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UNITED STATES
DEPARTMENT OF INTERIOR
GEOLOGICAL SURVEY
WATER RESOURCES DIVISION

WATER-RESOURCES INVESTIGATIONS
IN IOWA--FISCAL YEAR 1981

Compiled by I.L. Burmeister and D.E. Riddle

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Iowa City, Iowa
February 1981

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WATER-RESOURCES INVESTIGATIONS
OF THE U.S. GEOLOGICAL
SURVEY IN IOWA
Fiscal Year 1981
by I. L. Burmeister and D. E. Riddle

INTRODUCTION

The mission of the Water Resources Division is to provide the hydrologic information and the understanding needed for the optimum utilization and management of the Nation's water resources for the overall benefit of the people of the United States.

This is accomplished, in large part, through cooperating with other Federal and non-Federal agencies, by:

1. Collecting, on a systematic basis, data needed for the continuing determination and evaluation of the quantity, quality, and use of the Nation's water resources.
2. Conducting analytical and interpretive water-resource appraisals describing the occurrence, availability, and the physical, chemical, and biological characteristics of surface and ground water.
3. Conducting supportive basic and problem-oriented research in hydraulics, hydrology, and related fields of science to improve the scientific basis for investigations and measurement techniques and to understand hydrologic systems sufficiently well to quantitatively predict their response to stress, either natural or manmade.
4. Disseminating the water data and the results of these investigations and research through reports, maps, computerized information services, and other forms of public releases.
5. Coordinating the activities of Federal agencies in the acquisition of water data for streams, lakes, reservoirs, estuaries, and ground waters.
6. Providing scientific and technical assistance in hydrologic fields to other Federal, State and local agencies, to licensees of the Federal Power Commission, and to international agencies on behalf of the Department of State.

The Survey's water-resources investigations in Iowa consist of collecting, analyzing, and processing water-resources data and conducting interpretive hydrologic studies. The water-resources data and the results of hydrologic studies are published or released by the U.S. Geological Survey or by cooperating agencies. This report contains brief descriptions of projects active in the year ending September 30, 1981, a listing and maps of stations where hydrologic data are being obtained, and references to other hydrologic information.

THE U.S. GEOLOGICAL SURVEY AND IOWA

HISTORICAL SUMMARY

The U.S. Geological Survey was established by Act of Congress on March 3, 1879. This new agency, in the Interior Department, was charged with the responsibility for "Classification of the public lands, and examination of the geological structure, mineral resources, and products of the national domain".

The Reclamation Act of 1902 created a Hydrographic Branch within the USGS. Within this branch were the Divisions of Hydrography (streamgaging), Hydrology (ground water), Hydroeconomics (quality of water), and Reclamation Service (irrigation). The Hydrographic Branch was later renamed the Water Resources Division, the Reclamation Service was moved to its own Bureau and the other divisions were renamed as Surface Water, Ground Water and Quality of Water Branches.

The USGS has changed with time to better meet the increasing demands for earth resource information. The present organization consists of the Director, his supporting staff and essentially six organization units. The National Map Service produces maps delineating the physical features of land areas. The Geologic Division conducts research on geologic processes and the earth's history. The Water Resources Division appraises the source, quantity, quality and movement of the nation's water resources. The Conservation Division classifies the public lands with respect to leasable mineral and water power sites. The Land Information and Analysis office coordinates and administers interrelated Survey programs and the newly formed Office of National Petroleum Reserve in Alaska, manages the exploration of the reserve and operates the South Barrow gas field.

The first federal appropriations for collecting streamflow data in Iowa was in 1902. The upper Mississippi River basin activity operated out of the Chicago District (A. H. Horton, District Engineer). Three streamgaging stations had previously been maintained by the City of Boone. These and seven additional sites were then operated by the USGS. Congressional funding was discontinued in 1907. In 1909 the Upper Mississippi River District was formed and four stations in Iowa were reestablished in 1911. The State-Federal cooperative program for surface-water activity in Iowa began in 1914. During the period 1928-32 the program was completely abandoned because of the depression. The district office of the surface-water activities was established in October 1932 in the Hydraulics Laboratory, University of Iowa, Iowa City. Rudy C. Kasel was the District Engineer. Subsequent district engineers were Larry C. Crawford (1941-49), Vernal R. Bennion (1949-64), and Sulo W. Wiitala (1965-78).

Cooperative programs in ground water activity began in 1906 with offices in the Geology Department, University of Iowa, Iowa City. Ground Water chiefs, called District Geologists, were Fuller (1906-09), Meinzer, Robinson (1938-43), Hershey (1944-55), Walker (1956), and Steinhilber (1957-65). In 1965 the Water Resources Division reorganized with each district headed by a district chief. Sulo W. Wiitala served as Iowa district chief from 1965 to December 1978. Donald K. Leifeste is currently district chief. Several cities, power companies, navigation interests and the Universities contributed much to the data-collection program in those early years.

The data-collection program presently includes 117 daily streamflow stations, 3 lake and stream-stage only stations, 4 reservoir-contents stations, and 126 crest-stage gage sites. There are 34 ground-water observation wells, 11 daily sediment and 11 chemical quality stations. The oldest records on streams in Iowa are the annual peak stages for the Mississippi River at Davenport which are complete from 1860. Daily streamflow records are complete for the Mississippi River at Clinton since 1873 and for Keokuk since 1878. Other long-term stations are Cedar River at Cedar Rapids (1902), Iowa River at Iowa City (1903), and Des Moines River at Keosauqua (1903).

DISTRICT OFFICE ADDRESSES

Inquiries regarding projects described in this volume may be directed to the District office listed below. Requests for current streamflow data should be directed to the District office or field headquarters nearest the study area.

IOWA DISTRICT OFFICE

D. K. Leifeste, District Chief
U. S. Geological Survey, WRD
269 Federal Building
P. O. Box 1230
Iowa City, Iowa 52244
319/337-4191
FTS 863-6521

FIELD HEADQUARTERS

V. L. Spiers, Hydrol.-in-charge
U. S. Geological Survey, WRD
250 Federal Building
P. O. Box 917
Council Bluffs, Iowa 51502
712/325-5521
FTS 864-5521

P. J. Soenksen, Hydrol.-in-charge
U. S. Geological Survey, WRD
456 Federal Building
P. O. Box 693
Fort Dodge, Iowa 50501
515/576-4571
FTS 862-7431

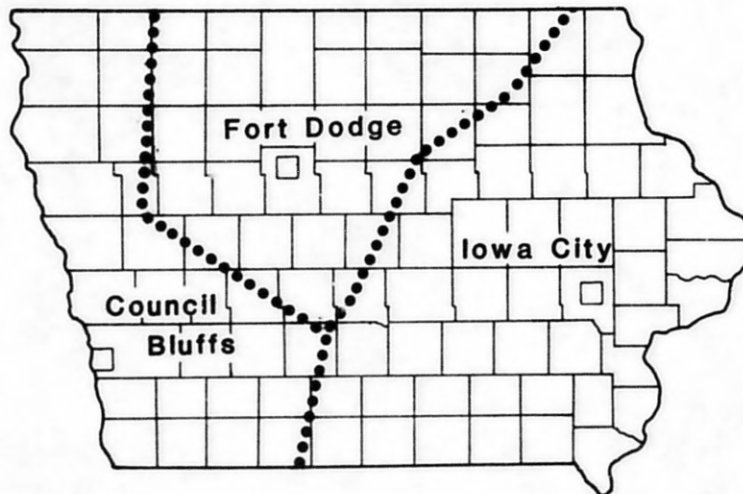


Figure 1.-Location of WRD offices and area of field assignments in Iowa.

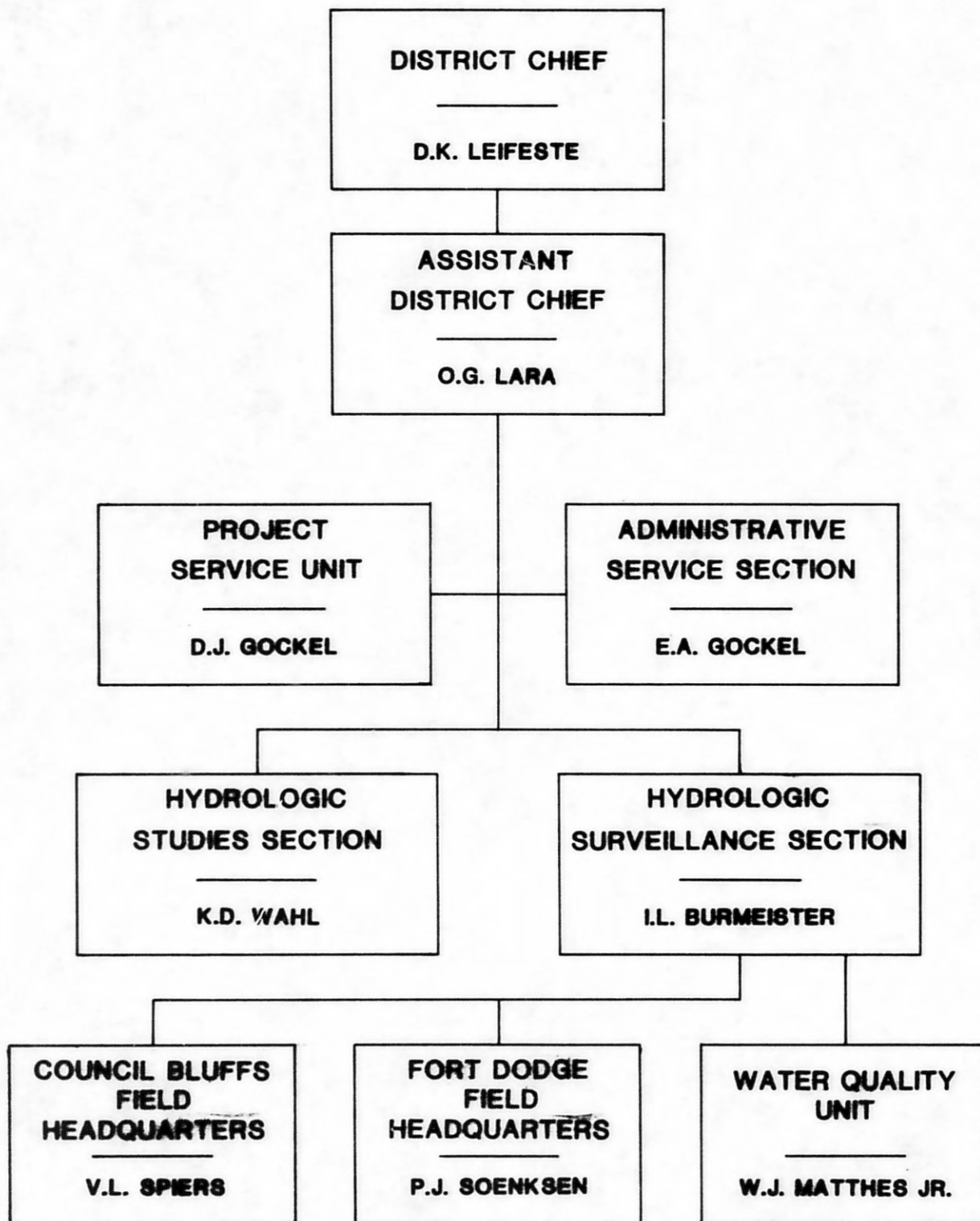


Figure 2.-Iowa District organization chart.

WHERE TO OBTAIN GEOLOGICAL SURVEY PUBLICATIONS

Current releases are described in a monthly pamphlet, "New Publications of the Geological Survey," which may be obtained from

Branch of Distribution
U.S. Geological Survey
604 South Pickett Street
Alexandria, VA 22304

Professional Papers, Bulletins, Water Supply Papers, Techniques of Water Resources Investigations, Circulars, Earthquake Information Bulletin, and popular leaflets, pamphlets, and booklets may be purchased from the above address. Additional information is given in "A Guide to Obtaining Information from the U.S. Geological Survey, 1978," Geological Survey Circular 777, available without cost from the above address.

Open-file reports from Iowa are available for inspection at the Iowa District Office.

Flood-prone area maps may be obtained from the Iowa District Office.

Map information is available from

Branch of Distribution
U.S. Geological Survey
Box 25286, Federal Center
Lakewood, CO 80225

Requests for miscellaneous water information and information on programs in other States may be referred to

Water Resources Division
U.S. Geological Survey, Mail Stop 440
12201 Sunrise Valley Drive
Reston, VA 22092

The Geological Survey National Center maintains a library with an extensive earth-sciences collection. Local libraries may obtain books, periodicals, and maps through interlibrary loan by writing to

U.S. Geological Survey Library
12201 Sunrise Valley Drive
Reston, VA 22092

SUMMARY OF CURRENT PROJECTS

Project No.: IA 00-001

Project Title: Surface Water Stations

Period of Project: Continuing since 1902

Project Chief: I. L. Burmeister

Location: Statewide, see map p. 39

Objective: A. To collect surface-water data sufficient to satisfy needs for current-purpose uses, such as (1) assessment of water resources, (2) operation of reservoirs or industries, (3) forecasting, (4) disposal of wastes and pollution controls, (5) discharge data to accompany water-quality measurements, (6) compact and legal requirements, and (7) research or special studies. B. To collect data necessary for analytical studies to define for any location the statistical properties of, and trends in, the occurrence of water in streams, lakes, estuaries, etc., for use in planning and design.

Progress: Data collected, compiled, and published on schedule. Basic data release, "Water Resources of Iowa, 1979", delivered April 28, 1980.

The data network consists of 117 daily streamflow stations, 3 lake and stream-stage stations, and 4 reservoir-contents stations.

See table p. 35 for complete list of stations.

Project No.: IA 00-002

Project Title: Ground Water Data

Period of Project: Continuing since 1939

Project Chief: Kenneth Wahl

Location: Statewide, see map p. 40

Objective: To collect water-level data sufficient to provide a long-term data base so that the general response of the hydrologic system to natural climatic variations and induced stresses is known. Data sites should be selected so that potential hydrologic problems can be defined early enough to allow proper planning and management.

To provide a hydrologic and geologic data base for use in answering requests for data and for use in areal studies. Convert the historical hydrologic and geologic data files into computer-data storage files. Provide computer retrieval of data files for use in special studies and areal studies throughout the state.

Progress: Observation-well network data collected, compiled, and processed for publication in annual water resources data report. Continue to update computer files and add historical hydrologic and geologic data to files.

Annual data release, "Water Resources Data for Iowa, 1979", was delivered April 28, 1980.

U.S. Geological Survey open-file report 80-755, "Iowa observation well network: past, present, and future", released in July 1980.

Cooperating Agency: Iowa Geological Survey

Project No.: IA 00-003

Project Title: Quality-of-Water Stations

Period of Project: Continuing since 1906

Location: Statewide, see map p. 41

Objective: To provide a national bank of water-quality data for broad federal planning and action programs and to provide data for federal management of interstate and international waters.

Progress: Water-quality data were collected, compiled, and processed for publication for six NASQAN, one benchmark, and four EPA stations. Annual data release, "Water Resources Data for Iowa, 1979", delivered April 28, 1980.

Cooperating Agencies: U.S. Geological Survey (Federal Program); U.S. Environmental Protection Agency.

Project No: IA 00-004

Project Title: Sediment Stations

Period of Project: Continuing since 1943

Project Chief: I. L. Burmeister

Location: Statewide, see map p. 41

Objective: To provide a national bank of sediment data for use in broad federal and state planning and action programs and to provide data for federal management of interstate and international waters.

Progress: Data collected, compiled, and processed for publication on schedule. Annual data release, "Water Resources Data for Iowa, 1979", delivered April 28, 1980.

Data network consists of eleven stations where daily suspended-sediment records are collected, three stations where comprehensive data are collected at a cross-section periodically (see next paragraph), and five stations where monthly suspended-sediment samples are collected.

Additional activity includes the collection of suspended-sediment samples and measurement of velocities at several points in 5 to 7 verticals in a cross-section five times per year at stations on the Missouri River at Sioux City, Iowa, Omaha, Nebraska, and Nebraska City, Nebraska. Bed-material samples are obtained at each sampling vertical also. Data obtained in this program are not published in the annual data release.

Laboratory analyses of samples collected by the Corps of Engineers, Rock Island District, and by the Illinois, Minnesota, and Missouri USGS districts are performed in the Iowa City sediment laboratory.

Cooperating Agencies: U.S. Geological Survey (Federal Program); Corps of Engineers, U.S. Army; Iowa Geological Survey.

Project No.: IA 00-007FC

Project Title: Iowa Water Use Data System

Period of Project: 1980 to

Project Chief: O. G. Lara

Location: Statewide

Objective: In general to establish a water-use system which will contain documentation of the sources of water supply, where and how the water is being used, how much is being consumed and how much is returned for later use. The inventory will include acquisition of current data, establishment of a data base, and development of techniques for continued collection, storage and retrieval of data. The system will be readily accessible to federal and state agencies, local managers, city planners, and all who are in charge of evaluating and deciding on the feasibility of water-development projects.

Progress: A report of the Iowa Study Task Force National Water Use Data System has been completed.

Cooperating Agency: Iowa Geological Survey

Project No.: IA 58-011

Project Title: Flood Profiles of Iowa
Streams

Period of Project: Continuing since 1957

Project Chief: O. G. Lara

Location: Statewide

Objective: To define profiles of at least one major flood of record and of floods of selected frequency - usually the 25- and 50- year floods - along the principal streams of Iowa.

Progress: Eleven flood profile reports have been completed as shown in figure 3 and table 1. Benchmark data at bridge crossings have been included in most of the reports. Benchmark data for the Iowa, Floyd, Skunk and Nishnabotna River basins are published separately in U.S. Geological Survey open-file reports. Reports on flood profiles in the Floyd and Nishnabotna River basins are in progress.

Completed Reports: See map in figure 3 and list in table 1.

Project No.: IA 66-016

Project Title: Flood Information at
Selected Bridge Sites

Period of Project: Continuing since 1966

Project Chief: O. G. Lara

Location: Statewide

Objective: To obtain data on small-area floods; to analyze the hydraulics of proposed bridge sites and evaluate proposed bridge sites and evaluate those already developed; to describe and document outstanding flood events not covered by other programs.

Progress: Operation of network of crest-stage gages at about 130 sites was continued.

Cooperating Agency: Iowa Department of Transportation, Highway Research Board, Highway Division.

Completed Reports: Reports on 38 bridge-site studies have been furnished to the Iowa Department of Transportation as open-file or letter type reports.

Schwob, H. H., 1968, Flood of June 7, 1967, in the Wapsinonoc River basin, Iowa: U.S. Geol. Survey open-file report, 21 p.

_____, 1970, Flood of March 3, 1970, on Old Mans Creek, Johnson County, Iowa: U.S. Geol. Survey open-file report, 9 p.

Heinitz, A. J., 1973, Flood of August 2, 1972, in the Little Maquoketa River basin, Dubuque County, Iowa: U.S. Geol. Survey open-file report, 28 p.

Lara, O. G., and Heinitz, A. J., 1976, Flood of June 27, 1975, in city of Ames, Iowa: U.S. Geol. Survey open-file report, 56 p.

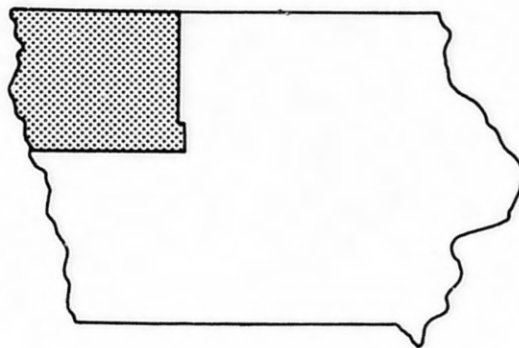
Lara, O. G., 1976, Floods in Iowa: Stage and discharge: U.S. Geol. Survey open-file report 76-757, 693 p.

Project No.: IA 76-032C

Project Title: Water Resources of
Northwest Iowa

Period of Project: 1976 - 1981

Project Chief: M. R. Burkart



Location: Sixteen counties of Northwest Iowa

Objectives: Generally to evaluate the availability and quality of the water resources of the region and to determine the effects of withdrawal and application of irrigation water on the water resources and the environment. One phase of the project has been to evaluate the hydrology of the Floyd River basin and project the methodology in this basin analysis to the entire region. The major purpose has been to evaluate the availability and quality of water from the Dakota aquifer in the study area.

Progress: Field activities have been completed and the final report is in preparation.

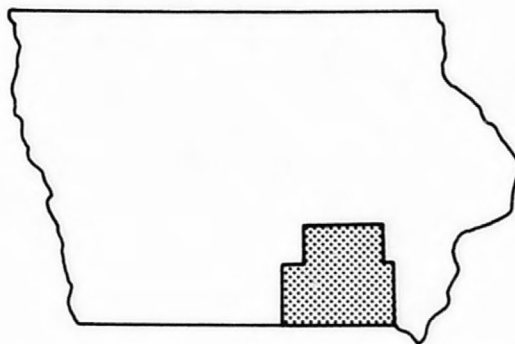
Cooperating Agency: Iowa Geological Survey

Project No.: IA 77-035

Project Title: Baseline Water Quality in
the Coal Region of Iowa

Period of Project: 1976 to

Project Chief: Mark G. Detroy



Location: Eight counties in south-central Iowa

Objective: To document the water quality of principal streams, creeks and ground water in an eight-county area of the coal region of Iowa.

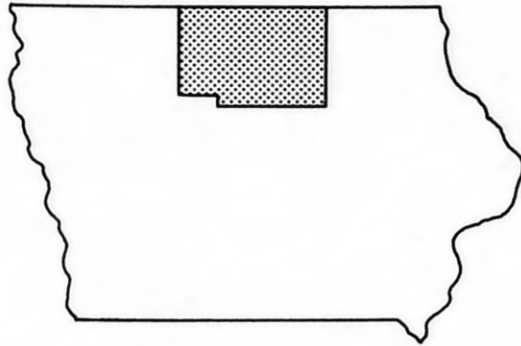
Progress: Eight to twelve sets of water quality data (including streamflow) at 9-16 sites located on the following streams: (1) Cedar Creek, (2) North Cedar Creek, (3) Whitebreast Creek and (4) English Creek. Additional synoptic data (Q, pH, K and T⁰) at approximately 250 small drainage sites within the area to identify "problem areas" was also collected. Groundwater quality data include analyses at 13 shallow wells located within the project area. Regular water quality parameters include pH, K, alkalinity, acidity, major anions and cations, iron and manganese and suspended sediment. Trace metals, bottom materials and radiochemical data are collected at selected sites at selected times.

Project No.: IA 79-037

Project Title: Water Resources of
North-Central Iowa

Period of Project: 1978 to

Project Chief: G. Gaillot



Location: Eleven counties in north-central Iowa

Objective: The purpose of this investigation is to present information on the water resources of north-central Iowa that will help solve the supply problems of water users in the region and aid planners and water managers who must consider water resources on a regional basis. The information presented includes the availability, quality, and utilization of water from all major sources and an evaluation of the future demands on the water resources.

Progress: All data have been collected and compiled, and all figures and tables have been drawn. About 25 percent of these figures have been drafted. The report writing has started and should be ready for review by early spring.

Cooperating Agency: Iowa Geological Survey

Project No.: IA 79-038F

Project Title: Northern Midwest
Regional Aquifer-
System Analysis-Iowa

Period of Project: 1978 - 1982

Project Chief: M. R. Burkart

Location: Statewide



Objectives: The regional project objectives are to evaluate the water-supply potential of the Cambrian-Ordovician aquifer(s) and to determine the aquifer response to changes in ground-water development. The objectives of the Iowa portion of the project include a comprehensive evaluation of the Cambrian-Ordovician aquifer system and numerical simulations of the aquifer system in areas of large withdrawals, such as Cedar Rapids, Davenport, and Des Moines, which can be used to predict the hydrologic effects of future stresses on the system.

Progress: Preliminary structure contour maps have been prepared for significant hydrologic units. Geologic data has been assembled in a form compatible with contouring programs. Water use data collection is complete. A storage system was developed to organize geologic and hydrologic data. A digital model is being developed to assess the regional hydrologic parameters. A test well near Green Island, Iowa is near completion. This well will allow installation of a nest of piezometers to each of the major aquifers under study.

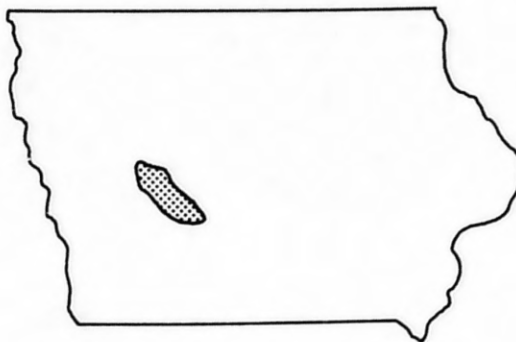
Cooperating Agency: U.S. Geological Survey (Federal Program)

Project No.: IA 79-039

Project Title: Sedimentation Study of
Lake Panorama

Period of Project: 1979 to

Project Chief: O. G. Lara



Location: Guthrie and Dallas counties

Objectives: The purpose of this study is to gain better understanding of the sediment regimen of the Middle Raccoon River Basin. The information collected in this study will be used to assess the impact of the stream runoff on the sedimentation of Lake Panorama. Ultimately this study will lead to the development of reliable techniques for restoration and management of man-made lakes.

Progress: Installation of the monitoring system has been completed and it is operational. Lake bottom cross sections have been collected. The cross sections show the present (1980) state of sedimentation and will be used to define a detailed topographic map of the reservoir.

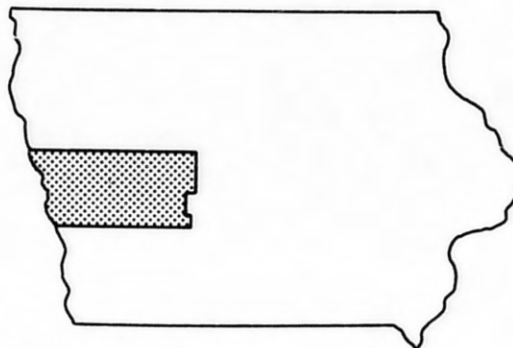
Project No.: IA 81-040

Project Title: Water Resources of West-Central Iowa

Period of Project: 1980 to

Project Chief: G. Gaillot

Location: Eight counties in west-central Iowa



Objective: The major objective of this project will be to prepare a description of the hydrologic characteristics of the Cretaceous-Quaternary system and to describe the chemical quality of water in the aquifers. Aquifer interrelationships and surface water/ground water relationships will be determined. A water budget analyses will be investigated and included if adequate data are available. Existing and potential water problems will be discussed along with ameliorating actions. Finally, data will be collected for the Cretaceous aquifer, i.e., Dakota formation. This data, combined with existing information from north-west Iowa will enable a ground water model to be assembled in a future project.

Progress: Most strip log data have been tabulated and wells that have been field located were plotted on preliminary base maps. All data that is located in U.S.G.S. and I.G.S. files is being compiled and will be used to direct drilling and data collection for the summer of 1981. A work outline has been constructed and a report outline will be completed soon.

Cooperating Agency: Iowa Geological Survey

SELECTED BIBLIOGRAPHY

The following selected reports on the water resources of Iowa were prepared for projects that have terminated and are not included in the listing of reports for current projects. This list does not include those flood profile reports as shown in Table 1.

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Anderson, D.B., and Schwob, H.H., 1970, Floods of April-May 1969 in Upper Midwestern United States: U.S. Geological Survey Open-File Report, 555 p.

Bowie, J.E., and Petri, L.R., 1969, Travel of Solutes in the lower Missouri River: U.S. Geological Survey Hydrologic Investigations Atlas HA-332.

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Casler, J.W., 1969, Availability of ground water in Wayne County, Iowa: Iowa Geological Survey Water Atlas No. 3, 33 p.

-----, 1973, Bedrock topography of South-Central Iowa: U.S. Geological Survey Miscellaneous Geologic Investigations Map I-763.

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Hale, W.E., 1955, Geology and ground-water resources of Webster County, Iowa: Iowa Geological Survey Water-Supply Bulletin No. 4, 257 p.

Hansen, R.E., 1970, Geology and ground-water resources of Linn County, Iowa: Iowa Geological Survey Water-Supply Bulletin No. 10, 66 p.

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Hansen, R.E., and Steinhilber, W.L., 1977, Geohydrology of Muscatine Island, Muscatine County, Iowa: Iowa Geological Survey Water-Supply Bulletin No. 11, 60 p.

Hershey, H.G., Wahl, K.D., and Steinhilber, W.L., 1970, Geology and ground-water resources of Cerro Gordo County, Iowa: Iowa Geological Survey Water-Supply Bulletin No. 9, 75 p.

Horick, P.J., and Steinhilber, W.L., 1972, Mississippian aquifer of Iowa: Iowa Geological Survey Miscellaneous Map Series 3.

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Lara, O.G., 1973, Floods in Iowa: Technical manual for estimating their frequency and magnitude: Iowa Natural Resources Council Bulletin No. 11, 56 p.

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-----, 1974, Flood-volume data for Iowa streams: Iowa Natural Resources Council Bulletin No. 14, 48 p.

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-----, 1979, Annual and seasonal low-flow characteristics of Iowa streams: Iowa Natural Resources Council Bulletin No. 13, 507 p.

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Myers, R.E., 1963, Floods at Des Moines, Iowa: U.S. Geological Survey Hydrologic Investigations Atlas HA-53.

Saboe, C.W., 1966, Summer base-flow recession curves for Iowa streams: U.S. Geological Survey Open-File Report, 27 p.

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Slack, L.J., 1979, Baseline water quality of Iowa's coal region: U.S. Geological Survey Open-File Report No. 79-980, 74 p.

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-----, 1972, Temporary bench marks for the Iowa River basin: U. S. Geological Survey Open-File Report, 33 p.

-----, 1972, Temporary bench marks for the Floyd River basin: U.S. Geological Survey Open-File Report, 21 p.

-----, 1974, Statistical summaries of Iowa streamflow data through September 30, 1971: U.S. Geological Survey Open-File Report, 527 p.

-----, 1976, Hydrologic Unit Map - 1974, State of Iowa.

-----, 1977, Temporary bench marks for the Skunk River basin: U.S. Geological Survey Open-File Report, 39 p.

-----, 1977, Discharge measurements at low-flow partial-record stations in Iowa: U.S. Geological Survey Data Release, 160 p.

-----, 1979, Temporary bench marks for the Nishnabotna River Basin: U.S. Geological Survey Open-File Report, 22 p.

Wahl, K.D., Ludvigson, G.L., Ryan, G.L., and Steinkampf, W.D., 1978, Water resources of East-Central Iowa: Iowa Geological Survey Water Atlas No. 6, 91 p.

Yost, I.D., 1958, Floods of June 1954 in Iowa: U.S. Geological Survey Water-Supply Paper 1370-A, p. 1-106.

TABLE 1.--U. S. GEOLOGICAL SURVEY FLOOD PROFILE REPORTS IN IOWA
(Numbers referenced to map in figure 3)

Map No.

- 1 Schwob, H.H., 1963, Cedar River basin floods, Iowa Highway Research Board Bulletin 27, 59 p.
- 2 Schwob, H.H., Meyers, R.E., 1965, The 1965 Mississippi River flood in Iowa, Open-File Report, 39 p.
- 3 Schwob, H.H., 1966, Little Sioux River basin floods, Open-File Report, 60 p.
- 4 -----, 1967, Floods on Otter Creek in Linn County, Iowa, Open-File Report, 22 p.
- 5 -----, 1968, Flood of June 7, 1967, in the Wapsinonoc Creek basin, Iowa, Open-File Report, 21 p.
- 6 -----, 1968, Flood Profile study, Squaw Creek, Linn County, Iowa, Open-File Report, 13 p.
- 7 -----, 1970, Floods in the upper Des Moines River basin, Iowa, Open-File Report, 49 p.
- 7A Heinitz, A.J., 1979, Supplement to floods in the upper Des Moines River basin, Iowa, Open-File Report 79-1486, 6 p.
- 8 Schwob, H.H., 1970, Flood Profile study, Morsan Creek, Linn County, Iowa, Open-File Report, 16 p.
- 9 -----, 1970, Flood of March 3, 1970, on Old Mans Creek, Johnson County, Iowa, Open-File Report, 9 p.
- 10 -----, 1970, Flood Profile study, Hoosier Creek, Linn County, Iowa, Open-File Report, 18 p.
- 11 -----, 1971, Floods in the Wapsinonoc River basin, Iowa, Open-File Report, 52 p.
- 12 Heinitz, A.J., 1973, Floods in the Iowa River basin upstream from Coralville Lake, Iowa, Open-File Report, 75 p.
- 13 -----, 1973, Flood of August 2, 1972, in the Little Maquoketa River basin, Dubuque County, Iowa, Open-File Report, 28 p.
- 14 -----, 1973, Floods in the Rock River basin, Iowa, Open-File Report, 74 p.
- 15 Lara, O.G., Heinitz, A.J., 1976, Flood of June 27, 1975 in city of Ames, Iowa, Open-File Report 76-728, 56 p.
- 16 Heinitz, A.J., 1977, Floods in the Big Creek basin, Linn County, Iowa, Open-File Report 77-209, 35 p.
- 17 Heinitz, A.J., Wiitala, S.W., 1978, Floods in the Skunk River basin, Iowa, Open-File Report 79-272, 80 p.
- 18 Heinitz, A.J., 1980, Floods in the Raccoon River basin, Iowa, Open-File Report 80-162, 110 p.
- 19 Heinitz, A.J., Riddle, D.E., 1981, Floods in the English River basin, Iowa, Open-File Report 81-67, 61 p.
- 20 Nishnabotna River basin, report in progress.
- 21 Floyd River basin, report in progress.

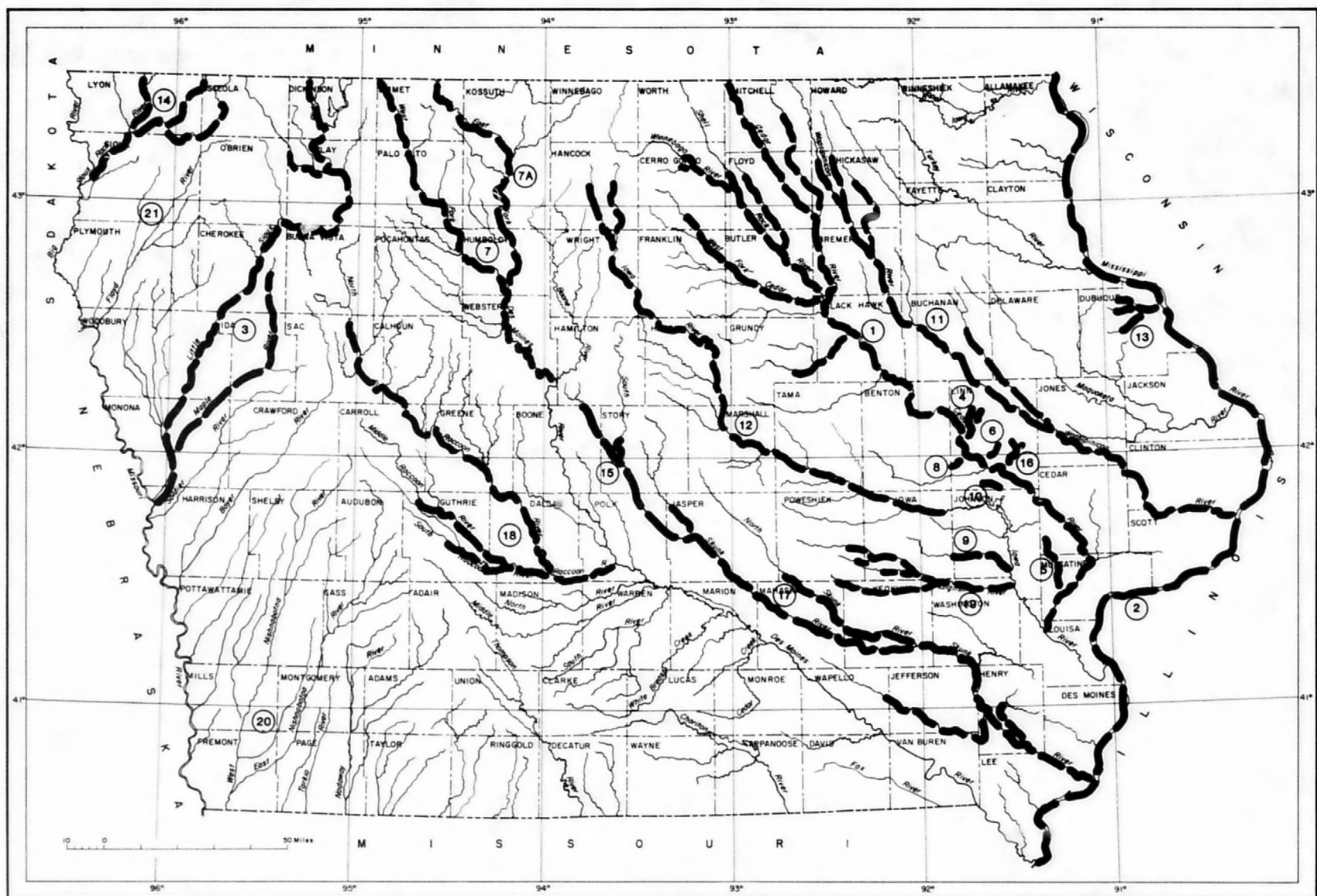


Figure 3.-U.S. Geological Survey flood profile reports in Iowa.

Listing, by counties, of flood-prone maps in Iowa

- | | | |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | ADAIR CASEY, IA | READLYN, IA REINBECK, IA SHELL ROCK, IA |
| 2 | ADAMS NONE | WATERLOO SOUTH, IA WATERLOO NORTH, IA WAVERLY, IA ZANETA, IA |
| 3 | ALLAMAKEE FERRYVILLE, WI-IA NEW ALBIN, IA PRAIRIE DU CHIEN, WI-IA WAUKON, IA WAUKON NW, IA | |
| 4 | APPANOOSE HIATTSVILLE, IA MYSTIC, IA PLANO, IA UNIONVILLE, IA | 8 BOONE BOONE E, IA BOONE WEST, IA FRASER, IA GRANGER, IA WOODWARD, IA |
| 5 | AUDUBON COON RAPIDS SOUTH, IA | 9 BREMER ALPHA, IA DENVER, IA FAIRBANK, IA FREDRICKSBURG, IA PLAINFIELD, IA READLYN, IA SHELL ROCK, IA SUMNER, IA SUMNER SW, IA WAVERLY, IA |
| 6 | BENTON BELLE PLAINE, IA BLAIRSTOWN, IA BRANDON, IA CENTERPOINT, IA CENTERPOINT NW, IA DYSART, IA EAGLE CENTER, IA ELBERON, IA FAIRFAX, IA HARTWICK, IA LADORA, IA LAPORTE CITY, IA LITTLETON, IA MARENGO, IA MIDDLE AMANA, IA NEWHALL, IA SHELLSBURG, IA VINTON, IA | 10 BUCHANAN BRANDON, IA COGGON, IA DUNDEE, IA FAIRBANK, IA |
| 7 | BLACK HAWK BRANDON, IA BUCKINGHAM, IA CEDAR FALLS, IA DENVER, IA DUNKERTON, IA EAGLE CENTER, IA FAIRBANK, IA GILBERTVILLE, IA HUDSON, IA LAPORTE CITY, IA LITTLETON, IA NEW HARTFORD, IA | 11 BUENA VISTA AURELIA, IA GALVA, IA NEWELL WEST, IA SIOUX RAPIDS, IA SUTHERLAND EAST, IA |
| | | 12 BUTLER CLARKVILLE, IA HANSELL, IA NEW HARTFORD, IA PLAINFIELD, IA SHELL ROCK, IA STOUT, IA |
| | | 13 CALHOUN FARNHAMVILLE, IA GILMORE CITY SW, IA |
| | | 14 CARROLL COON RAPIDS NORTH, IA COON RAPIDS SOUTH, IA |

Listing, by counties, of flood-prone maps in Iowa--(Continued)

- | | | |
|----|---------------------|-------------------------|
| 15 | CASS | MAY CITY, IA |
| | ANITA, IA | MILFORD, IA |
| | ATLANTIC, IA | SIOUX RAPIDS, IA |
| | GRISWOLD, IA | SPENCER, IA |
| | WIOTA, IA | SPIRIT LAKE SE, IA |
| | | SUTHERLAND EAST, IA |
| 16 | CEDAR | 22 CLAYTON |
| | ATALISSA, IA | BAGLEY, WI-IA |
| | BENNETT, IA | CASSVILLE, WI-IA |
| | CEDAR BLUFF, IA | CLAYTON, IA-WI |
| | DURANT, IA | COLESBURG, IA |
| | LOWDEN, IA | ELKADER, IA |
| | ROCHESTER, IA | GARBER, IA |
| | STANWOOD, IA | GUNDER, IA |
| | TIPTON E, IA | GUTTENBERG, WI-IA |
| | TIPTON W, IA | LITTLEPORT, IA |
| | WEST BRANCH, IA | PRAIRIE DU CHIEN, WI-IA |
| | WEST LIBERTY, IA | SAINT OLAF, IA |
| | WILTON JUNCTION, IA | TURKEY RIVER, IA-WI |
| | | VOLGA, IA |
| 17 | CERRO GORDO | 23 CLINTON |
| | FERTILE, IA | CAMANACHE, IA-IL |
| | FERTILE SE, IA | CLINTON, IL-IA |
| | GRAFTON, IA | CLINTON NW, IA-IL |
| | MANLY, IA | CORDOVA, IL-IA |
| | MASON CITY, IA | DEWITT, IA |
| | MASON CITY SE, IA | DIXON, IA |
| | NORA SPRINGS, IA | DONAHUE, IA |
| | SHEPPFIELD, IA | DUNLAP, IA |
| | | GRAND MOUND, IA |
| 18 | CHEROKEE | LOWDEN, IA |
| | AURELIA, IA | MALONE, IA |
| | CHEROKEE NORTH, IA | MCCAUSLAND, IA |
| | CHEROKEE S, IA | SAVANNA, IA-IL |
| | CLEGHORN, IA | WHEATLAND, IA |
| | GALVA, IA | |
| | PAULLINA, IA | 24 CRAWFORD |
| | PIERSON, IA | CHARTER OAK, IA |
| | QUIMBY, IA | DANBURY, IA |
| | SUTHERLAND EAST, IA | DENISON, IA |
| | WASHTA, IA | DENISON SW, IA |
| | | DOW CITY, IA |
| 19 | CHICKASAW | DUNLAP SW, IA |
| | ALPHA, IA | EARLING, IA |
| | FREDRICKSBURG, IA | UTE, IA |
| 20 | CLARKE | |
| | NONE | 25 DALLAS |
| 21 | CLAY | COMMERCE, IA |
| | DICKENS, IA | GRANGER, IA |
| | EVERLY, IA | GRIMES, IA |
| | GILLETT GROVE, IA | WAUKEE, IA |
| | HARTLEY, IA | WOODWARD, IA |
| | LAKE PARK SE, IA | |

Listing, by counties, of flood-prone maps in Iowa--(Continued)

- | | | |
|----|-------------------------|-------------------------|
| 26 | DAVIS | HOPKINTON EAST, IA |
| | ELDON, IA | MENOMINEE, IL-IA |
| | MILTON, IA | NEW VIENNA, IA |
| | OTTUMWA SOUTH, IA | PEOSTA, IA |
| | PARIS, IA | POTOSI, WI-IA |
| | SELMA, IA | SHERRILL, IA |
| | UNIONVILLE, IA | TURKEY RIVER, IA-WI |
| | | ZWINGLE, IA |
| 27 | DECATUR | |
| | LEON, IA | 32 EMMET |
| | LINEVILLE, MO-IA | ESTERVILLE, IA |
| | WOODLAND, IA | |
| 28 | DELAWARE | 33 PAYETTE |
| | COGGON, IA | ALPHA, IA |
| | COLESBURG, IA | ELGIN, IA |
| | DUNDEE, IA | FAIRBANK, IA |
| | DYERSVILLE WEST, IA | GUNDER, IA |
| | EARLVILLE, IA | SUMNER, IA |
| | GARBER, IA | VOLGA, IA |
| | HOPKINTON EAST, IA | WADENA, IA |
| | HOPKINTON WEST, IA | |
| | MANCHESTER, IA | 34 FLOYD |
| | RYAN, IA | CHARLES CITY, IA |
| | THORPE, IA | MASON CITY SE, IA |
| | | NORA SPRINGS, IA |
| | | POCKFORD, IA |
| 29 | DES MOINES | |
| | BURLINGTON, IL-IA | 35 FRANKLIN |
| | DALLAS CITY, IL-IA | HAMPTON NORTH, IA |
| | KINGSTON, IA-IL | HANSELL, IA |
| | LOMAX, IL-IA | SHEPFIELD, IA |
| | MEDIAPOLIS, IA | |
| | OAKVILLE, IA | 36 FREMONT |
| | WEST BURLINGTON, IA | RANDOLPH, IA |
| | | SHENANDOAH WEST, IA |
| | | TABOR NE, IA |
| 30 | DICKINSON | |
| | LAKE PARK, IA | 37 GREENE |
| | LAKE PARK SE, IA | COON RAPIDS NORTH, IA |
| | MAY CITY, IA | COON RAPIDS SOUTH, IA |
| | MILFORD, IA | |
| | OKOBOJI, IA | 38 GRUNDY |
| | SPIRIT LAKE SE, IA | CONRAD E, IA |
| | | CONRAD W, IA |
| 31 | DUBUQUE | LINCOLN, IA |
| | BALLTOWN, WI-IA | NEW HARTFORD, IA |
| | BERNARD, IA | REINBECK, IA |
| | CASCADE, IA | STOUT, IA |
| | CASSVILLE, WI-IA | ZANETA, IA |
| | COLESBURG, IA | |
| | DUBUQUE NORTH, IA-WI-IL | 39 GUTHRIE |
| | DUBUQUE SOUTH, IA-IL | CASEY, IA |
| | DYERSVILLE EAST, IA | COON RAPIDS SOUTH, IA |
| | FILLMORE, IA | GUTHRIE CENTER WEST, IA |
| | GALENA, IL-IA | |
| | HOLY CROSS, IA | |

Listing, by counties, of flood-prone maps in Iowa--(Continued)

- | | | |
|----|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 40 | HAMILTON FRASER, IA SHELDON CREEK, IA STANHOPE, IA STORY CITY, IA STRATFORD, IA WEBSTER CITY, IA WOOLSTOCK, IA | DEEP RIVER, IA HARTWICK, IA HOLBROOK, IA LADORA, IA MARENGO, IA MIDDLE AMANA, IA MILLERSBURG, IA NORTH ENGLISH, IA VICTOR, IA WILLIAMSBURG, IA WILLIAMSBURG NW, IA |
| 41 | HANCOCK CORWITH, IA FERTILE, IA GOODELL, IA OLAP, IA | 49 JACKSON BELLEVUE, IA-IL BERNARD, IA BLACKHAWK, IL-IA DUBUQUE SOUTH, IA-IL FILLMORE, IA GALENA, IL-IA GREEN ISLAND, IA-IL LA MOTTE, IA MENOMINEE, IL-IA SAVANNA, IA-IL ZWINGLE, IA |
| 42 | HARDIN UNION, IA | 50 JASPER COLFAX, IA MONROE, IA NEWTON, IA |
| 43 | HARRISON BEEBEETOWN, IA DUNLAP, IA DUNLAP SW, IA LOGAN, IA MISSOURI VALLEY, IA-NB PISGAH, IA WOODBINE, IA | 51 JEFFERSON ELDON, IA LIBERTYVILLE, IA |
| 44 | HENRY NONE | 52 JOHNSON AMISH, IA CEDAR BLUFF, IA HILLS, IA IOWA CITY EAST, IA IOWA CITY WEST, IA LONE TREE, IA NICHOLS, IA RIVERSIDE, IA SOLON, IA TIFFIN, IA WEST BRANCH, IA WEST LIBERTY, IA WILLIAMSTOWN, IA |
| 45 | HOWARD NONE | 53 JONES CASCADE, IA FILLMORE, IA HOPKINTON EAST, IA HOPKINTON WEST, IA STANWOOD, IA |
| 46 | HUMBOLDT CORWITH, IA EAGLE GROVE, IA GILMORE CITY, IA HUMBOLDT, IA LIVERMORE, IA RENWICK, IA ST. JOSEPH, IA UNIQUE, IA | |
| 47 | IDA BATTLE CREEK, IA CUSHING, IA DANBURY, IA GALVA, IA HOLSTEIN SW, IA IDA GROVE, IA IDA GROVE NW, IA WASHTA, IA | |
| 48 | IOWA AMISH, IA | |

Listing, by counties, of flood-prone maps in Iowa--(Continued)

- | | | |
|----|-------------------------|-------------------------|
| 54 | KEOKUK | LETTS, IA |
| | DEEP RIVER, IA | LONE TREE, IA |
| | DELTA, IA | MEDIAPOLIS, IA |
| | GIBSON, IA | NICHOLS, IA |
| | HARPER, IA | OAKVILLE, IA |
| | HOLBROOK, IA | TOOLESBORO, IA-IL |
| | KEOTA, IA | WAPELLO, IA |
| | KINROSS, IA | |
| | MILLERSBURG, IA | 59 LUCAS |
| | NORTH ENGLISH, IA | RUSSELL, IA |
| | ROSE HILL, IA | |
| | SIGOURNEY, IA | 60 LYON |
| | SOUTH ENGLISH, IA | ASHTON, IA |
| | WHAT CHEER, IA | DOON, IA |
| | | ROCK RAPIDS, IA |
| 55 | KOSSUTH | |
| | CORWITH, IA | 61 MADISON |
| | ST. JOSEPH, IA | COMMERCE, IA |
| | | WAUKEE, IA |
| 56 | LEE | |
| | ARGYLE, IA-MO | 62 MAHASKA |
| | CROTON, IA-MO | EDDYVILLE, IA |
| | DALLAS CITY, IL-IA | GIBSON, IA |
| | FARMINGTON, IA | KIRKVILLE, IA |
| | FORT MADISON, IA-IL | OSKALOOSA, IA |
| | HAMILTON, IL-IA | ROSE HILL, IA |
| | KEOKUK, IA-MO-IL | UNIVERSITY PARK, IA |
| | LOMAX, IL-IA | |
| | NAUVOO, IA-IL | 63 MARION |
| | NIOTA, IL-IA | MONROE, IA |
| | WAYLAND, MO-IA | |
| 57 | LINN | 64 MARSHALL |
| | ALVORD, IA | CONRAD E, IA |
| | BERTRAM, IA | CONRAD W, IA |
| | CEDAR BLUFF, IA | LE GRAND, IA |
| | CEDAR RAPIDS NORTH, IA | MARSHALLTOWN, IA |
| | CEDAR RAPIDS SOUTH, IA | UNION, IA |
| | CENTERPOINT, IA | |
| | CENTRAL CITY, IA | 65 MILLS |
| | COGGON, IA | COUNCIL BLUFFS S, IA-NB |
| | FAIRFAX, IA | GLENWOOD, IA |
| | HOPKINTON WEST, IA | MALVERN, IA |
| | LAFAYETTE, IA | OMAHA SOUTH, IA-NE |
| | MARION, IA | TABOR NE, IA |
| | MT VERNON, IA | |
| | RYAN, IA | 66 MITCHELL |
| | SHELLSBURG, IA | GRAPTON, IA |
| | OLON, IA | NORA SPRINGS, IA |
| 58 | LOUISA | |
| | BLANCHARD ISLAND, IL-IA | 67 MONONA |
| | COLUMBUS JCT, IA | CASTANA, IA |
| | COTTER, IA | DANBURY, IA |
| | JOY, IL-IA | DUNLAP SW, IA |
| | | MAPLETON, IA |
| | | MAPLETON SE, IA |

Listing, by counties, of flood-prone maps in Iowa--(Continued)

- | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>67 MONONA MOORHEAD, IA MOORHEAD NW, IA PISGAH, IA SMITHLAND, IA UTE, IA</p> <p>68 MONROE EDDYVILLE, IA</p> <p>69 MONTGOMERY COBURG, IA GRISWOLD, IA RED OAK NORTH, IA RED OAK SOUTH, IA</p> <p>70 MUSCATINE ATALISSA, IA BLANCHARD ISLAND, IL-IA COLUMBUS JCT, IA DURANT, IA ILLINOIS CITY, IA-IL LETTS, IA MONTPELIER, IL-IA MUSCATINE, IA-IL MUSCATINE NW, IA NICHOLS, IA WALCOTT, IA WEST LIBERTY, IA WILTON JUNCTION, IA</p> <p>71 O'BRIEN ASHTON, IA HARTLEY, IA MAY CITY, IA MELVIN, IA PAULLINA, IA SHELDON, IA SUTHERLAND EAST, IA</p> <p>72 OSCEOLA ASHTON, IA MAY CITY, IA MELVIN, IA OCHEYEDAN, IA</p> <p>73 PAGE CLARINDA NORTH, IA COBURG, IA RED OAK SOUTH, IA SHENANDOAH EAST, IA SHENANDOAH WEST, IA</p> <p>74 PALO ALTO NONE</p> | <p>75 PLYMOUTH HAWARDEN SOUTH, IA-SD HINTON, IA JAMES, IA KINGSLEY, IA KINGSLEY NW, IA LE MARS, IA MILLNERVILLE, IA PIERSON, IA REMSEN, IA UNION CENTER, IA</p> <p>76 POCAHONTAS GILMORE CITY, IA GILMORE CITY SW, IA PALMER, IA</p> <p>77 POLK COMMERCE, IA DES MOINES NE, IA DES MOINES NE, IA DES MOINES NW, IA DES MOINES NW, IA DES MOINES SE, IA DES MOINES SW, IA GRANGER, IA GRIMES, IA</p> <p>78 POTTAWATTAMIE AVOCA, IA AVOCA NW, IA BEEBEETOWN, IA COUNCIL BLUFFS N, IA-NB COUNCIL BLUFFS S, IA-NB GRISWOLD, IA HONEY CREEK, IA MISSOURI VALLEY, IA-NB OAKLAND, IA OMAHA NORTH, IA-NE OMAHA SOUTH, IA-NE</p> <p>79 POWESHIEK DEEP RIVER, IA HARTWICK, IA VICTOR, IA</p> <p>80 RINGGOLD NONE</p> <p>81 SAC GALVA, IA IDA GROVE NW, IA NEWELL WEST, IA</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Listing, by counties, of flood-prone maps in Iowa--(Continued)

| | | |
|----|-----------------------|-------------------|
| 82 | SCOTT | LE GRAND, IA |
| | BENNETT, IA | LINCOLN, IA |
| | CORDOVA, IL-IA | REINBECK, IA |
| | DAVENPORT EAST, IA-IL | TRAER, IA |
| | DAVENPORT W, IA | |
| | DEWITT, IA | 87 TAYLOR |
| | DIXON, IA | NONE |
| | DONAHUE, IA | |
| | DURANT, IA | 88 UNION |
| | ELDRIDGE, IA | NONE |
| | GRAND MOUND, IA | |
| | LOWDEN, IA | 89 VAN BUREN |
| | MALONE, IA | BONAPARTE, IA |
| | MCCAUSLAND, IA | CANTRIL, IA |
| | MILAN, IL-IA | CROTON, IA-MO |
| | MONTPELIER, IL-IA | DOUDS, IA |
| | PORT BYRON, IL-IA | ELDON, IA |
| | SILVIS, IA-IL | FARMINGTON, IA |
| | WALCOTT, IA | KEOSAUQUA, IA |
| | WHEATLAND, IA | LIBERTYVILLE, IA |
| | | MILTON, IA |
| | | SELMA, IA |
| 83 | SHELBY | |
| | DUNLAP, IA | |
| | EARLING, IA | 90 WAPELLO |
| | | AGENCY, IA |
| 84 | SIOUX | CHILLICOTHE, IA |
| | ALVORD, IA | EDDYVILLE, IA |
| | ASHTON, IA | ELDON, IA |
| | DOON, IA | FARSON, IA |
| | FAIRVIEW, IA-SD | KIRKVILLE, IA |
| | HAWARDEN NORTH, IA-SD | OTTUMWA NORTH, IA |
| | HAWARDEN SOUTH, IA-SD | OTTUMWA SOUTH, IA |
| | HOSPERS, IA | |
| | LE MARS, IA | 91 WARREN |
| | MATLOCK, IA | COMMERCE, IA |
| | ORANGE CITY, IA | DES MOINES SE, IA |
| | ROCK VALLEY, IA | DES MOINES SW, IA |
| | SHELDON, IA | HARTFORD, IA |
| | SIOUX CENTER, IA | MILO, IA |
| | | |
| 85 | STORY | 92 WASHINGTON |
| | STORY CITY, IA | AINSWORTH, IA |
| | | AMISH, IA |
| 86 | TAMA | COTTER, IA |
| | BELLE PLAINE, IA | HILLS, IA |
| | BUCKINGHAM, IA | HOLBROOK, IA |
| | CHELSEA, IA | KALONA, IA |
| | CONRAD E, IA | KEOTA, IA |
| | DYSART, IA | KINROSS, IA |
| | EAGLE CENTER, IA | LONE TREE, IA |
| | ELBERON, IA | RIVERSIDE, IA |
| | GARWIN, IA | WASHINGTON, IA |
| | GLADBROOK, IA | WELLMAN, IA |
| | GLADBROOK NE, IA | WILLIAMSTOWN, IA |
| | HARTWICK, IA | |

Listing, by counties, of flood-prone maps in Iowa--(Continued)

- 93 WAYNE NORTHWOOD, IA
 LINEVILLE, MO-IA
 PLANO, IA
 RUSSELL, IA
 WOODLAND, IA
- 94 WEBSTER
 CLARE, IA
 EAGLE GROVE, IA
 EAGLE GROVE SW, IA
 EVANSTON, IA
 FARNHAMVILLE, IA
 FORT DODGE NORTH, IA
 FORT DODGE SOUTH, IA
 FRASER, IA
 GILMORE CITY, IA
 GILMORE CITY SW, IA
 HUMBOLDT, IA
 LEHIGH, IA
 MOORLAND, IA
 STRATFORD, IA
 UNIQUE, IA
- 95 WINNEBAGO
 FERTILE, IA
- 96 WINNESHIEK
 NONE
- 97 WOODBURY
 CLIMBING HILL, IA
 CORRECTIONVILLE, IA
 CORRECTIONVILLE SE, IA
 CUSHING, IA
 DANBURY, IA
 HOLSTEIN SW, IA
 JAMES, IA
 KINGSLEY, IA
 LAWTON, IA
 MAPLETON, IA
 MOVILLE, IA
 OTO, IA
 PIERSON, IA
 SERGEANT BLUFF, IA
 SIOUX CITY S, NB-IA-SD
 SMITHLAND, IA
 UNION CENTER, IA
 WASHTA, IA
- 98 WORTH
 FERTILE, IA
 FERTILE NE, IA
 FERTILE SE, IA
 GRAFTON, IA
 MANLY, IA
- 99 WRIGHT
 BELMOND, IA
 CORNELIA, IA
 CORWITH, IA
 DOWS WEST, IA
 EAGLE GROVE, IA
 EAGLE GROVE SW, IA
 GOODELL, IA
 OLAF, IA
 RENWICK, IA
 SHELDON CREEK, IA
 WOOLSTOCK, IA

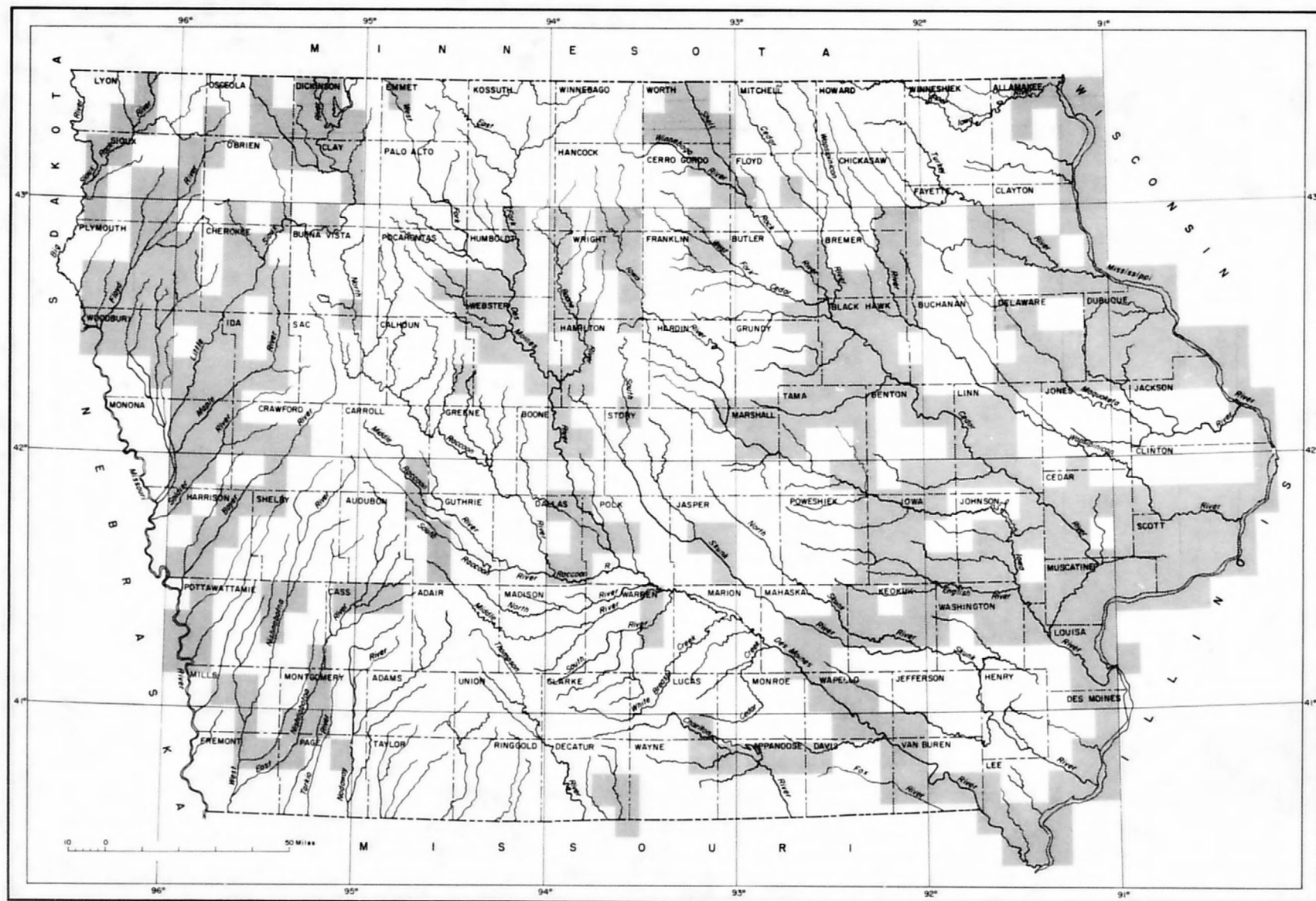


Figure 4.-Availability of flood-prone maps.

Table 2.--DAILY DISCHARGE & WATER QUALITY STATIONS OPERATED BY IOWA DISTRICT - 1981 WATER YEAR

| STATION NO. | STATION NAME | COUNTY NO. | DRAINAGE AREA | CLASSIFICATION | DIG | EQUIPMENT A35 | MAN | OTHER | COOP-ERATOR | DATUM (NGVD) |
|------------------------------|---------------------------------|------------|---------------|----------------|-----|---------------|-----|---------|-------------|--------------|
| UPPER IOWA RIVER BASIN | | | | | | | | | | |
| 05387500 | UPPER IOWA R AT DECORAH, IA | 96 | 511. | BC3 | X | X | | RT | BC | 850.00 |
| 05388250 | UPPER IOWA R NR DORCHESTER, IA | 3 | 770. | C57 | X | X | X | TEL TKS | C | 660.00 |
| MISSISSIPPI RIVER MAIN STEM | | | | | | | | | | |
| 05389500 | MISSISSIPPI R AT MCGREGOR, IA | 22 | 67500. | C123P | X | X | | TKS | BC | 605.30 |
| TURKEY RIVER BASIN | | | | | | | | | | |
| 05411600 | TURKEY R AT SPILLVILLE, IA | 96 | 177. | H | X | X | | | FG | 1034.77 |
| 05412500 | TURKEY R AT GARBER, IA | 22 | 1545. | BC3P | X | X | X | | CFG | 634.46 |
| LITTLE MAQUOKETA RIVER BASIN | | | | | | | | | | |
| 05414500 | L MAQUOKETA R NR DURANGO, IA | 31 | 130. | C2 | X | X | | | C | 612.03 |
| MAQUOKETA RIVER BASIN | | | | | | | | | | |
| 05416450 | NF MAQUOKETA R AT FULTON, IA | 49 | 516. | H | X | X | X | | FG | 666.19 |
| 05418500 | MAQUOKETA R NR MAQUOKETA, IA | 49 | 1553. | C25H | X | X | | DAR TKS | CFG | 626.52 |
| MISSISSIPPI RIVER MAIN STEM | | | | | | | | | | |
| 05420500 | MISSISSIPPI R AT CLINTON, IA | 23 | 85600. | C123P | X | X | X | NAS | BCFG | 562.68 |
| WAPSIPINICON RIVER BASIN | | | | | | | | | | |
| 05420560 | WAPSIPINICON R NR ELMA, IOWA | 45 | 95.2 | H | X | X | | | FG | 1130.05 |
| 05421000 | WAPSIPINICON R AT INDEPENDENCE | 10 | 1048. | H | X | X | | DAR | FG | 882.85 |
| 05422000 | WAPSIPINICON R NR DEWITT, IA | 23 | 2330. | C13P | X | X | X | S | CFG | 598.81 |
| CROW CREEK BASIN | | | | | | | | | | |
| 05422420 | CROW C AT ELDRIDGE, IA | 82 | 2.20 | C7 | X | X | X | P | C | 741.22 |
| 05422450 | CROW C AT MT JOY, IA | 82 | 6.90 | C7 | X | X | X | P | C | 695.57 |
| 05422470 | CROW C AT BETTENDORF, IA | 82 | 17.8 | C57 | X | X | X | P TKS | C | 576.23 |
| PINE CREEK BASIN | | | | | | | | | | |
| 05448150 | PINE C NR MUSCATINE, IA | 70 | 38.9 | H | X | | X | | B | 551.84 |
| IOWA RIVER BASIN | | | | | | | | | | |
| 05449000 | EB IOWA R NR KLENME, IA | 41 | 133. | H | X | X | | | FG | 1179.33 |
| 05449500 | IOWA R NR ROMAN, IA | 99 | 429. | H | X | | | | FG | 1143.35 |
| 05451500 | IOWA R AT MARSHALLTOWN, IA | 64 | 1564. | C34H | X | X | X | REM | FGK | 853.10 |
| 05451700 | TIMBER C NR MARSHALLTOWN, IA | 64 | 118. | C2 | X | | | | C | 849.44 |
| 05451900 | RICHLAND C NEAR HAVEN, IA | 86 | 56.1 | C2 | X | X | X | | C | 798.69 |
| 05452000 | SALT C NR ELBERON, IA | 86 | 201. | C2 | X | | | | C | 781.58 |
| 05452200 | WALNUT C NR HARTWICK, IA | 79 | 70.9 | C2 | X | X | X | | C | 786.59 |
| 05453000 | BIG BEAR C AT LADORA, IA | 48 | 189. | C2 | X | X | | | C | 754.94 |
| 05453100 | IOWA RIVER AT MARENGO, IA | 48 | 2794. | C23P | X | X | X | RAD | C | 720.52 |
| 05453510 | CORALVILLE LK NR CORALVILLE, IA | 52 | 3115. | C2 | | | | REM C | C | 000.00 |
| 05454000 | RAPID C NR IOWA CITY, IA | 52 | 25.3 | C3H | X | X | | | FGK | 673.72 |
| 05454300 | CLEAR C NR CORALVILLE, IA | 52 | 98.1 | C2 | X | X | | RAD | C | 648.43 |
| 05454500 | IOWA R AT IOWA CITY, IA | 52 | 3271. | C23SR | X | X | | RAD TKS | FGK | 617.27 |
| 05455000 | RALSTON C AT IOWA CITY, IA | 52 | 3.01 | C57H | X | X | | | FGK | 663.27 |
| 05455010 | S BR RALSTON C AT IOWA CITY, IA | 52 | 2.94 | C7H | X | X | | | FGK | 678.03 |
| 05455500 | ENGLISH R AT KALONA, IA | 92 | 573. | C23 | X | X | | RAD | C | 633.45 |
| 05455700 | IOWA R NR LONE TREE, IA | 58 | 4293. | C23R | X | X | | RAD | C | 588.16 |
| 05457700 | CEDAR R AT CHARLES CITY, IA | 34 | 1054. | C3H | X | X | | BDT | FGK | 973.02 |
| 05458000 | L CEDAR R NR IONIA, IA | 19 | 306. | C3H | X | X | | BDT | BC | 973.35 |
| 05458500 | CEDAR R AT JAMESVILLE, IA | 9 | 1661. | C3H | X | | | TEL | BC | 868.26 |

DAILY DISCHARGE & WATER QUALITY STATIONS OPERATED BY IOWA DISTRICT - 1981 WATER YEAR (Continued)

| STATION NO. | STATION NAME | COUNTY NO. | DRAINAGE AREA | CLASSIFICATION | EQUIPMENT DIG | A35 | MAN | OTHER | COOP-ERATOR | DATUM (NGVD) |
|-------------------------------|-----------------------------------|------------|---------------|----------------|---------------|-----|-----|-------|-------------|--------------|
| IOWA RIVER BASIN -- CONTINUED | | | | | | | | | | |
| 05458900 | WF CEDAR R AT FINCHFORD, IA | 7 | 846. | C3H | X | X | | TEL | BC | 867.15 |
| 05459000 | SHELL ROCK R NR NORTHWOOD, IA | 98 | 300. | C3 | X | X | | | C | 1176.48 |
| 05459500 | WINNEBAGO R AT MASON CITY, IA | 17 | 526. | H | X | X | | | FG | 1069.59 |
| 05460000 | CLEAR LK AT CLEAR LAKE, IA | 17 | 22.6 | C1 | | X | | L | FK | 1222.24 |
| 05462000 | SHELL ROCK R AT SHELL ROCK, IA | 12 | 1746. | C3H | X | X | | TEL | FG | 885.34 |
| 05463000 | BEAVER C AT NEW HARTFORD, IA | 12 | 347. | C3 | X | | | BDT | C | 882.44 |
| 05463500 | BLACK HAWK C AT HUDSON, IA | 7 | 303. | C3H | X | X | | TEL | FGK | 865.03 |
| 05464000 | CEDAR R AT WATERLOO, IA | 7 | 5146. | C134P | X | X | | TEL | CFK | 824.14 |
| 05464020 | CEDAR R NR GILBERTVILLE, IA | 7 | 5234. | C5 | | | | EPA | E | --- |
| 05464137 | FOURHILE C NR TRAER, IA | 86 | 19.5 | C7H | X | | | | FQ | 905.87 |
| 05464500 | CEDAR R AT CEDAR RAPIDS, IA | 57 | 6510. | C134H | X | X | | BDT | FGM | 700.47 |
| 05464640 | PRAIRIE C AT FAIRFAX, IA | 57 | 178. | C3H | X | X | X | | FM | 737.00 |
| 05464760 | CEDAR R NR BERTRAM, IA | 57 | 6955. | C5 | | | | EPA | E | --- |
| 05465000 | CEDAR R NR CONESVILLE, IA | 70 | 7785. | C3P | X | X | | RAD | C | 581.95 |
| 05465500 | IOWA R AT WAPELLO, IA | 58 | 12499. | C123R | X | X | | BDT | SMAS BC | 538.98 |
| SKUNK RIVER BASIN | | | | | | | | | | |
| 05470000 | S SKUNK R NR AMES, IA | 85 | 315. | H | X | X | | BDT | FG | 893.61 |
| 05470500 | SQUAM C AT AMES, IA | 85 | 204. | C3 | X | X | X | FWM | FJ | 881.00 |
| 05471500 | S SKUNK R NR OSKALOOSA, IA | 62 | 1635. | C3H | X | X | | DAR | BC | 685.50 |
| 05472500 | N SKUNK R NR SIGOURNEY, IA | 54 | 730. | C3H | X | X | | DAR | FG | 651.53 |
| 05473400 | CEDAR C NR OAKLAND MILLS, IA | 44 | 522. | C3H | X | X | X | | FG | 565.07 |
| 05474000 | SKUNK R AT AUGUSTA, IA | 29 | 4303. | C13P | X | X | | DAR | SNAS BCFG | 521.24 |
| MISSISSIPPI RIVER MAIN STEM | | | | | | | | | | |
| 05474500 | MISSISSIPPI R AT KEOKUK, IA | 56 | 119000. | C126P | | X | | NAS | BFK | 477.41 |
| DES MOINES RIVER BASIN | | | | | | | | | | |
| 05476500 | DES MOINES R AT ESTHERVILLE IA | 32 | 1372. | H | X | | | | B | 1247.55 |
| 05476750 | DES MOINES R AT HUMBOLDT, IA | 46 | 2256. | C3 | X | X | X | | C | 1053.54 |
| 05479000 | EF DES MOINES R AT DAKOTA CTY IA | 46 | 1308. | C3 | X | X | | BDT | C | 1038.71 |
| 05480000 | LIZARD C NR CLARE, IA | 94 | 257. | C3 | X | X | | | C | 1079.30 |
| 05480500 | DES MOINES R AT FORT DODGE, IA | 94 | 4190. | C123P | X | | | RAD | PTCL CFP | 969.38 |
| 05481000 | BOONE R NR WEBSTER CITY, IA | 40 | 844. | C3 | X | | | RAD | C | 989.57 |
| 05481300 | DES MOINES R NR STRATFORD, IA | 94 | 5452. | C2P | X | X | | RAD P | C | 894.00 |
| 05481605 | BIG C PUMP STA NR POLK CITY, IA | 77 | 94.3 | C2 | X | | X | RAD G | C | 800.00 |
| 05481630 | SAYLORVILLE LK NR SAYLORVILLE, IA | 77 | 5823. | C2 | X | X | | RAD | C | 790.00 |
| 05481650 | DES MOINES R NR SAYLORVILLE, IA | 77 | 5841. | C25R | X | X | X | RAD | TKS FG | 787.42 |
| 05481950 | BEAVER C NR GRIMES, IA | 77 | 358. | C2 | X | X | X | RAD | C | 806.98 |
| 05482170 | BIG CEDAR C NR VARINA, IA | 76 | 80.0 | H | X | X | | | FG | 1225.12 |
| 05482300 | N RACCOON R NR SAC CITY, IA | 81 | 713. | H | X | X | X | | FG | 1144.60 |
| 05482315 | BLACKHAWK LK AT LAKE VIEW, IA | 81 | 23.3 | C2 | | X | | L | FK | 1218.50 |
| 05482500 | N RACCOON R NR JEFFERSON, IA | 37 | 1619. | C3 | X | X | X | BDT | C | 967.09 |
| 05483000 | EF HARDIN C NR CHURDAN, IA | 37 | 24.0 | H | X | X | | | FG | 1050.90 |
| 05483450 | MIDDLE RACCOON R NR BAYARD, IA | 39 | 375. | C257 | X | | X | TEL | TKS FS | 1040.00 |
| 05483470 | LAKE PANORAMA NR PANORA, IA | 39 | 433. | C257 | X | | X | TEL | SL FS | --- |
| 05483600 | M RACCOON R AT PANORA, IA | 39 | 440. | C257 | X | X | | TEL | TKS FGS | 91.20 |
| 05484000 | S RACCOON R AT REDFIELD, IA | 25 | 988. | C3 | X | X | X | BDT | C | 696.43 |
| 05484500 | RACCOON R AT VAN METER, IA | 25 | 3441. | C123P | X | X | X | RAD | FGK | 841.16 |
| 05484800 | WALNUT C AT DES MOINES, IA | 77 | 80.9 | C3H | X | X | X | | DF | 801.04 |
| 05485500 | DES MOINES R BL RAC R AT DSM, IA | 77 | 9879. | C234R | X | X | X | RAD | CDFG | 762.52 |
| 05485520 | DES MOINES R BL DES MOINES, IA | 77 | 9901. | CSR | | | | EPA | E | --- |
| 05485640 | FOURHILE C AT DES MOINES, IA | 77 | 92.7 | C3H | X | X | X | | DF | 795.87 |

DAILY DISCHARGE & WATER QUALITY STATIONS OPERATED BY IOWA DISTRICT - 1981 WATER YEAR (Continued)

| STATION NO. | STATION NAME | COUNTY NO. | DRAINAGE AREA | CLASSIFICATION | EQUIPMENT DIG | A35 | MAN | OTHER | COOP-ERATOR | DATUM (NGVD) |
|-------------------------------------|----------------------------------|------------|---------------|----------------|---------------|-----|-----|---------|-------------|--------------|
| DES MOINES RIVER BASIN -- CONTINUED | | | | | | | | | | |
| 05486000 | NORTH R NR NORMAL, IA | 91 | 349. | C2H | X | X | | RAD | CF | 788.45 |
| 05486490 | MIDDLE R NR INDIANOLA, IA | 91 | 503. | C2H | X | X | X | RAD | CF | 776.15 |
| 05487470 | SOUTH R NR ACKWORTH, IA | 91 | 460. | C2 | X | X | X | RAD | C | 769.97 |
| 05487980 | WHITE BREAST C NR DALLAS, IA | 63 | 342. | C2 | X | X | | RAD | C | 759.12 |
| 05488100 | LK RED ROCK NR PELLA, IA | 63 | 12323. | C2 | | X | X | RAD C | C | 0000.00 |
| 05488500 | DES MOINES R NR TRACY, IA | 62 | 12479. | C23R | X | | | RAD | C | 670.91 |
| 05489000 | CEDAR C NR BUSSEY, IA | 63 | 374. | C2 | X | X | X | RAD | C | 682.15 |
| 05489090 | S COAL CR NR BUSSEY, IA | 62 | 12.9 | H | X | | X | | B | 671.67 |
| 05489500 | DES MOINES R AT OTTUMWA, IA | 90 | 13374. | C236R | X | X | | RAD | C | 622.00 |
| 05490500 | DES MOINES R AT KEOSAUQUA, IA | 89 | 14038. | C123R | X | | | DAR | BC | 557.36 |
| BIG SIOUX RIVER BASIN | | | | | | | | | | |
| 06483500 | ROCK R NR ROCK VALLEY, IA | 84 | 1592. | C23P | X | X | X | TEL | C | 1222.54 |
| MISSOURI RIVER MAIN STEM | | | | | | | | | | |
| 06486000 | MISSOURI R AT SIOUX CITY, IA | 97 | 314600. | C125R | X | X | X | TEL NAS | BC | 1056.98 |
| FLOYD RIVER BASIN | | | | | | | | | | |
| 06600100 | FLOYD R AT ALTON, IA | 84 | 265. | C3 | X | X | | TEL | C | 1269.55 |
| 06600300 | WB FLOYD R NR STRUBLE, IA | 84 | 181. | C3 | X | X | X | | C | 1239.40 |
| 06600500 | FLOYD R AT JAMES, IA | 75 | 882. | C23H | X | X | X | TEL | CFK | 1092.59 |
| MISSOURI RIVER MAIN STEM | | | | | | | | | | |
| 06601200 | MISSOURI R AT DECATUR, NB | 11 | 316160. | C25R | | X | | G EPA | CE | 1030.00 |
| MONONA-HARRISON DITCH BASIN | | | | | | | | | | |
| 06602020 | WEST FORK DITCH AT HORNICK, IA | 97 | 403. | C3 | X | X | X | | C | 1045.82 |
| 06602400 | MONONA-HARRISON D NR TURIN, IA | 67 | 900. | C3 | X | X | X | DAR | C | 1015.00 |
| LITTLE SIOUX RIVER BASIN | | | | | | | | | | |
| 06605000 | OCHEYEDAN R NR SPENCER, IA | 21 | 426. | H | X | X | X | | FG | 1311.66 |
| 06605850 | L SIOUX R AT LINN GROVE, IA | 11 | 1548. | C3 | X | X | X | TEL | C | 1223.60 |
| 06606600 | L SIOUX R AT CORRECTIONVILLE, IA | 97 | 2500. | H | X | X | X | DAR | FG | 1096.49 |
| 06607200 | MAPLE R AT MAPLETON, IA | 67 | 669. | C3 | X | X | X | DAR | C | 1085.86 |
| 06607500 | L SIOUX R NR TURIN, IA | 67 | 3526. | C3H | X | X | X | DAR | CFG | 1019.85 |
| SOLDIER RIVER BASIN | | | | | | | | | | |
| 06608500 | SOLDIER R AT PISGAH, IA | 43 | 407. | C3H | X | X | X | DAR | CFG | 1036.53 |
| BOYER RIVER BASIN | | | | | | | | | | |
| 06609500 | BOYER R AT LOGAN, IA | 43 | 871. | C3H | X | X | X | DAR | CFG | 1009.38 |
| MISSOURI RIVER MAIN STEM | | | | | | | | | | |
| 06610000 | MISSOURI R AT OMAHA, NB | 28 | 322800. | C125R | X | X | X | DAR NAS | BC | 958.24 |
| 06807000 | MISSOURI R AT NEBRASKA CITY, NB | 66 | 410000. | C12R | X | X | X | DAR | BC | 905.36 |
| NISHNABOTNA RIVER BASIN | | | | | | | | | | |
| 06807320 | W NISHNABOTNA R AT HARLAN, IA | 83 | 316. | CSH | X | X | X | | FR | 1162.89 |
| 06807410 | W NISHNABOTNA R AT HAMCOCK, IA | 78 | 609. | C3H | X | X | X | | CF | 1085.83 |
| 06808500 | W NISHNABOTNA R AT RANDOLPH, IA | 36 | 1326. | C3 | X | X | X | DAR | C | 932.99 |
| 06809210 | E NISHNABOTNA R NR ATLANTIC, IA | 15 | 436. | C3 | X | X | X | | C | 1105.83 |
| 06809500 | E NISHNABOTNA R AT RED OAK, IA | 69 | 894. | C3H | X | X | X | DAR | CFG | 1005.45 |
| 06810000 | NISHNABOTNA R AB HAMBURG, IA | 36 | 2806. | C3P | X | X | | DAR | C | 894.17 |
| TARKIO RIVER BASIN | | | | | | | | | | |
| 06811840 | TARKIO R AT STANTON, IA | 69 | 49.3 | H | X | X | | | FG | 1104.67 |

DAILY DISCHARGE & WATER QUALITY STATIONS OPERATED BY IOWA DISTRICT - 1981 WATER YEAR (Continued)

| STATION NO. | STATION NAME | COUNTY NO. | DRAINAGE AREA | CLASSIFICATION | EQUIPMENT DIG | A35 | MAN | OTHER | COOPERATOR | DATUM (NGVD) |
|---------------------------------|-----------------------------------|------------|---------------|----------------|---------------|-----|-----|-------|------------|--------------|
| MISSOURI RIVER MAIN STEM | | | | | | | | | | |
| 06813500 | MISSOURI R AT RULO, NB | 74 | 414900. | C123R | X | X | X | DAR | C | 837.23 |
| NODAWAY RIVER BASIN | | | | | | | | | | |
| 06817000 | NODAWAY R AT CLARINDA, IA | 73 | 762. | C35 | X | X | X | TKS | C | 960.36 |
| PLATTE RIVER BASIN | | | | | | | | | | |
| 06818750 | PLATTE R NR DIAGONAL, IA | 80 | 217. | H | X | X | X | | FG | 1095.27 |
| 06819190 | EF 102 R NR BEDFORD, IA | 87 | 92.1 | H | X | X | X | | FG | 1057.51 |
| GRAND RIVER BASIN | | | | | | | | | | |
| 06897950 | ELK C NR DECATUR CITY, IA | 27 | 52.5 | BC5H | X | X | X | | B | 934.70 |
| 06898000 | THOMPSON R AT DAVIS CITY, IA | 27 | 701. | C3P | X | X | X | DAR | BC | 874.04 |
| 06898400 | WELDON R NR LEON, IA | 27 | 104. | H | X | X | X | | FG | 906.26 |
| CHARITON RIVER BASIN | | | | | | | | | | |
| 06903400 | CHARITON R NR CHARITON, IA | 59 | 182. | C2 | X | X | X | | C | 917.96 |
| 06903700 | SF CHARITON R NR PROMISE CITY, IA | 93 | 168. | C2 | X | X | X | | C | 913.70 |
| 06903880 | RATHBUN LK NR RATHBUN, IA | 4 | 549. | C2 | | X | | | C | 0000.00 |
| 06903900 | CHARITON R NR RATHBUN, IA | 4 | 549. | C2R | X | X | X | TEL | C | 847.92 |
| 06904010 | CHARITON R NR MOULTON, IA | 4 | -- | C2R | X | | X | DAR P | C | 800.00 |

EXPLANATION OF SYMBOLS

COOPERATOR

B 001A FEDERAL PROGRAM (REG)
 C C401 CORPS OF ENGINEERS (STREAMGAGING)
 D IA11 CITY OF DES MOINES
 E C368 ENVIRONMENTAL PROTECTION AGENCY
 F 002A FEDERAL (COOP)
 G IA04 IOWA GEOLOGICAL SURVEY
 J IA02 IOWA STATE UNIVERSITY
 K IA19 INST. OF HYDRAULIC RESEARCH, SUI
 M IA06 CITY OF CEDAR RAPIDS
 P IA07 CITY OF FORT DODGE
 Q IA22 DEPT. OF AGRICULTURAL ENGINEERING, ISU
 R IA21 CITY OF HARLAN
 S IA25 ENGINEERING RESEARCH INSTITUTE, ISU

CLASSIFICATION

B BENCHMARK OR LONG-TERM-TREND STATION
 C CURRENT PURPOSE
 1 ACCOUNTING
 2 OPERATION
 3 FORECASTING
 4 DISPOSAL
 5 WATER QUALITY
 6 COMPACT OR LEGAL
 7 RESEARCH OR SPECIAL STUDIES
 P PRINCIPAL STREAM
 H HYDROLOGIC EXCEPT WHEN CLASSIFIED AS "P"
 R REGULATED

OTHER

BDT BINARY DECIMAL TRANSMITTER
 DAR AMOS/T (DARDC TELEMETRY) NWS
 RAD RADIO TRANSMITTER C OF E
 REM REMOTE RECORDER
 TEL TELEMARK TRANSMITTER
 RT RECORDING THERMOGRAPH
 NAS NATIONAL STREAM QUALITY ACCOUNTING NETWORK (NASQAN)
 EPA NATIONAL WATER QUALITY SURVEILLANCE SURVEY (NWQSS)
 FWH FLOOD WARNING MONITOR, IOWA STATE UNIVERSITY

EQUIPMENT ('X' IF AVAILABLE)

DIG DIGITAL RECORDER
 A35 A-35 STRIP-CHART RECORDER
 MAN MERCURY MANOMETER TYPE GAGE
 OTHER (SEE BELOW)

C CONTENTS, IN ACRE-FEET

G STAGE STATION ONLY
 K DAILY SPECIFIC CONDUCTANCE
 L LAKE LEVEL ONLY
 P RECORDING PRECIPITATION STA.
 S DAILY SEDIMENT
 T DAILY TEMPERATURE

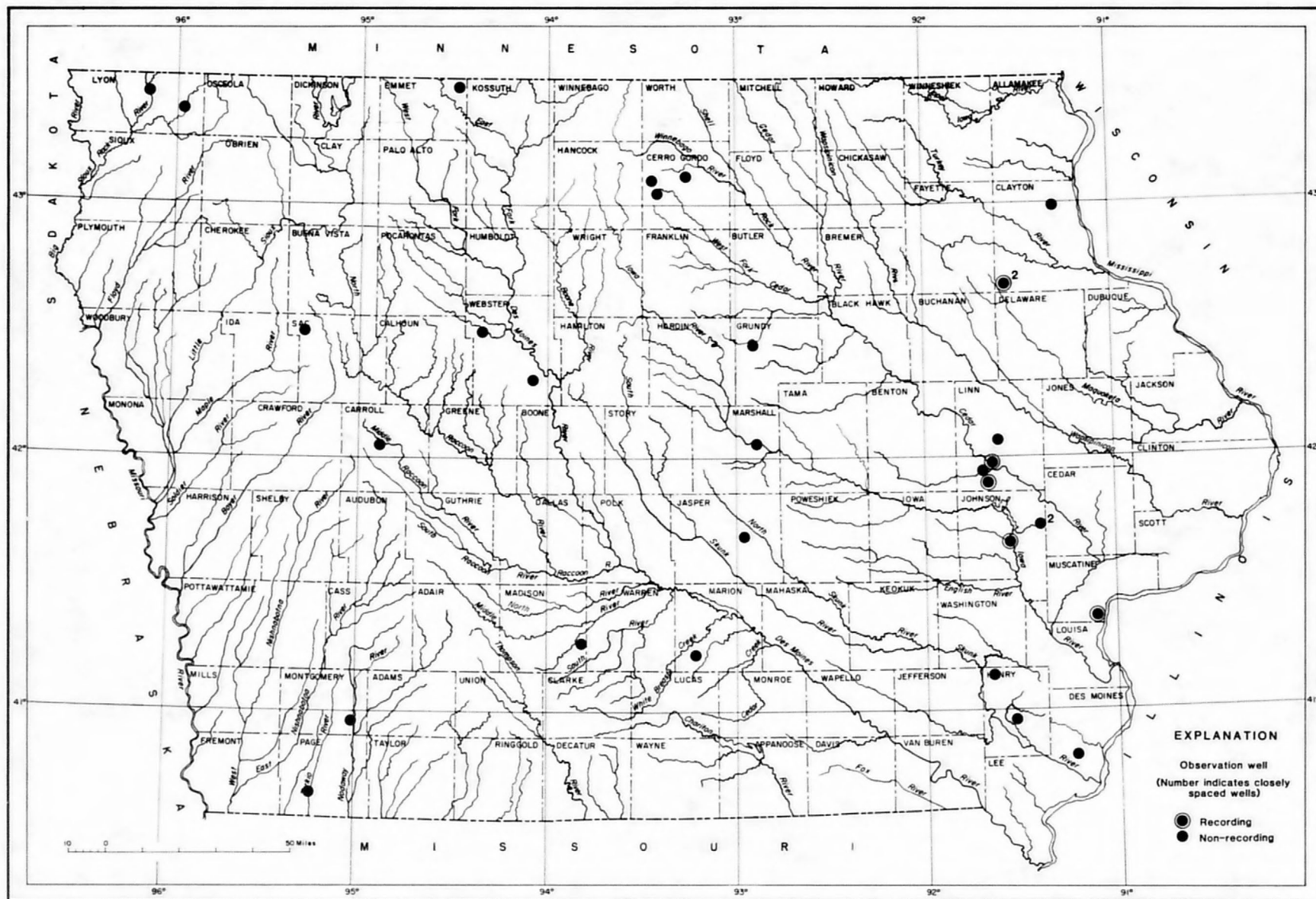


Figure 6.-Location of observation wells in Iowa.

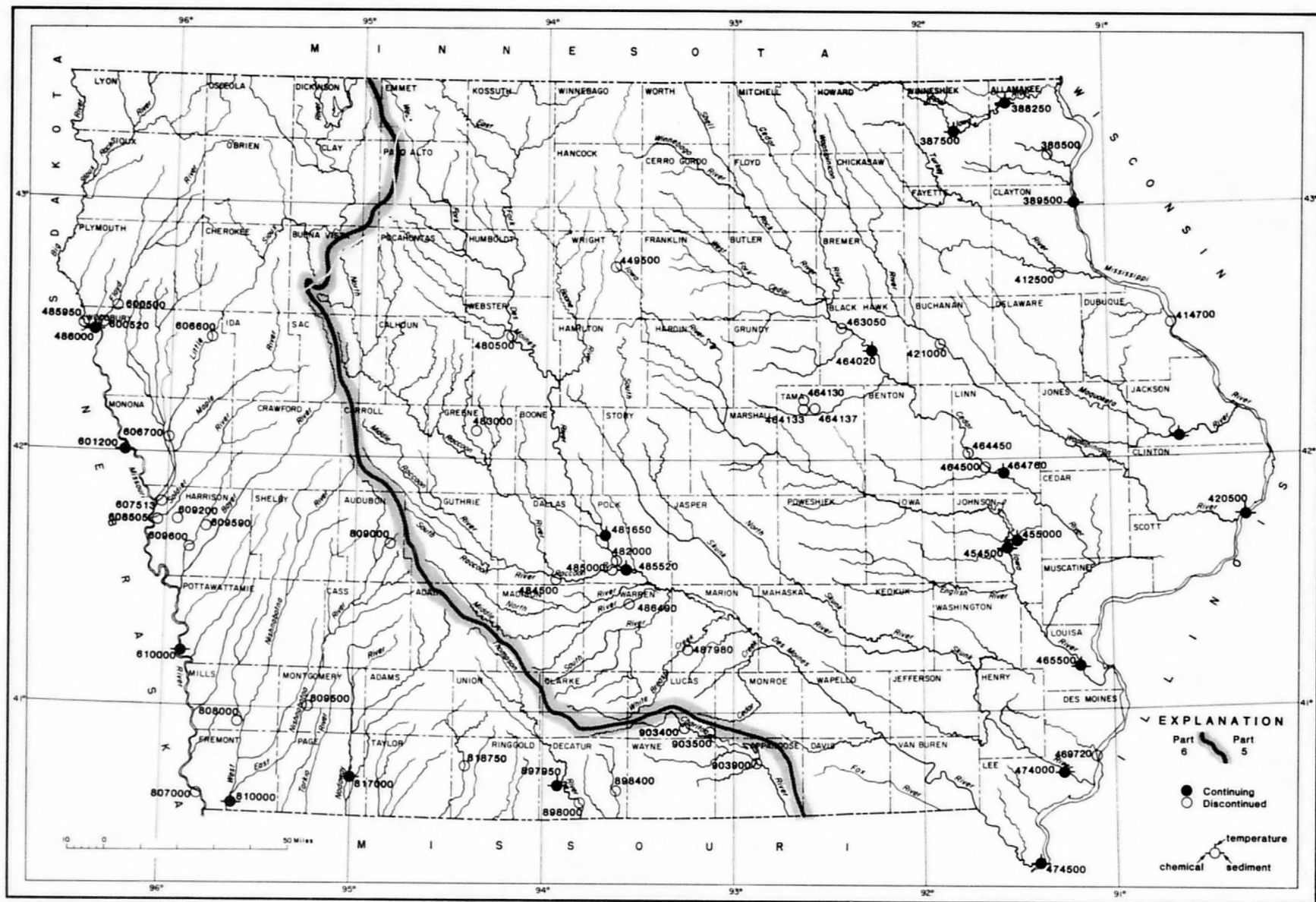


Figure 7.-Location of water-quality stations in Iowa.

Table 3.--Discontinued daily-discharge and lake-level stations

| Station name | Station number | Drainage area (sq mi) | Period of record |
|---------------------------------------------------------------------|----------------|-----------------------|----------------------------|
| Upper Iowa River near Decorah, Iowa. | 05388000 | 568 | 1913-14; 1919-27; 1933-51. |
| Paint Creek at Waterville, Iowa. | 05388500 | 42.8 | 1952-73. |
| Yellow River at Ion, Iowa. | 05389000 | 221 | 1934-51. |
| Mississippi River at Clayton, Iowa. | 05411500 | 79,200 | 1930-36. |
| Turkey River at Elkader, Iowa. | 05412000 | 891 | 1932-42. |
| Mauoketa River near Manchester, Iowa. | 05417000 | 305 | 1933-73. |
| Mauoketa River near Delhi, Iowa. | 05417500 | 347 | 1933-40. |
| Bear Creek near Monmouth, Iowa. | 05417700 | 61.3 | 1957-76. |
| Mauoketa River above North Fork Mauoketa River near Mauoketa, Iowa. | 05418000 | 938 | 1913-14. |
| Warsipinicon River at Stone City, Iowa. | 05421500 | 1,324 | 1903-14. |
| West Branch (West Fork) Iowa River near Klemme, Iowa. | 05448500 | 112 | 1948-58. |
| Iowa River near Iowa Falls, Iowa. | 05450000 | 665 | 1911-14. |
| Upper Pine Lake at Eldora, Iowa. | 05450500 | 14.9 | 1936-70. |
| Lower Pine Lake at Eldora, Iowa. | 05451000 | 15.9 | 1936-70. |
| Iowa River near Belle Plaine, Iowa. | 05452500 | 2,455 | 1939-59. |
| Lake Macbride near Solon, Iowa. | 05453500 | 27.0 | 1936-71. |
| Old Mans Creek near Iowa City, Iowa. | 05455100 | 201 | 1950-64. |
| Cedar River at Mitchell, Iowa. | 05457500 | 826 | 1933-42. |
| Shell Rock River at Marble Rock (Greene), Iowa. | 05460500 | 1,318 | 1933-53. |
| Shell Rock River at Greene, Iowa. | 05461000 | 1,357 | 1933-42. |
| Shell Rock River near Clarksville, Iowa. | 05461500 | 1,626 | 1915-27; 1932-34. |
| Fourmile Creek near Lincoln, Iowa. | 05464130 | 13.78 | 1962-67; 1969-74; 1976-80. |
| Half Mile Creek near Gladbrook, Iowa. | 05464133 | 1.33 | 1962-67; 1969-74; 1974-80. |
| South Skunk River below Sauaw Creek near Ames, Iowa. | 05471000 | 556 | 1952-79. |
| Indian Creek near Mingo, Iowa. | 05471200 | 276 | 1958-75. |
| Lake Keomah near Oskaloosa, Iowa. | 05472000 | 3.06 | 1936-71. |
| Skunk River at Coppack, Iowa. | 05473000 | 2,916 | 1913-44. |
| Big Creek near Mount Pleasant, Iowa. | 05473500 | 106 | 1955-79. |
| East Fork Des Moines River near Burt, Iowa. | 05478000 | 462 | 1971-74. |
| East Fork Des Moines River near Hardy, Iowa. | 05478500 | 1,268 | 1940-54. |
| Des Moines River near Fort Dodge, Iowa. | 05479500 | 3,753 | 1911-13. |
| Des Moines River near Boone, Iowa. | 05481500 | 5,511 | 1920-68. |
| Des Moines River at Des Moines, Iowa. | 05482000 | 6,245 | 1905-06; 1915-61. |
| Storm Lake at Storm Lake, Iowa. | 05482140 | 28.3 | 1970-75. |
| Springsbrook Lake near Guthrie Center, Iowa. | 05483500 | 5.18 | 1936-71. |
| Raccoon River at Des Moines, Iowa. | 05485000 | 3,590 | 1902-03. |
| Lake Aheubai near Indianola, Iowa. | 05487000 | 4.93 | 1936-71. |
| White Breast Creek near Knoxville, Iowa. | 05488000 | 380 | 1945-62. |
| Lake Wapello near Drakesville, Iowa. | 05490000 | 7.75 | 1936-71. |
| Susar Creek near Keokuk, Iowa. | 05491000 | 105 | 1922-31; 1958-73. |
| Muchakinock Creek near Eddyville, Iowa. | 05489190 | 70.2 | 1975-79. |
| Fox River at Bloomfield, Iowa. | 05494300 | 87.7 | 1957-73. |
| Fox River at Cantril, Iowa. | 05494500 | 161 | 1940-51. |
| Rock River at Rock Rapids, Iowa. | 06483270 | 788 | 1959-74. |
| Dry Creek at Hawarden, Iowa. | 06484000 | 48.4 | 1948-69. |
| Perry Creek at 38th Street, Sioux City, Iowa. | 06600000 | 65.1 | 1945-69. |
| West Fork ditch at Holly Springs, Iowa. | 06602000 | 399 | 1939-69. |
| Loon Creek near Orleans, Iowa. | 06603920 | 31 | 1971-74. |
| Spirit Lake outlet at Orleans, Iowa. | 06604100 | 75.6 | 1971-74. |
| Milford Creek at Milford, Iowa. | 06604400 | 146 | 1971-74. |

Table 3.--Discontinued daily-discharge and lake-level stations (Continued)

| Station name | Station number | Drainage area (sq mi) | Period of record |
|------------------------------------------------------|----------------|-----------------------|------------------|
| Little Sioux River at Spencer, Iowa. | 06605100 | 990 | 1936-42. |
| Little Sioux River at Gillett Grove, Iowa. | 06605600 | 1,334 | 1958-73. |
| Little Sioux River near Kennebeck, Iowa. | 06606700 | 2,738 | 1939-69. |
| Odebolt Creek near Arthur, Iowa. | 06607000 | 39.3 | 1957-75. |
| Maple River at Turin, Iowa. | 06607300 | 725 | 1939-41. |
| Little Sioux River near Blencoe (Turin), Iowa. | 06607510 | 4,470 | 1939-42. |
| Steer Creek near Mashtolai, Iowa. | 06609200 | 9.26 | 1963-69. |
| Thompson Creek near Woodbine, Iowa. | 06609590 | 6.97 | 1963-69. |
| Willow Creek near Logan, Iowa. | 06609600 | 129 | 1972-75. |
| Indian Creek at Council Bluffs, Iowa. | 06610500 | 7.99 | 1954-76. |
| Mosquito Creek near Earling, Iowa. | 06610520 | 33.0 (revised) | 1965-79. |
| Waubensie Creek near Bartlett, Iowa. | 06806000 | 30.4 | 1946-69. |
| West Nishnabotna River at (near) White Cloud, Iowa. | 06807500 | 967 | 1918-24. |
| Mule Creek near Malvern, Iowa. | 06808000 | 10.6 | 1954-69. |
| Springs Valley Creek near Tabor, Iowa. | 06808200 | 7.6 | 1955-64. |
| David's Creek near Hamlin, Iowa. | 06809000 | 26.0 | 1952-73. |
| Tarkio River (East Tarkio Creek) at Blanchard, Iowa. | 06812000 | 200 | 1934-40. |
| West Modaway River at Villisca, Iowa. | 06816500 | 342 | 1918-25. |
| Honey Creek near Russell, Iowa. | 06903500 | 13.2 | 1952-62. |
| Chariton River near Centerville, Iowa. | 06904000 | 708 | 1938-59. |

Table 4.--Discontinued water-quality stations

| Station name | Station number | Drainage area (sq mi) | Type of Record | Period of record |
|-------------------------------------------|----------------|-----------------------|----------------|------------------|
| Paint Creek at Waterville, Iowa. | 05388500 | 42.8 | Temp. | 1952-56 |
| Turkey River at Garber, Iowa. | 05412500 | 1,545 | Sed. | 1952-57 |
| Mississippi River at Dubuque, Iowa. | 05414700 | 81,600 | Temp. | 1957-62 |
| Wapsipinicon River at Independence, Iowa. | 05421000 | 1,048 | Sed. | 1957-62 |
| | | | Chem. | 1969-73 |
| | | | Temp. & | 1968-70 |
| | | | Sed. & | 1967-70 |
| Iowa River near Rowan, Iowa. | 05449500 | 429 | Temp. & | 1967-70 |
| | | | Sed. & | 1957-62 |
| Cedar River at Cedar Falls, Iowa. | 05463050 | 4,734 | Chem. | 1975-79 |
| Fourmile Creek near Lincoln, Iowa. | 05464130 | 13.78 | Chem. | 1969-74 |
| | | | Temp. | 1969-74 |
| | | | Sed. | 1969-74 |
| Half Mile Creek near Gladbrook, Iowa. | 05464133 | 1.33 | Chem. | 1969-74 |
| | | | Temp. | 1969-74 |
| | | | Sed. | 1969-74 |
| Fourmile Creek near Traer, Iowa. | 05464137 | 19.51 | Chem. | 1969-74 |
| | | | Temp. | 1969-74 |
| | | | Sed. | 1969-74 |
| Cedar River near Palo, Iowa. | 05464450 | 6,380 | Chem. | 1975-79 |
| Cedar River at Cedar Rapids, Iowa. | 05464500 | 6,640 | Chem. & | 1906-07; 1944-54 |
| | | | Temp. & | 1944-54 |
| | | | Sed. | 1943-54 |
| Mississippi River at Burlington, Iowa. | 05469720 | 114,000 | Chem. | 1969-73 |
| Des Moines River at Fort Dodge, Iowa. | 05480500 | 4,190 | Chem. | 1972-73 |
| Des Moines River at Des Moines, Iowa. | 05482000 | 6,245 | Chem. | 1954-55 |
| | | | Temp. | 1954-61 |
| | | | Sed. | 1954-61 |
| E. Fork Hardin Creek near Churdan, Iowa. | 05483000 | 24.0 | Temp. & | 1952-57 |
| | | | Sed. & | 1952-57 |
| Raccoon River at Van Meter, Iowa. | 05484500 | 3,441 | Chem. | 1969-73; 1974-79 |
| Raccoon River at Des Moines, Iowa. | 05485000 | 3,590 | Chem. | 1945-47 |
| | | | Temp. | 1945-47 |

Table 4.--Discontinued water-quality stations (Continued)

| Station name | Station number | Drainage area (sq mi) | Type of Record | Period of record |
|-----------------------------------------------------------|----------------|-----------------------|----------------------------|-------------------------------|
| Des Moines River below Raccoon River at Des Moines, Iowa. | 05485500 | 9,770 | Chem. & Temp. & Sed. | 1944-45 1944-47 1944-47 |
| Middle River near Indianola, Iowa. | 05486490 | 503 | Temp. & Sed. | 1962-67 1962-67 |
| White Breast Creek near Dallas, Iowa. | 05487980 | 342 | Chem. Temp. Sed. | 1968-73 1967-73 1967-73 |
| Big Sioux River at Sioux City, Iowa. | 06485950 | 9,410 | Chem. | 1969-73 |
| Floyd River at James, Iowa. | 06600500 | 882 | Temp. Sed. | 1968-73 1968-73 |
| Floyd River at Sioux City, Iowa. | 06600520 | 921 | Chem. | 1969-73 |
| Little Sioux River at Correctionville, Iowa. | 06606600 | 2,500 | Chem. & Temp. & Sed. | 1954-55 1951-62 1950-62 |
| Little Sioux River near Kennebec, Iowa. | 06606700 | 2,738 | Temp. Sed. | 1950-55 1950-57 |
| Little Sioux River at River Sioux, Iowa. | 06607513 | 3,600 | Chem. | 1969-73 |
| Soldier River near Mondamin, Iowa. | 06608505 | 440 | Chem. | 1970-73 |
| Steer Creek near Magnolia, Iowa. | 06609200 | 9.26 | Temp. Sed. | 1963-69 1963-69 |
| Thompson Creek near Woodbine, Iowa. | 06609590 | 6.97 | Temp. Sed. | 1963-69 1963-69 |
| Willow Creek near Logan, Iowa. | 06609600 | 129 | Chem. Temp. Sed. | 1972-75 1972-75 1971-75 |
| Missouri River at Nebraska City, Nebraska. | 06807000 | 410,000 | Chem. Temp. Sed. | 1951-77 1951-77 1971-76 |
| Mule Creek near Malvern, Iowa. | 06808000 | 10.6 | Temp. Sed. | 1958-69 1954-69 |
| Davids Creek near Hamlin, Iowa. | 06809000 | 26.0 | Temp. & Sed. & | 1952-53; 1965-68 1952-68 |
| East Mishnabotna River at Red Oak, Iowa. | 06809500 | 894 | Temp. Sed. | 1962-73 1962-73 |
| Platte River near Diagonal, Iowa. | 06818750 | 217 | Chem. | 1969-73 |
| Thompson River at Davis City, Iowa. | 06898000 | 701 | Chem. Temp. Sed. | 1967-73 1968-73 1968-73 |
| Weldon River near Leon, Iowa. | 06898400 | 104 | Chem. | 1968-73 |
| Chariton River near Chariton, Iowa. | 06903400 | 182 | Temp. Sed. | 1969-73 1969-73 |
| Honey Creek near Russell, Iowa. | 06903500 | 13.2 | Sed. | 1952-62 |
| Chariton River near Rathbun, Iowa. | 06903900 | 551 | Temp. & Sed. & | 1962-69 1962-69 |

Type of record: Chem. (chemical quality); Temp. (water temperature); Sed. (sediment).
COMMAND?