

UNITED STATES
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GEOLOGICAL SURVEY

BASE FLOW AND CHEMICAL QUALITY OF STREAMS IN THE
NORTHERN GREAT PLAINS AREA, MONTANA AND WYOMING, 1977-78

By Stanley A. Druse, Kent A. Dodge, and W. R. Hotchkiss

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METRIC CONVERSION TABLE

The following factors can be used to convert inch-pound units in this report to the International System (SI) of metric units.

<u>Multiply inch-pound unit</u>	<u>By</u>	<u>To obtain metric unit</u>
cubic foot per second (ft ³ /s)	0.02832	cubic meter per second
foot (ft)	0.3048	meter
inch (in.)	25.40	millimeter
mile (mi)	1.609	kilometer
acre-foot	1233	cubic meter
ton (short)	907.1	kilogram

temperature, in degrees Fahrenheit (°F) can be converted to degrees Celsius (°C) by the following equation:

$$^{\circ}\text{C} = 0.556 (^{\circ}\text{F} - 32)$$

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ABSTRACT

Base-flow discharge and chemical-quality measurements were made at 233 selected sites on streams during October-November 1977, August-September 1978, and October 1978 to provide data on the interaction between surface-water and ground-water systems in the northern Great Plains area of Montana and Wyoming. The tabulated data provide an areally broad data base of concurrent base-flow conditions.

Streamflow gains or losses were computed for stream reaches not significantly affected by irrigation. On October 17, 1978, the change in flow of the upper Powder River between Sussex and Arvada, Wyoming, was a loss of 14 cubic feet per second. On the same date, the change in flow of the lower Powder River between Arvada, Wyoming, and Moorhead, Montana, was a gain of 6 cubic feet per second. Except for August-September 1978, major subbasins showed little significant differences in water discharge, chemical character, or dissolved-solids concentrations.

INTRODUCTION

Rapid development of energy resources in the northern Great Plains of Montana and Wyoming (fig. 1) will put additional stresses on the hydrologic systems of the area. As a result, the U.S. Geological Survey has begun studies of the interaction of surface-water and ground-water systems to provide a basis for evaluating alternatives in water development. Streamflow gain-or-loss data and chemical-quality data for periods of base flow are pertinent to the study of this interaction.

The purpose of this report is to present the results of measurements and water-quality analyses for three periods of base flow during 1977-78. Stream discharge was measured, water samples were collected for chemical analysis, and gain or loss in streamflow was computed for October 26 to November 5, 1977, August 24 to September 26, 1978, and October 11 to 26, 1978, at selected sites in the study area. Long-term records were then used to compare precipitation, runoff, and 1978 measured gains and losses in discharge with historic averages.

The locations of major irrigated areas (pl. 1) were identified by M. E. Cooley and R. D. Feltis, U.S. Geological Survey (written commun., 1978-79), through visual interpretation of Landsat imagery. The irrigated areas are included to aid in interpretation of sources of base flow.

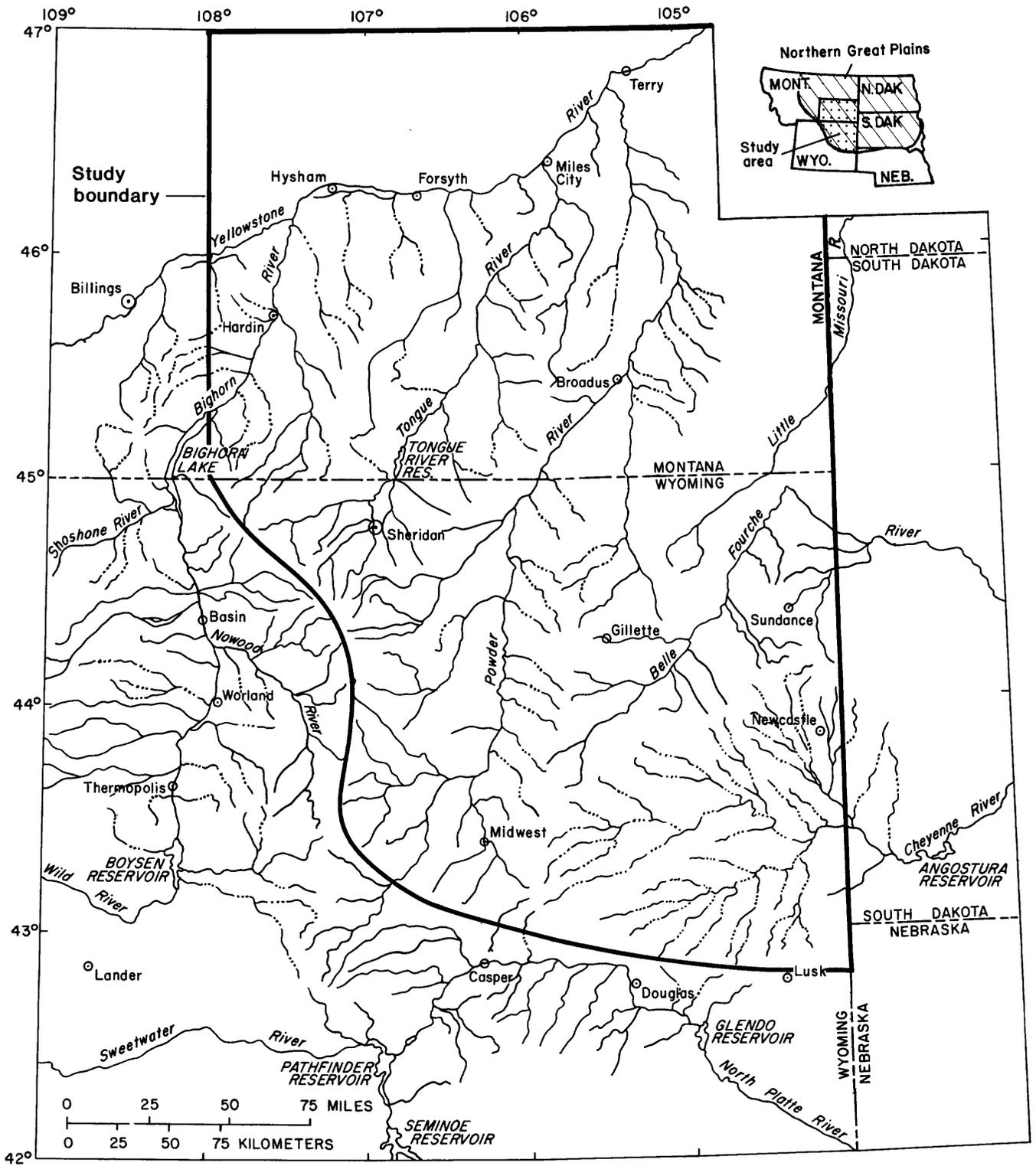


Figure 1.--Location of study area.

Base flow, as used in this report, is sustained or fair-weather runoff, which is composed of natural ground-water discharge with no direct contribution from precipitation runoff. Base-flow conditions were assumed to exist if no precipitation runoff occurred during the 5 days preceding the discharge measurements. Records from streamflow-gaging stations in the subbasins also were checked to verify that runoff from precipitation had not occurred.

The streamflow data presented herein provide an areal data base representative of concurrent base-flow conditions. The data should be useful in attempts to model ground-water discharge from the study area.

DATA COLLECTION

Site selection and measurement schedule

Base-flow measurement sites (pl. 1) were chosen on the basis of geohydrology, access, locations of tributary inflow, and distance between sites. The principal geohydrologic consideration was to choose sites near the geologic boundaries of aquifers that overlie the Pierre (or Bearpaw) Shale of Late Cretaceous age.

Consecutive site numbers were assigned to each site for reference to the location map (pl. 1). Each site location listed in table 1 is given by the land-line description, county, distance from a nearby town or landmark, and station number. If a site was at a U.S. Geological Survey streamflow-gaging station, the standard U.S. Geological Survey station number was used. The first two digits denote the drainage basin ("06" is Missouri River drainage basin). The last six digits, which increase in downstream order, are unique to a specific site. If the site was for miscellaneous measurements, the site was assigned a station number based on latitude and longitude. The first six digits are the degrees, minutes, and seconds of latitude; the next seven digits are the degrees, minutes, and seconds of longitude; and the last two digits (assigned sequentially) identify the sites within a 1-second grid.

Data collection at selected Montana sites was scheduled for periods of base flow during October-November 1977. A more comprehensive data-collection effort was scheduled at sites in Montana and Wyoming for base-flow periods during August-September 1978 and October 1978. Data from each drainage basin were obtained in a downstream sequence within a 24-hour period. Records from active gaging stations on the Powder and Tongue Rivers during the three periods of measurement indicate little significant diurnal fluctuation of streamflow. Therefore, no diurnal flow corrections were attempted. Sampling sites having two measurements made within a 24-hour period are part of a Geological Survey quality-control program to verify accuracy of the discharge measurements; both sets of data are shown in this report but only the first set was used in computations. Some data have been collected and computed by contractors in accordance with U.S. Geological Survey specifications and under Geological Survey quality control.

The October-November 1977 measurements were made after a killing frost to permit determination of gains and losses to streamflow exclusive of any irrigation or evapotranspiration effects. The August-September 1978 and October 1978 measurements were intended to aid in quantification of differences between periods of maximum and minimum evapotranspiration losses once modeling of the area is begun.

An aerial reconnaissance of the flow status of selected streams was made prior to the October measurements. The purpose was to select supplemental sites and to augment the existing quantitative flow data to be obtained later in the month. Base-flow conditions were verified by inspection of gage-height records at area stream-flow-gaging stations and by observation of weather conditions during the scheduled measuring periods.

Results of measurements

The site number, stream, date, discharge, gain or loss in flow, onsite specific conductance, and water temperature are listed in table 2 for 1977 data and table 3 for 1978 data. Streamflow data in the tables are separated into main-stem streams and tributaries and are identified by respective subbasins. In this report, drainage areas are considered to be subbasins if two or more measuring sites are located on the same stream. Gains or losses were computed between sites where discharge was measured at two or more sites on the same stream. Tributary inflow was considered a contribution and not a gain; diversion was considered a deduction and not a loss. Gains or losses within the subbasins were not computed if the streamflow was significantly affected by irrigation.

The accuracy of a stream-discharge measurement is dependent on the flow conditions at the measuring site, the streambed conditions, presence or absence of vegetation, and other factors. In general, a discharge measurement made under ideal conditions can be assumed to be accurate within 5 percent. Under less than ideal conditions, the error might be greater than 10 percent. The calculated gain or loss in flow given in tables 2 and 3 is simply the mathematical difference between flow at adjacent sites with no consideration given to possible errors in measurement. Although the reported gain or loss in a single reach might be questionable, the general trend of gain or loss between several sites would not be.

The downstream continuity of the discharge measurements could be affected by beaver dams, unrecognized irrigation withdrawal or return, and discharge from groundwater sources by irrigation wells, oil wells, or mine dewatering. In addition, groundwater seepage from irrigated areas (pl. 1) may continue to augment streamflow for some time following the seasonal discontinuance of irrigation. The quantitative effect cannot be accurately determined.

Detailed chemical-quality analyses for selected sites are listed in table 4 for 1977 and table 5 for 1978. Data are reported in the tables, as appropriate, as dissolved or total. The dissolved concentration of a chemical constituent is determined for a water sample after it is passed through a filter having a pore size of 0.45 micrometer. The total concentration of a chemical constituent is determined by the analysis of an unfiltered sample. The water samples were collected according to procedures outlined by Brown, Skougstad, and Fishman (1970). The samples were analyzed by the Geological Survey's water-quality laboratory in Denver, Colo.

MAJOR SUBBASIN DISCHARGE AND CHEMICAL CHARACTER

In this report, major subbasins are considered to be those in which the flow generally exceeds 10 ft³/s and where enough measurements were made to determine changes in flow. Specifically, they are the Rosebud Creek and the Tongue and Powder River subbasins. Discharge and chemical-constituent data used to describe the general

character of major drainage subbasins were selected, where possible, from sites at which repeated measurements have been made. Therefore, data may exist upstream or downstream from the sites mentioned below for any given measurement period.

For the purpose of determining the relative abundance of ions in the following discussion, concentrations in milligrams per liter (tables 4 and 5) have been converted to milliequivalents per liter. Conversion makes the unit concentrations of all ions chemically equivalent and, therefore, puts all constituents on a common basis for comparison. The conversion factors used are:

Ion	Multiply by	Ion	Multiply by
Bicarbonate (HCO_3^{-1})	0.01639	Magnesium (Mg^{+2})	0.08229
Calcium (Ca^{+2})	0.04990	Nitrate (NO_3^{-1})	0.01613
Carbonate (CO_3^{-2})	0.03333	Potassium (K^{+1})	0.02558
Chloride (Cl^{-1})	0.02821	Sodium (Na^{+1})	0.04350
Fluoride (F^{-1})	0.05264	Sulfate (SO_4^{-2})	0.02082

During the October-November 1977 measurement and sampling period, discharge of Rosebud Creek from the vicinity of Kirby, Mont. (site 16), to Rosebud, Mont. (site 36), increased from 8.32 to 13.6 ft^3/s (table 2). The increase in flow included large net gains in upstream reaches and smaller net losses in downstream reaches. Magnesium dominated the cations and bicarbonate dominated the anions in the upstream reaches; the calculated dissolved-solids concentration was as small as 563 mg/L (milligrams per liter). Downstream, the water contained slightly more magnesium than sodium as the dominant cations; about equal amounts of bicarbonate and sulfate dominated the anions. The dissolved-solids concentration downstream at site 36 was 918 mg/L (table 4). During the same time, discharge of the Tongue River from the Tongue River Reservoir in Montana (site 52) to Miles City, Mont. (site 116), increased from 156 to 233 ft^3/s (table 2). Downstream from the Tongue River Reservoir, about equal amounts of calcium and magnesium dominated the cations, and bicarbonate was slightly larger than sulfate; the calculated sum of dissolved solids was 508 mg/L. Downstream, magnesium and calcium were the dominant cations and sulfate became the dominant anion. The calculated sum of dissolved solids at site 116 was 647 mg/L (table 4).

During the August-September 1978 measurement and sampling period, discharge of Rosebud Creek increased from 10.9 ft^3/s near Kirby, Mont. (site 16), to 34.9 ft^3/s near Rosebud, Mont. (site 36), with gains and losses in flow (table 3) similar to those during 1977. Along the Tongue River from site 52 to 116, discharge decreased from 365 to 260 ft^3/s . This net decrease in discharge resulted in part from more than twice as much water being released from the Tongue River Reservoir than during the previous year and included a loss of 143 ft^3/s between sites 105 and 114 in a reach adjacent to irrigated land where unobserved diversion of water may have been taking place. The chemical constituents were in similar proportions to the 1977 samples, but ion concentrations were less in 1978; the calculated sum of dissolved solids for the Tongue River at site 52 was 376 mg/L (table 5). Discharge of the Powder River from Salt Creek in Wyoming (site 127), to Terry, Mont. (site 187), increased from 30.5 to 320 ft^3/s (table 3). At site 127, sodium and chloride were the dominant ions; the calculated sum of dissolved solids was 4,430 mg/L. Near

Terry, Mont. (site 187), the dominant cation and anion were sodium and sulfate, and the sum of dissolved solids was 1,540 mg/L (table 5).

During the October 1978 measurement and sampling period, discharge between sites 16 and 36 increased from 19.1 to 49.8 ft³/s (table 3). Dissolved-solids concentration increased downstream from 640 to 1,020 mg/L; the chemical character of the water was unchanged from August (table 5). Discharge of the Tongue River increased from 124 to 232 ft³/s between sites 52 and 116. Dissolved-solids concentration increased downstream from 462 to 737 mg/L; the chemical character was unchanged from September. Discharge from site 127 to site 187 on the Powder River increased from 31.8 to 297 ft³/s; the chemical character and the dissolved-solids concentration were similar to those observed during August.

COMPARISON OF 1978 CONDITIONS WITH HISTORIC AVERAGES

Precipitation and runoff

Precipitation and runoff were greater than normal during the spring and early summer months of 1978. These conditions favored increased storage of water in alluvial aquifers, natural depressions, and stockwater reservoirs. Floods from snowmelt runoff were widespread in the study area during March. Flood flows exceeding the 100-year recurrence interval occurred on several major streams in the area during May (Parrett and others, 1978). The following table indicates the departure from normal of January to May 1978 precipitation at weather stations at Gillette and Midwest, Wyo., and Miles City, Mont.; all values are in inches.

Station	Jan.	Feb.	Mar.	Apr.	May
Gillette¹:					
Precipitation	0.62	1.07	0.38	2.23	11.08
Departure	- .04	+ .46	-.54	+ .43	+ 8.58
Midwest¹:					
Precipitation	1.26	0.83	0.29	2.02	6.10
Departure	+ .72	+ .25	0	+ .41	+ 3.81
Miles City²:					
Precipitation	.51	1.19	.12	.47	6.81
Departure	+ .02	+ .68	- .53	- .79	+ 4.75

¹Environmental Data and Information Service (1978b).

²Environmental Data and Information Service (1978a).

Streamflow remained greater than normal for most area streams through the summer and fall. The August and October 1978 flows at Tongue River near Dayton, Wyo. (site identified on pl. 1), exceeded approximately 75 percent of the previous August and October mean monthly flows for the period of record (1918-29, 1940-76).

Seven-day low flow is frequently used as an indicator of base flow. It is defined as the smallest mean flow for a continuous 7-day period during a selected period of time, commonly a month or a year. Seven-day low flow was determined for August and October periods of record at several long-term streamflow-gaging stations in the area. The range of 7-day low flows, the 25th and 75th percentile values, and the median are compared to the 1978 measured discharge (fig. 2). The comparison indicates that base flows measured at selected stations during this study were several times greater than the median flow based on the period of record.

Measured gains or losses

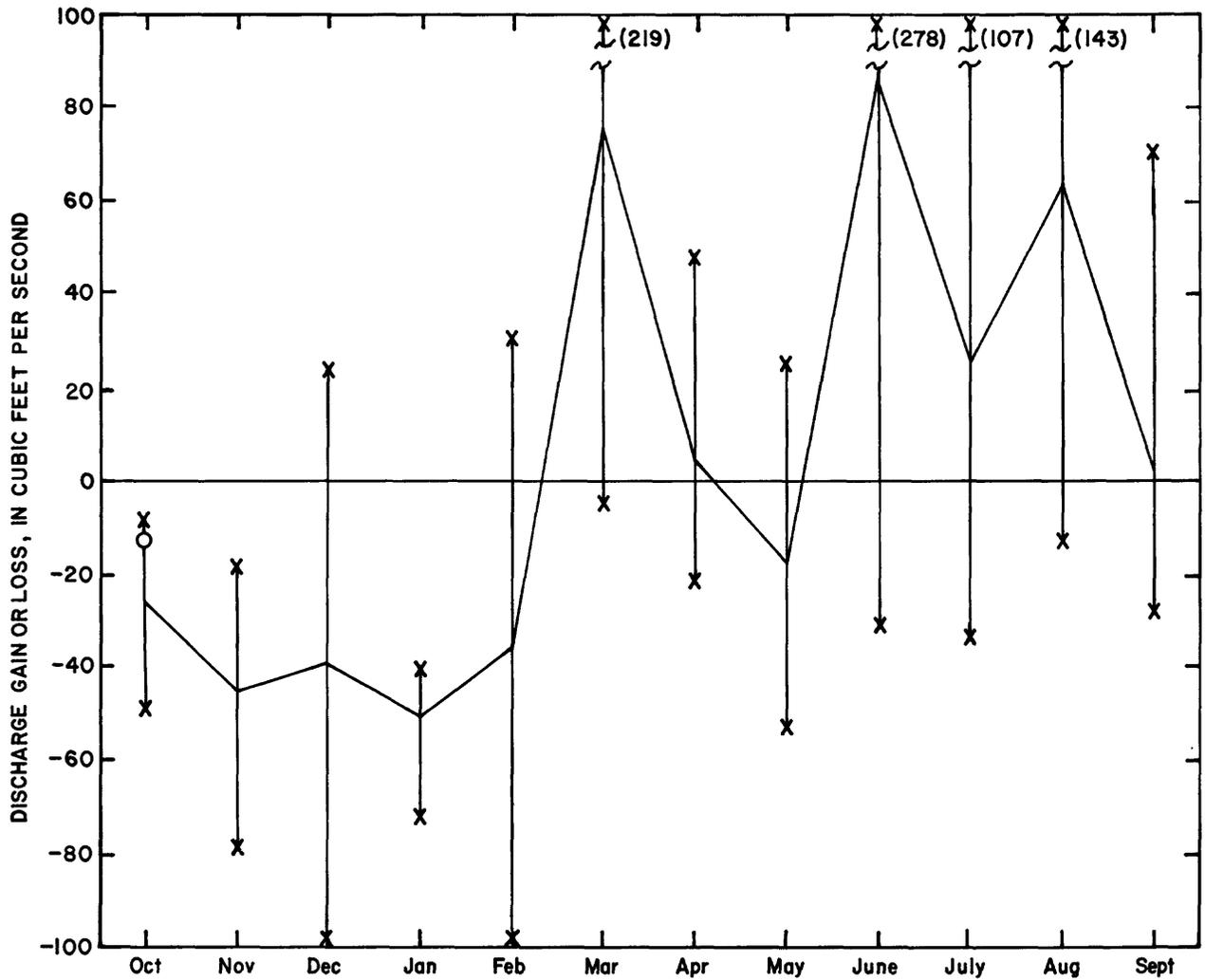
Several stations on the main stem of the Powder River and its major tributaries have sufficient years of overlapping streamflow record to permit a comparison between the 1978 measured gains or losses and historic averages. For the upper Powder River in Wyoming, concurrent records for water years 1951-57 were available at station 06313500, Powder River at Sussex, Wyo. (site 128); at station 06317000, Powder River at Arvada, Wyo. (site 147); and on the only perennial tributary, station 06316400, Crazy Woman Creek near Arvada, Wyo. (site 146). The average and range of monthly gain or loss in flow from site 128 (plus site 146) to site 147 are shown in figure 3. This was a losing reach during the fall and winter months when factors affecting base flow were minimal. The average October loss for 1951-57 between these sites was 27 ft³/s compared to a loss of 14 ft³/s measured on October 17, 1978. Annual flows at Powder River at Arvada, Wyo. (site 147), during the 1951-57 base period were less than the historic (1931-76) median. The 1951-57 annual flows ranged from 116 to 252 ft³/s compared to the median annual flow of 254 ft³/s for the period of record.

The lower Powder River in Wyoming can be analyzed similarly. Concurrent records were available for water years 1940-72 at station 06317000, Powder River at Arvada, Wyo. (site 147); station 06324500, Powder River at Moorhead, Mont. (site 162); and on the only major perennial tributary, station 06324000, Clear Creek near Arvada, Wyo. (site 161). The average and range of gain or loss in flow during the fall and winter months between site 147 (plus site 161) and site 162 are shown on figure 4. The average October loss for 1940-72 between these sites was 1.5 ft³/s, which compares to a gain of 6 ft³/s on October 17, 1978.

The historic average gain or loss in flow between the lower Powder River stations (sites 147 and 162) was computed using a longer period of record than the upper Powder River stations (sites 128 and 147). However, figure 4 shows that average gain or loss of flow computed for the shorter period (1951-57) is representative of the longer period (1940-72) for the lower Powder River stations.

SUMMARY

Base-flow discharge and chemical-quality measurements were made at selected sites on streams in the northern Great Plains area of Montana and Wyoming. The measurements were made during October-November 1977, August-September 1978, and October 1978. Streamflow gains or losses were computed for stream reaches not significantly affected by irrigation. Except for August-September 1978 when more than twice as much water was released from the Tongue River Reservoir in Montana, major subbasins showed little significant downstream differences in water discharge, chemical character, or dissolved-solids concentration.



EXPLANATION

- (107) — Maximum gain or loss for 1951-57
- October 1978 gain or loss
- Average monthly gain or loss for 1951-57
- Minimum gain or loss for 1951-57

Figure 3.--Average discharge and range of monthly gain or loss from Powder River at Sussex, Wyo. (site 128), to Powder River at Arvada, Wyo. (site 147), during concurrent years of operation (1951-57).

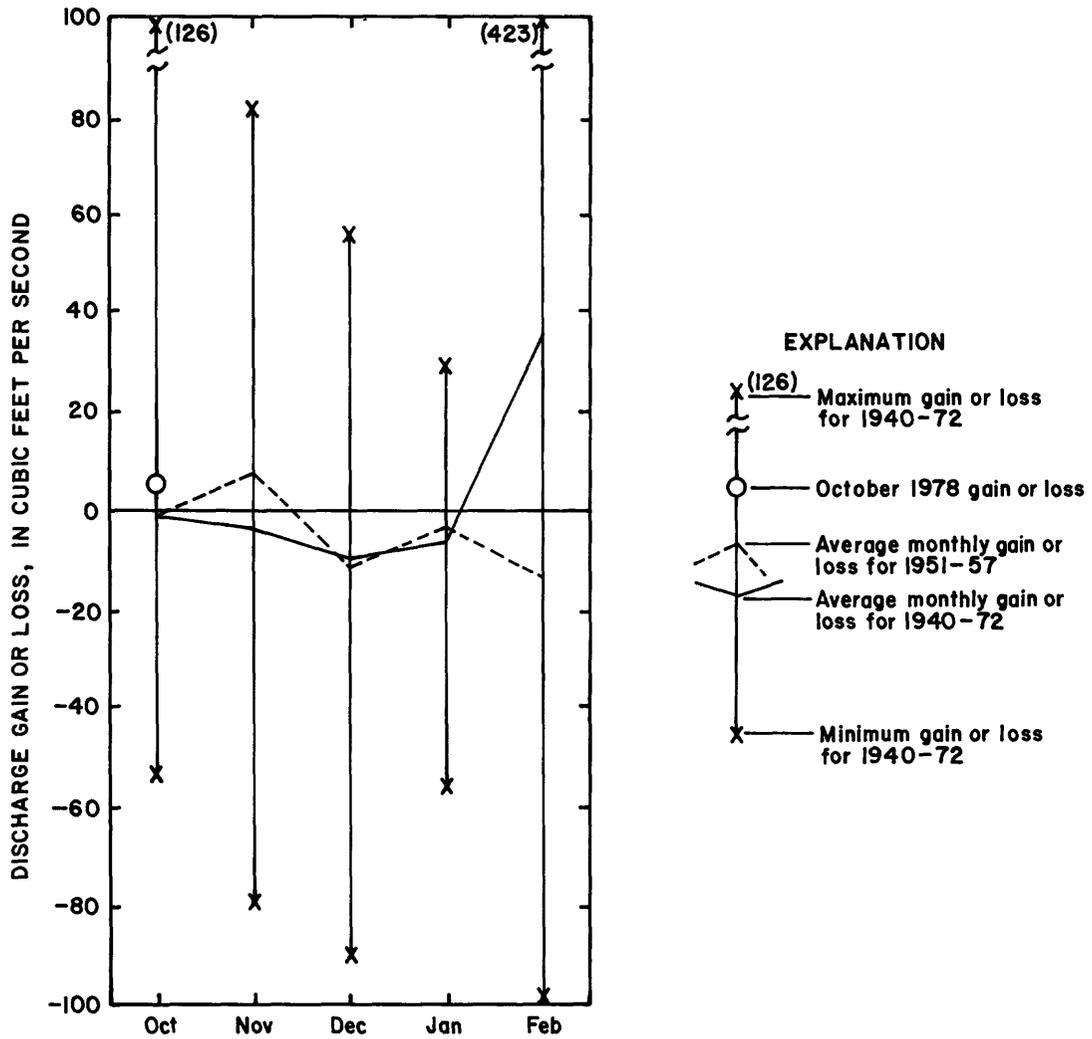


Figure 4.--Average discharge and range of monthly gain or loss from Powder River at Arvada, Wyo. (site 147), to Powder River at Moorhead, Mont. (site 162), during fall and winter of concurrent years of operation (1940-72 and 1951-57).

Precipitation and runoff were greater than normal during the spring and early summer months of 1978, and flow of most streams remained greater than normal through the summer and fall. As a result, the August and October 1978 base-flow discharges were several times greater than the median August and October 7-day low flow discharge based on the period of record at selected stations.

Data from long-term streamflow-gaging stations provide a basis for limited comparison between October 1978 measured gains or losses in flow and historic averages. The change in flow of the upper Powder River from Sussex to Arvada, Wyo., was a loss of 14 ft³/s on October 17, 1978, compared to an average loss of 27 ft³/s for October 1951-57. The change in flow of the lower Powder River from Arvada, Wyo., to Moorhead, Mont., was a gain of 6 ft³/s on October 17, 1978, compared to an average loss of 1.5 ft³/s during October 1940-72.

REFERENCES CITED

- Brown, Eugene, Skougstad, M. W., and Fishman, M. J., 1970, Methods for collection and analysis of water samples for dissolved minerals and gases: U.S. Geological Survey Techniques of Water Resources Investigations, book 5, chapter A1, 160 p.
- Environmental Data and Information Service, 1978a, Climatological data: National Oceanic and Atmospheric Administration, v. 81, no. 1-5.
- _____ 1978b, Climatological data: National Oceanic and Atmospheric Administration, v. 87, no. 1-5.
- Parrett, Charles, Carlson, D. D., Craig, G. S., Jr., and Hull, J. A., 1978, Data for floods of May 1978 in northeastern Wyoming and southeastern Montana: U.S. Geological Survey Open-File Report 78-985, 16 p.

Table 1.--Site descriptions

[Site number is the same as shown on plate 1. Number in parentheses is formal U.S. Geological Survey station number (06294690) or station number based on latitude and longitude (454709107180501)]

Site number	Stream	Location and station number
1	Tullock Creek	SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 36, T. 1 N., R. 35 E., Big Horn County, Mont., at bridge 15 mi northeast of Hardin, and 26 mi south of Bighorn (454709107180501)
2	Tullock Creek	NE $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 19, T. 4 N., R. 35 E., Treasure County, Mont., on right bank of old diversion dam, 0.3 mi upstream from Thunder Creek, 5.6 mi south of Bighorn, and 8 mi upstream from mouth (06294690)
3	Sarpy Creek	SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 15, T. 1 N., R. 37 E., Big Horn County, Mont., about 20 ft upstream from county bridge, 0.2 mi upstream from Spring Creek, and 28 mi northeast of Hardin (454947107064401)
4	East Fork Sarpy Creek	NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 22, T. 1 N., R. 38 E., Big Horn County, Sarpy, Mont., at county bridge 2.2 mi northwest of Sarpy School, and 19 mi west of Colstrip (454900106594401)
5	Sarpy Creek	SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 5, T. 2 N., R. 37 E., Treasure County, Mont., at farm bridge crossing 0.1 mi downstream from Iron Spring Coulee, and 20 mi southeast of Bighorn (455704107083001)
6	Sarpy Creek	NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 4, T. 3 N., R. 37 E., Treasure County, Mont., at county bridge, 0.5 mi upstream from Beaver Creek, and 18 mi southeast of Big Horn (460234107070401)
7	Sarpy Creek	SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 30, T. 6 N., R. 37 E., Treasure County, Mont., on left bank 100 ft upstream from bridge on FAS Route 415, 0.8 mi upstream from Hysham Canal, and 5.5 mi southeast of Hysham at site of continuous-record station (06294940)
8	East Fork Armells Creek	SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 34, T. 2 N., R. 41 E., Rosebud County, Mont., at State Highway 39 bridge, 0.5 mi south of Colstrip (455233106373501)
9	West Fork Armells Creek	NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 26, T. 3 N., R. 39 E., Rosebud County, Mont., 0.1 mi downstream from Trail Creek, and 13 mi northwest of Colstrip (455922106502901)

Table 1.--Site descriptions--Continued

Site number	Stream	Location and station number
10	Armells Creek	SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 16, T. 4 N., R. 40 E., Rosebud County, Mont., at county bridge 0.7 mi downstream from confluence of East and West Fork Armells Creek, and 15 mi south of Forsyth (460607106454201)
11	Armells Creek	NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 36, T. 5 N., R. 39 E., Rosebud County, Mont., at State bridge crossing, 7.5 mi south of I-94, and 11 mi southwest of Forsyth (460902106474301)
12	Armells Creek	SE $\frac{1}{4}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 26, T. 6 N., R. 39 E., Rosebud County, Mont., on right bank 300 ft upstream from bridge on Highway I-94, 2 mi upstream from mouth, and 6 mi southwest of Forsyth at site of continuous-record station (06294995)
13	Rosebud Creek	NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 20, T. 7 S., R. 39 E., Big Horn County, Mont., at farm road crossing on Kobold Ranch 0.1 mi south of county road, and about 15 mi south of Busby (451302106583201)
14	Rosebud Creek	NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 9, T. 7 S., R. 39 E., Big Horn County, Mont., at private road crossing, 0.1 mi west of county road crossing, and about 7 mi south of Kirby (451445106580201)
15	Rosebud Creek	NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 29, T. 6 S., R. 39 E., Big Horn County, Mont., at county road crossing, 0.2 mi east of Log School, and 2.5 mi south of Kirby (451743106590501)
16	Rosebud Creek	SW $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 8, T. 6 S., R. 39 E., Big Horn County, Mont., at private bridge at Kirby, 50 ft downstream from confluence of Cache Creek at site of water-quality station (06295110)
17	Rosebud Creek	NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 8, T. 2 S., R. 41 E., Rosebud County, Mont., at private road crossing 0.6 mi west of Jimtown, and 4 mi north of Lame Deer (454044106415601)
18	Rosebud Creek	NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 23, T. 1 S., R. 41 E., Rosebud County, Mont., near farm road crossing, about 0.2 mi downstream of Richard Coulee, and 13 mi south of Col-strip (454437106383801)

Table 1.--Site descriptions--Continued

Site number	Stream	Location and station number
19	Rosebud Creek	SE $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 8, T. 1 S., R. 42 E., Rosebud County, Mont., on left bank 10 ft downstream of bridge on FAS Route 315, 1.5 mi downstream from Lee Coulee, and 8.4 mi southeast of Colstrip at site of continuous-record station (06295250)
20	Miller Coulee	NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 3, T. 1 S., R. 42 E., Rosebud County, Mont., at county road crossing, just upstream from confluence with Rosebud Creek, about 2.5 mi east of FAS 315, and about 12 mi south of Colstrip (454713106320601)
21	Hay Coulee	NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 34, T. 1 N., R. 42 E., Rosebud County, Mont., 0.2 mi upstream from mouth, about 4.5 mi east of FAS 315, and 39 mi south of Rosebud (454808106300301)
22	Rosebud Creek	NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 34, T. 1 N., R. 42 E., Rosebud County, Mont., near private bridge crossing, 0.2 mi south of county road, 0.4 mi downstream from Hay Coulee, and about 39 mi south of Rosebud (454806106292901)
23	Greenleaf Creek	NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 29, T. 1 N., R. 43 E., Rosebud County, Mont., near county road crossing, 0.8 mi upstream from mouth, and about 36 mi south of Rosebud (454857106250801)
24	Rosebud Creek	NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 19, T. 1 N., R. 43 E., Rosebud County, Mont., at county road bridge, 0.6 mi downstream of Greenleaf Creek, and 34.5 mi south of Rosebud (454945106252201)
25	Rosebud Creek	NE $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 29, T. 2 N., R. 43 E., Rosebud County, Mont., on private road bridge, 0.3 mi upstream from Pony Creek, and 11.6 mi northeast of Colstrip at site of water-quality station (06295400)
26	Pony Creek	NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 29, T. 2 N., R. 43 E., Rosebud County, Mont., just upstream from mouth, 0.9 mi west of county road, and 29.5 mi south of Rosebud (455342106241501)
27	Rosebud Creek	NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 16, T. 2 N., R. 43 E., Rosebud County, Mont., at farm road bridge crossing, about 0.2 mi west of county road, 0.4 mi upstream from West Snider Creek, and 27 mi south of Rosebud (455527106231501)

Table 1.--Site descriptions--Continued

Site number	Stream	Location and station number
28	Spring Creek	NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 4, T. 2 N., R. 43 E., Rosebud County, Mont., just upstream from mouth, 0.6 mi west of county road, and 24.5 mi south of Rosebud (455747106235401)
29	Rosebud Creek	NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 33, T. 3 N., R. 43 E., Rosebud County, Mont., 0.2 mi west of county road, 0.5 mi downstream of Spring Creek, and 24 mi south of Rosebud (455810106233301)
30	Rosebud Creek	SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 8, T. 3 N., R. 43 E., Rosebud County, Mont., at farm road crossing, 0.4 mi west of county road, 0.5 mi upstream from Goodman Creek, and 20.5 mi south of Rosebud (460122106241901)
31	Rosebud Creek	NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 30, T. 4 N., R. 43 E., Rosebud County, Mont., at farm road bridge crossing, 0.4 mi west of county road, 1.8 mi downstream from Mitchell Coulee, and 17 mi south of Rosebud (460409106255301)
32	Rosebud Creek	NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 13, T. 4 N., R. 42 E., Rosebud County, Mont., at farm road bridge crossing, 0.1 mi upstream from Cottonwood Creek, 0.2 mi west of county road, and 12 mi south of Rosebud (460557106264601)
33	Vance Creek	NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 34, T. 5 N., R. 42 E., Rosebud County, Mont., just upstream from mouth, near county road bridge, 8.7 mi south of Highway I-94, and 10 mi south of Rosebud (460837106275201)
34	Rosebud Creek	SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 28, T. 5 N., R. 42 E., Rosebud County, Mont., at farm road bridge crossing, 0.2 mi west of county road, 0.8 mi downstream from Vance Creek, and about 8 mi south of Rosebud (460914106282201)
35	Rosebud Creek	SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 5, T. 5 N., R. 42 E., Rosebud County, Mont., at farm road bridge crossing, 0.3 mi east of county road, 1 mi downstream from previous published crest-stage gage number 06296000, and about 4 mi south of Rosebud (461237106293601)
36	Rosebud Creek	SW $\frac{1}{4}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 21, T. 6 N., R. 42 E., Rosebud County, Mont., on left bank 0.4 mi upstream from bridge on Highway I-94, 0.8 mi upstream from mouth, and 1.6 mi southwest of Rosebud at site of continuous-record station (06296003)

Table 1.--Site descriptions--Continued

Site number	Stream	Location and station number
37	Tongue River	NW $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 20, T. 57 N., R. 84 W., Sheridan County, Wyo., at bridge on county road at Monarch, 0.6 mi upstream from South Dry Creek, and 1.0 mi upstream from bridge on Highway I-90 (06299980)
38	Goose Creek	NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 27, T. 57 N., R. 84 W., Sheridan County, Wyo., at State secondary highway 3.5 mi upstream from mouth, near Kleenburn (445258106591301)
39	Ash Creek	NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 1, T. 57 N., R. 84 W., Sheridan County, Wyo., at Wyoming Highway 338, 0.3 mi upstream from mouth, near Acme (445700106563101)
40	Youngs Creek	SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 30, T. 58 N., R. 83 W., Sheridan County, Wyo., at Wyoming Highway 338, 1.2 mi upstream from mouth, near Decker, Mont. (445832106551401)
41	Squirrel Creek	SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 29, T. 9 S., R. 40 E., Big Horn County, Mont., at Montana secondary highway, 1.5 mi upstream from mouth, at Decker (450047106514201)
42	Prairie Dog ditch No. 13	SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 4, T. 56 N., R. 83 W., Sheridan County, Wyo., at private road, 1.3 mi upstream from Bates Draw, near Wakeley (445126106520801)
43	Prairie Dog Creek	SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 4, T. 56 N., R. 83 W., Sheridan County, Wyo., at private road, 1.7 mi upstream from Bates Draw, near Wakeley (445130106511601)
44	Dutch Creek	NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 32, T. 56 N., R. 82 W., Sheridan County, Wyo., at county road, 0.2 mi upstream from Dow Prong, near Wyarno (444732106452801)
45	Dow Prong	SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 32, T. 56 N., R. 82 W., Sheridan County, Wyo., 0.9 mi upstream from mouth, near Wyarno (444708106452201)
46	Dutch Creek	SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 13, T. 56 N., R. 83 W., Sheridan County, Wyo., at Wyoming Highway 336, 0.8 mi upstream from Plum Creek, near Wyarno (444947106482201)
47	Prairie Dog Creek	NE $\frac{1}{4}$ SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 23, T. 58 N., R. 83 W., Sheridan County, Wyo., on right bank 600 ft upstream from county bridge, 0.9 mi upstream from mouth, 2.8 mi downstream from Coutant Creek, and 7.6 mi northeast of Acme (06306250)

Table 1.--Site descriptions--Continued

Site number	Stream	Location and station number
48	Unnamed ditch	SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 23, T. 58 N., R. 83 W., Sheridan County, Wyo., at county road, 0.6 mi southwest of mouth of Prairie Dog Creek, near Decker, Mont. (445904106495501)
49	Wilson and Symons ditch	SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 23, T. 58 N., R. 83 W., Sheridan County, Wyo., at county road, 0.4 mi south of mouth of Prairie Dog Creek, near Decker, Mont. (445907106502401)
50	Badger Creek	NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 19, T. 58 N., R. 82 W., Sheridan County, Wyo., at county road, 2.8 mi upstream from mouth, near Decker, Mont. (445943106473801)
51	Tongue River	NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 33, T. 9 S., R. 40 E., Big Horn County, Mont., on left bank 1.0 mi north of Wyoming-Montana State line, 1.4 mi southeast of Decker, and 1.5 mi upstream from Badger Creek (06306300)
52	Tongue River	SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 12, T. 8 S., R. 40 E., Big Horn County, Mont., on left bank 0.5 mi downstream from Tongue River Dam, 4 mi upstream from Post Creek, 8 mi north-east of Decker, 16 mi southeast of Kirby, and at mile 162.3 at site of continuous-record station (06307500)
53	Tongue River	SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 32, T. 7 S., R. 41 E., Rosebud County, Mont., just west of road, about 4.5 mi upstream of Fourmile Creek, 6.7 mi downstream of Tongue River Reservoir, and 12 mi northeast of Decker (451052106434601)
54	Fourmile Creek	NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 28, T. 7 S., R. 41 E., Rosebud County, Mont., near public graveled road, 0.9 mi upstream of mouth, and about 7 mi downstream of Tongue River Dam (451228106425201)
55	Tongue River	NE $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 22, T. 7 S., R. 41 E., Rosebud County, Mont., 1 mi downstream from Fourmile Creek, at Petre Ranch, and 17 mi northeast of Decker, at mile 184.5 (451259106413601)
56	Canyon Creek	NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 11, T. 7 S., R. 41 E., Rosebud County, Mont., at bridge on county road, 11 mi southwest of Birney (06307520)

Table 1.--Site descriptions--Continued

Site number	Stream	Location and station number
57	Tongue River	SE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 31, T. 6 S., R. 42 E., Rosebud County, Mont., at mouth of Prairie Dog Creek, 7 mi southwest of Birney, and at mile 176.1 (451607106372801)
58	Tongue River	NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 27, T. 6 S., R. 42 E., Rosebud County, Mont., 0.7 mi upstream of Quarter Circle V Ranch, 0.8 mi downstream from Battle Butte Creek, and 3.5 mi upstream from Birney (451727106334401)
59	Hanging Woman West Prong	NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 2, T. 10 S., R. 43 E., Big Horn County, Mont., at mouth, 500 ft from county road, 0.3 mi southwest Forks Ranch, and 26 miles north of Leiter, Wyo. (450004106253001)
60	Hanging Woman Creek	NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 2, T. 10 S., R. 43 E., Big Horn County, Mont., at bridge 500 ft downstream from confluence of Hanging Woman West Prong and Hanging Woman Creek, 0.3 mi west of Forks Ranch, and 26 road miles north of Leiter, Wyo. (450007106252901)
61	Hanging Woman Creek	NW $\frac{1}{4}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 15, T. 9 S., R. 43 E., Big Horn County, Mont., at bridge, 0.3 mi east of county road, 500 ft downstream from mouth of Waddle Creek, and 25 mi north of Leiter, Wyo. (450301106265701)
62	Hanging Woman Creek	NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 18, T. 6 S., R. 43 E., Rosebud County, Mont., at mouth of Hanging Woman Creek, 0.25 mi south of Birney Day School, near county bridge crossing, at Birney (451912106310501)
63	Tongue River	SW $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 1, T. 6 S., R. 42 E., Rosebud County, Mont., at bridge on county road, 1.2 mi northwest of Birney, 2.5 mi downstream from Hanging Woman Creek, and at mile 148.8 (06307610)
64	Tongue River	NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 25, T. 5 S., R. 42 E., Rosebud County, Mont., just upstream from Cook Creek, 3 mi southeast of Birney Day School, and 4.5 mi north of Birney (452240106294001)
65	Cook Creek	SW $\frac{1}{4}$ NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 25, T. 5 S., R. 42 E., Rosebud County, Mont., on dirt road, 0.1 mi upstream from mouth, and 3.8 mi north of Birney (06307615)

Table 1.--Site descriptions--Continued

Site number	Stream	Location and station number
66	Tongue River	SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 8, T. 5 S., R. 43 E., Rosebud County, Mont., at county road bridge, 0.2 mi southeast of Birney Day School, and 9 mi north of Birney (452445106272501)
67	Tongue River	NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 34, T. 4 S., R. 43 E., Rosebud County, Mont., 0.4 mi upstream from Pawnee Creek, and 8 mi north of Birney (452708106242801)
68	Tongue River	SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 8, T. 4 S., R. 44 E., Rosebud County, Mont., near county road, 0.4 mi upstream from King Creek, and 7.5 mi south of Ashland (453019106195101)
69	Tongue River	NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 28, T. 3 S., R. 44 E., Rosebud County, Mont., 300 ft downstream of Logging Creek, and 3.4 mi southwest of Ashland (453301106181301)
70	Tongue River	SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 10, T. 3 S., R. 44 E., Rosebud County, Mont., at U.S. Highway 212 bridge crossing, 1 mi west of Ashland (453535106171101)
71	Otter Creek	NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 4, T. 9 S., R. 46 E., Powder River County, Mont., just downstream from Long Creek, about 9 mi south of Otter (450437106055201)
72	Otter Creek	NE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 18, T. 8 S., R. 46 E., Powder River County, Mont., 0.2 mi downstream from Pasture Creek, 5.5 mi upstream from Bradshaw Creek, and 6.2 mi southeast of Otter at site of water-quality station (06307665)
73	Otter Creek	NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 31, T. 7 S., R. 46 E., Powder River County, Mont., 2 mi upstream from Bear Creek, and 2.7 mi east of Otter (451134106085901)
74	Bear Creek	NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 24, T. 7 S., R. 45 E., Powder River County, Mont., at county bridge crossing, 0.3 mi upstream from confluence with Otter Creek, and 1.7 mi northeast of Otter (451313106101001)
75	Otter Creek	SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 13, T. 7 S., R. 45 E., Powder River County, Mont., near county bridge crossing, 0.35 mi north of Bear Creek, and 2 mi northeast of Otter (451330106100201)

Table 1.--Site descriptions--Continued

Site number	Stream	Location and station number
76	Otter Creek	NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 12, T. 7 S., R. 45 E., Powder River County, Mont., about 0.4 mi west of county road, on Thex Ranch, and 2.5 mi northeast of Otter (451438106100501)
77	Taylor Creek	NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 30, T. 6 S., R. 46 E., Powder River County, Mont., private road crossing near old Fort Howes, 0.5 mi downstream from Cow Creek, about 1.3 mi south of Fort Howes Ranger Station, and 6.5 mi north of Otter (451659106084701)
78	Otter Creek	NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 30, T. 6 S., R. 46 E., Powder River County, Mont., at bridge 0.5 mi downstream from Cow Creek, and 6 mi north of Otter (451732106085001)
79	Otter Creek	SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 35, T. 5 S., R. 45 E., Powder River County, Mont., 0.1 mi downstream from Gate Creek, 11 mi north of Otter, and 15 mi west of Sonnette (452106106085301)
80	Fifteenmile Creek	NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 23, T. 5 S., R. 45 E., Powder River County, Mont., at mouth about 0.3 mi south of Forest Service road, 0.6 mi east of Otter Creek Road, and 13 mi northeast of Otter (452311106081701)
81	Otter Creek	N $\frac{1}{2}$ sec. 23, T. 5 S., R. 45 E., Powder River County, Mont., on county road bridge, 1.0 mi upstream from Fifteenmile Creek, and 13.1 mi northeast of Otter at site of water-quality station (06307717)
82	Otter Creek	SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 2, T. 5 S., R. 45 E., Powder River County, Mont., 0.2 mi upstream from Tenmile Creek, 0.6 mi east of Otter Creek road, at farm road crossing, about 10 mi south of U.S. Highway 212, and 12 mi south of Ashland (452558106085101)
83	Tenmile Creek	NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 2, T. 5 S., R. 45 E., Powder River County, Mont., 0.4 mi upstream from mouth, at farm road crossing 0.2 mi north of Denson Ranch, 0.9 mi east of Otter Creek road, and 12 mi south of Ashland (452611106082801)
84	Otter Creek	NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 22, T. 4 S., R. 45 E., Powder River County, Mont., about 0.1 mi east of Otter Creek Road, near Badgetts Ranch, 0.5 mi downstream from Newell Creek, and 11 mi south of Ashland (452854106101601)

Table 1.--Site descriptions--Continued

Site number	Stream	Location and station number
85	Otter Creek	SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 9, T. 4 S., R. 45 E., Powder River County, Mont., near farm road crossing, 0.4 mi east of Otter Creek road, 0.6 mi upstream from Threemile Creek, and 8 mi south of Ashland (453017106102801)
86	Otter Creek	NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 4, T. 4 S., R. 45 E., Powder River County, Mont., at county road bridge crossing, 0.3 mi south of Willow Crossing, 0.8 mi downstream of Threemile Creek, and 7 mi south of Ashland (453117106110501)
87	Home Creek	SE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 29, T. 3 S., R. 45 E., Powder River County, Mont., about 150 ft west of Otter Creek road culvert, 1.0 mi upstream from mouth, about 2 mi south of Highway 212, and 5.1 mi southeast of Ashland at site of water-quality station (06307735)
88	Otter Creek	NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 29, T. 3 S., R. 45 E., Powder River County, Mont., at private road crossing, 0.4 mi downstream from Home Creek, and 5 mi south of Ashland (453246106124101)
89	East Fork Otter Creek	SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 20, T. 3 S., R. 45 E., Powder River County, Mont., at private road crossing, 0.2 mi upstream from confluence with Otter Creek, and 3 mi south of Ashland (453338106123701)
90	Otter Creek	SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 19, T. 3 S., R. 45 E., Powder River County, Mont., at private road crossing, 0.2 mi downstream of East Fork Otter Creek, and 3 mi south of Ashland (453323106125801)
91	Otter Creek	NE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 11, T. 3 S., R. 44 E., Rosebud County, Mont., on left bank 200 ft downstream from bridge on U.S. Highway 212, 2.5 mi upstream from mouth, and 0.3 mi southeast of Ashland at site of continuous-record station (06307740)
92	Otter Creek	SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 2, T. 3 S., R. 44 E., Rosebud County, Mont., near county road crossing, 0.2 mi upstream from confluence with Tongue River, and 0.2 mi west of Ashland (453601106161001)
93	Tongue River	NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 10, T. 2 S., R. 44 E., Rosebud County, Mont., 0.2 mi north of Northern Cheyenne Indian Reservation boundary, 0.9 mi west of county road, and 7.6 mi north of Ashland (454103106171401)

Table 1.--Site description--Continued

Site number	Stream	Location and station number
94	Tongue River	SE $\frac{1}{4}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 27, T. 1 S., R. 44 E., Rosebud County, Mont., 0.3 mi upstream from Lay Creek, and 10 mi north of Ashland, at mile 103.8 (454307106173501)
95	Tongue River	SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 2, T. 1 S., R. 44 E., Rosebud County, Mont., on right bank 2.0 mi upstream from Beaver Creek, 6 mi upstream from Brandenburg Bridge, and 13 mi north of Ashland (454700106161001)
96	Beaver Creek	NW $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 34, T. 1 N., R. 44 E., Rosebud County, Mont., at county road bridge, 0.8 mi upstream from mouth, and 14.7 mi north of Ashland (454752106141701)
97	Tongue River	NE $\frac{1}{4}$ sec. 14, T. 1 N., R. 44 E., Rosebud County, Mont., at Brandenburg Bridge, 42 mi southwest of Miles City (455023106131201)
98	Tongue River	NE $\frac{1}{4}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 6, T. 1 N., R. 45 E., Custer County, Mont., on left bank 3.1 mi downstream from Goodale Creek, 6.5 mi downstream from Brandenburg Bridge, and 21 mi north of Ashland at site of continuous-record station (06307830)
99	Liscom Creek	SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 33, T. 2 N., R. 45 E., Custer County, Mont., at county road crossing on Liscom Creek Road, 1.6 mi upstream of discontinued water-quality sampling site 06307840, and 22 mi northeast of Ashland (455303106083601)
100	S-H ditch	NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 16, T. 2 N., R. 45 E., Custer County, Mont., just downstream from diversion gate, 4.5 mi south of Moon Creek Road, 25 mi north of Ashland, and 36 mi south of Miles City (455531106083901)
101	Tongue River	SE $\frac{1}{4}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 16, T. 2 N., R. 45 E., Custer County, Mont., 0.3 mi downstream from S-H diversion dam, and 6 mi northeast of Brandenburg, at mile 73.7 (455528106083501)
102	Tongue River	SW $\frac{1}{4}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 30, T. 3 N., R. 45 E., Custer County, Mont., at Moon Creek Road bridge, 11.4 mi northeast of Brandenburg, at mile 64.5 (455844106031901)
103	Foster Creek	NE $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 12, T. 3 N., R. 46 E., Custer County, Mont., 0.6 mi upstream from mouth, and 18.5 mi northwest of Volborg at site of water-quality station (06307890)

Table 1.--Site descriptions--Continued

Site number	Stream	Location and station number
104	Tongue River	NE $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 6, T. 3 N., R. 47 E., Custer County, Mont., 2 mi downstream from Foster Creek, and 18.6 mi northwest of Volborg, at mile 53.2 (460244105560201)
105	Tongue River	SW $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 6, T. 4 N., R. 48 E., Custer County, Mont., 1 mi downstream from Ash Creek, and 15.6 mi northwest of Volborg, at mile 36.3 (460802105483301)
106	Tongue River	SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 6, T. 5 N., R. 48 E., Custer County, Mont., 0.1 mi downstream from Dry Creek at pumping station, 0.6 mi west of county road, and 14 mi south of Miles City (461237105454701)
107	Pumpkin Creek	SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 7, T. 5 S., R. 48 E., Powder River County, Mont., 0.3 mi downstream of Dry Creek, and 0.6 mi south of Sonnette (452423105503001)
108	Pumpkin Creek	NE $\frac{1}{4}$ SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 29, T. 3 S., R. 48 E., Powder River County, Mont., at culverts on State Highway 212, 5.9 mi upstream from Winter Gulch, and 9.1 mi north of Sonnette at site of former water-quality station 06308080 (453220105490301)
109	Pumpkin Creek	NW $\frac{1}{4}$ sec. 31, T. 1 S., R. 49 E., Powder River County, Mont., at bridge on county road, 0.9 mi northeast of Loesch, and 9 mi upstream from Little Pumpkin Creek at site of former water-quality station (06308160)
110	Little Pumpkin Creek	N $\frac{1}{2}$ sec. 6, T. 1 S., R. 49 E., Powder River County, Mont., on county bridge, 0.9 mi upstream from mouth, and 5.0 mi southwest of Volborg at site of former water-quality station (06308170)
111	Pumpkin Creek	NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 35, T. 1 N., R. 48 E., Custer County, Mont., at bridge, 0.5 mi north of Little Pumpkin Creek, and 3.9 mi southwest of Volborg (454739105430801)
112	Pumpkin Creek	NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 31, T. 4 N., R. 50 E., Custer County, Mont., 0.4 mi upstream of Deer Creek, and 29 mi southeast of Miles City (460317105334201)
113	Pumpkin Creek	SE $\frac{1}{4}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 35, T. 6 N., R. 48 E., Custer County, Mont., on right bank 30 ft upstream from bridge on U.S. Highway 312, 7.5 mi upstream from mouth, and 16 mi southeast of Miles City at site of continuous-record station (06308400)

Table 1.--Site descriptions--Continued

Site number	Stream	Location and station number
114	Tongue River	SE $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 19, T. 6 N., R. 48 E., Custer County, Mont., at Woodard Ranch, 0.7 mi downstream from Pumpkin Creek, 1.1 mi downstream from Tongue-Yellowstone diversion dam, and 12 mi south of Miles City, at mile 21.4 (461538105455201)
115	Tongue River	SE $\frac{1}{4}$ sec. 23, T. 7 N., R. 47 E., Custer County, Mont., on right bank 4 mi south of Miles City, and 8 mi upstream from mouth (06308500)
116	Tongue River	NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 33, T. 8 N., R. 47 E., Custer County, Mont., near U.S. Highway 12 bridge, at Riverside Park in Miles City (462413105512801)
117	Newland ditch	SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 13, T. 43 N., R. 81 W., Johnson County, Wyo., on left bank at gaging station 06312500, 0.1 mi downstream from Seventysix Draw, near Kaycee (434145106315401)
118	Sussex Irrigation Canal	NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 13, T. 43 N., R. 81 W., Johnson County, Wyo., on right bank at gaging station 06312500, 0.1 mi downstream from diversion, near Kaycee (434134106315401)
119	Powder River	NE $\frac{1}{4}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 13, T. 43 N., R. 81 W., Johnson County, Wyo., at former gaging station at D Ranch, 600 ft downstream from headgate of Sussex Irrigation Canal, 2.0 mi downstream from confluence of North and Middle Forks, and 6.0 mi east of Kaycee (06312500)
120	South Fork Powder River	NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 24, T. 40 N., R. 82 W., Natrona County, Wyo., at Antelope Springs Ranch Road, 0.3 mi downstream from Lone Bear Creek, near Midwest (432508106381901)
121	Willow Creek	SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 33, T. 41 N., R. 82 W., Natrona County, Wyo., at Lone Bear Road, 4.3 mi downstream from Poodle Dog Creek, near Kaycee (432848106415301)
122	South Fork Powder River	SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 3, T. 42 N., R. 81 W., Johnson County, Wyo., at Interstate Highway 25, 7.4 mi upstream from mouth, near Kaycee (443742106342001)
123	Salt Creek	SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 25, T. 41 N., R. 79 W., Natrona County, Wyo., 1.4 mi downstream from Sherwood Creek, near Midwest (432912106171001)

Table 1.--Site descriptions--Continued

Site number	Stream	Location and station number
124	Dugout Creek	SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 5, T. 41 N., R. 79 W., Johnson County, Wyo., at Dugout Ranch, 2.2 mi upstream from mouth, near Midwest (433315106223801)
125	Meadow Creek	NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 19, T. 42 N., R. 78 W., Johnson County, Wyo., 8.6 mi upstream from mouth, near Linch (433605106161301)
126	Salt Creek	NE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 8, T. 42 N., R. 79 W., Johnson County, Wyo., on left bank 200 ft upstream from bridge on West Sussex Dugout oil field road, 6.3 mi southwest of Sussex, and 12.6 mi upstream from mouth (06313400)
127	Salt Creek	SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 28, T. 43 N., R. 79 W., Johnson County, Wyo., 4.6 mi upstream from mouth, near Sussex (434000106211601)
128	Powder River	NE $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 13, T. 43 N., R. 79 W., Johnson County, Wyo., at bridge on State Route 192 at former discharge station, 0.2 mi west of Sussex, and 3.2 mi downstream from Salt Creek (06313500)
129	Powder River	SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 27, T. 45 N., R. 78 W., Johnson County, Wyo., at Z-L Bar Ranch, 1.4 mi upstream from Little Willow Creek, near Sussex (435005106131701)
130	Powder River	SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 17, T. 49 N., R. 77 W., Johnson County, Wyo., at Interstate Highway 90, 2.3 mi upstream from Dead Horse Creek, near Buffalo (441252106090801)
131	Powder River	SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 16, T. 52 N., R. 77 W., Johnson County, Wyo., at private road, 1.5 mi upstream from Crazy Woman Creek, near Arvada (442829106081601)
132	North Fork Crazy Woman Creek	SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 19, T. 49 N., R. 82 W., Johnson County, Wyo., 0.1 mi downstream from Little North Fork Crazy Woman Creek, near Buffalo (441148106460601)
133	North Fork Crazy Woman Creek	SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 35, T. 49 N., R. 82 W., Johnson County, Wyo., at old U.S. Highway 87, 0.1 mi downstream from Kelley Creek, near Buffalo (441023106414801)
134	Muddy Creek	SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 16, T. 48 N., R. 82 W., Johnson County, Wyo., at old U.S. Highway 87, 1.1 mi upstream from mouth, near Buffalo (440756106423401)

Table 1.--Site descriptions--Continued

Site number	Stream	Location and station number
135	Billy Creek	NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 16, T. 48 N., R. 82 W., Johnson County, Wyo., at old U.S. Highway 87, 0.5 mi upstream from mouth, near Buffalo (440740106423801)
136	Poison Creek	NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 33, T. 48 N., R. 82 W., Johnson County, Wyo., at old U.S. Highway 87, 1.1 mi upstream from O'Malley Draw, near Buffalo (440507106424201)
137	North Fork Crazy Woman Creek	NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 35, T. 48 N., R. 82 W., Johnson County, Wyo., at Middle Fork Road, 1.6 mi downstream from Poison Creek, near Buffalo (440508106401701)
138	Middle Fork Crazy Woman Creek	SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 10, T. 47 N., R. 82 W., Johnson County, Wyo., at old U.S. Highway 87, 1.3 mi downstream from Seventysix Creek, near Mayoworth (440306106413901)
139	North Fork Crazy Woman Creek	SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 6, T. 47 N., R. 81 W., Johnson County, Wyo., at Interstate Highway 25, 2.8 mi downstream from Middle Fork Crazy Woman Creek, near Mayoworth (440428106375701)
140	Beaver Creek	SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 4, T. 46 N., R. 82 W., Johnson County, Wyo., 0.6 mi downstream from Beaver Tooth Ditch diversion, near Mayoworth (435920106422601)
141	Beaver Creek	NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 2, T. 46 N., R. 82 W., Johnson County, Wyo., 0.1 mi upstream from mouth, near Mayoworth (435906106404401)
142	South Fork Crazy Woman Creek	NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 7, T. 47 N., R. 81 W., Johnson County, Wyo., at Interstate Highway 25 bridge, 4.2 mi upstream from mouth, near Mayoworth (440321106380201)
143	Crazy Woman Creek	SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 36, T. 48 N., R. 81 W., Johnson County, Wyo., at Buffalo-Sussex Cutoff, 2.7 mi downstream from Trabing Draw, near Buffalo (440516106315701)
144	Crazy Woman Creek	SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 1, T. 49 N., R. 80 W., Johnson County, Wyo., at Interstate Highway 90, 0.7 mi downstream from Timber Draw near Buffalo (441500106254601)
145	Crazy Woman Creek	SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 16, T. 51 N., R. 79 W., Johnson County, Wyo., at Tipperary Ranch, 0.7 mi upstream from Dry Creek, near Buffalo (442348106221001)

Table 1.--Site descriptions--Continued

Site number	Stream	Location and station number
146	Crazy Woman Creek	NW $\frac{1}{4}$ sec. 18, T. 52 N., R. 77 W., Johnson County, Wyo., at former gaging station, 0.2 mi upstream from unnamed tributary, 4.5 mi upstream from mouth, and 11.5 mi south of Arvada (06316400)
147	Powder River	NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 21, T. 54 N., R. 77 W., Sheridan County, Wyo., on left bank 0.5 mi upstream from bridge on county road, 0.5 mi southwest of Arvada, and 0.8 mi upstream from Wild Horse Creek (06317000)
148	Coal Draw	NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 21, T. 54 N., R. 77 W., Sheridan County, Wyo., 50 ft upstream from mouth, at Arvada (443852106080501)
149	Wild Horse Creek	SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 16, T. 54 N., R. 77 W., Sheridan County, Wyo., 0.3 mi upstream from mouth, at Arvada (443902106071701)
150	Powder River	NW $\frac{1}{4}$ sec. 31, T. 57 N., R. 76 W., Sheridan County, Wyo., at lower Powder River Road, 0.3 mi upstream from Clear Creek, near Arvada (445249106034201)
151	Rock Creek	NW $\frac{1}{4}$ NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 29, T. 52 N., R. 83 W., Johnson County, Wyo., on left bank 300 ft downstream from confluence of North and South Forks, and 11.5 mi northwest of Buffalo (06320000)
152	Rock Creek	NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 15, T. 51 N., R. 82 W., Johnson County, Wyo., at old U.S. Highway 87, 4.3 mi upstream from mouth, near Buffalo (442314106420201)
153	Clear Creek	SW $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 30, T. 51 N., R. 81 W., Johnson County, Wyo., on right bank 100 ft downstream from bridge on county road, 0.5 mi downstream from Rock Creek, and 2.5 mi northeast of Buffalo (06320200)
154	Clear Creek	NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 26, T. 52 N., R. 81 W., Johnson County, Wyo., 0.5 mi upstream from Waegle Draw, near Buffalo (442652106344101)
155	Clear Creek	NE $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 19, T. 53 N., R. 80 W., Johnson County, Wyo., on left bank 0.5 mi upstream from Sheridan-Johnson County line, 0.7 mi south of Ucross, and 1.6 mi upstream from Piney Creek (06320400)

Table 1.--Site descriptions--Continued

Site number	Stream	Location and station number
156	Piney Creek	SW $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 18, T. 53 N., R. 80 W., Sheridan County, Wyo., on left bank at Ucross, 140 ft upstream from bridge on U.S. Highways 14 and 16, and 1.0 mi upstream from mouth (06323500)
157	Clear Creek	SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 29, T. 55 N., R. 78 W., Sheridan County, Wyo., at U.S. Highway 14-16, 1.2 mi downstream from Big Corral Draw, at Leiter (444258106165601)
158	Buffalo Creek	SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 35, T. 56 N., R. 80 W., Sheridan County, Wyo., 0.1 mi upstream from Griffith Draw, near Leiter (444631106274601)
159	Buffalo Creek	NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 28, T. 56 N., R. 78 W., Sheridan County, Wyo., at county road, 0.5 mi downstream from Gardner Gulch, near Leiter (444821106155001)
160	Kendrick Ditch	NW $\frac{1}{4}$ sec. 1, T. 56 N., R. 77 W., Sheridan County, Wyo., at Lower Powder River Road, 3.7 mi downstream from diversion, near Arvada (445150106043301)
161	Clear Creek	SE $\frac{1}{4}$ sec. 36, T. 57 N., R. 77 W., Sheridan County, Wyo., on right bank 600 ft downstream from Cabin Creek, 1.8 mi upstream from mouth, and 16 mi north of Arvada (06324000)
162	Powder River	NW $\frac{1}{4}$ sec. 8, T. 9 S., R. 48 E., Powder River County, Mont., on left bank 500 ft downstream from discontinued post office at Moorhead, 6.2 mi upstream from Buffalo Creek, and at mile 184.8 at site of continuous-record station (06324500)
163	Powder River	NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 10, T. 6 S., R. 50 E., Powder River County, Mont., about 0.1 mi east of county road, 1.4 mi upstream of Chache Creek, and 10 mi southwest of Broadus (451931105341901)
164	Powder River	SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 20, T. 5 S., R. 51 E., Powder River County, Mont., 0.1 mi upstream of Third Creek, 0.1 mi west of county road, and 5 mi south of Broadus (452248105270401)

Table 1.--Site descriptions--Continued

Site number	Stream	Location and station number
165	Powder River	NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 3, T. 5 S., R. 51 E., Powder River County, Mont., on right bank 150 ft upstream from bridge on U.S. Highway 212, 0.4 mi downstream from Doyle Creek, 1 mi south of Broadus, and 7 mi upstream from Little Powder River at site of continuous-record station (06324710)
166	Little Powder River	NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 1, T. 51 N., R. 72 W., Campbell County, Wyo., at Wyoming Highway 59, 1.6 mi downstream from Dry Fork, near Gillette (442609105271901)
167	Little Powder River	SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 12, T. 52 N., R. 72 W., Campbell County, Wyo., downstream from Corral Creek at gaging station, and 14.7 mi north of Gillette (06324890)
168	Cottonwood Creek	NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 5, T. 53 N., R. 70 W., Campbell County, Wyo., 0.1 mi upstream from mouth, near Weston (443640105171801)
169	Little Powder River	SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 19, T. 54 N., R. 70 W., Campbell County, Wyo., at bridge on county road, and 1.4 mi northeast of Weston (06324925)
170	Little Powder River	SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 26, T. 56 N., R. 71 W., Campbell County, Wyo., 0.8 mi upstream from Antelope Creek, near Weston (444836105215601)
171	Little Powder River	NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 13, T. 57 N., R. 71 W., Campbell County, Wyo., on left bank 3.1 mi upstream from Dry Creek, 5.0 mi south of the Wyoming-Montana State line, and 20 mi north of Weston (06324970)
172	Little Powder River	SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 27, T. 8 S., R. 52 E., Powder River County, Mont., at highway bridge 0.5 mi downstream from Ranch Creek, and 0.8 mi northeast of Biddle (06325000)
173	Little Powder River	SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 26, T. 7 S., R. 52 E., Powder River County, Mont., at county bridge, 0.2 mi downstream of Bell Creek, 0.9 mi east of state Highway 59, and 7 mi north of Biddle (451147105184501)
174	Little Powder River	SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 28, T. 5 S., R. 52 E., Powder River County, Mont., at U.S. Highway 212 Bridge crossing, 0.2 mi upstream of East Fork Little Powder River, and 6 mi southeast of Broadus (452225105180501)

Table 1.--Site descriptions--Continued

Site number	Stream	Location and station number
175	Little Powder River	SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 29, T. 4 S., R. 52 E., Powder River County, Mont., at county bridge, 0.4 mi upstream from confluence with Powder River, and 4 mi northeast of Broadus (452739105193901)
176	Powder River	NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 25, T. 2 S., R. 52 E., Powder River County, Mont., just downstream from irrigation diversion canal, and 11 mi southwest of Powderville (453758105150701)
177	Powder River	SW $\frac{1}{4}$ SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 17, T. 1 S., R. 54 E., Powder River County, Mont., at county bridge 1 mi east of Powderville (454508105051501)
178	Powder River	SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 9, T. 1 N., R. 54 E., Custer County, Mont., 0.7 mi east of county road, 8 mi northeast of Powderville, and 23 mi west of Ekalaka (454911105023501)
179	Powder River	NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 5, T. 4 N., R. 53 E., Custer County, Mont., on Balsam Ranch, 0.3 mi east of county road, 0.6 mi upstream of Cut Coulee, and 9 mi southeast of Mizpah (460808105093201)
180	Powder River	NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 30, T. 6 N., R. 52 E., Custer County, Mont., at county bridge about 1.5 mi upstream from Mizpah Creek, and 0.3 mi east of Mizpah at site of former gaging station (06326000)
181	Mizpah Creek	SW $\frac{1}{4}$ sec. 26, T. 3 S., R. 50 E., Powder River County, Mont., at bridge on U.S. Highway 212, at Olive, about 1.0 mi downstream from YT Creek at site of water-quality station (06326050)
182	Mizpah Creek	NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 11, T. 1 S., R. 51 E., Powder River County, Mont., at county bridge, just upstream from confluence with Cross Creek, 14 mi northeast of Coalwood, and 15 mi northwest of Powderville (454609105241701)
183	Mizpah Creek	SW $\frac{1}{4}$ sec. 9, T. 2 N., R. 51 E., Custer County, Mont., on bridge on county road, about 2 mi downstream from Spring Creek, and 15.1 mi northeast of Volborg at site of water-quality station (06326200)

Table 1.--Site descriptions--Continued

Site number	Stream	Location and station number
184	Mizpah Creek	NW $\frac{1}{4}$ NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 24, T. 6 N., R. 51 E., Custer County, Mont., on left bank 10 ft upstream from county bridge, 1.0 mi upstream from mouth, and 1.6 mi northwest of Mizpah at site of continuous-record station (06326300)
185	Powder River	NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 13, T. 6 N., R. 51 E., Custer County, Mont., at county road, 0.9 mi downstream of Mizpah Creek, 1.6 mi north of Mizpah, and 28 miles east of Miles City (461656105164201)
186	Powder River	NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 14, T. 8 N., R. 51 E., Custer County, Mont., on left bank 1.5 mi downstream from bridge on U.S. Highway 12 at present site of Locate (5 mi west of former site of Locate), 1.5 mi upstream from Locate Creek, and 25 mi east of Miles City at site of continuous-record station (06326500)
187	Powder River	NE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 4, T. 11 N., R. 50 E., Custer County, Mont., at railroad bridge just upstream from confluence with Yellowstone River, and 6 mi southwest of Terry (464415105254301)
188	Little Missouri River	NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 19, T. 53 N., R. 67 W., Crook County, Wyo., at D Road, 1.0 mi upstream from Deadman Creek, near Oshoto (443404104574901)
189	Little Missouri River	SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 20, T. 55 N., R. 67 W., Crook County, Wyo., at county road, 2.2 mi downstream from Carr Creek, near New Haven (444343104552801)
190	Prairie Creek	SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 6, T. 54 N., R. 68 W., Crook County, Wyo., at county road, 0.6 mi upstream from Dry Hollow, near Stroner (444118105045301)
191	Prairie Creek	SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 27, T. 55 N., R. 68 W., Crook County, Wyo., at D Road, 1.4 mi downstream from Horse Creek, near Stroner (444328105004801)
192	Prairie Creek	SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 18, T. 55 N., R. 67 W., Crook County, Wyo., at county road, 3.2 mi upstream from mouth, near New Haven (444513104561201)
193	Cheyenne River	SE $\frac{1}{4}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 20, T. 40 N., R. 68 W., Converse County, Wyo., on right bank at the Fiddleback Ranch, 1.2 mi downstream from confluence of Antelope Creek and Dry Fork Cheyenne River, and 3.0 mi west of Dull Center (06365900)

Table 1.--Site descriptions--Continued

Site number	Stream	Location and station number
194	Cheyenne River	NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 26, T. 41 N., R. 67 W., Weston County, Wyo., at county road, 2.4 mi downstream from Frog Creek, near Dull Center (433022104522001)
195	Cheyenne River	NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 12, T. 41 N., R. 66 W., Weston County, Wyo., at county road, 2.9 mi upstream from Black Thunder Creek, near Hampshire (433240104431001)
196	Black Thunder Creek	NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 31, T. 42 N., R. 65 W., Weston County, Wyo., on right bank 20 ft downstream from bridge on county road, 1.3 mi west of Hampshire, and 4.0 mi upstream from mouth (06376300)
197	Lodgepole Creek	SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 5, T. 41 N., R. 64 W., Weston County, Wyo., on right bank 300 ft downstream from bridge on county road, 3.4 mi downstream from Wildcat Creek, 8.8 mi upstream from mouth, and 27 mi southwest of Newcastle (06378300)
198	Cheyenne River	SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 24, T. 40 N., R. 64 W., Niobrara County, Wyo., at county road 1.7 mi downstream from Snyder Creek, near Morrisey (432526104293501)
199	Cheyenne River	NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 17, T. 39 N., R. 62 W., Niobrara County, Wyo., 4.3 mi upstream from Lance Creek, near Mule Creek Jct. (432140104195501)
200	Lance Creek	NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 23, T. 36 N., R. 65 W., Niobrara County, Wyo., at Wyoming Highway 272, 4.5 mi downstream from Little Lightning Creek, near Lance Creek (430452104372801)
201	Lance Creek	SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 1, T. 37 N., R. 65 W., Niobrara County, Wyo., at county road, 2.5 mi upstream from Lightning Creek, near Cow Creek (431230104360401)
202	Lightning Creek	SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 3, T. 36 N., R. 68 W., Converse County, Wyo., at county road 2.8 mi downstream from Box Creek near Janet (430718105002301)
203	Lightning Creek	SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 35, T. 38 N., R. 65 W., Niobrara County, Wyo., at county road, 1.2 mi upstream from mouth, near Cow Creek (431346104372201)
204	Lance Creek	NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 23, T. 38 N., R. 63 W., Niobrara County, Wyo., at county road, 4.5 mi downstream from Crazy Woman Creek, at Bright (431512104232001)

Table 1.--Site descriptions--Continued

Site number	Stream	Location and station number
205	Lance Creek	Sec. 14, T. 39 N., R. 62 W., Niobrara County, Wyo., on right bank, 0.4 mi north of Spencer, 1.0 mi upstream from mouth, and 34 mi south of Newcastle (06386000)
206	Cheyenne River	NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 21, T. 40 N., R. 61 W., Niobrara County, Wyo., at U.S. Highway 85, 0.5 mi upstream from Wild Cat Creek, at Riverview (432542104114601)
207	Beaver Creek	NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 24, T. 46 N., R. 64 W., Weston County, Wyo., at Wyoming Highway 451, 2.8 mi upstream from Poison Creek, near Osage (435710104294201)
208	Beaver Creek	SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 20, T. 45 N., R. 63 W., Weston County, Wyo., at county road, 0.3 mi downstream from Fiddler Creek, near Newcastle (435207104271901)
209	Skull Creek	SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 26, T. 48 N., R. 63 W., Weston County, Wyo., at county road, 0.2 mi downstream from West Fork, at Skull Creek (440630104225201)
210	Beaver Creek	SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 35, T. 43 N., R. 62 W., Weston County, Wyo., at Morrisey Road, 2.0 mi downstream from Oil Creek, near Morrisey (433959104155101)
211	South Beaver Creek	NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 27, T. 44 N., R. 64 W., Weston County Wyo., at Wyoming Highway 450, about 3 mi upstream from Lone Tree Creek, near Clareton (434546104312001)
212	South Beaver Creek	SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 3, T. 42 N., R. 62 W., Weston County, Wyo., at county road, 6.5 mi downstream from Rough Creek, near Clifton (433858104170001)
213	Stockade Beaver Creek	NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 14, T. 44 N., R. 61 W., Weston County, Wyo., 4.3 mi downstream from Salt Creek, near Newcastle (434731104091401)
214	Stockade Beaver Creek	NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 2, T. 41 N., R. 61 W., Weston County, Wyo., at county road, 0.8 mi upstream from mouth, near Clifton (433403104083601)
215	Beaver Creek	NW $\frac{1}{4}$ sec. 18, T. 41 N., R. 60 W., Weston County, Wyo., at highway bridge, 2.2 mi downstream from Sheep Creek, and 23 mi south of Newcastle (06394000)

Table 1.--Site descriptions--Continued

Site number	Stream	Location and station number
216	Belle Fourche River	NW $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 9, T. 46 N., R. 71 W., Campbell County, Wyo., on right bank 200 ft downstream from bridge on county road, 1.2 mi downstream from Rattlesnake Creek, 10 mi southwest of Piney, 15.5 mi north of Reno Junction, and 22 mi south of Gillette (06425720)
217	Belle Fourche River	NW $\frac{1}{4}$ SE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 25, T. 47 N., R. 71 W., Campbell County, Wyo., on left bank 4.1 mi upstream from Dry Creek, 4.8 mi downstream from Coal Creek, 6.0 mi southwest of Piney, and 20 mi southeast of Gillette (06425780)
218	Caballo Creek	NW $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 4, T. 47 N., R. 70 W., Campbell County, Wyo., on right bank 0.1 mi downstream from bridge on county road, 0.7 mi southwest of Piney (discontinued post office), 1.3 mi upstream from mouth, and 18 mi southeast of Gillette (06425900)
219	Belle Fourche River	NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 22, T. 48 N., R. 69 W., Campbell County, Wyo., at county road, 4.7 mi upstream from Four Horse Creek, near Piney (440734105072201)
220	Raven Creek	NE $\frac{1}{4}$ NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 1, T. 48 N., R. 69 W., Campbell County, Wyo., on left bank 0.2 mi south of windmill, 1.4 mi upstream from mouth, 9.3 mi southwest of Moorcroft, and 9.5 mi southeast of Rozet (06425950)
221	Belle Fourche River	NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 31, T. 49 N., R. 68 W., Crook County, Wyo., at county road, 2.0 mi downstream from Raven Creek, near Moorcroft (441126105034701)
222	Buffalo Creek	NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 14, T. 49 N., R. 68 W., Crook County, Wyo., 0.2 mi upstream from mouth, near Moorcroft (441340104592601)
223	Belle Fourche River	SW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 36, T. 50 N., R. 68 W., Crook County, Wyo., at old U.S. Highway 14-16, 2.4 mi upstream from Donkey Creek, near Moorcroft (441630104583601)
224	Donkey Creek	NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 33, T. 50 N., R. 69 W., Campbell County, Wyo., at county road, 0.1 mi downstream from Buck Creek, near Rozett (441639105084001)
225	Donkey Creek	SE $\frac{1}{4}$ NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 30, T. 50 N., R. 68 W., Crook County, Wyo., on left bank 25 ft upstream from county bridge, 1.2 mi downstream from Well Creek, and 6.0 mi west of Moorcroft (06426400)

Table 1.--Site descriptions--Continued

Site number	Stream	Location and station number
226	Donkey Creek	SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 26, T. 50 N., R. 68 W., Crook County, Wyo., at old U.S. Highway 14-16, 2.1 mi upstream from mouth, near Moorcroft, Wyo. (441645104592001)
227	Arch Creek	SW $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 11, T. 51 N., R. 66 W., Crook County, Wyo., at county road, 1.2 mi upstream from mouth, near Carlile (442443104445001)
228	Inyan Kara Creek	NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 3, T. 49 N., R. 64 W., Crook County, Wyo., 3 mi upstream from Mason Creek, near Upton (441548104311601)
229	Mason Creek	NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 22, T. 49 N., R. 64 W., Crook County, Wyo., at county road, about 3 mi upstream from mouth, near Upton (441325104321001)
230	Inyan Kara Creek	SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 13, T. 50 N., R. 65 W., Crook County, Wyo., 0.2 mi upstream from Houston Creek, near Thornton (441838104365001)
231	Houston Creek	SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 13, T. 50 N., R. 65 W., Crook County, Wyo., 150 ft upstream from mouth, near Thornton (441844104365501)
232	Inyan Kara Creek	SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 25, T. 52 N., R. 66 W., Crook County, Wyo., at county road, 0.5 mi upstream from mouth, near Carlile (442724104440801)
233	Cabin Creek	NW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 7, T. 52 N., R. 67 W., Crook County, Wyo., at D-Road, 0.1 mi downstream from North Prong, near Oshoto (443018104573401)

Table 2.--Measured discharge, gain or loss in flow, onsite specific conductance, and water temperature at selected sites in Montana, October-November 1977

[ft³/s, cubic feet per second; micromhos, micromhos per centimeter at 25 degrees Celsius; °C, degrees Celsius]

Site number (pl.1)	Stream	Date (month-day)	October-November 1977			Water temperature (°C)
			Measured discharge (ft ³ /s)	Calculated gain or loss(-) in flow (ft ³ /s)	Specific conductance (micromhos)	
<u>Missouri River basin</u>						
<u>Yellowstone River subbasin</u>						
<u>Rosebud Creek subbasin</u>						
13	Rosebud Creek	10-31	3.51	---	1,100	6.0
14	Rosebud Creek	10-31	2.25	-1.26	---	5.0
15	Rosebud Creek	10-31	5.29	3.04	---	5.0
16	Rosebud Creek	11-01	8.32	3.03	910	2.5
17	Rosebud Creek	11-01	18.0	9.7	1,170	5.0
18	Rosebud Creek	10-31	19.0	1.0	---	7.0
19	Rosebud Creek	10-31	18.3	-.7	---	7.5
20	Miller Coulee	10-31	0	---	---	---
21	Hay Coulee	10-31	0	---	---	---
22	Rosebud Creek	11-01	16.5	-1.8	1,250	6.0
23	Greenleaf Creek	11-01	0	---	---	---
24	Rosebud Creek	11-01	15.9	-.6	---	5.5
25	Rosebud Creek	11-01	14.9	-1.0	1,360	7.5
26	Pony Creek	11-01	0	---	---	---
27	Rosebud Creek	11-01	14.6	-.3	---	7.0
28	Spring Creek	11-01	0	---	---	---
29	Rosebud Creek	11-01	14.8	.2	1,340	7.5
30	Rosebud Creek	11-01	14.9	.1	---	7.0
31	Rosebud Creek	11-01	14.3	-.6	---	6.0
32	Rosebud Creek	11-01	13.7	-.6	1,380	7.5
33	Vance Creek	11-01	a<.01	---	---	---
34	Rosebud Creek	11-01	14.3	.6	1,340	7.5
35	Rosebud Creek	11-02	13.0	-1.3	---	7.0
36	Rosebud Creek	11-02	13.6	.6	1,320	9.0
		11-02	14.4	---	1,400	4.5
<u>Tongue River subbasin</u>						
52	Tongue River	11-02	156	---	760	10.0
		11-02	154	---	---	10.0
53	Tongue River	11-02	160	4	---	10.0
54	Fourmile Creek	11-02	0	---	---	---
55	Tongue River	11-03	154	-6	---	7.0
56	Canyon Creek	11-03	.05	---	---	5.0
57	Tongue River	11-03	162	8	810	9.0
		11-03	160	---	833	7.0
58	Tongue River	11-03	159	-3	---	8.5
62	Hanging Woman Creek	11-03	.27	---	---	6.5
63	Tongue River	11-03	160	1	---	8.0
64	Tongue River	11-03	163	3	810	4.5
65	Cook Creek	11-03	.46	---	---	4.5
66	Tongue River	11-03	163	-0	---	5.0
67	Tongue River	11-03	178	15	840	5.0
		11-03	176	---	---	7.5
68	Tongue River	11-03	170	-8	---	5.0
69	Tongue River	11-03	183	13	840	6.0
70	Tongue River	11-03	190	7	---	5.0
		11-03	185	---	---	7.0

Table 2.--Measured discharge, gain or loss in flow, onsite specific conductance, and water temperature at selected sites in Montana, October-November 1977--Continued

Site number (pl.1)	Stream	Date (month-day)	October-November 1977			
			Measured discharge (ft ³ /s)	Calculated gain or loss(-) in flow (ft ³ /s)	Specific conductance (micro-mhos)	Water temperature (°C)
<u>Missouri River basin--Continued</u>						
<u>Yellowstone River subbasin--Continued</u>						
<u>Tongue River subbasin--Continued</u>						
<u>Otter Creek subbasin</u>						
71	Otter Creek	10-26	0.00	---	---	---
72	Otter Creek	10-26	.01	.01	---	5.0
73	Otter Creek	10-26	0.00	-.01	---	---
74	Bear Creek	10-26	.02	---	---	6.0
75	Otter Creek	10-26	.18	.16	---	15.0
76	Otter Creek	---	---	---	---	---
77	Taylor Creek	10-26	.22	---	---	11.0
78	Otter Creek	10-26	.79	.39	2,900	9.0
		10-26	.72	---	2,620	8.0
79	Otter Creek	10-26	.92	.13	2,260	9.5
80	Fifteenmile Creek	10-26	.10	---	---	11.0
		10-26	.08	---	---	---
81	Otter Creek	---	---	---	---	---
82	Otter Creek	10-27	.15	-.87	4,400	8.0
		10-27	.14	---	---	7.5
83	Tenmile Creek	10-26	0	---	---	---
84	Otter Creek	10-27	0	-.15	---	---
85	Otter Creek	10-27	0	0	---	---
86	Otter Creek	10-27	.06	.06	---	8.5
87	Home Creek	10-27	.06	---	---	8.5
88	Otter Creek	10-27	.55	.43	4,200	10.0
		10-27	.52	---	3,890	9.0
89	East Fork Otter Creek	10-27	.05	---	---	9.0
90	Otter Creek	10-27	1.24	.64	3,200	10.5
91	Otter Creek	10-28	.75	-.49	---	8.5
92	Otter Creek	10-28	.04	-.71	2,600	11.0
		11-03	.14	---	---	---
93	Tongue River	11-04	187	-3	890	3.0
94	Tongue River	11-03	215	28	---	6.5
95	Tongue River	11-04	213	-2	---	4.5
96	Beaver Creek	11-04	0	---	---	---
97	Tongue River	11-04	189	-24	910	4.0
98	Tongue River	11-04	202	13	---	4.5
99	Liscom Creek	11-04	0	---	---	---
100	S-H Ditch	11-04	1.88	---	---	6.0
101	Tongue River	11-04	197	-7	---	5.0
102	Tongue River	11-04	225	28	890	4.0
103	Foster Creek	11-04	0	---	---	---
104	Tongue River	11-04	227	2	940	4.5
105	Tongue River	11-04	226	-1	---	7.0
106	Tongue River	11-04	234	8	910	7.0
113	Pumpkin Creek	11-05	.01	---	---	3.5
114	Tongue River	11-04	221	-13	970	6.5
115	Tongue River	11-05	233	12	---	6.0
116	Tongue River	11-05	233	0	940	3.0

Table 3.--Measured discharge, gain or loss in flow, onsite specific conductance, and water temperature at selected sites, August-September and October 1978

[ft³/s, cubic feet per second; micromhos, micromhos per centimeter at 25 degrees Celsius; oC, degrees Celsius]

Site number (pl.1)	Stream	August-September 1978					October 1978				
		Date (month-day)	Measured discharge (ft ³ /s)	Calculated gain or loss (-) in flow (ft ³ /s)	Specific conductance (micromhos)	Water temperature (oC)	Date (month-day)	Measured discharge (ft ³ /s)	Calculated gain or loss (-) in flow (ft ³ /s)	Specific conductance (micromhos)	Water temperature (oC)
<u>Missouri River basin</u>											
<u>Yellowstone River subbasin</u>											
<u>Big Horn River subbasin</u>											
<u>Tullock Creek subbasin</u>											
1	Tullock Creek	08-25	0.30	---	2,280	17.0	10-24	3.95	---	2,190	7.0
2	Tullock Creek	08-25	.10	-0.20	3,400	19.5	10-24	5.16	1.21	2,470	8.5
<u>Sarpy Creek subbasin</u>											
3	Sarpy Creek	08-25	0	---	---	---	10-26	.21	---	a3,440	3.5
4	East Fork Sarpy Creek	08-25	.15	---	3,110	14.5	10-26	.78	---	3,200	2.0
5	Sarpy Creek	08-25	.01	-.14	3,200	16.0	10-26	.75	-.24	4,980	5.5
		---	---	---	---	---	10-26	.77	---	---	5.5
6	Sarpy Creek	08-25	.12	.11	4,600	17.0	10-26	.44	.31	4,550	6.5
7	Sarpy Creek	08-25	.17	.05	a3,400	16.0	10-26	2.41	1.97	a2,630	6.0
		---	---	---	---	---	10-26	2.21	---	---	7.0
<u>Armells Creek subbasin</u>											
8	East Fork Armells Creek	08-25	.01	---	a3,250	14.0	10-26	.01	---	3,680	3.0
9	West Fork Armells Creek	08-25	.06	---	6,500	19.5	10-26	.47	---	6,200	3.0
10	Armells Creek	08-25	.12	---	a6,400	17.0	---	---	---	---	---
11	Armells Creek	---	---	---	---	---	10-26	1.77	---	a5,900	7.0
12	Armells Creek	08-25	.04	-.08	a3,930	19.0	10-26	2.42	0.65	a5,250	8.0
<u>Rosebud Creek subbasin</u>											
13	Rosebud Creek	08-24	1.34	---	---	14.5	10-25	4.12	---	1,250	4.5
16	Rosebud Creek	08-24	10.9	9.6	a900	15.0	10-25	19.1	15.0	a950	6.0
17	Rosebud Creek	08-24	46.5	35.6	a1,130	17.0	10-25	18.2	---	---	7.0
19	Rosebud Creek	08-24	47.1	.6	1,150	19.0	10-25	55.5	36.4	a1,200	5.5
		08-24	41.4	---	---	---	10-25	52.6	-2.9	1,250	6.5
24	Rosebud Creek	08-24	46.5	-.6	1,280	18.0	10-25	48.9	-3.7	1,290	7.0
30	Rosebud Creek	08-24	44.2	-2.3	1,320	18.5	10-25	47.6	-1.3	1,400	7.0

Table 3.--Measured discharge, gain or loss in flow, onsite specific conductance, and water temperature at selected sites, August-September and October 1978--Continued

Site number (pl.1)	Stream	August-September 1978					October 1978				
		Date (month-day)	Measured discharge (ft ³ /s)	Calculated gain or loss (-) in flow (ft ³ /s)	Specific conductance (micro-mhos)	Water temperature (°C)	Date (month-day)	Measured discharge (ft ³ /s)	Calculated gain or loss (-) in flow (ft ³ /s)	Specific conductance (micro-mhos)	Water temperature (°C)
<u>Missouri River basin--Continued</u>											
<u>Yellowstone River subbasin--Continued</u>											
<u>Rosebud Creek subbasin--Continued</u>											
32	Rosebud Creek	08-24	44.1	-.1	a1,380	19.5	48.7	1.1	a1,400	7.0	
36	Rosebud Creek	08-24	34.9	-9.2	a1,460	18.5	49.8	1.1	a1,460	7.5	
<u>Tongue River subbasin</u>											
37	Tongue River	08-29	134	---	415	15.5	131	---	a450	7.0	
38	Goose Creek	08-29	96.1	---	750	17.0	172	---	a560	7.0	
39	Ash Creek	08-29	.42	---	1,600	14.0	1.06	---	a1,900	7.0	
40	Youngs Creek	08-29	8.00	---	810	17.0	6.96	---	a950	8.0	
41	Squirrel Creek	---	---	---	---	---	2.22	---	a2,000	5.0	
<u>Prairie Dog Creek subbasin</u>											
42	Prairie Dog ditch	08-29	1.39	---	540	17.0	0	---	---	---	
43	Prairie Dog Creek	08-29	52.4	---	a660	14.0	39.1	---	a900	8.0	
<u>Dutch Creek subbasin</u>											
44	Dutch Creek	08-29	1.46	---	a2,600	14.5	2.92	---	a2,900	5.0	
45	Dow Prong	08-29	2.35	---	1,650	14.5	4.53	---	a1,800	4.0	
46	Dutch Creek	---	---	---	---	---	7.26	-.19	a2,400	7.0	
47	Prairie Dog Creek	08-29	53.2	(b)	a1,100	16.0	37.5	-8.9	a1,550	7.0	
48	Unnamed ditch	08-29	0	---	---	---	0	---	---	---	
49	Wilson and Symons ditch	08-29	0	---	---	---	0	---	---	---	
50	Badger Creek	---	---	---	---	---	.03	---	a7,500	5.0	
51	Tongue River	08-29	305	(b)	700	20.5	371	20	a690	10.0	
52	Tongue River	09-07	365	---	a640	21.0	124	---	a700	9.5	
55	Tongue River	09-07	361	---	660	18.5	121	-3	700	11.5	
57	Tongue River	09-07	358	-3	675	21.0	126	5	725	9.5	
<u>Hanging Woman Creek subbasin</u>											
59	West Prong Hanging Woman Creek	09-06	0	---	---	---	0	---	---	---	
60	Hanging Woman Creek	09-06	.04	---	9,000	32	.05	---	10,000	7.5	
61	Hanging Woman Creek	09-06	0.00	-.04	---	---	0	-.05	---	---	
62	Hanging Woman Creek	09-06	1.02	1.02	3,560	24.5	1.14	1.14	3,340	6.0	

Table 3.--Measured discharge, gain or loss in flow, onsite specific conductance, and water temperature at selected sites, August-September and October 1978--Continued

Site number (pl.1)	Stream	August-September 1978					October 1978				
		Date (month-day)	Measured discharge (ft ³ /s)	Calculated gain or loss (ft ³ /s)	Specific conductance (micro-mhos)	Water temperature (°C)	Date (month-day)	Measured discharge (ft ³ /s)	Calculated gain or loss (ft ³ /s)	Specific conductance (micro-mhos)	Water temperature (°C)
<u>Missouri River basin--Continued</u>											
<u>Yellowstone River subbasin--Continued</u>											
<u>Tongue River subbasin--Continued</u>											
64	Tongue River	09-07	367	8	700	24.0	10-19	136	9	850	5.0
67	Tongue River	09-07	363	-4	a680	18.0	10-19	150	14	a868	9.0
70	Tongue River	09-07	362	-1	670	19.5	10-19	156	6	975	9.0
<u>Otter Creek subbasin</u>											
72	Otter Creek	09-06	.14	---	6,800	16.5	10-23	.29	---	6,500	11.0
75	Otter Creek	09-06	.48	.34	3,500	---	10-24	.35	---	6,400	7.5
78	Otter Creek	09-06	2.37	1.89	a2,900	16.0	10-24	3.05	0.46	3,620	4.0
82	Otter Creek	09-06	1.77	-0.60	a3,080	18.0	10-24	3.97	2.30	a2,980	7.0
86	Otter Creek	09-06	2.07	0.30	3,200	20.5	10-24	3.07	.92	a3,000	6.5
87	Home Creek	09-06	.03	---	---	17.5	10-24	---	-0.90	3,120	6.5
88	Otter Creek	09-06	1.50	-.60	a3,500	---	10-24	.08	---	2,950	8.0
90	Otter Creek	09-06	1.69	.19	3,010	20.0	10-24	3.81	.66	a3,250	6.0
91	Otter Creek	09-06	1.82	0.13	3,020	19.5	10-24	3.89	.08	3,060	7.5
94	Tongue River	09-07	395	---	---	20.5	10-24	4.23	0.34	2,830	7.0
97	Tongue River	09-07	384	31	775	---	10-24	1.3	---	---	7.5
98	Tongue River	09-07	359	-11	a795	24.5	10-19	172	12	1,060	11.0
102	Tongue River	09-07	345	-25	770	23.0	10-19	186	14	a1,060	9.0
105	Tongue River	09-07	355	-14	a835	22.0	10-19	183	-3	1,140	11.0
				10	860	21.5	10-19	194	11	a1,080	12.0
						26.0	10-19	208	14	1,090	11.0
<u>Pumpkin Creek subbasin</u>											
107	Pumpkin Creek	09-06	.27	---	a1,870	17.0	10-24	.24	---	a1,600	5.0
108	Pumpkin Creek	09-06	0.00	-.27	---	---	10-24	0.00	-.24	---	---
109	Pumpkin Creek	09-06	<.01	<.01	7,900	---	10-24	.02	.02	6,300	7.0
110	Little Pumpkin Creek	09-06	0.00	<.01	---	---	10-24	0.00	-.02	---	---
111	Pumpkin Creek	09-06	0.00	0	---	---	10-24	0	0	---	---
112	Pumpkin Creek	09-06	0.00	0	---	---	10-24	0.00	0	---	---
113	Pumpkin Creek	09-06	.03	.03	a2,590	20.0	10-24	.27	.27	a1,880	6.0
114	Tongue River	09-07	212	-143	875	23.5	10-19	215	7	1,110	7.6
116	Tongue River	09-07	260	48	a905	25.0	10-19	232	17	a1,080	8.5
<u>Powder River subbasin</u>											
117	Newland ditch	08-30	1.29	---	1,040	21.5	10-20	0	---	---	---
118	Sussex irrigation canal	08-30	57.3	---	1,040	21.5	10-20	13.9	---	1,120	7.0
119	Powder River	08-30	21.5	---	1,040	22.5	10-20	110	---	a1,120	7.5

Table 3.--Measured discharge, gain or loss in flow, onsite specific conductance, and water temperature at selected sites, August-September and October 1978--Continued

Site number (pl.1)	Stream	August-September 1978					October 1978				
		Date (month-day)	Measured discharge (ft ³ /s)	Calculated gain or loss (ft ³ /s)	Specific conductance (micro-mhos)	Water temperature (°C)	Date (month-day)	Measured discharge (ft ³ /s)	Calculated gain or loss (ft ³ /s)	Specific conductance (micro-mhos)	Water temperature (°C)
<u>Missouri River basin--Continued</u>											
<u>Yellowstone River subbasin--Continued</u>											
<u>Powder River subbasin--Continued</u>											
<u>South Fork Powder River subbasin</u>											
120	South Fork Powder River	---	---	---	---	---	0.06	---	a7,000	7.0	
121	Willow Creek	---	---	---	---	---	6.50	---	a1,900	6.0	
122	South Fork Powder River	08-30	0	---	---	---	4.96	-1.60	a3,740	13.0	
<u>Salt Creek subbasin</u>											
123	Salt Creek	08-30	33.0	---	6,700	26.0	32.6	---	7,650	15.0	
124	Dugout Creek	---	---	---	---	---	c.01	---	a7,100	14.0	
125	Meadow Creek	---	---	---	---	---	1.11	---	a4,400	10.0	
126	Salt Creek	08-31	26.8	-6.2	6,800	18.0	29.6	-4.1	7,000	12.0	
127	Salt Creek	08-31	30.5	3.7	a6,600	16.0	31.8	2.2	a7,200	9.0	
128	Powder River	08-30	66.6	(b)	4,000	22.5	d167	6	2,490	7.0	
		08-31	64.5	---	a4,180	22.5	d163	---	a2,490	7.0	
129	Powder River	08-31	78.9	(b)	a3,660	20.0	167	4	a2,690	8.5	
130	Powder River	08-31	89.7	10.8	a3,500	17.5	161	-6	a2,730	10.5	
131	Powder River	08-31	75.2	-14.5	a3,480	18.0	154	-7	a2,630	6.5	
<u>Crazy Woman Creek subbasin</u>											
<u>North Fork Crazy Woman Creek subbasin</u>											
132	North Fork Crazy Woman Creek	08-29	d16.0	---	240	14.0	d12.0	---	280	5.0	
133	North Fork Crazy Woman Creek	08-29	6.74	(b)	965	18.0	13.7	1.7	870	7.0	
<u>Muddy Creek subbasin</u>											
134	Muddy Creek	08-29	2.15	---	2,080	18.0	2.99	---	2,100	7.5	
135	Billy Creek	08-29	.61	---	790	18.0	.57	---	854	8.5	
136	Poison Creek	08-29	.25	---	4,250	21.5	.24	---	3,380	9.0	
137	North Fork Crazy Woman Creek	08-29	9.31	(b)	1,620	19.5	18.5	1.0	1,090	10.0	
138	Middle Fork Crazy Woman Creek	08-29	15.6	---	535	19.0	15.1	---	500	8.5	
139	North Fork Crazy Woman Creek	08-29	25.3	(b)	1,100	20.5	d35.3	1.7	888	10.0	

Table 3.--Measured discharge, gain or loss in flow, onsite specific conductance, and water temperature at selected sites, August-September and October 1978--Continued

Site num-ber (pl.1)	Stream	August-September 1978					October 1978				
		Date (month-day)	Measured discharge (ft ³ /s)	Calculated gain or loss (-) in flow (ft ³ /s)	Specific conductance (micro-mhos)	Water temperature (°C)	Date (month-day)	Measured discharge (ft ³ /s)	Calculated gain or loss (-) in flow (ft ³ /s)	Specific conductance (micro-mhos)	Water temperature (°C)
<u>Missouri River basin--Continued</u>											
<u>Yellowstone River subbasin--Continued</u>											
<u>Powder River subbasin--Continued</u>											
<u>Crazy Woman Creek subbasin--Continued</u>											
<u>South Fork Crazy Woman Creek subbasin</u>											
<u>Beaver Creek subbasin</u>											
140	Beaver Creek	---	---	---	---	10-20	.14	---	4,310	6.5	
141	Beaver Creek	---	---	---	---	10-20	.25	.11	3,540	7.0	
142	South Fork Crazy Woman Creek	08-29	.02	---	2,860	10-20	.26	---	3,740	8.5	
143	Crazy Woman Creek	08-29	10.8	(b)	1,800	10-20	26.8	(b)	1,110	10.0	
144	Crazy Woman Creek	08-29	12.3	1.5	1,920	10-20	27.5	.7	1,410	11.5	
145	Crazy Woman Creek	08-29	12.1	-0.2	2,190	10-20	27.2	-.3	1,550	10.0	
146	Crazy Woman Creek	08-29	15.2	3.1	2,220	10-20	26.1	-1.1	1,700	10.0	
146	Crazy Woman Creek	08-31	12.8	---	a2,350	10-17	26.6	---	a1,480	7.0	
147	Powder River	08-31	92.4	4.4	a3,200	10-17	176	-5	a2,500	7.0	
148	Coal Draw	---	---	---	---	10-17	c.01	---	5,400	11.0	
149	Wild Horse Creek	---	---	---	---	10-17	.08	---	a6,900	10.0	
150	Powder River	08-31	99.9	7.5	a3,160	10-17	174	-2	a2,520	8.0	
<u>Clear Creek subbasin</u>											
<u>Rock Creek subbasin</u>											
151	Rock Creek	08-29	51.5	---	800	10-21	10.0	---	702	4.5	
152	Rock Creek	08-29	41.2	(b)	695	10-21	19.2	(b)	1,120	7.5	
153	Clear Creek	08-29	68.5	---	735	10-21	65.0	---	1,758	8.5	
154	Clear Creek	08-29	51.5	(b)	980	10-21	46.9	(b)	950	4.5	
155	Clear Creek	08-29	57.1	(b)	1,120	10-21	50.2	3.3	1,060	5.5	
156	Piney Creek	08-29	58.8	---	375	10-21	d34	---	1,470	8.0	
157	Clear Creek	08-29	112	(b)	1,400	10-21	d95.0	11.0	1,020	7.5	
<u>Buffalo Creek subbasin</u>											
158	Buffalo Creek	08-29	c<.01	---	---	10-18	.05	---	a4,000	12.0	
159	Buffalo Creek	08-29	4.07	---	---	10-18	.02	-.03	a6,900	10.0	
160	Kendrick ditch	08-29	102	(b)	1,000	10-21	c.01	---	1,100	8.0	
161	Clear Creek	08-29	114	---	1,040	10-21	108	13	1,140	8.5	
162	Powder River	09-01	211	---	a1,100	10-17	111	---	a1,130	9.0	
		09-01	232	(b)	a2,150	10-17	293	8	a2,060	9.5	
					2,000	---	---	---	---	---	

Table 3.--Measured discharge, gain or loss in flow, onsite specific conductance, and water temperature at selected sites, August-September and October 1978--Continued

Site number (pl.1)	Stream	August-September 1978					October 1978				
		Date (month-day)	Measured discharge (ft ³ /s)	Calculated gain or loss (ft ³ /s)	Specific conductance (micro-mhos)	Water temperature (°C)	Date (month-day)	Measured discharge (ft ³ /s)	Calculated gain or loss (ft ³ /s)	Specific conductance (micro-mhos)	Water temperature (°C)
<u>Missouri River basin--Continued</u>											
<u>Yellowstone River subbasin--Continued</u>											
<u>Powder River subbasin--Continued</u>											
163	Powder River	08-31	238	27	2,300	23.0	308	15	2,150	7.5	
164	Powder River	09-01	223	-15	2,390	18.0	303	-33	2,100	8.0	
165	Powder River	09-01	236	13	a2,250	19.0	275	12	2,200	10.0	
		09-01	246	---	---	23.0	287	---	a2,150	10.0	
							---	---	---	---	
<u>Little Powder River subbasin</u>											
166	Little Powder River	---	---	---	---	---	---	---	---	---	
167	Little Powder River	08-30	.01	---	a2,430	15.0	.73	(b)	a2,940	5.0	
168	Cottonwood Creek	08-30	.50	---	4,100	18.5	.08	---	4,250	10.0	
169	Little Powder River	08-30	.77	.26	a3,950	18.0	.78	.32	a4,080	8.5	
170	Little Powder River	08-30	2.80	2.03	3,790	20.5	1.49	.71	4,820	7.0	
171	Little Powder River	08-30	3.44	0.64	3,850	20.5	1.82	.33	4,200	8.0	
172	Little Powder River	08-30	6.75	3.31	a3,750	20.5	4.74	2.92	a3,640	8.0	
173	Little Powder River	08-30	6.55	---	4,000	20.0	---	---	---	---	
174	Little Powder River	08-30	6.29	-.46	3,620	21.5	4.54	-0.20	3,900	10.0	
175	Little Powder River	08-30	10.4	4.1	3,600	23.0	3.61	-0.93	3,910	9.0	
176	Little Powder River	08-30	14.9	4.5	a3,110	22.0	9.00	5.39	a2,730	8.5	
177	Powder River	09-01	274	23	2,350	21.5	290	-6	2,150	8.0	
178	Powder River	09-01	257	-17	a2,450	19.5	284	-6	a2,220	7.0	
179	Powder River	09-01	253	-4	2,440	23.0	297	13	2,260	10.0	
180	Powder River	09-01	297	16	2,290	25.5	292	-5	2,140	11.0	
		09-01	297	28	a2,350	25.0	300	8	a2,250	8.0	
<u>Mizpah Creek subbasin</u>											
181	Mizpah Creek	08-31	.12	---	a5,000	21.0	.15	---	a5,180	8.0	
182	Mizpah Creek	08-31	.04	-.08	7,000	16.0	.14	-.01	6,800	7.0	
183	Mizpah Creek	08-31	.09	.05	a2,850	17.5	.02	-.12	a3,000	7.5	
184	Mizpah Creek	08-31	.05	-.04	a3,120	20.0	.23	.21	a2,430	9.0	
185	Powder River	09-01	280	-17	2,330	26.0	302	2	1,000	11.0	
186	Powder River	09-01	302	22	2,200	23.5	306	4	1,000	11.0	
187	Powder River	09-01	320	18	a2,200	25.0	297	-9	a2,340	8.0	
<u>Little Missouri River subbasin</u>											
188	Little Missouri River	08-30	0.00	---	---	---	0	---	---	---	
189	Little Missouri River	---	---	---	---	---	0	---	---	---	

Table 3.--Measured discharge, gain or loss in flow, onsite specific conductance, and water temperature at selected sites, August-September and October 1978--Continued

Site number (p1.1)	Stream	August-September 1978					October 1978				
		Date (month-day)	Measured discharge (ft ³ /s)	Calculated gain or loss (-) in flow (ft ³ /s)	Specific conductance (micro-mhos)	Water temperature (°C)	Date (month-day)	Measured discharge (ft ³ /s)	Calculated gain or loss (-) in flow (ft ³ /s)	Specific conductance (micro-mhos)	Water temperature (°C)
<u>Missouri River basin--Continued</u>											
<u>Little Missouri subbasin--Continued</u>											
<u>Prairie Creek subbasin</u>											
190	Prairie Creek	08-30	0.00	---	---	---	0	0	---	---	---
191	Prairie Creek	08-30	.04	.04	a2,010	15.5	.10	---	a2,030	5.0	5.0
192	Prairie Creek	---	---	---	---	---	.71	.61	2,360	5.0	5.0
<u>Cheyenne River subbasin</u>											
193	Cheyenne River	08-30	.76	---	2,500	27.5	0.18	---	3,700	14.5	14.5
194	Cheyenne River	08-30	2.0	1.2	a2,300	26.0	.20	.02	a2,700	11.0	11.0
195	Cheyenne River	08-30	.82	-1.2	a2,500	26.0	.18	-.02	a3,200	13.0	13.0
196	Black Thunder Creek	08-30	.12	---	---	---	---	---	---	---	---
197	Lodgepole Creek	08-30	<.01	---	---	---	.04	---	a4,500	10.5	10.5
198	Cheyenne River	08-30	6.75	5.81	a2,300	23.0	1.30	1.08	a3,300	14.0	14.0
199	Cheyenne River	---	---	---	---	---	1.64	.34	a2,550	12.0	12.0
<u>Lance Creek subbasin</u>											
200	Lance Creek	---	---	---	---	---	---	---	4,200	14.5	14.5
201	Lance Creek	---	---	---	---	---	2.52	-.27	4,100	15.0	15.0
<u>Lightning Creek subbasin</u>											
202	Lightning Creek	---	---	---	---	---	.12	---	1,400	9.5	9.5
203	Lightning Creek	---	---	---	---	---	.36	.24	3,200	15.5	15.5
204	Lance Creek	08-30	11.7	---	a2,800	26.0	1.31	-1.30	a3,500	15.5	15.5
205	Lance Creek	08-30	16.8	---	---	---	2.19	---	a3,600	12.0	12.0
206	Cheyenne River	08-30	29.6	5.1	a2,900	26.5	1.11	-1.08	a4,000	11.5	11.5
<u>Beaver Creek subbasin</u>											
207	Beaver Creek	---	---	---	---	---	0.61	---	a2,600	8.0	8.0
208	Beaver Creek	---	---	---	---	---	0	-.61	---	---	---
209	Skull Creek	---	---	---	---	---	3.16	---	a2,800	6.0	6.0
210	Beaver Creek	---	---	---	---	---	<.01	-3.16	a3,500	5.5	5.5
<u>South Beaver Creek subbasin</u>											
211	South Beaver Creek	08-30	0	---	---	---	.12	---	a4,600	8.0	8.0
212	South Beaver Creek	08-30	0	0	---	---	0	-.12	---	---	---

Table 3.--Measured discharge, gain or loss in flow, onsite specific conductance, and water temperature at selected sites, August-September and October 1978--Continued

Site number (p1.1)	Stream	August-September 1978					October 1978				
		Date (month-day)	Measured discharge (ft ³ /s)	Calculated gain or loss (-) in flow (ft ³ /s)	Specific conductance (micro-mhos)	Water temperature (OC)	Date (month-day)	Measured discharge (ft ³ /s)	Calculated gain or loss (-) in flow (ft ³ /s)	Specific conductance (micro-mhos)	Water temperature (OC)
<u>Missouri River basin--Continued</u>											
<u>Cheyenne River subbasin--Continued</u>											
<u>Beaver Creek subbasin--Continued</u>											
<u>Stockade Beaver Creek subbasin</u>											
213	Stockade Beaver Creek	---	---	---	---	10-18	9.97	---	25,800	9.0	
214	Stockade Beaver Creek	---	---	---	---	10-18	9.03	-.94	26,500	11.0	
215	Beaver Creek	---	---	---	---	10-18	9.86	.82	26,500	11.5	
<u>Belle Fourche River subbasin</u>											
216	Belle Fourche River	09-26	<.01	---	6,250	10-25	<.01	---	6,750	2.5	
217	Belle Fourche River	09-26	.68	---	3,290	10-25	.10	---	3,410	4.0	
218	Caballo Creek	09-26	2.26	---	2,650	10-25	.36	---	23,340	5.0	
219	Belle Fourche River	09-26	3.44	.50	2,900	10-25	2.19	1.73	3,180	6.0	
220	Raven Creek	09-26	0	---	---	10-25	0	---	---	---	
221	Belle Fourche River	09-26	4.32	.88	3,050	10-25	3.15	.96	3,920	7.0	
222	Buffalo Creek	09-26	0	---	---	10-25	0	---	---	---	
223	Belle Fourche River	09-26	6.33	2.01	3,030	10-25	4.88	1.73	3,200	7.0	
<u>Donkey Creek subbasin</u>											
224	Donkey Creek	09-26	0	---	---	10-26	<.01	---	4,050	9.0	
225	Donkey Creek	09-26	.07	.07	5,290	10-26	.08	.08	25,150	6.0	
226	Donkey Creek	09-26	.20	.13	3,890	10-26	.35	.27	4,130	7.5	
227	Arch Creek	---	---	---	---	10-17	.02	---	21,600	6.0	
<u>Inyan Kara Creek subbasin</u>											
228	Inyan Kara Creek	---	---	---	---	10-17	3.15	---	22,400	8.0	
229	Mason Creek	---	---	---	---	10-17	0	---	---	---	
230	Inyan Kara Creek	---	---	---	---	10-17	2.49	-.66	21,900	8.0	
231	Houston Creek	---	---	---	---	10-17	.68	---	21,300	7.0	
232	Inyan Kara Creek	---	---	---	---	10-17	3.48	.31	22,400	7.0	
233	Cabin Creek	08-30	0	---	---	10-26	0	---	---	---	

a Chemical analysis of major constituents given in table 5.
b Streamflow significantly affected by diversion and(or) irrigation practice; gain or loss not computed.
c Estimated.
d Includes discharge in irrigation canals or ditches that bypasses measuring site.

Table 4.--Chemical analyses of streamflow at selected sites in Montana, October-November 1977

[Except as indicated otherwise, constituents are dissolved and constituent values are reported in milligrams per liter. °C, degrees Celsius; ac-ft, acre-feet; µg/L, micrograms per liter]

Site number (pl.1)	Date of sample	Time	pH (units)	Hardness (CaCO ₃)	Noncarbonate hardness	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Sodium adsorption ratio	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)
13	77-10-31	1415	8.2	540	97	72	88	24	0.4	7	540	0
16	77-11-01	0815	8.4	470	66	75	69	25	.5	8	440	26
17	77-11-01	1040	8.4	590	160	78	96	70	1.3	10	440	43
22	77-11-01	1215	8.6	590	170	73	100	81	1.4	11	410	51
25	77-11-01	1325	8.5	600	180	76	100	90	1.6	11	460	26
29	77-11-01	1440	8.0	640	230	75	110	38	.7	11	500	0
32	77-11-02	1525	8.5	600	190	76	100	110	2.0	12	440	30
34	77-11-02	1425	8.6	600	190	74	100	94	1.7	11	450	24
36	77-11-02	0745	---	580	---	69	100	110	2.0	11	---	--
36	77-11-02	1300	8.5	540	140	71	87	120	2.3	11	450	18
52	77-11-02	1400	8.0	360	140	65	49	37	.8	4	270	--
57	77-11-03	1000	---	370	---	65	50	39	.9	4	---	--
57	77-11-03	1100	7.6	350	140	60	49	39	.9	4	260	0
64	77-11-03	0830	8.2	380	160	67	51	42	.9	4	270	0
67	77-11-03	1145	8.5	380	140	64	53	45	1.0	5	240	28
69	77-11-03	1400	8.7	380	120	65	52	45	1.0	4	280	14
78	77-10-26	1145	---	970	---	110	170	290	4.0	17	---	--
78	77-10-26	1215	8.2	1,000	480	110	180	300	4.1	16	630	0
79	77-10-26	1500	8.2	710	210	19	160	250	4.1	17	610	0
82	77-10-27	0945	8.1	1,400	830	83	290	630	7.3	26	700	0
88	77-10-27	1145	---	1,100	---	97	220	560	7.2	27	---	--
88	77-10-27	1230	8.3	1,200	520	96	230	570	7.2	26	830	0
90	77-10-27	1415	8.3	760	160	73	140	370	5.8	20	730	0
92	77-10-28	1230	8.3	820	250	82	150	390	5.9	20	690	0
93	77-11-04	0745	8.4	380	150	65	54	47	1.0	5	260	12
97	77-11-04	0800	7.7	380	140	68	52	50	1.1	5	290	0
102	77-11-04	1030	8.4	390	150	68	53	54	1.2	5	270	12
104	77-11-04	1030	7.2	390	140	66	55	57	1.3	5	300	0
106	77-11-04	1315	8.5	390	140	67	54	60	1.3	5	280	12
114	77-11-04	1330	7.9	390	140	69	53	53	1.2	5	300	--
116	77-11-05	0930	8.6	390	100	67	54	76	1.7	5	300	26

Table 4.--Chemical analyses of streamflow at selected sites in Montana, October-November 1977--Continued

Site number (pl.1)	Alkalinity, total as CaCO ₃	Carbon dioxide (CO ₂)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Silica (SiO ₂)	Solids, residue at 180 °C, dissolved	Solids, sum of constituents, dissolved	Solids, dissolved (tons per ac-ft)	Solids, dissolved (tons per day)	Nitrogen, NO ₂ +NO ₃ total as N
13	450	5.5	200	4.1	0.6	14	703	676	0.96	6.64	0.01
16	400	3.1	120	3.8	.7	18	560	563	.76	12.6	.10
17	430	3.4	270	4.9	.7	17	790	807	1.07	38.4	.01
22	430	2.1	320	5.2	.7	16	861	860	1.17	38.4	.00
25	420	2.6	360	5.9	.7	16	908	912	1.23	36.8	.01
29	410	8.0	360	5.7	.7	15	929	862	1.26	37.6	.00
32	410	2.5	390	6.2	.7	14	943	956	1.28	35.6	.01
34	410	2.0	360	7.2	.7	14	938	907	1.28	36.2	.01
36	---	---	380	6.2	.7	13	952	---	1.29	37.0	.07
36	400	2.5	370	6.4	.7	12	902	918	1.23	34.1	.05
52	220	4.3	210	3.4	.3	5.9	506	508	.69	213	.01
57	---	---	210	3.4	.3	3.0	507	---	.69	219	.01
57	210	10	210	3.5	.3	3.0	514	497	.70	225	.01
64	220	2.7	220	3.5	.3	4.5	535	526	.73	240	.01
67	240	1.3	230	3.7	.3	4.9	548	552	.75	263	.00
69	250	1.0	230	3.6	.3	5.0	549	558	.75	271	.01
78	---	---	1,100	9.9	.8	15	2,020	---	2.75	3.93	.01
78	520	6.4	1,100	10	.8	16	2,000	2,040	2.72	4.21	.02
79	500	6.2	840	9.8	.8	15	1,650	1,610	2.24	3.83	.25
82	570	8.9	2,100	24	.6	4.1	3,540	3,500	4.81	1.43	.06
88	---	---	1,700	15	1.2	6.8	3,060	---	4.16	4.30	.01
88	680	6.7	1,600	14	1.2	7.1	3,050	2,950	4.15	4.53	.04
90	600	5.9	980	15	0.9	12	1,970	1,970	2.68	6.38	.02
92	570	5.5	1,100	10	1.0	13	2,140	2,110	2.91	.23	.47
93	230	1.8	230	3.8	.3	5.2	557	550	.76	281	.00
97	240	9.3	240	4.0	.3	5.6	567	568	.77	289	.00
102	240	1.9	240	4.2	.4	6.2	596	576	.81	362	.00
104	240	30	250	4.3	.3	6.0	590	592	.80	362	.00
106	250	1.5	250	4.5	.3	6.2	617	597	.84	390	.01
114	250	6.0	250	4.3	.4	6.2	607	589	.83	362	.01
116	290	1.4	260	4.7	.3	6.6	630	647	.86	396	.02

Table 4.--Chemical analyses of streamflow at selected sites in Montana, October-November 1977--Continued

Site number (pl.1)	Nitrogen, ammonia, total as N	Nitrogen, organic, total as N	Nitrogen, ammonia + organic, total as N	Nitrogen, total as N	Nitrogen, total as NO ₃	Phosphorus, total as P	Phosphorus as P	Boron (µg/L as B)	Iron (Fe) (µg/L)	Carbon, organic (C)	Carbon, organic suspended, total (C)
13	0.00	0.38	0.38	0.39	1.7	0.05	0.03	90	30	6.4	0.7
16	.03	.39	.42	.52	2.3	.07	.02	110	20	4.2	1.5
17	.07	.17	.24	.25	1.1	.04	.02	180	20	5.5	.8
22	.01	.24	.25	.25	1.1	.04	.01	190	20	5.4	1.1
25	.04	.24	.28	.29	1.3	.03	.02	200	20	5.8	.9
29	.00	.30	.30	.30	1.3	.04	.01	210	20	5.9	1.0
32	.01	.47	.48	.49	2.2	.07	.00	210	30	5.9	---
34	.01	.38	.39	.40	1.8	.05	.00	210	30	5.7	1.4
36	.00	.46	.46	.53	2.3	.07	.01	220	50	---	---
36	.01	.65	.66	.71	3.1	.12	.01	210	40	6.2	2.0
52	.05	.71	.76	.77	3.4	.02	.01	120	30	6.9	.8
57	.00	.21	.21	.22	.97	.02	.01	110	100	---	---
57	.02	.33	.35	.36	1.6	.01	.00	110	30	4.9	.6
64	.01	.49	.50	.51	2.3	.01	.00	110	40	4.2	.6
67	.01	.36	.37	.37	1.6	.01	.00	110	30	4.2	.4
69	.01	.19	.20	.21	.93	.02	.00	110	20	4.1	.6
78	.00	.29	.29	.30	1.3	.01	.01	330	100	---	---
78	.01	.19	.20	.22	.97	.01	.01	330	280	6.5	.6
79	.14	.42	.56	.81	3.6	.05	.02	300	30	7.2	.9
82	.07	.71	.78	.84	3.7	.03	.02	660	50	9.8	.9
88	.01	.64	.65	.66	2.9	.05	.03	680	70	---	---
88	.00	.71	.71	.75	3.3	.07	.05	680	30	12	.7
90	.03	.32	.35	.37	1.6	.06	0.01	220	30	2.6	1.3
92	.03	.56	.59	1.1	4.7	.04	.00	470	30	7.8	1.7
93	.01	.24	.25	.25	1.1	.01	.00	120	20	4.2	---
97	.01	.31	.32	.32	1.4	.01	.00	130	20	3.7	.4
102	.01	.36	.37	.37	1.6	.00	.00	130	30	4.1	.8
104	.01	.29	.30	.30	1.3	.01	.00	130	20	3.6	.3
106	.01	.17	.18	.19	.84	.01	.00	100	20	4.0	.6
114	.01	.33	.34	.35	1.6	.00	.00	130	20	3.7	---
116	.01	.34	.35	.37	1.6	.02	.01	140	30	3.7	---

Table 5.---Chemical analyses of streamflow at selected sites, August-September and October 1978

[Except as indicated otherwise, constituents are dissolved and constituent values are reported in milligrams per liter. °C, degrees Celsius; ac-ft, acre-feet; µg/L, micrograms per liter]

Site number (pl.1)	Date of sample	Time	pH (units)	Hardness (CaCO ₃)	Noncarbonate hardness	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Sodium ad-sorption ratio	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Alkalinity, total as CaCO ₃
3	78-10-26	0800	8.0	1,600	940	140	310	320	3.5	18	800	0	650
7	78-08-25	1100	8.3	720	180	91	120	520	8.4	10	660	0	540
7	78-10-26	0900	8.4	630	98	95	95	420	7.3	9	640	4	540
8	78-08-25	0900	7.8	1,700	1,300	190	300	200	2.1	4	450	0	370
10	78-08-25	0715	8.2	1,100	540	120	200	1,300	17	14	680	0	560
11	78-10-26	1245	8.1	1,800	1,300	170	330	940	9.7	17	670	0	550
12	78-08-25	0915	8.2	580	88	76	95	700	13	10	600	0	490
12	78-10-26	1230	8.4	1,000	460	110	180	1,100	15	13	660	2	545
16	78-08-24	1200	8.1	470	84	76	67	28	.6	8	470	0	380
16	78-10-25	1230	8.1	530	120	83	79	30	.6	7	500	0	410
17	78-08-24	0945	8.5	560	180	69	93	58	1.1	10	410	24	360
17	78-10-25	0830	8.3	600	170	77	100	73	1.3	10	530	0	430
32	78-08-24	1140	8.4	630	250	72	110	93	1.6	11	450	6	380
32	78-10-25	0845	8.5	640	230	73	110	92	1.6	11	480	8	410
36	78-08-24	1130	8.5	630	270	72	110	110	1.9	11	430	5	370
36	78-10-25	1130	8.6	640	240	73	110	110	1.9	11	460	12	400
37	78-10-19	0810	7.5	230	52	55	23	22	.6	2	220	0	180
38	78-10-19	1005	8.5	260	68	50	32	22	.6	2	230	0	190
39	78-10-19	1145	7.7	820	430	130	120	140	2.1	19	470	0	390
40	78-10-19	1520	8.1	480	140	78	70	39	.8	8	400	9	340
41	78-10-19	0930	---	870	410	110	140	170	2.5	10	560	0	460
43	78-08-29	0930	7.8	330	160	74	36	18	.4	4	210	0	170
43	78-10-19	1120	8.5	470	220	98	55	29	0.6	5	310	1	260
44	78-08-29	0945	8.2	1,400	1,000	230	210	200	2.3	15	520	1	430
44	78-10-19	0920	8.8	1,400	1,000	230	210	220	2.5	15	540	0	440
45	78-10-19	0830	8.5	840	420	140	120	160	2.4	14	520	0	430
46	78-10-19	1005	8.8	1,200	720	180	170	190	2.4	2	520	0	430
47	78-08-29	1200	8.1	510	280	100	63	55	1.1	6	280	0	230
47	78-10-19	0845	8.2	680	390	130	87	85	1.4	8	360	1	300
50	78-10-19	1010	---	2,600	2,000	330	440	1,200	10	18	770	0	630
51	78-10-19	1330	8.1	330	160	65	41	29	.7	3	190	8	170
52	78-09-07	1100	8.2	280	110	58	33	29	.8	3	210	0	170
52	78-10-19	1030	8.6	330	120	63	42	36	.9	4	250	5	210
67	78-09-07	1030	8.4	310	120	63	38	40	1.0	4	230	2	190
67	78-10-19	1200	8.0	390	150	68	53	59	1.3	5	290	0	230

Table 5.--Chemical analyses of streamflow at selected sites, August-September and October 1978--Continued

Site number (pl.1)	Carbon dioxide (CO ₂)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Silica (SiO ₂)	Solids residue at 180°C, dissolved	Solids, sum of constituents, dissolved	Solids, dissolved (tons per (ac-ft))	Solids, dissolved (tons per day)	Nitrogen, nitrate as N	Nitrogen, NO ₂ +NO ₃ total as N
3	13	1,500	21	0.4	10	2,980	2,720	4.05	1.69	---	0.02
7	5.3	1,300	19	.5	3.8	2,430	2,390	3.30	1.12	---	.01
7	4.1	900	34	.4	9.3	1,940	1,880	2.64	12.6	---	.00
8	11	1,700	25	.2	17	3,010	2,660	4.09	.08	---	.21
10	6.9	3,200	35	.4	4.8	5,270	5,210	7.17	1.71	---	.00
11	8.5	3,000	48	.3	8.1	5,510	4,840	7.49	26.3	---	.01
12	6.1	1,500	22	.5	8.0	2,890	2,710	3.93	.31	---	.00
12	4.2	2,700	33	.4	6.7	4,400	4,470	5.98	28.8	---	.01
16	6.0	150	3.6	.6	16	574	580	.78	17.0	---	.08
16	6.4	170	4.2	.6	17	624	640	.85	32.2	---	.07
17	2.3	300	4.8	.6	14	782	776	1.06	99.2	---	.00
17	4.3	310	5.8	.6	16	840	853	1.14	127	---	.01
32	2.9	440	6.1	.6	14	987	975	1.34	117	---	.01
32	2.5	430	6.7	.6	15	984	983	1.34	130	---	.01
36	2.2	480	6.8	.6	14	1,180	1,020	1.60	112	---	.02
36	1.9	450	7.2	.6	15	1,010	1,020	1.37	137	---	.01
37	11	64	2.1	.2	6.9	265	283	.36	93.7	---	.02
38	1.2	110	3.7	.3	7.0	338	341	.46	157	---	.12
39	15	670	79	.6	20	1,350	1,410	1.84	4.01	---	.05
40	5.3	220	3.9	.7	18	606	644	.82	11.5	---	.02
41	---	790	5.5	.8	6.5	---	1,500	2.04	8.91	.07	---
43	5.3	180	1.6	.2	10	446	427	.61	63.1	---	.24
43	1.6	260	3.5	0.2	9.6	650	615	0.88	68.4	---	0.05
44	5.3	1,400	7.7	.5	8.3	2,430	2,330	3.30	9.84	---	.31
44	1.4	1,400	10	.5	9.6	2,520	2,360	3.43	19.7	---	.15
45	2.6	730	9.6	.5	14	1,460	1,440	1.99	17.7	---	.13
46	1.3	1,100	9.2	.5	9.8	1,990	1,920	2.71	39.2	---	.06
47	3.6	370	2.8	.2	11	803	746	1.09	91.1	---	.30
47	3.7	560	4.3	.3	9.4	1,080	1,060	1.47	111	---	.02
50	---	4,500	27	1.5	.0	---	6,900	9.38	.56	.02	---
51	2.6	190	3.5	.3	6.3	445	440	.61	446	---	.03
52	2.1	140	2.7	.2	6.1	409	376	.56	403	---	.02
52	1.0	180	4.0	.3	5.2	468	462	.64	157	---	.02
67	1.5	190	3.0	.3	6.5	476	461	.65	467	---	.00
67	4.6	250	4.7	.3	6.0	588	589	.80	238	---	.01

Table 5.--Chemical analyses of streamflow at selected sites, August-September and October 1978--Continued

Site number (pl.1)	Nitrogen ammonia, total as N	Nitrogen organic, total as N	Nitrogen ammonia + organic, total as N	Nitrogen total as N	Nitrogen total as NO ₃	Phosphorus total as P	Phosphorus as P	Boron (µg/L as B)	Iron (Fe) (µg/L)	Carbon organic (C)	Carbon organic suspended, total (C)
3	0.01	1.1	1.1	1.1	5.0	0.06	0.04	1,300	40	---	---
7	.02	.83	.85	.86	3.8	.03	.01	490	20	---	---
7	.00	.60	.60	.60	2.7	.03	.01	360	50	---	---
8	.04	.63	.67	.88	3.9	.04	.01	720	90	---	---
10	.01	.48	.49	.49	2.2	.03	.00	710	20	---	---
11	.01	.77	.78	.79	3.5	.02	.01	700	30	---	---
12	.02	.58	.60	.60	2.7	.02	.00	510	20	---	---
12	.01	.99	1.0	1.0	4.5	.04	.00	600	30	---	---
16	.00	.60	.60	.68	3.0	.05	.02	110	20	---	---
16	.01	.88	.89	.96	4.3	.02	.01	120	20	---	---
17	.01	.48	.49	.49	2.2	.04	.01	170	20	---	---
17	.00	.58	.58	.59	2.6	.04	.01	180	20	---	---
32	.04	1.4	1.4	1.4	6.2	.10	.01	210	20	---	---
32	.01	.67	.68	.69	3.1	.04	.01	200	10	---	---
36	.01	.81	.82	.84	3.7	.08	.01	220	30	---	---
36	.01	.46	.47	.48	2.1	.04	.00	220	10	---	---
37	.01	.25	.26	.28	1.2	.01	.01	70	90	2.9	.7
38	.06	.43	.49	.61	2.7	.08	.10	100	110	8.9	---
39	.01	.33	.34	.39	1.7	.01	.00	310	40	8.1	.7
40	.04	.38	.42	.44	1.9	.02	.01	150	60	4.5	.6
41	---	---	---	---	---	.01	---	---	---	---	---
43	.02	.52	.54	.78	3.5	.10	.03	60	30	8.2	1.6
43	0.03	0.89	0.92	0.97	4.3	0.02	0.01	120	40	8.4	0.4
44	.05	.75	.80	1.1	4.9	.03	.02	370	30	14	.4
44	.03	.76	.79	.94	4.2	.02	.01	280	60	13	.3
45	.02	.74	.76	.89	3.9	.05	.01	200	80	8.5	.5
46	.04	.93	.97	1.0	4.6	.04	.01	250	440	11	.9
47	.03	.60	.63	.93	4.1	.11	.03	110	60	4.7	1.4
47	.02	.33	.35	.37	1.6	.02	.00	140	30	5.0	.8
50	---	---	---	---	---	.00	---	---	---	---	---
51	.01	.34	.35	.38	1.7	.05	.03	90	40	4.9	2.6
52	.06	.49	.55	.57	2.5	.04	.01	70	30	---	---
52	.04	.55	.59	.61	2.7	.02	.00	110	<10	---	---
67	.03	.61	.64	.64	2.8	.04	.01	80	20	---	---
67	.01	---	---	---	---	.00	.00	130	10	---	---

Table 5.--Chemical analyses of streamflow at selected sites, August-September and October 1978--Continued

Site number (p.l.1)	Date of sample	Time	pH (units)	Hardness (CaCO ₃)	Noncarbonate hardness	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Sodium ad-sorption ratio	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Alkalinity, total as CaCO ₃
78	78-09-06	1100	8.1	1,100	620	120	200	330	4.3	20	590	0	480
78	78-10-24	1120	8.4	900	420	130	140	340	4.9	19	570	6	480
82	78-09-06	0845	8.3	1,100	620	92	200	380	5.1	22	580	0	480
82	78-10-24	0845	8.3	1,100	590	110	200	380	5.0	20	620	0	510
88	78-09-06	0700	8.4	1,000	510	75	200	430	5.9	28	560	20	500
88	78-10-24	1100	8.1	1,100	590	90	210	440	5.8	22	620	0	510
97	78-09-07	1220	8.4	330	110	68	40	49	1.2	5	260	4	220
97	78-10-19	0855	8.5	410	140	71	56	77	1.7	6	270	4	270
102	78-09-07	0835	8.4	350	120	70	43	56	1.3	5	320	5	230
102	78-10-19	1250	8.5	450	180	80	60	83	1.7	6	320	4	270
107	78-09-06	0840	8.0	850	420	160	110	120	1.8	10	520	0	420
107	78-10-24	0830	8.0	870	490	150	120	140	2.1	12	460	0	380
113	78-09-06	0900	8.6	340	0	61	46	470	11	18	450	13	390
113	78-10-24	0730	8.4	220	0	47	26	330	9.6	9	380	4	320
116	78-09-07	1200	8.4	340	95	68	42	73	1.7	6	270	14	240
116	78-10-19	0900	8.5	430	160	77	58	90	1.9	6	310	7	260
119	78-10-20	0915	8.3	430	240	100	43	78	1.6	3	230	0	190
120	78-10-20	1000	7.4	1,400	1,200	380	110	1,600	19	10	290	0	240
121	78-10-20	0900	---	950	830	290	56	90	1.3	4	150	0	120
122	78-10-20	1555	8.4	1,100	960	300	88	460	6.0	10	160	5	140
124	78-10-19	1515	8.6	1,300	1,000	280	160	1,200	14	13	340	0	280
125	78-10-20	0910	---	670	390	170	58	770	13	20	340	0	280
127	78-08-31	1030	8.5	310	0	55	41	1,500	37	22	700	12	620
127	78-10-20	1230	8.4	300	0	51	42	1,600	40	18	930	8	770
128	78-08-31	1400	8.2	510	120	110	58	660	13	12	480	0	390
128	78-10-17	0915	8.4	460	190	110	46	380	7.7	6	320	7	280
129	78-08-31	1600	8.2	560	240	120	62	580	11	10	390	0	320
129	78-10-17	1230	8.4	480	200	110	50	410	8.1	6	300	19	280
130	78-08-31	1900	8.2	410	160	110	34	530	11	10	310	0	260
130	78-10-17	1530	8.4	470	200	100	54	410	8.2	7	310	10	270
131	78-08-31	1645	8.1	620	370	130	71	560	9.8	10	310	0	250
131	78-10-17	0830	8.2	500	210	110	55	400	7.8	7	360	0	300
146	78-08-31	1600	8.3	1,100	870	230	120	180	2.4	6	280	0	230
146	78-10-17	0910	8.3	650	460	140	72	100	1.7	4	240	0	200
147	78-09-01	1215	8.3	720	480	160	78	470	7.6	9	290	0	240
147	78-10-17	1015	8.3	550	250	120	61	370	6.9	7	370	0	300
149	78-10-17	0845	---	2,000	1,600	350	260	580	5.7	37	450	0	370
150	78-08-31	1445	8.1	---	---	---	---	---	---	---	---	0	240
150	78-10-17	1215	8.4	580	310	130	62	360	6.5	7	320	6	270
158	78-10-18	1440	---	2,000	1,500	390	250	330	3.2	12	610	0	500

Table 5.--Chemical analyses of streamflow at selected sites, August-September and October 1978--Continued

Site number (pl.1)	Carbon dioxide (CO ₂)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Silica (SiO ₂)	Solids, residue at 180 °C, dissolved	Solids, sum of constituents, dissolved	Solids, dissolved (tons per (ac-ft) day)	Solids, dissolved (tons per day)	Nitrogen, nitrate as N	Nitrogen, NO ₂ +NO ₃ total as N
78	7.5	1,300	12	.6	12	2,390	2,290	3.25	15.5	---	.02
78	3.7	1,100	15	.6	15	2,360	2,050	3.21	19.1	---	.01
82	4.7	1,400	15	.6	1.9	2,570	2,400	3.50	12.5	---	.01
82	5.0	1,300	15	.6	7.2	2,490	2,340	3.39	26.9	---	.01
88	3.8	1,500	17	.7	1.7	2,690	2,550	3.66	10.9	---	.01
88	7.9	1,400	16	.6	2.9	2,640	2,490	3.59	27.2	---	.01
97	1.7	320	3.6	.3	7.3	537	515	.73	557	---	.00
97	1.7	320	6.0	.3	8.0	724	706	.98	364	---	.02
102	1.8	220	3.6	.3	8.0	560	544	.76	522	---	.00
102	1.7	320	6.0	0.3	9.3	711	727	0.97	372	---	0.02
107	8.3	710	6.0	.7	20	1,520	1,390	2.07	1.11	---	.01
107	7.4	780	5.9	.7	15	1,560	1,450	2.12	1.01	---	.05
113	1.9	970	4.1	.5	4.1	1,890	1,820	2.57	.15	---	.02
113	2.5	600	5.8	.4	6.2	1,290	1,220	1.75	.94	---	.00
116	1.9	240	4.5	.3	8.6	604	589	.82	424	---	.04
116	1.6	330	6.5	.3	9.5	721	737	.98	452	---	.04
119	1.8	340	44	.3	5.6	771	727	1.05	229	---	.05
120	18	4,400	22	1.7	.0	---	6,660	9.06	1.08	.00	---
121	---	1,000	13	.9	1.1	---	1,530	2.08	26.9	.00	---
122	1.1	1,700	160	.7	4.5	3,110	2,810	4.23	42.0	---	.36
124	1.4	3,500	38	1.4	.0	---	5,360	7.29	.14	.00	---
125	---	1,300	610	5.2	13	---	3,120	4.24	9.27	.00	---
127	3.7	930	1,500	2.2	22	4,270	4,430	5.81	346	---	.25
127	6.0	870	1,400	2.3	20	4,340	4,470	5.90	375	---	.01
128	4.8	740	660	1.2	14	2,710	2,490	3.69	476	---	.03
128	2.1	540	320	.8	9.0	1,540	1,580	2.09	640	---	.00
129	3.9	840	540	1.0	12	2,420	2,360	3.29	516	---	.03
129	2.2	600	360	.8	9.4	1,690	1,710	2.30	762	---	.03
130	3.1	780	460	.9	11	2,350	2,090	3.20	571	---	.05
130	2.1	650	330	.8	9.0	1,730	1,720	2.35	752	---	.08
131	3.9	950	470	.8	10	2,820	2,360	3.84	571	---	.01
131	3.6	660	340	0.6	8.3	1,780	1,760	2.42	740	---	0.05
146	2.3	1,200	19	.3	4.8	2,090	1,900	2.84	72.2	---	.05
146	1.9	660	9.1	.3	7.3	1,180	1,110	1.60	82.8	---	.01
147	2.3	1,000	390	.7	9.0	2,420	2,260	3.29	601	---	.02
147	3.0	680	270	.7	8.3	1,730	1,700	2.35	822	---	.08
149	---	2,800	18	1.3	8.6	---	4,280	5.82	.92	.05	---
150	3.8	1,000	380	.7	8.7	2,400	---	3.26	648	---	.01
150	2.1	750	270	.6	7.1	1,740	1,750	2.37	817	---	.08
158	---	2,200	8.5	1.1	12	---	3,500	4.76	.47	.00	---

Table 5.--Chemical analyses of streamflow at selected sites, August-September and October 1978--Continued

Site number (pl.1)	Nitro- gen, ammonia, total as N	Nitro- gen, organic, total as N	Nitro- gen, ammonia + organic, total as N	Nitro- gen, total as N	Nitro- gen, total as NO ₃	Phos- phorus, total as P	Phos- phorus as P	Boron (µg/L as B)	Iron (Fe) (µg/L)	Carbon, organic (C)	Carbon, organic suspended, total (C)
78	.03	.54	.57	.59	2.6	.04	.01	360	40	---	---
78	.02	.39	.41	.42	1.9	.03	.02	340	30	---	---
82	.01	.69	.70	.71	3.1	.05	.01	420	40	---	---
82	.01	.47	.48	.49	2.2	.02	.01	390	30	---	---
88	.00	.73	.73	.74	3.3	.04	.02	530	30	---	---
88	.01	.59	.60	.61	2.7	.03	.01	460	20	---	---
97	.01	.93	.94	.94	4.2	.03	.01	100	20	---	---
97	.01	.38	.39	.41	1.8	.01	.00	160	20	---	---
102	.01	.42	.43	.43	1.9	.01	.01	100	30	---	---
102	0.02	0.54	0.56	0.58	2.6	0.00	0.00	150	<10	---	---
107	.01	.61	.62	.63	2.8	.11	.08	260	200	---	---
107	.01	.46	.47	.52	2.3	.03	.01	260	20	---	---
113	.16	1.5	1.7	1.7	7.6	.07	.01	440	130	---	---
113	.01	1.3	1.3	1.3	5.8	.05	.01	270	30	---	---
116	.02	.71	.73	.77	3.4	.02	.01	120	220	---	---
116	.01	.43	.44	.48	2.1	.00	.01	160	<10	---	---
119	.03	.57	.60	.65	2.9	.02	.00	130	<10	---	---
120	---	---	---	---	---	.16	---	---	---	---	---
121	---	---	---	---	---	.06	---	---	---	---	---
122	.06	2.1	2.2	2.6	11	.00	.00	370	10	---	---
124	---	---	---	---	---	.03	---	---	---	---	---
125	---	---	---	---	---	.00	---	---	---	---	---
127	.02	.80	.82	1.1	4.7	.19	.01	2,100	20	---	---
127	.06	1.3	1.4	1.4	6.2	.70	.00	2,200	30	---	---
128	.01	.82	.83	.86	3.8	.11	.01	1,100	80	---	---
128	.01	.60	.61	.61	2.7	.15	.01	540	10	4.3	1.0
129	.02	1.3	1.3	1.3	5.9	.18	.02	830	20	---	---
129	.01	.81	.82	.85	3.8	.28	.02	580	40	---	---
130	.01	.88	.89	.94	4.2	.29	.01	730	30	---	---
130	.06	2.1	2.2	2.3	10	.41	.01	550	20	---	---
131	.01	1.2	1.2	1.2	5.4	.28	.01	700	40	---	---
131	0.03	1.4	1.4	1.5	6.4	0.52	0.01	540	40	---	---
146	.02	.70	.72	.77	3.4	.03	.01	170	20	10	.9
146	.01	.36	.37	.38	1.7	.02	.00	150	20	8.1	.4
147	.02	1.2	1.2	1.2	5.4	.39	.01	600	20	---	---
147	.01	1.6	1.6	1.7	7.4	.04	.02	460	20	---	---
149	---	---	---	---	---	.03	---	---	---	---	---
150	.01	1.2	1.2	1.2	5.4	.01	.01	540	---	---	---
150	.02	1.5	1.5	1.6	7.0	.63	.01	450	50	---	---
158	---	---	---	---	---	.01	---	---	---	---	---

Table 5.---Chemical analyses of streamflow at selected sites, August-September and October 1978---Continued

Site number (pl.1)	Date of sample	Time	pH (units)	Hardness (CaCO ₃)	Noncarbonate hardness	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Sodium adsorption ratio	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Alkalinity, total as CaCO ₃
159	78-10-18	1540	---	1,800	1,200	370	220	1,300	13	11	700	0	570
161	78-09-01	1345	8.2	450	---	100	49	64	1.3	5	---	---	200
161	78-10-17	1250	8.4	490	290	110	53	71	1.4	4	240	2	200
162	78-09-01	1630	8.2	610	400	130	69	230	4.1	7	260	0	220
162	78-10-17	1535	8.4	550	310	120	61	260	4.8	6	290	4	250
165	78-09-01	0830	8.3	680	470	150	74	270	4.5	8	260	0	220
165	78-10-17	1530	8.3	600	350	130	66	270	4.8	4	310	0	254
167	78-08-30	1000	7.8	1,200	1,000	250	130	190	1.8	40	250	0	200
167	78-10-21	0755	7.9	1,400	1,100	290	160	190	2.2	45	380	0	320
169	78-08-30	1130	8.1	890	430	160	120	660	9.6	21	560	0	460
169	78-10-21	1115	8.2	740	250	130	100	790	13	18	600	0	490
172	78-08-30	1405	8.2	1,000	630	180	140	560	7.6	25	450	0	370
172	78-10-21	0900	8.0	920	520	170	120	580	8.3	18	480	0	400
175	78-08-30	1615	8.3	700	360	130	90	450	7.4	17	420	0	350
175	78-10-21	1115	8.1	530	120	110	63	480	9.0	12	500	0	410
177	78-09-01	1030	8.2	690	470	150	76	290	4.8	8	270	0	220
177	78-10-18	0800	8.7	620	360	130	72	290	5.1	7	290	11	250
180	78-09-01	1400	8.3	630	400	140	68	280	4.9	8	280	0	230
180	78-10-18	1100	8.4	570	360	140	53	300	5.5	7	220	17	210
181	78-08-31	1115	8.0	2,000	1,700	210	350	600	5.9	21	390	0	320
181	78-10-18	0730	8.0	2,200	1,900	260	370	580	5.4	25	410	0	330
183	78-08-31	0845	8.1	630	150	120	80	440	7.6	10	580	0	470
183	78-10-18	1000	8.2	660	180	110	94	490	8.3	12	590	0	484
184	78-08-31	0940	8.8	280	0	48	39	600	16	11	510	29	470
184	78-10-18	1130	8.5	240	0	51	27	470	13	9	510	13	460
187	78-09-01	1330	8.4	580	370	130	62	280	5.1	9	250	6	220
187	78-10-18	1030	8.3	600	360	130	66	300	5.3	8	290	0	240
191	78-08-30	0810	8.6	160	0	26	24	480	16	6	890	14	750
191	78-10-26	0810	8.4	180	0	30	26	440	14	7	930	12	780
194	78-08-30	1500	8.1	920	710	230	83	230	3.3	17	250	0	210
194	78-10-17	1530	8.1	850	550	200	85	250	4.5	14	370	0	300
195	78-08-30	1300	8.0	980	800	240	92	300	3.5	17	220	0	180
195	78-10-17	1430	8.1	1,200	930	280	120	310	3.9	15	320	0	260
197	78-10-17	1145	8.6	170	0	27	25	890	30	14	930	36	820
198	78-08-30	1200	8.3	580	280	140	57	360	6.5	16	360	6	310
198	78-10-17	1510	7.8	620	200	140	65	560	9.8	11	510	2	420
199	78-10-17	1130	7.7	610	210	140	64	580	10	11	490	1	400
204	78-08-30	1645	8.3	750	510	190	66	490	6.4	19	280	1	230
204	78-10-17	1625	7.3	820	520	190	85	520	7.9	13	370	0	300
205	78-08-30	1530	8.3	770	500	190	71	440	6.9	18	330	0	270

Table 5.--Chemical analyses of streamflow at selected sites, August-September and October 1978--Continued

Site number (p.l.1)	Carbon dioxide (CO ₂)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Silica (SiO ₂)	Solids residue at 180°C, dissolved	Solids, sum of constituents, dissolved	Solids, dissolved (tons per ac-ft)	Solids, dissolved (tons per day)	Nitrogen, nitrate as N	Nitrogen, NO ₂ +NO ₃ total as N
159	---	3,800	5.5	1.4	2.5	---	6,050	8.23	8.23	.29	---
161	---	400	3.7	.2	2.6	833	---	1.13	256	---	.09
161	1.6	440	4.3	.2	4.8	864	811	1.18	259	---	.07
162	2.6	740	160	.4	5.2	1,570	1,470	2.14	894	---	.01
162	1.9	650	170	.6	6.4	1,440	1,420	1.96	1,140	---	.06
165	2.1	830	170	.4	6.4	1,770	1,640	2.41	1,130	---	.03
165	2.5	670	160	.6	6.9	1,540	1,460	2.09	1,190	---	.04
167	6.3	1,200	20	.7	1.9	2,110	1,910	2.87	.07	---	.01
167	7.7	1,500	17	.4	11	2,590	2,410	3.52	.56	---	.01
169	7.1	1,800	23	.7	8.7	3,160	3,070	4.30	6.40	---	.00
169	6.1	1,800	16	.6	6.0	3,250	3,160	4.42	6.84	---	.01
172	4.5	1,900	26	.6	12	3,290	3,070	4.47	60.4	---	.02
172	7.7	1,700	27	.4	8.8	3,040	2,860	4.13	38.9	---	.03
175	3.4	1,300	9.3	0.4	12	2,410	2,220	3.28	98.3	---	0.02
175	6.4	1,100	16	.3	11	2,020	2,040	2.75	49.1	---	.05
177	2.7	920	130	.4	7.9	1,860	1,720	2.53	1,290	---	.01
177	1.0	750	160	.5	7.3	1,590	1,570	2.16	1,220	---	.04
180	2.2	860	120	.4	8.8	1,730	1,620	2.35	1,390	---	.02
180	1.6	790	160	.5	7.9	1,640	1,590	2.23	1,520	---	.02
181	6.2	3,000	22	.2	9.0	4,810	4,410	6.54	1.56	---	.02
181	6.6	3,100	25	.2	9.2	5,090	4,570	6.92	2.06	---	.00
183	7.4	1,100	9.0	.3	14	1,770	2,060	2.41	.43	---	.03
183	6.0	1,200	11	.4	12	2,320	2,220	3.16	.13	---	.01
184	1.4	1,100	5.8	.6	3.2	2,250	2,090	3.06	.30	---	.02
184	2.7	820	9.5	.6	6.1	1,440	1,660	1.96	.89	---	.32
187	1.7	820	100	.4	8.8	1,600	1,540	2.18	1,380	---	.01
187	2.3	820	160	.5	8.1	1,670	1,640	2.27	1,340	---	.00
191	3.8	370	5.2	.6	5.6	1,390	1,370	1.89	.15	---	.01
191	6.1	350	6.5	.5	7.7	1,360	1,340	1.85	.37	---	.01
194	3.2	1,100	22	.5	13	1,940	1,820	2.64	10.5	---	.01
194	4.7	1,100	24	.6	11	1,970	1,920	2.68	1.06	---	.02
195	3.5	1,200	25	.5	13	2,140	1,950	2.91	4.74	---	.00
195	4.1	1,500	39	.4	12	2,630	2,430	3.58	1.28	---	.01
197	4.0	1,200	28	.6	1.4	2,920	2,680	3.97	.32	---	.01
198	3.0	1,000	23	.6	12	1,850	1,790	2.52	34.0	---	.01
198	13	1,400	35	1.0	11	2,370	2,480	3.22	8.32	---	0.02
199	16	1,400	35	.7	10	2,410	2,480	3.28	10.4	---	.01
204	2.3	1,200	65	.7	15	2,250	2,100	3.06	72.9	---	.00
204	30	1,400	140	.8	11	2,600	2,540	3.54	15.4	---	.02
205	2.6	1,200	130	.6	14	2,340	2,230	3.18	107	---	.04

Table 5.--Chemical analyses of streamflow at selected sites, August-September and October 1978--Continued

Site number (pl.1)	Nitro- gen, am- monia, total as N	Nitro- gen, organic, total as N	Nitro- gen, am- monia + organic, total as N	Nitro- gen, total as N	Nitro- gen, total as NO ₃	Phos- phorus, total as P	Phos- phorus as P	Boron (µg/L as B)	Iron (Fe) (µg/L)	Carbon, organic (C)	Carbon, sus- pended, total (C)
159	---	---	---	---	---	.04	---	---	---	---	---
161	.01	.47	.48	.57	2.5	.02	.01	110	30	---	---
161	.01	.44	.45	.52	2.3	.02	.00	120	20	---	---
162	.01	.88	.89	.90	4.0	.13	.01	300	20	---	---
162	.02	.98	1.0	1.1	4.7	.30	.01	330	20	---	---
165	.02	1.3	1.3	1.3	5.9	.29	.01	320	20	---	---
165	.00	1.1	1.1	1.1	5.0	.24	.01	320	20	---	---
167	.01	1.2	1.2	1.2	5.4	.05	.02	1,200	50	9.3	1.1
167	.02	.62	.64	.65	2.9	.02	.01	1,300	40	11	.4
169	.01	.99	1.0	1.0	4.4	.03	.02	220	30	10	1.0
169	.03	1.5	1.5	1.5	6.7	.01	.00	210	10	11	.6
172	.01	.62	.63	.65	2.9	.02	.01	250	20	---	---
172	.03	.51	.54	.57	2.5	.01	.00	220	30	---	---
175	0.01	0.60	0.61	0.63	2.8	0.03	0.01	200	30	---	---
175	.02	.45	.47	.52	2.3	.02	.01	180	30	---	---
177	.01	.87	.88	.89	3.9	.14	.01	280	20	---	---
177	.01	.52	.53	.57	2.5	.01	.01	300	20	---	---
180	.01	.82	.83	.85	3.8	.12	.01	250	20	---	---
180	.01	1.5	1.5	1.5	6.7	.18	.00	290	10	---	---
181	.06	1.7	1.8	1.8	8.1	.23	.18	480	50	---	---
181	.03	1.3	1.3	1.3	5.8	.11	.05	480	50	---	---
183	.01	.63	.64	.67	3.0	.02	.01	370	20	---	---
183	.00	.52	.52	.53	2.3	.02	.01	410	20	---	---
184	.03	.90	.93	.95	4.2	.04	.01	550	30	---	---
184	.01	1.9	1.9	2.2	9.8	.05	.01	360	20	---	---
187	.00	1.2	1.2	1.2	5.4	.20	.00	250	50	---	---
187	.01	.88	.89	.89	3.9	.17	.00	300	20	---	---
191	.08	2.0	2.1	2.1	9.3	.26	.09	290	50	---	---
191	.01	1.2	1.2	1.2	5.4	.17	.04	260	20	---	---
194	.00	.38	.38	.39	1.7	.01	.01	100	20	8.0	1.4
194	.04	.31	.35	.37	1.6	.00	.00	120	40	8.7	---
195	.00	.43	.43	.43	1.9	.01	.01	110	30	7.9	.3
195	.00	.57	.57	.58	2.6	.00	.00	120	60	12	.5
197	.14	1.8	1.9	1.9	8.5	.13	.03	290	170	18	4.0
198	.01	.42	.43	.44	1.9	.01	.05	100	20	7.6	.3
198	0.08	0.76	0.84	0.86	3.8	.01	0.01	140	60	9.3	0.5
199	.01	.50	.51	.52	2.3	.01	.01	120	50	11	.9
204	.03	.97	1.0	1.0	4.5	.02	.00	230	20	6.9	.6
204	.00	.60	.60	.60	2.7	.01	.00	190	70	8.8	3.1
205	.02	.52	.54	.58	2.6	.02	.08	190	200	6.8	.4

Table 5.--Chemical analyses of streamflow at selected sites, August-September and October 1978--Continued

Site number (p.l.)	Date of sample	Time	pH (units)	Hardness (CaCO ₃)	Noncarbonate hardness	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Sodium adsorption ratio	Potassium (K)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Alkalinity, total as CaCO ₃
205	78-10-17	1810	7.5	890	510	210	89	640	9.3	14	460	0	380
206	78-08-30	1345	8.4	670	400	160	65	430	7.2	16	320	0	260
206	78-10-17	0915	7.5	870	610	190	96	680	10	13	320	0	260
207	78-10-18	0910	8.1	450	71	120	36	470	9.7	6	460	0	380
209	78-10-18	1020	8.1	1,800	1,500	480	140	62	.6	19	350	0	290
210	78-10-17	0915	8.6	1,200	1,100	290	110	380	4.8	11	120	1	100
211	78-10-18	0915	8.9	120	0	24	15	1,100	43	15	1,390	1	1,140
213	78-10-18	0945	7.1	1,500	1,300	430	93	690	7.9	6	180	0	150
214	78-10-18	1040	7.5	1,700	1,600	430	150	790	8.4	8	170	0	140
215	78-10-18	1200	6.5	1,700	1,500	430	140	780	8.4	6	170	0	140
218	78-10-25	0855	8.0	1,600	1,400	380	160	210	2.3	46	300	0	250
225	78-10-27	1545	8.5	920	180	120	150	1,000	14	14	880	11	740
227	78-10-17	1100	8.0	500	280	120	48	230	4.5	6	260	0	210
228	78-10-17	1615	8.1	1,500	1,300	410	120	53	.6	10	210	0	170
230	78-10-17	1500	8.0	1,100	890	310	81	40	.5	10	260	0	210
231	78-10-17	1430	8.2	710	450	180	63	25	.4	11	320	0	260
232	78-10-17	1235	8.3	1,200	1,000	340	87	100	1.3	9	200	0	160

Table 5.--Chemical analyses of streamflow at selected sites, August-September and October 1978--Continued

Site number (pl.1)	Carbon dioxide (CO ₂)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Silica (SiO ₂)	Solids, residue at 180 °C, dis-solved	Solids, sum of constituents, dis-solved	Solids, dis-solved (tons per (ac-ft) day)	Solids, dis-solved (tons per day)	Nitrogen, nitrate as N	Nitrogen, NO ₃ total as N
205	23	1,800	94	.6	13	3,050	3,090	4.15	9.06	---	.00
206	2.0	1,200	77	.6	13	2,160	2,120	2.94	175	---	.02
206	16	2,000	75	.6	9.5	3,260	3,220	4.43	29.9	---	.01
207	5.8	840	170	1.1	4.6	1,820	1,870	2.48	3.00	---	.00
209	4.4	1,600	14	.2	14	2,820	2,500	3.84	24.4	---	.00
210	.5	1,800	50	.5	.5	2,940	2,700	4.00	.08	---	.01
211	2.8	900	240	1.0	5.2	3,140	2,990	4.27	1.02	---	.04
213	23	1,500	980	.5	9.5	3,960	3,800	5.39	107	---	.04
214	8.6	1,800	900	.5	4.6	4,480	4,170	6.09	109	---	.00
215	86	1,800	1,000	.5	3.6	4,590	4,240	6.24	123	---	.00
218	4.8	1,900	25	.4	2.1	3,160	2,870	4.30	3.07	---	.00
225	4.6	2,400	35	1.3	5.7	4,210	4,170	5.73	.91	---	.00
227	4.2	720	6.3	.8	4.5	1,310	1,260	1.78	.07	---	.00
228	2.7	1,400	6.2	.2	8.9	2,370	2,110	3.22	20.5	---	.13
230	4.2	960	14	.4	9.2	1,740	1,550	2.37	11.7	---	.05
231	3.2	510	6.5	.4	11	1,020	965	1.39	1.87	---	.04
232	1.6	1,200	7.1	.3	3.9	2,160	1,850	2.94	20.4	---	.00

Table 5.--Chemical analyses of streamflow at selected sites, August-September and October 1978--Continued

Site number (pl.1)	Nitro- gen, ammonia, total as N	Nitro- gen, organic, total as N	Nitro- gen, ammonia + organic, total as N	Nitro- gen, total as N	Nitro- gen, total as NO ₃	Phos- phorus, total as P	Phos- phorus as P	Boron (µg/L as B)	Iron (Fe) (µg/L)	Carbon, organic (C)	Carbon, sus- pended, total (C)
205	.00	.69	.69	.69	3.1	.06	.01	210	20	10	.4
206	.02	.61	.63	.65	2.9	.02	.01	170	40	6.8	.4
206	.02	.66	.68	.69	3.1	.01	.00	210	20	13	.2
207	.01	.63	.64	.64	2.8	.02	.00	700	50	9.1	.4
209	.00	1.3	1.3	1.3	5.8	.12	.05	570	200	19	1.0
210	.03	.48	.51	.52	2.3	.03	.02	590	60	6.6	.6
211	.18	2.0	2.2	2.2	9.9	.33	.16	300	580	22	4.7
213	.00	.57	.57	.61	2.7	.02	.00	250	100	4.7	.5
214	.02	.38	.40	.40	1.8	.01	.00	350	70	7.4	.4
215	.00	.42	.42	.42	1.9	.01	.00	380	60	4.3	.3
218	.01	.87	.88	.88	3.9	.03	.01	1,100	40	10	.4
225	.01	1.2	1.2	1.2	5.3	.07	.01	240	20	9.7	1.0
227	.00	.35	.35	.35	1.6	.02	.01	200	90	4.3	---
228	.04	.48	.52	.65	2.9	.01	.00	450	30	4.2	.3
230	.05	.39	.44	.49	2.2	.01	.01	290	80	5.9	.3
231	.04	.68	.72	.76	3.4	.02	.00	190	20	7.0	.4
232	.00	.45	.45	.45	2.0	.01	.00	370	50	4.9	.2