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UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
WASHINGTON 25, D. C.

DUPLICATE

FLOOD STAGES AND DISCHARGES FOR SMALL STREAMS
IN NORTH DAKOTA

1969-10
1969-10
PROGRESS REPORT TO THE
NORTH DAKOTA STATE HIGHWAY DEPARTMENT
for the period
July 1, 1954 to September 30, 1969

By
Orlo A. Crosby

For Administrative Use Only

Bismarck, North Dakota
November 1969

~~WATER RESOURCES RESEARCH INSTITUTE~~
~~North Dakota State University~~
~~FARGO, NORTH DAKOTA 58103~~

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FLOOD STAGES AND DISCHARGES FOR SMALL STREAMS
IN NORTH DAKOTA

Progress Report to the
North Dakota State Highway Department
for the period of
July 1, 1954, to September 30, 1969

INTRODUCTION

A cooperative program between the North Dakota State Highway Department and the U.S. Geological Survey for the collection of data pertaining to the magnitude and frequency of floods from streams of small drainage areas was begun July 1, 1954. The program is financed under a cooperative agreement whereby the costs are shared equally by the Geological Survey and the State Highway Department.

The program is conducted under the general supervision of Harlan M. Erskine, district chief of the North Dakota district.

This report is prepared to inform the cooperator and other interested parties of the status of the program. The activities and progress are summarized and pertinent basic data collected to date are presented. Progress through September 30, 1966 was included in previous progress reports. This report contains tabulations of the peak stages and discharge data by water years. No attempt was made to analyze the data in regard to frequency and magnitude.

PURPOSE OF THE PROGRAM

The purpose of the program is to obtain basic hydrologic data to supplement the water-supply paper series "Magnitude and Frequency of Floods in the United States - Part 5. Hudson Bay and Upper Mississippi River Basins, Part 6-A. Missouri River Basin above Sioux City, Iowa." The data available at the time these reports were prepared were inadequate to define the magnitude and frequency of floods from drainage areas less than 20 square miles, and in some instances, less than 100 square miles.

Another report on magnitude and frequency of floods will be prepared in the future when sufficient flood data for small drainage basins are available to give reliable results. This report also will utilize the peak-flow information collected under other programs of the Geological Survey. An abnormal number of years of low runoff and low-magnitude peak flows has necessitated extending the data collections program beyond the period originally contemplated before undertaking the analytical report.

PROGRAM OPERATION

There are 80 peak-flow stations in North Dakota. During the period of operation, 8 other stations had to be abandoned owing to channel rerouting, construction of stockponds or too much natural storage. Two additional stations were converted to continuous recording stations under another program, and 3 of the present stations were

converted from a continuous station to a peak-flow station. New stations have been added periodically to replace abandoned stations and to obtain better coverage.

These stations are located in such a manner as to provide information on representative areas ranging from less than 1 square mile to several hundred square miles and to give representative areal coverage. Sixteen of the stations have drainage areas of less than 1 square mile, 29 stations from 1 to 10 square miles, 23 stations from 10 to 50 square miles, and 12 stations more than 50 square miles.

A supplementary research program in cooperation with the North Dakota State Highway Department and the U.S. Bureau of Public Roads was begun in the water year 1965 in an attempt to define the effect of certain drainage basin characteristics on flood flow. Eleven stations are maintained in selected areas in southwestern, central, and northeastern North Dakota. Several adjacent basins having similar topographic and cultural characteristics but extreme variations in shape are being studied in each area. Recording gages have been installed to define discharge hydrographs for periods of runoff. Comprehensive records of precipitation are being obtained in the drainage basins. The program is planned to operate on a continuing basis until 1973 or until such time that the accumulated data are sufficient to permit preparation of a meaningful analysis. The stations under this program are identified in the report under the "REMARKS" paragraph.

Data collected through the regular stream-gaging programs of the Geological Survey are also available to supplement these data, particularly for the larger areas. Records from the regular program are published in the series of publications "Surface Water Supply of the United States" prior to 1966, and in the annual series "Surface Water Records of North Dakota" beginning with 1966. Figure 1 shows the locations of the stations for which data are tabulated in this report.

As time and funds permit, information on topography and other characteristics of the basins is being obtained. The peak discharges and basin characteristics are being stored on magnetic tape for use in regression analysis in the preparation of an analytical report.

Investigations are made of outstanding small-area floods, regardless of whether or not they are in drainage basins covered by the station network, to enhance the supply of peak-flow information. Transit-stadia surveys for indirect measurements of peak flow are made where warranted. The results of 93 indirect measurements utilizing such techniques are contained in this report. Of these, 48 were made at crest-stage or basin-characteristics study station sites, 5 at regular gaging station sites, and 40 at miscellaneous sites. Those made at miscellaneous sites are listed in table 1.

An open-file report on the flood of June 24-25, 1966 in southwest-central North Dakota includes rainfall, frequency, and discharge data. The discharge data for that flood are included in this report.

Calibration of the stage-discharge relation through the low-to medium-flow range has been accomplished at most of the stations. Difficulty has been experienced at some stations owing to the low-magnitude peak runoff and poor immediate accessibility.

PRESENTATION OF DATA

The section of this report on gaging-station records includes all stations operated by the Geological Survey with a contributing drainage area of less than 500 square miles.

The manuscript includes the permanent station number and name, location of gage, drainage area, period of records available, type of gage, bankfull stage, topographic characteristics where they have been determined, and a list of the annual maximum discharges with the corresponding gage height. The instantaneous maximum is listed unless otherwise noted.

The drainage areas listed are the contributing areas unless otherwise noted. These have not been computed satisfactorily as yet for a few of the stations.

The records available include all years since the stations were established.

Sea level datum are those of 1929.

Bankfull stage is that stage at which the stream begins to flow overbank or recedes from the flood-plain overflow.

Much information is yet to be obtained on the topographic characteristics. The characteristics being determined are defined as follows:

Length of main stream: The length of the longest watercourse, in miles, as measured with a map measure.

Slope of main stream: Average slope of lower 0.8 of the main stream.

Slope of main stream and tributaries: Average of the main stream slope and the tributary profiles, including only tributaries (and upper main stream) that drain 10 percent or more of the total area.

Basin slope: Average slope of the land from the one-tenth points on the perimeter of the basin to the nearest defined watercourse. This method is used in lieu of the contour intersection-line method owing to the lack of topographic map coverage.

Length/width basin: Length of main stream squared divided by the drainage area in square miles.

Stream density: Combined length of all the defined stream watercourses divided by drainage area.

Percentage of basin under cultivation: Cultivated area in square miles, divided by the total drainage area and multiplied by 100. The area of the portion of the basin under cultivation was estimated on the basis of field inspection.

Where possible, the latest Geological Survey topographic maps were used to obtain the foregoing information. In the absence of topographic map coverage, the State Highway planning maps were used and elevations were obtained by barometric leveling. Transit-stadia surveys were made on small basins.

All known discharges are listed in the table on annual maximum data. In many instances, the tables are not complete. The use of the term "unknown" indicates the data will probably never be available. The use of the term "not determined" indicates the data may be obtained at a later date (usually a situation where the stage-discharge relation is not yet defined). Revisions of peak discharges may be necessary in some cases as further information is obtained. The data in this report supersede that published in the previous progress report.

RED RIVER OF THE NORTH BASIN

5-0516. WILD RICE RIVER NEAR RUTLAND, N. DAK.

9

LOCATION.--Lat 46°01'20", long 97°30'40", in SE¼SE¼ sec.36, T.130 N., R.55 W., Sargent County, on right bank 1,000 ft upstream from bridge on county highway, 2 miles south of Rutland and 10 miles upstream from Lake Tewaukon.

DRAINAGE AREA.--546 sq mi, approximately, of which about 251 sq mi is probably noncontributing.

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

GAGE.--Water-stage recorder. Datum of gage is 1197.73 ft above mean sea level. Prior to November 18, 1959, nonrecording gage at same site and datum.

BANKFULL STAGE.--5 ft.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 49 miles; length/width basin, 4.07; stream density, 0.5 mile per square mile. (Map scale, 1:24,000).

REMARKS.--Station operated as part of the Department of the Interior program for the development of the Missouri River basin.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1960	Apr. 15, 1960	4.80	102
1961	Apr. 6, 1961	2.28	2.5
1962	July 6, 1962	5.69	135
1963	Apr. 4, 1963	4.19	68
1964	Apr. 25, 1964	3.52	46
1965	Apr. 13, 1965	4.80	173
1966	Mar. 15, 1966	^a 7.12	660
1967	June 15, 1967	5.39	257
1968	Apr. 7, 1968	3.86	91
1969	Apr. 8, 1969	^a 8.77	1,270

a Backwater

5-0518. GRASS LAKE TRIBUTARY NEAR LIDGERWOOD, N. DAK.

LOCATION.--Lat 46°04'45", long 97°11'40", at west line sec.15, T.130 N., R.52 W., Richland County, at culvert on county highway just off State Highway 11, 2 miles west of Lidgerwood.

DRAINAGE AREA.--0.61 sq mi.

PERIOD OF RECORD.--November 1957 to current year.

GAGE.--Crest-stage gage.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1958	May 12, 1958	1.59	2.1
1959	June 1, 1959	2.06	7.5
1960	Apr. 5, 1960	1.13	.1
1961	Aug.-Sept. 1961	1.28	.2
1962	June 16-17, 1962	3.03	22
1963	June-July 1963	1.74	3.8
1964	May-June 1964	2.05	7.5
1965	July-Aug. 1965	2.45	12
1966	1966	2.65	15
1967	June 14, 1967	4.07	30
1968	June 1968	1.53	2.0
1969	Apr. 9, 1969	2.51	12

5-0519. WILD RICE RIVER TRIBUTARY NEAR MANTADOR, N. DAK. 11

LOCATION.--Lat 46°10'15", long 97°04'15", at east line sec.9, T.131 N., R.51 W., Richland County, at bridge on county highway, 4.5 miles west of Mantador.

DRAINAGE AREA.--6 sq mi, approximately.

PERIOD OF RECORD.--November 1957 to current year.

GAGE.--Crest-stage gage.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1958	May 1958	3.20	2
1959	May 26, 1959	2.4	3
1960	April 1960	3.2	2
1961	March 1961	--	1
1962	May 1962	--	3
1963	Mar. 23, 1963	^a 3.63	1.5
1964	Mar. 13, 1964	^a 4.40	2.9
1965	Apr. 3, 1965	^a 4.47	4.1
1966	Mar. 13, 1966	^a 4.17	9.5
1967	Apr.-May 1967	4.43	7
1968	Mar. 17, 1968	--	1.0
1969	Apr. 10, 1969	4.87	64

a Backwater.

LOCATION.--Lat 46°18'50", long 96°44'05", in SE¼SE¼ sec.20, T.133 N., R.48 W., Richland County, at bridge on former U.S. Highway 81, 0.5 mile north of Dwight and 7 miles upstream from mouth.

DRAINAGE AREA.--294 sq mi, approximately, of which 16 sq mi is probably noncontributing.

PERIOD OF RECORD.--March 1944 to current year.

GAGE.--Nonrecording.

BANKFULL STAGE.--15 ft.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 23 miles; slope of main stream, 4.0 ft per mile; slope of main stream and tributaries, 5.6 ft per mile; basin slope, 6 ft per mile; length/width basin, 1.97; stream density, 0.24 mile per square mile. (Map scale, 1:125,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1944	July 5, 1944	6.98	460
1945	Mar. 19, 1945	9.5	868
1946	Mar. 21, 1946	12.33	1,360
1947	Apr. 12, 1947	11.34	1,160
1948			unknown
1949	Mar. 31, 1949	5.8	270
1950	May 9, 1950	9.9	893
1951	Apr. 4, 1951	13.26	1,700
1952	Apr. 8, 1952	16.31	3,670
1953	May 30, 1953	8.53	578
1954	June 11, 1954	4.39	111
1955	Mar. 31, 1955	6.58	341
1956	Apr. 11, 1956	5.88	237
1957	Apr. 20, 1957	4.70	134
1958	Apr. 7, 1958	3.22	50
1959	Mar. 18, 1959	^a 2.62	2
1960	Apr. 7, 1960	4.08	78
1961	Mar. 5, 1961	^a 3.26	10
1962	May 24, 1962	12.60	1,300
1963	June 12, 1963	6.22	295
1964	June 19, 1964	4.27	120
1965	Apr. 11, 1965	12.08	1,080
1966	Mar. 17, 1966	13.21	1,300
1967	June 14, 1967	12.93	1,250
1968	Apr. 28, 1968	2.61	20
1969	Apr. 10, 1969	17.82	9,000

a Backwater.

LOCATION.--Lat 47°42'10", long 99°56'55", in SW¼SE¼ sec.24, T.149 N., R.73 W., Wells County, on right bank just downstream from county highway, 2 miles upstream from unnamed tributary, 4.5 miles south of Harvey.

DRAINAGE AREA.--424 sq mi, approximately, of which 273 sq mi is probably noncontributing.

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

GAGE.--Water-stage recorder. Datum of gage is 1,547.30 ft above mean sea level.

BANKFULL STAGE.--8 ft.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 40 miles; slope of main stream, 3.2 ft per mile; slope of main stream and tributaries, 13 ft per mile; basin slope, 70 ft per mile; length/width basin, 10.6; stream density, 0.7 mile per square mile. (Map scale, 1:62,500).

REMARKS.--Station operated as part of the Department of the Interior program for the development of the Missouri River basin.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1956	Apr. 11, 1956	8.92	224
1957	Mar. 23, 1957	^a 8.14	26
1958	June 30, 1958	7.26	58
1959	Mar. 28, 1959	^a 5.70	15
1960	Mar. 27, 1960	^a 8.94	209
1961	Apr. 8, 1961	5.16	14
1962	Mar. 24, 1962	^a 8.51	110
1963	June 8, 1963	7.32	65
1964	Apr. 1, 1964	^a 8.18	54
1965	Apr. 9, 1965	^a 8.43	95
1966	Mar. 15, 1966	9.21	410
1967	Mar. 20, 1967	9.94	^a 300
1968	Mar. 7, 1968	7.59	62
1969	Apr. 11, 1969	9.45	370

a Backwater.

LOCATION.--Lat 47°47'25", long 99°53'25", in SE¼SW¼ sec.21, T.150 N., R.72 W., Wells County, on left bank 90 ft north of Harvey Water Works, 0.4 mile upstream from small tributary, 2.2 miles northeast of Harvey.

DRAINAGE AREA.--533 sq mi, approximately, of which 361 sq mi is probably noncontributing.

PERIOD OF RECORD.--1943, October 1945 to September 1956.

GAGE.--Nonrecording gage. Datum of gage is 1,520.10 ft above mean sea level. Prior to June 11, 1946, nonrecording gage at site 3 miles upstream at different datum.

BANKFULL STAGE.--5.5 ft.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 49 miles; slope of main stream, 3.5 ft per mile; slope of main stream and tributaries, 12 ft per mile; basin slope, 70 ft per mile; length/width basin, 14.0; stream density, 0.7 mile per square mile. (Map scale, 1:62,500).

REMARKS.--Station operated as part of the Department of the Interior program for the development of the Missouri River basin.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1943	March 1943	3.2	580
1946	Mar. 21, 1946	2.26	132
1947	Mar. 23, 1947	^a 5.44	200
1948	Apr. 18, 1948	6.45	1,220
1949	Apr. 7, 1949	6.20	846
1950	Apr. 18, 1950	6.62	1,430
1951	Apr. 7, 1951	^a 5.85	340
1952	Apr. 7, 1952	5.23	258
1953	June 30, 1953	3.60	60
1954	June 17, 1954	5.57	351
1955	Mar. 31, 1955	^a 4.76	120
1956	Apr. 10, 1956	5.64	316

a Backwater.

LOCATION.--Lat 47°57'30", long 99°34'53", on north line sec.11, T.151 N., R.70 W., Benson County, at culvert on county highway, 3.5 miles southwest of Maddock.

DRAINAGE AREA.--140 sq mi, approximately, of which 50 sq mi is probably noncontributing.

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

GAGE.--Crest-stage gage. Prior to October 1967, water-stage recorder.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 21 miles; slope of main stream, 5.7 ft per mile; slope of main stream and tributaries, 11 ft per mile; basin slope, 50 ft per mile; length/width basin, 4.72; stream density, 0.7 mile per square mile. (Map scale, 1:24,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1957	Mar. 21, 1957	1.95	33
1958	Feb. 25, 1958	^a 2.05	21
1959	Mar. 13, 1959	2.1	42
1960	Mar. 27, 1960	^a 2.50	262
1961	Mar. 15, 1961	2.07	120
1962	Mar. 26, 1962	2.27	209
1963	July 27, 1963	1.94	104
1964	June 18, 1964	2.45	159
1965	Apr. 8, 1965	5.95	99
1966	Mar. 14, 1966	6.54	310
1967	Mar. 24, 1967	^a 7.0	440
1968			unknown
1969	Apr. 11, 1969	7.0	750

a Backwater.

LOCATION.--Lat 47°52'57", long 98°58'02", in NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.22, T.151 N., R.65 W., Benson County, on right bank 30 ft above Bureau of Indian Affairs highway, 7 miles south of Fort Totten.

DRAINAGE AREA.--23.2 sq mi, of which about 15.5 sq mi is probably noncontributing.

PERIOD OF RECORD.--October 1965 to current year.

GAGE.--Water-stage recorder.

REMARKS.--Part of the Department of the Interior program for the development of the Missouri River basin.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1966	Mar. 31, 1966	^a 4.21	81
1967	Mar. 25, 1967	^a 5.07	80
1968	Mar. 4, 1968	2.50	25
1969	Apr. 10, 1969	8.46	270

a Backwater.

5-0560.2. MAUVAIS COULEE TRIBUTARY NEAR BISBEE, N. DAK.

17

LOCATION.--Lat 48°31'00", long 99°23'10", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.11, T.158 N., R.68 W., Towner County, at bridge on county highway, 7.5 miles south of Bisbee.

DRAINAGE AREA.--2.83 sq mi.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 2.2 miles; slope of main stream, 8.3 ft per mile; slope of main stream and tributaries, 9.8 ft per mile; basin slope, 45 ft per mile; length/width basin, 1.71; stream density, 0.8 mile per square mile. (Map scale, 1:63,360).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	March 1955	^a 3.24	35
1956	Apr. 18, 1956	3.98	220
1957	Aug. 12, 1957	2.38	13
1958	Feb. 26, 1958	2.08	.2
1959	July 27, 1959	2.16	3
1960	Apr. 7, 1960	2.91	35
1961	--	--	0
1962	Apr. 6, 1962	--	50
1963	May 1963	2.55	10
1964	Apr. 8, 1964	2.66	13
1965	May 5, 1965	2.84	30
1966	Mar. 15, 1966	^a 5.06	8.5
1967	April 1967	2.30	15
1968	March 1968	^a 3.38	1.0
1969	Apr. 11, 1969	6.05	300

a Backwater.

18 5-0560.4. MAUVAIS COULEE TRIBUTARY NO. 2 NEAR CANDO, N. DAK.

LOCATION.--Lat 48°29'10", long 99°24'20", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.23, T.158 N., R.68 W., Towner County, at culvert on State Highway 17, 9 miles west of Cando.

DRAINAGE AREA.--8.48 sq mi.

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

GAGE.--Crest-stage gage. Prior to March 1962, gage at same site on former bridge at different datum.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 9.4 miles; slope of main stream, 8.3 ft per mile; slope of main stream and tributaries, 8.1 ft per mile; basin slope, 30 ft per mile; length/width basin, 10.4; stream density, 1.1 miles per square mile. (Map scale, 1:63,360).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Mar. 30-31, 1955	^a 2.50	120
1956	Apr. 19-21, 1956	--	180
1957	Aug. 12, 1957	1.46	9
1958	Feb. 26, 1958	1.08	3
1959	June 1959	1.77	4
1960	Apr. 4, 1960	3.0	180
1961	1961	--	0
1962	Apr. 4, 1962	--	25
1963	June 7-18, 1963	3.30	150
1964	September 1964	2.77	90
1965	Apr. 11, 1965	^a 3.5	90
1966	Mar. 12, 1966	^a 3.67	26
1967	Mar. 28, 1967	2.67	60
1968	March 1968	^a 2.64	10
1969	Apr. 11, 1969	6.02	520

a Backwater.

LOCATION.--Lat 48°27'20", long 99°12'40", in NW¼NW¼ sec.5, T.157 N., R.66 W., Towner County, at bridge on U.S. Highway 281, 2.2 miles south of Cando.

DRAINAGE AREA.--60.2 sq mi.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 34 miles; slope of main stream, 10 ft per mile; slope of main stream and tributaries, 10 ft per mile; basin slope, 23 ft per mile; length/width basin, 19.6; stream density, 0.7 mile per square mile. (Map scale, 1:63,360).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Apr. 1-20, 1955	5.59	485
1956	Apr. 19-20, 1956	7.0	850
1957	Aug. 12, 1957	2.32	20
1958	Feb. 26, 1958	--	.2
1959	March 1959	--	.5
1960	Apr. 7, 1960	^a 4.9	200
1961	1961	--	0
1962	Apr. 6, 1962	6.80	750
1963	April-May 1963	2.18	25
1964	Apr. 7, 1964	^a 3.90	52
1965	Apr. 13, 1965	^a 5.55	220
1966	Mar. 18, 1966	4.00	120
1967	Mar. 29, 1967	^a 5.09	160
1968	Mar. 12, 1968	^a 3.90	55
1969	Apr. 14, 1969	9.35	2,300

a Backwater.

20 5-0560.8. MAUVAIS COULEE TRIBUTARY NO. 4 NEAR BISBEE, N. DAK.

LOCATION.--Lat 48°29'10", long 99°26'50", in SW¼SW¼ sec.21, T.158 N., R.68 W., Towner County, at culvert on State Highway 17, 10 miles southwest of Bisbee.

DRAINAGE AREA.--24.4 sq mi.

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

GAGE.--Crest-stage gage. Prior to March 1962 at same site on bridge at different datum.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 20 miles; slope of main stream, 9.9 ft per mile; slope of main stream and tributaries, 12 ft per mile; basin slope, 30 ft per mile; length/width basin, 15.9; stream density, 1.4 miles per square mile. (Map scale, 1:63,360).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Apr. 1, 1955	^a 2.75	300
1956	Apr. 18, 1956	3.09	450
1957	Aug. 12, 1957	1.23	10
1958	Mar. 27, 1958	1.02	.1
1959	--	--	0
1960	Apr. 7-8, 1960	2.65	230
1961	--	--	0
1962	Apr. 4, 1962	--	50
1963	July-Aug. 1963	3.23	10
1964	April 1964	3.5	40
1965	Apr. 11, 1965	4.0	130
1966	Mar. 15, 1966	^a 4.07	100
1967	Mar. 28, 1967	3.76	90
1968	Mar. 10, 1968	^a 3.8	18
1969	Apr. 11, 1969	5.17	1,100

a Backwater.

LOCATION.--Lat 48°26'53", long 99°06'08", in SE $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.1, T.157 N., R.66 W., Towner County, on left bank 0.3 mile upstream from county highway bridge about 4 miles upstream from West Fork, 5.5 miles south-east of Cando.

DRAINAGE AREA.--387 sq mi, approximately, of which 10 sq mi is probably noncontributing.

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

GAGE.--Water-stage recorder. Datum of gage is 1,445 ft above mean sea level (unadjusted). Prior to July 2, 1957, staff gage at present site and datum.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 72 miles; length/width basin, 1.38; stream density, 0.8 mile per square mile. (Map scale, 1:126,720).

REMARKS.--Station operated in cooperation with Corps of Engineers.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1957	Apr. 15, 1957	--	3.6
1958	Oct. 1, 1958	2.80	1.4
1959	Mar. 22, 1959	^a 5.06	20
1960	Apr. 10, 1960	^a 8.14	570
1961	Apr. 10, 1961	^a 2.94	.3
1962	Apr. 11, 1962	^a 3.13	310
1963	June 2, 1963	3.01	.5
1964	Apr. 15, 1964	^a 4.72	100
1965	July 29, 1965	6.95	295
1966	Mar. 18, 1966	^a 9.25	520
1967	Apr. 2, 1967	^a 6.44	280
1968	Mar. 15, 1968	4.82	102
1969	Apr. 14, 1969	11.16	2,500

a Backwater.

LOCATION.--Lat 48°20'10", long 98°39'40", on line between secs.17 and 18, T.156 N., R.62 W., Ramsey County, at bridge on county highway, 11 miles southwest of Edmore.

DRAINAGE AREA.--382 sq mi, approximately, of which 100 sq mi is probably noncontributing.

PERIOD OF RECORD.--April to June 1956, June 1957 to current year.

Gage.--Water-stage recorder. Prior to June 26, 1957, nonrecording gage at same site and datum.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 41 miles; length/width basin, 6.20; stream density, 0.6 mile per square mile. (Map scale, 1:126,720).

REMARKS.--Station operated in cooperation with Corps of Engineers.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1958	Feb. 24, 1958	--	0.5
1959	Apr. 3, 1959	--	54
1960	Apr. 15, 1960	5.47	601
1961	Apr. 5, 1961	^a 1.93	10
1962	Apr. 20, 1962	5.27	501
1963	June 7, 1963	4.59	360
1964	May 9, 1964	^a 3.72	95
1965	Apr. 14, 1965	5.67	378
1966	Apr. 2, 1966	5.60	420
1967	May 9, 1967	5.56	767
1968	Mar. 29, 1968	2.38	52
1969	Apr. 13, 1969	6.18	779

a Backwater.

LOCATION.--Lat 48°17'15", long 99°26'55", in center of sec.31, T.156 N., R.68 W., Benson County, at culverts on U.S. Highway 2, 0.2 miles west of Leeds.

DRAINAGE AREA.--280 sq mi, approximately, of which 140 sq mi is probably noncontributing.

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

GAGE.--Nonrecording gage and crest-stage gage. Datum of gage is 1,489.92 ft above mean sea level.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 33 miles; length/width basin, 7.47; stream density, 0.6 mile per square mile. (Map scale, 1:126,720).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1956	Apr. 15, 1956	8.2	515
1957	Mar. 23, 1957	^a 5.2	5
1958	--	--	0
1959	--	--	0
1960	Apr. 4, 1960	5.58	110
1961	--	--	0
1962	Apr. 4, 1962	5.10	41
1963	--	--	0
1964	Apr. 4, 1964	--	25
1965	Apr. 12, 1965	--	60
1966	Mar. 13, 1966	--	75
1967	Mar. 25, 1967	5.96	93
1968			unknown
1969	Apr. 12, 1969	7.95	590

a Backwater.

24 5-0569. SHEYENNE RIVER TRIBUTARY NEAR COOPERSTOWN, N. DAK.

LOCATION.--Lat 47°27'25", long 98°00'25", at sec. corner 13-14-25-26,
T. 146 N., R. 58 W., Griggs County, on bridge on county highway 1.4
miles north of State Highway 7, 5 miles east of Cooperstown.

DRAINAGE AREA.--15.2 sq mi.

PERIOD OF RECORD.--1959 to current year.

GAGE.--Crest-stage gage.

BANKFULL STAGE.--4 ft.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 6.4 miles; slope of
main stream, 30 ft per mile; slope of main stream and tributaries, 35
ft per mile; basin slope, 55 ft per mile; length/width basin, 2.69;
stream density, 1.3 miles per square mile. (Map scale, 1:63,360).

HISTORICAL DATA.--Flood of 1950 reached a stage of about 10.6 ft, from
information by local resident (discharge, 1,000 cfs).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1959	Apr. 4-10, 1959	2.49	49
1960	May 25, 1960	7.14	445
1961	Mar. 3, 1961	^a 3.66	35
1962	Apr. 4-5, 1962	^b 5.94	350
1963	July 11, 1963	3.95	140
1964	June 1964	6.35	354
1965	Apr. 11, 1965	7.90	700
1966	July 26, 27, 1966	4.77	375
1967	May 1967	7.20	650
1968	June 8, 9, 1968	3.68	190
1969	Apr. 1, 1969	9.80	1,000

a Backwater.

b Gage height doubtful.

5-0569.5. SHEYENNE RIVER TRIBUTARY NO. 2 NEAR COOPERSTOWN, N. DAK.

25

LOCATION.--Lat 47°26'20", long 98°01'35", on east line sec.27, T.146 N., R.58 W., Griggs County, at culvert on county highway 0.1 mile south of State Highway 7, 4 miles east of Cooperstown.

DRAINAGE AREA.--0.08 sq mi.

PERIOD OF RECORD.--1959 to current year.

GAGE.--Crest-stage gage.

BANKFULL STAGE.--Not subject to overflow.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 0.42 mile; slope of main stream, 300 ft per mile; slope of main stream and tributaries, 260 ft per mile; basin slope, 520 ft per mile; length/width basin, 2.20; stream density, 5.2 miles per sq mi. (Map scale, 1:3,600).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1959	Mar. 24-25, 1959	^a 4.59	3
1960	May 25, 1960	4.06	4
1961	Mar.-Apr. 1961	3.55	1.1
1962	June 1962	^a 3.90	2
1963	July 11, 1963	5.91	30
1964	June 1964	5.37	21
1965	July 1965	7.95	59
1966	July 26, 27, 1966	4.78	14
1967	April 1967	4.59	12
1968	June 8, 9, 1968	4.51	10
1969	Apr. 7, 1969	--	.5

a Backwater.

LOCATION.--Lat. 47°13'42", long 98°07'30", in SW¼ sec.2, T.143 N., R.59 W., Barnes County, on left bank 500 ft upstream from county highway, 4.5 miles northeast of Dazez, and 14 miles upstream from mouth.

DRAINAGE AREA.--691 sq mi, approximately, of which 340 sq mi is probably noncontributing.

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

GAGE.--Water-stage recorder. Prior to Nov. 9, 1956, nonrecording gage at site 500 ft downstream at same datum.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 42 miles; length/width basin, 5.11; stream density, 0.7 mile per square mile. (Map scale, 1:126,720).

REMARKS.--Station operated as part of the Department of the Interior program for the development of the Missouri River basin.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1957	Sept. 3, 1957	5.07	248
1958	Oct. 25, 1958	3.31	56
1959	Mar. 14-15, 1959	^a 4.42	30
1960	Apr. 5, 1960	^a 6.00	370
1961	Mar. 2, 1961	^a 3.60	50
1962	Mar. 28, 1962	^a 6.84	390
1963	Apr. 6-7, 1963	3.47	24
1964	June 19, 1964	3.65	60
1965	Apr. 12, 1965	9.23	1,780
1966	Mar. 13, 1966	8.69	880
1967	Mar. 27, 1967	^a 6.90	650
1968	June 8, 1968	4.46	210
1969	Apr. 11, 1969	^a 10.90	2,510

a Backwater.

LOCATION.--Lat 47°19'30", long 97°47'25", in NW¼NW¼ sec.4, T.144 N., R.56 W., Steele County, 100 ft downstream from box culvert on State Highway 38, 3 miles west of Hope.

DRAINAGE AREA.--22.4 sq mi.

PERIOD OF RECORD.--October 1964 to current year.

GAGE.--Water-stage recorder and concrete broad-crested weir. Datum of gage is 1,296.62 ft above mean sea level.

REMARKS.--This station is one of those especially established to study the effect of drainage basin characteristics.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1965	Apr. 10, 1965	4.43	575
1966	Mar. 14, 1966	--	150
1967	Apr. 20, 1967	3.88	248
1968	June 10, 1968	4.78	734
1969	Apr. 9, 1969	4.50	540

LOCATION.--Lat 46°58'30", long 97°21'30", on north line sec.3, T.140 N., R.53 W., Cass County, at bridge on county highway, 1.8 miles east of Absaraka.

32.9

DRAINAGE AREA.--22 sq mi, approximately.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 9.4 miles; length/width stream, 4.02; stream density, 1.3 miles per square mile. (Map scale, 1:63,360).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Mar. 30-31, 1955	2.20	60
1956	Apr. 13-14, 1956	2.03	44
1957	June 22, 1957	^a 2.70	80
1958	July 1958	^a 1.87	20
1959	June 10, 1959	2.13	53
1960	March 1960	^a 3.11	100
1961	Mar. 2, 1961	^a 2.31	28
1962	Apr. 2, 1962	^a 3.77	130
1963	1963	^a 2.58	50
1964	June 1964	^a 2.55	8
1965	Apr. 1, 1965	^a 4.46	250
1966	Mar. 17, 1966	^a 4.77	140
1967	April 1967	3.70	307
1968	June 1968	3.12	50
1969	Apr. 11, 1969	5.69	620

a Backwater.

5-0598.5. SWAN CREEK TRIBUTARY NEAR AYR, N. DAK.

29

LOCATION.--Lat 46°58'30", long 97°30'00", in NE¼ sec.4, T.140 N., R.54 W., Cass County, at culvert on county highway, 4.5 miles south of Ayr.

DRAINAGE AREA.--^{4.34}~~2~~ sq mi, approximately.

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

GAGE.--Crest-stage gage. Datum 0.26 ft lower prior to August 1955.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 2.2 miles; length/width basin, 2.42; stream density, 1.1 miles per square mile. (Map scale, 1:63,360).

REMARKS.--24-inch culvert replaced by 60-inch culvert in August 1955.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Mar.-Apr. 1955	1.86	8
1956	Apr. 10, 1956	^a 4.48	unknown
1957	June 22, 1957	2.60	85
1958	July 1958	1.78	1.1
1959	March 1959	2.95	5
1960	March 1960	4.90	70
1961	Mar. 2, 1961	2.19	3.8
1962	Apr. 3-5, 1962	3.66	32
1963	April 1963	2.57	8
1964	Apr. 15, 1964	2.45	6.5
1965	April 1965	4.98	73
1966	Mar. 15, 1966	^a 5.12	60
1967	April 1967	--	20
1968	June 1968	2.06	2.0
1969	Apr. 10, 1969	6.56	120

a Backwater.

LOCATION.--Lat 46°55'00", long 97°15'30", in NW¼ sec.28, T.140 N., R.52 W., Cass County, at bridge on county highway, 2.6 miles northwest of Casselton.

DRAINAGE AREA.--^{58.6}~~30~~ sq mi, approximately.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 17 miles; length/width basin, 9.63; stream density, 2.3 miles per square mile. (Map scale, 1:63,360).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Mar. 29-30, 1955	^a 7.10	260
1956	Apr. 10-14, 1956	^a 7.63	270
1957	June 22, 1957	5.22	70
1958	July 3, 1958	4.74	5
1959	June 10, 1959	7.38	210
1960	Apr. 6, 1960	7.32	200
1961	Mar. 9, 1961	4.4	8
1962	Apr. 4, 1962	4.57	340
1963		below gage	unknown
1964	April 1964	^a 3.1	150
1965	April 1965	^a 8.1	550
1966	Mar. 16, 1966	^a 7.38	500
1967	April 1967	4.65	330
1968	Mar. 28, 1968	^a 0.9	6
1969	Apr. 10, 1969	^a 9.19	2,000

a Backwater.

LOCATION.--Lat 46°53'10", long 97°12'40", near center sec.2, T.139 N., R.52 W., Cass County, at culverts on State Highway 18, 1 mile south of Casselton.

DRAINAGE AREA.--^{14.1}~~2.5~~ sq mi, approximately.

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

GAGE.--Crest-stage gage. Prior to 1962 at same site at different datum.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 2.9 miles; length/width basin, 3.36; stream density, 1.2 miles per square mile. (Map scale, 1:63,360).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Mar. - Apr. 1955	4.67	10
1956	Apr. 10-14, 1956	4.05	5
1957	June 22, 1957	5.35	15
1958	July 3, 1958	5.00	12
1959	June 10, 1959	6.00	100
1960	Apr. 6, 1960	5.07	61
1961	Mar. 2-15, 1961	3.35	3
1962	July 1962	6.47	115
1963	Apr.-June 1963	5.32	70
1964	June 1964	4.46	30
1965	April 1965	6.98	200
1966	Mar. 15, 1966	^a 7.12	36
1967	April 1967	4.90	93
1968	June 1968	4.49	not determined
1969	Apr. 11, 1969	8.47	225

a Backwater.

LOCATION.--Lat 47°01'00", long 97°12'50", in SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec.24, T.141 N., R.52 W., Cass County, on left bank on downstream side of bridge on State Highway 18, 0.6 mile north of Amenia.

DRAINAGE AREA.--116 sq mi.

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

GAGE.--Water-stage recorder. Datum of gage is about 935 ft above mean sea level. Prior to Oct. 7, 1947, nonrecording gage at site 0.2 mile upstream at datum 8.00 ft higher. Oct. 7, 1947, to June 10, 1961, nonrecording gage at site 150 ft upstream from former gage at datum 8.00 ft higher prior to Oct. 1, 1950 and 5.00 ft higher thereafter.

BANKFULL STAGE.--8 ft prior to June 10, 1961.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 29 miles; length/width basin, 7.40; stream density, 0.8 mile per square mile. (Map scale, 1:63,360).

REMARKS.--Station operated in cooperation with Corps of Engineers.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1947	Apr. 14, 1947	8.90	1,230
1948	Apr. 11, 1948	^a 8.04	590
1949	Mar. 31, 1949	^a 7.5	400
1950	Apr. 7, 1950	^a 8.62	620
1951	Mar. 28, 1951	^a 8.60	368
1952	Apr. 1, 1952	^a 9.7	600
1953	June 16, 1953	8.63	1,050
1954	Apr. 6, 1954	4.9	120
1955	Mar. 31, 1955	^a 9.0	200
1956	Apr. 13, 1956	--	250
1957	June 24, 1957	5.58	115
1958	July 5, 1958	5.40	77
1959	June 10, 1959	6.25	100
1960	Apr. 6, 1960	8.09	437
1961	Mar. 6, 1961	^a 6.06	25
1962	Apr. 5, 1962	^a 10.30	450
1963	Apr. 7, 1963	5.3	68
1964	Apr. 5, 1964	^a 6.7	100
1965	Apr. 11, 1965	^a 11.6	900
1966	Mar. 31, 1966	^a 9.16	300
1967	Apr. 17, 1967	7.82	384
1968	June 8, 1968	7.07	190
1969	Apr. 10, 1969	11.41	1,690

a Backwater.

LOCATION.--Lat 47°17'30", long 97°06'50", on west line sec.14, T.144 N., R.51 W., Traill County, on downstream side of county highway bridge, 5 miles southwest of Kelso, and 14 miles upstream from North Branch.

DRAINAGE AREA.--193 sq mi.

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

GAGE.--Staff gage in stilling well. Datum of gage is 887.60 ft above mean sea level. Prior to Mar. 30, 1957, nonrecording gage and Mar. 31, 1957 to Sept. 30, 1963, water-stage recorder at same site and datum.

BANKFULL STAGE.--6 ft.

HISTORICAL DATA.--Maximum stage known since 1925, about 14 ft in 1950, from information by local residents.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 55 miles; length/width basin, 15.4; stream density, 0.6 mile per square mile. (Map scale, 1:126,720).

REMARKS.--Station operated in cooperation with Soil Conservation Service prior to October 1963.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1956	June 4, 1956	6.80	102
1957	Mar. 24, 1957	4.75	3.0
1958	--	--	0
1959	Mar. 20, 1959	4.55	3.2
1960	Apr. 1, 1960	^a 7.76	165
1961	Mar. 18, 1961	^a 4.81	9.9
1962	Apr. 8, 1962	9.51	440
1963	Apr. 7, 1963	5.80	53
1964	1964	5.14	20
1965	April 1965	11.73	850
1966	March 1966	12.48	1,000
1967	April 1967	8.72	300
1968	1968	6.73	117
1969	1969	12.16	930

a Backwater.

LOCATION.--Lat 47°35'40", long 97°42'18", in NE¼ sec.31, T.148 N., R.55 W., Steele County, on right bank 500 ft downstream from bridge on county road, 7 miles northeast of Finley.

DRAINAGE AREA.--160 sq mi, approximately.

PERIOD OF RECORD.--October 1964 to current year.

GAGE.--Water-stage recorder and concrete broad-crested weir. Datum of gage is 1,170.08 ft above mean sea level.

BANKFULL STAGE.--3 ft.

REMARKS.--This station is one of those comprising the national network of hydrologic bench marks maintained by the Geological Survey.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1965	Apr. 11, 1965	^a 6.88	1,250
1966	Mar. 20, 1966	^a 7.33	400
1967	Apr. 20, 1967	5.52	652
1968	June 7, 1968	3.55	47
1969	Apr. 9, 1969	6.55	1,320

^a Backwater.

LOCATION.--Lat 47°32'20", long 97°27'20", in SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.19, T.147 N., R.53 W., Traill County, on left bank 25 ft upstream from bridge on State Highway 18, 1.2 miles upstream from unnamed tributary, 4 miles downstream from Beaver Creek, and 5 miles northwest of Portland.

DRAINAGE AREA.--517 sq mi, approximately, of which 111 sq mi is probably noncontributing.

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

GAGE.--Water-stage recorder. Datum of gage is 967.48 ft above mean sea level. Prior to Oct. 1, 1956, nonrecording gages at site 2 miles upstream at datum 11.26 ft higher.

BANKFULL STAGE.--18 ft prior to Oct. 1, 1956. 16 ft thereafter.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 83 miles; length/width basin, 17.0; stream density, 1.2 miles per square mile. (Map scale, 1:63,360).

REMARKS.--Station operated in cooperation with State Water Commission.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1940	Apr. 16, 1940	7.88	487
1941	Apr. 9, 1941	12.50	1,130
1942	Apr. 5, 1942	^a 11.51	850
1943	Mar. 26, 1943	^a 14.90	1,200
1944	Apr. 10, 1944	5.10	169
1945	Mar. 15, 1945	6.70	340
1946	Mar. 20, 1946	^a 9.14	530
1947	--	--	unknown
1948	Apr. 21, 1948	21.30	4,700
1949	Apr. 7, 1949	^a 13.60	1,200
1950	May 9, 1950	22.82	8,090
1951	Mar. 30, 1951	^a 12.5	650
1952	Apr. 3, 1952	^a 11.45	600
1953	July 4, 1953	7.77	367
1954	June 15, 1954	4.28	58
1955	Mar. 31, 1955	^a 10.8	600
1956	Apr. 16, 1956	^a 11.07	550
1957	Sept. 5, 1957	5.95	134
1958	June 27, 1958	5.47	95
1959	Apr. 3, 1959	4.94	72
1960	Apr. 8, 1960	11.45	924
1961	Mar. 10, 1961	^a 4.13	71
1962	Apr. 8, 1962	15.39	1,610
1963	Apr. 8, 1963	^a 5.83	150
1964	June 22, 1964	7.96	381
1965	Apr. 13, 1965	^a 18.22	3,740
1966	Mar. 21, 1966	^a 14.19	1,190
1967	Apr. 23, 1967	16.05	2,080
1968	June 10, 1968	8.22	448
1969	Apr. 13, 1969	18.17	3,660

a Backwater.

5-0657. MIDDLE BRANCH GOOSE RIVER NEAR FINLEY, N. DAK.

LOCATION.--Lat 47°33'25", long 97°45'00", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.11, T.147 N., R.56 W., Steele County, on left downstream wingwall of bridge on county highway, 4.5 miles northeast of Finley.

DRAINAGE AREA.--45.8 sq mi.

PERIOD OF RECORD.--March 1965 to current year (seasonal).

GAGE.--Water-stage recorder.

REMARKS.--This station is one of those especially established to study the effect of drainage basin characteristics.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1965	Apr. 10, 1965	8.47	1,030
1966	July 26, 1966	7.32	443
1967	Apr. 20, 1967	7.09	479
1968	June 8, 1968	6.05	120
1969	Apr. 10, 1969	7.06	560

5-0658. MIDDLE BRANCH GOOSE RIVER TRIBUTARY NEAR FINLEY, N. DAK.

LOCATION.--Lat 47°28'05", long 97°46'20", in NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.14, T.146 N., R.56 W., Steele County, on downstream left wingwall of bridge on county road 4.5 miles southeast of Finley.

DRAINAGE AREA.--25.0 sq mi.

PERIOD OF RECORD.--March 1965 to current year (seasonal).

GAGE.--Water-stage recorder.

REMARKS.--This station is one of those especially established to study the effect of drainage basin characteristics.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1965	Apr. 10, 1965	5.21	501
1966	July 26, 1966	4.75	379
1967	Apr. 20, 1967	4.61	324
1968	June 7, 1968	4.70	367
1969	May 14, 1969	5.48	588

LOCATION.--Lat 47°55'05", long 97°10'40", in SE¼SE¼ sec.4, T.151 N., R.51 W., Grand Forks County, at bridge on county highway at Powell, 7 miles west of Grand Forks.

DRAINAGE AREA.--4.68 sq mi.

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

GAGE.--Crest-stage gage.

BANKFULL STAGE.--3 ft.

HISTORICAL DATA.--Flood of 1950 reached a stage of 5.9 ft, from information by local resident (300 cfs). Highest recalled since 1911.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 4.5 miles; slope of main stream, 3.1 ft per mile; slope of main stream and tributaries, 3.6 ft per mile; basin slope, 14 ft per mile; length/width basin, 4.33; stream density, 1.0 mile per square mile. (Map scale, 1:62,500).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Apr. 1, 1955	^a 4.92	90
1956	Apr. 16, 1956	^a 5.68	100
1957	Sept. 1-2, 1957	4.52	112
1958	July 1958	1.45	1.5
1959	March 1959	^a 4.66	40
1960	Apr. 1-2, 1960	^a 4.17	65
1961	Mar. 10, 1961	^a 4.07	1
1962	Apr. 16, 1962	3.60	68
1963	April 1963	^a 2.44	15
1964	June 12, 1964	2.96	34
1965	Apr. 12, 1965	3.84	84
1966	Mar. 27, 1966	4.38	124
1967	Mar. 30, 1967	^a 4.91	130
1968	June 10, 1968	3.39	45
1969	Apr. 10, 1969	3.08	164

a Backwater.

38 5-0826.8. SALTWATER COULEE TRIBUTARY NEAR EMERADO, N. DAK.

LOCATION.--Lat 47°53'00", long 97°21'55", on west line sec.19, T.151 N., R.52 W., Grand Forks County, at bridge on county highway 2.5 miles south of Emerado.

DRAINAGE AREA.--22.0 sq mi.

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

GAGE.--Crest-stage gage.

BANKFULL STAGE.--6 ft.

HISTORICAL DATA.--Flood of 1950 reached a stage of 7.0 ft, from information by local resident (1,200 cfs).

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 9.9 miles; slope of main stream, 15 ft per mile, slope of main stream and tributaries, 18 ft per mile; basin slope, 23 ft per mile; length/width basin, 4.46; stream density, 0.6 mile per square mile. (Map scale, 1:62,500).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Mar.-Apr. 1955	^a 4.93	70
1956	Apr. 14, 1956	^a 4.84	60
1957	Sept. 1-2, 1957	^a 3.65	150
1958	March 1958	^a 2.57	10
1959	Mar. 25, 1959	^a .65	7
1960	Apr. 5, 1960	2.18	156
1961	Mar. 19, 1961	^a 1.10	1
1962	Apr. 6, 1962	^a 4.16	280
1963	Apr. 6-7, 1963	2.78	246
1964	June 12, 1964	3.26	111
1965	Apr. 12, 1965	6.00	290
1966	Mar. 30, 1966	4.34	190
1967	Apr. 20, 1967	^a 6.83	275
1968			not determined
1969	Apr. 10, 1969	6.30	230

a Backwater.

LOCATION.--Lat 47°55'55", long 97°15'40", in NW¼NW¼ sec.1, T.151 N., R.52 W., Grand Forks County, at bridge on county highway, 0.1 mile south of U.S. Highway 2, and 5.5 miles east of Emerado.

DRAINAGE AREA.--110 sq mi.

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

GAGE.--Crest-stage gage.

BANKFULL STAGE.--7 ft.

HISTORICAL DATA.--Flood of 1950 reached a stage of 11.3 ft (3,500 cfs) from information by local resident. Highest since 1918. Road overflows at 9.1 ft.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 24 miles; slope of main stream, 13 ft per mile; slope of main stream and tributaries, 12 ft per mile; basin slope, 10 ft per mile; length/width basin, 2.28; stream density, 0.5 mile per square mile. (Map scale, 1:62,500).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Mar.-Apr. 1955	^a 6.34	250
1956	Apr. 15, 1956	^a 6.73	310
1957	Sept.1-2, 1957	^a 5.52	240
1958	July 1958	^a 1.66	11
1959	Mar. 28-29, 1959	2.85	70
1960	Apr. 5, 1960	4.94	223
1961	Mar. 19-22, 1961	^a 1.99	19
1962	Apr. 6, 1962	^a 7.68	430
1963	Apr. 6, 1963	2.89	73
1964	June 12, 1964	^a 3.59	100
1965	Apr. 12, 1965	^a 6.90	380
1966	Mar. 19, 1966	7.72	530
1967	April 1967	5.78	295
1968	July 1968	4.61	197
1969	Apr. 10, 1969	7.09	710

a Backwater.

LOCATION.--Lat 47°56'00", long 97°14'00", in SW¼ sec.31, T.152 N., R.51 W., Grand Forks County, at bridge on U.S. Highway 2, 6.5 miles east of Emerado.

DRAINAGE AREA.--31.0 sq mi.

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

GAGE.--Crest-stage gage.

BANKFULL STAGE.--7 ft.

HISTORICAL DATA.--Flood of 1950 reached a stage of 11.5 ft, from information by local resident.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 13 miles; slope of main stream, 8.4 ft per mile; slope of main stream and tributaries, 11 ft per mile; basin slope, 18 ft per mile; length/width basin, 5.12; stream density, 0.8 mile per square mile. (Map scale, 1:62,500).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Apr. 3-5, 1955	^a 4.19	500
1956	Apr. 1, 1956	^a 5.28	650
1957	Sept. 1-2, 1957	5.00	1,180
1958	July 1958	1.84	15
1959	Mar. 26, 1959	^a 3.68	200
1960	April 1960	^a 3.90	330
1961	Mar. 19, 1961	^a 2.37	28
1962	Apr. 15, 1962	^a 4.24	520
1963	Apr. 6-7, 1963	^a 2.38	46
1964	June 12, 1964	3.38	259
1965	1965	5.00	1,180
1966	April 1966	4.60	840
1967	April 1967	3.72	378
1968	July 1968	3.67	358
1969	Apr. 10, 1969	^a 6.54	190

a Backwater

5-0836. MIDDLE BRANCH FOREST RIVER NEAR WHITMAN, N. DAK.

41

LOCATION.--Lat 48°14'50", long 98°07'00", in SW¼NE¼ sec.16, T.155 N., R.58 W., Walsh County, 150 ft downstream from bridge on State Highway 35, 6 miles north of Whitman.

DRAINAGE AREA.--73 sq mi.

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

GAGE.--Water-stage recorder.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 27 miles; length/width basin, 10.1; stream density, 0.5 mile per square mile. (Map scale, 1:63,360).

REMARKS.--Station operated in cooperation with Soil Conservation Service.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1961	Mar. 23, 1961	^a 3.11	1.6
1962	Apr. 21, 1962	^a 4.62	100
1963	June 25, 1963	^a 3.44	7.0
1964	June 19, 1964	5.23	192
1965	Apr. 11, 1965	^a 5.76	240
1966	Apr. 5, 1966	4.91	134
1967	May 10, 1967	5.33	192
1968	Mar. 8, 1968	^a 4.27	5.0
1969	Apr. 11, 1969	^a 6.82	425

a Backwater.

LOCATION.--Lat 48°11'51", long 97°43'49", on line between secs.32 and 33, T.155 N., R.55 W., Walsh County, on right bank, 50 ft upstream from county highway bridge, 0.5 mile downstream from South Branch and 3 miles southeast of Fordville.

DRAINAGE AREA.--456 sq mi, approximately, of which 118 sq mi is probably noncontributing.

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

GAGE.--Water-stage recorder. Altitude of gage is 1,040 ft (by barometer). Prior to July 21, 1951, nonrecording gage at site 50 ft downstream at same datum.

BANKFULL STAGE.--8 ft.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 83 miles; length/width basin, 20.4; stream density, 1.0 mile per square mile. Map scale, (1:126,720).

REMARKS.--Station operated in cooperation with State Water Commission.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1940	Apr. 17, 1940	^a 3.60	130
1941	Apr. 8, 1941	^a 8.03	2,250
1942	Apr. 4, 1942	9.73	3,650
1943	--	--	1,620
1944	Apr. 5, 1944	^a 5.89	400
1945	Mar. 27, 1945	3.15	243
1946	Mar. 20, 1946	^a 6.14	950
1947	Mar. 23, 1947	^a 7.40	700
1948	Apr. 18, 1948	14.15	14,600
1949	Apr. 7, 1949	5.64	1,470
1950	Apr. 18, 1950	14.48	16,400
1951	Mar. 29, 1951	4.9	500
1952	July 1, 1952	3.94	825
1953	May 30, 1953	2.04	130
1954	June 15, 1954	4.29	1,020
1955	Mar. 31, 1955	^a 8.46	3,000
1956	June 6, 1956	8.14	3,370
1957	Mar. 22, 1957	^a 4.23	356
1958	July 4, 1958	1.87	17
1959	Apr. 4, 1959	2.91	321
1960	Apr. 7, 1960	7.55	2,810
1961	Mar. 19, 1961	^a 2.69	65
1962	Apr. 6, 1962	^a 7.69	2,600
1963	July 8, 1963	3.67	590
1964	June 19, 1964	9.03	3,960
1965	Apr. 11, 1965	^a 10.22	4,730
1966	Mar. 21, 1966	^a 7.14	1,580
1967	Mar. 30, 1967	7.40	2,030
1968	Mar. 8, 1968	^a 4.48	500
1969	Apr. 11, 1969	8.80	3,290

^a Backwater.

LOCATION.--Lat 48°16'00", long 97°24'10", on line between secs.1 and 12, T.155 N., R.53 W., Walsh County, at county highway bridge, 2.5 miles southwest of Minto.

DRAINAGE AREA.--578 sq mi, approximately, of which 136 sq mi is probably noncontributing.

PERIOD OF RECORD.--1932 to 1944.

GAGE.--Nonrecording gage.

BANKFULL STAGE.--7 ft.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 116 miles; length/width basin, 30.4; stream density, 1.0 mile per square mile. (Map scale, 1:126,720).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1932	Apr. 10, 1932	^a 11.2	400
1933	Apr. 2, 1933	^a 12.95	700
1934	--	--	unknown
1935	Mar. 28, 1935	^a 8.99	442
1936	Apr. 15, 1936	^a 11.88	576
1937	Apr. 13, 1937	4.08	112
1938	Mar. 16, 1938	4.96	166
1939	Mar. 28, 1939	^a 9.44	unknown
1940	Apr. 17, 1940	^a 6.00	244
1941	Apr. 9, 1941	13.97	1,430
1942	Apr. 5, 1942	14.87	1,610
1943	--	--	unknown
1944	Apr. 10, 1944	^a 12.93	450

^a Backwater.

44 5-0880. SOUTH BRANCH PARK RIVER NEAR PARK RIVER, N. DAK.

LOCATION.--Lat 48°24'50", long 97°51'40", on line between secs.15 and 16, T.157 N., R.56 W., Walsh County, at bridge on State Highway 32, 4.5 miles northwest of Park River.

DRAINAGE AREA.--214 sq mi, approximately.

PERIOD OF RECORD.--1940 to 1950.

GAGE.--Nonrecording gage.

BANKFULL STAGE.--7 ft.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 45 miles; length/width basin, 9.46; stream density, 0.7 mile per square mile. (Map scale, 1:126,720).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1940	Apr. 19, 1940	3.16	171
1941	Apr. 10, 1941	8.85	3,340
1942	Apr. 4, 1942	7.40	1,880
1943	Mar. 24, 1943	^a 7.60	900
1944	--	--	unknown
1945	Mar. 14, 1945	^a 6.60	800
1946	Mar. 21-22, 1946	--	400
1947	July 25, 1947	4.30	518
1948	Apr. 18, 1948	11.80	11,000
1949	Apr. 8, 1949	5.93	1,200
1950	Apr. 19, 1950	10.1	5,970

a Backwater.

LOCATION.--Lat 48°35'30", long 97°52'50", on west line sec.16, T.159 N., R.56 W., Pembina County, at bridge on county highway at northwest corner of Gardar.

DRAINAGE AREA.--34.7 sq mi.

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

GAGE.--Crest-stage gage.

BANKFULL STAGE.--17 ft.

HISTORICAL DATA.--Highest floods since 1887 was that of 1909, which reached a stage of 11 ft, and that of 1950, which reached a stage of about 8 ft, from information by local residents.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 23 miles; length/width basin, 15.2; stream density, 1.5 miles per square mile. (Map scale, 1:126,720).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	April 1955	^a 5.52	1,000
1956	Apr. 24-25, 1956	^a 5.86	1,160
1957	Mar. 21-25, 1957	^a 2.90	80
1958	Mar. 21, 1958	^a 2.36	5
1959	Apr. 4, 1959	^a 4.36	500
1960	Apr. 15, 1960	^a 4.37	740
1961	Mar. 24, 1961	0.62	1.0
1962	Apr. 18, 1962	4.53	826
1963	June 6, 1963	1.36	75
1964	June 12, 1964	2.57	288
1965	Apr. 12, 1965	^a 4.90	700
1966	May 5, 1966	3.34	557
1967	May 6, 1967	4.30	750
1968	Mar. 25, 1968	3.06	72
1969	April 1969	5.53	1,200

a Backwater.

LOCATION.--Lat 48°40'37", long 97°51'41", in SW¼ sec.15, T.160 N., R.56 W.,
Pembina County, on right bank 50 ft downstream from bridge on State
Highway 32, 0.7 mile south of Mountain.

DRAINAGE AREA.--16.9 sq mi.

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

GAGE.--Water-stage recorder. Altitude of gage is 1,020 ft (by barometer).

BANKFULL STAGE.--6.5 ft.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 8.5 miles; length/
width basin, 4.28; stream density, 1.8 miles per square mile. (Map
scale, 1:126,720).

REMARKS.--Station operated in cooperation with Soil Conservation Service.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	April 1955	6.88	392
1956	Apr. 26, 1956	5.96	340
1957	Sept. 2, 1957	3.83	146
1958	July 4, 1958	2.43	27
1959	Apr. 2, 1959	^a 5.63	160
1960	Apr. 11, 1960	7.42	570
1961	Mar. 21, 1961	3.28	30
1962	Aug. 10, 1962	6.22	422
1963	June 3, 1963	4.94	218
1964	June 18, 1964	9.18	1,300
1965	Apr. 10, 1965	8.22	927
1966	May 4, 1966	6.26	425
1967	May 6, 1967	3.96	205
1968	May 15, 1968	3.01	126
1969	Apr. 9, 1969	^a 7.80	528

^a Backwater.

LOCATION.--Lat 48°35'20", long 97°39'55", on east line sec.13, T.159 N., R.55 W., Pembina County, at bridge on county highway, 0.6 mile south of post office at Crystal.

DRAINAGE AREA.--74.0 sq mi.

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

GAGE.--Crest-stage gage.

BANKFULL STAGE.--10 ft.

HISTORICAL DATA.--The flood of 1909 reached a stage of 14.5 ft and that of 1950 reached a stage of 16.7 ft about 0.5 mile above station; flood of 1950 reached a stage of 12.4 ft at gage, that of 1950 being the highest since 1889; from information by local residents.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 28 miles; length/width basin, 10.7; stream density, 2.4 miles per square mile. (Map scale, 1:126,720).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Apr. 2-3, 1955	a9.15	1,200
1956	Apr. 19, 1956	10.40	2,950
1957	Mar. 21-25, 1957	3.87	120
1958	April 1958	a1.90	10
1959	Apr. 4, 1959	6.48	345
1960	Apr. 7, 1960	8.67	860
1961	Mar. 20-25, 1961	a2.10	1
1962	Apr. 18, 1962	a9.89	2,200
1963	June 3, 1963	4.87	290
1964	June 19, 1964	9.86	2,150
1965	Apr. 11, 1965	10.10	2,420
1966	May 5, 1966	8.73	1,300
1967	May 6, 1967	8.02	680
1968	Mar. 26, 1968	3.66	100
1969	Apr. 12, 1969	9.03	1,040

a Backwater.

LOCATION.--Lat 48°34'35", long 97°41'15", on east line sec.23, T.159 N., R.55 W., Pembina County, at culvert on county highway, 1.6 miles southwest of Crystal.

DRAINAGE AREA.--3.77 sq mi.

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

GAGE.--Crest-stage gage.

BANKFULL STAGE.--6 ft.

HISTORICAL DATA.--Flood of April 1950 reached a stage of 7.8 ft (425 cfs) from information by local resident (highest recalled by man born in 1918).

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 4.2 miles; slope of main stream, 6.8 ft per mile; slope of main stream and tributaries, 7 ft per mile; basin slope, 7 ft per mile; length/width basin, 4.79; stream density, 1.1 miles per square mile. (Map scale, 1:62,500).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Mar. 30-31, 1955	3.51	38
1956	Apr. 19, 1956	6.86	187
1957	Mar. 20-21, 1957	^a 3.27	22
1958	--	--	0
1959	Mar. 31, 1959	3.18	29
1960	Apr. 8-11, 1960	5.72	96
1961	March 1961	^a 2.96	3
1962	Apr. 18, 1962	6.36	113
1963	June 1, 1963	3.50	38
1964	June 1964	^a 4.52	54
1965	Apr. 11, 1965	6.22	109
1966	April 1966	4.64	61
1967	May 6, 1967	5.18	76
1968	May 14, 1968	4.07	45
1969	April 1969	5.45	89

a Backwater.

LOCATION.--Lat 48°57'10", long 99°25'35", in SE¼SW¼ sec.11, T.163 N., R.68 W., Towner County, on right bank 400 ft downstream from bridge on county highway, 2.5 miles west of Hansboro.

DRAINAGE AREA.--38 sq mi, approximately.

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

GAGE.--Water-stage recorder. Prior to May 20, 1962, nonrecording gage 400 ft upstream at same datum.

BANKFULL STAGE.--9 ft.

REMARKS.--This station is one of the international gaging stations maintained by the United States under agreement with Canada.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1962	Apr. 6, 1962	--	40
1963	July 25, 1963	5.23	8.9
1964	Apr. 9, 1964	--	32
1965	Apr. 11, 1965	17.09	124
1966	Mar. 14, 1966	^a 6.92	66
1967	Apr. 21, 1967	6.73	128
1968	Aug. 24, 1968	7.17	218
1969	Apr. 12, 1969	8.80	700

a Backwater.

LOCATION.--Lat 48°56'35", long 98°57'05", in SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec.9, T.163 N., R.67 W., Cavalier County, on right bank 400 ft downstream from bridge on county highway, 2.5 miles east of Sarles.

DRAINAGE AREA.--66 sq mi, approximately.

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

GAGE.--Water-stage recorder.

REMARKS.--This station is one of the international gaging stations maintained by the United States under agreement with Canada.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1962	July 8, 1962	4.37	393
1963	June 2, 1963	4.70	572
1964	Apr. 10, 1964	3.03	189
1965	July 22, 1965	5.00	360
1966	Mar. 17, 1966	^a 6.18	670
1967	Apr. 21, 1967	^a 4.57	310
1968	Aug. 25, 1968	3.08	98
1969	Apr. 12, 1969	7.90	1,130

a Backwater.

LOCATION.--Lat 49°01'17", long 98°36'13", in SW¼ sec.10, T.1, R.9 W., 3 miles southeast of Snowflake.

DRAINAGE AREA.--348 sq mi.

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

GAGE.--Nonrecording gage. Datum of gage is 1,222.63 ft above mean sea level, Geodetic Survey of Canada datum (levels by the Prairie Farm Rehabilitation Administration).

REMARKS.--This station is one of the international gaging stations maintained by Canada under agreement with the United States.

ANNUAL MAXIMUM DAILY DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1961	Mar. 27, 1961	^a 1.58	13.6
1962	Apr. 18, 1962	3.78	101
1963	Mar. 21, 1963	3.76	9.9
1964	Apr. 5, 1964	1.72	27
1965	Apr. 11, 1965	2.49	44.0
1966	Apr. 14, 1966	3.73	227
1967	Apr. 20, 1967	6.54	310
1968	July 30, 1968	4.55	133
1969	Apr. 10, 1969	7.80	623

a Backwater.

52 5-0991.5. MOWBRAY CREEK NEAR MOWBRAY, MANITOBA

LOCATION.--Lat 49°00'00", long 98°27'15", in SE¼ sec.3, T.1, R.8 W., on downstream side of bridge on Municipal Road on international boundary 1.5 miles east of Mowbray.

DRAINAGE AREA.--93.9 sq mi.

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

GAGE.--Nonrecording gage.

REMARKS.--Records furnished by Inland Waters Branch, Department of Energy, Mines and Resources, Canada.

ANNUAL MAXIMUM DAILY DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1962	Apr. 20, 1962	5.75	305
1963	June 25, 1963	2.97	9.2
1964	Apr. 16, 1964	3.59	22.8
1965	Apr. 13, 1965	5.38	202
1966	Mar. 29, 1966	7.88	305
1967	Apr. 24, 1967	6.44	392
1968	Apr. 9, 10, 1968	3.35	17.6
1969	Apr. 13,14, 1969	6.35	414

a Backwater.

LOCATION.--Lat 48°51'55", long 98°00'20", in SW¼ sec.10, T.162 N., R.57 W., Cavalier County, on right bank 25 ft upstream from county bridge, 3.5 miles above mouth, and 6 miles southwest of Walhalla.

DRAINAGE AREA.--182 sq mi, approximately, of which 10 sq mi is probably noncontributing.

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

GAGE.--Water-stage recorder. Datum of gage is 1,099.48 ft above mean sea level. Prior to Sept. 10, 1956, nonrecording gage at bridge 25 ft downstream at same datum.

BANKFULL STAGE.--11 ft.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 48 miles; length/width basin, 13.3; stream density, 1.3 miles per square mile. (Map scale, 1:126,720).

REMARKS.--Station operated as part of the Department of the Interior program for the development of the Missouri River basin.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1957	Aug. 1, 1957	7.73	447
1958	July 5, 1958	^a 6.75	20
1959	Apr. 3, 1959	9.38	996
1960	Apr. 11, 1960	13.28	4,160
1961	Mar. 25, 1961	^a 7.46	300
1962	Apr. 18, 1962	^a 12.79	3,100
1963	July 26, 1963	10.11	1,310
1964	Apr. 10, 1964	7.85	725
1965	Apr. 10, 1965	13.36	2,770
1966	Apr. 1, 1966	11.62	2,300
1967	May 6, 1967	11.47	2,230
1968	Mar. 25, 1968	^a 7.82	270
1969	Apr. 9, 1969	12.76	6,000

^a Backwater.

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5-1010. TONGUE RIVER AT AKRA, N. DAK.

LOCATION.--Lat 48°46'40", long 97°42'55", in SE¼ sec.11, T.161 N., R.55 W., Pembina County, on right bank 0.6 mile east of Akra, and 4.2 miles west of Cavalier.

DRAINAGE AREA.--162 sq mi.

PERIOD OF RECORD.--1939 to current year.

GAGE.--Water-stage recorder. Datum of gage is 920.90 ft above mean sea level. Nonrecording gage prior to July 10, 1954. 1939 to July 20, 1946, at site 8.5 miles downstream at datum 51.66 ft lower. July 21, 1946 to 1949, at site 8 miles downstream at datum 39.92 ft lower. 1950 to July 9, 1954, at site 1.5 miles upstream at datum 20.90 ft lower.

BANKFULL STATE.--44 ft, 1950 to July 9, 1954. 14 ft thereafter.

HISTORICAL DATA.--Flood of Apr. 18, 1950, is the highest known since settlement of the region (about 1860).

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 19 miles; length/width basin, 9.10; stream density, 1.1 miles per square mile. (Map scale, 1:126,720).

REMARKS.--Station operated in cooperation with Corps of Engineers. Flow regulated by temporary retention in ten retarding basins completed during period 1955 to 1961.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1939	Apr. 1, 1939	a4.10	34
1940	Apr. 20, 1940	6.77	280
1941	Apr. 11, 1941	a12.26	unknown
1942	Apr. 5, 1942	a12.4	unknown
1943	Mar. 27, 1943	a11.10	490
1944	Apr. 12, 1944	a8.82	440
1945	Mar. 27, 1945	11.41	920
1946	Mar. 22, 1946	a10.02	690
1947	--	--	unknown
1948	Apr. 21, 1948	4.38	unknown
1949	Apr. 10, 1949	3.80	970

a Backwater.

ANNUAL MAXIMUM DATA.--Continued.

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1950	Apr. 18, 1950	48.7	11,800
1951	Apr. 5, 1951	--	410
1952	Apr. 1, 1952	^a 38.48	260
1953	May 31, 1953	35.86	178
1954	June 12, 1954	35.53	187
1955	Apr. 2, 1955	^a 13.23	700
1956	Apr. 19, 1956	14.23	1,350
1957	Mar. 22, 1957	^a 6.12	340
1958	July 5, 1958	2.38	78
1959	Apr. 5, 1959	^a 9.04	485
1960	Apr. 14, 1960	8.67	654
1961	Mar. 27, 1961	^a 4.56	60
1962	Apr. 23, 1962	7.03	473
1963	June 12, 1963	4.57	210
1964	June 20, 1964	5.38	275
1965	Apr. 14, 1965	8.10	580
1966	Apr. 2, 1966	7.35	492
1967	May 9, 1967	6.28	412
1968	Mar. 27, 1968	^a 5.55	160
1969	Apr. 14, 1969	7.85	606

^a Backwater.

56 5-1134.5. LONG CREEK TRIBUTARY NO. 2 NEAR CROSBY, N. DAK.

LOCATION.--Lat 48°57'29", long 103°18'57", on east line sec.7, T.163 N., R.97 W., Divide County, at culverts on county highway, 3.4 miles north of junction of State Highways 5 and 42 at Crosby.

DRAINAGE AREA.--6.69 sq mi, of which 1.11 sq mi is noncontributing.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 6.8 miles; slope of main stream, 15 ft per mile; slope of main stream and tributaries, 60 ft per mile; basin slope, 65 ft per mile; length/width basin, 8.26; stream density, 1.4 miles per square mile. (Map scale, 1:24,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1960	Mar.-Apr. 1960	7.10	260
1961	Mar. 14, 1961	^a 3.77	8
1962	Mar. 26, 1962	3.90	23
1963	June 5-6, 1963	4.9	40
1964	April 1964	4.5	32
1965	Apr. 8, 1965	4.50	30
1966	Mar. 15, 1966	^a 4.28	25
1967	March 1967	^a 5.29	43
1968	Aug. 18,19, 1968	3.35	8.0
1969	Apr. 6, 1969	7.07	260

a Backwater.

5-1135.2. LONG CREEK TRIBUTARY NEAR CROSBY, N. DAK.

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LOCATION.--Lat 48°50'11", long 103°19'19", on north line sec.30, T.162 N., R.97 W., Divide County, at culverts on county highway, 0.5 mile west of State Highway 42 and 5 miles south of Crosby.

DRAINAGE AREA.--0.35 sq mi.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 0.82 mile; slope of main stream, 18 ft per mile; slope of main stream and tributaries, 20 ft per mile; basin slope, 95 ft per mile; length/width basin, 1.92; stream density, 2.3 miles per square mile. (Map scale, 1:24,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1960	July 2-3, 1960	5.08	28
1961	September 1961	^a 6.14	5
1962	Mar. 20, 1962	^a 3.18	6
1963	July 24, 1963	4.4	24
1964	April 1964	3.6	10
1965	June 1965	4.13	20
1966	August 1966	3.03	4
1967	March 1967	3.61	12
1968	Aug. 18,19, 1968	^a 4.04	17
1969	Apr. 6, 1969	6.99	55

a Backwater.

5-1138. SHORT CREEK BELOW INTERNATIONAL BOUNDARY NEAR ROCHE PERCEE, SASK.

(International gaging station)

LOCATION.--Lat 49°01'42", long 102°51'00", in NW¼ sec.11, T.1, R.7 W., 2d meridian, 4 miles southwest of Roche Percee and 5 miles upstream from mouth.

DRAINAGE AREA.--480 sq mi.

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

GAGE.--Water-stage recorder.

REMARKS.--This station is one of the international gaging station maintained by Canada under agreement with the United States. Peak flow may be affected by reservoir on East Branch Short Creek near Columbus, N. Dak.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1960	Mar. 28, 1960	14.39	1,360
1961	Mar. 17, 1961	^a 6.18	55
1962	Mar. 26, 1962	6.43	123
1963	June 7, 1963	6.66	175
1964	Apr. 4, 1964	9.75	472
1965	May 8, 1965	5.91	119
1966	Mar. 16, 1966	6.54	87.1
1967	Mar. 2, 1967	^a 6.96	110
1968	Aug. 18, 1968	4.34	27.7
1969	Apr. 7, 1969	14.35	1,700

a Backwater.

LOCATION.--Lat 48°18'04", long 101°25'13", in SW¼ sec.25, T.156 N., R.83 W., Ward County, at culvert on county highway, 1.8 miles north of Burlington.

DRAINAGE AREA.--0.13 sq mi.

PERIOD OF RECORD.--1959 to current year.

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 0.58 mile; slope of main stream, 220 ft per mile; slope of main stream and tributaries, 210 ft per mile; basin slope, 300 ft per mile; length/width basin, 2.58; stream density, 4.5 miles per square mile. (Map scale, 1:24,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1959	--	--	0
1960	Mar. 26, 1960	4.16	11
1961	Feb. 22, 1961	^a 3.30	.5
1962	June, July 1962	4.18	11
1963	June 6-7, 1963	8.01	29
1964	April 1964	4.08	9
1965	July 1965	4.89	16
1966	May 15, 1966	3.54	1.1
1967	Mar. 9, 1967	^a 4.5	1.5
1968	Mar. 4, 1968	^a 4.30	.3
1969	Apr. 5, 1969	^a 4.5	3.0

a Backwater.

60 5-1162. DES LACS RIVER TRIBUTARY NEAR DONNYBROOK, N. DAK.

LOCATION.--Lat 48°29'35", long 101°51'20", in NE¼SW¼ sec.24, T.158 N., R.87 W., Ward County, at culvert in Minneapolis, St. Paul, Sault Ste. Marie Railroad, 1.8 miles southeast of Donnybrook.

DRAINAGE AREA.--3.82 sq mi.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 4.3 miles; length/width basin, 4.84; stream density, 2.1 miles per square mile. (Map scale, 1:36,360).

ANNUAL MAXIMUM DATA .--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1956	July-Aug. 1956	3.76	58
1957	Mar. 20, 1957	3.32	33
1958	Mar. 30, 1958	3.45	39
1959	June 1959	4.01	80
1960	Mar. 26, 1960	6.27	125
1961	Mar. 13, 1961	^a 2.46	2
1962			0
1963	August 1963	6.40	135
1964	Mar. 31, 1964	^a 3.67	15
1965	April 1965	3.01	19
1966	July 1966	5.90	100
1967	Mar. 23, 1967	4.16	55
1968	August 1968	3.02	20
1969	Apr. 6, 1969	6.79	160

a Backwater.

LOCATION.--Lat 48°21'45", long 101°34'00", in NE¼SW¼ sec.2, T.156 N., R.85 W., Ward County, at culvert on U.S. Highway 52, 0.4 mile southeast of Foxholm.

DRAINAGE AREA.--12.8 sq mi, of which about 6.9 sq mi is noncontributing.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 10.2 miles; length/width basin, 17.7; stream density, 4.5 miles per square mile. (Map scale, 1:63,360).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Mar. 29, 1955	4.73	140
1956	Mar. 20, 1956	^a 2.54	25
1957	Mar. 20, 1957	^a 1.76	16
1958	Mar. 28, 1958	3.06	75
1959	Aug. 22-24, 1959	2.29	45
1960	Mar. 26, 1960	^a 4.70	126
1961	March 1961	^a 1.72	3
1962	Mar. 23-25, 1962	2.00	33
1963	June 6-7, 1963	3.51	92
1964	Mar. 31, 1964	3.49	92
1965	June 1965	3.21	81
1966	Apr.-May 1966	1.48	13
1967	Mar. 23, 1967	^a 2.9	20
1968	March 1968	1.60	18
1969	Apr. 6, 1969	5.65	222

a Backwater.

62 5-1172. SOURIS RIVER TRIBUTARY NO. 2 NEAR BURLINGTON, N. DAK.

LOCATION.--Lat 48°15'17", long 101°22'48", in NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.17, T.155 N., R.83 W., Ward County, at culvert on county highway, 2.6 miles southeast of Burlington.

DRAINAGE AREA.--2.04 sq mi.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 2.5 miles; slope of main stream, 65 ft per mile; slope of main stream and tributaries, 60 ft per mile; basin slope, 180 ft per mile; length/width basin, 2.04; stream density, 1.4 miles per square mile. (Map scale, 1:24,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1960	Mar. 26, 1960	5.87	45
1961	Mar. 13, 1961	--	.8
1962	Mar. 21, 1962	3.11	14
1963	June 6-7, 1963	7.42	148
1964	June 1964	3.21	15
1965	June 1965	4.00	24
1966	Mar. 11-21, 1966	^a 3.26	6
1967	Mar. 23, 1967	3.88	10
1968	March 1968	3.89	23
1969	Apr. 5, 1969	5.01	89

a Backwater.

LOCATION.--Lat 47°55'50", long 100°40'15", on west line sec.4, T.151 N., R.78 W., McHenry County, at bridge on county highway, 6 miles south-east of Bergen.

DRAINAGE AREA.--176 sq mi, of which 49 sq mi is probably noncontributing.

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

GAGE.--Water-stage recorder. Altitude of gage is 1,590 ft (from topographic map).

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 19 miles; slope of main stream, 9.8 ft per mile; slope of main stream and tributaries, 28 ft per mile; basin slope, 70 ft per mile; length/width basin, 2.75; stream density, 1.3 miles per square mile. (Map scale, 1:24,000).

REMARKS.--Station operated as part of the Department of the Interior program for the development of the Missouri River basin.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1957	Mar. 21, 1957	2.41	15
1958	July 2, 1958	3.52	121
1959	June 27, 1959	3.86	225
1960	Mar. 27, 1960	4.71	360
1961	Mar. 19, 1961	1.71	1.9
1962	Mar. 26, 1962	2.77	45
1963	June 10, 1963	2.98	27
1964	June 19, 1964	4.63	320
1965	July 23, 1965	5.44	584
1966	June 26, 1966	4.23	227
1967	Mar. 24, 1967	4.05	221
1968	Mar. 10, 1968	2.54	39
1969	Apr. 10, 1969	5.90	900

a Backwater.

5-1225. WILLOW CREEK AT DUNSEITH, N. DAK.

LOCATION.--Lat 48°49'12", long 100°03'45", in NE¼NW¼ sec.36, T.162 N., R.73 W., Rolette County, at county highway bridge, 0.4 mile northwest of railway station in Dunseith.

DRAINAGE AREA.--142 sq mi, of which 51 sq mi is probably noncontributing.

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

GAGE.--Water-stage recorder. Datum of gage is 1,700.00 ft above mean sea level.

BANKFULL STAGE.--15 ft.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 21 miles; slope of main stream, 22 ft per mile; slope of main stream and tributaries, 22 ft per mile; basin slope, 120 ft per mile; length/width basin, 4.62; stream density, 0.6 mile per square mile. (Map scale, 1:62,500).

REMARKS.--Station operated in cooperation with State Water Commission.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1954	June 30, 1954	14.55	254
1955	Apr. 3, 1955	15.30	366
1956	Apr. 24, 1956	^a 14.4	350
1957	Apr. 10, 1957	--	50
1958	Apr. 7, 1958	--	80
1959	Aug. 22, 1959	11.87	33
1960	Apr. 17, 1960	14.16	410
1961	Apr. 21, 1961	^a 11.32	4.7
1962	Apr. 20, 1962	11.26	3.0
1963	Apr. 8, 1963	^a 12.01	23
1964	June 17, 1964	--	40
1965	July 20, 1965	13.58	347
1966	Mar. 30, 1966	^a 14.62	93
1967	Apr. 18, 1967	12.07	39
1968	Mar. 25, 1968	^a 12.33	20
1969	Apr. 19, 1969	14.60	476

a Backwater.

LOCATION.--Lat 48°49'14", long 100°24'38", 0.4 mile west of sec. corner 28, 29, 32, 33, T.162 N., R.75 W., Bottineau County, on State Highway 5, 1.5 miles east of Bottineau.

DRAINAGE AREA.--3.1 sq mi.

PERIOD OF RECORD.--1955, 1959 to current year.

GAGE.--Crest-stage gage. Prior to Aug. 26, 1959, reference point.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 3.2 miles; slope of main stream, 45 ft per mile; slope of main stream and tributaries, 120 ft per mile; basin slope, 140 ft per mile; length/width basin, 3.30; stream density, 1.7 miles per square mile. (Map scale, 1:24,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	July 6, 1955	16.52	851
1959	Aug. 22, 1959	15.44	713
1960	Apr. 5, 1960	^a 11.42	180
1961	March 1961	^a 8.70	.4
1962	June-July 1962	11.31	250
1963	June 6-8, 1963	9.78	100
1964	Apr. 3, 1964	^a 9.80	.5
1965	July 1965	9.86	110
1966	June-July 1966	9.34	50
1967	Mar. 24, 1967	^a 10.2	62
1968	Aug. 24, 25, 1968	12.95	410
1969	Apr. 8, 1969	^a 16.2	130

a Backwater.

66 5-1233.5. OAK CREEK TRIBUTARY NO. 5 NEAR BOTTINEAU, N. DAK.

LOCATION.--Lat 48°49'14", long 100°20'42", on south line sec.26, T.162 N., R.75 W., Bottineau County, at culvert on county highway, 1 mile north of State Highway 5 and 4.5 miles east of Bottineau.

DRAINAGE AREA.--0.73 sq mi, of which 0.17 sq mi is noncontributing.

PERIOD OF RECORD.--1959 to current year.

GAGE.--Crest-stage gage. Prior to Aug. 26, 1959, reference point.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 1.6 miles; slope of main stream, 110 ft per mile; slope of main stream and tributaries, 160 ft per mile; basin slope, 130 ft per mile; length/width basin, 4.85; stream density, 3.0 miles per square mile. (Map scale, 1:24,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1959	Aug. 22, 1959	5.86	100
1960	Apr. 3, 1960	2.49	43
1961	Mar. 20, 1961	^a 2.13	.4
1962	June-July 1962	5.11	88
1963	Mar.-Apr. 1963	3.40	60
1964	April 1964	^a 3.96	15
1965	July 1965	2.45	40
1966	June-July 1966	1.88	30
1967	Mar. 24, 1967	--	8
1968	Aug. 24, 1968	5.59	95
1969	Apr. 8, 1969	7.10	118

a Backwater.

5-1235.1. DEEP RIVER NEAR UPHAM, N. DAK.

67

LOCATION.--Lat 48°35'03", long 100°51'44", in SW¼NW¼ sec.22, T.159 N., R.79 W., McHenry County, 60 ft downstream from county highway bridge, 0.8 mile downstream from Little Deep River and 6.3 miles west of Upham.

DRAINAGE AREA.--974 sq mi, approximately, of which 605 sq mi is probably noncontributing.

PERIOD OF RECORD.--1951, September 1957 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,430 ft (from topographic map).

BANKFULL STAGE.--13 ft.

HISTORICAL DATA.--Flood of April 1951 reached a stage of about 16 ft, from information from local resident.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 83 miles; slope of main stream, 2.2 ft per mile; slope of main stream and tributaries, 3.4 ft per mile; basin slope, 40 ft per mile; length/width basin, 18.7; stream density, 0.8 mile per square mile. (Map scale, 1:24,000).

REMARKS.--Station operated as part of the Department of the Interior program for the development of the Missouri River basin.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1951	April 1951	16	2,700
1958	Apr. 6, 1958	5.78	26
1959	--	--	0
1960	May 5, 1960	10.90	580
1961	--	--	0
1962	--	--	0
1963	--	--	0
1964	Apr. 12, 1964	7.91	176
1965	Apr. 10, 1965	^a 5.58	6.0
1966	Apr. 28, 1966	^a 5.22	8.0
1967	Mar. 31, 1967	^a 7.49	107
1968	Mar. 9, 1968	^a 6.72	20
1969	Apr. 12, 1969	18.18	6,760

a Backwater.

LOCATION.--Lat 48°29'15", long 101°24'15", in SW¼SW¼ sec.21, T.158 N., R.83 W., Renville County, at culvert on county highway 8.5 miles west of Glenburn.

DRAINAGE AREA.--20.9 sq mi, of which 13.9 sq mi is probably noncontributing.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 6.8 miles; slope of main stream, 4.9 ft per mile; slope of main stream and tributaries, 5.9 ft per mile; basin slope, 60 ft per mile; length/width basin, 6.64; stream density, 1.0 mile per square mile. (Map scale, 1:24,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Mar. 29, 1955	3.96	60
1956	Apr. 1, 1956	4.59	75
1957	--	--	0
1958	Mar. 26, 1958	3.00	36
1959	May 1959	1.79	7.5
1960	Mar. 22, 1960	^a 4.90	50
1961	March 1961	^a 1.76	.5
1962	Mar. 21, 1962	^a 2.23	1.1
1963	June 4, 1963	1.50	.5
1964	March 1964	^a 1.74	5
1965	May-June 1965	3.39	46
1966	Mar. 11, 12, 1966	^a 2.46	2
1967	Mar. 24, 1967	3.08	30
1968	Mar. 5, 1968	--	8
1969	April 1969	5.19	165

a Backwater.

LOCATION.--Lat 48°26'25", long 101°17'55", in SW¼NW¼ sec.8, T.157 N., R.82 W., Ward County, at bridge on U.S. Highway 83, 4.7 miles north of Ruthville.

DRAINAGE AREA.--108.4 sq mi, of which 82.0 sq mi is probably noncontributing.

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

GAGE.--Crest-stage gage. Prior to July 22, 1966, at datum 2.08 ft higher.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 14 miles; slope of main stream, 5.1 ft per mile; slope of main stream and tributaries, 6.4 ft per mile; basin slope, 50 ft per mile; length/width basin, 7.36; stream density, 1.1 miles per square mile. (Map scale, 1:24,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Mar. 30, 1955	1.9	185
1956	April 1956	1.53	88
1957	July 13, 1957	1.73	133
1958	Mar. 26, 1958	^a 1.90	55
1959	Mar. 14, 1959	^a 2.02	190
1960	Mar. 26, 1960	^a 2.39	260
1961	September 1961	^a 1.34	16
1962	Mar. 25, 1962	^a 2.27	100
1963	June 6-8, 1963	^a 2.62	430
1964	June 1964	^a 2.38	180
1965	July 1965	3.17	290
1966	June-July 1966	2.48	130
1967	Mar. 23, 1967	^a 4.40	40
1968	Mar. 7, 1968	^a 5.0	40
1969	April 1969	4.28	600

^a Backwater.

LOCATION.--Lat 48°22'15", long 101°09'10", in SE¼ sec.32, T.157 N., R.81 W., Ward County, at culvert on county highway, 5 miles southwest of Deering.

DRAINAGE AREA.--4.25 sq mi, of which 0.75 sq mi is probably noncontributing.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 3.8 miles; slope of main stream, 6.0 ft per mile; slope of main stream and tributaries, 4.8 ft per mile; basin slope, 25 ft per mile; length/width basin, 4.04; stream density, 1.1 miles per square mile. (Map scale, 1:24,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Mar. 30, 1955	3.31	20
1956	June-July 1956	^a 1.52	5
1957	Aug. 11-12, 1957	^a 1.94	1
1958	Mar. 26, 1958	^a 2.28	3
1959	Mar. 18, 1959	2.00	1.5
1960	Mar. 26, 1960	2.72	9
1961	--	--	0
1962	Mar. 24-25, 1962	^a 3.01	.8
1963	June 1963	^a 2.77	25
1964	Mar. 31, 1964	2.42	1.0
1965	May-June 1965	2.82	2
1966	Apr.-May 1966	1.88	0
1967	Mar. 23, 1967	^a 2.85	4.9
1968	Mar. 6, 1968	--	4.0
1969	April 1969	^a 4.75	14

a Backwater.

LOCATION.--Lat 48°20'35", long 101°07'20", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.7, T.156 N., R.81 W., Ward County, at culvert on county highway 5 miles southwest of Deering.

DRAINAGE AREA.--132.0 sq mi, of which 91.2 sq mi is probably noncontributing.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 27 miles; slope of main stream, 4.0 ft per mile; slope of main stream and tributaries, 4.4 ft per mile; basin slope, 60 ft per mile; length/width basin, 17.7; stream density, 1.3 miles per square mile. (Map scale, 1:24,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Apr. 1, 1955	5.08	107
1956	Mar.-Apr. 1956	3.84	70
1957	Aug. 12, 1957	1.12	2.7
1958	Mar. 26, 1958	3.29	54
1959	Mar. 18, 1959	3.12	49
1960	Mar. 26, 1960	5.37	116
1961	March 1961	1.2	3.4
1962	Mar. 23-25, 1962	2.98	44
1963	June 1963	5.42	118
1964	Apr.-May 1964	3.02	46
1965	May-June 1965	3.74	67
1966	Apr.-May 1966	2.38	27
1967	Mar. 24, 1967	4.04	76
1968	Mar. 6, 1968	3.61	63
1969	April 1969	7.50	430

LOCATION.--Lat 48°21'18", long 100°49'19", on west line of sec.10, T.156 N., R.79 W., McHenry County, at bridge on county highway, 2 miles downstream from Hay Coulee, 3.5 miles upstream from North Lake, and 6 miles northeast of Granville.

DRAINAGE AREA.--289 sq mi, approximately, of which 146 sq mi is probably noncontributing.

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

GAGE.--Water-stage recorder. Datum of gage is 1,478.14 ft above mean sea level.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 48 miles; slope of main stream, 3.1 ft per mile; slope of main stream and tributaries; 4.1 ft per mile; basin slope, 70 ft per mile; length/width basin, 16.1; stream density, 1.6 miles per square mile. (Map scale, 1:24,000).

REMARKS.--Station operated as part of the Department of the Interior program for the development of the Missouri River basin.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1957	--	--	0
1958	Mar. 28, 1958	5.07	99
1959	--	--	0
1960	Mar. 28, 1960	5.44	258
1961	--	--	0
1962	Apr. 2, 1962	3.22	12
1963	June 9, 1963	5.09	147
1964	Apr. 9, 1964	4.03	53
1965	May 10, 1965	4.42	114
1966	May 23, 1966	3.89	20
1967	Mar. 27, 1967	^a 5.34	188
1968	Mar. 19, 1968	--	4.5
1969	Apr. 10, 1969	7.28	1,710

a Backwater.

LOCATION.--Lat 48°48'46", long 100°51'46", on west line of sec.36, T.162 N., R.79 W., Bottineau County, on right bank 80 ft downstream from bridge on county highway, 5 miles upstream from mouth and 6 miles southeast of Landa.

DRAINAGE AREA.--230 sq mi, approximately, of which 60 sq mi is probably noncontributing.

PERIOD OF RECORD.--September 1957 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,420.03 ft above mean sea level.

BANKFULL STAGE.--5 ft.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 49 miles; slope of main stream, 4.4 ft per mile; slope of main stream and tributaries, 23 ft per mile; basin slope, 50 ft per mile; length/width basin, 14.1; stream density, 1.1 miles per square mile. (Map scale, 1:50,000).

REMARKS.--Station operated in cooperation with State Water Commission.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1958	Mar. 28, 1958	6.76	87
1959	Aug. 23, 1959	10.06	408
1960	Mar. 30, 1960	^a 10.22	660
1961	Mar. 23, 1961	5.7	22
1962	June 22, 1962	6.21	42
1963	June 8, 1963	7.25	120
1964	Apr. 3, 1964	8.03	198
1965	Apr. 13, 1965	7.25	131
1966	Mar. 16, 1966	8.17	237
1967	Mar. 28, 1967	8.43	321
1968	Aug. 26, 1968	7.29	95
1969	Apr. 9, 1969	12.70	3,580

a Backwater.

MISSOURI RIVER BASIN

74 6-3295,97. CHARBONNEAU CREEK NEAR CHARBONNEAU, N. DAK.

LOCATION.--Lat 47°51'10", long 103°47'40", in SW¼ sec.31, T.151 N., R.102 W., McKenzie County, on right bank 45 ft downstream from county highway bridge 1.5 miles west of Charbonneau.

DRAINAGE AREA.--149 sq mi.

PERIOD OF RECORD.--September 1966 to current year.

GAGE.--Water-stage recorder.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1967	Mar. 22, 1967	--	2,000
1968	Mar. 2, 1968	^a 7.3	350
1969	Mar. 23, 1969	10.47	1,600

a Backwater.

6-3297. PAINTED WOODS CREEK TRIBUTARY NEAR WILLISTON, N. DAK.

75

LOCATION.--Lat 48°12'20", long 103°53'00", in SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.35, T.155 N.,
R.103 W., Williams County, at culvert on county highway 13 miles
west of Williston.

DRAINAGE AREA.--0.35 sq mi.

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

GAGE.--Crest-stage gage.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Mar. 28, 1955	^a 3.45	15
1956	Mar. 19, 1956	1.95	7
1957	March 1957	--	1.5
1958	March 1958	1.58	1
1959	June 26, 1959	4.36	47.8
1960	March 1960	^a 8.76	29
1961	Mar. 4-8, 1961	^a 2.57	1
1962	March 1962	^a 7.1	28
1963	July 10, 1963	2.10	2.0
1964	July 1964	1.71	1.0
1965	May 1965	3.56	29
1966	March 1966	^a 2.66	1
1967	Mar. 25, 1967	^a 4.97	6
1968	Mar. 1, 1968	^a 2.44	2.5
1969	1969	3.12	19

a. Backwater

LOCATION.--Lat 48°11'55", long 103°52'05", in NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec.1, T.154 N., R.103 W., Williams County, at bridge on county highway 12 miles west of Williston.

DRAINAGE AREA.--17.4 sq mi.

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

GAGE.--Crest-stage gage. Prior to 1956 at different datum.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 7.5 miles; length/width basin, 3.23; stream density, 2.1 miles per square mile. (Map scale, 1:63,360).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Mar. 28, 1955	4.14	30
1956	March 1956	3.98	33
1957	May-Sept. 1957	4.50	54
1958	March 1958	4.80	66
1959	March 1959	5.00	76
1960	March 1960	6.70	160
1961	March 1961	3.80	27
1962	March 1962	5.3	90
1963	July 10, 1963	4.6	58
1964	Apr. 1, 1964	3.7	23
1965	May 1965	4.97	75
1966	March 1966	--	30
1967	Mar. 26, 1967	--	45
1968	Mar. 1, 1968	^a 5.0	50
1969	1969	5.87	120

a Backwater.

6-3299. PAINTED WOODS CREEK TRIBUTARY NO. 2 NEAR WILLISTON, N. DAK. 77

LOCATION.--Lat 48°13'55", long 103°49'10", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.21, T.155 N., R.102 W., Williams County, at culvert on county highway, 10.5 miles northwest of Williston.

DRAINAGE AREA.--8.30 sq mi.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 6.3 miles; length/width basin, 4.78; stream density, 3.3 miles per square mile. (Map scale, 1:63,360).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Mar. 13, 1955	4.09	61
1956	Mar. 19, 1956	^a 2.67	15
1957	Spring 1957	1.65	.5
1958	April 1958	4.06	60
1959	Mar. 19, 1959	7.96	207
1960	March 1960	3.22	26
1961	March 1961	3.23	29
1962	--	--	0
1963	July 10, 1963	5.1	100
1964	Apr. 1, 1964	2.7	11
1965	May 1965	3.48	38
1966	Mar. 13, 1966	^a 4.11	30
1967	Mar. 26, 1967	^a 5.21	65
1968	Mar. 2, 1968	3.16	20
1969	Apr. 3, 1969	^a 7.82	140

a Backwater.

LOCATION.--Lat 48°08'50", long 103°39'10", in NW¼SE¼ sec.22, T.154 N., R.101 W., Williams County, at bridge on U.S. Highways 2 and 85, 1.5 miles west of post office at Williston.

DRAINAGE AREA.--38.2 sq mi.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 17 miles; length/width basin, 7.74; stream density, 2.3 miles per square mile. (Map scale, 1:63,360).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Mar. 28, 1955	4.66	161
1956	March 1956	3.10	37
1957	March 1957	--	10
1958	Mar. 25-31, 1958	5.00	207
1959	Mar. 19, 1959	6.5	900
1960	March 1960	9.00	not determined
1961	March 1961	^a 4.40	10
1962	Mar. 21, 1962	^a 6.4	350
1963	July 10, 1963	5.70	330
1964	July 5, 1964	2.8	10
1965	May 1965	5.16	237
1966	Mar. 18, 1966	4.04	102
1967	Mar. 26, 1967	^a 5.10	150
1968	Mar. 1, 1968	^a 4.41	30
1969	Apr. 3, 1969	6.89	1,250

a Backwater.

LOCATION.--Lat 48°25'40", long 103°43'25", in NW¼ sec.15, T.157 N., R.101 W., Williams County, on right bank half a mile upstream from unnamed tributary, 5 miles east of Bonetraill, and 8 miles upstream from mouth.

DRAINAGE AREA.--30 sq mi, approximately.

PERIOD OF RECORD.--October 1955 to September 1959.

GAGE.--Water-stage recorder.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 14 miles; length/width basin, 6.53; stream density, 2.8 miles per square mile. (Map scale, 1:126,720).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1956	July 14, 1956	4.05	100
1957	Feb. 28, 1957	3.30	10
1958	Mar. 27, 1958	4.8	90
1959	Mar. 18, 1959	4.1	96

80 6-3319. WHITE EARTH RIVER TRIBUTARY NEAR TIOGA, N. DAK.

LOCATION.--Lat 48°21'20", long 102°54'20", on north line sec.9, T.156 N., R.95 W., Williams County, at culvert on county highway, 1 mile north of U.S. Highway 2 and 2 miles southeast of Tioga.

DRAINAGE AREA.--9.55 sq mi.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 4.0 miles; length/width basin, 1.68; stream density, 2.1 miles per square mile. (Map scale, 1:126,720).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1960	March 1960	6.77	160
1961	Mar. 13-23, 1961	^a 4.70	30
1962	June 11, 1962	13.7	1,120
1963	Mar. 22, 1963	3.80	24
1964	Mar.-Apr. 1964	4.0	29
1965	July 1965	5.97	108
1966	March 1966	4.05	30
1967	Mar. 24, 1967	5.42	158
1968	Mar. 1, 1968	3.70	70
1969	Apr. 3, 1969	^a 6.37	20

a Backwater.

LOCATION.--Lat 48°22'35", long 102°46'00", in SE¼SW¼ sec.36, T.157 N., R.94 W., Mountrail County, 35 ft upstream from bridge on county highway, 0.2 mile east of White Earth.

DRAINAGE AREA.--490 sq mi, approximately.

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

GAGE.--Water-stage recorder. Prior to Oct. 25, 1959, nonrecording gage at site 0.2 mile upstream at datum 1.64 ft higher.

HISTORICAL DATA.--Flood of 1929 reached a stage of 21.8 ft (former site and datum) from information by local residents.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 39 miles; length/width basin, 3.10; stream density, 0.4 mile per square mile. (Map scale, 1:126,720).

REMARKS.--Station operated in cooperation with State Water Commission.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Mar. 30, 1955	^a 15.2	1,270
1956	Apr. 4, 1956	10.1	504
1957	Mar. 20, 1957	^a 7.19	120
1958	Mar. 31, 1958	10.25	540
1959	Mar. 21, 1959	^a 11.13	530
1960	Mar. 28, 1960	^a 18.02	2,300
1961	Mar. 15, 1961	^a 4.57	70
1962	June 12, 1962	14.27	1,350
1963	June 8, 1963	8.09	388
1964	Apr. 2, 1964	--	360
1965	May 6, 1965	7.34	318
1966	Mar. 12, 1966	^a 9.90	400
1967	Mar. 25, 1967	^a 13.08	840
1968	Mar. 5, 1968	^a 7.53	210
1969	Apr. 6, 1969	17.58	2,040

a Backwater.

82 6-3321.5. WHITE EARTH RIVER TRIBUTARY NEAR WHITE EARTH, N. DAK.

LOCATION.--Lat 48°19'55", long 102°45'10", in south ½ sec.15, T.156
N., R.94 W., Mountrail County, at culvert on U.S. Highway 2,
3 miles south of White Earth.

DRAINAGE AREA.--Not determined.

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

GAGE.--Crest-stage gage.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1960	March 1960	5.56	15
1961	Apr. 25-26, 1961	5.81	22
1962	June 11, 1962	6.84	56
1963	June 5, 1963	8.4	107
1964	July 1964	6.8	55
1965	July 1965	7.67	83
1966	June-Aug. 1966	6.08	32
1967	Apr.-May 1967	5.48	12
1968	Feb. 29, 1968	^a 5.64	1.5
1969	Apr. 3, 1969	--	1

a Backwater.

(Hydrologic bench mark station)

LOCATION.--Lat 47°47'20", long 102°46'10", in NW¼ sec.30, T.150 N.,
R.94 W., McKenzie County, on right bank 0.5 mile upstream from
county highway culvert, 5.5 miles northwest of Mandaree.

DRAINAGE AREA.--74 sq mi.

PERIOD OF RECORD.--June 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,947.58 ft above mean
sea level.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1967	Mar. 22, 1967	^a 7.90	290
1968	Feb. 29, 1968	^a 4.84	100
1969	Apr. 6, 1969	10.03	1,100

a Backwater.

LOCATION.--Lat 48°03'11", long 102°08'10", in SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.29, T.153 N., R.89 W., Mountrail County, on left bank 800 ft downstream from county highway bridge, 7 miles north of Parshall.

DRAINAGE AREA.--465 sq mi.

PERIOD OF RECORD.--August 1965 to current year,

GAGE.--Water-stage recorder.

BANKFULL STAGE.--6 ft.

REMARKS.--Station operated in cooperation with State Water Commission.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1966	July 1, 1966	5.63	502
1967	Mar. 27, 1967	--	300
1968	Mar. 5, 1968	4.35	138
1969	Apr. 6, 1969	7.60	2,270

6-3357. DEEP CREEK NEAR BOWMAN, N. DAK.

85

LOCATION.--Lat 46°13'55", long 103°22'05", in NW¼NW¼ sec.30, T.132 N., R.101 W., Bowman County, at culvert on U.S. Highway 85, 3.8 miles north of Bowman.

DRAINAGE AREA.--0.20 sq mi.

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

GAGE.--Crest-stage gage.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	June 26, 1955	8.90	57.0
1956	Aug. 6-7, 1956	3.91	4.2
1957	June 21-22, 1957	4.58	13
1958	Feb. 21-26, 1958	4.73	15
1959	Mar.-Apr. 1959	4.10	6.8
1960	March 1960	4.16	7.5
1961	--	--	0
1962	August 1962	5.48	25
1963	February 1963	^a 5.89	10
1964	June 1964	4.66	14
1965	May 1965	4.07	6
1966	July 12, 1966	9.02	58.0
1967	March 1967	4.27	9.0
1968	Feb. 26, 1968	3.96	4.5
1969	July 7, 1969	6.42	37

a Backwater.

6-3361. SHEEP CREEK TRIBUTARY NEAR MEDORA, N. DAK.

LOCATION.--Lat 46°54'00", long 103°26'53", in SE $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec.29, T.140 N., R.101 W., Billings County, at culvert on Interstate Highway 94, 4.0 miles east of Medora.

DRAINAGE AREA.--0.29 sq mi.

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

GAGE.--Crest-stage gage. Prior to 1966 at site about 500 ft downstream at different datum.

BANKFULL STAGE.--15 ft.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 0.83 mile; slope of main stream, 126 ft per mile; slope of main stream and tributaries, 170 ft per mile; basin slope, 390 ft per mile; length/width basin, 2.16; stream density, 7.2 miles per square mile; percent of basin under cultivation, 0 percent. (Map scale, 1:1,200).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	June 26-27, 1955	3.85	28
1956	Aug. 22-29, 1956	3.66	22
1957	1957	3.32	15
1958	Spring 1958	3.48	20
1959	Feb.-Mar. 1959	2.69	5
1960	June 20, 1960	6.55	147
1961	June 29, 1961	3.98	30
1962	July 18, 1962	4.02	55
1963	June-July 1963	3.01	20
1964	June 1964	3.62	40
1965	1965	3.96	50
1966	1966	--	unknown
1967	1967	--	unknown
1968	1968	7.80	not determined
1969	July 1969	9.65	not determined

LOCATION.--Lat 46°55'32", long 103°28'23", near center of sec.19,
T.140 N., R.101 W., Billings County, at culvert on Theodore
Roosevelt National Park highway, 3 miles east of Medora.

DRAINAGE AREA.--0.42 sq mi.

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

GAGE.--Crest-stage gage.

BANKFULL STAGE.--Not subject to overflow.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 1.05 miles; slope
of main stream, 83 ft per mile; slope of main stream and tributaries,
160 ft per mile; basin slope, 820 ft per mile; length/width basin,
2.76; stream density, 6.1 miles per square mile; percent of basin
under cultivation, 0 percent. (Map scale, 1:24,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955		below gage	less than 1
1956		below gage	less than 1
1957		below gage	less than 1
1958	February 1958	3.20	2
1959	--	--	0
1960	June 20, 1960	5.40	139
1961	June 29, 1961	4.01	85.7
1962	March 1962	^a 2.90	2
1963	June-July 1963	3.26	53
1964	March 1964	below gage	.2
1965	1965	3.15	50
1966	June-July 1966	4.69	112
1967	May-June 1967	3.30	55
1968	Sept.-Oct. 1968	3.35	58
1969	July 1969	4.02	85

a Backwater.

88 6-3363. LITTLE MISSOURI RIVER TRIBUTARY NEAR MEDORA, N. DAK.

LOCATION.--Lat 46°57'05", long 103°30'20", in SE¼ sec.11, T.140 N.,
R.102 W., Billings County, at culvert on Theodore Roosevelt
National Park highway, 3 miles north of Medora.

DRAINAGE AREA.--0.32 sq mi.

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

GAGE.--Crest-stage gage.

BANKFULL STAGE.--Not subject to overflow.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 0.85 mile; slope
of main stream, 180 ft per mile; slope of main stream and tributaries,
280 ft per mile; basin slope, 1,000 ft per mile; length/width basin,
2.12; stream density, 4.5 miles per square mile; percent of basin
under cultivation, 0 percent. (Map scale, 1:7,200).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Mar. 30-31, 1955	4.68	20
1956	Aug. 25-26, 1956	2.90	2.5
1957	--	--	0
1958	March 1958	3.49	6
1959	Mar.-Apr. 1959	3.99	11
1960	June 20, 1960	10.9	200
1961	June 29, 1961	3.89	10
1962	June 1962	3.22	4
1963	June-July 1963	^a 3.33	1.5
1964	June 1964	^a 3.08	1
1965	July 1965	3.18	4
1966	March 1966	--	.1
1967	March 1967	--	.1
1968	1968	--	0
1969	Mar. 19, 1969	^a 4.1	3.0

a Backwater.

LOCATION.--Lat 46°59'39", long 103°29'13", in NW¼ sec.33, T.141 N., R.101 W., Billings County, at bridge on Theodore Roosevelt National Park highway, 6 miles north of Medora.

DRAINAGE AREA.--3.80 sq mi.

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

GAGE.--Crest-stage gage. Datum of gage is 2,259.63 ft above mean sea level.

BANKFULL STAGE.--12 ft.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 3.76 miles; slope of main stream, 35 ft per mile; slope of main stream and tributaries, 100 ft per mile; basin slope, 770 ft per mile; length/width basin, 6.65; stream density, 5.0 miles per square mile; percent of basin under cultivation, 0 percent. (Map scale, 1:24,000).

HISTORICAL DATA.--The highest flood since February 1936 reached a stage of about 11 ft (year unknown) from information by local resident.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Mar. 9, 1955	3.80	62
1956	Aug. 22-29, 1956	4.71	130
1957	June 21-22, 1957	--	10
1958	July 1958	5.98	250
1959	Mar.-Apr. 1959	4.69	126
1960	June 20, 1960	9.49	619
1961	June 29, 1961	5.83	215
1962	July 18, 1962	5.49	220
1963	June 6, 1963	5.20	190
1964	May-June 1964	4.18	85
1965	1965	5.54	230
1966	June-July 1966	6.56	340
1967	June 9, 1967	--	80
1968	June 1968	--	50
1969	June 1969	7.75	460

90 6-3369.8. LITTLE MISSOURI RIVER TRIBUTARY NEAR WATFORD CITY, N. DAK.

LOCATION.--Lat 47°36'07", long 103°16'41", in NW¼NE¼ sec.34, T.148 N., R.99 W., McKenzie County, at bridge on Theodore Roosevelt National Park highway, 1.8 miles west of U.S. Highway 85 and 14 miles south of Watford City.

DRAINAGE AREA.--2.02 sq mi.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 1.7 miles; slope of main stream, 59 ft per mile; slope of main stream and tributaries, 139 ft per mile; basin slope, 900 ft per mile; length/width basin, 1.36; stream density, 1.95 miles per square mile. (Map scale, 1:24,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1960	June 21, 1960	2.49	25
1961	July 1961	3.1	55
1962	July 18, 1962	9.36	835
1963	Aug. 1, 1963	8.7	740
1964	July 1964	5.55	300
1965	May 31, 1965	6.07	375
1966	July 1966	7.14	520
1967	Mar. 22, 1967	4.18	24
1968	July-Aug. 1968	3.58	150
1969	July 7, 1969	12.22	1,040

LOCATION.--Lat 47°41'18", long 103°15'53", in NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.31, T.149 N., R.98 W., McKenzie County, at bridge on county highway 1 mile east of U.S. Highway 85 and 8 miles south of Watford City.

DRAINAGE AREA.--22.7 sq mi.

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

GAGE.--Crest-stage gage. Prior to 1964, at site 50 ft upstream at different datum.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 12 miles; slope of main stream, 18 ft per mile; slope of main stream and tributaries, 45 ft per mile; basin slope, 270 ft per mile; length/width basin, 5.93; stream density, 1.8 miles per square mile. (Map scale, 1:24,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1960	March 1960	8.79	700
1961	March 1961	4.48	35
1962	Aug. 10, 1962	9.92	1,080
1963	Aug. 1-2, 1963	^a 6.51	200
1964	--	--	0
1965	May 25, 1965	8.12	1,100
1966	Mar. 13, 1966	^a 6.02	400
1967	Mar. 22, 1967	5.70	135
1968	Mar. 3, 1968	4.42	175
1969	July 7, 1969	9.75	800

a Backwater.

92 6-3376. EAST BRANCH DOUGLAS CREEK TRIBUTARY NEAR GARRISON, N. DAK.

LOCATION.--Lat 47°38'37", long 101°31'09", in SW $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec.16, T.148 N., R.85 W., McLean County, at culvert on State Highway 37, 5 miles west of Garrison.

DRAINAGE AREA.--1.39 sq mi.

PERIOD OF RECORD.--1957, 1959 to current year.

GAGE.--Crest-stage gage. Prior to Sept. 8, 1959, reference point.

BANKFULL STAGE.--Not subject to overflow.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 0.82 miles; slope of main stream, 70 ft per mile; slope of main stream and tributaries, 65 ft per mile; basin slope, 65 ft per mile; length/width basin, 0.48; stream density, 1.7 miles per square mile; percent of basin under cultivation, 85 percent. (Map scale, 1:24,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1957	July 1957	8.54	76
1959	March 1959	4.2	5
1960	April 1960	8.18	66
1961	March 1961	5.48	17
1962	June 1962	6.83	41
1963	June 1963	7.54	53
1964	Apr. 27, 1964	4.82	8
1965	June 1965	5.24	14
1966	Mar. 10, 1966	5.15	16
1967	Mar. 9, 1967	^a 6.8	33
1968	Aug. 23-24, 1968	5.33	20
1969	Apr. 5, 1969	7.55	61

a Backwater.

LOCATION.--Lat 47°37'55", long 101°21'00", on south line sec.14, T.
148 N., R.84 W., McLean County, at culvert on county highway, 1 mile
south of State Highway 37 and 3 miles southeast of Garrison.

DRAINAGE AREA.--1.22 sq mi.

PERIOD OF RECORD.--1959 to current year.

GAGE.--Crest-stage gage. Prior to Sept. 9, 1959, reference point.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 1.8 miles; slope
of main stream, 30 ft per mile; slope of main stream and tributaries,
25 ft per mile; basin slope, 110 ft per mile; length/width basin,
2.57; stream density, 0.7 mile per square mile; percent of basin
under cultivation, 80 percent. (Map scale, 1:62,500).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1959	March 1959	1.88	3
1960	April 1960	6.18	not determined
1961	March 1961	2.97	11
1962	Mar. 21, 1962	3.21	14
1963	Mar. 19, 1963	2.77	8
1964	1964	2.53	5.5
1965	July 1965	2.89	8.8
1966	Mar. 11, 1966	2.60	6.8
1967	Mar. 22, 1967	3.16	20
1968	Mar. 4, 1968	2.64	16
1969	Apr. 5, 1969	5.01	65

KNIFE RIVER BASIN

94 6-3391. KNIFE RIVER AT MANNING, N. DAK.

LOCATION.--Lat 47°14'10", long 102°46'10", in SE¼NW¼ sec.6, T.143 N., R.95 W., Dunn County, on left bank 50 ft downstream from bridge on State Highway 22, 0.4 mile north of Manning.

DRAINAGE AREA.--205 sq mi, approximately.

PERIOD OF RECORD.--July 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,156.55 ft above mean sea level.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1968	Mar. 2, 1968	^a 10.44	420
1969	July 8, 1969	15.7	1,120

6-3304.9. ELM CREEK NEAR GOLDEN VALLEY, N. DAK.

LOCATION.--Lat 47°06'25", long 102°03'05", in SE¼NW¼ sec.23, T.142 N., R.90 W., Mercer County, on right bank 60 ft upstream from highway bridge, 13.5 miles south of Golden Valley.

DRAINAGE AREA.--82 sq mi, approximately.

PERIOD OF RECORD.--August 1967 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,915.18 ft above mean sea level.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1968	Mar. 5, 1968	7.20	191
1969	Apr. 4, 1969	17.25	980

6-3402. WEST BRANCH OTTER CREEK NEAR BEULAH, N. DAK.

95

LOCATION.--Lat 47°08'05", long 101°39'35", on east line sec.11, T.142 N., R.87 W., Oliver County, on right bank 10 miles southeast of Beulah.

DRAINAGE AREA.--26.5 sq mi.

PERIOD OF RECORD.--March 1965 to current year.

GAGE.--Water-stage recorder. Altitude of gage 1,967 ft (by barometer).

REMARKS.--This station is one of those especially established to study the effect of drainage basin characteristics.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1965	May 5, 1965	5.23	339
1966	June 24, 1966	17.2	23,700
1967	Mar. 22, 1967	6.54	204
1968	Mar. 8, 1968	5.67	122
1969	Apr. 6, 1969	7.48	660

6-3403. OTTER CREEK NEAR HANNOVER, N. DAK.

LOCATION.--Lat 47°06'40", long 101°35'55", in NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.20, T.142 N., R.86 W., Oliver County, on downstream left wingwall of county highway bridge, 8 miles west of Hannover.

DRAINAGE AREA.--42.9 sq mi.

PERIOD OF RECORD.--March 1965 to current year (seasonal).

GAGE.--Water-stage recorder.

REMARKS.--This station is one of those especially established to study the effect of drainage basin characteristics.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1965	July 12, 1965	8.04	980
1966	June 24, 1966	12.48	45,300
1967	Mar. 23, 1967	6.84	462
1968	Mar. 4, 1968	^a 6.28	140
1969	Apr. 7, 1969	6.48	432

a Backwater.

LOCATION.--Lat 47°16'30", long 100°47'30", in SW¼ sec.23, T.144 N., R.80 W., McLean County, on right bank 600 ft upstream from county highway bridge, 7 miles upstream from Yanktonai Creek and 8 miles north of Wilton.

DRAINAGE AREA.--427 sq mi, of which about 310 sq mi is probably non-contributing.

PERIOD OF RECORD.--October 1957 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,760 ft (from topographic map).

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 32 miles; length/width basin, 8.97; stream density, 1.1 miles per square mile. (Map scale, 1:126,720).

REMARKS.--Station operated as part of the Department of the Interior program for the development of the Missouri River basin.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1958	Mar. 26, 1958	6.22	271
1959	Mar. 21, 1959	5.13	46
1960	Mar. 27, 1960	^a 7.44	650
1961	Mar. 3, 1961	4.68	12
1962	Mar. 27, 1962	6.62	438
1963	July 26, 1963	6.81	475
1964	Apr. 3, 1964	4.97	40
1965	Apr. 8, 1965	^a 6.85	300
1966	Mar. 15, 1966	^a 8.50	1,100
1967	Mar. 24, 1967	^a 7.17	830
1968	Mar. 6, 1968	^a 5.59	80
1969	Apr. 12, 1969	11.13	3,000

a Backwater.

LOCATION.--Lat 47°06'40", long 101°17'55", at section corner 14, 15, 22, 23, T.124 N., R.84 W., Oliver County, at bridge on State Highway 25, in Center.

DRAINAGE AREA.--56.8 sq mi.

PERIOD OF RECORD.--1956 to current year.

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 15 miles; slope of main stream, 13 ft per mile; slope of main stream and tributaries, 30 ft per mile; basin slope, 72 ft per mile; length/width basin, 3.75; stream density, 3.8 miles per square mile. (Map scale, 1:63,360).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1956	Mar. 21, 1956	4.1	90
1957	July 22, 1957	4.43	360
1958	March 1958	4.54	380
1959	Mar. 22, 1959	^a 4.48	215
1960	Mar. 28, 1960	^a 7.00	1,000
1961	Feb. 22, 1961	^a 3.10	86
1962	May 29, 1962	^a 3.66	200
1963	March 1963	1.70	13
1964	June 21, 1964	3.89	450
1965	May 6, 1965	3.04	230
1966	June 24, 1966	10.96	8,000
1967	Mar. 23, 1967	6.49	650
1968	Mar. 4, 1968	--	400
1969	July 18, 1969	8.36	6,000

a Backwater.

98 6-3421. SQUARE BUTTE CREEK TRIBUTARY NO. 2 NEAR CENTER, N. DAK.

LOCATION.--Lat 47°06'40", long 101°15'05", in NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.24, T.142 N., R.84 W., Oliver County, on right bank 60 ft upstream from county highway bridge, 2.1 miles east of Center.

DRAINAGE AREA.--13.0 sq mi.

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

GAGE.--Water-stage recorder. Prior to May 1965, crest-stage gage at datum 1.48 ft lower.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 5.6 miles; slope of main stream, 21 ft per mile; slope of main stream and tributaries, 95 ft per mile; basin slope, 140 ft per mile; length/width basin, 2.46; stream density, 3.0 miles per square mile; percent of basin under cultivation, 20 percent. (Map scale, 1:63,360).

REMARKS.--Station operated in cooperation with Oliver County.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	March 1955	4.74	125
1956	March 1956	^a 6.18	170
1957	July 16, 1957	7.98	2,500
1958	March 1958	^a 5.28	230
1959	Mar. 22, 1959	5.55	300
1960	Mar. 26, 1960	7.20	1,350
1961	March 1961	4.08	53
1962	July-Aug. 1962	5.74	370
1963	June 1963	4.54	100
1964	Mar. 31, 1964	4.47	90
1965	Apr. 7, 1965	5.66	140
1966	Mar. 12, 1966	^a 5.93	60
1967	Mar. 22, 1967	5.29	450
1968	Mar. 4, 1968	3.70	52
1969	Apr. 6, 1969	8.90	450

a Backwater.

LOCATION.--Lat 47°06'20", long 101°15'30", on south line sec.13, T.142 N., T.84 W., Oliver County, at culvert on State Highway 25, 1.7 miles east of Center.

DRAINAGE AREA.--0.19 sq mi.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 0.8 mile; slope of main stream, 150 ft per mile; slope of main stream and tributaries, 150 ft per mile; basin slope, 310 ft per mile; length/width basin, 3.04; stream density, 4.0 miles per square mile; percent of basin under cultivation, 25 percent. (Map scale, 1:6,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	July-Aug. 1955	3.98	11
1956	Mar. 16, 1956	3.99	12
1957	July 16, 1957	6.34	51
1958	March 1958	4.63	22
1959	Mar. 22, 1959	--	7
1960	Mar. 26, 1960	4.40	18
1961	March 1961	--	1
1962	1962	^a 4.58	20
1963	June 1963	4.26	16
1964	March 1964	--	8
1965	Apr. 7, 1965	--	7.5
1966	Mar. 11, 1966	--	2.5
1967	Mar. 1, 1967	^a 4.92	20
1968	Mar. 5-6, 1968	4.46	12
1969	July 17, 1969	5.54	38

a Backwater.

100 6-3422.5. SQUARE BUTTE CREEK TRIBUTARY NO. 3 NEAR CENTER, N. DAK.

LOCATION.--Lat 47°06'20", long 101°10'35", in SE¼ sec.15, T.142 N., R. 83 W., Oliver County, at culvert on State Highway 25, 6 miles east of Center.

DRAINAGE AREA.--1.68 sq mi.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 1.8 miles; slope of main stream, 45 ft per mile; slope of main stream and tributaries, 65 ft per mile; basin slope, 110 ft per mile; length/width basin, 2.52; stream density, 1.2 miles per square mile; percent of basin under cultivation, 20 percent. (Map scale, 1:12,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	March 1955	^a 5.85	unknown
1956	Mar. 20-21, 1956	^a 4.29	40
1957	March 1957	4.20	48
1958	March 1958	6.61	86
1959	Mar. 19, 1959	^a 3.25	25
1960	Mar. 26, 1960	^a 5.10	40
1961	Mar. 2, 1961	^a 2.47	7
1962	May 29, 1962	3.67	38
1963	June 1963	6.79	88
1964	March 1964	2.91	21
1965	Apr. 7, 1965	^a 5.66	70
1966	Mar. 11, 1966	^a 5.03	45
1967	Mar. 23, 1967	7.69	116
1968	March 1968	^a 2.39	10
1969	Apr. 6, 1969	9.40	130

a Backwater.

LOCATION.--Lat 47°03'25", long 101°11'35", in SE¼ sec.4, T.141 N.,
R.83 W., Oliver County, on right bank at southeast corner of
farmyard, 6 miles southeast of Center.

DRAINAGE AREA.--146 sq mi.

PERIOD OF RECORD.--May 1965 to current year.

GAGE.--Water-stage recorder.

REMARKS.--Station operated in cooperation with Oliver County.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1966	June 24, 1966	14.35	9,700
1967	Mar. 23, 1967	9.62	1,800
1968	Apr. 8, 1968	3.56	120
1969	July 18, 1969	12.44	5,290

102 6-3423. BURNT CREEK TRIBUTARY NEAR BALDWIN, N. DAK.

LOCATION.--Lat 47°01'25", long 100°47'30", 0.2 mile south of section corner 14, 15, 22, 23, T.141 N., R.80 W., Burleigh County, at culvert on U.S. Highway 83, 2 miles west of Baldwin.

DRAINAGE AREA.--2.98 sq mi.

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

GAGE.--Crest-stage gage. Prior to 1969 at datum 2.06 ft lower.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 1.9 miles; slope of main stream, 50 ft per mile; slope of main stream and tributaries, 55 ft per mile; basin slope, 110 ft per mile; length/width basin, 1.54; stream density, 1.1 miles per square mile; percent of basin under cultivation, 90 percent. (Map scale, 1:62,500).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1956	July 7, 1956	2.78	73.4
1957	July 16, 1957	3.76	256
1958	Mar. 25, 1958	3.15	130
1959	Mar. 19, 1959	2.20	17
1960	Mar. 26, 1960	a 4.98	200
1961	Feb. 21, 1961	a 1.97	4.2
1962	Mar. 17, 1962	a 3.80	25
1963	June 6, 1963	3.05	50
1964	May 6, 1964	7.85	1,080
1965	June 13, 1965	7.6	1,040
1966	Mar. 11, 1966	a 5	120
1967	Mar. 9, 1967	a 4.40	80
1968	Aug. 23, 1968	3.56	200
1969	July 1969	6.57	not determined

a Backwater.

LOCATION.--Lat 46°59'05", long 100°47'25", in SW¼SW¼ sec.35, T.141 N., R.80 W., Burleigh County, at culvert on U.S. Highway 83, 3.5 miles southwest of Baldwin.

DRAINAGE AREA.--2.12 sq mi.

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

GAGE.--Crest-stage gage. Prior to 1965 at different datum.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 1.3 miles; slope of main stream, 70 ft per mile; slope of main stream and tributaries, 80 ft per mile; basin slope, 150 ft per mile; length/width basin, 0.82; stream density, 1.6 miles per square mile; percent of basin under cultivation, 70 percent. (Map scale, 1:62,500).

HISTORICAL DATA.--The highest flood since 1931 occurred in the spring of 1936 at gage height of 10.5 ft (1,000 cfs) from information by local resident.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1956	June 30, 1956	5.23	373
1957	July 16, 1957	5.95	476
1958	June 4, 1958	3.67	150
1959	Mar. 19, 1959	2.60	17
1960	Mar. 26, 1960	^a 4.28	200
1961	Feb. 21, 1961	^a 2.51	7.0
1962	Mar. 21, 1962	^a 4.2	20
1963	June 1963	^a 2.94	25
1964	May 6, 1964	7.18	645
1965	July 20, 1965	7.54	160
1966	Mar. 13, 1966	^a 6.00	50
1967	Mar. 21, 1967	6.08	90
1968	Aug. 23, 1968	9.50	285
1969	July 1969	7.1	135

a Backwater.

BURNT CREEK BASIN

104 6-3424.5. BURNT CREEK NEAR BISMARCK, N. DAK.

LOCATION.--Lat 46°54'54", long 100°48'48", in SW $\frac{1}{4}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.29, T.140 N., R.80 W., Burleigh County, on left bank on upstream side of county highway bridge, 7 miles northwest of Bismarck.

DRAINAGE AREA.--108 sq mi.

PERIOD OF RECORD.--October 1967 to current year.

GAGE.--Water-stage recorder.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1968	Mar. 5, 1968	a8.87	270
1969	Apr. 8, 1969	14.80	3,000

a Backwater.

LOCATION.--Lat 46°51'50", long 102°57'15", in SW¼ sec.8, T.139 N., R.97 W., Stark County, on left bank 0.5 mile downstream from North Creek and 2 miles east of South Heart.

DRAINAGE AREA.--315 sq mi.

PERIOD OF RECORD.--June 1946 to current year. Prior to June 1947, published as "near Dickinson."

GAGE.--Water-stage recorder. Datum of gage is 2,429.45 ft above mean sea level. June 21, 1946 to May 31, 1947, nonrecording gage at site 6 miles downstream at different datum.

BANKFULL STAGE.--18 ft.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 38 miles; length/width basin, 4.58; stream density, 3.3 miles per square mile. (Map scale, 1:126,720).

REMARKS.--Station operated in cooperation with the State Water Commission.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1947	Mar. 24, 1947	^a 17.0	2,200
1948	Mar. 23, 1948	15.15	1,640
1949	Mar. 31, 1949	17.75	2,400
1950	Apr. 16, 1950	21.67	4,970
1951	Mar. 26, 1951	^a 17.09	2,100
1952	Apr. 1, 1952	20.05	3,300
1953	Aug. 20, 1953	12.46	1,120
1954	Apr. 6, 1954	21.73	5,030
1955	June 28, 1955	16.12	1,910
1956	July 31, 1956	6.38	251
1957	June 23, 1957	21.79	5,090
1958	Mar. 26, 1958	12.07	994
1959	Mar. 20, 1959	17.42	2,290
1960	Mar. 22, 1960	14.72	1,580
1961	June 30, 1961	4.71	115
1962	May 31, 1962	7.14	349
1963	June 7, 1963	7.91	447
1964	June 10, 1964	10.42	814
1965	May 24, 1965	14.79	1,650
1966	Mar. 14, 1966	14.37	1,470
1967	May 8, 1967	14.69	1,790
1968	Aug. 24, 1968	5.30	163
1969	July 5, 1969	13.94	1,740

a Backwater.

106 6-3432. HEART RIVER TRIBUTARY NEAR SOUTH HEART, N. DAK.

LOCATION.--Lat 46°52'35", long 102°55'10", in SE½ sec.4, T.139 N., R.97 W., Stark County, at culvert on U.S. Highway 10, 3.5 miles northwest of South Heart.

DRAINAGE AREA.--0.13 sq mi.

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

GAGE.--Crest-stage gage. Prior to May 1956, reference point.

BANKFULL STAGE.--Not subject to overflow.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream 0.34 mile; slope of main stream, 140 ft per mile; slope of main stream and tributaries, 150 ft per mile; basin slope, 400 ft per mile; length/width basin 1.74; stream density, 4.8 miles per square mile; percent of basin under cultivation, 60 percent. (Map scale, 1:6,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	June 26, 1955	12.37	62
1956	July-Aug. 1956	10.80	33
1957	June 21, 1957	9.82	14
1958	Aug. 21, 1958	8.82	1.5
1959	June 20, 1959	10.09	20
1960	March 1960	9.49	9.0
1961	June 29, 1961	11.09	38
1962	March 1962	^a 9.30	1
1963	May 12, 1963	11.45	45
1964	May 1964	9.26	4.8
1965	1965	10.54	28
1966	March 1966	9.35	6.4
1967	April 1967	11.19	40
1968	1968	9.19	4.5
1969	Mar. 22, 1969	9.5	9.0

a Backwater.

LOCATION.--Lat 46°50'21", long 102°47'22", in NW¼SW¼ sec.22, T.139 N., R.96 W., Stark County, at culverts on State Highway 22, 3 miles south of Dickinson.

DRAINAGE AREA.--1.72 sq mi.

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

GATE.--Crest-stage gage.

BANKFULL STAGE.--Not subject to overflow.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 1.7 miles; slope of main stream, 35 ft per mile; slope of main stream and tributaries, 50 ft per mile; basin slope, 160 ft per mile; length/width basin, 1.74; stream density, 1.5 miles per square mile. (Map scale, 1:24,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	June 26, 1955	5.85	90
1956	Feb. 29-Mar. 1, 1956	3.88	16
1957	June 21, 1957	--	.2
1958	July 3-4, 1958	5.09	62
1959	March 1959	3.83	15
1960	March 1960	4.20	29
1961	--	--	0
1962	--	--	0
1963	--	--	0
1964	May-June 1964	3.53	6
1965	Mar. 31, 1965	4.18	28
1966	June-July 1966	4.07	24
1967	Mar. 18, 1967	3.54	3.5
1968	Feb. 26, 1968	3.41	.3
1969	July 7, 1969	4.63	45

LOCATION.--Lat 46°52'10", long 102°42'35", in NE¼ sec.7, T.139 N., R. 95 W., Stark County, on upstream side of highway bridge in Lehigh, 150 ft downstream from Northern Pacific Railway bridge, 10 miles upstream from Green River.

DRAINAGE AREA.--443 sq mi.

PERIOD OF RECORD.--March 1943 to June 1952.

GAGE.--Nonrecording gage. Datum of gage is 2,328.39 ft above mean sea level.

BANKFULL STAGE.--Not subject to overflow.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 60 miles; length/width basin, 8.13; stream density, 3.0 miles per square mile. (Map scale, 1:126,720).

REMARKS.--Flow regulated by Edward Arthur Patterson Lake after May 23, 1950.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1943	Mar. 25, 1943	17.7	5,420
1944	June 28, 1944	10.87	1,420
1945	Mar. 13, 1945	^a 17.7	4,500
1946	June 26, 1946	3.95	20
1947	Mar. 24, 1947	15.7	4,040
1948	Mar. 24, 1948	^a 12.1	1,640
1949	Apr. 2, 1949	^a 14.9	3,800
1950	Apr. 15, 1950	17.90	5,980
1951	Mar. 26, 1951	^a 14.7	2,600
1952	Apr. 3, 1952	14.30	3,520

a Backwater.

LOCATION.--Lat 47°01'40", long 103°03'10", on line between secs.13 and 14, about 0.1 mile north of intersection of secs.13, 14, 23, and 24, T.141 N., R.98 W., Billings County, on bridge on county road 8 miles west of New Hradec.

DRAINAGE AREA.--152 sq mi, approximately.

PERIOD OF RECORD.--February 1964 to current year.

GAGE.--Water-stage recorder.

BANKFULL STAGE.--15 ft.

HISTORICAL DATA.--Flood in early 1950's reached a stage of about 18 ft, from information by local resident.

REMARKS.--Station operated in cooperation with the State Water Commission.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1964	July 5, 1964	16.88	3,160
1965	Apr. 8, 1965	--	630
1966	Mar. 13, 1966	10.22	590
1967	Mar. 23, 1967	12.49	1,060
1968	Aug. 24, 1968	10.09	579
1969	July 8, 1969	14.68	1,790

LOCATION.--Lat 46°53'40", long 102°37'25", in SW¼ sec.36, T.140 N., R.95 W., Stark County, on right bank 0.5 mile upstream from bridge on U.S. Highway 10, 3.5 miles northwest of Gladstone, 3.5 miles upstream from mouth, and 8 miles downstream from Spring Creek.

DRAINAGE AREA.--365 sq mi.

PERIOD OF RECORD.--October 1945 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 2,320 ft (by barometer). Prior to June 27, 1953, nonrecording gage at datum 4.15 ft lower, Oct. 1, 1945 to July 5, 1949, on former U.S. Highway 10 bridge over former channel 700 ft east of present bridge and July 6, 1949 to June 26, 1953, on U.S. Highway 10 bridge 0.5 mile downstream from present site.

BANKFULL STAGE.--13 ft.

HISTORICAL DATA.--Maximum stage known, about 20 ft in March 1943.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 58 miles; length/width basin, 9.22; stream density, 2.0 miles per square mile. (Map scale, 1:126,720).

REMARKS.--Station operated in cooperation with the State Water Commission.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1946	Feb. 28, 1946	^a 5.42	140
1947	Mar. 25, 1947	^a 15.44	2,300
1948	Mar. 24, 1948	^a 12.7	1,770
1949	Apr. 5, 1949	16.9	3,780
1950	Apr. 15, 1950	18.3	5,260
1951	May 27, 1951	^a 16.7	3,800
1952	Apr. 3, 1952	15.7	3,440
1953	June 14, 1953	7.70	847
1954	Apr. 7, 1954	15.93	4,290
1955	Apr. 22, 1955	^a 4.52	280
1956	Mar. 19-20, 1956	--	250
1957	June 23, 1957	8.05	1,180
1958	Mar. 29, 1958	6.36	838
1959	Mar. 24, 1959	9.70	1,640
1960	Mar. 22, 1960	^a 9.65	1,500
1961	June 30, 1961	3.60	200
1962	July 4, 1962	3.65	213
1963	June 8, 1963	4.46	347
1964	July 6, 1964	16.20	4,950
1965	May 24, 1965	9.04	1,580
1966	July 1, 1966	8.35	1,380
1967	Mar. 24, 1967	11.03	2,140
1968	July 13, 1968	7.66	1,100
1969	Apr. 3, 1969	^a 12.10	2,500

^a Backwater.

6-3451. ANTELOPE CREEK NEAR DICKINSON, N. DAK.

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LOCATION.--Lat 46°43'15", long 102°47'25", in NW¼SW¼ sec.34, T.138 N., R.96 W., Stark County, at bridge on State Highway 22, 11 miles south of Dickinson.

DRAINAGE AREA.--69.2 sq mi.

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

GAGE.--Crest-stage gage.

BANKFULL STAGE.--11 ft.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 20 miles; length/width basin, 6.01; stream density, 1.8 miles per square mile. (Map scale, 1:63,360).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	June 26, 1955	5.18	200
1956	July 30-31, 1956	5.21	210
1957	June 21-22, 1957	11.98	6,100
1958	Mar. 24-25, 1958	6.95	920
1959	March 1959	^a 9.22	1,500
1960	April 1960	5.03	280
1961	--	--	0
1962	May 29, 1962	4.83	55
1963	June 5, 1963	6.59	600
1964	June 1964	3.58	5
1965	May 24, 1965	8.75	2,100
1966	July 2, 1966	10.52	4,100
1967	May 8, 1967	8.20	1,600
1968	March 1968	3.45	4.0
1969	July 7, 1969	8.12	1,200

a Backwater.

112 6-3452. ANTELOPE CREEK TRIBUTARY NEAR NEW ENGLAND, N. DAK.

LOCATION.--Lat 46°40'05", long 102°47'25", in SW¼NW¼ sec.22, T.137 N.,
R.96 W., Stark County, at culvert on State Highway 22, 9.5 miles
northwest of New England.

DRAINAGE AREA.--13.0 sq mi.

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

GAGE.--Crest-stage gage.

BANKFULL STAGE.--6 ft.

HISTORICAL DATA.--Highest flood since 1928 reached a stage of about
12 ft prior to 1937. One flood since then reached a stage of about
14.5 ft.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 7.2 miles;
length/width basin, 3.99; stream density, 2.5 miles per square mile.
(Map scale, 1:63,360).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	June 26, 1955	6.26	602
1956	June 29, 1956	3.91	179
1957	June 21-22, 1957	8.93	1,080
1958	Mar. 25-26, 1958	^a 4.64	240
1959	May 1959	2.92	17
1960	June 12, 1960	10.93	1,360
1961	--	--	0
1962	May 29, 1962	^a 3.02	12
1963	June 5, 1963	4.86	350
1964	June 1964	2.92	17
1965	Apr. 1, 1965	^a 4.10	50
1966	June 24, 1966	4.90	357
1967	May 8, 1967	4.74	328
1968	August 1968	2.93	18
1969	July 7, 1969	8.10	933

a Backwater.

6-3453. ANTELOPE CREEK TRIBUTARY (SITE NO. 2) NEAR NEW ENGLAND, N. DAK. 113

LOCATION.--Lat. 46°41'20", long 102°47'25", in SW¼SW¼ sec.10, T.137 N., R.96 W., Stark County, at culvert on State Highway 22, 11 miles northwest of New England.

DRAINAGE AREA.--22.4 sq mi.

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

GAGE.--Crest-stage gage.

BANKFULL STAGE.--8 ft.

HISTORICAL DATA.--The highest flood since 1935 reached a stage of about 11 ft, from information by local resident.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 9.6 miles; length/width basin, 4.11; stream density, 1.9 miles per square mile. (Map scale, 1:63,360).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	June 26, 1955	4.49	675
1956	July-Aug. 1956	3.72	441
1957	June 21-22, 1957	6.34	1,200
1958	Mar. 24-25, 1958	^a 3.55	100
1959	March 1959	--	20
1960	June 12, 1960	6.33	1,120
1961	--	--	0
1962	May 29, 1962	2.95	210
1963	June 5, 1963	4.14	567
1964	June 21-22, 1964	^a 1.52	2.0
1965	1965	2.21	72
1966	June 24, 1966	^a 3.84	170
1967	May 8, 1967	3.7	435
1968	August 1968	2.44	95
1969	July 7, 1969	6.00	1,100

a Backwater.

114 6-3457. GOVERNMENT CREEK NEAR RICHARDTON, N. DAK.

LOCATION.--Lat 46°48'15", long 102°18'35", in NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.5, T.138 N., R.92 W., Stark County, at bridge on county highway, 5.4 miles south of Richardton.

DRAINAGE AREA.--33.4 sq mi.

PERIOD OF RECORD.--1950, November 1954 to current year.

GAGE.--Crest-stage gage. Prior to Nov. 8, 1954, reference point.

BANKFULL STAGE.--18 ft.

HISTORICAL DATA.--Flood of 1950 is highest since 1949.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 12 miles; length/width basin, 4.46; stream density, 1.4 miles per square mile. (Map scale, 1:63,360).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1950	Apr. 16, 1950	15.05	4,300
1955	Mar. 11, 1955	^a 5.44	50
1956	Mar. 15-22, 1956	^a 7.26	400
1957	June 22, 1957	5.84	184
1958	Mar. 25-26, 1958	5.93	203
1959	Mar. 18, 1959	7.90	755
1960	March 1960	4.88	50
1961	--	--	0
1962	June 1962	^a 4.76	20
1963	May 31, 1963	^a 11.77	1,500
1964	June 18, 1964	6.23	273
1965	June 1965	4.94	58
1966	June 24, 1966	7.96	600
1967	May 8, 1967	9.20	1,250
1968	Mar. 3, 1968	^a 5.42	65
1969	June 1969	8.25	878

a Backwater.

LOCATION.--Lat 46°31'50", long 101°38'25", in NW¼NE¼ sec.8, T.135 N., R.87 W., Grant County, on right bank 800 ft upstream from county highway bridge, 4 miles upstream from mouth, and 8 miles northwest of Carson.

DRAINAGE AREA.--221 sq mi.

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

GAGE.--Water-stage recorder. Altitude of gage is 1,974 ft (by barometer). Prior to May 23, 1958, nonrecording gage at site 800 ft downstream at same datum.

BANKFULL STAGE.--15 ft.

HISTORICAL DATA.--Flood of Mar. 25, 1943 reached a stage of 17.1 ft, the highest known prior to 1950.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 45 miles; length/width basin, 9.01; stream density, 2.3 miles per square mile. (Map scale, 1:126,720).

REMARKS.--Station operated in cooperation with the State Water Commission.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1949	Mar. 28, 1949	^a 13.84	1,300
1950	Apr. 16, 1950	17.95	11,100
1951	Mar. 27, 1951	^a 15.5	2,900
1952	Aug. 30, 1952	15.05	3,300
1953	June 16, 1953	13.06	1,540
1954	Apr. 7, 1954	5.90	252
1955	June 2, 1955	7.50	377
1956	Mar. 20, 1956	^a 11.50	870
1957	June 23, 1957	8.44	480
1958	June 11, 1958	6.47	213
1959	Mar. 14, 1959	^a 10.11	250
1960	Mar. 21, 1960	^a 11.50	725
1961	June 14, 1961	^a 9.32	531
1962	May 30, 1962	9.77	621
1963	July 31, 1963	9.56	593
1964	June 19, 1964	13.41	1,630
1965	June 2, 1965	8.78	492
1966	Mar. 14, 1966	^a 13.75	1,770
1967	Mar. 2, 1967	^a 14.64	2,000
1968	Aug. 23, 1968	5.54	124
1969	Apr. 3, 1969	17.5	6,200

a Backwater.

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6-3471. WILSON CREEK NEAR GLEN ULLIN, N. DAK.

LOCATION.--Lat 46°49'53", long 101°39'23", in NW¼ sec.27, T.139 N.,
R.87 W., Morton County, on right bank 8 miles east of Glen Ullin.

DRAINAGE AREA.--41.4 sq mi.

PERIOD OF RECORD.--March 1965 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,995 ft (by barometer).

REMARKS.--This station is one of those especially established to study
the effect of drainage basin characteristics.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1965	May 6, 1965	11.36	533
1966	June 24, 1966	22.9	20,800
1967	May 6, 1967	12.86	878
1968	Mar. 8, 1968	^a 9.19	140
1969	Apr. 6, 1969	15.71	1,410

a Backwater.

LOCATION.--Lat 46°55'20", long 101°38'15", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.23, T.140 N., R.87 W., Morton County, on right downstream wingwall of county highway bridge 3 miles southwest of Blue Grass.

DRAINAGE AREA.--38.7 sq mi.

PERIOD OF RECORD.--March 1965 to current year (seasonal).

GAGE.--Water-stage recorder. Altitude of gage is 2,111 ft (by barometer).

REMARKS.--This station is one of those especially established to study the effect of drainage basin characteristics.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1965	July 21, 1965	5.30	72
1966	June 24, 1966	14.7	12,000
1967	May 7, 1967	7.59	626
1968	Mar. 8, 1968	5.40	155
1969	Apr. 6, 1969	^a 10.44	1,300

a Backwater.

LOCATION.--Lat 46°41'30", long 101°28'10", in SW¼ sec.7, T.137 N., R.85 W., Morton County, on right bank 450 ft downstream from county highway bridge, 2 miles downstream from Hailstone Creek, 3 miles southeast of Almont, and 12 miles upstream from mouth.

DRAINAGE AREA.--456 sq mi.

PERIOD OF RECORD.--October 1945 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 1,864 ft (by barometer). Prior to Sept. 5, 1952, nonrecording gage at same site and datum.

BANKFULL STAGE.--22 ft.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 27 miles; length/width basin, 1.49; stream density, 1.8 miles per square mile. (Map scale, 1:126,720).

REMARKS.--Station operated in cooperation with the State Water Commission.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1946	Mar. 3, 1946	^a 12.8	750
1947	Mar. 23, 1947	^a 17.17	1,600
1948	Mar. 24, 1948	^a 19.20	2,250
1949	Apr. 1, 1949	15.41	1,400
1950	Apr. 17, 1950	20.7	20,200
1951	Apr. 5, 1951	19.0	2,050
1952	Apr. 8, 1952	21.86	3,350
1953	June 17, 1953	12.60	836
1954	Apr. 6, 1954	14.07	1,170
1955	June 2, 1955	^a 12.49	864
1956	Mar. 21, 1956	^a 18.87	2,190
1957	June 24, 1957	7.18	205
1958	Mar. 28, 1958	^a 13.02	810
1959	Mar. 24, 1959	14.19	1,230
1960	Mar. 27, 1960	17.97	2,050
1961	Mar. 23, 1961	^a 3.66	8.4
1962	May 31, 1962	16.31	1,660
1963	July 26, 1963	--	630
1964	June 20, 1964	16.21	1,590
1965	July 20, 1965	9.82	480
1966	June 25, 1966	29.37	8,840
1967	May 8, 1967	19.27	2,380
1968	Mar. 5, 1968	11.93	600
1969	Apr. 7, 1969	24.80	4,760

a Backwater.

LOCATION.--Lat 46°51'05", long 101°15'15", in SW¼ sec.14, T.139 N., R.84 W., Morton County, on right bank 80 ft downstream from bridge on county highway, 2 miles northeast of Judson and 16 miles upstream from mouth.

DRAINAGE AREA.--157 sq mi.

PERIOD OF RECORD.--1950, July 1951 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,886.42 ft. Prior to July 20, 1955, nonrecording gage 80 ft upstream at same datum.

BANKFULL STAGE.--10 ft.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 32 miles; length/width basin, 6.52; stream density, 0.8 mile per square mile. (Map scale, 1:126,720).

REMARKS.--Station operated in cooperation with the State Water Commission and Corps of Engineers. Flow after Apr. 24, 1964 affected by dam at I-94 crossing about 0.5 mile upstream.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1950	Apr. 17, 1950	12.5	5,910
1952	Apr. 7, 1952	9.55	2,300
1953	June 16, 1953	8.48	1,450
1954	Apr. 5, 1954	7.8	1,100
1955	June 2, 1955	11.11	3,400
1956	Mar. 21, 1956	^a 8.10	1,300
1957	July 17, 1957	6.19	709
1958	Mar. 27, 1958	7.75	990
1959	Mar. 23, 1959	^a 7.17	866
1960	Mar. 27, 1960	^a 9.11	1,600
1961	Mar. 4, 1961	3.52	59
1962	May 30, 1962	7.01	1,130
1963	Aug. 1, 1963	5.73	566
1964	Apr. 1, 1964	2.94	30
1965	May 9, 1965	2.40	5.0
1966	Mar. 14, 1966	^a 7.28	900
1967	May 8, 1967	7.56	1,290
1968	Mar. 5, 1968	5.16	355
1969	Apr. 7, 1969	11.28	4,200

a Backwater.

120 6-3491. DEAD BUFFALO LAKE TRIBUTARY NEAR STEELE, N. DAK.

LOCATION.--Lat 46°53'03", long 99°49'34", on east line sec.1, T.139 N., R.73 W., Kidder County, at culverts on county highway 1.3 miles north of U.S. Highway 10 and 4.5 miles northeast of Steele.

DRAINAGE AREA.--5.92 sq mi.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 4.8 miles; slope of main stream, 17 ft per mile; slope of main stream and tributaries, 20 ft per mile; basin slope, 100 ft per mile; length/width basin, 3.96; stream density, 1.2 miles per square mile. (Map scale, 1:24,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1960	Mar. 26, 1960	5.68	116
1961	March 1961	^a 2.20	.2
1962	March 1962	2.9	18
1963	June 1963	2.59	7
1964	1964	3.31	32
1965	Apr. 9-10, 1965	3.23	29
1966	Mar. 18, 1966	^a 3.23	20
1967	Mar. 10, 1967	^a 4.18	28
1968	April 1968	3.32	32
1969	Apr. 8, 1969	^a 4.17	40

a Backwater.

6-3492. WEST BRANCH LONG LAKE CREEK NEAR HAZELTON, N. DAK.

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LOCATION.--Lat 46°29'10", long 100°09'20", on south line sec.19, T.135 N., R.75 W., Emmons County, at culverts on State Highway 34, 5.9 miles east of Hazelton.

DRAINAGE AREA.--16.5 sq mi.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 7.8 miles; slope of main stream, 14 ft per mile; slope of main stream and tributaries, 15 ft per mile; basin slope, 65 ft per mile; length/width basin, 5.06; stream density, 0.9 mile per square mile. (Map scale, 1:63,360).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Mar. 11-12, 1955	^a 5.45	140
1956	June 6, 1956	7.92	798
1957	May 1957	3.43	.1
1958	Feb. 25, 1958	4.50	43
1959	--	--	0
1960	March 1960	^a 7.8	500
1961	--	--	0
1962	Mar. 21, 1962	^a 6.60	120
1963	March 1963	--	2
1964	May-June 1964	4.04	13
1965	May-Aug. 1965	3.76	2.4
1966	Mar. 14, 1966	^a 9.10	300
1967	Mar. 1, 1967	^a 6.27	275
1968	Mar. 5, 1968	4.10	15
1969	Apr. 6, 1969	^a 7.86	300

a Backwater.

122 6-3516.5. MIDDLE FORK CEDAR CREEK NEAR BUFFALO SPRINGS, N. DAK.

LOCATION.--Lat 46°15'55", long 103°13'30", in SW¼SW¼ sec.8, T.132 N., R.100 W., Bowman County, on downstream right corner of bridge on county road, 6.3 miles north of Buffalo Springs.

DRAINAGE AREA.--32.9 sq mi.

PERIOD OF RECORD.--March 1965 to current year (seasonal).

GAGE.--Water-stage recorder.

REMARKS.--This station is one of those especially established to study the effect of drainage basin characteristics.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1965	Apr. 3, 1965	^a 8.55	250
1966	June 24, 1966	7.87	340
1967	June 8, 1967	8.23	430
1968	June 13, 1968	6.76	105
1969	Mar. 21, 1969	10.32	415

6-3516.8. WHITE BUTTE FORK CEDAR CREEK NEAR SCRANTON, N. DAK.

LOCATION.--Lat 46°19'20", long 102°59'45", in NW¼ sec.21, T.133 N., R.98 W., Slope County, on left bank 1,200 ft downstream from bridge on county highway, 13 miles northeast of Scranton.

DRAINAGE AREA.--42.9 sq mi.

PERIOD OF RECORD.--March 1965 to current year.

GAGE.--Water-stage recorder and concrete broad-crested weir.

REMARKS.--This station is one of those especially established to study the effect of drainage basin characteristics.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1965	May 25, 1965	5.88	277
1966	June 24, 1966	4.59	115
1967	May 8, 1967	7.76	627
1968	Mar. 6, 1968	^a 4.0	12
1969	July 8, 1969	6.53	381

a Backwater.

LOCATION.--Lat 46°22'25", long 101°29'20", in SW $\frac{1}{2}$ SW $\frac{1}{2}$ SW $\frac{1}{2}$ sec.34, T.134 N., R.86 W., Grant County, at culvert on county highway 2 miles south of Brisbane.

DRAINAGE AREA.--0.29 sq mi.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 0.9 mile; slope of main stream, 70 ft per mile; slope of main stream and tributaries, 60 ft per mile; basin slope, 400 ft per mile; length/width basin, 2.55; stream density, 3.2 miles per square mile. (Map scale, 1:6,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	June 9 or 16, 1955	3.69	8.8
1956	July 2-11, 1956	3.99	12
1957	June 1957	3.13	3.8
1958	Mar. 24, 1958	3.55	7.5
1959	March 1959	^a 4.69	10
1960	June 1960	4.64	17
1961	Aug. 26, 1961	2.53	.3
1962	May 30-31, 1962	3.18	4.2
1963	June 23-25, 1963	3.63	8.2
1964	June 18-19, 1964	4.68	18
1965	May 9, 1965	2.82	1.0
1966	June 24, 1966	7.21	31
1967	Feb. 28, 1967	^a 4.33	12
1968	March 1968	3.58	7.5
1969	1969	5.96	28

^a Backwater.

124 6-3537. LOUISE CREEK TRIBUTARY NEAR LARK, N. DAK.

LOCATION.--Lat 46°26'30", long 101°25'00", at center of NW¼ sec.7,
T.134 N., R.85 W., Grant County, at culvert on State Highway 21,
1.3 miles southwest of Lark.

DRAINAGE AREA.--0.76 sq mi.

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

GATE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 1.7 miles; slope
of main stream, 55 ft per mile; slope of main stream and tributaries,
60 ft per mile; basin slope, 520 ft per mile; length/width basin,
3.71; stream density, 2.2 miles per square mile. (Map scale,
1:21,120).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1956	Mar. 17, 1956	^a 3.30	5.5
1957	June 22, 1957	2.90	20
1958	Mar. 24, 1958	^a 3.00	10
1959	March 1959	^a 4.77	15
1960	March 1960	4.20	60
1961	Aug. 26, 1961	3.63	42
1962	Mar.-Apr. 1962	2.49	7
1963	June 23-25, 1963	2.30	2
1964	May-June 1964	2.77	16
1965	May 5, 1965	6.68	140
1966	Mar. 13-14, 1966	5.00	87
1967	Feb. 28, 1967	^a 4.26	40
1968	Mar. 1-2, 1968	^a 3.62	40
1969	Apr. 1, 1969	^a 3.80	36

a Backwater.

LOCATION.--Lat 46°26'35", long 101°19'55", on south line sec.2, T.134 N., R.85 W., Grant County, at culvert on State Highway 21, 3.4 miles east of Lark.

DRAINAGE AREA.--7.70 sq mi.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 4.5 miles; slope of main stream, 35 ft per mile; slope of main stream and tributaries, 65 ft per mile; basin slope, 180 ft per mile; length/width basin, 2.65; stream density, 2.7 miles per square mile. (Map scale, 1:63,360).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1956	March 1956	1.84	108
1957	June 1957	1.26	10.5
1958	April 1958	1.22	8.0
1959	Mar. 23-24 1959	1.21	7.5
1960	March 1960	3.30	not determined
1961	--	--	0
1962	May-June 1962	2.07	165
1963	July 31, 1963	1.44	29
1964	July 1964	1.28	12
1965	Apr.-May 1965	1.36	19
1966	March 1966	2.22	210
1967	Feb. 28, 1967	2.53	60
1968	March 1968	2.19	200
1969	1969	4.48	not determined

a Backwater.

LOCATION.--Lat 46°27'15", long 101°14'55", in SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec.4, T.134 N., R.84 W., Grant County, at bridge on Northern Pacific Railway, 0.7 mile west of Flasher.

DRAINAGE AREA.--110 sq mi.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 24 miles; slope of main stream, 17 ft per mile; slope of main stream and tributaries, 16 ft per mile; basin slope, 60 ft per mile; length/width basin, 5.32; stream density, 3.0 miles per square mile. (Map scale, 1:63,360).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Mar. 11, 1955	3.49	45
1956	Mar. 30, 1956	10.40	946
1957	June 23, 1957	^a 3.40	27
1958	Mar. 26, 1958	6.61	266
1959	March 1959	4.46	89
1960	Mar. 22, 1960	^a 9.55	600
1961	--	--	0
1962	June 14-15, 1962	5.96	199
1963	June 25, 1963	^a 3.5	40
1964	June 10, 1964	^a 7.57	350
1965	May 6, 1965	^a 8.64	480
1966	Mar. 15, 1966	^a 11.27	1,000
1967	Feb. 28, 1967	10.22	903
1968	March 1968	3.24	33
1969	Apr. 3, 1969	11.04	1,300

a Backwater.

6-3547. SPRING CREEK NEAR LINTON

127

LOCATION.--Lat 46°18'40", long 100°13'50", in NE¼NE¼ sec.28, T.133 N., R.76 W., Emmons County, at bridge on county highway 3 miles north of Linton.

DRAINAGE AREA.--22.9 sq mi.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 9.9 miles; slope of main stream, 24 ft per mile; slope of main stream and tributaries, 24 ft per mile; basin slope, 75 ft per mile; length/width basin, 4.26; stream density, 1.3 miles per square mile. (Map scale, 1:63,360).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	June-July 1955	4.42	72
1956	June 6, 1956	8.18	2,790
1957	Feb. 27, 1957	^a 4.34	18
1958	Mar. 24, 1958	4.52	82
1959	Mar. 19, 1959	^a 5.8	130
1960	Mar. 26, 1960	7.05	1,180
1961	Apr. 19, 1961	^a 1.60	1
1962	May 22, 1962	7.06	1,190
1963	Mar. 20, 1963	^a 6.50	250
1964	May-June 1964	^a 5.20	145
1965	April 1965	^a 4.2	4
1966	Mar. 16, 1966	^a 8.33	250
1967	Mar. 9, 1967	^a 6.55	485
1968	Mar. 4-5, 1968	^a 5.3	18
1969	Apr. 6, 1969	^a 7.60	800

a Backwater.

128 6-3547.5. SAND CREEK TRIBUTARY NEAR HAZELTON, N. DAK.

LOCATION.--Lat 46°25'50", long 100°17'50", in SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.12, T.134 N., R.77 W., Emmons County, at culvert on county highway 1.1 miles west of U.S. Highway 83 and 3.5 miles south of Hazelton.

DRAINAGE AREA.--2.96 sq mi.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 2.3 miles; slope of main stream, 22 ft per mile; slope of main stream and tributaries, 30 ft per mile; basin slope, 85 ft per mile; length/width basin, 4.82; stream density, 1.7 miles per square mile; percent of basin under cultivation, 85 percent. (Map scale, 1:2,640).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1960	Mar. 24, 1960	^a 5.5	18
1961	April 1961	2.40	.2
1962	June 12-13, 1962	6.47	60
1963	Mar. 20, 1963	2.99	8.3
1964	Mar. 30, 1964	2.70	5.2
1965	May-Aug. 1965	3.32	12
1966	Mar. 16, 1966	4.53	27
1967	Mar. 9, 1967	4.98	29
1968	March 1968	^a 3.93	10
1969	Apr. 7, 1969	4.05	19

a Backwater.

LOCATION.--Lat 46°22'20", long 100°20'40", on north line sec.3, T.133 N., R.77 W., Emmons County, at bridge on county highway, 4.2 miles west of Temvik.

DRAINAGE AREA.--23.3 sq mi.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 11 miles; slope of main stream, 22 ft per mile; slope of main stream and tributaries, 30 ft per mile; basin slope, 70 ft per mile; length/width basin, 4.82; stream density, 0.8 mile per square mile. (Map scale, 1:36,360).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Mar. 8 or 9, 1955	2.38	96
1956	May-June 1956	2.20	65
1957	March 1957	^a 2.01	28
1958	Feb. 25, 1958	2.68	165
1959	Mar. 22, 1959	^a 5.65	30
1960	Mar. 26, 1960	4.40	1,030
1961	--	--	0
1962	June 18, 1962	4.42	1,670
1963	Mar. 19, 1963	2.67	162
1964	Mar. 30, 1964	1.56	17
1965	Mar. 7, 1965	^a .63	.1
1966	Mar. 15, 1966	^a 5.12	500
1967	Mar. 9, 1967	3.20	365
1968	Mar. 4, 1968	2.28	76
1969	Apr. 6, 1969	3.27	240

a Backwater.

130 6-3548.8. NORTH FORK GRAND RIVER TRIBUTARY NEAR BOWMAN, N. DAK.

LOCATION.--Lat 45°59'20", long 103°28'55", on north line sec.19, T.129 N., R.102 W., Bowman County, on downstream wingwall of county highway bridge 14 miles south of Bowman.

DRAINAGE AREA.--36.7 sq mi.

PERIOD OF RECORD.--March 1965 to current year (seasonal).

GAGE.--Water-stage recorder.

REMARKS.--This station is one of those especially established to study the effect of drainage basin characteristics.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1965	June 2, 1965	10.63	530
1966	June 24, 1966	9.07	230
1967	June 19, 1967	10.47	520
1968	Aug. 23, 1968	8.02	105
1969	July 7, 1969	10.60	570

6-3548.9. ALKALI CREEK NEAR BOWMAN, N. DAK.

LOCATION.--Lat 46°00'00", long 103°22'05", on west line sec.18, T.129 N., R.101 W., Bowman County, on right bank on downstream side of county highway bridge 12 miles south of Bowman.

DRAINAGE AREA.--58.1 sq mi.

PERIOD OF RECORD.--March 1965 to current year (seasonal).

GAGE.--Water-stage recorder.

REMARKS.--This station is one of those especially established to study the effect of drainage basin characteristics.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1965	June 2, 1965	7.90	490
1966	June 25, 1966	5.08	130
1967	May 8, 1967	8.03	510
1968	Aug. 23, 1968	3.64	34
1969	July 7, 1969	7.88	490

LOCATION.--Lat 46°07'30", long 103°24'35", in NW¼ sec.35, T.131 N., R.102 W., Bowman County, at bridge on U.S. Highway 85, 4 miles south of Bowman.

DRAINAGE AREA.--51.2 sq mi.

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

GAGE.--Crest-stage gage.

BANKFULL STAGE.--8 ft.

HISTORICAL DATA.--Highest stage ever noted at this site at 18.4 ft (year unknown).

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 21 miles; length/width basin, 8.45; stream density, 2.1 miles per square mile. (Map scale, 1:63,360).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	June 28, 1955	2.61	9
1956	--	--	0
1957	June 21, 1957	4.34	90
1958	June 9, 1958	4.03	75
1959	Mar. 18, 1959	4.50	100
1960	Mar. 20, 1960	5.22	155
1961	--	--	0
1962	May 1962	--	2
1963	June 4-10, 1963	4.45	95
1964	June 18, 1964	5.8	265
1965	Apr. 4, 1965	5.3	185
1966	July 13, 1966	11.73	2,880
1967	Apr.-May 1967	7.35	635
1968	Feb. 6, 1968	1.76	.3
1969	July 7, 1969	6.48	422

132 6-3549.5. SPRING CREEK TRIBUTARY NEAR BOWMAN, N. DAK.

LOCATION.--Lat 46°08'55", long 103°24'35", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.23, T.131 N., R.102 W., Bowman County, at bridge on U.S. Highway 85, 2.3 miles south of Bowman.

DRAINAGE AREA.--11.4 sq mi.

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

GAGE.--Crest-stage gage.

BANKFULL STAGE.--6 ft

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 8.2 miles; length/width basin, 5.90; stream density, 1.4 miles per square mile. (Map scale, 1:63,360).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	June 28, 1955	6.29	70
1956	Mar.19-Apr.24, 1956	5.80	10
1957	June 21, 1957	^a 6.50	70
1958	July 1958	6.58	163
1959	Mar. 19, 1959	6.06	30
1960	June 12, 1960	5.95	22
1961	--	--	0
1962	May 1962	^a 5.90	14
1963	May 1963	6.08	35
1964	June 18, 1964	6.57	160
1965	May 1965	6.33	88
1966	July 13, 1966	7.27	488
1967	May 7, 1967	6.55	450
1968	May-June 1968	3.38	.1
1969	July 7, 1969	5.73	230

a Backwater.

LOCATION.--Lat 46°10'30", long 103°16'35", in NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec.14, T.131 N., R.101 W., Bowman County, at culverts on U.S. Highway 12, 2 miles west of Buffalo Springs.

DRAINAGE AREA.--3.39 sq mi.

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

GAGE.--Crest-stage gage.

BANKFULL STAGE.--Not subject to overflow.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 3.0 miles; length/width basin, 2.65; stream density, 2.2 miles per square mile. (Map scale, 1:63,360).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	June 26, 1955	0.68	0.1
1956	Aug. 6-7, 1956	1.00	1
1957	Spring 1957	2.11	33
1958	June 9, 1958	6.17	389
1959	March 1959	1.49	10
1960	Mar. 20, 1960	1.75	18
1961	--	--	0
1962	June 15, 1962	3.80	150
1963	Mar. 5-19, 1963	1.77	19
1964	June 18, 1964	2.01	24
1965	March 1965	3.35	40
1966	July 12, 1966	7.08	1,320
1967	May 1967	1.74	18
1968	1968	--	0
1969	Mar. 20, 1969	^a 4.10	100

a Backwater.

LOCATION.--Lat 47°38'40", long 99°49'40", near midpoint of north line sec.15, T.148 N., R.72 W., Wells County, on left upstream wingwall of bridge on U.S. Highway 52, 5 miles southwest of Manfred.

DRAINAGE AREA.--253 sq mi, approximately, of which about 197 sq mi is probably noncontributing.

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

GAGE.--Water-stage recorder. Prior to Sept. 16, 1957, crest-stage gage only.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 22 miles; length/width basin, 9.68; stream density, 1.1 miles per square mile. (Map scale, 1:126,720).

REMARKS.--Station operated as part of the Department of the Interior program for the development of the Missouri River basin.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Mar. 30, 1955	^a 3.80	110
1956	Aug. 13, 1956	^a 5.98	250
1957	Apr. 11, 1957	^a 2.02	35
1958	Mar. 30, 1958	^a 1.90	26
1959	Mar. 18, 1959	^a 1.88	6
1960	Mar. 27, 1960	6.15	555
1961	May 12-16, 1961	--	.3
1962	Mar. 28, 1962	^a 2.94	40
1963	June 26, 1963	1.37	2.7
1964	June 20, 1964	3.52	73
1965	Apr. 13, 1965	4.33	227
1966	Mar. 16, 1966	5.25	367
1967	Mar. 25, 1967	^a 5.00	185
1968	May 19, 1968	2.01	29
1969	Apr. 10, 1969	7.70	900

a Backwater.

LOCATION.--Lat 47°38'50", long 99°54'20", in SW¼ sec.7, T.148 N., R.72 W., Wells County, at bridge on county highway, 8 miles southwest of Manfred.

DRAINAGE AREA.--90.2 sq mi, of which 50.8 sq mi is probably non-contributing.

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

GAGE.--Crest-stage gage.

BANKFULL STAGE.--7 ft.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 21 miles; slope of main stream, 9.2 ft per mile; slope of main stream and tributaries, 10 ft per mile; basin slope, 55 ft per mile; length/width basin, 11.7; stream density, 0.5 mile per square mile. (Map scale, 1:24,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	March 1955	1.88	110
1956	Apr. 1, 1956	^a 1.98	50
1957	Mar. 21-26, 1957	1.58	2
1958	Apr.-May 1958	1.50	5
1959	March 1959	1.0	3
1960	March 1960	2.70	unknown
1961	--	--	0
1962	Mar. 29, 1962	2.5	unknown
1963	June-July 1963	^a 1.21	1
1964	June 1964	--	6
1965	April 1965	--	36
1966	Mar. 14-15, 1966	5.14	200
1967	March 1967	4.44	125
1968	Mar.-Apr. 1968	3.21	7
1969	Apr. 9, 1969	6.36	375

a Backwater.

136 6-4678. JAMES RIVER TRIBUTARY NO. 3 NEAR MANFRED, N. DAK.

LOCATION.--Lat 48°38'40", long 99°45'30", in NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.18, T.148 N., R.71 W., Wells County, at culvert on U.S. Highway 52, 3.5 miles south of Manfred.

DRAINAGE AREA.--23.5 sq mi, of which 2.9 sq mi is probably non-contributing.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 8.0 miles; slope of main stream, 7.0 ft per mile; slope of main stream and tributaries, 8.6 ft per mile; basin slope, 24 ft per mile; length/width basin, 3.20; stream density, 0.5 mile per square mile. (Map scale, 1:24,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	Mar. 28-30, 1955	^a 1.70	9
1956	April 1956	^a 3.98	50
1957	Aug. 12, 1957	2.24	18
1958	Mar. 26, 1958	2.07	14
1959	March 1959	^a 2.00	1
1960	March 1960	2.7	70
1961	--	--	0
1962	1962	^a 2.87	2
1963	July-Sept. 1963	--	.1
1964	May-June 1964	2.33	17
1965	April 1965	2.50	27
1966	Mar. 13, 1966	5.31	150
1967	Mar. 23, 1967	3.50	10
1968	Mar. 7-8, 1968	2.62	35
1969	Apr. 9, 1969	3.82	85

a Backwater.

LOCATION.--Lat 47°45'20", long 99°30'42", on west line sec.4, T.149 N., R.69 W., Wells County, on right bank 30 ft upstream from bridge on State Highway 30 and 0.5 mile south of Hamberg.

DRAINAGE AREA.--60 sq mi, approximately, of which about 18 sq mi is probably noncontributing.

PERIOD OF RECORD.--September 1957 to September 1967.

GAGE.--Water-stage recorder.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 12.0 miles; slope of main stream, 4.2 ft per mile; slope of main stream and tributaries, 9.0 ft per mile; basin slope, 35 ft per mile; length/width basin, 3.43; stream density, 0.6 mile per square mile. (Map scale, 1:24,000).

REMARKS.--Station operated as part of the Department of the Interior program for the development of the Missouri River basin.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1958	Apr. 28, 1958	^a 2.82	7.0
1959	--	--	0
1960	Apr. 6, 1960	^a 3.44	34
1961	--	--	0
1962	June 16, 1962	3.57	5.0
1963	--	--	0
1964	June 23, 1964	2.40	.8
1965	July 22, 1965	--	170
1966	Mar. 16, 1966	--	160
1967	Mar. 31, 1967	3.82	43

a Backwater.

138 6-4680. JAMES RIVER AT NEW ROCKFORD, N. DAK.

LOCATION.--Lat 47°41'05", long 99°07'30", on east line sec.32, T.149 N., R.66 W., Eddy County, on right bank 90 ft downstream from bridge on U.S. Highway 281 at New Rockford and 7 miles upstream from small tributary.

DRAINAGE AREA.--714 sq mi, of which about 435 sq mi is probably non-contributing.

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

GAGE.--Water-stage recorder. Datum of gage is 1,500.00 ft above mean sea level. Prior to Aug. 8, 1951, nonrecording gage at same site and datum.

BANKFULL STAGE.--10 ft.

HISTORICAL DATA.--Maximum stage known since 1925, about 13 ft in April 1948, from information by local resident. Flood in April 1950 reached a stage of 11.3 ft from floodmarks.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 68 miles; length/width basin, 11.4; stream density, 0.7 mile per square mile. (Map scale, 1:126,720).

REMARKS.--Station operated in cooperation with the Corps of Engineers.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1951	Apr. 12, 1951	9.20	840
1952	Apr. 8, 1952	^a 8.85	380
1953	July 11, 1953	6.36	4.1
1954	June 16, 1954	6.85	21
1955	Apr. 8-9, 1955	7.52	75
1956	Apr. 16, 1956	8.70	306
1957	Sept. 18, 1957	8.79	24
1958	Nov. 9, 1958	8.89	45
1959	--	--	0
1960	Apr. 3, 1960	^a 10.16	670
1961	--	--	0
1962	--	--	0
1963	--	--	0
1964	--	--	0
1965	Apr. 18, 1965	9.47	230
1966	Mar. 20, 1966	10.66	1,140
1967	Mar. 30, 1967	9.22	255
1968	June 11, 1968	8.27	1.5
1969	Apr. 12, 1969	11.13	3,000

a Backwater.

LOCATION.--Lat 47°03'59", long 98°55'07", on north line sec.4, T.141 N., R.65 W., Stutsman County, on left bank 30 ft downstream from bridge on county highway 4.5 miles west of Buchanan.

DRAINAGE AREA.--758 sq mi, of which about 460 sq mi is probably noncontributing.

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

GAGE.--Water-stage recorder. Datum of gage is 1,467.10 ft above mean sea level. Prior to July 11, 1950, nonrecording gage at same site and datum.

BANKFULL STAGE.--8 ft.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 77 miles; length/width basin, 12.5; stream density, 0.7 mile per square mile. (Map scale, 1:126,720).

REMARKS.--Station operated in cooperation with the Corps of Engineers.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1950	Apr. 17, 1950	10.77	4,480
1951	Apr. 6, 1951	7.84	826
1952	Apr. 4, 1952	^a 9.4	1,100
1953	June 20, 1953	4.41	116
1954	June 7, 1954	7.27	539
1955	Apr. 2, 1955	6.77	491
1956	June 7, 1956	7.06	560
1957	Sept. 11, 1957	3.55	55
1958	Mar. 30, 1958	^a 7.12	400
1959	Mar. 30, 1959	^a 2.56	4.3
1960	Mar. 27, 1960	7.6	678
1961	Apr. 6, 1961	2.89	15
1962	July 6, 1962	8.26	894
1963	Mar. 24, 1963	^a 3.72	28
1964	June 18, 1964	7.61	681
1965	Apr. 13, 1965	9.18	1,430
1966	Mar. 16, 1966	^a 11.1	2,040
1967	Mar. 28, 1967	8.71	1,080
1968	Mar. 26, 1968	4.07	81
1969	Apr. 10, 1969	12.08	6,080

a Backwater.

140 6-4696. MINNEAPOLIS FLATS CREEK TRIBUTARY NEAR ELDRIDGE, N. DAK.

LOCATION.--Lat 46°53'25", long 98°55'30", on west line sec.5, T.139 N., R.65 W., Stutsman County, at culverts on county road, 3.5 miles west of Eldridge.

DRAINAGE AREA.--9.91 sq mi.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 8.8 miles; slope of main stream, 35 ft per mile; slope of main stream and tributaries, 30 ft per mile; basin slope, 70 ft per mile; length/width basin, 7.9; stream density, 1.2 miles per square mile. (Map scale, 1:24,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	June 5-10, 1955	1.90	5.6
1956	June 6, 1956	2.68	33
1957	March-May 1957	2.08	10.5
1958	Mar. 24-28, 1958	^a 2.78	10
1959	--	--	0
1960	Apr. 5, 1960	2.46	30
1961	Mar.-Apr. 1961	1.85	.2
1962	July 6-7, 1962	3.36	60
1963	--	--	0
1964	May-June 1964	3.28	58
1965	Apr. 12, 1965	2.71	36
1966	Mar. 11-13, 1966	3.14	48
1967	March 1967	2.48	25
1968	Mar. 5, 1968	^a 2.16	5
1969	Apr. 10, 1969	3.38	90

a Backwater.

LOCATION.--Lat 46°52'15", long 98°55'30", on east line sec.7, T.139 N., R.65 W., Stutsman County, at culvert on county highway 4 miles southwest of Eldridge.

DRAINAGE AREA.--0.19 sq mi.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 0.9 mile; slope of main stream, 55 ft per mile; slope of main stream and tributaries, 45 ft per mile; basin slope, 100 ft per mile; length/width basin, 4.55; stream density, 4.9 miles per square mile; percent of basin under cultivation, 100 percent. (Map scale, 1:6,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	June 5-10, 1955	3.90	28
1956	May 29, 1956	3.00	14
1957	--	--	0
1958	Feb. 27-28, 1958	2.37	9.5
1959	March 1959	--	.1
1960	March 1960	3.00	13
1961	Feb. 27, 1961	--	.1
1962	July 19-20, 1962	5.55	45
1963	April 1963	2.52	11
1964	May-June 1964	4.80	38
1965	May-July 1965	2.21	7.5
1966	Mar. 13, 1966	1.94	4.3
1967	Mar.-Apr. 1967	--	1.0
1968	March 1968	2.99	15
1969	Apr. 10, 1969	3.47	21

LOCATION.--Lat 46°45'00", long 98°47'50", in SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.20, T.138 N., R.64 W., Stutsman County, at bridge on county highway 2 miles northwest of Sydney.

DRAINAGE AREA.--224 sq mi, of which 162 sq mi is noncontributing.

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

GAGE.--Crest-stage gage.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 25 miles; slope of main stream, 55 ft per mile; slope of main stream and tributaries, 45 ft per mile; basin slope, 45 ft per mile; length/width basin, 6.67; stream density, 1.1 miles per square mile. (Map scale, 1:24,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	June 1-10, 1955	3.18	180
1956	June 6, 1956	4.82	490
1957	May 1957	1.60	5
1958	Feb. 28, 1958	^a 4.48	290
1959	July 15, 1959	1.50	2.1
1960	Mar. 27, 1960	4.44	410
1961	March 1961	^a 2.66	2.5
1962	July 8, 1962	^a 7.66	700
1963	Apr.-May 1963	2.39	70
1964	May-June 1964	3.52	248
1965	Apr. 12, 1965	^a 4.04	321
1966	Mar. 16, 1966	6.16	350
1967	Mar. 3, 1967	^a 2.94	60
1968	June 1968	2.20	19
1969	Apr. 10, 1969	^a 8.92	1,010

a Backwater.

LOCATION.--Lat 46°42'40", long 98°50'20", in SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.1, T.137 N., R.65 W., Stutsman County, at bridge on county highway 3.5 miles southwest of Sydney.

DRAINAGE AREA.--23.7 sq mi, of which 12.4 sq mi is noncontributing.

RECORDS AVAILABLE.--December 1954 to current year.

GAGE.--Crest-stage gage. Prior to March 1959, at different datum.

TOPOGRAPHIC CHARACTERISTICS.--Length of main stream, 8.1 miles; slope of main stream, 21 ft per mile; slope of main stream and tributaries, 30 ft per mile; basin slope 70 ft per mile; length/width basin, 2.52; stream density, 0.6 mile per square mile. (Map scale, 1:24,000).

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1955	June-Aug. 1955	5.93	7.2
1956	June 6, 1956	6.16	130
1957	May 25, 1957	4.50	4
1958	Jeb. 28, 1958	^a 6.58	40
1959	July 14, 1959	3.04	120
1960	Mar. 27, 1960	2.71	66
1961	March 1961	2.00	5
1962	July 5-6, 1962	3.45	125
1963	Mar.-Apr. 1963	2.35	20
1964	May-June 1964	1.86	2
1965	Apr. 12, 1965	3.21	96
1966	Mar. 12-16, 1966	3.96	210
1967	Mar. 2, 1967	^a 3.07	10
1968	Apr.-May 1968	2.66	15
1969	Apr. 10, 1969	3.36	340

a Backwater.

144 6-4712. MAPLE RIVER AT NORTH DAKOTA-SOUTH DAKOTA STATE LINE

LOCATION.--Lat 45°56'20", long 98°27'10", in SW¼SE¼ sec.33, T.129 N., R.62 W., Dickey County, on left bank 0.4 mile upstream from State line, 8 miles northeast of Frederick, S. Dak., and 15.5 miles upstream from mouth.

DRAINAGE AREA.--711 sq mi, approximately, of which about 330 sq mi is probably noncontributing.

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

GAGE.--Water-stage recorder. Altitude of gage is 1,365 ft (from topographic map). Prior to June 14, 1962, nonrecording gage and crest-stage gage at site 0.4 mile downstream at datum 0.94 ft lower.

REMARKS.--Station operated in cooperation with South Dakota Water Resources Commission.

ANNUAL MAXIMUM DATA.--

<u>Water year</u>	<u>Date</u>	<u>Gage height (ft)</u>	<u>Discharge (cfs)</u>
1957	July 30, 1957	4.15	49
1958	Mar. 3, 1958	^a 8.32	496
1959	1959	--	0
1960	Mar. 29, 1960	6.85	589
1961	Mar. 13, 1961	3.90	45
1962	July 9, 1962	10.97	2,030
1963	June 7, 1963	5.77	270
1964	June 26, 1964	7.21	598
1965	Apr. 13, 1965	6.49	376
1966	Mar. 16, 1966	12.43	2,620
1967	Mar 3, 1967	5.97	281
1968	May 15, 1968	5.04	116
1969	Apr. 11, 1969	15.22	5,930

a Backwater.

EXPLANATION

- Crest-stage station
- Special basin-study station
- △ Regular gaging station

0 10 20 40 MILES
SCALE

Figure 1—Map of North Dakota showing location of gaging stations

Table 1. Maximum discharges at miscellaneous sites on small areas

147

Station name	Location	Drain- age area (sq mi)	Date	Dis- charge (cfs)
RED RIVER OF THE NORTH BASIN				
Gassman Coulee near Minot, N. Dak.	In NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.20, T.155 N., R.83 W., at culvert on U.S. Highway 2 and 52, 2 miles west of Minot.	61	Apr. 6-7, 1969	1,880
Bonnes Coulee tributary near Velva, N. Dak.	In S $\frac{1}{4}$ sec.36, T.153 N., R.81 W., 6 miles south- west of Velva.	1.42	Aug. 10, 1962	1,470
Bonnes Coulee near Velva, N. Dak.	In NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec.28, T.153 N., R.80 W., 2 miles southwest of Velva.	52.5	Aug. 10, 1962	26,300
Oak Creek tributary No. 2 near Bottineau, N. Dak.	On north line of sec.32, T.162 N., R.75 W., at culvert on State High- way 5, 1.7 miles east of Bottineau.	7.0	July 19, 1955	761
Oak Creek tributary No. 3 near Bottineau, N. Dak.	On north line of sec.34, T.162 N., R.75 W., at culvert on State High- way 5, 3.2 miles east of Bottineau.	1.2	July 6, 1955	373
Oak Creek tributary No. 4 near Bottineau, N. Dak.	On south line of sec.36, T.162 N., R.75 W., at culvert on State High- way 5, 4.5 miles east of Bottineau.	7.7	July 6, 1966	5,480
MISSOURI RIVER BASIN				
Charbonneau Creek tributary No. 2 near Charbonneau, N. Dak.	On south line of sec.22, T.151 N., R.103 W., at culvert on State High- way 23, 4.5 miles north- west of Charbonneau.	0.17	Aug. 1, 1963	224

148 Table 1. Maximum discharges at miscellaneous sites on small areas--Continued

Station name	Location	Drain- age area (sq mi)	Date	Dis- charge (cfs)
MISSOURI RIVER BASIN--Continued				
Charbonneau Creek tributary near Cartwright, N. Dak.	On west line of sec.30, T.151 N., R.103 W., at culvert on county road 0.4 mile north of State Highway 23 at Cartwright.	3.8	Aug. 1, 1963	2,040
Little Missouri River tributary near Marmarth, N. Dak.	In NW $\frac{1}{4}$ sec.4, T.131 N., R.106 W., at culvert on county road 7 miles south of Marmarth.	1.52	June 9, 1964	289
Sand Creek tributary near Amidon, N. Dak.	On west line of sec.34, T.135 N., R.101 W., at culvert on U.S. Highway 35, 2.5 miles southwest of Amidon.	--	June 21-22, 1957	1,740
Davis Creek near Medora, N. Dak.	In SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.10, T.139 N., R.102 W., 3.5 miles south of Medora.	51.8	June 25, 1955	5,480
Sully Creek near Medora, N. Dak.	On east line of sec.34, T.140 N., R.102 W., at bridge 1.6 miles south of Medora.	29.5	June 26, 1955	3,270
Brush Creek near Beulah, N. Dak.	On east line of sec.26, T.143 N., R.88 W., at bridge on State High- way 49, 6 miles south of Beulah.	23.3	June 24, 1966	6,000
Spring Creek trib- utary near Beulah, N. Dak.	In NE $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.27, T.144 N., R.88 W., at culvert on county road 1 mile west of Beulah.	0.94	July 18, 1969	227
West Branch Otter Creek near Hannover, N. Dak.	On north line of sec.23, T.142 N., R.87 W., at culvert on county road 11 miles west of Hannover.	20.7	June 17, 1964	2,780

Table 1. Maximum discharges at miscellaneous sites on small areas--Continued 149

Station name	Location	Drain- age area (sq mi)	Date	Dis- charge (cfs)
MISSOURI RIVER BASIN--Continued				
Antelope Creek trib- utary near Hazen, N. Dak.	On east line of SW $\frac{1}{4}$ sec.3, 42.8 T.144 N., R.87 W., at bridge on county highway 3 miles northwest of Hazen.		July 18, 1969	6,400
Antelope Creek at Schramm Dam near Hazen, N. Dak.	In NE $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.3, T.144 N., R.87 W., at Schramm Dam, 3 miles northeast of Hazen.	59.4	July 18, 1969	830
Kinneman Creek trib- utary near Hannover, N. Dak.	In SW $\frac{1}{4}$ sec.9, T.143 N., R.85 W., downstream from county road, 7 miles north of Hannover.	2.45	June 24, 1966	7,450
Kinneman Creek near Hazen, N. Dak.	In SE $\frac{1}{4}$ sec.12, T.144 N., R.86 W., just below U.S. Highway 7, 5 miles east of Hazen.	31.3	June 24, 1966	29,600
Missouri River tributary near Hensler, N. Dak.	On east line of sec.16, T.144 N., R.83 W., at culvert on county road 6 miles northwest of Hensler.	0.65	June 24, 1966	167
Square Butte Creek tributary near Hannover, N. Dak.	In NE corner sec.29, T.142 N., R.85 W., at culverts on county highway, 2 miles south- west of Hannover.	1.45	June 24, 1966	473
Square Butte Creek tributary No. 2 near Hannover, N. Dak.	On east line of sec.27, T.143 N., R.85 W., at culvert on State Highway 31, 4.5 miles north of Hannover.	0.14	June 24, 1966	80.2
Burnt Creek near Baldwin, N. Dak.	In SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec.16, T.140 N., R.80 W., at culvert on U.S. Highway 83, 6 miles south of Baldwin.	97.9	May 5, 1965	3,630

150 Table 1. Maximum discharges at miscellaneous sites on small areas.--Continued

Station name	Location	Drain- age area (sq mi)	Date	Dis- charge (cfs)
MISSOURI RIVER BASIN--Continued				
Baker Pond tributary at Bismarck, N. Dak.	In NW $\frac{1}{4}$ sec.32, T.139 N., R.80 W., on NW-SE road in Bismarck.	--	June 26, 1954	157
Norwegian Creek near Fryburg, N. Dak.	On east line of sec.26, T.139 N., R.100 W., at bridge 4.5 miles south- east of Fryburg.	16.7	June 26, 1955	5,170
Norwegian Creek near Belfield, N. Dak.	In NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.21, T.139 N., R.99 W., at bridge on U.S. Highway 85, 2.7 miles south of Belfield.	33.8	Feb. 26, 1955	5,860
Antelope Creek trib- utary near Elgin, N. Dak.	160 ft south of sec. cor- ner 2, 3, 10, 11, T.134 N., R.89 W., at culverts on State Highway 49, 2.9 miles north of Elgin.	0.11	June 13, 1961	.71.0
Antelope Creek trib- utary No. 2 near Elgin, N. Dak.	On east line of sec.15, T.134 N., R.89 W., at culverts on State High- way 49, 1 mile north of Elgin.	6.87	June 13, 1961	554
Big Muddy Creek tributary near Eagles Nest, N. Dak.	In SE $\frac{1}{4}$ sec.6, T.139 N., R.89 W., at culverts on county highway, 1.4 miles northwest of Eagles Nest interchange on Interstate 94.	0.8	June 24, 1966	1,300
Big Muddy Creek near Glen Ullin, N. Dak.	In SE $\frac{1}{4}$ sec.28, T.139 N., R.88 W., at bridge on State Highway 49, 2 miles east of Glen Ullin.	86.8	June 24, 1966	10,400
Hailstone Creek tributary near Blue Grass, N. Dak.	On west line of sec.21, T.140 N., R.87 W., 1 mile upstream from Hailstone Creek and 4.5 miles southwest of Blue Grass.	3.26	June 24, 1966	1,860

Table 1. Maximum discharges at miscellaneous sites on small areas--Continued 151

Station name	Location	Drain- age area (sq mi)	Date	Dis- charge (cfs)
MISSOURI RIVER BASIN--Continued				
South Branch Little Heart River near St. Anthony, N. Dak.	In SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec.14, T.136 N., R.82 W., at bridge on county highway, 3 miles southwest of St. Anthony.	17.1	June 9, 1963	2,600
Little Heart River near St. Anthony, N. Dak.	On west line of sec.16, T.137 N., R.81 W., at bridge 4 miles north of St. Anthony.	190	Apr. 16, 1950 June 9, 1964	8,770 4,800
East Branch Apple Creek tributary near McKenzie, N. Dak.	In SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.9, T.140 N., R.77 W., at culvert on county road 9 miles north of McKenzie.	0.49	June 5, 1963	1,080
Missouri River tributary near Huff, N. Dak.	In SE $\frac{1}{4}$ sec.31, T.137 N., R.79 W., at culverts on county highway 2 miles northwest of Huff.	--	June 5, 1956	1,890
Thirty Mile Creek near Bentley, N. Dak.	In SE $\frac{1}{4}$ sec.1, T.133 N., R.91 W., at bridge on Northern Pacific Railway 2 miles north of Bentley.	258	Apr. 16, 1950	11,400
Chanta Peta Creek tributary near Fallon, N. Dak.	On south line of sec.11, T.135 N., R.83 W., 0.5 mile east of Fallon.	0.35	June 9, 1964	105
North Fork Grand River tributary near Bowman, N. Dak.	In SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec.10, T.129 N., R.103 W., at bridge on county highway, 14 miles southwest of Bowman.	14.9	July 28, 1951	3,600
North Fork Grand River near Bowman, N. Dak.	In sec.26, T.129 N., R.102 W., at bridge on U.S. Highway 85, 14.6 miles south of Bowman.	114	July 28, 1951	5,300
Buffalo Creek at Buffalo Springs, N. Dak.	In NW $\frac{1}{4}$ sec.18, T.131 N., R.100 W., at culvert on U.S. Highway 12, 0.2 mile west of Buffalo Springs.	19.6	July 12, 1966	1,750

152 Table 1. Maximum discharges at miscellaneous sites on small areas--Continued

Station name	Location	Drain- age area (sq mi)	Date	Dis- charge (cfs)
MISSOURI RIVER BASIN--Continued				
Buffalo Creek near near Scranton, N. Dak.	In SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec.25, T.131 N., R.100 W., 1 mile southeast of Scranton.	--	June 9, 1958	1,470
Flat Creek trib- utary near Hettinger, N. Dak.	On west line of sec.36, T.130 N., R.96 W., at culvert on county high- way, 3 miles north of Hettinger.	1.13	July 12, 1966	2,790
Big Slough at Heimdal, N. Dak.	In NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.29, T.150 N., R.70 W., at culverts on county road 0.2 mile south of Heimdal.	30	July 19, 1965	1,970

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