STREAMFLOW AND SEDIMENT DATA COLLECTED AT SEVEN STREAM-GAGING STATIONS IN THE JAMES RIVER BASIN DOWNSTREAM FROM FORESTBURG, SOUTH DAKOTA, FROM OCTOBER 1, 1982, TO SEPTEMBER 30, 1983

U.S. GEOLOGICAL SURVEY

Open-File Report 85-156

Prepared in cooperation with the

LOWER JAMES CONSERVANCY SUB-DISTRICT

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Huron, South Dakota

1985

UNITED STATES DEPARTMENT OF THE INTERIOR

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GEOLOGICAL SURVEY

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INTRODUCTION

This report is a compilation of the streamflow and suspended-sediment data collected from October 1, 1982, to September 30, 1983, at seven gaging stations in the James River basin downstream from Forestburg, S. Dak. (fig. 1). Three of the gaging stations are on the main stem and four are on tributary streams (fig. 2). These are the results from the second year of a two-year study in cooperation with the Lower James Conservancy Sub-District.

The data listed in the tables (tables 1-14) and figures (figs. 3-23) include location, a summary of the streamflow for the period of record, tables listing the daily streamflow, mean suspended-sediment concentration, and suspended-sediment discharge; and figures showing the daily streamflow, mean suspended-sediment concentration and suspended-sediment discharge for each gaging station. Table 15 summarizes selected basin and suspended-discharge characteristics for water years 1982 and 1983.

The purpose of the study was to determine the rates of suspended sediment discharge at the mouths of selected tributaries to the James River. Sandbars are developing in the river and this data is to be used in studies analyzing sources of the sediment, and tributary sediment loads relative to those carried by the main stem.

DEFINITION OF TERMS

Terms related to streamflow, water-quality, and sediment, as used in this report, are defined below.

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 about 326,000 gallons or 1,233 cubic meters.

Cfs-day is the volume of water represented by flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, about 646,000 gallons or 2,447 cubic meters.

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 artificial structure, or a uniform cross section over a long reach of the channel.

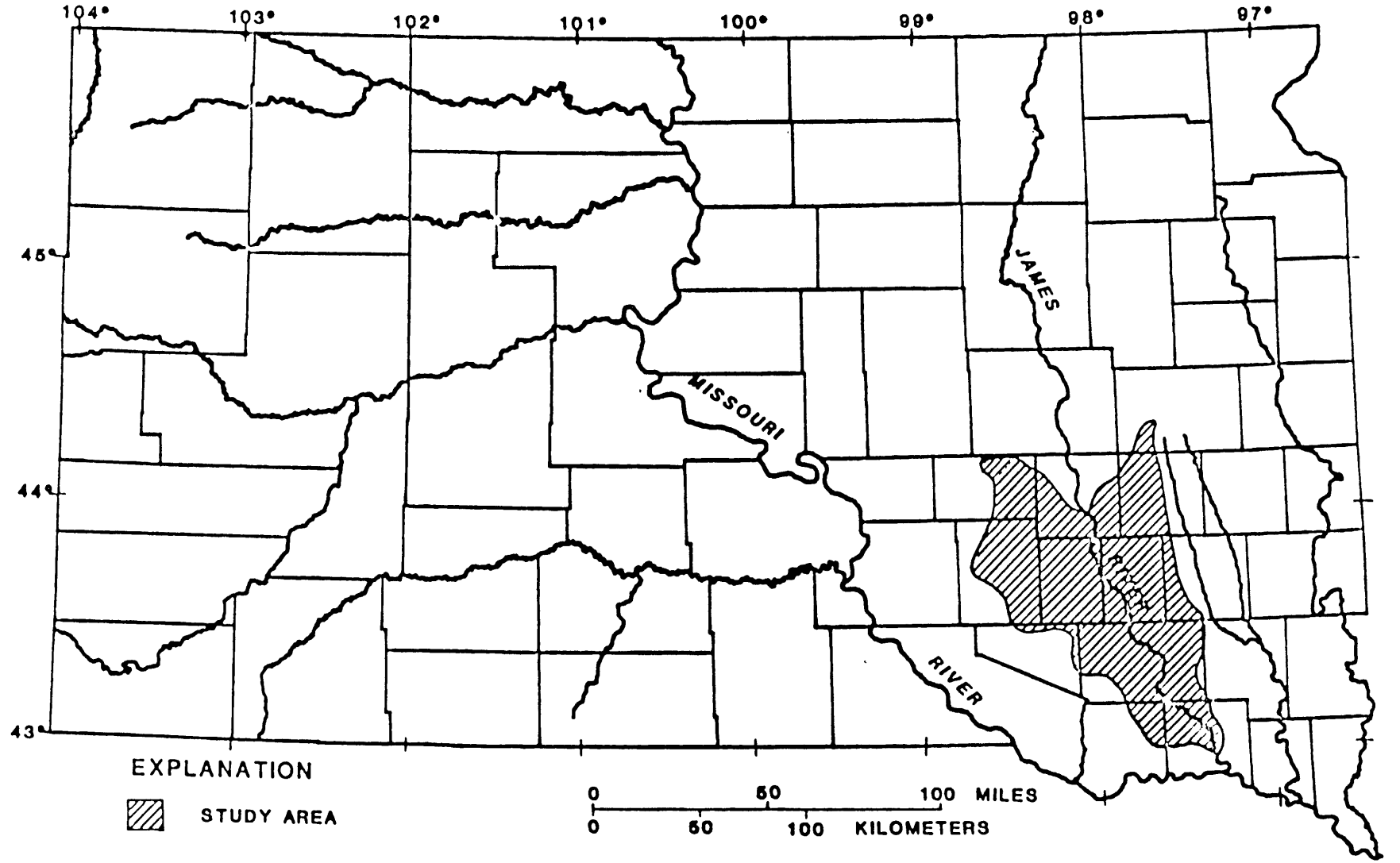

Figure 1.—Location of study area in South Dakota.

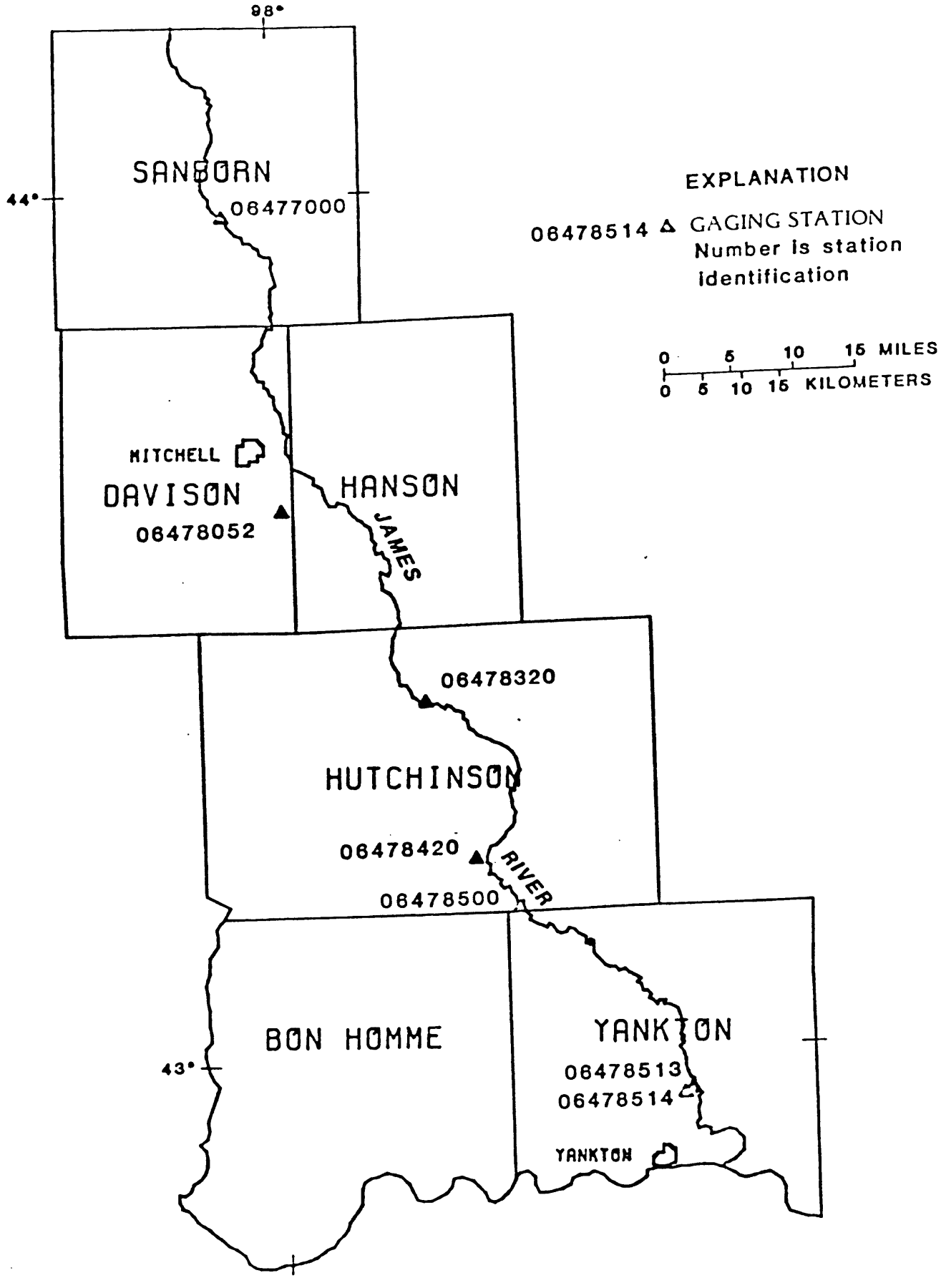

Figure 2.--Location of gaging stations in study area.

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

Cubic foot per second (FT^3/S, ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to approximately 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Discharge is the volume of water (or more broadly, volume of fluid plus suspended sediment), that passes a given point within a given period of time.

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

Instantaneous discharge is the discharge at a particular instant of time.

Drainage area of a stream at a specific 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 river above the specified point. Figures of drainage area given herein include all closed basins, or noncontribution areas, within the area unless otherwise noted.

Drainage basin is a part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.

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 hydrologic data are obtained.

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

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

National Geodetic Vertical Datum of 1929 (NGVD) is a geodetic datum derived from a general adjustment of the first order level nets of both the United States and Canada. It was formerly called "Sea Level Datum of 1929" or "mean sea level" in this series of reports. Although the datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts, it does not necessarily represent local mean sea level at any particular place.

Particle-size is the diameter, in millimeters (mm), of suspended sediment or bed material determined by either sieve or sedimentation methods. Sedimentation methods

(pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification used in this report agrees with recommendations made by the American Geophysical Union Subcommittee on Sediment Terminology.

The classification is as follows:

Classification	Size (mm)	Method of analysis
Clay	0.00024 - 0.004	Sedimentation.
Silt	.004 - .062	Sedimentation.
Sand	.062 - 2.	Sedimentation or sieve.
Gravel	2.0 - 64.0	Sieve.

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

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material, such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

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

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L).

Suspended-sediment discharge (tons/day) is the rate at which dry weight of sediment passes a section of a stream or is the quantity of sediment, as measured by dry weight or volume, that passes a section in a given time. It is computed by multiplying discharge time mg/L times 0.0027.

Suspended-sediment load is quantity of suspended sediment passing a section in a specified period.

Total sediment discharge (tons/day) is the sum of the suspended-sediment discharge and the bed-load discharge. It is the total quantity of sediment, as measured by dry weight or volume, that passes a section during a given time.

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

Specific conductance is a measure of the ability of a water to conduct an electrical current. It is expressed in micromhos per centimeter at 25°C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in micromhos). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

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

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

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the year.

Tons per day is the quantity of substance in solution or suspension that passes a stream section during a 24-hour day.

Total load (tons) is the total quantity of any individual constituent, as measured by dry mass or volume, that is dissolved in a specific amount of water (discharge) during a given time. It is computed by multiplying the total discharge, times the mg/L of the constituent, times the factor 0.0027, times the number of days.

WRD is used as an abbreviation for "Water-Resources Data" in the REVISED RECORDS paragraph to refer to State annual basic-data reports published before 1975.

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

EXPLANATION OF STAGE AND WATER-DISCHARGE RECORDS

Collection and computation of data

The base data collected at gaging stations consist 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 either direct readings on a nonrecording gage or from a water-stage recorder that gives either a continuous graph of the fluctuations or a tape punched at selected time intervals. Measurements of discharge are made with a current meter, using the general methods adopted by the Geological Survey. These

methods are described in standard text-books, in Water-Supply Paper 888, and in U.S. Geological Survey Techniques of Water Resources Investigations, book 3, chapter A6.

For stream-gaging stations, rating tables giving the discharge for any stage are prepared from stage-discharge relation curves. If extensions to the rating curves are necessary to express discharge greater than measured, 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), step-backwater techniques, velocity-area studies, and logarithmic plotting. The daily mean discharge is computed from gage heights and rating tables, then the monthly and yearly mean discharge are computed from the daily figures. 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 computed 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 most northern 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 gage-height record and occasional winter discharge measurements. Consideration is 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 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, prior and subsequent records, discharge measurements, weather records, and comparison with records for other stations in the same or nearby basins.

The data in this report comprise a description of the station and tabulations of daily and monthly figures. Tables showing the daily discharge and monthly and yearly discharge are given (tables 3, 5, 7, 9, 11, 13). Records are published for the water year, which begins on October 1 and ends on September 30.

The description of the gaging station gives the location, drainage area, period of record, notations of revisions of previously published records, type and history of gages, general remarks, average discharge, and extremes of discharge or contents. The location of the gaging station and the drainage area are obtained from 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."

Previously published streamflow 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 "REVISED RECORDS" 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, 1965 stands for the water year October 1, 1964, to September 30, 1965. If no daily, monthly, or annual figures of discharge are affected by the revision, the 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.

The type of gage currently in use; the datum of the present gage referred to National Geodetic Vertical Datum; and a condensed history of the types, locations, and datums of previous gages used during the period of record are given under "GAGE." National Geodetic Vertical Datum is explained in "DEFINITION OF TERMS."

Information pertaining to the accuracy of the discharge records and to conditions which affect the natural flow of the gaging station is given under "REMARKS."

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. Under "EXTREMES" are given first, the extremes for the period of record, second, information available outside the period of record, and last, those for the current year. Unless otherwise qualified, the maximum discharge (or contents) is the instantaneous maximum corresponding 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 on the same day as the maximum discharge (or contents), it is given separately. Similarly, the minimum is the instantaneous minimum unless otherwise qualified.

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

The daily table for stream-gaging stations gives the mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also may be expressed in acre-feet (line headed "AC-FT"). In the yearly summary below the monthly summary, the figures shown are the appropriate daily discharges for the calendar and water years.

Accuracy of field data and computed results

The accuracy of streamflow 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 interpretations 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 are 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 ft^3/s; to tenths between 1.0 and 10 ft^3/s; to whole numbers between 10 and 1,000 ft^3/s; and to 3 significant figures above 1,000 ft^3/s. The number of significant figures used is based solely on the magnitude of the figure.

Other data available

Information of a more detailed nature than that published for most of the gaging stations such as observations of water temperatures, discharge measurements, gage-height records, and rating tables is on file in the Geological Survey District Office in Huron, S. Dak. Also most gaging-station records are available in computer-usable form and many statistical analyses have been made.

Information on the availability of unpublished data or statistical analyses may be obtained from the District Office.

EXPLANATION OF WATER-QUALITY RECORDS

Collection and examination of data

Surface water samples for analyses usually are collected at or near gaging stations. The quality-of-water records are given immediately following the discharge records at these stations (tables 2, 4, 6, 8, 10, 12, 14).

The descriptive heading for water-quality records gives the period of record for all water-quality data; the period of daily record for parameters that are measured on a daily basis; extremes for the period of daily record; extremes for the current year; and general remarks.

Sediment

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

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was

computed by the subdivided day method. For periods when no samples were collected, daily loads of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

SELECTED REFERENCES

Carter, R. W., and Davidian, Jacob, 1968, General procedure for gaging streams: U.S. Geological Survey Techniques of Water-Resources Investigations, book 3, chap. A6, 13 p.

Rantz, S. E., and others, 1982, Measurement and computation of streamflow, v. 1, Measurement of stage and discharge: U.S. Geological Survey Water-Supply Paper 2175, 284 p.

Table 1.--Daily discharge for James River near Forestburg, SD (06477000)

LOCATION.--Lat 43°58'26", long 98°04'14", in SW¼SW¼NW¼ sec.20, T.106 N., R.60 W., Sanborn County, Hydrologic Unit 10160011, on right bank 5.0 ft downstream from highway bridge, 3.8 mi southeast of Forestburg, 5.4 mi downstream from Chicago, Milwaukee, St. Paul and Pacific Railroad bridge, and 6.1 mi downstream from Sand Creek.

DRAINAGE AREA.--18,600 mi^2, approximately, of which about 4,790 mi^2 is probably noncontributing.

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

GAGE.--Water-stage recorder. Datum of gage is 1,208.34 ft National Geodetic Vertical Datum of 1929 (Bureau of Reclamation bench mark). Prior to Sept. 5, 1951, nonrecording gage at same site and datum.

REMARKS.--Records good except those for winter period, Dec. 8 to Feb. 25, 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 mi upstream since May 1953. Several observations of water temperature and specific conductance were made during the year.

AVERAGE DISCHARGE.--33 years; 270 ft^3/s (195,600 acre-ft/yr); median of yearly mean discharges, 140 ft^3/s (101,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,500 ft^3/s Apr. 9, 1969 (gage height, 17.16 ft); no flow at times in 1950, 1955, 1959, 1961, 1970, 1976, 1977, 1981, 1982.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in March 1920 and March 1922 reached a stage of about 18 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 925 ft^3/s at 1700 hours, Apr. 14 (gage height, 7.87 ft); minimum daily discharge, 15 ft^3/s Feb. 12 and 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	76	127	194	115	26	60	612	840	455	279	249	283
2	84	132	193	115	24	61	668	835	436	264	250	267
3	101	137	187	115	23	59	704	830	406	253	252	270
4	108	141	173	110	22	53	716	811	380	251	261	268
5	102	143	176	110	20	53	722	790	381	253	269	270
6	97	142	178	105	19	55	736	768	391	247	275	274
7	98	140	147	105	19	57	757	756	388	230	290	261
8	96	140	140	100	18	60	772	752	375	216	310	250
9	110	145	140	95	17	65	780	730	363	209	311	238
10	138	152	140	90	17	70	786	667	345	201	313	249
11	157	164	135	85	16	82	804	648	328	192	321	245
12	168	168	135	80	15	88	816	722	314	183	325	231
13	202	141	135	75	15	112	870	766	321	170	325	223
14	216	197	135	70	16	118	919	743	345	157	327	226
15	211	226	135	65	17	107	923	711	344	143	332	225
16	205	210	135	58	19	105	888	684	341	140	342	221
17	193	190	130	53	21	115	872	666	336	165	391	220
18	183	177	130	50	24	120	875	653	322	176	395	206
19	183	173	130	45	27	124	877	643	303	152	391	199
20	184	185	130	42	30	126	879	642	288	141	397	196
21	177	179	130	40	35	121	884	637	287	135	391	191
22	163	161	125	38	40	121	891	616	284	138	386	178
23	154	192	125	35	55	126	901	602	272	146	382	167
24	146	197	125	33	65	146	897	590	260	154	371	159
25	140	221	125	32	60	189	874	571	249	164	363	154
26	135	209	120	31	59	245	855	555	253	172	351	151
27	124	197	120	30	59	310	848	526	249	183	344	148
28	117	196	120	28	56	357	864	509	260	201	342	146
29	116	197	120	28	---	422	865	508	269	214	328	146
30	117	196	120	27	---	479	852	499	281	223	319	143
31	123	---	120	27	---	550	---	478	---	238	306	---
TOTAL	4424	5175	4348	2032	834	4756	24707	20748	9826	5990	10209	6405
MEAN	143	173	140	65.5	29.8	153	824	669	328	193	329	214
MAX	216	226	194	115	65	550	923	840	455	279	397	283
MIN	76	127	120	27	15	53	612	478	249	135	249	143
AC-FT	8780	10260	8620	4030	1650	9430	49010	41150	19490	11880	20250	12700

CAL YR 1982 TOTAL 92499.33 MEAN 253 MAX 1040 MIN .00 AC-FT 183500
WTR YR 1983 TOTAL 99454.00 MEAN 272 MAX 923 MIN 15 AC-FT 197300

Table 2.--Water-quality records, daily suspended sediment, for James River near Forestburg, SD (06477000)

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: Oct. 1, 1981, to Sept. 30, 1983 (discontinued).

REMARKS.--Records poor. Several observations of water temperature and specific conductance were made during the year.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 300 mg/L Mar. 1, 1982, and Aug. 17, 1983; minimum daily, 0 mg/L on many days in 1982.
SEDIMENT LOADS: Maximum daily, 445 tons Apr. 9, 1982; minimum daily, 0 ton on many days in 1982.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 300 mg/L Aug. 17; minimum daily, 10 mg/L on many days.
SEDIMENT LOADS: Maximum daily, 323 tons Apr. 26; minimum daily, 0.41 ton Feb. 12 and 13.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	76	80	16	127	70	24	194	30	16
2	84	100	23	132	70	25	193	30	16
3	101	150	41	137	70	26	187	30	15
4	108	200	58	141	70	27	173	30	14
5	102	150	41	143	80	31	176	30	14
6	97	100	26	142	80	31	178	30	14
7	98	80	21	140	80	30	147	30	12
8	96	60	16	140	80	30	140	30	11
9	110	70	21	145	80	31	140	30	11
10	138	80	30	152	80	33	140	30	11
11	157	90	38	164	70	31	135	30	11
12	168	100	45	168	60	27	135	30	11
13	202	100	55	141	50	19	135	30	11
14	216	100	58	197	60	32	135	30	11
15	211	100	57	226	40	24	135	30	11
16	205	90	50	210	30	17	135	30	11
17	193	90	47	190	20	10	130	30	11
18	183	90	44	177	20	9.6	130	30	11
19	183	90	44	173	20	9.3	130	30	11
20	184	90	45	185	20	10	130	30	11
21	177	80	38	179	20	9.7	130	30	11
22	163	80	35	161	20	8.7	125	30	10
23	154	80	33	192	30	16	125	30	10
24	146	80	32	197	40	21	125	30	10
25	140	80	30	221	30	18	125	30	10
26	135	70	26	209	30	17	120	30	9.7
27	124	70	23	197	30	16	120	30	9.7
28	117	70	22	196	30	16	120	30	9.7
29	116	70	22	197	30	16	120	30	9.7
30	117	70	22	196	30	16	120	30	9.7
31	123	70	23	---	---	---	120	30	9.7
TOTAL	4424	---	1082	5175	---	631.3	4348	---	353.2

Table 2.--Water-quality records, daily suspended sediment, for James River near Forestburg, SD (06477000)--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JANUARY			FEBRUARY			MARCH	
1	115	20	6.2	26	10	.70	60	10	1.6
2	115	20	6.2	24	10	.65	61	10	1.6
3	115	20	6.2	23	10	.62	59	10	1.6
4	110	20	5.9	22	10	.59	53	10	1.4
5	110	20	5.9	20	10	.54	53	10	1.4
6	105	20	5.7	19	10	.51	55	20	3.0
7	105	20	5.7	19	10	.51	57	30	4.6
8	100	20	5.4	18	10	.49	60	40	6.5
9	95	20	5.1	17	10	.46	65	40	7.0
10	90	20	4.9	17	10	.46	70	50	9.5
11	85	20	4.6	16	10	.43	82	60	13
12	80	20	4.3	15	10	.41	88	70	17
13	75	20	4.1	15	10	.41	112	80	24
14	70	20	3.8	16	10	.43	118	50	16
15	65	20	3.5	17	10	.46	107	20	5.8
16	58	10	1.6	19	10	.51	105	20	5.7
17	53	10	1.4	21	10	.57	115	10	3.1
18	50	10	1.4	24	10	.65	120	10	3.2
19	45	10	1.2	27	10	.73	124	10	3.3
20	42	10	1.1	30	10	.81	126	10	3.4
21	40	10	1.1	35	10	.95	121	10	3.3
22	38	10	1.0	40	10	1.1	121	10	3.3
23	35	10	.95	55	10	1.5	126	10	3.4
24	33	10	.89	65	10	1.8	146	10	3.9
25	32	10	.86	60	10	1.6	189	10	5.1
26	31	10	.84	59	10	1.6	245	10	6.6
27	30	10	.81	59	10	1.6	310	10	8.4
28	28	10	.76	56	10	1.5	357	10	9.6
29	28	10	.76	---	---	---	422	20	23
30	27	10	.73	---	---	---	479	30	39
31	27	10	.73	---	---	---	550	30	45
TOTAL	2032	---	93.63	834	---	22.59	4756	---	283.3
		APRIL			MAY			JUNE	
1	612	30	50	840	100	227	455	100	123
2	668	30	54	835	100	225	436	100	118
3	704	30	57	830	90	202	406	100	110
4	716	30	58	811	90	197	380	100	103
5	722	30	58	790	90	192	381	100	103
6	736	40	79	768	90	187	391	100	106
7	757	40	82	756	90	184	388	100	105
8	772	40	83	752	90	183	375	100	101
9	780	40	84	730	90	177	363	100	99
10	786	40	85	667	90	162	345	100	93
11	804	50	109	648	100	175	328	100	89
12	816	50	110	722	110	214	314	100	85
13	870	50	117	766	120	248	321	150	130
14	919	50	124	743	110	221	345	200	186
15	923	50	125	711	110	211	344	160	167
16	888	60	144	684	110	203	341	170	157
17	872	60	141	666	110	198	336	170	154
18	875	60	142	653	100	176	322	170	148
19	877	60	142	643	100	174	303	160	131
20	879	60	142	642	100	173	288	160	124
21	884	60	143	637	100	172	287	150	116
22	891	80	192	616	100	166	284	150	115
23	901	100	243	602	100	163	272	140	103
24	897	110	266	590	100	159	260	140	98
25	874	120	283	571	100	154	249	130	87
26	855	140	323	555	100	150	253	140	96
27	848	120	275	526	100	142	249	150	101
28	864	110	257	509	100	137	260	170	119
29	865	110	257	508	100	137	269	200	145
30	852	110	253	499	100	135	261	230	175
31	---	---	---	478	100	129	---	---	---
TOTAL	24707	---	4478	20748	---	5573	9826	---	3586

Table 2.--Water-quality records, daily suspended sediment, for James River near Forestburg, SD (06477000)--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	279	260	196	249	200	134	283	240	183
2	264	270	192	250	210	142	267	240	173
3	253	280	191	252	210	143	270	240	175
4	251	290	197	261	220	155	268	240	174
5	253	290	198	269	220	160	270	240	175
6	247	280	187	275	220	163	274	230	170
7	230	280	174	290	230	180	261	230	162
8	216	280	163	310	230	193	250	230	155
9	209	280	158	311	230	193	238	230	148
10	201	280	152	313	240	203	249	230	155
11	192	260	135	321	240	208	245	220	146
12	183	260	128	325	240	211	231	210	131
13	170	240	110	325	240	211	223	210	126
14	157	240	102	327	250	221	226	210	128
15	143	240	93	332	250	224	225	200	121
16	140	220	83	342	270	249	221	180	107
17	165	220	98	391	300	317	220	180	107
18	176	250	119	395	290	309	206	180	100
19	152	220	90	391	290	306	199	160	86
20	141	200	76	397	290	311	196	160	85
21	135	170	62	391	280	296	191	150	77
22	138	150	56	386	280	292	178	140	67
23	146	150	59	382	280	289	167	140	63
24	154	150	62	371	270	270	159	140	60
25	164	150	66	363	270	265	154	140	58
26	172	160	74	351	270	256	151	130	53
27	183	170	84	344	260	241	148	130	52
28	201	180	98	342	250	231	146	130	51
29	214	180	104	328	240	213	146	130	51
30	223	190	114	319	240	207	143	130	50
31	238	190	122	306	240	198	---	---	---
TOTAL	5990	---	3743	10209	---	6991	6405	---	3389

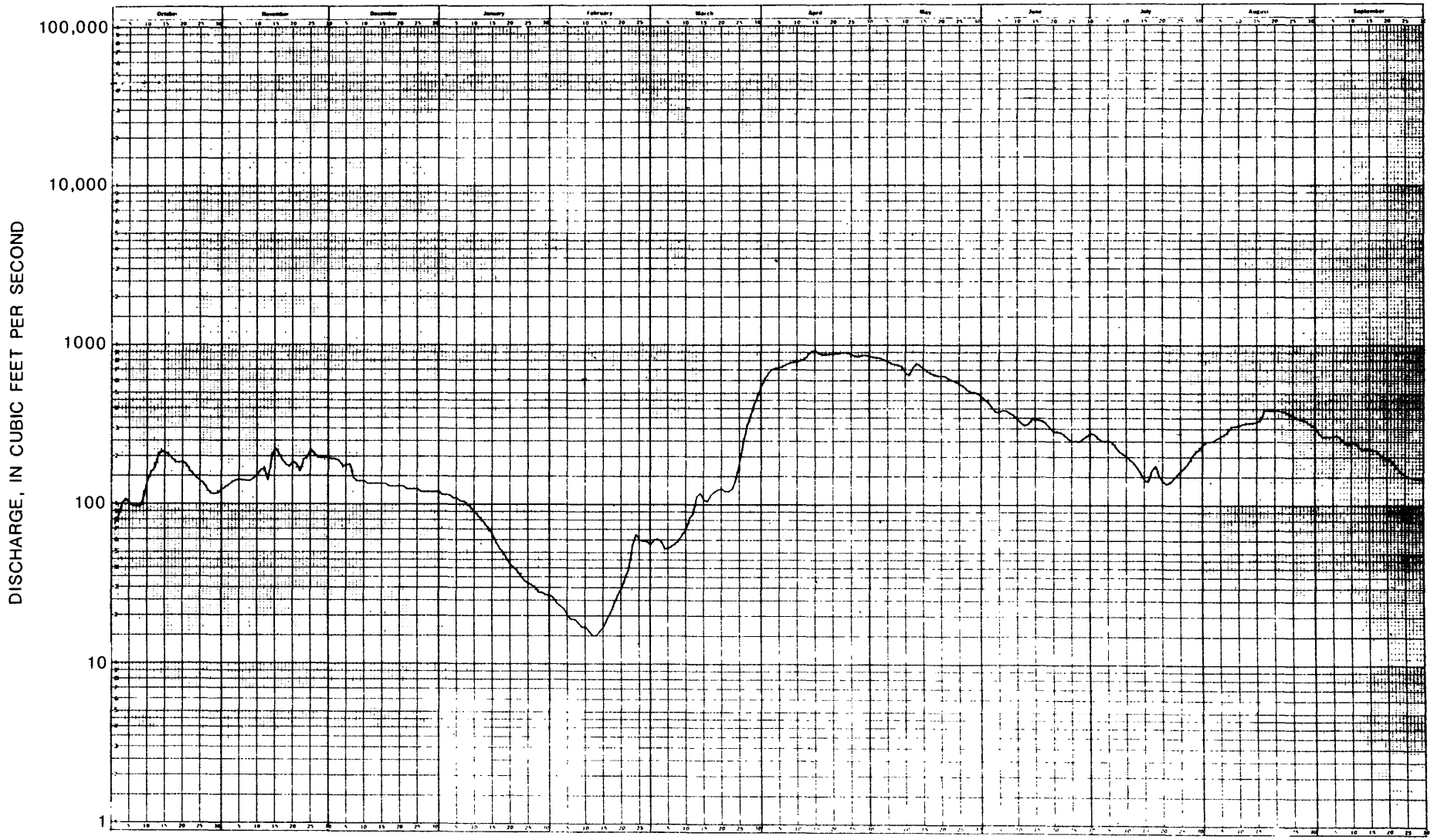

Figure 3.--Daily discharge for James River near Forestburg (06477000), October 1982 to September 1983.

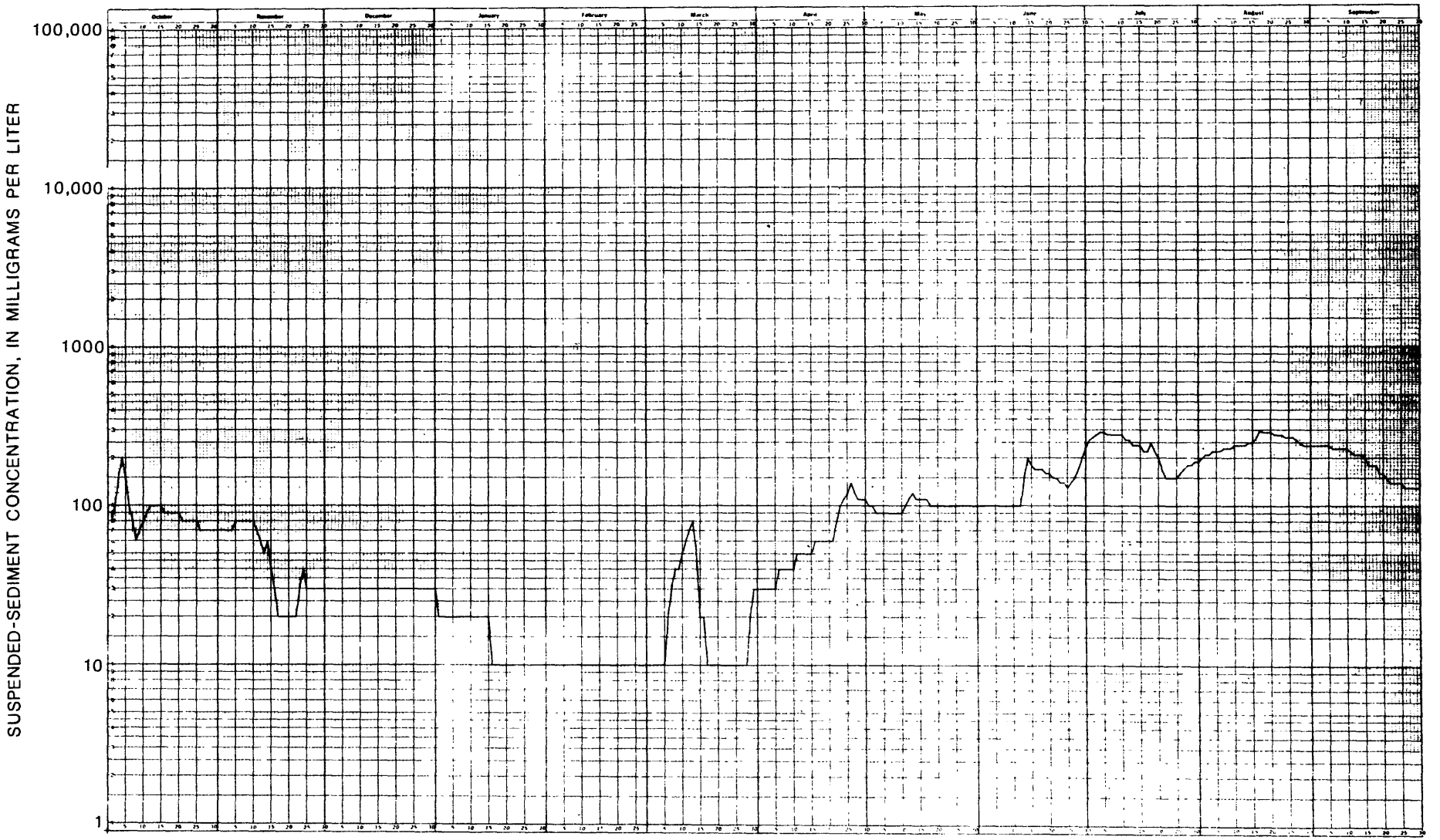

Figure 4.--Daily suspended-sediment concentration for James River near Forestburg (06477000), October 1982 to September 1983.

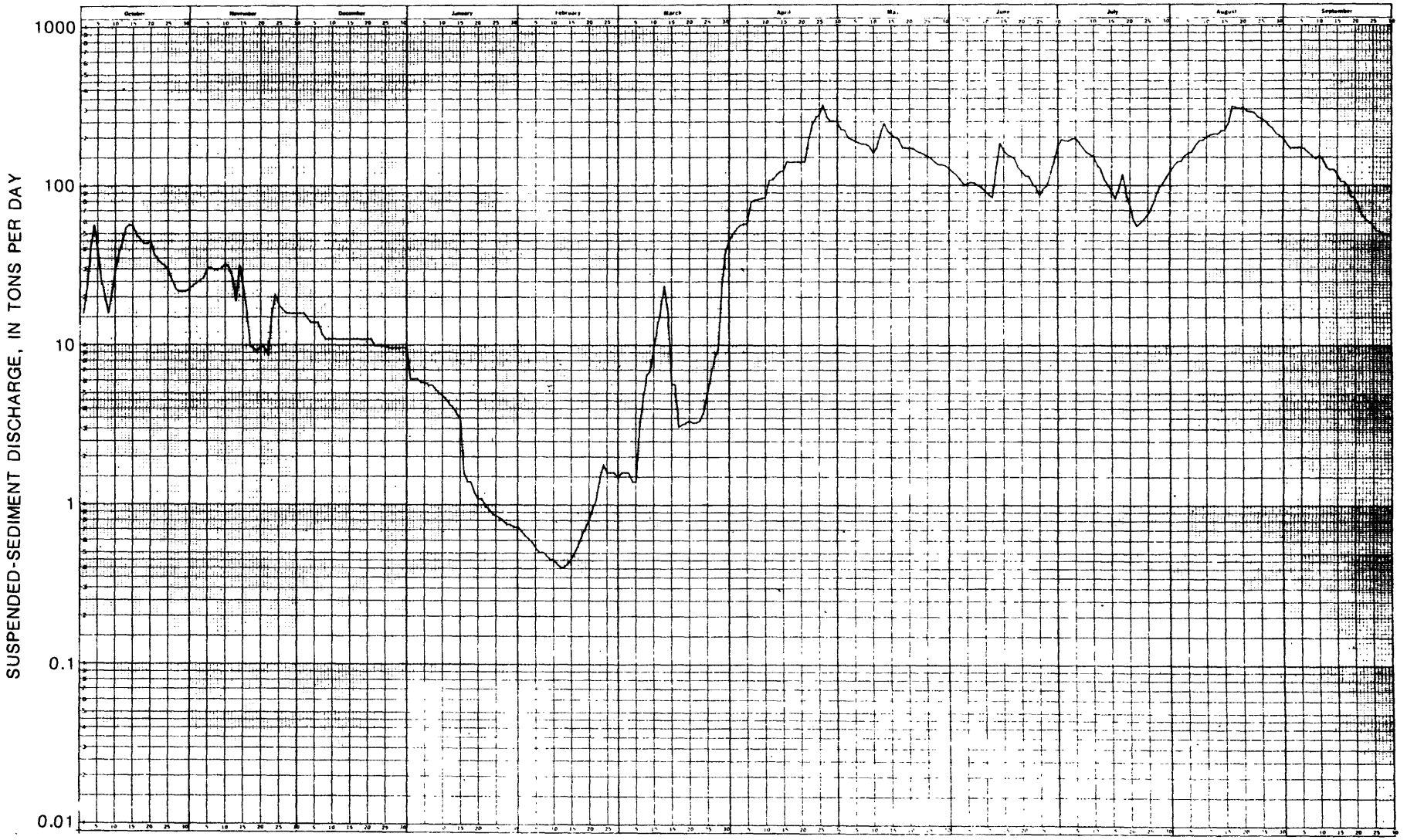

Figure 5.--Daily suspended-sediment discharge for James River near Forestburg (06477000), October 1982 to September 1983.

Table 3.--Daily discharge for Enemy Creek near Mitchell, SD (06478052)

LOCATION.--Lat 43°38'33", long 97°59'09", in NW¼NW¼ sec.13, T.102 N., R.60 W., Davison County, Hydrologic Unit 10160011, on left bank 3 ft downstream from highway bridge, 4.5 mi southeast of Mitchell, and 7.3 mi above mouth.

DRAINAGE AREA.--181 mi^2, approximately.

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

REVISED RECORDS.--WDR SD-78-1: 1977.

GAGE.--Water-stage recorder. Altitude of gage is 1,280 ft, from topographic map.

REMARKS.--Records good except those for winter period, Dec. 24 to Feb. 16, which are poor. Several observations of water temperature and specific conductance were made during the year.

AVERAGE DISCHARGE.--8 years, 4.74 ft^3/s (3,430 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,390 ft^3/s Mar. 19, 1978 (gage height, 11.27 ft); maximum gage height, 12.54 ft Mar. 19, 1978 (backwater from ice); no flow for many days in each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 20 ft^3/s and maximum (*):

Date	Time	Discharge (ft^3/s)	Gage height (ft)	Date	Time	Discharge (ft^3/s)	Gage height (ft)
Mar. 14	1430	53	6.25	Apr. 16	1530	215	7.56
Apr. 1	1315	194	7.46	May 2	2245	174	7.24
Apr. 8	0430	61	6.35	June 21	2300	*522	*9.12
Apr. 13	1745	166	7.15	July 2	1315	315	8.22

No flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.08	.17	.10	.06	7.7	176	20	4.1	255	9.2	.00
2	.00	.08	.17	.09	.05	7.7	128	69	4.1	301	8.2	.00
3	.00	.10	.17	.12	.05	7.4	86	149	3.8	281	6.7	.00
4	.00	.14	.09	.12	.04	6.9	62	87	3.5	192	5.5	.00
5	.00	.14	.14	.10	.03	7.8	48	55	3.1	134	4.7	.00
6	.00	.17	.17	.18	.02	8.9	42	42	2.7	91	4.0	.00
7	.00	.27	.12	.23	.02	12	44	34	2.2	64	3.5	.00
8	.00	.27	.10	.18	.01	14	54	29	2.0	47	2.7	.00
9	.00	.27	.10	.50	.01	11	42	24	1.7	37	1.8	.00
10	.00	.50	.10	1.0	.02	11	33	20	1.4	29	1.4	.00
11	.00	.56	.09	.44	.02	9.0	27	18	1.2	23	1.3	.00
12	.00	2.0	.09	.39	.03	12	30	16	1.1	19	.97	.00
13	.00	.50	.09	.54	.50	17	102	13	2.3	16	.75	.00
14	.00	.31	.09	.44	1.5	43	82	13	1.8	13	.52	.00
15	.00	.27	.10	.29	2.3	49	90	13	1.9	12	.40	.00
16	.00	.23	.11	.22	2.0	43	162	13	1.8	11	.27	.00
17	.00	.23	.10	.22	2.7	36	182	12	2.2	11	.22	.00
18	.00	.23	.10	.15	1.9	32	142	11	3.2	15	.17	.00
19	.00	.35	.11	.11	7.3	26	120	11	3.8	17	.16	.00
20	.00	.50	.11	.11	6.0	21	85	11	84	16	.08	.00
21	.00	.40	.13	.11	5.0	19	66	10	349	13	.08	.00
22	.01	.27	.13	.12	5.2	17	52	9.3	425	9.7	.07	.00
23	.03	.20	.13	.12	6.6	15	43	8.4	197	9.1	.06	.00
24	.05	.20	.12	.10	7.1	14	36	7.9	104	8.3	.04	.00
25	.06	.20	.12	.10	5.4	13	31	7.1	63	6.6	.02	.00
26	.07	.20	.12	.10	6.3	12	27	6.6	43	6.3	.03	.00
27	.07	.17	.12	.09	7.5	11	21	6.0	34	8.0	.04	.00
28	.09	.17	.15	.09	7.5	15	18	5.5	66	12	.04	.00
29	.08	.14	.12	.09	---	18	19	4.8	156	11	.02	.00
30	.08	.12	.12	.09	---	24	19	4.5	224	9.1	.01	.00
31	.08	---	.11	.09	---	107	---	4.3	---	8.7	.00	---
TOTAL	.62	9.27	3.69	6.63	75.16	647.4	2069	734.4	1792.9	1685.8	52.95	.00
MEAN	.020	.31	.12	.21	2.68	20.9	69.0	23.7	59.8	54.4	1.71	.000
MAX	.09	2.0	.17	1.0	7.5	107	182	149	425	301	9.2	.00
MIN	.00	.08	.09	.09	.01	6.9	18	4.3	1.1	6.3	.00	.00
AC-FT	1.2	18	7.3	13	149	1280	4100	1460	3560	3340	105	.00

CAL YR 1982 TOTAL 400.22 MEAN 1.10 MAX 83 MIN .00 AC-FT 794
WTR YR 1983 TOTAL 7077.82 MEAN 19.4 MAX 425 MIN .00 AC-FT 14040

Table 4.--Water-quality records, daily suspended sediment, for Enemy Creek near Mitchell, SD (06478052)

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: Oct. 1, 1981, to Sept. 30, 1983 (discontinued).

REMARKS.--Records poor. No flow Oct. 1-21, Aug. 31 to Sept. 30. Several observations of water temperature and specific conductance were made during the year.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 269 mg/L June 1, 1982; minimum daily mean, 0 mg/L on many days each year.
SEDIMENT LOADS: Maximum daily, 104 tons June 21, 1983; minimum daily, 0 ton on many days each year.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 130 mg/L May 3; minimum daily mean, 0 mg/L on many days.
SEDIMENT LOADS: Maximum daily, 104 tons June 21; minimum daily, 0 ton on many days.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	.00	0	.00	.08	2	.00	.17	2	.00
2	.00	0	.00	.08	2	.00	.17	2	.00
3	.00	0	.00	.10	2	.00	.17	2	.00
4	.00	0	.00	.14	2	.00	.09	2	.00
5	.00	0	.00	.14	2	.00	.14	2	.00
6	.00	0	.00	.17	2	.00	.17	2	.00
7	.00	0	.00	.27	2	.00	.12	2	.00
8	.00	0	.00	.27	2	.00	.10	2	.00
9	.00	0	.00	.27	2	.00	.10	2	.00
10	.00	0	.00	.50	2	.00	.10	2	.00
11	.00	0	.00	.56	5	.00	.09	2	.00
12	.00	0	.00	2.0	6	.03	.09	2	.00
13	.00	0	.00	.50	5	.00	.09	2	.00
14	.00	0	.00	.31	4	.00	.09	2	.00
15	.00	0	.00	.27	3	.00	.10	2	.00
16	.00	0	.00	.23	2	.00	.11	2	.00
17	.00	0	.00	.23	2	.00	.10	2	.00
18	.00	0	.00	.23	2	.00	.10	2	.00
19	.00	0	.00	.35	3	.00	.11	2	.00
20	.00	0	.00	.50	4	.00	.11	2	.00
21	.00	0	.00	.40	3	.00	.13	2	.00
22	.01	1	.00	.27	2	.00	.13	2	.00
23	.03	1	.00	.20	2	.00	.13	2	.00
24	.05	1	.00	.20	2	.00	.12	2	.00
25	.06	1	.00	.20	2	.00	.12	2	.00
26	.07	2	.00	.20	2	.00	.12	2	.00
27	.07	2	.00	.17	2	.00	.12	2	.00
28	.09	2	.00	.17	2	.00	.15	2	.00
29	.08	2	.00	.14	2	.00	.12	2	.00
30	.08	2	.00	.12	2	.00	.12	2	.00
31	.08	2	.00	---	---	---	.11	2	.00
TOTAL	0.62	---	0.00	9.27	---	0.03	3.69	---	0.00

Table 4.--Water-quality records, daily suspended sediment, for Enemy Creek near Mitchell, SD (06478052)--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JANUARY			FEBRUARY			MARCH	
1	.10	2	.00	.06	2	.00	7.7	12	.25
2	.09	2	.00	.05	2	.00	7.7	10	.21
3	.12	2	.00	.05	2	.00	7.4	10	.20
4	.12	2	.00	.04	2	.00	6.9	10	.19
5	.10	2	.00	.03	2	.00	7.8	10	.21
6	.18	3	.00	.02	2	.00	8.9	11	.26
7	.23	6	.00	.02	2	.00	12	12	.39
8	.18	9	.00	.01	2	.00	14	13	.49
9	.50	12	.02	.01	2	.00	11	11	.33
10	1.0	15	.04	.02	2	.00	11	10	.30
11	.44	10	.01	.02	2	.00	9.0	10	.24
12	.39	8	.00	.03	2	.00	12	10	.32
13	.54	11	.02	.50	5	.00	17	12	.55
14	.44	7	.00	1.5	10	.04	43	15	1.7
15	.29	5	.00	2.3	20	.12	49	25	3.3
16	.22	4	.00	2.0	18	.10	43	22	2.6
17	.22	3	.00	2.7	20	.15	36	20	1.9
18	.15	3	.00	1.9	15	.08	32	18	1.6
19	.11	3	.00	7.3	17	.34	26	17	1.2
20	.11	2	.00	6.0	10	.16	21	16	.91
21	.11	2	.00	5.0	10	.14	19	15	.77
22	.12	2	.00	5.2	10	.14	17	14	.64
23	.12	2	.00	6.6	11	.20	15	14	.57
24	.10	2	.00	7.1	12	.23	14	13	.49
25	.10	2	.00	5.4	10	.15	13	13	.46
26	.10	2	.00	6.3	11	.19	12	13	.42
27	.09	2	.00	7.5	11	.22	11	13	.39
28	.09	2	.00	7.5	12	.24	15	15	.61
29	.09	2	.00	---	---	---	18	20	.97
30	.09	2	.00	---	---	---	24	30	1.9
31	.09	2	.00	---	---	---	107	40	12
TOTAL	6.63	---	0.09	75.16	---	2.50	647.4	---	36.37
		APRIL			MAY			JUNE	
1	176	70	33	2C	13	.70	4.1	15	.17
2	128	50	17	69	120	22	4.1	14	.15
3	86	40	9.3	149	130	52	3.8	14	.14
4	62	30	5.0	87	100	23	3.5	13	.12
5	48	23	3.0	55	90	13	3.1	13	.11
6	42	20	2.3	42	80	9.1	2.7	13	.09
7	44	25	3.0	34	70	6.4	2.2	12	.07
8	54	30	4.4	29	60	4.7	2.0	12	.06
9	42	28	3.2	24	50	3.2	1.7	11	.05
10	33	23	2.0	20	45	2.4	1.4	10	.04
11	27	21	1.5	18	40	1.9	1.2	10	.03
12	30	20	1.6	16	35	1.5	1.1	10	.03
13	102	50	14	13	30	1.1	2.3	15	.09
14	82	26	5.8	13	28	.98	1.8	13	.06
15	90	100	24	13	26	.91	1.9	13	.07
16	162	110	48	13	26	.91	1.8	13	.06
17	182	120	59	12	24	.78	2.2	13	.08
18	142	110	42	11	23	.68	3.2	13	.11
19	120	100	32	11	22	.65	3.8	25	.26
20	85	75	17	11	21	.62	84	60	14
21	66	60	11	1C	20	.54	349	110	104
22	52	50	7.0	9.3	19	.48	425	50	57
23	43	45	5.2	8.4	18	.41	197	12	6.4
24	36	40	3.9	7.9	18	.38	104	9	2.5
25	31	35	2.9	7.1	17	.33	63	7	1.2
26	27	30	2.2	6.6	17	.30	43	7	.81
27	21	23	1.3	6.0	16	.26	34	7	.64
28	18	18	.87	5.5	16	.24	66	10	1.8
29	19	16	.82	4.8	15	.19	156	15	6.3
30	19	14	.72	4.5	15	.18	224	20	12
31	---	---	---	4.3	15	.17	---	---	---
TOTAL	2069	---	363.01	734.4	---	150.01	1792.9	---	208.44

Table 4.--Water-quality records, daily suspended sediment, for Enemy Creek near Mitchell, SD (06478052)--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	255	30	21	9.2	10	.25	.00	0	.00
2	301	50	41	8.2	9	.20	.00	0	.00
3	281	45	34	6.7	9	.16	.00	0	.00
4	192	45	23	5.5	9	.13	.00	0	.00
5	134	40	14	4.7	8	.10	.00	0	.00
6	91	30	7.4	4.0	7	.08	.00	0	.00
7	64	25	4.3	3.5	6	.06	.00	0	.00
8	47	20	2.5	2.7	5	.04	.00	0	.00
9	37	18	1.8	1.8	5	.02	.00	0	.00
10	29	16	1.3	1.4	5	.02	.00	0	.00
11	23	15	.93	1.3	4	.01	.00	0	.00
12	19	13	.67	.97	3	.00	.00	0	.00
13	16	11	.48	.75	3	.00	.00	0	.00
14	13	11	.39	.52	3	.00	.00	0	.00
15	12	10	.32	.40	3	.00	.00	0	.00
16	11	10	.30	.27	2	.00	.00	0	.00
17	11	10	.30	.22	2	.00	.00	0	.00
18	15	15	.61	.17	2	.00	.00	0	.00
19	17	20	.92	.16	2	.00	.00	0	.00
20	16	15	.65	.08	2	.00	.00	0	.00
21	13	10	.35	.08	1	.00	.00	0	.00
22	9.7	9	.24	.07	1	.00	.00	0	.00
23	9.1	8	.20	.06	1	.00	.00	0	.00
24	8.3	7	.16	.04	1	.00	.00	0	.00
25	6.6	6	.11	.02	1	.00	.00	0	.00
26	6.3	5	.09	.03	1	.00	.00	0	.00
27	8.0	10	.22	.04	1	.00	.00	0	.00
28	12	20	.65	.04	1	.00	.00	0	.00
29	11	15	.45	.02	1	.00	.00	0	.00
30	9.1	10	.25	.01	1	.00	.00	0	.00
31	8.7	10	.23	.00	0	.00	---	---	---
TOTAL	1685.8	---	158.82	52.95	---	1.07	0.00	---	0.00

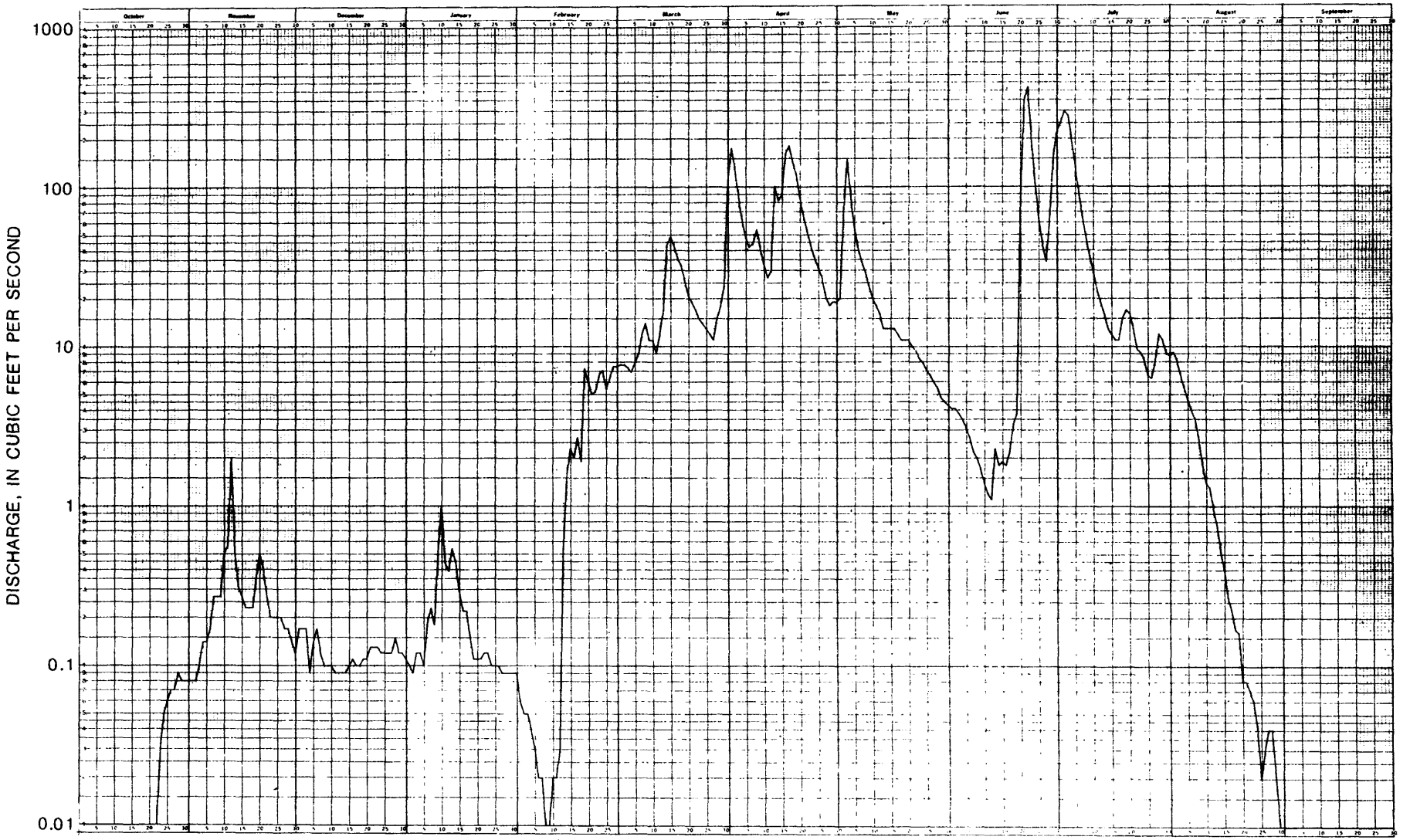

Figure 6.--Daily discharge for Enemy Creek near Mitchell (06478052), October 1982 to September 1983.

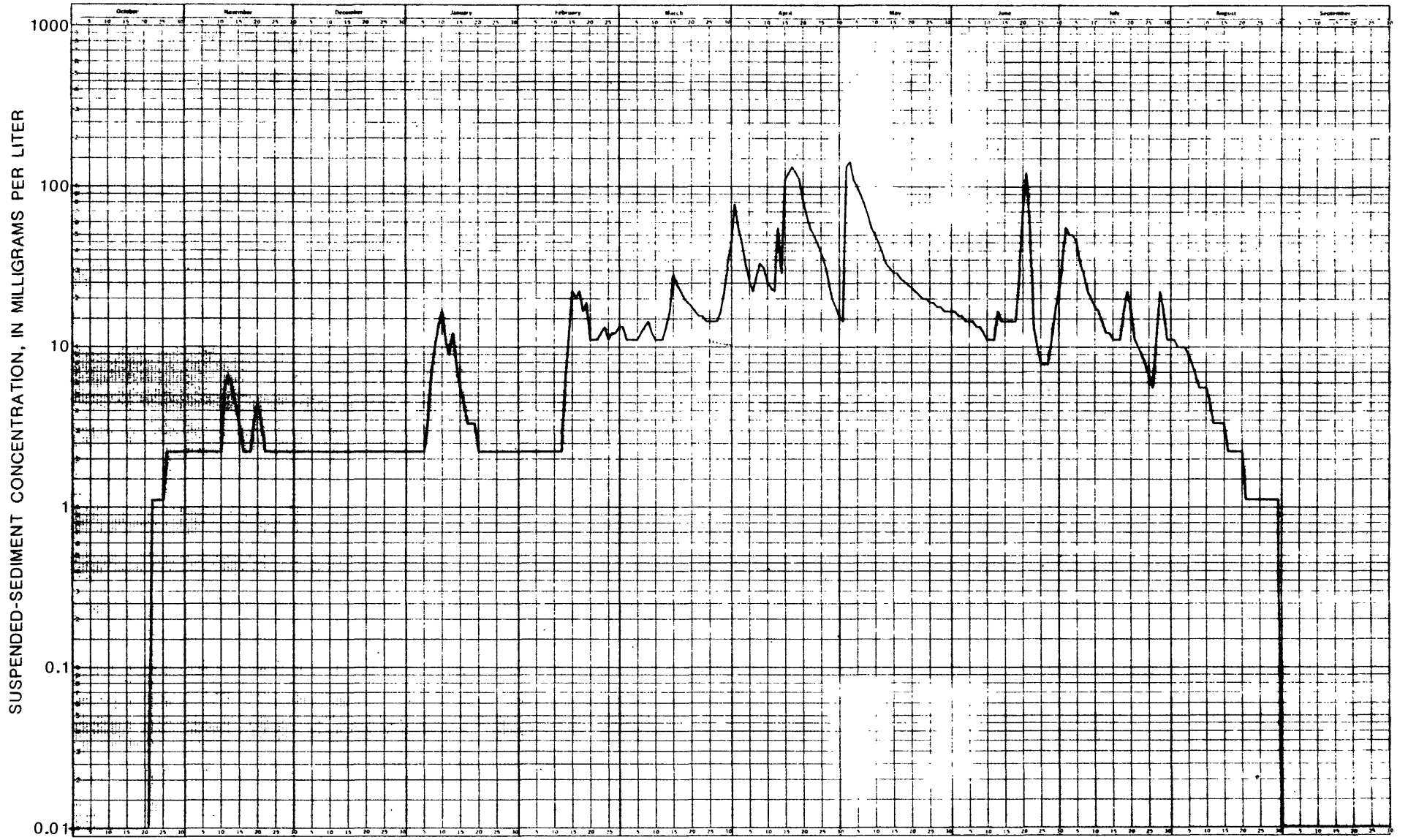

Figure 7.--Daily suspended-sediment concentration for Enemy Creek near Mitchell (06478052), October 1982 to September 1983.

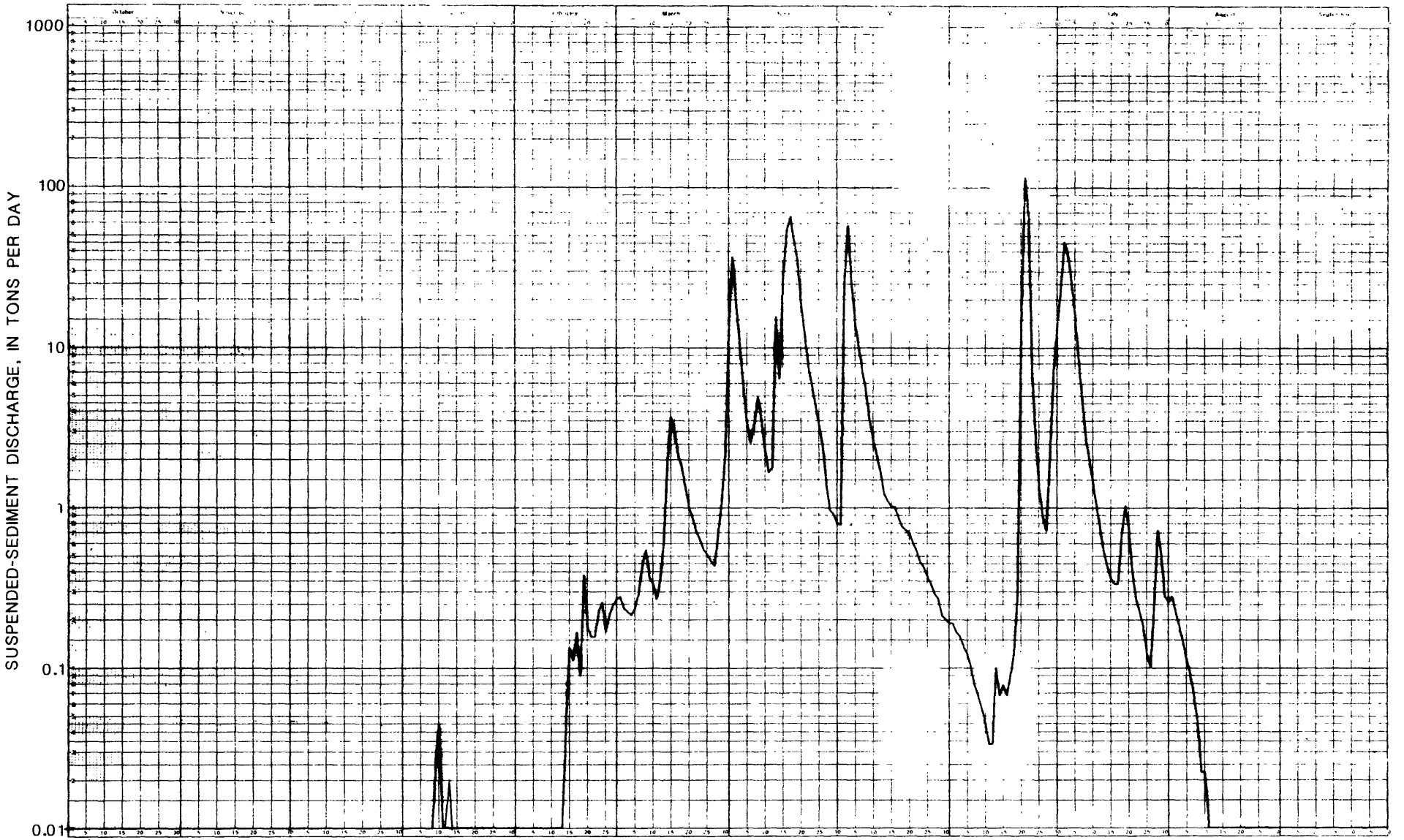

Figure 8.--Daily suspended-sediment discharge for Enemy Creek near Mitchell (06478052), October 1982 to September 1983.

Table 5.--Daily discharge for Plum Creek near Milltown, SD (06478320)

LOCATION.--Lat 43°25'05", long 97°46'13", in SE¼SW¼ sec.1, T.99 N., R.59 W., Hutchinson County, Hydrologic Unit 10160011, on right bank 5 ft downstream from highway bridge, 0.9 mi upstream from mouth, and 1.6 mi southeast of Milltown.

DRAINAGE AREA.--35.4 mi^2.

PERIOD OF RECORD.--Oct. 1, 1981, to Sept. 30, 1983 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 1,194 ft, from topographic map.

REMARKS.--Records good except those for winter periods, Nov. 11 to Feb. 25 and Mar. 8-28, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 774 ft^3/s June 20, 1983 (gage height, 7.14 ft); no flow in 1982 and 1983.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 774 ft^3/s at 1115 hours, June 20 (gage height, 7.14 ft); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.10	.00	.00	14	27	5.9	.00	42	3.6	.00
2	.00	.00	.20	.00	.00	14	24	23	.00	37	.93	.00
3	.00	.00	.10	.00	.00	13	18	30	.00	37	.23	.00
4	.00	.00	.10	.00	.00	12	14	23	.00	32	.05	.00
5	.00	.00	.10	.00	.00	17	10	17	.00	26	.00	.00
6	.00	.00	.05	.00	.00	32	9.7	13	.00	20	.00	.00
7	.00	.00	.00	.00	.00	54	9.4	11	.00	14	.00	.00
8	.00	.00	.00	.00	.00	30	8.4	9.3	.00	10	.00	.00
9	.29	.00	.00	.00	.00	25	7.4	7.3	.00	8.1	.00	.00
10	.00	.06	.00	.05	.00	20	6.3	5.8	.00	5.6	.00	.00
11	.50	.10	.00	.15	.00	15	5.3	4.8	.00	5.3	.00	.00
12	2.8	.50	.00	.05	.00	15	8.7	5.0	.00	5.2	.00	.00
13	15	2.0	.00	.01	.00	31	10	5.0	.00	1.8	.00	.00
14	5.3	4.0	.00	.10	1.0	35	40	4.0	.00	.65	.00	.00
15	2.0	5.0	.00	.05	10	31	38	3.6	.00	.27	.00	.00
16	.93	9.0	.00	.00	15	28	34	3.8	.00	.81	.00	.00
17	.46	2.0	.00	.00	30	26	28	4.0	.00	5.6	.00	.00
18	.21	1.8	.00	.00	70	25	23	5.0	.19	2.6	.00	.00
19	.23	3.0	.00	.00	60	23	17	5.6	.10	.27	.00	.00
20	.37	6.0	.00	.00	40	20	13	5.6	201	.05	.00	.00
21	.29	6.5	.00	.00	35	15	11	5.3	624	.00	.00	.00
22	.15	6.0	.00	.00	30	13	9.6	5.0	282	.00	.00	.00
23	.15	5.0	.00	.00	25	10	8.3	4.3	117	.00	.00	.00
24	.07	2.0	.00	.00	20	8.4	7.3	3.6	70	.00	.00	.00
25	.01	.50	.00	.00	25	7.4	6.6	2.8	50	.00	.00	.00
26	.00	.20	.00	.00	24	5.0	4.9	2.3	39	.00	.00	.00
27	.00	.10	.00	.00	22	1.0	3.4	1.2	33	.00	.00	.00
28	.00	.05	.00	.00	17	8.0	3.6	.30	40	34	.00	.00
29	.00	.05	.00	.00	---	13	3.5	.06	39	51	.00	.00
30	.00	.05	.00	.00	---	22	4.4	.00	41	24	.00	.00
31	.00	---	.00	.00	---	32	---	.00	---	10	.00	---
TOTAL	28.76	53.91	.65	.41	424.00	614.8	413.8	216.56	1536.29	373.25	4.81	.00
MEAN	.93	1.80	.021	.013	15.1	19.8	13.8	6.99	51.2	12.0	.16	.000
MAX	15	9.0	.20	.15	70	54	40	30	624	51	3.6	.00
MIN	.00	.00	.00	.00	.00	1.0	3.4	.00	.00	.00	.00	.00
AC-FT	57	107	1.3	.8	841	1220	821	430	3050	740	9.5	.00

CAL YR 1982 TOTAL 356.81 MEAN .98 MAX 50 MIN .00 AC-FT 708
WTR YR 1983 TOTAL 3667.24 MEAN 10.0 MAX 624 MIN .00 AC-FT 7270

Table 6.--Water-quality records, daily suspended sediment, for Plum Creek near Milltown, SD (06478320)

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: Oct. 1, 1981, to Sept. 30, 1983 (discontinued).

REMARKS.--Records poor. No flow Oct. 1-8, 10, Oct. 26 to Nov. 9, Dec. 7 to Jan. 9, Jan. 16 to Feb. 13, May 30 to June 17, July 21-27, Aug. 5 to Sept. 30. Several observations of water temperature and specific conductance were made during the year.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 1,190 mg/L Feb. 22, 1982; minimum daily mean, 0 mg/L on many days each year.
SEDIMENT LOADS: Maximum daily, 337 tons June 21, 1983; minimum daily, 0 ton on many days each year.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 250 mg/L Feb. 18; minimum daily mean, 0 mg/L on many days.
SEDIMENT LOADS: Maximum daily, 337 tons June 21; minimum daily, 0 ton on many days.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	.00	0	.00	.00	0	.00	.10	1	.00
2	.00	0	.00	.00	0	.00	.20	1	.00
3	.00	0	.00	.00	0	.00	.10	1	.00
4	.00	0	.00	.00	0	.00	.10	1	.00
5	.00	0	.00	.00	0	.00	.10	1	.00
6	.00	0	.00	.00	0	.00	.05	1	.00
7	.00	0	.00	.00	0	.00	.00	0	.00
8	.00	0	.00	.00	0	.00	.00	0	.00
9	.29	1	.00	.00	0	.00	.00	0	.00
10	.00	0	.00	.06	1	.00	.00	0	.00
11	.50	1	.00	.10	2	.00	.00	0	.00
12	2.8	10	.08	.50	5	.00	.00	0	.00
13	15	30	1.2	2.0	7	.04	.00	0	.00
14	5.3	10	.14	4.0	9	.10	.00	0	.00
15	2.0	8	.04	5.0	12	.16	.00	0	.00
16	.93	5	.01	9.0	16	.39	.00	0	.00
17	.46	1	.00	2.0	12	.06	.00	0	.00
18	.21	1	.00	1.8	10	.05	.00	0	.00
19	.23	1	.00	3.0	11	.09	.00	0	.00
20	.37	1	.00	6.0	12	.19	.00	0	.00
21	.29	1	.00	6.5	14	.25	.00	0	.00
22	.15	1	.00	6.0	12	.19	.00	0	.00
23	.15	1	.00	5.0	10	.14	.00	0	.00
24	.07	1	.00	2.0	7	.04	.00	0	.00
25	.01	1	.00	.50	1	.00	.00	0	.00
26	.00	0	.00	.20	1	.00	.00	0	.00
27	.00	0	.00	.10	1	.00	.00	0	.00
28	.00	0	.00	.05	1	.00	.00	0	.00
29	.00	0	.00	.05	1	.00	.00	0	.00
30	.00	0	.00	.05	1	.00	.00	0	.00
31	.00	0	.00	---	---	---	.00	0	.00
TOTAL	28.76	---	1.47	53.91	---	1.70	0.65	---	0.00

Table 6.--Water-quality records, daily suspended sediment, for Plum Creek near Milltown, SD (06478320)--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JANUARY			FEBRUARY			MARCH	
1	.00	0	.00	.00	0	.00	14	60	2.3
2	.00	0	.00	.00	0	.00	14	50	1.9
3	.00	0	.00	.00	0	.00	13	40	1.4
4	.00	0	.00	.00	0	.00	12	40	1.3
5	.00	0	.00	.00	0	.00	17	50	2.3
6	.00	0	.00	.00	0	.00	32	80	6.9
7	.00	0	.00	.00	0	.00	54	100	15
8	.00	0	.00	.00	0	.00	30	50	4.1
9	.00	0	.00	.00	0	.00	25	40	2.7
10	.05	1	.00	.00	0	.00	20	30	1.6
11	.15	2	.00	.00	0	.00	15	30	1.2
12	.05	1	.00	.00	0	.00	15	30	1.2
13	.01	1	.00	.00	0	.00	31	40	3.3
14	.10	2	.00	1.0	10	.03	35	50	4.7
15	.05	1	.00	10	50	1.4	31	40	3.3
16	.00	0	.00	15	60	2.4	28	30	2.3
17	.00	0	.00	30	100	8.1	26	30	2.1
18	.00	0	.00	70	250	47	25	30	2.0
19	.00	0	.00	60	200	32	23	30	1.9
20	.00	0	.00	40	100	11	20	30	1.6
21	.00	0	.00	35	70	6.6	15	20	.81
22	.00	0	.00	30	40	3.2	13	20	.70
23	.00	0	.00	25	20	1.4	10	10	.27
24	.00	0	.00	20	14	.76	8.4	10	.23
25	.00	0	.00	25	80	5.4	7.4	10	.20
26	.00	0	.00	24	80	5.2	5.0	10	.14
27	.00	0	.00	22	70	4.2	1.0	10	.03
28	.00	0	.00	17	60	2.8	8.0	20	.43
29	.00	0	.00	---	---	---	13	30	1.1
30	.00	0	.00	---	---	---	22	30	1.8
31	.00	0	.00	---	---	---	32	40	3.5
TOTAL	0.41	---	0.00	424.00	---	131.49	614.6	---	72.31
		APRIL			MAY			JUNE	
1	27	30	2.2	5.9	10	.16	.00	0	.00
2	24	30	1.9	23	20	1.2	.00	0	.00
3	18	20	.97	30	30	2.4	.00	0	.00
4	14	20	.76	23	20	1.2	.00	0	.00
5	10	10	.27	17	20	.92	.00	0	.00
6	9.7	10	.26	13	20	.70	.00	0	.00
7	9.4	10	.25	11	20	.59	.00	0	.00
8	8.4	10	.23	9.3	10	.25	.00	0	.00
9	7.4	10	.20	7.3	10	.20	.00	0	.00
10	6.3	10	.17	5.8	10	.16	.00	0	.00
11	5.3	10	.14	4.8	10	.13	.00	0	.00
12	8.7	10	.23	5.0	10	.14	.00	0	.00
13	10	20	.54	5.0	10	.14	.00	0	.00
14	40	30	3.2	4.0	10	.11	.00	0	.00
15	38	40	4.1	3.6	10	.10	.00	0	.00
16	34	40	3.7	3.8	10	.10	.00	0	.00
17	28	30	2.3	4.0	10	.11	.00	0	.00
18	23	30	1.9	5.0	10	.14	.19	1	.00
19	17	20	.92	5.6	10	.15	.10	10	.00
20	13	20	.70	5.6	10	.15	201	50	27
21	11	20	.59	5.3	10	.14	624	200	337
22	9.6	10	.26	5.0	10	.14	282	100	76
23	8.3	10	.22	4.3	10	.12	117	70	22
24	7.3	10	.20	3.6	10	.10	70	60	11
25	6.6	10	.18	2.8	10	.08	50	50	6.8
26	4.9	10	.13	2.3	10	.06	39	40	4.2
27	3.4	10	.09	1.2	1	.00	33	80	7.1
28	3.6	10	.10	.30	1	.00	40	100	11
29	3.5	10	.09	.06	1	.00	39	90	9.5
30	4.4	10	.12	.00	0	.00	41	90	10
31	---	---	---	.00	0	.00	---	---	---
TOTAL	413.8	---	26.92	216.56	---	9.69	1536.29	---	521.60

Table 6.--Water-quality records, daily suspended sediment, for Plum Creek near Milltown, SD (06478320)--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	42	80	9.1	3.6	7	.07	.00	0	.00
2	37	70	7.0	.93	6	.02	.00	0	.00
3	37	60	6.0	.23	5	.00	.00	0	.00
4	32	50	4.3	.05	1	.00	.00	0	.00
5	26	40	2.8	.00	0	.00	.00	0	.00
6	20	30	1.6	.00	0	.00	.00	0	.00
7	14	20	.76	.00	0	.00	.00	0	.00
8	10	10	.27	.00	0	.00	.00	0	.00
9	8.1	9	.20	.00	0	.00	.00	0	.00
10	5.6	8	.12	.00	0	.00	.00	0	.00
11	5.3	8	.11	.00	0	.00	.00	0	.00
12	5.2	8	.11	.00	0	.00	.00	0	.00
13	1.8	7	.03	.00	0	.00	.00	0	.00
14	.65	7	.01	.00	0	.00	.00	0	.00
15	.27	6	.00	.00	0	.00	.00	0	.00
16	.81	7	.02	.00	0	.00	.00	0	.00
17	5.6	10	.15	.00	0	.00	.00	0	.00
18	2.6	6	.04	.00	0	.00	.00	0	.00
19	.27	3	.00	.00	0	.00	.00	0	.00
20	.05	1	.00	.00	0	.00	.00	0	.00
21	.00	0	.00	.00	0	.00	.00	0	.00
22	.00	0	.00	.00	0	.00	.00	0	.00
23	.00	0	.00	.00	0	.00	.00	0	.00
24	.00	0	.00	.00	0	.00	.00	0	.00
25	.00	0	.00	.00	0	.00	.00	0	.00
26	.00	0	.00	.00	0	.00	.00	0	.00
27	.00	0	.00	.00	0	.00	.00	0	.00
28	34	50	4.6	.00	0	.00	.00	0	.00
29	51	100	14	.00	0	.00	.00	0	.00
30	24	20	1.3	.00	0	.00	.00	0	.00
31	10	10	.27	.00	0	.00	---	---	---
TOTAL	373.25	---	52.79	4.81	---	0.09	0.00	---	0.00

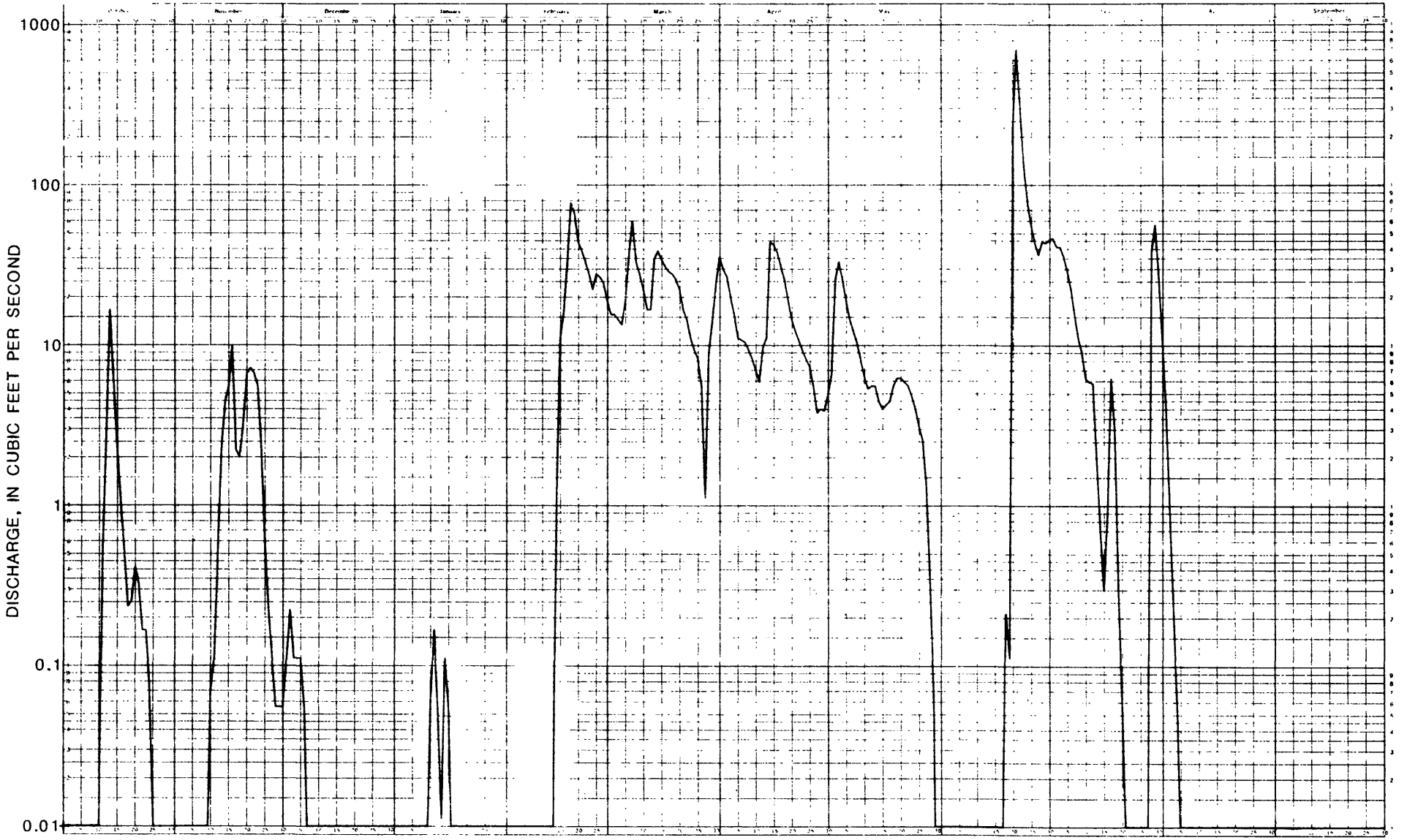

Figure 9.--Daily discharge for Plum Creek near Milltown (06478320), October 1982 to September 1983.

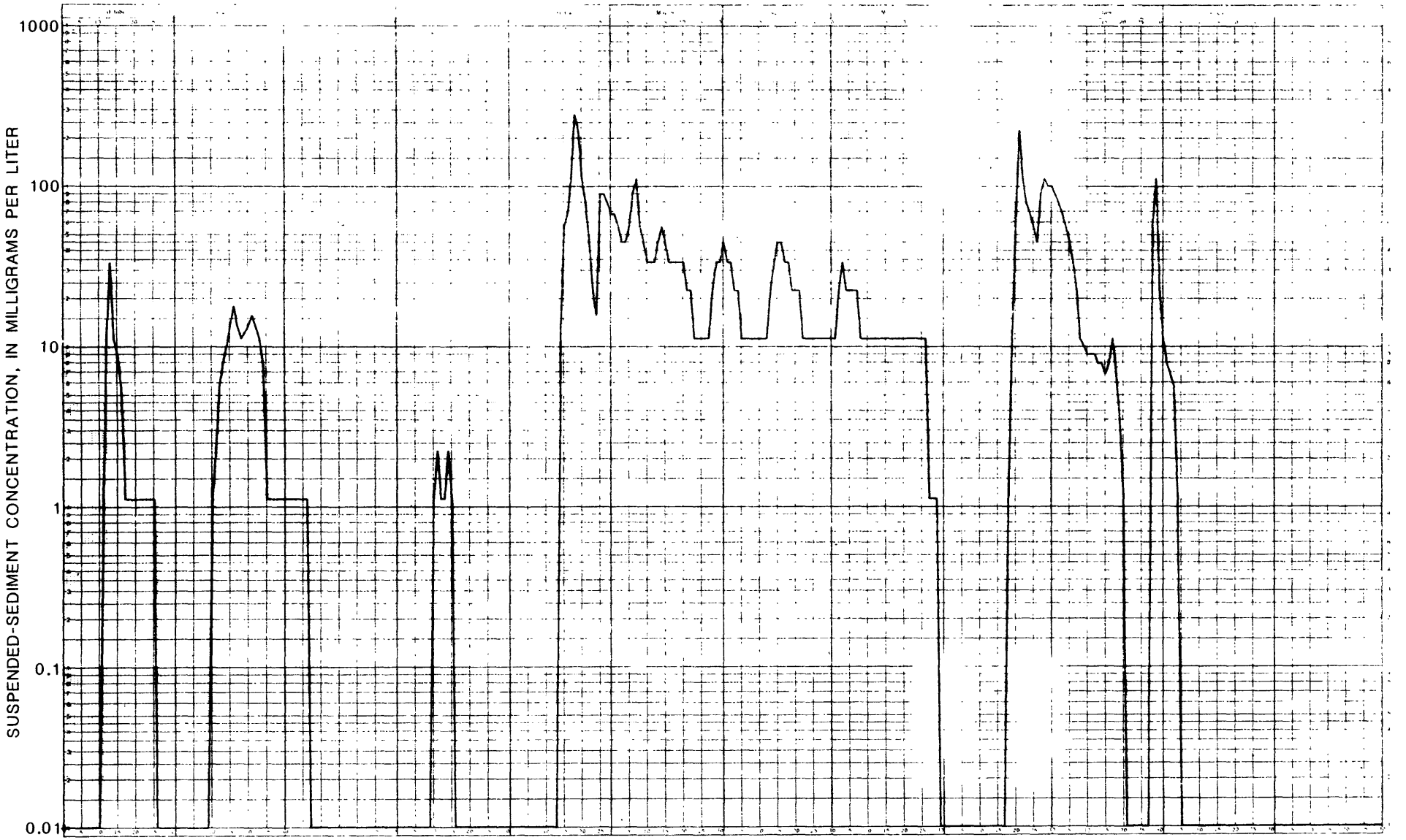

Figure 10.--Daily suspended-sediment concentration for Plum Creek near Milltown (06478320), October 1982 to September 1983.

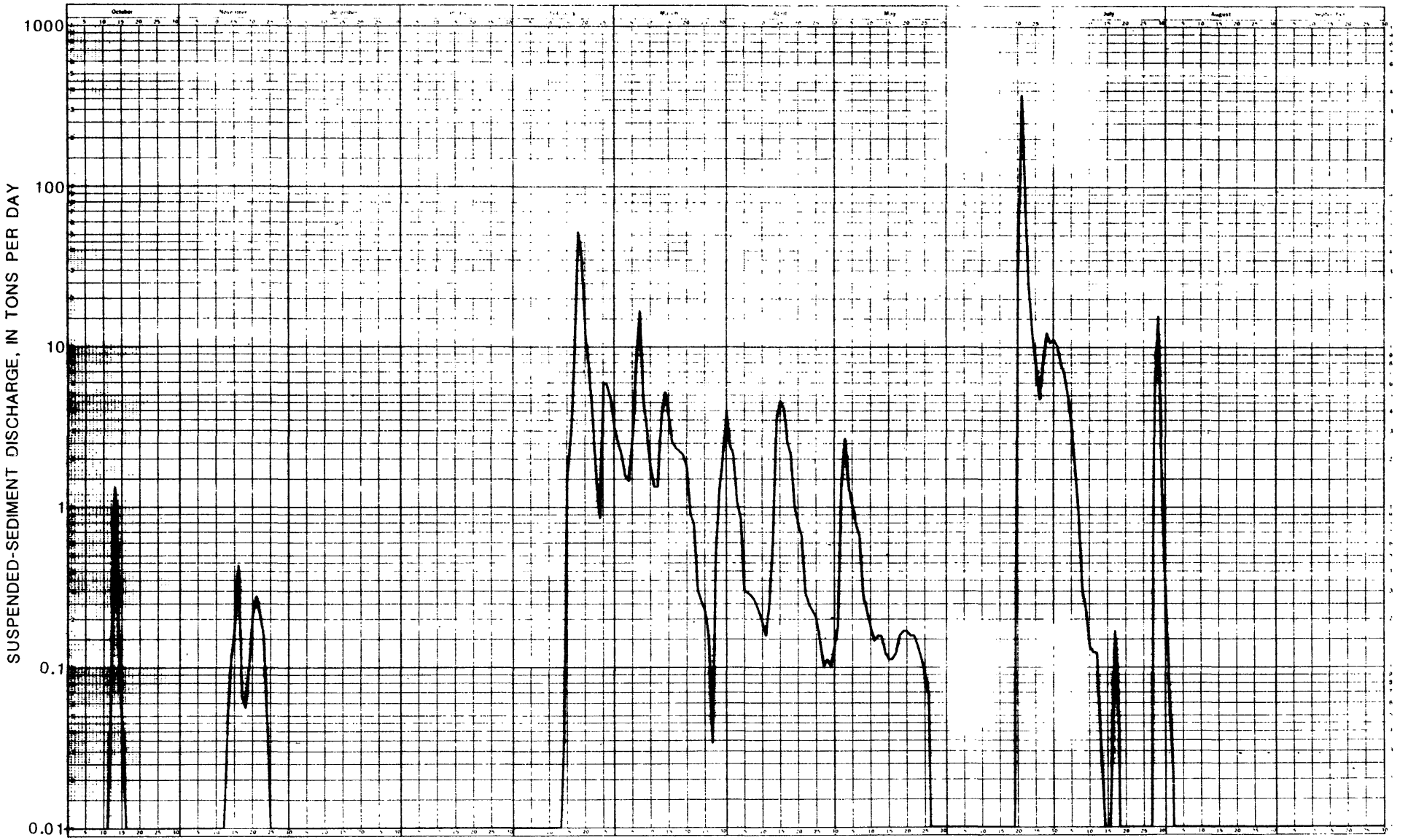

Figure 11.--Daily suspended-sediment discharge for Plum Creek near Milltown (06478320), October 1982 to September 1983.

Table 7.--Daily discharge for Lonetree Creek at Olivet, SD (06478420)

LOCATION.--Lat 43°13'35", long 97°40'44", in NE¼NE¼ sec.15, T.97 N., R.58 W., Hutchinson County, on right bank 25 ft upstream from highway bridge, 0.7 mi upstream from mouth, 0.4 mi downstream from South Branch Lonetree Creek, and 1.0 mi southwest of Olivet.

DRAINAGE AREA.--112 mi^2.

PERIOD OF RECORD.--Oct. 1, 1981, to Sept. 30, 1983 (discontinued).

GAGE.--Water-stage recorder. Altitude of gage is 1,180 ft, from topographic map.

REMARKS.--Records fair except those for winter period, Nov. 23 to Feb. 24, and period of beaver activity, Aug. 17 to Sept. 30, which are poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,090 ft^3/s Mar. 31, 1983 (gage height, 9.96 ft); no flow for many days in 1982.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,090 ft^3/s at 1015 hours, Mar. 31 (gage height, 9.96 ft); minimum daily discharge, 0.15 ft^3/s Sept. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.46	6.4	9.0	4.0	3.0	59	462	14	3.3	102	3.6	.20
2	1.9	6.6	10	4.0	2.5	51	225	215	3.3	81	3.3	.20
3	1.1	6.4	10	4.0	2.5	50	118	310	3.4	55	3.0	.15
4	.54	6.2	10	4.0	2.5	48	66	141	3.6	37	2.7	.20
5	.16	6.2	10	4.0	2.5	118	48	73	3.5	25	2.5	.70
6	.62	6.2	8.0	4.0	2.5	342	46	40	3.3	16	2.4	.70
7	1.8	6.0	5.0	4.0	2.5	408	51	31	3.2	11	2.3	.60
8	5.5	6.3	3.0	4.0	2.3	100	52	23	3.2	8.0	2.0	.60
9	11	6.5	3.0	5.0	2.3	60	42	18	2.9	6.3	2.0	.60
10	11	8.6	3.0	6.0	2.0	40	35	14	2.9	5.1	1.8	.60
11	15	15	3.0	6.0	2.0	30	28	11	2.7	4.7	1.7	.60
12	13	39	3.0	5.0	2.5	40	41	10	2.7	4.3	1.7	.60
13	10	64	3.0	5.0	10	91	407	8.9	3.1	4.0	1.7	.60
14	9.2	40	3.0	5.0	25	77	210	8.2	3.7	3.7	1.7	.65
15	9.0	25	3.0	5.0	30	61	166	7.5	3.4	3.1	1.6	.70
16	8.4	20	3.0	4.0	50	97	276	7.0	3.0	5.2	1.5	.60
17	7.6	17	3.0	4.0	180	78	220	6.7	3.9	5.4	1.3	.60
18	7.9	14	4.0	4.5	250	80	188	7.5	4.8	5.8	.97	.55
19	7.0	15	3.0	5.0	330	70	155	8.1	4.2	13	.56	.53
20	7.7	56	3.0	5.0	240	45	109	7.5	61	15	.50	.5
21	7.4	50	3.0	4.5	120	31	66	6.9	146	9.9	.50	.50
22	7.0	30	4.0	4.5	110	28	39	6.3	182	6.8	.47	.45
23	7.3	25	3.0	4.0	130	23	27	5.6	184	6.7	.37	.40
24	7.4	20	3.0	4.0	110	22	20	5.4	149	5.1	.35	.40
25	7.5	15	3.0	4.0	94	20	16	4.8	140	4.9	.35	.40
26	7.3	12	3.0	4.0	61	19	14	4.5	55	4.0	.35	.30
27	7.3	10	3.0	4.0	73	14	11	4.4	24	3.9	.30	.30
28	7.0	9.0	3.0	4.0	78	17	11	4.0	44	4.0	.25	.25
29	7.4	8.0	4.0	4.0	---	31	11	3.8	117	4.8	.25	.30
30	7.4	8.0	4.0	3.5	---	229	11	3.8	132	5.6	.20	.40
31	6.9	---	4.0	3.0	---	808	---	3.6	---	5.4	.20	---
TOTAL	208.78	557.4	139.0	135.0	1920.1	3187	3171	1014.5	1298.1	471.7	42.42	14.25
MEAN	6.73	18.6	4.48	4.35	68.6	103	106	32.7	43.3	15.2	1.37	.48
MAX	15	64	10	6.0	330	808	462	310	184	102	3.6	.70
MIN	.16	6.0	3.0	3.0	2.0	14	11	3.6	2.7	3.1	.20	.15
AC-FT	414	1110	276	268	3810	6320	6290	2010	2570	936	84	28

CAL YR 1982 TOTAL 1993.36 MEAN 5.46 MAX 200 MIN .00 AC-FT 3950
WTR YR 1983 TOTAL 12159.25 MEAN 33.3 MAX 808 MIN .15 AC-FT 24120

Table 8.--Water-quality records, daily suspended sediment, for Lonetree Creek near Olivet, SD (06478420)

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: Oct. 1, 1981, to Sept. 30, 1983 (discontinued).

REMARKS.--Records poor. Several observations of water temperature and specific conductance were made during the year.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 500 mg/L Mar. 31, 1983; minimum daily mean, 0 mg/L on many days in 1982.
SEDIMENT LOADS: Maximum daily, 1,090 tons Mar. 31, 1983; minimum daily, 0 ton on many days in 1982 and 1983.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 500 mg/L Mar. 31; minimum daily mean, 10 mg/L on many days.
SEDIMENT LOADS: Maximum daily, 1,090 tons Mar. 31; minimum daily, 0 ton Aug. 23 to Sept. 4, 26-29.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	.46	40	.05	6.4	10	.17	9.0	50	1.2
2	1.9	80	.41	6.6	10	.18	10	70	1.9
3	1.1	70	.21	6.4	10	.17	10	70	1.9
4	.54	60	.09	6.2	10	.17	10	70	1.9
5	.16	55	.02	6.2	10	.17	10	70	1.9
6	.62	60	.10	6.2	10	.17	8.0	65	1.4
7	1.8	65	.32	6.0	10	.16	5.0	60	.81
8	5.5	100	1.5	6.3	10	.17	3.0	55	.45
9	11	140	4.2	6.5	10	.18	3.0	55	.45
10	11	140	4.2	8.6	10	.23	3.0	55	.45
11	15	200	8.1	15	16	.65	3.0	55	.45
12	13	150	5.3	39	20	2.1	3.0	55	.45
13	10	50	1.4	64	30	5.2	3.0	55	.45
14	9.2	30	.75	40	20	2.2	3.0	55	.45
15	9.0	30	.73	25	15	1.0	3.0	55	.45
16	8.4	30	.68	20	13	.70	3.0	55	.45
17	7.6	25	.51	17	10	.46	3.0	55	.45
18	7.9	25	.53	14	10	.38	4.0	55	.59
19	7.0	25	.47	15	50	2.0	3.0	55	.45
20	7.7	20	.42	56	100	15	3.0	55	.45
21	7.4	20	.40	50	90	12	3.0	55	.45
22	7.0	15	.28	30	80	6.5	4.0	55	.59
23	7.3	15	.30	25	60	4.1	3.0	55	.45
24	7.4	15	.30	20	50	2.7	3.0	55	.45
25	7.5	15	.30	15	50	2.0	3.0	55	.45
26	7.3	10	.20	12	50	1.6	3.0	55	.45
27	7.3	10	.20	10	45	1.2	3.0	55	.45
28	7.0	10	.19	9.0	45	1.1	3.0	55	.45
29	7.4	10	.20	8.0	45	.97	4.0	55	.59
30	7.4	10	.20	8.0	45	.97	4.0	55	.59
31	6.9	10	.19	---	---	---	4.0	55	.59
TOTAL	208.78	---	32.75	557.4	---	64.60	139.0	---	22.51

Table 8.--Water-quality records, daily suspended sediment, for Lonetree Creek near Olivet, SD (06478420)--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JANUARY			FEBRUARY			MARCH	
1	4.0	55	.59	3.0	10	.08	59	10	1.6
2	4.0	55	.59	2.5	10	.07	51	20	2.8
3	4.0	55	.59	2.5	10	.07	50	30	4.1
4	4.0	55	.59	2.5	10	.07	48	50	6.5
5	4.0	55	.59	2.5	10	.07	116	100	32
6	4.0	55	.59	2.5	10	.07	342	200	185
7	4.0	55	.59	2.5	10	.07	408	300	330
8	4.0	55	.59	2.3	10	.06	100	100	27
9	5.0	60	.81	2.3	10	.06	60	40	6.5
10	6.0	65	1.1	2.0	10	.05	40	30	3.2
11	6.0	70	1.1	2.0	10	.05	30	20	1.6
12	5.0	50	.68	2.5	15	.10	40	50	5.4
13	5.0	50	.68	10	20	.54	91	100	25
14	5.0	50	.68	25	30	2.0	77	90	19
15	5.0	50	.68	30	40	3.2	61	80	13
16	4.0	50	.54	50	50	6.8	97	100	26
17	4.0	50	.54	180	100	49	78	90	19
18	4.5	50	.61	250	150	101	80	80	17
19	5.0	55	.74	330	200	178	70	70	13
20	5.0	60	.81	240	80	52	45	60	7.3
21	4.5	50	.61	120	60	19	31	50	4.2
22	4.5	45	.55	110	50	15	28	50	3.8
23	4.0	40	.43	130	70	25	23	50	3.1
24	4.0	30	.32	110	50	15	22	50	3.0
25	4.0	30	.32	94	30	7.6	20	50	2.7
26	4.0	30	.32	61	20	3.3	19	50	2.6
27	4.0	30	.32	73	15	3.0	14	50	1.9
28	4.0	30	.32	78	10	2.1	17	100	4.6
29	4.0	30	.32	---	---	---	31	200	17
30	3.5	20	.19	---	---	---	229	300	185
31	3.0	10	.08	---	---	---	808	500	1090
TOTAL	135.0	---	17.47	1920.1	---	483.36	3187	---	2062.9
		APRIL			MAY			JUNE	
1	462	300	374	14	150	5.7	3.3	50	.45
2	225	200	121	215	200	116	3.3	50	.45
3	118	100	32	310	300	251	3.4	55	.50
4	66	80	14	141	200	76	3.6	60	.58
5	48	60	7.8	73	180	35	3.5	55	.52
6	46	50	6.2	40	160	17	3.3	55	.49
7	51	40	5.5	31	140	12	3.2	50	.43
8	52	40	5.6	23	120	7.5	3.2	50	.43
9	42	30	3.4	18	110	5.3	2.9	50	.39
10	35	25	2.4	14	100	3.8	2.9	45	.35
11	28	20	1.5	11	90	2.7	2.7	45	.33
12	41	100	11	10	80	2.2	2.7	45	.33
13	407	300	330	8.9	60	1.9	3.1	70	.59
14	210	200	113	8.2	70	1.5	3.7	100	1.0
15	166	150	67	7.5	70	1.4	3.4	50	.46
16	276	200	149	7.0	60	1.1	3.0	20	.16
17	220	150	89	6.7	60	1.1	3.9	20	.21
18	188	140	71	7.5	70	1.4	4.8	25	.32
19	155	130	54	8.1	100	2.2	4.2	25	.28
20	109	120	35	7.5	90	1.8	61	30	4.9
21	66	120	21	6.9	90	1.7	146	100	39
22	39	110	12	6.3	85	1.4	182	200	98
23	27	100	7.3	5.6	80	1.2	184	250	124
24	20	100	5.4	5.4	75	1.1	149	200	80
25	16	90	3.9	4.8	70	.91	140	100	38
26	14	90	3.4	4.5	65	.79	55	80	12
27	11	90	2.7	4.4	60	.71	24	60	3.9
28	11	85	2.5	4.0	60	.65	44	100	12
29	11	85	2.5	3.8	60	.62	117	200	63
30	11	90	2.7	3.8	55	.56	132	300	107
31	---	---	---	3.6	55	.53	---	---	---
TOTAL	3171	---	1555.8	1014.5	---	556.77	1298.1	---	590.07

Table 8.--Water-quality records, daily suspended sediment, for Lonetree Creek near Olivet, SD (06478420)--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	102	260	72	3.6	30	.29	.20	10	.00
2	81	210	46	3.3	25	.22	.20	10	.00
3	55	180	27	3.0	20	.16	.15	10	.00
4	37	170	17	2.7	20	.15	.20	10	.00
5	25	160	11	2.5	20	.14	.70	10	.02
6	16	150	6.5	2.4	18	.12	.70	10	.02
7	11	130	3.9	2.3	16	.10	.60	10	.02
8	8.0	130	2.8	2.0	15	.08	.60	10	.02
9	6.3	120	2.0	2.0	14	.08	.60	10	.02
10	5.1	120	1.7	1.8	13	.06	.60	10	.02
11	4.7	110	1.4	1.7	12	.06	.60	10	.02
12	4.3	100	1.2	1.7	12	.06	.60	10	.02
13	4.0	80	.86	1.7	12	.06	.60	10	.02
14	3.7	70	.70	1.7	12	.06	.65	10	.02
15	3.1	50	.42	1.6	12	.05	.70	10	.02
16	5.2	60	.84	1.5	12	.05	.60	10	.02
17	5.4	70	1.0	1.3	11	.04	.60	10	.02
18	5.8	80	1.3	.97	10	.03	.55	10	.01
19	13	100	3.5	.56	10	.02	.55	10	.01
20	15	110	4.5	.50	10	.01	.50	10	.01
21	9.9	80	2.1	.50	10	.01	.50	10	.01
22	6.8	60	1.1	.47	10	.01	.45	10	.01
23	6.7	50	.90	.37	10	.00	.45	10	.01
24	5.1	40	.55	.35	10	.00	.40	10	.01
25	4.9	30	.40	.35	10	.00	.40	10	.01
26	4.0	30	.32	.35	10	.00	.30	10	.00
27	3.9	30	.32	.30	10	.00	.30	10	.00
28	4.0	30	.32	.25	10	.00	.25	10	.00
29	4.8	40	.52	.25	10	.00	.30	10	.00
30	5.6	50	.76	.20	10	.00	.40	10	.01
31	5.4	40	.58	.20	10	.00	---	---	---
TOTAL	471.7	---	213.49	42.42	---	1.86	14.25	---	0.35

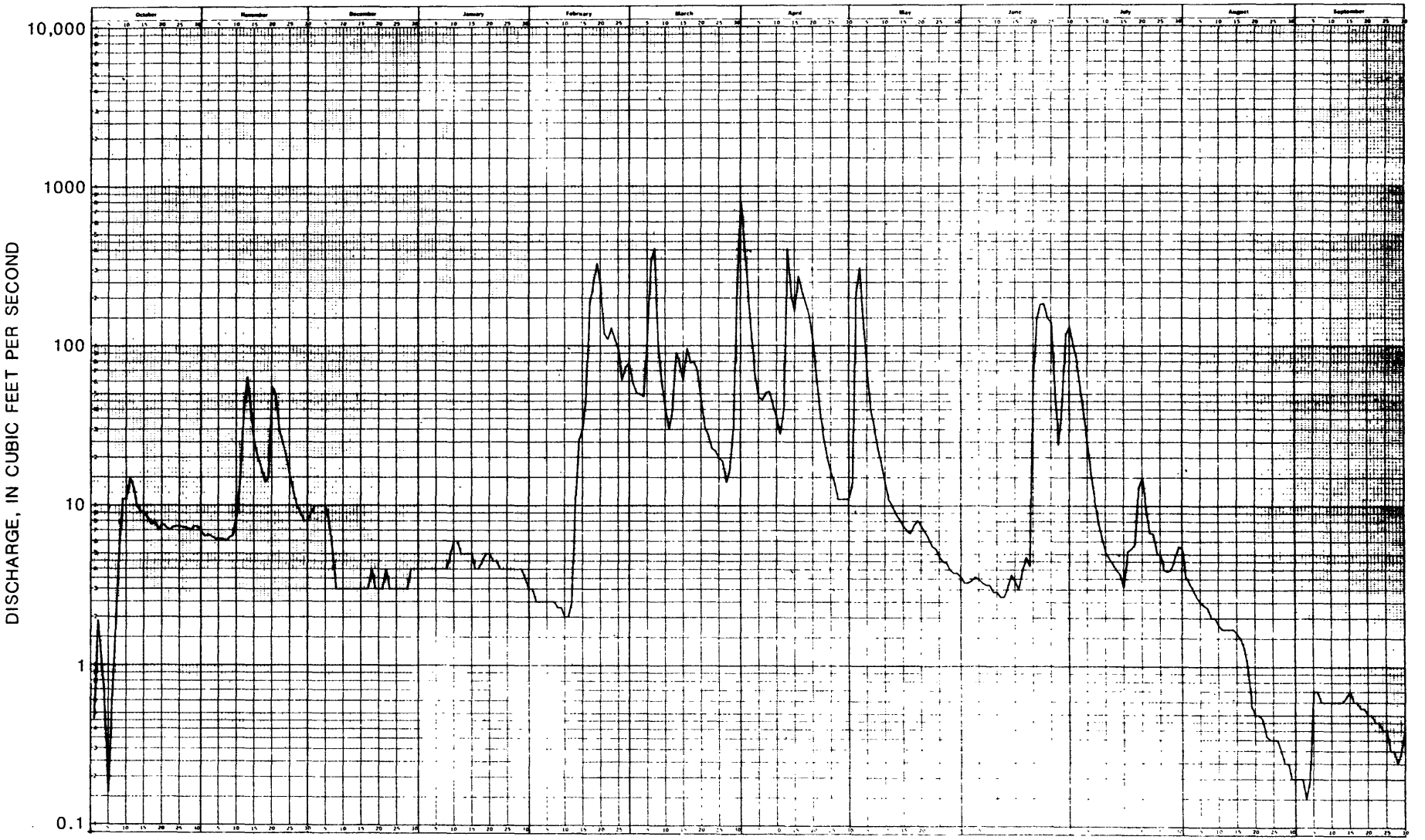

Figure 12.--Daily discharge for Lonetree Creek at Olivet (06478420), October 1982 to September 1983.

Figure 13.--Daily suspended-sediment concentration for Lonetree Creek at Olivet (06478420), October 1982 to September 1983.

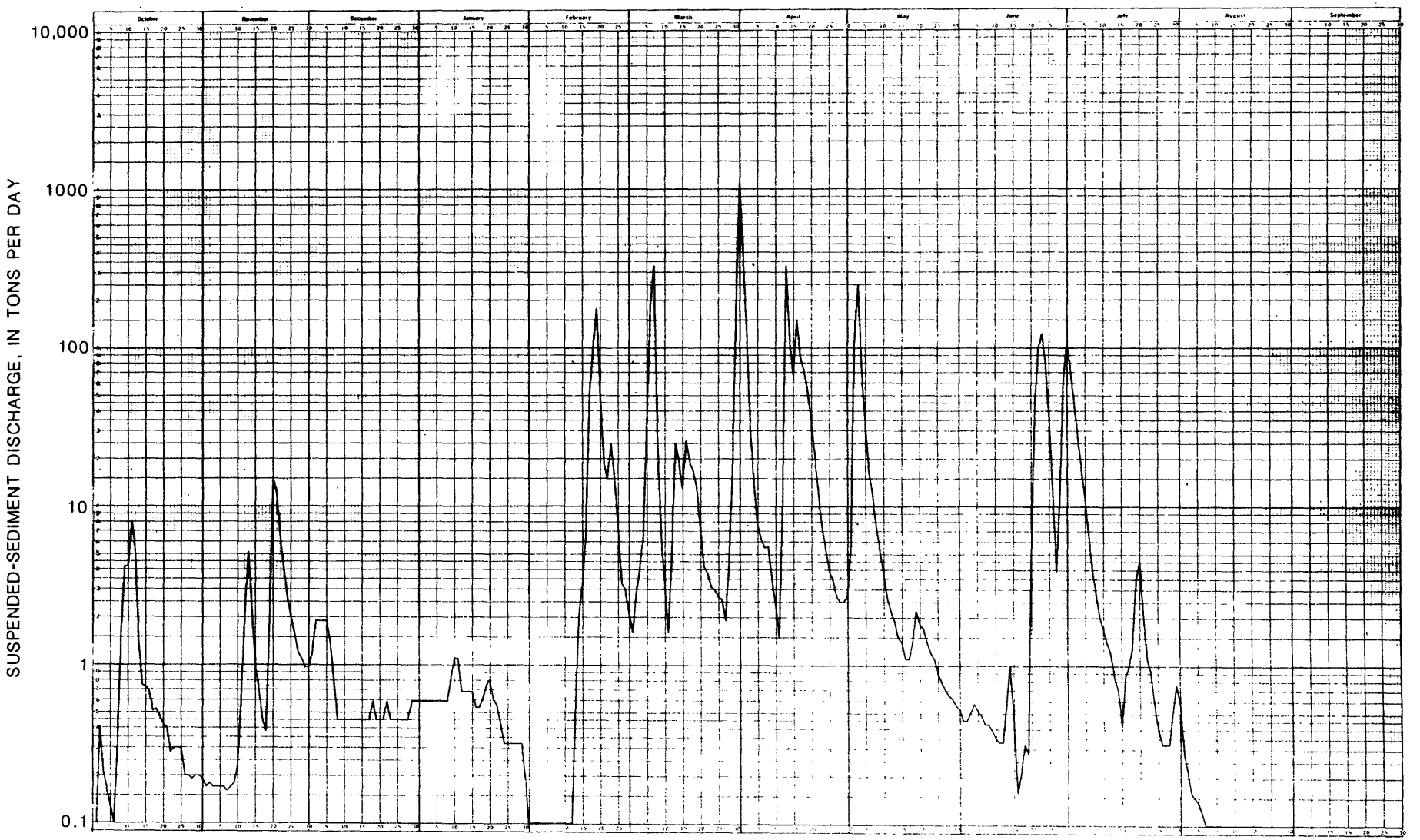

Figure 14.--Daily suspended-sediment discharge for Lonetree Creek at Olivet (06478420), October 1982 to September 1983.

Table 9.--Daily discharge for James River near Scotland, SD (06478500)

LOCATION.--Lat 43°11'09", long 97°38'07", in SW¼SW¼ sec.30, T.97 N., R.57 W., Hutchinson County, Hydrologic Unit 10160011, on right bank 5.0 ft downstream from highway bridge, 0.3 mi upstream from Dawson Creek and 5.2 mi northeast of Scotland.

DRAINAGE AREA.--21,550 mi^2, approximately, of which about 4,790 mi^2 is probably noncontributing.

PERIOD OF RECORD.--September 1928 to current year. Monthly discharge only for some periods, published in WSP 1309.

REVISED RECORDS.--WSP 786: Drainage area. WSP 956: 1937-38. WSP 1279: 1932, 1948.

GAGE.--Water-stage recorder and rock and earth control. Datum of gage is 1,168.07 ft National Geodetic Vertical Datum of 1929. Prior to Nov. 28, 1972, at site 0.25 mi downstream at present datum.

REMARKS.--Records good except those for winter period, Nov. 13 to Feb. 27, which are 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, 527 mi upstream since May 1953. Occasional backwater caused by Dawson Creek; reverse flow occurred for part of May 15, 1961, from information by local residents.

AVERAGE DISCHARGE.--55 years, 372 ft^3/s (269,500 acre-ft/yr); median of yearly mean discharges, 200 ft^3/s (145,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,200 ft^3/s Apr. 3, 1962 (gage height, 18.74 ft); no flow for many days in some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,510 ft^3/s at 0930 hours, June 24 (gage height, 13.31 ft); minimum daily discharge, 62 ft^3/s Feb. 10-13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	101	156	290	164	83	1080	2760	1150	681	2250	1300	376
2	122	152	295	158	80	850	2550	1760	662	2200	870	372
3	120	152	295	150	78	757	2290	2430	649	2080	623	360
4	114	152	295	148	71	710	2000	2470	636	1930	514	349
5	110	152	300	145	68	739	1730	2250	610	1720	457	342
6	116	152	285	144	66	1420	1560	1990	568	1460	427	333
7	124	152	265	144	66	2090	1510	1760	527	998	404	305
8	137	152	205	144	66	1990	1500	1550	501	711	393	287
9	262	160	205	147	64	1200	1490	1360	488	603	382	276
10	349	192	205	147	62	950	1450	1200	475	494	376	281
11	315	290	200	150	62	1000	1370	1110	463	433	371	288
12	267	589	197	150	62	970	1300	1070	445	371	360	281
13	228	469	184	150	62	1280	1760	1030	451	320	360	269
14	206	460	184	150	68	1460	2350	986	501	280	366	265
15	194	445	184	150	78	1390	2370	972	514	251	376	267
16	191	360	180	150	96	1450	2700	968	508	310	376	269
17	196	310	180	150	210	1400	2790	963	482	415	385	268
18	205	288	180	150	723	1280	2690	954	488	649	390	256
19	230	365	180	142	1000	1200	2600	940	494	723	385	248
20	253	693	180	137	1650	1030	2460	922	914	860	368	246
21	243	726	179	129	1700	890	2250	909	2290	668	376	245
22	228	623	179	122	1650	789	2060	904	3040	439	388	236
23	227	371	179	114	1600	723	1870	895	3330	330	406	223
24	222	335	179	110	1600	656	1720	875	3450	255	414	203
25	217	345	169	105	1550	589	1600	860	3180	223	420	196
26	200	350	134	99	1500	575	1460	828	2530	196	424	200
27	178	310	173	92	1400	575	1360	800	2050	180	428	199
28	166	310	171	93	1270	575	1280	789	1860	192	427	183
29	165	295	171	93	---	630	1210	759	1940	457	409	171
30	161	290	171	88	---	1010	1170	735	2180	1060	387	171
31	156	---	167	88	---	2250	---	699	---	1460	382	---
TOTAL	6003	9796	6361	4103	16985	33508	57210	36888	36907	24518	13944	7965
MEAN	194	327	205	132	607	1081	1907	1190	1230	791	450	266
MAX	349	726	300	164	1700	2250	2790	2470	3450	2250	1300	376
MIN	101	152	134	88	62	575	1170	699	445	180	360	171
AC-FT	11910	19430	12620	8140	33690	66460	113500	73170	73210	48630	27660	15800

CAL YR 1982 TOTAL 114859.0 MEAN 315 MAX 2340 MIN 9.2 AC-FT 227800
WTR YR 1983 TOTAL 254188.0 MEAN 696 MAX 3450 MIN 62 AC-FT 504200

Table 10.--Water-quality records, daily suspended sediment, for James River near Scotland, SD (06478500)

PERIOD OF RECORD.--Water years 1956-64, 1967-73, 1975 to current year.

PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: October 1974 to Sept. 30, 1981.
WATER TEMPERATURES: January 1953 to September 1969, October 1974 to Sept. 30, 1983 (discontinued).
SUSPENDED SEDIMENT DISCHARGE: Oct. 1, 1981, to Sept. 30, 1983 (discontinued).

REMARKS.--Prior to October 1969, continuous temperature thermograph at station. Sediment discharge records fair during periods of daily observer samples, poor thereafter.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SPECIFIC CONDUCTANCE: Maximum daily, 2,660 micromhos Jan. 9, 1977; minimum daily, 300 micromhos Mar. 19, 1977.
WATER TEMPERATURES: Maximum, 32.0°C Aug. 1, 2, 1957; minimum daily, 0.0°C on many days during winter periods.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 953 mg/L June 21, 1983; minimum daily mean, 12 mg/L Nov. 8, 1982.
SEDIMENT LOADS: Maximum daily, 5,890 tons June 21, 1983; minimum daily, 1.7 tons Oct. 2, 11, 1981.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURES: Maximum observed daily, 31.0°C July 20-22, Aug. 4, 6; minimum daily, 0.0°C Mar. 9.
SEDIMENT CONCENTRATIONS: Maximum daily mean, 953 mg/L June 21; minimum daily mean, 12 mg/L Nov. 8.
SEDIMENT LOADS: Maximum daily, 5,890 tons June 21; minimum daily, 3.3 tons Feb. 10-13.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	101	75	20	156	66	28	290	16	13
2	122	74	24	152	69	28	295	16	13
3	120	70	23	152	61	25	295	17	14
4	114	71	22	152	48	20	295	17	14
5	110	76	23	152	27	11	300	16	13
6	116	74	23	152	19	7.8	285	15	12
7	124	63	21	152	15	6.2	265	13	9.3
8	137	77	28	152	12	4.9	205	14	7.7
9	262	85	60	160	14	6.0	205	14	7.7
10	349	86	81	192	15	7.8	205	16	8.9
11	315	79	67	290	33	26	200	16	8.6
12	267	55	40	589	90	143	197	16	8.5
13	228	47	29	469	67	85	184	17	8.4
14	206	43	24	460	63	78	184	18	8.9
15	194	48	25	445	52	62	184	18	8.9
16	191	51	26	360	42	41	180	19	9.2
17	196	55	29	310	30	25	180	20	9.7
18	205	69	38	288	25	19	180	20	9.7
19	230	65	40	365	27	27	180	18	8.7
20	253	54	37	693	78	146	180	18	8.7
21	243	45	30	726	93	182	179	19	9.2
22	228	53	33	623	92	155	179	20	9.7
23	227	65	40	371	72	72	179	20	9.7
24	222	68	41	335	54	49	179	20	9.7
25	217	70	41	345	45	42	169	20	9.1
26	200	72	39	350	37	35	134	20	7.2
27	178	72	35	310	26	22	173	20	9.3
28	166	66	30	310	19	16	171	20	9.2
29	165	66	29	295	19	15	171	20	9.2
30	161	66	29	290	18	14	171	20	9.2
31	156	66	28	---	---	---	167	20	9.0
TOTAL	6003	---	1055	9796	---	1398.7	6361	---	302.4

Table 10.--Water-quality records, daily suspended sediment, for James River near Scotland, SD (06478500)--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JANUARY			FEBRUARY			MARCH	
1	164	20	8.9	83	20	4.5	1080	94	274
2	158	20	8.5	80	20	4.3	850	70	161
3	150	20	8.1	78	20	4.2	757	62	127
4	148	20	8.0	71	20	3.8	710	68	130
5	145	20	7.8	68	20	3.7	739	112	223
6	144	20	7.8	66	20	3.6	1420	197	755
7	144	20	7.8	66	20	3.6	2090	251	1420
8	144	20	7.8	66	20	3.6	1990	250	1340
9	147	20	7.9	64	20	3.5	1200	163	528
10	147	20	7.9	62	20	3.3	950	125	321
11	150	20	8.1	62	20	3.3	1000	152	410
12	150	20	8.1	62	20	3.3	970	143	375
13	150	20	8.1	62	20	3.3	1280	132	456
14	150	20	8.1	68	23	4.2	1460	114	449
15	150	20	8.1	78	27	5.7	1390	92	345
16	150	20	8.1	96	29	7.5	1450	76	298
17	150	20	8.1	210	31	18	1400	69	261
18	150	20	8.1	723	52	102	1280	56	194
19	142	20	7.7	1000	69	186	1200	51	165
20	137	20	7.4	1650	160	713	1030	50	139
21	129	20	7.0	1700	187	858	890	43	103
22	122	20	6.6	1650	98	437	789	38	81
23	114	20	6.2	1600	59	255	723	42	82
24	110	20	5.9	1600	78	337	656	45	80
25	105	20	5.7	1550	95	398	589	45	72
26	99	20	5.3	1500	101	409	575	38	59
27	92	20	5.0	1400	108	408	575	35	54
28	93	20	5.0	1270	107	367	575	30	47
29	93	20	5.0	---	---	---	630	41	70
30	86	20	4.8	---	---	---	1010	89	243
31	88	20	4.8	---	---	---	2250	292	1770
TOTAL	4103	---	221.7	16985	---	4553.4	33508	---	11032
		APRIL			MAY			JUNE	
1	2760	268	2000	1150	225	699	681	113	208
2	2550	125	861	1760	245	1160	662	112	200
3	2290	102	631	2430	192	1260	649	112	196
4	2000	99	535	2470	174	1160	636	112	192
5	1730	93	434	2250	158	960	610	113	186
6	1560	79	333	1990	155	833	568	114	175
7	1510	74	302	1760	153	727	527	116	165
8	1500	76	308	1550	153	640	501	119	161
9	1490	81	326	1360	150	551	488	136	179
10	1450	126	493	1200	150	486	475	141	181
11	1370	150	555	1110	144	432	463	145	181
12	1300	171	600	1070	141	407	445	155	186
13	1760	202	960	1030	135	375	451	154	188
14	2350	204	1290	986	130	346	501	144	195
15	2370	186	1190	972	122	320	514	140	194
16	2700	178	1300	968	122	319	508	137	188
17	2790	177	1330	963	126	328	482	141	183
18	2690	167	1210	954	136	350	488	145	191
19	2600	153	1070	940	136	345	494	145	193
20	2460	112	744	922	132	329	914	776	1920
21	2250	69	419	909	136	334	2290	953	5890
22	2060	65	362	904	138	337	3040	223	1830
23	1870	103	520	895	139	336	3330	140	1260
24	1720	153	711	875	134	317	3450	106	1010
25	1600	171	739	860	133	309	3180	99	850
26	1460	174	686	828	129	288	2530	90	615
27	1360	175	643	800	127	274	2050	266	1470
28	1280	187	646	789	121	258	1860	252	1270
29	1210	191	624	759	120	246	1940	195	1020
30	1170	205	648	735	117	232	2180	156	918
31	---	---	---	699	116	219	---	---	---
TOTAL	57210	---	22470	36888	---	15177	36907	---	21595

Table 10.--Water-quality records, daily suspended sediment, for James River near Scotland, SD (06478500)--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	2250	129	784	1300	169	593	376	53	54
2	2200	135	802	870	132	310	372	50	50
3	2080	152	854	623	103	173	360	49	48
4	1930	180	938	514	100	139	349	46	43
5	1720	194	901	457	100	123	342	46	42
6	1460	219	863	427	100	115	333	48	43
7	998	253	682	404	100	109	305	48	40
8	711	242	465	393	100	106	287	52	40
9	603	228	371	382	98	101	276	52	39
10	494	229	305	376	97	98	281	44	33
11	433	235	275	371	96	96	288	72	56
12	371	239	239	360	96	93	281	75	57
13	320	229	198	360	96	93	269	75	54
14	280	216	163	366	97	96	265	66	47
15	251	205	139	376	92	93	267	62	45
16	310	246	206	376	90	91	269	62	45
17	415	242	271	385	87	90	268	63	46
18	649	231	405	390	84	88	256	64	44
19	723	230	449	385	84	87	248	64	43
20	860	223	518	368	89	88	246	58	39
21	668	150	271	376	98	99	245	50	33
22	439	88	104	388	102	107	236	44	28
23	330	82	73	406	98	107	223	44	26
24	255	86	59	414	97	108	203	48	26
25	223	88	53	420	94	107	196	56	30
26	196	88	47	424	88	101	200	62	33
27	180	102	50	428	88	102	199	66	35
28	192	152	79	427	83	96	183	60	30
29	457	157	194	409	82	91	171	58	27
30	1060	184	527	387	70	73	171	59	27
31	1460	174	686	382	55	57	---	---	---
TOTAL	24518	---	11971	13944	---	3830	7965	---	1203
YEAR	254188		94809.2						

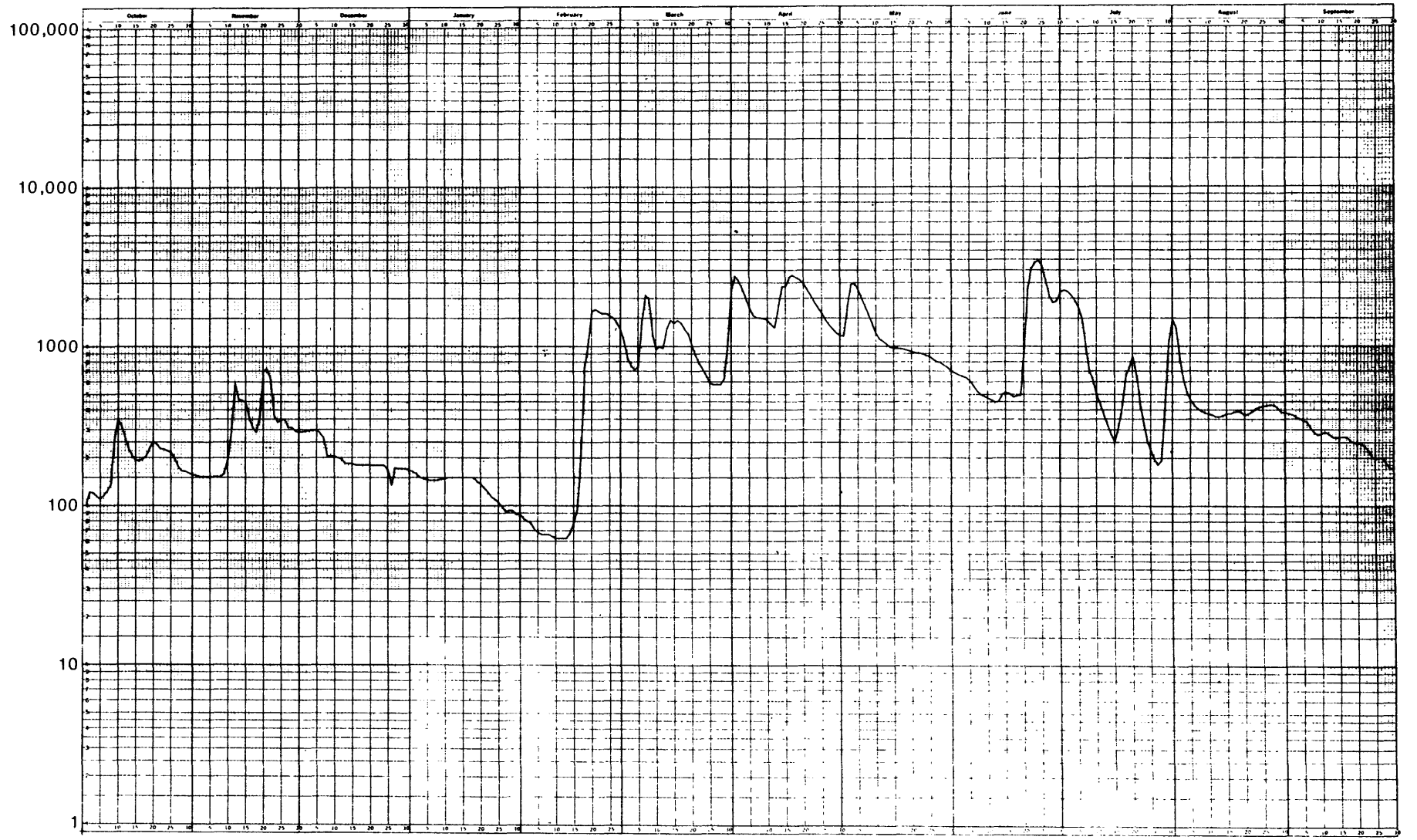

Figure 15.--Daily discharge for James River near Scotland (06478500), October 1982 to September 1983.

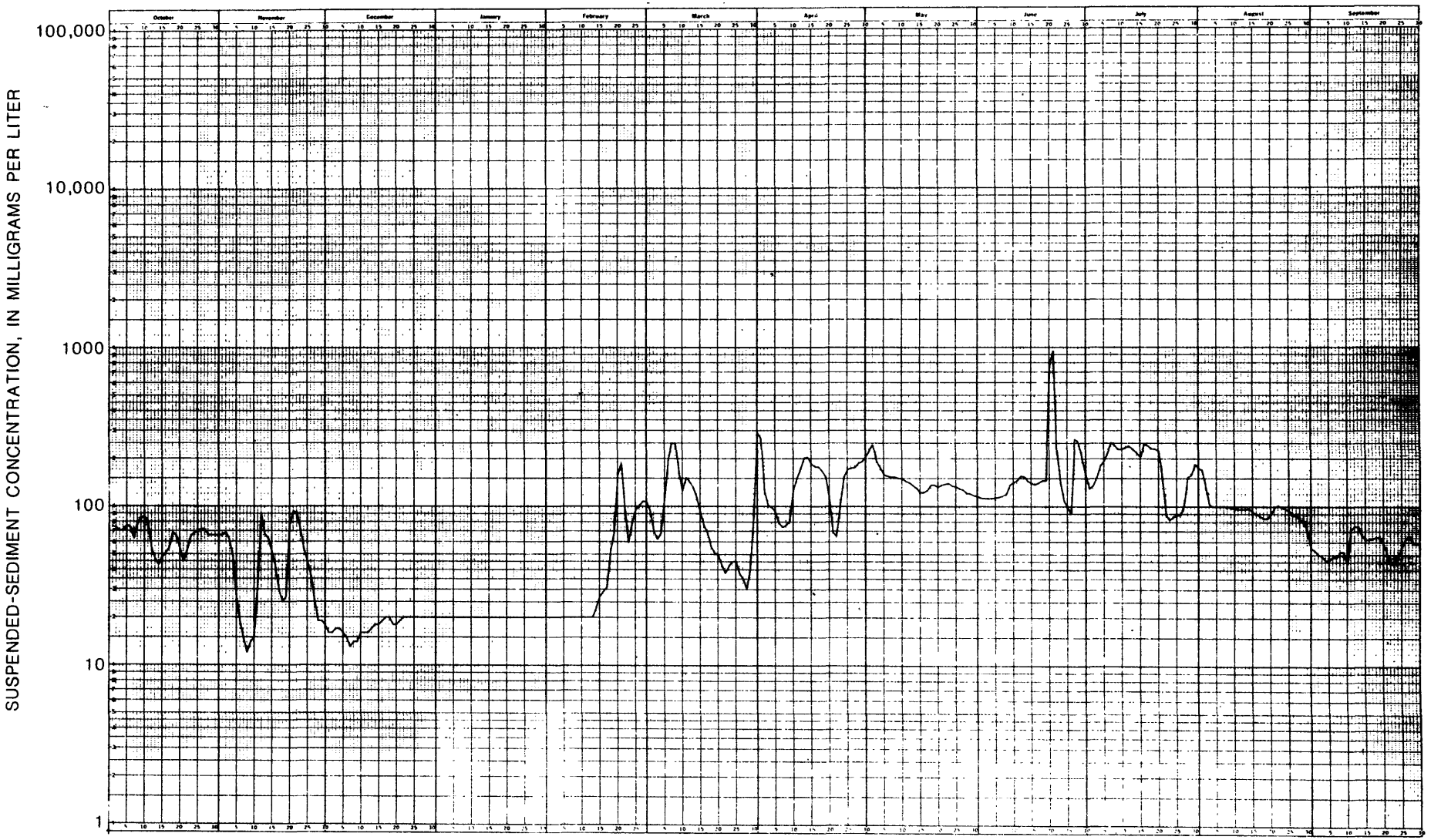

Figure 16.--Daily suspended-sediment concentration for James River near Scotland (06478500), October 1982 to September 1983.

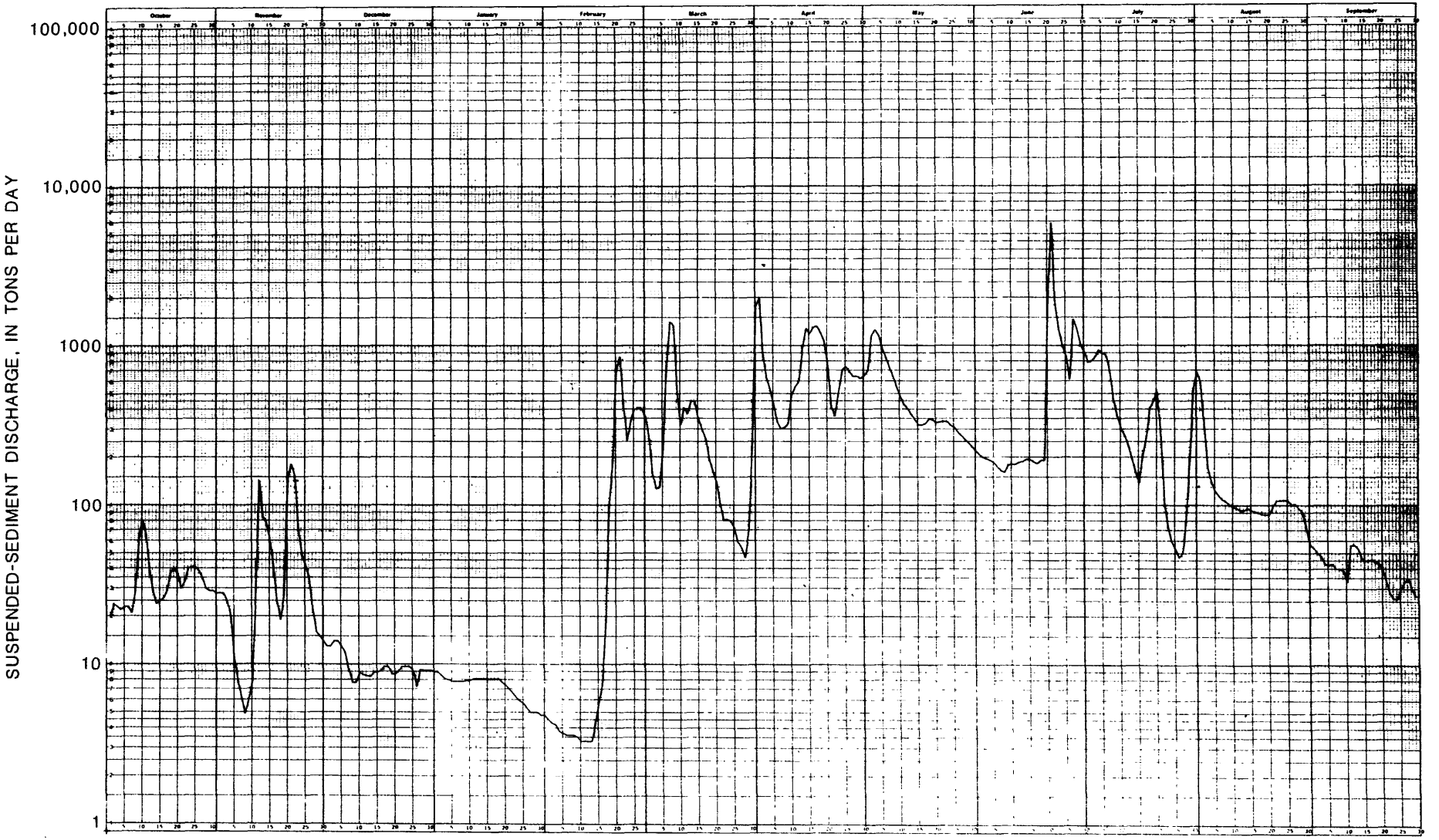

Figure 17.--Daily suspended-sediment discharge for James River near Scotland (06478500), October 1982 to September 1983.

Table 11.--Daily discharge for James River near Yankton, SD (06478513)

LOCATION.--Lat 42°59'45", long 97°22'10", in NE¼NW¼ sec.5, T.94 N., R.55 W., Yankton County, Hydrologic Unit 10160011, on left bank at downstream side of highway bridge, 3.9 mi upstream from Beaver Creek, 17.2 mi upstream from mouth, and 9 mi northeast of Yankton.

DRAINAGE AREA.--21,800 mi^2, approximately, of which about 4,790 mi^2 is probably noncontributing.

PERIOD OF RECORD.--Oct. 1, 1981, to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,153.38 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for winter period, Nov. 23 to Feb. 28, 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 mi upstream since May 1953. Occasional backwater caused by Beaver Creek. Several observations of water temperature and specific conductance were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,760 ft^3/s June 27, 1983 (gage height, 12.19 ft); minimum daily discharge, 0.78 ft^3/s Oct. 4, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,760 ft^3/s at 1415 hours, June 27 (gage height, 12.19 ft); maximum gage height, 12.61 ft Feb. 27 (backwater from ice); minimum daily discharge, 70 ft^3/s Feb. 9-13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	88	196	310	190	85	1740	2340	1240	607	2210	1200	327
2	108	191	310	185	80	1400	2540	1880	587	2220	1100	323
3	117	184	300	185	80	1140	2630	2230	572	2210	785	317
4	121	183	290	180	80	986	2530	2350	557	2160	558	307
5	113	183	290	180	80	1010	2310	2450	546	2070	457	298
6	124	187	290	170	75	1420	2090	2430	533	1860	413	293
7	119	192	290	170	75	2060	1840	2300	513	1510	386	282
8	126	192	270	170	75	2150	1650	2070	489	1110	366	272
9	180	201	250	170	70	2080	1550	1740	468	812	351	261
10	252	238	230	180	70	1690	1500	1460	461	657	345	248
11	329	271	200	180	70	1290	1430	1250	452	568	336	245
12	327	359	200	185	70	1270	1450	1120	444	509	333	251
13	299	459	200	185	70	1340	1740	1050	442	468	334	243
14	268	490	200	185	80	1410	1990	983	449	436	331	237
15	241	467	190	185	90	1560	2160	942	458	406	335	239
16	224	495	190	185	100	1580	2380	912	462	394	341	236
17	219	476	190	180	150	1550	2540	896	480	434	342	237
18	218	428	190	175	250	1510	2670	900	489	514	339	235
19	231	398	190	170	500	1400	2680	896	469	598	342	220
20	249	456	190	170	900	1270	2670	870	529	679	334	217
21	265	620	190	160	1200	1090	2610	844	1110	775	327	216
22	271	668	190	150	1500	912	2490	823	1820	686	325	218
23	264	560	180	140	1600	783	2310	797	2120	572	334	213
24	259	370	180	130	1700	702	2140	782	2280	473	347	207
25	253	420	180	120	1800	636	1950	760	2520	437	357	193
26	246	430	180	110	1850	606	1740	742	2690	413	366	184
27	237	430	180	100	1800	575	1540	721	2740	366	365	183
28	228	380	180	95	1750	566	1430	689	2600	326	362	184
29	213	320	200	90	---	607	1330	664	2340	324	358	176
30	205	310	200	85	---	951	1250	645	2210	470	347	169
31	202	---	195	85	---	1910	---	626	---	889	334	---
TOTAL	6596	10754	6825	4845	16250	39194	61480	38062	32437	27556	13150	7231
MEAN	213	358	220	156	580	1264	2049	1228	1081	889	424	241
MAX	329	668	310	190	1850	2150	2680	2450	2740	2220	1200	327
MIN	88	183	180	85	70	566	1250	626	442	324	325	169
AC-FT	13080	21330	13540	9610	32230	77740	121900	75500	64340	54660	26080	14340

CAL YR 1982 TOTAL 123580.0 MEAN 339 MAX 2400 MIN 8.0 AC-FT 245100
WTR YR 1983 TOTAL 264380.0 MEAN 724 MAX 2740 MIN 70 AC-FT 524400

Table 12.--Water-quality records, daily suspended sediment, for James River near Yankton, SD (06478513)

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE: Oct. 1, 1981 to Sept. 30, 1983 (discontinued).

REMARKS.--Records fair except those for Oct. 1 to Feb. 28, which are poor. Several observations of water temperature and specific conductance were made during the year.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 828 mg/L June 21, 1983; minimum daily mean, 30 mg/L Dec. 11, 13-18, 1981, Jan. 10-15, 1982.
SEDIMENT LOADS: Maximum daily, 2,810 tons June 1, 1982; minimum daily, 0.53 ton Oct. 4, 1981.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 828 mg/L June 21; minimum daily mean, 43 mg/L Mar. 26 and 27.
SEDIMENT LOADS: Maximum daily, 2,580 tons Mar. 31; minimum daily, 9.5 ton Feb. 9-13.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	88	70	17	196	50	26	310	290	243
2	108	80	23	191	50	26	310	290	243
3	117	90	28	184	50	25	300	280	227
4	121	100	33	183	50	25	290	260	219
5	113	100	31	183	50	25	290	280	219
6	124	110	37	187	50	25	290	280	219
7	119	120	39	192	50	26	290	280	219
8	126	130	44	192	60	31	270	270	197
9	180	140	68	201	60	33	250	260	175
10	252	150	102	238	60	39	230	250	155
11	329	140	124	271	70	51	200	230	124
12	327	120	106	359	80	78	200	230	124
13	299	110	89	459	90	112	200	230	124
14	268	100	72	490	100	132	200	230	124
15	241	90	59	467	120	151	190	230	118
16	224	80	48	495	110	147	190	230	118
17	219	70	41	476	100	129	190	220	113
18	218	60	35	428	90	104	190	220	113
19	231	70	44	398	90	97	190	220	113
20	249	80	54	456	150	185	190	220	113
21	265	90	64	620	250	418	190	220	113
22	271	80	59	668	400	721	190	220	113
23	264	70	50	560	350	529	180	190	92
24	259	70	49	370	300	300	180	190	92
25	253	70	48	420	300	340	180	190	92
26	246	70	46	430	350	406	180	190	92
27	237	70	45	430	320	372	180	190	92
28	228	60	37	380	300	308	180	190	92
29	213	60	35	320	290	251	200	190	103
30	205	60	33	310	290	243	200	190	103
31	202	60	33	---	---	---	195	190	100
TOTAL	6596	---	1593	10754	---	5355	6825	---	4384

Table 12.--Water-quality records, daily suspended sediment, for James River near Yankton, SD (06478513)--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JANUARY			FEBRUARY			MARCH	
1	190	180	92	85	60	14	1740	153	719
2	185	180	90	80	50	11	1400	152	575
3	185	180	90	80	50	11	1140	164	505
4	180	180	87	80	50	11	986	295	785
5	180	170	83	80	50	11	1010	322	878
6	170	170	78	75	50	10	1420	402	1540
7	170	170	78	75	50	10	2060	326	1810
8	170	170	78	75	50	10	2150	300	1740
9	170	170	78	70	50	9.5	2080	308	1730
10	180	170	83	70	50	9.5	1690	310	1410
11	180	170	83	70	50	9.5	1290	307	1070
12	185	170	85	70	50	9.5	1270	233	799
13	185	170	85	70	50	9.5	1340	210	760
14	185	170	85	80	50	11	1410	222	845
15	185	170	85	90	50	12	1560	201	847
16	185	170	85	100	60	16	1580	189	806
17	180	170	83	150	70	28	1550	172	720
18	175	170	80	250	80	54	1510	172	701
19	170	160	73	500	100	135	1400	165	624
20	170	150	69	900	150	364	1270	160	549
21	160	140	60	1200	200	648	1090	142	418
22	150	130	53	1500	220	891	912	85	209
23	140	120	45	1600	230	994	783	55	116
24	130	110	39	1700	250	1150	702	52	99
25	120	100	32	1800	230	1120	636	50	86
26	110	90	27	1850	210	1050	606	43	70
27	100	80	22	1800	190	923	575	43	67
28	95	70	18	1750	180	850	566	50	76
29	90	60	15	---	---	---	607	50	82
30	85	60	14	---	---	---	951	316	811
31	85	60	14	---	---	---	1910	501	2580
TOTAL	4845	---	1989	16250	---	9381.5	39194	---	24027
		APRIL			MAY			JUNE	
1	2340	335	2120	1240	201	673	607	213	349
2	2540	297	2040	1880	292	1480	587	214	339
3	2630	238	1690	2230	230	1380	572	224	346
4	2530	194	1330	2350	158	1000	557	245	368
5	2310	180	1120	2450	125	827	546	248	366
6	2090	175	988	2430	96	630	533	256	368
7	1840	172	854	2300	112	696	513	272	377
8	1650	168	748	2070	102	570	489	275	363
9	1550	166	695	1740	111	521	468	281	355
10	1500	163	660	1460	115	453	461	295	367
11	1430	146	564	1250	121	408	452	297	362
12	1450	133	521	1120	136	411	444	308	369
13	1740	116	545	1050	145	411	442	309	369
14	1990	121	650	983	147	390	449	299	362
15	2160	125	729	942	145	369	458	290	359
16	2380	134	861	912	166	409	462	334	417
17	2540	117	802	896	209	506	480	368	477
18	2670	105	757	900	207	503	489	317	419
19	2680	149	1080	896	185	448	469	290	367
20	2670	228	1640	870	194	456	529	466	666
21	2610	239	1680	844	201	458	1110	828	2480
22	2490	229	1540	823	202	449	1820	478	2350
23	2310	216	1350	797	214	461	2120	270	1550
24	2140	202	1170	762	220	465	2280	174	1070
25	1950	191	1010	760	220	451	2520	120	816
26	1740	191	897	742	221	443	2690	78	567
27	1540	183	761	721	221	430	2740	70	518
28	1430	181	699	669	211	393	2600	91	639
29	1330	172	618	664	211	378	2340	102	644
30	1250	173	584	645	218	380	2210	106	633
31	---	---	---	626	213	360	---	---	---
TOTAL	61480	---	30703	38062	---	17209	32437	---	19032

Table 12.--Water-quality records, daily suspended sediment, for James River near Yankton, SD (06478513)--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	2210	99	591	1200	191	619	327	244	215
2	2220	83	498	1100	147	437	323	243	212
3	2210	84	501	785	96	203	317	239	205
4	2160	102	595	558	78	118	307	238	197
5	2070	146	816	457	92	114	298	238	191
6	1860	157	788	413	115	128	293	242	191
7	1510	175	713	386	154	160	282	244	186
8	1110	209	626	366	166	164	272	231	170
9	812	225	493	351	160	152	261	227	160
10	657	254	451	345	163	152	248	219	147
11	568	282	432	336	161	146	245	209	136
12	509	285	392	333	148	133	251	208	141
13	468	275	347	334	144	130	243	206	135
14	436	264	311	331	144	129	237	205	131
15	406	261	286	335	144	130	239	200	129
16	394	256	272	341	154	142	236	198	126
17	434	260	305	342	167	154	237	187	120
18	514	300	416	339	185	169	235	186	118
19	598	313	505	342	184	170	220	186	110
20	679	317	581	334	173	156	217	168	98
21	775	332	695	327	186	164	216	146	85
22	686	249	461	325	204	179	218	136	80
23	572	178	275	334	205	185	213	130	75
24	473	151	193	347	250	234	207	129	72
25	437	204	241	357	278	268	193	129	67
26	413	191	213	366	288	285	184	128	64
27	366	151	149	365	274	270	183	127	63
28	326	145	128	362	268	262	184	133	66
29	324	146	126	358	262	253	176	146	69
30	470	191	242	347	262	245	169	141	64
31	889	212	509	334	256	231	---	---	---
TOTAL	27556	---	13153	13150	---	6282	7231	---	3825

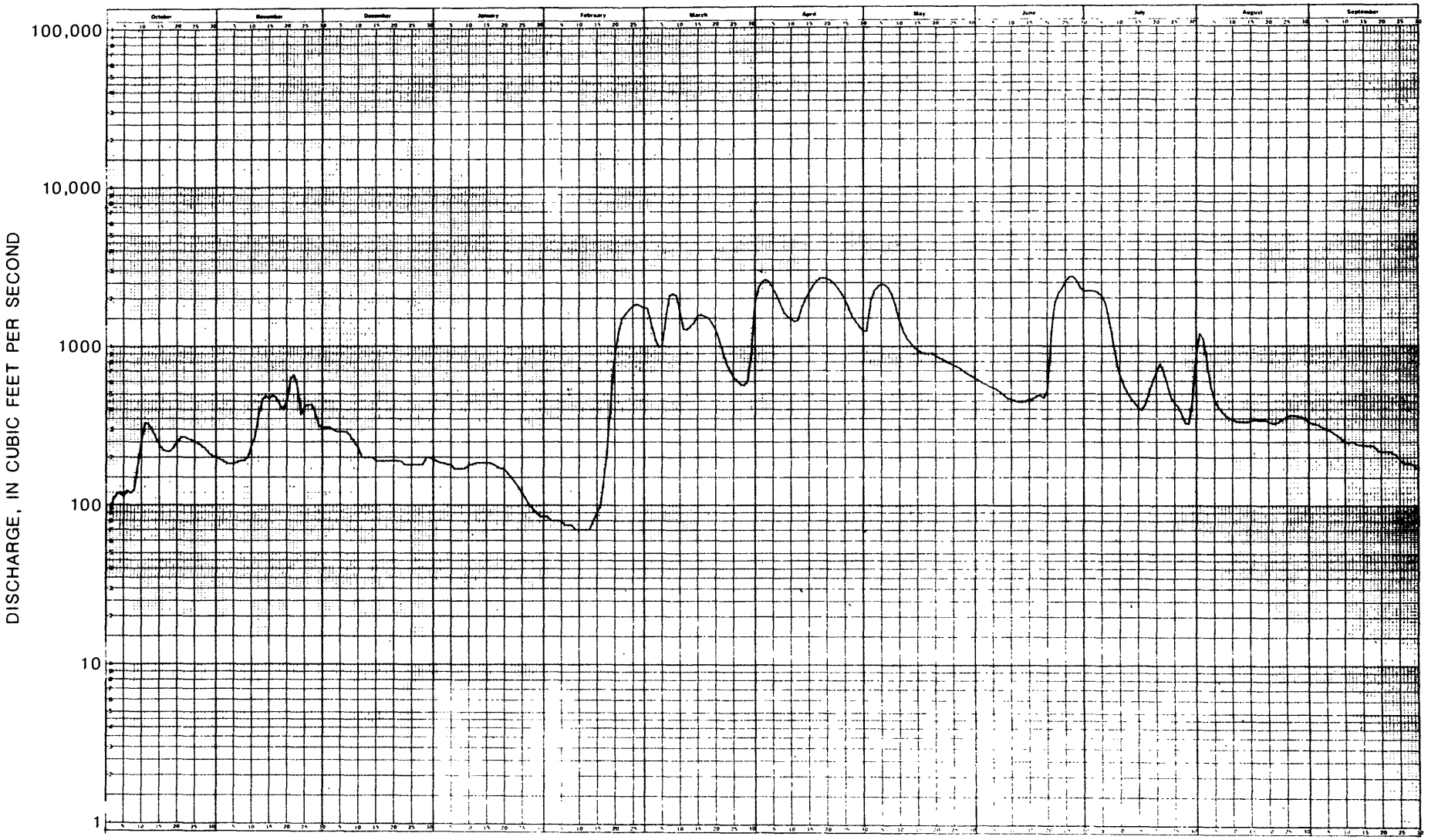

Figure 18.--Daily discharge for James River near Yankton (06478513), October 1982 to September 1983.

Figure 19.--Daily suspended-sediment concentration for James River near Yankton (06478513), October 1982 to September 1983.

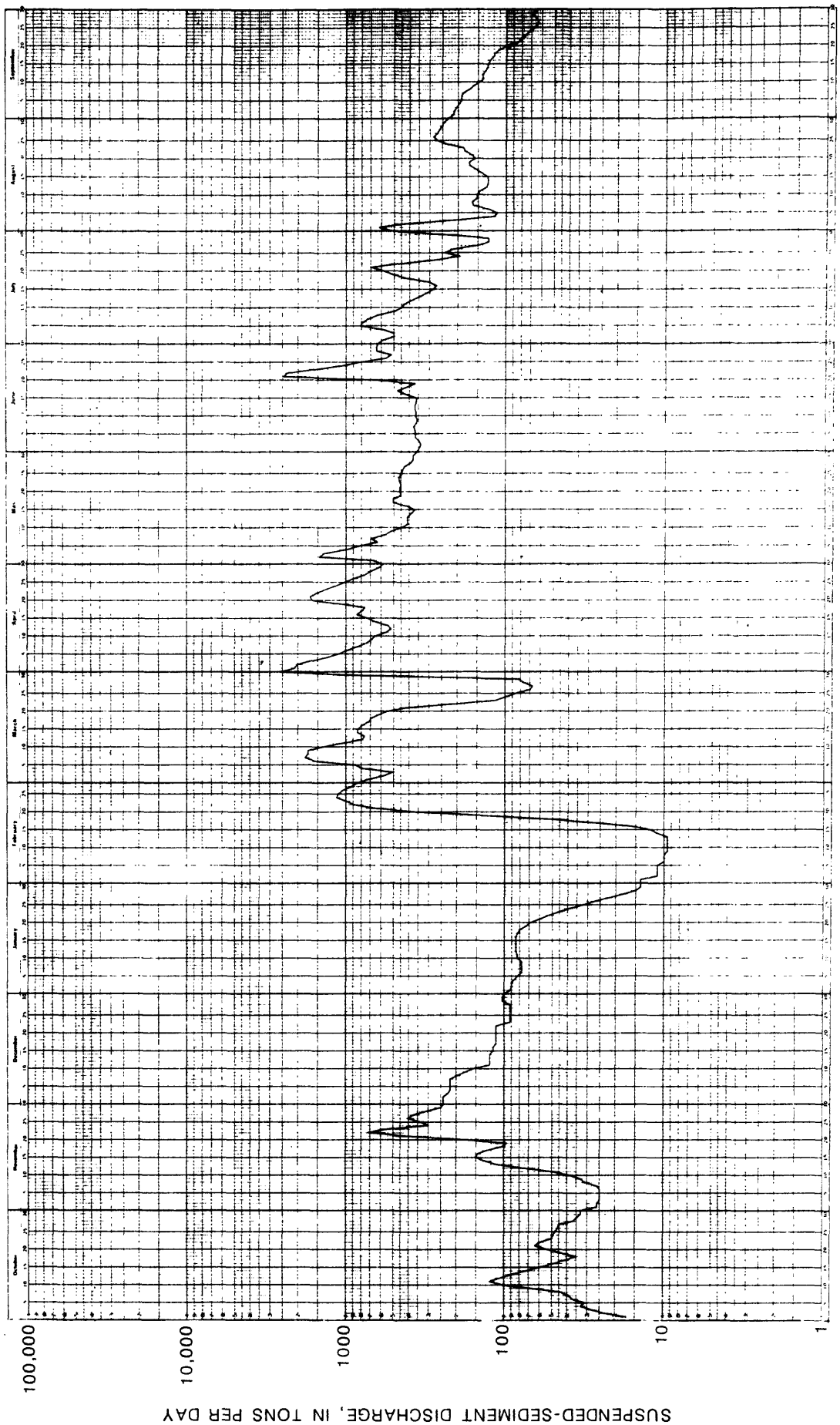

Figure 20.--Daily suspended-sediment discharge for James River near Yankton (06478513), October 1982 to September 1983.

Table 13.--Daily discharge for Beaver Creek near Yankton, SD (06478514)

LOCATION.--Lat 42°57'32", long 94°21'40", in NE¼SE¼ sec.17, T.97 N., R.55 W., Yankton County, Hydrologic Unit 10160011, on right bank 30 ft downstream from highway bridge, 6.8 mi northeast of Yankton, 8.9 mi downstream from Beaver Lake, and 1.2 mi upstream from mouth.

DRAINAGE AREA.--144 mi^2, approximately.

PERIOD OF RECORD.--Oct. 1, 1981, to Sept. 30, 1983 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 1,161.14 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair. Several observations of water temperature and specific conductance were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,110 ft^3/s May 20, 1982 (gage height, 9.67 ft); no flow for many days in 1982.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 730 ft^3/s at 1500 hours, Feb. 20 (gage height, 9.67 ft), backwater from ice; minimum daily discharge, 0.01 ft^3/s Oct. 4-7, Jan. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.07	.12	8.1	.10	.02	151	512	24	.40	14	.40	.20
2	.05	.09	8.9	.10	.03	121	328	211	.40	8.6	.40	.20
3	.02	.10	9.2	.10	.02	108	223	473	.40	6.7	1.0	.30
4	.01	.10	7.5	.10	.02	100	145	306	.30	5.4	.90	.25
5	.01	.10	7.5	.10	.02	146	100	187	.20	3.3	.80	.30
6	.01	.09	5.2	.10	.02	307	88	130	.20	2.8	.70	.30
7	.01	.06	4.0	.10	.02	439	103	145	.10	1.3	.60	.30
8	.07	.04	3.0	.10	.02	178	105	74	.10	.57	.50	.25
9	.30	.13	2.5	.10	.02	123	80	43	.05	.40	.40	.25
10	15	9.1	2.5	.10	.02	128	61	29	.05	.30	.30	.25
11	19	15	2.0	.10	.02	101	46	20	.05	.20	.20	.20
12	11	40	2.0	.07	.02	105	87	17	.04	.08	.20	.20
13	5.5	35	2.0	.09	.02	115	400	13	.04	.07	.20	.20
14	2.5	35	2.0	.08	.02	81	294	10	.03	.05	.30	.20
15	1.5	30	2.0	.08	.02	119	253	7.4	.02	.03	.20	.50
16	.77	25	1.5	.08	.03	160	396	7.0	.07	.10	.20	.40
17	.30	15	1.0	.07	.05	129	363	6.1	2.1	.08	.20	.40
18	.18	12	.90	.07	.10	128	248	8.0	8.6	.10	.20	.30
19	.81	20	.80	.07	100	118	160	10	8.1	.05	.20	.20
20	2.6	53	.70	.06	350	84	113	10	6.1	.05	.20	.20
21	.36	55	.70	.06	390	40	82	8.0	6.1	.05	.20	.20
22	.39	45	.70	.05	255	30	61	7.0	5.8	5.0	.20	.20
23	.53	30	.60	.04	290	25	49	4.5	3.8	3.0	.20	.15
24	.53	25	.50	.04	444	20	38	3.0	2.6	2.0	.20	.15
25	.52	20	.30	.03	242	15	29	2.5	1.9	1.0	.20	.15
26	.42	15	.25	.02	190	10	26	2.0	1.6	1.0	.20	.15
27	.38	11	.20	.03	208	9.0	18	1.5	8.5	1.5	.20	.15
28	.41	8.9	.20	.01	210	8.0	15	1.0	16	1.0	.20	.15
29	.45	6.6	.15	.02	---	26	13	1.0	24	1.0	.20	.15
30	.21	6.0	.10	.02	---	163	12	.50	16	.50	.20	.20
31	.15	---	.10	.02	---	555	---	.50	---	.50	.20	---
TOTAL	64.06	512.43	77.10	2.11	2679.49	3842.0	4448	1762.00	113.65	60.73	10.30	7.05
MEAN	2.07	17.1	2.49	.068	95.7	124	148	56.8	3.79	1.96	.33	.24
MAX	19	55	9.2	.10	444	555	512	473	24	14	1.0	.50
MIN	.01	.04	.10	.01	.02	8.0	12	.50	.02	.03	.20	.15
AC-FT	127	1020	153	4.2	5310	7620	8820	3490	225	120	20	14

CAL YR 1982 TOTAL 4982.27 MEAN 13.7 MAX 703 MIN .00 AC-FT 9880
WTR YR 1983 TOTAL 13578.92 MEAN 37.2 MAX 555 MIN .01 AC-FT 26930

Table 14.--Water-quality records, daily suspended sediment, for Beaver Creek near Yankton, SD (06478514)

PERIOD OF DAILY RECORD.--
SUSPENDED SEDIMENT DISCHARGE.--Oct. 1, 1981, to Sept. 30, 1983 (discontinued).

REMARKS.--Records poor.

EXTREMES FOR PERIOD OF DAILY RECORD.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,100 mg/L May 21, 1982; minimum daily mean, 0 mg/L on many days in 1982.
SEDIMENT LOADS: Maximum daily, 3,990 tons May 21, 1982; minimum daily, 0 ton on many days in 1982 and 1982.

EXTREMES FOR CURRENT YEAR.--
SEDIMENT CONCENTRATIONS: Maximum daily mean, 2,000 mg/L Mar. 29; minimum daily mean, 10 mg/L on many days.
SEDIMENT LOADS: Maximum daily, 2,100 tons Mar. 31; minimum daily, 0 ton on many days.

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		OCTOBER			NOVEMBER			DECEMBER	
1	.07	10	.00	.12	10	.00	8.1	40	.87
2	.05	10	.00	.09	10	.00	8.9	50	1.2
3	.02	10	.00	.10	10	.00	9.2	60	1.5
4	.01	10	.00	.10	10	.00	7.5	40	.81
5	.01	10	.00	.10	10	.00	7.5	30	.61
6	.01	10	.00	.09	10	.00	5.2	20	.28
7	.01	10	.00	.06	10	.00	4.0	20	.22
8	.07	10	.00	.04	10	.00	3.0	15	.12
9	.30	20	.02	.13	10	.00	2.5	15	.10
10	15	50	2.0	9.1	10	.25	2.5	15	.10
11	19	200	10	15	100	4.1	2.0	10	.05
12	11	140	4.2	40	400	43	2.0	10	.05
13	5.5	110	1.6	35	300	28	2.0	10	.05
14	2.5	45	.30	35	250	24	2.0	10	.05
15	1.5	30	.12	30	200	16	2.0	10	.05
16	.77	20	.04	25	150	10	1.5	10	.04
17	.30	10	.00	15	130	5.3	1.0	10	.03
18	.18	10	.00	12	200	6.5	.90	10	.02
19	.81	10	.02	20	250	13	.80	10	.02
20	2.6	50	.35	53	500	72	.70	10	.02
21	.36	30	.03	55	450	67	.70	10	.02
22	.39	30	.03	45	300	36	.70	10	.02
23	.53	40	.06	30	200	16	.60	10	.02
24	.53	30	.04	25	150	10	.50	10	.01
25	.52	25	.04	20	100	5.4	.30	10	.00
26	.42	20	.02	15	50	2.0	.25	10	.00
27	.38	20	.02	11	40	1.2	.20	10	.00
28	.41	25	.03	8.9	35	.84	.20	10	.00
29	.45	15	.02	6.6	30	.53	.15	10	.00
30	.21	10	.00	6.0	30	.49	.10	10	.00
31	.15	10	.00	---	---	---	.10	10	.00
TOTAL	64.06	---	18.94	512.43	---	361.61	77.10	---	6.26

Table 14.--Water-quality records, daily suspended sediment, for Beaver Creek near Yankton, SD (06478514)--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JANUARY			FEBRUARY			MARCH	
1	.10	10	.00	.02	10	.00	151	340	139
2	.10	10	.00	.03	10	.00	121	300	98
3	.10	10	.00	.02	10	.00	108	250	73
4	.10	10	.00	.02	10	.00	100	200	54
5	.10	10	.00	.02	10	.00	146	300	118
6	.10	10	.00	.02	10	.00	307	500	414
7	.10	10	.00	.02	10	.00	439	1000	1190
8	.10	10	.00	.02	10	.00	178	800	384
9	.10	10	.00	.02	10	.00	123	460	153
10	.10	10	.00	.02	10	.00	128	400	138
11	.10	10	.00	.02	10	.00	101	300	82
12	.07	10	.00	.02	10	.00	105	350	99
13	.09	10	.00	.02	10	.00	115	300	93
14	.08	10	.00	.02	10	.00	81	250	55
15	.08	10	.00	.02	10	.00	119	350	112
16	.08	10	.00	.03	10	.00	160	500	216
17	.07	10	.00	.05	10	.00	129	400	139
18	.07	10	.00	.10	10	.00	128	400	138
19	.07	10	.00	100	200	54	118	350	112
20	.06	10	.00	350	400	378	84	350	79
21	.06	10	.00	390	500	526	40	300	32
22	.05	10	.00	255	400	275	30	300	24
23	.04	10	.00	290	500	391	25	300	20
24	.04	10	.00	444	600	719	20	250	13
25	.03	10	.00	242	800	523	15	250	10
26	.02	10	.00	190	350	180	10	250	6.8
27	.03	10	.00	208	400	225	9.0	250	6.1
28	.01	10	.00	210	450	255	8.0	250	5.4
29	.02	10	.00	---	---	---	26	2000	140
30	.02	10	.00	---	---	---	163	1700	748
31	.02	10	.00	---	---	---	555	1400	2100
TOTAL	2.11	---	0.00	2679.49	---	3526.00	3842.0	---	6991.3
		APRIL			MAY			JUNE	
1	512	1300	1800	24	130	8.4	.40	10	.01
2	328	1200	1060	211	300	171	.40	10	.01
3	223	1100	662	473	500	639	.40	10	.01
4	145	900	352	306	700	578	.30	10	.00
5	100	800	216	187	500	252	.20	10	.00
6	88	800	190	130	300	105	.20	10	.00
7	103	900	250	145	300	117	.10	10	.00
8	105	1000	283	74	200	40	.10	10	.00
9	80	700	151	43	120	14	.05	10	.00
10	61	500	82	29	100	7.8	.05	10	.00
11	46	400	50	20	80	4.3	.05	10	.00
12	87	900	211	17	60	2.8	.04	10	.00
13	400	1500	1620	13	50	1.6	.04	10	.00
14	294	1200	953	10	45	1.2	.03	10	.00
15	253	1000	683	7.4	40	.60	.02	10	.00
16	396	1200	1280	7.0	35	.66	.07	10	.00
17	363	950	931	6.1	30	.49	2.1	60	.34
18	248	400	268	8.0	80	1.7	8.6	300	7.0
19	160	200	86	10	100	2.7	8.1	250	5.5
20	113	150	46	10	150	4.1	6.1	230	3.8
21	82	100	22	8.0	120	2.6	6.1	200	3.3
22	61	90	15	7.0	90	1.7	5.8	170	2.7
23	49	80	11	4.5	70	.85	3.8	150	1.5
24	38	70	7.2	3.0	60	.49	2.6	130	.91
25	29	60	4.7	2.5	45	.30	1.9	110	.56
26	26	50	3.5	2.0	35	.19	1.6	100	.43
27	18	40	1.9	1.5	25	.10	8.5	120	2.8
28	15	30	1.2	1.0	20	.05	16	140	6.0
29	13	25	.88	1.0	15	.04	24	200	13
30	12	25	.81	.50	10	.01	16	150	6.5
31	---	---	---	.50	10	.01	---	---	---
TOTAL	4448	---	11242.19	1762.00	---	1959.09	113.65	---	54.37

Table 14.--Water-quality records, daily suspended sediment, for Beaver Creek near Yankton, SD (06478514)--Continued

SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY), WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983

DAY	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)	MEAN DISCHARGE (CFS)	MEAN CONCEN-TRATION (MG/L)	SEDIMENT DISCHARGE (TONS/DAY)
		JULY			AUGUST			SEPTEMBER	
1	14	130	4.9	.40	15	.02	.20	10	.00
2	8.6	110	2.6	.40	10	.01	.20	10	.00
3	6.7	90	1.6	1.0	20	.05	.30	15	.01
4	5.4	60	.87	.90	15	.04	.25	15	.01
5	3.3	40	.36	.80	15	.03	.30	15	.01
6	2.8	35	.26	.70	10	.02	.30	15	.01
7	1.3	30	.11	.60	10	.02	.30	15	.01
8	.57	25	.04	.50	10	.01	.25	15	.01
9	.40	20	.02	.40	10	.01	.25	15	.01
10	.30	15	.01	.30	10	.00	.25	15	.01
11	.20	10	.00	.20	10	.00	.20	10	.00
12	.08	10	.00	.20	10	.00	.20	10	.00
13	.07	10	.00	.20	10	.00	.20	10	.00
14	.05	10	.00	.30	15	.01	.20	10	.00
15	.03	10	.00	.20	10	.00	.50	20	.03
16	.10	10	.00	.20	10	.00	.40	15	.02
17	.08	10	.00	.20	10	.00	.40	15	.02
18	.10	10	.00	.20	10	.00	.30	10	.00
19	.05	10	.00	.20	10	.00	.20	10	.00
20	.05	10	.00	.20	10	.00	.20	10	.00
21	.05	10	.00	.20	10	.00	.20	10	.00
22	5.0	100	1.4	.20	10	.00	.20	10	.00
23	3.0	50	.41	.20	10	.00	.15	10	.00
24	2.0	45	.24	.20	10	.00	.15	10	.00
25	1.0	40	.11	.20	10	.00	.15	10	.00
26	1.0	35	.09	.20	10	.00	.15	10	.00
27	1.5	35	.14	.20	10	.00	.15	10	.00
28	1.0	30	.08	.20	10	.00	.15	10	.00
29	1.0	25	.07	.20	10	.00	.15	10	.00
30	.50	25	.03	.20	10	.00	.20	10	.00
31	.50	20	.03	.20	10	.00	---	---	---
TOTAL	60.73	---	13.37	10.30	---	0.22	7.05	---	0.15

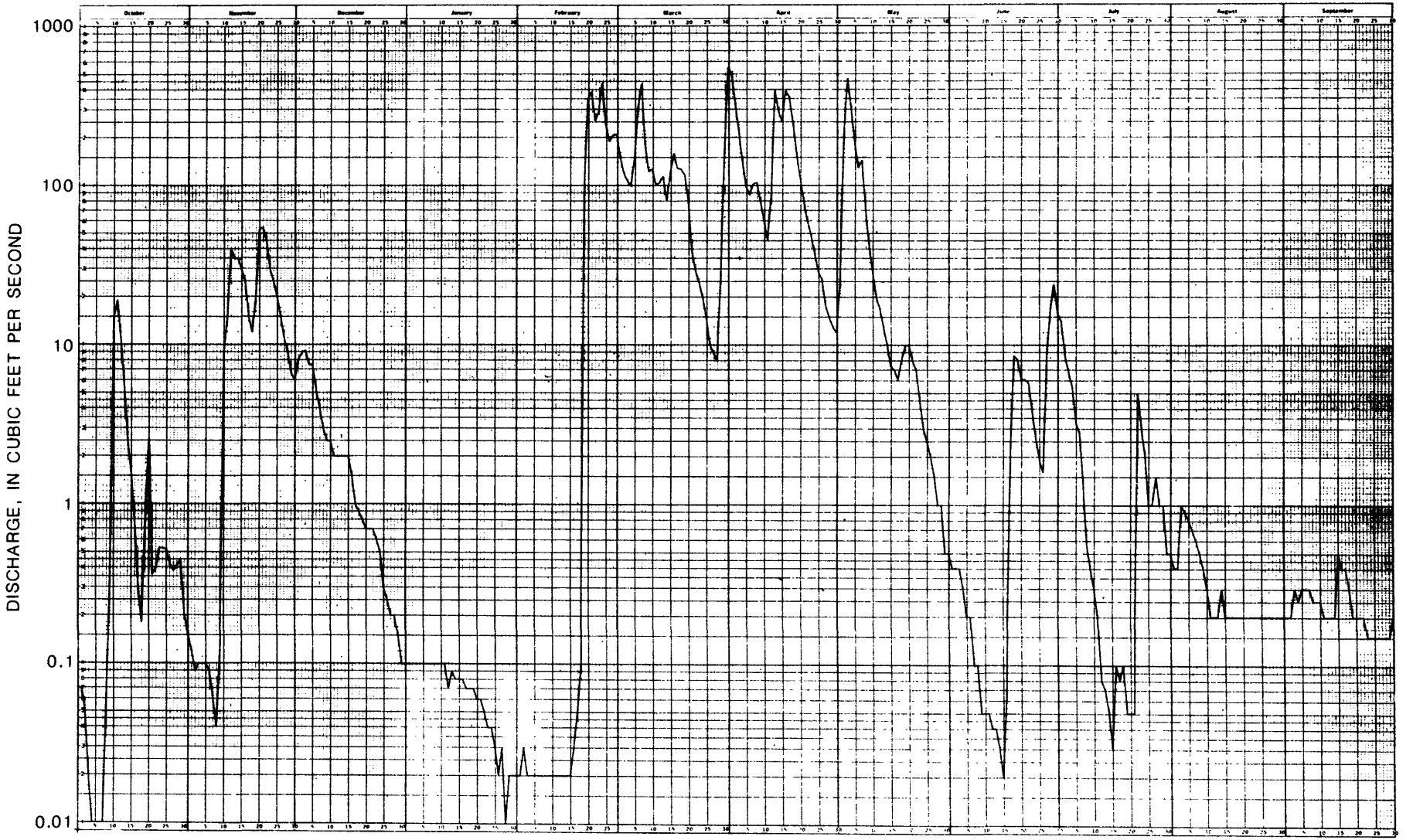

Figure 21.--Daily discharge for Beaver Creek near Yankton (06478514), October 1982 to September 1983.

Figure 22.--Daily suspended-sediment concentration for Beaver Creek near Yankton (06478514), October 1982 to September 1983.

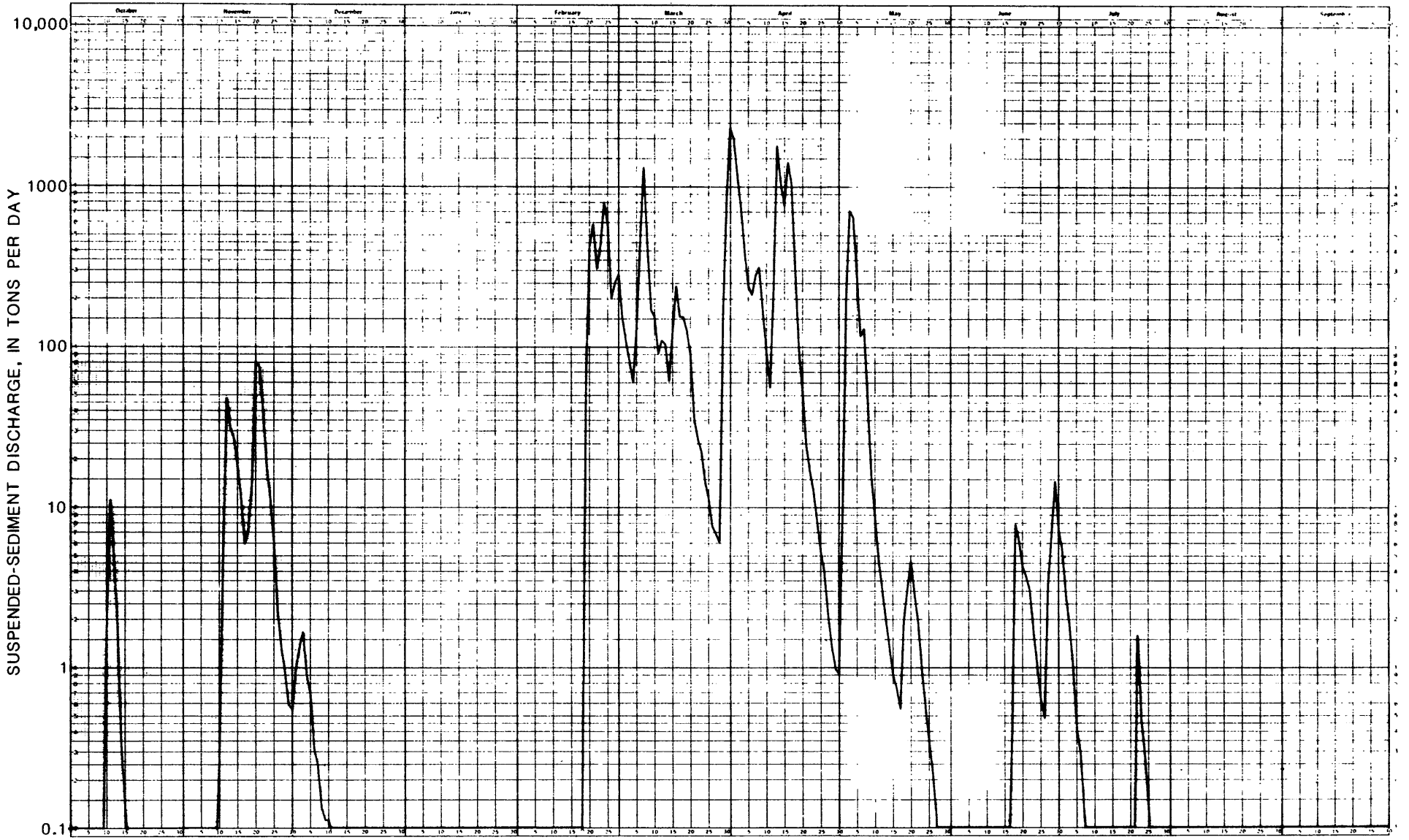

Figure 23.--Daily suspended-sediment discharge for Beaver Creek near Yankton (06478514), October 1982 to September 1983.

Table 15.--Selected basin and suspended-sediment discharge characteristics

Gaging station	Water year	Contributing drainage area (square miles)	River-bed slope (feet per mile)	Water discharge (cubic feet per second - days)	Suspended-sediment concentration (milligrams per liter)	Suspended-sediment discharge (tons per day)
James River near Forestburg	1982	13,810	0.33	78,800	71	15,000
	1983			99,500	110	30,200
Enemy Creek near Mitchell	1982	181	--	390	130	140
	1983			7,080	48	910
Plum Creek near Milltown	1982	35.4	--	270	420	310
	1983			3,670	83	820
Lonetree Creek at Olivet	1982	112	--	1,090	120	340
	1983			12,200	170	5,600
James River near Scotland	1982	16,760	.34	93,900	180	45,700
	1983			254,200	140	94,800
James River near Yankton	1982	17,010	.57	100,200	210	58,000
	1983			264,400	190	135,900
Beaver Creek near Yankton	1982	144	--	4,330	1,090	12,800
	1983			13,600	660	24,200