	379	122	35	80	29
24	122	97	e29	85	88	59	73	311	110	32	80	24
25	78	128	e25	101	68	56	81	359	104	49	57	28
26	59	102	e24	86	44	61	71	322	97	59	44	28
27	50	78	e38	85	e41	66	103	277	104	64	36	28
28	55	68	e32	58	e58	74	211	258	88	45	31	31
29	51	67	e28	e41	---	68	349	231	78	43	31	32
30	54	69	e33	e26	---	61	250	251	67	35	31	29
31	57	---	e27	e40	---	60	---	227	---	30	30	---
TOTAL	1911	1821	1609	1545	2387	1832	2596	12564	6486	2314	1336	963
MEAN	61.65	60.70	51.90	49.84	85.25	59.10	86.53	405.3	216.2	74.65	43.10	32.10
MAX	142	128	73	101	142	107	349	2650	864	568	104	76
MIN	36	43	24	26	41	41	46	104	67	30	25	23
AC-FT	3790	3610	3190	3060	4730	3630	5150	24920	12860	4590	2650	1910
CFSM	0.08	0.08	0.07	0.07	0.11	0.08	0.11	0.53	0.28	0.10	0.06	0.04
IN.	0.09	0.09	0.08	0.08	0.12	0.09	0.13	0.61	0.32	0.11	0.07	0.05

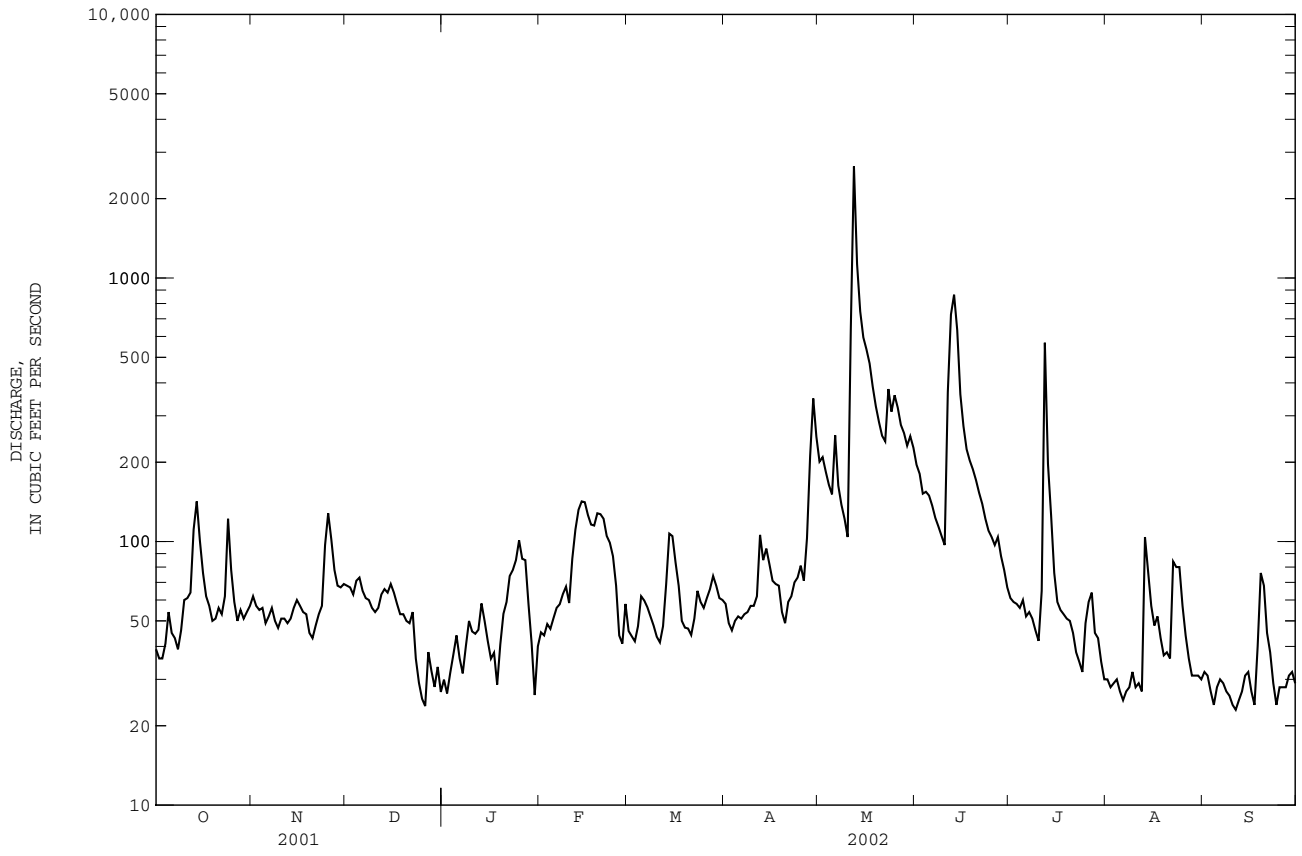
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 2002, BY WATER YEAR (WY)

MEAN	171.8	171.7	135.8	128.5	312.2	571.3	564.4	702.4	765.7	434.2	230.1	310.8
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 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1919 - 2002	
ANNUAL TOTAL	184535		37364			
ANNUAL MEAN	505.6		102.4		380.5	
HIGHEST ANNUAL MEAN					1577	1993
LOWEST ANNUAL MEAN					36.8	1968
HIGHEST DAILY MEAN	5190	Mar 15	2650	May 12	25500	Sep 13 1972
LOWEST DAILY MEAN	24	Dec 26	23	Sep 11	1.0	Dec 9 1923a
ANNUAL SEVEN-DAY MINIMUM	30	Dec 25	26	Sep 7	1.3	Dec 25 1923
MAXIMUM PEAK FLOW			3530	May 12	31100	Jun 13 1947b
MAXIMUM PEAK STAGE			11.24	May 12	25.30	Jun 13 1947c
INSTANTANEOUS LOW FLOW			19	Sep 11		
ANNUAL RUNOFF (AC-FT)	366000		74110		275600	
ANNUAL RUNOFF (CFSM)	0.66		0.13		0.50	
ANNUAL RUNOFF (INCHES)	9.01		1.82		6.78	
10 PERCENT EXCEEDS	1420		199		835	
50 PERCENT EXCEEDS	92		57		101	
90 PERCENT EXCEEDS	45		30		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.



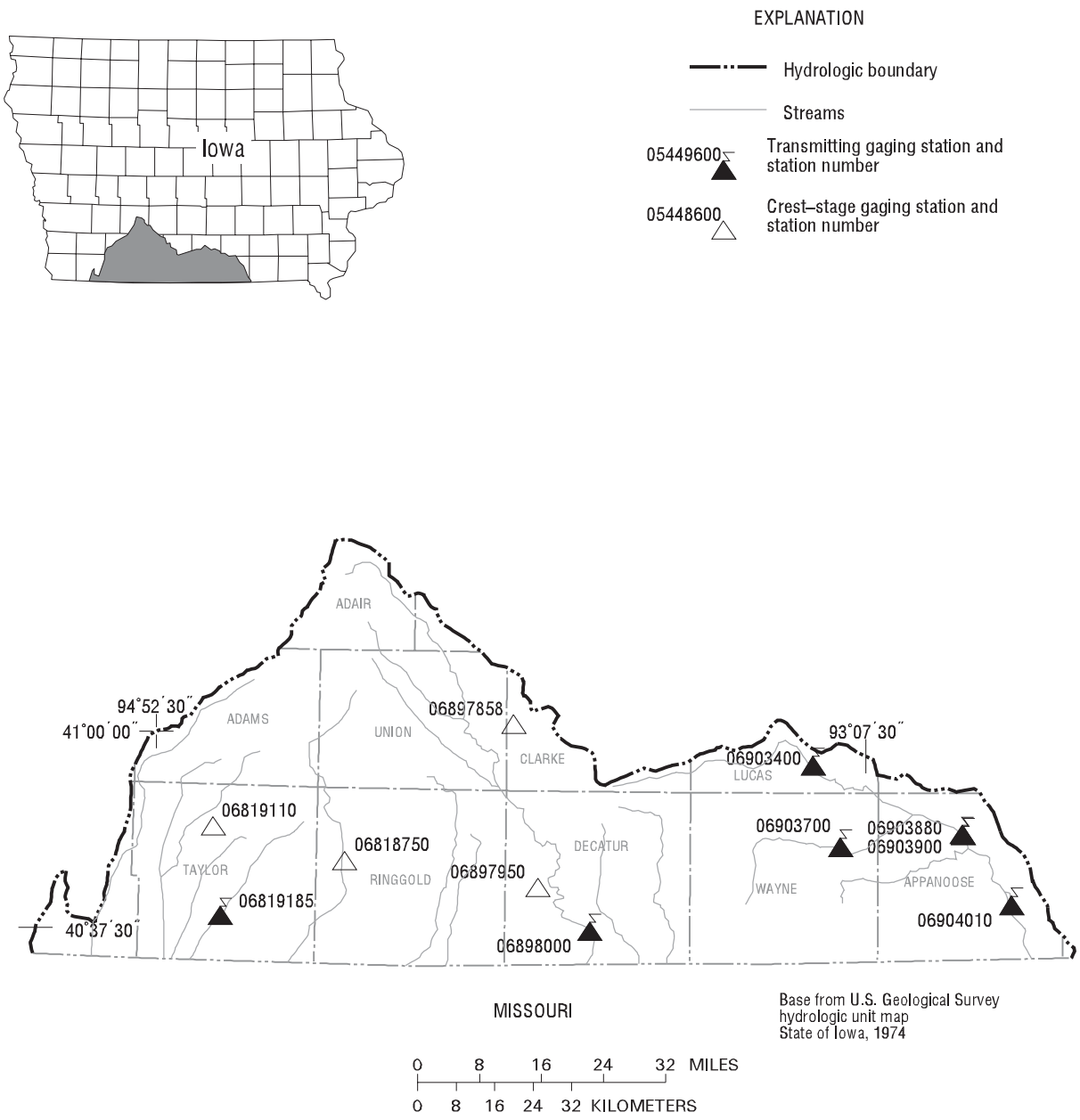


Figure 16. Locations of active continuous-record and crest-stage gaging stations in the Platte River, Grand River, and Chariton River drainage basins.

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 NGVD of 1929.

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. 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.70	1.1	1.1	e0.80	e0.70	0.92	4.3	9.1	17	0.95	1.3	0.63
2	0.72	0.95	1.1	e0.80	e0.71	0.90	4.9	7.2	13	0.88	0.82	0.70
3	0.72	0.69	1.1	e0.86	e0.70	0.80	2.8	5.2	11	0.85	0.77	0.72
4	2.8	0.63	1.1	0.90	e0.69	0.62	1.4	3.4	9.4	5.4	0.51	0.87
5	0.93	0.59	2.0	0.89	e0.70	0.64	2.0	2.1	8.3	0.96	0.56	0.89
6	0.82	0.76	1.7	e0.87	0.71	0.89	1.1	164	7.1	0.82	1.2	0.62
7	0.79	0.89	1.4	e0.85	0.74	1.0	3.1	53	5.9	0.83	0.67	0.01
8	0.76	0.72	1.2	0.87	0.77	11	7.3	23	4.7	0.95	0.67	0.01
9	0.54	0.70	1.1	0.86	0.84	42	8.8	9.6	5.3	0.84	0.70	0.06
10	0.59	0.66	1.3	0.83	0.95	19	7.2	4.3	5.4	1.4	0.68	0.35
11	0.81	0.61	1.2	0.82	0.98	9.3	9.6	672	7.2	0.95	0.66	0.25
12	0.90	0.99	40	0.82	1.0	5.8	16	132	11	1.1	0.85	0.33
13	2.6	1.1	38	0.80	1.0	5.3	12	57	7.3	2.9	1.1	0.46
14	0.94	1.1	31	0.83	1.0	4.2	12	39	5.2	1.5	0.63	0.14
15	0.91	1.1	28	0.85	1.1	4.1	13	31	4.4	1.0	0.63	0.02
16	0.88	1.1	27	0.85	1.1	2.2	12	32	4.6	0.99	0.61	0.02
17	0.87	1.1	26	0.83	1.1	1.1	13	29	3.8	0.98	4.8	0.0
18	0.89	1.1	25	e0.77	4.0	1.1	7.0	22	3.3	1.0	0.79	0.37
19	0.84	1.1	23	0.79	30	2.0	3.6	18	3.5	0.98	0.99	0.03
20	0.85	1.0	22	0.79	28	4.0	4.8	15	3.9	0.87	2.1	0.0
21	1.2	1.1	22	0.79	12	4.1	14	12	3.7	0.69	1.3	0.0
22	16	1.1	25	0.78	6.6	1.2	12	10	3.0	0.53	8.5	0.0
23	6.2	2.0	22	e0.73	5.8	1.1	9.3	68	2.5	0.59	2.5	0.0
24	1.2	35	18	e0.74	6.1	1.1	16	54	2.3	0.51	0.51	0.0
25	1.0	15	e4.0	0.75	6.0	2.1	8.9	59	2.1	3.5	0.24	0.0
26	0.91	3.4	e1.00	0.74	e2.5	2.2	7.0	42	2.8	3.9	0.38	0.0
27	0.65	2.3	1.7	0.72	e0.91	3.2	43	32	2.7	3.5	0.31	0.02
28	0.85	1.5	1.2	0.74	0.95	6.1	76	46	1.9	0.72	0.03	0.04
29	0.93	1.1	e0.90	0.72	---	16	30	32	2.0	0.56	0.15	0.05
30	13	1.1	e0.95	e0.70	---	6.9	17	25	1.1	0.57	0.59	0.06
31	3.5	---	e0.80	0.73	---	4.8	---	21	---	0.69	0.66	---
TOTAL	65.30	81.59	371.85	24.82	117.65	165.67	379.1	1728.9	165.4	41.91	36.21	6.65
MEAN	2.106	2.720	12.00	0.801	4.202	5.344	12.64	55.77	5.513	1.352	1.168	0.222
MAX	16	35	40	0.90	30	42	76	672	17	5.4	8.5	0.89
MIN	0.54	0.59	0.80	0.70	0.69	0.62	1.1	2.1	1.1	0.51	0.03	0.00
AC-FT	130	162	738	49	233	329	752	3430	328	83	72	13
CFSM	0.02	0.03	0.14	0.01	0.05	0.06	0.15	0.65	0.06	0.02	0.01	0.00
IN.	0.03	0.04	0.16	0.01	0.05	0.07	0.17	0.75	0.07	0.02	0.02	0.00

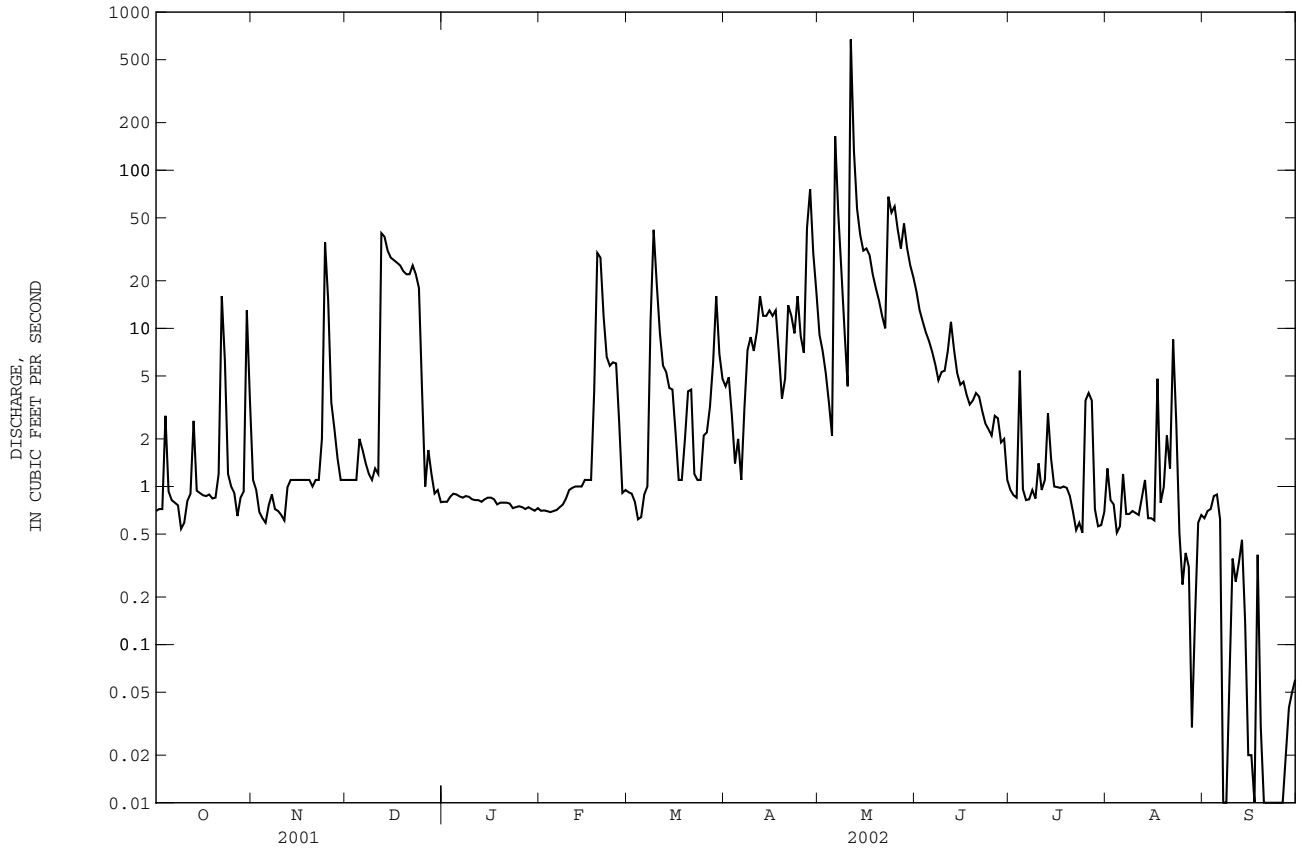
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 2002, BY WATER YEAR (WY)

MEAN	22.32	27.87	25.75	10.55	42.52	77.03	96.65	144.7	106.8	108.4	21.13	46.59
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	0.26	0.78	0.47	0.50	0.17	2.13	0.82	0.67	1.90	1.35	0.63	0.22
(WY)	1992	1991	1989	1991	1989	1989	1989	1989	1988	2002	2001	2002

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

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1984 - 2002	
ANNUAL TOTAL	24234.35		3185.05			
ANNUAL MEAN	66.40		8.726		60.89	
HIGHEST ANNUAL MEAN					200	1993
LOWEST ANNUAL MEAN					8.73	2002
HIGHEST DAILY MEAN	1630	Feb 25	672	May 11	7600	Jul 5 1993
LOWEST DAILY MEAN	0.41	Aug 14	0.00	Sep 17	0.00	Jul 6 1989c
ANNUAL SEVEN-DAY MINIMUM	0.56	Aug 8	0.00	Sep 20a	0.00	Aug 3 1989d
MAXIMUM PEAK FLOW			2380	May 11	9570	Jul 14 1986
MAXIMUM PEAK STAGE			17.82	May 11	23.85	Jul 5 1993
INSTANTANEOUS LOW FLOW			0.00	Sep 7b		
ANNUAL RUNOFF (AC-FT)	48070		6320		44120	
ANNUAL RUNOFF (CFSM)	0.78		0.10		0.71	
ANNUAL RUNOFF (INCHES)	10.56		1.39		9.69	
10 PERCENT EXCEEDS	125		22		98	
50 PERCENT EXCEEDS	5.8		1.1		7.2	
90 PERCENT EXCEEDS	0.66		0.57		0.69	

a Also Sept. 17 and 20-26
b Many days in Sept.
c Many days between July 6 to Dec. 24, 1989.
d Also Sept. 20, 2002.
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 NGVD of 1929. 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. 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	36	24	7.3	e8.0	e33	44	198	101	23	12	6.9
2	17	27	23	6.8	e18	e26	39	153	90	22	12	5.9
3	16	24	22	7.0	e21	e19	34	135	81	21	10	4.9
4	23	23	22	6.9	e7.8	e28	30	124	76	21	9.6	4.2
5	43	24	23	8.3	e13	31	28	102	81	20	12	3.7
6	44	22	23	e7.4	e17	33	28	142	76	24	21	3.3
7	34	21	23	e7.2	17	38	29	129	66	21	22	3.2
8	30	21	23	8.4	19	48	40	110	62	22	21	3.3
9	25	20	22	9.4	22	184	119	193	58	22	20	3.3
10	35	19	21	11	e21	198	112	118	54	26	27	3.5
11	32	18	21	12	e25	107	68	3480	53	27	24	4.0
12	22	19	24	13	31	92	55	2690	58	41	18	3.7
13	24	21	27	15	35	89	74	1010	78	113	19	3.5
14	27	20	27	14	38	82	68	612	85	225	16	3.6
15	33	21	26	15	44	67	72	410	265	138	14	3.2
16	30	22	24	18	50	61	69	432	163	63	16	2.8
17	24	21	23	e17	52	52	60	464	95	42	20	2.9
18	21	22	23	e11	57	47	55	365	75	33	24	2.7
19	29	22	22	e15	75	45	233	259	64	27	35	3.8
20	27	24	20	e16	87	43	70	193	56	24	53	3.7
21	31	21	18	e16	86	39	87	158	54	22	32	11
22	161	21	20	e17	73	37	106	136	47	21	20	20
23	259	21	15	e16	62	34	77	133	44	23	17	12
24	223	22	18	e14	60	34	74	135	39	22	16	8.2
25	116	23	e9.7	15	e55	37	99	269	36	21	14	6.0
26	63	26	e7.7	19	e34	35	74	447	32	25	15	4.5
27	45	27	13	21	e32	34	322	268	30	22	16	3.6
28	35	27	13	21	34	38	600	194	28	19	14	3.1
29	29	28	e8.5	17	---	53	397	146	26	21	12	2.6
30	28	27	9.0	9.1	---	69	275	125	25	17	9.2	1.9
31	38	---	e6.0	e14	---	54	---	123	---	12	7.9	---
TOTAL	1581	690	600.9	404.8	1093.8	1787	3438	13453	2098	1180	578.7	149.0
MEAN	51.00	23.00	19.38	13.06	39.06	57.65	114.6	434.0	69.93	38.06	18.67	4.967
MAX	259	36	27	21	87	198	600	3480	265	225	53	20
MIN	16	18	6.0	6.8	7.8	19	28	102	25	12	7.9	1.9
AC-FT	3140	1370	1190	803	2170	3540	6820	26680	4160	2340	1150	296
CFSM	0.07	0.03	0.03	0.02	0.06	0.08	0.16	0.62	0.10	0.05	0.03	0.01
IN.	0.08	0.04	0.03	0.02	0.06	0.09	0.18	0.71	0.11	0.06	0.03	0.01

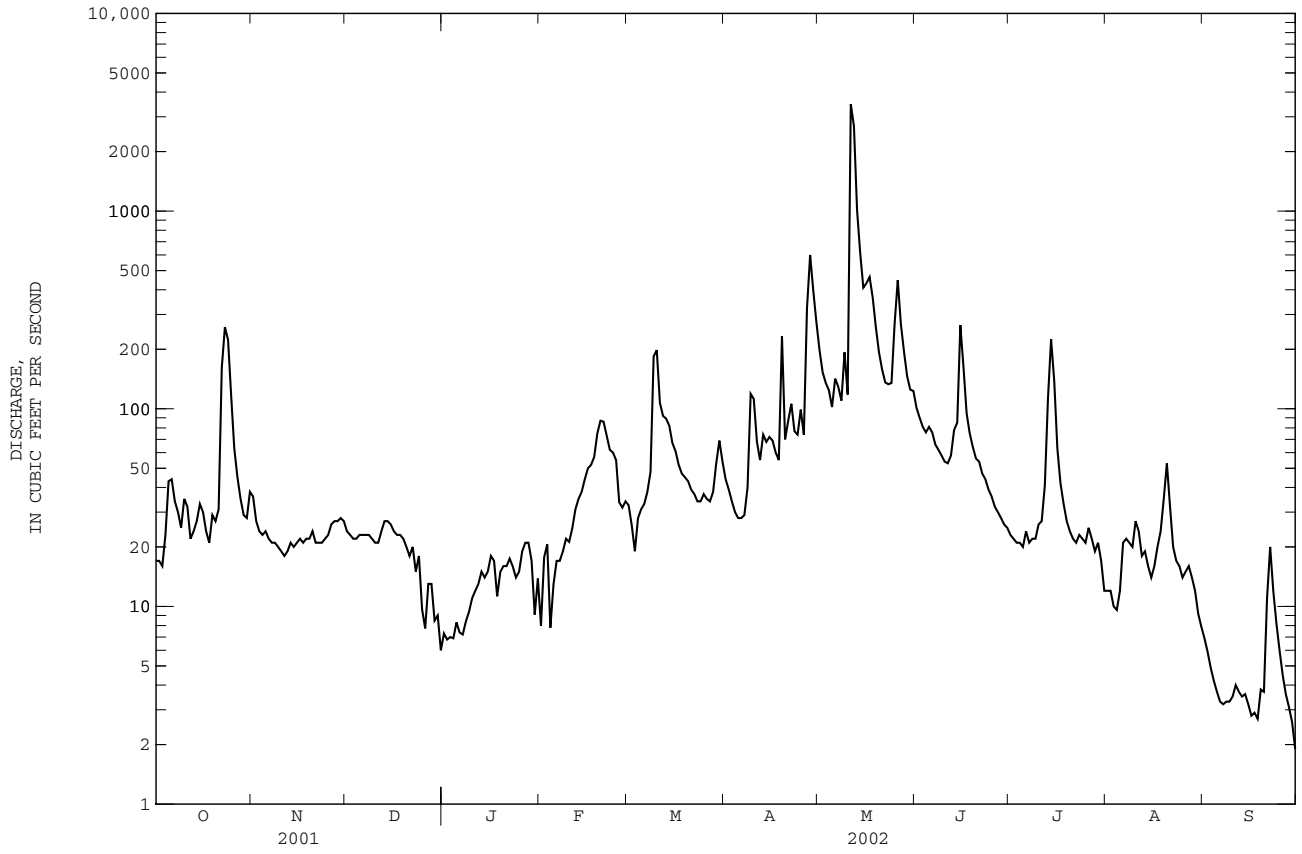
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1919 - 2002, BY WATER YEAR (WY)

MEAN	184.4	211.9	146.7	151.9	334.0	648.2	693.5	701.9	653.3	419.1	182.0	327.8
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	0.94	0.62	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 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1919 - 2002	
ANNUAL TOTAL	162751.5		27054.2			
ANNUAL MEAN	445.9		74.12		390.4	
HIGHEST ANNUAL MEAN					1469	1993
LOWEST ANNUAL MEAN					28.6	2000
HIGHEST DAILY MEAN	3950	Mar 15	3480	May 11	52900	Sep 16 1992
LOWEST DAILY MEAN	3.8	Jan 2	1.9	Sep 30	0.10	Jun 25 1956
ANNUAL SEVEN-DAY MINIMUM	6.5	Jan 1	3.2	Sep 12	0.36	Jun 19 1956
MAXIMUM PEAK FLOW			7000	May 11	57000	Sep 16 1992
MAXIMUM PEAK STAGE			8.07	May 11	24.29	Sep 16 1992
INSTANTANEOUS LOW FLOW			1.3	Sep 30		
ANNUAL RUNOFF (AC-FT)	322800		53660		282800	
ANNUAL RUNOFF (CFSM)	0.64		0.11		0.56	
ANNUAL RUNOFF (INCHES)	8.64		1.44		7.57	
10 PERCENT EXCEEDS	1460		135		839	
50 PERCENT EXCEEDS	60		26		80	
90 PERCENT EXCEEDS	17		8.0		9.6	

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 NGVD of 1929 (U.S. Army Corps of Engineers bench mark).

REMARKS.--Records good, except estimated daily discharges, which are poor. Beaver activity in September. 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.59	18	4.6	e0.78	e2.6	e2.5	43	94	78	e2.8	1.1	0.28
2	0.53	12	4.3	e0.82	e2.2	e2.0	34	83	267	2.3	0.78	0.28
3	0.49	11	4.4	e0.57	e1.8	e2.4	27	61	e96	2.0	0.59	0.32
4	0.70	13	4.5	e0.67	e1.5	e2.6	23	46	e49	5.1	0.51	0.38
5	5.3	9.7	4.7	e0.77	e1.2	3.3	21	38	40	5.2	0.47	0.34
6	9.0	7.4	5.7	e0.68	e1.3	5.9	21	34	43	25	0.44	0.31
7	5.0	5.9	7.1	e0.60	e1.4	8.3	21	34	27	33	0.41	0.26
8	2.2	5.6	7.0	e0.77	e1.6	37	41	42	20	8.3	0.37	0.22
9	2.1	5.2	6.4	e0.95	e2.5	176	289	259	15	4.7	0.36	e0.20
10	6.0	4.5	6.0	e0.88	e4.1	158	131	70	23	77	0.34	e0.18
11	39	4.3	5.5	e0.82	e3.6	118	98	1360	32	55	0.33	e0.20
12	17	3.9	5.7	e0.74	e3.3	60	65	2360	29	63	0.33	e0.19
13	6.7	3.7	8.2	e0.64	e2.8	45	52	1190	103	29	0.45	e0.22
14	12	3.9	10	e0.57	e6.5	38	41	1150	44	16	0.51	e0.24
15	7.4	4.1	8.8	e0.63	e11	33	35	313	26	16	0.44	e0.30
16	5.1	4.1	7.7	e0.69	e9.0	28	30	302	18	8.6	0.39	e0.26
17	2.8	4.0	7.3	e0.76	e12	24	28	317	16	5.5	0.37	e0.27
18	3.2	4.0	6.9	e0.82	e14	23	25	230	13	3.8	0.34	e0.45
19	4.0	3.7	6.6	e0.82	27	22	23	103	10	3.0	0.66	e0.90
20	3.8	3.5	6.0	e0.89	42	22	20	68	8.4	2.5	0.99	e1.1
21	4.3	3.4	5.1	e1.1	28	20	35	53	7.3	2.0	0.94	e0.55
22	133	3.5	5.3	e1.2	16	17	53	44	6.6	1.7	0.81	e0.72
23	1020	3.4	e5.0	e0.88	16	16	51	40	6.0	1.6	0.92	e0.56
24	246	3.8	e3.3	e0.74	12	17	40	39	5.5	1.4	1.1	e0.40
25	130	4.3	e2.0	e0.56	9.3	18	34	243	5.4	1.4	0.99	e0.31
26	46	4.6	e1.4	e1.4	6.3	17	29	205	e4.9	1.3	0.63	e0.26
27	25	5.1	e1.5	e1.9	e4.1	17	250	136	e5.1	1.3	0.46	e0.28
28	18	4.8	e1.6	e2.2	e3.0	18	538	99	e4.3	1.2	0.38	e0.28
29	14	4.7	e1.4	e2.4	---	30	265	82	e3.5	1.3	0.34	e0.30
30	11	4.8	e0.97	e2.0	---	65	126	65	e3.2	9.6	0.32	e0.34
31	14	---	e0.78	e2.2	---	39	---	70	---	3.5	0.29	---
TOTAL	1794.21	173.9	155.75	31.45	246.1	1085.0	2489	9230	1009.2	394.1	17.36	10.90
MEAN	57.88	5.797	5.024	1.015	8.789	35.00	82.97	297.7	33.64	12.71	0.560	0.363
MAX	1020	18	10	2.4	42	176	538	2360	267	77	1.1	1.1
MIN	0.49	3.4	0.78	0.56	1.2	2.0	20	34	3.2	1.2	0.29	0.18
CFSM	0.32	0.03	0.03	0.01	0.05	0.19	0.46	1.64	0.18	0.07	0.00	0.00
IN.	0.37	0.04	0.03	0.01	0.05	0.22	0.51	1.89	0.21	0.08	0.00	0.00

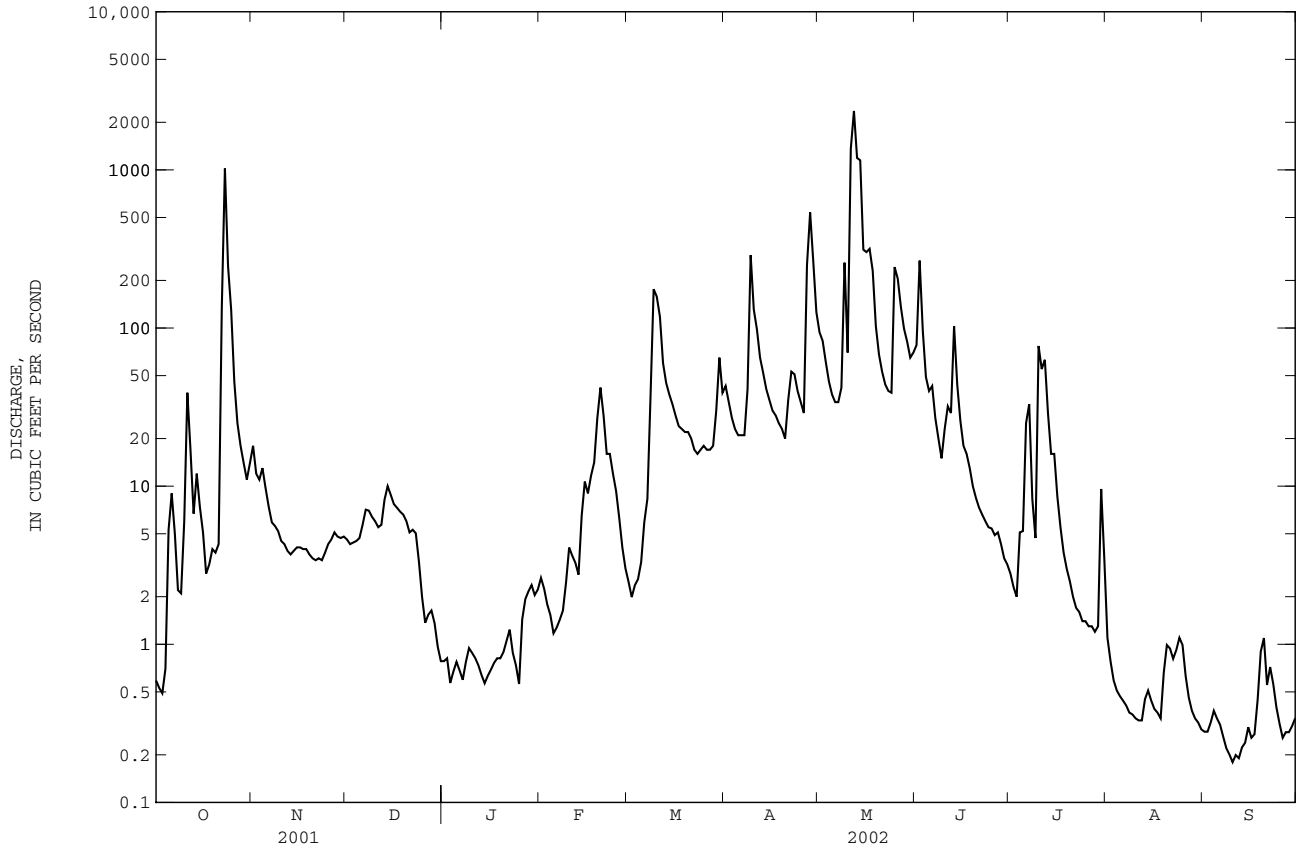
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 2002, BY WATER YEAR (WY)

MEAN	78.22	56.77	58.38	34.70	85.01	181.6	241.3	237.8	166.3	155.7	66.68	119.8
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	0.005	0.003	0.000	0.23	0.22	1.22	0.068	2.12	0.38	0.000	0.10	0.086
(WY)	1990	1990	1990	1977	1989	2000	1989	2000	1988	1988	1989	1991

06903400 CHARITON RIVER NEAR CHARITON, IA--Continued

SUMMARY STATISTICS	FOR 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1966 - 2002	
ANNUAL TOTAL	53952.54		16636.97			
ANNUAL MEAN	147.8		45.58		123.6	
HIGHEST ANNUAL MEAN					345	1993
LOWEST ANNUAL MEAN					9.71	1989
HIGHEST DAILY MEAN	2650	May 14	2360	May 12	24600	Sep 15 1992
LOWEST DAILY MEAN	0.33	Sep 5	0.18	Sep 10	0.00	Aug 1 1977
ANNUAL SEVEN-DAY MINIMUM	0.39	Sep 1	0.21	Sep 8	0.00	Jun 21 1988
MAXIMUM PEAK FLOW			2880	May 11	37700	Sep 15 1992
MAXIMUM PEAK STAGE			17.98	May 11	29.32	Sep 15 1992
INSTANTANEOUS LOW FLOW			0.17	Sep 8		
ANNUAL RUNOFF (CFSM)	0.81		0.25		0.68	
ANNUAL RUNOFF (INCHES)	11.03		3.40		9.23	
10 PERCENT EXCEEDS	411		73		270	
50 PERCENT EXCEEDS	9.8		5.1		12	
90 PERCENT EXCEEDS	0.91		0.41		0.60	

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 NGVD of 1929 (U.S. Army Corps of Engineers bench mark).

REMARKS.--Records good except those for estimated daily discharges, which are poor. 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.96	28	4.0	e1.3	e8.8	e18	43	63	22	1.6	1.2	1.1
2	1.1	17	3.8	e1.8	e7.4	e17	35	49	195	1.5	1.1	1.1
3	1.3	11	3.7	e1.5	e6.2	e18	27	37	56	1.5	1.0	0.89
4	12	8.2	4.4	e2.0	e5.2	20	22	30	27	1.7	1.0	0.89
5	110	7.4	4.7	e2.5	e4.7	20	19	26	22	1.9	1.0	0.87
6	37	7.0	5.5	e2.0	e10	27	17	31	17	2.1	1.0	0.84
7	12	6.8	5.9	e1.8	e13	31	20	46	13	2.7	1.6	0.83
8	5.1	5.1	6.2	e2.3	e14	49	74	38	10	2.1	1.3	0.79
9	3.0	4.4	5.4	e3.8	e18	116	376	595	8.3	1.8	1.1	0.76
10	3.3	4.6	4.9	e3.2	e22	66	113	116	13	5.6	1.0	0.74
11	6.1	4.5	4.7	e2.8	e20	41	65	e3540	23	7.3	0.95	0.77
12	7.2	4.1	8.3	e2.5	e19	33	66	e2990	35	6.0	0.87	0.75
13	4.9	4.0	40	e2.3	e17	30	60	383	58	3.4	1.3	0.79
14	3.3	4.0	40	e1.7	e22	27	47	201	33	2.8	1.3	0.81
15	3.2	3.9	23	e1.3	e27	22	38	137	16	1.9	1.1	0.87
16	3.0	3.7	18	e1.7	e24	19	30	254	11	1.5	1.0	0.84
17	2.7	3.7	16	e2.0	e23	17	25	177	7.8	1.4	1.0	0.85
18	2.5	3.7	14	e2.5	e32	17	21	112	6.5	1.3	0.91	1.1
19	2.8	3.5	11	e2.5	51	16	20	77	5.1	1.4	4.5	1.7
20	3.0	3.3	10	e3.1	83	16	19	59	3.9	1.4	14	1.9
21	2.9	3.5	9.9	e3.5	66	15	33	49	3.6	1.2	10	1.2
22	66	3.7	9.8	e4.2	45	13	53	43	3.3	1.2	4.4	1.4
23	492	3.7	e8.6	e3.6	38	14	31	42	2.9	1.2	3.0	1.2
24	87	4.3	e6.2	e3.0	35	14	32	42	2.6	1.1	2.0	0.97
25	47	4.3	e4.2	e2.1	31	16	50	696	2.4	1.4	1.9	0.84
26	29	5.1	e2.5	e5.0	e26	16	29	213	2.6	1.4	1.3	0.80
27	19	6.0	e2.1	e9.9	e27	19	1110	90	2.2	1.4	1.0	0.82
28	14	5.2	e2.8	e7.5	e21	26	706	59	2.0	1.4	1.0	0.82
29	11	4.9	e2.5	e5.9	---	77	143	49	1.9	1.8	0.97	0.84
30	11	4.4	e1.8	e4.6	---	114	85	35	1.8	1.7	0.99	0.87
31	42	---	e1.3	e4.8	---	53	---	27	---	1.4	1.1	---
TOTAL	1045.36	183.0	285.2	98.7	716.3	997	3409	10306	607.9	66.1	65.89	28.95
MEAN	33.72	6.100	9.200	3.184	25.58	32.16	113.6	332.5	20.26	2.132	2.125	0.965
MAX	492	28	40	9.9	83	116	1110	3540	195	7.3	14	1.9
MIN	0.96	3.3	1.3	1.3	4.7	13	17	26	1.8	1.1	0.87	0.74
AC-FT	2070	363	566	196	1420	1980	6760	20440	1210	131	131	57
CFSM	0.20	0.04	0.05	0.02	0.15	0.19	0.68	1.98	0.12	0.01	0.01	0.01
IN.	0.23	0.04	0.06	0.02	0.16	0.22	0.75	2.28	0.13	0.01	0.01	0.01

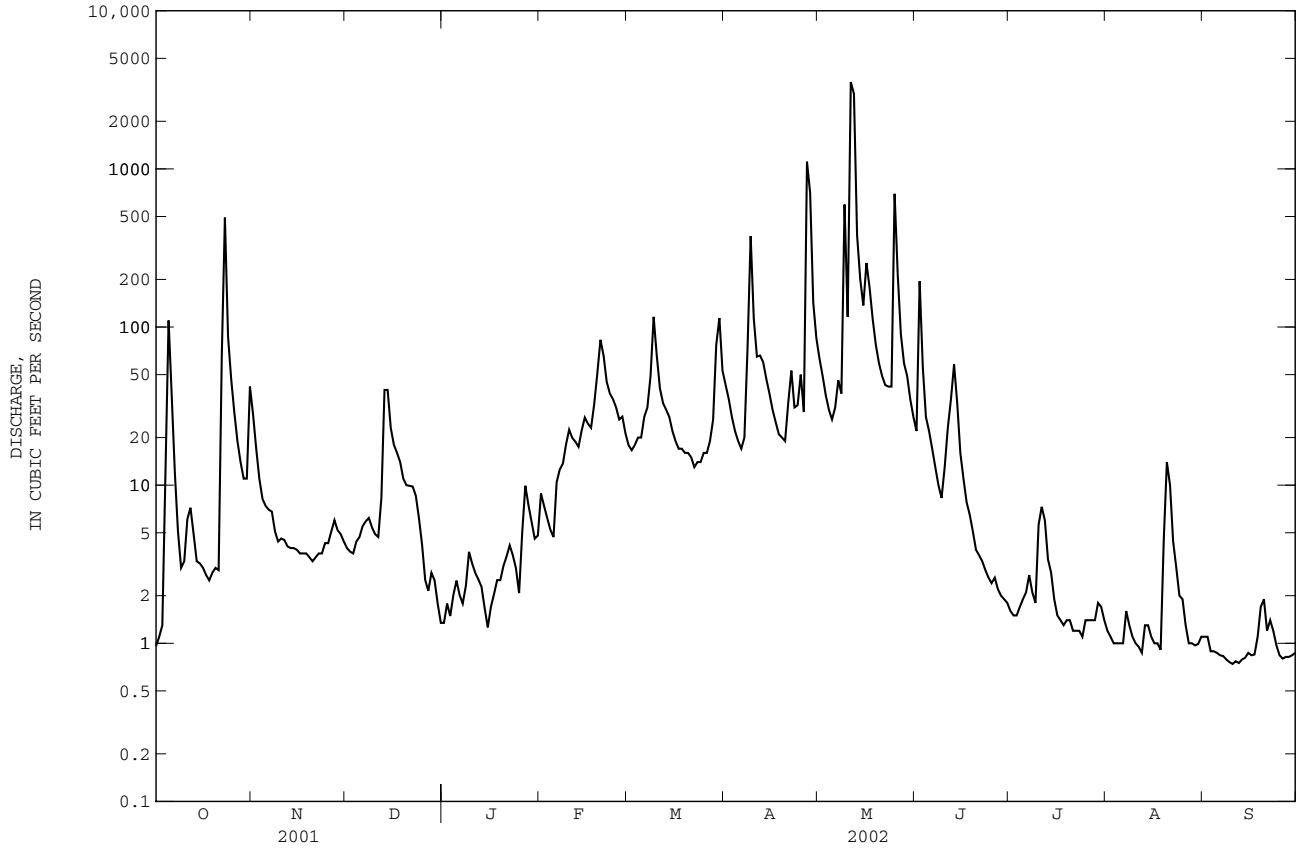
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 2002, BY WATER YEAR (WY)

MEAN	95.33	56.75	60.46	35.67	101.0	184.8	236.4	239.7	163.9	176.7	45.68	134.0
MAX	498	357	440	335	534	853	730	1043	625	2351	300	2227
(WY)	1978	1993	1983	1974	2001	1979	1991	1995	2001	1993	1993	1992
MIN	0.15	0.39	0.40	0.19	0.88	2.74	1.21	1.89	1.18	0.24	0.76	0.45
(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 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1968 - 2002	
ANNUAL TOTAL	74695.10		17809.40			
ANNUAL MEAN	204.6		48.79		127.5	
HIGHEST ANNUAL MEAN					446	1993
LOWEST ANNUAL MEAN					10.7	1989
HIGHEST DAILY MEAN	6910	Feb 25	3540	May 11	34700	Sep 15 1992
LOWEST DAILY MEAN	0.76	Sep 5	0.74	Sep 10	0.00	Jul 6 1977b
ANNUAL SEVEN-DAY MINIMUM	0.94	Aug 31	0.77	Sep 8	0.00	Aug 16 1989
MAXIMUM PEAK FLOW			6750	May 11	70600	Sep 15 1992
MAXIMUM PEAK STAGE			21.50	May 11	34.84	Sep 15 1992
INSTANTANEOUS LOW FLOW			0.72	Sep 8a		
ANNUAL RUNOFF (AC-FT)	148200		35320		92370	
ANNUAL RUNOFF (CFSM)	1.22		0.29		0.76	
ANNUAL RUNOFF (INCHES)	16.54		3.94		10.31	
10 PERCENT EXCEEDS	479		59		201	
50 PERCENT EXCEEDS	14		5.6		14	
90 PERCENT EXCEEDS	1.5		1.0		0.94	

a Also Sept. 9-13.
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 NGVD of 1929.

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. Prior to October 1, 2000 published as mean daily contents in acre feet, and as mean daily elevation in feet NGVD thereafter.

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

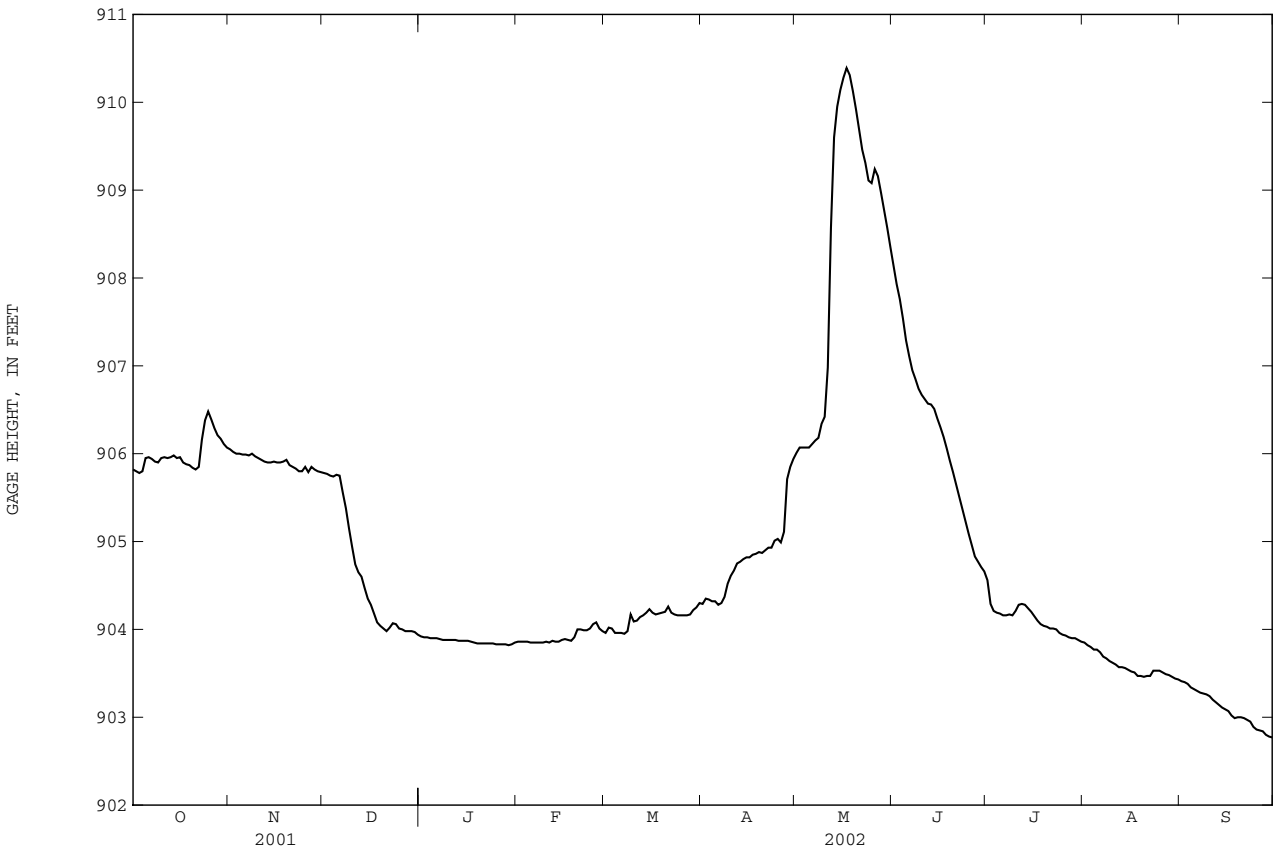
EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 927.16 ft July 28, 1993; minimum elevation, 855.40 ft Oct. 6-10, 1969.

EXTREMES FOR CURRENT YEAR.--Maximum elevation 910.39 ft May 17; minimum elevation, 902.77 ft Sept. 30.

ELEVATION, in FT (NGVD), WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	905.82	906.05	905.78	903.92	903.86	903.96	904.29	906.01	908.14	904.56	903.85	903.41
2	905.80	906.02	905.77	903.91	903.86	904.02	904.35	906.07	907.93	904.29	903.82	903.40
3	905.78	906.00	905.75	903.91	903.86	904.01	904.34	906.07	907.76	904.21	903.80	903.38
4	905.80	906.00	905.74	903.90	903.86	903.96	904.32	906.07	907.54	904.19	903.77	903.34
5	905.95	905.99	905.76	903.90	903.85	903.96	904.32	906.07	907.29	904.18	903.77	903.32
6	905.96	905.99	905.75	903.90	903.85	903.96	904.28	906.11	907.11	904.16	903.74	903.30
7	905.94	905.98	905.56	903.89	903.85	903.95	904.30	906.15	906.95	904.16	903.69	903.28
8	905.91	906.00	905.38	903.88	903.85	903.98	904.37	906.18	906.85	904.17	903.67	903.27
9	905.90	905.97	905.15	903.88	903.85	904.17	904.52	906.34	906.74	904.16	903.64	903.26
10	905.95	905.95	904.94	903.88	903.86	904.09	904.61	906.42	906.67	904.21	903.62	903.24
11	905.96	905.93	904.74	903.88	903.85	904.10	904.67	906.98	906.62	904.28	903.60	903.20
12	905.95	905.91	904.65	903.88	903.87	904.14	904.75	908.57	906.57	904.29	903.57	903.17
13	905.96	905.90	904.60	903.87	903.86	904.16	904.77	909.60	906.56	904.28	903.57	903.14
14	905.98	905.90	904.47	903.87	903.86	904.19	904.80	909.95	906.51	904.24	903.56	903.11
15	905.95	905.91	904.35	903.87	903.88	904.23	904.82	910.14	906.40	904.20	903.54	903.09
16	905.96	905.90	904.28	903.87	903.89	904.19	904.82	910.28	906.30	904.15	903.52	903.07
17	905.90	905.90	904.18	903.86	903.88	904.17	904.85	910.39	906.19	904.10	903.51	903.02
18	905.88	905.91	904.08	903.85	903.87	904.18	904.86	910.31	906.06	904.06	903.47	902.99
19	905.87	905.93	904.04	903.84	903.91	904.19	904.88	910.13	905.92	904.04	903.47	903.00
20	905.84	905.87	904.01	903.84	904.00	904.20	904.87	909.92	905.79	904.03	903.46	903.00
21	905.82	905.85	903.98	903.84	904.00	904.26	904.90	909.69	905.65	904.01	903.47	902.99
22	905.85	905.83	904.02	903.84	903.99	904.19	904.93	909.46	905.51	904.01	903.47	902.97
23	906.16	905.80	904.07	903.84	903.99	904.17	904.93	909.31	905.37	904.00	903.53	902.95
24	906.38	905.80	904.06	903.84	904.01	904.16	905.01	909.11	905.23	903.96	903.53	902.89
25	906.48	905.85	904.01	903.83	904.06	904.16	905.03	909.08	905.09	903.94	903.53	902.86
26	906.39	905.79	904.00	903.83	904.08	904.16	904.99	909.24	904.96	903.93	903.51	902.85
27	906.29	905.85	903.98	903.83	904.01	904.16	905.11	909.16	904.83	903.91	903.49	902.84
28	906.21	905.82	903.98	903.83	903.98	904.17	905.71	908.97	904.77	903.90	903.48	902.80
29	906.17	905.80	903.98	903.82	---	904.22	905.85	908.77	904.71	903.90	903.46	902.78
30	906.11	905.79	903.97	903.83	---	904.25	905.94	908.57	904.66	903.88	903.44	902.77
31	906.07	---	903.94	903.85	---	904.30	---	908.35	---	903.86	903.43	---
MEAN	906.00	905.91	904.61	903.86	903.91	904.13	904.81	908.31	906.22	904.11	903.58	903.09
MAX	906.48	906.05	905.78	903.92	904.08	904.30	905.94	910.39	908.14	904.56	903.85	903.41
MIN	905.78	905.79	903.94	903.82	903.85	903.95	904.28	906.01	904.66	903.86	903.43	902.77

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 NGVD of 1929. 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. 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 to Sept. 30 10 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 2002 water year, 1.74 billion gallons were withdrawn from the river.

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

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	302	26	e27	26	26	25	24	1540	751	e21	e24
2	25	175	26	28	26	e27	25	24	1540	1130	e25	23
3	23	22	26	28	26	25	25	24	1540	21	e24	23
4	23	21	26	29	26	25	25	24	1540	24	e24	23
5	23	22	26	29	26	25	25	24	1310	23	e24	24
6	22	22	524	28	26	25	25	24	1020	23	e23	24
7	22	22	1200	28	26	25	e26	24	804	23	e23	25
8	23	22	e1190	28	26	25	25	26	619	22	e23	26
9	22	22	e1180	26	26	25	25	26	620	22	e23	24
10	23	22	1180	25	26	25	25	25	620	23	e22	24
11	23	22	861	23	26	25	25	e26	623	23	e22	24
12	23	22	551	22	25	25	25	e27	624	83	e21	24
13	23	22	552	22	25	26	25	e27	627	163	e22	25
14	22	23	551	22	25	25	24	51	624	162	e23	25
15	23	23	548	22	25	25	24	74	624	162	e22	25
16	23	22	547	22	24	25	24	72	622	160	e22	25
17	24	22	546	22	e25	25	24	591	619	160	e22	22
18	25	23	458	22	e25	25	24	1580	617	78	e21	22
19	87	23	128	22	25	25	24	1580	751	17	e21	22
20	109	23	24	e22	25	26	24	1580	827	21	e21	23
21	25	23	24	e22	25	25	24	1570	825	20	e21	23
22	25	e23	24	22	26	25	24	1560	824	20	e21	23
23	166	23	23	24	26	25	24	1570	822	21	e21	23
24	311	24	e24	28	26	25	24	1570	821	21	e21	23
25	308	24	e24	27	26	25	24	709	817	20	e22	23
26	309	25	25	27	25	25	24	895	817	21	e22	27
27	308	25	25	27	29	25	e24	1560	523	21	e22	27
28	307	25	25	26	25	25	e25	1560	181	21	e22	e28
29	304	25	25	26	---	26	24	1560	181	19	e21	e27
30	303	25	26	27	---	25	24	1550	181	e21	e22	26
31	303	---	27	27	---	25	---	1550	---	e21	e22	---
TOTAL	3282	1119	10442	780	718	781	735	21507	23703	3317	686	727
MEAN	105.9	37.30	336.8	25.16	25.64	25.19	24.50	693.8	790.1	107.0	22.13	24.23
MAX	311	302	1200	29	29	27	26	1580	1540	1130	25	28
MIN	22	21	23	22	24	25	24	24	181	17	21	22
AC-FT	6510	2220	20710	1550	1420	1550	1460	42660	47010	6580	1360	1440

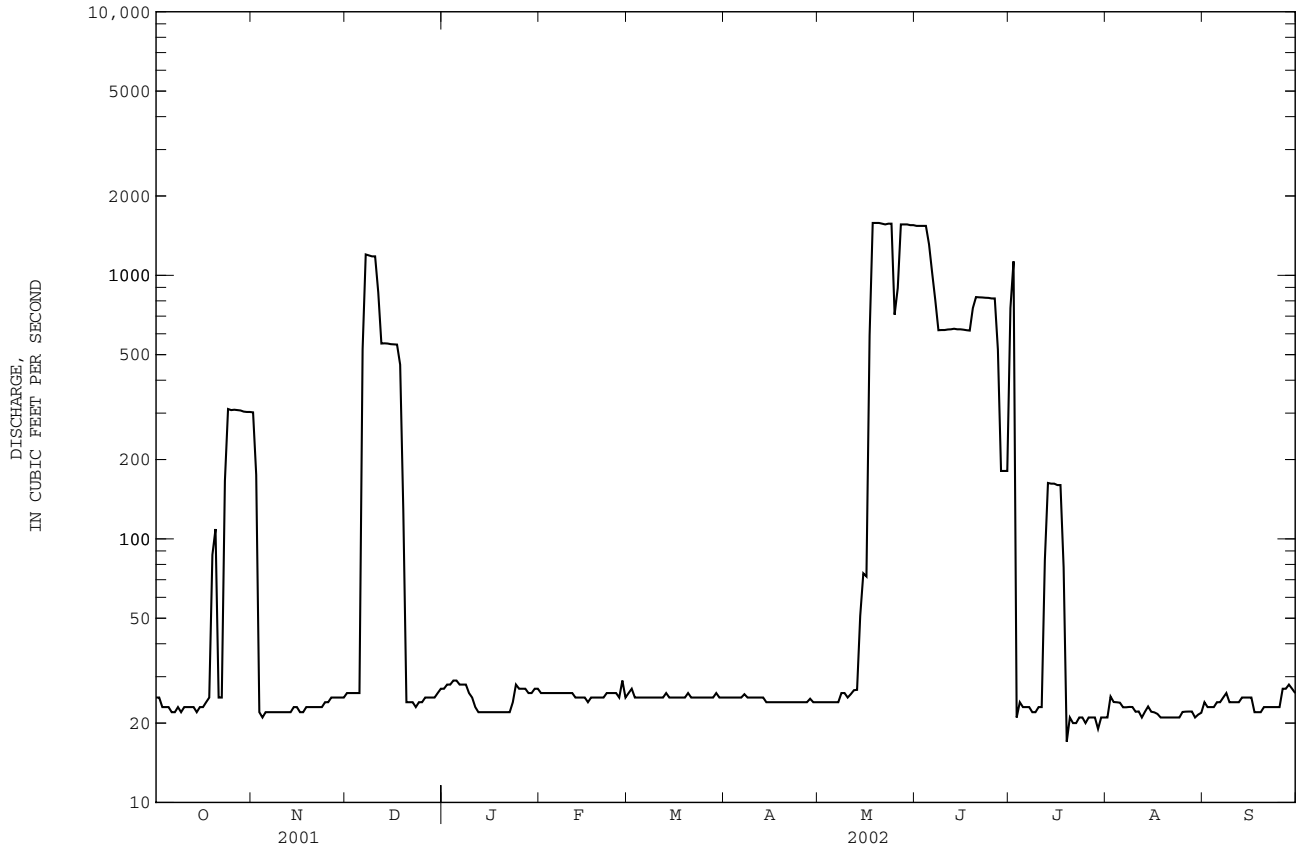
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 2002, BY WATER YEAR (WY)

MEAN	266.1	275.8	408.9	235.9	311.7	448.8	366.1	447.7	489.6	575.9	474.0	302.9
MAX	1790	1828	1364	1546	1550	1271	1480	1281	1573	1377	1826	1707
(WY)	1994	1994	1993	1993	1993	1993	2001	1973	1973	2001	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 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1970 - 2002a	
ANNUAL TOTAL	194017		67797			
ANNUAL MEAN	531.6		185.7		384.4	
HIGHEST ANNUAL MEAN					1164	1993
LOWEST ANNUAL MEAN					20.4	1989
HIGHEST DAILY MEAN	1540	Apr 12	1580	May 18b	1950	Oct 17 1993
LOWEST DAILY MEAN	12	Jan 6	17	Jul 19	0.00	Oct 26 1977
ANNUAL SEVEN-DAY MINIMUM	12	Jan 3	20	Jul 19	1.0	Apr 1 1970
MAXIMUM PEAK FLOW			1670	May 25	2780	Dec 14 1993
MAXIMUM PEAK STAGE			11.06	May 25	14.94	Dec 14 1993
ANNUAL RUNOFF (AC-FT)	384800		134500		278500	
10 PERCENT EXCEEDS	1480		660		1200	
50 PERCENT EXCEEDS	26		25		52	
90 PERCENT EXCEEDS	19		22		16	

a Post regulation.
b Also May 19, 20.
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 NGVD of 1929 (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. 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 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	375	40	e42	e46	e56	101	158	1610	268	36	30
2	38	360	39	e45	e44	e53	84	127	1590	1390	37	29
3	40	131	39	e43	e42	e56	72	104	1580	477	35	30
4	40	47	39	e45	e40	e58	66	90	1570	51	35	29
5	141	45	40	e46	e42	e59	62	80	1540	42	35	28
6	89	43	42	e43	e45	e63	60	94	1140	43	34	29
7	66	41	1170	e42	e48	e66	65	104	1050	52	34	32
8	56	39	1340	e45	e50	e87	187	85	694	51	34	36
9	51	38	1330	e44	62	e153	733	209	667	41	34	35
10	51	38	1330	e43	70	119	334	213	667	153	33	35
11	71	38	1260	e43	94	104	163	2360	688	181	33	35
12	56	37	720	e42	72	85	233	4300	826	99	32	37
13	55	37	689	e43	72	75	193	1730	1350	185	33	37
14	58	38	681	e42	73	68	131	474	951	230	35	40
15	56	40	679	e40	77	62	104	238	735	226	33	39
16	60	38	668	e41	78	59	88	197	688	224	33	37
17	59	38	658	e43	76	57	75	185	664	224	32	38
18	55	38	652	e45	74	55	66	1440	647	222	31	35
19	50	38	397	e43	100	54	63	1660	683	80	73	37
20	165	40	96	e44	229	53	62	1640	860	40	54	38
21	101	39	51	46	186	51	109	1620	866	40	52	40
22	62	46	52	45	120	48	143	1610	864	38	38	37
23	362	39	e52	43	95	49	109	1690	861	e41	45	37
24	617	40	e44	e43	82	49	89	1680	858	e41	46	36
25	539	41	e44	e42	73	52	87	2150	853	43	37	35
26	416	40	e43	e45	67	55	82	1020	858	40	33	37
27	389	44	e45	51	e67	59	736	1670	825	35	31	38
28	379	42	e46	50	e59	63	1650	2040	307	35	31	36
29	372	41	e44	49	---	120	481	1880	238	44	29	36
30	369	41	e43	e48	---	243	214	1680	234	40	29	35
31	399	---	e43	e48	---	149	---	1630	---	36	30	---
TOTAL	5300	1952	12416	1374	2183	2380	6642	34158	26964	4712	1137	1053
MEAN	171.0	65.07	400.5	44.32	77.96	76.77	221.4	1102	898.8	152.0	36.68	35.10
MAX	617	375	1340	51	229	243	1650	4300	1610	1390	73	40
MIN	38	37	39	40	40	48	60	80	234	35	29	28
AC-FT	10510	3870	24630	2730	4330	4720	13170	67750	53480	9350	2260	2090
CFSM	0.23	0.09	0.54	0.06	0.11	0.10	0.30	1.49	1.21	0.21	0.05	0.05
IN.	0.27	0.10	0.62	0.07	0.11	0.12	0.33	1.72	1.36	0.24	0.06	0.05

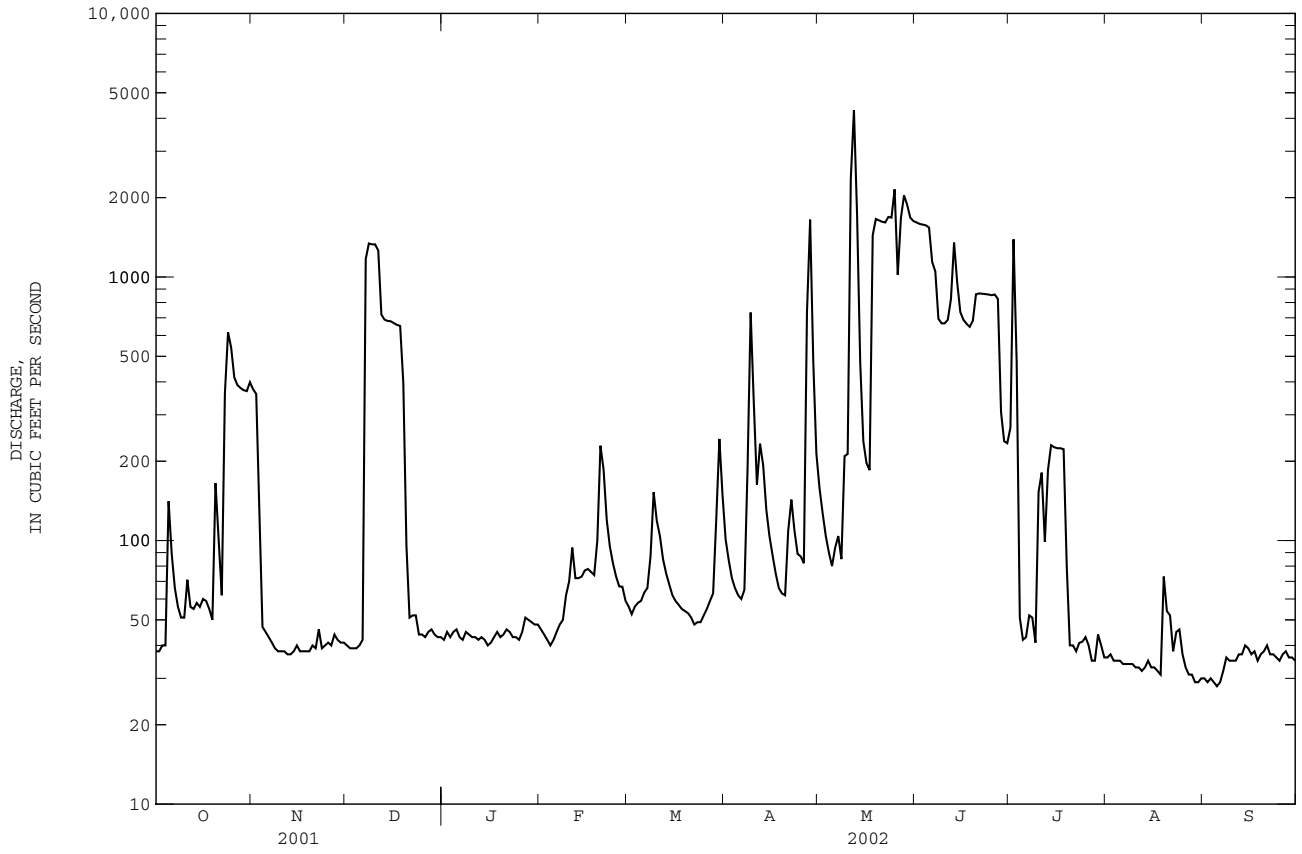
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1980 - 2002, BY WATER YEAR (WY)

MEAN	394.1	384.5	510.8	306.0	439.3	695.6	652.4	737.3	708.5	907.2	632.0	447.4
MAX	1874	1931	1557	1696	1772	1831	1731	1421	1593	2849	2004	1976
(WY)	1994	1994	1983	1993	1983	1993	2001	1995	2001	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 2001 CALENDAR YEAR		FOR 2002 WATER YEAR		WATER YEARS 1980 - 2002	
ANNUAL TOTAL	279573		100271			
ANNUAL MEAN	766.0		274.7		569.1	
HIGHEST ANNUAL MEAN					1555	1993
LOWEST ANNUAL MEAN					43.6	1989
HIGHEST DAILY MEAN	5010	Mar 15	4300	May 12	8720	Jul 17 1982
LOWEST DAILY MEAN	18	Jan 2	28	Sep 5	14	Jun 22 1988a
ANNUAL SEVEN-DAY MINIMUM	22	Jan 1	29	Aug 30	15	Jun 22 1988
MAXIMUM PEAK FLOW			5020	May 12	11200	Jul 16 1982
MAXIMUM PEAK STAGE			33.25	May 12	36.83	Jul 16 1982
ANNUAL RUNOFF (AC-FT)	554500		198900		412300	
ANNUAL RUNOFF (CFSM)	1.04		0.37		0.77	
ANNUAL RUNOFF (INCHES)	14.05		5.04		10.45	
10 PERCENT EXCEEDS	1680		860		1430	
50 PERCENT EXCEEDS	360		56		258	
90 PERCENT EXCEEDS	38		35		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 2002 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-	08-22-02	4.26	(+)	06-13-01	9.78	(+)
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-	2002	(a)	<78	06-20-83	88.37	d6,400
			Revised Record:					
			1968	(a)	<70			
			04-05-69	86.26	1,240			
			03-03-70	86.30	1,270			
			06-06-71	86.66	d1,750			
			06-07-72	87.19	d2,700			
			06-18-73	86.98	d2,300			
			06-22-74	83.57	140			
			05-22-76	85.02	400			
			05-11-79	84.67	300			
			10-31-79	85.22	470			
			06-14-81	85.30	500			
			02-23-82	85.29	500			
			06-20-83	88.37	d6,400			
			06-12-84	86.30	1,270			
			04-23-85	85.29	490			
			03-17-86	86.04	1,020			
			1987	(a)	<70			
			1988	(a)	<70			
			06-28-90	86.71	d1,850			
			1991	(a)	<70			
			02-20-92	84.19	220			
			07-12-93	87.79	d4,200			
			06-05-94	86.99	d2,300			
			05-15-95	85.60	640			
			06-22-96	86.84	d2,060			
			03-12-97	85.02	400			
			04-27-98	83.57	170			
			1999	(a)	<110			
			2000	(a)	<110			
			04-24-01	85.66	750			
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-	07-10-02	8.98	392	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-	07-10-02	29.56	896	06-14-81	38.68	d5,500
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-	2002	(a)	<104	03-02-70	89.04	(+)

Station name and number	Location and drainage area	Period of record	Water year 2002 maximum			Period of record maximum		
			Date	Gage height (ft)	Discharge (ft^3/s)	Date	Gage height (ft)	Discharge (ft^3/s)
FLOYD RIVER BASIN--continued								
Sweeney Creek tributary near Sheldon, IA (06600036)	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-	03-30-02	(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-	2002	(a)	<349	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-	08-22-02	(+)	(+)	03-22-79	94.87	(+)
MONONA-HARRISON DITCH BASIN								
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-	2002	(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-	2002	(a)	<353	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-	06-11-02	11.52	43	06-29-93	16.44	419
			Revised Record:					
			06-16-90	11.66	[d]48			
			1994	(a)	[d]<12			
			03-12-95	12.94	[d]110			
			03-20-97	15.18	[d]280			
			1998	(a)	[d]<20			
			02-15-99	13.71	[d]160			
			2000	(a)	[d]<17			
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-	2002	(a)	<120	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-	2002	(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-	2002	(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., O'Brian County, Hydrologic Unit 10230003, at culvert on State Highway 10, 1.2 mi north of Calumet. Drainage area 4.13 mi^2.	1991-	2002	(a)	(+)	07-14-93	100.92	(+)

Station name and number	Location and drainage area	Period of record	Water year 2002 maximum			Period of record maximum		
			Date	Gage height (ft)	Discharge (ft^3/s)	Date	Gage height (ft)	Discharge (ft^3/s)
LITTLE SIOUX RIVER BASIN--continued								
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-	08-22-02	91.56	[d]120	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-	06-11-02	85.39	(+)	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-	06-11-02	73.27	1,090	07-09-93	84.66	6,840
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-	05-11-02	76.07	1,760	06-15-84	87.89	(+)
			Revised Record:					
			1991	(a)	<1,550			
			1992	(a)	<1,550			
			06-18-94	79.59	3,340			
			1995	(a)	<1,560			
			2000	(a)	<1,560			
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-	05-11-02	78.81	[d]73	08-07-99	[d]82.7	[d]770
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-	03-15-02	75.47	[d]4.4	07-10-99	82.97	[d]600
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-	06-11-02	90.91	[d]410	05-15-98	93.73	[d]1,220
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-	2002	(a)	<766	06-15-82	92.63	15,800
						08-07-99	94.32	(+)
			Revised Record:					
			06-02-91	86.61	1,160			
			1992	(a)	<920			
			1994	(a)	<1,150			
			1995	(a)	<1,150			
			07-18-96	87.25	1,520			
			1997	(a)	<1,150			
			06-14-98	92.18	12,500			
			08-07-99	[e]94.32	(+)			
			2000	(a)	<1,150			
			2001	(a)	<820			
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-	08-23-02	74.39	213	07-09-93	88.55	(+)

Station name and number	Location and drainage area	Period of record	Water year 2002 maximum			Period of record maximum		
			Date	Gage height (ft)	Discharge (ft^3/s)	Date	Gage height (ft)	Discharge (ft^3/s)
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-	2002	(a)	<374	08-29-93	12.98	4,640
			Revised Record:					
			1953	(a)	<180			
			1954	(a)	<180			
			03-02-55	8.88	630			
			07-07-56	6.19	250			
			05-29-57	5.16	140			
			08-28-58	11.48	1,150			
			09-11-72	10.21	1,000			
			09-19-86	8.67	800			
			1988	(a)	<370			
			09-08-89	10.32	1,130			
			05-25-90	9.23	930			
			06-14-91	11.33	1,490			
			1992	(a)	<330			
			08-29-93	12.98	2,780			
			1994	(a)	<380			
			1995	(a)	<380			
			1997	(a)	<370			
			08-07-99	11.59	1,600			
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-	2002	(a)	<471	06-09-67	13.74	4,790
TARKIO RIVER BASIN								
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-	2002	(a)	(+)	06-23-99	5.56	1,070
			Revised Record:					
			06-09-67	13.74	5,480			
			06-26-69	7.68	480			
			09-11-72	11.03	1,590			
			02-01-73	8.54	640			
			06-25-75	10.60	1,350			
			06-14-76	11.11	1,650			
			08-27-77	11.61	2,040			
			03-29-79	8.93	720			
			06-05-82	12.82	3,510			
			09-19-86	8.74	680			
			1998	(a)	<471			
			1995	(a)	<471			
			1996	(a)	<471			
			1997	(a)	<471			
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-	2002	(a)	(+)	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-	05-12-02	72.38	259	02-01-73	82.39	[d]4,700
			Revised Record:					
			1966	(a)	<1,410			
			1967	(a)	<1,410			
			1968	(a)	<1,410			
			07-09-69	79.57	2,460			
			1970	(a)	<1,410			
			1971	(a)	<1,410			
			1972	(a)	<1,410			
			02-01-73	82.39	[d]4,700			
			1974	(a)	<1,410			
			1975	(a)	<1,410			
			1976	(a)	<1,410			
			1977	(a)	<1,410			
			04-17-78	78.48	1,840			
			06-27-79	79.91	2,690			
			1980	(a)	<1,410			
			1981	(a)	<1,410			
			06-15-82	81.19	3,650			
			1983	(a)	<1,410			
			1984	(a)	<1,410			
			1985	(a)	<1,410			
			07-09-87	74.70	580			
			1988	(a)	<1,410			
			06-14-91	80.11	2,820			
			1993	(a)	<1,260			
			1994	(a)	<1,260			
			1995	(a)	<1,260			
			1996	(a)	<1,260			
			1997	(a)	<1,260			

Station name and number	Location and drainage area	Period of record	Water year 2002 maximum			Period of record maximum		
			Date	Gage height (ft)	Discharge (ft^3/s)	Date	Gage height (ft)	Discharge (ft^3/s)
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-	05-11-02	10.69	1,360	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-	2002	(a)	<758	02-01-73	[c]83.65	(+)
						07-05-93	82.30	6,250
			Revised Record:					
			1975	(a)	<1,280			
			1976	(a)	<1,530			
			1978	(a)	<2,020			
			1979	(a)	<2,270			
			1980	(a)	<2,520			
			1981	(a)	<2,770			
			1982	(a)	<3,010			
			1983	(a)	<3,260			
			1984	(a)	<3,510			
			1985	(a)	<3,750			
			07-14-86	82.30	6,250			
			07-12-87	78.91	3,330			
			1988	(a)	<4,000			
			1990	(a)	<4,000			
			1991	(a)	<4,000			
			1992	(a)	<4,000			
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-	2002	(a)	(+)	09-15-92	24.92	[d]1,330
			Revised Record:					
			05-23-95	15.08	[d]110			
			1998	(a)	<1,590			
			1999	(a)	<1,590			
			2000	(a)	<1,590			
			2001	(a)	<1,590			
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-	05-11-02	23.84	8,650	07-05-93	29.93	32,800

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, 2.30 feet below land-surface datum, May 08, 2001; lowest measured, 3.08 ft below land-surface datum, December 06, 1996.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	2.55	FEB 02	2.51	MAY 02	2.35	AUG 14	4.11

WATER YEAR 2002 HIGHEST 2.35 MAY 02, 2002 LOWEST 4.11 AUG 14, 2002

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, 5.45 ft below land-surface datum, November 30, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	5.42	FEB 05	5.34	MAY 02	5.23	AUG 14	8.24

WATER YEAR 2002 HIGHEST 5.23 MAY 02, 2002 LOWEST 8.24 AUG 14, 2002

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 1961 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 355.00 feet below land surface datum, March 10, 1961; lowest measured, 389.00 feet below land-surface datum February 08, 1999.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 13	391.40	FEB 14	388.86	MAY 06	389.13	AUG 12	390.28

WATER YEAR 2002 HIGHEST 388.86 FEB 14, 2002 LOWEST 391.40 NOV 13, 2001

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	52.15	MAR 28	53.03	MAY 01	53.16	AUG 15	53.61

WATER YEAR 2002 HIGHEST 52.15 NOV 02, 2001 LOWEST 53.61 AUG 15, 2002

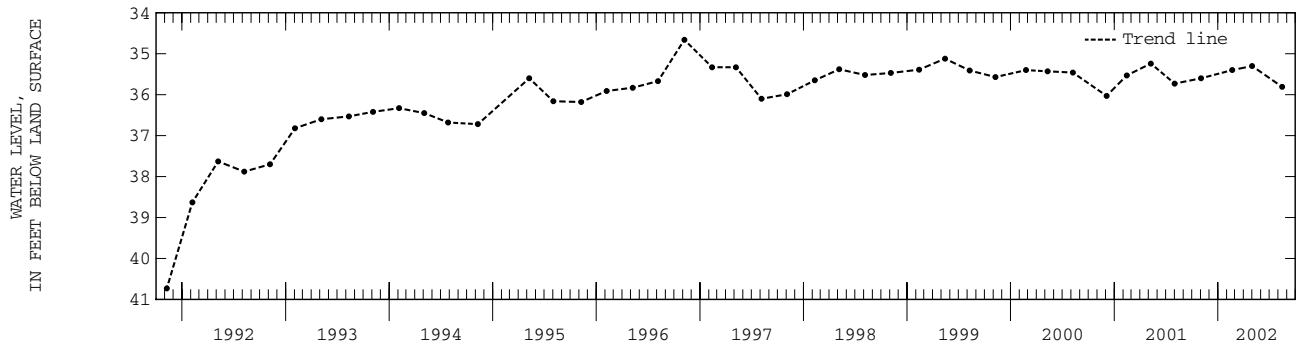
AUDUBON COUNTY--Continued

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	35.60	FEB 20	35.40	MAY 01	35.30	AUG 15	35.81

WATER YEAR 2002 HIGHEST 35.30 MAY 01, 2002 LOWEST 35.81 AUG 15, 2002



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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	163.20	FEB 20	163.41	MAY 01	163.47	AUG 15	164.47

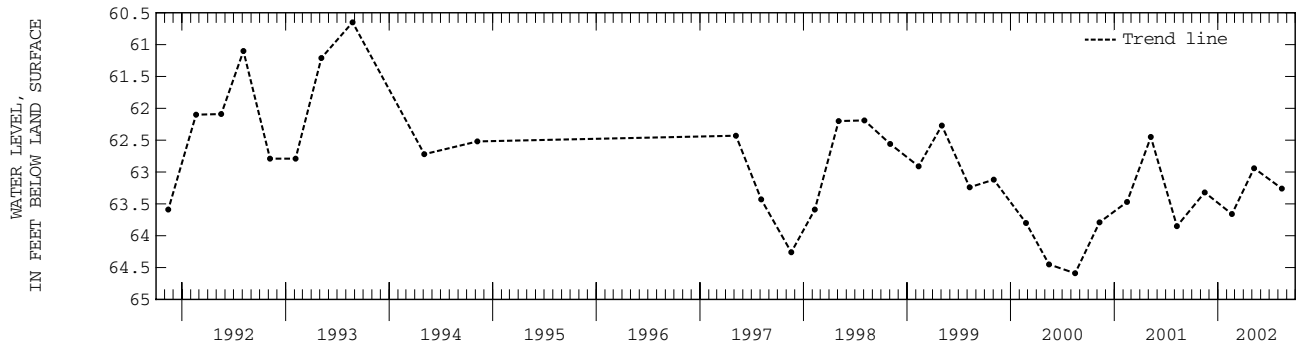
WATER YEAR 2002 HIGHEST 163.20 OCT 29, 2001 LOWEST 164.47 AUG 15, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 15	63.32	FEB 19	63.66	MAY 08	62.94	AUG 14	63.26

WATER YEAR 2002 HIGHEST 62.94 MAY 08, 2002 LOWEST 63.66 FEB 19, 2002



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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 15	63.37	FEB 19	63.68	MAY 08	62.99	AUG 14	63.28

WATER YEAR 2002 HIGHEST 62.99 MAY 08, 2002 LOWEST 63.68 FEB 19, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 15	79.82	FEB 19	80.97	MAY 08	81.60	AUG 14	86.25

WATER YEAR 2002 HIGHEST 79.82 NOV 15, 2001 LOWEST 86.25 AUG 14, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	89	FEB 13	88	APR 30	88	AUG 06	88

WATER YEAR 2002 HIGHEST 88 FEB 13, 2002 APR 30, 2002 AUG 06, 2002 LOWEST 89 NOV 07, 2001

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	97.58	FEB 14	97.20	MAY 01	97.16	AUG 07	98.20

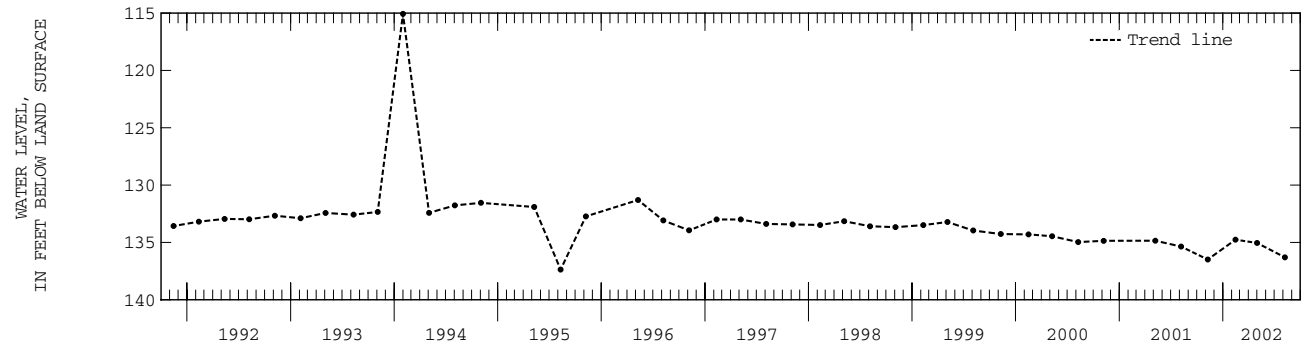
WATER YEAR 2002 HIGHEST 97.16 MAY 01, 2002 LOWEST 98.20 AUG 07, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	136.49	FEB 14	134.76	MAY 01	135.05	AUG 07	136.30

WATER YEAR 2002 HIGHEST 134.76 FEB 14, 2002 LOWEST 136.49 NOV 08, 2001



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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	8.82	FEB 14	8.89	MAY 01	6.32	AUG 08	9.74

WATER YEAR 2002 HIGHEST 6.32 MAY 01, 2002 LOWEST 9.74 AUG 08, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	305	FEB 14	279.00	AUG 08	222

WATER YEAR 2002 HIGHEST 222 AUG 08, 2002 LOWEST 305 NOV 08, 2001

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	4.93	FEB 14	4.97	MAY 01	2.47	AUG 07	4.54

WATER YEAR 2002 HIGHEST 2.47 MAY 01, 2002 LOWEST 4.97 FEB 14, 2002

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, 24.85 ft below land-surface datum, November 08, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	21.65	FEB 14	21.57	MAY 01	20.31	AUG 07	20.26

WATER YEAR 2002 HIGHEST 20.26 AUG 07, 2002 LOWEST 21.65 NOV 08, 2001

CARROLL COUNTY--Continued

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, 12.53 ft below land-surface datum, February 12, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	11.11	FEB 14	11.49	MAY 01	10.53	AUG 07	10.07

WATER YEAR 2002 HIGHEST 10.07 AUG 07, 2002 LOWEST 11.49 FEB 14, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	236	FEB 14	228.00	MAY 01	205	AUG 07	207

WATER YEAR 2002 HIGHEST 205 MAY 01, 2002 LOWEST 236 NOV 08, 2001

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	119.08	FEB 20	121.20	MAY 02	121.18	AUG 14	121.74

WATER YEAR 2002 HIGHEST 119.08 NOV 01, 2001 LOWEST 121.74 AUG 14, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	121.36	FEB 20	122.37	MAY 01	123.06	AUG 15	124.20

WATER YEAR 2002 HIGHEST 121.36 NOV 02, 2001 LOWEST 124.20 AUG 15, 2002

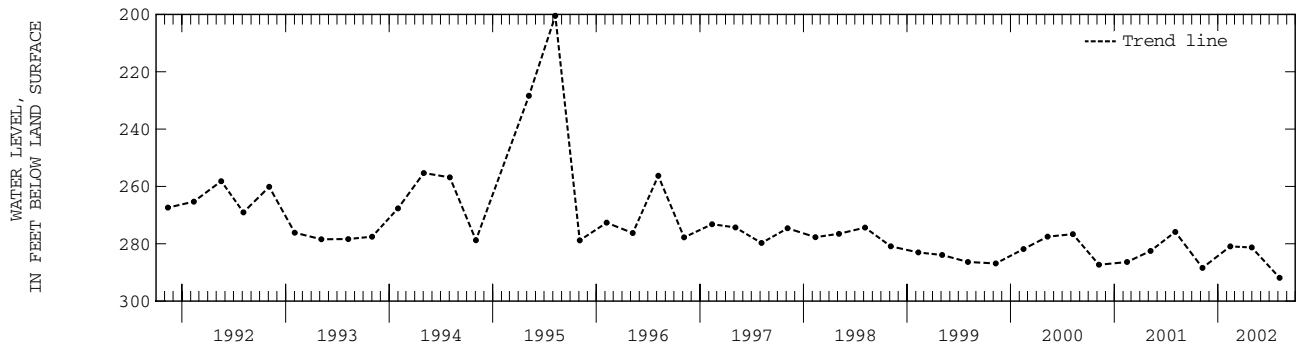
CERRO GORDO COUNTY

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	288.40	FEB 13	280.92	APR 30	281.30	AUG 06	291.88

WATER YEAR 2002 HIGHEST 280.92 FEB 13, 2002 LOWEST 291.88 AUG 06, 2002



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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	7.10	FEB 13	7.76	APR 30	7.29	AUG 06	4.95

WATER YEAR 2002 HIGHEST 4.95 AUG 06, 2002 LOWEST 7.76 FEB 13, 2002

CHEROKEE COUNTY

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	155.77	FEB 21	146.48	APR 29	144.88	AUG 14	157.60

WATER YEAR 2002 HIGHEST 144.88 APR 29, 2002 LOWEST 157.60 AUG 14, 2002

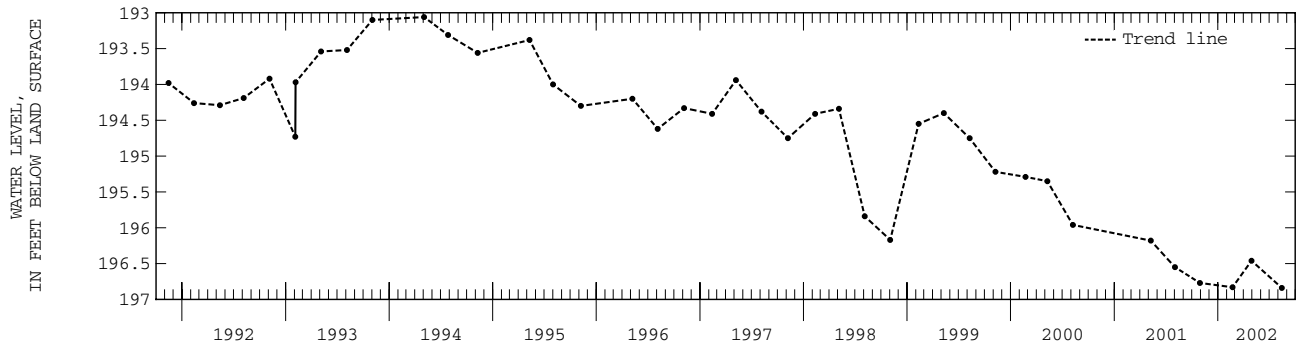
CHEROKEE COUNTY--Continued

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	196.77	FEB 21	196.83	APR 29	196.46	AUG 14	196.84

WATER YEAR 2002 HIGHEST 196.46 APR 29, 2002 LOWEST 196.84 AUG 14, 2002



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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	194.13	FEB 21	193.94	APR 29	193.66	AUG 14	193.79

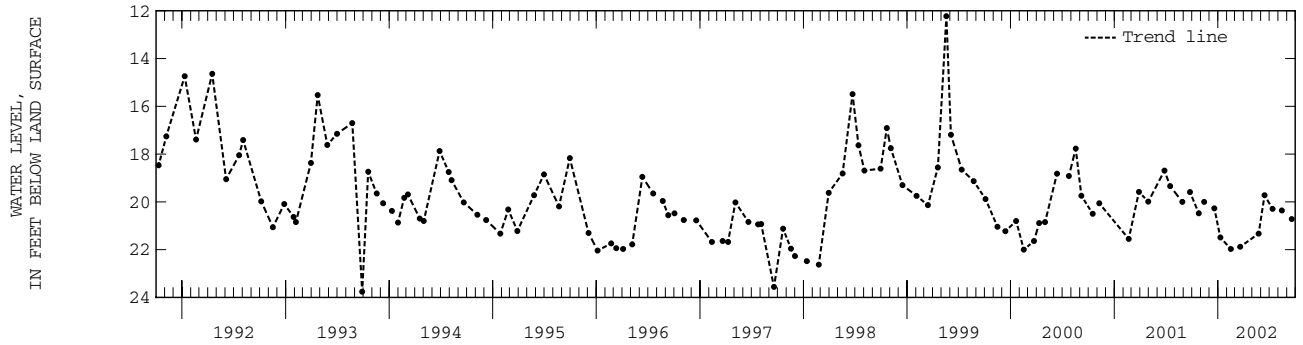
WATER YEAR 2002 HIGHEST 193.66 APR 29, 2002 LOWEST 194.13 OCT 29, 2001

424023091291201. 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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 25	20.48	DEC 19	20.27	FEB 15	21.97	MAY 24	21.33	JUL 12	20.29	SEP 18	20.72
NOV 13	20.00	JAN 09	21.49	MAR 20	21.88	JUN 14	19.72	AUG 14	20.36		

WATER YEAR 2002 HIGHEST 19.72 JUN 14, 2002 LOWEST 21.97 FEB 15, 2002



425736091260303. Local number, 94-05-31 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.
REMARKS.--Well BS2-G.
PERIOD OF RECORD.--January 1989 to April 1989, May 1997 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level recorded, 182.82 ft above land-surface datum, August 25, 1999, lowest water level recorded 185.60 ft below land-surface datum, February 20, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 13	185.38	MAR 20	185.66	MAY 24	185.83	AUG 13	185.76

WATER YEAR 2002 HIGHEST 185.38 NOV 13, 2001 LOWEST 185.83 MAY 24, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 13	6.60	MAR 20	5.77	MAY 24	5.60	AUG 13	6.13

WATER YEAR 2002 HIGHEST 5.60 MAY 24, 2002 LOWEST 6.60 NOV 13, 2001

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 14	23.48	MAR 19	23.2	AUG 13	23.56

WATER YEAR 2002 HIGHEST 23.2 MAR 19, 2002 LOWEST 23.56 AUG 13, 2002

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, 104 ft below land-surface datum, August 09, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 13	102	FEB 13	47	MAY 08	125	AUG 13	125

WATER YEAR 2002 HIGHEST 47 FEB 13, 2002 LOWEST 125 AUG 13, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 13	22.57	FEB 15	22.70	MAY 08	21.62	AUG 13	23.13

WATER YEAR 2002 HIGHEST 21.62 MAY 08, 2002 LOWEST 23.13 AUG 13, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 30	42.78	FEB 20	42.88	APR 29	42.68	AUG 14	41.65

WATER YEAR 2002 HIGHEST 41.65 AUG 14, 2002 LOWEST 42.88 FEB 20, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	215.17	FEB 20	215.05	APR 29	214.93	AUG 14	215.55

WATER YEAR 2002 HIGHEST 214.93 APR 29, 2002 LOWEST 215.55 AUG 14, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	248.93	FEB 21	248.80	APR 29	248.71	AUG 14	249.57

WATER YEAR 2002 HIGHEST 248.71 APR 29, 2002 LOWEST 249.57 AUG 14, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	236.27	FEB 21	236.49	APR 29	236.50	AUG 14	236.70

WATER YEAR 2002 HIGHEST 236.27 OCT 29, 2001 LOWEST 236.70 AUG 14, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	303.75	FEB 21	304.43	APR 29	304.29	AUG 14	304.25

WATER YEAR 2002 HIGHEST 303.75 OCT 29, 2001 LOWEST 304.43 FEB 21, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 20	68.19	FEB 21	68.07	APR 29	67.92	AUG 14	68.68

WATER YEAR 2002 HIGHEST 67.92 APR 29, 2002 LOWEST 68.68 AUG 14, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 05	409	FEB 12	405	APR 29	403	AUG 05	415

WATER YEAR 2002 HIGHEST 403 APR 29, 2002 LOWEST 415 AUG 05, 2002

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, 445.22 ft below land-surface datum, July 26, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	445.36	FEB 05	445.50	MAY 22	446.20

WATER YEAR 2002 HIGHEST 445.36 NOV 01, 2001 LOWEST 446.20 MAY 22, 2002

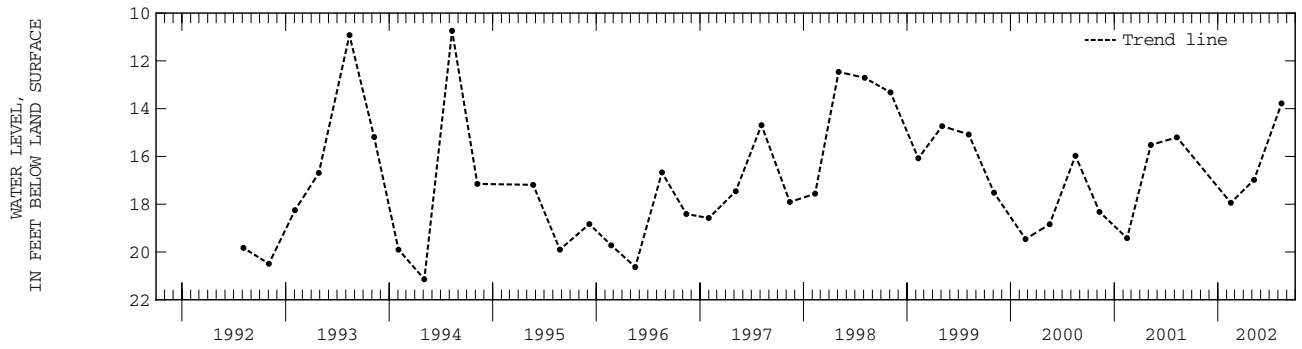
DELAWARE COUNTY

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 15	17.94	MAY 08	16.98	AUG 13	13.78

WATER YEAR 2002 HIGHEST 13.78 AUG 13, 2002 LOWEST 17.94 FEB 15, 2002



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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 14	249.44	FEB 15	242.63	MAY 08	248.79	AUG 14	245.25

WATER YEAR 2002 HIGHEST 242.63 FEB 15, 2002 LOWEST 249.44 NOV 14, 2001

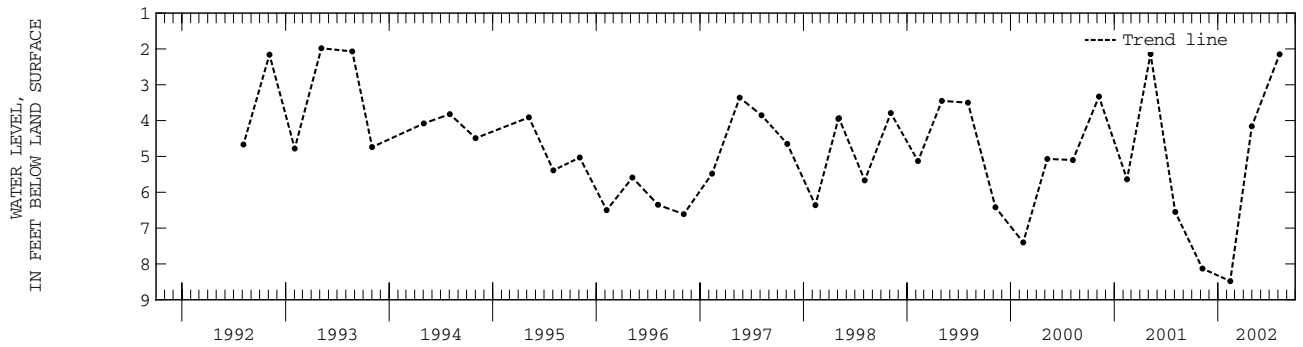
FLOYD COUNTY

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	8.13	FEB 13	8.48	APR 30	4.16	AUG 06	2.15

WATER YEAR 2002 HIGHEST 2.15 AUG 06, 2002 LOWEST 8.48 FEB 13, 2002



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, 83.41 ft below land-surface datum, February 14, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	81.82	FEB 13	88.68	FEB 13	88.68	APR 30	87.37	AUG 06	80.09

WATER YEAR 2002 HIGHEST 80.09 AUG 06, 2002 LOWEST 88.68 FEB 13, 2002 FEB 13, 2002

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, 89.07 ft below land-surface datum, February 14, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	87.79	FEB 13	94.55	APR 30	92.35	AUG 06	85.09

WATER YEAR 2002 HIGHEST 85.09 AUG 06, 2002 LOWEST 94.55 FEB 13, 2002

FLOYD COUNTY--Continued

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, 83.13 ft below land-surface datum, February 14, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	81.53	FEB 13	88.23	APR 30	87.88	AUG 06	80.19

WATER YEAR 2002 HIGHEST 80.19 AUG 06, 2002 LOWEST 88.23 FEB 13, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	87.84	FEB 13	93.63	APR 30	92.35	AUG 06	85.13

WATER YEAR 2002 HIGHEST 85.13 AUG 06, 2002 LOWEST 93.63 FEB 13, 2002

430800092540301. Local number, 96-17-18 CDBA.
LOCATION.--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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	196	FEB 13	191	APR 30	201	AUG 06	190

WATER YEAR 2002 HIGHEST 190 AUG 06, 2002 LOWEST 201 APR 30, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	42.90	FEB 14	42.60	MAY 01	42.30	AUG 07	49.98

WATER YEAR 2002 HIGHEST 42.30 MAY 01, 2002 LOWEST 49.98 AUG 07, 2002

GREENE COUNTY--Continued

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	18.79	FEB 14	18.42	MAY 01	16.92	AUG 07	17.72

WATER YEAR 2002 HIGHEST 16.92 MAY 01, 2002 LOWEST 18.79 NOV 08, 2001

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 05	39.55	FEB 12	36.84	APR 29	37.15	AUG 05	36.55

WATER YEAR 2002 HIGHEST 36.55 AUG 05, 2002 LOWEST 39.55 NOV 05, 2001

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	153.26	FEB 14	152.56	MAY 01	152.50	AUG 07	153.22

WATER YEAR 2002 HIGHEST 152.50 MAY 01, 2002 LOWEST 153.26 NOV 08, 2001

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 05	41.24	FEB 12	40.83	APR 29	40.83	AUG 05	41.63

WATER YEAR 2002 HIGHEST 40.83 FEB 12, 2002 APR 29, 2002 LOWEST 41.63 AUG 05, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	274	FEB 12	281	APR 29	261	MAY 08	276	AUG 05	276

WATER YEAR 2002 HIGHEST 261 APR 29, 2002 LOWEST 281 FEB 12, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 05	40.88	FEB 12	40.30	APR 29	39.57	AUG 05	40.82

WATER YEAR 2002 HIGHEST 39.57 APR 29, 2002 LOWEST 40.88 NOV 05, 2001

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 05	73.17	FEB 12	73.33	APR 29	73.19	AUG 05	73.32

WATER YEAR 2002 HIGHEST 73.17 NOV 05, 2001 LOWEST 73.33 FEB 12, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 05	39.90	FEB 12	40.15	APR 29	40.27	AUG 05	40.27

WATER YEAR 2002 HIGHEST 39.90 NOV 05, 2001 LOWEST 40.27 APR 29, 2002 AUG 05, 2002

GUTHRIE COUNTY--Continued

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 05	61.81	FEB 12	62.45	APR 29	62.88	AUG 05	63.54

WATER YEAR 2002 HIGHEST 61.81 NOV 05, 2001 LOWEST 63.54 AUG 05, 2002

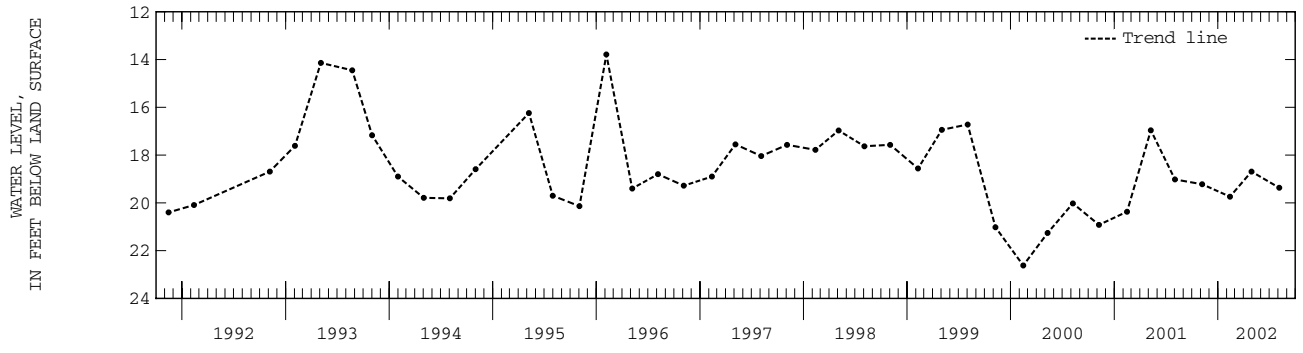
HARDIN COUNTY

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	19.22	FEB 12	19.74	APR 29	18.69	AUG 05	19.37

WATER YEAR 2002 HIGHEST 18.69 APR 29, 2002 LOWEST 19.74 FEB 12, 2002



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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	57.59	MAR 27	57.97	MAY 01	58.05	AUG 15	59.65

WATER YEAR 2002 HIGHEST 57.59 NOV 01, 2001 LOWEST 59.65 AUG 15, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	72.72	FEB 20	72.32	APR 29	72.31	AUG 14	73.41

WATER YEAR 2002 HIGHEST 72.31 APR 29, 2002 LOWEST 73.41 AUG 14, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	4.70	FEB 20	4.17	APR 17	4.41	AUG 14	5.74				
NOV 30	4.35	MAR 27	4.36	JUN 25	4.48	SEP 27	5.61				

WATER YEAR 2002 HIGHEST 4.17 FEB 20, 2002 LOWEST 5.74 AUG 14, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	4.64	FEB 20	4.28	APR 29	4.13	AUG 14	6.79

WATER YEAR 2002 HIGHEST 4.13 APR 29, 2002 LOWEST 6.79 AUG 14, 2002

HARRISON COUNTY--Continued

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 30	75.34	FEB 20	76.66	APR 29	77.03	AUG 14	77.38

WATER YEAR 2002 HIGHEST 75.34 OCT 30, 2001 LOWEST 77.38 AUG 14, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 13	72.08	FEB 15	72.21	MAY 06	71.26	AUG 12	71.88

WATER YEAR 2002 HIGHEST 71.26 MAY 06, 2002 LOWEST 72.21 FEB 15, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 13	9.88	FEB 15	9.75	MAY 06	9.72	AUG 12	9.89

WATER YEAR 2002 HIGHEST 9.72 MAY 06, 2002 LOWEST 9.89 AUG 12, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	355	FEB 13	328	APR 30	320	AUG 06	320

WATER YEAR 2002 HIGHEST 320 APR 30, 2002 AUG 06, 2002 LOWEST 355 NOV 07, 2001

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	9.29	JAN 17	10.69	APR 19	10.51	JUN 10	9.37	SEP 20	7.40		
NOV 09	8.87	FEB 21	11.01	MAY 02	10.10	JUL 12	9.85				
DEC 10	10.24	MAR 18	11.07	20	9.73	AUG 13	8.16				

WATER YEAR 2002 HIGHEST 7.40 SEP 20, 2002 LOWEST 11.07 MAR 18, 2002

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, 208.27 ft below land-surface datum, November 20, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	207.63	FEB 21	207.90	APR 29	208.12	AUG 14	208.66

WATER YEAR 2002 HIGHEST 207.63 OCT 29, 2001 LOWEST 208.66 AUG 14, 2002

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, 177.06 ft below land-surface datum, August 06, 2001; lowest measured, 244.55 ft below land-surface datum, July 9, 1980.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	177.58	FEB 21	176.44	APR 29	176.48	AUG 14	176.74

WATER YEAR 2002 HIGHEST 176.44 FEB 21, 2002 LOWEST 177.58 OCT 29, 2001

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 14	10.13	FEB 15	10.38	AUG 13	10.92

WATER YEAR 2002 HIGHEST 10.13 NOV 14, 2001 LOWEST 10.92 AUG 13, 2002

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, +1.84 ft above land-surface datum, May 21, 1987; lowest measured, 3.88 below land-surface datum, November 4, 1982.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
(READINGS ABOVE LAND SURFACE INDICATED BY "+")

DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 14	+1.18	AUG 13	+1.71

WATER YEAR 2002 HIGHEST +1.71 AUG 13, 2002 LOWEST +1.18 NOV 14, 2001

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 14	4.81	FEB 15	4.87	MAY 08	4.16	AUG 13	4.68

WATER YEAR 2002 HIGHEST 4.16 MAY 08, 2002 LOWEST 4.87 FEB 15, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 13	63.36	FEB 13	63.71	MAY 07	62.61	AUG 13	60.81

WATER YEAR 2002 HIGHEST 60.81 AUG 13, 2002 LOWEST 63.71 FEB 13, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 14	16.15	FEB 15	16.93	MAY 08	13.90	AUG 13	16.06

WATER YEAR 2002 HIGHEST 13.90 MAY 08, 2002 LOWEST 16.93 FEB 15, 2002

JASPER COUNTY

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 13	9.10	FEB 14	10.35	MAY 06	5.99	AUG 12	5.58

WATER YEAR 2002 HIGHEST 5.58 AUG 12, 2002 LOWEST 10.35 FEB 14, 2002

413908093071100. Local number, 79-19-01 CCCB.
LOCATION.--Lat 41°39'08", long 93°07'11", Hydrologic Unit 07080105, located approximately .5 miles east of Newton airport on county road. Owner: Newton Waterworks.
AQUIFER.--Cambrian/Ordovician.
WELL CHARACTERISTICS.--Drilled public-supply well, diameter 24 in. and 16 in., depth 2256.00 ft, open hole 1705-2256 ft.
INSTRUMENTATION.--Intermitent measurement by Newton Waterworks personnel by airline.
DATUM.--Elevation of land-surface datum is 775.00 ft above sea level, by levels.
REMARKS.-- Newton No. 24.
PERIOD OF RECORD.--October 2000 to current year.
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 182 feet below land surface datum, Decemeber 18, 2000; lowest measured, 205 feet below land-surface datum March 24, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
JAN 15	187	MAR 14	187	MAY 16	190	JUL 17	190	SEP 21	195		
FEB 15	192	APR 22	193	JUN 20	190	AUG 15	195				

WATER YEAR 2002 HIGHEST 187 JAN 15, 2002 MAR 14, 2002 LOWEST 195 AUG 15, 2002 SEP 21, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 16	136.45	DEC 17	125.33	FEB 27	117.12	APR 24	115.13	JUN 03	175.89	AUG 15	174.77
NOV 20	147.84	JAN 16	111.49	APR 09	113.33	MAY 20	146.51	JUL 09	154.57	SEP 17	140.45

WATER YEAR 2002 HIGHEST 111.49 JAN 16, 2002 LOWEST 175.89 JUN 03, 2002

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, 253.83 ft. below land-surface datum, July 09, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 16	237.23	DEC 17	244.26	FEB 27	231.79	APR 24	246.26	JUN 03	250.22	SEP 17	256.87
NOV 20	245.39	JAN 16	241.20	APR 09	247.11	MAY 20	244.79	JUL 09	261.11		

WATER YEAR 2002 HIGHEST 231.79 FEB 27, 2002 LOWEST 261.11 JUL 09, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 16	140.27	DEC 17	136.25	FEB 27	133.62	APR 24	134.49	JUN 03	148.96	AUG 15	147.91
NOV 20	141.45	JAN 16	133.46	APR 09	134.44	MAY 20	140.13	JUL 09	146.84	SEP 17	141.73

WATER YEAR 2002 HIGHEST 133.46 JAN 16, 2002 LOWEST 148.96 JUN 03, 2002

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, 314 ft below land-surface datum, August 13, 2001 and August 28, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 16	245	JAN 16	298	APR 09	306	JUN 03	310	SEP 17	322		
NOV 20	303	FEB 27	240	24	304	JUL 09	324				
DEC 17	246	MAR 11	312	MAY 20	302	AUG 15	318				

WATER YEAR 2002 HIGHEST 240 FEB 27, 2002 LOWEST 324 JUL 09, 2002

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, August 13, 2001 and August 28, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 16	353	DEC 17	365	FEB 27	360	JUN 03	410	AUG 15	420		
NOV 20	410	JAN 16	410	MAY 20	412	JUL 09	417	SEP 17	421		

WATER YEAR 2002 HIGHEST 353 OCT 16, 2001 LOWEST 421 SEP 17, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 17	13.31	JAN 17	13.54	APR 10	13.24	JUN 04	12.22	SEP 18	11.89		
NOV 21	13.43	FEB 28	13.55	25	12.80	JUL 09	12.08				
DEC 18	13.52	MAR 12	13.49	MAY 21	12.33	AUG 21	11.91				

WATER YEAR 2002 HIGHEST 11.89 SEP 18, 2002 LOWEST 13.55 FEB 28, 2002

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 Bureaús 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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 16	230.33	DEC 17	225.69	FEB 27	229.65	APR 24	230.72	JUN 03	231.36	AUG 15	235.44
NOV 20	229.03	JAN 16	224.82	APR 09	229.77	MAY 20	228.52	JUL 09	239.61	SEP 17	236.53

WATER YEAR 2002 HIGHEST 224.82 JAN 16, 2002 LOWEST 239.61 JUL 09, 2002

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 Bureaús 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 LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 16	213.34	JAN 16	208.80	APR 09	212.83	JUN 03	213.10	SEP 17	217.95		
NOV 20	211.66	FEB 27	212.03	24	213.54	JUL 09	220.14				
DEC 17	209.69	MAR 11	213.16	MAY 20	211.64	AUG 15	213.25				

WATER YEAR 2002 HIGHEST 208.80 JAN 16, 2002 LOWEST 220.14 JUL 09, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 16	264	JAN 16	262	APR 09	280	JUN 03	278	SEP 17	312		
NOV 20	268	FEB 27	184	24	186	JUL 09	294				
DEC 17	191	MAR 11	185	MAY 20	205	AUG 15	184				

WATER YEAR 2002 HIGHEST 184 FEB 27, 2002 AUG 15, 2002 LOWEST 312 SEP 17, 2002

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, 222 ft. below land-surface datum, June 21, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 16	171	JAN 16	180	APR 09	175	JUN 03	210	SEP 17	189		
NOV 20	182	FEB 27	173	24	175	JUL 09	221				
DEC 17	171	MAR 11	175	MAY 20	201	AUG 15	175				

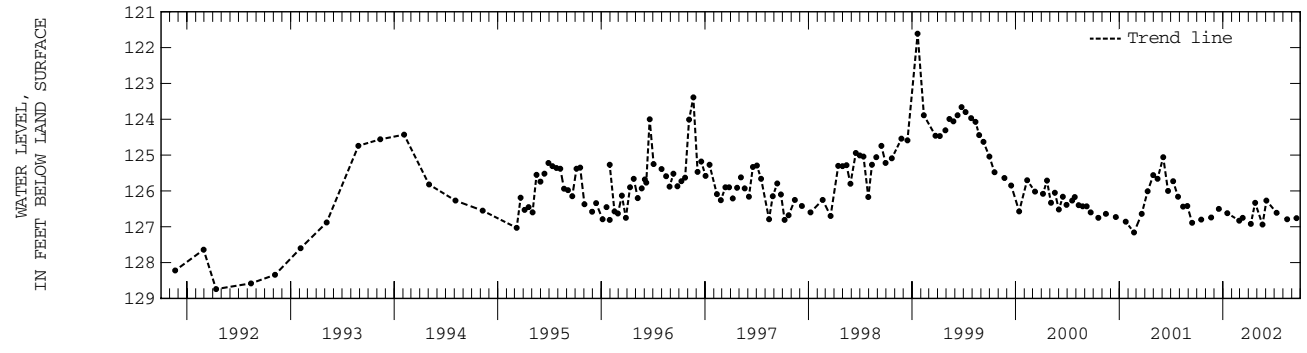
WATER YEAR 2002 HIGHEST 171 OCT 16, 2001 DEC 17, 2001 LOWEST 221 JUL 09, 2002

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 Bureaús 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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 16	126.80	JAN 16	126.62	APR 09	126.92	JUN 03	126.27	SEP 17	126.76		
NOV 20	126.74	FEB 27	126.83	24	126.33	JUL 09	126.61				
DEC 17	126.50	MAR 11	126.75	MAY 20	126.94	AUG 15	126.79				

WATER YEAR 2002 HIGHEST 126.27 JUN 03, 2002 LOWEST 126.94 MAY 20, 2002



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.

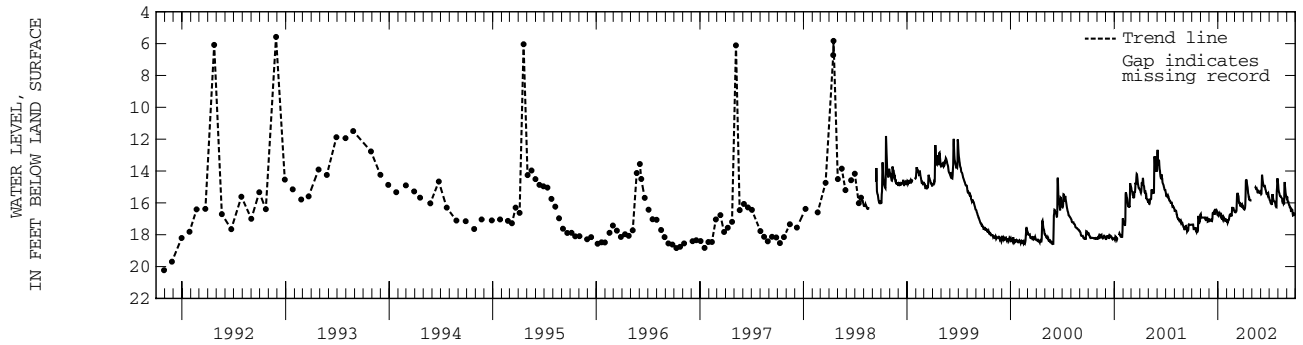
WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 17	17.90	JAN 17	17.02	APR 10	14.55	JUN 04	14.53	SEP 18	16.38		
NOV 21	16.93	FEB 28	16.47	25	15.85	JUL 09	16.07				
DEC 18	16.52	MAR 12	15.47	MAY 21	15.36	AUG 21	16.01				

WATER YEAR 2002 HIGHEST 14.53 JUN 04, 2002 LOWEST 17.90 OCT 17, 2001

DEPTH BELOW LAND S., in FT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.37	16.70	17.16	16.78	17.18	16.58	16.33	---	15.40	15.75	14.88	15.69
2	17.37	16.89	17.12	16.81	17.19	16.57	16.33	---	15.46	15.82	15.15	15.61
3	17.36	16.92	17.09	16.76	17.13	16.59	16.41	---	15.43	15.84	15.25	15.81
4	17.36	16.92	17.08	16.64	17.25	16.59	16.42	---	14.86	15.90	15.35	15.93
5	17.36	16.92	17.06	16.66	17.21	16.57	16.38	---	14.24	15.99	15.38	15.94
6	17.51	16.92	17.09	16.74	17.10	16.55	16.32	---	14.36	16.02	15.47	15.94
7	17.65	16.92	17.11	16.81	17.07	16.48	16.14	---	14.55	16.02	15.54	16.03
8	17.65	16.93	17.11	16.67	17.06	15.98	15.55	---	14.69	16.03	15.58	16.12
9	17.65	16.93	17.13	16.71	16.98	15.48	14.60	---	14.80	16.08	15.59	16.15
10	17.65	16.93	17.08	16.87	16.84	15.46	14.57	---	14.85	16.13	15.59	16.16
11	17.64	16.93	17.10	16.90	16.76	15.37	14.56	---	14.92	15.61	15.64	16.28
12	17.64	16.93	17.00	16.81	16.75	15.46	14.58	15.07	14.96	15.45	15.66	16.29
13	17.53	16.92	16.67	16.77	16.84	15.54	14.80	15.03	14.95	15.59	15.68	16.29
14	17.59	16.92	16.60	16.82	16.73	15.57	14.92	15.07	14.95	15.72	15.71	16.32
15	17.76	16.92	16.73	17.05	16.74	15.82	15.02	15.12	14.94	15.81	15.77	16.50
16	17.80	16.92	16.68	16.99	16.75	16.00	15.18	15.10	15.05	15.86	15.90	16.49
17	17.84	17.03	16.56	17.02	16.85	16.01	15.41	15.09	15.15	15.89	15.87	16.46
18	17.75	17.03	16.53	17.06	16.78	16.06	15.47	15.14	15.19	15.90	15.96	16.41
19	17.79	17.07	16.61	16.94	16.50	16.04	15.64	15.20	15.27	15.90	15.96	16.42
20	17.79	17.06	16.68	16.89	16.25	16.09	15.72	15.34	15.36	15.96	16.05	16.45
21	17.80	16.95	16.68	16.94	16.41	16.23	15.69	15.35	15.42	16.00	16.01	16.67
22	17.75	16.93	16.47	16.93	16.47	16.19	15.78	15.30	15.41	16.07	16.09	16.78
23	16.92	16.93	16.45	16.96	16.33	16.08	15.83	15.28	15.41	16.20	14.94	16.76
24	16.82	16.93	16.52	17.07	16.29	16.10	15.83	15.38	15.45	16.23	14.69	16.82
25	16.91	17.12	16.53	17.05	16.45	16.24	15.85	15.32	15.51	16.18	14.94	16.71
26	17.08	17.09	16.50	17.02	16.47	16.25	15.85	15.30	15.44	16.20	15.15	16.62
27	17.13	17.11	16.47	17.02	16.48	16.23	15.85	15.30	15.41	15.27	15.34	16.67
28	17.03	17.22	16.51	17.02	16.48	16.14	15.84	15.35	15.53	15.05	15.48	16.76
29	17.09	17.08	16.72	17.03	---	16.19	15.84	15.34	15.61	14.50	15.54	16.70
30	17.02	16.99	16.76	17.18	---	16.30	---	15.30	15.67	14.46	15.64	16.71
31	16.72	---	16.76	17.05	---	16.34	---	15.36	---	14.68	15.72	---
MEAN	17.43	16.97	16.79	16.90	16.76	16.10	---	---	15.14	15.75	15.53	16.35
MAX	17.84	17.22	17.16	17.18	17.25	16.59	---	---	15.67	16.23	16.09	16.82
MIN	16.72	16.70	16.45	16.64	16.25	15.37	---	---	14.24	14.46	14.69	15.61



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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 15	4.13	FEB 13	4.71	MAY 08	2.81	AUG 15	2.80

WATER YEAR 2002 HIGHEST 2.80 AUG 15, 2002 LOWEST 4.71 FEB 13, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 13	83.78	FEB 14	83.86	MAY 07	86.29	AUG 13	87.19

WATER YEAR 2002 HIGHEST 83.78 NOV 13, 2001 LOWEST 87.19 AUG 13, 2002

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, 271.77 ft. below land-surface datum, August 07, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 13	271.73	FEB 15	270.85	MAY 06	271.82	AUG 12	273.45

WATER YEAR 2002 HIGHEST 270.85 FEB 15, 2002 LOWEST 273.45 AUG 12, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 15	11.81	FEB 13	12.94	MAY 07	12.06	AUG 14	10.81

WATER YEAR 2002 HIGHEST 10.81 AUG 14, 2002 LOWEST 12.94 FEB 13, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 15	7.64	FEB 13	9.01	MAY 07	4.78	AUG 15	6.11

WATER YEAR 2002 HIGHEST 4.78 MAY 07, 2002 LOWEST 9.01 FEB 13, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 15	88.67	FEB 13	88.16	MAY 08	88.13	AUG 15	90.67

WATER YEAR 2002 HIGHEST 88.13 MAY 08, 2002 LOWEST 90.67 AUG 15, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 15	50.35	FEB 13	50.84	MAY 08	50.30	AUG 15	49.14

WATER YEAR 2002 HIGHEST 49.14 AUG 15, 2002 LOWEST 50.84 FEB 13, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 15	47.57	FEB 13	49.74	MAY 07	48.20	AUG 14	47.39

WATER YEAR 2002 HIGHEST 47.39 AUG 14, 2002 LOWEST 49.74 FEB 13, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 15	49.67	FEB 13	50.78	MAY 07	47.64	AUG 14	47.29

WATER YEAR 2002 HIGHEST 47.29 AUG 14, 2002 LOWEST 50.78 FEB 13, 2002

LINN COUNTY--Continued

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 23	3.74	DEC 21	6.38	FEB 13	6.21	APR 26	4.25	JUN 14	2.23	AUG 14	5.66
NOV 15	7.10	JAN 17	6.88	MAR 29	4.77	MAY 07	4.40	JUL 19	4.19	SEP 20	4.17

WATER YEAR 2002 HIGHEST 2.23 JUN 14, 2002 LOWEST 7.10 NOV 15, 2001

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 13	30.63	FEB 13	30.48	MAY 08	30.51	AUG 14	32.19

WATER YEAR 2002 HIGHEST 30.48 FEB 13, 2002 LOWEST 32.19 AUG 14, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 15	20.61	FEB 13	20.20	MAY 08	19.89	AUG 14	20.45

WATER YEAR 2002 HIGHEST 19.89 MAY 08, 2002 LOWEST 20.61 NOV 15, 2001

LINN COUNTY--Continued

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 15	28.39	FEB 13	28.77	MAY 08	26.73	AUG 14	26.66

WATER YEAR 2002 HIGHEST 26.66 AUG 14, 2002 LOWEST 28.77 FEB 13, 2002

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, 8.0 feet below land-surface datum, May 09, 2001; lowest measured, 22 ft below land-surface datum, February 23, 1998.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 15	15	MAY 08	16	AUG 14	16

WATER YEAR 2002 HIGHEST 15 NOV 15, 2001 LOWEST 16 MAY 08, 2002 AUG 14, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 30	105.67	FEB 22	105.06	APR 29	104.45	AUG 15	104.26

WATER YEAR 2002 HIGHEST 104.26 AUG 15, 2002 LOWEST 105.67 OCT 30, 2001

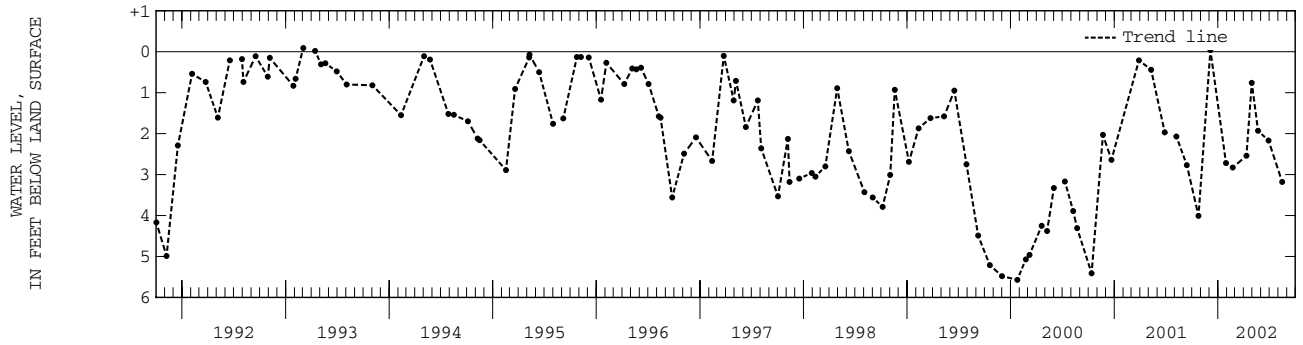
LYON COUNTY--Continued

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 2001 TO SEPTEMBER 2002
(READINGS ABOVE LAND SURFACE INDICATED BY "+")

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	4.01	JAN 29	2.72	APR 11	2.54	MAY 22	1.93	AUG 15	3.18		
DEC 05	+.04	FEB 22	2.83	30	.76	JUN 28	2.17				

WATER YEAR 2002 HIGHEST +.04 DEC 05, 2001 LOWEST 4.01 OCT 24, 2001

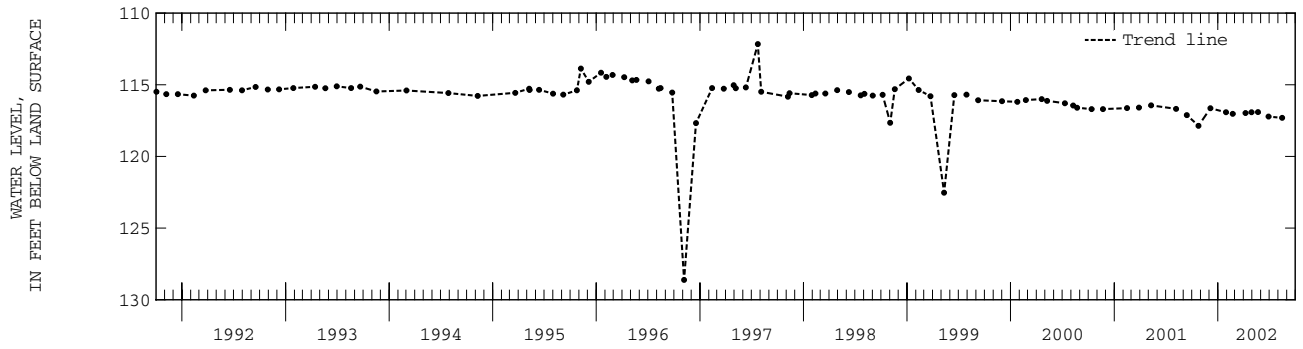


432553096105701. Local number, 99-45-05 ABAC.
LOCATION.--Lat 43°25'53", long 96°10'57", Hydrologic Unit 10170204, 0.05 mi south of Iowa Highway 9 on 2nd Street, Rock Rapids. Owner: City of Rock Rapids.
AQUIFER.--Dakota: sandstone of Cretaceous age.
WELL CHARACTERISTICS.--Drilled unused artesian water 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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 24	117.86	JAN 29	116.92	APR 08	116.97	MAY 22	116.91	AUG 15	117.31		
DEC 05	116.64	FEB 22	117.03	29	116.92	JUN 28	117.22				

WATER YEAR 2002 HIGHEST 116.64 DEC 05, 2001 LOWEST 117.86 OCT 24, 2001



LYON COUNTY--Continued

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 30	154.9	FEB 22	155.15	APR 29	155.02	AUG 15	155.60

WATER YEAR 2002 HIGHEST 154.9 OCT 30, 2001 LOWEST 155.60 AUG 15, 2002

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, 281.43 ft below land-surface datum, July 26, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	281.34	MAY 22	281.84	MAY 22	281.68	AUG 14	181.93

WATER YEAR 2002 HIGHEST 181.93 AUG 14, 2002 LOWEST 281.84 MAY 22, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 13	100.97	FEB 14	101.00	MAY 07	101.05	AUG 13	101.86

WATER YEAR 2002 HIGHEST 100.97 NOV 13, 2001 LOWEST 101.86 AUG 13, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 13	100.55	FEB 14	100.60	MAY 07	100.65	AUG 13	100.42

WATER YEAR 2002 HIGHEST 100.42 AUG 13, 2002 LOWEST 100.65 MAY 07, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
FEB 14	146.02	MAY 06	148.02	AUG 12	156.68

WATER YEAR 2002 HIGHEST 146.02 FEB 14, 2002 LOWEST 156.68 AUG 12, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 02	6.31	DEC 18	6.15	FEB 14	5.96	APR 15	4.75	JUN 04	5.04	AUG 12	6.17
NOV 13	6.23	JAN 03	6.61	MAR 12	5.68	MAY 06	4.36	JUL 17	4.28		

WATER YEAR 2002 HIGHEST 4.28 JUL 17, 2002 LOWEST 6.61 JAN 03, 2002

MARION COUNTY--Continued

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 13	12.94	FEB 14	13.31	MAY 06	12.23	AUG 12	12.39

WATER YEAR 2002 HIGHEST 12.23 MAY 06, 2002 LOWEST 13.31 FEB 14, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 13	21.55	FEB 14	21.67	MAY 06	21.36	AUG 12	21.44

WATER YEAR 2002 HIGHEST 21.36 MAY 06, 2002 LOWEST 21.67 FEB 14, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	54.18	FEB 12	60.85	APR 29	45.68	AUG 05	53.95

WATER YEAR 2002 HIGHEST 45.68 APR 29, 2002 LOWEST 60.85 FEB 12, 2002

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, 170.00 ft below land-surface datum, July 30, 2001.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	141.08	FEB 05	141.50	MAY 02	143.39	AUG 14	143.68

WATER YEAR 2002 HIGHEST 141.08 NOV 01, 2001 LOWEST 143.68 AUG 14, 2002

MILLS COUNTY--Continued

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	171.96	FEB 05	172.47	MAY 02	172.83	AUG 14	175.86

WATER YEAR 2002 HIGHEST 171.96 NOV 01, 2001 LOWEST 175.86 AUG 14, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	5.35	FEB 13	4.69	APR 30	2.81	AUG 06	2.51

WATER YEAR 2002 HIGHEST 2.51 AUG 06, 2002 LOWEST 5.35 NOV 07, 2001

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	11.64	FEB 13	12.87	APR 30	11.28	AUG 06	9.77

WATER YEAR 2002 HIGHEST 9.77 AUG 06, 2002 LOWEST 12.87 FEB 13, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	12.34	FEB 13	13.86	APR 30	12.61	AUG 06	9.85

WATER YEAR 2002 HIGHEST 9.85 AUG 06, 2002 LOWEST 13.86 FEB 13, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	15.86	FEB 13	17.21	APR 30	16.04	AUG 06	14.38

WATER YEAR 2002 HIGHEST 14.38 AUG 06, 2002 LOWEST 17.21 FEB 13, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 07	19.53	FEB 12	22.71	APR 30	21.97	AUG 06	20.07

WATER YEAR 2002 HIGHEST 19.53 NOV 07, 2001 LOWEST 22.71 FEB 12, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 30	244.78	FEB 22	245.08	APR 30	245.57

WATER YEAR 2002 HIGHEST 244.78 OCT 30, 2001 LOWEST 245.57 APR 30, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 30	60.72	FEB 22	61.80	APR 30	63.18	AUG 15	64.43

WATER YEAR 2002 HIGHEST 60.72 OCT 30, 2001 LOWEST 64.43 AUG 15, 2002

MONONA COUNTY--Continued

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 30	185.72	FEB 22	185.85	APR 30	185.94	AUG 15	186.31

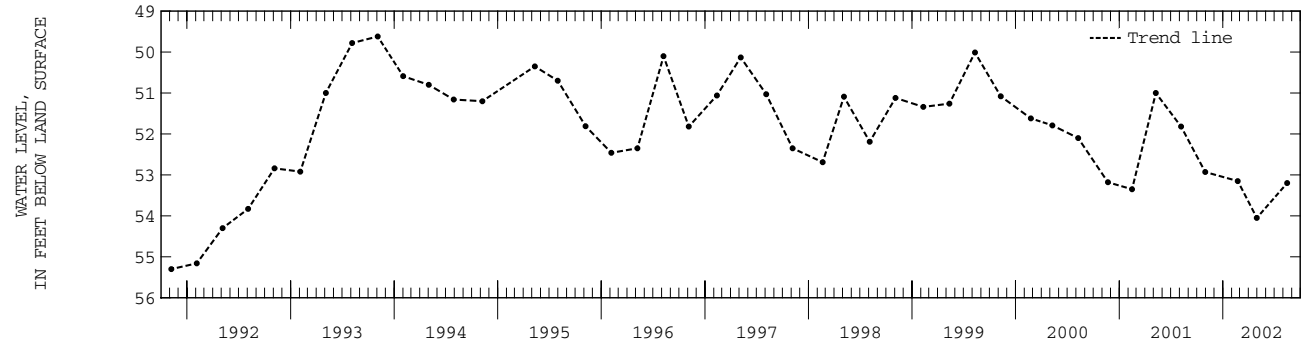
WATER YEAR 2002 HIGHEST 185.72 OCT 30, 2001 LOWEST 186.31 AUG 15, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 30	52.93	FEB 22	53.15	APR 30	54.05	AUG 15	53.20

WATER YEAR 2002 HIGHEST 52.93 OCT 30, 2001 LOWEST 54.05 APR 30, 2002



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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	16.46	FEB 05	16.58	MAY 02	15.67

WATER YEAR 2002 HIGHEST 15.67 MAY 02, 2002 LOWEST 16.58 FEB 05, 2002

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.

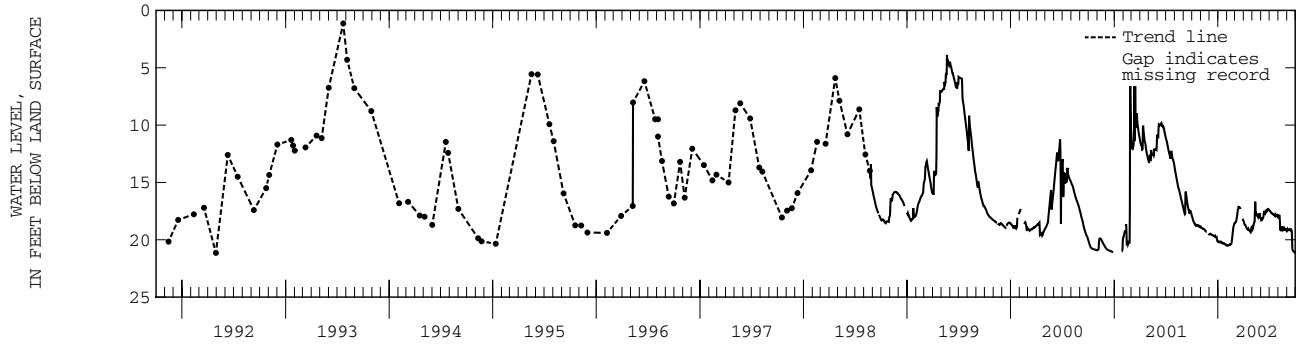
WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 17	18.77	MAR 28	18.12	MAY 02	19.14	AUG 07	19.17				
NOV 28	19.66	APR 17	19.03	JUN 26	17.36						

WATER YEAR 2002 HIGHEST 17.36 JUN 26, 2002 LOWEST 19.66 NOV 28, 2001

DEPTH BELOW LAND S., in FT, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17.95	18.84	19.53	20.17	20.48	18.51	18.37	18.85	18.15	17.42	17.87	19.21
2	18.02	18.90	19.52	20.21	20.47	18.49	18.43	18.97	18.26	17.47	17.88	19.16
3	18.12	18.95	19.50	20.20	20.49	18.50	18.54	19.05	18.22	17.51	17.96	19.08
4	18.23	18.98	19.48	20.16	20.51	18.48	18.63	18.97	18.15	17.50	17.92	19.13
5	18.31	18.98	19.47	20.16	20.51	18.45	18.68	18.87	18.18	17.54	17.91	19.17
6	18.37	18.98	19.50	20.19	20.49	18.33	18.71	18.74	18.23	17.57	17.91	19.16
7	18.43	18.99	19.52	20.21	20.50	18.23	18.71	18.65	18.19	17.63	18.41	19.12
8	18.48	19.03	19.55	20.17	20.49	18.11	18.73	18.52	18.10	17.68	19.13	19.12
9	18.53	19.05	19.56	20.17	20.47	17.95	18.83	18.47	18.05	17.68	19.17	19.14
10	18.58	19.05	19.56	20.21	20.46	17.76	18.88	18.43	17.99	17.69	19.16	19.12
11	18.65	19.08	19.59	20.23	20.41	17.53	18.92	17.52	17.70	17.71	19.17	19.14
12	18.68	19.09	19.60	20.23	20.41	17.36	18.99	16.68	17.59	17.74	19.12	19.16
13	18.67	19.09	19.61	20.19	20.43	17.24	19.05	17.33	17.61	17.74	18.81	19.18
14	18.70	19.10	19.61	20.21	20.39	17.13	19.06	17.78	17.67	17.77	19.03	19.08
15	18.74	19.13	19.63	20.27	20.38	17.13	19.07	17.87	17.68	17.80	19.06	19.08
16	18.79	19.17	19.65	20.28	20.37	17.17	19.11	17.75	17.60	17.84	19.12	19.16
17	18.78	19.21	19.66	20.31	20.32	17.16	19.10	17.80	17.67	17.85	19.07	19.20
18	18.71	19.22	19.66	20.33	20.20	17.18	19.05	17.84	17.61	17.87	19.17	19.21
19	18.71	19.27	19.69	20.30	20.00	17.20	19.12	17.89	17.51	17.87	19.08	19.98
20	18.72	19.29	19.72	20.29	19.77	17.24	19.17	17.89	17.40	17.85	19.15	20.84
21	18.75	19.28	19.72	20.30	19.55	17.32	19.19	17.97	17.51	17.89	19.14	20.90
22	18.76	19.27	19.67	20.30	19.34	---	19.23	18.02	17.52	17.79	19.09	20.94
23	18.73	---	19.72	20.32	19.10	---	19.25	17.88	17.47	17.83	18.98	20.97
24	18.75	---	19.77	20.36	18.90	---	19.27	17.91	17.38	17.93	19.01	21.01
25	18.80	---	19.78	20.39	18.80	---	19.32	17.96	17.32	17.94	19.09	21.03
26	18.86	---	19.77	20.41	18.72	---	19.35	17.96	17.32	17.90	19.12	21.05
27	18.88	---	19.76	20.41	18.63	---	19.25	17.67	17.31	17.92	19.10	21.09
28	18.86	---	19.93	20.43	18.56	---	18.98	17.95	17.33	17.88	19.11	21.12
29	18.88	19.61	20.10	20.44	---	18.17	18.92	18.07	17.37	17.85	19.15	21.14
30	18.89	19.54	20.13	20.47	---	18.26	18.88	18.09	17.39	17.89	19.12	21.16
31	18.84	---	20.15	20.45	---	18.34	---	18.10	---	17.95	19.14	---
MEAN	18.62	---	19.68	20.28	19.97	---	18.96	18.11	17.72	17.76	18.84	19.86
MAX	18.89	---	20.15	20.47	20.51	---	19.35	19.05	18.26	17.95	19.17	21.16
MIN	17.95	---	19.47	20.16	18.56	---	18.37	16.68	17.31	17.42	17.87	19.08



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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 13	14.72	FEB 15	15.82	MAY 07	15.30	AUG 13	15.17

WATER YEAR 2002 HIGHEST 14.72 NOV 13, 2001 LOWEST 15.82 FEB 15, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 13	14.66	FEB 15	15.75	MAY 07	15.23	AUG 13	15.10

WATER YEAR 2002 HIGHEST 14.66 NOV 13, 2001 LOWEST 15.75 FEB 15, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 13	14.76	FEB 15	15.85	MAY 07	15.33	AUG 13	15.25

WATER YEAR 2002 HIGHEST 14.76 NOV 13, 2001 LOWEST 15.85 FEB 15, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	37.67	FEB 14	37.48	MAY 01	37.47	AUG 07	38.30

WATER YEAR 2002 HIGHEST 37.47 MAY 01, 2002 LOWEST 38.30 AUG 07, 2002

O'BRIEN COUNTY--Continued

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 28	362.23	FEB 22	361.99	APR 29	363.08	AUG 14	362.76

WATER YEAR 2002 HIGHEST 361.99 FEB 22, 2002 LOWEST 363.08 APR 29, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	193.40	FEB 14	193.10	MAY 01	192.98	AUG 07	194.47

WATER YEAR 2002 HIGHEST 192.98 MAY 01, 2002 LOWEST 194.47 AUG 07, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	199.89	FEB 14	199.08	MAY 01	199.07	AUG 07	200.92

WATER YEAR 2002 HIGHEST 199.07 MAY 01, 2002 LOWEST 200.92 AUG 07, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	195.82	FEB 14	195.16	MAY 01	195.30	AUG 07	195.89

WATER YEAR 2002 HIGHEST 195.16 FEB 14, 2002 LOWEST 195.89 AUG 07, 2002

OSCEOLA COUNTY--Continued

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	345.93	FEB 14	346.45	MAY 01	345.19	AUG 07	344.10

WATER YEAR 2002 HIGHEST 344.10 AUG 07, 2002 LOWEST 346.45 FEB 14, 2002

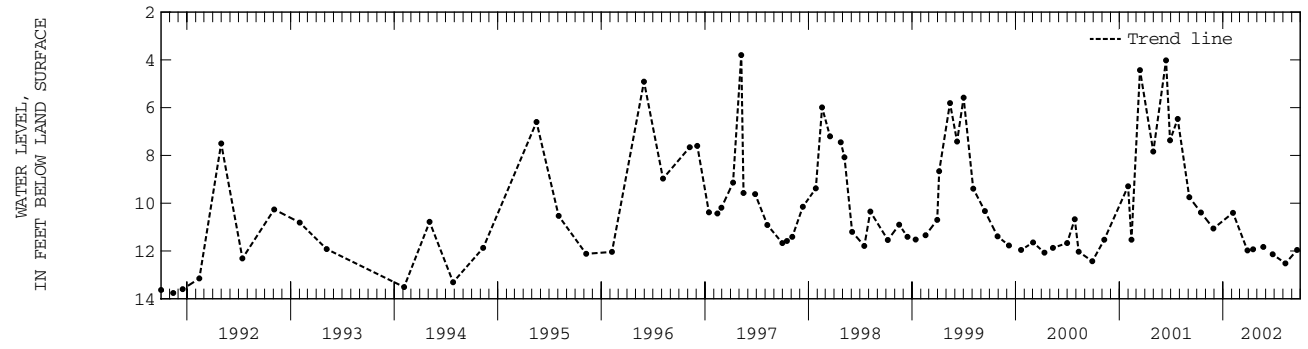
PAGE COUNTY

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	10.39	FEB 05	10.40	APR 17	11.93	JUN 25	12.14	SEP 19	11.96		
NOV 28	11.06	MAR 28	11.98	MAY 23	11.83	AUG 09	12.52				

WATER YEAR 2002 HIGHEST 10.39 OCT 15, 2001 LOWEST 12.52 AUG 09, 2002



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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	137.40	FEB 21	137.19	APR 30	138.18	AUG 14	137.33

WATER YEAR 2002 HIGHEST 137.19 FEB 21, 2002 LOWEST 138.18 APR 30, 2002

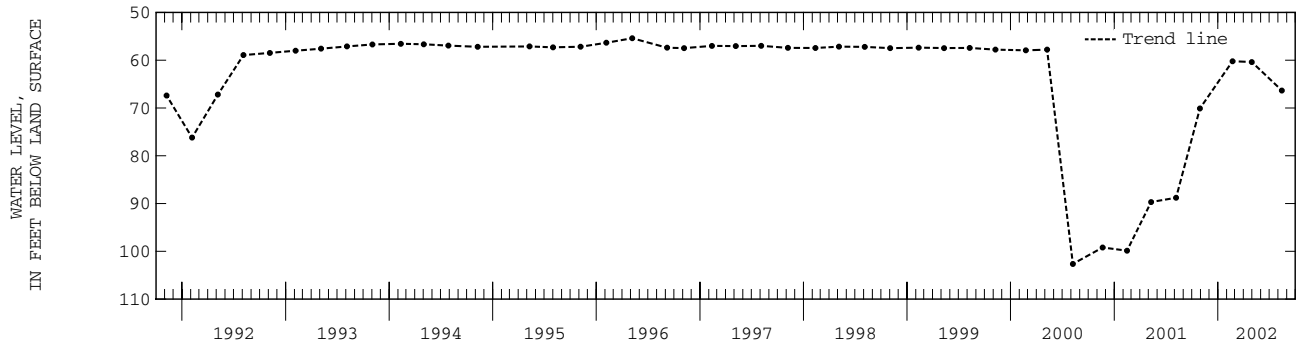
PLYMOUTH COUNTY--Continued

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	70.10	FEB 21	60.21	APR 30	60.38	AUG 14	66.34

WATER YEAR 2002 HIGHEST 60.21 FEB 21, 2002 LOWEST 70.10 OCT 29, 2001



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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 30	126.30	FEB 21	124.78	APR 30	125.51	AUG 14	124.86

WATER YEAR 2002 HIGHEST 124.78 FEB 21, 2002 LOWEST 126.30 OCT 30, 2001

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 01	124.09	FEB 05	124.94	MAY 02	125.01	AUG 14	125.42

WATER YEAR 2002 HIGHEST 124.09 NOV 01, 2001 LOWEST 125.42 AUG 14, 2002

POTTAWATTAMIE COUNTY--Continued

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, 72.17 ft below land surface datum, May 09, 2001; lowest measured, 74.18 ft below land surface datum, October 28, 1996.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	72.26	MAR 27	71.86	MAY 01	71.62

WATER YEAR 2002 HIGHEST 71.62 MAY 01, 2002 LOWEST 72.26 NOV 02, 2001

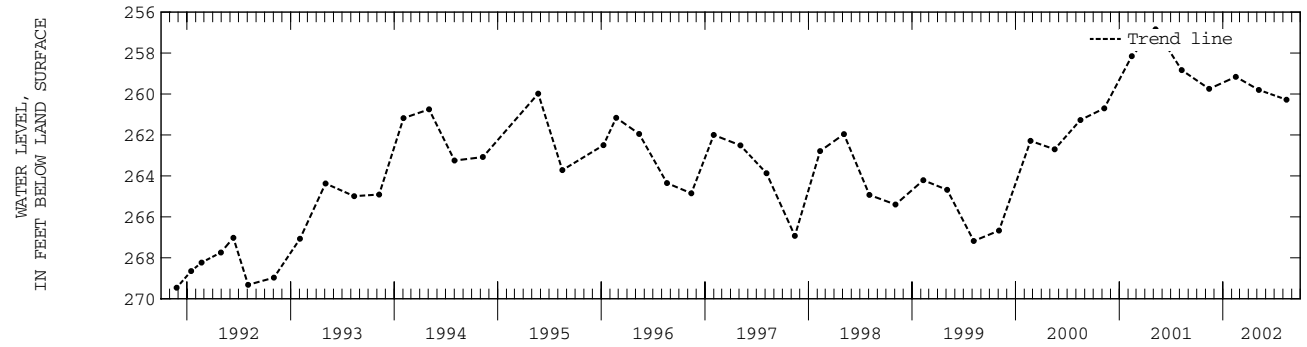
SCOTT COUNTY

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 13	259.75	FEB 15	259.16	MAY 07	259.80	AUG 13	260.28

WATER YEAR 2002 HIGHEST 259.16 FEB 15, 2002 LOWEST 260.28 AUG 13, 2002



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, 43.23 ft below land-surface datum, December 04, 2000.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	42.90	FEB 20	42.98	MAY 01	43.28	AUG 15	43.80

WATER YEAR 2002 HIGHEST 42.90 NOV 02, 2001 LOWEST 43.80 AUG 15, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 02	152.86	FEB 20	152.71	MAY 01	152.65	AUG 15	153.32

WATER YEAR 2002 HIGHEST 152.65 MAY 01, 2002 LOWEST 153.32 AUG 15, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	20.10	FEB 20	19.81	MAY 01	19.71	AUG 15	20.02

WATER YEAR 2002 HIGHEST 19.71 MAY 01, 2002 LOWEST 20.10 OCT 29, 2001

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	116.39	FEB 20	116.97	MAY 01	118.06	AUG 15	113.17

WATER YEAR 2002 HIGHEST 113.17 AUG 15, 2002 LOWEST 118.06 MAY 01, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 29	212.24	FEB 20	212.04	MAY 01	211.09	AUG 15	212.47

WATER YEAR 2002 HIGHEST 211.09 MAY 01, 2002 LOWEST 212.47 AUG 15, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 30	219.91	FEB 22	219.70	APR 30	219.67	AUG 15	220.36

WATER YEAR 2002 HIGHEST 219.67 APR 30, 2002 LOWEST 220.36 AUG 15, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 30	197.18	FEB 22	197.04	APR 29	197.09	AUG 15	197.86

WATER YEAR 2002 HIGHEST 197.04 FEB 22, 2002 LOWEST 197.86 AUG 15, 2002

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 aquifer.
WELL CHARACTERISTICS.--Drilled public supply well, diameter 16 in., depth 2630 ft, open hole 2015-2630 ft
INSTRUMENTATION.--Quarterly measurement with chalked tape 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; lowest measured, 373 ft below land-surface datum, February 11, 1997.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	330	FEB 12	360	APR 29	315	AUG 05	330

WATER YEAR 2002 HIGHEST 315 APR 29, 2002 LOWEST 360 FEB 12, 2002

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 06	61.46	FEB 12	73.99	APR 29	79.00	AUG 05	74.83

WATER YEAR 2002 HIGHEST 61.46 NOV 06, 2001 LOWEST 79.00 APR 29, 2002

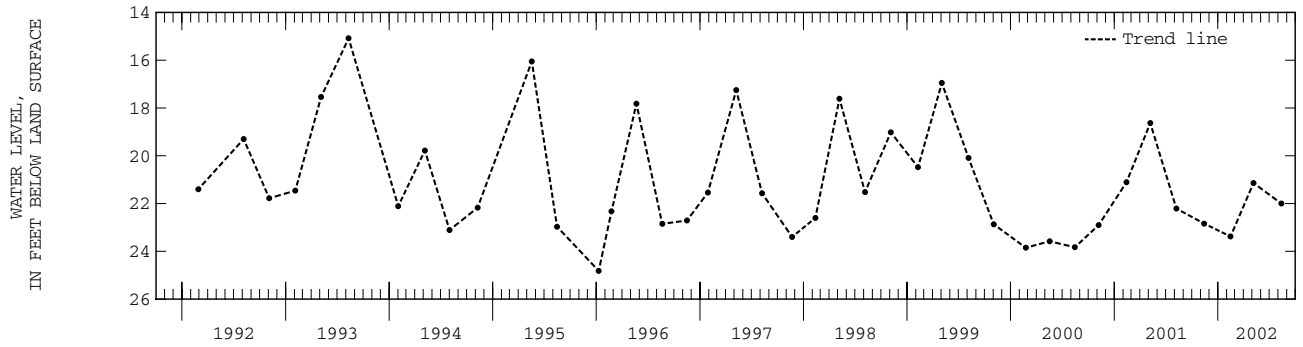
VAN BUREN COUNTY

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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 13	22.84	FEB 14	23.38	MAY 06	21.14	AUG 12	22.00

WATER YEAR 2002 HIGHEST 21.14 MAY 06, 2002 LOWEST 23.38 FEB 14, 2002



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 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 14	72.39	FEB 15	71.25	MAY 06	70.60	AUG 12	72.76

WATER YEAR 2002 HIGHEST 70.60 MAY 06, 2002 LOWEST 72.76 AUG 12, 2002

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, 0.31 ft above land-surface datum, May 08, 2001; lowest measured, 6.80 ft below land-surface datum, October 20, 1964.

WATER LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 13	2.29	FEB 14	2.20	MAY 07	1.07	AUG 13	1.81

WATER YEAR 2002 HIGHEST 1.07 MAY 07, 2002 LOWEST 2.29 NOV 13, 2001

WASHINGTON COUNTY--Continued

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 LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 23	3.85	DEC 21	4.03	FEB 15	2.92	APR 26	2.55	JUN 14	2.41	AUG 15	6.15
NOV 14	4.33	JAN 17	4.90	MAR 29	3.70	MAY 06	2.71	JUL 19	5.24	SEP 20	9.91

WATER YEAR 2002 HIGHEST 2.41 JUN 14, 2002 LOWEST 9.91 SEP 20, 2002

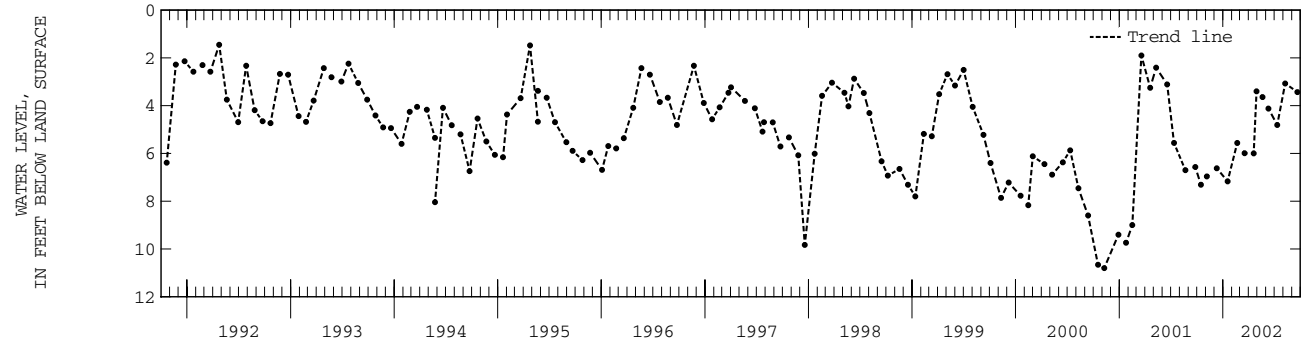
WEBSTER COUNTY

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 LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 15	7.31	JAN 17	7.17	APR 19	6.00	JUN 10	4.12	SEP 20	3.43		
NOV 05	6.96	FEB 20	5.56	29	3.40	JUL 11	4.81				
DEC 10	6.62	MAR 18	5.99	MAY 20	3.64	AUG 08	3.07				

WATER YEAR 2002 HIGHEST 3.07 AUG 08, 2002 LOWEST 7.31 OCT 15, 2001



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 LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
NOV 08	43.35	FEB 14	43.95	MAY 01	42.56	AUG 08	42.71

WATER YEAR 2002 HIGHEST 42.56 MAY 01, 2002 LOWEST 43.95 FEB 14, 2002

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 LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 30	55.89	FEB 22	56.47	APR 30	56.57	AUG 15	56.59

WATER YEAR 2002 HIGHEST 55.89 OCT 30, 2001 LOWEST 56.59 AUG 15, 2002

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 LEVELS IN FEET BELOW LAND SURFACE DATUM, WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
OCT 30	199.48	FEB 22	199.65	APR 30	199.42	AUG 15	199.49

WATER YEAR 2002 HIGHEST 199.42 APR 30, 2002 LOWEST 199.65 FEB 22, 2002

GROUND WATER QUALITY MONITORING PROGRAM

[Geologic unit abbreviations used in this table: 110QRCU, Quarternary-Cretaceous Undifferentiated; 110QRNR, Quarternary System; 111ALVM, Holocene Alluvium; 111ENRV, East Nishnabotna River Allvuial; 111SDRV, Soldier River Alluvial; 112AFNN, Aftonian Interglacial Deposits; 112PLSC, Pleistocene Series]

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

Station number	Station name	County	Date	Time	Geologic unit	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE (G/M) (00058)
411727094374001	075N33W15DDBB 1976Fontanelle 5	Adair	08-14-02	1330	111ALVM	39.00	80
405632094534401	071N35W20AACB 1990Nodaway 4	Adams	08-07-02	1520	111ALVM	35.00	40
431638091282902	098N05W30ACDC 1899Waukon 2	Allamakee	08-02-02	1030	371JRDN	577	280
413234094552401	078N35W19BCDB 1976Brayton 1	Audubon	08-15-02	1400	111ENRV	41.00	55
420535091524002	084N09W15ACC 1932Shellsburg 2	Benton	07-22-02	1115	340DVSL	335.00	100
422819092212701	089N13W34DDAA 12031 1960Waterloo 17	Black Hawk	08-08-02	1300	344DVNNM	215.00	2400
420451093561301	084N27W13DCAA 1940Boone 20	Boone	08-19-02	1530	111ALVM	64.00	300
420959094001901	085N27W16CCDC 1967Pilot Mound 3	Boone	08-19-02	1645	112PLSC	30.00	32
422852092040101	089N10W31AAB 09382 1957Jesup 2	Buchanan	08-08-02	1445	358KNKK	380.00	260
424708094570901	092N35W14BCCC 2002 ALBERT CITY 3	Buena Vista	07-30-02	1000	112PLSC	183.00	--
425344095090401	093N37W01DDDD 1977Sioux Rapids 2	Buena Vista	08-22-02	0830	111ALVM	54.00	290
425330092483701	093N17W01DDDA 11918 1960Greene 2	Butler	08-08-02	1100	344CDVL	150.00	280
415233094403201	082N33W34ABBD 1938Coon Rapids 1, North	Carroll	08-19-02	0930	217DKOT	191.00	100
411622094520901	075N35W27BBAB 1921Cumberland 1	Cass	08-07-02	0910	112PLSC	155.00	30
411639094521101	075N35W22CBDC 1978Cumberland (5) 4	Cass	08-07-02	1015	217DKOT	213.00	40
414032091210001	079N04W06DACD 1979West Branch 4	Cedar	07-23-02	1415	358ALXD	450.00	365
423744095383301	090N41W11ADAD 1967Quimby 1	Cherokee	07-29-02	1700	217DKOT	218.00	100
424340095331301	091N40W03ACCC 1996Cherokee 10	Cherokee	07-30-02	0800	217DKOT	240.00	620
414652090153201	081N06E33ADA 1956Camanche 2	Clinton	08-19-02	1200	111ALVM	61.00	210
414930090321601	081N04E18ACBB 00183 1923De Witt 3	Clinton	08-19-02	1035	371JRDN	1646	--
420336095115601	084N37W30BDAD 1936Vail (1),2	Crawford	07-29-02	1000	111ALVM	32.00	150
413749093592601	079N27W21CDDA 1977Adel 3	Dallas	08-28-02	1315	111ALVM	54.00	400
413836094161701	079N29W19BAAC 19060 1966Linden 3	Dallas	08-28-02	1115	330MSSP	940.00	60
415057094065301	081N28W09ABBB 1987Perry 9R	Dallas	08-19-02	1120	111ALVM	45.00	300
423020091273701	089N05W20DBBB 1981Manchester 7	Delaware	08-09-02	0730	350SLRN	270.00	210
423135090383201	089N03E18AADD 1969Dubuque 9	Dubuque	08-09-02	1115	111ALVM	125.00	625
423602090595201	090N01W19AA 1987Holy Cross 1	Dubuque	08-09-02	0915	364GLEN	665.00	122
432349094285201	099N31W14BBCD 1995Armstrong 7	Emmet	08-21-02	1600	112PLSC	136.00	300
425717091382602	094N07W14CBAD 1954Elgin 2	Fayette	08-07-02	0815	364GLEN	220	300
425341093132501	093N20W05DDAB 1956Sheffield 2	Franklin	08-21-02	0800	110QRNR	27.00	100
404327095284801	068N40W07BCAA 1980Farragut 79-2 (North)	Fremont	08-08-02	0915	111ALVM	65.00	180
421322092522001	086N17W31ABDA 13238 1962Conrad 3	Grundy	07-30-02	1005	339HMPN	120.00	140
421856092355101	087N15W28DBDD 1978Reinbeck 3	Grundy	07-29-02	1105	344CDVL	394	330
422611092552501	088N18W14BCCB 10984 1960Wellsburg 1	Grundy	07-29-02	1225	371JRDN	2050.00	310
425533093364001	094N23W30CCD 1941Goodell 2	Hancock	08-20-02	1800	330MSSP	175.00	60
430015093360501	095N23W31ACA 11168 1959Klemme 2	Hancock	08-20-02	1600	341LMCK	185.00	50
430015093360502	095N23W31ABDD 00265 1934Klemme 1	Hancock	08-20-02	1450	371JRDN	1512.00	120
414236096012501	080N45W25DABD 1951Mondamin 2, South	Harrison	08-15-02	0930	111ALVM	90.00	150
432650092170401	100N12W29DBD 1968Lime Springs 2	Howard	08-07-02	1345	364GLEN	380	--
422106095280201	087N40W14ACBB 1965Ida Grove 3	Ida	07-29-02	1330	112PLSC	65.00	125
422915095323504	089N39W33CDDD 1985Holstein 3	Ida	07-29-02	1445	111ALVM	54.00	110
414825091511201	081N09W23DADA 21060 1968East Amana 2	Iowa	07-26-02	0930	340DVSL	550	50
414520092112001	080N12W12ADDC 05509 1952Ladora 1	Iowa	08-20-02	1030	112PLSC	72.00	--
420414090113201	084N07E20BCDD 1895Sabula 1	Jackson	08-19-02	1305	360OVCB	973	--
413048093062101	078N20W36DBDA 1981Monroe 7	Jasper	08-28-02	1630	325DSMS	300.00	35
413913093070001	079N20W13ADDA 07999 1955Newton 13	Jasper	07-31-02	1025	111ALVM	45	<100
410046091555701	Fairfield Municipal Well nr Walton Lake	Jefferson	08-01-02	0900	371JRDN	2200.00	2200
421442091120001	086N03W21CAAA 1977Monticello 4	Jones	08-09-02	1330	350SLRN	320.00	114
412138091571501	076N10W25ACCA 01794 1943Keota 2	Keokuk	07-23-02	1000	339WSVL	153.00	90
403745091174701	067N04W02CBBC 1991Fort Madison 4	Lee	08-01-02	1130	111ALVM	147	380
420005091431201	083N08W13ACDB 1970Cedar Rapids S6	Linn	07-22-02	1000	111ALVM	65.00	1000
411644091110703	075N03W22DCBD 1975Grandview 3	Louisa	08-01-02	1330	112AFNN	174.00	15
432608096201503	100N47W36DCBD 1988Lester (4) 2	Lyon	07-30-02	1815	111ALVM	32.00	45
420352092552401	084N18W22DDDD 1981Marshalltown 14	Marshall	07-30-02	1140	330MSSP	160.00	520
420405092545601	084N18W23CACA 1977Marshalltown 8	Marshall	07-30-02	1215	112PLSC	223	590
410656095380201	073N42W23AAAC 1978Silver City 3	Mills	08-14-02	0900	111ALVM	60.00	30
431654092484501	098N17W26ADBC 16641 1964Osage 5	Mitchell	08-07-02	1600	364GLEN	650	625
432150092332401	099N15W25DABA 1917Riceville 1	Mitchell	08-07-02	1500	344CDVL	515	--
432241092550802	099N18W24CABA 1960Saint Ansgar 2	Mitchell	08-08-02	0845	344CDVL	240.00	--
420955095475601	085N43W24BDBA 1973Mapleton 5	Monona	07-31-02	1315	111ALVM	64.00	350
405850095061701	071N37W04ACD 06207 1953Stanton 1	Montgomery	08-07-02	1145	217DKOT	158.00	160
413521090511001	078N01E04CAA 03238 1948Stockton 1	Muscatine	07-24-02	0920	355HPKN	247.00	--
431157095502901	097N42W29BBBC 1949Sheldon 5	O'Brien	07-30-02	1300	111ALVM	24.00	60
403906095015001	067N37W01AAAA 1985Shambaugh 3	Page	08-08-02	0730	111ALVM	30.00	30
425731094270801	094N31W13ACCC 1949West Bend 2	Palo Alto	08-21-02	1330	217DKOT	115.00	30
423537095583901	090N43W19CCBB 1956Kingsley 1	Plymouth	07-31-02	1115	110QRNR	37.00	230
411501095251301	075N40W35CBCA 1975Carson (5) 3	Pottawattamie	08-14-02	1115	111ALVM	25.00	50
414430092433001	080N16W16BCCB 06931 1955Grinnell 7	Poweshiek	07-31-02	0915	371JRDN	2550	1110
421617095051001	086N36W07CDBB 1971Wall Lake (3),2	Sac	07-29-02	1130	112PLSC	43.00	370
413040090455001	078N02E32CC 22757 1971Blue Grass (2),1	Scott	07-24-02	1030	364PLVL	640.00	156

GROUND WATER QUALITY MONITORING PROGRAM--Continued

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

Station number	Date	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	HARDNESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410)
411727094374001	08-14-02	30	.3	7.2	467	12.5	220	65.0	12.0	1.60	9.80	180
405632094534401	08-07-02	30	.9	6.8	419	12.5	220	61.0	20.0	<1.00	12.0	140
431638091282902	08-02-02	>30	6.9	6.9	665	9.8	340	96.0	22.0	<1.00	6.40	280
413234094552401	08-15-02	30	.3	6.9	831	12.5	400	100	30.0	<1.00	24.0	300
420535091524002	07-22-02	30	10.8	6.8	738	11.8	350	110	15.0	4.00	16.0	270
422819092212701	08-08-02	>30	76.0	7.0	681	12.5	260	100	27.0	1.00	12.0	220
420451093561301	08-19-02	30	.3	7.5	623	20.0	290	74.0	29.0	3.90	19.0	190
420959094001901	08-19-02	30	.3	7.3	713	12.0	370	110	34.0	3.00	8.00	290
422852092040101	08-08-02	165	1.8	7.0	534	12.7	300	75.0	26.0	1.80	5.70	250
424708094570901	07-30-02	30	.3	7.3	1470	10.5	700	180	54.0	7.40	63.0	400
425344095090401	08-22-02	30	4.5	7.1	1020	11.0	460	130	37.0	3.10	26.0	340
425330092483701	08-08-02	35	.7	7.2	465	12.4	250	74.0	16.0	1.10	2.90	210
415233094403201	08-19-02	30	2.4	7.1	415	12.5	210	59.0	18.0	<1.00	6.60	170
411622094520901	08-07-02	30	2.8	7.0	340	13.5	170	48.0	12.0	1.50	8.80	170
411639094521101	08-07-02	30	.4	7.0	380	12.5	200	54.0	14.0	<1.00	10.0	190
414032091210001	07-23-02	30	5.4	6.6	871	12.3	450	120	34.0	1.90	17.0	360
423744095383301	07-29-02	30	.3	7.3	637	12.5	310	82.0	21.0	3.60	13.0	270
424340095331301	07-30-02	30	.3	7.2	1300	11.5	610	170	48.0	4.50	52.0	280
414652090153201	08-19-02	30	7.0	7.0	401	13.8	120	48.0	17.0	1.20	12.0	120
414930090321601	08-19-02	>30	.3	6.9	618	14.5	200	49.0	25.0	8.40	50.0	260
420336095115601	07-29-02	25	1.3	7.1	861	13.5	410	110	26.0	1.10	26.0	280
413749093592601	08-28-02	30	2.0	7.2	717	10.0	370	96.0	34.0	2.40	12.0	270
413836094161701	08-28-02	30	.4	8.4	1160	16.5	130	16.0	7.80	3.30	230	260
415057094065301	08-19-02	30	.2	7.3	737	11.5	390	110	32.0	1.90	8.80	290
423020091273701	08-09-02	630	4.8	7.0	520	11.6	250	73.0	20.0	1.00	8.60	190
423135090383201	08-09-02	>1440	.4	7.3	416	12.8	210	49.0	19.0	1.90	11.0	180
423602090595201	08-09-02	30	.3	6.9	596	13.9	330	80.0	35.0	1.10	2.30	310
432349094285201	08-21-02	30	.3	7.3	1170	10.5	540	150	45.0	3.80	55.0	430
425717091382602	08-07-02	37	1.3	6.7	674	10.3	360	100	29.0	2.20	5.90	280
425341093132501	08-21-02	30	5.5	7.4	584	14.5	300	83.0	26.0	<1.00	6.70	200
404327095284801	08-08-02	30	.8	7.0	631	13.5	300	81.0	25.0	2.10	19.0	240
421322092522001	07-30-02	>30	2.1	6.5	716	12.3	390	90.0	36.0	2.80	11.0	290
421856092355101	07-29-02	>60	.4	7.1	1030	10.8	570	150	47.0	3.00	11.0	210
422611092552501	07-29-02	30	.9	7.3	945	13.0	350	81.0	32.0	18.0	70.0	300
425533093364001	08-20-02	30	.3	7.4	654	10.5	350	90.0	33.0	1.30	11.0	350
430015093360501	08-20-02	30	.6	7.2	864	11.5	430	110	43.0	4.60	15.0	340
430015093360502	08-20-02	30	.2	7.2	1000	11.5	440	120	40.0	16.0	45.0	330
414236096012501	08-15-02	30	.2	7.2	1170	12.5	550	150	48.0	6.70	46.0	530
432650092170401	08-07-02	--	.2	7.2	431	8.8	240	66.0	19.0	1.60	4.20	210
422106095280201	07-29-02	60	.8	7.1	1110	13.5	500	150	29.0	2.70	42.0	--
422915095323504	07-29-02	30	6.0	7.3	802	11.5	390	110	28.0	1.20	13.0	--
414825091511201	07-26-02	>30	.4	6.9	276	14.8	320	77.0	31.0	6.00	46.0	280
414520092112001	08-20-02	30	4.9	7.5	1150	13.0	330	84.0	30.0	3.10	100	360
420414090113201	08-19-02	>30	1.4	7.2	500	18.0	260	50.0	34.0	4.20	2.00	250
413048093062101	08-28-02	30	1.2	6.8	878	13.0	410	120	35.0	3.00	37.0	370
413913093070001	07-31-02	>30	6.8	7.0	647	11.5	350	88.0	31.0	<1.00	7.10	250
410046091555701	08-01-02	>30	.4	7.0	1820	23.9	310	73.0	29.0	17.0	280	240
421442091120001	08-09-02	30	2.9	7.2	575	20.2	300	77.0	33.0	<1.00	5.20	260
412138091571501	07-23-02	30	.5	6.4	894	13.5	450	110	40.0	3.10	31.0	430
403745091174701	08-01-02	>30	1.0	6.9	477	14.2	220	54.0	18.0	2.80	10.0	210
420005091431201	07-22-02	>30	.5	6.8	623	8.8	350	78.0	25.0	2.30	16.0	250
411644091110703	08-01-02	30	1.7	7.0	437	13.2	230	64.0	17.0	1.10	7.10	240
432608096201503	07-30-02	30	.3	7.2	1180	10.5	650	160	53.0	3.10	17.0	300
420352092552401	07-30-02	--	.9	7.2	624	9.7	350	87.0	29.0	2.50	9.20	250
420405092545601	07-30-02	>30	.5	7.3	731	11.1	370	88.0	32.0	1.90	18.0	280
410656095380201	08-14-02	30	6.7	7.0	982	12.0	480	130	39.0	2.80	22.0	340
431654092484501	08-07-02	75	.4	7.2	549	12.7	290	84.0	24.0	1.80	9.10	240
432150092332401	08-07-02	--	.4	7.1	613	9.8	300	75.0	30.0	2.40	19.0	300
432241092550802	08-08-02	--	2.5	6.7	653	10.4	350	94.0	31.0	1.30	7.80	240
420955095475601	07-31-02	20	4.8	7.2	861	13.0	420	110	34.0	3.90	18.0	310
405850095061701	08-07-02	20	.5	7.1	579	13.5	280	79.0	20.0	2.00	16.0	250
413521090511001	07-24-02	30	.7	6.7	592	13.7	340	81.0	29.0	<1.00	7.00	310
431157095502901	07-30-02	30	.5	7.3	810	12.0	460	100	36.0	1.40	15.0	280
403906095015001	08-08-02	30	.3	6.6	514	12.0	220	62.0	13.0	<1.00	23.0	140
425731094270801	08-21-02	30	.3	7.2	773	11.5	400	110	33.0	4.40	15.0	380
423537095583901	07-31-02	30	3.9	7.2	906	12.5	450	120	33.0	2.50	19.0	340
411501095251301	08-14-02	30	1.0	7.1	698	12.0	360	100	28.0	1.10	9.10	300
414430092433001	07-31-02	>30	.3	6.7	1090	24.5	380	81.0	37.0	16.0	94.0	290
421617095051001	07-29-02	30	.4	7.2	883	11.0	420	110	32.0	3.50	16.0	280
413040090455001	07-24-02	>30	1.0	6.8	642	13.3	360	81.0	34.0	1.00	8.90	340

GROUND WATER QUALITY MONITORING PROGRAM--Continued

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

Station number	Date	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN,AMMONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, ORGANIC DISSOLVED (MG/L AS N) (00607)	ORTHOPHOSPHATE, DISSOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)
411727094374001	08-14-02	12.0	.18	19.0	25.0	280	.260	--	<.100	.28	<.050	1.6
405632094534401	08-07-02	4.4	.19	20.0	92.0	330	.050	--	1.50	.12	<.050	.5
431638091282902	08-02-02	20.0	<.10	15.0	23.0	370	<.050	--	2.40	<.05	<.050	<.5
413234094552401	08-15-02	51.0	.28	18.0	60.0	490	.100	--	<.100	.07	<.050	.9
420535091524002	07-22-02	19.0	.23	14.0	46.0	400	<.050	--	6.10	.11	<.050	.6
422819092212701	08-08-02	23.0	.60	15.0	97.0	430	.140	--	1.20	.06	.050	<.5
420451093561301	08-19-02	32.0	.44	23.0	73.0	400	<.050	--	1.80	.31	.120	2.2
420959094001901	08-19-02	5.4	.30	33.0	73.0	450	.230	--	<.100	.13	<.050	.6
422852092040101	08-08-02	5.7	.65	11.0	20.0	310	<.050	--	2.80	<.05	<.050	<.5
424708094570901	07-30-02	1.2	.28	30.0	440	1100	1.80	--	<.100	.30	<.050	2.3
425344095090401	08-22-02	84.0	.20	28.0	51.0	590	<.050	--	5.40	<.05	<.050	.7
425330092483701	08-08-02	5.2	.23	12.0	36.0	300	<.050	--	<.100	<.05	<.050	<.5
415233094403201	08-19-02	4.9	.33	21.0	36.0	250	<.050	--	1.80	.38	<.050	<.5
411622094520901	08-07-02	<1.0	.26	22.0	11.0	210	<.050	--	<.100	<.05	<.050	<.5
411639094521101	08-07-02	<1.0	.28	23.0	14.0	230	<.050	--	<.100	.05	<.050	<.5
414032091210001	07-23-02	32.0	.22	19.0	57.0	520	.660	--	<.100	.16	<.050	1.2
423744095383301	07-29-02	1.2	.52	27.0	46.0	380	.520	--	<.100	<.05	<.050	<.5
424340095331301	07-30-02	3.0	.60	27.0	420	940	.500	--	<.100	.10	<.050	.5
414652090153201	08-19-02	23.0	.20	24.0	30.0	240	<.050	--	6.20	.08	.090	1.3
414930090321601	08-19-02	23.0	.63	9.20	34.0	330	<.050	--	<.100	1.1	<.050	<.5
420336095115601	07-29-02	44.0	.23	23.0	76.0	530	<.050	--	5.00	<.05	.110	.6
413749093592601	08-28-02	24.0	.28	18.0	76.0	470	.070	--	.200	.12	<.050	1.6
413836094161701	08-28-02	30.0	4.70	8.20	260	720	.890	.89	<.100	<.05	<.050	<.5
415057094065301	08-19-02	14.0	.29	26.0	97.0	500	.050	--	<.100	<.05	<.050	1.3
423020091273701	08-09-02	16.0	.22	13.0	22.0	310	<.050	--	9.00	<.05	<.050	<.5
423135090383201	08-09-02	14.0	.14	15.0	12.0	240	.540	--	<.100	.31	.230	4.1
423602090595201	08-09-02	1.3	.19	9.00	21.0	330	.120	--	<.100	.07	<.050	<.5
432349094285201	08-21-02	1.4	.21	32.0	230	760	.930	--	<.100	<.05	<.050	1.7
425717091382602	08-07-02	16.0	.21	11.0	48.0	420	<.050	--	5.00	<.05	<.050	<.5
425341093132501	08-21-02	11.0	.12	26.0	17.0	370	<.050	--	19.0	<.05	1.70	<.5
404327095284801	08-08-02	15.0	.30	23.0	67.0	380	.120	--	.900	.09	<.050	.7
421322092522001	07-30-02	23.0	.27	16.0	48.0	420	.370	--	5.00	.10	<.050	<.5
421856092355101	07-29-02	1.0	1.56	12.0	350	770	.870	--	<.100	<.05	<.050	.8
422611092552501	07-29-02	9.7	1.13	7.60	180	580	1.50	--	<.100	<.05	<.050	<.5
425533093364001	08-20-02	3.1	.26	31.0	11.0	370	1.00	--	<.100	<.05	<.050	.8
430015093360501	08-20-02	30.0	.60	19.0	84.0	470	.430	--	<.100	<.05	<.050	1.1
430015093360502	08-20-02	--	.80	8.00	200	620	.980	1.3	<.100	.52	<.050	<.5
414236096012501	08-15-02	23.0	.18	32.0	93.0	720	1.40	--	<.100	<.50	<.050	2.4
432650092170401	08-07-02	2.8	.45	11.0	20.0	240	.280	--	<.100	.14	<.050	<.5
422106095280201	07-29-02	100	.20	24.0	69.0	670	<.050	--	1.50	<.05	.090	.6
422915095323504	07-29-02	21.0	.30	19.0	54.0	490	<.050	--	13.0	.05	<.050	<.5
414825091511201	07-26-02	1.8	.46	10.0	25.0	470	1.60	--	<.100	<.05	<.050	.8
414520092112001	08-20-02	4.9	.50	14.0	170	640	2.90	--	1.70	1.2	.110	3.3
420414090113201	08-19-02	2.2	.24	9.60	16.0	260	<.050	--	<.100	.06	<.050	<.5
413048093062101	08-28-02	1.5	.29	20.0	110	530	1.60	1.6	<.100	<.05	<.050	.8
413913093070001	07-31-02	18.0	.22	24.0	35.0	400	<.050	--	9.40	.07	.100	<.5
410046091555701	08-01-02	160	1.85	11.0	470	1200	1.30	--	<.100	.18	<.050	<.5
421442091120001	08-09-02	8.3	.12	14.0	25.0	330	<.050	--	3.70	<.05	<.050	<.5
412138091571501	07-23-02	4.5	.37	10.0	67.0	530	.710	--	<.100	.15	<.050	.6
403745091174701	08-01-02	19.0	.20	23.0	11.0	270	3.50	--	<.100	.60	.480	4.4
420005091431201	07-22-02	28.0	.16	13.0	34.0	360	.730	--	.300	.31	<.050	1.6
411644091110703	08-01-02	<1.0	.24	23.0	<1.0	250	.730	--	<.100	.09	.090	.9
432608096201503	07-30-02	16.0	.31	16.0	320	870	.190	--	2.10	.06	<.050	.8
420352092552401	07-30-02	22.0	.25	14.0	50.0	380	<.050	--	3.50	.54	<.050	1.7
420405092545601	07-30-02	24.0	.37	16.0	72.0	410	1.20	--	<.100	.23	<.050	1.4
410656095380201	08-14-02	39.0	.21	23.0	78.0	600	.220	--	<.100	1.8	<.050	.9
431654092484501	08-07-02	11.0	.30	12.0	43.0	330	.340	--	<.100	.20	<.050	1.2
432150092332401	08-07-02	--	.70	11.0	42.0	350	--	--	<.100	.06	<.050	1.0
432241092550802	08-08-02	24.0	.10	11.0	56.0	400	<.050	--	6.20	.12	<.050	1.5
420955095475601	07-31-02	26.0	.30	27.0	60.0	540	<.050	--	11.0	<.05	.060	.3
405850095061701	08-07-02	27.0	.27	24.0	14.0	340	.470	--	<.100	.17	<.050	<.5
413521090511001	07-24-02	--	.23	14.0	14.0	340	.060	--	<.100	.15	<.050	<.5
431157095502901	07-30-02	26.0	.43	22.0	110	530	.240	--	<.100	.11	<.050	1.5
403906095015001	08-08-02	36.0	.17	26.0	53.0	310	<.050	--	<.100	.18	<.050	1.1
425731094270801	08-21-02	3.3	.35	23.0	47.0	440	.800	--	<.100	<.05	<.050	1.0
423537095583901	07-31-02	30.0	.25	28.0	67.0	580	<.050	--	8.30	.09	.130	.6
411501095251301	08-14-02	15.0	.33	9.70	56.0	420	<.050	--	.700	.52	<.050	<.5
414430092433001	07-31-02	17.0	1.31	11.0	260	710	1.20	--	<.100	<.05	<.050	<.5
421617095051001	07-29-02	36.0	.38	23.0	100	560	.060	--	1.50	.08	<.050	1.1
413040090455001	07-24-02	1.5	.28	16.0	12.0	350	<.050	--	<.100	.07	<.050	<.5

GROUND WATER QUALITY MONITORING PROGRAM--Continued

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

Station number	Date	ANTI-MONY, DIS-SOLVED (UG/L AS SB) (01095)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	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)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	CYANIDE TOTAL (MG/L AS CN) (00720)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)
411727094374001	08-14-02	<5	16.0	<2	<1	<10	<10	<.01	1200	<1	530	<50
405632094534401	08-07-02	<5	6.0	<2	<1	<10	<10	<.01	500	<1	70	<50
431638091282902	08-02-02	<5	<1.0	<2	<1	<10	<10	<.01	<20	<1	<20	<50
413234094552401	08-15-02	<5	3.0	<2	<1	<10	<10	<.01	5800	<1	1000	<50
420535091524002	07-22-02	<5	<1.0	<2	<1	<10	<10	<.01	30	<1	<20	<50
422819092212701	08-08-02	<5	<1.0	<2	<1	<10	<10	<.01	20	<1	70	<50
420451093561301	08-19-02	<5	2.0	<2	<1	<10	<10	<.01	<20	M	230	<50
420959094001901	08-19-02	<5	9.0	<2	<1	<10	<10	<.01	2800	<1	230	<50
422852092040101	08-08-02	<5	<1.0	<2	<1	<10	<10	<.01	<20	<1	M	<50
424708094570901	07-30-02	<5	21.0	<2	<1	<10	<10	<.01	4700	<1	140	<50
425344095090401	08-22-02	<5	<1.0	<2	<1	<10	<10	<.01	<20	<1	30	<50
425330092483701	08-08-02	<5	<1.0	<2	<1	<10	<10	<.01	280	<1	<20	<50
415233094403201	08-19-02	<5	<1.0	<2	<1	<10	<10	<.01	340	<1	70	<50
411622094520901	08-07-02	<5	<1.0	<2	<1	<10	<10	<.01	<20	<1	<20	<50
411639094521101	08-07-02	<5	<1.0	<2	<1	<10	<10	<.01	30	M	40	<50
414032091210001	07-23-02	<5	<1.0	<2	<1	<10	<10	<.01	1600	M	200	<50
423744095383301	07-29-02	<5	<1.0	<2	<1	<10	<10	<.01	1300	<1	100	<50
424340095331301	07-30-02	<5	3.0	<2	<1	<10	<10	<.01	1200	<1	380	<50
414652090153201	08-19-02	<5	1.0	<2	<1	<10	<10	<.01	<20	<1	<20	<50
414930090321601	08-19-02	<5	<1.0	<2	<1	<10	<10	<.01	580	<1	<20	<50
420336095115601	07-29-02	<5	<1.0	<2	<1	<10	<10	<.01	<20	<1	<20	<50
413749093592601	08-28-02	<5	1.0	<2	<1	<10	<10	<.01	1100	M	460	<50
413836094161701	08-28-02	<5	<1.0	<2	<1	<10	<10	<.01	90	<1	<20	<50
415057094065301	08-19-02	<5	4.0	<2	<1	<10	<10	<.01	2100	<1	410	<50
423020091273701	08-09-02	<5	<1.0	<2	<1	<10	<10	<.01	<20	<1	<20	<50
423135090383201	08-09-02	<5	4.0	<2	<1	<10	<10	<.01	1900	<1	2700	<50
423602090595201	08-09-02	<5	<1.0	<2	<1	<10	<10	<.01	180	<1	<20	<50
432349094285201	08-21-02	<5	12.0	<2	<1	<10	<10	<.01	2300	<1	530	<50
425717091382602	08-07-02	<5	<1.0	<2	<1	<10	<10	<.01	<20	<1	<20	<50
425341093132501	08-21-02	<5	<1.0	<2	<1	<10	<10	<.01	50	<1	<20	<50
404327095284801	08-08-02	<5	<1.0	<2	<1	<10	<10	<.01	830	<1	120	<50
421322092522001	07-30-02	<5	<1.0	<2	<1	<10	<10	<.01	<20	<1	50	<50
421856092355101	07-29-02	<5	7.0	<2	<1	<10	<10	<.01	510	<1	50	<50
422611092552501	07-29-02	<5	2.0	<2	<1	<10	<10	<.01	1300	<1	<20	<50
425533093364001	08-20-02	<5	21.0	<2	<1	<10	<10	<.01	2200	<1	30	<50
430015093360501	08-20-02	<5	2.0	<2	<1	<10	<10	<.01	2600	<1	100	<50
430015093360502	08-20-02	<5	<1.0	<2	<1	<10	<10	<.01	450	<1	<20	<50
414236096012501	08-15-02	<5	3.0	<2	<1	<10	<10	<.01	9500	<1	420	<50
432650092170401	08-07-02	<5	<1.0	<2	<1	<10	<10	<.01	610	<1	<20	<50
422106095280201	07-29-02	<5	<1.0	<2	<1	<10	<10	<.01	<20	<1	300	<50
422915095323504	07-29-02	<5	<1.0	<2	<1	<10	<10	--	40	<1	<20	<50
414825091511201	07-26-02	<5	1.0	<2	<1	<10	<10	<.01	180	M	<20	<50
414520092112001	08-20-02	5	4.0	<2	<1	<10	<10	<.01	50	<1	20	<50
420414090113201	08-19-02	<5	1.0	<2	<1	<10	<10	<.01	20	<1	<20	<50
413048093062101	08-28-02	<5	<1.0	<2	<1	<10	<10	<.01	200	M	200	<50
413913093070001	07-31-02	<5	<1.0	<2	<1	<10	<10	<.01	<20	<1	<20	<50
410046091555701	08-01-02	<5	<1.0	<2	<1	<10	<10	<.01	180	<1	<20	<50
421442091120001	08-09-02	<5	<1.0	<2	<1	<10	<10	<.01	<20	<1	<20	<50
412138091571501	07-23-02	<5	1.0	<2	<1	<10	<10	<.01	800	<1	30	<50
403745091174701	08-01-02	<5	2.0	<2	<1	10	<10	<.01	550	<1	2200	<50
420005091431201	07-22-02	<5	<2.0	<2	<1	10	10	.01	800	<1	1300	<50
411644091110703	08-01-02	<5	1.0	<2	<1	<10	<10	<.01	830	<1	60	<50
432608096201503	07-30-02	<5	<1.0	<2	<1	<10	<10	<.01	<20	<1	810	<50
420352092552401	07-30-02	<5	<1.0	<2	<1	<10	<10	<.01	<20	<1	370	<50
420405092545601	07-30-02	<5	<1.0	<2	<1	<10	<10	<.01	1700	M	60	<50
410656095380201	08-14-02	<5	1.0	M	M	<10	10	<.01	3800	<1	610	<50
431654092484501	08-07-02	<5	<1.0	<2	<1	<10	10	<.01	260	<1	20	<50
432150092332401	08-07-02	<5	<1.0	<2	<1	<10	<10	<.01	660	<1	<20	<50
432241092550802	08-08-02	<5	<1.0	<2	<1	<10	<10	<.01	<20	<1	<20	<50
420955095475601	07-31-02	<5	<1.0	<2	<1	<10	<10	<.01	<20	<1	<20	<50
405850095061701	08-07-02	<5	13.0	<2	<1	<10	<10	<.01	2600	<1	320	<50
413521090511001	07-24-02	<5	<1.0	<2	<1	<10	<10	<.01	100	<1	<20	<50
431157095502901	07-30-02	<5	1.0	<2	<1	<10	<10	<.01	1300	<1	870	<50
403906095015001	08-08-02	<5	<1.0	M	<1	<10	<10	<.01	4700	<1	450	<50
425731094270801	08-21-02	<5	19.0	<2	<1	<10	<10	<.01	2500	<1	190	<50
423537095583901	07-31-02	<5	<1.0	<2	<1	<10	<10	<.01	<20	<1	30	<50
411501095251301	08-14-02	<5	1.0	<2	<1	<10	<10	<.01	<880	<1	1400	<50
414430092433001	07-31-02	<5	<1.0	<2	<1	<10	<10	<.01	360	<1	<20	<50
421617095051001	07-29-02	<5	3.0	<2	<1	<10	<10	<.01	640	<1	520	<50
413040090455001	07-24-02	<5	<1.0	<2	<1	<10	<10	<.01	<20	<1	<20	<50

GROUND WATER QUALITY MONITORING PROGRAM--Continued

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

Station number	Date	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	THAL-LIUM, DIS-SOLVED (UG/L AS TL) (01057)	BENZENE O-DI-CHLORO-WATER UNFLTRD REC (UG/L) (34536)	BENZENE 1,3-DI-CHLORO-WATER UNFLTRD REC (UG/L) (34566)	BENZENE 1,4-DI-CHLORO-WATER UNFLTRD REC (UG/L) (34571)	ACETO-CHLOR, WATER, UNFLTRD REC (UG/L) (49259)	ALA-CHLOR TOTAL RECOVER (UG/L) (77825)	AME-TRYNE TOTAL (UG/L) (82184)	BROM-ACIL WATER WHLREC (UG/L) (30234)	BROMO-METHANE WATER WHOLE RECOVER (UG/L) (30202)
411727094374001	08-14-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
405632094534401	08-07-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
431638091282902	08-02-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
413234094552401	08-15-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
420535091524002	07-22-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
422819092212701	08-08-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
420451093561301	08-19-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
420959094001901	08-19-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
422852092040101	08-08-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
424708094570901	07-30-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
425344095090401	08-22-02	<10	<10	<1.0	<.5	<.5	<.5	--	--	--	<.1	<.50
425330092483701	08-08-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
415233094403201	08-19-02	10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
411622094520901	08-07-02	<10	<10	<1.0	--	--	--	--	--	--	--	--
411639094521101	08-07-02	<10	<10	<1.0	--	--	--	--	--	--	--	--
414032091210001	07-23-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
423744095383301	07-29-02	<10	<10	<1.0	--	--	--	--	--	--	--	--
424340095331301	07-30-02	<10	<10	<1.0	--	--	--	--	--	--	--	--
414652090153201	08-19-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
414930090321601	08-19-02	<10	<10	<1.0	<.5	<.5	<.5	--	--	--	--	<.50
420336095115601	07-29-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
413749093592601	08-28-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
413836094161701	08-28-02	<10	<10	<1.0	--	--	--	--	--	--	--	--
415057094065301	08-19-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
423020091273701	08-09-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
423135090383201	08-09-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
423602090595201	08-09-02	<10	<10	<1.0	--	--	--	--	--	--	--	--
432349094285201	08-21-02	<10	<10	<1.0	--	--	--	--	--	--	--	--
425717091382602	08-07-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
425341093132501	08-21-02	<10	<10	<1.0	<.5	<.5	<.5	--	--	--	<.1	<.50
404327095284801	08-08-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
421322092522001	07-30-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	.3	<.1	<.1	<.50
421856092355101	07-29-02	10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
422611092552501	07-29-02	<10	<10	<1.0	--	--	--	--	--	--	--	--
425533093364001	08-20-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
430015093360501	08-20-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
430015093360502	08-20-02	<10	<10	<1.0	--	--	--	--	--	--	--	--
414236096012501	08-15-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
432650092170401	08-07-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
422106095280201	07-29-02	10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
422915095323504	07-29-02	10	<10	<1.0	<.5	<.5	<.5	.220	<.1	<.1	<.1	<.50
414825091511201	07-26-02	<10	<10	<1.0	<.5	<.5	<.5	--	--	--	--	<.50
414520092112001	08-20-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
420414090113201	08-19-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
413048093062101	08-28-02	<10	<10	<1.0	--	--	--	--	--	--	<.1	<.50
413913093070001	07-31-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
410046091555701	08-01-02	<10	<10	<1.0	<.5	<.5	<.5	--	--	--	--	<.50
421442091120001	08-09-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
412138091571501	07-23-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
403745091174701	08-01-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
420005091431201	07-22-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
411644091110703	08-01-02	<10	<10	<1.0	--	--	--	--	--	--	--	--
432608096201503	07-30-02	20	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
420352092552401	07-30-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
420405092545601	07-30-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
410656095380201	08-14-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
431654092484501	08-07-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
432150092332401	08-07-02	<10	<10	<1.0	--	--	--	--	--	--	--	--
432241092550802	08-08-02	<10	14	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
420955095475601	07-31-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
405850095061701	08-07-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
413521090511001	07-24-02	<10	<10	<1.0	--	--	--	--	--	--	--	--
431157095502901	07-30-02	10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
403906095015001	08-08-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
425731094270801	08-21-02	<10	<10	<1.0	--	--	--	--	--	--	--	--
423537095583901	07-31-02	20	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
411501095251301	08-14-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
414430092433001	07-31-02	<10	<10	<1.0	--	--	--	--	--	--	--	--
421617095051001	07-29-02	<10	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50
413040090455001	07-24-02	<10	<10	<1.0	<.5	<.5	<.5	--	--	--	--	<.50

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

Station number	Date	BUTA-CHLOR WATER WHLREC (UG/L) (30235)	BUTYL-ATE WATER WHLREC (UG/L) (30236)	CARB-ARYL UNFILT RECOVER (UG/L) (39750)	CHLORO-METHANE WATER WHOLE RECOVER (UG/L) (30201)	CLO-MAZONE WATER FLTRD REC (UG/L) (50344)	CYAN-AZINE TOTAL (UG/L) (81757)	DEETHYL ATRA-ZINE, WATER, WHOLE, TOTAL (UG/L) (75981)	DE-ISO PROPYL ATRAZIN WATER, WHOLE, TOTAL (UG/L) (75980)	DI-METHEN-AMID WATER FLTRD REC (UG/L) (61588)	EPTC WATER WHOLE REC (UG/L) (81894)	METOLA-CHLOR WATER UNFLTRD REC (UG/L) (39356)
411727094374001	08-14-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
405632094534401	08-07-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	.27
431638091282902	08-02-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
413234094552401	08-15-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
420535091524002	07-22-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
422819092212701	08-08-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
420451093561301	08-19-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
420959094001901	08-19-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
422852092040101	08-08-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
424708094570901	07-30-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
425344095090401	08-22-02	<.1	--	<.05	<.50	<.050	--	--	--	--	--	--
425330092483701	08-08-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
415233094403201	08-19-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
411622094520901	08-07-02	--	--	--	--	--	--	--	--	--	--	--
411639094521101	08-07-02	--	--	--	--	--	--	--	--	--	--	--
414032091210001	07-23-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	3.60
423744095383301	07-29-02	--	--	--	--	--	--	--	--	--	--	--
424340095331301	07-30-02	--	--	--	--	--	--	--	--	--	--	--
414652090153201	08-19-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
414930090321601	08-19-02	--	--	--	<.50	--	--	--	--	--	--	--
420336095115601	07-29-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
413749093592601	08-28-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
413836094161701	08-28-02	--	--	--	--	--	--	--	--	--	--	--
415057094065301	08-19-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
423020091273701	08-09-02	<.1	<.1	<.05	<.50	<.050	<.1	.2	<.1	<.05	<.05	.09
423135090383201	08-09-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
423602090595201	08-09-02	--	--	--	--	--	--	--	--	--	--	--
432349094285201	08-21-02	--	--	--	--	--	--	--	--	--	--	--
425717091382602	08-07-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
425341093132501	08-21-02	<.1	--	<.05	<.50	<.050	--	--	--	--	--	--
404327095284801	08-08-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
421322092522001	07-30-02	<.1	<.1	<.05	<.50	<.050	<.1	.1	<.1	<.05	<.05	.17
421856092355101	07-29-02	<.1	<.1	<.05	<.50	.050	<.1	<.1	<.1	<.05	<.05	<.05
422611092552501	07-29-02	--	--	--	--	--	--	--	--	--	--	--
425533093364001	08-20-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
430015093360501	08-20-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
430015093360502	08-20-02	--	--	--	--	--	--	--	--	--	--	--
414236096012501	08-15-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
432650092170401	08-07-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
422106095280201	07-29-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
422915095323504	07-29-02	<.1	<.1	<.05	<.50	<.050	<.1	.1	<.1	.24	<.05	.94
414825091511201	07-26-02	--	--	--	<.50	--	--	--	--	--	--	--
414520092112001	08-20-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
420414090113201	08-19-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
413048093062101	08-28-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	--	<.05
413913093070001	07-31-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
410046091555701	08-01-02	--	--	--	<.50	--	--	--	--	--	--	--
421442091120001	08-09-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
412138091571501	07-23-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
403745091174701	08-01-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
420005091431201	07-22-02	<.1	<.1	<.05	<.50	<.050	<.1	.1	<.1	<.05	<.05	<.05
411644091110703	08-01-02	--	--	--	--	--	--	--	--	--	--	--
432608096201503	07-30-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
420352092552401	07-30-02	<.1	<.1	<.05	<.50	<.050	<.1	.1	<.1	<.05	<.05	<.05
420405092545601	07-30-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
410656095380201	08-14-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
431654092484501	08-07-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
432150092332401	08-07-02	--	--	--	--	--	--	--	--	--	--	--
432241092550802	08-08-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
420955095475601	07-31-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
405850095061701	08-07-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
413521090511001	07-24-02	--	--	--	--	--	--	--	--	--	--	--
431157095502901	07-30-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
403906095015001	08-08-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.07
425731094270801	08-21-02	--	--	--	--	--	--	--	--	--	--	--
423537095583901	07-31-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
411501095251301	08-14-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05
414430092433001	07-31-02	--	--	--	--	--	--	--	--	--	--	--
421617095051001	07-29-02	<.1	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	.66
413040090455001	07-24-02	--	--	--	<.50	--	--	--	--	--	--	--

GROUND WATER QUALITY MONITORING PROGRAM--Continued

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

Station number	Date	METRI-BUZIN IN WHOLE WATER (UG/L) (81408)	PENDI-METH-ALIN TOTAL (UG/L) (79190)	PROME-TONE TOTAL (UG/L) (39056)	PROPA-CHLOR IN WHOLE WATER (UG/L) (77729)	PRO-PAZINE TOTAL (UG/L) (39024)	TRIAL-LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI-FLURA-LIN TOTAL RECOVER (UG/L) (39030)	1,1,1-TRI-CHLORO-ETHANE TOTAL (UG/L) (34506)	1,1,2-TRI-CHLORO-ETHANE TOTAL (UG/L) (34511)	1,1-DI-CHLORO-ETHANE TOTAL (UG/L) (34496)	1,1-DI CHLORO-PRO-PENE, WAT, WH TOTAL (UG/L) (77168)
411727094374001	08-14-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
405632094534401	08-07-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
431638091282902	08-02-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
413234094552401	08-15-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
420535091524002	07-22-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
422819092212701	08-08-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
420451093561301	08-19-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
420959094001901	08-19-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
422852092040101	08-08-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
424708094570901	07-30-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
425344095090401	08-22-02	--	<.05	--	--	--	<.050	--	<.5	<.5	<.5	<.5
425330092483701	08-08-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
415233094403201	08-19-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
411622094520901	08-07-02	--	--	--	--	--	--	--	--	--	--	--
411639094521101	08-07-02	--	--	--	--	--	--	--	--	--	--	--
414032091210001	07-23-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
423744095383301	07-29-02	--	--	--	--	--	--	--	--	--	--	--
424340095331301	07-30-02	--	--	--	--	--	--	--	--	--	--	--
414652090153201	08-19-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
414930090321601	08-19-02	--	--	--	--	--	--	--	<.5	<.5	<.5	<.5
420336095115601	07-29-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
413749093592601	08-28-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
413836094161701	08-28-02	--	--	--	--	--	--	--	--	--	--	--
415057094065301	08-19-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
423020091273701	08-09-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
423135090383201	08-09-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
423602090595201	08-09-02	--	--	--	--	--	--	--	--	--	--	--
432349094285201	08-21-02	--	--	--	--	--	--	--	--	--	--	--
425717091382602	08-07-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
425341093132501	08-21-02	--	<.05	--	--	--	<.050	--	<.5	<.5	<.5	<.5
404327095284801	08-08-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
421322092522001	07-30-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
421856092355101	07-29-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
422611092552501	07-29-02	--	--	--	--	--	--	--	--	--	--	--
425533093364001	08-20-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
430015093360501	08-20-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
430015093360502	08-20-02	--	--	--	--	--	--	--	--	--	--	--
414236096012501	08-15-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
432650092170401	08-07-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
422106095280201	07-29-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	M	<.5
422915095323504	07-29-02	<.05	<.05	.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
414825091511201	07-26-02	--	--	--	--	--	--	--	<.5	<.5	<.5	<.5
414520092112001	08-20-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
420414090113201	08-19-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
413048093062101	08-28-02	<.05	<.05	<.1	<.05	<.1	--	<.1	--	--	--	--
413913093070001	07-31-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
410046091555701	08-01-02	--	--	--	--	--	--	--	<.5	<.5	<.5	<.5
421442091120001	08-09-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
412138091571501	07-23-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
403745091174701	08-01-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
420005091431201	07-22-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
411644091110703	08-01-02	--	--	--	--	--	--	--	--	--	--	--
432608096201503	07-30-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
420352092552401	07-30-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
420405092545601	07-30-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
410656095380201	08-14-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	M	<.5
431654092484501	08-07-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
432150092332401	08-07-02	--	--	--	--	--	--	--	--	--	--	--
432241092550802	08-08-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
420955095475601	07-31-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
405850095061701	08-07-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
413521090511001	07-24-02	--	--	--	--	--	--	--	--	--	--	--
431157095502901	07-30-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
403906095015001	08-08-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
425731094270801	08-21-02	--	--	--	--	--	--	--	--	--	--	--
423537095583901	07-31-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
411501095251301	08-14-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
414430092433001	07-31-02	--	--	--	--	--	--	--	--	--	--	--
421617095051001	07-29-02	<.05	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5
413040090455001	07-24-02	--	--	--	--	--	--	--	<.5	<.5	<.5	<.5

GROUND WATER QUALITY MONITORING PROGRAM--Continued

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

Station number	Date	123-TRI CHLORO-PROPANE WATER WHOLE TOTAL (UG/L) (77443)	1,2-DI-CHLORO-ETHANE TOTAL (UG/L) (32103)	1,2-DI-CHLORO-PROPANE TOTAL (UG/L) (34541)	TRANS-1,2-DI-CHLORO-ETHENE TOTAL (UG/L) (34546)	2,2-DI CHLORO-PRO-PANE WAT, WH TOTAL (UG/L) (77170)	BENZENE TOTAL (UG/L) (34030)	BROMO-BENZENE WATER, WHOLE, TOTAL (UG/L) (81555)	BROMO-FORM TOTAL (UG/L) (32104)	CARBON TETRA-CHLO-RIDE TOTAL (UG/L) (32102)	CHLORO-BENZENE TOTAL (UG/L) (34301)	CHLORO-ETHANE TOTAL (UG/L) (34311)
411727094374001	08-14-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
405632094534401	08-07-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
431638091282902	08-02-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
413234094552401	08-15-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
420535091524002	07-22-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
422819092212701	08-08-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
420451093561301	08-19-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
420959094001901	08-19-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
422852092040101	08-08-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
424708094570901	07-30-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
425344095090401	08-22-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
425330092483701	08-08-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
415233094403201	08-19-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
411622094520901	08-07-02	--	--	--	--	--	--	--	--	--	--	--
411639094521101	08-07-02	--	--	--	--	--	--	--	--	--	--	--
414032091210001	07-23-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
423744095383301	07-29-02	--	--	--	--	--	--	--	--	--	--	--
424340095331301	07-30-02	--	--	--	--	--	--	--	--	--	--	--
414652090153201	08-19-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
414930090321601	08-19-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
420336095115601	07-29-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
413749093592601	08-28-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
413836094161701	08-28-02	--	--	--	--	--	--	--	--	--	--	--
415057094065301	08-19-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
423020091273701	08-09-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
423135090383201	08-09-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
423602090595201	08-09-02	--	--	--	--	--	--	--	--	--	--	--
432349094285201	08-21-02	--	--	--	--	--	--	--	--	--	--	--
425717091382602	08-07-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
425341093132501	08-21-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
404327095284801	08-08-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
421322092522001	07-30-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
421856092355101	07-29-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
422611092552501	07-29-02	--	--	--	--	--	--	--	--	--	--	--
425533093364001	08-20-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
430015093360501	08-20-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
430015093360502	08-20-02	--	--	--	--	--	--	--	--	--	--	--
414236096012501	08-15-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
432650092170401	08-07-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
422106095280201	07-29-02	<.5	<.5	<.5	<.5	M	3	<.5	<.5	<.5	<.5	<.5
422915095323504	07-29-02	<.5	<.5	<.5	<.5	<.5	M	<.5	<.5	<.5	<.5	<.5
414825091511201	07-26-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
414520092112001	08-20-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
420414090113201	08-19-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
413048093062101	08-28-02	--	--	--	<.5	--	<.5	<.5	<.5	<.5	<.5	<.5
413913093070001	07-31-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
410046091555701	08-01-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
421442091120001	08-09-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
412138091571501	07-23-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
403745091174701	08-01-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
420005091431201	07-22-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
411644091110703	08-01-02	--	--	--	--	--	--	--	--	--	--	--
432608096201503	07-30-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
420352092552401	07-30-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
420405092545601	07-30-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
410656095380201	08-14-02	<.5	M	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
431654092484501	08-07-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
432150092332401	08-07-02	--	--	--	--	--	--	--	--	--	--	--
432241092550802	08-08-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
420955095475601	07-31-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
405850095061701	08-07-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
413521090511001	07-24-02	--	--	--	--	--	--	--	--	--	--	--
431157095502901	07-30-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
403906095015001	08-08-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
425731094270801	08-21-02	--	--	--	--	--	--	--	--	--	--	--
423537095583901	07-31-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
411501095251301	08-14-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
414430092433001	07-31-02	--	--	--	--	--	--	--	--	--	--	--
421617095051001	07-29-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
413040090455001	07-24-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5

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

Station number	Date	CHLORO-FORM TOTAL (UG/L) (32106)	CIS-1,2-DI-CHLORO-ETHENE WATER TOTAL (UG/L) (77093)	CIS 1,3-DI-CHLORO-PROPENE TOTAL (UG/L) (34704)	DI-BROMO-METHANE WATER WHOLE RECOVER (UG/L) (30217)	ETHYL-BENZENE TOTAL (UG/L) (34371)	METHYL TERT-BUTYL ETHER WAT UNF REC (UG/L) (78032)	STYRENE TOTAL (UG/L) (77128)	TOLUENE TOTAL (UG/L) (34010)	TRANS-1,3-DI-CHLORO-PROPENE TOTAL (UG/L) (34699)	VINYL CHLO-RIDE TOTAL (UG/L) (39175)	SIMA-ZINE TOTAL (UG/L) (39055)
411727094374001	08-14-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
405632094534401	08-07-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
431638091282902	08-02-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
413234094552401	08-15-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
420535091524002	07-22-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
422819092212701	08-08-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
420451093561301	08-19-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
420959094001901	08-19-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
422852092040101	08-08-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
424708094570901	07-30-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
425344095090401	08-22-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	--
425330092483701	08-08-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
415233094403201	08-19-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
411622094520901	08-07-02	--	--	--	--	--	--	--	--	--	--	--
411639094521101	08-07-02	--	--	--	--	--	--	--	--	--	--	--
414032091210001	07-23-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
423744095383301	07-29-02	--	--	--	--	--	--	--	--	--	--	--
424340095331301	07-30-02	--	--	--	--	--	--	--	--	--	--	--
414652090153201	08-19-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
414930090321601	08-19-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	--
420336095115601	07-29-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
413749093592601	08-28-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
413836094161701	08-28-02	--	--	--	--	--	--	--	--	--	--	--
415057094065301	08-19-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
423020091273701	08-09-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
423135090383201	08-09-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
423602090595201	08-09-02	--	--	--	--	--	--	--	--	--	--	--
432349094285201	08-21-02	--	--	--	--	--	--	--	--	--	--	--
425717091382602	08-07-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
425341093132501	08-21-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	--
404327095284801	08-08-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
421322092522001	07-30-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
421856092355101	07-29-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
422611092552501	07-29-02	--	--	--	--	--	--	--	--	--	--	--
425533093364001	08-20-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
430015093360501	08-20-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
430015093360502	08-20-02	--	--	--	--	--	--	--	--	--	--	--
414236096012501	08-15-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
432650092170401	08-07-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
422106095280201	07-29-02	<.5	<.5	<.5	<.5	<.5	4.1	<.5	<.5	<.5	<.5	<.1
422915095323504	07-29-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
414825091511201	07-26-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	--
414520092112001	08-20-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
420414090113201	08-19-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
413048093062101	08-28-02	<.5	<.5	<.5	<.5	<.5	--	<.5	<.5	<.5	<.5	<.1
413913093070001	07-31-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
410046091555701	08-01-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	--
421442091120001	08-09-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
412138091571501	07-23-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
403745091174701	08-01-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
420005091431201	07-22-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
411644091110703	08-01-02	--	--	--	--	--	--	--	--	--	--	--
432608096201503	07-30-02	2	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
420352092552401	07-30-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
420405092545601	07-30-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
410656095380201	08-14-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
431654092484501	08-07-02	<.5	<.5	<.05	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
432150092332401	08-07-02	--	--	--	--	--	--	--	--	--	--	--
432241092550802	08-08-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
420955095475601	07-31-02	4	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
405850095061701	08-07-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
413521090511001	07-24-02	--	--	--	--	--	--	--	--	--	--	--
431157095502901	07-30-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
403906095015001	08-08-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
425731094270801	08-21-02	--	--	--	--	--	--	--	--	--	--	--
423537095583901	07-31-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
411501095251301	08-14-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
414430092433001	07-31-02	--	--	--	--	--	--	--	--	--	--	--
421617095051001	07-29-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1
413040090455001	07-24-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	--

GROUND WATER QUALITY MONITORING PROGRAM--Continued

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

Station number	Date	TRITIUM TOTAL (PCI/L) (07000)	PHOS-PHATE, TOTAL (MG/L AS PO4) (00650)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BORON, DIS-SOLVED (UG/L AS B) (01020)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ETHANE, 1,1,2,2 TETRA-CHLORO-WAT UNF REC (UG/L) (34516)	BENZENE 1,2,4-TRI-CHLORO-WAT UNF REC (UG/L) (34551)	2,4,5-T TOTAL (UG/L) (39740)
411727094374001	08-14-02	--	.580	<100	190	<50	<.05	160	<20	<.5	<.5	<.20
405632094534401	08-07-02	--	.070	<100	80.0	200	<.05	180	<20	<.5	<.5	<.20
431638091282902	08-02-02	--	.070	<100	70.0	<50	<.05	110	<20	<.5	<.5	<.20
413234094552401	08-15-02	--	.190	<100	270	70	<.05	300	20	<.5	<.5	<.20
420535091524002	07-22-02	--	<.050	<100	90.0	100	<.05	30	60	<.5	<.5	<.20
422819092212701	08-08-02	--	<.050	<100	<50.0	70	<.05	1300	<20	<.5	<.5	<.20
420451093561301	08-19-02	--	.140	<100	60.0	90	<.05	270	<20	<.5	<.5	<.20
420959094001901	08-19-02	--	.120	<100	390	<50	<.05	320	<20	<.5	<.5	<.20
422852092040101	08-08-02	--	<.050	<100	160	<50	<.05	2400	<20	<.5	<.5	<.20
424708094570901	07-30-02	--	.070	<100	<50.0	450	<.05	840	20	<.5	<.5	<.20
425344095090401	08-22-02	--	<.050	<100	100	120	<.05	--	<20	<.5	<.5	<.20
425330092483701	08-08-02	--	<.050	<100	310	<50	<.05	5900	<20	<.5	<.5	<.20
415233094403201	08-19-02	--	.060	<100	160	<50	<.05	140	70	<.5	<.5	<.20
411622094520901	08-07-02	--	<.050	<100	200	<50	<.05	190	<20	--	--	--
411639094521101	08-07-02	--	<.050	<100	270	<50	<.05	230	<20	--	--	--
414032091210001	07-23-02	--	.170	<100	320	70	<.05	300	20	<.5	<.5	<.20
423744095383301	07-29-02	--	.060	<100	70.0	60	<.05	820	<20	--	--	--
424340095331301	07-30-02	--	.070	<100	60.0	120	.13	1600	<20	--	--	--
414652090153201	08-19-02	--	.080	<100	<50.0	<50	<.05	120	<20	<.5	<.5	<.20
414930090321601	08-19-02	--	<.050	<100	70.0	290	<.05	1600	<20	<.5	<.5	--
420336095115601	07-29-02	--	.140	<100	60.0	350	<.05	240	60	<.5	<.5	<.20
413749093592601	08-28-02	26.4	<.050	<100	230	<50	<.05	250	90	<.5	<.5	<.20
413836094161701	08-28-02	--	--	<100	<50.0	1600	<.05	620	<20	--	--	--
415057094065301	08-19-02	--	<.050	<100	100	<50	<.05	260	<20	<.5	<.5	<.20
423020091273701	08-09-02	--	<.050	<100	60.0	<50	<.05	170	<20	<.5	<.5	<.20
423135090383201	08-09-02	--	.470	<100	390	<50	<.05	110	<20	<.5	<.5	<.20
423602090595201	08-09-02	--	.050	<100	100	60	.05	220	<20	--	--	--
432349094285201	08-21-02	--	<.050	<100	70.0	370	<.05	450	<20	--	--	--
425717091382602	08-07-02	--	<.050	<100	100	<50	<.05	190	<20	<.5	<.5	<.20
425341093132501	08-21-02	--	2.70	<100	60.0	<50	<.05	120	<20	<.5	<.5	<.20
404327095284801	08-08-02	--	.240	<100	150	80	<.05	340	50	<.5	<.5	<.20
421322092522001	07-30-02	--	<.050	<100	150	60	<.05	180	30	<.5	<.5	<.20
421856092355101	07-29-02	-.1	<.050	<100	<50.0	250	.05	3200	20	<.5	<.5	<.20
422611092552501	07-29-02	--	<.050	<100	<50.0	1200	<.05	2000	<20	--	--	--
425533093364001	08-20-02	--	<.050	<100	240	50	<.05	330	<20	<.5	<.5	<.20
430015093360501	08-20-02	--	<.050	<100	190	80	<.05	390	130	<.5	<.5	<.20
430015093360502	08-20-02	--	--	<100	<50.0	720	<.05	1900	<20	--	--	--
414236096012501	08-15-02	--	.430	<100	270	170	<.05	1300	<20	<.5	<.5	<.20
432650092170401	08-07-02	--	.060	<100	120	<50	<.05	160	<20	<.5	<.5	<.20
422106095280201	07-29-02	--	.100	<100	190	100	<.05	380	<20	<.5	<.5	.20
422915095323504	07-29-02	--	.050	<100	110	60	<.05	370	<20	<.5	<.5	<.20
414825091511201	07-26-02	--	<.050	<100	<50.0	530	<.05	1300	<20	<.5	<.5	--
414520092112001	08-20-02	--	.160	100	70.0	580	<.05	780	<20	<.5	<.5	<.20
420414090113201	08-19-02	--	<.050	<100	130	<50	<.05	110	30	<.5	<.5	<.20
413048093062101	08-28-02	-.1	--	<100	50.0	<300	<.05	920	<20	--	--	--
413913093070001	07-31-02	--	.110	<100	120	<50	<.05	170	<20	<.5	<.5	<.20
410046091555701	08-01-02	--	<.050	<100	<50.0	1300	<.05	2200	--	--	--	--
421442091120001	08-09-02	--	.060	<100	100	<50	<.05	100	<20	<.5	<.5	<.20
412138091571501	07-23-02	.1	<.050	<100	130	220	<.05	600	<20	<.5	<.5	<.50
403745091174701	08-01-02	--	1.50	<100	250	<50	<.05	120	--	--	--	<.20
420005091431201	07-22-02	--	.050	<100	110	<50	<.05	180	<20	<.5	<.5	<.20
411644091110703	08-01-02	.1	.790	<100	140	<50	<.05	150	--	--	--	--
432608096201503	07-30-02	--	<.050	<100	50.0	120	<.05	690	<20	<.5	<.5	<.20
420352092552401	07-30-02	--	.070	<100	90.0	<50	<.05	160	<20	<.5	<.5	<.20
420405092545601	07-30-02	--	.080	<100	60.0	180	<.05	640	<20	<.5	<.5	<.20
410656095380201	08-14-02	--	.220	100	590	70	<.05	40	<20	<.5	<.5	<.20
431654092484501	08-07-02	--	<.050	<100	100	<50	<.05	180	<20	<.5	<.5	<.20
432150092332401	08-07-02	--	.060	100	150	190	<.05	450	<20	--	--	--
432241092550802	08-08-02	--	.070	<100	<50.0	<50	<.05	80	<20	<.5	<.5	<.20
420955095475601	07-31-02	--	.090	<100	160	70	<.05	430	60	<.5	<.5	<.20
405850095061701	08-07-02	--	.100	<100	450	50	<.05	390	<20	<.5	<.5	<.20
413521090511001	07-24-02	.9	.100	<100	300	<50	<.05	120	<460	--	--	--
431157095502901	07-30-02	25.7	.180	<100	120	<50	<.05	30	<20	<.5	<.5	<.20
403906095015001	08-08-02	--	.450	100	190	<50	<.05	270	30	<.5	<.5	<.20
425731094270801	08-21-02	.3	.250	<100	130	140	<.05	530	<20	--	--	--
423537095583901	07-31-02	42.2	.110	<100	200	60	<.05	370	30	<.5	<.5	<.20
411501095251301	08-14-02	--	.070	<100	260	<50	<.05	270	<20	<.5	<.5	<.20
414430092433001	07-31-02	--	<.050	<100	<50.0	980	<.05	2100	<20	--	--	--
421617095051001	07-29-02	--	.060	<100	160	60	<.05	260	<20	<.5	<.5	<.20
413040090455001	07-24-02	--	<.050	<100	270	<50	<.05	190	<20	<.5	<.5	--

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

Station number	Date	2,4-D, TOTAL (UG/L) (39730)	2,4-DB WATER WHOLE RECOVER (UG/L) (30219)	ACI-FLUOR-FEN WATER UNFLTD REC (UG/L) (79193)	ALDRIN, TOTAL (UG/L) (39330)	ATRA-ZINE WATER UNFLTRD REC (UG/L) (39630)	BENTA-ZON WATER UNFLTRD REC (UG/L) (38710)	CARBO-FURAN WATER WHOLE TOT.REC (UG/L) (82615)	CHLOR-AMBEN WATER UNFLTRD REC (UG/L) (82051)	CHLOR-PYRIFOS TOTAL RECOVER (UG/L) (38932)	DDD, SUS-PENDED TOTAL (UG/L) (39362)	DDE, SUS-PENDED TOTAL (UG/L) (39367)
411727094374001	08-14-02	<.40	<.40	<.20	<.050	.3	<.50	<.05	<.20	<.05	<.05	<.05
405632094534401	08-07-02	<.40	<.40	<.20	<.050	.4	<.50	<.05	<.20	<.05	<.05	<.05
431638091282902	08-02-02	<.40	<.40	<.20	<.050	.2	<.50	<.05	<.20	<.05	<.05	<.05
413234094552401	08-15-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
420535091524002	07-22-02	<.40	<.40	<.20	<.050	.1	<.50	<.05	<.20	<.05	<.05	<.05
422819092212701	08-08-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
420451093561301	08-19-02	<.40	<.40	<.20	<.050	.3	<.50	<.05	<.20	<.05	<.05	<.05
420959094001901	08-19-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
422852092040101	08-08-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
424708094570901	07-30-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
425344095090401	08-22-02	<.40	<.40	<.20	<.050	--	<.50	<.05	<.20	<.05	<.05	<.05
425330092483701	08-08-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
415233094403201	08-19-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
411622094520901	08-07-02	--	--	--	--	--	--	--	--	--	--	--
411639094521101	08-07-02	--	--	--	--	--	--	--	--	--	--	--
414032091210001	07-23-02	<.40	<.40	<.20	<.050	.1	<.50	<.05	<.20	<.05	<.05	<.05
423744095383301	07-29-02	--	--	--	--	--	--	--	--	--	--	--
424340095331301	07-30-02	--	--	--	--	--	--	--	--	--	--	--
414652090153201	08-19-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
414930090321601	08-19-02	--	--	--	--	--	--	--	--	--	--	--
420336095115601	07-29-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
413749093592601	08-28-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
413836094161701	08-28-02	--	--	--	--	--	--	--	--	--	--	--
415057094065301	08-19-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
423020091273701	08-09-02	<.40	<.40	<.20	<.050	.2	<.50	<.05	<.20	<.05	<.05	<.05
423135090383201	08-09-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
423602090595201	08-09-02	--	--	--	--	--	--	--	--	--	--	--
432349094285201	08-21-02	--	--	--	--	--	--	--	--	--	--	--
425717091382602	08-07-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
425341093132501	08-21-02	<.40	<.40	<.20	<.050	--	<.50	<.05	<.20	<.05	<.05	<.05
404327095284801	08-08-02	<.40	<.40	<.20	<.050	.1	<.50	<.05	<.20	<.05	<.05	<.05
421322092522001	07-30-02	<.40	<.40	<.20	<.050	.1	<.50	<.05	<.20	<.05	<.05	<.05
421856092355101	07-29-02	<.40	<.40	<.20	<.050	<.1	<.50	.05	<.20	<.05	<.05	<.05
422611092552501	07-29-02	--	--	--	--	--	--	--	--	--	--	--
425533093364001	08-20-02	<.40	<.40	<.20	--	<.1	<.50	--	<.20	--	--	--
430015093360501	08-20-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
430015093360502	08-20-02	--	--	--	--	--	--	--	--	--	--	--
414236096012501	08-15-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
432650092170401	08-07-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
422106095280201	07-29-02	.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
422915095323504	07-29-02	<.40	<.40	<.20	<.050	.2	13	<.05	<.20	<.05	<.05	<.05
414825091511201	07-26-02	--	--	--	--	--	--	--	--	--	--	--
414520092112001	08-20-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
420414090113201	08-19-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
413048093062101	08-28-02	--	--	--	--	<.1	--	--	--	--	--	--
413913093070001	07-31-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
410046091555701	08-01-02	--	--	--	--	--	--	--	--	--	--	--
421442091120001	08-09-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
412138091571501	07-23-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
403745091174701	08-01-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
420005091431201	07-22-02	<.40	<.40	<.20	<.050	.2	<.50	<.05	<.20	<.05	<.05	<.05
411644091110703	08-01-02	--	--	--	--	--	--	--	--	--	--	--
432608096201503	07-30-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
420352092552401	07-30-02	<.40	<.40	<.20	<.050	.1	<.50	<.05	<.20	<.05	<.05	<.05
420405092545601	07-30-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
410656095380201	08-14-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
431654092484501	08-07-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
432150092332401	08-07-02	--	--	--	--	--	--	--	--	--	--	--
432241092550802	08-08-02	<.40	<.40	<.20	<.050	.1	<.50	<.05	<.20	<.05	<.05	<.05
420955095475601	07-31-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
405850095061701	08-07-02	<.40	<.40	<.20	<.050	.1	<.50	<.05	<.20	<.05	<.05	<.05
413521090511001	07-24-02	--	--	--	--	--	--	--	--	--	--	--
431157095502901	07-30-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
403906095015001	08-08-02	<.40	<.40	<.20	<.050	.1	<.50	<.05	<.20	<.05	<.05	<.05
425731094270801	08-21-02	--	--	--	--	--	--	--	--	--	--	--
423537095583901	07-31-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
411501095251301	08-14-02	<.40	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05
414430092433001	07-31-02	--	--	--	--	--	--	--	--	--	--	--
421617095051001	07-29-02	<.40	<.40	<.20	<.050	<.1	16	<.05	<.20	<.05	<.05	<.05
413040090455001	07-24-02	--	--	--	--	--	--	--	--	--	--	--

GROUND WATER QUALITY MONITORING PROGRAM--Continued

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

Station number	Date	DDT, SUS-PENDED TOTAL (UG/L) (39372)	DI-AZINON, TOTAL (UG/L) (39570)	DICAMBA TOTAL (UG/L) (82052)	DI-CHLOR-PROP WATER WHOLE RECOVER (UG/L) (30190)	DICHLOR VOS WAT, WH REC (UG/L) (30218)	DI-ELDRIN TOTAL (UG/L) (39380)	DIMETH-OATE WATER WHOLE TOTAL (UG/L) (39009)	DINOSEB WATER UNFLTRD REC (UG/L) (30191)	DISUL-FOTON WATER WHOLE TOT.REC (UG/L) (82617)	ENDO-SULFAN-I WATER WHOLE REC (UG/L) (34361)	ENDO-SULFAN-II WATER WHOLE TOT.REC (UG/L) (82624)
411727094374001	08-14-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
405632094534401	08-07-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
431638091282902	08-02-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
413234094552401	08-15-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
420535091524002	07-22-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
422819092212701	08-08-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
420451093561301	08-19-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
420959094001901	08-19-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
422852092040101	08-08-02	<.05	<.05	<.20	<.20	<.05	<.050	.05	<.20	<.1	<.1	<.1
424708094570901	07-30-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
425344095090401	08-22-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
425330092483701	08-08-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
415233094403201	08-19-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
411622094520901	08-07-02	--	--	--	--	--	--	--	--	--	--	--
411639094521101	08-07-02	--	--	--	--	--	--	--	--	--	--	--
414032091210001	07-23-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
423744095383301	07-29-02	--	--	--	--	--	--	--	--	--	--	--
424340095331301	07-30-02	--	--	--	--	--	--	--	--	--	--	--
414652090153201	08-19-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
414930090321601	08-19-02	--	--	--	--	--	--	--	--	--	--	--
420336095115601	07-29-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
413749093592601	08-28-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
413836094161701	08-28-02	--	--	--	--	--	--	--	--	--	--	--
415057094065301	08-19-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
423020091273701	08-09-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
423135090383201	08-09-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
423602090595201	08-09-02	--	--	--	--	--	--	--	--	--	--	--
432349094285201	08-21-02	--	--	--	--	--	--	--	--	--	--	--
425717091382602	08-07-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
425341093132501	08-21-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
404327095284801	08-08-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
421322092522001	07-30-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
421856092355101	07-29-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	>.1	<.1	<.1
422611092552501	07-29-02	--	--	--	--	--	--	--	--	--	--	--
425533093364001	08-20-02	--	--	<.20	<.20	--	--	--	<.20	--	--	--
430015093360501	08-20-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
430015093360502	08-20-02	--	--	--	--	--	--	--	--	--	--	--
414236096012501	08-15-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
432650092170401	08-07-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
422106095280201	07-29-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
422915095323504	07-29-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	--	<.1	<.1
414825091511201	07-26-02	--	--	--	--	--	--	--	--	--	--	--
414520092112001	08-20-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
420414090113201	08-19-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
413048093062101	08-28-02	--	--	--	--	--	--	--	--	--	--	--
413913093070001	07-31-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
410046091555701	08-01-02	--	--	--	--	--	--	--	--	--	--	--
421442091120001	08-09-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
412138091571501	07-23-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
403745091174701	08-01-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
420005091431201	07-22-02	<.20	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
411644091110703	08-01-02	--	--	--	--	--	--	--	--	--	--	--
432608096201503	07-30-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
420352092552401	07-30-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
420405092545601	07-30-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
410656095380201	08-14-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
431654092484501	08-07-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
432150092332401	08-07-02	--	--	--	--	--	--	--	--	--	--	--
432241092550802	08-08-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
420955095475601	07-31-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
405850095061701	08-07-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
413521090511001	07-24-02	--	--	--	--	--	--	--	--	--	--	--
431157095502901	07-30-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
403906095015001	08-08-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
425731094270801	08-21-02	--	--	--	--	--	--	--	--	--	--	--
423537095583901	07-31-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
411501095251301	08-14-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
414430092433001	07-31-02	--	--	--	--	--	--	--	--	--	--	--
421617095051001	07-29-02	<.05	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1
413040090455001	07-24-02	--	--	--	--	--	--	--	--	--	--	--

GROUND WATER QUALITY MONITORING PROGRAM--Continued

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

Station number	Date	ENDO-SULFAN SULFATE WATER WHOLE TOT.REC (UG/L) (82623)	ENDRIN ALDE-HYDE WATER WHOLE TOT.REC (UG/L) (82622)	ENDRIN KETONE WATER WHOLE TOTAL (UG/L) (78008)	ENDRIN WATER UNFLTRD REC (UG/L) (39390)	ETHO-PROP WAT, WH REC (UG/L) (81758)	FONOFOS WATER DISS REC (UG/L) (04095)	HEPTA-CHLOR, TOTAL (UG/L) (39410)	ISO-FENPHOS SURRGTE WATER, UNFLT, REC PERCENT (99577)	LINDANE TOTAL (UG/L) (39340)	MALA-THION, TOTAL (UG/L) (39530)	METH-OXY-CHLOR, TOTAL (UG/L) (39480)
411727094374001	08-14-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
405632094534401	08-07-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
431638091282902	08-02-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
413234094552401	08-15-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
420535091524002	07-22-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
422819092212701	08-08-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
420451093561301	08-19-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
420959094001901	08-19-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
422852092040101	08-08-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
424708094570901	07-30-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
425344095090401	08-22-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
425330092483701	08-08-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
415233094403201	08-19-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
411622094520901	08-07-02	--	--	--	--	--	--	--	--	--	--	--
411639094521101	08-07-02	--	--	--	--	--	--	--	--	--	--	--
414032091210001	07-23-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
423744095383301	07-29-02	--	--	--	--	--	--	--	--	--	--	--
424340095331301	07-30-02	--	--	--	--	--	--	--	--	--	--	--
414652090153201	08-19-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
414930090321601	08-19-02	--	--	--	--	--	--	--	--	--	--	--
420336095115601	07-29-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
413749093592601	08-28-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
413836094161701	08-28-02	--	--	--	--	--	--	--	--	--	--	--
415057094065301	08-19-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
423020091273701	08-09-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
423135090383201	08-09-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
423602090595201	08-09-02	--	--	--	--	--	--	--	--	--	--	--
432349094285201	08-21-02	--	--	--	--	--	--	--	--	--	--	--
425717091382602	08-07-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
425341093132501	08-21-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
404327095284801	08-08-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
421322092522001	07-30-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
421856092355101	07-29-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
422611092552501	07-29-02	--	--	--	--	--	--	--	--	--	--	--
425533093364001	08-20-02	--	--	--	--	--	--	--	--	--	--	--
430015093360501	08-20-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
430015093360502	08-20-02	--	--	--	--	--	--	--	--	--	--	--
414236096012501	08-15-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
432650092170401	08-07-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
422106095280201	07-29-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
422915095323504	07-29-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
414825091511201	07-26-02	--	--	--	--	--	--	--	--	--	--	--
414520092112001	08-20-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
420414090113201	08-19-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
413048093062101	08-28-02	--	--	--	--	--	--	--	--	--	--	--
413913093070001	07-31-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
410046091555701	08-01-02	--	--	--	--	--	--	--	--	--	--	--
421442091120001	08-09-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
412138091571501	07-23-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
403745091174701	08-01-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
420005091431201	07-22-02	<.2	<.2	<.20	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.200
411644091110703	08-01-02	--	--	--	--	--	--	--	--	--	--	--
432608096201503	07-30-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
420352092552401	07-30-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
420405092545601	07-30-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
410656095380201	08-14-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
431654092484501	08-07-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
432150092332401	08-07-02	--	--	--	--	--	--	--	--	--	--	--
432241092550802	08-08-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
420955095475601	07-31-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
405850095061701	08-07-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
413521090511001	07-24-02	--	--	--	--	--	--	--	--	--	--	--
431157095502901	07-30-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
403906095015001	08-08-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
425731094270801	08-21-02	--	--	--	--	--	--	--	--	--	--	--
423537095583901	07-31-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
411501095251301	08-14-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
414430092433001	07-31-02	--	--	--	--	--	--	--	--	--	--	--
421617095051001	07-29-02	<.1	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050
413040090455001	07-24-02	--	--	--	--	--	--	--	--	--	--	--

GROUND WATER QUALITY MONITORING PROGRAM--Continued

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

Station number	Date	METHYL PARA-THION, TOTAL (UG/L) (39600)	PARA-THION, TOTAL (UG/L) (39540)	PENTA-CHLORO-PHENOL TOTAL (UG/L) (39032)	PHORATE TOTAL (UG/L) (39023)	PIC-LORAM UNFILT RECOVER (UG/L) (39720)	SILVEX, TOTAL (UG/L) (39760)	TERBU-FOS WAT, WH REC (UG/L) (82088)	TOX-APHENE, TOTAL (UG/L) (39400)	TRI CLOPYR WATER UNFLTRD REC (UG/L) (04092)	XYLENE WATER UNFLTRD REC (UG/L) (81551)	1,1-DI-CHLORO-ETHYL-ENE TOTAL (UG/L) (34501)
411727094374001	08-14-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
405632094534401	08-07-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
431638091282902	08-02-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
413234094552401	08-15-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
420535091524002	07-22-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
422819092212701	08-08-02	<.05	.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
420451093561301	08-19-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
420959094001901	08-19-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
422852092040101	08-08-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
424708094570901	07-30-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
425344095090401	08-22-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	<.5	<.20	<.5	<.5
425330092483701	08-08-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
415233094403201	08-19-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
411622094520901	08-07-02	--	--	--	--	--	--	--	--	--	--	--
411639094521101	08-07-02	--	--	--	--	--	--	--	--	--	--	--
414032091210001	07-23-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
423744095383301	07-29-02	--	--	--	--	--	--	--	--	--	--	--
424340095331301	07-30-02	--	--	--	--	--	--	--	--	--	--	--
414652090153201	08-19-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
414930090321601	08-19-02	--	--	--	--	--	--	--	--	--	<.5	<.5
420336095115601	07-29-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
413749093592601	08-28-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	<.5	<.20	<.5	<.5
413836094161701	08-28-02	--	--	--	--	--	--	--	--	--	--	--
415057094065301	08-19-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	<.5	<.20	<.5	<.5
423020091273701	08-09-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
423135090383201	08-09-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
423602090595201	08-09-02	--	--	--	--	--	--	--	--	--	--	--
432349094285201	08-21-02	--	--	--	--	--	--	--	--	--	--	--
425717091382602	08-07-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
425341093132501	08-21-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	<.5	<.20	<.5	<.5
404327095284801	08-08-02	<.05	<.05	<.2	<.05	.88	<.20	<.05	--	<.20	<.5	<.5
421322092522001	07-30-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
421856092355101	07-29-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
422611092552501	07-29-02	--	--	--	--	--	--	--	--	--	--	--
425533093364001	08-20-02	--	--	<.2	--	<.40	<.20	--	--	<.20	<.5	<.5
430015093360501	08-20-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	<.5	<.20	<.5	<.5
430015093360502	08-20-02	--	--	--	--	--	--	--	--	--	--	--
414236096012501	08-15-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
432650092170401	08-07-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
422106095280201	07-29-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
422915095323504	07-29-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
414825091511201	07-26-02	--	--	--	--	--	--	--	--	--	<.5	<.5
414520092112001	08-20-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
420414090113201	08-19-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
413048093062101	08-28-02	--	--	--	--	--	--	--	--	--	--	--
413913093070001	07-31-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
410046091555701	08-01-02	--	--	--	--	--	--	--	--	--	<.5	<.5
421442091120001	08-09-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
412138091571501	07-23-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
403745091174701	08-01-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
420005091431201	07-22-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
411644091110703	08-01-02	--	--	--	--	--	--	--	--	--	--	--
432608096201503	07-30-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
420352092552401	07-30-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
420405092545601	07-30-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
410656095380201	08-14-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
431654092484501	08-07-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
432150092332401	08-07-02	--	--	--	--	--	--	--	--	--	--	--
432241092550802	08-08-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
420955095475601	07-31-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
405850095061701	08-07-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
413521090511001	07-24-02	--	--	--	--	--	--	--	--	--	--	--
431157095502901	07-30-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
403906095015001	08-08-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
425731094270801	08-21-02	--	--	--	--	--	--	--	--	--	--	--
423537095583901	07-31-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
411501095251301	08-14-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
414430092433001	07-31-02	--	--	--	--	--	--	--	--	--	--	--
421617095051001	07-29-02	<.05	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5
413040090455001	07-24-02	--	--	--	--	--	--	--	--	--	<.5	<.5

GROUND WATER QUALITY MONITORING PROGRAM--Continued

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

Station number	Date	CHLORO-DI-BROMO-METHANE TOTAL (UG/L) (32105)	BROMO-DI-CHLORO-METHANE TOTAL (UG/L) (32101)	ETHANE, 1112-TETRA-CHLORO-WAT UNF REC (UG/L) (77562)	METHYL ENE CHLO-RIDE TOTAL (UG/L) (34423)	O-CHLORO-TOLUENE WATER WHOLE TOTAL (UG/L) (77275)	1,3-DI-CHLORO-PROPANE WAT. WH TOTAL (UG/L) (77173)	TETRA-CHLORO-ETHYL-ENE TOTAL (UG/L) (34475)	TOLUENE P-CHLOR WATER UNFLTRD REC (UG/L) (77277)	TRI-CHLORO-ETHYL-ENE TOTAL (UG/L) (39180)	GROSS ALPHA, DIS-SOLVED (PCI/L AS U-NAT) (01515)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) (03515)
411727094374001	08-14-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
405632094534401	08-07-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
431638091282902	08-02-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
413234094552401	08-15-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
420535091524002	07-22-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
422819092212701	08-08-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	<.8	<2.1
420451093561301	08-19-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
420959094001901	08-19-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
422852092040101	08-08-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	2.9	5.5
424708094570901	07-30-02	<.5	<.5	<.5	1	<.5	<.5	<.5	<.5	<.5	--	--
425344095090401	08-22-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
425330092483701	08-08-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
415233094403201	08-19-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
411622094520901	08-07-02	--	--	--	--	--	--	--	--	--	1.3	3.1
411639094521101	08-07-02	--	--	--	--	--	--	--	--	--	<.8	<2.5
414032091210001	07-23-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
423744095383301	07-29-02	--	--	--	--	--	--	--	--	--	<1.3	4.2
424340095331301	07-30-02	--	--	--	--	--	--	--	--	--	4.6	10.2
414652090153201	08-19-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	<1.1	3.1
414930090321601	08-19-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	3.8	11.6
420336095115601	07-29-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
413749093592601	08-28-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	3.1	7.2
413836094161701	08-28-02	--	--	--	--	--	--	--	--	--	5.0	5.3
415057094065301	08-19-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
423020091273701	08-09-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	<1.6	1.5
423135090383201	08-09-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
423602090595201	08-09-02	--	--	--	--	--	--	M	--	--	3.6	14.8
432349094285201	08-21-02	--	--	--	--	--	--	--	--	--	1.1	9.3
425717091382602	08-07-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
425341093132501	08-21-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
404327095284801	08-08-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
421322092522001	07-30-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	2.4	3.8
421856092355101	07-29-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	2.6	4.3
422611092552501	07-29-02	--	--	--	--	--	--	--	--	--	12	27.1
425533093364001	08-20-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	1.3	4.1
430015093360501	08-20-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
430015093360502	08-20-02	--	--	--	--	--	--	--	--	--	7.8	21.3
414236096012501	08-15-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
432650092170401	08-07-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
422106095280201	07-29-02	<.5	<.5	<.5	<1	<.5	<.5	M	<.5	<.5	--	--
422915095323504	07-29-02	<.05	<.5	M	--	<.5	M	<.5	<.5	<.5	--	--
414825091511201	07-26-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	5.1	21.4
414520092112001	08-20-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
420414090113201	08-19-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
413048093062101	08-28-02	<.5	--	--	--	--	--	<.5	--	--	4.6	5.7
413913093070001	07-31-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	<2.0	4.4
410046091555701	08-01-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	32	26.5
421442091120001	08-09-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
412138091571501	07-23-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	2.9	5.5
403745091174701	08-01-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	--	--
420005091431201	07-22-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	<1.6	10.4
411644091110703	08-01-02	--	--	--	--	--	--	--	--	--	<1.5	3.4
432608096201503	07-30-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
420352092552401	07-30-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	2.6	3.8
420405092545601	07-30-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	<2.0	13.8
410656095380201	08-14-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
431654092484501	08-07-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
432150092332401	08-07-02	--	--	--	--	--	--	--	--	--	2.5	5.1
432241092550802	08-08-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
420955095475601	07-31-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
405850095061701	08-07-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
413521090511001	07-24-02	--	--	--	--	--	--	--	--	--	1.7	<1.3
431157095502901	07-30-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
403906095015001	08-08-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
425731094270801	08-21-02	--	--	--	--	--	--	--	--	--	20	11.9
423537095583901	07-31-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
411501095251301	08-14-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
414430092433001	07-31-02	--	--	--	--	--	--	--	--	--	7.2	19.3
421617095051001	07-29-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--
413040090455001	07-24-02	<.5	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	2.4	<1.4

GROUND WATER QUALITY MONITORING PROGRAM--Continued

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

Station number	Date	RADIUM 226, DIS-SOLVED (PCI/L) (09503)
411727094374001	08-14-02	--
405632094534401	08-07-02	--
431638091282902	08-02-02	--
413234094552401	08-15-02	--
420535091524002	07-22-02	--
422819092212701	08-08-02	<.7
420451093561301	08-19-02	--
420959094001901	08-19-02	--
422852092040101	08-08-02	1
424708094570901	07-30-02	--
425344095090401	08-22-02	--
425330092483701	08-08-02	--
415233094403201	08-19-02	--
411622094520901	08-07-02	<.9
411639094521101	08-07-02	<.8
414032091210001	07-23-02	--
423744095383301	07-29-02	<.7
424340095331301	07-30-02	4
414652090153201	08-19-02	<.7
414930090321601	08-19-02	3
420336095115601	07-29-02	--
413749093592601	08-28-02	M
413836094161701	08-28-02	2
415057094065301	08-19-02	--
423020091273701	08-09-02	<.7
423135090383201	08-09-02	--
423602090595201	08-09-02	2
432349094285201	08-21-02	<.9
425717091382602	08-07-02	--
425341093132501	08-21-02	--
404327095284801	08-08-02	--
421322092522001	07-30-02	<.7
421856092355101	07-29-02	<.7
422611092552501	07-29-02	4
425533093364001	08-20-02	<.6
430015093360501	08-20-02	--
430015093360502	08-20-02	3
414236096012501	08-15-02	--
432650092170401	08-07-02	--
422106095280201	07-29-02	--
422915095323504	07-29-02	--
414825091511201	07-26-02	1
414520092112001	08-20-02	--
420414090113201	08-19-02	--
413048093062101	08-28-02	2
413913093070001	07-31-02	<.6
410046091555701	08-01-02	11
421442091120001	08-09-02	--
412138091571501	07-23-02	1
403745091174701	08-01-02	--
420005091431201	07-22-02	<.6
411644091110703	08-01-02	M
432608096201503	07-30-02	--
420352092552401	07-30-02	<.6
420405092545601	07-30-02	<.6
410656095380201	08-14-02	--
431654092484501	08-07-02	--
432150092332401	08-07-02	2
432241092550802	08-08-02	--
420955095475601	07-31-02	--
405850095061701	08-07-02	--
413521090511001	07-24-02	M
431157095502901	07-30-02	--
403906095015001	08-08-02	--
425731094270801	08-21-02	12
423537095583901	07-31-02	--
411501095251301	08-14-02	--
414430092433001	07-31-02	4
421617095051001	07-29-02	--
413040090455001	07-24-02	<.8

Station number	Station name	County	Date	Time	Geologic unit	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE (G/M) (00058)
413923090350901	079N03E11CCBD 1929Eldridge 2	Scott	07-24-02	1300	350SLRN	515.00	210
413049095254501	078N39W34ACCD 1968Shelby 5	Shelby	08-15-02	1215	111ALVM	48.00	15
430017096285301	095N48W35BDDC 1931Hawarden 2	Sioux	07-30-02	1500	110QRCU	36.00	120
415252093411401	082N24W30DCBB 1945Slater 1	Story	08-19-02	1315	112PLSC	180.00	50
415417092180101	082N13W24AAAD 12850 1961Belle Plaine 4	Tama	07-22-02	1245	111ALVM	42.00	180
415753092350201	083N15W27CDD 18841 1966Tama 5	Tama	07-30-02	1440	111ALVM	43	460
421135092275002	085N14W10ABCD 1894Traer 2	Tama	07-29-02	0935	344CDVL	350.00	--
403659094285301	067N32W12CAAD 1960Blockton 1	Taylor	08-07-02	1740	112PLSC	271.00	80
410907092375301	073N15W06CADA 1995Eddyville 3	Wapello	07-31-02	1300	111ALVM	35.00	190
413040093290501	078N23W34DDBD 1979Carlisle 5	Warren	08-29-02	0845	111ALVM	30.00	300
412013091485701	076N08W31DDCC 08701 1957West Chester 1	Washington	07-23-02	1130	339WSVL	243.00	85
412850091342901	077N06W17BBA 14835 1961Riverside 5	Washington	07-23-02	1300	112PLSC	250.00	120
423028094115101	089N28W19CAA 1931Fort Dodge 12	Webster	08-20-02	1000	339KDRK	541.00	750
423043094120401	089N28W19BDBB 13068 1962Fort Dodge 16	Webster	08-20-02	0800	360OVCB	1850.00	1500
431556093375401	098N24W26DDCC 00304 1934Forest City 2	Winnebago	08-21-02	1030	344CDVL	142.00	1000
431828091473201	098N08W16ACBC 1972Decorah 6	Winneshiek	08-07-02	1200	111ALVM	82	--
422831095465102	089N42W34DDDD 1927Correctionville 1 W	Woodbury	07-31-02	1545	111ALVM	26.00	25
422927096252201	089N47W29CDCD 1971SIOUX CITY RIVER 2	Woodbury	07-31-02	0900	217DKOT	310	1200
423954093535801	091N26W27CAAD 1952Eagle Grove 3	Wright	08-20-02	1230	112PLSC	70.00	265

Station number	Date	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	OXYGEN, DISSOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	SPECIFIC CONDUCTANCE (US/CM) (00095)	TEMPERATURE WATER (DEG C) (00010)	HARDNESS TOTAL (MG/L AS CACO3) (00900)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	ANC UNFLTRD TIT 4.5 LAB (MG/L AS CACO3) (90410)
413923090350901	07-24-02	--	.6	7.2	438	12.8	210	46.0	23.0	<1.00	11.0	--
413049095254501	08-15-02	30	4.8	7.0	496	12.5	240	65.0	19.0	1.60	8.50	180
430017096285301	07-30-02	30	6.1	7.4	1000	11.0	440	140	37.0	4.30	22.0	320
415252093411401	08-19-02	30	.1	7.8	794	12.5	270	68.0	27.0	6.90	66.0	430
415417092180101	07-22-02	30	.3	11.1	787	14.9	250	100	<.10	2.80	15.0	100
415753092350201	07-30-02	>30	2.5	7.3	649	11.8	370	91.0	25.0	1.40	14.0	230
421135092275002	07-29-02	30	8.2	6.2	1660	14.4	870	--	--	--	--	190
403659094285301	08-07-02	30	.3	7.8	1740	14.0	140	37.0	11.0	1.50	340	410
410907092375301	07-31-02	30	2.1	7.2	729	12.9	430	110	26.0	1.40	12.0	280
413040093290501	08-29-02	30	1.1	7.4	586	12.5	300	82.0	25.0	1.50	12.0	210
412013091485701	07-23-02	30	.4	7.0	818	12.3	460	70.0	39.0	2.70	53.0	380
412850091342901	07-23-02	30	.4	7.5	666	16.2	310	58.0	20.0	2.60	58.0	4
423028094115101	08-20-02	60	.2	7.1	912	11.5	450	120	42.0	5.20	31.0	380
423043094120401	08-20-02	30	.2	7.2	1340	16.0	400	93.0	38.0	11.0	130	320
431556093375401	08-21-02	30	.3	7.2	746	9.5	380	100	34.0	2.60	18.0	370
431828091473201	08-07-02	>30	2.0	7.0	657	11.7	340	110	21.0	2.60	11.0	280
422831095465102	07-31-02	30	4.6	7.2	792	13.5	410	110	30.0	2.20	13.0	300
422927096252201	07-31-02	>30	.3	7.3	966	13.5	370	96.0	30.0	6.70	69.0	240
423954093535801	08-20-02	30	.2	7.2	722	11.0	380	100	33.0	2.70	13.0	370

Station number	Date	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L) (70300)	NITROGEN, AMMONIA DISSOLVED (MG/L AS N) (00608)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N) (00631)	NITROGEN, ORGANIC DISSOLVED (MG/L AS N) (00607)	ORTHOPHOSPHATE, DISSOLVED (MG/L AS P) (00671)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	ANTIMONY, DISSOLVED (UG/L AS SB) (01095)
413923090350901	07-24-02	1.3	.46	15.0	<1.0	240	2.10	.600	.22	<.050	2.2	<5
413049095254501	08-15-02	17.0	.30	24.0	14.0	300	.260	7.40	.37	<.050	.6	<5
430017096285301	07-30-02	37.0	.28	26.0	100	650	<.050	10.0	<.05	<.050	1.1	<5
415252093411401	08-19-02	1.8	.34	10.0	<1.0	480	8.50	<.100	1.3	<.050	18.0	<5
415417092180101	07-22-02	42.0	.57	31.0	94.0	440	.220	5.10	<.05	<.050	<.5	<5
415753092350201	07-30-02	27.0	.21	25.0	64.0	360	<.050	4.40	.15	.080	.5	<5
421135092275002	07-29-02	2.6	.70	13.0	730	1300	5.40	<.100	2.2	<.050	2.2	--
403659094285301	08-07-02	9.8	.81	13.0	310	1100	<.050	<.100	3.9	.320	13.0	<5
410907092375301	07-31-02	23.0	.12	17.0	110	480	<.050	3.10	.07	.080	.8	<5
413040093290501	08-29-02	23.0	.12	25.0	54.0	370	<.050	.900	<.05	<.050	<.5	<5
412013091485701	07-23-02	2.6	.25	12.0	65.0	490	1.90	<.100	.21	<.050	.9	<5
412850091342901	07-23-02	2.6	.13	14.0	13.0	4	.050	<.100	.06	.210	1.8	<2
423028094115101	08-20-02	2.9	.67	16.0	130	570	.760	<.100	.23	<.050	.7	<5
423043094120401	08-20-02	120	1.00	8.30	200	810	.470	<.100	.47	<.050	<.5	<5
431556093375401	08-21-02	1.7	.32	24.0	50.0	430	.740	<.100	.07	<.050	1.4	<5
431828091473201	08-07-02	26.0	.11	14.0	26.0	390	<.050	3.00	.22	<.050	<.5	<5
422831095465102	07-31-02	17.0	.22	22.0	53.0	490	<.050	8.70	<.05	<.050	.6	<5
422927096252201	07-31-02	18.0	.38	17.0	240	650	.200	<.100	.09	<.050	1.6	5
423954093535801	08-20-02	2.7	.31	25.0	28.0	420	.700	<.100	<.05	<.050	.7	<5

GROUND WATER QUALITY MONITORING PROGRAM--Continued

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

Station number	Date	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	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)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)	CYANIDE TOTAL (MG/L AS CN) (00720)	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	NICKEL, DIS-SOLVED (UG/L AS NI) (01065)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)
413923090350901	07-24-02	17.0	<2	<1	<10	<10	<.01	1600	<1	<20	<50	<10
413049095254501	08-15-02	12.0	<2	<1	<10	<10	<.01	1400	<1	190	<50	10
430017096285301	07-30-02	<1.0	<2	<1	<10	<10	.01	<20	M	<20	<50	<10
415252093411401	08-19-02	5.0	<2	<1	<10	<10	<.01	7600	<1	140	<50	<10
415417092180101	07-22-02	1.0	<2	<1	<10	<10	<.01	<20	<1	<20	<50	<10
415753092350201	07-30-02	<1.0	<2	<1	<10	<10	<.01	<20	<1	70	<50	<10
421135092275002	07-29-02	--	--	--	--	--	<.01	--	--	--	--	--
403659094285301	08-07-02	7.0	<2	<1	<10	<10	<.01	590	<1	40	<50	<10
410907092375301	07-31-02	<1.0	<2	<1	<10	<10	<.01	40	<1	100	<50	<10
413040093290501	08-29-02	1.0	<2	<1	<10	<10	<.01	480	<1	350	<50	<10
412013091485701	07-23-02	2.0	<2	<1	<10	<10	<.01	1100	<1	<20	<50	<10
412850091342901	07-23-02	<1.0	<2	<1	<10	<10	<.01	770	<1	50	<50	<10
423028094115101	08-20-02	1.0	<2	<1	<10	<10	<.01	710	<1	60	<50	<10
423043094120401	08-20-02	<1.0	<2	<1	<10	<10	<.01	240	<1	<20	<50	<10
431556093375401	08-21-02	2.0	<2	<1	<10	<10	<.01	1400	<1	60	<50	<10
431828091473201	08-07-02	<1.0	<2	<1	<10	<10	<.01	<20	<1	<20	<50	<10
422831095465102	07-31-02	<1.0	<2	<1	<10	<10	<.01	<20	<1	<20	<50	<10
422927096252201	07-31-02	<1.0	<2	<1	<10	<10	<.01	560	<1	390	<50	10
423954093535801	08-20-02	7.0	<2	<1	<10	<10	<.01	2900	<1	310	<50	<10

Station number	Date	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	THAL-LIUM, DIS-SOLVED (UG/L AS TL) (01057)	BENZENE O-DI-CHLORO-WATER UNFLTRD REC (UG/L) (34536)	BENZENE 1,3-DI-CHLORO-WATER UNFLTRD REC (UG/L) (34566)	BENZENE 1,4-DI-CHLORO-WATER UNFLTRD REC (UG/L) (34571)	ACETO-CHLOR, WATER, UNFLTRD REC (UG/L) (49259)	ALA-CHLOR TOTAL RECOVER (UG/L) (77825)	AME-TRYNE TOTAL (UG/L) (82184)	BROM-ACIL WATER WHLREC (UG/L) (30234)	BROMO-METHANE WATER WHOLE RECOVER (UG/L) (30202)	BUTA-CHLOR WATER WHLREC (UG/L) (30235)
413923090350901	07-24-02	<10	<1.0	<.5	<.5	<.5	--	--	--	--	<.50	--
413049095254501	08-15-02	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50	<.1
430017096285301	07-30-02	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50	<.1
415252093411401	08-19-02	<10	<1.0	--	--	--	--	--	--	--	--	--
415417092180101	07-22-02	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50	<.1
415753092350201	07-30-02	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50	<.1
421135092275002	07-29-02	--	--	--	--	--	--	--	--	--	--	--
403659094285301	08-07-02	<10	<1.0	--	--	--	--	--	--	--	--	--
410907092375301	07-31-02	10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50	<.1
413040093290501	08-29-02	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50	<.1
412013091485701	07-23-02	<10	<1.0	--	--	--	--	--	--	--	--	--
412850091342901	07-23-02	<10	<1.0	--	--	--	--	--	--	--	--	--
423028094115101	08-20-02	<10	<1.0	--	--	--	--	--	--	--	--	--
423043094120401	08-20-02	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50	<.1
431556093375401	08-21-02	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50	<.1
431828091473201	08-07-02	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50	<.1
422831095465102	07-31-02	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50	<.1
422927096252201	07-31-02	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50	<.1
423954093535801	08-20-02	<10	<1.0	<.5	<.5	<.5	<.050	<.1	<.1	<.1	<.50	<.1

Station number	Date	BUTYL-ATE WATER WHLREC (UG/L) (30236)	CARB-ARYL UNFILT RECOVER (UG/L) (39750)	CHLORO-METHANE WATER WHOLE RECOVER (UG/L) (30201)	CLO-MAZONE WATER FLTRD REC (UG/L) (50344)	CYAN-AZINE TOTAL (UG/L) (81757)	DEETHYL ATRA-ZINE, WATER, WHOLE, TOTAL (UG/L) (75981)	DE-ISO PROPYL ATRAZIN WATER, WHOLE, TOTAL (UG/L) (75980)	DI-METHEN-AMID WATER FLTRD REC (UG/L) (61588)	EPTC WATER WHOLE REC (UG/L) (81894)	METOLA-CHLOR WATER UNFLTRD REC (UG/L) (39356)	METRI-BUZIN IN WHOLE WATER (UG/L) (81408)
413923090350901	07-24-02	--	--	<.50	--	--	--	--	--	--	--	--
413049095254501	08-15-02	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05	<.05
430017096285301	07-30-02	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05	<.05
415252093411401	08-19-02	--	--	--	--	--	--	--	--	--	--	--
415417092180101	07-22-02	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05	<.05
415753092350201	07-30-02	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05	<.05
421135092275002	07-29-02	--	--	--	--	--	--	--	--	--	--	--
403659094285301	08-07-02	--	--	--	--	--	--	--	--	--	--	--
410907092375301	07-31-02	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05	<.05
413040093290501	08-29-02	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05	<.05
412013091485701	07-23-02	--	--	--	--	--	--	--	--	--	--	--
412850091342901	07-23-02	--	--	--	--	--	--	--	--	--	--	--
423028094115101	08-20-02	--	--	--	--	--	--	--	--	--	--	--
423043094120401	08-20-02	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05	<.05
431556093375401	08-21-02	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05	<.05
431828091473201	08-07-02	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05	<.05
422831095465102	07-31-02	<.1	<.05	<.50	<.050	<.1	.1	<.1	<.05	<.05	<.05	<.05
422927096252201	07-31-02	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05	<.05
423954093535801	08-20-02	<.1	<.05	<.50	<.050	<.1	<.1	<.1	<.05	<.05	<.05	<.05

GROUND WATER QUALITY MONITORING PROGRAM--Continued

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

Station number	Date	PENDI-METH-ALIN TOTAL (UG/L) (79190)	PROME-TONE TOTAL (UG/L) (39056)	PROPA-CHLOR IN WHOLE WATER (UG/L) (77729)	PRO-PAZINE TOTAL (UG/L) (39024)	TRIAL-LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI-FLURA-LIN TOTAL RECOVER (UG/L) (39030)	1,1,1-TRI-CHLORO-ETHANE TOTAL (UG/L) (34506)	1,1,2-TRI-CHLORO-ETHANE TOTAL (UG/L) (34511)	1,1-DI-CHLORO-ETHANE TOTAL (UG/L) (34496)	1,1-DI CHLORO-PRO-PENE, WAT, WH TOTAL (UG/L) (77168)	123-TRI CHLORO-PROPANE WATER WHOLE TOTAL (UG/L) (77443)
413923090350901	07-24-02	--	--	--	--	--	--	<.5	<.5	<.5	<.5	<.5
413049095254501	08-15-02	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5	<.5
430017096285301	07-30-02	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5	<.5
415252093411401	08-19-02	--	--	--	--	--	--	--	--	--	--	--
415417092180101	07-22-02	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5	<.5
415753092350201	07-30-02	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5	<.5
421135092275002	07-29-02	--	--	--	--	--	--	--	--	--	--	--
403659094285301	08-07-02	--	--	--	--	--	--	--	--	--	--	--
410907092375301	07-31-02	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5	<.5
413040093290501	08-29-02	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5	<.5
412013091485701	07-23-02	--	--	--	--	--	--	--	--	--	--	--
412850091342901	07-23-02	--	--	--	--	--	--	--	--	--	--	--
423028094115101	08-20-02	--	--	--	--	--	--	--	--	--	--	--
423043094120401	08-20-02	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5	<.5
431556093375401	08-21-02	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5	<.5
431828091473201	08-07-02	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5	<.5
422831095465102	07-31-02	<.05	<.1	.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5	<.5
422927096252201	07-31-02	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5	<.5
423954093535801	08-20-02	<.05	<.1	<.05	<.1	<.050	<.1	<.5	<.5	<.5	<.5	<.5

Station number	Date	1,2-DI-CHLORO-ETHANE TOTAL (UG/L) (32103)	1,2-DI-CHLORO-PROPANE TOTAL (UG/L) (34541)	TRANS-1,2-DI-CHLORO-ETHENE TOTAL (UG/L) (34546)	2,2-DI CHLORO-PRO-PANE WAT, WH TOTAL (UG/L) (77170)	BENZENE TOTAL (UG/L) (34030)	BROMO-BENZENE WATER, WHOLE, TOTAL (UG/L) (81555)	BROMO-FORM TOTAL (UG/L) (32104)	CARBON TETRA-CHLO-RIDE TOTAL (UG/L) (32102)	CHLORO-BENZENE TOTAL (UG/L) (34301)	CHLORO-ETHANE TOTAL (UG/L) (34311)	CHLORO-FORM TOTAL (UG/L) (32106)
413923090350901	07-24-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
413049095254501	08-15-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
430017096285301	07-30-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	90
415252093411401	08-19-02	--	--	--	--	--	--	--	--	--	--	--
415417092180101	07-22-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	4
415753092350201	07-30-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
421135092275002	07-29-02	--	--	--	--	--	--	--	--	--	--	--
403659094285301	08-07-02	--	--	--	--	--	--	--	--	--	--	--
410907092375301	07-31-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
413040093290501	08-29-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
412013091485701	07-23-02	--	--	--	--	--	--	--	--	--	--	--
412850091342901	07-23-02	--	--	--	--	--	--	--	--	--	--	--
423028094115101	08-20-02	--	--	--	--	--	--	--	--	--	--	--
423043094120401	08-20-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
431556093375401	08-21-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
431828091473201	08-07-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
422831095465102	07-31-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
422927096252201	07-31-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5
423954093535801	08-20-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5

Station number	Date	CIS-1,2-DI-CHLORO-ETHENE WATER TOTAL (UG/L) (77093)	CIS 1,3-DI-CHLORO-PROPENE TOTAL (UG/L) (34704)	DI-BROMO-METHANE WATER WHOLE RECOVER (UG/L) (30217)	ETHYL-BENZENE TOTAL (UG/L) (34371)	METHYL TERT-BUTYL ETHER WAT UNF REC (UG/L) (78032)	STYRENE TOTAL (UG/L) (77128)	TOLUENE TOTAL (UG/L) (34010)	TRANS-1,3-DI-CHLORO-PROPENE TOTAL (UG/L) (34699)	VINYL CHLO-RIDE TOTAL (UG/L) (39175)	SIMA-ZINE TOTAL (UG/L) (39055)	TRITIUM TOTAL (PCI/L) (07000)
413923090350901	07-24-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	--	.2
413049095254501	08-15-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1	--
430017096285301	07-30-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1	--
415252093411401	08-19-02	--	--	--	--	--	--	--	--	--	--	--
415417092180101	07-22-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1	--
415753092350201	07-30-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1	--
421135092275002	07-29-02	--	--	--	--	--	--	--	--	--	--	--
403659094285301	08-07-02	--	--	--	--	--	--	--	--	--	--	--
410907092375301	07-31-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1	--
413040093290501	08-29-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1	--
412013091485701	07-23-02	--	--	--	--	--	--	--	--	--	--	--
412850091342901	07-23-02	--	--	--	--	--	--	--	--	--	--	--
423028094115101	08-20-02	--	--	--	--	--	--	--	--	--	--	--
423043094120401	08-20-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1	--
431556093375401	08-21-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1	--
431828091473201	08-07-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1	--
422831095465102	07-31-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1	--
422927096252201	07-31-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1	39.7
423954093535801	08-20-02	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.5	<.1	--

GROUND WATER QUALITY MONITORING PROGRAM--Continued

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

Station number	Date	PHOS-PHATE, TOTAL (MG/L AS PO4) (00650)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	BORON, DIS-SOLVED (UG/L AS B) (01020)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	STRON-TIUM, DIS-SOLVED (UG/L AS SR) (01080)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)	ETHANE, 1,1,2,2 TETRA-CHLORO-WAT UNF REC (UG/L) (34516)	BENZENE 1,2,4-TRI-CHLORO-WAT UNF REC (UG/L) (34551)	2,4,5-T TOTAL (UG/L) (39740)	2,4-D, TOTAL (UG/L) (39730)
413923090350901	07-24-02	.340	<100	290	<50	<.05	140	<20	<.5	<.5	--	--
413049095254501	08-15-02	.240	100	210	<50	<.05	220	<20	<.5	<.5	<.20	<.40
430017096285301	07-30-02	.060	<100	130	100	.05	330	<20	<.5	<.5	<.20	<.40
415252093411401	08-19-02	--	<100	2500	340	<.05	M	--	--	--	--	--
415417092180101	07-22-02	<.050	400	<50.0	120	<.05	250	<20	<.5	<.5	<.20	<.40
415753092350201	07-30-02	.090	<100	100	80	<.05	160	<20	<.5	<.5	<.20	<.40
421135092275002	07-29-02	.080	--	--	--	--	--	--	--	--	--	--
403659094285301	08-07-02	.410	<100	160	820	<.05	720	<20	--	--	--	--
410907092375301	07-31-02	.080	<100	80.0	100	<.05	1300	<20	<.5	<.5	<.20	<.40
413040093290501	08-29-02	<.050	<100	70.0	60	<.05	120	<20	<.5	<.5	<.20	<.40
412013091485701	07-23-02	.050	<100	70.0	450	<.05	560	<20	--	--	--	--
412850091342901	07-23-02	.390	<100	320	290	<.05	540	50	--	--	--	--
423028094115101	08-20-02	.070	<100	<50.0	180	<.05	1100	--	--	--	--	--
423043094120401	08-20-02	<.050	<100	<50.0	620	<.05	3600	60	<.5	<.5	<.20	<.40
431556093375401	08-21-02	<.050	<100	200	70	<.05	270	<20	<.5	<.5	<.20	<.40
431828091473201	08-07-02	.100	<100	90.0	<50	<.05	130	<20	<.5	<.5	<.20	<.40
422831095465102	07-31-02	<.050	<100	100	60	<.05	240	<20	<.5	<.5	<.20	<.40
422927096252201	07-31-02	.080	100	<50.0	120	<.05	700	<20	<.5	<.5	<.20	<.40
423954093535801	08-20-02	<.050	<100	180	90	<.05	340	<20	<.5	<.5	<.20	<.40

Station number	Date	2,4-DB WATER WHOLE RECOVER (UG/L) (30219)	ACI-FLUOR-FEN WATER UNFLTD REC (UG/L) (79193)	ALDRIN, TOTAL (UG/L) (39330)	ATRA-ZINE WATER UNFLTRD REC (UG/L) (39630)	BENTA-ZON WATER UNFLTRD REC (UG/L) (38710)	CARBO-FURAN WATER WHOLE TOT.REC (UG/L) (82615)	CHLOR-AMBEN WATER UNFLTRD REC (UG/L) (82051)	CHLOR-PYRIFOS TOTAL RECOVER (UG/L) (38932)	DDD, SUS-PENDED TOTAL (UG/L) (39362)	DDE, SUS-PENDED TOTAL (UG/L) (39367)	DDT, SUS-PENDED TOTAL (UG/L) (39372)
413923090350901	07-24-02	--	--	--	--	--	--	--	--	--	--	--
413049095254501	08-15-02	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05	<.05
430017096285301	07-30-02	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05	<.05
415252093411401	08-19-02	--	--	--	--	--	--	--	--	--	--	--
415417092180101	07-22-02	<.40	<.20	<.050	.1	<.50	<.05	<.30	<.05	<.05	<.05	<.05
415753092350201	07-30-02	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05	<.05
421135092275002	07-29-02	--	--	--	--	--	--	--	--	--	--	--
403659094285301	08-07-02	--	--	--	--	--	--	--	--	--	--	--
410907092375301	07-31-02	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05	<.05
413040093290501	08-29-02	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05	<.05
412013091485701	07-23-02	--	--	--	--	--	--	--	--	--	--	--
412850091342901	07-23-02	--	--	--	--	--	--	--	--	--	--	--
423028094115101	08-20-02	--	--	--	--	--	--	--	--	--	--	--
423043094120401	08-20-02	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05	<.05
431556093375401	08-21-02	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05	<.05
431828091473201	08-07-02	<.40	<.20	<.050	.2	<.50	<.05	<.20	<.05	<.05	<.05	<.05
422831095465102	07-31-02	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05	<.05
422927096252201	07-31-02	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05	<.05
423954093535801	08-20-02	<.40	<.20	<.050	<.1	<.50	<.05	<.20	<.05	<.05	<.05	<.05

Station number	Date	DI-AZINON, TOTAL (UG/L) (39570)	DICAMBA TOTAL (UG/L) (82052)	DI-CHLOR-PROP WATER WHOLE RECOVER (UG/L) (30190)	DICHLOR VOS WAT, WH REC (UG/L) (30218)	DI-ELDRIN TOTAL (UG/L) (39380)	DIMETH-OATE WATER WHOLE TOTAL (UG/L) (39009)	DINOSEB WATER UNFLTRD REC (UG/L) (30191)	DISUL-FOTON WATER WHOLE TOT.REC (UG/L) (82617)	ENDO-SULFAN-I WATER WHOLE REC (UG/L) (34361)	ENDO-SULFAN-II WATER WHOLE TOT.REC (UG/L) (82624)	ENDO-SULFAN SULFATE WATER WHOLE TOT.REC (UG/L) (82623)
413923090350901	07-24-02	--	--	--	--	--	--	--	--	--	--	--
413049095254501	08-15-02	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1	<.1
430017096285301	07-30-02	<.05	<.20	<.20	<.05	<.050	<.05	.20	<.1	<.1	<.1	<.1
415252093411401	08-19-02	--	--	--	--	--	--	--	--	--	--	--
415417092180101	07-22-02	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1	<.1
415753092350201	07-30-02	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1	<.1
421135092275002	07-29-02	--	--	--	--	--	--	--	--	--	--	--
403659094285301	08-07-02	--	--	--	--	--	--	--	--	--	--	--
410907092375301	07-31-02	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1	<.1
413040093290501	08-29-02	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1	<.1
412013091485701	07-23-02	--	--	--	--	--	--	--	--	--	--	--
412850091342901	07-23-02	--	--	--	--	--	--	--	--	--	--	--
423028094115101	08-20-02	--	--	--	--	--	--	--	--	--	--	--
423043094120401	08-20-02	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1	<.1
431556093375401	08-21-02	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1	<.1
431828091473201	08-07-02	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1	<.1
422831095465102	07-31-02	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1	<.1
422927096252201	07-31-02	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1	<.1
423954093535801	08-20-02	<.05	<.20	<.20	<.05	<.050	<.05	<.20	<.1	<.1	<.1	<.1

GROUND WATER QUALITY MONITORING PROGRAM--Continued

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

Station number	Date	ENDRIN ALDE-HYDE WATER WHOLE TOT.REC (UG/L) (82622)	ENDRIN KETONE WATER WHOLE TOTAL (UG/L) (78008)	ENDRIN WATER UNFLTRD REC (UG/L) (39390)	ETHO-PROP WAT, WH REC (UG/L) (81758)	FONOFOS WATER DISS REC (UG/L) (04095)	HEPTA-CHLOR, TOTAL (UG/L) (39410)	ISO-FENPHOS SURRGTE WATER, UNFLT, REC PERCENT (99577)	LINDANE TOTAL (UG/L) (39340)	MALA-THION, TOTAL (UG/L) (39530)	METH-OXY-CHLOR, TOTAL (UG/L) (39480)	METHYL PARA-THION, TOTAL (UG/L) (39600)
413923090350901	07-24-02	--	--	--	--	--	--	--	--	--	--	--
413049095254501	08-15-02	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050	<.05
430017096285301	07-30-02	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050	<.05
415252093411401	08-19-02	--	--	--	--	--	--	--	--	--	--	--
415417092180101	07-22-02	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050	<.05
415753092350201	07-30-02	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050	<.05
421135092275002	07-29-02	--	--	--	--	--	--	--	--	--	--	--
403659094285301	08-07-02	--	--	--	--	--	--	--	--	--	--	--
410907092375301	07-31-02	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050	<.05
413040093290501	08-29-02	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050	<.05
412013091485701	07-23-02	--	--	--	--	--	--	--	--	--	--	--
412850091342901	07-23-02	--	--	--	--	--	--	--	--	--	--	--
423028094115101	08-20-02	--	--	--	--	--	--	--	--	--	--	--
423043094120401	08-20-02	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050	<.05
431556093375401	08-21-02	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050	<.05
431828091473201	08-07-02	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050	<.05
422831095465102	07-31-02	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050	<.05
422927096252201	07-31-02	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050	<.05
423954093535801	08-20-02	<.1	<.05	<.050	<.05	<.050	<.050	<.1	<.0500	<.05	<.050	<.05

Station number	Date	PARA-THION, TOTAL (UG/L) (39540)	PENTA-CHLORO-PHENOL TOTAL (UG/L) (39032)	PHORATE TOTAL (UG/L) (39023)	PIC-LORAM UNFILT RECOVER (UG/L) (39720)	SILVEX, TOTAL (UG/L) (39760)	TERBU-FOS WAT, WH REC (UG/L) (82088)	TOX-APHENE, TOTAL (UG/L) (39400)	TRI CLOPYR WATER UNFLTRD REC (UG/L) (04092)	XYLENE WATER UNFLTRD REC (UG/L) (81551)	1,1-DI-CHLORO-ETHYL-ENE TOTAL (UG/L) (34501)	CHLORO-DI-BROMO-METHANE TOTAL (UG/L) (32105)
413923090350901	07-24-02	--	--	--	--	--	--	--	--	<.5	<.5	<.5
413049095254501	08-15-02	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5	<.5
430017096285301	07-30-02	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5	2
415252093411401	08-19-02	--	--	--	--	--	--	--	--	--	--	--
415417092180101	07-22-02	<.05	1	<.05	<.40	<.20	<.05	--	<.20	M	<.5	<.5
415753092350201	07-30-02	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5	<.5
421135092275002	07-29-02	--	--	--	--	--	--	--	--	--	--	--
403659094285301	08-07-02	--	--	--	--	--	--	--	--	--	--	--
410907092375301	07-31-02	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5	<.5
413040093290501	08-29-02	<.05	<.2	<.05	<.40	<.20	<.05	<.5	<.20	<.5	<.5	<.5
412013091485701	07-23-02	--	--	--	--	--	--	--	--	--	--	--
412850091342901	07-23-02	--	--	--	--	--	--	--	--	--	--	--
423028094115101	08-20-02	--	--	--	--	--	--	--	--	--	--	--
423043094120401	08-20-02	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5	<.5
431556093375401	08-21-02	<.05	<.2	<.05	<.40	<.20	<.05	<.5	<.20	<.5	<.5	<.5
431828091473201	08-07-02	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5	<.5
422831095465102	07-31-02	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5	<.5
422927096252201	07-31-02	<.05	<.2	<.05	<.40	<.20	<.05	--	<.20	<.5	<.5	<.5
423954093535801	08-20-02	<.05	<.2	<.05	<.40	<.20	<.05	<.5	<.20	<.5	<.5	<.5

Station number	Date	BROMO-DI-CHLORO-METHANE TOTAL (UG/L) (32101)	ETHANE, 1112-TETRA-CHLORO-WAT UNF REC (UG/L) (77562)	METHYL ENE CHLO-RIDE TOTAL (UG/L) (34423)	O-CHLORO-TOLUENE WATER WHOLE TOTAL (UG/L) (77275)	1,3-DI-CHLORO-PROPANE WAT. WH TOTAL (UG/L) (77173)	TETRA-CHLORO-ETHYL-ENE TOTAL (UG/L) (34475)	TOLUENE P-CHLOR WATER UNFLTRD REC (UG/L) (77277)	TRI-CHLORO-ETHYL-ENE TOTAL (UG/L) (39180)	GROSS ALPHA, DIS-SOLVED (PCI/L AS U-NAT) (01515)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137) (03515)	RADIUM 226, DIS-SOLVED (PCI/L) (09503)
413923090350901	07-24-02	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	<1.4	.9	<.6
413049095254501	08-15-02	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--	--
430017096285301	07-30-02	9	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--	--
415252093411401	08-19-02	--	--	--	--	--	--	--	--	4.5	11.6	3
415417092180101	07-22-02	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	<1.5	5.9	<.6
415753092350201	07-30-02	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	<.8	<1.7	<.6
421135092275002	07-29-02	--	--	--	--	--	--	--	--	.8	18.1	<.8
403659094285301	08-07-02	--	--	--	--	--	--	--	--	2.3	3.1	M
410907092375301	07-31-02	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	2.1	10.7	<.8
413040093290501	08-29-02	<.5	<.5	<1	<.5	<.5	3	<.5	<.5	--	--	--
412013091485701	07-23-02	--	--	--	--	--	--	--	--	2.4	4.5	<.9
412850091342901	07-23-02	--	--	--	--	--	--	--	--	<1.9	11.2	M
423028094115101	08-20-02	--	--	--	--	--	--	--	--	4.6	7.9	3
423043094120401	08-20-02	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	8.7	17.2	4
431556093375401	08-21-02	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	9.2	6.1	5
431828091473201	08-07-02	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--	--
422831095465102	07-31-02	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--	--
422927096252201	07-31-02	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--	--
423954093535801	08-20-02	<.5	<.5	<1	<.5	<.5	<.5	<.5	<.5	--	--	--

NATIONAL WATER-QUALITY ASSESSMENT PROGRAM
Ground-Water Trend Network

[111ALVM, Holocene Alluvial Aquifers; <. Less than; E, Estimated value; M, Presence verified but not quantified]

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

Station number	Station name	County	Date	Time	Geo-logic unit	DEPTH OF WELL, TOTAL (FEET) (72008)	OXYGEN, DIS-SOLVED (MG/L) (00300)
415147092115301	082n12w36ccc	011	08-20-02	1200	111ALVM	28.0	4.5
423749092260801	090n13w06ccb	013	08-27-02	1130	111ALVM	55.0	8.6
431339093155901	097N21W13ABA 1997NAWQA obs/Cerro Gordo Cnty	033	08-22-02	1700	111ALVM	12.0	7.7
430549092272301	096n14w35aaa	037	08-23-02	1015	111ALVM	80.0	.1
423419093172401	090N21W26DCC 1997NAWQA obs/Franklin County	069	08-22-02	1315	111ALVM	12.5	2.5
414818092055403	081N11W14CCA 1985USGS OBS. WELL IRA 26C	095	08-20-02	1530	111ALVM	11.0	.1
413438091341201	078n06w08acc	103	08-21-02	1100	111ALVM	80.0	.1
421115091250501	085N05W10BDC 1997NAWQA obs/Ron McGovern	113	08-26-02	1300	111ALVM	23.0	11.3
412755091114101	077N03W16DDC 1997NAWQA obs/James King	139	08-19-02	1130	111ALVM	18.0	.1
414430093220001	080n22w13bcb	153	08-28-02	1215	111ALVM	20.0	.1
414208092312601	080N14W31BAA 1997NAWQA obs/Poweshiek County	157	08-28-02	1700	111ALVM	18.0	10.7

Station number	Date	PH WATER WHOLE FIELD (STAND-ARD UNITS) (00400)	SPE-CIFIC CON-DUCT-ANCE (US/CM) (00095)	TEMPER-ATURE WATER (DEG C) (00010)	CALCIUM DIS-SOLVED (MG/L AS CA) (00915)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG) (00925)	POTAS-SIUM, DIS-SOLVED (MG/L AS K) (00935)	SODIUM, DIS-SOLVED (MG/L AS NA) (00930)	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CACO3 (39086)	BICAR-BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	CAR-BONATE WATER DIS IT FIELD MG/L AS CO3 (00452)	BROMIDE DIS-SOLVED (MG/L AS BR) (71870)
415147092115301	08-20-02	6.3	641	13.2	132	27.8	1.23	23.1	223	272	0	.12
423749092260801	08-27-02	7.3	456	12.2	69.3	15.5	1.53	4.92	141	172	0	.04
431339093155901	08-22-02	7.0	540	14.6	77.0	24.6	.76	2.75	183	223	0	.05
430549092272301	08-23-02	7.2	451	10.2	63.6	16.9	1.27	10.1	229	279	0	<.03
423419093172401	08-22-02	7.0	636	18.2	90.6	25.0	2.37	13.6	300	365	0	<.03
414818092055403	08-20-02	6.4	238	14.6	41.6	13.4	.73	5.91	121	148	0	.06
413438091341201	08-21-02	6.9	550	11.8	76.0	25.6	.74	10.3	275	335	0	.09
421115091250501	08-26-02	7.5	325	12.4	65.8	8.36	.75	2.10	139	169	0	E.03
412755091114101	08-19-02	6.4	262	12.4	44.7	10.1	.55	6.73	85	104	0	.05
414430093220001	08-28-02	6.9	638	12.0	101	28.8	1.03	5.69	227	276	0	E.03
414208092312601	08-28-02	6.3	488	14.0	62.6	17.7	.22	4.48	115	140	0	.03

Station number	Date	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)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N) (00608)	NITRO-GEN,AM-MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N) (00631)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N) (00613)	ORTHO-PHOS-PHATE, DIS-SOLVED (MG/L AS P) (00671)	ALUM-INUM, DIS-SOLVED (UG/L AS AL) (01106)
415147092115301	08-20-02	51.2	E.1	30.5	60.2	647	<.04	.24	37.2	<.008	.14	<1
423749092260801	08-27-02	8.66	E.1	20.7	16.6	300	<.04	E.06	15.2	<.008	.06	<1
431339093155901	08-22-02	12.3	.2	24.2	14.9	356	<.04	.11	19.4	<.008	.03	<1
430549092272301	08-23-02	.81	.4	12.1	11.2	268	.76	.83	<.05	<.008	.02	<1
423419093172401	08-22-02	5.07	.3	22.9	40.9	393	.06	.17	.11	<.008	<.02	<1
414818092055403	08-20-02	8.61	.2	16.3	33.8	207	<.04	E.06	<.05	<.008	<.02	<1
413438091341201	08-21-02	3.02	.3	21.4	19.0	343	.34	.41	.16	<.008	E.01	<1
421115091250501	08-26-02	5.20	E.1	18.5	7.8	243	<.04	E.06	7.90	<.008	.10	<1
412755091114101	08-19-02	14.6	.1	11.8	51.3	201	.10	.24	<.05	<.008	.14	<1
414430093220001	08-28-02	23.8	.2	28.5	105	484	.21	.33	<.05	<.008	.04	1
414208092312601	08-28-02	11.8	.2	14.1	22.1	348	<.04	E.07	23.4	<.008	.02	<1

NATIONAL WATER-QUALITY ASSESSMENT PROGRAM--Continued
Ground-Water Trend Network

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

Station number	Date	ANTIMONY, DISSOLVED (UG/L AS SB) (01095)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	BERYLLIUM, DISSOLVED (UG/L AS BE) (01010)	BORON, DISSOLVED (UG/L AS B) (01020)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COBALT, DISSOLVED (UG/L AS CO) (01035)	COPPER, DISSOLVED (UG/L AS CU) (01040)	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, DISSOLVED (UG/L AS PB) (01049)
415147092115301	08-20-02	<.05	.3	166	<.06	36	.07	1.0	.34	7.9	24	.27
423749092260801	08-27-02	.05	.6	68	<.06	14	<.04	E.4	.12	7.5	<10	.09
431339093155901	08-22-02	.09	.3	48	<.06	21	<.04	<.8	.15	.5	<10	<.08
430549092272301	08-23-02	<.05	2.0	280	<.06	85	<.04	<.8	.12	.2	1420	<.08
423419093172401	08-22-02	.27	.9	105	<.06	64	.05	<.8	.30	2.0	20	<.08
414818092055403	08-20-02	.06	E.2	111	<.06	12	<.04	1.1	3.90	.4	1570	<.08
413438091341201	08-21-02	.05	1.4	250	<.06	21	<.04	<.8	.26	.5	2750	.10
421115091250501	08-26-02	E.03	.5	27	<.06	14	<.04	E.5	.15	.3	<10	<.08
412755091114101	08-19-02	.22	8.4	64	<.06	10	<.04	<.8	.34	.6	783	E.06
414430093220001	08-28-02	.05	7.2	381	<.06	30	<.04	<.8	.22	.7	2040	<.08
414208092312601	08-28-02	.06	.2	136	<.06	10	<.04	.9	.25	.6	E8	E.04

Station number	Date	LITHIUM DISSOLVED (UG/L AS LI) (01130)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MOLYBDENUM, DISSOLVED (UG/L AS MO) (01060)	NICKEL, DISSOLVED (UG/L AS NI) (01065)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	SILVER, DISSOLVED (UG/L AS AG) (01075)	STRONTIUM, DISSOLVED (UG/L AS SR) (01080)	THALLIUM, DISSOLVED (UG/L AS TL) (01057)	VANADIUM, DISSOLVED (UG/L AS V) (01085)	ZINC, DISSOLVED (UG/L AS ZN) (01090)	2,6-DIETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)
415147092115301	08-20-02	8.3	1.2	<.2	4.11	.4	<1	333	<.04	1.4	52	<.006
423749092260801	08-27-02	2.1	.2	.2	.22	1.0	<1	89.4	.07	1.9	7	<.006
431339093155901	08-22-02	2.2	E.1	.3	1.17	.9	<1	83.7	E.02	1.7	<1	<.006
430549092272301	08-23-02	6.4	10.2	1.7	.94	<.3	<1	311	E.02	2.2	2	<.006
423419093172401	08-22-02	8.3	128	3.4	4.21	E.2	<1	223	E.04	3.2	4	<.006
414818092055403	08-20-02	3.0	831	.2	1.78	<.3	<1	83.8	<.04	.4	<1	<.006
413438091341201	08-21-02	4.9	198	1.0	.72	<.3	<1	191	<.04	1.5	11	<.006
421115091250501	08-26-02	.8	1.0	.3	2.63	1.3	<1	112	.07	1.6	<1	<.006
412755091114101	08-19-02	2.1	201	2.4	1.48	<.3	<1	68.8	<.04	.3	2	M
414430093220001	08-28-02	8.0	465	5.2	.58	<.3	<1	177	<.04	.8	2	.008
414208092312601	08-28-02	3.1	5.0	.7	5.55	1.4	<1	156	<.04	.6	1	<.006

Station number	Date	ACETOCHLOR, WATER FLTRD REC (UG/L) (49260)	ALACHLOR, WATER, DISS, REC, (UG/L) (46342)	ALPHA BHC DISSOLVED (UG/L) (34253)	ATRAZINE, WATER, DISS, REC (UG/L) (39632)	BENFLURALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	BUTYLATE, WATER, DISS, REC (UG/L) (04028)	CARBARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	CARBOFURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	CHLORPYRIFOS DISSOLVED (UG/L) (38933)	CYANAZINE, WATER, DISS, REC (UG/L) (04041)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)
415147092115301	08-20-02	<.006	<.004	<.005	.024	<.010	<.002	<.041	<.020	<.005	<.018	<.003
423749092260801	08-27-02	<.006	<.004	<.005	.079	<.010	<.002	<.041	<.020	<.005	<.018	<.003
431339093155901	08-22-02	<.006	<.004	<.005	.033	<.010	<.002	<.041	<.020	<.005	<.018	<.003
430549092272301	08-23-02	<.006	<.004	<.005	<.007	<.010	<.002	<.041	<.020	<.005	<.018	<.003
423419093172401	08-22-02	<.006	<.004	<.005	<.007	<.010	<.002	<.041	<.020	<.005	<.018	<.003
414818092055403	08-20-02	<.006	<.004	<.005	<.007	<.010	<.002	<.041	<.020	<.005	<.018	<.003
413438091341201	08-21-02	<.006	<.004	<.005	<.007	<.010	<.002	<.041	<.020	<.005	<.018	<.003
421115091250501	08-26-02	<.006	<.004	<.005	.009	<.010	<.002	<.041	<.020	<.005	<.018	<.003
412755091114101	08-19-02	.042	<.004	<.005	1.68	<.010	<.002	<.041	<.020	<.005	<.018	<.003
414430093220001	08-28-02	<.006	<.004	<.005	<.007	<.010	<.002	<.041	<.020	<.005	<.018	<.003
414208092312601	08-28-02	<.006	<.004	<.005	.069	<.010	<.002	<.041	<.020	<.005	<.018	<.003

NATIONAL WATER-QUALITY ASSESSMENT PROGRAM--Continued
Ground-Water Trend Network

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

Station number	Date	DEETHYL ATRA-ZINE, WATER, DISS, REC (UG/L) (04040)	DIAZ-INON D10 SRG WAT FLT 0.7 U GF, REC PERCENT (91063)	DI-AZINON, DIS-SOLVED (UG/L) (39572)	DI-ELDRIN DIS-SOLVED (UG/L) (39381)	DISUL-FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	ETHAL-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	ETHO-PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	FONOFOS WATER DISS REC (UG/L) (04095)	LINDANE DIS-SOLVED (UG/L) (39341)	LIN-URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)
415147092115301	08-20-02	E.033	75.0	<.005	<.005	<.02	<.002	<.009	<.005	<.003	<.004	<.035
423749092260801	08-27-02	E.298	119	<.005	<.005	<.02	<.002	<.009	<.005	<.003	<.004	<.035
431339093155901	08-22-02	E.048	77.4	<.005	<.005	<.02	<.002	<.009	<.005	<.003	<.004	<.035
430549092272301	08-23-02	<.006	80.5	<.005	<.005	<.02	<.002	<.009	<.005	<.003	<.004	<.035
423419093172401	08-22-02	<.006	83.4	<.005	<.005	<.02	<.002	<.009	<.005	<.003	<.004	<.035
414818092055403	08-20-02	<.006	73.9	<.005	<.005	<.02	<.002	<.009	<.005	<.003	<.004	<.035
413438091341201	08-21-02	<.006	74.5	<.005	<.005	<.02	<.002	<.009	<.005	<.003	<.004	<.035
421115091250501	08-26-02	E.016	112	<.005	<.005	<.02	<.002	<.009	<.005	<.003	<.004	<.035
412755091114101	08-19-02	E.099	77.9	<.005	<.005	<.02	<.002	<.009	<.005	<.003	<.004	<.035
414430093220001	08-28-02	<.006	95.4	<.005	<.005	<.02	<.002	<.009	<.005	<.003	<.004	<.035
414208092312601	08-28-02	E.120	106	<.005	<.005	<.02	<.002	<.009	<.005	<.003	<.004	<.035

Station number	Date	MALA-THION, DIS-SOLVED (UG/L) (39532)	METHYL AZIN-PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	METHYL PARA-THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	METO-LACHLOR WATER DISSOLV (UG/L) (39415)	METRI-BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	MOL-INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	NAPROP-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	P,P' DDE DISSOLV (UG/L) (34653)	PARA-THION, DIS-SOLVED (UG/L) (39542)	PEB-ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	PENDI-METH-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)
415147092115301	08-20-02	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010	<.004	<.022
423749092260801	08-27-02	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010	<.004	<.022
431339093155901	08-22-02	<.027	<.050	<.006	.016	<.006	<.002	<.007	<.003	<.010	<.004	<.022
430549092272301	08-23-02	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010	<.004	<.022
423419093172401	08-22-02	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010	<.004	<.022
414818092055403	08-20-02	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010	<.004	<.022
413438091341201	08-21-02	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010	<.004	<.022
421115091250501	08-26-02	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010	<.004	<.022
412755091114101	08-19-02	<.027	<.050	<.006	.081	<.006	<.002	<.007	<.003	<.010	<.004	<.022
414430093220001	08-28-02	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010	<.004	<.022
414208092312601	08-28-02	<.027	<.050	<.006	<.013	<.006	<.002	<.007	<.003	<.010	<.004	<.022

Station number	Date	PER-METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	PRO-METON, WATER, DISS, REC (UG/L) (04037)	PRON-AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	PROPA-CHLOR, WATER, DISS, REC (UG/L) (04024)	PRO-PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	PRO-PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	SI-MAZINE, WATER, DISS, REC (UG/L) (04035)	TEBU-THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	TER-BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	TER-BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)
415147092115301	08-20-02	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02
423749092260801	08-27-02	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02
431339093155901	08-22-02	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02
430549092272301	08-23-02	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02
423419093172401	08-22-02	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02
414818092055403	08-20-02	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02
413438091341201	08-21-02	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02
421115091250501	08-26-02	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02
412755091114101	08-19-02	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02
414430093220001	08-28-02	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02
414208092312601	08-28-02	<.006	<.011	<.01	<.004	<.010	<.011	<.02	<.005	<.02	<.034	<.02

NATIONAL WATER-QUALITY ASSESSMENT PROGRAM--Continued
Ground-Water Trend Network

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

Station number	Date	THIO-BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	TRIAL-LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	TRI-FLUR-ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	1,1,1-TRI-CHLORO-ETHANE TOTAL (UG/L) (34506)	1,1,2-TRI-CHLORO-ETHANE TOTAL (UG/L) (34511)	1,1-DI-CHLORO-ETHANE TOTAL (UG/L) (34496)	1,1-DI-CHLORO-ETHYL-ENE TOTAL (UG/L) (34501)	1,1-DI CHLORO-PRO-PENE, WAT, WH TOTAL (UG/L) (77168)	123-TRI CHLORO-PROPANE WATER WHOLE TOTAL (UG/L) (77443)	1,2-DIBROMO ETHANE WATER WHOLE TOTAL (UG/L) (77651)	1,2-DI-CHLORO-ETHANE TOTAL (UG/L) (32103)
415147092115301	08-20-02	<.005	<.002	<.009	<.03	<.06	<.04	<.04	<.05	<.16	<.04	<.1
423749092260801	08-27-02	<.005	<.002	<.009	<.03	<.06	<.04	<.04	<.05	<.16	<.04	<.1
431339093155901	08-22-02	<.005	<.002	<.009	<.03	<.06	<.04	<.04	<.05	<.16	<.04	<.1
430549092272301	08-23-02	<.005	<.002	<.009	<.03	<.06	<.04	<.04	<.05	<.16	<.04	<.1
423419093172401	08-22-02	<.005	<.002	<.009	<.03	<.06	<.04	<.04	<.05	<.16	<.04	<.1
414818092055403	08-20-02	<.005	<.002	<.009	<.03	<.06	<.04	<.04	<.05	<.16	<.04	<.1
413438091341201	08-21-02	<.005	<.002	<.009	<.03	<.06	<.04	<.04	<.05	<.16	<.04	<.1
421115091250501	08-26-02	<.005	<.002	<.009	<.03	<.06	<.04	<.04	<.05	<.16	<.04	<.1
412755091114101	08-19-02	<.005	<.002	<.009	<.03	<.06	<.04	<.04	<.05	<.16	<.04	<.1
414430093220001	08-28-02	<.005	<.002	<.009	<.03	<.06	<.04	<.04	<.05	<.16	<.04	<.1
414208092312601	08-28-02	<.005	<.002	<.009	<.03	<.06	<.04	<.04	<.05	<.16	<.04	<.1

Station number	Date	1,2-DI-CHLORO-PROPANE TOTAL (UG/L) (34541)	TRANS-1,2-DI-CHLORO-ETHENE TOTAL (UG/L) (34546)	2,2-DI CHLORO-PRO-PANE WAT, WH TOTAL (UG/L) (77170)	2BUTENE TRANS-1 4-DI-CHLORO UNFLTRD RECOVER (UG/L) (73547)	2-HEXA-NONE WATER WHOLE TOTAL (UG/L) (77103)	ACETONE WATER WHOLE TOTAL (UG/L) (81552)	ACRYLO-NITRILE TOTAL (UG/L) (34215)	1,2,3-TRI-CHLORO BENZENE WAT, WH REC (UG/L) (77613)	BENZENE 123-TRI METHYL-WATER UNFLTRD RECOVER (UG/L) (77221)	BENZENE 1,2,4-TRI-CHLORO-WAT UNF REC (UG/L) (34551)	BENZENE 124-TRI METHYL UNFILT RECOVER (UG/L) (77222)
415147092115301	08-20-02	<.03	<.03	<.05	<.7	<.7	<7	<1	<.3	<.1	<.1	E.01
423749092260801	08-27-02	<.03	<.03	<.05	<.7	<.7	E2	<1	<.3	<.1	<.1	<.06
431339093155901	08-22-02	<.03	<.03	<.05	<.7	<.7	<7	<1	<.3	<.1	<.1	<.06
430549092272301	08-23-02	<.03	<.03	<.05	<.7	<.7	<7	<1	<.3	<.1	<.1	<.06
423419093172401	08-22-02	<.03	<.03	<.05	<.7	<.7	<7	<1	<.3	<.1	<.1	<.06
414818092055403	08-20-02	<.03	<.03	<.05	<.7	<.7	<7	<1	<.3	<.1	<.1	<.06
413438091341201	08-21-02	<.03	<.03	<.05	<.7	<.7	<7	<1	<.3	<.1	<.1	<.06
421115091250501	08-26-02	<.03	<.03	<.05	<.7	<.7	<7	<1	<.3	<.1	<.1	<.06
412755091114101	08-19-02	<.03	<.03	<.05	<.7	<.7	<7	<1	<.3	<.1	<.1	<.06
414430093220001	08-28-02	<.03	<.03	<.05	<.7	<.7	<7	<1	<.3	<.1	<.1	<.06
414208092312601	08-28-02	<.03	<.03	<.05	<.7	<.7	<7	<1	<.3	<.1	<.1	<.06

Station number	Date	BENZENE 135-TRI METHYL WATER UNFLTRD REC (UG/L) (77226)	BENZENE 1,3-DI-CHLORO-WATER UNFLTRD REC (UG/L) (34566)	BENZENE 1,4-DI-CHLORO-WATER UNFLTRD REC (UG/L) (34571)	ISO-PROPYL-BENZENE WATER WHOLE REC (UG/L) (77223)	BENZENE N-BUTYL WATER UNFLTRD REC (UG/L) (77342)	BENZENE N-PROPY WATER UNFLTRD REC (UG/L) (77224)	BENZENE O-DI-CHLORO-WATER UNFLTRD REC (UG/L) (34536)	BENZENE SEC BUTYL-WATER UNFLTRD REC (UG/L) (77350)	BENZENE TERT-BUTYL-WATER UNFLTRD REC (UG/L) (77353)	BENZENE TOTAL (UG/L) (34030)	BROMO-BENZENE WATER, WHOLE, TOTAL (UG/L) (81555)
415147092115301	08-20-02	<.04	<.03	<.05	<.06	<.2	<.04	<.03	<.03	<.05	<.04	<.04
423749092260801	08-27-02	<.04	<.03	<.05	<.06	<.2	<.04	<.03	<.03	<.05	<.04	<.04
431339093155901	08-22-02	<.04	<.03	<.05	<.06	<.2	<.04	<.03	<.03	<.05	<.04	<.04
430549092272301	08-23-02	<.04	<.03	<.05	<.06	<.2	<.04	<.03	<.03	<.05	<.04	<.04
423419093172401	08-22-02	<.04	<.03	<.05	<.06	<.2	<.04	<.03	<.03	<.05	<.04	<.04
414818092055403	08-20-02	<.04	<.03	<.05	<.06	<.2	<.04	<.03	<.03	<.05	<.04	<.04
413438091341201	08-21-02	<.04	<.03	<.05	<.06	<.2	<.04	<.03	<.03	<.05	<.04	<.04
421115091250501	08-26-02	<.04	<.03	<.05	<.06	<.2	<.04	<.03	<.03	<.05	<.04	<.04
412755091114101	08-19-02	<.04	<.03	<.05	<.06	<.2	<.04	<.03	<.03	<.05	<.04	<.04
414430093220001	08-28-02	<.04	<.03	<.05	<.06	<.2	<.04	<.03	<.03	<.05	<.04	<.04
414208092312601	08-28-02	<.04	<.03	<.05	<.06	<.2	<.04	<.03	<.03	<.05	<.04	<.04

NATIONAL WATER-QUALITY ASSESSMENT PROGRAM--Continued
Ground-Water Trend Network

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

Station number	Date	BROMO-ETHENE WATER UNFLTRD RECOVER (UG/L) (50002)	BROMO-FORM TOTAL (UG/L) (32104)	CARBON DI-SULFIDE WATER WHOLE TOTAL (UG/L) (77041)	CARBON TETRA-CHLO-RIDE TOTAL (UG/L) (32102)	CHLORO-BENZENE TOTAL (UG/L) (34301)	CHLORO-DI-BROMO-METHANE TOTAL (UG/L) (32105)	CHLORO-ETHANE TOTAL (UG/L) (34311)	CHLORO-FORM TOTAL (UG/L) (32106)	CIS-1,2-DI-CHLORO-ETHENE WATER TOTAL (UG/L) (77093)	CIS 1,3-DI-CHLORO-PROPENE TOTAL (UG/L) (34704)	DIBROMO CHLORO-PROPANE WATER WHOLE TOT.REC (UG/L) (82625)
415147092115301	08-20-02	<.1	<.06	<.07	<.06	<.03	<.2	<.1	<.02	<.04	<.09	<.5
423749092260801	08-27-02	<.1	<.06	<.07	<.06	<.03	<.2	<.1	<.02	<.04	<.09	<.5
431339093155901	08-22-02	<.1	<.06	<.07	<.06	<.03	<.2	<.1	<.02	<.04	<.09	<.5
430549092272301	08-23-02	<.1	<.06	<.07	<.06	<.03	<.2	<.1	<.02	<.04	<.09	<.5
423419093172401	08-22-02	<.1	<.06	<.07	<.06	<.03	<.2	<.1	<.02	<.04	<.09	<.5
414818092055403	08-20-02	<.1	<.06	<.07	<.06	<.03	<.2	<.1	<.02	<.04	<.09	<.5
413438091341201	08-21-02	<.1	<.06	E.03	<.06	<.03	<.2	<.1	.21	<.04	<.09	<.5
421115091250501	08-26-02	<.1	<.06	.13	<.06	<.03	<.2	<.1	<.02	<.04	<.09	<.5
412755091114101	08-19-02	<.1	<.06	.31	<.06	<.03	<.2	<.1	<.02	<.04	<.09	<.5
414430093220001	08-28-02	<.1	<.06	E.09	<.06	<.03	<.2	<.1	E.07	<.04	<.09	<.5
414208092312601	08-28-02	<.1	<.06	E.02	<.06	<.03	<.2	<.1	<.02	<.04	<.09	<.5

Station number	Date	DI-BROMO-METHANE WATER WHOLE RECOVER (UG/L) (30217)	BROMO-DI-CHLORO-METHANE TOTAL (UG/L) (32101)	DI-CHLORO-DI-FLUORO-METHANE TOTAL (UG/L) (34668)	DI-ISO-PROPYL-ETHER, WATER, UNFLTRD RECOVER (UG/L) (81577)	ETHANE, 1112-TETRA-CHLORO-WAT UNF REC (UG/L) (77562)	ETHANE, 1,1,2,2 TETRA-CHLORO-WAT UNF REC (UG/L) (34516)	ETHANE HEXA-CHLORO-WATER UNFLTRD RECOVER (UG/L) (34396)	ETHER ETHYL WATER UNFLTRD RECOVER (UG/L) (81576)	ETHER TERT-BUTYL ETHYL UNFLTRD RECOVER (UG/L) (50004)	ETHER TERT-PENTYL METHYL UNFLTRD RECOVER (UG/L) (50005)	ETHYL-BENZENE TOTAL (UG/L) (34371)
415147092115301	08-20-02	<.05	<.05	<.18	<.10	<.03	<.09	<.2	<.2	<.05	<.08	<.03
423749092260801	08-27-02	<.05	<.05	<.18	<.10	<.03	<.09	<.2	<.2	<.05	<.08	<.03
431339093155901	08-22-02	<.05	<.05	<.18	<.10	<.03	<.09	<.2	<.2	<.05	<.08	<.03
430549092272301	08-23-02	<.05	<.05	<.18	<.10	<.03	<.09	<.2	<.2	<.05	<.08	<.03
423419093172401	08-22-02	<.05	<.05	<.18	<.10	<.03	<.09	<.2	<.2	<.05	<.08	E.01
414818092055403	08-20-02	<.05	<.05	<.18	<.10	<.03	<.09	<.2	<.2	<.05	<.08	<.03
413438091341201	08-21-02	<.05	<.05	<.18	<.10	<.03	<.09	<.2	<.2	<.05	<.08	<.03
421115091250501	08-26-02	<.05	<.05	<.18	<.10	<.03	<.09	<.2	<.2	<.05	<.08	<.03
412755091114101	08-19-02	<.05	<.05	<.18	<.10	<.03	<.09	<.2	<.2	<.05	<.08	<.03
414430093220001	08-28-02	<.05	<.05	<.18	<.10	<.03	<.09	<.2	<.2	<.05	<.08	<.03
414208092312601	08-28-02	<.05	<.05	<.18	<.10	<.03	<.09	<.2	<.2	<.05	<.08	<.03

Station number	Date	FREON-113 WATER UNFLTRD REC (UG/L) (77652)	FURAN, TETRA-HYDRO-WATER UNFLTRD RECOVER (UG/L) (81607)	HEXA-CHLORO-BUT-ADIENE TOTAL (UG/L) (39702)	ISO-DURENE WATER UNFLTRD RECOVER (UG/L) (50000)	METHAC-RYLATE ETHYL-WATER UNFLTRD RECOVER (UG/L) (73570)	METHAC-RYLATE METHYL WATER UNFLTRD RECOVER (UG/L) (81597)	METH-ACRYLO-NITRILE WATER UNFLTRD RECOVER (UG/L) (81593)	METHANE BROMO CHLORO-WAT UNFLTRD REC (UG/L) (77297)	METHYL ACRY-LATE WATER UNFLTRD RECOVER (UG/L) (49991)	METHYL IODIDE WATER UNFLTRD RECOVER (UG/L) (77424)	METHYL TERT-BUTYL ETHER WAT UNF REC (UG/L) (78032)
415147092115301	08-20-02	<.06	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25	<.2
423749092260801	08-27-02	<.06	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25	<.2
431339093155901	08-22-02	<.06	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25	<.2
430549092272301	08-23-02	<.06	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25	<.2
423419093172401	08-22-02	<.06	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25	<.2
414818092055403	08-20-02	<.06	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25	<.2
413438091341201	08-21-02	<.06	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25	<.2
421115091250501	08-26-02	<.06	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25	<.2
412755091114101	08-19-02	<.06	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25	<.2
414430093220001	08-28-02	<.06	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25	<.2
414208092312601	08-28-02	<.06	<2	<.1	<.2	<.2	<.3	<.6	<.07	<2.0	<.25	<.2

NATIONAL WATER-QUALITY ASSESSMENT PROGRAM--Continued
Ground-Water Trend Network

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

Station number	Date	METHYL-BROMIDE TOTAL (UG/L) (34413)	METHYL-CHLORIDE TOTAL (UG/L) (34418)	METHYL ENE CHLORIDE TOTAL (UG/L) (34423)	METHYL-ETHYL-KETONE WATER WHOLE TOTAL (UG/L) (81595)	METHYL ISO-BUTYL KETONE WAT.WH. TOTAL (UG/L) (78133)	META/PARA-XYLENE WATER UNFLTRD REC (UG/L) (85795)	NAPHTH-ALENE TOTAL (UG/L) (34696)	O-CHLORO-TOLUENE WATER WHOLE TOTAL (UG/L) (77275)	O-XYLENE WATER WHOLE TOTAL (UG/L) (77135)	P-ISO-PROPYL-TOLUENE WATER WHOLE REC (UG/L) (77356)	1234-TETRA METHYL BENZENE UNFLTRD REC (UG/L) (49999)
415147092115301	08-20-02	<.3	<.2	<.2	<5.0	<.4	E.01	<.5	<.03	<.07	<.07	<.2
423749092260801	08-27-02	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03	<.07	<.07	<.2
431339093155901	08-22-02	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03	<.07	<.07	<.2
430549092272301	08-23-02	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03	<.07	<.07	<.2
423419093172401	08-22-02	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03	<.07	<.07	<.2
414818092055403	08-20-02	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03	<.07	<.07	<.2
413438091341201	08-21-02	<.3	<.2	<.2	<5.0	<.4	E.01	<.5	<.03	<.07	<.07	<.2
421115091250501	08-26-02	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03	<.07	<.07	<.2
412755091114101	08-19-02	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03	<.07	<.07	<.2
414430093220001	08-28-02	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03	<.07	<.07	<.2
414208092312601	08-28-02	<.3	<.2	<.2	<5.0	<.4	<.06	<.5	<.03	<.07	<.07	<.2

Station number	Date	1,3-DI-CHLORO-PROPANE WAT. WH TOTAL (UG/L) (77173)	PROPENE 3-CHLORO-WATER UNFLTRD RECOVER (UG/L) (78109)	STYRENE TOTAL (UG/L) (77128)	TETRA-CHLORO-ETHYL-ENE TOTAL (UG/L) (34475)	TOLUENE O-ETHYL WATER UNFLTRD RECOVER (UG/L) (77220)	TOLUENE P-CHLOR WATER UNFLTRD REC (UG/L) (77277)	TOLUENE TOTAL (UG/L) (34010)	TRANS-1,3-DI-CHLORO-PROPENE TOTAL (UG/L) (34699)	TRI-CHLORO-ETHYL-ENE TOTAL (UG/L) (39180)	TRI-CHLORO-FLUORO-METHANE TOTAL (UG/L) (34488)	VINYL CHLO-RIDE TOTAL (UG/L) (39175)
415147092115301	08-20-02	<.1	<.07	E.01	<.03	<.06	<.05	.42	<.09	<.04	<.09	<.1
423749092260801	08-27-02	<.1	<.07	<.04	<.03	<.06	<.05	E.03	<.09	<.04	<.09	<.1
431339093155901	08-22-02	<.1	<.07	<.04	<.03	<.06	<.05	E.02	<.09	<.04	<.09	<.1
430549092272301	08-23-02	<.1	<.07	<.04	<.03	<.06	<.05	<.05	<.09	<.04	<.09	<.1
423419093172401	08-22-02	<.1	<.07	<.04	<.03	<.06	<.05	E.07	<.09	<.04	<.09	<.1
414818092055403	08-20-02	<.1	<.07	<.04	<.03	<.06	<.05	E.03	<.09	<.04	<.09	<.1
413438091341201	08-21-02	<.1	<.07	<.04	<.03	<.06	<.05	E.04	<.09	<.04	<.09	<.1
421115091250501	08-26-02	<.1	<.07	<.04	<.03	<.06	<.05	E.03	<.09	<.04	<.09	<.1
412755091114101	08-19-02	<.1	<.07	<.04	<.03	<.06	<.05	E.03	<.09	<.04	<.09	<.1
414430093220001	08-28-02	<.1	<.07	<.04	<.03	<.06	<.05	E.03	<.09	<.04	<.09	<.1
414208092312601	08-28-02	<.1	<.07	<.04	<.03	<.06	<.05	E.03	<.09	<.04	<.09	<.1

Station number	Date	URANIUM NATURAL DIS-SOLVED (UG/L AS U) (22703)
415147092115301	08-20-02	.10
423749092260801	08-27-02	.19
431339093155901	08-22-02	.35
430549092272301	08-23-02	E.02
423419093172401	08-22-02	3.83
414818092055403	08-20-02	<.02
413438091341201	08-21-02	.35
421115091250501	08-26-02	.15
412755091114101	08-19-02	.17
414430093220001	08-28-02	.99
414208092312601	08-28-02	.23

Remark codes used in this report:
< -- Less than
E -- Estimated value
M -- Presence verified, not quantified

405747093233201 MCNAY RESEARCH STATION NEAR CHARITON, IOWA

LOCATION.--Lat 40°57'47", long 93°23'34", in SW$^1/_4$ NE$^1/_4$ 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, 7.1, April 19-26, 1988; minimum field pH, 3.8, February 12-19, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum field pH, 6.3, Sept. 10-18; minimum field pH, 4.7, Aug. 7-13.

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

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 02-09	5.06	7.4	.20	.02	.01	.02	.260	.170	.03	1.02	<.003
OCT 09-16	5.36	8.1	.46	.03	.03	.05	.380	.240	.08	1.01	<.003
OCT 16-23	5.26	10.3	.53	.04	.02	.11	.370	.280	.13	1.53	<.003
OCT 23-30	5.57	21.6	1.62	.07	.06	.12	.890	.850	.19	2.81	<.003
OCT 30-NOV 06	--	--	.62	.04	.02	.09	.450	.440	.19	2.14	<.003
NOV 06-13	--	--	.79	.06	.06	.04	.890	.520	.18	2.12	<.012
NOV 13-20	--	--	.52	.02	.04	.04	1.53	.530	.14	2.00	<.003
NOV 20-27	5.60	17.1	1.36	.06	.06	.15	.400	.360	.15	1.66	<.003
NOV 27-DEC 04	--	--	--	--	--	--	--	--	--	--	--
DEC 04-11	5.52	8.9	.64	.03	.02	.07	.400	.120	.08	1.14	<.003
DEC 11-19	5.25	12.5	.59	.02	.03	.43	.430	.340	.11	2.02	<.003
DEC 19-26	5.46	33.5	2.86	.16	.16	1.12	.930	.950	.53	5.57	<.003
DEC 26 2001-JAN 02 2002	--	--	--	--	--	--	--	--	--	--	--
JAN 02-08	--	--	--	--	--	--	--	--	--	--	--
JAN 08-15	--	--	--	--	--	--	--	--	--	--	--
JAN 15-22	--	--	--	--	--	--	--	--	--	--	--
JAN 22-29	--	--	--	--	--	--	--	--	--	--	--
JAN 29-FEB 05	--	--	1.57	.07	.12	.62	1.11	1.13	.36	6.02	<.011
FEB 05-12	4.94	54.1	3.80	.22	.21	.79	2.66	2.57	.33	8.28	<.003
FEB 12-19	5.52	20.2	.56	.03	.03	.12	1.63	.520	.19	2.43	<.003
FEB 19-26	--	--	.45	.04	.04	.14	1.70	.720	.16	2.42	<.003
FEB 26-MAR 05	--	--	1.82	.11	.04	.11	.470	.600	.15	1.61	<.003
MAR 05-12	5.54	10.7	.61	.04	.05	.10	.500	.230	.09	1.19	<.003
MAR 12-19	4.77	45.5	.89	.07	.07	.18	1.87	1.28	.24	5.28	<.003
MAR 19-26	--	--	1.12	.09	.05	.11	1.49	1.01	.17	3.83	<.003
MAR 26-APR 11	5.64	7.6	.32	.03	.01	.01	.570	.230	.04	.67	<.003
APR 11-16	6.28	15.7	.54	.03	.03	.04	1.06	.640	.06	2.12	<.003
APR 16-23	5.38	12.8	.82	.08	.03	.08	.720	.380	.09	1.33	<.003
APR 23-30	5.12	11.3	.38	.03	.05	.04	.610	.370	.08	1.51	<.003
APR 30-MAY 07	5.37	17.6	1.10	.14	.09	.10	.890	.520	.13	2.46	<.003
MAY 07-14	5.32	7.5	.23	.03	.04	.10	.350	.180	.13	1.01	<.003
MAY 14-21	5.49	16.2	1.14	.08	.06	.06	.680	.510	.12	1.85	<.003
MAY 21-28	5.82	11.4	.61	.05	.05	.07	<.020	.350	.12	1.15	<.003
MAY 28-JUN 04	5.80	24.7	1.20	.11	1.16	.12	4.20	.410	.70	2.15	.510
JUN 04-11	5.41	8.9	.32	.03	.06	.08	.340	.280	.14	1.08	<.003

405747093233201 MCNAY RESEARCH STATION NEAR CHARITON, IOWA--Continued

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

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)
JUN 11-17	5.86	11.7	.60	.06	.04	.03	.680	.320	.07	.83	<.003
JUN 17-25	--	--	--	--	--	--	--	--	--	--	--
JUN 25-JUL 02	--	--	3.27	.28	1.01	.14	.890	1.40	.62	3.91	<.003
JUL 02-09	5.25	19.2	.83	.06	.05	.03	.980	.560	.10	3.36	<.003
JUL 09-16	5.00	10.1	.20	.02	.03	.01	.510	.350	.04	1.25	<.003
JUL 16-23	6.21	19.9	1.68	.10	.05	.09	.760	.630	.15	1.44	<.003
JUL 23-30	5.46	14.3	.76	.04	.06	.06	.760	.520	.09	1.08	<.003
JUL 30-AUG 07	5.02	28.0	2.43	.21	.04	.09	.730	.840	.17	3.82	<.003
AUG 07-13	4.72	16.5	.43	.03	.02	.04	.420	.510	.08	1.21	<.003
AUG 13-20	5.24	12.4	.58	.06	.04	.14	.510	.430	.17	1.46	<.003
AUG 20-27	5.62	8.0	.50	.03	.02	.08	.300	.290	.10	.99	<.003
AUG 27-SEP 03	--	--	--	--	--	--	--	--	--	--	--
SEP 03-10	--	--	--	--	--	--	--	--	--	--	--
SEP 10-18	6.34	5.3	.35	.02	.01	.01	.160	.160	.05	.48	<.003
SEP 18-24	5.96	9.0	.50	.04	.02	.02	.490	.200	.03	.79	<.003
SEP 24-OCT 01	6.01	25.7	3.48	.17	.08	.10	.680	1.04	.23	3.35	<.003

425435091281101 BIG SPRING FISH HATCHERY NEAR ELKADER, IOWA

LOCATION.--Lat 42°54'35", long 91°28'11", in $SE^1/_4$ $NE^1/_4$ $SE^1/_4$ 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, 7.1, July 2-9, 2002; minimum field pH, 3.7, August 31 to September 7, 1999.

EXTREMES FOR CURRENT YEAR.--Maximum field pH, 7.1, July 2-9; minimum field pH, 4.2, Mar. 12-19.

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

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 02-09	--	--	--	--	--	--	--	--	--	--	--
OCT 09-16	--	9.8	.49	.09	.06	.04	.470	.350	.10	1.45	<.003
OCT 16-23	--	8.2	.13	.02	.01	.01	.090	.150	.03	.45	<.003
OCT 23-30	--	18.8	.76	.04	.06	.05	1.24	.770	.09	1.74	<.003
OCT 30-NOV 06	6.59	26.2	2.13	.16	.14	.16	1.03	.680	.22	3.28	<.003
NOV 06-13	4.74	23.2	.70	.08	.07	.04	.810	.560	.09	3.22	<.003
NOV 13-20	6.36	13.9	.35	.03	.05	.03	1.11	.350	.05	1.01	<.003
NOV 20-27	5.04	14.1	.28	.03	.03	.04	.610	.430	.09	1.66	<.003
NOV 27-DEC 04	4.48	21.9	.09	.01	.01	.01	.480	.550	.04	1.76	<.003
DEC 04-11	5.70	16.8	.67	.10	.14	.18	.790	.390	.20	2.50	<.003
DEC 11-18	4.71	20.1	.26	.02	.02	.16	.610	.590	.09	2.12	<.003
DEC 18-25	4.75	22.0	.71	.07	.07	.26	.580	.590	.22	2.76	<.003
DEC 25 2001-JAN 01 2002	--	--	--	--	--	--	--	--	--	--	--
JAN 01-08	--	--	--	--	--	--	--	--	--	--	--
JAN 08-15	--	--	1.16	.05	.04	.07	.770	.370	.08	1.80	<.003
JAN 15-22	--	--	3.12	.16	.12	.14	1.43	2.55	.26	1.92	<.003
JAN 22-29	--	--	--	--	--	--	--	--	--	--	--
JAN 29-FEB 05	5.39	7.8	.32	.04	.01	.04	.100	.210	.03	.33	<.003
FEB 05-12	4.48	22.9	.14	.02	.02	.01	.560	.720	.05	1.39	<.003
FEB 12-19	4.98	17.0	.72	.08	.03	.06	.590	.430	.08	2.32	<.003
FEB 19-26	5.26	25.6	.16	.02	.04	.07	.890	.700	.15	2.25	<.003
FEB 26-MAR 05	4.71	14.6	.43	.04	.01	.03	.160	.640	.08	.40	<.003
MAR 05-12	5.30	19.6	.91	.12	.09	.34	.790	.750	.40	2.62	<.003
MAR 12-19	4.23	53.5	1.10	.13	.07	.27	1.23	1.84	.49	4.51	<.003
MAR 19-26	4.42	29.6	.24	.04	.03	.03	.750	.740	.10	2.88	<.003
MAR 26-APR 02	5.60	13.1	.47	.04	.03	.05	.900	.510	.06	1.75	<.003
APR 02-09	5.11	9.8	.23	.03	.02	.02	.430	.310	.06	.96	<.003
APR 09-16	6.28	15.7	1.23	.10	.05	.04	.680	.390	.06	1.42	<.003
APR 16-23	6.19	10.8	.58	.09	.16	.10	.310	.240	.14	1.26	<.003
APR 23-30	5.50	10.4	.17	.03	.05	.03	.450	.270	.05	1.01	<.003
APR 30-MAY 07	6.48	13.1	.90	.12	.04	.05	.650	.400	.09	1.26	<.003
MAY 07-14	5.88	12.6	.39	.07	.09	.21	.630	.250	.07	1.46	<.003
MAY 14-21	--	--	--	--	--	--	--	--	--	--	--
MAY 21-28	6.33	5.8	.46	.09	.03	.02	.230	.140	.05	.37	<.003
MAY 28-JUN 04	6.51	13.9	.92	.11	.08	.06	.660	.440	.09	1.47	<.003

425435091281101 BIG SPRING FISH HATCHERY NEAR ELKADER, IOWA--Continued

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

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)
JUN 04-11	6.14	10.0	.46	.07	.13	.05	.510	.300	.08	.94	<.003
JUN 11-18	--	--	--	--	--	--	--	--	--	--	--
JUN 18-25	6.79	17.6	1.42	.22	.05	.05	.680	.470	.11	1.18	<.003
JUN 25-JUL 02	5.85	7.9	.44	.05	.03	.01	.440	.240	.04	.84	<.003
JUL 02-09	7.07	41.1	5.21	.45	.07	.10	.820	.910	.24	2.09	<.003
JUL 09-16	--	13.9	.49	.12	.01	.01	.860	.490	.06	1.30	<.003
JUL 16-23	--	18.2	1.42	.21	.09	.06	.730	.530	.09	1.26	<.003
JUL 23-30	--	5.9	.27	.03	.03	.02	.300	.240	.04	.61	<.003
JUL 30-AUG 06	5.27	9.1	.32	.04	.02	.05	.260	.270	.07	1.10	<.003
AUG 06-13	5.55	12.8	.64	.08	.08	.02	.440	.320	.04	1.49	<.003
AUG 13-20	6.36	10.8	.53	.09	.16	.05	.240	.240	.07	.77	<.003
AUG 20-27	5.98	5.7	.24	.05	.14	.03	.220	.190	.05	.55	<.003
AUG 27-SEP 03	5.76	18.7	1.23	.12	.11	.04	.720	.780	.14	2.90	<.003
SEP 03-10	--	--	--	--	--	--	--	--	--	--	--
SEP 10-17	6.38	10.4	.68	.06	.02	.01	.330	.200	.04	.99	<.003
SEP 17-24	5.69	10.2	.27	.05	.04	.01	.610	.340	.04	1.68	<.003
SEP 24-OCT 01	6.49	20.6	1.68	.15	.06	.02	.710	.640	.08	3.62	<.003

CONVERSION FACTORS

Multiply	By	To obtain
	Length	
inch (in.)	2.54×10^{1}	millimeter
	2.54×10^{-2}	meter
foot (ft)	3.048×10^{-1}	meter
mile (mi)	1.609×10^{0}	kilometer
	Area	
acre	4.047×10^{3}	square meter
	4.047×10^{-1}	square hectometer
	4.047×10^{-3}	square kilometer
square mile (mi^2)	2.590×10^{0}	square kilometer
	Volume	
gallon (gal)	3.785×10^{0}	liter
	3.785×10^{0}	cubic decimeter
	3.785×10^{-3}	cubic meter
million gallons (Mgal)	3.785×10^{3}	cubic meter
	3.785×10^{-3}	cubic hectometer
cubic foot (ft^3)	2.832×10^{1}	cubic decimeter
	2.832×10^{-2}	cubic meter
cubic-foot-per-second day [(ft^3/s) d]	2.447×10^{3}	cubic meter
	2.447×10^{-3}	cubic hectometer
acre-foot (acre-ft)	1.233×10^{3}	cubic meter
	1.233×10^{-3}	cubic hectometer
	1.233×10^{-6}	cubic kilometer
	Flow	
cubic foot per second (ft^3/s)	2.832×10^{1}	liter per second
	2.832×10^{1}	cubic decimeter per second
	2.832×10^{-2}	cubic meter per second
gallon per minute (gal/min)	6.309×10^{-2}	liter per second
	6.309×10^{-2}	cubic decimeter per second
	6.309×10^{-5}	cubic meter per second
million gallons per day (Mgal/d)	4.381×10^{1}	cubic decimeter per second
	4.381×10^{-2}	cubic meter per second
	Mass	
ton (short)	9.072×10^{-1}	megagram or metric ton

U.S. DEPARTMENT OF THE INTERIOR
U.S. Geological Survey
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