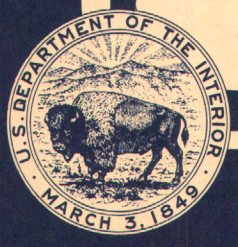
1971

Water Resources Data for South Dakota

Part 1. Surface Water Records



UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Prepared in cooperation with the State of South Dakota
and with other agencies

CALENDAR FOR WATER YEAR 1971

OCTOBER 1970

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NOVEMBER 1970

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JANUARY 1971

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FEBRUARY 1971

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MARCH 1971

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APRIL 1971

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MAY 1971

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JUNE 1971

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JULY 1971

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AUGUST 1971

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22	23	24	25	26	27	28
29	30	31				

SEPTEMBER 1971

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19	20	21	22	23	24	25
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1971

Water Resources Data for South Dakota

Part 1. Surface Water Records

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Prepared in cooperation with the State of South Dakota
and with other agencies

Prepared in cooperation with

South Dakota Water Resources Commission
South Dakota Department of Highways
East Dakota Conservancy Sub-district
Black Hills Conservancy Sub-district
Corps of Engineers, U.S. Army
Bureau of Reclamation, U.S. Department of the Interior
Fish and Wildlife Service, U.S. Department of the Interior
Bureau of Indian Affairs, U.S. Department of the Interior

Water resources records, 1971, for South Dakota are in the following reports of the U.S. Geological Survey:

1. Water Resources Data for South Dakota
   Part 1: Surface Water Records

2. Water Resources Data for South Dakota
   Part 2: Water Quality Records

Copies of this report may be obtained from
District Chief, Water Resources Division
U.S. Geological Survey
P. O. Box 1412
Room 231, Federal Building
Huron, South Dakota 57350

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WATER RESOURCES DATA FOR SOUTH DAKOTA, 1971

PART 1. SURFACE-WATER RECORDS

INTRODUCTION

Surface-water records for the 1971 water year for South Dakota, including records of streamflow or reservoir storage at gaging stations, partial-record stations, and miscellaneous sites, are given in this report and their locations shown in figures 1 and 2. The records were collected and computed by the Water Resources Division of the U.S. Geological Survey under the direction of J. E. Powell, District Chief. These data represent that portion of the National Water Data System collected by the U.S. Geological Survey and cooperating State and Federal agencies in South Dakota.

Through September 30, 1960, the records of discharge and stage of streams and canals and contents and stage of lakes or reservoirs were published in an annual series of U.S. Geological Survey water-supply papers entitled "Surface Water Supply of the United States."

Beginning with the 1961 water years, surface-water records have been released by the Geological Survey in annual reports on a State-boundary basis. Distribution of these reports is limited; they are designed primarily for rapid release of data shortly after the end of the water year to meet local needs. The discharge and reservoir storage records for 1961-65 are also published in a Geological Survey water-supply paper series entitled "Surface Water Supply of the United States 1961-65."

COOPERATION

The U.S. Geological Survey and organizations of the State of South Dakota have had cooperative agreements for the systematic collection of surface-water records since 1914. Organizations that supplied data are acknowledged in station descriptions. Organizations that assisted in collecting data through cooperative agreement with the Survey are:

South Dakota Water Resources Commission, J. W. Grimes, Chief Engineer.

South Dakota Department of Highways, Jack Allmon, Director.

East Dakota Conservancy Sub-district, Vern W. Butler, Manager-Engineer.

Black Hills Conservancy Sub-district, Ed Glassgow, Manager-Treasurer.

Assistance in the form of funds or services was given by the Corps of Engineers, U.S. Army, in collecting records for 28 gaging stations, and the Fish and Wildlife Service, U.S. Department of the Interior, for one gaging station. The Missouri River Basin Program provided funds and services for 27 gaging stations.

DEFINITION OF TERMS

Definition of terms related to streamflow and other hydrologic data, as used in this report, are defined as follows:

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or 325,851 gallons.

Cfs-day is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, 1.9835 acre-feet, or 646,317 gallons, and represents a runoff of 0.0372 inch from 1 square mile.

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

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

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

Cubic foot per second (cfs) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second, and is equivalent to 7.48 gallons per second or 448.8 gallons per minute.

Discharge is the volume of water (or more broadly, total fluids), that passes a given point within a given period of time.

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

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

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

Partial-record station is a particular site where limited streamflow data are collected systematically over a period of years for use in hydrologic analyses.

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

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

WRD is used as an abbreviation for "Water-Resources Data" in the summary REVISIONS paragraph to refer to previously published State annual basic-data reports.

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

SPECIAL NETWORKS AND PROGRAMS

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

International Hydrological Decade (IHD) River Stations provide a general index of runoff and materials in the water balance (discharge of water, and dissolved and transported solids) of the world. In the United States, IHD Stations provide indices of runoff and of the general distribution of water in the principal river basins of the conterminous United States and Alaska.

DOWNSTREAM ORDER AND STATION NUMBERS

Records are listed in a downstream direction along the main stream, and stations on tributaries are listed between stations on the main stream in the order in which those tributaries enter the main stream. Stations on tributaries entering above all mainstream stations are listed before the first mainstream station. Stations on tributaries to tributaries are listed in a similar manner. In the list of gaging stations in the front of this report the rank of tributaries is indicated by indention, each indention representing one rank.

As an added means of identification, each gaging station and partial-record station has been assigned a station number. These are in the same downstream order used in this report. In assigning station numbers, no distinction is made between partial-record stations and continuous-record gaging 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 numbers to allow for new stations that may be established; hence the numbers are not

consecutive. The complete 8-digit number for each station, such as 06476000, includes the part number "06" and a 6-digit station number and appears just to the left of the station name. In this report, the records are listed in downstream order by parts. All records for a drainage basin encompassing more than one State could be arranged in downstream order by assembling pages from the various State reports by station number to include all records in the basin.

EXPLANATION OF SURFACE-WATER DATA

Collection and Computation of Data

The base data collected at gaging stations consists of records of stage and measurements of discharge of streams or canals, and stage, surface area, and contents of lakes or reservoirs. In addition, observations of factors affecting the stage-discharge relation or the stage-capacity relation, weather records, and other information are used to supplement base data in determining the daily flow or volume of water in storage. Records of stage are obtained from a water-stage recorder that gives a continuous graph of the fluctuations (for digital recorders, a tape punched at 15-, 30-, or 60-minute intervals) or from direct readings on a nonrecording gage. Measurements of discharge are made with a current meter, using the general methods adopted by the Geological Survey on the basis of experience in stream gaging since 1888. These methods are described in standard textbooks on the measurement of stream discharge. (See also SELECTED REFERENCES.) Surface areas of lakes or reservoirs are determined from instrument surveys using standard methods. The configuration of the reservoir bottom is determined by sounding at many points.

For a stream-gaging station rating tables giving the discharge for any stage are prepared from stage-discharge relation curves defined by discharge measurements. If extensions to the rating curves are necessary to define the extremes of discharge, they are made on the basis of indirect measurements of peak discharge (such as slope-area or contracted-opening measurements, computation of flow over dams or weirs), velocity-area studies, and logarithmic plotting. The application of the daily mean gage heights to the rating table gives the daily mean discharge, from which the monthly and the yearly mean discharge are computed. 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 individual discharge measurements and notes

by engineers and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is basically the shifting-control method.

At some stream-gaging stations the stage-discharge relation is affected by 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 determining discharge. Information required for determining 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 determining discharge.

At some stream-gaging stations the stage-discharge relation is affected by ice in the winter, and it becomes impossible to compute the discharge in the usual manner. Discharge for periods of ice effect is computed on the basis of the gage-height record and occasional winter discharge measurements, consideration being given to the available information on temperature and precipitation, notes by gage observers and hydrologists, and comparable records of discharge for other stations in the same or nearby basins.

For a lake or reservoir station, capacity tables giving the contents for any stage are prepared from stage-area relation curves defined by surveys. Discharge over spillways is computed from a stage-discharge relation curve defined by discharge measurements. The application of the stage to the capacity tables gives the contents, from which the daily, monthly, or yearly change in contents is computed.

If the stage-capacity curve is subject to changes because of deposition of sediment in the reservoir, periodic resurveys of the reservoir are necessary to define new stage-capacity curves. During the period between reservoir surveys the computed contents may be increasingly in error due to the gradual accumulation of sediment.

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 such periods the daily discharges are estimated on the basis of recorded range in stage, adjoining good record, discharge

measurements, weather records, and comparison with other station records from the same or nearby basins. Likewise daily contents may be estimated on the basis of operator's log, adjoining good record, inflow-outflow studies, and other information.

The data in this report generally comprise a description of the station and tabulations of basic data. For gaging stations on streams or canals a table showing the daily discharge and monthly and yearly discharge is given. For gaging stations on lakes and reservoirs a monthly summary table of stage and contents or a table showing the daily contents is given. Tables of daily mean gage heights are included for some streamflow stations and for some reservoir stations. Records are published for the water year, which begins on October 1 and ends on September 30. A calendar for the 1971 water year is shown on the reverse side of the front cover to facilitate finding the day of the week for any date.

The description of the gaging station gives the location, drainage area, period of record, type and history of gages, average discharge, extremes of discharge or contents, and general remarks. The location of the gaging station and the drainage area are obtained from the most accurate maps available. River mileage, given under "LOCATION" for some stations, is that determined and used by the Corps of Engineers or other agencies. Periods for which there are published records for the present station or for stations generally equivalent to the present one are given under "PERIOD OF RECORD." The type of gage currently in use, the datum of the present gage above mean sea level, and a condensed history of the types, locations, and datums of previous gages used during the period of record are given under "GAGE." In references to datum of gage, the phrase "mean sea level" denotes "Sea Level Datum of 1929" as used by the Topographic Division of the Geological Survey, unless otherwise qualified. The average discharge for the number of years indicated is given under "AVERAGE DISCHARGE"; it is not given for stations having fewer than 5 complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. In addition, the median of yearly mean discharges is given for stream-gaging stations having 10 or more complete years of record if the median differs from the average by more than 10 percent. The maximum discharge (or contents) and the maximum gage height, the minimum discharge if there is little or no regulation (or the minimum contents), and the minimum gage height if it is significant are given under "EXTREMES." The minimum daily discharge is given if there is extensive regulation (also the minimum discharge and gage height if they are abnormally low). In the first paragraph headed "Current year:" the data given are for the complete current water year unless

otherwise specified. In the second paragraph under "EXTREMES" headed "Period of record:" the data given are for the period of record given in the PERIOD OF RECORD paragraph. Reliable information concerning major floods that occurred outside the period of record is given in the third or last paragraph under "EXTREMES." Unless otherwise qualified, the maximum discharge (or contents) corresponds to the crest stage obtained by use of a water-stage recorder (graphic or digital), a crest-stage gage, or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur at the same time as the maximum discharge or contents, it is given separately. Information pertaining to the accuracy of the discharge records, to conditions that affect the natural flow at the gaging station, and availability of Water Quality records, is given under "REMARKS"; for reservoir stations information on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir, is also given under "REMARKS."

Previously published records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published along with the current records in one of the annual or compilation reports. In order to make it easier to find such revised records, a paragraph headed "REVISIONS (WATER YEARS)" has been added to the description of all stations for which revised records have been published. Listed therein are all the reports in which revisions have been published, each followed by the water years for which figures are revised in that report. In listing the water years only one number is given; for instance, 1933 stands for the water year October 1, 1932, to September 30, 1933. If no daily, monthly, or annual figures of discharge were revised, that fact is brought out by notations 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 revised figure was first published is given. It should be noted that for all stations for which cubic feet per second per square mile and runoff in inches are published, a revision of the drainage area necessitates corresponding revision of all figures based on the drainage area. Revised figures of cubic feet per second per square mile and runoff in inches resulting from a revision of the drainage area only are usually not published in the annual series of reports.

Skeleton rating tables are published for stream-gaging stations where they serve a useful purpose and the dates of applicability can be easily identified.

Skeleton capacity tables are published for all reservoirs for which records of contents are published on a daily basis.

The daily tables for stream-gaging stations give the discharge corresponding to the daily mean gage height unless there are large or rapid changes in the discharge during a day. For days having large or rapid changes, discharge for the day is computed by averaging the mean discharge for several parts of a day. For digital recorders, the daily mean discharge is always the average of the discharges at each punched reading. For stations equipped with nonrecording gages, the daily discharge corresponds to once-daily readings of the gage or to the mean of twice-daily readings; but for periods of rapidly changing stage the discharge is determined from a gage-height graph based on gage readings.

The daily tables for reservoir stations give the contents corresponding to the water-surface elevation at a given time, usually at 2400 each day. For some reservoirs the elevation at a given time is given in the daily table.

The monthly summary is given below the daily table. For stream-gaging stations the line headed "TOTAL" gives the sum of the daily figures; it is the total cubic feet per second per day for the month. 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 may be 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 of cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion, if the drainage area includes large noncontributing areas, or if the average rainfall on the drainage basin is usually less than 20 inches.

For reservoir stations the monthly summary gives the elevation (or gage height) at the end of the month and the change in contents during the month. If elevation or gage height is given in the daily table, the monthly summary gives the contents at the end of the month, rather than the elevation or gage height. For some reservoirs a tabulation of monthly evaporation from the water surface also is included.

In the yearly summary below the monthly summary, the figures of maximum are the maximum daily discharges for the calendar and water years; likewise, the minimums in this summary are the minimum daily discharges.

For reservoir stations the yearly summary gives the change in contents for the calendar year and for the water year. For some reservoirs the yearly evaporation also is included.

Peak discharges and their times of occurrence and corresponding gage heights for many stations are listed below the yearly summary. All independent peaks above the selected base are given. The base discharge, which is given in parentheses, is selected so that an average of about three peaks a year can be presented. Peak discharges are not published for any canals, ditches, drains, or for any stream for which the peaks are subject to substantial control by man. Time of day is expressed in 24-hour local standard time; for example, 12:30 a.m. is 0030 and 1:30 p.m. is 1330.

In a general footnote, introduced by the word "NOTE" certain periods are indicated for which the discharge is computed or estimated by special methods because of no gage-height record, backwater from various sources, or other unusual conditions. Periods of no gage-height record are indicated if the period is continuous for a month or more or includes the maximum discharge for the year. Periods of backwater from an unusual source, of indefinite stage-discharge relation, or of any other unusual condition at the gage are indicated only if they are a month or more in length and the accuracy of the records is affected. Days on which the stage-discharge relation is affected by ice are not indicated. The methods used in computing discharge for various unusual conditions have been explained in preceding paragraphs. Footnotes to reservoir tables may be used to explain the use of new capacity tables or for other special conditions.

Accuracy of Data

The accuracy of discharge data 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 observations of stage, measurements of discharge, and interpretation of records.

The station description under "REMARKS" states the degree of accuracy of the records. "Excellent" means that about 95 percent of the daily discharges is within 5 percent; "good" within 10 percent and "fair" within 15 percent. "Poor" means that daily discharges have less than "fair" accuracy.

Figures of daily mean discharge in this report are shown to the nearest hundredth of a cubic foot per second for discharges of less than 1 cfs; to tenths between 1.0 and 10 cfs; to whole numbers between 10 and 1,000 cfs; and to 3 significant figures above 1,000 cfs. The number of significant figures used is based solely on the magnitude of the figure. The same rounding rules apply to discharge figures 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, consumptive use, regulation, evaporation, or other factors. For such stations, discharge in cubic feet per second per square mile and runoff in inches are not published unless satisfactory adjustments can be made for such effects. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or unadjusted losses (consumptive use, evaporation, seepage, etc.) are large in comparison with the observed discharge.

Publications

Each volume of the 1960 series of U.S. Geological Survey water-supply papers entitled "Surface Water Supply of the United States" contains a listing of the numbers of all water-supply papers in which records of surface-water data were published for the area covered by the individual volumes. Each volume also contains a list of water-supply papers that give detailed information on major floods for the area. A new series of water-supply papers containing surface-water records for the 5-year period October 1, 1960, to September 30, 1965, also will include lists of annual and special reports published as water-supply papers.

Records through September 1950 for the area covered by this report have been compiled and published in Water-Supply Papers 1308(5) and 1309(6A); records for October 1950 to September 1960 have been compiled and published in Water-Supply Papers 1728(5) and 1729(6A). These reports contain summaries of monthly and annual discharge and monthend storage for all previously published records, as well as some records not contained in the annual series of water-supply papers. All records were reexamined and revised where warranted. Estimates of discharge were made to fill short gaps whenever practical. The yearly summary table for each gaging station lists the numbers of the water-supply papers in which daily records were published for that station.

Special reports on major floods or droughts or of other hydrologic studies for the area have been issued in publications other than water-supply papers. Information relative to these reports may be obtained from the district office.

Other Data Available

Data collected at partial-record stations and at miscellaneous sites are given in three tables at the end of the surface-water records in this report. The first is a table of discharge measurements at low-flow partial-record stations, the second is a table of annual maximum stage and discharge at crest-stage stations, and the third is a table of discharge measurements at miscellaneous sites.

More detailed information than that published for most of the gaging stations, such as discharge measurements, gage-height records, and rating tables, is on file in the district office. Many gaging-station records in South Dakota through 1968 have been analyzed to give several statistical summaries: (1) the number of days in each year that the daily discharge was between selected limits (duration tables); (2) the lowest mean discharge for selected numbers of consecutive days in each year; and (3) the highest mean discharge for selected numbers of consecutive days in each year.

At or near some gaging stations, water-quality records also are collected. Data are obtained on the chemical quality of the stream water, on water temperature, on suspended-sediment concentration, and on the particle-size distribution of suspended sediment and bed material. These data are given in Part 2 of this report. Under the "REMARKS" paragraph of the gaging-station description, reference is made to water-quality records collected on a regular basis.

HYDROLOGIC CONDITIONS

Annual runoff from the major river basins of the State was near normal for the 1971 water year.

A comparison of monthly and yearly mean discharges with the median discharge for the 30-year base period (1931-60) is shown in figure 3 for two key gaging stations.

Combined storage in the four Missouri River main-stem reservoirs--Lakes Oahe, Sharp, Francis Case, and Lewis and Clark, was 25,415,000 acre-ft at the end of the water year.

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Corbett, D. M., and others, 1943, stream-gaging procedure, a manual describing methods and practices of the Geological Survey: U.S. Geol. Survey Water-Supply Paper 888, 245 p.

Langbein, W. B., and Iseri, K. T., 1960, General introduction and hydrologic definitions: U.S. Geol. Survey Water-Supply Paper 1541-A, 29 p.

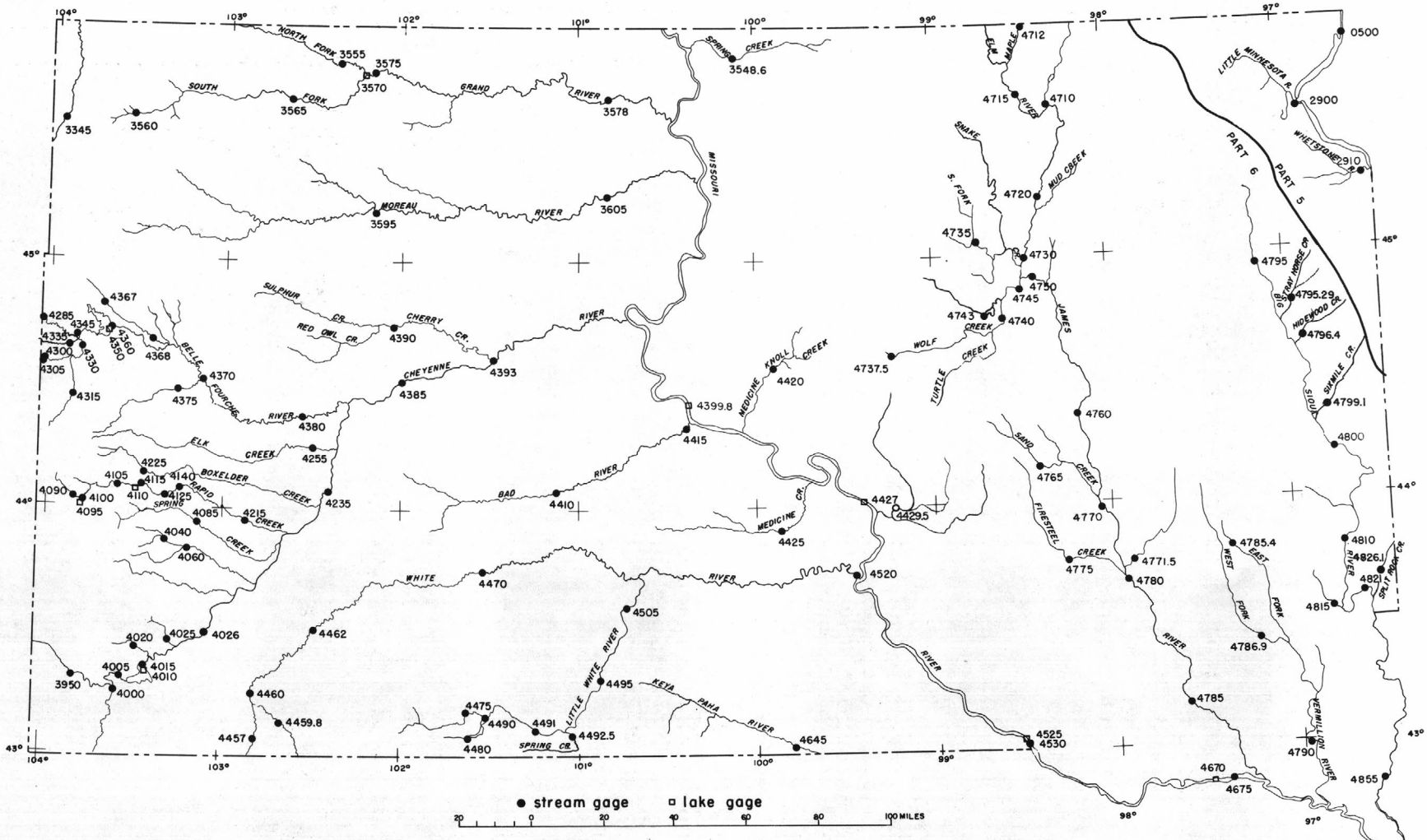

Figure 1. Map of South Dakota showing location of lake and stream gaging stations

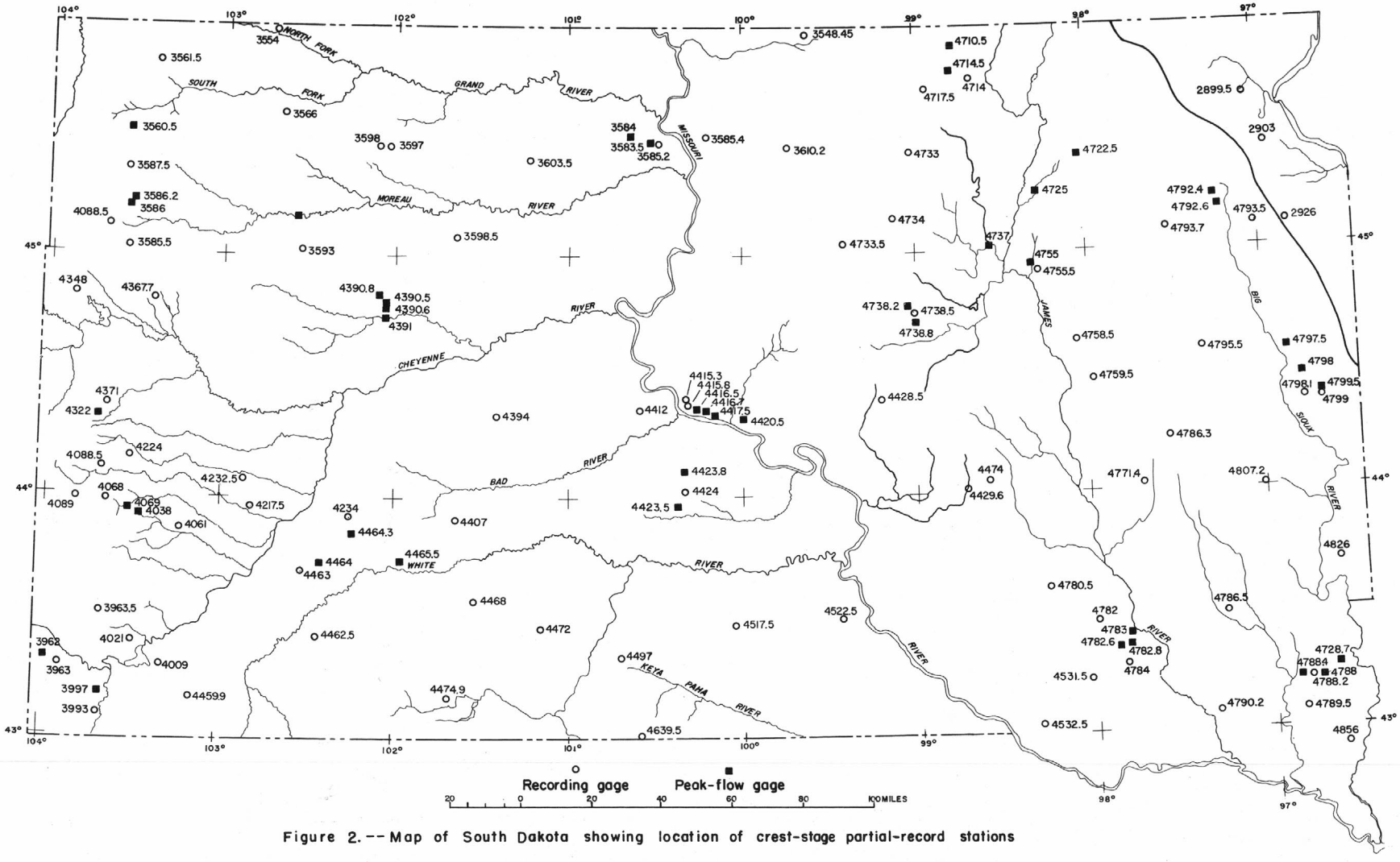

Figure 2.--Map of South Dakota showing location of crest-stage partial-record stations

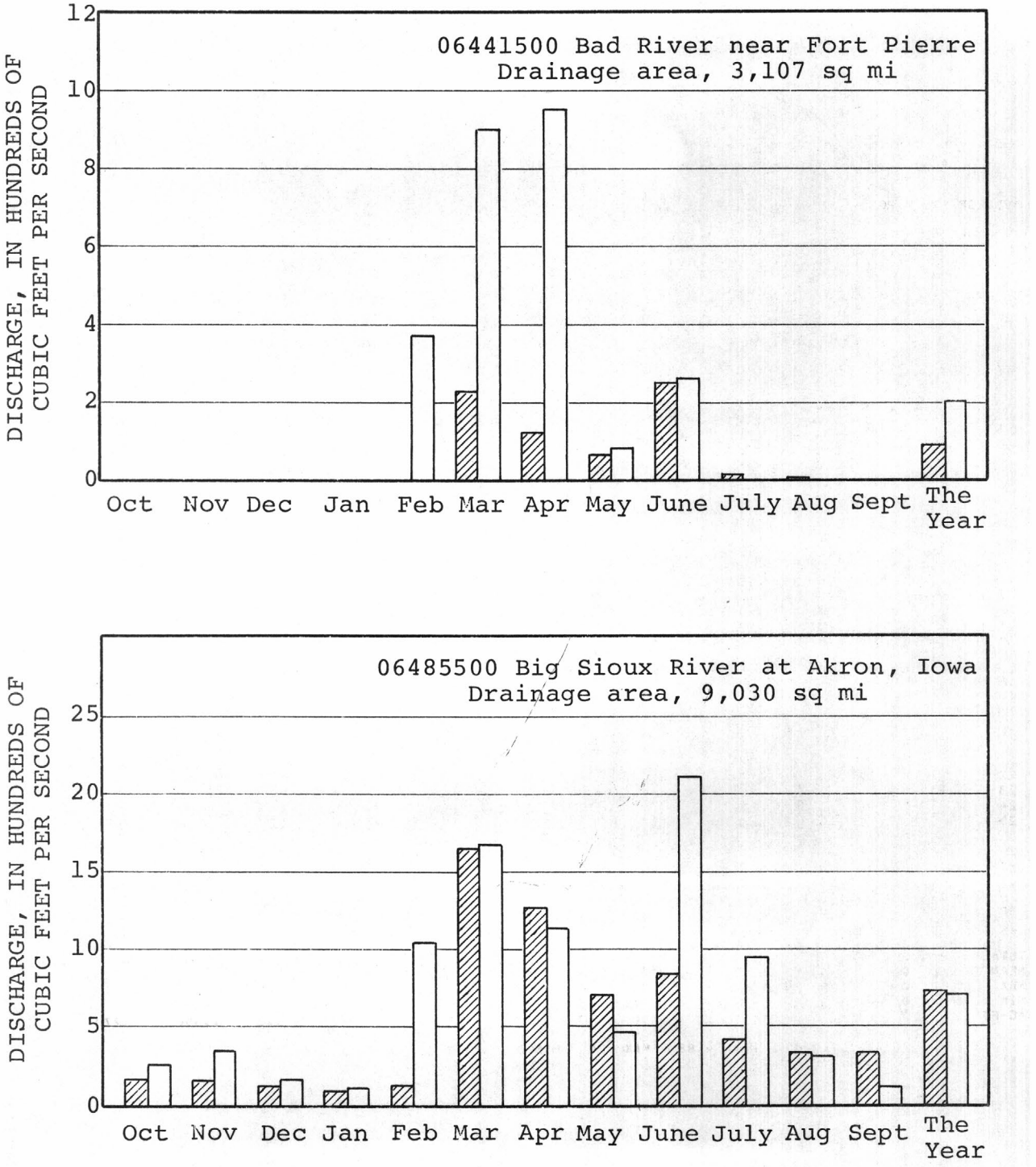

FIGURE 3.--RUNOFF DURING 1971 WATER YEAR COMPARED WITH MEDIAN RUNOFF FOR PERIOD 1931-60 FOR TWO REPRESENTATIVE GAGING STATIONS.

05050000 Bois de Sioux River near White Rock, S. Dak.

LOCATION.--Lat 45°51'45", long 96°34'25", in SW¼SW¼ sec.27, T.128 N., R.47 W., Roberts County, on left bank just downstream from Big Slough Outlet, 300 ft downstream from White Rock Dam, 4 miles south of White Rock, and 5 miles northwest of Wheaton, Minn.

DRAINAGE AREA.--1,160 sq mi, approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 960.00 ft above mean sea level, adjustment of 1912 (levels by Corps of Engineers). Prior to Jan. 14, 1943, nonrecording gage at same site at datum 0.11 ft lower. Jan. 15, 1943, to Sept. 30, 1963, water-stage recorder at same site at datum 0.11 ft lower.

AVERAGE DISCHARGE.--30 years, 82.9 cfs (60,060 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 188 cfs, June 26 (gage height, 5.93 ft); no flow for many days. Period of record: Maximum discharge, 3,770 cfs, occurred during period Apr. 19-21, 1969 (gage height, 15.07 ft, from floodmarks); no flow at times in most years.

REMARKS.--Records poor. Flow regulated by Lake Traverse-Bois de Sioux Flood Control and Water Conservation project (available capacity for flood control, 137,000 acre-ft).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		.10	.10			0	8.0	5.8	4.8	115	.30	20
2		.10	.10			0	7.5	5.8	7.2	100	.30	22
3		.10	.10			0	5.0	5.8	14	85	.30	27
4		.10	.10			0	4.0	5.8	17	65	.10	13
5		.10	.10			0	3.5	5.8	23	48	0	22
6		.10	.10			0	3.0	5.6	19	32	0	13
7		.10	.10			0	8.0	5.4	10	28	0	11
8		.10	.10			0	15	5.1	7.5	24	0	4.8
9		.20	.10			0	28	4.8	22	25	0	6.1
10		.20	.10			0	13	4.8	81	23	0	3.8
11		.20	.10			.10	2.4	4.8	86	23	.10	5.1
12		.20	.10			.20	2.4	4.6	57	21	.10	3.0
13		.20	.10			.50	2.4	4.6	54	19	.10	8.5
14		.20	.10			1.0	2.4	4.6	52	20	.20	.70
15		.20	.10			1.5	2.4	4.6	51	19	.20	.10
16		.20	.10			2.7	2.4	4.4	40	18	.20	.20
17		.20	.10			3.0	2.2	4.6	26	19	.30	.20
18		.20	.10			3.2	2.2	4.4	22	16	.30	.10
19		.20	.10			3.4	2.2	4.4	21	6.8	.30	.10
20		.20	.10			3.6	2.2	4.6	16	6.1	.20	.10
21		.20	.10			3.8	2.4	4.4	31	5.1	.20	.10
22		.20	.10			4.0	2.1	4.4	101	5.1	.20	.20
23		.10	.10			3.5	2.1	4.4	174	3.0	1.4	.20
24		.10	.10			3.5	2.0	4.4	180	2.0	26	.10
25		.10	.10			4.0	1.9	4.4	184	1.0	43	.10
26		.10	.10			4.5	1.9	4.4	187	1.0	32	.20
27		.10	.10			5.0	1.9	4.4	185	.80	7.9	.20
28		.10	0			5.5	2.4	4.4	122	.80	6.4	.20
29		.10	0		------	6.0	3.8	4.4	150	.50	2.4	.20
30		.10	0		------	7.5	5.4	4.4	135	.50	1.8	.30
31		------	0		------	8.0	------	4.4	------	.30	12	------
TOTAL	0	4.40	2.70	0	0	74.50	144.1	148.7	2,079.5	733.00	136.30	162.60
MEAN	0	.15	.087	0	0	2.40	4.80	4.80	69.3	23.6	4.40	5.42
MAX	0	.20	.10	0	0	8.0	28	5.8	187	115	43	27
MIN	0	.10	0	0	0	0	1.9	4.4	4.8	.30	0	.10
AC-FT	0	8.7	5.4	0	0	148	286	295	4,120	1,450	270	323

CAL YR 1970 TOTAL 1,780.80 MEAN 4.88 MAX 38 MIN 0 AC-FT 3,530
WTR YR 1971 TOTAL 3,485.80 MEAN 9.55 MAX 187 MIN 0 AC-FT 6,910

05290000 Little Minnesota River near Peever, S. Dak.

LOCATION.--Lat 45°36'05", long 96°52'18", in SW¼ sec.13, T.125 N., R.50 W., Roberts County, on right bank 2 miles northwest of town of Browns Valley, Minn., 3.2 miles upstream from proposed Lake Traverse diversion, 5.3 miles northeast of Peever, 7.2 miles downstream from Jorgenson River, and 8 miles upstream from Big Stone Lake.

DRAINAGE AREA.--447 sq mi.

PERIOD OF RECORD.--October 1939 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,000 ft (from topographic map). Oct. 1, 1939, to Mar. 20, 1940, nonrecording gage at site 4.5 miles downstream at different datum. Mar. 21 to Apr. 12, 1940, nonrecording gage at site 100 ft downstream at present datum. April 13 to Aug. 27, 1940, nonrecording gage at present site and datum.

AVERAGE DISCHARGE.--32 years, 45.6 cfs (1.39 inches per year, 33,040 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 595 cfs June 30 (gage height, 5.25 ft); maximum gage height, 7.66 ft Mar. 14 (backwater from ice); minimum discharge, 0.05 cfs Jan. 12 to Feb. 14; minimum gage height, 2.17 ft Aug. 24, 25, 27, 28, 29, 30, Sept. 20, 25, 26, 27.
Period of record: Maximum discharge, 4,730 cfs Apr. 8, 1952 (gage height, 12.16 ft); maximum gage height, 13.35 ft Mar. 25, 1943, from floodmarks (backwater from ice); no flow at times in 1940, 1942, 1950, 1954, 1957, 1959, 1963, 1968.

REMARKS.--Records fair.

REVISIONS(WATER YEARS).--WSP 1308: 1943(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.26	1.3	.88	.13	.05	1.4	110	26	25	345	6.1	1.1
2	.22	1.3	.87	.13	.05	1.4	102	21	158	183	5.9	.93
3	.18	1.3	.86	.13	.05	1.4	92	18	104	158	5.2	1.6
4	.18	1.2	.84	.12	.05	1.4	83	17	80	149	5.0	3.5
5	.22	.98	.78	.12	.05	1.4	74	16	77	131	4.5	2.4
6	.16	.98	.70	.11	.05	1.4	63	14	68	116	4.1	2.2
7	.18	.98	.60	.11	.05	1.4	57	14	58	110	3.9	3.1
8	.26	1.6	.50	.10	.05	1.4	52	12	48	112	3.7	2.5
9	.24	2.4	.46	.09	.05	1.5	47	12	43	106	3.1	1.8
10	.30	1.9	.40	.08	.05	1.6	44	9.5	40	84	2.6	1.6
11	.36	2.1	.39	.07	.05	10	42	7.6	40	73	2.3	1.3
12	.33	2.0	.34	.05	.05	50	40	6.4	47	63	1.9	1.0
13	.36	2.0	.32	.05	.05	300	37	5.9	54	58	1.7	.81
14	.33	2.0	.30	.05	.05	240	33	5.6	42	50	1.5	.73
15	.33	2.1	.28	.05	.10	190	31	5.2	33	45	1.2	.62
16	.36	2.1	.26	.05	.15	147	30	5.0	28	39	1.0	.59
17	.30	2.0	.25	.05	.23	170	23	5.0	23	34	.93	.60
18	.26	1.9	.24	.05	.34	160	20	4.8	20	30	1.3	.55
19	.26	1.8	.23	.05	.43	150	18	4.5	26	26	1.0	.54
20	.26	1.8	.22	.05	.44	145	17	4.5	21	24	.92	.53
21	.26	1.8	.21	.05	.45	140	15	4.3	21	21	.92	.54
22	.26	1.8	.20	.05	.66	135	14	4.3	24	18	.81	.54
23	.30	1.7	.19	.05	1.0	130	13	5.9	19	16	.68	.55
24	.33	1.5	.18	.05	1.1	128	12	6.4	19	13	.62	.57
25	.46	1.4	.18	.05	1.2	125	11	8.2	20	12	.59	.53
26	.64	1.3	.17	.05	1.3	122	10	13	19	9.9	.60	.51
27	.64	1.2	.16	.05	1.3	120	11	12	21	9.2	.54	.62
28	.70	1.1	.16	.05	1.4	140	15	9.5	18	8.5	.54	.92
29	.83	1.0	.15	.05	------	133	28	7.9	77	7.9	.54	.99
30	1.2	.90	.15	.05	------	125	31	7.1	410	7.1	1.1	.90
31	1.3	------	.14	.05	------	118	------	9.2	------	6.9	2.4	------
TOTAL	12.27	47.44	11.61	2.19	10.80	2,992.3	1,175	301.8	1,683	2,065.5	67.19	34.67
MEAN	.40	1.58	.37	.071	.39	96.5	39.2	9.74	56.1	66.6	2.17	1.16
MAX	1.3	2.4	.88	.13	1.4	300	110	26	410	345	6.1	3.5
MIN	.16	.90	.14	.05	.05	1.4	10	4.3	18	6.9	.54	.51
AC-FT	24	94	23	4.3	21	5,940	2,330	599	3,340	4,100	133	69

CAL YR 1970 TOTAL 5,806.24 MEAN 15.9 MAX 263 MIN .08 AC-FT 11,520
WTR YR 1971 TOTAL 8,403.77 MEAN 23.0 MAX 410 MIN .05 AC-FT 16,670

PEAK DISCHARGE (BASE, 450 CFS).--June 30 (1830) 595 cfs (5.25 ft).

05291000 Whetstone River near Big Stone City, S. Dak.

LOCATION.--Lat 45°17'32", long 96°29'14", in SE¼NW¼ sec.18, T.121 N., R.46 W., Grant County, on right bank 20 ft downstream from highway bridge, 1.5 miles west of Big Stone City and 4.5 miles upstream from Big Stone Lake.

DRAINAGE AREA.--389 sq mi.

PERIOD OF RECORD.--March 1910 to November 1912 (no winter records), and March 1931 to current year. Monthly discharge only for some periods, published in WSP 1308.

GAGE.--Water-stage recorder. Datum of gage is 996.96 ft above mean sea level, adjustment of 1912. Mar. 8, 1910, to Nov. 30, 1912, nonrecording gage 2 miles downstream at different datum. Mar. 18, 1931, to May 3, 1939, nonrecording gage, at site 20 ft upstream at present datum. May 4, 1939, to Nov. 8, 1952, water-stage recorder at site 80 ft downstream at present datum.

AVERAGE DISCHARGE.--40 years (1931-71), 45.5 cfs (1.59 inches per year, 32,960 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,540 cfs June 30 (gage height, 9.94 ft); minimum, 0.8 cfs Sept. 25.
Period of record: Maximum discharge, 6,870 cfs Apr. 8, 1969 (gage height, 14.32 ft, from floodmarks); no flow at times in most years.
Maximum stage known, about 26 ft in June 1919, present site and datum, from information by local resident.

REMARKS.--Records good except those for winter periods or periods of no gage-height record, which are fair.

REVISIONS(WATER YEARS).--WSP 895: Drainage area. WSP 1308: 1932(M), 1935(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	7.7	11	3.8	4.6	11	67	38	28	1,370	8.8	21
2	2.4	7.7	10	3.8	4.6	11	62	33	721	545	8.7	15
3	2.1	8.0	9.6	3.8	4.6	12	55	28	533	264	7.3	10
4	2.2	10	9.3	3.8	4.7	12	49	24	245	159	5.9	9.7
5	2.3	11	9.0	3.9	4.8	13	43	22	165	116	6.0	8.7
6	2.0	11	8.4	3.9	4.8	13	38	19	139	94	5.2	8.4
7	2.6	12	7.9	3.9	4.9	13	35	17	115	127	6.0	8.1
8	5.0	13	7.4	3.9	4.9	14	34	16	86	331	6.0	6.0
9	6.2	19	7.2	3.9	5.0	15	33	15	67	334	4.9	7.7
10	5.9	28	6.8	3.9	5.0	17	34	15	59	187	4.9	8.1
11	5.6	24	6.4	3.9	5.2	30	32	14	51	125	4.8	7.3
12	5.3	20	6.1	3.9	5.3	50	30	14	66	93	4.1	5.7
13	5.0	17	5.8	3.9	5.4	90	28	13	50	74	4.0	5.5
14	4.4	14	5.4	3.9	5.6	1,500	25	12	43	59	4.3	4.5
15	4.1	14	5.2	3.9	6.3	1,210	23	12	35	48	4.2	4.1
16	3.6	11	5.0	3.9	7.0	500	22	11	28	40	2.8	3.6
17	3.1	10	4.7	3.9	7.5	270	21	11	21	35	2.6	3.1
18	3.4	9.9	4.5	3.9	8.2	220	19	11	16	31	14	3.0
19	3.4	9.8	4.3	4.0	8.6	195	20	11	16	28	16	2.7
20	4.0	9.7	4.2	4.0	9.0	175	20	11	14	27	10	2.6
21	4.1	9.8	4.0	4.0	9.4	165	20	10	13	24	7.2	2.3
22	4.3	10	3.9	4.1	9.8	135	19	9.8	13	20	5.9	2.7
23	4.5	10	3.9	4.1	10	90	18	13	13	19	4.2	2.3
24	4.7	10	3.9	4.2	10	78	18	17	14	17	3.9	2.1
25	5.0	11	3.9	4.2	10	74	16	20	19	15	3.2	1.7
26	5.5	11	3.9	4.2	11	80	15	24	17	13	2.9	2.1
27	6.5	11	3.9	4.3	11	90	20	24	25	12	2.9	2.1
28	6.2	11	3.9	4.4	11	100	24	21	34	11	3.5	3.1
29	6.5	11	3.9	4.4	------	82	29	17	92	10	3.2	2.5
30	7.2	11	3.9	4.5	------	78	38	16	1,600	9.8	4.7	3.1
31	7.7	------	3.9	4.5	------	73	------	16	------	9.6	12	------
TOTAL	137.0	372.6	181.2	124.7	198.2	5,416	907	534.8	4,338	4,247.4	184.1	168.8
MEAN	4.42	12.4	5.85	4.02	7.08	175	30.2	17.3	145	137	5.94	5.63
MAX	7.7	28	11	4.5	11	1,500	67	38	1,600	1,370	16	21
MIN	2.0	7.7	3.9	3.8	4.6	11	15	9.8	13	9.6	2.6	1.7
AC-FT	272	739	359	247	393	10,740	1,800	1,060	8,600	8,420	365	335

CAL YR 1970 TOTAL 12,576.0 MEAN 34.5 MAX 1,300 MIN 1.8 AC-FT 24,940
WTR YR 1971 TOTAL 16,809.8 MEAN 46.1 MAX 1,600 MIN 1.7 AC-FT 33,340

PEAK DISCHARGE (BASE, 200 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
3-14	-	9.36	2,210	6-30	1515	9.94	2,540
6- 2	1445	6.40	934	7- 8	1315	4.77	438

NOTE.--No gage-height record Oct. 20 to Nov. 15, Jan. 6 to Apr. 5.

05291500 Big Stone Lake at Ortonville, Minn.

LOCATION.--Lat 45°18'18", long 96°26'57", in NW¼SW¼ sec.9, T.121 N., R.46 W., Big Stone County, at powerplant intake at west edge of Ortonville, 0.5 mile north of concrete dam at outlet, 0.5 mile southwest of Ortonville.

PERIOD OF RECORD.--March 1937 to current year.

GAGE.--Nonrecording gage read once a day. Datum of gage is 957.69 ft above mean sea level, datum of 1929. Prior to Sept. 17, 1947, nonrecording gage at site 0.5 mile south at same datum. Sept. 18, 1947, to June 30, 1963, water-stage recorder at site 0.5 mile south at same datum. Sept. 21, 1959, to June 30, 1963, supplementary nonrecording gage read once daily, at present site and datum.

EXTREMES.--Current year: Maximum gage height observed, 8.38 ft July 7; minimum observed, 5.02 ft Oct. 10.
Period of record: Maximum gage height, 12.73 ft Apr. 17, 1952; minimum observed, 3.53 ft Mar. 2, 1957 (strong upstream wind in channel). Minimum observations of 3.10 ft Mar. 2, 1940 and 2.20 ft Nov. 20, 1940 at spillway site are the result of blockage of channel to spillway by ice and snow and do not represent lake elevations.

REMARKS.--Reservoir is formed by natural lake with concrete dam at outlet. Fixed crest of dam is at elevation 963.64 ft, with one 5-foot and two 2.5-foot gates with lowest sill at elevation 958.40 ft (all elevations are referred to datum of 1929). Changes in gate openings are not made.
Silt barrier dam 700 ft upstream in outlet channel of lake completed July 7, 1958; crest elevation, 963.6 ft. Supplementary nonrecording gage readings used for stages below crest of silt barrier to June 30, 1963. Water level subject to fluctuation caused by wind action.

GAGE HEIGHT, IN FEET, OCTOBER 1970 TO SEPTEMBER 1971

Oct. 31	6.25	Apr. 30	7.84
Nov. 30	6.40	May 31	7.18
Dec. 31	6.40	June 30	8.00
Jan. 31	6.45	July 31	7.50
Feb. 28	6.65	Aug. 31	6.83
Mar. 31	7.93	Sept.30	6.63

NOTE.--Gage-height record other than that shown above is available.

05292000 Minnesota River at Ortonville, Minn.

LOCATION.--Lat 45°17'44", long 96°26'38", in NE¼NW¼ sec.16, T.121 N., R.46 W., Big Stone County, on left bank 400 ft downstream from bridge on U.S. Highway 12 and 1,300 ft downstream from dam at outlet of Big Stone Lake, at Ortonville.

DRAINAGE AREA.--1,160 sq mi, approximately.

PERIOD OF RECORD.--February 1938 to current year.

GAGE.--Water-stage recorder. Datum of gage is 956.38 ft above mean sea level, datum of 1929. Prior to Mar. 31, 1939, nonrecording gage on downstream side of dam 1,300 ft upstream at datum 1.31 ft higher.

AVERAGE DISCHARGE.--33 years, 112 cfs (81,140 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 596 cfs June 30 (gage height, 6.81 ft); minimum, 7.1 cfs Oct. 12, (gage height, 1.35 ft).
Period of record: Maximum discharge, 3,060 cfs Apr. 13, 1952 (gage height, 12.92 ft); no flow Dec. 13, 1940.

REMARKS.--Records good except those for winter periods, which are fair. Flow affected by natural storage in Big Stone Lake (see station 05291500).

REVISIONS(WATER YEARS).--WSP 895: 1939. WSP 1508: 1942 (yearly mean).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	19	11	12	11	15	253	158	76	414	82	48
2	19	14	11	12	11	15	240	107	97	254	76	49
3	13	17	11	12	11	15	201	76	105	229	60	48
4	9.8	17	11	11	11	15	193	96	91	291	54	49
5	10	11	11	11	11	15	188	76	131	278	52	49
6	12	13	11	11	11	15	184	72	138	254	53	58
7	13	10	11	11	11	15	178	95	169	284	51	71
8	13	14	11	11	11	15	195	72	111	305	51	67
9	15	21	12	11	11	14	178	53	82	267	56	63
10	9.3	17	12	11	11	14	105	83	107	267	73	65
11	10	24	12	11	11	15	184	165	118	242	56	59
12	9.1	17	12	11	11	20	196	54	142	287	54	62
13	13	17	12	11	11	50	200	58	143	338	54	59
14	11	18	12	11	11	210	125	56	131	300	54	68
15	10	16	12	11	11	190	116	64	121	300	53	62
16	9.1	16	12	11	11	161	147	46	104	311	53	57
17	8.9	16	12	11	12	133	102	68	126	248	53	55
18	9.1	15	12	11	13	154	58	75	106	326	60	52
19	8.8	12	13	11	14	206	108	82	98	234	57	50
20	9.1	12	13	11	14	215	103	49	138	209	53	51
21	8.6	14	13	11	14	210	69	44	91	189	48	50
22	9.5	24	13	11	14	206	105	41	102	187	48	45
23	9.7	16	13	11	14	199	151	53	90	173	46	45
24	9.5	10	13	11	14	190	121	139	84	132	53	41
25	9.5	10	13	11	15	184	139	106	76	220	47	37
26	10	10	12	11	15	183	93	49	58	155	46	37
27	11	11	12	11	15	190	101	49	66	136	46	41
28	10	11	12	11	15	196	157	47	89	148	45	46
29	8.9	11	12	11	------	187	102	49	112	134	46	38
30	16	11	12	11	------	190	150	56	341	83	47	34
31	22	------	12	11	------	202	------	60	------	76	49	------
TOTAL	352.9	444	371	344	345	3,639	4,442	2,298	3,443	7,271	1,676	1,556
MEAN	11.4	14.8	12.0	11.1	12.3	117	148	74.1	115	235	54.1	51.9
MAX	22	24	13	12	15	215	253	165	341	414	82	71
MIN	8.6	10	11	11	11	14	58	41	58	76	45	34
AC-FT	700	881	736	682	684	7,220	8,810	4,560	6,830	14,420	3,320	3,090

CAL YR 1970 TOTAL 14,703.9 MEAN 40.3 MAX 320 MIN 8.6 AC-FT 29,170
WTR YR 1971 TOTAL 26,181.9 MEAN 71.7 MAX 414 MIN 8.6 AC-FT 51,930

05293000 Yellow Bank River near Odessa, Minn.

LOCATION.--Lat 45°13'35", long 96°21'12", in SE¼SE¼ sec.1, T.120 N., R.46 W., Lac qui Parle County, on left bank 150 ft downstream from highway bridge, 2.5 miles southwest of Odessa and 4.5 miles upstream from mouth.

DRAINAGE AREA.--398 sq mi.

PERIOD OF RECORD.--October 1939 to current year.

GAGE.--Water-stage recorder. Datum of gage is 953.34 ft above mean sea level, datum of 1929 (Corps of Engineers bench mark). Prior to Aug. 28, 1940, nonrecording gage at site 150 ft upstream at same datum.

AVERAGE DISCHARGE.--32 years, 56.2 cfs (1.92 inches per year, 40,720 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,050 cfs July 1 (gage height, 6.99 ft); maximum gage height, 12.13 ft Mar. 15 (backwater from ice); minimum discharge, 1.4 cfs Oct. 1; minimum gage height, 1.65 ft Aug. 30.
Period of record: Maximum discharge, 6,970 cfs Apr. 9, 1969 (gage height, 19.07 ft, from floodmarks); no flow Jan. 26 to Feb. 8, 1940, Jan. 8, 9, 1942, Jan. 25 to Feb. 25, 1959, Feb. 11 to Mar. 9, 1965.

REMARKS.--Records good except those for winter periods, which are fair.

REVISIONS(WATER YEARS).--WSP 1388: 1947(M), 1950.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	9.4	21	6.0	5.7	36	96	103	25	957	11	12
2	1.7	11	21	6.0	5.8	38	103	87	28	605	9.9	9.1
3	1.8	13	21	5.9	5.8	40	110	73	59	402	9.1	6.3
4	2.0	13	20	5.8	5.9	42	116	64	68	264	8.7	4.6
5	2.1	13	19	5.8	6.0	44	106	57	58	186	7.9	6.3
6	2.2	14	18	5.7	6.0	46	83	52	55	140	7.5	6.0
7	2.4	13	17	5.6	6.1	49	79	46	52	165	6.7	5.2
8	4.3	17	16	5.6	6.2	52	75	42	48	153	6.3	4.6
9	6.4	33	15	5.6	6.3	57	70	39	44	110	6.0	4.9
10	6.8	45	15	5.6	6.3	69	68	35	43	87	5.6	4.6
11	8.4	61	14	5.5	6.5	120	62	32	42	77	4.9	4.3
12	8.3	64	13	5.4	6.5	190	57	31	37	73	4.6	3.7
13	12	55	12	5.4	6.5	300	54	29	34	70	4.6	3.4
14	5.3	47	11	5.3	6.6	500	51	26	31	63	4.3	2.9
15	3.9	53	11	5.2	6.7	900	47	25	28	55	4.0	2.5
16	3.3	41	10	5.2	6.9	700	45	23	25	48	3.7	2.3
17	4.3	35	9.6	5.2	7.8	380	44	21	21	42	3.4	2.3
18	4.8	32	9.0	5.1	10	300	43	19	19	37	3.7	2.3
19	4.4	31	8.8	5.1	15	220	43	19	18	33	4.6	2.3
20	3.9	29	8.0	5.1	18	190	43	18	16	31	4.9	2.1
21	4.2	28	7.7	5.1	20	170	43	17	15	28	4.6	1.7
22	4.1	27	7.4	5.1	22	130	43	17	15	24	4.0	1.9
23	9.0	26	7.2	5.1	23	100	43	21	13	22	3.2	2.3
24	5.6	26	7.0	5.2	25	85	43	24	15	20	2.9	2.3
25	4.4	25	6.9	5.2	28	80	43	22	17	18	2.7	1.7
26	7.2	24	6.7	5.2	29	78	41	22	16	16	2.5	2.1
27	5.5	23	6.6	5.3	31	76	46	24	19	15	2.1	2.1
28	5.5	23	6.4	5.3	33	73	54	23	26	15	2.1	3.7
29	8.1	22	6.4	5.4	------	72	61	19	73	13	1.9	4.0
30	7.7	22	6.3	5.5	------	79	100	18	411	12	2.3	2.7
31	8.2	------	6.1	5.6	------	86	------	19	------	11	8.7	------
TOTAL	159.2	875.4	364.1	168.1	361.6	5,302	1,912	1,067	1,371	3,792	158.4	116.2
MEAN	5.14	29.2	11.7	5.42	12.9	171	63.7	34.4	45.7	122	5.11	3.87
MAX	12	64	21	6.0	33	900	116	103	411	957	11	12
MIN	1.4	9.4	6.1	5.1	5.7	36	41	17	13	11	1.9	1.7
AC-FT	316	1,740	722	333	717	10,520	3,790	2,120	2,720	7,520	314	230

CAL YR 1970 TOTAL 16,949.6 MEAN 46.4 MAX 658 MIN 1.1 AC-FT 33,620
WTR YR 1971 TOTAL 15,647.0 MEAN 42.9 MAX 957 MIN 1.4 AC-FT 31,040

06334500 Little Missouri River at Camp Crook, S. Dak.

LOCATION.--Lat 45°32'49", long 103°58'23", in SW¼ sec.2, T.18 N., R.1 E., Harding County, on left bank 15 ft upstream from bridge on State Highway 20 at east edge of Camp Crook.

DRAINAGE AREA.--1,970 sq mi, approximately.

PERIOD OF RECORD.--September 1903 to November 1906, May 1956 to current year. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 3,110.98 ft above mean sea level. Prior to Nov. 30, 1906, nonrecording gage at site 0.5 mile upstream at different datum. May 1956 to Oct. 8, 1957, nonrecording gage at site 15 ft downstream at present datum.

AVERAGE DISCHARGE.--18 years, 133 cfs (96,360 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 4,440 cfs June 5 (gage height, 10.52 ft); minimum daily, 0.30 cfs Jan. 12-15.
Period of record: Maximum discharge, 7,600 cfs May 28, 1962 (gage height, 13.07 ft); no flow at times. Flood of 1952 reached a stage of about 16 ft, from information by local residents.

REMARKS.--Records good except those for winter periods, which are poor. Small diversions above station for irrigation.

REVISIONS (WATER YEARS).--WSP 1309: 1904. WSP 1729: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.48	3.3	4.5	2.5	1.3	60	3,040	648	958	70	17	46
2	.46	3.1	4.5	2.0	1.3	60	2,870	486	1,370	65	12	79
3	.54	3.5	4.0	1.5	1.3	90	2,770	379	2,050	60	11	44
4	.56	3.2	4.0	1.0	1.0	150	2,680	293	1,470	55	10	37
5	.53	3.3	4.0	.90	1.5	300	2,520	234	2,880	55	11	150
6	.72	3.4	4.0	.80	1.0	350	1,950	189	2,970	50	11	176
7	.92	3.5	4.0	.70	1.0	400	1,200	161	1,930	48	9.1	1,060
8	1.2	5.2	4.0	1.0	1.5	450	905	142	1,270	46	12	335
9	1.7	4.9	3.0	.80	3.0	500	773	132	1,010	46	11	109
10	1.9	4.9	2.5	.70	5.0	600	782	134	842	46	7.8	70
11	2.0	4.3	2.0	.50	6.0	786	965	121	782	52	7.4	53
12	2.0	4.9	2.0	.30	7.0	1,010	1,120	112	1,080	46	6.6	40
13	2.0	4.8	2.0	.30	8.0	1,410	1,060	103	1,890	36	9.1	32
14	3.6	5.3	1.5	.30	9.0	1,690	825	100	1,770	28	11	25
15	2.0	5.1	1.5	.30	10	1,880	638	100	855	24	11	21
16	2.0	4.0	1.3	1.0	20	2,000	447	91	616	24	12	20
17	2.3	4.0	1.0	1.5	30	1,500	312	85	551	24	12	19
18	2.5	4.0	.70	1.0	40	1,500	250	78	438	21	12	17
19	2.5	3.7	.50	1.0	40	1,500	269	74	350	18	11	14
20	2.6	3.7	.50	1.5	40	1,540	518	69	300	20	9.9	14
21	2.7	3.5	.50	1.5	30	1,330	835	68	250	22	9.9	13
22	2.6	3.0	.50	1.0	40	1,140	1,350	272	200	21	14	12
23	2.6	3.0	.50	1.5	50	1,000	1,620	365	150	21	10	11
24	2.9	3.5	.70	2.0	60	958	1,460	626	100	15	10	9.1
25	3.0	4.0	1.0	2.5	70	743	1,190	911	100	15	10	8.6
26	3.1	4.0	1.5	2.0	70	713	905	1,050	90	17	8.6	7.8
27	3.0	4.0	1.0	1.5	70	1,000	687	1,060	85	16	7.4	8.2
28	2.9	4.0	1.5	2.0	70	2,860	551	1,070	80	17	6.6	9.5
29	3.6	4.3	2.0	2.5	------	3,720	667	875	80	16	4.3	7.8
30	4.0	4.5	2.5	2.0	------	3,600	769	512	75	17	13	6.6
31	3.4	------	3.0	1.5	------	3,340	------	475	------	15	17	------
TOTAL	66.31	119.9	66.20	39.60	687.9	38,180	35,928	11,015	26,592	1,026	324.7	2,454.6
MEAN	2.14	4.00	2.14	1.28	24.6	1,232	1,198	355	886	33.1	10.5	81.8
MAX	4.0	5.3	4.5	2.5	70	3,720	3,040	1,070	2,970	70	17	1,060
MIN	.46	3.0	.50	.30	1.0	60	250	68	75	15	4.3	6.6
AC-FT	132	238	131	79	1,360	75,730	71,260	21,850	52,750	2,040	644	4,870

CAL YR 1970 TOTAL 35,639.02 MEAN 97.6 MAX 340 MIN .46 AC-FT 70,690
WTR YR 1971 TOTAL 116,500.21 MEAN 319 MAX 3,720 MIN .30 AC-FT 231,100

PEAK DISCHARGE (BASE, 1,000 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
3-16	-	-	2,450	5-26	2000	4.57	1,070
3-29	1215	10.36	3,960	6- 5	2000	10.52	4,440
4-12	1645	4.92	1,150	6-14	0330	7.33	2,100
4-23	0530	6.24	1,650	9- 7	1330	5.22	1,250

06342500 Missouri River at Bismarck, N. Dak.

LOCATION.--Lat 46°48'51", long 100°49'12", in SE¼NW¼SE¼ sec.31, T.139 N., R.80 W., Burleigh County, on left bank 40 ft upstream from Bismarck city waterplant, 2,100 ft downstream from Burlington Northern Railway bridge, 1.6 miles northwest of Bismarck Post Office, 3.5 miles upstream from Heart River, and at mile 1,314.5.

DRAINAGE AREA.--186,400 sq mi, approximately.

PERIOD OF RECORD.--October to November 1927, April 1928 to current year. See WSP 1729 or 1917 for history of data prior to April 1928.

GAGE.--Water-stage recorder. Datum of gage is 1,618.38 ft above mean sea level. See WSP 1729 or 1917 for history of changes prior to Sept. 30, 1937.

AVERAGE DISCHARGE.--43 years (1928-71), 21,470 cfs (15,560,000 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 42,700 cfs May 27 (gage height, 10.63 ft); maximum gage height, 12.89 ft Jan. 29 (backwater from ice); minimum discharge, 21,300 cfs Oct. 13; minimum gage height, 6.37 ft Sept. 7.
Period of record: Maximum discharge, 500,000 cfs Apr. 6, 1952 (gage height, 27.90 ft); minimum, about 1,800 cfs Jan. 3, 1940; minimum gage height, 1.35 ft Sept. 4, 1934, present site and datum.
Maximum stage known, 31.6 ft Mar. 31, 1881 (ice jam), present site and datum.

REMARKS.--Records good. Many diversions from tributaries. Flow regulated by Lake Sakakawea since November 1953 (maximum capacity, 24,790,000 acre-ft) 75.4 miles upstream. Records of chemical analyses for the water year 1971 are published in Part 2. Water Quality Records for North Dakota.

REVISIONS(WATER YEARS).--WSP 716: 1929-30. WSP 1279: 1929(M). See also PERIOD OF RECORD.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27,000	33,100	32,100	24,400	27,700	31,100	36,300	40,900	36,000	37,900	30,200	27,700
2	27,000	29,700	31,700	24,600	30,100	30,800	34,200	41,600	37,900	37,700	29,500	27,100
3	25,900	30,000	32,300	24,800	31,900	30,900	32,900	41,800	36,600	37,900	29,900	26,900
4	26,400	31,300	33,400	24,800	31,800	29,600	32,600	41,400	37,000	38,700	30,500	26,600
5	25,500	34,000	32,000	26,000	30,600	31,100	32,200	39,700	38,900	38,200	30,600	27,200
6	26,200	34,900	32,700	26,900	30,900	31,000	31,300	40,100	39,200	38,200	30,800	24,000
7	27,600	34,200	34,800	28,000	30,200	29,400	31,100	40,800	39,500	37,600	28,600	23,600
8	27,900	34,500	29,100	28,500	28,700	27,500	32,600	40,900	39,100	37,900	27,800	26,200
9	28,300	28,600	25,900	28,600	28,300	27,500	37,200	41,300	39,300	38,200	27,800	26,300
10	30,100	28,200	29,900	28,800	30,200	30,200	40,500	41,800	39,200	38,300	28,000	25,800
11	30,200	29,000	26,500	28,700	31,100	33,800	39,000	41,700	37,600	38,400	26,800	25,700
12	24,700	27,800	28,600	28,200	31,500	35,000	39,500	41,700	36,300	38,900	28,300	26,400
13	24,700	27,600	28,400	27,900	31,100	35,300	37,100	41,600	36,400	38,500	28,100	27,400
14	29,400	27,400	27,500	29,000	29,100	36,000	35,700	41,800	33,800	38,200	28,300	26,700
15	31,000	28,900	27,700	29,800	28,800	36,300	39,000	41,800	32,300	38,100	27,900	26,000
16	31,600	28,600	27,800	29,600	28,800	36,300	40,200	41,800	32,700	38,200	28,100	27,000
17	30,600	28,400	27,500	29,100	29,600	35,900	39,600	42,400	33,700	38,200	27,700	26,500
18	28,200	29,100	26,200	29,200	29,700	36,000	41,200	42,000	33,000	38,400	28,100	26,900
19	26,200	28,600	25,000	29,100	29,600	34,800	40,900	42,200	36,800	38,400	26,600	26,400
20	26,600	28,600	24,000	28,200	29,100	33,100	40,200	42,200	37,600	38,300	27,800	23,800
21	26,000	28,300	23,800	28,800	28,100	32,600	40,500	42,000	37,400	38,900	30,600	25,200
22	27,100	31,800	23,600	29,100	27,200	32,200	40,600	42,300	37,000	37,400	30,200	27,100
23	27,300	33,500	23,800	29,500	27,500	32,600	41,200	42,300	38,500	37,100	29,000	26,800
24	30,200	34,200	23,800	29,700	29,500	32,300	41,900	42,000	39,500	36,100	28,800	26,900
25	31,500	34,000	24,000	29,900	31,300	31,800	41,500	41,400	39,500	34,900	28,900	26,700
26	30,200	33,300	24,000	29,500	32,000	32,000	41,800	38,900	39,700	34,800	29,400	27,300
27	31,100	33,500	24,000	29,600	31,100	32,400	42,400	38,400	38,800	34,900	30,400	24,900
28	31,700	33,700	24,000	29,000	30,400	32,600	40,900	38,400	38,700	32,600	29,900	25,300
29	33,900	34,000	24,000	29,600	------	32,300	41,100	37,900	39,400	32,000	30,400	27,200
30	33,100	33,100	24,000	29,500	------	35,800	41,400	38,900	39,400	30,600	29,800	26,300
31	33,300	------	24,400	28,900	------	37,500	------	37,300	------	30,800	27,400	------
TOTAL	890,500	931,900	846,500	877,300	835,900	1,015.7M	1,146.6M	1,269.3M	1,120.8M	1,144.3M	896,200	787,900
MEAN	28,730	31,060	27,310	28,300	29,850	32,760	38,220	40,950	37,360	36,910	28,910	26,260
MAX	33,900	34,900	34,800	29,900	32,000	37,500	42,400	42,400	39,700	38,900	30,800	27,700
MIN	24,700	27,400	23,600	24,400	27,200	27,500	31,100	37,300	32,300	30,600	26,600	23,600
AC-FT	1,766M	1,848M	1,679M	1,740M	1,658M	2,015M	2,274M	2,518M	2,223M	2,270M	1,778M	1,563M

CAL YR 1970 TOTAL 10,344,500 MEAN 28,340 MAX 41,100 MIN 13,800 AC-FT 20,520,000
WTR YR 1971 TOTAL 11,762,900 MEAN 32,230 MAX 42,400 MIN 23,600 AC-FT 23,330,000

06354860 Spring Creek near Herreid, S. Dak.

LOCATION.--Lat 45°48'52", long 100°06'28", in SW¼ sec.13, T.127 N., R.77 W., Campbell County, on left bank 0.5 mile upstream from county highway bridge, 2.4 miles southwest of Herreid and 13.2 miles upstream from high-water line of Lake Oahe.

DRAINAGE AREA.--440 sq mi, approximately, of which about 220 sq mi is probably noncontributing.

PERIOD OF RECORD.--October 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,653.80 ft above mean sea level.

AVERAGE DISCHARGE.--9 years, 10.4 cfs (7,530 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 931 cfs June 18 (gage height, 10.85 ft); no flow for many days.
Period of record: Maximum discharge, 1,160 cfs Mar. 17, 1966 (gage height, 11.60 ft); no flow for several months each year.

REMARKS.--Records fair.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Feb. 16-20, Apr. 2-9, Aug. 30 to Sept. 30;
stage-discharge relation affected by ice Mar. 12-24)

3.0	0	3.4	.90	4.4	16	7.0	171
3.1	.03	3.5	1.6	4.8	28	8.0	301
3.2	.10	3.7	3.8	5.2	46	9.0	483
3.3	.40	3.9	6.8	6.0	88	11.0	980

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		0	.78	.16	.44	.96	75	18	11	35	1.6	.31
2		0	.78	.22	.48	.90	41	16	9.2	29	1.4	.37
3		0	.72	.19	.44	.96	51	13	8.5	23	1.5	.28
4		0	.56	.20	.48	.96	42	12	7.5	20	1.3	.22
5		0	.52	.25	.44	.84	31	11	6.8	17	1.1	.25
6		0	.37	.28	.44	.78	24	9.8	5.7	16	1.2	.37
7		0	.37	.28	.44	.90	23	8.9	6.0	15	1.0	.34
8		0	.48	.28	.40	.90	21	7.5	6.0	12	.96	.31
9		0	.52	.31	.44	.84	18	6.9	5.7	12	.96	.28
10		.17	.48	.34	.48	.90	16	6.8	7.5	11	.84	.25
11		1.3	.48	.34	.40	.96	14	6.3	7.1	10	.84	.25
12		1.2	.48	.34	.48	1.0	12	4.9	8.2	10	.66	.22
13		.90	.48	.37	.48	2.0	11	4.4	12	8.7	.72	.16
14		.72	.48	.40	.44	50	10	3.8	19	7.5	.66	.10
15		.56	.48	.40	.52	300	9.4	3.4	29	6.4	.56	.09
16		.52	.48	.44	.52	430	8.8	3.2	149	5.8	.40	.09
17		.52	.48	.44	.60	410	8.0	3.1	394	5.5	.34	.09
18		.52	.48	.44	.66	300	7.6	2.8	855	5.8	.34	.09
19		.52	.40	.44	.60	150	7.8	2.5	645	5.7	.44	.10
20		.56	.37	.40	.56	100	8.9	2.3	293	4.9	.44	.10
21		.60	.31	.44	.66	95	24	2.5	256	4.4	.44	.16
22		.60	.31	.40	.66	90	37	2.6	226	4.0	.37	.22
23		.60	.31	.40	.66	90	19	19	147	3.8	.25	.25
24		.52	.28	.40	.66	100	18	65	123	3.6	.16	.25
25		.56	.25	.40	.84	135	25	46	105	3.7	.13	.25
26		.56	.25	.40	.78	108	22	26	84	3.5	.07	.22
27		.60	.25	.40	.78	93	23	21	69	3.0	.06	.28
28		.78	.19	.48	.90	97	36	16	59	2.8	.08	.40
29		.78	.13	.72	------	93	26	14	50	2.7	.09	.60
30		.72	.15	.52	------	103	20	12	45	2.1	.13	.56
31		------	.13	.34	------	96	------	12	------	2.0	.19	------
TOTAL	0	13.81	12.70	11.42	15.68	2,852.90	689.7	382.7	3,649.2	295.9	19.23	7.46
MEAN	0	.46	.41	.37	.56	92.0	23.0	12.3	122	9.55	.62	.25
MAX	0	1.3	.78	.72	.90	430	75	65	855	35	1.6	.60
MIN	0	0	.10	.16	.40	.78	7.6	2.3	5.7	2.0	.06	.09
AC-FT	0	27	25	23	31	5,660	1,370	759	7,240	587	38	15

CAL YR 1970 TOTAL 938.43 MEAN 2.57 MAX 55 MIN 0 AC-FT 1,860
WTR YR 1971 TOTAL 7,950.70 MEAN 21.8 MAX 855 MIN 0 AC-FT 15,770

PEAK DISCHARGE (BASE, 40 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
3-16	-	-	450	5-24	1400	6.27	103
4-22	0700	5.23	46	6-18	1400	10.85	931
4-28	1600	5.28	50				

06355000 North Fork Grand River at Haley, N. Dak.

LOCATION.--Lat 45°57'39", long 103°07'09", at southwest corner of sec.30, T.129 N., R.99 W., Bowman County, on left bank 10 ft downstream from county highway bridge, 300 ft south of post office at Haley and 1 mile north of South Dakota state line.

DRAINAGE AREA.--509 sq mi.

PERIOD OF RECORD.--May 1908 to September 1917, October 1945 to current year. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 2,658.60 ft above mean sea level. Oct. 23, 1945, to June 18, 1951, nonrecording gage on downstream side of bridge near left abutment at present datum. See WSP 1729 or 1917 for history of changes prior to Oct. 23, 1945.

AVERAGE DISCHARGE.--35 years, 29.0 cfs (21,010 acre-ft per year); median of yearly mean discharges, 22 cfs (15,900 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,350 cfs Mar. 15 (gage height, 12.00 ft, backwater from ice); minimum, 0.21 cfs Oct. 4; minimum gage height, 4.34 ft Nov. 21, Aug. 17, 18.
Period of record: Maximum discharge, 14,100 cfs Apr. 7, 1952 (gage height, 17.03 ft), from rating curve extended above 4,500 cfs on basis of discharge measurement at gage height 15.09 ft, half of which was indirect measurement of flow over roadway outside of main channel; maximum gage height, 17.10 ft Apr. 15, 1950; no flow at times.

REMARKS.--Records fair. Flow regulated by Bowman-Haley Reservoir beginning August 1966 (capacity, 93,000 acre-ft) 14 miles upstream.

REVISIONS(WATER YEARS).--WSP 1239: 1908-10, 1913-15(M), 1917(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	1.5	1.6	.71	1.5	51	930	65	4.9	37	4.0	1.0
2	1.2	1.4	1.6	.63	1.5	52	890	58	4.9	30	3.5	.86
3	2.4	1.4	1.6	.63	1.6	45	700	53	4.7	27	3.2	.28
4	.34	1.3	1.6	.71	1.6	41	600	48	6.6	25	2.8	1.1
5	.88	1.4	1.8	.55	1.6	37	500	44	20	21	2.3	5.1
6	1.4	1.3	1.9	.38	1.7	36	300	40	335	19	2.1	5.3
7	.98	1.3	1.7	.36	1.6	32	238	36	506	18	2.0	3.4
8	.87	1.6	1.7	1.3	1.6	29	204	32	442	17	1.6	1.9
9	.76	1.6	1.6	1.5	1.6	27	179	30	360	11	1.3	.86
10	.72	1.5	1.6	.73	1.6	24	160	30	299	8.6	1.4	.86
11	.64	1.5	1.5	.95	1.7	45	140	28	306	6.9	1.1	.77
12	.58	1.4	1.4	1.2	1.6	148	122	26	257	6.7	.86	.69
13	.59	1.6	1.4	1.0	1.7	288	107	24	216	9.7	1.4	.62
14	.55	1.6	1.4	.87	1.7	748	93	24	175	5.7	1.6	.70
15	.52	1.5	1.4	.89	1.8	1,180	85	22	139	4.0	1.2	.78
16	.49	1.5	1.4	.84	3.4	1,040	82	19	118	4.9	.56	.78
17	.50	1.4	1.1	.95	17	690	69	20	146	4.1	.42	.73
18	.55	1.5	.95	1.0	6.0	600	67	21	140	3.5	.41	.61
19	.49	1.6	.95	1.2	2.8	500	85	14	134	5.2	.86	.65
20	.54	1.5	.95	1.2	4.3	400	81	12	123	5.9	.87	.46
21	.74	1.4	.95	1.4	16	300	97	10	110	4.0	.71	.62
22	.89	1.6	.78	1.6	22	200	120	9.6	97	3.8	.76	.60
23	.88	1.6	.71	1.7	7.5	150	148	9.3	82	4.1	.62	.51
24	1.1	1.6	.63	1.6	2.3	100	148	9.3	74	4.3	.60	.37
25	1.1	1.6	.63	1.5	2.2	100	132	9.2	67	4.7	.77	.42
26	1.1	1.6	.56	1.5	3.2	200	115	7.0	60	6.1	.71	.43
27	1.1	1.6	.56	1.5	13	500	103	5.5	53	5.6	.71	.46
28	1.3	1.6	.63	1.5	47	700	91	5.5	49	5.1	.95	.82
29	1.4	1.5	.63	1.6	------	810	82	5.6	43	6.1	.56	.88
30	1.6	1.6	.71	1.5	------	950	74	5.6	40	5.8	.63	.78
31	1.6	------	.71	1.5	------	960	------	5.3	------	4.7	.95	------
TOTAL	29.11	45.1	36.65	34.50	171.1	10,983	6,742	727.9	4,412.1	324.5	41.45	33.34
MEAN	.94	1.50	1.18	1.11	6.11	354	225	23.5	147	10.5	1.34	1.11
MAX	2.4	1.6	1.9	1.7	47	1,180	930	65	506	37	4.0	5.3
MIN	.34	1.3	.56	.36	1.5	24	67	5.3	4.7	3.5	.41	.28
AC-FT	58	89	73	68	339	21,780	13,370	1,440	8,750	644	82	66

CAL YR 1970 TOTAL 7,943.36 MEAN 21.8 MAX 344 MIN .34 AC-FT 15,760
WTR YR 1971 TOTAL 23,580.75 MEAN 64.6 MAX 1,180 MIN .28 AC-FT 46,770

06355500 North Fork Grand River near White Butte, S. Dak.

LOCATION.--Lat 45°48'10", long 102°21'45", in NE¼NE¼ sec.10, T.21 N., R.14 E., Perkins County, on left bank 100 ft upstream from highway bridge, 0.2 mile upstream from nearest tributary and 9.8 miles south of White Butte.

DRAINAGE AREA.--1,190 sq mi, approximately.

PERIOD OF RECORD.--October 1945 to current year. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Altitude of gage is 2,275 ft (by barometer). Aug. 28, 1947, and Apr. 17, 1950, to June 11, 1951, nonrecording gage, and Aug. 29, 1947, to Apr. 16, 1950, water-stage recorder all at site 100 ft downstream at same datum.

AVERAGE DISCHARGE.--26 years, 56.3 cfs (40,790 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,750 cfs Mar. 14 (gage height, 7.81 ft); maximum gage height, 8.62 ft Mar. 13 (backwater from ice); no flow Oct. 2-11, Aug. 20, 21, Sept. 3.
Period of record: Maximum discharge, 30,900 cfs Apr. 16, 1950 (gage height, 20.0 ft, from floodmarks), from rating curve extended above 19,000 cfs on basis of slope-area measurement of peak flow; no flow at times.

REMARKS.--Records good except those for winter periods, which are poor. Flow regulated by Bowman-Haley reservoir (capacity, 93,000 acre-ft), 71 miles upstream, beginning August 1966.

REVISIONS(WATER YEARS).--WSP 1279: 1947, 1950.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.05	4.6	5.2	1.9	1.5	40	1,210	148	28	84	3.7	.10
2	0	4.6	5.0	1.7	1.6	40	1,030	131	28	74	3.4	.04
3	0	4.8	4.6	1.5	1.5	30	855	119	30	68	2.4	0
4	0	4.8	4.8	1.5	1.4	22	693	108	28	62	.80	.75
5	0	4.4	4.0	1.5	1.5	20	566	96	39	54	.45	1.6
6	0	4.8	3.7	1.5	1.4	20	472	86	75	50	1.0	2.8
7	0	4.8	3.7	1.5	1.3	20	400	81	50	46	1.2	4.0
8	0	5.0	4.0	1.7	1.3	20	340	75	101	41	.50	5.0
9	0	5.0	3.4	1.6	1.4	25	289	68	387	37	.70	4.8
10	0	5.2	3.0	1.4	1.5	45	258	68	370	36	1.7	3.7
11	0	5.6	2.5	1.2	1.7	60	237	66	314	73	1.0	3.1
12	.05	5.4	3.0	1.2	1.7	100	217	68	340	141	.35	2.7
13	.25	5.8	3.0	1.2	2.2	600	196	62	314	121	.48	2.2
14	.72	5.8	2.5	1.0	3.0	1,900	180	57	258	59	.25	1.8
15	.72	5.6	2.7	1.0	5.0	1,460	161	52	227	39	.76	1.7
16	.95	5.4	2.6	1.5	20	1,160	146	48	205	30	.80	1.6
17	1.2	5.6	2.7	1.5	50	1,440	135	46	215	24	.25	1.6
18	1.4	6.4	2.2	1.4	50	1,350	135	44	232	24	.05	1.5
19	1.6	6.1	1.7	1.5	40	1,190	129	42	337	21	.05	1.4
20	1.7	5.6	1.5	2.0	30	965	148	38	227	17	0	1.6
21	1.7	5.0	1.5	1.8	25	1,050	210	40	200	14	0	1.5
22	2.1	4.0	1.5	1.6	30	1,040	344	38	237	13	.02	1.4
23	2.5	3.0	1.6	1.8	35	930	377	39	245	12	.25	1.2
24	2.3	4.0	1.6	1.8	45	868	321	35	200	9.8	.10	1.2
25	2.3	4.8	1.7	1.8	44	745	269	33	170	7.8	.10	1.6
26	2.3	4.5	1.8	1.6	42	693	245	31	150	6.4	.10	2.3
27	2.4	4.6	1.6	1.8	41	682	224	27	135	4.6	.20	3.5
28	3.5	4.6	1.7	1.9	40	864	200	25	119	2.8	.15	5.4
29	4.6	5.0	1.8	2.0	------	1,060	180	23	109	2.8	.10	7.2
30	4.4	5.2	1.9	1.5	------	1,310	164	24	98	3.4	.10	8.0
31	4.8	------	2.0	1.5	------	1,350	------	25	------	3.8	.15	------
TOTAL	41.54	150.0	84.5	48.4	520.0	21,099	10,331	1,843	5,468	1,181.4	21.11	75.29
MEAN	1.34	5.00	2.73	1.56	18.6	681	344	59.5	182	38.1	.68	2.51
MAX	4.8	6.4	5.2	2.0	50	1,900	1,210	148	387	141	3.7	8.0
MIN	0	3.0	1.5	1.0	1.3	20	129	23	28	2.8	0	0
AC-FT	82	298	168	96	1,030	41,850	20,490	3,660	10,850	2,340	42	149

CAL YR 1970 TOTAL 11,583.35 MEAN 31.7 MAX 430 MIN 0 AC-FT 22,980
WTR YR 1971 TOTAL 40,863.24 MEAN 112 MAX 1,900 MIN 0 AC-FT 81,050

PEAK DISCHARGE (BASE, 400 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
3-14	1730	7.81	2,750	6-19	0100	4.15	436
3-30	1300	6.30	1,430				

06356000 South Fork Grand River at Buffalo, S. Dak.

LOCATION.--Lat 45°34'34", long 103°32'38", in SW¼ sec.29, T.19 N., R.5 E., Harding County, on right bank at downstream side of bridge on U.S. Highway 85, 0.3 mile south of Buffalo.

DRAINAGE AREA.--148 sq mi.

PERIOD OF RECORD.--August 1955 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,839.60 ft above mean sea level. Prior to May 5, 1970, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--16 years, 7.86 cfs (5,690 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,140 cfs June 5 (gage height, 8.55 ft); minimum daily, 0.30 cfs Jan. 15, Feb. 4.
Period of record: Maximum discharge, 2,780 cfs June 14, 1963 (gage height, 9.01 ft), from rating curve extended above 550 cfs on basis of slope-area measurement of peak flow; no flow at times.
Flood in 1908, reached a stage of 15.4 ft, from information by South Dakota Department of Highways.

REMARKS.--Records good except those for winter periods, which are poor.

REVISIONS(WATER YEARS).--WSP 1917: 1956-57.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	3.0	4.0	2.0	.50	7.0	20	4.2	41	2.8	2.2	1.8
2	2.0	2.8	4.0	1.6	.50	7.0	12	4.2	12	2.8	2.2	1.7
3	2.0	2.8	3.0	1.4	.40	8.0	7.6	5.0	9.7	2.8	2.0	1.7
4	1.8	3.0	3.0	1.2	.30	9.0	5.8	3.2	375	2.8	1.8	34
5	1.8	3.0	1.2	1.0	.50	8.0	4.4	3.3	1,020	2.8	1.7	450
6	2.0	3.0	1.4	.80	.50	7.0	4.0	2.9	205	2.8	1.7	46
7	2.0	3.0	1.8	.70	.40	5.0	3.7	2.6	89	2.8	1.8	8.3
8	2.0	3.5	1.8	.90	.50	6.0	3.3	2.8	64	2.8	1.7	3.2
9	2.1	4.0	1.6	.80	1.0	7.0	2.9	2.8	30	2.8	2.0	2.1
10	2.1	3.5	1.4	.70	2.0	8.0	2.5	8.3	22	2.8	1.8	2.0
11	2.0	3.0	.80	.60	2.0	15	2.0	16	14	2.8	1.8	1.8
12	2.0	3.0	1.2	.50	3.0	50	2.0	4.2	88	2.8	1.8	1.7
13	2.0	3.0	1.0	.40	5.0	100	1.8	3.2	13	2.5	1.8	1.6
14	2.0	2.5	1.0	.40	10	50	1.7	3.0	5.2	2.4	2.2	1.5
15	2.1	5.0	.80	.30	20	35	1.8	2.5	3.9	2.1	1.7	1.6
16	2.1	6.1	.80	1.0	60	30	1.7	2.6	4.6	2.0	1.7	1.6
17	2.1	5.2	1.0	.80	50	30	3.3	2.6	298	2.0	1.8	1.8
18	2.1	5.0	.80	.60	25	30	46	2.4	86	2.0	2.0	1.7
19	2.1	5.0	.60	.60	10	30	49	1.8	29	2.0	1.8	1.7
20	2.0	3.7	.60	1.0	7.0	35	97	2.4	20	2.0	1.7	2.0
21	2.0	3.5	.60	.80	6.0	30	208	2.4	45	2.0	1.8	1.7
22	2.0	3.5	.60	.60	6.0	30	47	25	54	2.0	1.7	1.3
23	2.0	3.0	.80	.60	7.0	28	15	46	33	2.0	1.7	1.5
24	2.0	4.0	.80	.60	8.5	27	9.0	12	43	2.0	1.7	1.8
25	2.0	4.5	1.0	.60	8.0	23	6.3	3.3	30	2.0	1.6	1.8
26	2.0	3.5	1.0	.40	7.5	33	7.0	2.0	10	2.1	1.6	1.8
27	2.0	3.0	.80	.40	7.0	57	10	1.6	7.0	2.1	1.6	1.6
28	2.5	3.0	.60	.60	7.0	108	8.6	1.7	5.0	2.1	1.7	1.7
29	1.6	3.5	1.0	1.0	------	46	5.4	1.7	4.0	2.1	1.6	1.8
30	3.0	4.0	1.4	.50	------	36	4.0	12	3.0	2.1	1.7	1.8
31	3.0	------	2.5	.50	------	24	------	92	------	2.2	1.8	------
TOTAL	64.5	108.6	42.90	23.90	255.60	919.0	592.8	279.7	2,663.4	73.3	55.7	584.6
MEAN	2.08	3.62	1.38	.77	9.13	29.6	19.8	9.02	88.8	2.36	1.80	19.5
MAX	3.0	6.1	4.0	2.0	60	108	208	92	1,020	2.8	2.2	450
MIN	1.6	2.5	.60	.30	.30	5.0	1.7	1.6	3.0	2.0	1.6	1.3
AC-FT	128	215	85	47	507	1,820	1,180	555	5,280	145	110	1,160

CAL YR 1970 TOTAL 2,420.30 MEAN 6.63 MAX 305 MIN .40 AC-FT 4,800
WTR YR 1971 TOTAL 5,664.00 MEAN 15.5 MAX 1,020 MIN .30 AC-FT 11,230

PEAK DISCHARGE (BASE, 200 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
4-21	1230	5.70	370	6-12	1000	5.50	325
5-31	1630	5.16	235	6-17	1200	6.67	760
6- 5	0030	8.55	2,140	9- 5	0900	6.90	900

06356500 South Fork Grand River near Cash, S. Dak.

LOCATION.--Lat 45°38'56", long 102°38'27", in SW¼SW¼ sec.34, T.20 N., R.12 E., Perkings County, on left bank at downstream side of highway bridge, 1 mile upstream from Little Nasty Creek, 4.0 miles north of Cash, 10 miles south of Lodgepole, 12 miles northwest of Bison, and 16 miles downstream from Big Nasty Creek.

DRAINAGE AREA.--1,350 sq mi, approximately.

PERIOD OF RECORD.--October 1945 to current year. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Altitude of gage is 2,416 ft (by barometer). Prior to Oct. 25, 1946, nonrecording gage and Oct. 25, 1946 to May 16, 1966, water-stage recorder, at site 500 ft upstream. May 17, 1966 to May 2, 1968, nonrecording gage, at present site, all at same datum.

AVERAGE DISCHARGE.--26 years, 53.8 cfs (38,980 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 3,030 cfs June 6 (gage height, 7.31 ft); maximum gage height, 8.00 ft Mar. 14 (backwater from ice); minimum daily discharge, 1.0 cfs Feb. 7, 8.
Period of record: Maximum discharge, 27,000 cfs Apr. 15, 1950 (gage height, 15.40 ft), from rating curve extended above 14,000 cfs on basis of slope-area measurement of peak flow; no flow at times.

REMARKS.--Records good except those for winter periods, which are poor.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Stage-discharge relation affected by ice Nov. 15, Nov. 20 to Mar. 20)

1.4	5.5	2.5	219
1.5	10	3.0	390
1.7	28	4.0	850
1.9	56	5.0	1,480
2.2	132	7.0	2,810

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	9.5	24	4.5	1.5	48	500	49	101	36	14	12
2	13	10	24	4.0	1.8	50	400	44	146	32	14	12
3	13	12	22	3.5	1.5	52	350	40	132	33	12	11
4	13	10	22	3.0	1.5	55	300	40	223	30	11	14
5	13	14	20	2.5	2.0	50	280	38	448	30	11	26
6	13	10	22	2.5	1.5	45	270	35	2,170	28	11	106
7	13	12	25	2.8	1.0	45	260	33	705	52	10	341
8	13	14	25	3.0	1.0	50	250	33	595	154	10	127
9	12	14	20	2.0	1.5	55	240	32	489	49	10	53
10	11	14	16	2.0	3.0	60	230	36	448	34	10	35
11	10	15	12	2.0	5.0	70	220	43	292	26	10	28
12	10	16	14	2.0	10	100	210	51	179	32	11	24
13	10	16	15	2.0	15	800	210	54	229	33	11	22
14	10	16	12	2.0	20	1,700	200	43	207	28	10	20
15	10	15	13	2.0	25	1,500	190	35	124	26	10	20
16	10	18	13	3.0	30	1,050	180	31	98	22	10	20
17	10	18	14	3.5	35	950	170	31	101	20	10	20
18	9.0	18	11	3.0	30	750	170	30	184	18	10	20
19	9.5	16	9.0	3.5	25	600	180	28	358	18	10	20
20	9.5	15	7.0	4.0	20	400	200	28	278	18	10	20
21	9.5	14	5.0	3.5	15	481	268	28	148	18	11	20
22	10	12	4.5	3.0	18	600	452	28	135	18	11	20
23	9.5	10	4.0	3.5	22	464	330	30	176	16	11	20
24	9.5	12	3.5	3.5	30	476	156	49	156	16	11	20
25	10	16	3.0	3.5	35	368	103	56	114	16	12	20
26	10	15	3.5	3.0	40	299	85	43	88	15	11	20
27	10	15	3.0	3.3	42	426	78	32	61	14	10	22
28	10	16	3.5	3.7	45	1,050	70	28	49	15	10	22
29	11	18	4.5	4.0	------	956	63	26	46	15	11	22
30	9.0	22	5.0	3.0	------	614	56	31	43	15	12	22
31	9.5	------	5.0	1.5	------	452	------	33	------	15	12	------
TOTAL	332.0	432.5	384.5	92.3	478.3	14,616	6,671	1,138	8,523	892	337	1,159
MEAN	10.7	14.4	12.4	2.98	17.1	471	222	36.7	284	28.8	10.9	38.6
MAX	13	22	25	4.5	45	1,700	500	56	2,170	154	14	341
MIN	9.0	9.5	3.0	1.5	1.0	45	56	26	43	14	10	11
AC-FT	659	858	763	183	949	28,990	13,230	2,260	16,910	1,770	668	2,300

CAL YR 1970 TOTAL 11,719.2 MEAN 32.1 MAX 108 MIN 2.0 AC-FT 23,250
WTR YR 1971 TOTAL 35,055.6 MEAN 96.0 MAX 2,170 MIN 1.0 AC-FT 69,530

PEAK DISCHARGE (BASE, 500 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
3-14	-	-	2,400	6- 4	1530	4.06	883
3-28	1830	5.26	1,640	6- 6	0430	7.31	3,030

06357000 Shadehill Reservoir at Shadehill, S. Dak.

LOCATION.--Lat 45°45'12", long 102°12'12", in NW¼ sec.30, T.21 N., R.16 E., Perkins County, at dam on Grand River, 0.8 mile west of Shadehill.

DRAINAGE AREA.--3,120 sq mi, approximately.

PERIOD OF RECORD.--June 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level. Prior to Apr. 3, 1952, occasional elevations obtained by level circuits and Apr. 3, 1952 to Apr. 28, 1970, nonrecording gage at same site and datum.

EXTREMES.--Current year: Maximum contents observed, 96,560 acre-ft Apr. 1 (elevation, 2,275.01 ft); minimum observed, 48,830 acre-ft Feb. 15 (elevation, 2,264.79 ft).
Period of record: Maximum usable contents observed, 259,900 acre-ft Apr. 10, 1952 (elevation, 2,297.86 ft); minimum usable observed since first filling to spillway level, 25,950 acre-ft Mar. 17, 1962 (elevation, 2,258.90 ft).

REMARKS.--Reservoir formed by earthfill dam. Storage began July 1, 1950; dam completed August 1951. Conservation storage, 81,443 acre-ft between elevations 2,250.8 ft (invert of canal and river outlet) and elevation 2,272.0 ft (crest of morning glory spillway). Dead storage, 58,231 acre-ft below elevation 2,250.8 ft. Flood control, 217,708 acre-ft between elevations 2,272.0 ft and 2,302.0 ft (crest of emergency spillway). Surcharge, 111,203 acre-ft at elevation 2,312.0 ft (maximum pool elevation). Total reservoir capacity is 468,585 acre-ft at elevation 2,312.0 ft. The reservoir provides flood control and water for irrigation purposes. Figures given herein represent usable contents above elevation 2,250.8 ft. Prior to Oct. 1, 1968, reservoir contents published as total contents and included dead storage. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

COOPERATION.--Records of elevations and contents furnished by Bureau of Reclamation.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	2,268.72	65,980	-
Oct. 31	2,267.68	61,300	-4,680
Nov. 30	2,267.00	58,290	-3,010
Dec. 31	2,266.20	54,810	-3,480
CAL YR 1970	-	-	-2,690
Jan. 31	2,265.25	50,760	-4,050
Feb. 28	2,267.64	61,110	+10,350
Mar. 31	2,274.99	96,450	+35,340
Apr. 30	2,272.02	81,540	-14,910
May 31	2,271.51	79,060	-2,480
June 30	2,272.58	84,290	+5,230
July 31	2,271.33	78,200	-6,090
Aug. 31	2,269.59	69,980	-8,220
Sept.30	2,268.44	64,710	-5,270
WTR YR 1971	-	-	-1,270

06357500 Grand River at Shadehill, S. Dak.

LOCATION.--Lat 45°45'25", long 102°11'41", in NW¼NW¼ sec.30, T.21 N., R.16 E., Perkins County, on left bank 0.2 mile downstream from Shadehill Dam, 1 mile southwest of Shadehill, and 12 miles southwest of Lemmon.

DRAINAGE AREA.--3,120 sq mi, approximately.

PERIOD OF RECORD.--February 1943 to current year. Records for July 1904 to October 1906 collected at site 4 miles upstream and published as "at Seim" in WSP 130, 172, and 208 have been found to be unreliable and should not be used.

GAGE.--Water-stage recorder. Datum of gage is 2,192.48 ft above mean sea level. Prior to Aug. 31, 1947, nonrecording gage, and Aug. 31, 1947, to Oct. 24, 1958, water-stage recorder, at site 0.8 mile downstream at datum 6.02 ft lower.

AVERAGE DISCHARGE.--28 years, 119 cfs (86,220 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,870 cfs Mar. 19 (gage height, 6.64 ft); minimum daily, 21 cfs Oct. 28.
Period of record: Maximum discharge, 58,000 cfs Apr. 16, 1950 (gage height, 21.0 ft, from floodmarks upstream from bridge; 19.06 ft, from floodmark in gage well, unreliable, site and datum then in use); no flow for many days in some years.

REMARKS.--Records good except those for winter periods, which are fair. Flow completely regulated by Shadehill Reservoir (see station 06357000) since July 1, 1950.

REVISIONS(WATER YEARS).--WSP 1279: 1943(M). See also Period of Record.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)
(Stage-discharge relation affected by ice Dec. 2, Jan. 12-15, Jan. 30 to Feb. 10; shifting-control method used Mar. 18, 19)

Oct. 1 to Mar. 19				Mar. 19 to Sept. 30			
2.9	18	4.3	307	3.1	33	5.0	608
3.1	33	5.0	710	3.4	79	6.0	1,300
3.4	79	6.0	1,460	3.8	161	6.7	1,920
3.8	161	6.5	1,860	4.3	307		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68	66	79	66	63	72	1,830	487	74	277	102	98
2	69	66	78	66	62	70	1,760	485	35	250	101	98
3	68	66	77	66	62	72	1,600	336	97	234	102	98
4	68	65	71	68	62	75	1,420	55	106	212	101	100
5	68	66	72	70	61	75	1,230	55	111	192	101	98
6	69	69	71	70	58	77	1,060	56	136	177	100	98
7	70	70	68	70	55	78	909	74	316	166	100	98
8	69	71	68	69	58	80	870	107	393	150	100	98
9	69	71	69	68	60	80	902	106	457	146	100	98
10	68	72	70	68	65	82	838	106	528	141	100	98
11	68	74	70	68	66	83	722	105	565	166	99	98
12	69	76	68	68	65	86	652	108	580	179	99	98
13	68	76	68	68	65	87	682	107	578	172	98	98
14	68	76	70	68	65	97	659	106	570	163	99	98
15	68	75	69	68	65	485	611	106	560	150	98	98
16	68	76	69	70	64	1,190	560	109	528	139	98	98
17	68	78	69	70	66	1,560	528	107	519	128	100	98
18	68	79	69	70	69	1,820	513	106	494	122	100	98
19	68	79	70	70	69	1,850	495	106	502	112	98	97
20	68	79	68	70	70	1,810	499	103	528	104	98	98
21	68	79	68	70	71	1,760	528	105	532	101	98	98
22	68	79	68	70	71	1,690	537	104	520	102	98	97
23	68	79	68	70	70	1,600	561	105	506	98	98	96
24	69	78	68	70	71	1,500	578	104	494	102	98	97
25	70	78	68	70	71	1,410	568	104	481	99	98	97
26	70	77	68	70	72	1,350	555	103	459	98	98	96
27	28	80	68	70	71	1,270	540	105	426	102	96	96
28	21	79	68	70	73	1,270	522	104	380	100	96	96
29	56	83	68	72	------	1,510	504	104	346	100	96	97
30	66	79	68	70	------	1,730	494	106	319	100	90	97
31	66	------	67	65	------	1,850	------	104	------	99	100	------
TOTAL	2,017	2,241	2,160	2,138	1,840	26,769	23,727	4,078	12,140	4,481	3,060	2,928
MEAN	65.1	74.7	69.7	69.0	65.7	864	791	132	405	145	98.7	97.6
MAX	70	83	79	72	73	1,850	1,830	487	580	277	102	100
MIN	21	65	67	65	55	70	494	55	35	98	90	96
AC-FT	4,000	4,450	4,280	4,240	3,650	53,100	47,060	8,090	24,080	8,890	6,070	5,810

CAL YR 1970 TOTAL 23,135 MEAN 63.4 MAX 94 MIN 21 AC-FT 45,890
WTR YR 1971 TOTAL 87,579 MEAN 240 MAX 1,850 MIN 21 AC-FT 173,700

06357800 Grand River at Little Eagle, S. Dak.

LOCATION.--Lat 45°30'28", long 100°49'04", in NE¼NE¼ sec.32, T.20 N., R.27 E., Corson County, on left bank at downstream side of bridge on State Highway 63, 1.3 miles southwest of Little Eagle and 4.7 miles downstream from Little Oak Creek.

DRAINAGE AREA.--5,370 sq mi, approximately.

PERIOD OF RECORD.--July 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,628.63 ft above mean sea level. Prior to May 12, 1959, nonrecording gage, and May 12, 1959, to Aug. 11, 1970, water-stage recorder at site 0.6 mile downstream at datum 2.00 ft lower.

AVERAGE DISCHARGE.--13 years, 210 cfs (152,100 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 7,370 cfs Mar. 15 (gage height, 11.67 ft); maximum gage height, 14.93 ft Mar. 14 (backwater from ice); minimum daily discharge, 33 cfs Nov. 26.
Period of record: Maximum discharge, 11,000 cfs June 13, 1962 (gage height, 14.54 ft, site and datum then in use); maximum gage height, 21.76 ft Mar. 18, 1966 (site and datum then in use), from floodmarks (ice jam); no flow at times in 1958-62, 1969.

REMARKS.--Records good except those for winter periods, which are poor. Flow regulated by Shadehill Reservoir 144 miles upstream. (See station 06357000).

CORRECTION.--Daily discharges for November and December 1968 are interchanged in WRD S.Dak. 1969.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)
(Stage-discharge relation affected by ice Nov. 21 to Mar. 15;
shifting-control method used Apr. 3-8, June 24 to July 4)

Oct. 1 to Nov. 21		Nov. 22 to Sept. 30			
3.7	54	4.3	71	6.0	843
3.8	62	4.5	119	7.0	1,730
4.0	89	4.7	184	9.0	3,990
4.3	160	5.0	298	11.0	6,500
		5.5	518		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68	60	80	50	44	130	2,530	905	282	334	100	111
2	68	56	90	48	46	130	2,170	843	449	306	100	106
3	66	71	95	46	44	150	2,000	785	363	282	100	92
4	68	73	95	46	44	150	1,850	763	250	243	97	100
5	69	75	95	44	44	150	1,710	770	216	224	100	119
6	69	79	90	44	42	140	1,560	524	275	216	97	135
7	70	79	90	46	40	140	1,300	302	338	220	95	308
8	72	91	90	46	40	140	1,100	213	383	267	97	213
9	72	91	85	44	42	140	1,230	292	453	472	97	160
10	72	102	80	42	46	130	1,170	799	453	254	97	144
11	73	127	75	40	50	130	1,210	383	477	209	100	135
12	75	124	80	40	48	150	1,180	342	568	380	97	119
13	81	120	80	40	50	300	1,020	467	714	1,650	97	106
14	83	112	75	40	55	2,000	912	458	777	1,430	97	95
15	79	104	70	40	55	7,000	836	449	735	1,010	97	92
16	81	106	65	42	55	6,010	882	224	687	866	90	95
17	79	112	65	44	55	4,790	821	202	788	477	90	97
18	78	115	60	46	50	5,660	770	184	900	346	95	100
19	78	124	60	50	48	4,820	742	184	976	278	97	97
20	76	139	55	55	48	3,910	905	184	763	231	114	100
21	75	130	50	65	46	4,950	2,180	184	866	198	106	108
22	75	100	48	62	46	5,100	5,150	177	821	167	92	97
23	76	50	46	60	50	3,550	3,110	518	661	150	88	97
24	76	40	46	58	80	2,720	1,410	655	668	138	92	95
25	75	35	48	56	150	2,400	1,060	1,220	655	116	90	88
26	75	33	50	54	150	2,610	944	866	586	106	90	86
27	76	35	50	54	140	3,890	905	546	493	100	90	86
28	78	40	45	55	140	6,270	1,060	350	439	103	88	92
29	83	50	45	60	------	5,580	1,390	270	408	103	84	100
30	84	70	48	50	------	3,790	1,110	266	375	100	86	97
31	79	------	50	46	------	3,020	------	306	------	100	92	------
TOTAL	2,329	2,543	2,101	1,513	1,748	80,050	44,217	14,631	16,819	11,076	2,952	3,470
MEAN	75.1	84.8	67.8	48.8	62.4	2,582	1,474	472	561	357	95.2	116
MAX	84	139	95	65	150	7,000	5,150	1,220	976	1,650	114	308
MIN	66	33	45	40	40	130	742	177	216	100	84	86
AC-FT	4,620	5,040	4,170	3,000	3,470	158,800	87,700	29,020	33,360	21,970	5,860	6,880

CAL YR 1970 TOTAL 98,037 MEAN 269 MAX 6,900 MIN 26 AC-FT 194,500
WTR YR 1971 TOTAL 183,449 MEAN 503 MAX 7,000 MIN 33 AC-FT 363,900

06359500 Moreau River near Faith, S. Dak.

LOCATION (revised).--Lat 45°11'52", long 102°09'22", in NW¼NW¼ sec.10, T.14 N., R.16 E., Perkins County, on left bank 10 ft downstream from bridge on State Highway 73, 3.1 miles downstream from Rabbit Creek and 13.5 miles northwest of Faith.

DRAINAGE AREA.--2,660 sq mi, approximately.

PERIOD OF RECORD.--March 1943 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,238.68 ft above mean sea level. Prior to Oct. 5, 1949, nonrecording gage 0.3 mile upstream and Oct. 5, 1949, to July 16, 1959, nonrecording gage and crest-stage gage at present site; both at datum 1.0 ft higher. July 17, 1959, to Sept. 1, 1971, recording gage at site 500 ft downstream at present datum.

AVERAGE DISCHARGE.--28 years, 138 cfs (99,980 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 7,650 cfs Mar. 15; maximum gage height, 13.70 ft Mar. 15; no flow Oct. 1-13.
Period of record: Maximum discharge, 26,000 cfs Apr. 9, 1944 (gage height, 20.9 ft, from floodmarks, site and datum then in use), from rating curve extended above 12,000 cfs on basis of slope-area measurement of peak flow; no flow at times in 1944, 1946, 1948-51, 1955-66, 1968-70.

REMARKS.--Records fair except those for winter periods, which are poor.

REVISIONS (WATER YEARS).--WSP 1176: 1944. WSP 1279: 1946(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	6.9	14	2.0	1.2	60	1,590	223	1,130	32	5.1	35
2	0	7.2	14	1.5	1.2	65	987	158	955	30	4.8	9.8
3	0	6.9	13	1.2	1.2	70	650	120	916	27	4.5	7.2
4	0	5.4	12	1.2	1.0	75	438	99	736	26	4.2	27
5	0	14	11	1.2	1.1	70	295	78	477	24	3.6	112
6	0	10	12	1.2	1.1	65	239	64	525	26	3.2	146
7	0	10	13	1.3	1.0	60	208	57	1,080	27	2.7	143
8	0	14	14	1.5	1.2	65	191	48	2,040	21	2.7	88
9	0	14	12	1.3	1.4	70	169	42	696	20	2.5	55
10	0	13	10	1.0	2.0	75	156	38	525	19	2.3	102
11	0	15	8.0	.90	3.0	100	149	63	1,400	16	2.0	62
12	0	16	9.0	.80	3.0	200	125	82	1,040	87	4.2	38
13	0	16	9.0	.70	4.0	500	98	83	839	164	7.2	27
14	2.5	18	8.5	.60	5.0	3,000	96	98	655	55	6.0	17
15	3.4	30	8.0	.50	6.0	4,000	98	102	656	25	4.2	13
16	3.2	18	7.5	1.0	10	4,800	75	65	404	19	2.3	11
17	3.6	15	7.5	1.5	50	4,320	74	57	254	17	1.7	9.8
18	3.8	13	7.0	1.2	100	3,550	71	40	193	14	.98	8.8
19	4.5	13	6.0	1.5	150	2,440	95	32	828	11	.48	8.5
20	6.0	13	5.0	1.7	400	1,530	171	26	538	10	.54	8.5
21	6.3	13	4.0	1.6	500	1,440	338	28	282	9.1	.68	9.4
22	6.0	12	3.0	1.5	400	1,780	739	32	163	8.2	.26	10
23	5.4	10	2.0	1.6	300	1,270	1,240	62	141	7.5	.16	10
24	4.8	11	1.5	1.5	200	1,130	881	61	88	7.5	.13	10
25	4.2	12	2.0	1.5	100	768	659	78	71	7.8	.16	9.4
26	4.2	13	2.0	1.3	70	721	394	50	59	6.6	.10	8.2
27	4.8	12	1.5	1.4	65	1,370	284	30	51	5.7	.07	7.8
28	5.4	12	1.5	1.5	60	4,160	217	24	48	5.1	.05	8.5
29	5.7	13	2.0	1.5	------	5,130	208	22	39	5.1	.03	8.8
30	6.9	14	2.5	1.2	------	3,860	326	52	35	5.1	61	8.8
31	6.6	------	3.0	1.2	------	2,750	------	681	------	5.1	55	------
TOTAL	87.3	390.4	225.5	39.60	2,438.4	49,494	11,261	2,699	16,864	742.8	182.84	1,019.5
MEAN	2.82	13.0	7.27	1.28	87.1	1,597	375	87.1	562	24.0	5.90	34.0
MAX	6.9	30	14	2.0	500	5,130	1,590	681	2,040	164	61	146
MIN	0	5.4	1.5	.50	1.0	60	71	22	35	5.1	.03	7.2
AC-FT	173	774	447	79	4,840	98,170	22,340	5,350	33,450	1,470	363	2,020

CAL YR 1970 TOTAL 24,002.43 MEAN 65.8 MAX 2,330 MIN 0 AC-FT 47,610
WTR YR 1971 TOTAL 85,444.34 MEAN 234 MAX 5,130 MIN 0 AC-FT 169,500

PEAK DISCHARGE (BASE, 1,500 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
3-15	-	-	7,650	5-31	1800	7.62	1,910
3-22	1630	7.90	2,130	6- 8	0400	8.81	2,860
3-28	1900	11.42	5,500	6-11	1400	7.32	1,700

06360500 Moreau River near Whitehorse, S. Dak.

LOCATION.--Lat 45°15'21", long 100°50'33", in SW¼SE¼ sec.17, T.15 N., R.27 E., Dewey County, on left bank 30 ft downstream from bridge, 2.4 miles southeast of Whitehorse, 8.8 miles downstream from Little Moreau River, and 16.3 miles southeast of town of Timber Lake.

DRAINAGE AREA.--4,880 sq mi, approximately.

PERIOD OF RECORD.--June 1954 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,661.48 ft above mean sea level. Prior to Nov. 24, 1954 (corrected), nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--17 years, 173 cfs (125,300 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 10,300 cfs Mar. 17 (gage height, 17.64 ft); no flow for many days.
Period of record: Maximum discharge, 17,500 cfs May 22, 1962 (gage height, 21.0 ft); no flow at times in each year.
Flood in June 1953 reached a stage of about 26.2 ft. Flood in March 1947 was probably higher.

REMARKS.--Records good except those for winter periods, which are poor.

REVISIONS(WATER YEARS).--WSP 1917: 1957, 1960.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.05	.02	.09		0	85	3,770	612	408	91	14	0
2	.02	.02	.09		0	90	2,480	567	624	80	9.6	0
3	.02	.02	.08		0	95	1,690	528	1,410	70	7.6	0
4	.02	.02	.08		0	100	1,200	420	1,150	62	6.6	0
5	0	.03	.08		0	100	865	351	1,250	55	5.1	0
6	0	.03	.07		0	95	671	288	953	50	4.2	0
7	0	.04	.07		0	90	537	241	720	51	1.4	0
8	0	.04	.06		0	100	453	212	573	42	1.1	0
9	0	.04	.06		0	140	411	183	963	52	.84	0
10	0	.05	.05		0	200	366	177	1,650	149	.44	0
11	0	.05	.05		0	400	336	173	841	159	.28	99
12	0	.05	.04		0	800	300	156	689	1,550	.22	89
13	0	.06	.04		0	2,000	265	144	1,270	1,410	.16	73
14	0	.06	.03		0	4,000	234	125	1,050	842	.11	76
15	0	.07	.03		0	6,000	219	117	893	441	.08	75
16	0	.07	.03		0	8,000	205	130	755	354	.04	52
17	0	.08	.03		300	9,000	194	132	668	229	0	32
18	0	.09	.02		550	9,040	187	132	664	161	.04	23
19	0	.09	.01		500	7,000	181	133	1,490	114	.09	16
20	0	.10	0		400	5,130	701	117	877	91	.17	15
21	0	.10	0		300	4,030	1,660	104	1,230	76	.08	21
22	0	.12	0		200	3,530	1,670	98	1,040	68	.04	23
23	0	.14	0		150	2,900	1,520	699	773	65	0	24
24	0	.15	0		120	2,460	1,330	1,300	522	55	0	31
25	0	.14	0		100	2,060	1,480	1,370	345	48	0	36
26	0	.14	0		90	1,880	1,110	783	271	41	0	38
27	0	.12	0		85	1,820	1,080	570	205	34	0	39
28	0	.12	0		85	2,550	845	408	160	28	0	47
29	0	.10	0		------	3,850	762	294	130	25	0	56
30	0	.10	0		------	5,850	973	306	108	24	0	60
31	.01	------	0		------	5,370	------	615	------	19	0	------
TOTAL	.12	2.26	1.01	0	2,880	88,765	27,695	11,485	23,682	6,536	52.19	925
MEAN	.004	.075	.033	0	103	2,863	923	370	789	211	1.68	30.8
MAX	.05	.15	.09	0	550	9,040	3,770	1,370	1,650	1,550	14	99
MIN	0	.02	0	0	0	85	181	98	108	19	0	0
AC-FT	.2	4.5	2.0	0	5,710	176,100	54,930	22,780	46,970	12,960	104	1,830

CAL YR 1970 TOTAL 53,445.31 MEAN 146 MAX 5,120 MIN 0 AC-FT 106,000
WTR YR 1971 TOTAL 162,023.58 MEAN 444 MAX 9,040 MIN 0 AC-FT 321,400

PEAK DISCHARGE (BASE, 1,800 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
3-17	1930	17.64	10,300	6-10	0600	7.10	1,920
3-30	2130	13.73	6,310	6-19	1100	7.29	2,010
4-21	0200	7.87	2,240	7-12	1300	7.32	2,020
5-23	2000	7.00	1,840				

06395000 Cheyenne River at Edgemont, S. Dak.

LOCATION.--Lat 43°18'20", long 103°49'14", in SW¼SE¼SE¼ sec.36, T.8 S., R.2 E., Fall River County, on right bank at downstream side of bridge on U.S. Highway 18 at Edgemont, 300 ft downstream from Chicago, Burlington and Quincy Railroad bridge and 600 ft upstream from Cottonwood Creek.

DRAINAGE AREA.--7,143 sq mi.

PERIOD OF RECORD.--June 1903 to November 1906 (no winter records), April 1928 to February 1933, October 1946 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,416.56 ft above mean sea level. Prior to Nov. 30, 1906, nonrecording gage 20 ft upstream at datum 2.7 ft lower. Apr. 11, 1928, to Feb. 28, 1933, Oct. 4, 1946, to Oct. 23, 1947, and Jan. 11, 1961, to Apr. 24, 1963, nonrecording gage at present site and datum.

AVERAGE DISCHARGE.--29 years (1928-32, 1946-71), 109 cfs (78,970 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 13,800 cfs May 25 (gage height, 8.57 ft); no flow part of each day Oct. 31, Nov. 1, 2, 15, 21, Dec. 4.
Period of record: Maximum discharge, 13,800 cfs May 25 (gage height, 8.57 ft); no flow at times most years.
Flood of May 1, 1920 reached a stage of 12.0 ft (present datum), from floodmarks at railroad bridge. Flood of May 12, 1920 reached a stage of 11.0 ft (present datum), from floodmarks at railroad bridge.

REMARKS.--Records good except those for winter periods, which are poor. Many small reservoirs above station used for stock and irrigation water (total capacity, about 45,000 acre-ft). Water-quality records for the water year 1971 are published in Part 2 of this report.

REVISIONS(WATER YEARS).--WSP 1086: Drainage area. WSP 1116: 1947.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.3	9.9	9.0	5.5	1.0	20	413	348	7,890	57	7.5	.56
2	6.2	9.4	7.0	2.5	1.5	16	387	245	2,560	61	6.9	.48
3	6.2	14	7.0	1.0	1.0	18	290	201	2,160	56	6.2	.48
4	6.2	16	7.0	.50	.50	20	140	167	1,080	53	4.3	7.7
5	6.8	15	6.0	.20	.40	18	108	140	1,160	50	4.0	6.9
6	7.7	15	8.0	.20	.20	12	98	111	882	125	3.6	3.2
7	19	16	9.0	.30	.10	5.0	100	739	819	123	3.2	2.2
8	17	14	10	.50	.20	6.0	84	596	648	72	2.9	4.0
9	13	17	8.0	1.0	1.0	7.0	78	344	747	54	2.6	4.0
10	16	13	5.0	.80	2.0	7.5	113	271	530	46	2.9	2.6
11	18	14	5.0	.50	2.5	10	94	221	437	40	2.9	2.2
12	18	13	5.5	.40	2.5	15	80	207	344	32	2.9	.80
13	16	9.9	5.0	.50	3.0	25	56	178	491	27	2.6	.72
14	14	9.9	6.0	.70	10	35	50	147	530	24	2.2	.64
15	14	13	7.0	1.0	50	45	56	120	416	21	1.2	.64
16	14	13	8.0	2.0	150	50	26	96	530	18	1.2	.72
17	14	11	7.0	2.5	100	70	22	74	291	15	.80	.64
18	12	11	5.0	1.8	100	80	139	55	238	15	2.2	1.5
19	12	12	3.0	2.0	70	70	766	49	195	12	3.2	1.2
20	11	13	5.0	3.0	60	80	951	48	151	11	2.6	.80
21	11	11	10	2.5	40	90	667	41	131	11	1.5	1.2
22	11	8.0	11	2.0	30	60	1,160	50	148	9.4	.80	1.5
23	11	1.2	8.0	2.5	25	45	470	2,720	128	8.1	1.2	1.5
24	8.6	1.2	5.0	3.0	30	50	317	8,920	117	8.8	.80	2.2
25	5.6	5.0	5.0	3.0	35	65	234	9,850	109	9.4	.80	2.2
26	6.2	3.0	5.5	2.5	25	100	194	2,050	93	10	.80	1.8
27	11	5.0	4.0	3.0	20	249	330	2,160	77	8.1	.72	1.8
28	13	10	5.0	4.0	25	197	725	1,150	70	7.5	.64	2.6
29	12	11	5.5	5.0	------	371	1,370	785	68	8.8	.64	5.6
30	11	11	6.0	4.0	------	638	660	1,190	63	8.8	.64	4.9
31	11	------	5.5	2.0	------	603	------	4,840	------	7.5	.64	------
TOTAL	359.8	325.5	203.0	60.40	785.90	3,077.5	10,078	38,113	23,103	1,009.4	75.08	67.28
MEAN	11.6	10.9	6.55	1.95	28.1	99.3	336	1,229	770	32.6	2.42	2.24
MAX	19	17	11	5.5	150	638	1,370	9,850	7,890	125	7.5	7.7
MIN	5.6	1.2	3.0	.20	.10	5.0	22	41	63	7.5	.64	.48
AC-FT	714	646	403	120	1,560	6,100	19,990	75,600	45,820	2,000	149	133

CAL YR 1970 TOTAL 11,376.16 MEAN 31.2 MAX 345 MIN 0 AC-FT 22,560
WTR YR 1971 TOTAL 77,257.86 MEAN 212 MAX 9,850 MIN .10 AC-FT 153,200

PEAK DISCHARGE (BASE, 1,500 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
4-29	1030	3.43	1,800	6- 1	0700	7.54	10,500
5-25	0800	8.57	13,800	6- 3	0100	4.36	3,350
5-27	0800	4.09	2,920				

06400000 Hat Creek near Edgemont, S. Dak.

LOCATION.--Lat 43°14'46", long 103°35'16", in SW¼SE¼SE¼ sec.24, T.9 S., R.4 E., Fall River County, on left bank at downstream side of bridge on State Highway 71, 2.0 miles upstream from mouth, 2.0 miles west of Heppner, and 12.5 miles southeast of Edgemont.

DRAINAGE AREA.--1,044 sq mi.

PERIOD OF RECORD.--April 1905 to September 1906, October 1950 to current year. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 3,295.71 ft above mean sea level. Nonrecording gage Apr. 8, 1905, to May 2, 1906, at site 1,000 ft downstream and May 3 to July 7, 1906, at site 0.8 mile upstream at different datum. Nov. 6, 1950, to May 1, 1951, nonrecording gage at present site and datum.

AVERAGE DISCHARGE.--22 years, 24.5 cfs (17,750 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,700 cfs May 24 (gage height, 11.76 ft); no flow for many days. Period of record: Maximum discharge, 13,300 cfs June 16, 1967 (gage height, 13.35 ft), from rating curve extended above 2,600 cfs on basis of slope-area measurement at 11.98 ft. No flow for many days in each year.

REMARKS.--Records fair except those for winter periods, which are poor. A few small diversions above station for irrigation. Lander ditch diverts water from Hat Creek 0.8 mile upstream from gaging station for irrigating hay meadows downstream from station. Results of discharge measurements, in cubic feet per second, of Lander ditch during water year 1970-71 are given herewith:

Oct. 26	0	Apr. 13	0.02
Feb. 16	0	May 11	8.00
Mar. 16	2.46	July 1	4.33
		July 27	.18

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 8-17, 24-26, Sept. 10-30; stage-discharge relation affected by ice Feb. 14 to Mar. 30)

3.4	0	4.2	9.4	7.0	210
3.5	.32	4.5	17	8.0	356
3.6	1.0	5.0	39	10.0	780
3.7	1.8	5.5	66	13.0	1,720
3.9	4.1	6.0	102		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		0			0	1.0	3.0	44	450	6.4	.13	0
2		0			0	.60	.52	16	300	3.3	.03	0
3		0			0	.50	.16	5.0	200	2.2	0	0
4		0			0	.60	.13	1.4	500	1.2	0	0
5		0			0	.50	.06	.29	500	25	0	0
6		0			0	.40	.10	2.4	800	28	0	0
7		0			0	.10	.10	19	400	12	0	0
8		0			0	.20	.13	104	300	19	0	0
9		0			0	.25	.13	29	89	12	0	0
10		0			0	.30	.19	11	52	7.1	0	5.3
11		0			0	.40	.16	7.5	42	3.7	0	4.4
12		0			0	.50	.16	3.0	36	2.0	0	2.0
13		0			0	.60	.19	6.7	34	.86	0	1.3
14		0			.50	3.0	.13	11	37	1.0	0	.93
15		0			.80	15	.10	3.6	44	.93	0	.80
16		0			15	30	.06	.59	26	.73	0	.73
17		0			25	15	.25	.46	20	.59	0	.66
18		0			10	5.0	.39	.39	16	.39	0	.52
19		0			6.0	2.0	.46	.32	15	.29	0	.39
20		0			5.0	2.0	.39	.16	12	.46	0	.39
21		0			3.0	.60	.59	.10	12	.86	0	.46
22		0			1.5	.20	.66	.19	11	.59	0	.39
23		0			1.0	.15	17	384	11	.39	0	.39
24		0			2.5	.10	3.8	1,100	10	.16	0	.32
25		0			2.5	.15	2.0	1,530	9.2	.26	0	1.6
26		0			2.0	.20	2.5	1,200	7.5	.46	0	1.1
27		0			1.5	.50	5.7	850	6.1	.19	0	2.1
28		.06			1.0	1.0	30	500	5.5	.13	0	2.4
29		.11			------	4.0	76	225	6.1	.29	0	2.1
30		0			------	15	67	300	8.3	.26	0	1.0
31		------			------	14	------	600	------	.19	0	------
TOTAL	0	.17	0	0	77.30	113.85	212.06	6,955.10	3,959.7	130.93	.16	29.28
MEAN	0	.006	0	0	2.76	3.67	7.07	224	132	4.22	.005	.98
MAX	0	.11	0	0	25	30	76	1,530	800	28	.13	5.3
MIN	0	0	0	0	0	.10	.06	.10	5.5	.13	0	0
AC-FT	0	.3	0	0	153	226	421	13,800	7,850	260	.3	58

CAL YR 1970 TOTAL 982.50 MEAN 2.69 MAX 202 MIN 0 AC-FT 1,950
WTR YR 1971 TOTAL 11,478.55 MEAN 31.4 MAX 1,530 MIN 0 AC-FT 22,770

PEAK DISCHARGE (BASE, 1,000 CFS).--May 24 (1900) 1,700 cfs (11.76 ft).

06400500 Cheyenne River near Hot Springs, S. Dak.

LOCATION.--Lat 43°18'19", long 103°33'43", in SE¼SE¼ sec.31, T.8 S., R.5 E., Fall River County, near right bank on downstream side of bridge on State Highway 71 (corrected), 0.2 mile downstream from Cascade Creek and 10 miles southwest of Hot Springs.

DRAINAGE AREA.--8,710 sq mi, approximately.

PERIOD OF RECORD.--September 1914 to September 1920 (published as "near Cascade Springs" 1914-15), March 1943 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,190.89 ft above mean sea level. Sept. 11, 1914, to Apr. 1, 1915, water-stage recorder, and Apr. 2, 1915, to Sept. 30, 1920, nonrecording gage at site 3 miles downstream at different datum. Mar. 1, 1943, to June 17, 1954, nonrecording gage at present site and datum.

AVERAGE DISCHARGE.--34 years, 238 cfs (172,400 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 14,200 cfs May 25 (gage height, 17.71 ft); minimum daily, 6.8 cfs Aug. 9, 10, 24.
Period of record: Maximum discharge, 114,000 cfs May 12, 1920 (gage height, 29.2 ft, from floodmarks, site and datum then in use), from rating curve extended above 19,000 cfs on basis of slope-area measurement of peak flow; minimum daily, 1.2 cfs Sept. 5, 7, 1970.

REMARKS.--Records good. Many small reservoirs above station used for stock and irrigation water (total capacity, about 53,000 acre-ft).

REVISIONS(WATER YEARS).--WSP 976: 1920, drainage area. WSP 1309: 1944(M). WSP 1339: 1953.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	27	53	23	23	70	532	657	7,640	103	16	8.6
2	24	28	42	23	23	64	467	420	3,490	103	13	7.7
3	24	31	32	23	24	64	455	297	2,800	94	11	8.6
4	24	28	32	24	24	62	276	221	1,730	88	11	22
5	24	31	31	24	24	55	154	157	1,770	88	10	35
6	25	35	26	24	24	50	122	163	1,820	128	7.7	31
7	36	35	31	24	24	52	105	438	1,580	168	7.7	30
8	44	38	36	24	24	50	108	791	1,230	160	7.7	31
9	39	35	48	24	26	48	93	584	923	113	6.8	32
10	36	35	34	24	31	48	95	378	725	90	6.8	29
11	36	32	27	24	30	57	133	308	524	78	7.7	31
12	41	32	30	24	31	66	119	266	418	70	7.7	26
13	44	34	31	21	41	78	98	242	390	57	10	24
14	41	32	32	21	45	100	80	218	682	51	11	23
15	38	26	32	21	50	148	66	179	498	47	8.6	23
16	36	34	31	21	250	170	58	127	508	44	8.6	25
17	35	35	31	21	195	225	45	95	413	41	12	27
18	35	31	32	21	228	319	41	76	234	38	15	26
19	35	30	31	21	202	259	237	55	185	31	15	26
20	34	26	31	21	185	215	1,160	48	174	29	13	25
21	32	34	30	21	133	221	792	47	170	25	14	25
22	32	20	27	21	85	42	1,190	50	164	24	12	25
23	28	19	27	21	100	83	862	775	148	23	7.7	26
24	26	19	28	21	95	100	516	8,100	139	20	6.8	25
25	26	25	28	23	103	130	385	11,900	126	23	7.7	27
26	24	23	28	23	78	166	326	4,080	120	26	8.6	30
27	23	28	27	23	70	189	301	2,630	111	20	16	26
28	24	32	27	23	74	169	634	1,650	106	17	16	29
29	27	44	25	23	------	286	1,290	1,040	113	16	11	29
30	30	60	24	23	------	574	1,120	732	111	16	9.5	30
31	30	------	24	23	------	738	------	3,050	------	16	9.5	------
TOTAL	974	939	968	698	2,242	4,898	11,860	38,774	29,012	1,947	325.1	762.9
MEAN	31.4	31.3	31.2	22.5	80.1	158	395	1,283	967	59.6	10.5	25.4
MAX	44	60	53	24	250	738	1,290	11,900	7,640	168	16	35
MIN	21	19	24	21	23	42	41	47	106	16	6.8	7.7
AC-FT	1,930	1,860	1,920	1,380	4,450	9,720	23,520	78,890	57,550	3,660	645	1,510

CAL YR 1970 TOTAL 26,895.8 MEAN 57.2 MAX 493 MIN 1.2 AC-FT 41,450
WTR YR 1971 TOTAL 94,300.0 MEAN 258 MAX 11,900 MIN 6.8 AC-FT 187,000

PEAK DISCHARGE (BASE, 2,000 CFS)

DATE	TIME	G.H.	DISCHARGE
5-25	1200	17.71	14,200
6- 1	1400	15.64	8,910

06401000 Angostura Reservoir near Hot Springs, S. Dak.

LOCATION.--Lat 43°20'35", long 103°26'16", in SW¼NW¼ sec.20, T.8 S., R.6 E., Fall River County, at dam on Cheyenne River, 6.5 miles southeast of Hot Springs.

DRAINAGE AREA.--9,100 sq mi, approximately.

PERIOD OF RECORD.--October 1949 to current year.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level. Prior to Aug. 26, 1965, nonrecording gage at same site and datum.

EXTREMES.--Current year: Maximum contents observed, 133,900 acre-ft May 25 (elevation, 3,188.51 ft); minimum observed, 23,960 acre-ft Oct. 3 (elevation, 3,176.78 ft).
Period of record: Maximum contents observed, 145,200 acre-ft June 18, 1962 (elevation, 3,189.00 ft); minimum observed since normal operating level reached, 45,350 acre-ft Sept. 28, 1960 (elevation, 3,162.90 ft).

REMARKS.--Reservoir formed by concrete gravity dam with earth embankment with gated concrete gravity spillway section. Storage began October 3, 1949; dam completed December 1949. Conservation capacity, 127,558 acre-ft between elevations 3,139.75 ft (invert of lowest outlet) and 3,187.2 ft (top of spillway gates). Dead storage below elevation 3,139.75, 11,203 acre-ft. Surcharge capacity, 196,221 acre-ft (maximum pool elevation). Figures given herein represent contents above elevation 3,139.75 ft. Water is stored for irrigation.

COOPERATION.--Records of elevations, contents, and diversion to Angostura project furnished by Bureau of Reclamation.

MONTHEND ELEVATION AND CONTENTS at 2400 HOURS, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)	+Diversions (acre-feet)
Sept.30	3,176.88	84,330	-	-
Oct. 31	3,177.12	85,220	+890	113
Nov. 30	3,177.51	86,690	+1,470	-
Dec. 31	3,177.93	88,280	+1,590	-
CAL YR 1970	-	-	-16,220	45,901
Jan. 31	3,178.28	89,620	+1,340	-
Feb. 28	3,179.44	94,140	+4,520	-
Mar. 31	3,181.55	102,610	+8,470	-
Apr. 30	3,186.62	124,820	+22,210	-
May 31	3,187.46	128,800	+3,980	2,511
June 30	3,187.17	127,410	-1,390	2,975
July 31	3,184.02	113,040	-14,370	14,439
Aug. 31	3,179.80	95,560	-17,480	16,478
Sept.30	3,178.67	91,130	-4,430	4,696
WTR YR 1971	-	-	+6,800	41,212

(+) Diversions to Angostura irrigation project.

06401500 Cheyenne River below Angostura Dam, S. Dak.

LOCATION.--Lat 43°20'42", long 103°26'12", in NE¼NW¼NW¼ sec.20, T.8 S., R.6 E., Fall River County, on right bank 800 ft downstream from Angostura Dam, 4.8 miles upstream from Fall River and 6.5 miles southeast of Hot Springs.

DRAINAGE AREA.--9,100 sq mi, approximately.

PERIOD OF RECORD.--October 1945 to current year. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 3,058.02 ft above mean sea level (Bureau of Reclamation bench mark). Prior to Oct. 17, 1946, nonrecording gage and Oct. 17, 1946 to July 7, 1946, water-stage recorder at site 4.8 miles downstream at different datum.

AVERAGE DISCHARGE.--26 years, 89.0 cfs (64,480 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 21,100 cfs May 25 (gage height, 13.18 ft); minimum daily, 0.46 cfs Sept. 2.
Period of record: Maximum discharge, 24,300 cfs June 18, 1962 (gage height, 13.81 ft), from rating curve extended above 6,000 cfs; no flow Oct. 9, 1949, to Feb. 5, 1950, Apr. 28, Aug. 26, 30, 1951.

REMARKS.--Records good except those below 5 cfs, which are fair. Flow completely regulated by and diversions made at Angostura Reservoir 800 ft upstream. (See station 06401000.) Water-quality records for the water year 1971 are published in Part 2 of this report.

REVISIONS(WATER YEARS).--WSP 1309: 1946(M).

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 24 to June 29, July 11-31)

2.78	.46	3.3	16	6.0	1,190
2.8	.50	3.4	31	7.0	1,930
2.9	1.0	3.6	73	8.0	3,220
3.0	2.5	4.0	171	9.0	5,300
3.1	5.2	4.5	350	11.0	10,900
3.2	9.2	5.0	580	13.0	19,400

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	1.0	1.2	1.2	1.2	.95	1.1	310	6,840	11	1.3	.48
2	1.7	.97	1.2	1.2	1.4	.96	.99	54	5,400	9.2	1.3	.46
3	1.7	.96	1.2	1.2	1.2	.85	.81	93	2,520	2.5	1.2	.50
4	1.7	1.1	1.2	1.2	1.2	.88	.84	65	1,670	2.8	1.2	.76
5	1.7	1.0	1.2	1.3	1.1	.88	.89	278	1,500	2.8	1.1	.61
6	1.8	1.1	1.2	1.3	1.3	.89	.90	93	1,690	3.1	1.0	.61
7	2.0	1.1	1.2	1.4	1.2	.92	.89	1.9	1,590	3.2	.93	.63
8	1.6	1.1	1.2	1.2	1.2	.96	.94	511	1,260	3.2	.90	.70
9	1.6	1.1	1.2	1.2	1.1	.96	1.1	652	847	2.7	.80	.68
10	1.5	1.1	1.3	1.2	1.1	.98	1.0	367	871	2.5	.82	.73
11	1.3	1.1	1.2	1.2	1.1	1.0	1.0	256	552	2.5	.73	.70
12	1.3	1.1	1.2	1.3	1.1	.99	1.2	190	569	2.6	.71	.69
13	1.4	1.1	1.2	1.4	1.1	1.0	1.1	246	456	2.4	.65	.74
14	1.2	1.1	1.2	1.4	.96	.96	1.0	133	631	2.3	.65	.82
15	1.2	1.1	1.2	1.4	1.0	.98	.96	84	493	2.2	.60	.83
16	1.2	1.1	1.1	1.4	1.0	.95	1.0	86	457	2.0	.60	.96
17	1.2	1.1	1.1	1.3	.96	.93	1.2	44	667	2.1	.55	.98
18	1.2	1.2	1.1	1.2	.96	.88	.88	2.7	190	2.0	.65	.93
19	1.2	1.2	1.2	1.2	.96	.89	.96	2.9	72	2.0	.55	.96
20	1.1	1.2	1.2	1.2	.96	.86	.88	2.9	227	1.9	.54	1.1
21	1.0	1.2	1.1	1.4	.96	.96	1.2	4.2	166	1.8	.51	1.1
22	1.0	1.3	1.1	1.4	.91	.96	1.0	2.9	148	1.9	.51	1.0
23	1.0	1.3	1.1	1.4	.88	.96	.96	1,060	120	1.9	.48	1.1
24	1.1	1.2	1.1	1.2	.87	.91	1.1	6,920	46	1.9	.48	.99
25	.96	1.2	1.1	1.2	.92	.93	1.1	15,900	17	2.0	.50	.93
26	1.1	1.2	1.1	1.2	.89	.93	1.2	7,840	9.4	2.0	.50	.88
27	1.1	1.2	1.1	1.2	.90	.96	1.1	2,100	6.7	2.0	.51	.98
28	1.1	1.2	1.1	1.2	.90	1.0	1.1	1,990	6.8	1.8	.50	1.0
29	1.1	1.2	1.1	1.3	------	.98	1.1	1,060	7.1	1.7	.52	.99
30	1.1	1.2	1.2	1.4	------	.91	77	984	9.2	1.6	.54	.97
31	1.0	------	1.2	1.2	------	1.0	------	1,580	------	1.5	.50	------
TOTAL	40.56	34.03	36.1	39.5	29.33	29.17	106.50	42,913.5	29,038.2	85.1	22.33	24.81
MEAN	1.31	1.13	1.16	1.27	1.05	.94	3.55	1,384	968	2.75	.72	.83
MAX	2.0	1.3	1.3	1.4	1.4	1.0	77	15,900	6,840	11	1.3	1.1
MIN	.96	.96	1.1	1.2	.87	.85	.81	1.9	6.7	1.5	.48	.46
AC-FT	80	68	72	78	58	58	211	85,120	57,600	169	44	49

CAL YR 1970 TOTAL 755.79 MEAN 2.0 MAX 153 MIN .50 AC-FT 1,500
WTR YR 1971 TOTAL 72,399.13 MEAN 198 MAX 15,900 MIN .46 AC-FT 143,600

06402000 Fall River at Hot Springs, S. Dak.

LOCATION.--Lat 43°25'50", long 103°28'33", in NW¼NW¼ sec.24, T.7 S., R.5 E., Fall River County, on left bank at intersection of River Street and University Avenue in Hot Springs and 6.0 miles upstream from mouth.

DRAINAGE AREA.--137 sq mi.

PERIOD OF RECORD.--October 1937 to current year. Monthly discharge only for October 1937, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 3,413.20 ft above mean sea level. Prior to June 2, 1939, nonrecording gage at site 300 ft upstream at datum 3.00 ft higher.

AVERAGE DISCHARGE.--34 years, 26.2 cfs (18,980 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 122 cfs June 29 (gage height, 2.51 ft); minimum daily, 17 cfs July 30, Aug. 10.
Period of record: Maximum discharge, 13,100 cfs Sept. 4, 1938 (gage height, 18.4 ft, site and datum then in use), from rating curve extended above 51 cfs on basis of weir formula and slope-area measurement of peak flow; minimum, 4 cfs Sept. 23, 1940.

REMARKS.--Records good. Flow regulated by Coldbrook Reservoir (capacity, 7,200 acre-ft) beginning September 1952, and Cottonwood Springs Lake (capacity, 8,385 acre-ft) since June 1969. Some diversion above station for municipal supply of Hot Springs.

REVISIONS(WATER YEARS)(revised).--WSP 1279: 1938, 1941(M), 1947(M). WSP 1729: 1959(M).

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 10 to Dec. 11, May 9-14, July 4 to Aug. 24)

2.0	17
2.1	26
2.2	48
2.5	152

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	21	21	22	21	22	22	23	24	21	18	23
2	25	21	21	22	21	22	22	23	24	21	18	22
3	25	22	21	22	22	21	23	23	25	22	18	22
4	24	21	19	22	22	21	23	23	27	21	18	25
5	25	21	20	22	22	21	23	22	26	21	19	24
6	25	22	20	22	22	22	22	22	23	22	18	24
7	25	22	20	22	22	21	22	22	23	20	18	25
8	23	22	20	22	22	22	22	22	23	21	18	25
9	23	22	21	22	22	23	22	22	22	21	18	24
10	23	22	21	22	22	24	22	22	22	21	17	24
11	23	22	21	22	22	24	22	21	23	21	18	25
12	23	22	21	22	22	25	22	22	22	20	18	24
13	23	23	21	22	22	24	22	22	22	19	18	24
14	22	23	21	21	22	24	22	22	22	19	18	23
15	22	23	21	21	22	24	22	22	22	18	18	24
16	22	23	21	21	22	23	22	22	22	18	18	24
17	23	22	21	21	22	23	24	22	22	19	19	25
18	23	22	21	21	22	23	24	22	22	18	20	25
19	23	22	22	22	22	23	26	22	22	18	20	25
20	23	22	22	21	22	23	25	22	22	18	20	26
21	23	22	22	21	22	23	25	21	21	18	20	27
22	22	23	22	21	23	23	25	24	21	18	21	27
23	22	22	21	21	23	23	24	37	21	18	20	27
24	22	21	21	21	23	22	25	23	21	18	22	26
25	22	21	21	21	23	22	24	23	21	20	22	27
26	22	20	21	21	22	22	24	23	21	18	22	26
27	22	20	22	21	22	22	24	23	22	18	22	25
28	22	21	22	21	22	22	24	23	21	19	22	26
29	21	21	22	21	------	22	24	24	24	19	23	25
30	21	21	22	21	------	22	24	29	21	17	23	25
31	20	------	22	21	------	22	------	25	------	18	23	------
TOTAL	709	652	654	665	618	700	697	718	674	600	607	744
MEAN	22.9	21.7	21.1	21.5	22.1	22.6	23.2	23.2	22.5	19.4	19.6	24.8
MAX	25	23	22	22	23	25	26	37	27	22	23	27
MIN	20	20	19	21	21	21	22	21	21	17	17	22
AC-FT	1,410	1,290	1,300	1,320	1,230	1,390	1,380	1,420	1,340	1,190	1,200	1,480

CAL YR 1970 TOTAL 7,693 MEAN 21.1 MAX 30 MIN 16 AC-FT 15,260
WTR YR 1971 TOTAL 8,038 MEAN 22.0 MAX 37 MIN 17 AC-FT 15,940

PEAK DISCHARGE (BASE, 135 CFS).--No peak above base.

06402500 Beaver Creek near Buffalo Gap, S. Dak.

LOCATION.--Lat 43°27'56", long 103°18'22", in SE¼SE¼ sec.5, T.7 S., R.7 E., Fall River County, on left bank 1.5 miles south of Buffalo Gap and 4.5 miles upstream from mouth.

DRAINAGE AREA.--130 sq mi, approximately.

PERIOD OF RECORD.--October 1937 to current year. Monthly discharge only for October 1937, published in WSP 1309.

GAGE.--Water-stage recorder. Altitude of gage is 3,150 ft (from topographic map). Prior to June 20, 1939, nonrecording gage at site 0.8 mile downstream at different datum.

AVERAGE DISCHARGE.--34 years, 7.10 cfs (5,140 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 340 cfs May 4 (gage height, 6.04 ft); minimum daily, 0.42 cfs Aug. 5, 6.
Period of record: Maximum discharge, 11,700 cfs Sept. 4, 1938 (gage height, 16.46 ft, site and datum then in use), from rating curve extended above 11 cfs on basis of slope-area measurement of peak flow; no flow at times in some years.
Flood in 1927 reached a stage of 18.0 ft.

REMARKS.--Records good except those above 50 cfs and those for winter periods, which are poor. Nearly all flow is diverted above station during irrigation season.

REVISIONS(WATER YEARS).--WSP 956: 1941. WSP 1309: 1939-40(M), 1947(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.2	11	6.2	7.9	11	12	7.2	13	15	11	1.2	.74
2	7.8	11	6.8	7.8	11	12	6.8	13	14	9.8	.54	.64
3	7.8	11	7.1	7.5	11	12	7.0	14	13	7.8	.46	.47
4	7.8	11	7.2	7.5	10	12	7.0	46	12	7.5	.44	2.9
5	7.6	11	7.5	7.5	9.0	12	7.3	14	11	7.5	.42	6.5
6	8.2	11	7.5	7.5	8.0	11	7.2	13	14	9.1	.42	6.6
7	9.4	11	7.5	8.5	6.0	11	7.0	13	13	9.8	.44	7.4
8	9.1	11	7.5	9.3	8.0	11	7.1	13	12	10	.44	8.8
9	8.9	11	7.6	8.8	10	11	7.2	14	12	10	.44	8.6
10	8.9	11	7.8	8.6	11	11	7.3	11	11	8.9	.48	8.3
11	8.7	11	8.0	8.5	12	11	7.3	5.8	9.7	8.2	.47	8.4
12	9.8	11	7.8	8.5	12	11	7.5	4.9	9.6	8.5	.48	8.1
13	11	8.7	7.8	8.5	49	11	7.6	7.5	9.5	9.2	.49	8.1
14	11	7.9	7.8	9.0	33	11	7.7	8.0	9.6	7.5	.51	8.4
15	11	5.8	7.8	9.0	15	11	9.9	7.5	8.7	4.8	.49	8.7
16	11	5.6	7.8	9.5	14	11	8.1	7.5	8.7	4.1	.53	8.8
17	11	5.5	7.8	10	13	11	6.5	7.3	8.7	4.4	.52	8.9
18	11	5.5	7.8	13	13	12	3.9	4.4	8.7	2.6	.57	8.6
19	11	5.4	7.5	14	13	11	5.9	2.7	8.5	1.3	.63	8.3
20	11	5.3	8.0	14	12	11	14	2.4	8.0	2.4	.63	7.9
21	11	5.3	8.5	13	12	11	13	2.2	6.8	3.3	1.7	7.7
22	11	5.1	9.0	12	12	11	14	2.1	8.7	3.3	2.0	7.3
23	11	5.4	9.5	12	12	11	13	9.6	7.8	3.4	1.6	7.3
24	11	5.6	9.5	12	12	11	13	4.9	7.5	3.3	1.4	7.4
25	11	5.9	10	12	13	11	15	2.1	7.8	5.7	.97	7.5
26	11	6.1	10	12	12	10	16	3.0	7.3	7.8	.84	7.4
27	11	6.1	10	12	12	8.1	15	3.4	7.3	7.5	1.2	7.6
28	11	5.9	10	12	12	8.4	16	3.1	6.0	4.4	.84	8.7
29	11	5.4	10	11	------	7.4	14	5.7	22	1.2	.77	8.0
30	11	5.8	8.8	11	------	7.0	14	14	12	.70	.78	8.0
31	11	------	8.2	11	------	5.9	------	19	------	1.1	.75	------
TOTAL	311.2	238.3	254.3	314.9	378.0	327.8	292.5	291.1	309.9	186.10	23.45	212.05
MEAN	10.0	7.94	8.20	10.2	13.5	10.6	9.75	9.39	10.3	6.00	.76	7.07
MAX	11	11	10	14	49	12	16	46	22	11	2.0	8.9
MIN	7.6	5.1	6.2	7.5	6.0	5.9	3.9	2.1	6.0	.70	.42	.47
AC-FT	617	473	504	625	750	650	580	577	615	369	47	421

CAL YR 1970 TOTAL 2,394.17 MEAN 6.56 MAX 13 MIN .36 AC-FT 4,750
WTR YR 1971 TOTAL 3,139.60 MEAN 8.60 MAX 49 MIN .42 AC-FT 6,230

PEAK DISCHARGE (BASE, 24 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
2-13	2200	5.79	273	6-29	1200	4.70	46
5- 4	0030	6.04	340				

06402600 Cheyenne River near Buffalo Gap, S. Dak.

LOCATION.--Lat 43°30'05", long 103°04'23", in SW¼NE¼ sec.29, T.6 S., R.9 E., Custer County, on right bank at right end of highway bridge, 5.8 miles upstream from Cottonwood Creek and 12 miles east of Buffalo Gap.

DRAINAGE AREA.--9,810 sq mi, approximately.

PERIOD OF RECORD.--October 1968 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,820 ft (from topographic map).

EXTREMES.--Current year: Maximum discharge, 17,600 cfs May 25 (gage height, 11.44 ft); minimum daily, 38 cfs Feb. 7.
Period of record: Maximum discharge, 17,600 cfs May 25, 1971 (gage height, 11.44 ft); minimum daily, 20 cfs Dec. 30, 1968.

REMARKS.--Records good except those for winter periods, which are poor. Flow regulated by Angostura Reservoir 34 miles upstream (see station 06401000). Water-quality records for the water year 1971 are published in Part 2 of this report.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Sept. 18-30; stage-discharge relation affected by ice Nov. 22 to Mar. 12)

2.4	34	4.0	368	7.0	2,390
2.8	64	4.5	576	8.0	3,860
3.1	109	5.0	831	9.0	5,920
3.5	209	6.0	1,140	10.0	9,290
				11.0	14,800

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	75	71	54	58	55	90	58	147	4,440	76	64	76
2	78	66	54	56	56	80	54	352	6,350	75	63	76
3	78	69	53	50	54	85	62	137	3,100	74	64	76
4	78	78	55	45	52	88	59	256	2,580	70	58	9[illegible]
5	76	79	53	40	50	85	59	164	2,650	69	56	100
6	79	76	55	40	45	80	59	392	1,790	68	56	93
7	100	75	58	42	38	70	59	157	1,860	69	52	95
8	95	72	58	45	40	70	60	123	1,570	65	48	96
9	90	74	55	45	42	72	59	635	1,010	69	47	84
10	86	71	50	43	45	75	59	747	853	60	48	79
11	84	70	48	42	55	76	58	378	665	60	53	78
12	80	66	49	42	60	78	57	300	466	57	54	79
13	84	65	48	45	70	80	57	255	528	57	56	90
14	84	65	49	50	85	75	53	322	410	56	60	84
15	80	64	50	56	100	72	53	231	605	48	63	82
16	79	64	52	57	110	70	55	154	433	45	61	80
17	79	63	53	58	115	69	53	172	599	46	53	79
18	79	62	52	57	120	68	54	124	479	48	50	84
19	78	62	50	58	125	68	64	84	121	43	52	86
20	77	60	52	60	110	68	85	76	113	43	59	90
21	76	60	55	58	100	65	76	70	252	44	61	91
22	75	55	54	56	105	60	74	68	175	45	63	91
23	75	56	54	58	110	59	70	551	180	52	61	85
24	74	60	54	60	120	59	64	3,140	137	51	56	84
25	74	64	54	60	120	60	80	11,000	98	53	52	84
26	74	62	55	58	110	62	102	12,600	84	64	52	82
27	78	58	54	60	100	65	113	2,940	75	68	55	79
28	76	56	55	62	100	62	126	2,890	70	66	60	85
29	74	56	57	65	------	60	104	1,810	84	68	64	86
30	74	57	59	60	------	60	93	1,250	98	63	70	85
31	71	------	60	56	------	60	------	1,830	------	63	69	------
TOTAL	2,460	1,952	1,659	1,641	2,292	2,190	2,079	43,355	31,975	1,835	1,781	2,541
MEAN	79.4	65.1	53.5	52.9	81.9	70.6	69.3	1,399	2,063	59.2	57.5	84.7
MAX	100	79	60	65	125	90	126	12,600	6,350	76	70	100
MIN	71	55	48	40	38	58	53	68	70	43	47	76
AC-FT	4,880	3,870	3,290	3,250	4,550	4,340	4,120	85,990	63,420	3,640	3,530	5,040

CAL YR 1970 TOTAL 24,583 MEAN 67.4 MAX 277 MIN 32 AC-FT 48,760
WTR YR 1971 TOTAL 95,660 MEAN 262 MAX 12,600 MIN 38 AC-FT 189,700

06404000 Battle Creek near Keystone, S. Dak.

LOCATION.--Lat 43°52'18", long 103°20'09", in SW¼SW¼ sec.18, T.2 S., R.7 E., Pennington County, on right bank 40 ft upstream from highway bridge, 0.6 mile downstream from Iron Creek and 4.5 miles southeast of Keystone.

DRAINAGE AREA.--66 sq mi.

PERIOD OF RECORD.--July 1945 to July 1947, October 1961 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 3,790 ft (from topographic map). Prior to Dec. 5, 1961, nonrecording gage at site 40 ft downstream; prior to Nov. 13, 1961, at different datum.

AVERAGE DISCHARGE.--11 years (1945-46, 1961-71), 11.2 cfs (8,110 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 429 cfs June 1 (gage height, 3.65 ft); minimum daily, 0.10 cfs Feb. 7.
Period of record: Maximum discharge, 718 cfs May 24, 1965 (gage height, 3.71 ft), from rating curve extended above 310 cfs; no flow for many days in 1961, 1962, 1970.

REMARKS.--Records good except those for winter periods, which are poor.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Stage-discharge relation affected by ice Nov. 15, Nov. 20 to Apr. 10)

0.8	0.45	1.8	34
.9	1.2	2.0	50
1.0	2.4	2.5	103
1.1	4.2	3.0	215
1.2	6.8	3.5	374
1.5	20		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	1.1	1.1	2.0	.20	1.2	10	89	340	14	2.6	.98
2	2.2	1.2	1.0	1.9	.20	1.2	10	76	221	12	2.3	.75
3	2.2	1.2	1.0	1.8	.20	1.5	9.0	65	170	15	2.2	.68
4	2.2	1.2	.90	1.8	.20	1.4	8.0	57	120	14	2.2	1.6
5	5.9	1.2	.60	1.8	.20	1.2	8.0	48	91	13	1.9	2.6
6	14	1.2	.70	1.9	.15	1.0	7.0	40	75	12	1.8	1.9
7	5.8	1.4	.80	2.0	.10	1.0	9.0	35	77	11	1.6	1.6
8	7.5	2.0	.60	2.5	.20	1.4	12	31	66	10	1.4	1.6
9	1.9	2.0	.50	2.0	.50	1.5	10	92	57	8.8	1.4	1.4
10	1.4	1.7	.40	1.0	1.0	1.6	10	203	49	8.4	1.6	1.3
11	1.1	1.6	.40	.50	1.4	1.8	12	127	41	7.2	1.4	1.2
12	1.0	1.4	.50	.40	1.0	2.5	10	99	37	6.8	1.2	1.0
13	1.4	1.4	.50	.30	1.5	3.0	7.2	79	42	6.0	1.3	.90
14	1.6	1.4	.40	.20	2.0	4.0	6.0	66	50	5.8	2.5	.90
15	1.3	1.3	.50	.20	3.0	3.5	5.8	54	37	5.2	2.0	.90
16	1.2	1.3	.40	.40	2.8	3.0	5.8	46	32	4.7	1.7	.98
17	1.1	1.3	.40	.40	2.5	2.5	5.8	41	31	4.5	1.4	1.0
18	1.0	1.4	.30	.30	2.5	2.0	5.8	36	30	4.2	1.9	1.2
19	1.0	1.6	.20	.40	2.0	2.0	10	32	26	4.0	1.9	1.2
20	1.0	1.5	.20	.40	1.5	2.5	92	30	24	3.8	3.0	1.2
21	1.0	1.0	.20	.30	1.0	1.5	74	29	22	3.5	2.9	1.4
22	1.0	.70	.30	.40	1.0	1.0	117	50	21	3.5	1.8	1.4
23	1.0	.45	.40	.50	1.2	.80	88	109	21	3.3	1.3	1.4
24	1.0	.70	.40	.50	1.4	1.0	64	95	19	2.9	1.1	1.4
25	1.0	.80	.50	.50	1.6	1.2	113	71	18	4.2	1.0	1.3
26	1.0	.70	.60	.20	1.4	3.0	98	63	16	4.7	.90	1.2
27	1.0	.60	.60	.20	1.2	10	82	53	16	4.0	.90	1.3
28	.71	.70	.70	.30	1.3	12	87	45	14	3.5	.82	3.8
29	.52	.90	1.0	.30	------	14	87	40	16	3.7	.82	3.3
30	1.0	1.1	1.5	.20	------	12	100	111	16	3.3	.90	2.4
31	1.2	------	2.0	.20	------	11	------	195	------	2.9	1.0	------
TOTAL	67.43	36.05	19.60	25.80	33.25	107.30	1,163.4	2,207	1,795	209.9	50.74	43.79
MEAN	2.18	1.20	.63	.83	1.19	3.46	38.8	71.2	59.8	6.77	1.64	1.46
MAX	14	2.0	2.0	2.5	3.0	14	117	203	340	15	3.0	3.8
MIN	.52	.45	.20	.20	.10	.80	5.8	29	14	2.9	.82	.68
AC-FT	134	72	39	51	66	213	2,310	4,380	3,560	416	101	87

CAL YR 1970 TOTAL 2,488.63 MEAN 6.82 MAX 380 MIN 0 AC-FT 4,940
WTR YR 1971 TOTAL 5,759.26 MEAN 15.8 MAX 340 MIN .10 AC-FT 11,420

PEAK DISCHARGE (BASE, 100 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
4-20	1230	2.71	144	5-23	1630	2.78	157
5- 9	2130	3.56	396	6- 1	0300	3.65	429

06405000 Grace Coolidge Creek near Custer, S. Dak.

LOCATION (revised).--Lat 43°45'40", long 103°21'42", in SE¼NE¼ sec.26, T.3 S., R.6 E., Custer County, on right bank at U.S. Highway Alternate 16, 1.7 miles southwest of junction U.S. Highways 36 and Alternate 16 and 11.5 miles east of Custer.

DRAINAGE AREA.--25.3 sq mi.

PERIOD OF RECORD.--July 1945 to July 1947, (published as Squaw Creek near Custer), June 1967 (revised) to current year.

GAGE.--Water-stage recorder and grouted-rock control. Altitude of gage is 4,100 ft (from topographic map). Prior to July 31, 1947, nonrecording gage at site 0.5 mile upstream at different datum.

AVERAGE DISCHARGE.--5 years (1945-46, 1967-71) 3.55 cfs (2,570 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 109 cfs May 21 (gage height, 1.27 ft); maximum gage height, 2.28 ft Feb. 13 (backwater from ice); minimum daily discharge, 0.08 cfs Sept. 24-26.
Period of record: Maximum discharge, 206 cfs June 21, 1947 (gage height, 4.50 ft from floodmarks, site and datum then in use), from rating curve extended above 120 cfs; no flow for many days most years.
Flood of June 12, 1967, reached a stage of 1.45 ft, from floodmarks (discharge, 151 cfs).
CORRECTIONS.--The maximum discharge for the water year 1970 is 196 cfs Aug. 6, 1970 (gage height, 1.61 ft); the previously published figure was not the maximum.

REMARKS.--Records fair except those for winter periods, which are poor. Considerable losses in sinkholes in vicinity of gage.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.43	2.0	3.0	.80	.15	.80	9.0	40	70	9.3	1.3	1.0
2	.54	2.2	2.5	.70	.15	.80	8.8	40	56	8.8	1.3	.60
3	.54	2.2	2.0	.70	.15	1.2	7.6	30	47	8.8	.88	.35
4	.54	2.2	2.0	.65	.15	1.4	7.0	25	41	8.8	.88	1.0
5	.43	2.5	1.5	.60	.15	1.2	6.3	20	34	8.8	.51	7.0
6	.43	2.5	2.0	.60	.10	1.0	6.6	15	29	8.3	.34	2.0
7	1.2	2.7	2.5	.60	.10	1.5	6.6	12	36	6.4	.28	1.0
8	1.4	4.8	2.5	.70	.50	2.0	11	20	29	6.0	.28	1.5
9	1.6	4.8	2.0	.70	2.0	2.0	8.8	50	26	5.6	.28	2.0
10	1.6	3.7	1.5	.60	2.5	2.2	8.2	40	24	6.9	.28	1.0
11	1.4	3.3	1.3	.50	2.0	2.5	8.2	34	22	5.6	.28	1.0
12	1.0	3.3	1.1	.50	2.0	3.0	6.6	27	19	5.3	.28	1.0
13	2.0	2.7	1.0	.50	2.2	3.0	6.3	22	22	3.7	.22	1.1
14	1.6	2.7	1.0	.50	2.5	2.5	5.5	19	26	3.4	.45	1.3
15	1.4	2.7	1.3	.60	2.5	2.0	4.8	15	21	3.0	.51	2.0
16	1.0	2.7	1.2	.80	2.2	2.0	4.4	14	19	2.2	.22	1.6
17	.82	2.7	1.1	.80	2.0	1.8	3.3	13	18	2.2	.24	1.8
18	.82	2.7	.80	.70	1.8	1.5	3.3	11	17	1.8	.40	2.0
19	.82	2.7	.60	.80	1.6	1.5	5.5	10	13	1.6	.40	1.6
20	.82	2.7	.50	.80	1.2	1.7	33	8.8	13	1.8	1.7	1.2
21	.67	2.3	.50	.60	.80	2.0	32	24	12	1.8	1.1	.34
22	.54	1.8	.60	.50	.80	2.5	46	30	12	1.6	.63	.22
23	.34	1.5	.60	.50	.90	2.5	38	32	11	1.6	.40	.10
24	.34	2.0	.65	.30	1.0	2.6	32	31	9.8	1.6	.40	.08
25	.54	2.2	.70	.20	1.2	2.8	47	27	9.3	2.6	.34	.08
26	.67	2.0	.80	.15	1.0	3.5	46	25	9.8	3.7	.28	.08
27	1.2	2.0	.70	.15	.80	4.0	38	22	9.8	2.4	.22	.16
28	2.0	2.5	.70	.20	.90	4.5	36	21	8.8	2.2	.22	1.6
29	2.0	3.0	.80	.30	------	5.0	40	19	9.3	2.2	.22	1.6
30	5.2	3.5	.90	.20	------	6.0	45	35	9.8	2.2	.34	.88
31	2.5	------	1.0	.15	------	7.0	------	60	------	1.8	1.0	------
TOTAL	36.39	80.6	39.35	16.40	33.35	78.00	560.8	791.8	683.6	132.0	16.18	37.19
MEAN	1.17	2.69	1.27	.53	1.19	2.52	18.7	25.5	22.8	4.26	.52	1.24
MAX	5.2	4.8	3.0	.80	2.5	7.0	47	60	70	9.3	1.7	7.0
MIN	.34	1.5	.50	.15	.10	.80	3.3	8.8	8.8	1.6	.22	.08
AC-FT	72	160	78	33	66	155	1,110	1,570	1,360	262	32	74

CAL YR 1970 TOTAL 1,148.89 MEAN 3.15 MAX 92 MIN 0 AC-FT 2,280
WTR YR 1971 TOTAL 2,505.66 MEAN 6.86 MAX 70 MIN .08 AC-FT 4,970

PEAK DISCHARGE (BASE, 25 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
2-13	-	-	90	6- 1	0800	1.10	74
4-22	1900	1.13	58	6- 7	0500	.83	38
4-30	0800	1.22	47	6-13	2100	.77	30
5-21	1800	1.27	109				

06406000 Battle Creek at Hermosa, S. Dak.

LOCATION.--Lat 43°49'41", long 103°11'43", in NE¼SW¼SW¼ sec.32, T.2 S., R.8 E., Custer County, on right bank 130 ft downstream from Chicago and North Western Railway Co. bridge, 0.8 mile south of Hermosa and 2.9 miles downstream from Grace Coolidge Creek.

DRAINAGE AREA.--178 sq mi.

PERIOD OF RECORD.--August to December 1903 (gage heights only), July 1949 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 3,290 ft (from topographic map). August to December 1903 nonrecording gage at site 130 ft upstream at different datum, July 7, 1949, to Nov. 2, 1950, nonrecording gage at site 0.5 mile upstream at different datum. Nov. 3, 1950, to Dec. 6, 1961, nonrecording gage at site 120 ft downstream at present datum.

AVERAGE DISCHARGE.--22 years, 9.03 cfs (6,540 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 653 cfs June 1 (gage height, 6.83 ft); minimum, 1.2 cfs Oct. 1, 3; minimum gage height, 1.11 ft Mar. 20, 22.
Period of record: Maximum discharge, 2,950 cfs May 22, 1952 (gage height, 14.00 ft); no flow at times in 1954-57, 1959.

REMARKS.--Records good except those for winter periods, which are poor.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Nov. 13, Dec. 6-9, Apr. 27 to May 1, May 10 to June 18; stage-discharge relation affected by ice Nov. 23-27, Dec. 10 to Feb. 14, Mar. 17, 18, 22)

1.6	0.62	2.1	20
1.7	2.0	2.5	61
1.8	4.0	3.0	128
1.9	7.3	6.0	595
2.0	13		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	3.3	2.6	2.8	2.0	3.8	4.6	82	519	24	9.1	4.9
2	1.4	3.3	3.0	2.7	2.0	4.0	4.0	70	300	22	8.1	4.2
3	1.4	2.9	3.2	2.6	1.8	2.9	4.0	62	202	21	7.9	3.9
4	1.6	3.0	3.4	2.5	1.9	2.9	4.2	55	162	21	7.5	5.8
5	1.6	3.0	3.4	2.5	2.0	2.7	4.3	47	125	21	7.2	6.2
6	1.8	2.9	3.4	2.3	1.8	2.7	4.0	40	91	19	6.8	5.5
7	2.5	2.7	3.5	2.4	1.5	2.7	4.0	35	93	17	6.5	5.1
8	2.8	2.9	3.5	2.6	1.5	3.3	4.0	31	78	17	6.3	5.5
9	2.5	2.7	3.5	2.5	1.8	2.7	3.6	48	64	16	6.1	6.0
10	2.8	2.6	3.0	2.4	2.0	2.7	3.6	335	51	16	6.3	5.4
11	2.7	2.5	2.5	2.2	2.5	2.7	3.6	159	44	16	6.2	5.0
12	1.8	2.4	2.5	2.0	2.5	2.9	3.7	86	40	15	6.1	4.4
13	2.1	2.4	2.3	1.8	5.0	3.1	3.7	49	46	15	5.7	4.3
14	2.3	2.4	2.2	1.6	12	3.3	3.7	29	57	14	6.1	4.2
15	2.6	2.4	2.3	1.8	14	3.2	3.8	20	46	14	5.1	4.8
16	2.5	2.4	2.2	2.0	6.5	3.3	3.6	14	42	13	5.0	5.3
17	2.4	2.4	2.0	2.2	5.4	3.3	3.7	12	42	12	4.9	5.3
18	2.9	2.4	1.8	2.0	5.4	3.2	3.8	9.2	43	11	6.5	5.3
19	3.2	2.4	1.6	2.2	5.4	3.5	4.9	7.3	40	11	6.7	5.3
20	3.2	2.4	1.4	2.2	5.4	3.5	38	6.8	37	10	6.3	5.5
21	3.3	2.4	1.3	2.1	4.5	3.3	64	6.2	38	9.9	7.4	5.3
22	3.2	2.4	1.4	2.2	4.2	3.3	94	12	35	9.4	6.1	5.3
23	3.2	2.3	1.5	2.5	4.2	3.2	82	57	34	10	5.7	5.1
24	3.2	2.3	1.6	2.6	4.5	3.4	54	78	32	10	5.1	4.9
25	3.4	2.6	1.6	2.5	4.2	3.5	113	35	30	12	5.3	4.7
26	3.4	2.5	1.6	2.4	4.2	3.7	110	27	28	12	5.0	4.4
27	3.5	2.3	1.5	2.5	4.2	4.1	78	21	27	11	4.6	4.4
28	3.4	2.6	1.6	2.5	3.8	7.9	83	18	26	11	4.5	5.4
29	3.6	2.6	2.0	2.6	------	5.2	74	15	26	12	4.3	4.6
30	3.6	2.7	2.5	2.6	------	4.7	92	58	26	11	4.1	3.6
31	3.5	------	3.0	2.5	------	4.6	------	249	------	9.8	5.3	------
TOTAL	82.8	78.1	72.9	72.3	116.2	109.3	956.8	1,773.5	2,424	443.1	187.8	149.6
MEAN	2.67	2.60	2.35	2.33	4.15	3.53	31.9	57.2	80.8	14.3	6.06	4.99
MAX	3.6	3.3	3.5	2.8	14	7.9	113	335	519	24	9.1	6.2
MIN	1.4	2.3	1.3	1.6	1.5	2.7	3.6	6.2	26	9.4	4.1	3.6
AC-FT	164	155	145	143	230	217	1,900	3,520	4,810	879	373	297

CAL YR 1970 TOTAL 1,826.38 MEAN 5.00 MAX 201 MIN .86 AC-FT 3,620
WTR YR 1971 TOTAL 6,466.40 MEAN 17.7 MAX 519 MIN 1.3 AC-FT 12,830

PEAK DISCHARGE (BASE, 50 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
4-25	1245	3.20	149	5-23	2115	3.68	152
4-30	0845	2.98	103	6- 1	0300	6.83	653
5-10	0415	5.75	542	6-14	0415	2.72	66

06408500 Spring Creek near Hermosa, S. Dak.

LOCATION.--Lat 43°56'30", long 103°09'33", in SE¼SE¼SE¼ sec.21, T.1 S., R.8 E., Pennington County, on right bank 150 ft upstream from highway bridge, 0.3 mile upstream from Chicago and North Western Railway Company bridge and 7.5 miles north of Hermosa.

DRAINAGE AREA.--199 sq mi.

PERIOD OF RECORD.--July 1949 to current year.

GAGE.--Nonrecording gage and crest-stage gage. Datum of gage is 3,267.30 ft above mean sea level.

AVERAGE DISCHARGE.--22 years, 5.33 cfs (3,860 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 351 cfs June 2; (gage height, 4.82 ft, from floodmarks); no flow Oct. 1-7.
Period of record: Maximum discharge, 772 cfs June 7, 1967 (gage height, 5.49 ft), from rating curve extended above 150 cfs; no flow for many days in most years.

REMARKS.--Records fair except those for winter periods, which are poor. Considerable loss in sinkholes in reach 10 to 15 miles above station. Flow regulated by Lake Sheridan (capacity, 12,657 acre-ft), 24 miles above station.

REVISIONS(WATER YEARS).--WSP 1729: 1950.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Mar. 28 to Apr. 4, May 9, 10, June 1, 2; stage-discharge relation affected by ice Nov. 23-28, Dec. 3 to Mar. 11)

Oct. 1 to May 9

0.3	0	0.8	5.6	0.4	0.60	1.0	26
.4	.10	.9	10	.5	1.5	1.3	58
.5	.40	1.2	36	.6	4.1	1.6	104
.6	1.1	1.5	66	.8	12	2.3	252
.7	2.6						

May 9 to Sept. 30

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	.37	.75	.80	.60	1.2	1.0	66	159	26	2.4	1.4
2	0	.37	.75	.70	.70	1.0	.82	65	248	24	2.0	1.4
3	0	.40	.70	.60	.60	1.5	.75	62	173	22	2.0	1.4
4	0	.40	.70	.50	.50	1.2	.75	62	150	20	1.6	1.4
5	0	.40	.60	.50	.50	1.0	.68	58	146	19	1.6	1.4
6	0	.47	.70	.40	.30	1.0	.68	56	129	19	1.5	1.4
7	0	.40	.70	.50	.20	1.0	.75	54	125	16	1.4	1.4
8	.10	.40	.35	.70	.30	1.1	.75	54	129	15	1.3	1.4
9	.10	.40	.30	.70	2.0	1.2	.61	82	123	11	1.3	1.4
10	.15	.40	.20	.60	50	1.3	.61	73	123	6.3	1.2	1.4
11	.20	.40	.30	.50	100	1.3	.54	72	110	6.3	1.0	1.4
12	.25	.40	.50	.40	150	1.2	.54	64	108	6.3	1.3	1.5
13	.28	.40	.60	.30	200	1.6	.40	65	108	11	1.6	1.6
14	.25	.40	.70	.30	50	1.4	.40	71	108	9.4	1.8	1.5
15	.20	.40	1.0	.40	5.0	1.2	.40	72	99	7.8	1.8	1.5
16	.15	.40	1.0	.80	4.0	1.2	.54	75	96	7.1	1.8	1.5
17	.10	.40	1.0	.90	3.0	1.1	.47	66	90	6.3	2.0	1.5
18	.05	.40	.70	.70	2.0	1.0	.47	74	90	6.0	1.8	1.5
19	.05	.40	.40	.80	1.3	1.2	.82	90	80	5.2	1.8	1.4
20	.05	.40	.20	.90	1.1	1.2	.40	78	75	4.8	1.8	1.4
21	.05	.40	.10	.80	1.0	1.2	.40	64	58	4.5	1.8	1.4
22	.05	.40	.20	.70	1.0	1.4	.37	64	58	4.1	1.8	1.4
23	.05	.60	.30	.80	1.2	1.2	.34	64	43	3.4	1.6	1.4
24	.05	.60	.40	.90	1.5	1.6	.37	68	39	3.0	1.6	1.4
25	.03	.60	.50	.90	1.7	1.4	.54	72	37	3.0	1.6	1.5
26	.03	.60	.50	.80	1.6	1.2	.75	74	37	11	1.5	1.5
27	.03	.60	.40	1.0	1.2	1.6	20	78	37	2.7	1.4	1.5
28	.04	.70	.50	1.1	1.3	1.1	26	78	29	2.7	1.4	1.5
29	.09	.75	.80	1.1	------	1.1	42	78	28	2.7	1.3	1.5
30	.09	.75	.80	.80	------	1.1	54	108	27	2.4	1.3	1.6
31	.22	------	1.0	.60	------	1.1	------	180	------	2.4	1.3	------
TOTAL	2.66	14.01	17.65	21.50	582.60	37.9	157.15	2,287	2,866	290.4	49.6	43.5
MEAN	.086	.47	.57	.69	20.8	1.22	5.24	73.8	95.5	9.37	1.60	1.45
MAX	.28	.75	1.0	1.1	200	1.6	54	180	248	26	2.4	1.6
MIN	0	.37	.10	.30	.20	1.0	.34	54	27	2.4	1.0	1.4
AC-FT	5.3	28	35	43	1,160	75	312	4,540	5,680	576	98	86

CAL YR 1970 TOTAL 126.46 MEAN .35 MAX 5 MIN 0 AC-FT 251
WTR YR 1971 TOTAL 6,369.97 MEAN 17.5 MAX 248 MIN 0 AC-FT 12,630

06409000 Castle Creek above Deerfield Reservoir, near Hill City, S. Dak.
(Hydrologic benchmark station)

LOCATION.--Lat 44°00'49", long 103°49'48", in SW¼ sec.25, T.1 N., R.2 E., Pennington County, on right bank 50 ft downstream from highway bridge, 250 ft downstream from South Fork Castle Creek, 600 ft upstream from high-water line of Deerfield Reservoir, 2.5 miles southwest of Deerfield Dam, and 14 miles northwest of Hill City.

DRAINAGE AREA.--83 sq mi, approximately.

PERIOD OF RECORD.--June 1948 to current year. Prior to October 1953, published as "above Deerfield Reservoir, near Deerfield."

GAGE.--Water-stage recorder and grouted-rock control. Altitude of gage is 5,910 ft (from reservoir elevation). Prior to Aug. 31, 1948, nonrecording gage at site 50 ft upstream at datum 2.05 ft higher.

AVERAGE DISCHARGE.--23 years, 9.82 cfs (7,110 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 70 cfs Apr. 17 (gage height, 3.08 ft); maximum gage height, 3.36 ft Dec. 14 (backwater from ice); minimum daily discharge, 6.0 cfs Nov. 23; minimum gage height, 1.59 ft Mar. 19.
Period of record: Maximum discharge, 1,120 cfs May 22, 1952 (gage height, 5.81 ft), from rating curve extended above slope-area measurement at gage height, 5.67 ft; minimum, 1.2 cfs Apr. 25, 1969; minimum gage height, 1.35 ft Nov. 12, 1949, Feb. 19, 1954, Mar. 7, 1957, Mar. 29, 1961.

REMARKS.--Records good except those for winter periods, which are poor. Recording rain gage located at Deerfield Dam 2.5 miles northeast of station. Water-quality records for the water year 1971 are published in Part 2 of this report.

REVISIONS(WATER YEARS).--WSP 1917: 1952(M).

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Apr. 11-13; stage-discharge relation affected by ice Oct. 27 to Nov. 10, Nov. 15, 16, Nov. 19 to Feb. 8, Feb. 21-24, Mar. 6, 7, Mar. 15 to Apr. 10)

1.6	6.6
1.9	14
2.5	38
3.0	70

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	7.9	10	11	10	10	10	24	17	9.8	12	12
2	11	7.9	10	9.5	10	11	11	24	16	9.8	12	11
3	12	7.8	10	9.0	10	11	11	23	15	11	12	11
4	11	8.0	10	8.5	9.5	11	10	24	18	11	12	13
5	11	9.0	9.0	8.0	9.5	11	10	22	16	11	12	16
6	11	10	11	8.0	8.5	10	12	21	22	11	12	12
7	12	12	12	8.5	10	9.0	16	20	20	11	12	11
8	12	10	12	9.0	10	11	20	20	19	11	11	11
9	11	12	10	9.0	12	11	20	25	18	11	11	11
10	12	13	9.5	8.5	12	11	30	25	17	11	11	12
11	11	13	9.0	8.0	12	11	22	21	16	11	11	11
12	13	13	10	8.0	12	11	17	20	16	11	11	11
13	13	13	11	8.0	11	12	18	19	17	12	12	11
14	11	12	10	8.0	11	11	22	19	16	12	12	11
15	11	13	12	8.5	11	9.5	24	19	15	12	11	12
16	11	14	12	10	10	10	23	20	15	12	11	12
17	11	12	11	11	10	10	34	19	14	12	11	12
18	12	13	9.0	10	10	10	34	18	14	12	11	12
19	11	11	8.5	11	10	8.5	30	18	13	12	11	12
20	11	10	8.0	12	11	10	40	17	13	12	11	11
21	11	8.0	8.0	11	9.0	10	33	17	12	12	11	11
22	11	7.0	8.5	10	9.0	10	34	18	13	12	11	11
23	11	6.0	9.0	10	9.0	10	31	18	11	11	10	11
24	11	8.0	9.5	10	10	10	31	17	9.6	11	10	11
25	11	9.0	10	10	11	10	33	17	9.8	14	10	11
26	11	8.0	11	10	8.6	11	28	16	9.8	12	11	11
27	11	8.0	10	9.5	7.9	12	26	15	9.8	12	11	12
28	8.5	9.0	11	10	9.6	11	27	14	9.8	12	11	13
29	10	9.5	12	10	------	10	28	16	11	13	11	12
30	9.0	10	12	10	------	11	26	20	9.8	12	11	12
31	7.5	------	13	10	------	11	------	19	------	12	11	------
TOTAL	342.0	304.1	318.0	294.0	283.6	325.0	711	605	432.6	358.6	347	349
MEAN	11.0	10.1	10.3	9.48	10.1	10.5	23.7	19.5	14.4	11.6	11.2	11.6
MAX	13	14	13	12	12	12	40	25	22	14	12	16
MIN	7.5	6.0	8.0	8.0	7.9	8.5	10	14	9.6	9.8	10	11
AC-FT	678	603	631	583	563	645	1,410	1,200	858	711	688	692

CAL YR 1970 TOTAL 4,596.8 MEAN 12.6 MAX 56 MIN 6.0 AC-FT 9,120
WTR YR 1971 TOTAL 4,669.9 MEAN 12.8 MAX 40 MIN 6.0 AC-FT 9,260

PEAK DISCHARGE (BASE, 50 CFS).--Apr. 17 (2130) 70 cfs (3.08 ft).

06409500 Deerfield Reservoir near Hill City, S. Dak.

LOCATION.--Lat 44°01'46", long 103°47'09", in NE¼SW¼ sec.20, T.1 N., R.3 E., at dam on Castle Creek, 0.4 mile upstream from Dutchman Creek and 12.5 miles northwest of Hill City.

DRAINAGE AREA.--95 sq mi, approximately.

PERIOD OF RECORD.--May 1947 to current year. Some elevations obtained during period of initial filling, December 1945 to May 1947, are available in Bureau of Reclamation files. Prior to October 1953, published as "near Deerfield."

GAGE.--Water-stage recorder. Datum of gage is at mean sea level (levels by Bureau of Reclamation). Prior to July 20, 1964, nonrecording gage at same site and datum.

EXTREMES.--Current year: Maximum contents observed, 15,230 acre-ft Apr. 20, 21 (elevation, 5,908.19 ft); minimum observed, 12,430 acre-ft Oct. 1 (elevation, 5,901.06).
Period of record: Maximum contents observed, 15,340 acre-ft May 22, 1952 (elevation, 5,908.50 ft), from capacity table extended above elevation 5,908.00 ft (crest of spillway); minimum observed, 5 acre-ft Oct. 2, 1959 (elevation, 5,839.10 ft).

REMARKS.--Reservoir is formed by earthfill dam. Storage began Dec. 4, 1945; dam completed in 1947. Usable capacity, 15,153 acre-ft between elevations 5,839 ft (lowest outlet) and 5,908 ft (crest of spillway). Dead storage below elevation 5,839 ft, 565 acre-ft. Figures given herein represent usable contents. Water is used to supplement Rapid City water supply and for irrigation in Rapid Creek basin downstream from Rapid City.

COOPERATION.--Records of elevation and contents furnished by Bureau of Reclamation.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	5,901.02	12,410	-
Oct. 31	5,902.24	12,870	+460
Nov. 30	5,903.37	13,300	+430
Dec. 31	5,904.66	13,800	+500
CAL YR 1970	-	-	+390
Jan. 31	5,905.95	14,320	+520
Feb. 28	5,907.24	14,840	+520
Mar. 31	5,908.07	15,180	+340
Apr. 30	5,908.14	15,210	+30
May 31	5,908.14	15,210	0
June 30	5,908.06	15,180	-30
July 31	5,908.03	15,160	-20
Aug. 31	5,907.60	14,990	-170
Sept.30	5,904.02	13,550	-1,440
WTR YR 1971	-	-	+1,140

06410000 Castle Creek below Deerfield Dam, S. Dak.

LOCATION.--Lat 44°01'49", long 103°46'58", in NW¼SE¼ sec.20, T.1 N., R.3 E., Pennington County, on right bank at downstream side of bridge, 500 ft upstream from Dutchman Creek, 800 ft downstream from Deerfield Dam, and 12.5 miles northwest of Hill City.

DRAINAGE AREA.--96 sq mi, approximately.

PERIOD OF RECORD.--July 1946 to current year.

GAGE.--Water-stage recorder and grouted-rock control. Altitude of gage is 5,805 ft (from topographic map). Prior to Oct. 15, 1947, water-stage recorder at site 700 ft downstream at datum 3.77 ft lower. Oct. 15, 1947, to Sept. 1, 1948, water-stage recorder at site 850 ft downstream at datum 5.77 ft lower.

AVERAGE DISCHARGE.--25 years, 10.2 cfs (7,390 acre-ft per year).

EXTREMES.--Current year: Maximum daily discharge, 61 cfs Apr. 20; maximum gage height, 1.50 ft Apr. 10; minimum daily discharge, 0.67 cfs Feb. 9-16; minimum gage height, 0.12 ft Mar. 19.
Period of record: Maximum daily discharge, 200 cfs May 22, 1952; maximum gage height, 3.87 ft May 23, 1952 (backwater from spillway overflow); no flow at times in 1948, 1959-60.

REMARKS.--Records good. Flow completely regulated by Deerfield Reservoir 800 ft upstream (see station 06409500).

Rating tables (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used May 8-27; spillway overflow Mar. 19 to Aug. 12)

Oct. 1 to Mar. 18		Mar. 19 to Sept. 30			
1.05	.45	0.0	2.4	0.6	19
1.1	.75	.1	4.5	1.0	39
1.2	1.8	.3	9.8	1.5	68
1.3	3.3				

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	1.9	2.0	2.1	1.0	1.8	14	34	26	8.7	9.5	11
2	2.3	1.9	1.9	2.1	.93	1.8	13	32	22	9.5	10	11
3	2.3	1.9	2.0	2.1	.93	1.8	13	32	20	8.4	11	24
4	2.1	1.9	2.0	2.1	.84	1.7	13	31	25	11	11	35
5	2.1	1.8	2.1	2.1	.84	1.7	13	29	23	11	11	35
6	2.1	1.8	2.1	2.1	.84	1.7	13	27	30	11	11	35
7	2.1	1.8	2.1	2.1	.84	1.7	17	23	33	8.4	10	34
8	2.1	1.8	2.1	2.1	.84	1.6	28	25	25	9.0	8.7	35
9	2.1	1.8	2.1	2.1	.67	1.6	30	31	23	10	12	35
10	2.1	1.8	2.1	2.1	.67	1.6	47	38	22	10	12	36
11	2.1	1.8	2.1	2.1	.67	1.6	47	29	21	9.2	11	36
12	2.1	1.8	2.1	2.1	.67	1.6	29	24	20	9.2	16	36
13	2.2	1.8	2.2	2.1	.67	1.6	22	23	22	8.4	24	36
14	2.2	1.9	2.2	2.1	.67	1.6	25	22	20	7.8	23	36
15	2.2	1.9	2.2	2.1	.67	1.6	29	21	18	8.4	21	35
16	2.2	1.9	2.2	2.2	.67	1.6	33	26	18	8.1	21	35
17	2.2	1.9	2.2	2.2	1.1	1.6	35	27	16	7.8	21	35
18	2.1	1.9	2.2	2.2	1.9	1.6	53	21	16	8.7	20	37
19	2.1	1.9	2.2	2.2	2.0	3.4	48	20	15	8.4	20	36
20	2.2	1.9	2.2	2.2	2.1	4.8	61	19	15	8.7	16	36
21	2.2	1.9	2.2	2.2	2.1	6.8	52	18	14	9.0	10	37
22	2.2	1.9	2.2	2.2	2.1	10	49	19	14	9.0	11	37
23	2.2	1.9	2.2	2.2	2.1	13	41	23	14	9.0	10	38
24	2.2	1.9	2.2	2.2	1.9	14	42	20	11	9.5	10	38
25	2.1	1.9	2.2	2.2	1.9	14	49	20	12	14	10	38
26	2.1	1.9	2.2	2.2	1.9	14	46	20	10	13	10	38
27	2.1	2.0	2.2	2.2	1.9	15	38	19	9.5	11	10	38
28	2.1	2.0	2.1	2.2	1.8	18	35	17	8.4	11	10	38
29	2.1	1.9	2.1	2.2	------	18	38	19	12	12	10	38
30	2.1	2.0	2.1	2.2	------	17	37	27	10	11	10	38
31	2.1	------	2.1	1.9	------	17	------	31	------	9.8	10	------
TOTAL	66.7	56.4	66.1	66.4	35.22	194.8	1,010	767	544.9	300.0	410.2	1,027
MEAN	2.15	1.88	2.13	2.14	1.26	6.28	33.7	24.7	18.2	9.68	13.2	34.2
MAX	2.3	2.0	2.2	2.2	2.1	18	61	38	33	14	24	38
MIN	2.1	1.8	1.9	1.9	.67	1.6	13	17	8.4	7.8	8.7	11
AC-FT	132	112	131	132	70	386	2,000	1,520	1,080	595	814	2,040

CAL YR 1970 TOTAL 4,581.40 MEAN 12.6 MAX 74 MIN 1.8 AC-FT 9,090
WTR YR 1971 TOTAL 4,544.72 MEAN 12.5 MAX 61 MIN .67 AC-FT 9,010

06410500 Rapid Creek above Pactola Reservoir, at Silver City, S. Dak.

LOCATION.--Lat 44°05'05", long 103°34'48", in SW¼SE¼ sec.36, T.2 N., R.4 E., Pennington County, on right bank 0.8 mile west of Silver City and 3.0 miles downstream from Slate Creek.

DRAINAGE AREA.--292 sq mi.

PERIOD OF RECORD.--October 1953 to current year.

GAGE.--Water-stage recorder. Datum of gage is 4,620.00 ft above mean sea level (Bureau of Reclamation bench mark).

AVERAGE DISCHARGE.--18 years, 41.0 cfs (29,700 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 305 cfs Apr. 25 (gage height, 3.05 ft); minimum daily, 7.0 cfs Nov. 23.
Period of record: Maximum discharge, 2,060 cfs May 15, 1965 (gage height, 10.44 ft), from rating curve extended above 1,000 cfs on basis of slope-area measurement of peak flow; minimum daily, 4 cfs Jan. 20, 1962.

REMARKS.--Records good except those for winter periods, which are poor. Flow regulated by dam on Castle Creek (see station 06409500).

Rating tables (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-25, June 23-30; stage-discharge relation affected by ice Nov. 20 to Mar. 31)

Oct. 1 to Mar. 21		Mar. 22 to Sept. 30	
4.4	13	4.4	20
4.6	24	4.6	37
5.0	64	5.0	88
		5.5	182
		6.0	302

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	20	15	15	18	20	75	223	178	60	37	27
2	19	18	15	13	19	20	60	212	164	55	37	25
3	20	17	15	12	15	18	60	207	156	56	35	24
4	20	19	16	11	15	17	65	216	150	61	35	49
5	20	22	14	10	15	15	65	200	200	64	38	84
6	20	18	16	11	12	13	70	187	150	55	33	66
7	22	20	17	12	10	12	70	175	170	52	31	58
8	21	24	17	15	12	14	100	169	160	47	30	58
9	22	19	15	14	15	15	120	173	150	46	29	56
10	22	20	12	12	20	16	150	219	160	45	36	54
11	22	18	11	10	24	18	250	189	150	44	33	54
12	21	18	14	11	23	23	200	169	120	41	31	53
13	23	18	13	11	27	26	150	152	140	40	38	53
14	21	18	11	11	31	25	130	142	140	42	45	53
15	19	18	14	12	31	25	120	136	130	40	41	54
16	19	18	15	16	29	25	140	130	120	38	40	55
17	19	18	15	15	27	23	150	144	110	37	40	56
18	18	17	12	13	25	21	207	127	110	37	42	56
19	19	16	11	16	24	20	191	118	100	36	42	55
20	19	14	10	20	23	25	259	111	85	36	41	55
21	18	11	10	22	22	22	264	107	85	37	34	56
22	18	8.0	11	20	26	18	286	104	75	37	31	56
23	18	7.0	12	23	29	18	262	127	74	36	27	55
24	18	11	13	25	30	20	247	132	71	36	27	54
25	17	20	14	22	31	50	271	111	80	44	27	54
26	17	15	15	19	28	65	259	107	71	48	27	53
27	16	12	12	22	22	70	245	109	66	42	28	54
28	16	13	15	25	22	65	233	98	63	41	27	63
29	15	16	18	25	------	67	235	106	64	47	26	58
30	16	16	18	20	------	75	238	130	64	42	31	56
31	18	------	20	18	------	80	------	160	------	39	29	------
TOTAL	592	499.0	436	501	625	941	5,172	4,690	3,556	1,381	1,048	1,604
MEAN	19.1	16.6	14.1	16.2	22.3	30.4	172	151	119	44.5	33.8	53.5
MAX	23	24	20	25	31	80	286	223	200	64	45	84
MIN	15	7.0	10	10	10	12	60	98	63	36	26	24
AC-FT	1,170	990	865	994	1,240	1,870	10,260	9,300	7,050	2,740	2,080	3,180

CAL YR 1970 TOTAL 19,379.0 MEAN 53.1 MAX 777 MIN 7.0 AC-FT 38,440
WTR YR 1971 TOTAL 21,045.0 MEAN 57.7 MAX 286 MIN 7.0 AC-FT 41,740

06411000 Pactola Reservoir near Silver City, S. Dak.

LOCATION.--Lat 44°04'20", long 103°29'17", in NE¼SW¼ sec.2, T.1 N., R.5 E., Pennington County, in outlet works of dam on Rapid Creek, 3.8 miles east of Silver City.

DRAINAGE AREA.--319 sq mi.

PERIOD OF RECORD.--August 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level (Bureau of Reclamation datum). Prior to Feb. 18, 1970, nonrecording gage at same site and datum.

EXTREMES.--Current year: Maximum contents observed, 54,920 acre-ft June 4 (elevation, 4,580.15 ft); minimum observed, 49,480 acre-ft Sept. 4 (elevation, 4,573.57 ft).
Period of record: Maximum contents observed, 60,970 acre-ft May 19, 1965 (elevation, 4,585.87 ft); minimum contents observed since initial filling, 50,070 acre-ft Sept. 29, 1968 (elevation, 4,574.31 ft).

REMARKS.--Reservoir formed by an earthfill dam completed August 1956. Storage began August 22, 1956. Conservation capacity, 54,960 acre-ft between elevations 4,456.1 ft and 4,580.2 ft. Combined dead and inactive storage below elevation 4,456.1 ft is 1,003 acre-ft. Flood storage capacity, 43,050 acre-ft between elevations 4,580.2 ft and 4,621.5 ft (crest of spillway). Surcharge capacity, 15,780 acre-ft between elevations 4,621.5 ft and 4,633.7 ft (maximum pool elevation). Figures given herein represent contents above elevation 4,456.1 ft. Reservoir provides flood control and water for municipal and irrigation uses.

COOPERATION.--Records of elevations and contents furnished by Bureau of Reclamation.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	4,574.47	50,200	-
Oct. 31	4,574.69	50,380	+180
Nov. 30	4,575.24	50,820	+440
Dec. 31	4,575.52	51,040	+220
CAL YR 1970	-	-	+1,020
Jan. 31	4,575.86	51,320	+280
Feb. 28	4,576.45	51,800	+480
Mar. 31	4,577.36	52,560	+760
Apr. 30	4,579.87	54,680	+2,120
May 31	4,579.34	54,220	-460
June 30	4,579.25	54,150	-70
July 31	4,577.25	52,470	-1,680
Aug. 31	4,573.89	49,740	-2,730
Sept.30	4,574.35	50,100	+360
WTR YR 1971	-	-	-100

06411500 Rapid Creek below Pactola Dam, S. Dak.

LOCATION.--Lat 44°04'36", long 103°28'54", in SW¼NE¼ sec.2, T.1 N., R.5 E., Pennington County, on right bank 2,000 ft downstream from Pactola Dam, 3.9 miles upstream from Deer Creek and 13 miles west of Rapid City.

DRAINAGE AREA.--320 sq mi, approximately.

PERIOD OF RECORD.--October 1928 to September 1932 (combined records of creek and Dakota Power and Light Co. flume), July 1946 to current year. Prior to October 1953, published as "near Pactola." Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder; concrete control since Oct. 16, 1962. Datum of gage is 4,406.00 ft above mean sea level (Bureau of Reclamation bench mark). Apr. 19, 1929, to June 30, 1932, nonrecording gage at site 3,500 ft upstream at different datum. July 24, 1946, to Aug. 24, 1947, nonrecording gage and Aug. 25, 1947, to Nov. 18, 1953, water-stage recorder, at site 2 miles upstream at different datum.

AVERAGE DISCHARGE.--29 years, 45.0 cfs (32,600 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 338 cfs Apr. 25 (gage height, 8.55 ft); minimum discharge, 7.8 cfs Oct. 12 (gage height, 6.94 ft).
Period of record: Maximum discharge, 2,170 cfs May 22, 1952 (gage height, 6.74 ft, site and datum then in use); no flow Oct. 11-17, 1962.

REMARKS.--Records good. Flow completely regulated by Pactola Reservoir 2,000 ft upstream since Aug. 22, 1956. (See station 06411000.) Water-quality records for the water year 1971 are published in Part 2 of this report.

REVISIONS(WATER YEARS).--WSP 1309: 1931(M).

Rating table (gage height, in feet, and discharge, in cubic feet per second)

6.9	7.1	7.7	62
7.1	12	7.9	99
7.3	22	8.1	161
7.5	38	8.5	338

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	15	14	14	13	14	87	253	111	69	62	56
2	21	15	14	14	13	14	87	253	111	69	62	56
3	17	15	14	14	13	14	87	258	111	69	62	56
4	17	15	14	14	13	14	87	258	183	69	62	57
5	17	15	14	14	13	14	89	253	244	69	62	57
6	17	15	14	14	13	14	76	253	244	69	62	57
7	17	15	14	13	14	14	47	192	227	69	62	56
8	17	15	14	13	14	14	56	165	115	67	62	56
9	17	15	14	13	14	14	87	165	290	59	62	56
10	17	15	14	13	14	15	87	231	290	56	70	50
11	17	14	14	13	14	15	85	285	213	56	72	47
12	15	14	14	13	14	15	85	285	148	56	78	46
13	14	14	14	13	14	15	85	285	131	64	161	46
14	14	14	14	13	15	15	85	244	135	70	165	47
15	14	14	14	13	15	15	85	184	135	70	104	47
16	14	14	14	13	14	15	60	154	135	81	69	47
17	14	14	14	13	14	15	47	135	135	87	69	47
18	14	14	14	13	14	15	47	125	138	87	69	47
19	14	14	14	13	14	15	62	128	138	87	69	47
20	14	14	14	13	14	14	140	128	114	87	69	47
21	14	14	14	13	14	14	240	128	99	87	67	47
22	14	14	14	13	14	14	285	128	99	87	67	47
23	14	14	14	13	14	19	218	131	99	87	67	47
24	14	14	14	13	14	26	184	154	99	87	67	47
25	15	14	14	13	14	26	262	173	99	87	67	47
26	15	14	14	13	14	30	338	173	99	80	67	45
27	15	14	14	13	14	39	333	135	89	77	67	16
28	15	14	14	13	14	47	281	108	81	76	67	16
29	15	14	14	13	------	49	253	108	81	67	67	16
30	15	14	14	13	------	49	253	108	72	62	69	16
31	15	------	14	13	------	72	------	108	------	62	58	------
TOTAL	490	430	434	409	388	675	4,218	5,688	4,265	2,269	2,283	1,369
MEAN	15.8	14.3	14.0	13.2	13.9	21.8	141	183	142	73.2	73.6	45.6
MAX	28	15	14	14	15	72	338	285	290	87	165	57
MIN	14	14	14	13	13	14	47	108	72	56	58	16
AC-FT	972	853	861	811	770	1,340	8,370	11,280	8,460	4,500	4,530	2,720

CAL YR 1970 TOTAL 18,142 MEAN 49.7 MAX 304 MIN 14 AC-FT 35,980
WTR YR 1971 TOTAL 22,918 MEAN 62.8 MAX 338 MIN 13 AC-FT 45,460

06412500 Rapid Creek above Canyon Lake, near Rapid City, S. Dak.

LOCATION.--Lat 44°03'04", long 103°18'47", in NE¼NE¼ sec.18, T.1 N., R.7 E., Pennington County, on right bank at bridge on State Highway 40, 1.0 mile southwest of city limits of Rapid City and 2.8 miles downstream from Victoria Creek.

DRAINAGE AREA.--371 sq mi.

PERIOD OF RECORD.--July 1946 to current year.

GAGE.--Water-stage recorder. Concrete control Oct. 17, 1962 to Nov. 2, 1967 (destroyed). Datum of gage is 3,407.39 ft above mean sea level (levels by Corps of Engineers). Prior to Oct. 6, 1947, nonrecording gage, and Oct. 6, 1947, to Nov. 2, 1968, water-stage recorder at present site and datum. Nov. 3, 1968, to Sept. 28, 1968, nonrecording gage at site 0.2 mile downstream at datum 3.12 ft lower.

AVERAGE DISCHARGE.--25 years, 38.8 cfs (28,110 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 385 cfs Apr. 26 (gage height, 3.39 ft); minimum daily, 7.0 cfs Feb. 7.
Period of record: Maximum discharge, 2,600 cfs May 23, 1952 (gage height, 8.08 ft); no flow at times in 1950, 51, 1957-60, 1962-63.

REMARKS.--Records good except those for winter periods, which are poor. Flow regulated by dam on Castle Creek (see station 06409500), since December 1945. Flow completely regulated by Pactola Reservoir 21 miles upstream since August 1956 (see station 06411000).

Rating tables (gage height, in feet, and discharge, in cubic feet per second)
(Stage-discharge relation affected by ice Nov. 21 to Mar. 30)

Oct. 1 to Mar. 29		Mar. 30 to Sept. 30			
1.2	9.5	0.9	8.0	2.0	109
1.4	18	1.1	21	3.0	282
1.8	41	1.5	55	4.0	586

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	12	13	11	10	12	85	295	171	75	65	54
2	35	12	12	11	10	11	86	289	170	73	65	52
3	24	12	11	11	9.5	12	86	286	166	72	65	53
4	26	14	11	11	9.5	13	86	282	207	77	65	58
5	28	20	10	11	9.0	12	88	276	264	74	63	57
6	28	28	9.0	11	8.0	12	89	272	262	72	62	54
7	25	26	9.0	11	7.0	12	61	243	260	72	62	54
8	20	16	9.0	12	7.5	12	50	198	131	71	63	55
9	14	14	9.0	12	7.5	13	83	200	276	69	62	54
10	14	14	8.0	11	8.0	13	90	236	282	60	65	49
11	27	14	8.0	11	8.5	13	93	297	251	58	71	41
12	28	14	8.0	11	9.0	13	93	295	187	58	71	41
13	15	14	8.0	11	10	13	93	295	163	60	122	42
14	15	14	8.0	11	11	13	94	276	163	70	148	42
15	15	14	8.0	11	12	14	94	225	154	70	129	41
16	14	15	8.0	11	13	15	85	187	153	73	71	41
17	13	16	8.0	10	14	20	57	166	149	84	69	40
18	11	16	8.0	10	13	20	60	151	149	84	68	39
19	12	16	7.5	10	12	20	62	149	144	84	67	39
20	16	16	7.5	10	11	20	156	148	134	84	68	40
21	20	15	7.5	10	10	20	245	148	110	82	66	40
22	18	13	8.0	10	10	20	326	151	109	82	65	38
23	23	14	8.5	10	11	25	280	170	108	82	64	38
24	21	16	9.0	10	12	30	220	175	108	82	64	38
25	22	17	10	10	13	30	266	195	112	84	64	38
26	20	16	10	10	13	40	382	195	106	82	64	38
27	19	13	10	10	12	50	366	182	101	62	65	29
28	18	13	10	11	12	60	343	139	88	81	64	18
29	18	13	10	11	------	60	295	137	88	76	64	12
30	12	13	11	10	------	60	297	153	83	75	70	11
31	11	------	12	10	------	56	------	163	------	70	62	------
TOTAL	615	460	286.0	330	292.5	734	4,711	6,574	4,849	2,298	2,233	1,246
MEAN	19.8	15.3	9.23	10.6	10.4	23.7	157	212	162	74.1	72.0	41.5
MAX	35	28	13	12	14	60	382	297	282	84	148	58
MIN	11	12	7.5	10	7.0	11	50	137	83	58	62	11
AC-FT	1,220	912	567	655	580	1,460	9,340	13,040	9,620	4,560	4,430	2,470

CAL YR 1970 TOTAL 17,702.9 MEAN 48.5 MAX 240 MIN 5.0 AC-FT 35,110
WTR YR 1971 TOTAL 24,628.5 MEAN 67.5 MAX 382 MIN 7.0 AC-FT 48,850

06414000 Rapid Creek at Rapid City, S. Dak.

LOCATION.--Lat 44°05'08", long 103°14'24", in SW¼SE¼ sec.35, T.2 N., R.7 E., Pennington County, on right bank 200 ft downstream from Oskosh Street Bridge in Rapid City and 5.2 miles (revised) downstream from Canyon Lake.

DRAINAGE AREA.--410 sq mi, approximately.

PERIOD OF RECORD.--June 1903 to November 1906, July 1942 to current year. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 3,230.8 ft above mean sea level (levels by Corps of Engineers). Prior to Nov. 30, 1906, nonrecording gage at site 1 mile downstream at different datum.

AVERAGE DISCHARGE.--32 years, 62.7 cfs (45,430 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 498 cfs Apr. 26 (gage height, 2.38 ft); minimum daily, 13 cfs Mar. 14; minimum gage height, 0.55 ft Mar. 10, 14, 15.
Period of record: Maximum discharge, 3,300 cfs July 13, 1962 (gage height, 8.37 ft), from rating curve extended above 1,400 cfs on basis of slope-area measurement of peak flow; minimum, 1.6 cfs Apr. 20, 1962.
Flood of May 12, 13, 1920, reached a stage of 13.6 ft, from floodmarks.

REMARKS.--Records good except those for winter periods, which are poor. Several small diversions above station to municipal park pools and for irrigation of about 320 acres. Flow regulated by Pactola Reservoir 25.4 miles upstream (see station 06411000), and by Canyon Lake, 5.1 miles upstream.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Aug. 3-6; stage-discharge relation affected by ice Nov. 22, 23, Dec. 18-25, Jan. 3-8, 10-17, 30, 31, Feb. 3-9, 22)

0.5	8.0	1.6	198
.6	14	2.0	350
.8	35	2.5	586
1.2	102		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	32	26	23	25	27	99	328	190	89	65	68
2	32	34	28	24	26	27	103	324	184	84	63	63
3	29	35	35	22	25	26	104	315	179	89	59	58
4	25	34	34	20	23	27	105	310	198	100	58	76
5	19	34	30	18	21	28	104	306	286	98	51	79
6	22	35	22	18	18	27	105	294	290	93	52	70
7	30	35	35	20	15	25	81	266	290	89	59	68
8	30	36	32	22	16	27	62	211	176	90	60	68
9	31	34	33	22	23	29	87	211	270	78	55	66
10	31	32	28	22	27	27	104	248	319	69	55	65
11	31	32	24	20	51	22	105	319	294	70	64	57
12	33	30	26	20	36	16	106	319	179	63	73	54
13	35	32	24	21	99	18	106	310	174	61	115	53
14	30	43	20	21	53	13	103	298	168	77	164	51
15	30	44	24	22	39	15	103	234	162	70	141	54
16	29	42	24	22	34	26	101	184	159	68	69	57
17	29	39	24	21	32	30	68	179	152	86	63	58
18	29	37	24	32	31	28	69	161	152	89	74	59
19	30	35	22	25	30	26	75	160	147	91	73	59
20	29	31	20	25	29	29	176	158	145	81	73	60
21	30	29	20	25	28	31	276	156	129	85	75	60
22	29	27	20	25	26	26	376	161	108	85	74	59
23	43	25	20	24	27	28	328	211	112	78	64	60
24	70	21	21	24	29	29	255	187	104	81	70	57
25	43	27	22	25	31	39	298	214	132	105	64	57
26	32	27	21	26	30	42	440	211	118	99	62	57
27	30	27	21	28	27	58	431	201	113	74	64	53
28	32	26	22	26	28	69	408	150	94	103	72	48
29	32	26	22	26	------	69	346	148	110	96	68	35
30	32	26	23	25	------	68	337	182	102	73	87	30
31	32	------	23	23	------	69	------	182	------	66	86	------
TOTAL	991	967	770	717	879	1,021	5,461	7,138	5,236	2,580	2,272	1,759
MEAN	32.0	32.2	24.8	23.1	31.4	32.9	182	230	175	83.2	73.3	58.6
MAX	70	44	35	32	99	69	440	328	319	105	164	79
MIN	19	21	20	18	15	13	62	148	94	61	51	30
AC-FT	1,970	1,920	1,530	1,420	1,740	2,030	10,830	14,160	10,390	5,120	4,510	3,490

CAL YR 1970 TOTAL 22,507 MEAN 61.7 MAX 332 MIN 15 AC-FT 44,640
WTR YR 1971 TOTAL 29,791 MEAN 81.6 MAX 440 MIN 13 AC-FT 59,090

06421500 Rapid Creek near Farmingdale, S. Dak.

LOCATION.--Lat 43°56'31", long 102°51'12", in SW¼SW¼SW¼ sec.19, T.1 S., R.11 E., Pennington County, on right bank at downstream side of bridge, 2 miles southeast of Farmingdale and 4.8 miles downstream from Antelope Creek.

DRAINAGE AREA.--602 sq mi.

PERIOD OF RECORD.--July 1946 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,700 ft (from topographic map). Prior to Sept. 19, 1947, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--25 years, 54.0 cfs (39,120 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 511 cfs Apr. 27 (gage height, 7.25 ft); no flow for part of Aug. 19.
Period of record: Maximum discharge, 2,640 cfs June 21, 1947; maximum gage height, 10.67 ft Dec. 6, 1969 (backwater from ice); no flow at times in 1949, 1952-56, 1958-63, 1969-71.

REMARKS.--Records good except those for winter periods, which are poor. Flow regulated by Pactola Reservoir 67 miles upstream (see station 06441000) since August 1956, and by Deerfield Reservoir on Castle Creek since November 1945 (see station 06409500). Diversions for irrigation of about 10,000 acres above station. Water-quality records for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	45	52	35	30	55	96	384	242	125	22	33
2	49	42	52	30	30	55	126	373	226	113	13	29
3	49	45	52	30	30	60	134	368	217	102	29	29
4	43	45	50	25	30	65	138	352	219	119	23	39
5	37	49	40	25	30	60	142	347	234	125	25	82
6	33	45	45	25	25	55	145	341	274	110	14	86
7	32	46	50	25	20	55	142	333	290	87	8.5	66
8	43	53	50	30	25	60	125	315	286	76	5.9	58
9	51	65	45	30	30	65	100	280	208	72	6.3	61
10	51	52	40	25	40	70	124	278	272	63	6.3	65
11	54	47	35	20	50	80	148	314	286	43	6.3	62
12	60	44	35	20	60	110	156	342	271	24	6.7	55
13	59	41	30	20	70	100	161	331	195	9.2	6.7	51
14	73	49	25	20	80	70	168	321	204	6.3	22	42
15	51	52	25	25	90	70	170	310	190	6.3	108	38
16	45	59	25	30	100	53	164	264	178	6.0	114	47
17	44	60	25	35	110	49	152	240	179	6.8	40	54
18	41	57	25	35	90	53	124	234	168	7.3	5.7	60
19	39	54	20	40	80	52	135	219	162	6.0	1.6	58
20	40	53	20	45	70	52	272	214	160	16	19	61
21	42	48	20	40	60	56	303	205	157	9.2	13	66
22	37	17	25	40	50	49	363	197	148	5.9	12	68
23	37	30	25	40	50	48	374	241	115	6.4	17	64
24	37	37	25	45	60	46	357	323	112	6.8	16	56
25	86	45	30	45	70	49	371	241	130	10	18	57
26	69	40	35	45	60	79	441	249	149	32	22	51
27	57	35	30	45	55	148	484	246	127	33	15	54
28	57	40	30	50	55	150	457	233	120	16	12	86
29	54	48	30	50	------	132	425	199	117	23	12	84
30	52	49	35	40	------	114	399	211	135	42	21	41
31	48	------	35	35	------	110	------	290	------	32	28	------
TOTAL	1,526	1,392	1,061	1,045	1,550	2,270	6,896	8,795	5,771	1,339.2	669.0	1,703
MEAN	49.2	46.4	34.2	33.7	55.4	73.2	230	284	192	43.2	21.6	56.8
MAX	86	65	52	50	110	150	484	384	290	125	114	86
MIN	32	17	20	20	20	46	96	197	112	5.9	1.6	29
AC-FT	3,030	2,760	2,100	2,070	3,070	4,500	13,680	17,440	11,450	2,660	1,330	3,380

CAL YR 1970 TOTAL 25,347.97 MEAN 69.4 MAX 502 MIN 0 AC-FT 50,280
WTR YR 1971 TOTAL 34,017.20 MEAN 93.2 MAX 484 MIN 1.6 AC-FT 67,470

06422500 Boxelder Creek near Nemo, S. Dak.

LOCATION.--Lat 44°08'38", long 103°27'16", in SE¼SE¼ sec.12, T.2 N., R.5 E., Lawrence County, on right bank at ranch 0.2 mile upstream from county line, 0.9 mile downstream from Jim Creek and 4.5 miles southeast of Nemo.

DRAINAGE AREA.--96 sq mi, approximately.

PERIOD OF RECORD.--July 1945 to July 1947, May 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 4,322.27 ft above mean sea level. July 1945 to July 1947, nonrecording gage at same site at different datum.

AVERAGE DISCHARGE.--6 years (1946, 1967-71), 21.6 cfs (15,650 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 221 cfs Apr. 25 (gage height, 4.00 ft); maximum gage height, 5.80 ft Mar. 18 (backwater from ice); minimum daily discharge, 1.0 cfs Jan. 11-14.
Period of record: Maximum discharge observed, 1,180 cfs May 2, 1946 (gage height, 5.75 ft, datum then in use) from rating curve extended above 210 cfs; minimum daily, 0.70 cfs Dec. 30, 1968.
Highest known stage, about 14 feet, occurred in 1911.

REMARKS.--Records good except those for winter periods, which are poor.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Jan. 28, 29, Feb. 12 to Mar. 5; stage-discharge relation affected by ice Nov. 21-24, Dec. 10 to Jan. 7, Jan. 9-25, Jan. 30 to Feb. 11, Mar. 17-23)

1.7	1.6	2.5	28
1.8	3.1	3.0	64
2.0	8.0	3.5	126
2.2	14	4.0	221

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.0	5.8	13	4.5	4.5	7.4	17	136	120	35	16	9.4
2	8.0	6.6	12	4.0	5.0	6.9	20	124	105	33	15	8.4
3	7.4	6.9	10	3.0	4.5	7.2	17	118	98	32	15	7.9
4	8.0	7.3	11	2.5	4.5	6.6	15	128	107	34	14	9.6
5	7.4	7.8	8.3	2.0	4.5	6.3	14	107	98	40	13	27
6	7.2	8.5	9.1	2.0	4.0	5.8	17	96	87	33	12	19
7	8.3	10	9.4	2.5	3.0	6.3	38	87	88	30	12	13
8	8.3	13	9.1	2.5	3.5	5.8	61	82	81	28	11	11
9	8.6	9.7	8.8	2.0	4.0	5.5	62	87	78	27	11	11
10	8.6	11	8.5	1.5	6.0	5.5	89	142	75	26	11	11
11	9.4	10	8.0	1.0	8.0	6.0	76	114	68	25	11	11
12	9.4	10	7.5	1.0	9.7	8.3	51	96	67	23	11	9.9
13	9.7	11	7.0	1.0	24	14	45	89	70	22	10	9.4
14	9.4	10	6.5	1.0	27	11	50	83	63	22	11	9.1
15	8.6	8.0	6.0	1.5	20	11	57	78	63	21	10	10
16	8.3	11	5.0	2.5	18	9.7	61	76	58	20	9.4	10
17	7.7	11	4.0	4.0	15	9.0	57	80	54	20	9.4	10
18	7.7	10	3.5	4.0	14	9.0	84	69	52	19	9.5	9.9
19	7.7	8.8	3.0	4.0	13	9.0	74	66	49	18	10	10
20	7.7	8.3	2.5	4.5	12	7.5	150	62	47	18	10	10
21	7.7	7.0	2.0	4.5	11	7.0	132	61	47	17	9.6	10
22	8.3	4.5	3.0	4.0	12	6.5	174	67	44	18	9.2	10
23	7.7	4.0	3.5	4.5	10	6.0	137	123	42	17	8.1	10
24	7.7	7.0	4.0	4.5	10	6.0	137	110	40	16	7.6	9.9
25	7.2	11	4.5	4.5	10	6.3	182	87	47	19	7.6	9.6
26	7.2	11	5.0	5.0	8.3	15	156	80	42	20	8.0	8.5
27	6.3	11	4.5	5.4	7.7	37	140	75	38	18	8.0	8.5
28	6.3	10	4.5	6.0	8.0	24	128	70	36	17	7.9	12
29	5.8	10	5.0	8.3	------	21	140	77	36	19	7.8	11
30	5.5	11	5.0	6.0	------	26	150	117	40	18	9.2	9.9
31	4.4	------	5.0	5.0	------	29	------	117	------	17	9.7	------
TOTAL	239.5	271.2	198.2	108.7	281.2	341.6	2,531	2,904	1,940	722	324.0	326.0
MEAN	7.73	9.04	6.39	3.51	10.0	11.0	84.4	93.7	64.7	23.3	10.5	10.9
MAX	9.7	13	13	8.3	27	37	182	142	120	40	16	27
MIN	4.4	4.0	2.0	1.0	3.0	5.5	14	61	36	16	7.6	7.9
AC-FT	475	538	393	216	558	678	5,020	5,760	3,850	1,430	643	647

CAL YR 1970 TOTAL 8,319.1 MEAN 22.8 MAX 375 MIN 1.6 AC-FT 16,500
WTR YR 1971 TOTAL 10,187.4 MEAN 27.9 MAX 182 MIN 1.0 AC-FT 20,210

06423500 Cheyenne River near Wasta, S. Dak.

LOCATION.--Lat 44°04'52", long 102°24'03", in NE¼NE¼NW¼ sec.2, T.1 N., R.14 E., Pennington County, on left bank at downstream side of highway bridge, 200 ft downstream from Chicago and North Western Railway Co. bridge, 3.0 miles east of Wasta, and 8.6 miles downstream from Box Elder Creek.

DRAINAGE AREA.--12,800 sq mi, approximately.

PERIOD OF RECORD.--July 1914 to June 1915, August 1928 to June 1932, March 1934 to current year. Monthly discharge only for some periods, published in WSP 1309. Records for Feb. 19-28, 1930, published in WSP 701, have been found to be unreliable and should not be used.

GAGE.--Water-stage recorder. Datum of gage is 2,261.78 ft above mean sea level. Prior to Aug. 1, 1940, nonrecording gage at site 50 ft upstream; Aug. 1, 1940 to Dec. 3, 1940, nonrecording gage and Dec. 4, 1940 to Sept. 30, 1968 water-stage recorder at present site all at datum 1.00 ft higher.

AVERAGE DISCHARGE.--40 years (1928-31, 1934-71), 375 cfs (271,700 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 15,600 cfs May 27 (gage height, 9.37 ft); minimum daily, 35 cfs Dec. 20.

Period of record: Maximum discharge observed, 46,300 cfs May 6, 1932 (gage height, 12.28 ft, present datum), from rating curve extended above 11,000 cfs on basis of an incomplete discharge measurement at gage height 9.65 ft (present datum); maximum gage height observed, 13.5 ft (present datum) June 13, 1915; minimum discharge, 0.6 cfs July 27, 1961.

Flood in May 1920 reached a stage of 17 ft (present datum), from information by local residents.

REMARKS.--Records good except those for winter periods, which are poor. Flow regulated by Angostura Reservoir 108 miles upstream (see station 06401000) since October 1949 and by upstream reservoirs on Rapid Creek since 1956.

REVISIONS(WATER YEARS).--WSP 786: Drainage area. WSP 1279: 1930(M), 1931, 1937. See also Period of Record.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	145	122	188	60	46	307	323	873	3,390	294	103	126
2	132	121	172	58	48	132	251	718	6,690	257	99	105
3	127	122	129	56	48	123	250	882	7,800	234	99	97
4	127	119	134	55	48	245	237	1,660	4,880	223	97	116
5	129	117	120	55	48	294	238	1,350	4,080	234	101	1,770
6	112	149	140	56	46	292	232	1,000	2,880	227	94	651
7	115	182	76	60	45	232	225	800	3,060	205	84	230
8	248	194	96	60	46	206	211	900	3,030	182	80	195
9	241	209	69	60	55	226	176	800	2,730	173	72	209
10	198	155	40	55	70	255	158	600	2,080	253	63	202
11	140	139	40	50	75	659	166	1,560	1,890	179	60	173
12	124	132	45	48	80	2,350	180	1,800	1,660	142	55	155
13	127	125	50	45	100	3,490	180	1,800	1,250	126	52	152
14	122	122	48	45	200	3,210	183	1,500	1,170	112	60	144
15	127	121	50	45	500	1,310	186	1,300	991	110	60	147
16	122	123	50	50	300	725	194	1,200	1,220	103	94	144
17	112	120	50	52	200	529	183	1,000	1,090	88	119	144
18	110	110	45	50	150	271	172	900	1,100	81	101	144
19	108	100	40	50	100	239	180	900	1,060	76	80	147
20	106	100	35	52	90	231	3,260	800	706	73	64	152
21	104	80	40	50	90	685	1,350	700	538	70	62	155
22	104	70	48	50	90	302	744	700	643	73	70	152
23	102	65	57	50	100	216	744	3,130	582	67	72	152
24	100	70	57	52	150	199	684	5,480	503	66	72	155
25	98	80	55	50	298	216	2,870	5,320	516	76	73	150
26	106	75	55	48	311	491	3,430	11,300	429	84	66	147
27	110	75	52	50	438	892	4,190	10,400	389	84	59	131
28	106	100	52	52	443	1,190	2,600	4,630	307	101	56	147
29	111	212	52	55	------	1,060	1,480	4,210	282	112	57	223
30	115	198	55	50	------	561	1,070	3,180	273	112	730	202
31	119	------	60	46	------	423	------	3,880	------	107	384	------
TOTAL	3,947	3,707	2,200	1,615	4,215	21,561	26,347	75,273	57,219	4,324	3,338	6,817
MEAN	127	124	71.0	52.1	151	696	878	2,428	1,907	139	108	227
MAX	248	212	188	60	500	3,490	4,190	11,300	7,800	294	730	1,770
MIN	98	65	35	45	45	123	158	600	273	66	52	97
AC-FT	7,830	7,350	4,360	3,200	8,360	42,770	52,260	149,300	113,500	8,580	6,620	13,520

CAL YR 1970 TOTAL 102,870 MEAN 282 MAX 7,290 MIN 35 AC-FT 204,000
WTR YR 1971 TOTAL 210,563 MEAN 577 MAX 11,300 MIN 35 AC-FT 417,700

06425500 Elk Creek near Elm Springs, S. Dak.

LOCATION.--Lat 44°14'54", long 102°30'10", in SW¼NW¼ sec.1, T.3 N., R.13 E., Meade County, near center of span on downstream side of county highway bridge, 1.4 miles downstream from Hay Draw, 5.0 miles southeast of Elm Springs, and 7.0 miles upstream from mouth.

DRAINAGE AREA.--540 sq mi, approximately.

PERIOD OF RECORD.--July 1949 to current year.

GAGE.--Nonrecording gage and crest-stage gage; crest-stage gage since Sept. 29, 1954. Datum of gage is 2,304.49 ft above mean sea level. Prior to Sept. 16, 1954, on upstream side of bridge, Sept. 16, 1954 to Jan. 31, 1967, on downstream side of bridge, at site 350 ft downstream at same datum.

AVERAGE DISCHARGE.--22 years, 25.2 cfs (18,260 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 3,510 cfs May 23 (gage height, 10.42 ft); no flow for many days.
Period of record: Maximum discharge, 8,540 cfs Mar. 29, 1952 (gage height, 10.61 ft, from floodmarks, site and datum then in use), from rating curve extended above 5,100 cfs; maximum gage height, 11.0 ft May 29, 1962, from floodmarks, site and datum then in use; no flow for long periods in each year.
Maximum stage known, about 17 ft (at former site) in May 1920, from information by local residents.

REMARKS.--Records fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					0	20	64	126	200	31	3.8	0
2					0	14	56	88	200	28	3.5	0
3					0	16	50	79	305	26	3.5	0
4					0	18	42	70	178	24	3.5	0
5					0	16	38	62	163	23	1.0	.09
6					0	15	33	54	141	19	.50	.03
7					0	15	25	60	124	16	.10	.03
8					0	20	14	53	103	17	.05	.03
9					0	30	14	58	92	14	.05	.03
10					0	75	16	124	107	13	.05	.03
11					130	92	19	142	94	12	.05	0
12					192	469	19	130	103	10	.03	0
13					258	1,560	21	120	84	10	.03	0
14					647	855	20	106	35	7.7	.03	0
15					900	493	16	87	24	8.6	0	0
16					493	178	18	79	13	5.4	0	0
17					239	98	18	73	49	4.7	0	0
18					185	67	17	67	44	6.0	0	0
19					142	67	24	62	49	4.4	0	0
20					108	55	74	55	46	4.4	0	0
21					75	37	87	46	44	4.7	0	0
22					40	41	81	47	44	4.1	0	0
23					45	45	108	2,090	38	4.4	0	0
24					50	51	116	2,450	35	4.1	0	0
25					55	55	124	1,460	236	4.4	0	0
26					40	68	164	425	53	4.4	0	0
27					30	100	236	300	40	4.7	0	0
28					20	151	216	200	34	4.1	0	.03
29					------	120	194	200	30	4.1	0	.05
30					------	94	168	250	32	4.1	0	.05
31		------			------	83	------	200	------	4.1	0	------
TOTAL	0	0	0	0	3,649	5,018	2,092	9,363	2,740	331.4	16.19	.37
MEAN	0	0	0	0	130	162	69.7	302	91.3	10.7	.52	.012
MAX	0	0	0	0	900	1,560	236	2,450	305	31	3.8	.09
MIN	0	0	0	0	0	14	14	46	13	4.1	0	0
AC-FT	0	0	0	0	7,240	9,950	4,150	18,570	5,430	657	32	.7

CAL YR 1970 TOTAL 11,790.92 MEAN 32.3 MAX 2,290 MIN 0 AC-FT 23,390
WTR YR 1971 TOTAL 23,209.96 MEAN 63.6 MAX 2,450 MIN 0 AC-FT 46,040

PEAK DISCHARGE (BASE, 400 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
2-15	0600	7.48	972	5-23	2300	10.42	3,510
3-15	1900	9.40	2,730	6-25	2100	7.34	737

06428500 Belle Fourche River at Wyoming-South Dakota State line

LOCATION.--Lat 44°44'59", long 104°02'49", in NE¼NW¼NW¼ sec.18, T.9 N., R.1 E., Butte County, on left bank 0.3 mile downstream from State line, 3.7 miles downstream from Oak Creek and 11 miles northwest of Belle Fourche, S. Dak.

DRAINAGE AREA.--3,280 sq mi, approximately.

PERIOD OF RECORD.--December 1946 to current year. Records for water year 1947 incomplete, yearly estimate published in WSP 1729.

GAGE.--Water-stage recorder. Datum of gage is 3,095.7 ft above mean sea level.

AVERAGE DISCHARGE.--25 years, 82.5 cfs (59,770 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,400 cfs June 4 (gage height, 11.32 ft); minimum daily, 7.0 cfs Jan. 6, 12-15.
Period of record: Maximum discharge, 4,400 cfs June 18, 1962 (gage height, 15.59 ft); no flow at times most years.

REMARKS(revised).--Records good except those for winter periods, which are poor. Diversions above station for irrigation of about 5,400 acres. Flow regulated by Keyhole Reservoir (usable capacity, 191,600 acre-ft), 143 miles upstream since Oct. 25, 1952. Water-quality records for the water year 1971 are published in Part 2 of this report.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used June 1-3, July 30 to Aug. 6; stage-discharge relation affected by ice Nov. 23, Nov. 26 to Mar. 16)

2.3	6.5	5.0	335
2.5	18	7.0	765
3.0	61	9.0	1,400
4.0	175	11.0	2,220

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	24	40	16	17	60	1,170	398	295	188	112	68
2	8.7	24	41	12	20	55	1,020	352	245	144	109	66
3	16	18	40	9.0	22	60	656	320	217	116	102	61
4	16	27	34	8.0	21	60	523	301	605	96	103	66
5	15	24	30	7.5	22	55	416	298	832	86	102	147
6	15	28	30	7.0	20	50	369	299	416	81	100	87
7	16	28	31	8.0	18	50	374	296	295	76	99	61
8	16	29	33	10	15	55	645	287	233	71	100	52
9	16	28	30	10	18	60	1,240	265	207	67	98	45
10	16	30	26	8.0	20	65	1,550	262	402	65	95	40
11	17	33	20	7.5	30	70	1,540	270	359	60	95	37
12	19	33	23	7.0	250	80	1,430	269	347	57	96	33
13	25	32	26	7.0	300	85	1,180	245	325	52	94	29
14	23	31	23	7.0	600	100	814	223	302	50	92	26
15	21	30	24	7.0	400	150	503	207	235	50	90	23
16	21	31	25	9.0	300	200	392	192	188	46	89	24
17	20	29	25	12	250	152	367	182	163	43	86	21
18	20	27	20	10	150	119	363	171	173	85	91	22
19	20	27	15	12	80	101	441	164	143	103	97	21
20	20	27	10	13	60	92	768	162	130	102	94	23
21	20	25	11	13	50	98	1,800	156	169	112	96	24
22	20	20	12	12	45	100	1,840	153	176	110	89	24
23	19	19	13	14	50	97	1,030	192	134	107	74	25
24	19	20	15	16	60	87	763	236	117	105	68	25
25	20	25	17	16	70	87	591	717	110	110	68	23
26	21	24	18	15	70	134	591	396	102	112	65	22
27	22	22	16	18	66	175	705	276	136	109	63	22
28	24	20	17	20	65	367	595	226	237	107	63	22
29	23	25	18	20	------	523	580	194	141	109	66	20
30	24	31	19	18	------	415	446	205	116	118	70	20
31	24	------	20	17	------	705	------	520	------	116	70	------
TOTAL	589.7	791	722	366.0	3,089	4,507	24,702	8,434	7,550	2,853	2,736	1,179
MEAN	19.0	26.4	23.3	11.8	110	145	823	272	252	92.0	88.3	39.3
MAX	25	33	41	20	600	705	1,840	717	832	188	112	147
MIN	8.7	18	10	7.0	15	50	363	153	102	43	63	20
AC-FT	1,170	1,570	1,430	726	6,130	8,940	49,000	16,730	14,980	5,660	5,430	2,340

CAL YR 1970 TOTAL 36,191.7 MEAN 99.2 MAX 1,160 MIN 8.7 AC-FT 71,790
WTR YR 1971 TOTAL 57,518.7 MEAN 158 MAX 1,840 MIN 7.0 AC-FT 114,100

06430000 Murray ditch at Wyoming-South Dakota State line

LOCATION.--Lat 44°34'35", long 104°02'58", in SW¼SW¼ sec.7, T.7 N., R.1 E., Butte County, on right bank 15 ft downstream from State line, and 12 miles southwest of Belle Fourche.

PERIOD OF RECORD.--June 1954 to current year (irrigation seasons only prior to October 1959).

GAGE.--Water-stage recorder. Altitude of gage is 3,440 ft (from topographic map).

EXTREMES.--Period of record: Maximum daily discharge, 33 cfs Oct. 4-6, 1970; no flow for long periods in each year.

REMARKS.--Records fair. Ditch diverts water from left bank of Redwater Creek, 2 miles upstream, for irrigation of about 700 acres. Flow maintained during irrigation season only.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.7	2.1							0	0	6.7	13
2	3.7	2.1							0	0	6.9	12
3	3.0	2.1							0	0	7.8	14
4	3.0	2.1							0	0	13	12
5	3.0	2.1							0	1.1	13	11
6	2.7	2.1							0	2.8	13	11
7	2.7	2.1							0	2.6	13	11
8	2.7	2.1							0	2.4	13	7.8
9	2.6	2.1							0	2.4	12	7.6
10	2.4	1.8							0	2.1	18	7.4
11	2.2	1.7							0	2.1	17	7.8
12	2.1	1.7							0	2.1	16	7.6
13	2.1	1.6							0	4.8	16	7.6
14	2.1	1.6							0	8.4	16	7.8
15	2.0	1.6							0	15	17	7.7
16	2.0	1.6							0	24	17	7.9
17	2.0	.09							0	23	17	8.4
18	2.7	0							0	23	11	8.4
19	2.5	0							0	25	13	9.1
20	2.6	0							0	28	24	9.5
21	2.4	0							0	25	20	8.3
22	2.4	0							0	23	22	6.9
23	2.4	0							0	22	25	6.3
24	2.3	0							0	22	25	6.3
25	2.2	0							0	19	21	6.2
26	2.2	0							0	21	17	6.0
27	2.2	0							0	24	18	5.4
28	2.2	0							.06	22	19	.67
29	2.2	0			------				.13	22	19	.05
30	2.2	0			------				0	23	16	0
31	2.1	------			------		------		------	15	14	------
TOTAL	76.6	30.59	0	0	0	0	0	0	.19	406.8	496.4	234.72
MEAN	2.47	1.02	0	0	0	0	0	0	.006	13.1	16.0	7.82
MAX	3.7	2.1	0	0	0	0	0	0	.13	28	25	14
MIN	2.0	0	0	0	0	0	0	0	0	0	6.7	0
AC-FT	152	61	0	0	0	0	0	0	.4	807	985	466

CAL YR 1970 TOTAL 1,132.90 MEAN 3.10 MAX 26 MIN 0 AC-FT 2,250
WTR YR 1971 TOTAL 1,245.30 MEAN 3.41 MAX 28 MIN 0 AC-FT 2,470

06430500 Redwater Creek at Wyoming-South Dakota State line

LOCATION.--Lat 44°34'26", long 104°02'54", in NW¼NW¼ sec.18, T.7 N., R.1 E., Butte County, on left bank 800 ft downstream from State line, 5.7 miles upstream from Crow Creek, and 12 miles southwest of Belle Fourche, S. Dak.

DRAINAGE AREA.--471 sq mi.

PERIOD OF RECORD.--April 1929 to September 1931 and February 1936 to July 1937 (published as "near Beulah, Wyo."), June 1954 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 3,410 ft (from topographic map). Apr. 25, 1929, to Sept. 30, 1931, and Feb. 28, 1936, to July 31, 1937, nonrecording gage at site 2 miles upstream at different datum.

AVERAGE DISCHARGE.--19 years (1929-31, 1954-71), 34.0 cfs (24,630 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 391 cfs Feb. 13 (gage height, 4.80 ft); minimum, 5.3 cfs July 15 (gage height, 1.62 ft).
Period of record: Maximum discharge, 2,340 cfs June 16, 1962 (gage height, 11.95 ft, from floodmark), from rating curve extended above 940 cfs on basis of slope-area measurement of peak flow; no flow Aug. 13-15, 1929.

REMARKS.--Records good except those for winter periods, which are fair. Large diversions for irrigation above station. Total flow passing State line may be obtained by adding flow of Murray ditch. (See station 06430000).

REVISIONS(WATER YEARS).--WSP 1309: 1931(M): 1936-37(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	33	39	31	33	40	45	67	77	63	32	23
2	30	35	38	31	33	39	44	67	74	61	30	22
3	31	34	37	30	33	39	43	75	72	60	28	23
4	31	34	36	32	33	40	42	110	71	58	21	29
5	32	34	36	30	32	40	42	103	73	57	22	35
6	32	35	36	28	30	38	41	89	70	56	21	31
7	34	36	37	30	28	38	43	78	71	54	21	31
8	35	37	37	31	30	39	48	77	69	51	22	34
9	35	36	37	31	33	40	49	74	68	51	25	33
10	35	37	36	31	33	39	49	130	69	51	19	35
11	35	36	35	30	79	40	60	182	68	51	22	38
12	35	36	35	29	81	40	55	140	76	49	23	37
13	35	36	35	29	224	45	47	111	66	43	22	37
14	35	36	35	29	183	55	46	94	64	37	22	37
15	35	35	35	30	133	43	50	83	63	26	21	37
16	35	38	34	31	90	39	57	73	62	15	21	37
17	35	38	35	31	54	39	55	68	62	19	21	37
18	34	38	35	30	49	38	58	65	62	19	22	37
19	34	38	34	30	44	37	72	67	62	19	17	37
20	34	38	32	54	42	38	84	62	61	19	11	38
21	35	37	30	37	41	40	115	58	61	18	12	39
22	35	36	31	32	40	38	99	60	62	17	13	38
23	35	35	33	32	40	38	87	173	64	17	14	38
24	35	37	34	32	41	39	75	211	63	17	14	38
25	35	40	34	32	41	42	77	157	63	16	16	38
26	35	38	32	31	40	58	81	124	63	15	16	36
27	34	38	32	33	39	121	71	104	62	14	17	39
28	32	37	32	36	40	95	62	89	63	14	19	42
29	32	37	31	37	------	53	61	80	68	14	19	43
30	33	39	31	39	------	50	69	81	66	15	21	42
31	33	------	31	34	------	51	------	82	------	24	23	------
TOTAL	1,046	1,094	1,065	1,003	1,619	1,431	1,827	3,034	1,995	1,040	627	1,061
MEAN	33.7	36.5	34.4	32.4	57.8	46.2	60.9	97.9	66.5	33.5	20.2	35.4
MAX	35	40	39	54	224	121	115	211	77	63	32	43
MIN	30	33	30	28	28	37	41	58	61	14	11	22
AC-FT	2,070	2,170	2,110	1,990	3,210	2,840	3,620	6,020	3,960	2,060	1,240	2,100

CAL YR 1970 TOTAL 16,523 MEAN 45.3 MAX 498 MIN 10 AC-FT 32,770
WTR YR 1971 TOTAL 16,842 MEAN 46.1 MAX 224 MIN 11 AC-FT 33,410

PEAK DISCHARGE (BASE, 150 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
2-13	1700	4.80	391	5-11	0015	3.75	202
3-27	0700	3.51	164	5-23	1530	4.20	282

06431500 Spearfish Creek at Spearfish, S. Dak.

LOCATION.--Lat 44°28'57", long 103°51'40", in SE¼NW¼ sec.15, T.6 N., R.2 E., Lawrence County, on right bank in city park in Spearfish, 500 ft downstream from fish hatchery and nearest tributary, and 9.8 miles upstream from mouth.

DRAINAGE AREA.--168 sq mi.

PERIOD OF RECORD.--October 1946 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 3,640 ft (from topographic map). Prior to Dec. 5, 1946, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--25 years, 48.4 cfs (35,070 acre-ft per year, unadjusted).

EXTREMES.--Current year: Maximum discharge, 234 cfs May 10 (gage height, 6.85 ft); no flow for part of Oct. 18.
Period of record: Maximum discharge, 4,240 cfs May 15, 1965 (gage height, 10.53 ft), from rating curve extended above 520 cfs on basis of slope-area measurement of peak flow; no flow for part of Oct. 18, 1970.
Flood of June 5, 1904, reached a stage of 7.00 ft, site and datum of former gage near Spearfish, 1 mile upstream (drainage area, 157 sq mi); discharge about 5,000 cfs.

REMARKS.--Records good except those for the winter periods, which are fair. Regulation by fish hatchery and by hydroelectric plant 0.5 mile upstream causes diurnal fluctuation, but since storage capacity is small, daily flows are not appreciably affected. Prior to water year 1962 average monthly diversion by Homestake Mining Co., about 7 cfs. Figures of daily discharge do not include diversion by Homestake Mining Co.

REVISIONS.--WSP 1116: Drainage area.

COOPERATION.--Figures of monthly diversion, in acre-feet, are furnished by Homestake Mining Co.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	44	51	42	55	56	54	137	106	76	53	46
2	45	48	47	40	56	58	49	138	104	72	54	42
3	44	47	47	29	45	54	51	136	106	69	50	43
4	43	43	45	35	40	58	50	158	87	72	51	66
5	45	46	41	30	40	57	50	167	50	71	50	115
6	44	45	42	35	40	53	52	149	46	69	49	81
7	46	47	45	38	40	43	62	135	47	61	50	67
8	45	53	43	50	63	56	69	131	47	65	51	62
9	47	47	45	49	63	53	69	129	52	64	55	61
10	48	48	45	47	70	51	86	169	53	60	54	56
11	48	48	37	40	69	52	102	220	55	62	50	55
12	44	47	45	40	59	50	85	194	55	62	47	53
13	46	51	37	44	72	54	76	176	58	61	48	51
14	46	47	40	43	68	55	80	163	60	59	51	49
15	43	46	44	40	63	53	95	150	60	57	49	50
16	45	47	43	45	63	48	116	140	61	56	47	50
17	45	46	44	45	60	51	125	127	60	53	46	52
18	34	47	44	44	60	46	136	121	65	58	54	52
19	46	46	25	43	60	52	137	118	63	59	49	49
20	45	46	22	44	59	48	137	118	65	55	50	54
21	46	45	30	43	58	48	137	112	66	55	48	54
22	46	25	38	43	44	44	137	107	66	55	47	49
23	48	22	30	46	56	47	137	128	64	55	46	47
24	48	52	39	45	61	46	137	172	67	51	46	48
25	49	53	38	46	61	47	135	164	64	57	46	46
26	49	50	45	44	60	44	135	146	71	58	43	46
27	44	48	45	46	54	53	135	131	81	54	45	46
28	47	46	43	48	43	53	135	118	80	56	43	52
29	46	46	45	50	------	48	135	113	80	58	45	48
30	49	51	43	46	------	56	137	110	86	55	52	44
31	45	------	42	50	------	60	------	108	------	55	47	------
TOTAL	1,410	1,377	1,270	1,330	1,582	1,594	3,041	4,385	2,025	1,870	1,516	1,634
MEAN	45.5	45.9	41.0	42.9	56.5	51.4	101	141	67.5	60.3	48.9	54.5
MEAN‡	54.5	54.9	49.4	51.6	65.2	60.4	110	148	76.9	69.8	58.6	62.4
(+)	553	533	513	535	481	550	510	442	562	582	595	470
AC-FT	2,800	2,730	2,520	2,640	3,140	3,160	6,030	8,700	4,020	3,710	3,010	3,240
AC-FT‡	3,350	3,260	3,030	3,180	3,620	3,710	6,540	9,140	4,580	4,290	3,600	3,710
MAX	49	53	51	50	72	60	137	220	106	76	55	115
MIN	34	22	22	29	40	43	49	107	46	51	43	42

CAL YR 1970 TOTAL 25,781 MEAN 70.6 MEAN‡ 79.2 MAX 510 MIN 22 AC-FT 51,140 AC-FT‡ 57,370
WTR YR 1971 TOTAL 23,034 MEAN 63.1 MEAN‡ 71.8 MAX 220 MIN 22 AC-FT 45,690 AC-FT‡ 52,020

(+) Diversion, in acre-feet, by Homestake Mining Company.
(‡) Adjusted for diversion.

06433000 Redwater River above Belle Fourche, S. Dak.

LOCATION.--Lat 44°40'02", long 103°50'20", in NW¼SE¼ sec.11, T.8 N., R.2 E., Butte County, on right bank at upstream side of bridge on U.S. Highway 212 in Belle Fourche, 0.5 mile upstream from Hay Creek and 0.9 mile upstream from mouth.

DRAINAGE AREA.--920 sq mi.

PERIOD OF RECORD.--November 1945 to current year. Records for water year 1946 incomplete, yearly discharge published in WSP 1309. Prior to October 1960, published as Redwater Creek above Belle Fourche.

GAGE.--Water-stage recorder. Altitude of gage is 3,000 ft (from topographic map). Prior to Dec. 13, 1946, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--26 years (1945-71), 127 cfs (92,010 acre-ft per year).

EXTREMES.--Water year 1970: Maximum discharge, 1,870 cfs (revised) June 13 (gage height, 7.68 ft); minimum daily, 7.2 cfs (revised) July 18.
Current year: Maximum discharge, 890 cfs May 23 (gage height, 5.75 ft; maximum gage height, 8.40 ft Feb. 11 (backwater from ice); minimum daily discharge, 6.7 cfs Aug. 23.
Period of record: Maximum discharge, 16,400 cfs June 16, 1962 (gage height, 11.69 ft) from rating curve extended above 6,000 cfs on basis of slope-area measurement of peak flow; no flow for part of Aug. 5, 1960, Aug. 8-10, 1968, and Aug. 13, 1969.

REVISIONS.--The maximum discharge for the water year 1970 has been revised to 1,870 cfs June 13, 1970 (gage height, 7.68 ft) and the minimum daily discharge for the water year 1970 has been revised to 7.2 cfs July 18, 1940, superceeding figures published in WRD S.Dak. 1970.

REMARKS.--Records good except those for winter periods, which are poor. Diversions for irrigation of about 13,000 acres above station.

REVISIONS(WATER YEARS).--WSP 1389: 1954 (maximum gage height only). Revised figures of discharge, in cubic feet per second, for the water year 1970 superceeding those published in WRD S.Dak. 1970, are given herewith:

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	154	154	140	110	131	150	240	599	92	23	57
2	62	161	154	140	125	133	150	230	539	81	23	67
3	68	156	152	140	130	133	160	225	427	67	23	70
4	74	152	152	130	130	136	150	224	362	65	23	75
5	76	154	154	120	133	136	150	236	333	62	31	76
6	82	152	154	110	140	133	150	302	311	53	94	75
7	77	150	154	100	140	138	140	531	296	50	225	82
8	71	147	150	90	136	140	150	715	285	46	160	83
9	82	150	150	100	136	145	160	920	270	43	133	82
10	88	152	150	110	140	145	160	683	262	42	120	88
11	97	150	152	120	136	138	170	659	249	36	110	98
12	109	150	154	110	133	138	210	707	850	41	106	102
13	126	152	154	110	130	145	240	695	1,570	40	94	112
14	138	154	152	120	130	143	250	850	835	36	83	118
15	143	159	152	120	136	143	210	720	543	31	80	123
16	133	156	150	110	136	147	200	599	416	22	76	118
17	127	161	150	100	136	150	190	607	333	8.2	73	116
18	124	154	147	90	140	152	190	655	298	7.2	66	120
19	147	150	145	100	136	154	220	659	262	8.5	57	120
20	159	154	145	100	133	154	190	611	241	8.5	53	125
21	145	152	147	110	133	154	190	547	228	8.2	42	130
22	140	154	154	130	136	156	210	503	219	9.6	33	130
23	143	152	152	150	138	159	450	479	212	13	32	133
24	145	152	150	160	138	177	380	453	196	38	33	136
25	147	152	145	150	133	182	360	401	170	43	34	145
26	150	152	140	150	133	168	300	359	150	38	33	141
27	150	150	140	140	133	166	260	336	129	31	33	145
28	147	152	135	140	133	167	260	324	114	27	44	141
29	150	152	130	140	------	167	250	311	105	26	46	138
30	152	154	135	150	------	167	250	373	93	22	44	138
31	154	------	140	150	------	167	------	416	------	23	44	------
TOTAL	3,665	4,590	4,593	3,830	3,743	4,664	6,500	15,570	10,887	1,118.2	2,071	3,284
MEAN	118	153	148	124	134	150	217	502	363	36.1	66.8	109
MAX	159	161	154	160	140	182	450	920	1,570	92	225	145
MIN	59	147	130	90	110	131	140	224	93	7.2	23	57
AC-FT	7,270	9,100	9,110	7,600	7,420	9,250	12,890	30,880	21,590	2,220	4,110	6,510

CAL YR 1969 TOTAL 48,862.17 MEAN 134 MAX 1,080 MIN 0.57 AC-FT 96,920
WTR YR 1970 TOTAL 64,515.2 MEAN 177 MAX 1,570 MIN 7.2 AC-FT 128,000

06433000 Redwater River above Belle Fourche, S. Dak.--Continued

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Nov. 21, June 1, 2; stage-discharge relation affected by ice Nov. 22-24, Dec. 11, 12, 14-16, Dec. 19 to Jan. 27, Jan. 31 to Feb. 14)

2.6	4.5	3.6	110
2.7	7.7	4.0	210
2.8	12	5.0	560
3.0	26	6.0	990
3.3	58		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	144	176	180	170	150	178	207	275	344	163	36	66
2	142	178	178	160	150	178	198	273	333	150	37	72
3	142	180	178	155	145	175	195	277	326	143	37	76
4	144	180	176	150	140	193	189	296	326	141	32	93
5	140	178	172	150	145	190	189	309	323	141	27	159
6	138	183	172	150	140	175	186	289	281	125	22	163
7	144	183	172	155	130	168	189	275	267	116	22	144
8	148	195	174	170	150	175	192	269	267	100	25	144
9	150	188	176	160	180	175	195	243	261	90	24	146
10	152	194	172	150	200	175	208	274	258	80	28	144
11	153	189	175	140	250	180	207	414	258	70	26	142
12	155	183	175	145	300	180	213	337	295	63	30	138
13	159	182	170	145	280	189	212	298	261	42	30	138
14	157	186	165	145	300	207	208	277	249	29	73	138
15	155	183	170	150	414	195	198	264	240	24	106	140
16	155	182	170	160	319	180	222	249	237	17	104	144
17	157	180	174	160	264	178	230	243	228	13	82	146
18	157	180	170	150	228	178	235	243	252	15	16	148
19	153	180	165	155	207	175	256	243	238	20	20	150
20	159	180	155	170	201	175	269	243	240	14	13	153
21	161	180	150	155	192	186	291	240	237	9.0	9.0	165
22	163	175	155	150	182	178	302	237	216	12	9.5	158
23	163	175	155	160	186	178	296	568	204	16	6.7	155
24	163	180	160	165	192	175	282	572	192	15	7.1	155
25	165	176	165	160	201	180	280	456	192	17	8.1	158
26	169	174	170	150	195	219	289	396	175	23	12	155
27	169	172	165	160	189	228	293	358	170	23	19	153
28	170	170	170	178	178	252	277	333	163	23	24	163
29	172	174	175	214	------	225	273	316	168	27	30	163
30	174	176	180	176	------	204	269	326	170	27	49	163
31	176	------	180	160	------	210	------	351	------	29	61	------
TOTAL	4,849	5,401	5,264	4,918	5,809	5,834	7,050	9,744	7,421	1,775.0	1,025.4	4,232
MEAN	156	180	170	159	207	188	235	314	247	57.3	33.1	141
MAX	176	195	180	214	414	252	302	572	344	163	106	165
MIN	138	170	150	140	130	168	186	237	163	9.0	6.7	66
AC-FT	9,620	10,710	10,440	9,750	11,520	11,570	13,980	19,330	14,720	3,520	2,030	8,390

CAL YR 1970 TOTAL 67,181.2 MEAN 184 MAX 1,570 MIN 7.2 AC-FT 133,300
WTR YR 1971 TOTAL 63,322.4 MEAN 173 MAX 572 MIN 6.7 AC-FT 125,600

PEAK DISCHARGE (BASE, 500 CFS).--May 23 (1915) 890 cfs (5.75 ft).

06433500 Hay Creek at Belle Fourche, S. Dak.

LOCATION.--Lat 44°40'01", long 103°50'46", in NW¼SW¼ sec.11, T.8 N., R.2 E., Butte County, on right bank at intersection of Tenth Avenue and Jackson Street in Belle Fourche, 0.5 mile upstream from mouth.

DRAINAGE AREA.--121 sq mi.

PERIOD OF RECORD.--October 1953 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,005.18 ft above mean sea level (City of Belle Fourche bench mark). Prior to Dec. 8, 1953, nonrecording gage at site 300 ft downstream at same datum.

AVERAGE DISCHARGE.--18 years, 0.96 cfs (696 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 200 cfs Feb. 14; maximum gage height, 7.37 ft Feb. 14 (backwater from ice); no flow for many days.
Period of record: Maximum discharge, 422 cfs June 22, 1964 (gage height, 7.12 ft), from rating curve extended above 150 cfs; no flow for many days each year.

REMARKS.--Records fair except those for winter periods, which are poor. Minor diversion to the stream at times from city reservoir overflow, which enters stream above gage.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Stage-discharge relation affected by ice Nov. 21 to Feb. 14, Feb. 20-28, Mar. 2-6, 16-19)

3.0	0	4.0	9.8
3.1	.42	4.5	25
3.2	1.0	5.0	50
3.4	2.6	5.5	91
3.6	4.5	6.0	151
3.8	6.6		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	.20	.30	.70	.15	.60	2.7	5.4	4.2	2.0	0	0
2	0	.04	.30	.30	.17	.35	2.7	5.4	6.1	1.5	0	0
3	0	.30	.25	.15	.10	.30	2.5	5.2	7.1	.89	0	0
4	0	.50	.20	.10	0	.50	1.8	4.6	6.4	.42	0	1.7
5	0	.72	.15	0	0	.25	1.4	4.2	14	.13	0	1.6
6	0	.66	.05	0	0	.05	1.1	3.8	14	0	0	1.0
7	0	.29	0	0	0	0	2.2	3.5	19	0	0	.83
8	0	1.6	0	0	0	.08	.89	3.2	15	0	.03	1.1
9	0	.66	0	0	0	.13	.60	3.3	13	0	0	.04
10	0	1.2	0	0	4.0	.23	.60	4.2	11	0	.12	0
11	0	.95	0	0	15	.29	.66	3.9	11	0	.49	0
12	0	.72	0	0	40	.25	.77	3.8	23	0	.03	0
13	0	.60	0	0	70	.60	.77	4.0	32	0	0	0
14	0	.60	0	0	100	.72	.83	4.0	20	0	0	0
15	0	.34	0	0	141	1.1	1.2	3.4	13	0	0	0
16	0	.29	0	0	56	1.0	.95	3.3	8.7	0	0	.10
17	0	.35	0	0	21	1.0	.77	3.0	6.9	0	0	.32
18	0	.25	0	0	12	.70	.83	2.6	6.1	0	0	.42
19	0	.21	0	0	7.6	.35	2.0	2.3	5.5	0	0	.38
20	0	.25	0	.10	5.0	.25	3.0	2.3	5.0	0	0	.48
21	0	.10	0	.20	3.0	.29	3.7	2.3	4.8	0	0	.60
22	0	.02	0	.20	2.0	.17	7.3	4.5	4.5	0	0	.04
23	0	.02	0	.25	1.5	.17	8.9	24	4.6	0	0	0
24	0	.05	0	.30	2.0	.11	6.5	18	3.4	0	0	0
25	0	.10	0	.25	2.0	.42	6.8	8.4	3.0	0	0	0
26	0	.05	0	.15	1.5	.83	13	5.8	2.4	0	0	0
27	0	.03	0	.25	1.2	.83	16	4.9	2.2	0	0	0
28	.10	.10	0	.35	1.0	5.0	13	4.3	2.6	0	0	1.1
29	.50	.20	0	.30	------	6.1	8.4	4.1	2.6	0	0	0
30	1.0	.25	0	.20	------	5.1	6.1	6.2	2.3	0	0	0
31	.40	------	0	.15	------	3.7	------	4.8	------	0	0	------
TOTAL	2.00	11.65	1.25	3.95	486.22	31.47	117.97	162.7	273.4	4.94	.67	9.71
MEAN	.065	.39	.040	.13	17.4	1.02	3.93	5.25	9.11	.16	.022	.32
MAX	1.0	1.6	.30	.70	141	6.1	16	24	32	2.0	.49	1.7
MIN	0	.02	0	0	0	0	.60	2.3	2.2	0	0	0
AC-FT	4.0	23	2.5	7.8	964	62	234	323	542	9.8	1.3	19

CAL YR 1970 TOTAL 568.24 MEAN 1.56 MAX 55 MIN 0 AC-FT 1,130
WTR YR 1971 TOTAL 1,105.93 MEAN 3.03 MAX 141 MIN 0 AC-FT 2,190

PEAK DISCHARGE (BASE, 50 CFS).--Feb. 14 (time and stage unknown) 200 cfs.

06434500 Inlet Canal near Belle Fourche, S. Dak.

LOCATION.--Lat 44°42'14", long 103°49'23", in NE¼NW¼ sec.36, T.9 N., R.2 E., Butte County, on right bank 0.5 mile downstream from Crow Creek, 0.9 mile downstream from diversion dam on Belle Fourche River, and 2.5 miles northeast of Belle Fourche.

PERIOD OF RECORD.--October 1945 to current year. Monthly diversions from Inlet Canal between station and reservoir for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 2,985.22 ft above mean sea level. Prior to Dec. 10, 1946, nonrecording gage, and Dec. 10, 1946, to Nov. 26, 1949, water-stage recorder at site 0.8 mile upstream at same datum.

AVERAGE DISCHARGE.--26 years, 155 cfs (112,300 acre-ft per year).

EXTREMES.--Period of record: Maximum daily discharge, 1,340 cfs May 30, 1962; no flow for many days in 1946-49, 1963, 1966, 1971.

REMARKS.--Records good except those for winter periods, which are poor. Records show actual diversions to Belle Fourche Reservoir (see station 06435000), from Belle Fourche River and Crow Creek, except for 7,993 acre-ft which was diverted for irrigation from the canal between the station and reservoir. Water-quality records for the water year 1971 are published in Part 2 of this report.

COOPERATION.--Records of diversion from the canal furnished by Bureau of Reclamation.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	150	204	220	160	175	264	850	0	0	272	133	135
2	144	205	212	130	180	248	909	0	0	326	135	135
3	137	213	210	110	170	231	872	0	66	250	134	130
4	147	203	204	110	160	254	754	0	73	219	116	150
5	144	208	195	120	160	250	480	0	158	203	119	272
6	142	223	219	130	155	239	102	0	49	185	116	355
7	151	230	196	160	150	228	39	0	81	170	110	233
8	151	243	195	160	170	242	36	0	63	155	114	213
9	162	236	200	150	200	247	27	0	81	140	119	203
10	164	233	194	140	250	250	0	0	98	123	111	190
11	164	237	190	130	300	274	0	0	131	111	109	181
12	165	232	190	140	450	298	0	0	45	104	116	169
13	175	236	195	130	600	368	0	0	46	92	119	170
14	176	235	190	130	800	445	0	0	66	77	144	166
15	172	228	195	160	800	443	0	0	67	55	164	168
16	167	226	195	170	650	532	0	0	63	39	164	170
17	171	225	190	180	550	409	0	0	61	30	152	172
18	174	222	175	170	400	339	0	0	61	38	104	169
19	168	219	170	170	350	328	0	0	58	107	132	172
20	177	219	170	185	300	308	0	0	64	130	121	174
21	175	215	170	180	300	312	0	0	90	115	110	194
22	180	194	175	170	250	290	0	0	149	124	104	180
23	184	200	175	180	300	270	0	0	138	128	90	179
24	184	220	180	190	348	280	0	0	143	122	83	175
25	184	226	190	190	385	285	0	0	188	123	95	177
26	189	195	200	180	326	356	0	130	300	134	95	173
27	189	194	190	190	291	425	0	123	273	128	101	171
28	192	191	190	200	268	562	0	0	369	123	101	186
29	194	194	200	230	------	615	0	0	338	132	105	186
30	201	205	210	200	------	627	0	0	285	140	131	176
31	201	------	220	185	------	747	------	0	------	133	144	------
TOTAL	5,274	6,511	6,005	5,030	9,438	10,966	4,069	253	3,604	4,228	3,691	5,525
MEAN	170	217	194	162	337	354	136	8.16	120	136	119	184
MAX	201	243	220	230	800	747	909	130	369	326	164	355
MIN	137	191	170	110	150	228	0	0	0	30	83	130
AC-FT	10,460	12,910	11,910	9,980	18,720	21,750	8,070	502	7,150	8,390	7,320	10,960

CAL YR 1970 TOTAL 74,417 MEAN 204 MAX 1,040 MIN 12 AC-FT 147,600
WTR YR 1971 TOTAL 64,594 MEAN 177 MAX 909 MIN 0 AC-FT 128,100

06435000 Belle Fourche Reservoir near Belle Fourche, S. Dak.

LOCATION.--Lat 44°44'12", long 103°40'27", in SW¼SE¼ sec.18, T.9 N., R.4 E., Butte County, at dam on Owl Creek, 9.8 miles northeast of Belle Fourche.

RECORDS AVAILABLE.--January 1912 to current year.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level, adjustment of 1912. Prior to June 6, 1967, nonrecording gage at present site and datum.

EXTREMES.--Current year: Maximum contents observed, 165,600 acre-ft May 10 (elevation, 2,972.50 ft); minimum observed 49,500 acre-ft Oct. 1 (elevation, 2,952.40 ft).
Period of record: Maximum contents observed, 197,400 acre-ft Apr. 30, 1919, May 20, 1920 (elevation, 2,974.9 ft); minimum observed, -3,000 acre-ft Sept. 30, 1936 (water was lowered below dead storage level of 2,927.0 ft by opening holes in crib walls).

REMARKS.--Offstream reservoir formed by earthfill dam. Storage began in May 1910; dam completed in April 1911. Conservation capacity, 185,170 acre-ft (1949 survey) between elevations 2,927.0 ft (lowest outlet) and 2,975.0 ft (crest of spillway weir). Dead storage below elevation 2,927.0 ft, 6,800 acre-ft. Figures given herein represent contents above elevation 2,927.0 ft. Water diverted from Belle Fourche River through Inlet Canal (see station 06434500) is stored in Belle Fourche Reservoir for irrigation.

COOPERATION.--Elevations and contents furnished by Bureau of Reclamation.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	2,952.50	49,900	-
Oct. 31	2,955.19	61,320	+11,420
Nov. 30	2,958.10	73,520	+12,200
Dec. 31	2,960.30	86,260	+12,740
CAL YR 1970	-	-	+9,620
Jan. 31	2,962.46	98,620	+12,360
Feb. 28	2,967.9	132,330	+33,710
Mar. 31	2,971.3	156,550	+24,220
Apr. 30	2,972.48	165,600	+9,050
May 31	2,972.13	162,560	-3,040
June 30	2,971.93	161,050	-1,510
July 31	2,964.70	111,510	-49,540
Aug. 31	2,954.9	60,070	-51,440
Sept.30	2,954.1	56,320	-3,750
WTR YR 1971	-	-	-6,240

06436000 Belle Fourche River near Fruitdale, S. Dak.

LOCATION.--Lat 44°41'27", long 103°44'14", in NW¼NE¼ sec.3, T.8 N., R.3 E., Butte County, on right bank 5 ft downstream from bridge on U.S. Highway 212, 2.5 miles northwest of Fruitdale and 8.8 miles downstream from point of diversion to Belle Fourche Reservoir.

DRAINAGE AREA.--4,540 sq mi, approximately.

PERIOD OF RECORD.--October 1945 to current year. Monthly discharge only for October 1945, published in WSP 1309.

GAGE.--Water-stage recorder. Altitude of gage is 2,925 ft (from topographic map). Prior to Apr. 9, 1947, nonrecording gage and Apr. 10, 1947, to Oct. 14, 1948, water-stage recorder, at site 100 ft upstream at same datum. Oct. 15, 1948, to Dec. 30, 1958, water-stage recorder and Dec. 31, 1958, to Sept. 23, 1959, nonrecording gage at present site and datum.

AVERAGE DISCHARGE.--26 years, 81.9 cfs (59,340 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,770 cfs Apr. 22 (gage height, 7.19 ft); maximum gage height, 7.70 ft, Feb. 14 (backwater from ice); minimum daily discharge, 3.0 cfs Dec. 20, 21, Jan. 15.
Period of record: Maximum discharge, 8,100 cfs May 15, 1965 (gage height, 10.53 ft); maximum gage height, 11.25 ft June 16, 1962; no flow at times in 1945, 1948, 1959-62.

REMARKS.--Records good except those for winter periods, which are poor. Flow regulated by Keyhole Reservoir (capacity, 199,900 acre-ft) 180 miles upstream. At a point 8.8 miles above station, water is diverted to Belle Fourche Reservoir (see station 06435000) through Inlet Canal (see station 06434500), with other smaller diversions from the main stem and tributaries for irrigation. Total diversions for irrigation of about 60,000 acres above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.7	4.5	5.0	5.2	4.5	4.0	178	752	882	5.7	10	10
2	5.2	5.0	5.0	5.0	4.5	4.0	309	719	726	4.3	10	9.1
3	5.0	5.2	5.0	5.0	4.5	4.3	100	680	579	5.0	8.4	10
4	4.7	5.0	5.0	4.5	4.0	4.5	6.2	674	538	6.6	7.5	30
5	4.5	5.0	4.5	4.5	4.0	4.5	74	732	1,550	6.0	7.5	75
6	4.5	5.0	5.0	4.8	4.0	4.2	432	700	1,340	6.0	6.6	150
7	4.5	5.2	5.0	5.0	4.0	3.8	485	648	986	5.2	7.8	75
8	4.5	5.2	5.0	5.2	3.5	3.8	567	615	752	5.2	9.5	30
9	4.5	5.2	5.0	5.0	4.0	4.0	1,080	591	597	6.0	9.9	20
10	4.5	5.2	4.5	4.8	4.0	5.0	1,630	622	674	5.2	9.9	10
11	4.5	5.2	3.5	4.5	4.5	5.5	1,810	1,040	626	4.5	9.9	10
12	4.5	5.5	4.0	4.0	200	5.2	1,760	901	1,030	4.5	8.7	10
13	4.5	6.0	4.0	4.0	500	6.0	1,530	790	778	5.2	9.9	10
14	4.5	6.6	4.0	3.5	1,000	6.6	1,190	686	667	5.2	8.7	10
15	4.5	6.6	4.0	3.0	350	5.7	823	597	579	4.5	9.5	10
16	4.5	6.0	4.0	3.5	200	5.2	628	528	485	4.5	7.2	9.0
17	4.5	5.5	4.0	4.0	100	5.0	567	495	424	5.0	5.2	9.0
18	4.5	6.0	4.0	3.5	50	4.7	555	465	450	5.5	5.5	9.0
19	4.5	6.3	3.5	3.5	30	4.3	628	460	490	6.0	7.2	9.0
20	4.5	6.3	3.0	4.0	10	3.8	888	455	406	5.7	8.7	9.0
21	4.5	6.0	3.0	4.0	8.0	4.7	1,590	437	372	4.7	8.1	8.0
22	4.3	5.5	3.5	4.0	6.0	5.0	2,590	432	298	5.2	7.8	8.0
23	4.0	5.0	4.0	4.0	5.0	4.5	1,730	1,050	252	5.0	7.8	8.0
24	4.0	6.0	4.0	4.0	5.0	4.0	1,280	1,380	202	6.0	7.2	8.0
25	3.5	6.5	4.2	4.0	5.0	4.0	1,030	1,210	156	7.5	7.8	8.0
26	4.0	6.0	4.4	4.0	5.0	4.5	1,040	1,120	19	9.1	6.6	7.0
27	4.0	5.5	4.4	4.0	4.5	4.7	1,200	591	9.1	9.1	6.3	7.0
28	4.3	4.5	4.4	4.5	4.5	5.0	1,090	706	8.4	10	8.1	7.0
29	4.3	4.7	4.7	5.0	------	163	972	597	9.9	11	7.5	7.0
30	4.5	5.0	5.2	5.0	------	9.0	836	622	6.9	9.5	8.1	7.0
31	4.7	------	5.5	4.5	------	4.0	------	875	------	10	8.7	------
TOTAL	138.7	165.2	134.3	133.5	2,528.5	306.5	28,598.2	22,170	15,892.3	192.9	251.6	589.1
MEAN	4.47	5.51	4.33	4.31	90.3	9.89	953	715	530	6.22	8.12	19.6
MAX	5.7	6.6	5.5	5.2	1,000	163	2,590	1,380	1,550	11	10	150
MIN	3.5	4.5	3.0	3.0	3.5	3.8	6.2	432	6.9	4.3	5.2	7.0
AC-FT	275	328	266	265	5,020	608	56,720	43,970	31,520	383	499	1,170

CAL YR 1970 TOTAL 42,923.0 MEAN 118 MAX 3,050 MIN 1.4 AC-FT 85,140
WTR YR 1971 TOTAL 71,100.8 MEAN 195 MAX 2,590 MIN 3.0 AC-FT 141,000

06436700 Indian Creek near Arpan, S. Dak.

LOCATION.--Lat 44°48'51", long 103°41'22", in SE¼NE¼ sec.24, T.10 N., R.3 E., Butte County, on left bank 3,200 ft upstream from North Canal flume, 3.5 miles northwest of Arpan and 6.9 miles downstream from Bitter Creek.

DRAINAGE AREA.--315 sq mi, approximately.

PERIOD OF RECORD.--August 1961 to current year.

GAGE.--Water-stage recorder.

AVERAGE DISCHARGE.--10 years, 18.0 cfs (13,040 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,250 cfs Sept. 6 (gage height, 13.23 ft); no flow for many days. Period of record: Maximum discharge, 2,690 cfs May 8, 1967 (gage height, 14.58 ft, from floodmarks); maximum gage height, 15.11 ft May 26, 1962 (from floodmarks); no flow for many days in most years.

REMARKS.--Records fair except those for winter periods, which are poor.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					0	5.0	105	28	42		0	72
2					0	4.0	58	22	62		0	30
3					0	5.0	48	17	30		0	23
4					0	5.0	39	11	19		0	17
5					0	5.0	30	7.8	20		0	81
6					0	5.0	28	5.0	269		0	1,020
7					0	4.0	26	2.6	493		0	514
8					0	5.0	22	.31	219		0	117
9					0	6.0	19	.87	71		0	62
10					0	10	18	1.4	265		0	50
11					0	70	15	.58	618		0	38
12					0	200	12	0	49		0	26
13					0	300	9.6	1.8	33		0	6.5
14					20	467	7.4	11	22		2.6	.18
15					200	532	4.4	7.1	13		0	0
16					500	369	1.7	3.8	9.3		0	0
17					900	315	.14	1.7	7.1		0	1.2
18					800	242	0	.58	16		0	1.7
19					567	145	1.2	0	9.6		0	0
20					279	80	8.4	0	8.7		0	0
21					150	73	91	0	4.1		0	0
22					100	88	148	0	.04		0	0
23					70	85	94	.12	0		0	0
24					70	76	113	0	0		0	0
25					75	51	57	0	.58		0	0
26					60	42	44	0	2.0		0	0
27					30	46	44	0	8.1		0	0
28					10	150	72	0	7.4		0	.29
29					------	362	55	0	3.2		0	1.2
30					------	257	38	.67	.87		0	.50
31		------			------	176	------	1.7	------		56	------
TOTAL	0	0	0	0	3,831	4,180.0	1,208.84	125.03	2,301.99	0	58.6	2,061.57
MEAN	0	0	0	0	137	135	40.3	4.03	76.7	0	1.89	68.7
MAX	0	0	0	0	900	532	148	28	618	0	56	1,020
MIN	0	0	0	0	0	4.0	0	0	0	0	0	0
AC-FT	0	0	0	0	7,600	8,290	2,400	248	4,570	0	116	4,090

CAL YR 1970 TOTAL 2,844.73 MEAN 7.79 MAX 470 MIN 0 AC-FT 5,640
WTR YR 1971 TOTAL 13,767.03 MEAN 37.7 MAX 1,020 MIN 0 AC-FT 27,310

PEAK DISCHARGE (BASE, 350 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
2-17	-	-	1,050	6- 7	0200	9.80	625
3-14	2100	9.67	594	6-11	0400	11.26	1,080
3-29	1400	8.90	431	9- 6	1000	13.23	1,250

06436800 Horse Creek near Vale, S. Dak.

LOCATION.--Lat 44°39'30", long 103°20'17", in SE¼NW¼ sec.13, T.8 N., R.6 E., Butte County, on right bank 600 ft downstream from Dry Creek, 2.9 miles upstream from mouth and 4.0 miles northeast of Vale.

DRAINAGE AREA.--530 sq mi, approximately.

PERIOD OF RECORD.--April 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,688.96 ft above mean sea level.

AVERAGE DISCHARGE.--9 years, 55.0 cfs (39,850 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,150 cfs Mar. 14; maximum gage height, 9.33 ft Mar. 14 (backwater from ice); minimum daily discharge, 2.4 cfs Feb. 8.
Period of record: Maximum discharge, 2,380 cfs May 26, 1965 (gage height, 10.84 ft); minimum daily, 0.20 cfs May 7-9, 1962, Jan. 17, 18, 1970.

REMARKS.--Records good except those for winter periods, which are poor. Natural flow of stream affected by diversions for irrigation above station and by return flow from Belle Fourche Irrigation Project. Water-quality records for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	5.7	6.3	4.0	3.0	20	212	53	110	26	174	274
2	42	5.7	6.3	3.8	3.1	20	146	36	141	21	173	314
3	33	6.0	6.9	3.8	3.0	30	89	28	263	20	146	121
4	18	5.7	6.3	3.6	3.0	25	71	23	163	24	117	135
5	14	6.0	3.6	3.6	3.0	25	59	19	182	27	109	343
6	11	6.0	3.4	3.6	2.8	22	47	17	190	37	116	742
7	8.1	6.3	3.7	4.0	2.6	20	42	15	285	47	124	859
8	6.9	8.4	3.8	4.2	2.4	25	37	13	399	50	134	760
9	6.9	8.8	3.6	4.0	3.8	40	31	13	268	57	131	306
10	6.6	5.7	3.2	3.6	5.0	45	26	21	169	72	122	151
11	6.0	8.4	2.8	3.2	4.8	100	23	26	214	83	121	113
12	5.5	6.6	3.0	2.8	4.6	200	21	16	493	92	127	94
13	5.5	6.9	3.2	2.6	4.4	400	18	12	155	91	130	83
14	5.5	6.6	3.4	2.8	10	600	17	10	112	89	135	78
15	5.5	5.7	3.8	2.5	30	777	15	8.8	87	114	131	80
16	5.5	6.0	3.8	2.8	100	687	14	8.4	90	107	109	79
17	5.5	6.0	4.0	3.4	200	534	12	10	95	124	126	70
18	5.2	5.7	3.6	3.8	250	377	12	11	172	138	138	64
19	4.9	5.2	3.0	3.6	100	278	13	10	172	140	148	61
20	4.9	5.2	3.2	3.8	80	185	30	9.2	95	140	144	58
21	4.9	5.2	3.4	4.0	50	173	34	8.1	86	134	156	58
22	5.2	3.8	3.6	3.6	25	166	95	8.1	84	139	156	59
23	4.9	3.4	3.4	3.6	20	157	148	14	80	150	169	56
24	4.9	3.6	3.2	3.8	25	129	108	14	75	164	185	52
25	4.9	3.8	3.2	3.6	25	121	129	10	62	169	155	45
26	5.2	4.2	3.8	3.4	22	114	89	7.7	40	184	170	42
27	5.7	4.4	3.6	3.6	22	151	86	39	36	178	159	39
28	6.0	4.8	4.0	3.4	20	258	84	108	37	163	153	42
29	5.7	5.5	3.8	3.2	------	286	100	81	35	160	151	48
30	6.3	5.2	4.0	3.0	------	377	79	89	30	155	176	53
31	6.6	------	4.2	3.0	------	312	------	120	------	170	325	------
TOTAL	299.8	170.5	121.1	107.7	1,024.5	6,654	1,887	858.3	4,420	3,265	4,610	5,279
MEAN	9.67	5.68	3.91	3.47	36.6	215	62.9	27.7	147	105	149	176
MAX	42	8.8	6.9	4.2	250	777	212	120	493	184	325	859
MIN	4.9	3.4	2.8	2.5	2.4	20	12	7.7	30	20	109	39
AC-FT	595	338	240	214	2,030	13,200	3,740	1,700	8,770	6,480	9,140	10,470

CAL YR 1970 TOTAL 15,169.90 MEAN 41.6 MAX 495 MIN .20 AC-FT 30,090
WTR YR 1971 TOTAL 28,696.90 MEAN 78.6 MAX 859 MIN 2.4 AC-FT 56,920

PEAK DISCHARGE (BASE, 400 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
3-14	-	-	1,150	6-12	0900	6.86	621
3-30	1400	6.10	407	6-18	2300	6.15	410
6- 3	0100	6.66	561	6-31	1000	6.36	455
6- 8	0130	6.32	476	9- 7	2300	8.15	1,050

06437000 Belle Fourche River near Sturgis, S. Dak.

LOCATION.--Lat 44°30'47", long 103°08'11", in SE¼NW¼ sec.3, T.6 N., R.8 E., Meade County, near right bank on downstream side of bridge on State Highway 34, 0.5 mile upstream from Bear Butte Creek and 20 miles northeast of Sturgis.

DRAINAGE AREA.--5,870 sq mi, approximately.

PERIOD OF RECORD.--October 1945 to current year. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water stage recorder. Datum of gage is 2,526.13 ft above mean sea level. Prior to Oct. 31, 1946, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--26 years, 254 cfs (184,000 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 5,160 cfs May 24 (gage height, 9.13 ft); maximum gage height, 11.30 ft Feb. 14 (backwater from ice); minimum daily discharge, 15 cfs Dec. 20-22.
Period of record (corrected): Maximum discharge, 17,900 cfs May 24, 1946 (gage height, 13.86 ft), from rating curve extended above 11,000 cfs; maximum gage height, 14.32 ft June 16, 1962; no flow for many days in 1945, 1950, and Aug. 9, 1961.

REMARKS(revised).--Records good except those for winter periods, which are poor. Flow regulated by Keyhole Reservoir (total capacity, 199,900 acre-ft) 246 miles upstream since February 1952. At a point 75 miles above station, water is diverted to Belle Fourche Reservoir (see station 06435000), through Inlet Canal (see station 06434500), with other small diversions from the main stem and tributaries for irrigation. Total diversion for irrigation of about 60,000 acres above station. Water-quality records for the water year 1971 are published in Part 2 of this report.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Apr. 13-24, May 23 to June 2, July 26 to Aug. 30, Sept. 5-7; stage-discharge relation affected by ice Nov. 21 to Mar. 2)

3.0	42	6.0	1,420
3.4	143	7.0	2,200
4.0	340	8.0	3,230
5.0	795	9.0	4,700

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	205	56	50	23	23	150	460	971	1,680	199	406	622
2	208	60	48	21	22	160	443	866	1,340	158	398	646
3	183	72	45	20	23	173	512	894	1,520	183	382	439
4	126	58	42	20	24	170	370	905	1,090	170	330	378
5	90	60	40	20	25	160	254	923	1,250	205	291	919
6	75	61	43	20	27	149	215	929	1,890	222	268	1,380
7	70	62	45	20	30	137	622	872	1,410	199	278	1,100
8	62	70	45	22	35	189	681	834	1,330	228	298	1,110
9	60	96	40	22	45	205	790	800	1,140	199	348	727
10	60	82	35	21	50	205	1,280	844	929	205	336	477
11	60	80	30	20	90	251	1,610	1,870	1,010	222	326	390
12	56	82	31	21	1,500	319	1,640	1,330	1,430	258	322	322
13	58	85	32	22	3,000	576	1,560	1,120	1,280	241	319	298
14	58	85	30	22	3,500	929	1,400	977	941	238	326	298
15	56	68	30	22	2,000	1,060	1,120	894	822	254	319	261
16	54	65	28	22	1,000	1,190	872	806	763	264	258	245
17	54	65	28	24	700	812	784	747	676	278	295	225
18	50	60	25	25	400	525	790	696	676	285	312	195
19	48	54	20	25	300	363	822	661	1,240	305	340	192
20	48	44	15	26	250	245	1,060	636	929	330	344	192
21	48	40	15	25	200	302	1,520	622	612	319	382	195
22	48	35	15	23	160	312	2,330	641	556	348	402	186
23	50	37	17	24	150	370	2,690	1,750	486	363	406	186
24	50	40	18	25	150	305	1,810	3,430	443	374	398	186
25	50	45	20	23	150	281	1,470	1,660	473	386	378	176
26	48	42	20	22	150	351	1,380	1,570	422	439	374	158
27	56	40	18	23	150	622	1,610	1,230	308	443	378	155
28	56	42	20	25	150	1,080	1,520	1,120	248	390	394	170
29	56	45	22	26	------	747	1,250	1,040	222	386	398	186
30	58	50	23	25	------	822	1,150	977	225	414	642	173
31	56	------	25	24	------	666	------	1,850	------	410	727	------
TOTAL	2,257	1,781	915	703	14,304	13,826	34,015	34,465	27,341	8,915	11,375	12,187
MEAN	72.8	59.4	29.5	22.7	511	446	1,134	1,112	911	288	367	406
MAX	208	96	50	26	3,500	1,190	2,690	3,430	1,890	443	727	1,380
MIN	48	35	15	20	22	137	215	622	222	158	258	155
AC-FT	4,480	3,530	1,810	1,390	28,370	27,420	67,470	68,360	54,230	17,680	22,560	24,170

CAL YR 1970 TOTAL 105,667.0 MEAN 289 MAX 4,190 MIN 6.0 AC-FT 209,600
WTR YR 1971 TOTAL 162,084 MEAN 444 MAX 3,500 MIN 15 AC-FT 321,500

06437500 Bear Butte Creek near Sturgis, S. Dak.

LOCATION.--Lat 44°28'53", long 103°16'31", in NW¼SE¼ sec.16, T.6 N., R.7 E., Meade County, on left bank 0.8 mile downstream from Spring Creek, 12.5 miles northeast of Sturgis and 13.4 miles upstream from mouth.

DRAINAGE AREA.--192 sq mi.

PERIOD OF RECORD.--November 1945 to current year. Records for water year 1946 incomplete, yearly estimate published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 2,779.91 ft above mean sea level. Prior to June 25, 1962, nonrecording and crest-stage gage at site 1 mile downstream at datum 11.79 ft lower.

AVERAGE DISCHARGE.--26 years, 12.7 cfs (9,200 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,550 cfs May 23 (gage height, 9.82 ft); no flow Oct. 5, Aug. 9-11, Sept. 12-14.
Period of record: Maximum discharge, 12,700 cfs June 16, 1962 (gage height, 12.45 ft, from floodmarks, site and datum then in use, 12.63 ft, from floodmarks, present site and datum), from rating curve extended above 2,400 cfs on basis of contracted-opening and flow-over-road measurement of peak flow; no flow for many days in most years.
Flood of May 20, 1883, and one in 1909 were greater than flood of June 16, 1962, from information by local residents.

REMARKS.--Records fair except those for winter periods, which are poor.

REVISIONS(WATER YEARS).--WSP 1917: 1946-47, 1949(M), 1951(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.26	.60	1.9	1.2	1.2	10	10	68	180	12	3.2	1.0
2	.17	.60	1.6	1.0	1.2	9.0	11	67	191	11	3.2	1.0
3	.17	.51	1.6	.90	1.2	10	10	67	128	11	2.6	.70
4	.08	.51	1.6	.70	1.2	10	8.9	69	98	9.8	2.8	.50
5	0	.51	1.4	.50	1.2	10	8.4	68	107	9.5	1.5	1.0
6	.34	.42	1.0	.50	1.0	10	8.4	60	80	8.9	.42	1.0
7	.51	.42	1.0	.50	1.0	9.0	8.4	53	66	6.7	.08	.68
8	.42	.51	.80	.70	2.0	10	8.7	48	60	6.3	.11	.17
9	.51	.42	.70	.70	2.5	10	7.6	43	54	5.8	0	.60
10	.60	.34	.50	.60	3.5	15	7.9	68	57	5.3	0	.60
11	.76	1.0	.30	.50	75	15	7.6	404	60	3.7	0	.05
12	.68	.26	.40	.40	300	15	7.4	152	53	3.0	.26	0
13	.17	.34	.60	.40	250	15	7.6	106	56	4.2	.34	0
14	.34	.60	.60	.40	250	10	12	86	66	7.0	.08	0
15	.42	.42	.60	.40	50	10	13	73	60	7.6	.03	.20
16	1.0	.34	.60	.70	30	10	13	64	53	7.9	.13	1.1
17	1.3	.68	.60	1.0	15	10	13	56	47	8.9	.26	2.3
18	1.4	1.6	.50	.90	10	10	21	53	43	8.7	2.0	2.5
19	1.0	1.3	.30	.90	10	10	35	52	39	7.9	3.0	2.3
20	.51	1.9	.20	1.0	9.0	15	69	50	33	7.2	2.0	2.2
21	.68	1.8	.30	1.1	8.0	15	149	42	28	6.3	1.0	2.2
22	1.4	1.5	.40	1.0	7.0	10	160	33	25	5.4	.60	1.4
23	1.4	1.7	.60	1.1	7.0	10	168	601	20	4.4	.50	1.4
24	1.5	2.0	.80	1.2	8.0	11	120	587	18	3.3	.40	1.4
25	.60	2.2	1.0	1.5	9.0	11	107	199	23	2.6	.40	1.0
26	.68	1.9	.90	1.5	10	13	106	141	20	2.0	.40	.85
27	.76	1.7	.80	2.0	10	17	131	113	18	1.9	.50	.51
28	.68	1.6	.85	5.0	10	17	107	93	15	2.5	.60	1.1
29	.68	1.6	.90	50	------	17	86	82	13	3.3	.60	1.0
30	.68	1.6	1.0	20	------	14	76	97	12	3.7	1.0	.60
31	.60	------	1.2	6.0	------	14	------	424	------	3.3	2.0	------
TOTAL	20.30	30.88	25.55	104.30	1,084.0	372.0	1,497.9	4,119	1,723	191.1	30.01	29.36
MEAN	.65	1.03	.82	3.36	38.7	12.0	49.9	133	57.4	6.16	.97	.98
MAX	1.5	2.2	1.9	50	300	17	168	601	191	12	3.2	2.5
MIN	0	.26	.20	.40	1.0	9.0	7.4	33	12	1.9	0	0
AC-FT	40	61	51	207	2,150	738	2,970	8,170	3,420	379	60	58

CAL YR 1970 TOTAL 6,250.94 MEAN 17.1 MAX 220 MIN 0 AC-FT 12,400
WTR YR 1971 TOTAL 9,227.40 MEAN 25.3 MAX 601 MIN 0 AC-FT 18,300

PEAK DISCHARGE (BASE, 200 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
2-12	-	-	450	5-23	2200	9.82	1,550
4-23	0300	5.80	200	5-31	0400	8.18	588
5-11	0900	8.72	711	6- 2	2030	8.65	700

06438000 Belle Fourche River near Elm Springs, S. Dak.

LOCATION.--Lat 44°22'11", long 102°33'56", in NE¼NE¼ sec.29, T.5 N., R.13 E., Meade County, on right bank 10 ft downstream from highway bridge, 4.3 miles northwest of Elm Springs and 4.7 miles downstream from Hay Creek.

DRAINAGE AREA.--7,210 sq mi, approximately.

PERIOD OF RECORD.--August 1928 to June 1932, March 1934 to current year. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 2,171.60 ft above mean sea level. Prior to July 27, 1939, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--40 years (1928-31, 1934-71), 349 cfs (260,100 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 10,300 cfs May 23 (gage height, 8.04 ft); minimum daily, 10 cfs Dec. 25, 27, Jan. 3-7.
Period of record: Maximum discharge, 45,100 cfs June 8, 1964 (gage height, 15.90 ft), from rating curve extended above 23,000 cfs; no flow for many days in 1936-37, 1939-40, 1961-62.
Flood in May 1927 reached a stage of 21.8 ft. Flood in spring of 1933 reached a stage of about 20 ft, from floodmarks.

REMARKS(revised).--Records good except those for winter periods, which are poor. Flow regulated by Keyhole Reservoir (total capacity, 199,900 acre-ft), 304 miles upstream, since February 1952. At a point 133 miles above station, water is diverted to Belle Fourche Reservoir (see station 06435000), through Inlet Canal near Belle Fourche (see station 06434500), with other smaller diversions from the main stem and tributaries for irrigation. Total diversion for irrigation of about 60,000 acres above station. Water-quality records for the water year 1971 are published in Part 2 of this report.

REVISIONS(WATER YEARS).--WSP 786: Drainage area. WSP 926: 1929, 1931(M), 1935, 1937.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Mar. 14, 15, June 13, July 5 to Aug. 14, Aug. 28 to Sept. 10; stage-discharge relation affected by ice Nov. 21-28, Dec. 10 to Mar. 8)

Oct. 1 to Mar. 15 June 13 to Sept. 30				Mar. 15 to June 12			
0.9	45	2.0	480	1.7	465	5.0	3,260
1.1	77	3.0	1,120	3.0	1,320	6.0	5,100
1.3	132	4.0	1,910	4.0	2,110	8.0	10,200

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	206	57	57	13	11	90	882	1,390	2,500	265	413	834
2	171	62	50	11	12	90	735	1,220	2,010	245	408	732
3	171	60	50	10	15	90	696	1,160	4,690	193	402	744
4	163	60	54	10	16	120	768	1,120	2,670	206	391	566
5	126	66	48	10	18	300	644	1,120	1,740	197	333	650
6	91	58	42	10	20	200	482	1,130	1,980	206	301	1,100
7	82	60	58	10	25	150	465	1,080	1,900	240	265	1,390
8	75	68	58	12	30	400	808	1,040	1,670	206	270	1,210
9	69	68	46	12	40	714	875	984	1,570	230	291	1,030
10	64	73	28	11	47	317	1,070	1,100	1,460	202	333	614
11	62	75	25	11	75	374	1,500	1,960	1,260	193	327	430
12	62	73	26	12	150	1,000	1,660	2,130	1,400	206	317	353
13	62	73	27	12	800	1,880	1,600	1,510	1,650	230	322	307
14	62	71	26	11	5,000	2,480	1,550	1,290	1,220	235	333	281
15	60	66	25	11	2,500	3,590	1,380	1,140	1,050	225	343	275
16	60	69	25	12	1,500	3,410	1,170	1,020	952	230	343	240
17	60	68	23	11	1,000	2,950	970	950	875	245	296	215
18	58	64	20	11	600	2,300	977	895	782	250	359	206
19	58	62	18	11	450	2,000	991	848	889	265	402	180
20	57	57	16	11	300	1,550	1,340	821	1,410	296	418	175
21	55	50	15	11	200	970	2,210	795	945	301	424	180
22	53	30	14	11	150	1,080	2,350	775	751	312	463	175
23	52	25	13	11	100	1,070	3,360	4,670	684	327	480	175
24	52	25	11	12	100	868	2,470	7,950	607	348	497	167
25	52	26	10	11	100	742	1,920	3,220	578	369	503	163
26	52	25	11	11	100	868	1,810	2,000	560	386	491	171
27	54	25	10	12	100	1,570	2,460	1,900	503	435	497	155
28	55	30	12	12	90	3,090	2,240	1,380	391	441	514	180
29	58	40	13	13	------	2,340	1,860	1,450	333	408	526	175
30	60	54	14	12	------	2,140	1,560	1,360	296	396	566	189
31	58	------	14	12	------	1,640	------	2,030	------	413	868	------
TOTAL	2,420	1,640	859	350	13,549	40,383	42,803	51,438	39,326	8,701	12,696	13,262
MEAN	78.1	54.7	27.7	11.3	484	1,303	1,427	1,659	1,311	281	410	442
MAX	206	75	58	13	5,000	3,590	3,360	7,950	4,690	441	868	1,390
MIN	52	25	10	10	11	90	465	775	296	193	265	155
AC-FT	4,800	3,250	1,700	694	26,870	80,100	84,900	102,000	78,000	17,260	25,180	26,310

CAL YR 1970 TOTAL 129,416.5 MEAN 355 MAX 5,310 MIN 5.0 AC-FT 256,700
WTR YR 1971 TOTAL 227,427.0 MEAN 623 MAX 7,950 MIN 10 AC-FT 451,100

06438500 Cheyenne River near Plainview, S. Dak.

LOCATION.--Lat 44°31'16", long 101°59'34", in NE¼SW¼ sec.31, T.7 N., R.18 E., Ziebach County, near left bank on downstream side of highway bridge, 1.0 mile downstream from Ash Creek and 10 miles southeast of Plainview.

DRAINAGE AREA.--21,600 sq mi, approximately.

PERIOD OF RECORD.--October 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,877.65 ft above mean sea level. Prior to Mar. 22, 1951, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--21 years, 620 cfs (449,200 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 24,000 cfs May 24 (gage height, 10.21 ft); maximum gage height, 11.05 ft Feb. 15 (backwater from ice); minimum daily discharge, 50 cfs many days in January and February.
Period of record: Maximum discharge, 41,700 cfs May 26, 1957, from rating curve extended above 18,000 cfs; maximum gage height, 11.68 ft May 26, 1965; no flow Dec. 14, 19-21, 1961.
Flood late in May 1920, reached a stage of about 17.5 ft, from information by local residents. Flood in May 1927 reached a stage of about 14 ft, from information by local residents.

REMARKS.--Records good except those for winter periods, which are poor. Flow regulated by Angostura Reservoir 164 miles upstream (see station 06401000) since October 1949 and upstream reservoirs on Rapid Creek since 1956 and Belle Fourche River since 1952. Flow also affected by diversions for irrigation of about 70,000 acres and return flow from irrigated areas.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Mar. 13 to Apr. 25, Aug. 12 to Sept. 6; stage-discharge relation affected by ice Nov. 4, 5, Nov. 21 to Feb. 15)

Oct. 1 to Feb. 15		Feb. 16 to July 7				July 7 to Sept. 30	
3.7	138	3.9	240	6.0	3,330	4.3	215
4.0	265	4.3	526	7.0	6,230	4.6	340
4.5	600	4.9	1,220	8.0	10,200	5.0	620
		5.5	2,250	10.0	22,300	5.5	1,160
						6.0	2,020

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	326	204	190	60	50	475	1,900	3,030	6,170	500	475	878
2	309	204	180	57	55	298	1,370	2,510	6,100	500	475	706
3	282	213	160	55	52	257	1,030	2,170	10,700	492	468	612
4	292	190	170	54	52	332	1,160	2,270	9,840	492	468	620
5	282	165	160	52	52	403	994	2,970	6,230	492	454	569
6	260	183	180	50	52	441	835	2,170	5,020	492	434	1,520
7	236	175	180	50	50	275	704	1,900	5,410	487	402	1,260
8	227	217	160	55	55	300	791	1,970	4,900	475	390	954
9	255	227	120	55	75	400	1,060	1,770	4,570	454	390	899
10	287	260	100	52	100	554	1,070	1,650	4,140	460	402	696
11	265	217	80	50	120	791	1,510	2,640	3,310	460	421	528
12	231	217	80	50	150	2,010	1,960	4,220	3,100	447	414	408
13	231	227	82	50	300	6,870	2,150	3,550	3,240	421	408	373
14	227	200	80	50	1,500	10,900	2,110	2,950	2,990	421	414	331
15	217	192	82	50	6,000	7,000	1,960	2,510	2,410	414	408	326
16	213	188	80	60	7,500	5,440	1,680	2,290	4,480	402	414	318
17	209	183	80	60	6,970	5,050	1,400	1,990	2,130	408	434	295
18	204	175	75	58	5,380	3,830	1,240	1,820	1,880	402	434	275
19	200	168	70	60	3,330	2,410	1,230	1,730	1,810	395	468	267
20	196	156	65	65	2,450	1,490	1,650	1,630	2,170	402	468	259
21	196	150	60	65	1,530	1,270	5,810	1,530	1,940	414	468	259
22	192	100	60	63	1,280	1,940	4,080	1,460	1,360	414	475	251
23	183	100	63	65	824	1,580	4,570	1,990	1,200	408	490	227
24	183	120	65	67	583	1,240	4,720	16,700	968	414	505	223
25	188	140	65	65	526	955	3,800	10,300	883	421	512	219
26	183	130	65	60	433	919	5,440	10,200	895	434	512	219
27	196	120	60	62	325	1,760	7,520	13,800	769	447	498	219
28	209	135	60	65	275	3,940	6,610	6,940	663	468	505	223
29	204	165	62	68	------	4,780	5,110	4,990	509	475	498	219
30	209	200	65	55	------	3,430	3,750	4,630	518	475	520	219
31	209	------	65	50	------	2,600	------	5,750	------	468	818	------
TOTAL	7,101	5,321	3,064	1,778	40,069	73,940	79,214	126,030	100,305	13,854	14,442	14,372
MEAN	229	177	98.8	57.4	1,431	2,385	2,640	4,065	3,344	447	466	479
MAX	326	260	190	68	7,500	10,900	7,520	16,700	10,700	500	818	1,520
MIN	183	100	60	50	50	257	704	1,460	509	395	390	219
AC-FT	14,080	10,550	6,080	3,530	79,480	146,700	157,100	250,000	199,000	27,480	28,650	28,510

CAL YR 1970 TOTAL 233,651 MEAN 640 MAX 11,000 MIN 45 AC-FT 463,400
WTR YR 1971 TOTAL 479,490 MEAN 1,314 MAX 16,700 MIN 50 AC-FT 951,100

06439000 Cherry Creek near Plainview, S. Dak.

LOCATION.--Lat 44°44'38", long 102°03'11", in SW¼NE¼ sec.16, T.9 N., R.17 E., Meade County, on left bank 5 ft downstream from bridge on State Highway 73, 0.2 mile downstream from small right-bank tributary, 6.2 miles downstream from Red Owl Creek, and 11 miles northeast of Plainview.

DRAINAGE AREA.--1,190 sq mi, approximately.

PERIOD OF RECORD.--October 1945 to current year. Monthly discharge only for October and November 1945, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 2,158.06 ft above mean sea level. Prior to June 8, 1948, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--26 years, 48.3 cfs (34,990 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 4,610 cfs May 31 (gage height, 15.36 ft); no flow for several months.
Period of record: Maximum discharge, 17,500 cfs Apr. 1, 1952 (gage height, 22.63 ft); no flow for long periods in each year.

REMARKS.--Records good except those for winter periods, which are poor.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Mar. 29 to May 22, May 31 to June 9; stage-discharge relation affected by ice Feb. 16 to Mar. 14)

3.5	0	5.5	127
3.7	1.6	6.5	306
3.9	5.2	7.0	416
4.1	10	8.0	703
4.5	26	10.0	1,460
5.0	63	12.0	2,410
		14.0	3,620

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					0	12	800	81	2,380	5.7		
2					0	15	567	66	922	4.6		
3					0	22	327	53	677	3.4		
4					0	15	212	44	334	2.9		
5					0	12	172	37	166	3.0		
6					0	8.0	136	32	99	3.0		
7					0	7.0	112	28	75	2.7		
8					0	6.0	93	24	121	2.4		
9					0	5.0	77	22	84	1.8		
10					0	5.0	64	19	102	1.4		
11					0	5.5	53	17	106	.96		
12					0	9.0	45	16	72	.48		
13					0	50	39	15	45	0		
14					0	800	37	13	33	0		
15					0	2,540	35	12	26	0		
16					30	2,460	32	11	19	0		
17					100	2,490	30	9.8	13	0		
18					100	2,380	28	8.8	11	0		
19					90	1,700	26	8.0	11	0		
20					50	1,050	25	7.0	18	0		
21					30	748	26	6.6	54	0		
22					20	665	39	5.9	67	0		
23					22	729	93	9.2	46	0		
24					25	671	147	61	29	0		
25					25	643	127	98	27	0		
26					20	364	102	44	21	0		
27					15	350	88	18	15	0		
28					12	664	76	12	12	0		
29					------	1,500	77	9.0	9.2	0		
30					------	1,800	88	203	7.3	0		
31		------			------	1,600	------	3,410	------	0		------
TOTAL	0	0	0	0	539	23,325.5	3,773	4,400.3	5,601.5	32.34	0	0
MEAN	0	0	0	0	19.3	752	126	142	187	1.04	0	0
MAX	0	0	0	0	100	2,540	800	3,410	2,380	5.7	0	0
MIN	0	0	0	0	0	5.0	25	5.9	7.3	0	0	0
AC-FT	0	0	0	0	1,070	46,270	7,480	8,730	11,110	64	0	0

CAL YR 1970 TOTAL 8,084.17 MEAN 22.1 MAX 996 MIN 0 AC-FT 16,030
WTR YR 1971 TOTAL 37,671.64 MEAN 103 MAX 3,410 MIN 0 AC-FT 74,720

PEAK DISCHARGE (BASE, 1,000 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
3-14	2200	13.79	3,480	5-31	1200	15.36	4,610
3-31	0700	10.76	1,890				

06439300 Cheyenne River at Cherry Creek, S. Dak.

LOCATION.--Lat 44°36'10", long 101°29'24", in NE¼NW¼ sec.5, T.7 N., R.22 E., Ziebach County, on left bank 0.5 mile east of village of Cherry Creek, 0.5 mile downstream from Cherry Creek and 1.7 miles upstream from Plum Creek.

DRAINAGE AREA.--23,900 sq mi, approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 1,699.29 ft above mean sea level. Prior to Oct. 17, 1960, nonrecording gage at present site and datum.

AVERAGE DISCHARGE.--11 years, 896 cfs (649,200 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 22,600 cfs May 24 (gage height, 10.40 ft); maximum gage height, 11.50 ft Feb. 15 (backwater from ice); minimum daily discharge, 45 cfs Jan. 5-7, 11-15.
Period of record: Maximum discharge, 43,800 cfs June 16, 1967 (gage height, 14.75 ft); no flow Jan. 6 to Feb. 2, 1962.

REMARKS.--Records good except those for winter periods, which are poor. Flow regulated by Angostura Reservoir 197 miles upstream (see station 06401000) since October 1949 and upstream reservoirs on Rapid Creek since 1956 and Belle Fourche River since 1952. Flow also affected by diversions for irrigation of about 70,000 acres and return flow from irrigated areas.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Nov. 20, Mar. 9 to Apr. 11, May 28 to June 3, July 27 to Aug. 13, Sept. 19-30; stage-discharge relation affected by ice Nov. 21 to Mar. 8)

1.2	146	6.0	5,500
1.7	272	7.0	7,670
2.0	401	8.0	10,000
3.0	1,140	9.0	12,900
4.0	2,060	10.0	16,200
5.0	3,600		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	305	188	190	60	60	700	4,310	3,020	10,500	600	468	1,410
2	295	186	190	55	62	600	2,700	2,560	8,820	705	474	1,080
3	272	188	170	50	55	500	1,820	2,270	10,900	500	468	840
4	250	196	180	48	55	400	1,480	2,260	12,500	470	449	892
5	266	191	170	45	55	500	1,340	2,660	7,900	455	437	948
6	264	181	180	45	55	600	1,120	2,560	6,710	508	396	1,720
7	241	183	190	45	52	700	892	2,060	6,310	508	339	2,090
8	218	216	180	48	60	700	758	2,020	5,800	535	314	1,700
9	203	250	140	50	80	645	1,000	1,980	5,400	488	288	1,420
10	303	264	110	48	100	735	1,100	1,790	4,890	474	295	1,350
11	292	261	90	45	150	1,080	1,180	2,010	3,950	443	302	1,020
12	264	236	90	45	180	2,160	1,680	3,990	3,370	481	326	758
13	223	223	95	45	400	6,330	1,900	3,740	3,460	413	302	630
14	210	208	85	45	1,800	13,400	1,880	3,070	3,600	385	302	564
15	203	198	90	45	7,000	12,500	1,740	2,540	2,800	385	298	474
16	193	188	85	55	8,000	10,100	1,570	2,270	2,330	359	295	461
17	191	186	85	60	7,000	8,540	1,360	2,050	2,330	348	298	449
18	183	186	70	58	6,000	7,880	1,160	1,850	2,100	348	344	390
19	174	186	65	58	4,000	6,010	1,100	1,710	1,900	339	348	380
20	169	183	60	65	3,000	4,120	1,330	1,630	2,200	322	396	344
21	164	160	55	70	2,000	2,910	4,440	1,510	2,150	322	374	318
22	158	130	55	65	1,500	2,880	3,860	1,450	2,100	344	374	305
23	155	110	60	70	1,000	2,810	3,800	1,900	2,090	344	374	302
24	155	120	60	75	600	2,450	4,890	11,800	1,700	335	390	292
25	153	140	65	70	500	2,010	3,820	13,400	1,440	353	410	275
26	158	130	65	65	500	1,780	5,130	9,640	1,350	380	390	264
27	153	120	55	70	500	1,700	6,100	13,000	1,280	396	400	252
28	174	130	55	72	500	3,530	7,580	10,500	800	437	390	258
29	191	145	60	75	------	6,540	5,230	5,130	461	494	369	255
30	183	145	60	65	------	5,990	3,740	5,230	500	494	410	250
31	193	------	62	60	------	4,990	------	7,200	------	474	468	------
TOTAL	6,556	5,428	3,167	1,772	45,264	115,790	80,010	128,800	121,641	13,439	11,488	21,691
MEAN	211	181	102	57.2	1,617	3,735	2,667	4,155	4,055	434	371	723
MAX	305	264	190	75	8,000	13,400	7,580	13,400	12,500	705	474	2,090
MIN	153	110	55	45	52	400	758	1,450	461	322	288	250
AC-FT	13,000	10,770	6,280	3,510	89,780	229,700	158,700	255,500	241,300	26,660	22,790	43,020

CAL YR 1970 TOTAL 252,606 MEAN 692 MAX 15,300 MIN 50 AC-FT 501,000
WTR YR 1971 TOTAL 555,046 MEAN 1,521 MAX 13,400 MIN 45 AC-FT 1,101,000

06439980 Lake Oahe near Pierre, S. Dak.

LOCATION.--Lat 44°27'30", long 100°23'29", in NE¼ sec.1, T.111 N., R.80 W., 5th principal meridian, Hughes County, in Pier A of Control Tower No. 1 of powerhouse intake structure of dam on Missouri River, 6 miles northwest of Pierre, 7.1 miles upstream from Bad River, and at mile 1,072.3.

DRAINAGE AREA.--243,500 sq mi, approximately.

PERIOD OF RECORD.--August 1958 to current year. Prior to October 1967, published as Oahe Reservoir near Pierre.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level. Prior to Jan. 14, 1959, nonrecording gages at various locations upstream from outlet works, Jan. 14, 1959, to Sept. 30, 1962, recorder in Tower No. 1 of outlet works, all at same datum.

EXTREMES.--Current year: Maximum contents, 22,397,000 acre-ft May 31 (elevation, 1,616.7 ft, affected by wind); minimum, 18,367,000 acre-ft Dec. 24 (elevation, 1,604.3 ft, affected by wind).
Period of record: Maximum contents, 22,397,000 acre-ft May 31, 1970 (elevation, 1,616.7 ft, affected by wind); minimum since initial filling, 16,984,000 acre-ft Sept. 24, 26, 1967 (elevation, 1,599.2 ft).

REMARKS.--Reservoir is formed by an earthfill dam; storage began in August 1958. Maximum capacity, 23,630,000 acre-ft below elevation 1,620.0 ft (top of spillway gates). Normal maximum, 22,530,000 acre-ft below 1,617.0 ft, of which about 2,390,000 acre-ft is designated for flood control. Inactive storage, 5,538,000 acre-ft below elevation 1,540.0 ft. Dead storage, 2,000 acre-ft below elevation 1,425.0 ft (invert of lowest outlet tunnel). Figures given herein represent elevations at powerhouse intake structure and total contents adjusted for wind effect.
The spillway consists of a gated chute with flat crest at elevation 1,596.5 ft, 8 gates, 50 by 23.5 ft each; design capacity, 300,000 cfs. The outlet works consist of 7 turbines with a generating capacity of 85,000 kilowatts each. Water is used for flood control, navigation, power, and incidental uses.

COOPERATION.--Elevation and contents furnished by Corps of Engineers.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	1,605.1	18,619,000	
Oct. 31	1,604.9	18,551,000	-68,000
Nov. 30	1,605.9	18,758,000	+207,000
Dec. 31	1,604.5	18,411,000	-347,000
CAL YR 1970	-	-	-1,050,000
Jan. 31	1,606.1	18,899,000	+488,000
Feb. 28	1,608.5	19,646,000	+747,000
Mar. 31	1,613.4	21,243,000	+1,597,000
Apr. 30	1,615.5	22,016,000	+773,000
May 31	1,616.7	22,397,000	+381,000
June 30	1,616.2	22,233,000	-164,000
July 31	1,614.7	21,698,000	-535,000
Aug. 31	1,610.5	20,317,000	-1,381,000
Sept.30	1,607.2	19,236,000	-1,081,000
WTR YR 1971	-	-	+617,000

06441000 Bad River near Midland, S. Dak.

LOCATION (revised).--Lat 44°04'01", long 101°09'36", in NE¼NW¼ sec.7, T.1 N., R.25 E., Haakon County, on right bank at downstream side of bridge on State Highway 63, 0.4 mile southwest of Midland, 2.0 miles upstream from Mitchell Creek, and 3.7 miles upstream from Ash Creek. Prior to June 15, 1971 at site 60 ft upstream.

DRAINAGE AREA.--1,460 sq mi, approximately.

PERIOD OF RECORD.--October 1945 to current year. Prior to February 1946 monthly discharge only, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 1,849.14 ft above mean sea level. Prior to Feb. 21, 1961, nonrecording gage, and Feb. 21, 1961, to June 14, 1967, water-stage recorder at site 4.2 miles downstream at datum 15.72 ft lower. June 15 to July 26, 1967, nonrecording gage at site 30 ft upstream and July 27, 1967, to June 14, 1971, water-stage recorder at site 60 ft upstream, both at present datum.

AVERAGE DISCHARGE.--26 years, 71.6 cfs (51,870 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 3,120 cfs Mar. 15 (gage height, 14.00 ft, from floodmarks); no flow for many days.
Period of record: Maximum discharge, 29,400 cfs June 15, 1967 (gage height, 24.44 ft, from floodmarks, 20.10 ft, from floodmarks, at former site and datum), from rating curve extended above 16,000 cfs; no flow for many days in each year.

REMARKS.--Records fair except those for winter periods, which are poor.

REVISIONS.--WRD S.Dak. 1967: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		0	.60		0	20	121	131	1,000	1.6		0
2		0	.70		0	15	90	93	823	9.5		0
3		0	.70		0	12	64	64	295	8.5		0
4		0	.60		0	15	48	52	185	4.4		0
5		0	.60		0	20	38	40	144	3.5		0
6		0	.50		0	15	28	50	107	3.3		0
7		0	.40		0	10	23	43	142	2.1		179
8		0	.27		0	15	20	29	291	1.5		537
9		0	.11		0	20	18	23	1,650	1.1		103
10		0	.04		0	44	17	19	555	.72		41
11		0	.02		0	79	14	19	304	.40		21
12		28	0		0	295	12	15	213	.27		11
13		15	0		50	1,530	12	20	85	0		4.8
14		9.0	0		100	2,640	9.0	32	88	0		2.5
15		5.6	0		500	2,860	8.5	23	56	0		1.6
16		3.5	0		1,300	1,510	7.6	17	19	0		1.2
17		3.0	0		1,200	781	7.1	14	11	0		1.3
18		2.8	0		700	450	6.6	11	8.0	0		1.8
19		2.0	0		300	255	7.1	10	8.5	0		2.3
20		1.2	0		100	190	19	8.0	11	0		2.3
21		.93	0		70	151	443	7.6	10	0		2.0
22		.93	0		50	131	1,230	7.6	8.5	0		1.5
23		.82	0		30	118	486	7.6	7.1	0		1.0
24		.80	0		20	108	269	7.6	4.4	0		.72
25		.90	0		40	86	169	530	3.3	0		.72
26		.70	0		60	84	125	1,230	2.5	0		.63
27		.60	0		50	82	115	390	1.6	0		.47
28		.50	0		30	159	322	172	1.1	0		.40
29		.60	0		------	224	517	105	.93	0		.33
30		.60	0		------	234	220	84	.93	0		.33
31		------	0		------	154	------	891	------	0		------
TOTAL	0	77.48	4.54	0	4,600	12,307	4,465.9	4,145.4	6,035.86	36.89	0	917.90
MEAN	0	2.58	.15	0	164	397	149	134	201	1.19	0	30.6
MAX	0	28	.70	0	1,300	2,860	1,230	1,230	1,650	9.5	0	537
MIN	0	0	0	0	0	10	6.6	7.6	.93	0	0	0
AC-FT	0	154	9.0	0	9,120	24,410	8,860	8,220	11,970	73	0	1,820

CAL YR 1970 TOTAL 15,443.24 MEAN 42.3 MAX 2,520 MIN 0 AC-FT 30,630
WTR YR 1971 TOTAL 32,590.97 MEAN 89.3 MAX 2,860 MIN 0 AC-FT 64,640

PEAK DISCHARGE (BASE, 500 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
2-16	-	-	1,300	5-26	0700	10.50	1,750
3-15	0400	14.00	3,120	5-31	2200	10.10	1,610
4-22	1130	9.96	1,540	6- 9	1500	12.41	2,020
4-29	0130	7.47	718	9- 7	2400	9.65	1,120

06441500 Bad River near Fort Pierre, S. Dak.

LOCATION.--Lat 44°19'36", long 100°23'02", in NW¼NW¼ sec.10, T.4 N., R.31 E., Stanley County, on right bank at downstream side of highway bridge, 2.1 miles south of Fort Pierre, 4.3 miles downstream from Willow Creek, and 6.0 miles (corrected) upstream from mouth.

DRAINAGE AREA.--3,107 sq mi.

PERIOD OF RECORD.--August 1928 to current year. Monthly discharge only for July 1932 to February 1934, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 1,427.83 ft above mean sea level. Prior to July 10, 1951, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--43 years, 158 cfs (114,500 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 10,300 cfs Apr. 20 (gage height, 20.88 ft); no flow for many days.
Period of record: Maximum discharge, 43,800 cfs June 18, 1967 (gage height, 29.55 ft); no flow for long periods in each year.
Flood in April 1927 reached a stage of 30.89 ft, from floodmarks (discharge, about 55,000 cfs). Flood in July 1905 reached a stage about 2 ft higher than that in April 1927.

REMARKS.--Records good except those for winter periods, which are poor.

REVISIONS(WATER YEARS).--WSP 786: Drainage area. WSP 856: 1929(M), 1937.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					0	800	261	615	501	6.2		
2					0	600	200	379	1,300	4.9		
3					0	500	155	246	1,330	4.9		
4					0	500	119	181	964	4.4		
5					0	600	91	151	794	4.1		
6					0	700	73	119	389	3.3		
7					0	600	58	98	337	2.7		
8					0	600	46	82	201	2.5		
9					0	700	39	86	714	1.9		
10					0	800	31	76	1,180	1.4		
11					0	900	25	65	173	1.2		
12					150	1,100	21	56	178	1.6		
13					120	1,500	20	46	117	1.4		
14					400	2,000	18	40	101	.92		
15					1,000	3,160	17	36	81	.54		
16					1,500	3,510	17	29	69	.42		
17					2,000	2,160	15	40	79	.30		
18					1,800	1,100	13	36	56	.24		
19					1,000	689	474	30	41	.18		
20					700	463	6,820	25	31	.12		
21					500	330	5,900	19	24	.06		
22					400	241	7,760	18	21	0		
23					350	197	3,110	20	16	0		
24					320	172	1,640	23	15	0		
25					500	163	920	21	13	0		
26					1,800	152	580	18	12	0		
27					1,400	157	1,640	1,020	10	0		
28					1,000	170	1,650	535	9.2	0		
29					------	140	808	292	8.8	0		
30					------	216	956	181	7.9	0		
31		------			------	307	------	273	------	0		------
TOTAL	0	0	0	0	14,940	25,227	33,477	4,856	8,772.9	43.28	0	0
MEAN	0	0	0	0	534	814	1,116	157	292	1.40	0	0
MAX	0	0	0	0	2,000	3,510	7,760	1,020	1,330	6.2	0	0
MIN	0	0	0	0	0	140	13	18	7.9	0	0	0
AC-FT	0	0	0	0	29,630	50,040	66,400	9,630	17,400	86	0	0

CAL YR 1970 TOTAL 35,611.97 MEAN 97.6 MAX 3,650 MIN 0 AC-FT 70,640
WTR YR 1971 TOTAL 87,316.18 MEAN 239 MAX 7,760 MIN 0 AC-FT 173,200

PEAK DISCHARGE (BASE, 2,000 CFS, REVISED)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
2-17	-	-	2,500	4-20	2300	20.88	10,300
2-26	-	-	2,300	4-28	0100	9.35	2,260
3-16	1100	12.18	3,760	6- 9	2130	13.09	4,280

06442000 Medicine Knoll Creek near Blunt, S. Dak.

LOCATION.--Lat 44°33'46", long 99°54'50", in NW¼ sec.31, T.113 N., R.75 W., Sully County, on left bank at downstream side of highway bridge, 4.8 miles northeast of Blunt and 5.5 miles upstream from South Fork Medicine Knoll Creek.

DRAINAGE AREA.--455 sq mi, approximately.

PERIOD OF RECORD.--March 1950 to current year. Prior to October 1959, published as Medicine Creek near Blunt.

GAGE.--Water-stage recorder. Datum of gage is 1,611.08 ft above mean sea level (revised). Prior to Oct. 31, 1950, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--21 years, 5.51 cfs (3,990 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 75 cfs Feb. 17; maximum gage height, 9.6 ft Feb. 17 (backwater from ice); no flow Oct. 1 to Feb. 16, June 28 to Sept. 30.
Period of record: Maximum discharge, 1,830 cfs Apr. 5, 1952 (gage height, 12.34 ft, from floodmarks); maximum gage height, 13.2 ft between Mar. 26-29, 1950, from floodmark (backwater from ice); no flow for long periods in each year.

REMARKS.--Records fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					0	1.3	2.2	2.8	1.5			
2					0	1.3	1.4	3.0	1.2			
3					0	1.5	1.3	3.4	1.0			
4					0	2.0	1.0	3.3	.90			
5					0	1.8	.85	2.8	.85			
6					0	1.5	.93	2.4	.85			
7					0	1.3	.65	2.1	.80			
8					0	1.0	.28	1.8	.80			
9					0	.90	.34	1.7	.75			
10					0	1.0	.58	1.3	1.5			
11					0	1.2	.13	.93	5.0			
12					0	2.0	.04	1.0	20			
13					0	4.0	.06	.85	19			
14					0	8.0	.08	.65	17			
15					0	8.5	.03	.72	10			
16					0	6.5	.02	.78	8.0			
17					5.0	5.8	.02	.58	6.0			
18					60	5.5	.02	.39	5.0			
19					25	5.5	.02	.28	4.0			
20					5.0	6.0	.08	.28	3.0			
21					2.0	5.5	.18	1.1	2.0			
22					1.0	8.0	.34	1.8	1.6			
23					.90	10	.65	2.2	1.1			
24					1.0	9.5	.52	3.2	.52			
25					1.5	9.0	.45	3.1	.18			
26					2.0	9.0	.45	3.0	.04			
27					1.5	8.0	1.3	2.5	.01			
28					1.5	6.5	1.7	2.3	0			
29					------	5.0	2.3	2.0	0			
30					------	4.0	2.4	1.9	0			
31		------			------	3.0	------	1.7	------			------
TOTAL	0	0	0	0	106.40	144.10	20.32	55.86	112.60	0	0	0
MEAN	0	0	0	0	3.80	4.65	.68	1.80	3.75	0	0	0
MAX	0	0	0	0	60	10	2.4	3.4	20	0	0	0
MIN	0	0	0	0	0	.90	.02	.28	0	0	0	0
AC-FT	0	0	0	0	211	286	40	111	223	0	0	0

CAL YR 1970 TOTAL 328.18 MEAN .90 MAX 38 MIN 0 AC-FT 651
WTR YR 1971 TOTAL 439.28 MEAN 1.20 MAX 60 MIN 0 AC-FT 871

PEAK DISCHARGE (BASE, 50 CFS).--Feb. 17 (time and stage unknown) 75 cfs.

06442500 Medicine Creek at Kennebec, S. Dak.

LOCATION.--Lat 43°54'17", long 99°52'35", in NW¼NE¼ sec.18, T.105 N., R.75 W., Lyman County, on right bank 4 ft downstream from highway bridge, 0.5 mile west of Kennebec and 0.5 mile downstream from nearest tributary.

DRAINAGE AREA.--465 sq mi, approximately.

PERIOD OF RECORD.--July 1954 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,659.64 ft above mean sea level. Prior to Dec. 28, 1954, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--17 years, 16.5 cfs (11,950 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 425 cfs Apr. 23 (gage height, 5.65 ft); no flow for many days.
Period of record: Maximum discharge, 8,970 cfs Mar. 28, 1960 (gage height, 16.71 ft); no flow for many days each year.
Flood in April 1952 reached a stage of 17.0 ft, from floodmarks.

REMARKS.--Records good above 5.0 cfs and poor below.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Stage-discharge relation affected by ice Feb. 25 to Mar. 25)

0.36	0	0.8	3.7	2.4	68
.4	.04	1.0	7.4	2.8	101
.5	.49	1.3	14	3.2	137
.6	1.4	1.6	25	4.0	215
.7	2.4	2.0	43	5.0	335

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					0	.40	12	103	.20			0
2					0	5.0	7.6	70	.10			0
3					0	10	5.6	40	0			0
4					0	14	3.3	31	0			0
5					0	7.0	2.0	20	0			53
6					0	4.0	1.5	14	0			25
7					0	3.0	1.2	11	0			8.5
8					0	2.0	.90	7.4	0			3.6
9					0	1.0	.80	5.2	0			2.5
10					0	.50	.90	4.0	0			1.5
11					0	1.0	.70	3.0	0			1.0
12					0	2.0	.50	2.5	0			.50
13					0	3.0	.15	1.9	0			.30
14					0	4.0	.20	1.5	0			.10
15					0	4.0	.10	1.0	0			0
16					0	3.8	0	.80	0			0
17					0	3.6	0	.90	0			0
18					0	3.6	0	.80	0			0
19					0	3.4	0	.50	0			0
20					0	3.4	.14	.40	0			0
21					0	3.2	16	.40	0			0
22					0	3.2	269	.50	0			0
23					0	3.0	327	1.0	0			0
24					0	3.0	281	1.5	0			0
25					1.0	3.5	133	1.4	0			0
26					.90	4.0	61	1.3	0			0
27					.50	5.3	67	1.1	0			0
28					.50	8.7	54	1.0	0			0
29					------	5.4	137	.80	0			0
30					------	11	148	.60	0			0
31		------			------	19	------	.40	------			------
TOTAL	0	0	0	0	2.90	148.00	1,530.59	328.90	.30	0	0	96.00
MEAN	0	0	0	0	.10	4.77	51.0	10.6	.010	0	0	3.20
MAX	0	0	0	0	1.0	19	327	103	.20	0	0	53
MIN	0	0	0	0	0	.40	0	.40	0	0	0	0
AC-FT	0	0	0	0	5.8	294	3,040	652	.6	0	0	193

CAL YR 1970 TOTAL 1,459.94 MEAN 4.00 MAX 179 MIN 0 AC-FT 2,900
WTR YR 1971 TOTAL 2,106.69 MEAN 5.77 MAX 327 MIN 0 AC-FT 4,180

PEAK DISCHARGE (BASE, 100 CFS)

DATE	TIME	G.H.	DISCHARGE
4-23	1730	5.65	425
4-29	1500	3.79	195

06442700 Lake Sharpe near Fort Thompson, S. Dak.

LOCATION.--Lat 44°02'18", long 99°26'45", in SE¼ sec.27, T.107 N., R.72 W., Lyman County, at left approach wall of powerhouse at Big Bend Dam on Missouri River, 2.5 miles south of Fort Thompson, and at mile 987.4.

DRAINAGE AREA.--249,300 sq mi, approximately.

PERIOD OF RECORD.--July 1963 to current year.

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

EXTREMES.--Current year: Maximum contents, 1,829,000 acre-ft Apr. 22 (elevation, 1,421.9 ft, affected by wind); minimum, 1,700,000 acre-ft Oct. 9 (elevation, 1,419.6 ft, affected by wind).
Period of record: Maximum contents, 1,829,000 acre-ft Apr. 22, 1971 (elevation, 1,421.9 ft, affected by wind); minimum since initial filling, 1,448,000 acre-ft Sept. 17, 1967 (elevation, 1,414.7 ft, affected by wind).

REMARKS.--Reservoir is formed by earth-fill dam; closure made July 1963: intentional storage began November 1963. Maximum capacity, 1,900,000 acre-ft below elevation, 1,423.0 ft (top of spillway gates). Normal maximum, 1,725,000 acre-ft below elevation 1,420.0 ft. Inactive storage, 1,465,000 acre-ft below elevation 1,415.0 ft. Figures given herein represent elevations at powerhouse and total contents adjusted for wind effect.
The spillway consists of a concrete chute with flat crest at elevation 1,385.0 ft surmounted by 8 Taintor gates, each 40 by 38 ft; design capacity, 390,000 cfs. Normal releases are through 8 power units (completed in July 1966), with a generating capacity of 58,500 kilowatts each. Maximum release through powerplant about 100,000 cfs. Water is used for flood control, navigation, power, and incidental uses.

COOPERATION.--Elevations and contents furnished by Corps of Engineers.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	1,420.3	1,742,000	-
Oct. 31	1,420.2	1,730,000	-12,000
Nov. 30	1,420.5	1,746,000	+16,000
Dec. 31	1,420.3	1,739,000	-7,000
CAL YR 1970	-	-	+24,000
Jan. 31	1,420.2	1,739,000	0
Feb. 28	1,420.4	1,750,000	+11,000
Mar. 31	1,420.9	1,763,000	+13,000
Apr. 30	1,421.5	1,813,000	+50,000
May 31	1,420.1	1,731,000	-82,000
June 30	1,420.5	1,763,000	+32,000
July 31	1,419.9	1,731,000	-32,000
Aug. 31	1,420.2	1,735,000	+4,000
Sept.30	1,419.8	1,718,000	-17,000
WTR YR 1971	-	-	-24,000

06444000 White River at Crawford, Nebr.

LOCATION.--Lat 42°41'33", long 103°25'03", in W½ sec.3, T.31 N., R.52 W., Dawes County, on right bank 15 ft downstream from bridge in city park at Crawford, Nebr.

DRAINAGE AREA.--313 sq mi.

PERIOD OF RECORD.--February 1931 to September 1943, October 1947 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,659.85 ft above mean sea level. Feb. 25, 1931, to Oct. 2, 1933, nonrecording gage at old highway bridge 0.5 mile upstream at different datum and Oct. 3, 1933, to Sept. 30, 1943, 1 mile upstream at different datum.

AVERAGE DISCHARGE.--36 years, 20.2 cfs (14,630 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 504 cfs Mar. 27 (gage height, 5.02 ft, from floodmarks); minimum daily, 9.4 cfs Aug. 24, Sept. 3.
Period of record: Maximum discharge, 1,580 cfs Mar. 15, 1948 (gage height, 6.88 ft); maximum gage height, 7.7 ft July 10, 1958 (from floodmarks); minimum daily discharge, 2.7 cfs Aug. 13, 31, Sept. 1, 1960.

REMARKS.--Records good. Some regulation at low flows by pumps for irrigation and diversion for water supply for town of Crawford.

REVISIONS(WATER YEARS).--WSP 1309: 1931(M), 1942(M). WSP 1729: 1958-59(M). WSP 1917: 1958-59.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	17	19	18	19	20	22	23	30	18	12	11
2	11	17	16	17	18	20	22	23	51	16	12	10
3	11	17	17	17	17	21	22	24	34	15	12	9.4
4	12	17	17	16	17	22	21	23	36	25	12	14
5	11	17	17	15	17	23	21	31	34	45	12	17
6	12	17	17	15	16	22	20	36	30	21	11	14
7	17	16	17	16	15	20	20	25	27	19	11	12
8	16	17	17	16	18	21	19	23	27	18	10	17
9	15	17	17	17	22	22	19	24	26	18	10	17
10	16	17	17	18	26	23	19	25	29	20	10	15
11	16	16	16	17	23	33	19	33	39	18	10	14
12	17	16	15	16	20	62	19	24	27	16	10	13
13	16	16	16	15	21	86	19	22	30	15	10	13
14	16	17	17	16	21	62	19	20	28	15	10	13
15	16	16	17	16	22	29	20	20	26	15	10	13
16	16	17	17	17	22	23	20	20	25	15	10	14
17	15	16	17	18	23	19	20	21	24	14	10	14
18	16	17	16	19	22	19	22	20	24	14	14	16
19	16	17	15	20	23	19	27	21	23	14	12	17
20	16	17	17	20	23	19	27	20	22	14	12	16
21	16	17	18	19	22	20	27	20	21	13	11	22
22	17	17	18	19	21	22	29	23	20	13	10	22
23	14	17	16	19	20	21	26	40	19	13	9.8	20
24	16	18	17	20	22	21	26	34	18	12	9.4	18
25	16	20	17	20	23	22	27	27	17	13	9.8	18
26	16	18	17	19	25	24	30	27	16	15	10	17
27	18	17	18	19	20	258	31	26	16	14	10	16
28	17	17	19	20	21	101	29	28	15	13	10	17
29	16	18	20	21	------	28	25	30	18	13	10	17
30	16	17	21	21	------	25	23	51	18	13	10	17
31	17	------	18	20	------	25	------	44	------	13	11	------
TOTAL	471	510	533	556	579	1,152	690	828	770	510	331.0	463.4
MEAN	15.2	17.0	17.2	17.9	20.7	37.2	23.0	26.7	25.7	16.5	10.7	15.4
MAX	18	20	21	21	26	258	31	51	51	45	14	22
MIN	11	16	15	15	15	19	19	20	15	12	9.4	9.4
AC-FT	934	1,010	1,060	1,100	1,150	2,280	1,370	1,640	1,530	1,010	657	919

CAL YR 1970 TOTAL 6,291.9 MEAN 17.2 MAX 95 MIN 7.3 AC-FT 12,480
WTR YR 1971 TOTAL 7,393.4 MEAN 20.3 MAX 258 MIN 9.4 AC-FT 14,660

PEAK DISCHARGE (BASE, 100 CFS, REVISED).--Mar. 27 (2200) 504 cfs (5.02 ft); July 5 (0230) 121 cfs (2.52 ft).

06445980 White Clay Creek near Oglala, S. Dak.

LOCATION.--Lat 43°08'46", long 102°40'58", in SE¼SE¼ sec.30, T.37 N., R.45 W., Shannon County, on left bank at downstream side of bridge on U.S. Highway 18, 4 miles southeast of Oglala, 5.5 miles upstream from Oglala Dam, and 11 miles northwest of Pine Ridge.

DRAINAGE AREA.--340 sq mi, approximately.

PERIOD OF RECORD.--August 1965 to current year.

GAGE.--Water-stage recorder.

AVERAGE DISCHARGE.--6 years, 14.8 cfs (10,720 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 200 cfs Feb. 14; maximum gage height, 11.46 ft Feb. 14 (backwater from ice); minimum daily discharge, 0.98 cfs Sept. 15.
Period of record: Maximum discharge, 659 cfs June 16, 1967 (gage height, 14.74 ft); maximum gage height, 15.02 ft Mar. 11, 1966 (backwater from ice); no flow Sept. 4, 1965, Aug. 20-28, Sept. 4-7, 9-12, 1970.

REMARKS.--Records good except those for winter periods, which are poor. Some storage and possible regulation above station.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Nov. 3; stage-discharge relation affected by ice Nov. 4, 5, 22-30, Dec. 4 to Mar. 26)

4.2	0.55	5.5	18
4.3	1.4	6.0	28
4.5	3.9	7.0	62
5.0	11	8.0	103

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	2.6	5.7	3.0	3.0	11	16	16	50	5.4	3.0	1.1
2	3.0	3.2	5.6	2.5	3.0	10	14	15	35	5.3	2.9	1.1
3	2.5	3.9	5.7	2.2	2.8	12	13	14	40	5.3	3.0	.98
4	1.1	3.5	6.0	2.0	2.7	13	13	14	35	5.3	2.6	1.3
5	1.1	4.0	5.5	2.0	2.4	11	13	16	30	5.6	2.5	2.7
6	2.9	3.5	7.0	2.0	2.2	10	12	18	20	5.3	2.2	3.2
7	4.9	4.0	7.5	2.0	2.0	10	12	19	13	7.2	2.1	2.1
8	4.9	4.0	6.5	2.2	2.2	10	12	17	13	5.9	2.2	2.4
9	3.5	4.2	6.0	2.3	2.5	12	11	16	13	4.9	2.1	2.7
10	2.6	3.8	5.0	2.2	3.0	14	12	14	12	4.6	2.2	2.4
11	2.5	3.9	4.5	2.0	5.0	15	12	15	11	4.5	2.2	2.1
12	2.5	4.0	4.5	2.0	20	20	9.6	15	11	4.2	2.2	1.8
13	2.9	4.0	4.0	2.0	40	50	11	15	9.8	3.8	2.0	1.2
14	2.7	4.3	4.2	2.5	60	90	11	14	9.8	3.5	1.9	1.1
15	2.7	4.2	4.5	3.0	55	60	12	14	9.9	3.5	2.0	.98
16	3.0	4.5	5.0	3.6	50	30	11	13	9.5	3.2	1.9	1.2
17	3.1	4.9	4.5	3.5	30	25	11	13	9.2	3.4	1.6	1.6
18	3.0	4.6	3.0	3.3	20	25	13	12	11	3.5	1.9	2.0
19	3.2	4.7	2.4	3.5	20	25	12	12	10	3.2	1.9	2.0
20	3.4	4.9	2.5	4.0	18	30	16	12	8.8	3.1	1.8	2.2
21	3.4	4.7	2.7	3.5	15	30	22	12	7.9	3.1	1.8	3.5
22	3.4	4.5	2.5	3.2	15	25	19	12	7.3	3.1	1.6	3.2
23	3.8	5.0	2.5	3.5	16	20	17	13	7.2	3.0	1.3	3.0
24	3.9	6.0	2.5	4.0	17	20	15	19	6.9	2.9	1.2	2.6
25	3.1	6.0	2.5	4.0	18	30	15	50	6.3	3.0	1.1	2.4
26	3.0	5.5	2.6	3.5	15	50	16	45	5.9	3.4	1.1	2.5
27	2.7	5.0	2.5	3.8	12	43	18	40	5.6	3.5	1.1	2.0
28	2.9	5.0	2.5	4.0	12	69	19	35	5.3	3.2	1.1	2.4
29	2.9	5.0	2.7	5.0	------	42	18	30	5.4	3.1	1.1	2.2
30	3.1	5.0	2.8	4.5	------	20	17	80	5.4	3.2	1.1	3.4
31	2.9	------	3.0	4.0	------	18	------	70	------	3.1	1.1	------
TOTAL	91.6	132.4	128.4	94.8	463.8	850	422.6	700	424.2	125.3	57.8	63.36
MEAN	2.95	4.41	4.14	3.06	16.6	27.4	14.1	22.6	14.1	4.04	1.86	2.11
MAX	4.9	6.0	7.5	5.0	60	90	22	80	50	7.2	3.0	3.5
MIN	1.0	2.6	2.4	2.0	2.0	10	9.6	12	5.3	2.9	1.1	.98
AC-FT	182	263	255	188	920	1,690	838	1,390	841	249	115	126

CAL YR 1970 TOTAL 2,817.78 MEAN 7.72 MAX 28 MIN 0 AC-FT 5,590
WTR YR 1971 TOTAL 3,554.26 MEAN 9.74 MAX 90 MIN .98 AC-FT 7,050

PEAK DISCHARGE (BASE, 150 CFS).--Feb. 14 (time and stage unknown) 200 cfs.

06446000 White River near Oglala, S. Dak.

LOCATION.--Lat 43°15'17", long 102°49'29", in SW¼NE¼ sec.24, T.38 N., R.47 W., Shannon County, on right bank at downstream side of bridge, 3.0 miles downstream from Blacktail Creek and 7.0 miles northwest of Oglala.

DRAINAGE AREA.--2,200 sq mi, approximately.

PERIOD OF RECORD.--May 1943 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,853.54 ft above mean sea level. Prior to May 6, 1947, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--28 years, 59.6 cfs (43,180 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,300 cfs May 25 (gage height, 16.88 ft); no flow Oct. 1, 12-14, Aug. 17-19, 31, Sept. 1.
Period of record: Maximum discharge, 5,200 cfs June 21, 1947 (gage height, 23.50 ft), from rating curve extended above 2,800 cfs on basis of velocity-area studies; maximum gage height, 23.61 ft June 16, 1967; no flow at times in 1952, 1954, 1957, 1961, 1964, 1965, 1970-71.

REMARKS.--Records good except those for winter periods, which are poor. Some diversions for irrigation above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	8.4	11	4.1	1.0	25	114	135	749	30	25	0
2	3.0	8.0	10	3.0	3.0	20	61	78	434	29	17	.18
3	1.4	8.4	10	2.0	3.0	25	48	58	521	29	16	11
4	.12	9.2	10	1.0	2.0	25	43	51	433	36	15	18
5	.20	11	9.5	.50	2.0	25	40	49	362	34	16	17
6	2.0	12	10	.50	1.0	20	39	48	301	28	14	13
7	2.2	12	11	.60	1.0	20	38	67	247	39	6.8	11
8	3.6	13	11	.70	2.0	25	36	72	254	110	3.4	15
9	2.8	13	10	.70	3.0	30	34	105	163	64	7.6	42
10	1.8	15	9.0	.60	5.0	35	32	86	131	45	6.9	27
11	.18	15	8.0	.50	6.0	50	31	63	111	40	5.6	21
12	0	15	7.0	.40	5.0	55	30	56	105	37	2.6	40
13	0	16	6.0	.40	40	125	30	54	94	34	.40	30
14	0	16	6.5	.60	270	110	28	61	92	36	.05	18
15	7.2	17	6.5	.80	300	165	28	96	89	31	.03	13
16	6.6	17	7.0	1.0	250	200	28	73	100	25	.25	9.0
17	2.6	18	5.0	1.0	150	180	28	61	102	22	0	5.0
18	4.0	18	4.5	.90	125	110	28	56	76	20	0	2.6
19	2.2	17	4.0	1.0	65	80	32	53	69	18	0	1.8
20	3.8	16	4.5	1.2	65	50	45	53	64	18	.73	1.6
21	3.0	14	5.0	1.2	40	45	38	54	59	18	3.6	4.8
22	2.4	9.5	4.5	1.0	25	40	38	53	57	17	3.0	12
23	8.9	9.0	4.0	1.2	30	40	43	67	54	16	2.8	16
24	6.8	9.5	4.0	1.4	35	45	53	693	51	16	2.8	11
25	2.6	10	4.0	1.5	35	45	79	1,010	48	16	2.0	1.8
26	2.0	9.5	4.2	1.3	35	50	125	617	44	15	1.4	31
27	13	9.5	4.0	1.4	30	73	156	467	40	16	3.2	23
28	14	10	4.0	1.5	30	73	189	206	36	16	3.6	16
29	13	10	4.1	1.7	------	76	171	153	34	18	1.4	13
30	11	11	4.1	1.5	------	165	166	165	32	15	.03	13
31	9.5	------	4.2	1.0	------	210	------	815	------	7.8	0	------
TOTAL	129.90	377.0	206.6	36.20	1,559.0	2,237	1,851	5,675	4,952	895.8	161.19	437.78
MEAN	4.19	12.6	6.66	1.17	55.7	72.2	61.7	183	165	28.9	5.20	14.6
MAX	14	18	11	4.1	300	210	189	1,010	749	110	25	42
MIN	0	8.0	4.0	.40	1.0	20	28	48	32	7.8	0	0
AC-FT	258	748	410	72	3,090	4,440	3,670	11,260	9,820	1,780	320	868

CAL YR 1970 TOTAL 11,548.25 MEAN 31.6 MAX 710 MIN 0 AC-FT 22,910
WTR YR 1971 TOTAL 18,518.47 MEAN 50.7 MAX 1,010 MIN 0 AC-FT 36,730

PEAK DISCHARGE (BASE, 800 CFS)

DATE	TIME	G.H.	DISCHARGE
5-25	0015	16.88	1,300
5-31	1600	15.25	1,050

06447000 White River near Kadoka, S. Dak.

LOCATION.--Lat 43°45'09", long 101°31'28", in SE¼SE¼ sec.30, T.3 S., R.22 E., Black Hills meridian, Jackson County, near center of span on downstream side of bridge on State Highway 73, 5.0 miles upstream from Pass Creek, 5.5 miles downstream from Cottonwood Creek, and 5.8 miles south of Kadoka.

DRAINAGE AREA.--5,000 sq mi, approximately.

PERIOD OF RECORD.--July 1942 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,122.18 ft above mean sea level. Prior to June 14, 1949, nonrecording gage, and June 14, 1949, to Mar. 8, 1955, water-stage recorder at site 0.3 mile downstream at same datum. Mar. 9, 1955, to May 17, 1957, nonrecording gage at present site and datum.

AVERAGE DISCHARGE.--29 years, 294 cfs (213,000 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 10,200 cfs May 24 (gage height, 11.67 ft); no flow for many days.
Period of record: Maximum discharge, 21,700 cfs June 7, 1951 (gage height, 13.83 ft, site then in use), from rating curve extended above 16,000 cfs; no flow at times in many years.
Flood of June 4, 1942, reached a stage of 16.24 ft, from floodmarks (discharge, about 32,000 cfs, from rating curve extended above 16,000 cfs). Floods of Mar. 8, 1905, and in spring of 1927 were 1 or 2 ft higher than flood of June 4, 1942, from information by local residents.

REMARKS.--Records good except those for winter periods, which are poor. Some diversions above station for irrigation.

REVISIONS(WATER YEARS).--WSP 1279: 1944(M), 1948.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	40	40	0	18	330	317	658	1,620	51	8.0	191
2	1.2	64	50	0	18	320	322	550	1,040	48	6.0	54
3	0	30	80	0	16	320	341	511	1,140	39	4.1	18
4	0	46	90	0	12	340	270	1,010	776	36	4.6	56
5	0	39	50	0	10	360	197	1,800	535	35	4.6	2,190
6	0	38	30	0	8.0	340	152	767	510	33	2.0	2,230
7	45	72	20	0	7.0	330	118	304	493	48	0	658
8	366	100	12	0	6.0	340	105	206	396	48	0	270
9	589	258	10	0	8.0	360	88	150	412	48	0	155
10	407	222	5.0	0	10	385	66	105	317	60	0	229
11	250	150	7.0	0	50	1,030	55	572	331	327	0	191
12	164	76	7.0	0	500	1,970	50	559	250	226	0	100
13	110	49	5.0	0	600	2,440	48	308	220	134	0	51
14	64	39	4.0	0	2,000	2,260	44	206	185	76	0	49
15	41	32	5.0	0	3,500	1,380	42	137	262	51	0	35
16	30	26	5.0	0	4,500	671	42	103	176	54	0	30
17	22	27	3.0	0	3,500	469	39	108	158	53	0	19
18	18	26	1.0	0	2,000	423	50	103	152	34	18	35
19	14	25	0	0	1,000	357	164	191	185	33	12	25
20	9.5	24	0	0	600	335	6,400	143	150	26	7.4	22
21	5.5	22	0	5.0	450	400	3,390	108	128	19	4.1	22
22	3.2	18	0	4.0	400	511	1,150	95	120	14	8.0	30
23	2.4	12	0	3.0	350	335	613	425	203	10	44	24
24	2.0	16	0	7.0	400	191	481	7,280	108	8.0	14	20
25	2.0	20	0	12	380	219	1,260	2,230	81	8.0	10	15
26	9.5	18	0	10	360	233	2,630	825	64	8.4	4.6	10
27	11	20	0	15	320	331	4,950	1,260	58	9.5	2.8	6.0
28	11	22	0	18	340	499	2,770	1,180	58	13	1.2	4.0
29	10	24	0	20	------	839	1,530	1,120	58	13	1.0	2.0
30	9.5	28	0	20	------	860	1,170	1,250	53	11	50	1.0
31	18	------	0	16	------	457	------	1,880	------	14	117	------
TOTAL	2,216.4	1,583	424.0	130.0	21,363.0	19,635	28,854	26,144	10,239	1,587.9	323.4	6,742.0
MEAN	71.5	52.8	13.7	4.19	763	633	962	843	341	51.2	10.4	225
MAX	589	258	90	20	4,500	2,440	6,400	7,280	1,620	327	117	2,230
MIN	0	12	0	0	6.0	191	39	95	53	8.0	0	1.0
AC-FT	4,400	3,140	841	258	42,370	38,950	57,230	51,860	20,310	3,150	641	13,370

CAL YR 1970 TOTAL 78,660.61 MEAN 216 MAX 5,850 MIN 0 AC-FT 156,000
WTR YR 1971 TOTAL 119,241.70 MEAN 327 MAX 7,280 MIN 0 AC-FT 236,500

PEAK DISCHARGE (BASE, 3,600 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
2-16	-	-	4,700	4-27	0530	9.25	5,460
4-20	0700	10.89	8,630	5-24	0800	11.67	10,200

06447500 Little White River near Martin, S. Dak.

LOCATION.--Lat 43°10'00", long 101°37'47", in NW¼ sec.19, T.37 N., R.36 W., Bennett County, on right bank 70 ft downstream from highway culvert and 5.4 miles east of Martin.

DRAINAGE AREA.--310 sq mi, approximately, of which about 230 sq mi probably contributes directly to surface runoff.

PERIOD OF RECORD.--February 1938 to September 1940, July 1962 to current year. Prior to October 1965, published as South Fork White River near Martin.

GAGE.--Water-stage recorder. Altitude of gage is 3,045 ft (by barometer). Prior to Aug. 14, 1938, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--11 years, 20.5 cfs (14,850 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 118 cfs Mar. 29 (gage height, 3.69 ft); maximum gage height, 4.53 ft Feb. 19 (backwater from ice); minimum daily discharge, 3.2 cfs Aug. 8.
Period of record: Maximum discharge, 1,190 cfs July 19, 1965 (gage height, 12.90 ft), from rating curve extended above 340 cfs on basis of computation of peak flow through culvert and flow-over-road measurement of peak flow; maximum gage height, 13.21 ft Mar. 11, 1966 (backwater from ice); minimum daily discharge 0.6 cfs Aug. 14, 16, 18, 1940; no flow for part of each day Oct. 19, 20, 22, 1962 (regulation caused by construction work above station).
Flood of May 5, 1932, reached a stage of 13.3 ft, from floodmarks.

REMARKS.--Records good except those for winter periods, which are poor.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 2-28; stage-discharge relation affected by ice Nov. 22-24, Dec. 1 to Mar. 25)

0.8	1.0	2.0	41
1.0	6.5	2.5	62
1.2	13	3.0	84
1.5	22	4.0	133

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.7	14	22	8.5	6.0	19	45	71	59	12	6.2	6.5
2	5.4	15	25	8.0	5.5	19	42	54	73	11	5.7	5.7
3	5.9	9.2	26	7.5	5.5	20	37	45	44	12	5.4	5.1
4	5.9	11	23	7.0	5.0	20	36	41	36	11	5.1	6.2
5	6.2	15	20	6.0	5.0	19	33	39	33	13	4.8	8.9
6	6.2	18	20	5.0	4.5	19	31	39	29	11	4.0	13
7	7.1	15	23	5.0	4.0	20	30	49	27	10	3.7	15
8	9.2	22	22	5.5	5.0	22	30	51	31	9.2	3.2	15
9	9.8	25	20	6.0	6.5	24	29	49	33	9.2	6.2	12
10	10	25	15	6.0	9.0	26	29	42	25	9.2	6.8	9.8
11	11	24	13	6.0	15	30	28	37	23	9.8	5.4	8.0
12	11	23	12	5.5	20	40	27	38	21	9.2	4.3	7.4
13	11	22	12	5.5	30	50	27	41	19	8.3	4.0	6.8
14	10	19	13	6.0	45	60	26	41	19	7.7	3.7	5.9
15	10	18	13	8.0	50	65	26	36	19	7.1	3.7	5.7
16	10	18	13	9.0	45	60	25	32	16	6.8	3.7	5.7
17	10	18	12	9.5	40	55	24	29	15	6.2	3.7	5.9
18	10	18	10	8.0	35	50	24	29	15	5.7	3.7	8.3
19	10	18	8.0	8.5	30	48	25	27	16	5.4	4.0	8.3
20	11	17	6.0	8.5	25	48	46	26	14	5.4	3.7	7.1
21	11	18	5.0	8.0	20	50	82	25	14	5.9	4.3	6.2
22	9.2	16	5.0	7.5	18	48	90	24	15	6.5	4.8	8.9
23	9.2	15	5.0	8.0	17	46	93	23	14	6.5	6.5	10
24	9.8	18	5.0	8.5	18	48	60	24	13	5.9	5.7	8.9
25	10	19	6.0	9.0	20	50	47	25	13	5.9	4.5	9.5
26	11	19	6.0	7.0	20	56	44	26	13	5.9	4.0	8.9
27	11	19	6.5	6.5	19	60	47	26	12	6.5	3.7	8.0
28	11	17	7.0	7.0	19	77	56	25	11	8.3	3.7	7.4
29	11	19	7.5	9.0	------	103	70	24	11	7.7	3.7	7.4
30	13	20	8.0	8.5	------	86	76	32	12	7.1	3.7	8.0
31	14	------	8.5	7.0	------	54	------	52	------	6.2	4.3	------
TOTAL	295.6	544.2	397.5	225.0	542.0	1,392	1,285	1,122	695	251.6	139.9	249.5
MEAN	9.54	18.1	12.8	7.26	19.4	44.9	42.8	36.2	23.2	8.12	4.51	8.32
MAX	14	25	26	9.5	50	103	93	71	73	13	6.8	15
MIN	5.4	9.2	5.0	5.0	4.0	19	24	23	11	5.4	3.2	5.1
AC-FT	586	1,080	788	446	1,080	2,760	2,550	2,230	1,380	499	277	495

CAL YR 1970 TOTAL 6,187.9 MEAN 17.0 MAX 130 MIN 2.9 AC-FT 12,270
WTR YR 1971 TOTAL 7,139.3 MEAN 19.6 MAX 103 MIN 3.2 AC-FT 14,160

PEAK DISCHARGE (BASE, 100 CFS).--Mar. 29 (1800) 118 cfs (3.69 ft).

06448000 Lake Creek above refuge, near Tuthill, S. Dak.

LOCATION.--Lat 43°05'07", long 101°36'04", in NE¼ sec.19, T.36 N., R.36 W., Bennett County, on left wingwall at upstream side of culvert, 80 ft downstream from west boundary of LaCreek game refuge and 7.5 miles southwest of Tuthill.

DRAINAGE AREA.--58 sq mi, approximately, of which about 23 sq mi probably contributes directly to surface runoff.

PERIOD OF RECORD.--February 1938 to September 1940, July 1962 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 3,090 ft (by barometer). Prior to Aug. 10, 1938, nonrecording gage and Aug. 10, 1938, to Sept. 30, 1940, water-stage recorder at site 110 ft upstream at same datum.

AVERAGE DISCHARGE.--11 years, 19.4 cfs (14,060 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 121 cfs Apr. 20 (gage height, 3.46 ft); maximum gage height, 3.75 ft Feb. 12 (backwater from ice); minimum daily discharge, 5.3 cfs Sept. 3.
Period of record: Maximum discharge, 154 cfs Mar. 9, 1966 (gage height, 2.83 ft); maximum gage height, 3.75 ft Feb. 12, 1971 (backwater from ice); no flow for part of June 5, 1939.

REMARKS.--Records good except those for winter periods, which are poor. A few small diversions for irrigation of hay meadows above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	19	22	18	22	24	24	28	29	18	11	7.1
2	13	11	21	17	20	24	22	28	26	17	11	6.1
3	13	16	21	17	19	24	22	27	22	19	12	5.3
4	13	24	19	16	18	24	21	27	21	19	15	12
5	13	29	19	16	16	25	22	26	22	21	14	21
6	12	32	21	16	16	24	21	26	20	18	15	13
7	12	30	21	17	17	25	22	26	20	16	13	9.7
8	15	29	22	18	17	24	22	26	20	15	10	12
9	15	28	22	19	18	23	22	26	19	15	9.7	15
10	20	24	20	19	20	24	22	27	19	14	9.7	15
11	22	23	18	18	25	24	21	27	18	14	10	14
12	22	22	17	16	30	24	21	26	18	13	7.9	13
13	21	22	18	16	34	25	21	24	17	14	7.6	13
14	20	21	18	17	37	25	21	23	20	14	9.1	15
15	20	21	19	19	35	24	21	22	18	14	8.8	15
16	20	20	20	21	33	23	21	20	17	14	8.8	15
17	20	21	20	21	30	22	21	20	18	15	8.8	15
18	20	21	19	20	27	18	21	21	18	13	9.1	17
19	20	22	18	22	25	21	30	21	16	10	8.8	18
20	21	22	17	25	23	26	105	21	18	9.0	9.4	17
21	20	21	16	27	22	29	60	20	18	9.0	9.7	18
22	20	20	17	26	22	29	40	20	19	10	9.4	19
23	21	18	16	27	25	27	28	21	20	10	8.8	18
24	21	19	16	27	27	26	27	22	18	9.0	8.5	17
25	21	20	16	27	29	26	26	23	20	9.0	8.5	16
26	21	21	16	28	28	27	35	22	19	9.0	8.8	16
27	22	21	17	28	27	32	30	22	18	10	7.1	16
28	22	22	17	30	25	32	29	22	18	11	6.8	17
29	21	22	17	31	------	29	28	21	19	11	6.1	17
30	21	22	17	28	------	27	28	37	20	12	9.3	17
31	20	------	18	25	------	25	------	40	------	11	7.9	------
TOTAL	575	663	575	672	687	782	854	762	585	413.0	299.6	439.2
MEAN	18.5	22.1	18.5	21.7	24.5	25.2	28.5	24.6	19.5	13.3	9.66	14.6
MAX	22	32	22	31	37	32	105	40	29	21	15	21
MIN	12	11	16	16	16	18	21	20	16	9.0	6.1	5.3
AC-FT	1,140	1,320	1,140	1,330	1,360	1,550	1,690	1,510	1,160	819	594	871

CAL YR 1970 TOTAL 7,000.7 MEAN 19.2 MAX 46 MIN 4.2 AC-FT 13,890
WTR YR 1971 TOTAL 7,306.8 MEAN 20.0 MAX 105 MIN 5.3 AC-FT 14,490

PEAK DISCHARGE (BASE, 50 CFS).--Apr. 20 (0500) 121 cfs (3.46 ft).

06449000 Lake Creek below refuge, near Tuthill, S. Dak.

LOCATION.--Lat 43°08'46", long 101°30'38", in SW¼ sec.30, T.37 N., R.35 W., Bennett County, on left bank 400 ft downstream from east boundary of LaCreek game refuge, 1.2 miles southwest of Tuthill and 5.5 miles upstream from mouth.

DRAINAGE AREA.--120 sq mi, approximately, of which about 60 sq mi probably contributes directly to surface runoff.

PERIOD OF RECORD.--February 1938 to September 1940, July 1962 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 3,055 ft (by barometer). Prior to Aug. 4, 1938, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--11 years, 15.0 cfs (10,870 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 130 cfs May 5 (gage height, 4.57 ft); no flow Aug. 4.
Period of record: Maximum discharge, 178 cfs June 18, 1967 (gage height, 5.17 ft); no flow for many days in most years.

REMARKS.--Records fair above 10 cfs and poor below. Flow regulated by series of lakes above gage.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.3	1.7	18	5.0	2.5	3.0	28	80	41	1.9	.42	.10
2	5.6	1.9	19	5.0	2.0	2.0	33	81	37	1.2	.11	.10
3	1.6	2.6	15	5.0	1.0	2.0	33	82	34	2.4	.01	.10
4	1.7	3.0	20	4.8	.50	2.5	33	102	42	2.2	0	1.4
5	1.9	3.0	17	4.6	.40	3.0	32	128	47	2.8	.27	2.3
6	4.6	2.3	16	4.4	.30	3.5	33	126	45	1.5	.76	.19
7	2.8	1.9	14	4.6	.30	3.0	33	118	47	4.5	.87	.70
8	3.6	3.1	13	5.0	.60	4.0	33	103	46	1.9	.70	1.0
9	2.7	3.1	8.3	7.0	.50	6.0	32	103	46	2.0	1.1	.92
10	1.5	5.9	5.7	7.5	.60	10	32	101	47	1.7	.92	1.5
11	2.5	4.5	4.3	8.0	1.0	20	33	99	47	.58	.52	1.4
12	2.3	4.6	4.0	8.5	2.0	30	32	97	47	2.8	.92	2.0
13	2.7	5.9	4.0	8.0	4.0	25	32	94	47	2.6	1.4	2.0
14	2.2	5.7	4.5	7.5	6.0	20	31	90	48	5.7	1.2	2.3
15	1.6	5.6	5.0	7.5	7.0	18	30	86	47	7.6	1.3	2.0
16	1.4	5.6	5.0	7.5	8.0	20	30	82	46	8.5	1.8	2.0
17	1.3	9.5	5.0	8.0	8.0	24	28	78	42	7.7	2.8	2.0
18	1.1	8.5	4.8	8.5	7.0	26	28	73	34	6.7	3.4	2.1
19	.98	12	4.6	9.0	6.0	30	30	68	29	2.5	4.0	2.5
20	.76	11	4.4	6.0	6.5	35	33	61	19	1.5	4.3	2.6
21	1.1	19	4.4	4.0	5.5	35	33	54	19	1.7	4.5	3.1
22	1.4	12	4.4	3.5	4.5	32	35	47	15	1.1	4.7	2.8
23	1.1	4.4	4.4	3.0	4.0	30	36	42	11	1.5	5.3	2.9
24	.98	4.7	4.6	3.0	3.5	35	38	28	9.5	1.1	1.9	2.4
25	1.1	8.3	4.6	3.0	4.0	35	40	7.6	6.1	1.8	.70	2.4
26	1.7	7.4	4.6	2.8	4.5	29	43	6.2	6.5	.80	.44	2.0
27	1.6	8.5	4.6	2.6	4.0	30	45	7.8	6.6	1.9	.56	1.9
28	1.9	9.6	4.8	2.8	3.5	30	47	9.8	3.3	.21	.56	1.9
29	2.2	12	4.8	3.4	------	31	48	23	4.0	1.2	.19	2.3
30	2.7	18	4.8	3.2	------	31	58	43	3.0	.17	.28	3.5
31	2.6	------	4.8	3.0	------	33	------	47	------	.56	.13	------
TOTAL	66.52	205.3	242.4	165.7	97.70	638.0	1,052	2,167.4	922.0	80.32	46.06	54.41
MEAN	2.15	6.84	7.82	5.35	3.49	20.6	35.1	69.9	30.7	2.59	1.49	1.81
MAX	5.6	19	20	9.0	8.0	35	58	128	48	8.5	5.3	3.5
MIN	.76	1.7	4.0	2.6	.30	2.0	28	6.2	3.0	.17	0	.10
AC-FT	132	407	481	329	194	1,270	2,090	4,300	1,830	159	91	108

CAL YR 1970 TOTAL 6,159.88 MEAN 16.9 MAX 79 MIN 0 AC-FT 12,220
WTR YR 1971 TOTAL 5,737.81 MEAN 15.7 MAX 128 MIN 0 AC-FT 11,380

06449100 Little White River near Vetal, S. Dak.

LOCATION.--Lat 43°06'03", long 101°13'49", in NE¼NW¼ sec.17, T.36 N., R.33 W., Bennett County, on left bank 120 ft downstream from highway bridge, 0.3 mile downstream from small right-bank tributary, 10.8 miles southeast of Vetal, and 15.3 miles upstream from Spring Creek.

DRAINAGE AREA.--590 sq mi, approximately, of which about 415 sq mi probably contributes directly to surface runoff.

PERIOD OF RECORD.--August 1959 to current year. Prior to October 1965, published as South Fork White River near Vetal.

GAGE.--Water-stage recorder. Datum of gage is 2,780.69 ft above mean sea level. Prior to Nov. 14, 1959, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--12 years, 55.8 cfs (40,430 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 211 cfs Apr. 4 (gage height, 4.23 ft); maximum gage height, 4.25 ft May 6; minimum daily discharge, 17 cfs Sept. 3.
Period of record: Maximum discharge, 1,330 cfs Mar. 13, 1966 (gage height, 7.75 ft); minimum daily, 10 cfs Sept. 1-3, 10, 1961, Dec. 18, 1964.

REMARKS.--Records good except those for winter periods, which are poor. Some small diversions for irrigation and some storage in several small lakes above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	40	49	32	23	30	140	153	98	37	20	20
2	26	38	50	30	23	30	146	159	97	36	20	18
3	27	35	50	29	22	30	160	170	95	31	21	17
4	28	29	45	28	21	30	201	178	102	29	22	22
5	25	37	47	27	20	30	181	174	117	31	22	29
6	24	49	47	26	19	30	97	198	114	27	22	28
7	29	47	53	26	18	30	68	202	134	26	21	24
8	31	45	50	27	18	32	62	195	112	27	21	22
9	30	43	44	28	19	34	56	180	106	28	22	22
10	31	41	35	28	20	38	53	178	104	26	21	21
11	28	39	30	28	22	42	51	174	104	26	22	20
12	26	39	29	27	25	50	51	170	102	25	22	20
13	25	38	29	26	35	56	49	164	105	24	21	19
14	25	37	30	26	45	60	49	159	108	26	21	20
15	25	38	30	26	55	63	49	155	104	26	20	20
16	24	38	30	27	40	57	48	152	97	31	19	21
17	24	37	30	27	32	52	46	150	95	35	19	22
18	24	36	29	28	32	48	44	140	96	36	20	23
19	23	37	28	29	30	46	58	131	87	35	20	25
20	23	36	28	28	28	48	163	125	77	31	20	26
21	22	37	28	28	27	50	143	119	68	28	22	26
22	20	35	28	27	27	50	107	111	64	26	22	26
23	21	33	28	27	28	45	88	103	59	26	22	26
24	21	37	28	28	30	45	85	95	52	26	21	24
25	22	44	28	27	32	55	105	76	50	26	22	22
26	23	42	29	25	31	75	126	58	46	27	21	20
27	22	39	30	26	30	106	146	51	44	26	20	20
28	23	39	31	27	30	92	152	46	44	24	20	20
29	25	41	32	27	------	80	160	50	42	26	20	20
30	39	42	32	26	------	76	157	104	39	23	20	20
31	40	------	32	24	------	91	------	104	------	22	20	------
TOTAL	802	1,168	1,089	845	782	1,601	3,041	4,224	2,562	873	646	663
MEAN	25.9	38.9	35.1	27.3	27.9	51.6	101	136	85.4	28.2	20.8	22.1
MAX	40	49	53	32	55	106	201	202	134	37	22	29
MIN	20	29	28	24	18	30	44	46	39	22	19	17
AC-FT	1,590	2,320	2,160	1,680	1,550	3,180	6,030	8,380	5,080	1,730	1,280	1,320

CAL YR 1970 TOTAL 19,176 MEAN 52.5 MAX 248 MIN 15 AC-FT 38,040
WTR YR 1971 TOTAL 18,296 MEAN 50.1 MAX 202 MIN 17 AC-FT 36,290

PEAK DISCHARGE (BASE, 150 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
4- 4	0630	4.23	211	5- 6	1930	4.25	210
4-20	0500	4.15	192	6- 7	1230	3.91	157

06449250 Spring Creek near St. Francis, S. Dak.

LOCATION.--Lat 43°04'21", long 101°01'49", in NW¼NE¼ sec.25, T.36 N., R.32 W., Todd County, on left bank 40 ft downstream from highway culvert, 4.1 miles upstream from mouth and 8.0 miles southwest of St. Francis.

DRAINAGE AREA.--57 sq mi, approximately, of which about 10 sq mi probably contributes directly to surface runoff.

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

GAGE.--Water-stage recorder. Datum of gage is 2,815.50 ft above mean sea level.

AVERAGE DISCHARGE.--12 years, 3.77 cfs (2,730 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 56 cfs Apr. 21 (gage height, 7.34 ft); no flow for many days. Period of record: Maximum discharge, 65 cfs June 21, 1962 (gage height, 7.41 ft); maximum gage height, 7.43 ft Mar. 19, 1969; no flow for many days in each year.

REMARKS.--Records good. Small diversions above station for irrigation of hay meadows.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Mar. 4-23, June 11 to July 10)

3.94	0	4.5	5.0
4.0	.26	5.0	13
4.1	.93	6.0	31
4.3	2.5	7.5	59

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						0	15	34	16	.73		
2						0	16	30	16	.46		
3						0	16	28	18	.21		
4						.03	15	30	18	.21		
5						.11	15	29	16	.59		
6						.07	15	28	14	.59		
7						0	14	26	13	.46		
8						0	14	25	11	.16		
9						0	13	22	10	.11		
10						.16	13	21	9.5	.03		
11						.53	12	20	8.8	0		
12						1.0	12	18	7.8	0		
13						2.3	12	18	7.3	0		
14						3.2	13	17	7.0	0		
15						6.1	13	16	6.2	0		
16						10	13	16	5.6	0		
17						12	13	18	5.0	0		
18						9.0	12	16	4.4	0		
19						8.6	14	15	3.9	0		
20						10	41	15	3.5	0		
21						12	51	15	3.3	0		
22						11	44	15	2.9	0		
23						9.1	31	17	2.5	0		
24						10	25	16	2.2	0		
25						12	25	14	1.8	0		
26						16	31	14	1.7	0		
27						18	39	13	1.5	0		
28						21	46	13	1.3	0		
29					------	22	49	13	1.1	0		
30					------	21	41	15	.93	0		
31		------			------	18	------	22	------	0		------
TOTAL	0	0	0	0	0	233.20	683	609	220.23	3.55	0	0
MEAN	0	0	0	0	0	7.52	22.8	19.6	7.34	.11	0	0
MAX	0	0	0	0	0	22	51	34	18	.73	0	0
MIN	0	0	0	0	0	0	12	13	.93	0	0	0
AC-FT	0	0	0	0	0	463	1,350	1,210	437	7.0	0	0

CAL YR 1970 TOTAL 1,420.82 MEAN 3.89 MAX 49 MIN 0 AC-FT 2,820
WTR YR 1971 TOTAL 1,748.98 MEAN 4.79 MAX 51 MIN 0 AC-FT 3,470

PEAK DISCHARGE (BASE, 25 CFS)

DATE	TIME	G.H.	DISCHARGE
4-21	1330	7.34	56
4-29	1400	7.10	51

06449500 Little White River near Rosebud, S. Dak.

LOCATION.--Lat 43°19'32", long 100°53'00", in SW¼NW¼ sec.28, T.39 N., R.30 W., Todd County, on left bank at downstream side of bridge on U.S. Highway 18, 0.3 mile downstream from Scabby Creek (revised), 0.7 mile downstream from Soldier Creek, and 6.4 miles north of Rosebud.

DRAINAGE AREA.--1,020 sq mi, approximately, of which about 760 sq mi probably contributes directly to surface runoff.

PERIOD OF RECORD.--May 1943 to current year. Prior to October 1965, published as South Fork White River near Rosebud.

GAGE.--Water-stage recorder. Datum of gage is 2,294.99 ft above mean sea level. Prior to May 11, 1948, non-recording gage at same site and datum.

AVERAGE DISCHARGE.--28 years, 113 cfs (81,870 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 3,320 cfs Apr. 20 (gage height, 11.52 ft), from rating curve extended above 1,300 cfs; minimum daily, 47 cfs Aug. 9-11, 16, 17.
Period of record: Maximum discharge, 4,640 cfs June 11, 1967 (gage height, 14.09 ft), from rating curve extended above 1,300 cfs; minimum daily, 10 cfs Jan. 4, 1949, Feb. 20, 1955.

REMARKS.--Records good except those for winter periods, which are poor. Some small diversions for irrigation and some storage in several small lakes above station.

REVISIONS(WATER YEARS).--WSP 1056: 1943, drainage area. WSP 1309: 1946(M).

Rating tables (gage height, in feet, and discharge, in cubic feet per second)
(Stage-discharge relation affected by ice Nov. 23, 24, Dec. 11 to Mar. 13;
shifting-control method used Mar. 30, 31)

Oct. 1 to May 28				May 29 to Sept. 30	
3.3	54	4.6	386	3.4	45
3.5	84	5.0	532	3.6	74
3.8	144	6.0	902	3.8	109
4.2	252	7.0	1,290	4.1	173
				4.5	290

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65	75	85	75	65	90	173	269	162	84	59	62
2	67	78	88	70	65	95	216	252	152	81	56	57
3	63	82	87	65	70	100	216	253	152	84	52	53
4	68	76	88	65	65	100	252	278	155	86	54	56
5	68	70	84	60	65	100	281	275	166	83	52	69
6	67	78	81	60	60	100	233	274	166	79	51	67
7	73	88	91	65	55	95	148	287	162	76	50	66
8	71	90	97	65	55	95	132	280	171	64	48	64
9	67	86	96	70	60	100	119	277	155	68	47	61
10	66	84	82	70	70	100	111	271	150	71	47	62
11	69	81	70	65	85	120	109	263	148	66	47	63
12	70	76	65	60	85	140	102	231	140	63	48	63
13	69	81	65	60	90	160	99	220	144	68	49	58
14	63	77	65	60	100	135	94	212	140	63	49	62
15	63	77	65	60	120	120	95	208	144	60	49	58
16	63	81	70	65	140	122	94	201	140	60	47	60
17	66	82	70	65	135	122	95	214	135	65	47	58
18	64	83	65	65	135	118	90	204	135	67	49	61
19	64	87	60	65	120	100	456	191	127	68	49	64
20	66	85	60	70	95	108	919	177	121	64	49	62
21	65	84	60	70	95	156	309	174	111	63	49	64
22	67	76	60	75	90	186	292	171	107	61	51	64
23	67	75	65	75	90	184	223	183	105	60	50	63
24	67	80	65	75	90	181	192	167	104	58	48	66
25	69	99	65	75	90	168	196	151	100	57	50	69
26	63	90	65	75	95	178	228	136	95	58	51	69
27	61	88	70	70	95	219	284	121	93	58	50	67
28	66	98	70	75	90	211	300	117	86	55	51	62
29	69	85	70	75	------	186	306	117	84	55	58	63
30	72	77	75	80	------	171	297	144	88	58	99	66
31	76	------	75	70	------	166	------	176	------	60	61	------
TOTAL	2,074	2,469	2,274	2,115	2,470	4,226	6,661	6,494	3,938	2,063	1,617	1,879
MEAN	66.9	82.3	73.4	68.2	88.2	136	222	209	131	66.5	52.2	62.6
MAX	76	99	97	80	140	219	919	287	171	86	99	69
MIN	61	70	60	60	55	90	90	117	84	55	47	53
AC-FT	4,110	4,900	4,510	4,200	4,900	8,380	13,210	12,880	7,810	4,090	3,210	3,730

CAL YR 1970 TOTAL 37,575 MEAN 103 MAX 353 MIN 39 AC-FT 74,530
WTR YR 1971 TOTAL 38,280 MEAN 105 MAX 919 MIN 47 AC-FT 75,930

PEAK DISCHARGE (BASE, 330 CFS).--Apr. 20 (0015) 3,320 cfs (11.52 ft).

06450500 Little White River below White River, S. Dak.

LOCATION.--Lat 43°36'04", long 100°44'52", in SW¼NW¼ sec.23, T.42 N., R.29 W., Mellette County, on left bank at downstream side of bridge on U.S. Highway 83, 1.3 miles downstream from Pine Creek and 2.0 miles north of town of White River.

DRAINAGE AREA.--1,570 sq mi, approximately, of which about 1,310 sq mi probably contributes directly to surface runoff.

PERIOD OF RECORD.--October 1949 to current year. Prior to October 1965, published as South Fork White River below White River.

GAGE.--Water-stage recorder. Datum of gage is 1,912.78 ft above mean sea level. Prior to June 8, 1968, at site 0.8 mile downstream at datum 4.50 ft lower.

AVERAGE DISCHARGE.--22 years, 134 cfs (97,080 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 11,200 cfs Apr. 20 (gage height, 13.75 ft); minimum daily, 13 cfs Dec. 12.
Period of record: Maximum discharge, 13,700 cfs June 12, 1967 (gage height, 10.02 ft, site and datum then in use); maximum gage height, 11.21 ft June 7, 1968, site and datum then in use; maximum gage height at present site and datum, 15.46 ft June 7, 1968, from floodmarks; no flow for parts of several days in 1952, 1954, 1956; minimum daily discharge, 7 cfs July 31, Aug. 31, Sept. 1, 1952.

REMARKS.--Records fair except those for winter periods, which are poor. Diurnal fluctuations caused by small powerplant 2.2 miles upstream. Several small diversions for irrigation and some storage in several small lakes above station.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	81	112	80	70	90	160	326	254	73	61	61
2	38	92	90	75	70	85	190	281	208	68	67	41
3	34	87	88	70	75	85	206	276	222	71	60	43
4	42	89	88	70	70	95	210	320	235	83	52	38
5	44	79	81	65	70	100	249	336	235	85	48	68
6	49	68	63	60	65	105	236	305	209	88	44	68
7	67	91	91	60	60	105	178	305	195	79	47	84
8	57	102	88	65	50	100	136	291	215	76	47	45
9	55	96	89	65	40	100	127	286	235	74	43	59
10	55	89	65	70	50	100	122	295	239	58	43	47
11	57	81	27	70	70	100	119	291	223	70	45	63
12	62	89	13	65	90	150	116	244	198	58	38	56
13	59	76	60	60	85	250	116	249	167	59	33	56
14	64	76	62	58	90	300	116	239	113	64	39	45
15	69	77	62	58	150	250	110	231	206	60	37	53
16	64	83	65	60	200	170	116	230	456	55	40	52
17	57	87	72	62	215	136	122	239	143	54	34	50
18	66	86	72	62	200	127	122	234	133	53	30	51
19	74	91	65	64	150	116	513	221	122	64	35	50
20	57	91	60	64	125	94	5,570	203	116	64	47	55
21	55	77	58	65	110	139	1,320	189	116	60	43	54
22	62	64	58	70	100	163	622	197	116	58	50	55
23	57	69	60	75	90	167	432	217	106	58	48	54
24	53	49	65	80	85	163	331	208	99	57	36	57
25	57	81	68	80	85	156	295	184	90	67	44	48
26	62	89	68	80	90	167	305	179	82	61	44	45
27	64	89	68	80	100	198	498	170	71	60	40	52
28	64	88	68	75	100	232	868	155	75	58	37	45
29	71	102	68	75	------	214	540	163	80	58	44	45
30	76	109	75	80	------	190	391	261	80	65	84	48
31	76	------	80	75	------	172	------	276	------	65	82	------
TOTAL	1,811	2,529	2,149	2,138	2,755	4,619	14,436	7,601	5,039	2,023	1,442	1,588
MEAN	58.4	84.3	69.3	69.0	98.4	149	481	245	168	65.3	46.5	52.9
MAX	76	109	112	80	215	300	5,570	336	456	88	84	84
MIN	34	49	13	58	40	85	110	155	71	53	30	38
AC-FT	3,590	5,010	4,260	4,240	5,460	9,160	28,630	15,080	9,990	4,010	2,860	3,150

CAL YR 1970 TOTAL 36,428 MEAN 99.8 MAX 468 MIN 13 AC-FT 72,250
WTR YR 1971 TOTAL 48,129 MEAN 132 MAX 5,570 MIN 13 AC-FT 95,460

06452000 White River near Oacoma, S. Dak.

LOCATION.--Lat 43°44'54", long 99°33'22", in SE¼SW¼ sec.3, T.103 N., R.73 W., Lyman County, near center of span at downstream side of bridge on State Highway 47, 1.5 miles downstream from Wagner Draw, 1.8 miles upstream from high-water line of Lake Francis Case, and 8.8 miles southwest of Oacoma.

DRAINAGE AREA.--10,200 sq mi, approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 1,377.29 ft above mean sea level. See WSP 1709 or 1729 for history of changes prior to Feb. 27, 1960.

AVERAGE DISCHARGE.--43 years, 545 cfs (394,900 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 14,300 cfs Apr. 21 (gage height, 9.35 ft); maximum gage height observed, 17.05 ft Mar. 14 (ice jam); no flow Aug. 14-28.
Period of record: Maximum discharge, 51,900 cfs Mar. 30, 1952 (gage height, 15.40 ft, site and datum then in use); maximum gage height, 17.6 ft Mar. 31, 1950 (site and datum then in use), from floodmarks (ice jam); no flow Aug. 14-28, 1971.

REMARKS.--Records good except those for winter periods, which are poor. Some diversions for irrigation above station.

REVISIONS(WATER YEARS).--WSP 786: Drainage area. WSP 1309: 1929-30(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	69	90	25	20	700	1,310	3,080	5,260	144	8.6	28
2	25	69	90	24	22	700	1,500	2,950	2,600	127	8.0	26
3	23	82	90	22	20	700	1,330	1,960	2,840	109	10	22
4	21	87	100	20	20	750	956	1,350	2,110	97	6.0	35
5	20	92	200	18	18	750	865	956	1,500	97	3.8	35
6	20	92	150	18	16	700	794	771	1,370	90	2.5	.82
7	73	104	100	20	14	700	857	1,570	1,420	78	1.8	162
8	54	104	80	22	14	700	873	1,600	1,010	80	1.8	1,370
9	35	104	60	22	12	750	779	1,220	857	190	1.8	1,220
10	30	104	45	20	16	800	628	841	833	574	1.8	841
11	30	130	40	20	20	900	540	690	787	117	.70	565
12	50	130	36	18	22	1,500	483	511	979	97	.45	404
13	300	200	32	18	20	3,000	434	500	697	82	.33	291
14	304	250	30	18	25	4,000	419	456	571	62	0	227
15	245	200	28	16	50	3,500	404	625	483	90	0	259
16	201	170	28	16	300	3,000	384	810	466	124	0	217
17	167	150	30	18	1,000	2,000	366	642	414	204	0	182
18	150	140	28	18	4,500	1,500	347	511	717	164	0	185
19	138	136	26	20	3,000	1,300	343	429	445	133	0	161
20	122	130	24	20	1,000	1,200	561	404	375	112	0	144
21	99	130	24	20	800	1,000	10,900	366	317	97	0	147
22	80	110	24	22	700	900	7,690	334	259	71	0	144
23	82	92	24	24	700	700	4,530	361	255	71	0	130
24	69	92	26	26	800	600	2,510	404	287	58	0	122
25	69	80	28	28	900	500	1,690	404	255	51	0	125
26	69	75	28	26	850	500	1,210	3,890	220	45	0	117
27	67	75	26	26	800	550	1,350	2,200	191	33	0	120
28	69	80	24	26	750	600	4,360	1,680	210	17	0	112
29	67	85	24	28	------	650	6,010	1,080	207	12	4.1	92
30	67	85	25	30	------	650	3,970	849	176	16	69	87
31	69	------	25	25	------	900	------	2,360	------	9.4	32	------
TOTAL	2,847	3,447	1,585	674	16,409	36,700	58,393	35,804	28,111	3,251.4	152.68	7,652
MEAN	91.8	115	51.1	21.7	586	1,184	1,946	1,155	937	105	4.93	255
MAX	304	250	200	30	4,500	4,000	10,900	3,890	5,260	574	69	1,370
MIN	20	69	24	16	12	500	343	334	176	9.4	0	22
AC-FT	5,650	6,840	3,140	1,340	32,550	72,790	115,800	71,020	55,760	6,450	303	15,180

CAL YR 1970 TOTAL 137,451.2 MEAN 377 MAX 8,690 MIN 1.2 AC-FT 272,600
WTR YR 1971 TOTAL 195,026.08 MEAN 534 MAX 10,900 MIN 0 AC-FT 386,800

PEAK DISCHARGE (BASE, 5,500 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
4-21	1830	9.35	14,300	5-26	0300	7.13	6,490
4-29	0100	7.66	8,110	6- 1	0900	7.27	6,910

06452500 Lake Francis Case at Pickstown, S. Dak.

LOCATION.--Lat 43°04'05", long 98°33'15", in SE¼ sec.5, T.95 N., R.65 W., Charles Mix County, in tower 6 of outlet works at Fort Randall Dam on Missouri River at Pickstown, 1.0 mile upstream from Randall Creek, and at mile 880.0.

DRAINAGE AREA.--263,500 sq mi, approximately.

PERIOD OF RECORD.--December 1952 to current year. Prior to October 1964, published as Fort Randall Reservoir at Pickstown.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level. Prior to Mar. 25, 1953, elevations determined from temporary nonrecording gages.

EXTREMES.--Current year: Maximum contents, 4,455,000 acre-ft June 15 (elevation, 1,361.8 ft, affected by wind); minimum, 1,663,000 acre-ft Nov. 30 (elevation, 1,320.4 ft, affected by wind).
Period of record: Maximum contents, 5,087,000 acre-ft June 20, 1962 (elevation, 1,364.2 ft, affected by wind); minimum since initial filling, 1,450,000 acre-ft Oct. 23, 1956 (elevation, 1,311.5 ft).

REMARKS.--Reservoir is formed by earthfill dam; storage began in December 1952; initial closure made July 1952. Maximum capacity, 5,816,000 acre-ft below elevation 1,375.0 ft (top of spillway gates). Normal maximum, 4,834,000 acre-ft below elevation 1,365.0 ft. Inactive storage, 1,336,000 acre-ft below elevation 1,310.0 ft. No dead storage; elevation of invert of lowest outlet is 1,227.0 ft. Figures given herein represent elevations at outlet works and total contents adjusted for wind effect.
The spillway consists of 21 Taintor gates, each 40 ft wide by 29 ft high; spillway capacity, 490,000 cfs at pool elevation 1,375 ft. Crest of spillway is at elevation 1,346 ft. Normal releases are through 12 tunnels 22 ft in diameter. Installation of power units in 8 of these tunnel was completed in January 1956; maximum release through power tunnels is 46,000 cfs; maximum release through 4 other tunnels is 130,000 cfs at pool elevation 1,375 ft. Water is used for flood control, navigation, power, and incidental uses.

COOPERATION.--Elevations and contents furnished by Corps of Engineers.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	1,347.7	3,252,000	-
Oct. 31	1,335.3	2,408,000	-844,000
Nov. 30	1,320.4	1,663,000	-745,000
Dec. 31	1,334.7	2,364,000	+701,000
CAL YR 1970	-	-	+543,000
Jan. 31	1,343.4	2.938,000	+574,000
Feb. 28	1,350.5	3,495,000	+557,000
Mar. 31	1,354.1	3,776,000	+281,000
Apr. 30	1,357.6	4,087,000	+311,000
May 31	1,358.6	4,160,000	+73,000
June 30	1,361.2	4,396,000	+236,000
July 31	1,360.9	4,350,000	-46,000
Aug. 31	1,360.9	4,355,000	+5,000
Sept.30	1,356.8	3,987,000	-368,000
WTR YR 1971	-	-	+735,000

06453000 Missouri River at Fort Randall Dam, S. Dak.

LOCATION.--Lat 43°03'54", long 98°33'11", in NW¼NE¼ sec.8, T.95 N., R.65 (corrected) W., Charles Mix County, in powerhouse of Fort Randall Dam on Missouri River at Pickstown, 0.8 mile upstream from Randall Creek, and at mile 879.8.

DRAINAGE AREA.--263,500 sq mi, approximately.

PERIOD OF RECORD.--May 1947 to current year. Prior to October 1969 published as "below Fort Randall Dam".

GAGE.--Totalizing flowmeters on each turbine in Fort Randall powerhouse. Prior to Nov. 10, 1965, water-stage recorder at site 7.0 miles downstream at datum 1,230.00 ft above mean sea level and Nov. 10, 1965, to June 30, 1969, at datum 5.0 ft lower (Corps of Engineers bench mark).

AVERAGE DISCHARGE.--24 years, 23,860 cfs (17,290,000 acre-ft per year).

EXTREMES.--Current year: Maximum daily discharge during year, 47,500 cfs Aug. 20; minimum daily, 2,900 cfs Feb. 21.
Period of record: Maximum discharge, 447,000 cfs Apr. 12, 1952; maximum gage height, 20.82 ft Apr. 12, 1952 (site and datum then in use); minimum daily discharge, 100 cfs Mar. 29, 1962.
Flood in April 1943 reached a stage of about 16.5 ft. Maximum stage known, in April 1881, was about 5 ft higher than that of April 1943.

REMARKS.--Records good. Flow regulated by Lake Francis Case. (See station 06452500). Many diversions for irrigation above station.

COOPERATION.--Daily discharge determined from flow through turbines furnished by Corps of Engineers. Two discharge measurements made by Geological Survey.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39,000	39,500	28,600	11,100	15,800	16,200	27,500	35,400	44,900	45,100	47,000	47,100
2	39,000	39,500	25,100	13,900	16,100	13,200	27,300	28,800	45,000	45,300	47,000	47,100
3	39,000	39,000	25,800	11,100	14,700	13,100	29,600	35,200	45,200	45,400	47,000	47,100
4	39,000	38,900	24,100	14,200	14,500	13,000	33,000	37,100	45,800	45,400	47,000	46,900
5	39,000	39,100	22,700	15,400	14,300	14,100	34,700	32,800	46,100	45,400	47,000	47,200
6	39,500	38,900	21,500	16,100	14,800	13,900	33,400	32,600	46,100	45,300	46,900	47,100
7	39,500	38,900	19,800	16,000	14,700	14,100	33,400	32,200	45,900	45,300	46,900	47,100
8	39,500	38,800	15,300	15,800	14,700	14,200	32,000	40,300	45,900	45,600	47,000	47,000
9	41,000	38,700	15,500	16,000	14,800	13,000	31,300	42,700	45,900	45,900	47,000	46,900
10	41,000	38,600	15,000	16,200	14,800	14,900	32,100	43,300	45,900	46,000	47,100	46,700
11	40,500	38,700	14,800	16,100	15,100	15,600	31,800	43,900	45,800	45,300	47,200	46,800
12	40,500	38,500	15,600	14,700	14,400	15,300	32,900	43,700	45,900	44,800	47,000	46,800
13	40,500	38,600	15,600	14,900	15,100	14,900	33,600	43,500	45,900	44,800	46,800	46,600
14	40,500	38,600	15,300	14,900	15,100	14,700	33,400	43,400	45,600	45,200	47,400	46,700
15	40,500	38,500	16,400	14,700	15,100	9,800	32,900	43,600	46,000	45,500	47,300	46,700
16	40,500	38,300	16,500	14,500	15,100	9,400	32,700	43,600	45,400	45,400	47,200	46,700
17	40,500	38,200	17,000	14,900	13,900	14,500	31,000	43,700	45,300	45,500	47,100	46,700
18	40,500	38,100	17,500	14,600	13,500	20,500	30,400	43,600	45,200	46,200	47,300	47,200
19	40,500	38,100	18,000	14,700	9,300	28,300	31,100	43,600	45,200	46,100	47,400	47,100
20	40,500	38,100	17,900	15,000	3,800	29,000	31,500	44,200	44,800	46,100	47,500	47,100
21	40,300	38,000	17,700	14,900	2,900	29,100	27,900	44,600	44,400	45,800	47,300	46,500
22	40,000	38,000	18,200	14,900	9,000	28,000	28,200	44,700	44,900	46,200	47,000	47,000
23	40,000	37,700	18,500	15,100	11,700	32,300	30,700	44,700	45,000	46,400	47,300	47,000
24	40,000	37,800	17,500	14,800	14,500	33,400	33,600	44,500	44,800	46,600	47,400	46,900
25	40,000	37,800	14,900	14,800	10,200	31,600	26,800	44,600	44,900	46,500	47,400	47,000
26	39,500	37,500	15,900	13,900	14,600	31,300	33,700	44,600	44,700	46,400	47,300	47,000
27	39,500	35,200	15,600	13,800	15,600	29,900	29,500	44,700	44,600	47,000	47,400	46,900
28	39,500	36,300	15,400	14,300	15,200	29,400	32,300	44,900	44,900	47,100	47,100	46,900
29	39,500	35,000	14,300	14,000	------	27,100	32,800	44,900	44,700	47,000	47,000	46,900
30	39,500	31,700	14,300	14,100	------	26,300	33,100	44,800	44,900	47,000	47,100	46,900
31	39,500	------	14,100	14,500	------	26,500	------	44,900	------	47,000	47,100	------
TOTAL	1,237.8M	1,138.6M	554,400	453,900	373,300	636,600	944,200	1,289.1M	1,359.6M	1,422.6M	1,461.5M	1,407.6M
MEAN	39,930	37,950	17,880	14,640	13,330	20,540	31,470	41,580	45,320	45,890	47,150	46,920
MAX	41,000	39,500	28,600	16,200	16,100	33,400	34,700	44,900	46,100	47,100	47,500	47,200
MIN	39,000	31,700	14,100	11,100	2,900	9,400	26,800	28,800	44,400	44,800	46,800	46,500
AC-FT	2,455M	2,258M	1,100M	900,300	740,400	1,263M	1,873M	2,557M	2,697M	2,822M	2,899M	2,792M

CAL YR 1970 TOTAL 7,861,600 MEAN 21,540 MAX 43,800 MIN 4,900 AC-FT 15,590,000
WTR YR 1971 TOTAL 12,279,200 MEAN 33,640 MAX 47,500 MIN 2,900 AC-FT 24,360,000

06464500 Keya Paha River at Wewela, S. Dak.

LOCATION.--Lat 43°01'42", long 99°46'45", in SE¼ sec.24, T.95 N., R.76 W., Tripp County, on left bank 13 ft downstream from bridge on U.S. Highway 183, 1.0 mile north of Wewela, 4.5 miles upstream from Holt Creek, and 11.5 miles downstream from Lost Creek.

DRAINAGE AREA.--1,070 sq mi, approximately.

PERIOD OF RECORD.--November 1937 to September 1940, October 1947 to current year. Monthly discharge only for October 1947, published in WSP 1309.

GAGE.--Water-stage recorder. Datum of gage is 2,049.78 ft above mean sea level. Prior to June 21, 1957, nonrecording gage at site 13 ft upstream at same datum.

AVERAGE DISCHARGE.--26 years (1938-40, 1947-71), 71.9 cfs (52,090 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 600 cfs Mar. 14; maximum gage height, 7.76 ft Mar. 14 (backwater from ice); minimum daily discharge, 2.5 cfs Feb. 6-8.
Period of record: Maximum discharge, 5,430 cfs Mar. 31, 1952 (gage height, 13.08 ft); maximum gage height, 13.5 ft Mar. 25, 1950 (from floodmark, backwater from ice); no flow Jan. 10 to Feb. 15, 1949.

REMARKS.--Records good except those for winter periods, which are poor.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)
(Stage-discharge relation affected by ice Nov. 22 to Mar 29)

Oct. 1 to Mar. 29		Mar. 30 to Sept. 30			
1.1	8.0	1.1	6.0	2.0	89
1.2	13	1.2	9.8	2.5	174
1.4	29	1.3	15	3.0	284
1.7	68	1.5	30	3.5	420
		1.7	50		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	25	38	11	3.5	24	233	215	71	28	15	23
2	13	28	35	10	3.5	23	180	182	70	27	14	22
3	12	30	30	7.0	3.0	23	161	150	67	25	12	15
4	13	31	25	4.0	3.0	24	141	135	62	24	11	13
5	13	29	20	3.0	3.0	24	127	127	60	24	10	16
6	13	29	15	3.0	2.5	24	117	134	59	25	10	19
7	15	31	17	3.0	2.5	25	107	125	60	25	9.8	19
8	18	35	20	3.0	2.5	25	98	112	61	25	10	18
9	20	37	15	3.5	3.5	50	91	103	57	23	9.4	19
10	21	35	9.0	3.0	5.0	80	85	103	53	22	9.0	19
11	23	33	8.0	3.0	8.5	200	82	106	49	22	8.7	17
12	23	31	7.0	3.0	15	300	76	104	47	22	9.8	16
13	22	30	6.0	3.0	20	400	72	95	47	19	8.3	15
14	23	28	6.0	3.0	40	500	67	88	47	18	9.0	14
15	22	29	6.0	3.0	75	450	66	83	45	18	8.3	14
16	21	35	6.0	3.0	100	350	67	78	43	17	7.5	14
17	21	34	5.5	3.5	120	270	66	88	42	16	7.5	15
18	22	33	5.5	3.5	100	230	63	89	41	17	7.9	17
19	22	33	5.0	3.5	80	200	67	86	40	16	7.9	18
20	22	31	5.0	3.5	50	180	85	78	46	15	8.3	18
21	22	29	5.0	3.5	30	160	134	71	46	14	7.9	18
22	22	22	5.0	3.5	28	160	251	69	40	14	8.3	21
23	23	20	5.5	3.5	25	160	253	134	36	14	7.1	21
24	23	20	5.5	4.0	25	180	209	127	34	13	7.1	20
25	24	25	5.5	4.0	26	180	170	101	34	14	7.1	19
26	25	30	6.0	4.0	28	200	144	89	32	16	6.4	20
27	25	32	6.0	4.0	28	240	151	81	30	15	7.1	19
28	25	35	7.0	4.0	26	300	198	74	30	13	7.1	19
29	26	40	8.0	4.0	------	400	228	70	31	14	7.1	18
30	25	40	10	3.5	------	332	262	70	30	16	19	19
31	25	------	10	3.5	------	292	------	70	------	16	22	------
TOTAL	637	920	357.5	124.0	856.5	6,006	4,051	3,237	1,410	587	299.6	535
MEAN	20.5	30.7	11.5	4.00	30.6	194	135	104	47.0	18.9	9.66	17.8
MAX	26	40	38	11	120	500	262	215	71	28	22	23
MIN	12	20	5.0	3.0	2.5	23	63	69	30	13	6.4	13
AC-FT	1,260	1,820	709	246	1,700	11,910	8,040	6,420	2,800	1,160	594	1,060

CAL YR 1970 TOTAL 14,517.1 MEAN 39.8 MAX 363 MIN 5.0 AC-FT 28,790
WTR YR 1971 TOTAL 19,020.6 MEAN 52.1 MAX 500 MIN 2.5 AC-FT 37,730

PEAK DISCHARGE (BASE, 250 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
3-14	-	-	600	4-22	2230	3.09	294
3-29	-	-	450	4-30	0530	3.09	302

06464900 Keya Paha River near Naper, Nebr.

LOCATION.--Lat 42°55'00", long 99°05'50", in SE¼SE¼ sec.17, T.34 N., R.15 W., Boyd County, on left bank 8 ft downstream from highway bridge, 3.3 miles south of Naper and 8.6 miles upstream from mouth.

DRAINAGE AREA.--1,630 sq mi, approximately.

PERIOD OF RECORD.--October 1957 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,680 ft (from topographic map). Prior to May 2, 1958, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--14 years, 141 cfs (102,200 acre-ft per year); median of yearly mean discharges, 120 cfs (86,900 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, about 1,950 cfs Mar. 14 (gage height, 9.47 ft, backwater from ice); maximum gage height, 10.03 ft Mar. 14 (ice jam); minimum daily discharge, 0.75 cfs Aug. 24.
Period of record: Maximum discharge, 9,280 cfs July 1, 1962 (gage height, 10.91 ft); maximum gage height, 13.34 ft Mar. 23, 1960 (backwater from ice); minimum daily discharge, 0.70 cfs Sept. 9, 12, 1970.

REMARKS.--Records good except those for winter period, which are fair. Minor diversions for irrigation above station.

REVISIONS(WATER YEARS).--WSP 1709: 1959(M).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	44	72	25	23	340	412	245	131	30	4.6	36
2	16	45	50	22	24	350	257	170	133	22	3.4	24
3	16	51	46	17	21	360	193	229	134	18	3.2	23
4	18	56	33	14	20	420	192	250	132	18	2.9	37
5	17	54	30	18	17	580	163	216	133	22	2.6	42
6	17	53	24	15	15	620	154	205	122	22	2.5	27
7	21	51	28	15	14	580	170	201	125	19	2.2	24
8	37	65	37	18	17	540	206	181	126	16	1.9	25
9	37	91	28	17	21	560	200	172	117	12	2.0	31
10	37	71	18	18	25	640	186	197	114	12	1.7	33
11	37	62	25	16	25	840	162	194	104	13	1.7	29
12	42	60	24	17	30	960	140	182	94	13	3.9	26
13	44	58	22	21	60	1,200	133	184	83	10	2.5	21
14	42	53	26	21	94	1,700	133	164	83	8.2	13	20
15	42	49	27	21	160	1,080	123	137	77	7.7	5.4	19
16	40	47	29	16	270	700	136	121	68	5.4	3.0	19
17	38	60	35	18	390	400	125	172	60	4.4	1.5	19
18	37	60	35	17	300	300	108	170	123	31	1.3	21
19	39	60	34	16	185	204	125	150	80	21	1.8	23
20	39	54	30	19	135	250	159	147	64	12	1.7	26
21	39	54	30	19	124	260	302	137	56	12	4.2	30
22	39	24	30	19	150	223	535	123	60	25	4.4	50
23	45	22	31	20	135	204	364	249	57	33	1.9	47
24	50	22	31	14	210	215	254	354	53	21	.75	40
25	45	25	24	14	235	197	181	211	54	20	1.2	43
26	45	33	28	13	310	214	163	255	49	17	1.1	39
27	45	39	27	16	300	323	262	190	38	14	1.7	37
28	45	50	29	16	320	830	316	147	35	8.2	2.8	36
29	45	62	28	18	------	828	340	130	34	6.6	2.0	34
30	45	66	26	23	------	749	282	132	38	5.8	49	35
31	44	------	26	21	------	556	------	148	------	7.1	33	------
TOTAL	1,120	1,541	963	554	3,630	17,223	6,476	5,763	2,577	486.4	164.85	916
MEAN	36.1	51.4	31.1	17.9	130	556	216	186	85.9	15.7	5.32	30.5
MAX	50	91	72	25	390	1,700	535	354	134	33	49	50
MIN	16	22	18	13	14	197	108	121	34	4.4	.75	19
AC-FT	2,220	3,060	1,910	1,100	7,200	34,160	12,850	11,430	5,110	965	327	1,820

CAL YR 1970 TOTAL 31,460.48 MEAN 86.2 MAX 1,070 MIN .70 AC-FT 62,400
WTR YR 1971 TOTAL 41,414.25 MEAN 113 MAX 1,700 MIN .75 AC-FT 82,150

PEAK DISCHARGE (BASE, 900 CFS)

DATE	TIME	G.H.	DISCHARGE
3-14	0300	9.47	1,950
3-29	2230	6.75	1,380

06467000 Lewis and Clark Lake near Yankton, S. Dak.

LOCATION.--Lat 42°50'56", long 97°28'54", in SW¼ sec.7, T.33 N., R.1 W., Cedar County, Nebraska, in powerhouse of Gavins Point Dam on Missouri River, 3.75 miles southwest of Yankton, 13.6 miles upstream from James River, 32.5 miles downstream from Niobrara River, and at mile 811.0.

DRAINAGE AREA.--279,500 sq mi, approximately.

PERIOD OF RECORD.--July 1955 to current year. Prior to October 1955, published as Gavins Point Reservoir near Yankton.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level. Prior to Dec. 9, 1955, recorder at temporary location on wall of intake structure unit 3.

EXTREMES.--Current year: Maximum contents, 485,000 acre-ft Dec. 1 (elevation, 1,208.4 ft, affected by wind); minimum, 364,000 acre-ft Apr. 4 (elevation, 1204.6 ft, affected by wind).
Period of record: Maximum contents, 565,000 acre-ft Apr. 1, 1960 (elevation, 1,210.7 ft, affected by wind); minimum since initial filling, 61,950 acre-ft Apr. 23, 1956 (elevation, 1,188.1 ft).

REMARKS.--Reservoir is formed by earthfill dam; storage began in July 1955. Maximum capacity, 541,000 acre-ft below elevation 1,210.0 ft (top of spillway gates). Normal maximum, 477,000 acre-ft below elevation 1,208.0 ft. Inactive storage, 156,000 acre-ft below elevation 1,195.0 ft. Dead storage, 18,000 acre-ft below elevation 1,180.0 ft (crest of spillway). Figures given herein represent elevations at powerhouse and total contents adjusted for wind effect.
The spillway consists of 14 Taintor gates, each 40 ft wide by 30 ft high; spillway capacity, 280,000 cfs at pool elevation 1,210 ft. Crest of spillway is at elevation 1,180 ft. Normal releases are through 3 power units, installation completed in January 1957; maximum release through power units is 35,000 cfs at pool elevation, 1,210 ft. Water is used for flood control, navigation, power, and incidental uses.

COOPERATION.--Elevations and contents furnished by Corps of Engineers.

MONTHEND ELEVATION AND CONTENTS AT 2400 HOURS, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	1,207.9	471,000	-
Oct. 31	1,208.3	482,000	+11,000
Nov. 30	1,208.3	485,000	+3,000
Dec. 31	1,207.6	460,000	-25,000
CAL YR 1970	-	-	+47,000
Jan. 31	1,207.4	456,000	-4,000
Feb. 28	1,205.6	402,000	-54,000
Mar. 31	1,205.8	390,000	+1,000
Apr. 30	1,205.0	374,000	-16,000
May 31	1,205.1	375,000	+1,000
June 30	1,206.2	407,000	+32,000
July 31	1,207.5	446,000	+39,000
Aug. 31	1,208.2	464,000	+18,000
Sept.30	1,208.5	474,000	+8,000
WTR YR 1971	-	-	+1,000

Note.--Area-capacity table revised Mar. 1, 1971.

06467500 Missouri River at Yankton, S. Dak.

LOCATION.--Lat 42°51'58", long 97°23'37", in SW¼SW¼ sec.18, T.93 N., R.55 W., Yankton County, near left bank in downstream end of left pier of Meridian Highway Bridge on U.S. Highway 81, 5.0 miles downstream from Gavins Point Dam, 6.0 miles upstream from James River, and at mile 805.8.

DRAINAGE AREA.--279,500 sq mi, approximately.

PERIOD OF RECORD.--October 1930 to current year. Monthly discharge only for some periods, published in WSP 1309. Gage-height records collected at same site March 1873 to November 1886, March 1905 to May 1908 (fragmentary), August 1921 to date (except winter months prior to 1932), are contained in reports of the U.S. Weather Bureau.

GAGE.--Water-stage recorder. Datum of gage is 1,139.68 ft above mean sea level. Prior to Sept. 20 (corrected), 1932, non-recording gage and Sept. 20, 1932 to Mar. 9, 1967, water-stage recorder at present site and at datum 20 ft higher.

AVERAGE DISCHARGE.--41 years, 25,110 cfs (18,190,000 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 57,200 cfs June 17 (gage height, 23.62 ft); minimum daily, 14,700 cfs Dec. 26-27.
Period of record: Maximum discharge, 480,000 cfs Apr. 13, 1952; maximum gage height, 35.5 ft Apr. 13, 14, 1952; minimum daily discharge, 2,700 cfs Nov. 15, 16, 1940.
Maximum stage known, 50.5 ft Apr. 5, 1881 (ice jam), present datum.

REMARKS.--Records good. Flow regulated by Lewis and Clark Lake. (See station 06467000.) Many diversions for irrigation and water supply above station. Water-quality records for the water year 1971 are published in Part 2 of this report.

REVISIONS.--WSP 761: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40,400	42,000	35,800	14,900	17,300	17,900	35,300	34,600	47,400	46,000	48,400	48,400
2	40,200	42,000	36,100	15,000	17,100	18,000	35,300	34,600	47,500	46,300	48,400	48,800
3	40,100	42,000	34,100	15,100	17,100	18,200	35,600	34,800	47,500	46,700	48,300	48,900
4	40,100	41,600	31,000	16,700	17,400	18,200	35,200	35,100	47,500	46,700	48,300	49,000
5	40,200	41,400	28,100	16,500	17,500	18,200	35,200	35,300	47,400	47,200	48,200	49,100
6	40,600	41,400	25,200	16,000	17,400	18,100	35,200	35,200	47,600	47,000	48,200	49,300
7	40,500	41,900	22,100	15,400	17,300	18,200	35,300	35,100	47,300	48,800	48,300	49,400
8	41,000	42,400	19,700	15,500	17,400	18,300	35,100	36,500	51,500	49,200	48,200	49,300
9	41,900	42,600	17,500	15,200	17,400	18,200	35,000	40,800	52,100	49,600	48,400	49,300
10	42,700	43,100	18,100	15,300	17,100	18,100	35,100	45,000	52,400	49,900	48,500	49,200
11	42,800	42,800	18,000	15,400	17,000	18,400	35,000	47,700	52,300	49,200	48,600	49,200
12	42,900	42,800	17,900	15,700	17,000	18,200	35,100	48,200	52,200	49,200	48,700	49,200
13	43,100	42,500	17,800	15,600	17,200	18,100	35,500	48,200	52,500	49,500	48,600	49,100
14	43,500	42,200	17,800	15,700	16,900	17,700	35,100	48,200	52,500	49,400	48,900	49,100
15	43,700	42,000	17,800	15,700	17,000	17,500	34,800	48,400	51,200	49,400	48,700	48,900
16	43,500	41,100	17,900	15,800	16,900	18,700	35,200	48,600	48,600	48,900	48,600	48,700
17	43,300	40,000	17,900	15,600	17,500	22,300	35,300	47,400	37,000	48,900	48,800	48,400
18	43,200	39,800	17,900	15,700	17,900	26,200	35,200	46,200	48,900	48,400	48,700	48,300
19	43,000	39,800	17,900	16,000	19,600	28,800	35,000	46,000	47,700	48,300	48,800	48,100
20	42,600	39,600	17,400	16,000	17,600	31,400	34,200	46,100	47,600	48,500	48,800	47,900
21	42,600	39,500	17,400	16,000	17,500	34,100	35,700	46,300	47,600	48,300	48,700	48,000
22	42,000	39,500	15,700	16,000	17,400	34,400	35,500	47,400	47,600	48,300	48,600	48,000
23	41,900	39,800	15,300	16,100	17,400	35,800	35,100	47,500	47,700	48,400	48,600	47,900
24	41,800	39,900	15,100	16,000	17,300	35,600	35,200	49,200	47,900	48,400	48,500	48,100
25	41,800	38,600	15,200	16,000	17,500	34,900	34,900	51,700	48,200	48,400	49,100	48,400
26	41,900	37,900	14,700	16,200	17,300	35,200	35,100	52,100	48,200	48,200	49,100	48,500
27	41,800	37,100	14,700	16,100	17,100	35,400	34,900	51,700	48,300	48,100	48,900	48,700
28	41,800	36,000	15,000	16,000	17,800	35,400	34,700	50,300	48,500	48,100	48,800	49,000
29	41,800	36,000	14,900	16,000	------	35,500	34,700	47,800	48,500	48,100	48,800	49,200
30	42,000	36,100	14,900	15,900	------	35,600	34,600	47,800	47,900	48,300	48,600	49,200
31	41,900	------	15,000	15,800	------	35,500	------	47,700	------	48,800	48,400	------
TOTAL	1,300.6M	1,213.4M	613,900	488,900	486,900	786,100	1,053.1M	1,381.5M	1,459.1M	1,498.5M	1,506.5M	1,462.6M
MEAN	41,950	40,450	19,800	15,770	17,390	25,360	35,100	44,560	48,640	48,340	48,600	48,750
MAX	43,700	43,100	36,100	16,700	19,600	35,800	35,700	52,100	52,500	49,900	49,100	49,400
MIN	40,100	36,000	14,700	14,900	16,900	17,500	34,200	34,600	37,000	46,000	48,200	47,900
AC-FT	2,580M	2,407M	1,218M	969,700	965,800	1,559M	2,089M	2,740M	2,894M	2,972M	2,988M	2,901M

CAL YR 1970 TOTAL 11,613,500 MEAN 31,820 MAX 46,100 MIN 14,700 AC-FT 23,040,000
WTR YR 1971 TOTAL 13,251,100 MEAN 36,300 MAX 52,500 MIN 14,700 AC-FT 26,280,000

M Expressed in thousands

06469000 Jamestown Reservoir near Jamestown, N. Dak.

LOCATION.--Lat 46°55'50", long 98°42'23", in SE¼NW¼ sec.24, T.140 N., R.64 W., on left bank in control house below Jamestown Dam on James River, 1.7 miles north of Jamestown Post Office and 4 miles upstream from Pipestem Creek.

DRAINAGE AREA.--1,760 sq mi, approximately, of which about 1,010 sq mi is probably noncontributing.

PERIOD OF RECORD.--November 1953 to current year.

GAGE.--Water-stage recorder. Datum of gage is at mean sea level. June 22, 1959 to June 3, 1971 at site 0.2 mile upstream at same datum. Prior to June 22, 1959, nonrecording gages at different locations.

EXTREMES.--Current year: Maximum contents, 40,080 acre-ft May 5 (elevation, 1,434.33 ft); minimum observed, 26,510 acre-ft Oct. 11 (elevation, 1,428.60 ft).
Period of record: Maximum contents, 103,100 acre-ft May 1, 1969 (elevation, 1,443.60).

REMARKS.--Reservoir is formed by earth-fill dam, completed Oct. 1, 1953. Closure made May 7, 1953, and filling of dead storage started. Gates initially closed Feb. 8, 1954. Usable capacity, 229,470 acre-ft between elevations 1,400 ft (sill of outlet) and 1,454 ft (crest of spillway). Dead storage below elevation 1,400 ft, 820 acre-ft. Maximum design pool, 389,000 acre-ft (elevation, 1,464.6 ft). Figures given herein represent total contents based on capacity table dated Oct. 1, 1965. Reservoir is used for flood control and municipal supply.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30	1,428.78	26,850	-
Oct. 31	1,429.70	28,700	+1,850
Nov. 30	1,430.36	30,110	+1,410
Dec. 31	1,430.33	30,040	-70
CAL YR 1970	-	-	+1,870
Jan. 31	1,430.29	29,950	-90
Feb. 28	1,430.27	29,910	-40
Mar. 31	1,430.89	31,270	+1,360
Apr. 30	1,434.07	39,310	+8,040
May 31	1,432.34	34,710	-4,600
June 30	1,432.01	33,880	-830
July 31	1,431.30	32,210	-1,670
Aug. 31	1,430.54	30,500	-1,710
Sept.30	1,430.96	31,420	+920
WTR YR 1971	-	-	+4,570

06470500 James River at La Moure, N. Dak.

LOCATION.--Lat 46°21'20", long 98°18'15", at northeast corner of sec.11, T.133 N., R.61 W., La Moure County, on left bank 80 ft downstream from bridge on State Highway 13, 0.5 mile west of La Moure and 12 miles upstream from Cottonwood Creek.

DRAINAGE AREA.--4,390 sq mi, approximately, of which about 2,600 sq mi is probably noncontributing.

PERIOD OF RECORD.--April to July 1903 (gage-height record only), April 1950 to current year. Gage-height records for 1902-11 are contained in reports of the U.S. Weather Bureau.

GAGE.--Water-stage recorder and rubble-masonry control. Datum of gage is 1,290.00 ft above mean sea level. See WSP 1729 or 1917 for history of changes prior to Apr. 19, 1950.

AVERAGE DISCHARGE.--21 years (1950-71), 84.4 cfs (61,150 acre-ft per year); median of yearly mean discharges, 53 cfs (38,400 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 621 cfs Apr. 11 (gage height, 8.53 ft); no flow Oct. 3 (gage height, 6.90 ft, caused by wind).
Period of record: Maximum discharge, 6,800 cfs Apr. 14, 1969 (gage height, 16.17 ft); no flow at times. Prior to flood of Apr. 14, 1969, a long-time resident said that the flood of May 16, 1950 was the highest since 1881, with stage in either 1942 or 1943 being almost as high owing to large ice jam.

REMARKS.--Records fair. Flow regulated by Arrowwood and Jim Lakes, and Jamestown Reservoir (combined capacity, 246,000 acre-ft), the largest of which is Jamestown Reservoir (capacity, 229,470 acre-ft), 85 miles upstream.

REVISIONS.--WSP 1917: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	15	13	7.8	7.9	10	107	156	168	196	13	14
2	12	11	11	8.2	7.4	11	87	147	165	189	10	14
3	.03	13	12	8.0	7.7	11	99	141	166	188	9.4	16
4	.42	10	11	7.5	7.5	11	101	145	164	176	8.9	16
5	2.1	9.1	11	7.2	8.1	12	110	136	134	168	9.1	18
6	6.7	14	9.2	7.2	8.3	12	127	135	89	161	9.5	17
7	3.7	9.6	9.0	6.4	7.7	11	122	134	68	164	8.1	20
8	3.9	12	9.2	6.0	7.4	11	153	142	222	157	7.5	18
9	7.0	11	9.2	6.5	7.4	11	183	162	297	126	11	21
10	1.3	17	9.1	6.5	7.6	13	380	177	218	70	12	22
11	1.9	13	8.8	6.4	7.9	15	491	165	181	40	6.7	13
12	4.3	11	8.3	6.8	7.9	23	359	164	160	46	7.3	19
13	6.2	15	8.6	7.3	7.9	37	276	164	111	30	7.9	16
14	5.0	12	8.9	7.4	7.7	99	214	162	121	30	6.7	13
15	4.4	12	8.4	7.3	7.9	129	191	166	199	27	5.5	11
16	4.5	12	8.2	7.3	8.4	102	179	145	210	25	6.5	9.8
17	9.0	12	8.4	7.3	9.2	113	145	176	216	20	8.4	13
18	7.5	12	8.5	7.4	9.7	139	151	152	197	26	12	11
19	4.6	12	8.2	7.4	9.2	159	145	159	196	17	11	12
20	7.9	13	8.0	6.9	8.9	168	125	153	181	16	6.3	16
21	6.4	13	7.4	7.9	8.7	177	115	146	174	19	7.1	11
22	7.9	14	7.9	8.4	8.9	176	107	161	181	16	8.4	17
23	5.9	12	8.5	7.4	8.9	165	97	201	181	19	7.4	22
24	5.6	10	8.4	7.5	9.3	158	81	205	195	16	10	18
25	11	9.6	7.8	8.1	13	143	91	209	197	27	8.6	21
26	13	9.5	8.3	7.4	16	134	120	204	202	14	12	26
27	9.8	9.5	8.2	7.4	12	125	160	180	204	20	14	26
28	8.8	9.4	7.5	7.3	10	116	161	164	180	18	15	23
29	8.4	9.8	7.5	8.3	------	108	158	182	197	18	19	23
30	15	10	7.6	8.8	------	108	175	163	198	12	20	29
31	13	------	7.3	9.1	------	118	------	181	------	14	19	------
TOTAL	208.25	352.5	274.4	230.4	248.5	2,625	5,010	5,077	5,372	2,067	317.3	525.8
MEAN	6.72	11.8	8.85	7.43	8.88	84.7	167	164	179	66.7	10.2	17.5
MAX	15	17	13	9.1	16	177	491	209	297	196	20	29
MIN	.03	9.1	7.3	6.0	7.4	10	81	134	68	12	5.5	9.8
AC-FT	413	699	544	457	493	5,210	9,940	10,070	10,660	4,100	629	1,040

CAL YR 1970 TOTAL 11,720.95 MEAN 32.1 MAX 173 MIN .03 AC-FT 23,250
WTR YR 1971 TOTAL 22,308.15 MEAN 61.1 MAX 491 MIN .03 AC-FT 44,250

06471000 James River at Columbia, S. Dak.

LOCATION.--Lat 45°37'05", long 98°19'30", in NE¼NW¼ sec.29, T.125 N., R.62 W., Brown County, on left bank 10 ft downstream from highway bridge, 0.8 mile northwest of Columbia, 2.4 miles upstream from Chicago and North Western Railway Co. bridge, 3.6 miles upstream from Elm River, and 9.4 miles downstream from Columbia Road Dam.

DRAINAGE AREA.--7,050 sq mi, approximately.

PERIOD OF RECORD.--October 1945 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,275.01 ft above mean sea level. Prior to Oct. 5, 1957, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--26 years, 106 cfs (76,800 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 145 cfs July 9 (gage height, 8.66 ft); no flow for many days. Period of record: Maximum discharge, 5,420 cfs May 24, 25, 1950 (gage height, 16.89 ft, from graph based on gage readings); maximum gage height, 17.09 ft Apr. 22, 1969; maximum daily reverse flow, 1,860 cfs Apr. 8, 1952 (backwater from Elm River).

REMARKS.--Records fair. Flow regulated by Arrowwood and Jim Lakes, and Jamestown Reservoir (combined capacity, 246,000 acre-ft). Regulation by Jamestown Reservoir (capacity, 229,470 acre-ft), 168 miles upstream, since May 1953. Water-quality records for the water year 1971 are published in Part 2 of this report.

REVISIONS.--Corrected figure of discharge for Sept. 16, 1962 is 72 cfs, and minimum discharge for calendar year 1964 is -720 cfs, superseding figures published in WSP 1917.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						0	0	49	73	127	101	89
2						0	0	50	71	125	100	89
3						0	0	52	70	123	99	87
4						0	0	52	70	125	99	85
5						0	0	51	71	130	99	81
6						0	0	52	70	134	99	73
7						0	0	52	71	140	98	65
8						0	.03	53	73	140	97	57
9						0	3.0	53	78	139	95	50
10						0	.86	53	87	142	94	44
11						0	.60	54	96	137	93	39
12						0	.31	54	101	132	91	41
13						0	.14	54	105	129	90	53
14						0	0	55	107	125	88	58
15						0	0	55	109	123	86	55
16						2.0	0	55	111	120	84	49
17						4.3	0	55	112	119	81	43
18						2.5	0	55	113	118	80	37
19						.60	0	55	114	118	78	33
20						.38	0	55	116	117	78	29
21						1.0	0	55	119	117	76	27
22						3.0	0	56	123	116	76	25
23						4.0	0	60	122	115	75	24
24						2.0	0	63	124	113	73	23
25						1.0	0	62	125	111	71	23
26						0	0	61	125	109	71	23
27						0	0	61	125	107	71	23
28						0	19	60	125	106	70	23
29					------	0	35	60	127	104	72	23
30					------	0	45	61	128	103	79	22
31		------			------	0	------	66	------	102	87	------
TOTAL	0	0	0	0	0	20.78	103.94	1,729	3,061	3,766	2,651	1,393
MEAN	0	0	0	0	0	.67	3.46	55.8	102	121	85.5	46.4
MAX	0	0	0	0	0	4.3	45	66	128	142	101	89
MIN	0	0	0	0	0	0	0	49	70	102	70	22
AC-FT	0	0	0	0	0	41	206	3,430	6,070	7,470	5,260	2,760

CAL YR 1970 TOTAL 16,149.08 MEAN 44.2 MAX 280 MIN 0 AC-FT 32,030
WTR YR 1971 TOTAL 12,724.72 MEAN 34.9 MAX 142 MIN 0 AC-FT 25,240

06471200 Maple River at North Dakota-South Dakota State line

LOCATION.--Lat 45°56'20", long 98°27'08", in SW¼SE¼ sec.33, T.129 N., R.62 W., Dickey County, N. Dak., on left bank 0.4 mile upstream from State line, 7.8 miles northeast of Frederick, S. Dak. and 15.7 miles upstream from mouth.

DRAINAGE AREA.--750 sq mi, approximately, of which about 270 sq mi is probably noncontributing.

PERIOD OF RECORD.--June 1956 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,365 ft (from topographic map). Prior to June 14, 1962, nonrecording gage at site 0.4 mile downstream at datum 0.94 ft lower.

AVERAGE DISCHARGE.--15 years, 19.4 cfs (14,060 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 125 cfs Mar. 18; maximum gage height, 5.66 ft Mar. 18, backwater from ice; no flow for many days.
Period of record: Maximum discharge, 5,930 cfs Apr. 11, 1969 (gage height, 15.22 ft); maximum gage height, 16.05 ft Apr. 11, 1969 (backwater from ice); no flow for long periods in each year.

REMARKS.--Records good except those for March, which are poor.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Stage-discharge relation affected by ice Mar. 10-23; shifting-control method used Mar. 24 to Apr. 8, June 22 to July 5)

2.92	0	3.4	4.9
3.0	.14	3.7	13
3.1	.70	4.0	26
3.2	1.7	4.5	59
3.3	3.1	5.0	114

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						0	20	2.2	1.1	49	1.3	
2						0	15	1.6	.87	34	1.2	
3						0	14	1.2	.78	45	.87	
4						0	15	1.4	.78	78	.78	
5						0	13	1.2	1.4	63	.70	
6						0	12	.78	1.4	47	.70	
7						0	11	.70	1.4	39	.63	
8						0	11	.43	1.5	33	.49	
9						0	9.6	.22	1.5	27	.56	
10						0	7.0	.43	2.5	23	.56	
11						0	7.5	.43	2.3	20	.37	
12						.20	6.3	.27	2.8	18	.22	
13						1.0	5.4	.22	5.4	16	.18	
14						.80	3.9	.09	3.1	14	.14	
15						1.0	3.4	.03	2.2	12	.02	
16						2.0	3.3	0	1.6	11	0	
17						5.0	2.3	0	2.9	9.1	.03	
18						100	1.9	0	4.1	8.0	.32	
19						120	2.3	0	6.7	6.5	.22	
20						110	2.2	0	8.0	5.4	.14	
21						90	1.8	0	24	4.3	.05	
22						70	1.6	0	57	2.8	.02	
23						60	1.6	.17	49	2.2	.02	
24						46	1.3	.43	36	1.6	0	
25						40	1.2	.27	29	2.3	0	
26						37	1.1	.09	28	2.2	0	
27						34	2.1	.03	27	2.1	0	
28						32	2.1	0	24	1.9	0	
29					------	30	1.6	.01	33	2.1	0	
30					------	25	2.2	.05	55	1.8	0	
31		------			------	22	------	.49	------	1.4	0	------
TOTAL	0	0	0	0	0	826.00	182.7	12.74	414.33	582.7	9.52	0
MEAN	0	0	0	0	0	26.6	6.09	.41	13.8	18.8	.31	0
MAX	0	0	0	0	0	120	20	2.2	57	78	1.3	0
MIN	0	0	0	0	0	0	1.1	0	.78	1.4	0	0
AC-FT	0	0	0	0	0	1,640	362	25	822	1,160	19	0

CAL YR 1970 TOTAL 1,561.61 MEAN 4.28 MAX 84 MIN 0 AC-FT 3,100
WTR YR 1971 TOTAL 2,027.99 MEAN 5.56 MAX 120 MIN 0 AC-FT 4,020

PEAK DISCHARGE (BASE, 50 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
3-18	-	-	125	6-30	1700	4.60	59
6-22	1600	4.66	61	7- 4	1200	4.83	81

06471500 Elm River at Westport, S. Dak.

LOCATION.--Lat 45°39'22", long 98°29'48", in SW¼NW¼ sec.12, T.125 N., R.64 W., Brown County, on right bank 12 ft downstream from highway bridge, 0.5 mile north of Westport, 0.7 mile upstream from Chicago, Milwaukee, St. Paul and Pacific Railroad bridge, 9.3 miles downstream from Willow Creek, and 30.4 miles upstream from mouth.

DRAINAGE AREA.--1,680 sq mi, approximately.

PERIOD OF RECORD.--October 1945 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,309.3 ft above mean sea level. Prior to Aug. 6, 1951, and Apr. 8 to Sept. 9, 1952, nonrecording gage 12 ft upstream at same datum. Aug. 6, 1951, to Apr. 7, 1952, water-stage recorder at present site and datum.

AVERAGE DISCHARGE.--26 years, 48.0 cfs (34,780 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 254 cfs July 4 (gage height, 6.35 ft); minimum daily, 1.2 cfs Nov. 22.
Period of record: Maximum discharge, 12,600 cfs Apr. 10, 1969 (gage height, 22.11 ft); no flow for many days in most years prior to 1960.

REMARKS.--Records good. Flow regulated for Aberdeen municipal water supply by Elm Lake and other small reservoirs upstream (combined capacity, about 16,000 acre-ft).

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Dec. 11 to Jan. 25)

4.2	0.78	4.8	24
4.3	2.0	5.1	48
4.4	4.2	5.5	92
4.5	7.6	6.0	176
4.6	12	6.5	287

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.9	3.3	4.0	2.4	3.0	5.2	29	7.2	3.8	43	2.6	13
2	3.0	3.0	3.3	2.2	3.0	5.2	25	6.1	3.5	116	2.6	13
3	2.4	2.8	3.0	2.4	2.6	5.2	19	6.5	3.8	230	2.6	12
4	2.8	2.8	3.6	2.4	2.6	4.9	19	6.1	4.0	233	2.6	9.2
5	3.0	2.8	3.5	2.4	2.6	4.6	17	4.9	3.8	209	2.6	8.4
6	3.3	2.6	5.0	2.6	2.4	4.6	25	4.0	3.5	178	2.6	8.4
7	4.9	2.4	8.0	3.0	2.4	4.3	25	3.5	3.8	142	2.8	8.8
8	6.5	3.3	7.2	3.8	2.4	4.0	22	2.8	3.5	104	2.8	8.8
9	7.6	2.8	4.0	4.3	2.4	4.0	22	2.8	3.8	89	2.8	9.2
10	6.1	2.8	3.0	4.3	2.4	4.3	20	3.0	4.3	77	2.6	8.8
11	7.2	2.8	2.6	4.3	2.6	5.2	16	3.0	3.8	65	2.4	4.3
12	7.6	2.4	2.6	4.3	2.6	9.2	16	2.4	3.5	55	2.8	4.0
13	8.0	2.4	2.6	4.0	2.4	30	17	2.2	2.8	46	8.0	3.8
14	8.0	2.2	2.4	3.8	2.6	145	13	1.9	2.4	38	8.0	3.5
15	6.5	2.2	2.2	3.8	2.6	113	12	2.0	4.0	33	8.4	4.0
16	4.0	5.5	2.0	3.8	3.0	55	11	1.9	6.8	29	8.4	9.6
17	2.8	8.0	2.0	3.5	2.8	74	8.4	2.4	6.5	23	8.0	12
18	2.6	6.1	2.0	3.5	3.0	66	11	2.6	5.2	19	11	12
19	2.6	2.4	2.0	3.8	4.6	128	9.6	3.5	8.8	15	17	12
20	4.0	2.0	2.2	4.3	6.5	209	8.4	3.5	8.8	14	17	13
21	4.0	1.9	2.2	4.0	6.1	189	7.6	3.8	11	11	17	12
22	3.8	1.2	2.2	5.2	5.5	115	7.2	4.3	12	9.6	16	13
23	3.8	1.4	2.2	7.2	4.6	98	6.5	5.2	14	10	16	10
24	3.8	1.6	2.2	12	5.2	92	4.9	4.3	53	8.8	14	4.9
25	4.0	2.4	2.4	14	5.8	69	4.3	3.8	56	8.8	14	4.3
26	3.5	3.0	2.4	9.6	5.8	65	3.5	3.8	47	4.9	14	4.3
27	3.5	3.3	2.2	8.4	5.8	57	9.2	3.8	43	4.6	14	4.0
28	3.8	3.8	2.2	6.8	5.5	48	9.2	3.8	39	4.6	13	3.8
29	4.0	4.0	2.2	3.8	------	41	9.2	3.8	40	3.5	13	3.5
30	3.8	4.0	2.4	3.3	------	37	9.6	3.8	37	3.3	14	3.8
31	3.0	------	2.4	3.3	------	35	------	4.6	------	3.0	14	------
TOTAL	138.8	91.2	92.2	146.5	102.8	1,726.7	416.6	117.3	442.4	1,830.1	276.6	241.4
MEAN	4.48	3.04	2.97	4.73	3.67	55.7	13.9	3.78	14.7	59.0	8.92	8.05
MAX	8.0	8.0	8.0	14	6.5	209	29	7.2	56	233	17	13
MIN	2.4	1.2	2.0	2.2	2.4	4.0	3.5	1.9	2.4	3.0	2.4	3.5
AC-FT	275	181	183	291	204	3,420	826	233	878	3,630	549	479

CAL YR 1970 TOTAL 3,677.7 MEAN 10.1 MAX 89 MIN 1.0 AC-FT 7,290
WTR YR 1971 TOTAL 5,622.6 MEAN 15.4 MAX 233 MIN 1.2 AC-FT 11,150

PEAK DISCHARGE (BASE, 100 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
3-14	1800	6.05	184	7- 4	0030	6.35	254
3-20	0030	6.31	239				

06472000 James River near Stratford, S. Dak.

LOCATION.--Lat 45°14'30", long 98°23'28", in NE¼NE¼NE¼ sec.3, T.120 N., R.63 W., Spink County, on right bank 30 ft downstream from highway bridge, 6.7 miles southwest of Stratford and 9.0 miles upstream from Mud Creek.

DRAINAGE AREA.--9,990 sq mi, approximately.

PERIOD OF RECORD.--March 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,254.29 ft above mean sea level. Prior to May 17, 1950, nonrecording gage at site 20.9 miles upstream at different datum. May 17, 1950, to Aug. 5, 1951, nonrecording gage at site 60 ft upstream at present datum.

AVERAGE DISCHARGE.--21 years, 127 cfs (92,010 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 198 cfs July 16 (gage height, 9.81 ft); no flow for many days. Period of record: Maximum discharge, 5,580 cfs May 14 or 15, 1950, estimated on basis of records at site 20.9 miles upstream; maximum gage height, 18.18 ft Apr. 19, 1969 (backwater from Mud Creek); no flow for many days in most years.

REMARKS.--Records good except those for March, which are poor. Flow regulated by Arrowwood and Jim Lakes, and Jamestown Reservoir (combined capacity, 246,000 acre-ft), the largest of which is Jamestown Reservoir (capacity, 229,470 acre-ft), 244 miles upstream.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1						0	90	15	54	117	101	70
2						0	85	14	56	120	98	71
3						0	80	13	56	122	96	71
4						0	70	12	58	127	93	78
5						0	65	14	59	129	90	85
6						0	55	18	59	131	86	91
7						0	49	23	60	138	84	97
8						0	43	29	62	146	81	100
9						0	38	36	64	156	78	102
10						0	34	41	67	167	75	101
11						1.0	29	44	68	176	72	98
12						2.0	24	47	68	184	70	93
13						2.5	20	49	69	191	68	86
14						2.0	19	49	70	195	67	78
15						1.0	18	48	72	197	66	71
16						0	19	47	76	197	65	65
17						0	18	46	78	196	63	59
18						0	19	44	82	193	63	56
19						0	18	42	87	187	63	55
20						0	18	42	91	181	64	53
21						0	17	45	95	172	64	51
22						0	15	48	99	165	64	49
23						0	14	52	101	160	63	47
24						0	13	55	104	150	62	46
25						0	12	56	105	140	62	43
26						1.0	12	56	106	131	61	41
27						3.0	14	56	106	123	60	38
28						10	15	55	107	117	59	35
29					------	80	15	53	118	112	58	33
30					------	100	15	52	117	107	64	32
31		------			------	96	------	53	------	104	67	------
TOTAL	0	0	0	0	0	298.5	953	1,254	2,414	4,731	2,227	1,995
MEAN	0	0	0	0	0	9.63	31.8	40.5	80.5	153	71.8	66.5
MAX	0	0	0	0	0	100	90	56	118	197	101	102
MIN	0	0	0	0	0	0	12	12	54	104	58	32
AC-FT	0	0	0	0	0	592	1,890	2,490	4,790	9,380	4,420	3,960

CAL YR 1970 TOTAL 24,508.66 MEAN 67.1 MAX 389 MIN 0 AC-FT 48,610
WTR YR 1971 TOTAL 13,872.50 MEAN 38.0 MAX 197 MIN 0 AC-FT 27,520

06473000 James River at Ashton, S. Dak.

LOCATION.--Lat 45°00'02", long 98°28'57", in SE¼SW¼ sec.25, T.118 N., R.64 W., Spink County, on right bank 900 ft upstream from highway bridge, 0.9 mile east of Ashton, 6.3 miles upstream from Snake Creek, and 14.4 miles upstream from Turtle Creek.

DRAINAGE AREA.--11,000 sq mi, approximately.

PERIOD OF RECORD.--October 1945 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,244.4 ft above mean sea level. Prior to Nov. 6 (corrected), 1957, nonrecording gage at site 900 ft downstream at same datum.

AVERAGE DISCHARGE.--26 years, 157 cfs (113,700 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 195 cfs July 19 (gage height, 5.43 ft); maximum gage height, 5.49 ft Mar. 31; no flow for many days.
Period of record: Maximum discharge, 5,680 cfs Apr. 24, 1969 (gage height, 20.63 ft); maximum gage height, 21.17 ft Apr. 13, 1969 (backwater from Snake Creek); maximum daily reverse flow, 2,100 cfs Apr. 9, 1969 (backwater from Snake Creek).

REMARKS.--Records fair. Flow regulated by Arrowwood and Jim Lakes, and Jamestown Reservoir (combined capacity, 246,000 acre-ft), the largest of which is Jamestown Reservoir (capacity, 229,470 acre-ft), 285 miles upstream. Occasional backwater and reverse flow caused by Snake Creek during most years.

REVISIONS(WATER YEARS).--WSP 1209: 1947. Corrected figure of mean discharge for 1969 water year is 639 cfs, superseding figure published in WRD S.Dak. 1969.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		0	.06			0	125	21	62	126	114	64
2		0	.06			0	115	18	63	125	110	64
3		0	.13			0	109	17	64	123	105	64
4		0	.10			0	100	17	64	128	102	73
5		0	.03			0	92	17	65	131	99	71
6		0	.02			0	85	16	66	134	96	71
7		0	.01			0	81	15	67	136	94	71
8		0	.01			0	71	15	67	139	90	75
9		0	.01			0	67	17	71	143	88	80
10		0	.01			0	59	23	74	146	85	84
11		0	0			0	54	30	75	153	82	87
12		0	0			1.0	50	37	76	160	80	87
13		0	0			3.0	45	45	78	169	77	86
14		0	0			5.0	40	48	79	176	75	82
15		0	0			4.8	36	50	80	183	73	77
16		0	0			4.8	31	52	83	188	71	72
17		0	0			4.7	29	52	83	192	69	68
18		0	0			4.6	27	50	83	194	69	62
19		0	0			4.7	26	50	91	194	68	57
20		.02	0			4.8	26	48	90	192	67	53
21		.08	0			4.5	28	49	92	191	66	49
22		.08	0			3.0	26	47	95	186	65	47
23		.04	0			2.0	25	50	97	182	64	44
24		.03	0			1.2	23	50	102	174	64	42
25		.03	0			1.5	20	52	105	166	63	38
26		.03	0			3.0	18	55	107	157	63	36
27		.02	0			6.1	26	57	110	149	63	35
28		.01	0			34	27	58	112	139	61	32
29		.01	0		------	45	26	59	124	131	61	32
30		.02	0		------	92	24	61	124	123	66	29
31		------	0		------	146	------	61	------	118	66	------
TOTAL	0	.37	.44	0	0	375.7	1,511	1,237	2,549	4,848	2,416	1,832
MEAN	0	.012	.014	0	0	12.1	50.4	39.9	85.0	156	77.9	61.1
MAX	0	.08	.13	0	0	146	125	61	124	194	114	87
MIN	0	0	0	0	0	0	18	15	62	118	61	29
AC-FT	0	.7	.9	0	0	745	3,000	2,450	5,060	9,620	4,790	3,630

CAL YR 1970 TOTAL 29,879.76 MEAN 81.9 MAX 442 MIN 0 AC-FT 59,270
WTR YR 1971 TOTAL 14,769.51 MEAN 40.5 MAX 194 MIN 0 AC-FT 29,300

06473500 South Fork Snake Creek near Athol, S. Dak.

LOCATION.--Lat 45°03'04", long 98°44'14", in SE¼NE¼ sec.11, T.118 N., R.66 W., Faulk County, on left bank at upstream side of highway bridge, 2.9 miles downstream from Perry Creek and 7.5 miles northwest of Athol.

DRAINAGE AREA.--1,820 sq mi, approximately, of which about 730 sq mi is probably noncontributing.

PERIOD OF RECORD.--March 1950 to current year. Prior to October 1967, published as West Branch Snake Creek near Athol.

GAGE.--Water-stage recorder. Datum of gage is 1,316.05 ft above mean sea level. Prior to May 1, 1951, nonrecording gage at site 0.6 mile upstream at datum 4.78 ft higher.

AVERAGE DISCHARGE.--21 years, 10.6 cfs (7,680 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 10 cfs Mar. 15 (gage height, 8.54 ft); maximum gage height, 8.55 ft Mar. 14; no flow for many days.
Period of record: Maximum discharge, 6,810 cfs Apr. 7, 1969 (gage height, 19.03 ft); maximum gage height, 19.15 ft Apr. 7, 1969 (backwater from ice); no flow for many days in each year.

REMARKS.--Records fair. Water-quality records for the water year 1971 are published in Part 2 of this report.

REVISIONS.--WSP 1917: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					0	2.8	.45	8.4				
2					0	1.7	.39	8.2				
3					0	1.2	.37	7.7				
4					0	1.1	.33	6.4				
5					0	1.2	.31	4.6				
6					0	1.4	.27	3.4				
7					0	1.4	.24	2.2				
8					0	1.1	.22	1.4				
9					0	.86	.19	.86				
10					0	.76	.17	.58				
11					0	.86	.13	.47				
12					0	1.5	.12	.33				
13					0	4.2	.11	.25				
14					0	7.4	.10	.19				
15					0	6.9	.09	.13				
16					0	4.4	.08	.10				
17					0	3.6	.08	.07				
18					0	2.6	.07	.04				
19					0	1.7	.07	.03				
20					0	1.4	.07	.02				
21					0	.96	.09	.01				
22					0	.72	.09	.01				
23					0	.53	.07	0				
24					0	.43	.07	0				
25					0	.41	.07	0				
26					0	.37	.07	0				
27					.02	.37	.17	0				
28					2.6	.37	.53	0				
29					------	.37	2.6	0				
30					------	.37	7.4	0				
31		------			------	.43	------	0	------			------
TOTAL	0	0	0	0	2.62	53.41	15.02	45.39	0	0	0	0
MEAN	0	0	0	0	.094	1.72	.50	1.46	0	0	0	0
MAX	0	0	0	0	2.6	7.4	7.4	8.4	0	0	0	0
MIN	0	0	0	0	0	.37	.07	0	0	0	0	0
AC-FT	0	0	0	0	5.2	106	30	90	0	0	0	0

CAL YR 1970 TOTAL 581.77 MEAN 1.59 MAX 39 MIN 0 AC-FT 1,150
WTR YR 1971 TOTAL 116.44 MEAN .32 MAX 8.4 MIN 0 AC-FT 231

PEAK DISCHARGE (BASE, 75 CFS).--No peak above base.

06473750 Wolf Creek near Ree Heights, S. Dak.

LOCATION.--Lat 44°36'25", long 99°13'54", in SW¼SW¼ sec.11, T.113 N., R.70 W., Hand County, near right bank on downstream side of highway bridge, 0.3 mile downstream from nearest tributary, 6.5 miles north of Ree Heights, and 13.8 miles upstream from Lake Louise dam.

DRAINAGE AREA.--265 sq mi, approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 1,614.16 ft above mean sea level.

AVERAGE DISCHARGE.--12 years, 5.05 cfs (3,660 acre-ft per year).

EXTREMES.--Current year: No flow during year.
Period of record: Maximum discharge, 990 cfs Apr. 5, 1969 (gage height, 9.33 ft); maximum gage height, 9.57 ft Mar. 14, 1966 (backwater from ice); no flow for many days each year.

REMARKS.--No flow since May 8, 1970. Flow regulated by small reservoir 0.5 mile upstream (capacity, about 1,100 acre-ft).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
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20												
21												
22												
23												
24												
25												
26												
27												
28												
29					------							
30					------							
31		------			------		------		------			------
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0
MEAN	0	0	0	0	0	0	0	0	0	0	0	0
MAX	0	0	0	0	0	0	0	0	0	0	0	0
MIN	0	0	0	0	0	0	0	0	0	0	0	0
AC-FT	0	0	0	0	0	0	0	0	0	0	0	0

CAL YR 1970 TOTAL 330.83 MEAN .30 MAX 48 MIN 0 AC-FT 220
WTR YR 1971 TOTAL 0.00 MEAN .000 MAX .0 MIN 0 AC-FT 0

PEAK DISCHARGE (BASE, 40 CFS).--No peak above base

06474000 Turtle Creek near Tulare, S. Dak.

LOCATION.--Lat 44°44'06", long 98°35'09", in SE¼SE¼ sec.25, T.115 N., R.65 W., Spink County, on left bank at downstream side of highway bridge, 3.9 miles west of Tulare and 8.9 miles downstream from Wolf Creek.

DRAINAGE AREA.--1,120 sq mi, approximately.

PERIOD OF RECORD.--August 1953 to September 1956, September 1965 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,300 ft (by barometer). Prior to Oct. 6, 1965, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--9 years, 16.7 cfs (12,100 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 27 cfs Mar. 22 (gage height, 5.05 ft); no flow for many days.
Period of record: Maximum discharge, about 6,000 cfs Apr. 5, 1969; maximum gage height, 18.51 ft Apr. 5, 1969 (backwater from ice); no flow for many days each year.

REMARKS.--Records fair.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		0	.04	.11	.02	1.4	1.7	3.4	.20	.16		
2		0	.05	.11	.03	.73	1.2	2.8	.20	.13		
3		0	.05	.10	.03	.50	.96	2.1	.20	.11		
4		0	.06	.10	.03	.43	.88	1.8	.19	.12		
5		0	.06	.09	.03	.43	.84	1.4	.22	.10		
6		0	.06	.08	.04	.45	.78	1.2	.23	.08		
7		0	.07	.08	.03	.50	.75	.96	.24	.15		
8		0	.07	.07	.03	.60	.78	.73	.24	.16		
9		0	.08	.07	.03	.80	.61	.56	.26	.17		
10		0	.08	.06	.03	1.0	.49	.50	.30	.17		
11		0	.10	.05	.03	1.6	.54	.44	.30	.16		
12		.02	.10	.05	.02	1.7	.49	.39	.31	.15		
13		.02	.11	.05	.02	2.0	.50	.35	.31	.12		
14		.02	.12	.05	.02	2.8	.44	.33	.30	.10		
15		.02	.12	.03	.02	3.2	.44	.31	.29	.08		
16		.02	.14	.03	.05	3.2	.49	.27	.32	.06		
17		.02	.14	.03	.06	3.9	.43	.28	.34	.04		
18		.02	.16	.03	.05	3.4	.40	.25	.37	.03		
19		.02	.16	.03	.22	2.6	.43	.23	.39	.02		
20		.01	.17	.03	.12	2.0	.49	.21	.39	.02		
21		.01	.18	.03	.07	2.0	.68	.20	.39	.01		
22		.01	.19	.03	.07	19	.70	.18	.36	0		
23		0	.18	.03	.07	16	.81	.20	.32	0		
24		0	.18	.03	.08	10	.84	.20	.28	0		
25		.01	.17	.03	.10	5.0	.92	.20	.25	0		
26		.02	.16	.02	.15	3.6	.96	.19	.22	0		
27		.02	.15	.02	.19	3.0	2.2	.19	.20	0		
28		.02	.15	.02	.21	2.6	3.6	.18	.17	0		
29		.03	.14	.02	------	2.1	3.6	.18	.21	0		
30		.04	.13	.02	------	1.7	3.9	.18	.19	0		
31		------	.12	.02	------	1.6	------	.20	------	0		------
TOTAL	0	.33	3.69	1.52	1.85	99.84	31.85	20.61	8.19	2.14	0	0
MEAN	0	.011	.12	.049	.066	3.22	1.06	.66	.27	.069	0	0
MAX	0	.04	.19	.11	.22	19	3.9	3.4	.39	.17	0	0
MIN	0	0	.04	.02	.02	.43	.40	.18	.17	0	0	0
AC-FT	0	.7	7.3	3.0	3.7	198	63	41	16	4.2	0	0

CAL YR 1970 TOTAL 1,395.05 MEAN 3.82 MAX 111 MIN 0 AC-FT 2,770
WTR YR 1971 TOTAL 170.02 MEAN .47 MAX 19 MIN 0 AC-FT 337

PEAK DISCHARGE (BASE, 50 CFS).--No peak above base.

06474300 Medicine Creek near Zell, S. Dak.

LOCATION.--Lat 44°45'52", long 98°42'13", in NW¼NW¼ sec.19, T.115 N., R.65 W., Spink County, on downstream side at center of bridge on State Highway 26, 3.8 miles upstream from Cottonwood Lake and 9.2 miles south of Zell.

DRAINAGE AREA.--210 sq mi, approximately.

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

GAGE.--Water-stage recorder. Altitude of gage is 1,320 ft (from topographic map).

AVERAGE DISCHARGE.--12 years, 6.95 cfs (5,040 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 10 cfs Mar. 15; maximum gage height, 5.17 ft Mar. 2 (backwater from ice); no flow for many days.
Period of record: Maximum discharge, 2,210 cfs Apr. 5, 1969 (gage height, 12.41 ft); no flow for many days in most years.

REMARKS.--Records fair except those for winter periods, which are poor.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Nov. 12, June 29 to Aug. 4;
stage-discharge relation affected by ice Nov. 13 to Mar. 21)

2.32	0	2.7	.70
2.4	.04	2.8	1.2
2.5	.10	3.1	4.1
2.6	.30		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	0	.02		0	.10	.90	1.8	.18	.01	0	.02
2	.01	.01	.01		0	.50	.26	1.2	.12	.01	0	.01
3	.01	0	0		0	1.0	.62	1.0	.10	.02	0	.15
4	.02	0	0		0	.60	.54	1.5	.09	.03	0	.72
5	.01	0	0		0	.50	.50	1.4	.09	.01	.01	.06
6	.01	0	0		0	.40	.38	1.1	.08	.01	.01	.03
7	.02	0	0		0	.40	.34	.85	.08	.01	.01	.02
8	.03	.01	0		0	.50	.34	.95	.07	.01	.01	.02
9	.02	0	0		0	.80	.24	1.2	.07	.01	0	.02
10	.02	0	0		.01	1.0	.20	1.1	.07	.01	0	.02
11	.01	0	.01		.02	2.0	.20	.95	.06	.01	0	.02
12	.02	0	.02		.01	3.5	.20	.75	.05	0	0	.02
13	.02	.02	.03		.01	7.0	.20	.62	.03	0	0	.02
14	.02	.02	.03		.02	8.5	.16	.50	.03	0	0	.02
15	.02	.01	.03		.03	8.0	.12	.42	.02	0	0	.01
16	.02	0	.03		.03	8.0	.12	.30	.03	0	0	.01
17	.02	0	.02		.02	7.5	.10	.34	.02	0	0	.02
18	.01	0	.02		.02	6.5	.10	.28	.01	0	.01	.02
19	.01	0	.02		.01	6.0	.09	.26	.01	0	.02	.01
20	.01	0	.02		.01	5.0	.14	.22	.01	0	0	.01
21	.01	0	.01		.01	4.0	.30	.24	.02	0	0	.01
22	.01	0	0		.01	2.9	.26	.24	.02	.01	0	.01
23	.01	0	0		.02	2.7	.20	.38	.01	.02	0	.02
24	.01	0	0		.03	2.1	.14	.38	.01	.01	0	.02
25	.01	0	0		.04	1.8	.09	.30	.01	.02	0	.02
26	.01	.01	0		.05	1.3	.10	.26	.01	.01	0	.02
27	.01	.02	0		.04	1.3	.66	.20	.01	.01	0	.02
28	.01	.02	0		.04	1.1	.66	.18	.02	0	0	.01
29	.01	.03	0		------	1.1	.75	.14	.05	0	0	.02
30	.01	.03	0		------	1.0	2.2	.16	.02	0	.03	.02
31	0	------	0		------	1.1	------	.16	------	0	.02	------
TOTAL	.43	.18	.27	0	.43	88.20	11.11	15.38	1.40	.22	.12	1.40
MEAN	.014	.006	.009	0	.015	2.85	.37	.63	.047	.007	.004	.047
MAX	.03	.03	.03	0	.05	8.5	2.2	1.8	.18	.03	.03	.72
MIN	0	0	0	0	0	.10	.09	.14	.01	0	0	.01
AC-FT	.9	.4	.5	0	.9	175	22	38	2.8	.4	.2	2.8

CAL YR 1970 TOTAL 738.99 MEAN 2.02 MAX 65 MIN 0 AC-FT 1,470
WTR YR 1971 TOTAL 123.14 MEAN .34 MAX 8.5 MIN 0 AC-FT 244

PEAK DISCHARGE (BASE, 40 CFS).--No peak above base.

06474500 Turtle Creek at Redfield, S. Dak.

LOCATION.--Lat 44°53'00", long 98°30'46", in SW¼SE¼ sec.3, T.116 N., R.64 W., Spink County, on right bank at downstream side of bridge on U.S. Highway 281 at north edge of Redfield, 6.8 miles upstream from mouth.

DRAINAGE AREA.--1,540 sq mi, approximately.

PERIOD OF RECORD.--October 1945 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,259.3 ft above mean sea level. Prior to May 25, 1951, nonrecording gage and May 25, 1951, to Sept. 30, 1962, water-stage recorder at site 100 ft upstream at same datum. Oct. 1, 1962, to July 29, 1963, nonrecording gage at site 500 ft downstream at same datum. July 30, 1963, to Apr. 20, 1964, nonrecording gage at present site and datum.

AVERAGE DISCHARGE.--26 years, 24.3 cfs (17,610 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 24 cfs June 19 (gage height, 3.74 ft); no flow for many days.
Period of record: Maximum discharge, 7,660 cfs Apr. 7, 1969 (gage height, 15.94 ft); no flow for many days in most years.

REMARKS.--Records fair. Some regulation at times by Lake Redfield 1.6 miles upstream from station (capacity, 1,570 acre-ft).

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1-15, Oct. 25 to Nov. 20, Mar. 11-17;
stage-discharge relation affected by ice Nov. 21 to Mar. 10, Mar. 18-26)

2.7	0	3.2	2.6
2.8	.06	3.3	4.5
2.9	.29	3.4	7.2
3.0	.70	3.6	15
3.1	1.4		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	.03	.03	.03	0	.06	.23	1.3	.09	.94	.32	.06
2	0	.05	.02	.01	0	.06	.26	1.3	.05	.38	.17	0
3	0	.03	.02	0	0	.06	.23	1.1	.13	.17	.11	0
4	0	.02	.01	0	0	.07	.20	.42	.15	.07	.03	0
5	.06	0	.01	0	0	.07	.20	.26	.32	.05	0	0
6	.05	0	0	0	0	.06	.23	.20	.20	.01	0	0
7	.09	0	0	0	0	.05	.23	.15	.13	0	0	0
8	.20	.23	.01	0	0	.05	.29	.11	.07	0	0	0
9	.13	.06	0	0	.01	.05	.35	.06	.90	0	0	0
10	.04	0	0	0	.05	.06	.29	.06	.75	0	0	0
11	.01	0	0	0	.03	.07	.20	.05	.38	0	0	0
12	0	0	0	0	.03	.06	.23	.02	.26	0	0	0
13	0	0	0	0	.02	.05	.29	.02	.15	4.0	0	0
14	0	0	0	0	.05	.07	.32	.02	.13	6.6	0	1.0
15	0	0	0	0	.10	.09	.32	.02	.13	2.2	0	.50
16	0	0	0	0	.50	.09	.32	.06	1.9	6.7	0	.23
17	0	0	0	0	.85	.09	.32	.17	.46	.70	0	.06
18	0	0	0	0	.90	.09	.35	.05	.15	.38	.23	0
19	0	.02	0	0	.50	.07	.35	.07	13	.23	.20	0
20	0	.01	0	.01	.45	.07	.89	.11	9.4	.07	.11	0
21	0	.01	0	.02	.40	.06	1.3	.15	7.6	.03	.11	0
22	0	.01	0	.01	.40	.04	.81	.06	4.7	.01	.01	0
23	0	.01	0	0	.40	.05	.46	.35	2.8	.03	0	0
24	0	.01	0	0	.45	.06	.35	.07	1.3	0	0	0
25	0	.02	0	0	.50	.06	.29	.03	.65	0	0	0
26	0	.01	0	0	.40	.08	1.1	0	.32	0	.01	0
27	.01	0	0	0	.20	.13	15	0	.13	0	0	0
28	0	.01	0	0	.10	.07	8.5	0	.38	0	0	0
29	0	.02	0	.01	------	.03	1.7	0	2.8	8.9	0	0
30	.03	.02	.02	.01	------	.07	.87	0	1.3	9.5	.90	0
31	0	------	.04	0	------	.17	------	.07	------	1.0	.29	------
TOTAL	.62	.57	.16	.10	6.34	2.16	36.48	6.28	50.73	41.97	2.49	1.85
MEAN	.020	.019	.005	.003	.23	.070	1.22	.20	1.69	1.35	.080	.062
MAX	.20	.23	.04	.03	.90	.17	15	1.3	13	9.5	.90	1.0
MIN	0	0	0	0	0	.03	.20	0	.05	0	0	0
AC-FT	1.2	1.1	.3	.2	13	4.3	72	12	101	83	4.9	3.7

CAL YR 1970 TOTAL 2,365.53 MEAN 6.48 MAX 92 MIN 0 AC-FT 4,690
WTR YR 1971 TOTAL 149.75 MEAN .41 MAX 15 MIN 0 AC-FT 297

PEAK DISCHARGE (BASE, 50 CFS).--No peak above base.

06475000 James River near Redfield, S. Dak.

LOCATION.--Lat 44°55'13", long 98°25'52", in SW¼NW¼ sec.28, T.117 N., R.63 W., Spink County, on right bank at downstream side of highway bridge, 5.2 miles northeast of Redfield and 5.2 miles downstream from Turtle Creek.

DRAINAGE AREA.--14,800 sq mi, approximately.

PERIOD OF RECORD.--March 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,236.3 ft above mean sea level. Prior to July 26, 1951, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--21 years, 189 cfs (136,900 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 200 cfs July 24 (gage height, 6.05 ft); no flow for many days.
Period of record: Maximum discharge, 7,310 cfs Apr. 13, 1969 (gage height, 24.93 ft); no flow for many days in most years.

REMARKS.--Records fair except those for winter periods, which are poor. Flow regulated by Arrowwood and Jim Lakes, and Jamestown Reservoir (combined capacity, 246,000 acre-ft), the largest of which is Jamestown Reservoir (capacity, 229,470 acre-ft), 303 miles upstream. Low flow affected by wind at times.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	.95	.20	.15	.02	.50	128	46	69	104	92	83
2	0	.92	.19	.14	.02	.50	142	46	79	120	87	89
3	0	1.0	.19	.10	.02	1.0	149	64	77	131	85	99
4	0	1.0	.19	.08	.01	1.0	124	45	102	112	90	97
5	0	.98	.18	.05	.01	1.5	98	45	88	111	92	98
6	0	1.2	.17	.03	.01	1.0	87	41	80	126	86	84
7	0	1.1	.16	.03	0	1.0	80	37	66	127	84	84
8	0	1.1	.15	.02	0	1.0	50	42	67	114	86	74
9	0	1.2	.13	.02	.01	1.5	55	51	87	127	78	80
10	0	1.2	.12	.02	.03	2.0	105	39	80	134	58	81
11	0	1.3	.11	.01	.06	4.0	63	25	77	142	5[illegible]	92
12	0	1.2	.11	.01	.10	10	45	37	70	141	59	88
13	0	1.2	.11	.01	.30	20	39	38	63	133	53	100
14	0	1.0	.10	.01	.50	25	56	48	61	144	50	85
15	.17	.80	.10	0	.75	22	56	43	61	147	57	85
16	.17	.50	.10	0	1.0	18	39	73	71	154	63	83
17	.22	.45	.10	0	1.2	18	57	60	63	172	63	78
18	.25	.44	.09	0	1.1	18	79	56	61	171	54	75
19	.27	.43	.09	0	.95	17	52	53	96	170	62	78
20	.38	.40	.09	.03	.85	17	53	63	100	174	55	67
21	.44	.30	.10	.05	.85	14	58	94	92	179	56	55
22	.44	.25	.10	.05	.85	10	51	96	86	178	52	60
23	.44	.17	.10	.04	.90	11	39	79	93	176	53	58
24	.44	.16	.10	.02	.95	15	40	55	90	185	42	74
25	.47	.16	.11	.02	.95	17	34	59	92	165	48	80
26	.50	.15	.11	.02	.90	20	37	75	100	150	49	75
27	.32	.15	.12	.01	.80	25	45	83	100	142	58	52
28	.80	.17	.13	.02	.70	30	50	102	90	123	59	41
29	.74	.20	.13	.02	------	40	70	89	111	111	72	56
30	.92	.20	.14	.03	------	70	51	91	101	108	83	65
31	.98	------	.15	.02	------	119	------	86	------	105	72	------
TOTAL	7.95	20.28	3.97	1.01	13.84	551.00	2,032	1,861	2,473	4,376	2,055	2,315
MEAN	.26	.68	.13	.033	.49	17.8	67.7	60.0	82.4	141	66.3	77.2
MAX	.98	1.3	.20	.15	1.2	119	149	102	111	185	92	100
MIN	0	.15	.09	0	0	.50	34	25	61	104	42	41
AC-FT	16	40	7.9	2.0	27	1,090	4,030	3,690	4,910	8,680	4,080	4,590

CAL YR 1970 TOTAL 37,908.90 MEAN 104 MAX 640 MIN 0 AC-FT 75,190
WTR YR 1971 TOTAL 15,710.05 MEAN 43.0 MAX 185 MIN 0 AC-FT 31,160

06476000 James River at Huron, S. Dak.
(Irrigation network station)

LOCATION.--Lat 44°21'49", long 98°11'56", in SW¼SE¼NE¼ sec.6, T.110 N., R.61 W., Beadle County, on right bank 15 ft upstream from city dam at Huron, 135 ft downstream from Chicago and North Western Railway Co. bridge and 165 ft upstream from bridge on business loop U.S. Highway 14.

DRAINAGE AREA.--16,800 sq mi, approximately.

PERIOD OF RECORD.--August 1928 to September 1932, August 1943 to current year. Monthly discharge only for some periods, published in WSP 1309. Gage-height records collected at site about 100 ft downstream for period of open water each year July 1902 to June 1914 and for period March to June 1915-23 are in reports of U.S. Weather Bureau.

GAGE.--Water-stage recorder and concrete dam. Datum of gage is 1,223.44 ft above mean sea level. Aug. 29, 1928, to Mar. 15, 1929, nonrecording gage at site 100 ft downstream at about same datum. Mar. 16, 1929, to June 30, 1932, nonrecording gage 165 ft downstream at present datum. Aug. 3, 1943, to Oct. 17, 1951, nonrecording gage at site 15 ft downstream at present site and datum.

AVERAGE DISCHARGE.--32 years, 237 cfs (171,700 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 674 cfs Mar. 14 (gage height, 8.84 ft); maximum gage height, 9.03 ft July 24, Sept. 13; no flow for many days.
Period of record: Maximum discharge, 9,000 cfs Apr. 13, 1969 (gage height, 16.70 ft); no flow for long periods in most years.
A flood between Apr. 11 and 13, 1881 reached a stage of 19.8 ft, from U.S. Weather Bureau publication. Flood of Mar. 22, 1922, reached a stage of 16.5 ft.

REMARKS.--Records good above 100 cfs and fair below. Flow regulated by Arrowwood and Jim Lakes, and Jamestown Reservoir (combined capacity, 246,000 acre-ft). Regulation by Jamestown Reservoir (capacity, 229.470 acre-ft), 365 miles upstream, since May 1953. The City of Huron and Armour and Company take water from the river immediately upstream from the gage. Average daily pumpage was about 5.0 cfs. Stage and discharge affected by wind at times. Water-quality records for the water year 1971 are published in Part 2 of this report.

COOPERATION.--Average yearly pumpage figures furnished by City of Huron Water Department and by Armour and Company.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1		0	9.9		0	4.7	73	54	51	87	93	39
2		0	9.9		0	3.0	60	43	47	66	87	32
3		0	7.9		0	1.9	86	22	47	70	80	32
4		0	6.0		0	1.0	96	35	27	87	70	62
5		0	4.1		0	.59	62	43	51	87	66	54
6		0	2.2		0	.38	32	32	54	74	62	70
7		0	.50		0	.44	66	30	54	74	58	66
8		0	.50		0	.40	93	24	54	87	54	66
9		0	.40		0	.31	80	13	51	74	54	66
10		0	4.1		0	.28	30	30	47	80	62	66
11		0	4.1		0	.33	74	43	47	74	58	58
12		0	2.2		0	22	87	11	54	87	54	62
13		0	2.2		0	201	70	19	54	87	51	58
14		0	.50		0	625	54	8.0	51	87	47	62
15		0	.30		0	522	51	16	47	93	35	58
16		0	.40		0	423	58	8.0	39	93	30	62
17		0	.30		0	338	43	24	47	87	24	62
18		0	.30		4.3	209	22	35	47	99	39	62
19		0	.30		21	142	43	32	54	106	47	54
20		0	.30		12	119	51	32	62	106	47	58
21		0	.25		10	103	70	22	66	106	43	62
22		0	.20		9.9	87	47	8.0	70	118	47	58
23		0	.15		9.9	81	54	51	66	118	39	54
24		0	.15		8.9	74	51	58	70	112	43	32
25		0	.15		7.9	70	51	58	70	137	43	35
26		0	.15		11	65	43	47	66	131	35	35
27		11	.15		8.4	67	54	35	58	124	27	51
28		14	.15		6.7	68	54	22	80	118	24	51
29		12	.06		------	67	39	30	80	118	19	39
30		12	0		------	67	51	39	80	106	43	27
31		------	0		------	70	------	43	------	99	47	------
TOTAL	0	49	57.81	0	110.0	3,433.33	1,745	967.0	1,691	2,992	1,528	1,593
MEAN	0	1.63	1.86	0	3.93	111	58.2	31.2	56.4	96.5	49.3	53.1
MAX	0	14	9.9	0	21	625	96	58	80	137	93	70
MIN	0	0	0	0	0	.28	22	8.0	27	66	19	27
AC-FT	0	97	115	0	218	6,810	3,460	1,920	3,350	5,930	3,030	3,160

CAL YR 1970 TOTAL 62,030.81 MEAN 170 MAX 1,810 MIN 0 AC-FT 123,000
WTR YR 1971 TOTAL 14,166.14 MEAN 38.8 MAX 625 MIN 0 AC-FT 28,100

06476500 Sand Creek near Alpena, S. Dak.

LOCATION.--Lat 44°09'15", long 98°26'06", in NE¼NE¼ sec.19, T.108 N., R.63 W., Jerauld County, on left bank 5 ft downstream from highway bridge, 4.0 miles southwest of Alpena, 7.0 miles upstream from Chicago, Milwaukee, St. Paul and Pacific Railroad bridge, and 10.5 miles upstream from interlink with Cain Creek.

DRAINAGE AREA.--240 sq mi, approximately.

PERIOD OF RECORD.--March 1950 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,315 ft (by barometer). Prior to Sept. 17, 1951, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--21 years, 10.3 cfs (7,460 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 400 cfs Mar. 15; maximum gage height, 11.88 ft Mar. 15 (backwater from ice); no flow for many days.
Period of record: Maximum discharge, 2,240 cfs Mar. 28, 1960 (gage height, 13.35 ft); maximum gage height, 14.1 ft Mar. 28, 1950 (backwater from ice); no flow for many days in each year.

REMARKS.--Records good except those for winter periods, which are poor.

REVISIONS(WATER YEARS).--WSP 1309: 1950(M).

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Stage-discharge relation affected by ice Feb. 16 to Apr. 5)

7.4	0	7.8	1.3
7.5	.10	7.9	3.5
7.6	.20	8.1	14
7.7	.60		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					0	0	9.5	13	1.2			
2					0	0	10	11	1.1			
3					0	0	8.5	9.9	.95			
4					0	0	10	8.8	.88			
5					0	0	10	7.2	1.3			
6					0	0	10	5.6	1.0			
7					0	0	8.3	5.1	.95			
8					0	0	6.2	4.0	.81			
9					0	0	5.1	3.5	.67			
10					0	.10	5.1	3.1	.60			
11					0	.20	4.0	2.4	.52			
12					0	1.0	3.1	2.0	.48			
13					0	35	2.8	2.2	.44			
14					0	300	2.8	1.7	.36			
15					0	375	2.6	1.3	.28			
16					1.0	325	2.2	1.2	.24			
17					6.0	175	1.5	2.6	.18			
18					8.0	125	1.5	1.7	.17			
19					6.0	75	1.3	1.2	.17			
20					4.0	50	2.0	1.2	.17			
21					3.0	35	3.1	1.2	.18			
22					2.0	30	2.4	1.2	.19			
23					1.0	25	2.4	2.0	.17			
24					.50	20	2.4	1.5	.14			
25					.10	17	2.6	1.2	.12			
26					0	15	3.5	1.2	.09			
27					0	18	8.3	1.2	.06			
28					0	19	7.2	1.1	.02			
29					------	16	8.8	1.1	.04			
30					------	13	12	1.1	.02			
31		------			------	12	------	1.2	------			------
TOTAL	0	0	0	0	31.60	1,681.30	159.2	102.7	13.50	0	0	0
MEAN	0	0	0	0	1.13	54.2	5.31	3.31	.45	0	0	0
MAX	0	0	0	0	8.0	375	12	13	1.3	0	0	0
MIN	0	0	0	0	0	0	1.3	1.1	.02	0	0	0
AC-FT	0	0	0	0	63	3,330	316	204	27	0	0	0

CAL YR 1970 TOTAL 2,510.86 MEAN 6.88 MAX 229 MIN 0 AC-FT 4,980
WTR YR 1971 TOTAL 1,988.30 MEAN 5.45 MAX 375 MIN 0 AC-FT 3,940

PEAK DISCHARGE (BASE, 50 CFS).--Mar. 15 (time and stage unknown) 400 cfs.

06477000 James River near Forestburg, S. Dak.

LOCATION.--Lat 43°58'26", long 98°04'14", in SW¼SW¼NW¼ sec.20, T.106 N., R.60 W., Sanborn County, on right bank 5 ft downstream from highway bridge, 3.8 miles southeast of Forestburg, 5.4 miles downstream from Chicago, Milwaukee, St. Paul and Pacific Railroad bridge, and 6.1 miles downstream from Sand Creek.

DRAINAGE AREA.--18,600 sq mi, approximately.

PERIOD OF RECORD.--March 1950 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,208.34 ft above mean sea level (Bureau of Reclamation bench mark). Prior to Sept. 5, 1951, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--21 years, 290 cfs (210,100 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 980 cfs Mar. 18; maximum gage height, 11.40 ft Mar. 18 (backwater from ice); minimum daily discharge, 0.10 cfs Oct. 4.
Period of record: Maximum discharge, 12,500 cfs Apr. 9, 1969 (gage height, 17.16 ft); no flow at times in 1950, 1955, 1959, 1961, 1970.
Floods in March 1920 and March 1922 reached a stage of about 18 ft, from information by local residents.

REMARKS.--Records good except those for winter periods, which are poor. Flow regulated by Arrowwood and Jim Lakes, and Jamestown Reservoir (combined capacity, 246,000 acre-ft), the largest of which is Jamestown Reservoir (capacity, 229,470 acre-ft), 408 miles upstream.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Nov. 27, Dec. 11 to Jan. 17, Apr. 1-24; stage-discharge relation affected by ice Nov. 28 to Dec. 10, Jan. 18 to Mar. 31)

2.19	0.10	2.5	5.4	3.5	101
2.2	.14	2.7	13	4.0	183
2.3	.90	2.8	18	4.5	278
2.4	2.6	3.0	36		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.40	7.6	29	3.5	1.5	25	195	83	43	95	113	37
2	.32	8.4	26	3.8	1.5	22	139	80	54	92	107	45
3	.22	8.9	23	4.0	1.4	19	124	79	63	88	99	44
4	.10	11	20	3.9	1.4	18	116	73	60	80	82	43
5	.18	11	17	3.3	1.3	16	127	66	57	81	56	46
6	.32	8.7	15	2.6	1.2	15	135	57	57	93	43	47
7	1.0	7.4	12	2.3	1.2	14	111	58	62	92	63	57
8	3.6	7.8	11	2.2	1.1	14	101	57	72	88	63	66
9	6.0	9.5	10	2.1	1.2	13	133	51	78	92	60	75
10	6.0	9.3	9.3	1.9	1.3	14	130	46	76	106	59	72
11	7.2	10	8.9	1.7	1.5	15	127	43	71	94	59	69
12	6.6	10	8.9	1.6	1.9	45	118	40	66	88	58	64
13	5.6	10	8.8	1.6	2.3	60	121	55	64	86	54	62
14	4.4	9.5	8.5	1.6	2.6	130	125	52	68	88	51	58
15	3.2	8.6	8.5	1.5	3.0	350	109	44	70	90	44	58
16	2.8	8.5	8.3	1.4	3.7	700	98	39	67	90	36	57
17	2.6	8.2	8.0	1.4	7.0	900	90	43	61	90	33	58
18	3.3	7.8	7.8	1.4	8.0	950	75	44	58	91	33	59
19	4.0	7.9	7.6	1.4	9.0	940	66	52	60	93	30	58
20	4.0	7.5	7.0	1.5	17	890	61	59	63	99	27	57
21	4.1	7.4	6.4	1.6	13	760	86	60	68	104	25	57
22	4.5	7.2	6.0	1.7	10	640	96	53	72	107	24	59
23	4.7	5.6	5.3	1.8	9.0	570	104	57	84	113	24	59
24	4.9	4.9	4.8	1.7	10	520	91	58	86	120	24	56
25	5.1	4.8	4.4	1.7	15	470	79	73	82	124	21	51
26	4.5	5.6	4.2	1.6	20	390	76	85	82	132	22	43
27	4.4	5.8	4.1	1.6	25	320	95	80	78	139	20	36
28	4.7	8.0	3.8	1.5	35	265	101	69	82	135	20	35
29	5.6	16	3.5	1.5	------	230	102	57	79	131	24	40
30	6.8	29	3.5	1.5	------	220	94	49	87	128	32	43
31	7.3	------	3.5	1.4	------	200	------	43	------	125	33	------
TOTAL	118.44	271.9	304.1	62.3	206.1	9,735	3,225	1,805	2,070	3,174	1,439	1,611
MEAN	3.82	9.06	9.81	2.01	7.36	314	108	58.2	69.0	102	46.4	53.7
MAX	7.3	29	29	4.0	35	950	195	85	87	139	113	75
MIN	.10	4.8	3.5	1.4	1.1	13	61	39	43	80	20	35
AC-FT	235	539	603	124	409	19,310	6,400	3,580	4,110	6,300	2,850	3,200

CAL YR 1970 TOTAL 74,218.95 MEAN 203 MAX 1,300 MIN 0 AC-FT 147,200
WTR YR 1971 TOTAL 24,021.84 MEAN 65.8 MAX 950 MIN .10 AC-FT 47,650

06477150 Rock Creek near Fulton, S. Dak.

LOCATION (revised).--Lat 43°45'39", long 97°54'25", in NW¼NW¼ sec.3, T.103 N., R.59 W., Hanson County, near right bank on downstream wingwall of highway bridge, 4.9 miles northwest of Fulton and 9.5 miles upstream from mouth.

DRAINAGE AREA.--270 sq mi, approximately.

PERIOD OF RECORD.--October 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,232.08 ft above mean sea level.

AVERAGE DISCHARGE.--5 years, 8.43 cfs (6,110 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 900 cfs Mar. 15; maximum gage height, 9.18 ft Mar. 15 (backwater from ice); no flow for many days.
Period of record: Maximum discharge, 2,040 cfs Apr. 7, 1969 (gage height, 10.21 ft, from floodmarks). No flow for many days in each year.

REMARKS.--Records good except those for winter periods, which are poor.

REVISIONS (WATER YEARS).--WRD S. Dak. 1968: 1967(M).

Rating tables (gage height, in feet, and discharge, in cubic feet per second)
(Stage-discharge relation affected by ice Nov. 22 to Mar. 26; shifting-control method used Mar. 27 to Apr. 4)

Oct. 1 to Mar. 26		Mar. 27 to Sept. 30			
2.65	0	2.55	0	2.9	2.0
2.7	.03	2.6	.09	3.0	3.3
2.8	.45	2.7	.50	3.2	7.1
		2.8	1.1	3.4	12

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	.11	.13	.03	0	3.8	16	4.8	.35	.16		
2	0	.11	.13	.02	0	3.6	14	4.3	.30	.05		
3	0	.11	.12	.01	0	3.4	13	3.3	.25	0		
4	0	.06	.12	0	0	3.6	12	2.8	.30	0		
5	0	.02	.10	0	0	4.0	11	2.6	.25	0		
6	0	.02	.08	0	0	3.9	9.2	2.0	.20	0		
7	0	.02	.11	0	0	3.7	7.6	1.8	.25	0		
8	0	.12	.12	0	0	3.7	6.9	1.7	.25	0		
9	0	.45	.12	0	.05	4.0	5.6	1.4	.16	0		
10	.02	.08	.11	0	.13	4.3	5.2	1.3	.50	.16		
11	.06	.03	.10	0	.30	4.6	4.1	1.1	.56	.09		
12	.02	.02	.08	0	.28	5.0	3.4	.98	.35	.05		
13	.03	.03	.07	0	.23	5.5	3.2	.86	.35	0		
14	.02	.03	.06	0	.48	6.0	3.0	.74	.35	0		
15	.02	.03	.06	0	.80	175	2.6	.62	.30	0		
16	.03	.03	.06	0	1.5	750	2.3	.50	.20	0		
17	.02	.03	.05	0	3.0	475	2.1	.74	.11	0		
18	.03	.06	.04	0	5.0	250	1.8	.74	.07	0		
19	.02	.14	.03	0	4.8	150	1.8	.68	.05	0		
20	.03	.14	.01	.01	4.5	125	1.8	.62	.05	0		
21	.02	.18	0	.03	4.3	75	3.2	.56	.03	0		
22	.03	.14	0	.05	4.1	60	2.8	.50	.01	0		
23	.08	.12	0	.06	3.9	32	4.1	.92	0	.11		
24	.06	.12	0	.05	3.9	35	4.1	.86	0	.09		
25	.06	.14	0	.03	4.2	50	3.8	.68	0	.03		
26	.06	.12	0	.02	4.4	52	3.2	.68	0	0		
27	.06	.08	0	.02	4.2	55	4.8	.62	0	0		
28	.06	.10	0	.02	4.0	29	4.3	.50	.23	0		
29	.06	.12	0	.03	------	24	4.3	.45	.74	0		
30	.08	.13	.02	.02	------	19	5.0	.45	.40	0		
31	.08	------	.03	0	------	18	------	.45	------	0		------
TOTAL	.95	2.89	1.75	.40	54.07	2,433.1	166.2	40.25	6.61	.74	0	0
MEAN	.031	.096	.057	.013	1.93	78.5	5.54	1.30	.22	.024	0	0
MAX	.08	.45	.13	.06	5.0	750	16	4.8	.74	.16	0	0
MIN	0	.02	0	0	0	3.4	1.8	.45	0	0	0	0
AC-FT	1.9	5.7	3.5	.8	107	4,830	330	80	13	1.5	0	0

CAL YR 1970 TOTAL 1,126.56 MEAN 3.09 MAX 158 MIN 0 AC-FT 2,230
WTR YR 1971 TOTAL 2,706.96 MEAN 7.42 MAX 750 MIN 0 AC-FT 5,370

PEAK DISCHARGE (BASE, 50 CFS).--Mar. 15 (time and stage unknown) 900 cfs.

06477500 Firesteel Creek near Mount Vernon, S. Dak.

LOCATION.--Lat 43°46'30", long 98°14'33", in SW¼SW¼ sec.26, T.104 N., R.62 W., Davison County, near center of span on downstream side of highway bridge, 4.5 miles north of Mount Vernon, 5.2 miles downstream from West Firesteel Creek, and 12 miles northwest of Mitchell.

DRAINAGE AREA.--540 sq mi, approximately.

PERIOD OF RECORD.--September 1955 to current year.

GAGE.--Nonrecording gage and crest-stage gage. Altitude of gage is 1,310 ft (from topographic map).

AVERAGE DISCHARGE.--16 years, 25.8 cfs (18,690 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 900 cfs Mar. 17; maximum gage height, 9.47 ft Mar. 15 (backwater from ice); no flow for many days.
Period of record: Maximum discharge, 6,610 cfs Apr. 4, 1969 (gage height, 15.34 ft); maximum gage height, 17.12 ft Apr. 3, 1969 (backwater from ice); no flow for many days in each year.

REMARKS.--Records good except those for winter periods, which are poor.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Nov. 1-21, Mar. 27 to Apr. 15; stage-discharge relation affected by ice Nov. 22 to Mar. 26)

2.25	0	2.5	.99	2.8	5.4	3.5	42
2.3	.02	2.6	1.9	2.9	8.4	4.0	88
2.4	.37	2.7	3.4	3.2	22	4.5	147

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0	.10	.06		0	2.0	24	7.8	.26	3.7		
2	0	.13	.07		0	1.5	23	9.6	.31	3.4		
3	0	.16	.07		0	1.0	18	7.5	.26	2.7		
4	0	.13	.08		0	2.3	17	6.3	.59	4.5		
5	0	.16	.07		0	2.5	12	7.8	.47	4.7		
6	0	.21	.04		0	2.5	14	6.3	.71	4.3		
7	0	.26	.05		0	2.0	8.4	1.2	.47	.26		
8	0	.26	.07		0	1.5	6.9	1.6	.47	.13		
9	0	.31	.06		0	2.0	4.3	2.3	.53	.04		
10	0	.21	.05		0	3.0	3.4	2.1	.71	.37		
11	.02	.31	.04		0	5.0	2.2	1.8	.47	.16		
12	.02	.04	.04		0	50	1.9	1.4	.26	.13		
13	.02	.07	.05		0	175	2.4	1.4	.04	.16		
14	.02	.03	.06		0	375	1.8	1.2	.02	.02		
15	.02	.02	.05		.50	600	1.8	1.3	.02	.02		
16	.03	.02	.05		2.0	480	2.3	1.2	.04	.13		
17	.02	.04	.04		4.0	525	2.1	.85	.10	.03		
18	.02	.03	.03		3.0	325	1.4	.78	.04	.02		
19	.03	.02	.02		1.5	180	1.8	.65	.10	0		
20	.02	.03	.01		1.0	115	2.3	.53	.10	0		
21	.03	.04	.01		.75	75	2.6	.26	.37	0		
22	.02	.03	.01		.60	60	2.5	.21	.04	.10		
23	.02	.02	0		1.0	45	2.3	1.1	.04	.04		
24	.03	.03	0		1.5	36	2.4	1.1	.03	.03		
25	.04	.04	0		2.0	34	2.1	1.2	.03	.02		
26	.02	.03	0		2.0	29	1.9	1.7	.04	.02		
27	.02	.02	0		1.5	27	3.4	.78	.02	.02		
28	.04	.03	0		1.0	24	5.7	.37	.13	0		
29	.04	.04	0		------	49	5.4	.26	.42	0		
30	.07	.06	0		------	99	6.9	.42	.37	0		
31	.10	------	0		------	89	------	.31	------	0		------
TOTAL	.65	2.88	1.03		22.35	3,417.3	186.2	71.32	7.46	25.00	0	0
MEAN	.021	.096	.033		.80	110	6.21	2.30	.25	.81	0	0
MAX	.10	.31	.08		4.0	600	24	9.6	.71	4.7	0	0
MIN	0	.02	0		0	1.0	1.4	.21	.02	0	0	0
AC-FT	1.3	5.7	2.0		44	6,780	369	141	15	50	0	0

CAL YR 1970 TOTAL 3,244.73 MEAN 8.89 MAX 257 MIN 0 AC-FT 6,440
WTR YR 1971 TOTAL 3,734.19 MEAN 10.2 MAX 600 MIN 0 AC-FT 7,410

PEAK DISCHARGE (BASE, 100 CFS)

DATE	TIME	G.H.	DISCHARGE
3-17	-	-	900
3-30	2400	4.87	173

06478000 James River near Mitchell, S. Dak.

LOCATION.--Lat 43°41'36", long 97°57'54", in NW¼SW¼ sec.30, T.103 N., R.59 W., Hanson County, on left bank 50 ft downstream from bridge on Interstate 90, 0.2 mile downstream from Firesteel Creek and 3.2 miles southeast of Mitchell.

DRAINAGE AREA.--19,800 sq mi, approximately.

PERIOD OF RECORD.--July 1953 to September 1958 (published as "near Alexandria"), August 1965 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,198.00 ft above mean sea level (South Dakota Department of Highways bench mark). July 1, 1953, to Sept. 30, 1958, nonrecording gage at site 10.5 miles downstream at datum 2.97 ft lower. Aug. 17 to Dec. 7, 1965, nonrecording gage at present site and datum.

AVERAGE DISCHARGE.--11 years, 285 cfs (206,500 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,850 cfs Mar. 18; maximum gage height, 12.80 ft Mar. 18 (backwater from ice); minimum daily discharge, 1.8 cfs Feb. 8.
Period of record: Maximum discharge, 13,800 cfs Apr. 11, 1969 (gage height, 18.32 ft); minimum, 1.0 cfs Oct. 9, 1956, Sept. 26, 27, 1958.

REMARKS(revised).--Records fair except those for winter periods, which are poor. Flow regulated by Arrowwood and Jim Lakes, and Jamestown Reservoir (combined capacity, 246,000 acre-ft), the largest of which is Jamestown Reservoir (capacity, 229,470 acre-ft), 447 miles upstream. Water-quality records for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	3.7	13	5.0	2.2	23	340	145	62	87	122	26
2	2.4	4.9	15	4.8	2.1	25	298	139	57	85	121	26
3	2.2	5.0	20	4.6	2.1	28	258	130	54	83	116	25
4	2.1	5.0	25	4.5	2.0	30	220	121	56	82	110	25
5	2.4	5.0	35	4.4	2.0	31	196	120	59	81	103	26
6	2.6	4.8	28	4.4	1.9	31	184	111	59	82	95	26
7	3.5	5.5	25	4.5	1.9	29	179	99	57	82	87	29
8	5.0	10	23	4.6	1.8	26	168	90	56	84	80	32
9	4.0	20	21	4.7	1.9	23	162	84	58	91	71	38
10	3.7	16	20	4.8	2.0	25	146	81	73	111	64	43
11	5.0	17	18	4.7	2.3	30	147	78	72	116	59	50
12	4.6	16	17	4.3	2.5	60	152	74	70	112	55	52
13	3.8	15	16	4.0	2.8	150	140	67	69	106	51	55
14	3.8	14	15	3.3	3.1	370	136	64	68	101	48	55
15	4.0	13	14	3.2	3.5	920	135	62	65	96	46	55
16	4.4	13	14	3.0	3.9	1,430	132	62	64	94	42	55
17	4.6	13	13	2.8	15	1,650	131	64	61	91	38	55
18	4.2	13	12	2.7	58	1,800	124	64	62	89	39	56
19	4.9	14	12	2.6	70	1,710	117	60	61	89	39	56
20	5.0	13	11	2.5	56	1,600	112	58	58	88	36	57
21	5.4	13	10	2.5	45	1,550	114	60	57	87	33	58
22	5.7	14	10	2.5	34	1,480	117	60	57	92	30	60
23	4.8	13	9.2	2.5	28	1,400	115	76	58	99	28	61
24	5.5	12	8.6	2.6	23	1,260	116	82	60	101	24	61
25	5.0	11	8.0	2.8	21	938	116	80	64	105	23	61
26	4.9	12	7.5	2.5	25	672	115	78	66	113	24	60
27	4.3	12	7.0	2.5	28	516	132	76	66	117	23	57
28	4.3	12	6.6	2.4	25	452	150	76	77	122	23	54
29	4.4	13	6.0	2.3	------	404	149	74	96	125	22	52
30	4.0	13	5.5	2.3	------	367	147	75	91	126	24	50
31	4.3	------	5.2	2.2	------	348	------	68	------	126	25	------
TOTAL	127.2	345.9	450.6	106.5	466.0	19,378	4,748	2,578	1,933	3,063	1,701	1,416
MEAN	4.10	11.5	14.5	3.44	16.6	625	158	83.2	64.4	98.8	54.9	47.2
MAX	5.7	20	35	5.0	70	1,800	340	145	96	126	122	61
MIN	2.1	3.7	5.2	2.2	1.8	23	112	58	54	81	22	25
AC-FT	252	686	894	211	924	38,440	9,420	5,110	3,830	6,080	3,370	2,810

CAL YR 1970 TOTAL 70,212.5 MEAN 192 MAX 1,290 MIN 1.2 AC-FT 139,300
WTR YR 1971 TOTAL 36,313.2 MEAN 99.5 MAX 1,800 MIN 1.8 AC-FT 72,030

06478500 James River near Scotland, S. Dak.

LOCATION.--Lat 43°11'00", long 97°37'57", in SW¼SW¼ sec.30, T.97 N., R.57 W., Hutchinson County, on left bank 50 ft upstream from highway bridge, 500 ft upstream from Dawson Creek and 5 miles northeast of Scotland.

DRAINAGE AREA.--21,550 sq mi, approximately.

PERIOD OF RECORD.--September 1928 to current year. Monthly discharge only for some periods, published in WSP 1309.

GAGE.--Water-stage recorder and rock and earth control. Datum of gage is 1,168.51 ft above mean sea level. Prior to Dec. 1, 1934, nonrecording gage at site 50 ft downstream, and Dec. 1, 1934, to Sept. 27, 1948, water-stage recorder at site 50 ft upstream at present datum.

AVERAGE DISCHARGE.--43 years, 379 cfs (274,600 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,950 cfs Mar. 17; maximum gage height, 13.16 ft Mar. 17 (backwater from ice); minimum daily discharge, 7.6 cfs Oct. 3.
Period of record: Maximum discharge, 15,200 cfs Apr. 3, 1962 (gage height, 18.74 ft); no flow for many days in some years.

REMARKS(revised).--Records good except those for winter periods, which are poor. Flow regulated by Arrowwood and Jim Lakes, and Jamestown Reservoir (combined capacity, 246,000 acre-ft), the largest of which is Jamestown Reservoir (capacity, 229,470 acre-ft), 527 miles upstream. Occasional backwater caused by Dawson Creek; reverse flow occurred for part of May 15, 1961, from information by local residents. Water-quality records for the water year 1971 are published in Part 2 of this report.

REVISIONS(WATER YEARS).--WSP 786: Drainage area. WSP 956: 1937-38. WSP 1279: 1932, 1948. WRD S.Dak. 1970: 1968, 1969.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.2	20	25	21	11	55	867	191	100	94	98	27
2	8.2	22	25	20	11	40	722	191	98	93	98	26
3	7.6	23	25	19	10	35	602	185	95	88	96	25
4	7.7	24	25	18	10	33	499	172	111	81	87	28
5	7.7	24	25	17	9.7	35	429	167	111	87	81	28
6	7.9	24	25	16	9.5	45	367	169	93	93	82	28
7	8.9	22	29	15	9.3	40	308	155	315	89	122	27
8	11	23	32	15	9.0	35	268	141	570	95	113	27
9	12	28	35	15	11	30	258	126	528	324	103	30
10	13	31	35	14	12	28	215	115	1,910	575	95	33
11	13	33	31	14	14	32	181	113	1,650	362	91	32
12	12	31	30	14	15	70	190	111	645	289	84	34
13	12	33	30	14	15	500	186	96	377	258	79	35
14	12	31	29	14	15	1,500	181	83	264	241	72	40
15	11	31	28	14	16	2,000	163	79	186	219	63	42
16	11	31	28	13	19	2,500	162	72	139	191	60	45
17	12	31	27	13	35	2,900	164	72	109	173	52	47
18	12	31	27	13	60	2,800	151	73	109	156	47	48
19	13	34	27	14	100	2,750	143	78	94	144	63	48
20	13	35	26	14	200	2,520	151	74	82	136	98	49
21	12	35	25	14	120	2,440	167	70	77	121	72	49
22	13	31	25	14	90	2,530	154	72	74	113	55	61
23	13	27	24	14	70	2,610	157	208	69	118	45	61
24	13	26	24	14	55	2,620	151	224	67	115	41	56
25	16	26	24	14	60	2,570	144	147	64	105	36	55
26	18	25	24	13	70	2,390	145	120	62	96	34	54
27	18	24	24	13	90	2,060	158	106	57	91	31	56
28	16	23	24	13	70	1,650	169	98	58	87	27	62
29	18	24	23	12	------	1,340	174	90	68	89	26	63
30	18	24	22	12	------	1,090	177	89	88	91	26	57
31	19	------	22	11	------	990	------	93	------	94	26	------
TOTAL	387.2	827	825	451	1,216.5	40,238	7,803	3,780	8,270	4,908	2,103	1,273
MEAN	12.5	27.6	26.6	14.5	43.4	1,298	260	122	276	158	67.8	42.4
MAX	19	35	35	21	200	2,900	867	224	1,910	575	122	63
MIN	7.6	20	22	11	9.0	28	143	70	57	81	26	25
AC-FT	768	1,640	1,640	895	2,410	79,810	15,480	7,500	16,400	9,740	4,170	2,530

CAL YR 1970 TOTAL 103,644.3 MEAN 284 MAX 1,960 MIN 6.5 AC-FT 205,600
WTR YR 1971 TOTAL 72,081.7 MEAN 197 MAX 2,900 MIN 7.6 AC-FT 143,000

06478540 Little Vermillion River near Salem, S. Dak.
(Hydrologic benchmark station)

LOCATION.--Lat 43°47'39", long 97°22'02", in SW¼ sec.19, T.104 N., R.54 W., McCook County, on right wingwall at downstream end of culvert on county highway, 2.0 miles upstream from small left-bank tributary and 5.2 miles northeast of Salem.

DRAINAGE AREA.--51.0 sq mi, approximately.

PERIOD OF RECORD.--October 1966 to current year.

GAGE.--Water-stage recorder and concrete dam.

AVERAGE DISCHARGE.--5 years, 2.61 cfs (1,890 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 140 cfs Mar. 14; maximum gage height, 6.47 ft Mar. 14 (backwater from ice); no flow for many days.
Period of record: Maximum discharge, 596 cfs Apr. 7, 1969 (gage height, 7.58 ft); maximum gage height, 8.53 ft Apr. 5, 1969 (backwater from ice); no flow for many days in each year.

REMARKS.--Records good except those for winter periods, which are poor.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Stage-discharge relation affected by ice Feb. 20 to Mar. 25)

3.70	0	4.2	2.8
3.8	.09	4.3	5.5
3.9	.20	4.4	11
4.0	.53	4.5	16
4.1	1.4		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1					0	.15	12	.46	0	0		
2					0	.12	7.7	.28	0	0		
3					0	.10	4.8	.19	0	0		
4					0	.15	2.1	.17	0	0		
5					0	.30	1.2	.09	0	0		
6					0	.25	.75	.05	0	0		
7					0	.20	.53	.01	0	0		
8					0	.15	.46	0	0	0		
9					0	.40	.28	0	0	0		
10					0	1.0	.19	0	.16	.27		
11					0	4.5	.19	0	.60	.26		
12					0	15	.13	0	1.4	.17		
13					0	60	.10	0	2.1	.03		
14					0	135	.03	0	2.0	0		
15					0	115	0	0	1.4	0		
16					0	90	0	0	.67	0		
17					.01	60	0	0	.24	0		
18					.31	40	0	0	.16	0		
19					.35	35	0	0	.09	0		
20					.30	20	0	0	.02	0		
21					.25	9.0	.14	0	0	0		
22					.20	5.0	.24	0	0	0		
23					.15	4.5	.26	0	0	0		
24					.30	4.0	.22	0	0	0		
25					2.0	3.5	.18	0	0	0		
26					3.5	3.0	.13	0	0	0		
27					.25	4.4	.83	0	0	0		
28					.20	4.8	1.3	0	0	0		
29					------	1.8	1.2	0	0	0		
30					------	2.0	.83	0	0	0		
31		------			------	13	------	0	------	0		------
TOTAL	0	0	0	0	7.82	632.32	35.79	1.25	8.84	.73	0	0
MEAN	0	0	0	0	.28	20.4	1.19	.040	.29	.024	0	0
MAX	0	0	0	0	3.5	135	12	.46	2.1	.27	0	0
MIN	0	0	0	0	0	.10	0	0	0	0	0	0
AC-FT	0	0	0	0	16	1,250	71	2.5	18	1.5	0	0

CAL YR 1970 TOTAL 1,247.38 MEAN 3.42 MAX 262 MIN 0 AC-FT 2,470
WTR YR 1971 TOTAL 686.75 MEAN 1.88 MAX 135 MIN 0 AC-FT 1,360

PEAK DISCHARGE (BASE, 10 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
2-25	-	-	12	3-31	1700	4.41	14
3-14	-	-	140				

06478690 West Fork Vermillion River near Parker, S. Dak.

LOCATION.--Lat 43°24'55", long 97°12'18", in NE¼NE¼ sec.10, T.99 N., R.54 W., Turner County, near center of span at downstream side of bridge, 3.7 miles northwest of Parker and 13.9 miles upstream from confluence with East Fork Vermillion River.

DRAINAGE AREA.--370 sq mi, approximately.

PERIOD OF RECORD.--August 1961 to current year.

GAGE.--Nonrecording gage and crest-stage gage. Altitude of gage is 1,340 ft (from topographic map).

AVERAGE DISCHARGE.--10 years, 22.9 cfs (16,590 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 834 cfs Mar. 14 (gage height, 7.73 ft); no flow Oct. 16-24, Aug. 4-12.
Period of record: Maximum discharge, 4,340 cfs Mar. 28, 1962 (gage height, 12.33 ft); no flow for many days in each year.

REMARKS.--Records good except those for winter periods, which are poor.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Mar. 14 to Apr. 6, June 11-20;
stage-discharge relation affected by ice Nov. 23 to Mar. 13)

Oct. 1, 1970 to Mar. 13

1.15	0
1.2	.09
1.3	.89

Mar. 14 to Sept. 30, 1971

0.98	0	1.8	11
1.0	.01	2.4	30
1.1	.15	3.0	63
1.2	.49	4.0	142
1.3	1.1	5.0	243
1.4	2.2	7.0	560
1.5	4.2	8.0	865

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.05	.70	.12	.05	.06	130	69	7.8	2.7	.80	.02	.01
2	.03	.79	.10	.05	.07	120	57	7.6	2.7	.63	.02	.01
3	.03	.79	.10	.05	.07	110	47	6.6	2.5	.53	.01	.01
4	.01	.79	.10	.05	.06	100	35	5.9	3.1	.53	0	.13
5	.01	.61	.10	.04	.06	90	27	5.6	5.2	.45	0	.11
6	.03	.52	.10	.03	.05	90	25	5.2	8.0	.45	0	.11
7	.05	.43	.09	.03	.03	90	22	5.2	9.7	.45	0	.08
8	.07	.52	.08	.04	.02	95	20	4.7	11	.37	0	.08
9	.15	.35	.08	.05	.03	95	18	4.2	14	.37	0	.06
10	.15	.43	.08	.05	.04	100	16	4.2	39	.86	0	.06
11	.15	.35	.08	.05	.06	110	15	3.6	117	1.0	0	.06
12	.09	.21	.07	.05	.06	140	13	3.1	107	1.0	0	.05
13	.07	.21	.07	.06	.05	300	12	2.9	62	.86	.86	.05
14	.01	.15	.07	.06	.08	668	9.7	2.5	27	.68	.63	.04
15	.01	.28	.07	.06	.20	495	9.2	2.3	16	.53	.37	.04
16	0	.43	.07	.07	1.3	352	8.8	2.2	12	.37	.11	.04
17	0	.43	.07	.07	2.5	241	8.3	1.9	8.8	.33	.11	.04
18	0	.43	.08	.07	20	195	9.0	1.9	8.0	.29	.06	.04
19	0	.35	.08	.07	225	163	9.5	1.8	8.8	.20	.06	.02
20	0	.43	.08	.07	150	129	9.5	1.8	6.4	.23	.06	.02
21	0	.43	.08	.08	150	107	13	1.6	3.8	.17	.05	.02
22	0	.43	.08	.08	150	92	12	1.5	3.3	.17	.05	.02
23	0	.38	.08	.10	140	74	11	1.5	2.5	.15	.04	.02
24	0	.35	.08	.10	130	64	11	5.4	2.2	.15	.04	.02
25	.01	.32	.08	.09	130	62	9.7	5.2	1.6	.13	.04	.01
26	.01	.30	.07	.08	250	59	9.5	5.2	1.3	.15	.04	.01
27	.05	.25	.07	.07	210	59	9.5	4.9	1.1	.10	.04	.01
28	.07	.20	.07	.07	160	157	9.0	4.7	1.0	.06	.04	.01
29	.21	.15	.06	.07	------	174	8.5	4.5	1.0	.04	.04	.05
30	.35	.15	.06	.07	------	129	8.0	3.6	.93	.02	.02	.05
31	.52	------	.06	.06	------	100	------	3.1	------	.02	.02	------
TOTAL	2.13	12.16	2.48	1.94	1,719.74	4,890	541.2	122.2	489.63	12.09	2.73	1.28
MEAN	.069	.41	.080	.063	61.4	158	18.0	3.94	16.3	.39	.088	.043
MAX	.52	.79	.12	.10	250	668	69	7.8	117	1.0	.86	.13
MIN	0	.15	.06	.03	.02	59	8.0	1.5	.93	.02	0	.01
AC-FT	4.2	24	4.9	3.9	3,410	9,700	1,070	242	971	24	5.4	2.5

CAL YR 1970 TOTAL 7,848.73 MEAN 21.5 MAX 1,250 MIN 0 AC-FT 15,570
WTR YR 1971 TOTAL 7,797.58 MEAN 21.4 MAX 668 MIN 0 AC-FT 15,470

PEAK DISCHARGE (BASE, 150 CFS).--Mar. 14 (unknown) 834 cfs (7.73 ft).

06479000 Vermillion River near Wakonda, S. Dak.

LOCATION.--Lat 42°59'27", long 96°57'49", in SW¼NW¼ sec.2, T.94 N., R.52 W., Clay County, on left bank 40 ft downstream from bridge on State Highway 19, 4.3 miles downstream from Frog Creek, 7.4 miles southeast of Wakonda, and 29.6 miles upstream from mouth.

DRAINAGE AREA.--1,680 sq mi, approximately.

PERIOD OF RECORD.--October 1945 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,150.9 ft above mean sea level (levels by Corps of Engineers). Prior to Sept. 2, 1954, nonrecording gage and crest-stage gage at site 40 ft upstream at same datum. Since Dec. 27, 1951, supplementary nonrecording gage on relief bridge.

AVERAGE DISCHARGE.--26 years, 118 cfs (85,490 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,700 cfs Feb. 19; maximum gage height, 16.00 ft Feb. 19 (backwater from ice); minimum daily discharge, 2.0 cfs Jan. 15.
Period of record: Maximum discharge, 9,880 cfs Apr. 8, 1969; maximum gage height, 17.17 ft Apr. 6, 1969; no flow at times in 1951, 1956-59.

REMARKS.--Records good except those for winter periods, which are poor. At times during periods of high stage, part of flow leaves main channel through levee breaks and bypasses gage through overflow channel on left bank. Water-quality records for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.3	12	12	4.5	7.5	400	423	64	26	37	17	6.2
2	5.6	12	11	5.0	7.0	390	341	60	25	36	16	5.9
3	5.9	14	10	5.0	8.0	325	274	56	25	34	15	5.5
4	5.8	14	9.0	4.5	7.5	240	240	54	29	32	15	5.7
5	5.9	13	8.0	4.0	7.5	200	201	52	71	30	14	5.7
6	5.8	13	7.0	3.0	7.0	175	173	54	181	30	14	6.0
7	6.2	13	8.0	3.8	6.5	160	154	52	582	29	13	6.2
8	11	14	8.5	4.5	6.0	140	138	46	701	28	13	6.6
9	14	19	9.0	5.0	7.0	115	125	44	640	27	12	8.0
10	14	21	8.5	4.5	8.5	90	112	44	546	39	12	7.6
11	16	19	8.5	4.0	10	100	104	42	522	70	11	6.6
12	17	19	8.0	3.5	14	110	95	40	429	215	11	5.9
13	15	20	7.5	3.0	18	120	86	37	342	186	10	5.4
14	13	19	7.0	2.5	23	140	80	35	374	131	9.9	4.6
15	13	17	6.5	2.0	24	225	76	34	260	91	9.4	3.8
16	11	16	6.2	2.5	25	450	72	32	194	67	9.2	4.0
17	10	14	6.0	3.0	28	804	70	31	154	53	9.8	4.1
18	9.6	14	5.5	3.5	35	981	65	30	134	44	9.8	4.2
19	9.2	16	5.5	4.0	1,000	704	61	30	122	38	9.5	3.9
20	8.9	15	5.0	4.5	1,400	520	61	29	110	34	9.0	3.8
21	8.7	14	5.0	5.5	1,050	518	70	28	99	31	8.8	3.9
22	8.4	12	4.5	6.0	800	404	71	27	87	29	8.7	5.2
23	8.7	10	4.5	7.0	700	309	70	28	75	28	8.3	5.4
24	8.8	8.0	4.0	7.5	475	268	75	29	66	26	7.9	5.9
25	9.4	8.5	4.0	8.5	400	234	73	28	57	24	7.2	7.1
26	10	9.5	3.8	8.5	450	202	68	30	51	23	7.2	7.2
27	12	10	3.5	8.0	350	177	67	35	45	22	7.0	8.5
28	12	10	3.2	7.5	350	219	66	40	41	21	6.4	6.2
29	11	11	3.0	8.5	------	290	65	34	41	19	6.0	5.3
30	12	12	3.5	9.0	------	479	64	30	41	19	6.5	6.2
31	12	------	4.0	8.5	------	510	------	28	------	18	6.3	------
TOTAL	316.2	419.0	199.7	160.8	7,224.5	9,999	3,640	1,203	6,070	1,511	319.9	170.6
MEAN	10.2	14.0	6.44	5.19	258	323	121	38.8	202	48.7	10.3	5.69
MAX	17	21	12	9.0	1,400	981	423	64	701	215	17	8.5
MIN	5.6	8.0	3.0	2.0	6.0	90	61	27	25	18	6.0	3.8
AC-FT	627	831	396	319	14,330	19,830	7,220	2,390	12,040	3,000	635	338

CAL YR 1970 TOTAL 26,739.9 MEAN 73.3 MAX 1,570 MIN 3.0 AC-FT 53,040
WTR YR 1971 TOTAL 31,233.7 MEAN 85.6 MAX 1,400 MIN 2.0 AC-FT 61,950

PEAK DISCHARGE (BASE, 1,000 CFS)

DATE	TIME	G.H.	DISCHARGE
2-19	-	-	1,700
3-18	1100	11.96	1,010

06479500 Big Sioux River at Watertown, S. Dak.

LOCATION.--Lat 44°56'33", long 97°08'45", in SW¼SW¼NW¼ sec.13, T.117 N., R.53 W., Codington County, on right bank 20 ft downstream from highway bridge, 1.7 miles downstream from inlet-outlet to Lake Kampeska, 3.5 miles northwest of Watertown, and 7.1 miles upstream from Willow Creek.

DRAINAGE AREA.--1,800 sq mi, approximately, of which about 1,400 sq mi is probably noncontributing.

PERIOD OF RECORD.--October 1945 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,710 ft (from river-profile map). Prior to Oct. 15, 1958, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--26 years, 30.8 cfs (22,310 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 85 cfs Mar. 13; maximum gage height, 6.70 ft Mar. 13 (backwater from ice); no flow Jan. 11 to Feb. 13.
Period of record: Maximum discharge observed, 2,220 cfs Apr. 9, 1952; maximum gage height, 11.40 ft Apr. 8, 1969 (backwater from ice); no flow at times in most years.

REMARKS.--Records good except those for winter periods, which are poor. Water is stored naturally offstream in Lake Kampeska (capacity, 35,500 acre-ft) during periods when river is rising and then naturally released, in part, when river is falling. Records of chemical analyses for water year 1971 are contained in Part 2 of this report.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Mar. 30 to Apr. 24, May 21-30; stage-discharge relation affected by ice Dec. 5 to Mar. 29)

Oct. 1 to Mar. 29		Mar. 30 to Sept. 30			
3.6	0.15	3.8	0.30	4.3	8.5
3.7	.70	3.9	1.1	4.5	20
3.8	1.6	4.1	3.3	5.0	57
3.9	2.8	4.2	5.2		
4.0	4.6				

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.64	1.2	2.0	.25	0	20	3.7	11	6.5	20	2.3	4.2
2	.54	1.3	1.7	.17	0	25	4.4	10	7.2	25	2.1	3.7
3	.32	1.6	1.6	.10	0	12	5.0	11	7.2	20	1.8	3.1
4	.42	1.6	1.6	.06	0	9.0	3.3	9.5	7.2	14	1.7	5.5
5	.54	1.6	1.2	.03	0	7.0	3.3	8.5	8.5	10	1.6	5.5
6	.59	1.6	1.0	.02	0	5.5	3.3	8.2	7.5	9.0	1.6	5.0
7	.88	1.5	1.1	.02	0	5.5	3.1	7.8	6.5	8.2	1.4	4.6
8	1.3	2.6	1.2	.05	0	5.0	2.6	7.2	5.9	7.2	1.2	4.2
9	1.3	4.1	1.0	.03	0	5.0	2.2	7.5	5.0	6.8	1.1	4.1
10	1.2	3.5	.80	.01	0	6.0	2.6	7.2	5.2	7.8	.94	3.9
11	1.7	3.7	.70	0	0	6.0	2.7	5.9	5.0	7.8	.86	3.5
12	2.0	3.3	.60	0	0	7.0	4.4	5.9	4.2	8.5	.86	3.1
13	1.7	3.2	.55	0	0	60	4.4	5.5	4.1	8.5	.78	2.8
14	1.5	2.7	.50	0	.02	75	4.2	5.9	3.5	8.2	.78	2.7
15	1.3	2.4	.40	0	.07	65	4.4	5.2	3.1	7.8	.70	2.3
16	1.3	2.4	.50	0	.30	35	4.6	5.0	3.1	7.2	.62	2.2
17	1.4	2.4	.55	0	.55	14	4.2	6.2	2.8	6.8	.46	2.2
18	1.3	2.3	.40	0	.90	5.5	4.8	5.9	2.6	6.5	1.2	2.1
19	1.4	2.2	.35	0	1.5	5.0	5.0	5.0	2.8	5.9	2.5	2.2
20	1.6	2.2	.30	0	2.0	5.5	4.6	4.8	2.6	5.9	1.9	2.2
21	1.5	2.2	.25	0	7.0	5.0	6.5	5.5	2.5	5.2	1.6	2.0
22	1.3	2.2	.20	0	12	4.5	6.2	5.5	2.2	4.8	1.4	2.0
23	1.2	1.8	.15	0	5.0	4.0	5.5	8.2	1.9	4.6	1.3	2.1
24	1.2	1.7	.13	0	6.0	5.0	5.2	8.2	2.8	4.4	1.0	2.2
25	1.3	1.7	.10	0	7.0	6.0	4.8	7.8	3.2	4.1	.78	2.2
26	1.4	1.8	.20	0	8.0	7.0	4.8	8.2	3.1	3.7	.62	2.2
27	1.3	1.8	.20	0	10	8.0	9.5	7.8	3.1	3.5	.54	2.0
28	1.2	1.7	.10	0	15	7.0	13	6.5	3.1	3.3	.46	1.9
29	1.3	1.7	.12	0	------	6.5	16	5.9	13	2.9	.38	1.7
30	1.4	1.8	.17	0	------	6.2	13	4.8	18	2.6	3.5	1.9
31	1.2	------	.20	0	------	5.9	------	5.0	------	2.5	6.2	------
TOTAL	37.23	65.8	19.87	.74	75.34	443.1	161.3	216.6	153.4	242.7	44.18	89.3
MEAN	1.20	2.19	.64	.024	2.69	14.3	5.38	6.99	5.11	7.83	1.43	2.98
MAX	2.0	4.1	2.0	.25	15	75	16	11	18	25	6.2	5.5
MIN	.32	1.2	.10	0	0	4.0	2.2	4.8	1.9	2.5	.38	1.7
AC-FT	74	131	39	1.5	149	879	320	430	304	481	88	177

CAL YR 1970 TOTAL 4,669.46 MEAN 12.8 MAX 200 MIN .10 AC-FT 9,260
WTR YR 1971 TOTAL 1,549.56 MEAN 4.25 MAX 75 MIN 0 AC-FT 3,070

PEAK DISCHARGE (BASE, 400 CFS).--No peaks above base.

06479529 Stray Horse Creek near Castlewood, S. Dak.

LOCATION.--Lat 44°43'52", long 96°57'23", in NE¼NE¼NW¼ sec.33, T.115 N., R.51 W., Hamlin County, on right bank at downstream side of bridge on State Highway 22, 3.5 miles east of Castlewood, 6.4 miles upstream from mouth, and 7.0 miles north of Dempster.

DRAINAGE AREA.--73.7 sq mi, approximately.

PERIOD OF RECORD.--October 1968 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,705 ft (from topographic map).

EXTREMES.--Water year 1969: Maximum discharge, 14,000 cfs Apr. 7 (gage height, 14.65 ft), from rating curve extended above 3,500 cfs on basis of contracted-opening measurement of peak flow; no flow for many days.
Water year 1970: Maximum discharge, 500 cfs Mar. 3; maximum gage height, 9.76 ft Mar. 3 (backwater from ice); no flow for many days.
Water year 1971: Maximum discharge, 400 cfs Mar. 12; maximum gage height, 9.00 ft Mar. 12 (backwater from ice); no flow for many days.

REMARKS.--Records good except those for winter periods, which are poor. Water-quality records for the water years 1970-71 are published in Part 2 of this report.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Stage-discharge relation affected by ice Dec. 3 to Mar. 18)

4.3	0	4.9	6.4
4.4	.35	5.2	15
4.5	.85	5.5	27
4.6	1.6	6.0	61
4.7	2.8	6.5	113

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1968 TO SEPTEMBER 1969

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.17	.17	.17				0	7.9	1.2	.62	1.1	.12
2	.16	.16	.19				0	8.2	1.2	8.2	.82	.12
3	.15	.14	.21				.20	8.3	1.1	4.6	.65	.07
4	.15	.15	.20				2.0	16	1.1	7.9	.59	.07
5	.16	.16	.17				6.0	19	1.0	9.7	.55	.09
6	.16	.17	.14				100	20	.95	4.3	.46	.10
7	.17	.17	.10				3,500	15	.90	2.6	.30	.10
8	.17	.13	.06				3,050	11	.75	2.5	.20	.10
9	.18	.19	.05				1,190	8.7	.70	2.1	.20	.10
10	.18	.19	.04				538	7.6	.69	1.6	.15	.10
11	.18	.20	.04				363	6.6	.92	1.3	.10	.10
12	.18	.20	.03				275	6.0	.82	1.0	.07	.10
13	.18	.21	.01				212	5.5	1.3	.78	.03	.07
14	.19	.21	0				163	4.9	1.6	.63	0	.04
15	.19	.22	0				105	4.2	1.3	.69	0	.03
16	.25	.22	0				74	3.9	1.2	.64	0	.03
17	.30	.23	0				58	3.7	1.1	1.7	0	0
18	.30	.23	0				53	3.5	1.2	3.9	0	0
19	.25	.24	0				42	3.2	.96	5.1	.17	.02
20	.25	.24	0				38	2.9	.84	2.6	.20	.03
21	.20	.24	0				35	2.8	.73	2.1	.14	.03
22	.20	.22	0				26	3.1	.70	2.1	.12	.37
23	.20	.21	0				20	3.0	.77	1.7	.07	.50
24	.20	.21	0				16	2.6	.85	1.5	.07	.50
25	.20	.22	0				14	2.4	1.1	1.3	.07	.50
26	.19	.08	0				12	2.4	1.1	2.8	.07	.50
27	.18	.08	0				11	2.3	1.0	9.7	.09	.50
28	.17	.14	0				10	1.9	.86	5.9	.10	.50
29	.16	.14	0		------		9.0	1.6	.83	3.1	.06	.50
30	.17	.14	0		------		7.8	1.7	.64	2.0	.05	.45
31	.18	------	0		------		------	1.3	------	1.5	.09	------
TOTAL	5.97	5.56	1.41	0	0	0	9,931.00	191.2	29.41	96.16	6.52	5.74
MEAN	.19	.19	.046	0	0	0	331	6.17	.98	3.10	.21	.19
MAX	.30	.24	.21	0	0	0	3,500	20	1.6	9.7	1.1	.50
MIN	.15	.08	0	0	0	0	0	1.3	.64	.62	0	0
AC-FT	12	11	2.8	0	0	0	19,700	379	58	191	13	11

WTR YR 1969 TOTAL 10,272.97 MEAN 28.1 MAX 3,500 MIN 0 AC-FT 20,380

PEAK DISCHARGE (BASE, 175 CFS)

DATE	TIME	G.H.	DISCHARGE
4- 7	2000	14.65	14,000
4-10	2100	8.87	842

06479529 Stray Horse Creek near Castlewood, S. Dak.--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.45	.55	.24	.11	.01	3.0	2.8	9.5	27	1.1	0	0
2	.45	.53	.24	.10	0	3.2	20	7.9	19	.99	0	.02
3	.45	.55	.21	.08	0	300	50	7.1	13	.82	0	.08
4	.45	.45	.22	.06	.01	100	65	5.9	9.5	.75	0	.11
5	.45	.35	.24	.04	.02	50	99	4.9	7.1	.69	.01	.09
6	.45	.35	.24	.02	.02	23	74	4.4	5.4	.53	0	.06
7	.45	.31	.24	.02	.02	16	57	3.7	4.0	.47	.18	.03
8	.35	.28	.23	.02	.02	11	31	3.2	3.0	.38	.29	0
9	.32	.26	.24	.01	.02	9.3	12	2.8	2.3	.30	.56	.01
10	.32	.22	.24	.02	.02	8.7	7.7	2.4	2.1	.31	1.9	.13
11	.20	.23	.24	.02	.01	9.0	5.9	2.3	2.0	.24	1.6	.14
12	.22	.22	.22	.01	.01	11	5.1	2.3	2.0	.18	1.3	.12
13	.27	.26	.21	.01	0	11	5.1	2.1	2.0	.18	.81	0
14	.28	.24	.21	.02	0	11	4.4	1.9	1.6	.17	.59	.05
15	.28	.21	.21	.02	0	9.5	8.5	2.0	35	.14	.41	.19
16	.23	.23	.19	.01	0	8.2	39	1.9	153	.07	.28	.21
17	.21	.24	.17	.01	.01	7.3	31	1.7	87	.06	.22	.28
18	.21	.24	.17	.01	.01	6.2	17	1.4	37	.03	.21	.26
19	.21	.28	.17	.01	.01	5.0	21	1.4	20	.03	.17	.18
20	.21	.24	.12	0	.01	4.0	107	1.3	15	.08	.10	.14
21	.18	.24	.12	0	.03	3.7	53	1.2	11	.16	.05	.11
22	.17	.24	.12	.01	.08	5.8	30	1.2	8.3	.10	.03	.06
23	.15	.28	.13	.01	7.0	8.6	21	1.5	6.2	.09	0	.07
24	.16	.28	.14	.02	10	10	37	1.7	4.7	.08	0	.07
25	.14	.32	.14	.02	7.0	14	43	1.6	3.8	.04	0	.04
26	.14	.28	.13	.02	6.0	23	24	1.5	2.8	0	0	.03
27	.14	.24	.13	.02	5.0	14	17	5.2	2.5	0	0	.08
28	.14	.24	.14	.02	4.0	11	14	32	1.9	0	0	.13
29	.15	.24	.13	.02	------	3.0	12	76	1.7	0	.03	.07
30	.27	.24	.13	.02	------	2.0	12	61	1.6	.03	0	.07
31	.44	------	.12	.02	------	2.3	------	37	------	.03	.02	------
TOTAL	8.54	8.84	5.68	.78	39.31	703.8	925.5	290.0	491.5	8.05	8.76	2.83
MEAN	.28	.29	.18	.025	1.40	22.7	30.9	9.35	16.4	.26	.28	.094
MAX	.45	.55	.24	.11	10	300	107	76	153	1.1	1.9	.28
MIN	.14	.21	.12	0	0	2.0	2.8	1.2	1.6	0	0	0
AC-FT	17	18	11	1.6	78	1,400	1,840	575	975	16	17	5.6

CAL YR 1969 TOTAL 10,283.09 MEAN 28.2 MAX 3,500 MIN 0 AC-FT 20,400
WTR YR 1970 TOTAL 2,493.59 MEAN 6.83 MAX 300 MIN 0 AC-FT 4,950

PEAK DISCHARGE (BASE, 175 CFS)

DATE	TIME	G.H.	DISCHARGE
3- 3	-	-	500
6-16	1400	7.27	238

06479529 Stray Horse Creek near Castlewood, S. Dak.--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.07	.24	1.1	.13	0	9.0	4.7	9.0	1.1	49	.20	.15
2	.05	.26	.96	.11	0	6.4	5.8	6.9	1.1	22	.07	.02
3	0	.25	.88	.10	0	5.8	3.8	5.6	1.3	12	.06	0
4	0	.24	.82	.08	0	5.3	2.3	4.4	1.3	8.2	.03	.01
5	0	.24	.75	.07	0	4.8	2.0	3.9	1.3	5.7	.01	0
6	.01	.22	.67	.06	0	4.5	1.7	3.5	1.5	3.7	0	0
7	.27	.16	.60	.04	0	4.3	1.6	2.4	1.6	2.8	0	0
8	.57	.62	.55	.05	0	4.0	1.4	2.5	1.6	2.2	0	0
9	.33	1.2	.50	.08	0	3.7	1.2	2.2	1.6	1.7	0	0
10	.31	2.1	.45	.08	0	3.6	1.2	1.9	1.6	1.5	0	.02
11	.43	2.4	.41	.08	0	25	.96	1.7	1.6	1.6	0	0
12	.41	2.1	.38	.08	0	150	.91	1.5	1.6	1.5	0	0
13	.40	1.9	.34	.09	0	100	.82	1.5	1.4	1.0	0	0
14	.34	1.6	.31	.10	0	60	.73	1.5	1.1	.87	0	0
15	.35	1.5	.27	.10	0	35	.75	1.1	.93	.90	0	0
16	.33	1.3	.24	.11	.05	19	.75	1.1	.84	1.1	0	0
17	.31	1.3	.23	.10	.25	17	.78	1.1	.77	1.2	0	0
18	.31	1.4	.21	.09	.60	12	.80	1.1	.75	.99	0	0
19	.28	1.3	.20	.07	1.5	10	.80	1.2	.75	.76	0	0
20	.26	1.3	.19	.16	2.5	9.1	.80	1.2	.74	.83	0	0
21	.24	1.5	.18	.36	5.0	8.1	1.1	1.0	.60	.79	0	0
22	.21	1.8	.18	.37	8.0	6.4	1.3	.93	.44	.56	0	0
23	.21	1.1	.17	.32	12	5.0	1.3	1.3	.29	.49	0	0
24	.11	.94	.19	.27	17	5.2	1.3	1.5	.24	.46	0	0
25	.12	.89	.21	.16	25	4.1	1.3	1.5	.28	.31	0	0
26	.24	.93	.19	.11	30	3.4	1.4	1.4	.32	.28	0	0
27	.24	.87	.16	.02	22	3.3	2.5	1.3	.27	.21	0	0
28	.24	.82	.14	0	15	4.4	5.2	1.2	.24	.19	0	0
29	.19	.80	.17	0	------	4.0	16	1.0	6.0	.28	0	.06
30	.24	.90	.18	0	------	3.9	13	1.0	105	.23	.01	.03
31	.24	------	.15	0	------	3.9	------	1.0	------	.24	.14	------
TOTAL	7.31	32.17	11.98	3.39	138.90	540.2	78.20	68.43	138.16	123.59	.52	.29
MEAN	.24	1.07	.39	.11	4.96	17.4	2.61	2.21	4.61	3.99	.017	.010
MAX	.57	2.4	1.1	.37	30	150	16	9.0	105	49	.20	.15
MIN	0	.16	.14	0	0	3.3	.73	.93	.24	.19	0	0
AC-FT	15	64	24	6.7	276	1,070	155	136	274	245	1.0	.6

CAL YR 1970 TOTAL 2,521.99 MEAN 6.91 MAX 300 MIN 0 AC-FT 5,000
WTR YR 1971 TOTAL 1,143.14 MEAN 3.13 MAX 150 MIN 0 AC-FT 2,270

PEAK DISCHARGE (BASE, 175 CFS).--Mar. 12 (time and stage unknown) 400 cfs.

06479640 Hidewood Creek near Estelline, S. Dak.

LOCATION.--Lat 44°36'42", long 96°54'17", in SW¼NW¼ sec.12, T.113 N., R.51 W., Hamlin County, on left bank at upstream side of highway bridge, 2.7 miles north of Estelline, 2.8 miles southeast of Dempster, and 4.7 miles upstream from mouth.

DRAINAGE AREA.--164 sq mi, approximately.

PERIOD OF RECORD.--October 1968 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,665 ft (from topographic map).

EXTREMES.--Water year 1969: Maximum discharge, 3,630 cfs Apr. 7 (gage height, 11.30 ft); maximum gage height, 11.55 ft Apr. 8 (backwater from collapsed bridge); no flow for many days.
Water year 1970: Maximum discharge, 800 cfs Mar. 3; maximum gage height, 9.10 ft Mar. 3 (backwater from ice); minimum daily discharge, 0.04 cfs Sept. 23.
Water year 1971: Maximum discharge, 850 cfs Mar. 12; maximum gage height, 8.94 ft Mar. 12 (backwater from ice); no flow Jan. 31 to Feb. 15.

REMARKS.--Records good except those for winter periods, which are poor. Water-quality records for the 1970-1971 water years are published in Part 2 of this report.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Stage-discharge relation affected by ice Dec. 1 to Mar. 31)

2.2	0	2.6	4.6	4.0	110
2.3	.20	2.8	14	5.0	238
2.4	.95	3.2	38	6.0	454
2.5	2.2	3.5	64	7.0	766

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1968 TO SEPTEMBER 1969

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.6	5.6	5.2				0	80	16	9.5	4.8	1.5
2	6.5	5.5	5.3				0	82	16	11	4.7	1.4
3	6.4	5.3	5.1				5.0	78	16	20	4.5	1.3
4	6.2	5.3	5.0				50	79	16	120	4.5	1.2
5	6.2	5.2	4.0				500	84	15	90	4.5	1.3
6	6.2	5.2	3.0				1,500	84	14	40	4.5	1.0
7	6.1	5.3	2.5				3,350	80	14	29	4.5	.92
8	6.1	5.4	2.0				2,000	75	13	25	5.3	2.2
9	6.2	5.5	1.5				1,700	63	12	22	6.0	7.4
10	6.2	5.6	1.0				1,390	54	12	25	5.2	7.1
11	6.2	5.7	.70				1,240	50	13	22	4.7	6.8
12	6.2	5.9	.50				1,070	45	13	19	4.4	6.2
13	6.2	6.1	.30				898	41	12	18	4.1	5.9
14	6.1	6.3	.10				733	39	13	16	4.1	5.8
15	6.0	6.4	0				586	36	12	17	4.0	5.6
16	8.0	6.5	0				472	34	11	18	3.9	5.3
17	9.5	6.4	0				396	32	11	21	3.8	5.0
18	10	6.2	0				345	29	11	88	3.6	4.8
19	9.6	5.7	0				293	28	10	43	3.8	4.5
20	8.5	5.3	0				255	26	9.9	37	3.9	4.3
21	7.5	5.2	0				219	25	10	29	3.9	4.1
22	6.8	5.2	0				176	25	10	23	3.9	4.4
23	6.3	5.4	0				144	24	10	19	3.6	4.2
24	6.2	5.7	0				122	23	10	17	3.5	4.1
25	6.1	5.7	0				108	22	11	16	3.6	3.7
26	6.0	5.6	0				77	22	10	27	3.5	3.3
27	6.0	5.7	0				96	21	11	50	3.3	3.1
28	5.9	5.4	0				92	20	11	59	3.3	2.9
29	5.8	5.4	0		------		87	18	11	34	1.9	2.7
30	5.6	5.0	0		------		83	17	10	17	1.7	2.5
31	5.5	------	0		------		------	17	------	6.4	1.7	------
TOTAL	206.7	168.7	36.20	0	0	0	17,987.0	1,353	363.9	987.9	122.7	114.52
MEAN	6.67	5.62	1.17	0	0	0	600	43.6	12.1	31.9	3.96	3.82
MAX	10	6.5	5.3	0	0	0	3,350	84	16	120	6.0	7.4
MIN	5.5	5.0	0	0	0	0	0	17	9.9	6.4	1.7	.92
AC-FT	410	335	72	0	0	0	35,680	2,680	722	1,960	243	227

WTR YR 1969 TOTAL 21,340.62 MEAN 58.5 MAX 3,350 MIN 0 AC-FT 42,330

PEAK DISCHARGE (BASE, 300 CFS)

DATE	TIME	G.H.	DISCHARGE
4- 7	2215	11.36	3,630
7- 4	1045	7.77	497

06479640 Hidewood Creek near Estelline, S. Dak.--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1969 TO SEPTEMBER 1970

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	2.7	1.8	.80	.30	3.9	25	53	166	19	9.1	.58
2	2.4	2.7	1.8	.73	.38	5.6	29	51	68	19	8.9	.67
3	2.3	2.7	1.8	.68	.40	400	30	48	48	19	6.5	.68
4	2.6	2.6	1.8	.65	.38	300	35	47	42	22	4.4	.74
5	4.6	2.7	1.8	.60	.35	70	93	44	39	19	3.4	.62
6	3.7	2.5	1.8	.58	.30	40	70	41	35	18	2.9	.58
7	3.1	2.5	1.8	.58	.25	35	31	38	33	16	3.6	.86
8	2.8	2.3	1.8	.60	.23	30	23	35	30	14	3.9	.83
9	2.6	2.4	1.8	.67	.30	25	18	32	27	13	3.8	1.2
10	2.7	2.3	1.8	.70	.40	24	16	30	25	12	3.6	1.0
11	2.5	2.3	1.8	.73	.50	22	14	28	25	12	1.9	.35
12	2.6	2.3	1.8	.78	.60	21	14	27	25	11	1.6	.12
13	2.6	2.2	1.7	.83	.70	21	14	25	25	12	1.6	.12
14	2.6	2.4	1.7	.90	.70	22	12	24	24	12	1.6	.12
15	2.6	2.0	1.7	.95	.70	23	19	23	44	11	1.9	.18
16	2.6	2.2	1.6	.95	.65	24	60	22	255	11	2.8	.16
17	2.6	2.0	1.6	.95	.70	26	41	18	585	11	2.1	.16
18	2.4	2.2	1.5	.88	.80	26	27	17	111	11	1.7	.16
19	2.4	1.8	1.5	.78	1.0	26	39	15	61	10	1.6	.12
20	2.5	2.0	1.4	.70	1.2	24	158	13	55	9.5	1.6	.10
21	2.4	2.0	1.4	.65	1.3	22	84	13	51	8.4	1.6	.08
22	2.3	2.0	1.3	.60	1.5	22	48	12	45	8.6	1.5	.08
23	2.3	2.0	1.2	.55	1.8	23	41	12	40	8.0	1.6	.04
24	2.3	2.0	1.2	.47	2.0	24	71	14	35	5.7	1.4	.08
25	2.4	2.0	1.1	.40	2.3	25	84	14	33	4.4	.99	.12
26	2.3	2.0	1.1	.30	2.5	24	64	12	30	4.5	.20	.08
27	2.3	1.9	1.0	.25	2.8	23	55	9.8	27	3.9	.26	.18
28	2.3	1.8	.98	.20	3.2	22	57	17	25	2.1	.29	.20
29	2.3	1.8	.92	.17	------	22	56	30	23	2.1	.41	.18
30	2.4	1.8	.88	.18	------	22	55	49	20	2.1	.35	.14
31	2.6	------	.85	.22	------	23	------	46	------	4.9	.40	------
TOTAL	80.5	66.1	46.23	19.03	28.24	1,420.5	1,383	859.8	2,052	336.1	77.50	10.53
MEAN	2.60	2.20	1.49	.61	1.01	45.8	46.1	27.7	68.4	10.8	2.50	.35
MAX	4.6	2.7	1.8	.95	3.2	400	158	53	585	22	9.1	1.2
MIN	2.3	1.8	.85	.17	.23	3.9	12	9.8	20	2.1	.20	.04
AC-FT	160	131	92	38	56	2,820	2,740	1,710	4,070	667	154	21

CAL YR 1969 TOTAL 21,121.85 MEAN 57.9 MAX 3,350 MIN 0 AC-FT 41,900
WTR YR 1970 TOTAL 6,379.53 MEAN 17.5 MAX 585 MIN .04 AC-FT 12,650

DATE	TIME	G.H.	DISCHARGE
3- 3	-	-	800
6-17	0415	7.25	861

06479640 Hidewood Creek near Estelline, S. Dak.--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.45	1.2	6.0	.55	0	27	55	32	7.1	238	8.5	.89
2	.43	1.3	9.0	.50	0	21	54	26	7.1	73	7.2	.73
3	.28	1.6	14	.45	0	19	54	23	7.2	48	6.4	.57
4	.16	1.7	10	.43	0	17	64	21	7.4	36	5.2	.50
5	.20	1.6	9.0	.41	0	16	48	20	8.7	61	4.8	.42
6	.20	1.6	8.0	.38	0	15	43	18	7.8	43	4.3	.56
7	.50	1.5	7.0	.34	0	14	40	17	7.7	39	3.4	.48
8	1.1	2.3	6.5	.32	0	14	38	16	6.8	38	2.9	.20
9	1.1	5.8	5.5	.35	0	13	35	15	7.6	38	3.0	.28
10	1.1	8.6	4.7	.36	0	35	31	15	10	38	2.2	.49
11	1.3	12	4.0	.37	0	150	30	15	9.2	50	1.9	.42
12	1.6	11	3.5	.38	0	650	28	13	8.3	55	.88	.37
13	1.6	9.5	3.0	.45	0	500	27	12	7.2	45	1.4	.20
14	1.3	8.1	2.7	.50	0	350	24	11	6.9	42	1.4	.20
15	1.3	7.2	2.5	.55	0	250	20	10	6.2	34	1.2	.16
16	1.4	5.9	2.2	.52	.10	200	19	9.8	4.7	34	1.1	.16
17	1.4	5.5	2.0	.47	.25	150	18	10	3.6	33	.91	.18
18	1.1	4.5	1.7	.42	.45	100	17	9.9	3.1	33	.80	.20
19	.85	4.1	1.6	.55	1.0	75	16	9.3	4.8	26	2.8	.20
20	.82	4.2	1.4	.70	2.0	55	15	7.1	4.3	26	2.9	.20
21	.92	5.2	1.3	.75	3.5	40	16	6.0	4.4	22	2.9	.21
22	.95	6.1	1.2	.70	7.0	30	17	7.5	3.7	19	2.9	.28
23	.94	5.4	1.1	.60	13	25	18	9.6	2.9	18	2.9	.31
24	.87	4.1	1.3	.45	30	22	19	9.7	1.8	17	2.9	.20
25	.89	3.9	1.5	.35	50	20	21	10	2.8	17	2.9	.20
26	1.0	3.9	1.3	.25	100	23	22	9.6	2.6	14	2.9	.20
27	1.3	3.9	1.1	.20	70	27	26	9.1	2.2	15	3.1	.27
28	1.2	3.9	.90	.15	45	32	37	7.3	2.4	12	3.1	.29
29	1.4	4.0	.80	.10	------	36	50	6.5	294	11	3.1	.22
30	1.4	4.6	.70	.05	------	41	40	6.8	708	9.6	3.1	.18
31	1.1	------	.60	0	------	44	------	7.1	------	9.5	1.1	------
TOTAL	30.16	144.2	116.10	12.60	322.30	3,011	942	399.3	1,160.5	1,194.1	94.09	9.77
MEAN	.97	4.81	3.75	.41	11.5	97.1	31.4	12.9	38.7	38.5	3.04	.33
MAX	1.6	12	14	.75	100	650	64	32	708	238	8.5	.89
MIN	.16	1.2	.60	0	0	13	15	6.0	1.8	9.5	.80	.16
AC-FT	60	286	230	25	639	5,970	1,870	792	2,300	2,370	187	19

CAL YR 1970 TOTAL 6,477.16 MEAN 17.7 MAX 585 MIN .04 AC-FT 12,850
WTR YR 1971 TOTAL 7,436.12 MEAN 20.4 MAX 708 MIN 0 AC-FT 14,750

PEAK DISCHARGE (BASE, 300 CFS)

DATE	TIME	G.H.	DISCHARGE
3-12	-	-	850
6-30	0600	7.03	781

06480000 Big Sioux River near Brookings, S. Dak.

LOCATION.--Lat 44°10'48", long 96°44'55", in NW¼NW¼ sec.8, T.108 N., R.49 W., Moody County, on right bank 3 ft downstream from highway bridge, 2.2 miles downstream from Medary Creek and 9.5 miles southeast of Brookings.

DRAINAGE AREA.--4,420 sq mi, approximately, of which about 1,970 sq mi is probably noncontributing.

PERIOD OF RECORD.--August 1953 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,551.91 ft above mean sea level. Prior to May 30, 1959, nonrecording gage at present site and datum.

AVERAGE DISCHARGE.--18 years, 150 cfs (108,700 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 2,100 cfs Mar. 15; maximum gage height, 11.50 ft Mar. 15 (backwater from ice); minimum daily discharge, 2.0 cfs Feb. 8.
Period of record: Maximum discharge, 33,900 cfs Apr. 9, 1969 (gage height, 14.77 ft); no flow at times in 1956, 1959.
CORRECTION.--The maximum discharge for the water year 1963 has been corrected to 1,880 cfs; superceeding figure published in WSP 1917.

REMARKS.--Records good except those for winter periods, which are poor. Water-quality records for the water year 1971 are published in Part 2 of this report.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Stage-discharge relation affected by ice Nov. 15 to Mar. 25)

1.6	3.0	2.5	86
1.7	7.0	3.0	145
1.8	16	4.0	288
2.0	35	5.0	483

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	42	50	20	4.0	160	297	232	87	104	33	29
2	24	43	45	18	4.5	180	242	225	87	208	30	21
3	23	44	43	16	4.0	190	189	212	85	260	28	19
4	23	44	45	15	4.0	175	200	202	85	216	27	23
5	24	43	42	14	3.5	125	208	187	89	170	25	21
6	24	42	41	13	3.0	110	191	171	92	141	24	19
7	28	42	43	13	2.5	100	193	159	97	135	23	18
8	41	50	42	12	2.0	90	190	149	98	125	22	16
9	49	73	40	13	4.0	80	181	141	110	113	21	16
10	47	85	38	12	6.0	75	177	138	113	110	20	17
11	51	88	36	11	5.0	100	185	133	115	103	18	15
12	55	96	34	11	4.0	200	167	125	117	94	16	13
13	52	95	31	11	6.0	500	159	119	113	93	15	12
14	48	83	28	10	7.0	1,350	155	114	101	94	13	11
15	49	65	26	9.0	8.0	1,800	155	110	89	87	12	8.9
16	45	58	26	10	9.0	1,450	156	104	82	79	12	7.1
17	44	62	25	10	10	1,250	154	105	75	74	9.7	7.2
18	44	60	23	10	30	950	155	105	72	69	9.7	7.0
19	41	58	21	9.0	40	700	157	101	72	65	13	7.3
20	39	56	21	10	30	475	155	97	72	63	18	7.1
21	40	54	22	10	40	400	167	95	72	60	15	7.0
22	40	50	23	10	60	325	178	91	72	57	15	8.8
23	41	48	20	9.0	75	300	178	92	68	54	12	10
24	38	47	21	8.0	95	285	172	98	64	50	11	11
25	39	50	22	7.0	110	280	164	98	63	47	7.9	10
26	41	46	23	6.0	125	263	158	97	60	46	6.2	11
27	43	44	20	4.0	100	255	172	95	58	43	5.8	12
28	42	45	18	4.0	110	255	204	90	57	41	5.8	14
29	41	46	18	3.5	------	264	218	85	67	39	5.4	11
30	42	48	19	3.0	------	289	229	83	82	37	18	10
31	43	------	19	3.0	------	318	------	84	------	35	43	------
TOTAL	1,226	1,707	925	314.5	901.5	13,294	5,506	3,937	2,514	2,912	534.5	399.4
MEAN	39.5	56.9	29.8	10.1	32.2	429	184	127	83.8	93.9	17.2	13.3
MAX	55	96	50	20	125	1,800	297	232	117	260	43	29
MIN	23	42	18	3.0	2.0	75	154	83	57	35	5.4	7.0
AC-FT	2,430	3,390	1,830	624	1,790	26,370	10,920	7,810	4,990	5,780	1,060	792

CAL YR 1970 TOTAL 67,357.0 MEAN 185 MAX 3,200 MIN 13 AC-FT 133,600
WTR YR 1971 TOTAL 34,170.9 MEAN 93.6 MAX 1,800 MIN 2.0 AC-FT 67,780

PEAK DISCHARGE (BASE, 1,000 CFS).--Mar. 15 (time and stage unknown) 2,100 cfs.

06481000 Big Sioux River near Dell Rapids, S. Dak.

LOCATION.--Lat 43°47'25", long 96°44'42", in NW¼NW¼ sec.29, T.104 N., R.49 W., Minnehaha County, on left bank at downstream side of highway bridge, 0.2 mile downstream from confluence of divided channels and 3 miles southwest of Dell Rapids.

DRAINAGE AREA.--5,060 sq mi, approximately, of which about 1,970 sq mi is probably noncontributing.

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

GAGE.--Water-stage recorder. Datum of gage is 1,455.99 ft above mean sea level. Prior to Nov. 11, 1949, nonrecording gage and Nov. 11, 1949, to Sept. 30, 1951, water-stage recorder, at present site at datum 0.04 ft lower.

AVERAGE DISCHARGE.--23 years, 262 cfs (189,800 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,600 cfs Mar. 18; maximum gage height, 9.97 ft Mar. 18 (backwater from ice); minimum daily, 5.0 cfs Feb. 9.
Period of record: Maximum discharge, 41,300 cfs Apr. 9, 1969 (gage height, 16.47 ft); minimum daily, 0.20 cfs Jan. 31, Feb. 1, 1965.

REMARKS.--Records good except those for winter periods, which are poor. Water-quality records for the water year 1971 are published in Part 2 of this report.

Rating tables (gage height, in feet, and discharge, in cubic feet per second)
(Stage-discharge relation affected by ice Dec. 20 to Mar. 25)

Oct. 1 to Mar. 25		Mar. 26 to Sept. 30			
3.1	13	2.7	5	4.0	230
3.3	56	2.9	18	5.0	525
3.6	130	3.1	36	6.0	875
		3.3	66		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	51	75	28	7.5	350	456	253	100	185	45	17
2	33	51	71	30	8.0	250	412	260	100	300	40	22
3	32	54	68	29	10	240	378	264	100	276	36	27
4	36	51	65	26	13	230	319	262	105	305	33	36
5	37	51	64	23	12	170	277	250	107	313	32	36
6	38	55	62	20	11	150	271	239	109	273	30	33
7	32	63	66	17	8.0	125	270	221	120	225	30	32
8	49	64	65	18	6.0	115	252	211	123	182	20	29
9	49	71	61	20	5.0	105	243	203	172	170	14	28
10	56	75	64	19	6.0	95	243	195	168	195	20	28
11	59	76	68	18	6.0	140	232	184	188	178	19	27
12	65	92	56	17	7.0	450	225	182	188	150	19	26
13	69	112	62	16	7.5	1,000	217	176	178	141	20	26
14	68	116	61	15	10	1,250	208	178	146	134	16	22
15	66	105	55	14	15	1,300	203	164	144	114	16	22
16	69	90	54	13	25	1,200	197	162	134	118	15	22
17	69	86	50	12	45	1,300	196	157	123	111	13	21
18	67	90	51	11	150	1,500	199	132	116	98	9.2	21
19	63	103	51	10	55	1,450	193	123	118	89	16	21
20	61	112	49	9.0	30	1,400	197	125	100	87	18	21
21	55	114	47	10	35	1,300	208	127	94	83	16	19
22	52	110	45	12	30	1,100	198	130	85	75	15	20
23	51	105	43	13	25	900	201	144	83	69	17	22
24	49	99	41	12	80	740	209	132	85	66	16	23
25	54	98	40	11	150	650	211	118	79	56	16	22
26	56	85	38	10	300	606	208	111	79	53	17	22
27	49	82	35	9.0	450	598	213	109	77	51	17	22
28	51	80	32	8.0	400	644	207	111	71	48	15	22
29	51	78	30	7.5	------	637	215	111	79	45	14	22
30	54	75	28	7.0	------	606	238	107	85	45	13	24
31	54	------	26	7.0	------	546	------	105	------	45	17	------
TOTAL	1,633	2,494	1,623	471.5	1,907.0	21,147	7,296	5,246	3,456	4,280	634.2	735
MEAN	52.7	83.1	52.4	15.2	68.1	682	243	169	115	138	20.5	24.5
MAX	69	116	75	30	450	1,500	456	264	188	313	45	36
MIN	32	51	26	7.0	5.0	95	193	105	71	45	9.2	17
AC-FT	3,240	4,950	3,220	935	3,780	41,950	14,470	10,410	6,850	8,490	1,260	1,460

CAL YR 1970 TOTAL 92,000.0 MEAN 252 MAX 2,770 MIN 17 AC-FT 182,500
WTR YR 1971 TOTAL 50,922.7 MEAN 140 MAX 1,500 MIN 5.0 AC-FT 101,000

PEAK DISCHARGE (BASE, 1,000 CFS).

DATE	TIME	G.H.	DISCHARGE
3-15	-	-	1,350
3-18	-	-	1,600

06481500 Skunk Creek near Sioux Falls, S. Dak.

LOCATION.--Lat 43°32'38", long 96°48'27", in NW¼NW¼ sec.23, T.101 N., R.50 W., Minnehaha County, on left bank 5 ft downstream from bridge on U.S. Highway 16, 600 ft upstream from small right-bank tributary, 3.2 miles upstream from mouth, and 4.0 miles west of Sioux Falls.

DRAINAGE AREA.--520 sq mi, approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 1,415.29 ft above mean sea level (levels by Corps of Engineers). Prior to Oct. 24, 1949, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--23 years, 49.1 cfs (35,570 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 670 cfs Mar. 29 (gage height, 4.52 ft); maximum gage height, 5.10 ft Feb. 19 (backwater from ice); minimum daily discharge, 0.30 cfs Feb. 8.
Period of record: Maximum discharge, 29,400 cfs June 17, 1957 (gage height, 17.78 ft), from rating curve extended above 8,100 cfs on basis of slope-area measurement of peak flow; no flow at times in many years.

REMARKS.--Records good except those for winter periods, which are poor. Water-quality records for the water year 1971 are published in Part 2 of this report.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Oct. 1 to Jan. 2, Aug. 2-10, Sept. 12-30;
stage-discharge relation affected by ice Jan. 3 to Feb. 21)

1.5	0.29	1.9	6.5	2.7	77
1.6	1.0	2.0	9.6	3.2	170
1.7	2.2	2.2	20	3.9	380
1.8	4.1	2.4	36		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	7.1	7.6	2.6	.90	128	92	29	8.7	8.4	2.5	1.0
2	.85	7.3	7.4	2.2	.95	121	56	27	8.7	7.8	2.0	.82
3	.65	6.9	5.7	2.1	1.0	91	53	26	7.9	6.6	1.9	.64
4	.70	6.6	7.2	1.9	.90	45	56	25	9.1	6.5	1.6	1.8
5	.83	6.3	6.7	1.7	.80	19	55	23	13	5.7	1.2	1.8
6	.95	6.0	5.9	1.3	.60	12	55	22	11	5.1	1.1	1.1
7	1.3	6.3	6.2	1.1	.40	8.0	49	21	15	4.8	1.1	.90
8	3.9	7.0	5.9	1.2	.30	9.4	46	20	30	4.5	1.0	.94
9	4.6	9.3	5.2	1.4	.40	12	42	20	57	4.2	1.3	.86
10	4.4	9.6	5.1	1.6	.60	10	38	19	151	75	1.0	.84
11	4.4	11	5.1	1.5	.80	12	36	19	150	20	1.0	1.0
12	4.4	11	4.2	1.3	1.0	16	31	18	117	11	1.2	1.1
13	5.2	11	3.9	1.1	2.0	131	30	18	71	9.1	1.6	.96
14	5.7	11	4.2	1.0	3.0	231	28	16	45	8.2	1.7	.84
15	6.0	8.6	4.3	.90	6.0	195	26	13	32	7.1	1.2	.80
16	6.3	8.2	4.2	.80	10	98	26	12	24	6.2	1.1	.80
17	6.0	8.2	2.6	.70	20	104	25	10	20	5.6	1.3	.84
18	5.4	8.1	3.0	.65	150	45	24	11	42	5.0	1.3	.91
19	4.5	8.1	3.0	.60	300	48	23	11	65	4.3	1.5	.84
20	4.3	8.3	3.3	.70	425	84	24	10	65	4.3	1.8	.78
21	4.1	8.8	2.7	.90	325	115	36	9.3	70	4.6	1.6	.74
22	4.3	4.5	2.5	1.1	190	77	43	8.7	44	5.8	1.6	1.3
23	4.8	6.0	2.4	1.3	100	49	43	12	27	7.5	1.5	1.4
24	5.3	6.4	2.6	1.5	130	49	35	14	19	5.2	1.3	1.0
25	6.0	6.5	2.0	1.4	250	42	31	12	15	5.3	.99	1.1
26	6.3	6.5	2.1	1.3	350	43	27	12	14	5.2	.95	1.1
27	6.2	5.8	2.0	1.2	250	59	29	12	11	4.2	.97	1.1
28	6.8	5.3	2.1	1.1	148	274	34	11	8.8	3.6	1.0	1.0
29	6.8	5.7	2.3	1.0	------	304	35	10	9.3	3.1	.73	.97
30	7.1	7.0	2.8	.95	------	175	34	9.4	9.4	2.6	.72	1.1
31	6.4	------	2.8	.90	------	121	------	9.2	------	2.6	.88	------
TOTAL	135.68	228.4	127.0	39.00	2,667.65	2,727.4	1,162	489.6	1,169.9	259.1	40.64	30.38
MEAN	4.38	7.61	4.10	1.26	95.3	88.0	38.7	15.8	39.0	8.36	1.31	1.01
MAX	7.1	11	7.6	2.6	425	304	92	29	151	75	2.5	1.8
MIN	.65	4.5	2.0	.60	.30	8.0	23	8.7	7.9	2.6	.72	.64
AC-FT	269	453	252	77	5,290	5,410	2,300	971	2,320	514	81	60

CAL YR 1970 TOTAL 14,398.87 MEAN 39.4 MAX 991 MIN .13 AC-FT 28,560
WTR YR 1971 TOTAL 9,076.75 MEAN 24.9 MAX 425 MIN .30 AC-FT 18,000

PEAK DISCHARGE (BASE, 500 CFS)

DATE	TIME	G.H.	DISCHARGE
2-19	-	-	650
3-29	0315	4.52	670

06482100 Big Sioux River near Brandon, S. Dak.

LOCATION.--Lat 43°36'25", long 96°37'55", in NE¼SE¼ sec.30, T.102 N., R.48 W., Minnehaha County, on left bank 130 ft upstream from Great Northern Railway bridge, 2.8 miles northwest of Brandon and 7.2 miles upstream from Split Rock Creek.

DRAINAGE AREA.--5,810 sq mi, approximately, of which about 1,970 sq mi is probably noncontributing.

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

GAGE.--Water-stage recorder. Datum of gage is 1,283.38 ft above mean sea level.

AVERAGE DISCHARGE.--12 years, 339 cfs (245,600 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,740 cfs Mar. 19 (gage height, 8.82 ft); minimum daily, 14 cfs Feb. 8, Aug. 29.
Period of record: Maximum discharge, 36,800 cfs Apr. 10, 1969 (gage height, 24.56 ft, from floodmarks); minimum daily, 5.0 cfs Jan. 7, 1968.

REMARKS.--Records good except those for winter periods, which are poor. Diurnal fluctuations caused by powerplants upstream. Water-quality records for the water year 1971 are published in Part 2 of this report.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Stage-discharge relation affected by ice Dec. 11 to Mar. 11)

3.9	14
4.1	34
4.5	88
5.0	196
6.0	531
9.0	1,810

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	73	97	42	28	600	698	291	116	114	51	17
2	60	81	91	40	30	500	570	292	178	191	49	17
3	51	84	98	38	32	350	497	295	133	249	47	17
4	47	78	68	36	30	250	451	293	193	234	45	79
5	52	74	91	34	26	230	402	286	160	261	45	44
6	60	77	100	36	22	200	375	276	137	270	43	31
7	46	76	90	40	18	195	368	262	238	234	41	38
8	188	111	86	41	14	195	353	244	212	205	39	30
9	111	132	84	43	20	190	334	228	234	178	39	27
10	93	117	62	42	25	185	323	222	375	338	42	38
11	92	125	60	41	30	185	307	214	358	256	40	27
12	85	111	60	39	35	286	295	207	318	197	37	18
13	60	118	55	38	40	612	292	199	270	167	35	50
14	63	130	55	37	45	1,220	279	190	228	150	34	56
15	77	122	55	36	50	1,470	268	182	205	141	29	27
16	78	116	50	35	60	1,370	260	164	177	131	28	21
17	77	103	50	34	150	1,290	252	168	159	121	30	31
18	75	113	45	33	350	1,350	245	163	164	115	27	19
19	76	120	45	31	850	1,520	220	155	196	102	31	16
20	76	121	50	30	500	1,580	222	147	199	100	20	20
21	71	125	58	36	250	1,460	325	146	180	94	22	24
22	47	92	58	40	275	1,210	275	159	167	88	19	36
23	65	101	56	44	250	936	273	151	141	87	20	34
24	67	75	53	39	175	662	268	198	124	77	22	29
25	79	132	52	34	250	630	262	132	116	71	19	33
26	79	92	52	32	600	620	257	146	109	67	18	30
27	78	84	51	30	700	750	283	145	96	66	18	32
28	73	80	50	28	650	950	269	144	95	63	17	34
29	74	80	48	27	------	1,100	267	138	222	59	14	33
30	80	85	46	26	------	900	277	135	137	54	17	31
31	78	------	45	25	------	800	------	130	------	54	19	------
TOTAL	2,314	3,028	1,961	1,107	5,505	23,796	9,767	6,102	5,637	4,534	957	939
MEAN	74.6	101	63.3	35.7	197	768	326	197	188	146	30.9	31.3
MAX	188	132	100	44	850	1,580	698	295	375	338	51	79
MIN	46	73	45	25	14	185	220	130	95	54	14	16
AC-FT	4,590	6,010	3,890	2,200	10,920	47,200	19,370	12,100	11,180	8,990	1,900	1,860

CAL YR 1970 TOTAL 113,128 MEAN 310 MAX 1,950 MIN 27 AC-FT 224,400
WTR YR 1971 TOTAL 65,647 MEAN 180 MAX 1,580 MIN 14 AC-FT 130,200

PEAK DISCHARGE (BASE, 1,200 CFS)

DATE	TIME	G.H.	DISCHARGE
3-15	2200	8.43	1,540
3-19	2300	8.82	1,740

06482610 Split Rock Creek at Corson, S. Dak.

LOCATION.--Lat 43°36'59", long 96°33'54", in NE¼NW¼ sec.26, T.102 N. (corrected), R.48 W., Minnehaha County, on left bank 6 ft downstream from highway bridge, 0.3 mile east of Corson and 3.4 miles upstream from mouth.

DRAINAGE AREA.--475 sq mi, approximately.

PERIOD OF RECORD.--October 1965 to current year. February 1951 to September 1965 (gage heights and discharge measurements only in files of Corps of Engineers).

GAGE.--Water-stage recorder. Datum of gage is 1,304.22 ft above mean sea level (levels by Corps of Engineers). Prior to Aug. 15, 1964, nonrecording gage at datum 0.15 ft higher and Aug. 15, 1964 to Sept. 3, 1970, nonrecording gage at present site and datum.

AVERAGE DISCHARGE.--6 years, 64.2 cfs (46,510 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 1,300 cfs June 30 (gage height, 6.20 ft); maximum gage height, 8.07 ft Mar. 13 (backwater from ice); minimum daily discharge, 1.0 cfs Feb. 8.
Period of record: Maximum discharge, 17,800 cfs Apr. 8, 1969 (gage height, 15.00 ft); no flow at times most years.
Maximum stage since 1951, 15.41 ft June 17, 1957 (discharge not determined).

REMARKS.--Records good except those for winter periods, which are poor. Water-quality records for the water year 1971 are published in Part 2 of this report.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.6	14	21	5.5	1.8	150	131	40	14	389	12	5.6
2	7.2	14	22	5.5	2.2	200	98	38	13	232	11	5.2
3	7.6	15	21	5.0	2.5	175	76	36	13	467	10	5.6
4	7.2	15	15	3.0	3.0	140	59	34	14	377	10	7.6
5	7.2	13	18	2.0	2.5	100	53	32	15	310	9.9	8.0
6	7.2	14	20	1.5	2.0	75	49	30	14	199	9.9	7.6
7	9.0	14	20	1.5	1.5	50	49	27	49	141	9.9	6.4
8	13	14	19	1.7	1.0	150	43	25	41	103	9.4	6.8
9	12	22	19	2.0	2.0	250	34	25	46	78	8.9	7.2
10	12	24	19	2.5	5.0	400	39	25	45	110	8.9	6.8
11	12	27	18	2.5	6.0	500	38	25	46	137	5.2	6.4
12	11	24	17	2.3	7.0	600	36	22	44	107	5.2	6.0
13	11	24	16	2.3	9.0	750	35	20	35	82	5.2	5.6
14	11	26	15	2.0	14	475	33	19	26	69	6.0	4.8
15	11	26	14	2.0	18	450	32	18	22	60	6.4	4.0
16	10	23	13	1.8	22	400	34	18	18	49	4.0	4.4
17	9.8	22	11	1.8	25	300	34	17	16	43	4.0	4.4
18	9.0	23	10	1.5	200	100	34	17	14	38	4.4	4.4
19	8.7	23	9.2	1.3	450	130	34	17	14	32	4.4	4.8
20	8.7	24	8.5	1.3	250	144	34	16	14	28	4.8	4.8
21	8.6	24	8.0	1.5	200	117	41	15	12	25	4.8	4.8
22	8.3	23	7.5	2.5	100	103	41	15	10	22	6.0	6.4
23	8.3	18	7.0	3.0	125	74	43	18	8.4	22	6.0	7.2
24	8.6	20	6.4	3.0	200	62	39	19	7.6	19	5.2	7.6
25	9.2	18	5.8	2.8	500	69	37	19	6.8	17	4.0	8.0
26	10	19	5.3	2.5	800	53	36	18	6.0	16	3.7	7.6
27	12	18	5.0	2.2	600	50	39	17	4.8	15	3.7	8.0
28	13	18	4.5	1.8	100	167	39	16	3.7	16	3.7	7.6
29	13	19	5.0	1.5	------	185	40	15	223	13	3.4	7.6
30	13	19	5.3	1.5	------	181	40	14	1,040	12	4.4	6.8
31	13	------	5.5	1.5	------	149	------	13	------	12	5.2	------
TOTAL	309.2	597	391.0	72.8	3,649.5	6,749	1,370	680	1,835.3	3,240	199.6	188.0
MEAN	9.97	19.9	12.6	2.35	130	218	45.7	21.9	61.2	105	6.44	6.27
MAX	13	27	22	5.5	800	750	131	40	1,040	467	12	8.0
MIN	7.2	13	4.5	1.3	1.0	50	32	13	3.7	12	3.4	4.0
AC-FT	613	1,180	776	144	7,240	13,390	2,720	1,350	3,640	6,430	396	373

CAL YR 1970 TOTAL 19,690.90 MEAN 53.9 MAX 1,500 MIN .65 AC-FT 39,060
WTR YR 1971 TOTAL 19,281.40 MEAN 52.8 MAX 1,040 MIN 1.0 AC-FT 38,240

PEAK DISCHARGE (BASE, 500 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
2-19	-	-	525	3-13	-	-	1,250
2-26	-	-	1,000	6-30	0400	6.20	1,300

06483500 Rock River near Rock Valley, Iowa

LOCATION.--Lat 43°11'58", long 96°20'22", in NW¼NE¼ sec.25, T.97 N., R.47 W., Sioux County, on downstream side of bridge on U.S. Highway 18, 1.8 miles west of Rock Valley and at mile 15.9.

DRAINAGE AREA.--1,600 sq mi.

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

GAGE.--Water-stage recorder. Datum of gage is 1,211.81 ft above mean sea level. Prior to Aug. 13, 1952, nonrecording gage (June 4, 1949, to Aug. 12, 1952, supplementary water-stage recorder operating above 6.2 ft gage height) at same site and datum.

AVERAGE DISCHARGE.--22 years, 304 cfs (2.58 inches per year, 220,200 acre-ft per year); median of yearly mean discharges, 230 cfs (2.0 inches per year, 167,000 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 9,060 cfs Feb. 19 (gage height, 13.73 ft); minimum daily, 20 cfs Jan. 27 to Feb. 9.
Period of record: Maximum discharge, 40,400 cfs Apr. 7, 1969 (gage height, 17.32 ft); no flow Feb. 20-23, Feb. 27 to Mar. 8, 1959.
Flood in 1897 reached a stage of 17.0 ft (discharge not determined), from information by State Highway Commission.

REMARKS.--Records good except those for winter periods, which are poor. Records of periodic chemical analyses for the current year are published in Part 2. Water-Quality Records for Iowa, 1971.

REVISIONS.--WSP 1439: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	138	210	34	20	700	1,400	249	130	294	100	32
2	29	142	210	33	20	550	980	233	121	347	94	31
3	26	147	200	32	20	520	764	218	120	331	88	31
4	24	147	170	31	20	480	636	197	519	301	84	30
5	23	145	160	30	20	460	575	191	708	329	81	30
6	27	151	160	28	20	400	530	195	840	370	77	30
7	33	160	160	28	20	350	480	177	2,420	311	72	31
8	69	175	170	27	20	320	444	166	3,520	262	68	30
9	102	201	160	27	20	330	411	156	3,070	231	69	30
10	128	227	150	27	22	342	394	153	3,330	396	65	30
11	149	334	120	27	24	337	368	153	3,640	555	63	32
12	166	423	90	27	26	347	352	144	1,990	676	59	33
13	177	397	105	26	23	423	337	140	1,270	625	59	31
14	197	363	110	26	22	1,240	324	137	908	492	54	30
15	199	300	100	25	25	2,400	313	133	728	392	52	30
16	183	280	90	25	30	1,100	303	132	606	334	52	29
17	162	294	80	24	40	748	294	123	523	289	49	30
18	147	294	70	24	60	660	289	112	468	255	50	30
19	135	275	66	24	3,000	400	284	113	423	227	60	30
20	126	269	62	24	7,160	410	280	102	411	208	66	29
21	118	258	58	23	2,470	380	296	100	453	197	60	29
22	113	180	54	23	684	350	306	95	483	177	49	29
23	110	160	50	22	468	310	316	90	414	166	46	30
24	106	150	47	22	440	300	306	125	363	153	42	31
25	104	170	45	21	650	310	286	160	324	142	39	33
26	109	170	43	21	800	316	266	273	294	130	38	34
27	121	170	41	20	700	331	258	262	269	130	36	34
28	123	180	39	20	750	492	249	229	244	120	34	34
29	130	190	38	20	------	1,140	249	201	242	110	33	34
30	140	210	37	20	------	2,310	255	181	273	104	32	34
31	140	------	35	20	------	2,120	------	160	------	101	32	------
TOTAL	3,449	6,700	3,130	781	17,574	20,876	12,545	5,100	29,104	8,755	1,803	931
MEAN	111	223	101	25.2	628	673	418	165	970	282	58.2	31.0
MAX	199	423	210	34	7,160	2,400	1,400	273	3,640	676	100	34
MIN	23	138	35	20	20	300	249	90	120	101	32	29
CFSM	.07	.14	.06	.02	.39	.42	.26	.10	.61	.18	.04	.02
IN.	.08	.16	.07	.02	.41	.49	.29	.12	.68	.20	.04	.02
AC-FT	6,840	13,290	6,210	1,550	34,860	41,410	24,880	10,120	57,730	17,370	3,580	1,850

CAL YR 1970 TOTAL 98,682 MEAN 270 MAX 6,450 MIN 18 CFSM .17 IN 2.29 AC-FT 195,700
WTR YR 1971 TOTAL 110,748 MEAN 303 MAX 7,160 MIN 20 CFSM .19 IN 2.57 AC-FT 219,700

PEAK DISCHARGE (BASE, 3,000 CFS)

DATE	TIME	G.H.	DISCHARGE
2-19	2000	13.73	9,060
6-10	1800	10.72	3,930

06485500 Big Sioux River at Akron, Iowa

LOCATION.--Lat 42°49'42", long 96°33'45", in NW¼SW¼ sec.31, T.93 N., R.48 W., Plymouth County, Iowa, on left bank at west edge of Akron, 0.6 mile downstream from bridge on State Highway 48, and 2.3 miles upstream from Union Creek.

DRAINAGE AREA.--9,030 sq mi, approximately, of which about 1,970 sq mi is probably noncontributing.

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

GAGE.--Water-stage recorder. Datum of gage is 1,118.90 ft above mean sea level. Prior to Dec. 3, 1934, nonrecording gage at bridge 300 ft upstream at same datum.

AVERAGE DISCHARGE.--43 years, 849 cfs (615,100 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, 7,310 cfs June 11 (gage height, 15.69 ft); maximum gage height, 17.16 ft Feb. 22 (backwater from ice); minimum daily discharge, 60 cfs Feb. 8, 9.
Period of record: Maximum discharge, 80,800 cfs Apr. 9, 1969 (gage height, 22.99 ft); minimum daily, 7 cfs Feb. 26-28, 1936.

REMARKS.--Records good except those for the winter months, which are poor. Records of chemical analyses for the water year 1971 are published in Part 2 of this report.

REVISISION (WATER YEARS).--WSP 1309: 1929(M), 1931-33(M), 1936(M), 1938(M), 1940(M). WSP 1389: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	176	320	190	190	75	1,750	3,450	713	386	1,430	325	129
2	175	328	185	180	80	2,000	2,650	701	373	1,770	311	127
3	172	340	180	160	85	1,650	2,100	690	370	1,300	294	123
4	170	342	170	130	85	1,580	1,740	674	1,040	1,060	279	125
5	172	348	160	110	80	1,430	1,520	659	2,580	1,170	270	126
6	173	352	165	95	70	1,340	1,380	657	1,870	1,160	260	126
7	181	352	180	100	65	1,160	1,260	641	3,450	1,200	250	123
8	252	372	190	105	60	1,040	1,180	599	4,900	1,060	237	148
9	292	422	190	115	60	944	1,110	566	5,330	924	224	142
10	301	425	190	115	65	889	1,050	539	6,690	1,400	213	132
11	379	465	185	110	70	877	1,020	516	6,900	2,610	202	130
12	403	542	180	105	65	949	976	487	5,690	1,780	197	128
13	394	647	175	100	65	882	948	467	3,760	1,630	191	123
14	380	550	170	95	70	999	917	449	2,540	1,410	184	121
15	375	450	175	95	75	2,970	892	438	1,980	1,180	179	117
16	359	400	180	100	110	4,090	878	417	1,630	998	173	112
17	335	350	185	100	180	3,520	861	404	1,380	878	170	114
18	326	370	180	95	625	2,880	847	392	1,240	783	164	122
19	309	380	170	85	4,000	2,510	836	384	1,110	710	165	118
20	294	350	180	90	4,500	2,080	826	376	1,030	654	180	110
21	280	325	185	90	5,500	2,200	840	365	1,000	609	182	108
22	269	250	180	95	5,900	2,250	847	352	1,050	576	179	112
23	260	140	180	100	3,500	2,060	858	356	1,030	549	166	110
24	258	170	175	95	900	1,750	833	372	924	511	157	107
25	254	190	180	90	700	1,500	808	379	826	466	151	115
26	254	185	190	90	850	1,340	770	416	740	441	144	127
27	268	170	180	85	1,050	1,260	758	489	692	416	137	134
28	276	180	170	85	1,200	1,750	740	454	650	403	135	132
29	294	190	170	80	------	2,000	734	429	617	390	133	127
30	304	190	175	75	------	2,820	719	409	784	359	130	125
31	312	------	185	70	------	3,710	------	400	------	338	130	------
TOTAL	8,647	10,095	5,550	3,230	30,085	58,180	34,348	15,190	62,562	30,165	6,112	3,693
MEAN	279	337	179	104	1,074	1,877	1,145	490	2,085	973	197	123
MAX	403	647	190	190	5,900	4,090	3,450	713	6,900	2,610	325	148
MIN	170	140	160	70	60	877	719	352	370	338	130	107
AC-FT	17,150	20,020	11,010	6,410	59,670	115,400	68,130	30,130	124,100	59,830	12,120	7,330

CAL YR 1970 TOTAL 305,070 MEAN 836 MAX 7,380 MIN 100 AC-FT 605,100
WTR YR 1971 TOTAL 267,857 MEAN 734 MAX 6,900 MIN 60 AC-FT 531,300

PEAK DISCHARGE (BASE, 3,500 CFS)

DATE	TIME	G.H.	DISCHARGE	DATE	TIME	G.H.	DISCHARGE
2-22	-	-	6,200	3-31	1900	11.26	3,890
3-16	2000	11.79	4,240	6-11	0200	15.69	7,310

06486000 Missouri River at Sioux City, Iowa

LOCATION.--Lat 42°29'10", long 96°24'47", in NW¼SE¼ sec.16, T.29 N., R.9 E., sixth principal meridian, Dakota County, Nebraska, on right bank on upstream side of bridge on U.S. Highway 77 at South Sioux City, Nebraska, 2.0 miles downstream from Big Sioux River and at mile 732.3.

DRAINAGE AREA.--314,600 sq mi, approximately.

PERIOD OF RECORD.--October 1897 to current year in reports of 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.

GAGE.--Water-stage recorder. Datum of gage is 1,056.98 ft above mean sea level. Sept. 2, 1878, to Dec. 31, 1905, nonrecording gages at various locations within 1.7 miles 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 present site at datum 19.98 ft higher, and Oct. 1, 1969 to Sept. 30, 1970 at datum 20.00 ft higher.

AVERAGE DISCHARGE.--74 years, 31,780 cfs (23,020,000 acre-ft per year).

EXTREMES.--Current year: Maximum discharge, about 80,000 cfs Feb. 19 (gage height, 30.65 ft, backwater from ice); minimum daily, 13,500 cfs Jan. 16-19; minimum gage height, 15.48 ft Dec. 24.
Period of record: Maximum discharge, 441,000 cfs Apr. 14, 1952 (gage height, 24.28 ft); minimum, 2,500 cfs Dec. 29, 1941; minimum gage height, -6.60 ft Dec. 14, 1968, result of freezeup.

REMARKS.--Records good except those for winter periods, which are poor. Flow partly regulated by upstream main-stem reservoirs.

REVISIONS(WATER YEARS).--WSP 716: 1929-30. WSP 876: Drainage area.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1970 TO SEPTEMBER 1971

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40,000	42,700	38,500	18,500	14,000	24,000	42,700	36,400	48,200	48,600	49,500	47,900
2	40,000	42,700	38,200	18,400	14,000	24,600	40,900	37,000	47,900	46,600	49,200	47,900
3	40,000	42,400	38,500	18,100	16,000	24,000	39,400	36,700	47,900	46,900	49,200	48,600
4	39,700	42,400	35,800	17,500	18,000	22,800	39,700	36,400	49,200	46,900	48,900	49,500
5	41,200	42,100	33,100	17,200	18,000	23,000	39,400	36,100	56,700	47,600	48,600	49,800
6	40,900	41,800	29,800	17,000	17,000	24,000	38,500	36,700	56,000	48,200	48,600	49,800
7	42,400	42,400	26,000	14,500	16,500	21,400	37,600	36,400	58,600	47,600	48,600	49,800
8	44,600	43,400	23,700	14,000	16,000	20,600	37,600	36,400	56,000	48,600	48,200	49,800
9	43,700	44,300	21,400	14,500	15,500	23,500	37,000	37,300	61,700	49,500	48,200	49,800
10	42,400	43,400	19,800	15,000	16,000	24,000	37,000	42,100	69,800	51,800	48,900	49,500
11	42,400	43,400	19,000	15,000	17,000	24,400	37,000	47,900	67,600	53,400	48,900	48,900
12	43,000	43,400	19,500	15,000	17,500	22,600	36,700	50,200	64,800	53,100	49,200	48,600
13	43,000	43,400	19,800	15,000	17,000	23,300	36,700	50,200	66,200	51,800	48,900	48,200
14	43,000	43,400	20,000	14,500	17,000	23,500	36,400	48,900	63,800	51,500	48,200	48,900
15	43,000	42,700	19,500	14,000	17,000	23,000	36,400	48,200	59,000	49,800	48,600	48,900
16	42,400	42,400	19,700	13,500	18,000	23,300	36,100	48,200	56,400	50,200	48,600	49,200
17	42,700	41,500	19,800	13,500	18,000	26,300	36,400	48,600	51,200	49,200	48,600	49,500
18	42,700	40,900	20,200	13,500	40,000	30,100	36,400	48,200	45,400	49,500	48,600	49,200
19	43,000	41,200	19,500	13,500	60,000	34,300	36,100	46,600	49,600	49,200	49,200	48,900
20	43,400	40,600	18,900	14,500	48,600	36,400	36,400	46,000	51,800	48,600	48,900	48,900
21	43,000	41,200	18,700	15,000	44,000	38,200	36,400	46,600	49,500	48,900	48,600	48,900
22	42,400	41,500	18,900	15,500	30,100	38,800	36,700	47,600	49,500	49,200	48,900	48,600
23	42,400	40,300	19,500	15,500	27,800	39,700	37,000	49,200	49,800	49,200	48,600	48,600
24	42,100	39,700	16,600	15,500	29,800	40,300	36,700	49,500	50,500	49,200	48,600	47,900
25	42,100	39,700	17,200	16,000	29,800	40,300	36,400	48,900	50,200	49,500	48,600	48,900
26	42,100	38,500	17,300	16,000	28,400	40,300	36,700	50,800	49,800	49,200	48,900	49,500
27	42,100	38,200	17,900	16,000	26,800	40,300	37,300	51,200	49,500	48,900	49,500	49,800
28	41,800	37,600	17,300	16,000	23,700	40,300	36,700	50,500	49,200	49,200	49,200	49,200
29	41,800	37,300	16,700	16,000	------	40,000	36,100	49,800	49,500	48,900	48,600	48,200
30	42,400	37,600	17,800	15,500	------	40,300	36,100	48,200	50,500	48,900	48,200	47,900
31	42,700	------	18,400	15,000	------	41,800	------	48,200	------	48,200	48,200	------
TOTAL	1,308.4M	1,242.1M	697,000	478,700	671,500	939,400	1,120.5M	1,395.0M	1,625.8M	1,527.9M	1,511.5M	1,469.1M
MEAN	42,210	41,400	22,480	15,440	23,980	30,300	37,350	45,000	54,190	49,290	48,760	48,970
MAX	44,600	44,300	38,500	18,500	60,000	41,800	42,700	51,200	69,800	53,400	49,500	49,800
MIN	39,700	37,300	16,600	13,500	14,000	20,600	36,100	36,100	45,400	46,600	48,200	47,900
CFSM	.13	.13	.07	.05	.08	.10	.12	.14	.17	.16	.16	.16
IN.	.15	.15	.08	.06	.08	.11	.13	.16	.19	.18	.18	.17
AC-FT	2,595M	2,464M	1,382M	949,500	1,332M	1,863M	2,223M	2,767M	3,225M	3,031M	2,998M	2,914M

CAL YR 1970 TOTAL 12,169,600 MEAN 33,340 MAX 45,600 MIN 9,000 CFSM .11 IN 1.44 AC-FT 24,140,000
WTR YR 1971 TOTAL 13,986,900 MEAN 38,320 MAX 69,800 MIN 13,500 CFSM .12 IN 1.65 AC-FT 27,740,000

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or floodflow analyses, depending on the type of data collected.

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, and discharge measurements may have been made for purposes of establishing the stage-discharge relation, but these are not published herein. The years given in the period of record represent water years for which the annual maximum has been determined.

Annual maximum discharge at crest-stage partial-record stations during water year 1971

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
Minnesota River basin							
05289950	Little Minnesota River tributary at Sisseton, S. Dak.	Lat 45°39'38", long 97°04'21", in NW¼ sec.32, T.126 N., R.51 W., Roberts County, at culvert on State Highway 10, 0.6 mile west of Sisseton.	[a]4.0	1970-71	4-27-70 6-29-71	4.25 8.54	16 288
05290300	North Fork Whetstone River tributary near Wilmot, S. Dak.	Lat 45°26'02", long 96°57'33", in SE¼ sec.18, T.123 N., R.50 W., Roberts County, at culvert on county highway, 6.0 miles northwest of Wilmot.	[a]2.0	1970-71	6-15-70 6-29-71	3.66 4.06	24 36
05292600	North Fork Yellow Bank River tributary near Stockholm, S. Dak.	Lat 45°06'24", long 96°49'06", in NW¼ sec.22, T.119 N., R.50 W., Grant County, at culvert on State Highway 20, 1.0 mile northwest of Stockholm.	[a]7.0	1970-71	4-19-70 6-29-71	4.64 10.44	52 510
Spring Creek basin							
06354845	Spring Creek tributary near Greenway, S. Dak.	Lat 45°54'45", long 99°36'48", in SW¼ sec.12, T.128 N., R.73 W., McPherson County, at culvert on State Highway 47, 5.8 miles east of Greenway.	[a]3.0	1970-71	6-12-70 6-17-71	2.91 7.86	3.0 188
Grand River basin							
06355400	North Fork Grand River tributary near Lodgepole, S. Dak.	Lat 45°55'45", long 102°39'04", in NW¼ sec.28, T.23 N., R.12 E., Perkins County, at culvert on county highway, 9.0 miles north of Lodgepole.	[a]3.0	1970-71	6-12-70 7-12-71	5.28 6.21	(+) (+)
06356050	Wide Sandy Creek near Buffalo, S. Dak.	Lat 45°30'57", long 103°32'40", in NW¼ sec.20, T.18 N., R.5 E., Harding County, at bridge on U.S. Highway 85, 4.5 miles south of Buffalo.	38.8	1956, 1958-71	6-17-71	5.19	(+)
06356150	North Jack Creek near Ludlow, S. Dak.	Lat 45°47'15", long 103°23'43", in SW¼NW¼NW¼ sec.16, T.21 N., R.6 E., Harding County, at culvert on U.S. Highway 85, 3.4 miles southwest of Ludlow.	[a]1.71	1970-71	4-25-70 6- 4-71	[b]4.24 3.74	[c]20 (+)
06356600	South Fork Grand River tributary near Bison, S. Dak.	Lat 45°35'54", long 102°39'28", in NE¼ sec.21, T.19 N., R.12 E., Perkins County, at culvert on county highway, 10 miles northwest of Bison.	[a]1.0	1970-71	5-30-70 6- 4-71	3.06 5.55	5.0 80
06358350	Claymore Creek tributary near Trail City, S. Dak.	Lat 45°29'14", long 100°34'54", in NW¼ sec.32, T.18 N., R.23 E., Corson County, at culvert on county highway, 7.3 miles east of Trail City.	1.98	1956-71	4-20-71	3.08	(+)
06358400	Claymore Creek tributary No. 2 near Trail City, S. Dak.	Lat 45°29'14", long 100°35'30", in NE¼ sec.31, T.18 N., R.29 E., Corson County, at culvert on county highway, 7.0 miles east of Trail City.	.15	1956-71	5-23-71	2.65	(+)
Deadman Creek basin							
06358520	Deadman Creek tributary near Mobridge, S. Dak.	Lat 45°28'12", long 100°29'46", in NW¼ sec.1, T.17 N., R.29 E., Dewey County, at culvert on county highway, 5.5 miles southwest of Mobridge.	0.28	1956-71	5-23-71	5.03	13

See footnotes at end of table, p. 149.

Annual maximum discharge at crest-stage partial-record stations during water year 1971.--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Blue Blanket Creek basin					
06358540	Blue Blanket Creek tributary near Glenham, S. Dak.	Lat 45°32'12", long 100°12'01", in NW¼NW¼NW¼ sec.30, T.124 N., R.77 W., Walworth County, at culvert on U.S. Highway 12, 3.5 miles east of Glenham.	[a]0.58	1970-71	9- 7-70 6-17-71	3.33 3.48	6.8 8.6
		Moreau River basin					
06358550	Battle Creek tributary near Castle Rock, S. Dak.	Lat 45°02'57", long 103°32'56", in NE¼ sec.31, T.13 N., R.5 E., Butte County, at culvert on U.S. Highway 85, 8.7 miles northwest of Castle Rock.	[a]1.0	1969-71	7- 8-69 6-12-70 6- 4-71	10.8 4.69 5.52	430 60 97
06358600	South Fork Moreau River tributary near Redig, S. Dak.	Lat 45°11'45", long 103°34'09", in SE¼ sec.1, T.14 N., R.4 E., Butte County, at culvert on former U.S. Highway 85, 5 miles south of Redig, 26.2 miles south of Buffalo.	11.3	1956, 1958-71	7- -56 1958 6-25-59 6- -63 7- 8-65 3-13-66 6- 6-67 8-24-68 7- 8-69 5-11-70 4-19-71	2.44 2.08 3.56 3.55 [e]2.38 [b]3.20 2.32 2.38 5.15 2.20 3.8	[d]72 [d]1.0 [d]205 [d]170 [d]65 [f]40 [d]58 [d]65 [d]450 [d]40 180
06358620	Sand Creek tributary near Redig, S. Dak.	Lat 45°13'21", long 103°32'56", in NE¼ sec.31, T.15 N., R.5 E., Harding County, at culvert on U.S. Highway 85, 3.5 miles south of Redig.	.06	1956, 1958-71	4-19-71	2.58	13
06358750	North Fork Moreau River tributary near Redig, S. Dak.	Lat 45°19'51", long 103°32'57", in SE¼ sec.19, T.16 N., R.5 E., Harding County, at culvert on U.S. Highway 85, 5 miles north of Redig, 17.7 miles south of Buffalo.	4.00	1956, 1958-71	5-11-70 4-19-71	[gf]4.47 7.31	(+) (+)
06359000	Moreau River at Bixby, S. Dak.	Lat 45°08'37", long 102°33'30" (corrected), in SE¼SW¼ sec.29, T.14 N., R.13 E., Perkins County, at highway bridge, 0.4 mile south of Bixby, 3.5 miles downstream from proposed Bixby damsite.	1,570	1948-69‡, 1970-71	3-28-71	11.95	7,100
06359300	Deep Creek tributary near Maurine, S. Dak.	Lat 45°01'34", long 102°32'29", in SW¼SE¼ sec.4, T.12 N., R.13 E., Meade County, at culvert on U.S. Highway 212, 2.6 miles east of Maurine.	[a]1.32	1970-71	5-30-70 5-30-71	3.27 8.13	(+) (+)
06359700	Thunder Butte Creek tributary near Meadow, S. Dak.	Lat 45°26'39", long 102°05'21", in SE¼ sec.12, T.17 N., R.16 E., Perkins County, at culvert on State Highway 20, 8.5 miles southeast of Meadow, 15.7 miles west of Glad Valley.	[a]3.0	1970-71	5- 7-70 3-13-71	8.00 [b]6.43	145 [c]35
06359800	Thunder Butte Creek tributary near Glad Valley, S. Dak.	Lat 45°26'39", long 102°01'01", in SW¼ sec.10, T.17 N., R.17 E., Perkins County, at culvert on State Highway 20, 12.2 miles west of Glad Valley.	[a]8.0	1970-71	5- 8-70 7-11-71	8.43 6.05	(+) (+)
06359850	Elm Creek tributary near Dupree, S. Dak.	Lat 45°03'12", long 101°38'39", in SW¼ sec.26, T.13 N., R.20 E., Ziebach County, at culvert on U.S. Highway 212, 1.8 miles west of Dupree.	[a]5.0	1970-71	5-14-70 5-23-71	3.11 3.66	(+) (+)
06360350	Little Moreau River tributary near Firesteel, S. Dak.	Lat 45°24'16", long 101°13'30", in NE¼SE¼ sec.25, T.17 N., R.23 E., Dewey County, at culvert on State Highway 63, 3.5 miles southeast of Firesteel.	[a]2.75	1970-71	6-12-70 4-20-71	2.71 4.14	(+) 40
		Swan Creek basin					
06361020	Swan Lake Creek tributary near Bowdle, S. Dak.	Lat 45°26'57", long 99°44'34", in SW¼ sec.23, T.123 N., R.74 W., Walworth County, at culvert on U.S. Highway 12, 3.7 miles west of Bowdle.	[a]10.0	1970-71	4-28-70 4- 8-71	4.6 4.80	(+) (+)

See footnotes at end of table, p. 149.

Annual maximum discharge at crest-stage partial-record stations during water year 1971.--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Cheyenne River basin					
06396200	Fiddle Creek near Edgemont, S. Dak.	Lat 43°18'16", long 103°59'46", in SE¼ sec.33, T.8 S., R.1 E., Fall River County, at culvert on U.S. Highway 18 and 85A, 9 miles west of Edgemont.	1.97	1956-71	5-22-71	1.41	3.6
06396300	Cottonwood Creek tributary near Edgemont, S. Dak.	Lat 43°17'35", long 103°52'20", in SW¼ sec.3, T.9 S., R.2 E., Fall River County, at culvert on U.S. Highway 18 and 85A, 2.5 miles west of Edgemont.	.20	1956-71	7-12-70 5-22-71	[hf]2.93 2.72	(+) (+)
06396350	Red Canyon Creek tributary near Pringle, S. Dak.	Lat 43°32'22", long 103°39'20", in SW¼ sec.9, T.6 S., R.4 E., Custer County, at culvert on State Highway 89, 0.5 mile northwest of Argyle, and 5.5 miles southwest of Pringle.	[a].2	1970-71	1970 5- 3-71	(i) 4.01	[c]5.0 30
06399300	Hat Creek tributary near Ardmore, S. Dak.	Lat 43°05'42", long 103°40'25", in NW¼ sec.16, T.11 S., R.4 E., Fall River County, at culvert on State Highway 71, 5.0 miles north of Ardmore.	3.74	1956-71	5-25-57 6-16-62 3-16-63 6-21-64 5-24-65 6-15-67 6- 9-68 3-19-69 5-23-71	[j]5.12 [j]5.05 [j]6.65 [j]5.47 [j]5.01 [j]5.33 [j]5.47 [j]3.70 6.13	[d]270 [d]265 [d]510 [d]320 [d]255 [d]300 [d]320 [d] 45 310
06399700	Pine Creek near Ardmore, S. Dak.	Lat 43°11'14", long 103°38'24", in NW¼ sec.15, T.10 S., R.4 E., Fall River County, at bridge on State Highway 71, 11.5 miles north of Ardmore.	5.47	1956-71	5-23-71	6.78	900
06400900	Horsehead Creek tributary near Smithwick, S. Dak.	Lat 43°17'16", long 103°19'08", in NW¼ sec.8, T.9 S., R.7 E., Fall River County, at culvert on U.S. Highway 18 and 385, 12 miles southeast of Hot Springs, and 5.3 miles west of Smithwick.	[a]1.5	1969-71	7-18-69 6-12-70 5-23-71	7.6 3.09 4.09	(+) (+) (+)
06402100	Fall River tributary at Hot Springs, S. Dak.	Lat 43°24'58", long 103°29'18", in NW¼NE¼ sec.26, T.7 S., R.5 E., Fall River County, at culvert on State Highway 71, 0.5 mile south of Hot Springs.	[a]3.8	1970-71	7-27-70 5-30-71	4.17 2.68	40 (+)
06403800	Battle Creek tributary near Keystone, S. Dak.	Lat 43°55'28", long 103°27'44", in NW¼ NE¼NE¼ sec.36, T.1 S., R.5 E., Pennington County, at culvert on U.S. Highway 16, 2.8 miles northwest of Keystone.	.88	1956-71	5-31-71	4.50	4.2
06406100	Battle Creek tributary near Hermosa, S. Dak.	Lat 43°50'10", long 103°09'43", in SE¼NE¼ sec.33, T.2 S., R.8 E., Custer County, at culvert on county highway, 1.3 miles east of Hermosa.	[a]3.50	1970-71	4- -70 4- -71	(i) (i)	(+) (+)
06406800	Newton Fork near Hill City, S. Dak.	Lat 43°58'03", long 103°38'24", in NE¼NE¼ sec.16, T.1 S., R.4 E., Pennington County, at culvert on Forest Service Road 17, 3.9 miles northwest of Hill City.	[a]8.25	1969-71	7-16-69 5-13-70 6- 6-71	3.53 3.47 3.62	(+) (+) (+)
06406900	Palmer Creek near Hill City, S. Dak.	Lat 43°56'12", long 103°30'36", in NE¼SE¼NW¼ sec.27, T.1 S., R.5 E., Pennington County, at culvert on U.S. Highway 16, 3.0 miles east of Hill City.	8.24	1956-71	5-10-71	4.06	(+)
06408850	Silver Creek near Rochford, S. Dak.	Lat 44°07'24", long 103°41'53", in NE¼NE¼ sec.24, T.2 N., R.3 E., Pennington County, at culvert on Forest Service Road 291, 0.3 mile upstream from mouth, and 1.1 miles east of Rochford.	[a]6.20	1969-71	9- 9-69 6-12-70 5-10-71	[k]4.17 3.93 3.64	13 9.8 6.3
06408900	Heeley Creek near Hill City, S. Dak.	Lat 43°58'57", long 103°50'02", in NW¼NW¼ sec.12, T.1 S., R.2 E., Pennington County, at culvert on Forest Service Road 291, 2.8 miles south of Deerfield, and 13.5 miles northwest of Hill City.	[a]4.86	1969-71	5- 3-69 6-12-70 4-17-71	(l) 3.47 (l)	[c]15 10 [c]15

See footnotes at end of table, p. 149.

Annual maximum discharge at crest-stage partial-record stations during water year 1971.--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Cheyenne River basin - Continued					
06421750	Rapid Creek tributary near Farmingdale, S. Dak.	Lat 43°56'30", long 102°48'43", in SE¼SW¼ sec.21, T.1 S., R.11 E., Pennington County, at culvert on State Highway 40, 3.8 miles southeast of Farmingdale.	[a]1.51	1970-71	4-25-70 3-25-71	3.87 4.35	35 [c]10
06422400	Estes Creek near Nemo, S. Dak.	Lat 44°10'21", long 103°29'35", in SE¼SE¼ sec.34, T.3 N., R.5 E., Lawrence County, at culvert on Forest Service Road 5081, 1.6 miles southeast of Nemo.	[a]6.15	1969-71	5- 3-69 6-12-70 5-30-71	2.91 5.41 3.82	(+) (+) (+)
06423250	Boxelder Creek tributary at New Underwood, S. Dak.	Lat 44°05'47", long 102°50'30", in SE¼SW¼ sec.30, T.2 N., R.11 E., Pennington County, at culvert on former U.S. Highway 14 and 16, 0.1 mile west of New Underwood.	[a].14	1970-71	1970 1971	(i) (i)	[c]1.0 [c]1.0
06423400	Bull Creek tributary near Wall, S. Dak.	Lat 43°53'55", long 102°14'18", in NW¼SW¼ sec.5, T.2 S., R.16 E., Pennington County, at culvert on U.S. Highway 16A, 6.2 miles south of Wall.	[a].41	1970-71	5-30-70 5-23-71	2.92 4.14	[c].05 29
06432200	Polo Creek near Whitewood, S. Dak.	Lat 44°27'49", long 103°43'41", in SW¼ sec.23, T.6 N., R.3 E., Lawrence County, at bridge on U.S. Highway 85, 4.3 miles west of Whitewood.	10.6	1956-71	5-10-71	2.78	190
06434800	Owl Creek tributary near Belle Fourche, S. Dak.	Lat 44°49'32", long 103°51'06", in NW¼SE¼ sec.15, T.10 N., R.2 E., Butte County, at culvert on U.S. Highway 85, 10.2 miles north of Belle Fourche.	[a]3.06	1970-71	1970 4-20-71	(i) (i)	[c]10 [c]20
06436770	Dry Creek tributary near Newell, S. Dak.	Lat 44°48'13", long 103°25'03", in NW¼ sec.29, T.10 N., R.6 E., Butte County, at culvert on State Highway 79, 5.8 miles north of Newell.	[a].5	1970-71	5-11-70 8-29-71	3.66 3.38	4.6 2.1
06437100	Boulder Creek near Deadwood, S. Dak.	Lat 44°23'28", long 103°39'38", in NE¼SW¼ sec.17, T.5 N., R.4 E., Lawrence County, at culvert on U.S. Highway 14A, 3.5 miles east of Deadwood.	1.69	1956-71	6-12-70 5-23-71	8.38 5.48	[f]206 61
06439050	Cherry Creek tributary near Avance, S. Dak.	Lat 44°48'33", long 102°03'18", in SW¼ sec.21, T.10 N., R.17 E., Meade County, at culvert on State Highway 73, 12.5 miles southeast of Avance.	.60	1956-71	6-18-71	4.11	(+)
06439060	Cherry Creek tributary No. 2 near Avance, S. Dak.	Lat 44°48'15", long 102°03'18", in NW¼ sec.28, T.10 N., R.17 E., Meade County, at culvert on State Highway 73, 12.5 miles southeast of Avance.	.11	1956-71	5-23-71	4.18	45
06439080	Cherry Creek tributary No. 3 near Avance, S. Dak.	Lat 44°51'03", long 102°02'36", in SW¼ sec.3, T.10 N., R.17 E., Meade County, at bridge on State Highway 73, 11 miles southeast of Avance.	4.58	1956-71	5-23-71	5.48	980
06439100	Beaver Creek near Faith, S. Dak.	Lat 44°56'21", long 102°02'37", in SW¼ sec.3, T.11 N., R.17 E., Meade County, at bridge on State Heightway 73, 6 miles south of Faith.	37.1	1956-71	8-21-57 6- 8-58 3-21-60 5-21-62 6-15-63 6- 8-64 6- 2-65 7-21-66 6-13-67 6-25-68 7-17-69 5-23-71	5.97 6.63 [b]8.15 11.85 7.09 7.19 12.70 4.33 11.32 7.25 10.13 9.31	[f]115 [f]160 [f]170 [f]3,300 [f]190 [f]210 [f]5,000 [f]26 [d]2,600 [d]220 [d]1,350 845
06439400	Plum Creek tributary near Milesville, S. Dak.	Lat 44°21'34", long 101°25'42", in S½ sec.26, T.5 N., R.22 E., Haakon County, at culvert on State Highway 34, 14.5 miles southeast of Milesville	[a].5	1970-71	7-13-70 6- 6-71	4.07 4.25	19 22

See footnotes at end of table, p. 149.

Annual maximum discharge at crest-stage partial-record stations during water year 1971.--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Bad River basin					
06440700	Brady Creek tributary near Philip, S. Dak.	Lat 43°55'14", long 101°39'40", in NE¼NE¼ sec.36, T.1 S., R.20 E., Jackson County, at culvert on State Highway 73, 8.1 miles south of Philip.	[a]4.85	1970-71	1970 4-20-71	(i) 4.47	(+) (+)
06441200	Powell Creek tributary near Fort Pierre, S. Dak.	Lat 44°22'39", long 100°35'16", in NW¼SW¼ sec.23, T.5 N., R.29 E., Stanley County, at culvert on U.S. Highway 14, 10.2 miles west of Fort Pierre.	[a].4	1970-71	8-10-70 4-21-71	8.07 3.94	211 24
		Hilgers Gulch basin					
06441530	Hilgers Gulch tributary near Pierre, S. Dak.	Lat 44°23'52", long 100°18'57", in SE¼SW¼SE¼ sec.22, T.111 N., R.79 W., Hughes County, at culvert on U.S. Highway 14 and 83, 1 mile upstream from mouth, and 3 miles northeast of Pierre.	[a]1.25	1968-71	6- 9-68 7-17-69 8- 7-70 6- 9-71	5.47 4.40 4.74 7.41	102 42 59 244
06441580	Hilgers Gulch at Pierre, S. Dak.	Lat 44°22'10", long 100°20'30", in SE¼SW¼ sec.33, T.111 N., R.79 W., Hughes County, on right bank at culvert on Church Street, 0.7 mile upstream from mouth, in city of Pierre.	[a]7.0	1967-71	6-18-67 6- 9-68 7-17-69 8- 7-70 6- 9-71	13.8 12.38 9.23 8.44 9.50	1,320 1,010 455 344 498
		Mush Creek basin					
06441650	Mush Creek near Pierre, S. Dak.	Lat 44°20'13", long 100°12'42", in NE¼ sec.16, T.110 N., R.78 W., Hughes County, at bridge on State Highway 34, 7.5 miles east of Pierre.	14.6	1956-71	6- 9-71	5.86	1,770
		Unnamed Missouri River tributaries					
06441670	Missouri River tributary near Pierre, S. Dak.	Lat 44°20'09", long 100°11'39", in NE¼ sec.15, T.110 N., R.78 W., Hughes County, at culvert on State Highway 34, 8 miles east of Pierre.	0.42	1956-71	7-10-71	2.32	33
06441750	Missouri River tributary near Canning, S. Dak.	Lat 44°19'57", long 100°09'54", in NW¼ sec.13, T.110 N., R.78 W., Hughes County, at culvert on State Highway 34, 8 miles southwest of Canning.	.20	1956-71	6- 9-71	3.27	43
06442050	Missouri River tributary near DeGrey, S. Dak.	Lat 44°17'45", long 99°58'58", in SW¼ sec.28, T.110 N., R.76 W., Hughes County, at culvert on State Highway 34, 3.2 miles northwest of DeGrey.	1.64	1956-71	4-27-71	1.83	68
		Medicine Creek basin					
06442350	North Fork Medicine Creek near Vivian, S. Dak.	Lat 43°57'06", long 100°19'25", in SW¼ sec.28, T.106 N., R.79 W., Lyman County, at bridge on U.S. Highway 83, 2.5 miles northwest of Vivian.	45.9	1956-71	[e]5-19-69 4-20-71	[e]4.91 7.15	[e]118 350
06442380	Medicine Creek tributary near Vivian, S. Dak.	Lat 44°05'47", long 100°19'39", in SE¼ sec.5, T.107 N., R.79 W., Lyman County, at culvert on former U.S. Highway 83, 12 miles northwest of Vivian.	.30	1956-71	4-20-71	(1)	[c]10
06442400	Medicine Creek tributary No. 2 near Vivian, S. Dak.	Lat 44°02'03", long 100°19'28", in NE¼ sec.32 (revised), T.107 N., R.79 W., Lyman County, at culvert on U.S. Highway 83, 8 miles northwest of Vivian.	8.62	1956-71	4-20-71	[m]6.71	390

See footnotes at end of table, p. 149.

Annual maximum discharge at crest-stage partial-record stations during water year 1971.--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Crow Creek basin					
06442850	Elm Creek tributary near Ree Heights, S. Dak.	Lat 44°25'05", long 99°12'17", in NW¼SW¼ sec.13, T.111 N., R.70 W., Hand County, at culvert on county highway, 6.5 miles south of Ree Heights.	[a]1.0	1969-71	4- 3-69 4-25-70 6-15-71	4.82 2.19 2.18	(+) (+) (+)
		White River basin					
06445700	White River at Slim Butte, S. Dak.	Lat 43°04'33", long 102°48'41", in SE¼SE¼ sec.23, T.36 N., R.47 W., Shannon County, on left bank 300 ft downstream from highway bridge, 1,300 ft downstream from Janis Creek, 0.5 mile east of village of Slim Butte, 8.8 miles southwest of Oglala, and 12.2 miles downstream from Nebraska-South Dakota State line.	1,500	1962-70‡ 1971	5-25-71	(i)	[c]900
06445990	South Fork Blacktail Creek tributary near Oelrichs, S. Dak.	Lat 43°11'18", long 103°08'20", in NW¼ sec.14, T.10 S., R.8 E., Fall River County, at culvert on U.S. Highway 18, 4.2 miles east of Oelrichs.	[a]3.60	1969-71	7-20-69 4-27-70 5-23-71	4.7 (i) 3.75	(+) [c]3.0 (+)
06446200	White River near Rockyford, S. Dak.	Lat 43°30'52", long 102°29'30", in SW¼NW¼ sec.19, T.41 N., R.43 W., Shannon County, on right bank at downstream side of highway bridge, 0.7 mile upstream from Porcupine Creek, and 1.8 miles northeast of village of Rockyford.	3,000	1964-70‡ 1971	5-25-71	8.30	3,480
06446250	Porcupine Creek tributary near Rockyford, S. Dak.	Lat 43°26'05", long 102°25'45", in SE¼SE¼ sec.17, T.40 N., R.43 W., Shannon County, at culvert on county road, 5 miles southeast of village of Rockyford.	[a]1.66	1968, 1970-71	6- -68 6-12-70 9- 5-71	10.7 3.03 3.37	500 41 58
06446300	Big Hollow Creek tributary near Scenic, S. Dak.	Lat 43°42'25", long 102°31'15", in SE¼SE¼ sec.11, T.4 S., R.13 E., Pennington County, at culvert on county road, 4.9 miles south of Scenic.	[a]2.67	1968, 1970-71	6- -68 6-12-70 5- 3-71	10.7 8.54 10.53	570 365 555
06446400	Cain Creek tributary at Imlay, S. Dak.	Lat 43°42'59", long 102°23'23", in SE¼NW¼ sec.12, T.4 S., R.14 E., Pennington County, at bridge on State Highway 40, 0.5 mile east of Imlay.	14.0	1956-71	5-23-71	4.95	350
06446430	White River tributary near Conata, S. Dak.	Lat 43°50'48", long 102°12'33", in NE¼NW¼ sec.28, T.2 S., R.16 E., Pennington County, in Badlands National Monument, at culvert on U.S. Highway 16A, 8 miles northwest of Conata.	.17	1956-58, 1960-71	5-23-71	5.58	102
06446550	White River tributary near Interior, S. Dak.	Lat 43°44'51", long 101°56'50", in SE¼ sec.27, T.3 S., R.18 E., Jackson County, in Badlands National Monument, at culvert on U.S. Highway 16A, 2.3 miles northeast of Interior.	.14	1956-71	5-23-71	3.94	27
06446800	Cottonwood Creek near Wanblee, S. Dak.	Lat 43°34'35", long 101°32'15", in NW¼NW¼ sec.31, T.42 N., R.35 W., Washabaugh County, at culvert on State Highway 40, 6.2 miles east of Wanblee.	[a]1.7	1971	4-20-71	(i)	[c]5.0
06447200	Black Pipe Creek tributary near Norris, S. Dak.	Lat 43°27'42", long 101°08'05", in NW¼NW¼ sec.8, T.40 N., R.32 W., Mellette County, at culvert on State Highway 63, 3.2 miles east of Norris.	[a]4.25	1971	5-31-71	6.63	(+)
06447490	Little White River tributary near Martin, S. Dak.	Lat 43°10'20", long 101°41'02", in SE¼SW¼ sec.15, T.37 N., R.37 W., Bennett County, at culvert on U.S. Highway 18, 2.3 miles east of Martin.	[a]8.9	1971	2-15-71	[b]3.30	[c]5.0

See footnotes at end of table, p. 149.

Annual maximum discharge at crest-stage partial-record stations during water year 1971.--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		White River basin - Continued					
06449700	Little Oak Creek near Mission, S. Dak.	Lat 43°19'45", long 100°42'33", in NW¼ sec.25, T.39 N., R.29 W., Todd County, at culvert on U.S. Highway 83, 3.2 miles northwest of Mission.	2.62	1956-71	6-24-58 2- -63 6-15-67 5-21-69 4-20-71	5.01 [b]4.55 4.15 3.11 (1)	[f]180 [f]25 [d]22 [d]7.0 [c]45
06449750	West Branch Horse Creek near Mission, S. Dak.	Lat 43°23'36", long 100°42'32", in SW¼ sec.36, T.40 N., R.29 W., Mellette County, at culvert on U.S. Highway 83, 6.8 miles northwest of Mission.	6.05	1956-70[h]	6- -57 6- -58 7-12-60 6- -62 6-16-64 8-31-66 6-15-67 6-15-70	5.26 3.77 4.70 5.02 3.83 3.72 4.44 of4.90	[f]160 [f]18 [f]84 [f]122 [f]20 [f]16 [f]59 [d]390
06451750	Cottonwood Creek tributary near Winner, S. Dak.	Lat 43°28'11", long 100°01'13", in NW¼ sec.24, T.99 N., R.78 W., Tripp County, at culvert on U.S. Highway 18, 7.5 miles west of Winner.	[a]4.0	1971	3- -71	[b]4.00	[c]10
		Fivemile Creek basin					
06452250	Fivemile Creek tributary near Iona, S. Dak.	Lat 43°29'23", long 99°26'08", in SE¼ sec.11, T.99 N., R.73 W., Gregory County, at culvert on State Highway 47, 3.8 miles south of Iona.	[a]2.0	1970-71	6-11-70 3- -71	3.34 (i)	(+) (+)
		Choteau Creek basin					
06453150	Choteau Creek tributary near Tripp, S. Dak.	Lat 43°14'20", long 98°02'35", in NE¼NW¼ sec.10, T.97 N., R.61 W., Hutchinson County, at culvert on U.S. Highway 18, 3.7 miles west of Tripp.	[a]0.3	1970-71	4-18-70 6- 9-71	2.14 4.86	6.1 82
06453250	Choteau Creek tributary near Wagner, S. Dak.	Lat 43°04'54", long 98°19'04", in NE¼NW¼ sec.5, T.95 N., R.63 W., Charles Mix County, at culvert on State Highway 46, 1.1 miles west of Wagner.	[a]16.4	1970-71	4-15-70 4-21-71	2.39 3.79	(+) (+)
		Niobrara River basin					
06463950	Rock Creek tributary near Olsonville, S. Dak.	Lat 43°01'22", long 100°35'21", in NE¼SE¼ sec.3, T.35 N., R.28 W., Todd County, at culvert on U.S. Highway 83, 7.5 miles south of Olsonville.	[a]8.1	1970-71	4- -70 4-20-71	[b]2.93 3.63	[c]5.0 (+)
		James River basin					
06471050	Elm River tributary near Leola, S. Dak.	Lat 45°50'40", long 98°46'03", in NE¼SE¼ sec.3, T.127 N., R.66 W., McPherson County, at culvert on county highway, 12.2 miles northeast of Leola.	14.7	1956-71	4-20-68 5-24-71	[f]3.38 4.32	[f]27 66
06471400	Willow Creek tributary near Leola, S. Dak.	Lat 45°44'10", long 98°45'45", in SW¼ sec.11, T.126 N., R.66 W., McPherson County, at culvert on former State Highway 10, 8.5 miles northeast of Leola.	3.74	1956-71	5-24-71	2.72	52
06471450	Willow Creek tributary near Barnard, S. Dak.	Lat 45°44'12", long 98°37'42", in SW¼ sec.11, T.126 N., R.65 W., Brown County, at culvert on former State Highway 10, 6.5 miles west of Barnard.	.18	1956-71	4- 5-65 3-13-66 3- -67 6-21-68 4- 9-69 4-21-70 4- -71	[pb]1.93 [pb]3.11 [pb]2.00 [f]2.87 [f]6.36 [f]2.73 [b]4.87	[f]3.0 [f]15 [f]4.0 (+) 78 (+) [c]20
06471750	Foot Creek tributary near Leola, S. Dak.	Lat 45°41'01", long 98°55'55", in SE¼ sec.32, T.126 N., R.67 W., McPherson County, at culvert on State Highway 45, 2.5 miles south of Leola.	[a]4.5	1971	3- -71	(i)	[c]1.0

See footnotes at end of table, p. 149.

Annual maximum discharge at crest-stage partial-record stations during water year 1971.--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		James River basin - Continued					
06472250	Mud Creek tributary No. 2 near Groton, S. Dak.	Lat 45°26'36", long 98°02'52", in SE¼ sec.21, T.123 N., R.60 W., Brown County, at culvert on U.S. Highway 12, 2.7 miles east of Groton.	60.0	1960-71	4- 8-71	4.48	78
06472500	Mud Creek near Stratford, S. Dak.	Lat 45°16'13", long 98°17'16", in NW¼NW¼NW¼ sec.27, T.121 N., R.62 W., Brown County, at highway bridge, 3.3 miles south of Stratford, 14.7 miles upstream from mouth.	[q]730	1955-69‡, 1970-71	3-20-71	[b]3.85	55
06473300	Preachers Run tributary at Ipswich, S. Dak.	Lat 45°27'08", long 99°01'45", in SE¼ sec.21, T.123 N., R.68 W., Edmunds County, at culvert on county highway, 0.3 mile north of U.S. Highway 12, at Ipswich.	[a]5.0	1971	6-21-71	2.66	(+)
06473350	South Fork Snake Creek tributary near Seneca, S. Dak.	Lat 45°03'00", long 99°23'36", in SE¼NE¼ sec.9, T.118 N., R.71 W., Faulk County, at culvert on U.S. Highway 212, 5.3 miles east of Seneca.	[a]7.0	1971	9- 4-71	3.17	(+)
06473400	North Fork Snake Creek tributary near Wecota, S. Dak.	Lat 45°09'26", long 99°07'26", in NE¼NE¼ sec.3, T.119 N., R.69 W., Faulk County, at culvert on county highway, 1.1 miles south of Wecota.	[a]3.0	1971	3-13-71	[b]4.08	(+)
06473700	Snake Creek near Ashton, S. Dak.	Lat 45°01'50", long 98°34'26", in SW¼SW¼ sec.17, T.118 N., R.64 W., Spink County, on right bank 7 ft downstream from highway bridge, 700 ft downstream from South Fork Snake Creek, 4.5 miles northwest of Ashton, and 21.5 miles upstream from mouth.	[r]2,620	1956-69‡, 1970-71	3-15-71	[b]5.5	20
06473800	Matter Creek tributary near Orient, S. Dak.	Lat 44°48'08", long 99°04'06", in SE¼NE¼ sec.1, T.115 N., R.69 W., Hand County, at culvert on county highway, 6.8 miles southeast of Orient.	5.41	1956-71[n]	5- 3-64 5-15-65 7- -66 3- 8-67 7-26-68 4-20-70 4- -71	2.56 2.78 6.10 4.78 2.84 3.74 [b]2.99	[f]10 [d]2.5 [d]210 [d]35 [d]4.2 [d]60 [c]3.0
06473820	Shaefer Creek near Orient, S. Dak.	Lat 44°46'46", long 99°02'39", in NW¼ NW¼ sec.17, T.115 N., R.68 W., Hand County, on downstream side of bridge on county highway, 8.5 miles southeast of Orient.	45.1	1956-71	4-27-71	1.98	18
06473850	Shaefer Creek tributary near Orient, S. Dak.	Lat 44°43'49", long 98°59'17", in SE¼NE¼ sec.34, T.115 N., R.68 W., Hand County, at culvert on State Highway 45, 13 miles southeast of Orient.	6.08	1956-71	6- 7-71	3.22	6.5
06473880	Shaefer Creek tributary near Miller, S. Dak.	Lat 44°42'20", long 98°59'17", in NE¼ sec.10, T.114 N., R.68 W., Hand County, at culvert on State Highway 45, 13 miles north of Miller.	5.75	1956-71	4-27-71	2.92	1.9
06475500	Dry Run near Frankfort, S. Dak.	Lat 44°56'17", long 98°19'43", in NW¼NW¼ sec.20, T.117 N., R.62 W., Spink County, at highway bridge, 400 ft downstream from small right-bank tributary, 4.4 miles north of Frankfort, and 8.1 miles upstream from mouth.	225	1955-69‡, 1970-71	3-17-71	(1)	[c]1.0
06475550	Dry Run tributary near Frankfort, S. Dak.	Lat 44°55'45", long 98°18'31", in W½NW¼SW¼ sec.21, T.117 N., R.62 W., Spink County, on left bank at culvert on county highway, half a mile upstream from mouth, and 3.5 miles north of Frankfort.	[a]4.5	1967-71	6- -67 4-19-68 6-25-69 3- 3-70 6-19-71	[k]8.66 4.90 5.41 2.93 2.93	135 46 59 7.2 7.2
06475950	Shue Creek tributary near Yale, S. Dak.	Lat 44°27'48", long 97°59'18", in NW¼SW¼ sec.36, T.112 N., R.60 W., Beadle County, at culvert on county highway, 2 miles north of Yale.	[a]8.0	1968-71	1968 4- 4-69 6-16-70 4-27-71	(s) 4.48 3.52 2.46	0 (+) (+) (+)

See footnotes at end of table, p. 149.

Annual maximum discharge at crest-stage partial-record stations during water year 1971.--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		James River basin - Continued					
06477140	Rock Creek tributary near Roswell, S. Dak.	Lat 44°02'24", long 97°42'34", in SW¼SW¼ sec.29, T.107 N., R.57 W., Miner County, at culvert on county highway, 2.2 miles north of Roswell.	[a]6.0	1970-71	4-15-70 3-13-71	[b]4.89 [b]6.86	(+) [c]100
06477400	Firesteel Creek tributary near Wessington Springs, S. Dak.	Lat 44°04'26", long 98°34'52", in NW¼ sec.13, T.107 N., R.65 W., Jerauld County, at culvert on State Highway 34, 0.8 mile west of Wessington Springs.	[a]1.0	1968-71	7-26-68 4- 3-69 3- 3-70 3-18-71	4.41 5.14 [b]4.17 4.00	39 57 [c]20 30
06478050	Enemy Creek tributary near Mount Vernon, S. Dak.	Lat 43°36'19", long 98°15'55", in NE¼SE¼ sec.28, T.102 N., R.62 W., Davison County, at culvert on county highway, 7.3 miles south of Mount Vernon.	[a]2.5	1969-71	4- 8-69 6-16-70 6-28-71	5.0 5.54 4.97	(+) (+) (+)
06478200	Coffee Creek tributary near Parkston, S. Dak.	Lat 43°27'26", long 97°59'42", in SE¼SE¼ sec.24, T.100 N., R.61 W., Hutchinson County, at culvert on State Highway 37, 4.25 miles north of Parkston.	[a].5	1968-71	9-22-68 4- 3-69 4-23-70 3-13-71	2.83 4.43 2.29 [b]4.05	(+) (+) (+) [c]25
06478260	North Branch Dry Creek near Parkston, S. Dak.	Lat 43°22'13", long 97°50'42", in NE¼ sec.29, T.99 N., R.59 W., Hutchinson County, at bridge on county highway, 7.5 miles southeast of Parkston.	37.0	1956-71	6-19-67 6-25-68 6-10-71	2.68 2.68 3.99	[e]29 [e]29 145
06478280	South Branch Dry Creek near Parkston, S. Dak.	Lat 43°21'22", long 97°49'35", in NW¼ sec.33, T.99 N., R.59 W., Hutchinson County, at bridge on county highway, 8.3 miles southeast of Parkston.	17.1	1956-71	4-23-70 6-10-71	4.11 3.01	[e]94 25
06478300	Dry Creek near Parkston, S. Dak.	Lat 43°22'18", long 97°49'23", in SE¼ sec.21, T.99 N., R.59 W., Hutchinson County, at bridge on highway, 8.5 miles southeast of Parkston.	76.8	1956-71	6-10-71	6.17	360
06478400	Lonetree Creek tributary near Kaylor, S. Dak.	Lat 43°17'18", long 97°50'10", in NE¼SE¼ sec.20, T.98 N., R.59 W., Hutchinson County, at culvert on county highway, 7.2 miles north of Kaylor.	[a]1.5	1970-71	4-22-70 6- 7-71	2.59 3.41	12 36
		Vermillion River basin					
06478630	West Fork Vermillion River near DeSmet, S. Dak.	Lat 44°12'54", long 97°33'04", in NW¼SW¼ sec.27, T.109 N., R.56 W., Kingsbury County, at culvert on State Highway 25, 11.5 miles south of DeSmet.	[a]8.0	1970-71	6-16-70 3-13-71	3.21 [b]4.76	(+) (+)
06478650	West Fork Vermillion River tributary near Monroe, S. Dak.	Lat 42°28'35", long 97°15'39", in SW¼SW¼ sec.17, T.100 N., R.54 W., Turner County, at culvert on county highway, 3.2 miles north of Marion, and 2.2 miles west of Monroe.	[a]1.0	1969-71	4- 8-69 3- 3-70 5-23-71	[b]11.65 [b]5.29 4.11	[c]250 [c]42 22
06478800	Saddlerock Creek near Canton, S. Dak.	Lat 43°12'20", long 96°43'37", in NW¼SW¼ sec.23, T.97 N., R.50 W., Lincoln County, at bridge on county highway, 9.6 miles southwest of Canton.	14.8	1956-71	7-30-64 9-18-68 7-10-71	3.89 4.04 4.3	[f]38 [f]48 66
06478820	Saddlerock Creek tributary near Beresford, S. Dak.	Lat 43°12'21", long 96°45'51", in NE¼ NW¼NW¼ sec.21, T.97 N., R.50 W., Lincoln County, at culvert on county highway, 9 miles north of Beresford.	[a]2.32	1956-71[t]	[f]4- 4-69 [f]4-22-70 6- 6-71	[fb]4.39 [f]3.08 4.82	32 [f].1 (+)
06478840	Saddlerock Creek near Beresford, S. Dak.	Lat 43°12'55", long 96°49'33", in SE¼SE¼ sec.14, T.97 N., R.51 W., Lincoln County, at bridge on county highway, 9.5 miles northwest of Beresford.	26.3	1956-70	[e]3-18-70 1971	[e]2.51	[e]21 (u)

See footnotes at end of table, p. 149.

Annual maximum discharge at crest-stage partial-record stations during water year 1971.--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Vermillion River basin - Continued					
06478950	Ash Creek near Beresford, S. Dak.	Lat 43°05'01", long 96°50'08", in NE¼NW¼ sec.2, T.95 N., R.51 W., Clay County, at culvert on State Highway 46, 2.1 miles west of Beresford.	[a]5.1	1969-71	7-17-69 6-18-70 6- 6-71	5.11 2.87 10.45	(+) (+) (+)
06479020	Smoky Run near Irene, S. Dak.	Lat 43°04'56", long 97°19'12", in SE¼SE¼SE¼ sec.34, T.96 N., R.55 W., Yankton County, at culvert on State Highway 46, 0.1 mile west of Mayfield, and 8.0 miles west of Irene.	[a]7.0	1969-71	4- 3-69 4-22-70 6-14-71	[b]5.77 3.26 4.36	[c]75 6.5 30
		Big Sioux River basin					
06479240	Big Sioux River tributary No. 2 near Summit, S. Dak.	Lat 45°13'45", long 97°06'05", in SW¼ sec.30, T.121 N., R.51 W., Grant County, at culvert on U.S. Highway 81, 5.8 miles southwest of Summit, 11.5 miles southeast of Waubay.	0.26	1956-71	6-29-71	4.97	50
06479260	Big Sioux River tributary No. 3 near Summit, S. Dak.	Lat 45°13'30", long 97°06'27", in SE¼ sec.25, T.121 N., R.52 W., Grant County, at culvert on county highway, 6.5 miles southwest of Summit, 11.5 miles southeast of Waubay.	6.60	1956-71	6-29-71	7.57	480
06479350	Soo Creek tributary near South Shore, S. Dak.	Lat 45°06'22", long 97°01'12", in NW¼NE¼ sec.24, T.119 N., R.52 W., Codington County, at culvert on State Highway 20, 3.8 miles west of South Shore.	[a]1.2	1970-71	4-19-70 6-29-71	4.28 4.61	(+) (+)
06479370	Big Sioux River tributary near Wallace, S. Dak.	Lat 45°05'40", long 97°31'15", in NW¼NE¼ sec.26, T.119 N., R.56 W., Clark County, at culvert on State Highway 20, 3 miles northwest of Wallace.	[a].5	1969-71	5- 3-69 6-16-70 6-29-71	3.86 3.77 3.73	(+) (+) (+)
06479550	Dolph Creek tributary near Lake Norden, S. Dak.	Lat 44°35'15", long 97°19'37", in SW¼SW¼ sec.16, T.113 N., R.54 W., Hamlin County, at culvert on State Highway 28, 5.4 miles west of Lake Norden.	[a]7.0	1970-71	6-16-70 3-13-71	3.78 [b]4.65	(+) 9.0
06479750	Peg Munky Run near Estelline, S. Dak.	Lat 44°34'22", long 96°51'15", in N½ sec.29, T.113 N., R.50 W., Deuel County, at bridge on State Highway 28, 2.5 miles east of Estelline.	25.4	1956-71	6-29-71	4.73	310
06479800	North Deer Creek near Estelline, S. Dak.	Lat 44°27'44", long 96°47'13", in SE¼ sec.35, T.112 N., R.50 W., Brookings County, at bridge on U.S. Highway 77, 9.8 miles southeast of Estelline.	48.3	1956-71	3-14-71	[b]6.90	[c]175
06479810	North Deer Creek tributary near Brookings, S. Dak.	Lat 44°22'44", long 96°47'14", in NW¼SW¼NW¼ sec.36, T.111 N., R.50 W., Brookings County, at culvert on U.S. Highway 77, 4.5 miles north of Brookings.	[a].5	1969-71	4- 8-69 6-15-70 3-14-71	7.73 8.65 [b]5.38	106 134 [c]5
06479900	Sixmile Creek tributary near Brookings, S. Dak.	Lat 44°22'57", long 96°40'48", in NW¼ sec.35, T.111 N., R.49 W., Brookings County, at bridge on county highway, 7.3 miles northeast of Brookings.	9.42	1956-71	3-14-71	[b]5.24	[c]100
06479950	Deer Creek near Brookings, S. Dak.	Lat 44°23'03", long 96°37'19", in SW¼ sec.29, T.111 N., R.48 W., Brookings County, at bridge on county highway, 9.8 miles northeast of Brookings.	4.21	1956-71	3-14-71	[b]3.91	[c]20
06480720	Bachelor Creek tributary near Wentworth, S. Dak.	Lat 44°00'28", long 97°00'02", in NE¼NE¼NW¼ sec.7, T.106 N., R.51 W., Lake County, at culvert on State Highway 34, 1.75 miles northwest of Wentworth.	[a]1.0	1969-71	4- 8-69 4-23-70 7- 3-71	[b]7.83 3.71 3.80	[c]100 (+) (+)

See footnotes at end of table, p. 149.

Annual maximum discharge at crest-stage partial-record station during water year 1971.--Continued

Station No.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Discharge (cfs)
		Big Sioux River basin - Continued					
06482600	West Pipestone Creek tributary near Garretson, S. Dak.	Lat 43°42'12", long 96°36'43", in SE¼SE¼ sec.20, T.103 N., R.48 W., Minnehaha County, at culvert on State Highway 11, 5.3 miles west of Garretson.	[a]2.20	1969-71	6-29-69 5-28-70 6-29-71	9.21 12.52 4.04	393 792 7.0
06482870	Little Beaver Creek tributary near Canton, S. Dak.	Lat 43°15'27", long 96°37'59", in NE¼ sec.4, T.97 N., R.49 W., Lincoln County, at culvert on county highway, 4.0 miles southwest of Canton.	.22	1956-71	7-10-71	5.54	104
06485550	West Union Creek near Alcester, S. Dak.	Lat 42°56'18", long 96°38'00", in SW¼SE¼ sec.21, T.94 N., R.49 W., Union County, at culvert on county highway, 5.7 miles south of Alcester.	[a]3.62	1969-71	6-27-69 5-27-70 6- 6-71	8.95 6.39 7.50	2,100 640 940

(+) Discharge not determined
(‡) Operated as a continuous-record gaging station
a Approximate
b Backwater from ice
c Estimated
d Not previously published
e Corrected
f Revised
g Prior to Apr. 30, 1970, at datum 0.59 ft higher
h Prior to Apr. 28, 1970, at datum 0.32 ft lower
i Peak stage did not reach bottom of gage
j Prior to Apr. 28, 1970, at datum 0.74 ft higher
k At least this high
l Gage height not determined
m Prior to May 14, 1970, at datum 0.24 ft higher
n Discontinued October 1971
o Prior to Apr. 22, 1970, at datum 1.40 ft lower
p Prior to Oct. 24, 1967, at datum 2.00 ft higher
q About 270 sq mi probably noncontributing
r About 850 sq mi probably noncontributing
s No evidence of any flow during 1968 water year
t Prior to Aug. 7, 1968, at old site 1,000 ft downstream at datum 6.60 ft lower
u Unknown

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