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RAY LYMAN WILBUR, Secretary
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SURFACE WATER SUPPLY *of the* UNITED STATES 1929

PART VI

MISSOURI RIVER BASIN

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CONTENTS

	Page
Authorization and scope of work	1
Definition of terms	2
Explanation of data	2
Accuracy of field data and computed results	4
Publications	5
Cooperation	10
Division of work	10
Gaging-station records	12
Missouri River proper	12
Red Rock River at Metzel Ford, near Monida, Mont	12
Red Rock River below Red Rock Reservoir, near Monida, Mont	13
Beaverhead River at Barratts, Mont	14
Jefferson River near Silverstar, Mont	15
Missouri River below Hauser Lake Dam, near Helena, Mont	16
Missouri River at Fort Benton, Mont	17
Missouri River near Williston, N. Dak	18
Missouri River at Sanish, N. Dak	19
Missouri River at Bismarck, N. Dak	20
Missouri River near Mobridge, S. Dak	21
Missouri River at Chamberlain, S. Dak	22
Missouri River at Sioux City, Iowa	23
Missouri River at Omaha, Nebr	24
Missouri River at Nebraska City, Nebr	25
Missouri River at St. Joseph, Mo	26
Missouri River at Leavenworth, Kans	27
Missouri River at Kansas City, Mo	28
Missouri River at Waverly, Mo	29
Missouri River at Boonville, Mo	30
Missouri River at Isbell, Mo	31
Missouri River at Hermann, Mo	32
Grasshopper Creek Basin	33
Grasshopper Creek near Dillon, Mont	33
Ruby River Basin	34
Ruby River near Alder, Mont	34
Big Hole River Basin	35
Big Hole River near Melrose, Mont	35
Boulder River Basin	36
Boulder River near Boulder, Mont	36
South Boulder Creek Basin	37
South Boulder Creek near Jefferson Island, Mont	37
Willow Creek Basin	38
Willow Creek near Willow Creek, Mont	38
Madison River Basin	39
Madison River near West Yellowstone, Mont	39
Madison River at Lyon, Mont	40
Madison River near Three Forks, Mont	41

Gaging-station records—Continued. Page
Gallatin River Basin 42
Gallatin River at Logan, Mont 42
Crow Creek Basin 43
Crow Creek near Radersburg, Mont 43
Prickly Pear Creek Basin 44
Prickly Pear Creek near Clancy, Mont 44
Tenmile Creek near Rimini, Mont 45
Tenmile Creek near Helena, Mont 46
Little Prickly Pear Creek Basin 47
Little Prickly Pear Creek near Marysville, Mont 47
Dearborn River Basin 48
Dearborn River near Clemons, Mont 48
Smith River Basin 49
Smith River near White Sulphur Springs, Mont 49
Smith River at Truly, Mont 50
Marias River Basin 51
Marias River near Shelby, Mont 51
Marias River near Brinkman, Mont 52
Birch Creek at Swift Dam, near Dupuyer, Mont 53
Birch Creek near Dupuyer, Mont 54
Dupuyer Creek near Valier, Mont 55
Dry Fork of Marias River at Fowler, Mont 56
Teton River near Fort Benton, Mont 57
Judith River Basin 58
Judith River near Utica, Mont 58
Judith River near Winifred, Mont 59
Musselshell River Basin 60
North Fork of Musselshell River at Delpine, Mont 60
Musselshell River at Harlowton, Mont 61
Musselshell River at Musselshell, Mont 62
Musselshell River at Mosby, Mont 63
Checkerboard Creek at Delpine, Mont 64
American Fork near Harlowton, Mont 65
Lebo Creek near Harlowton, Mont 66
Flatwillow Creek near Flatwillow, Mont 67
Flatwillow Creek at Petrolia, Mont 68
Milk River Basin 69
South Fork of Milk River near international boundary 69
Milk River at Milk River, Alberta 70
Milk River at eastern crossing of international boundary 71
Milk River above Havre, Mont 72
Milk River near Vandalia, Mont 73
North Fork of Milk River above St. Mary Canal, near Browning, Mont 74
North Fork of Milk River near international boundary 75
Big Sandy Creek near Boxelder, Mont 76
Lodge Creek at international boundary 77
McRea Coulee at international boundary 77
North Chinook Canal near Havre, Mont 78
Battle Creek at international boundary 79
Woodpile Coulee near international boundary 80
East Fork of Battle Creek near international boundary 81
Lyons Coulee at international boundary 82

Gaging-station records—Continued.
Milk River Basin—Continued. Page
Matheson Canal near Chinook, Mont 83
Whitewater Creek near international boundary 84
Frenchman River at international boundary 85
Frenchman Canal near Saco, Mont 86
Rock Creek at international boundary 87
Horse Creek at international boundary 88
McEachern Creek at international boundary 89
Yellowstone River Basin 90
Yellowstone Lake at Lake Hotel, Yellowstone National Park 90
Yellowstone River at Yellowstone Lake outlet, Yellowstone National Park 91
Yellowstone River near Canyon Hotel, Yellowstone National Park 93
Yellowstone River at Corwin Springs, Mont 94
Yellowstone River near Livingston, Mont 95
Yellowstone River at Billings, Mont 96
Yellowstone River at Miles City, Mont 97
Yellowstone River at Intake, Mont 98
Tower Creek at Tower Falls, Yellowstone National Park 99
Lamar River near Tower Falls ranger station, Yellowstone National Park 100
Gardiner River at Mammoth Hotel, Yellowstone National Park 101
Shields River at Clyde Park, Mont 102
Boulder River near Contact, Mont 103
Stillwater River near Nye, Mont 104
Clark Fork below Crandall Creek, Wyo 105
Clark Fork at Chance, Mont 106
Clark Fork at Edgar, Mont 107
Sunlight Creek near Painter, Wyo 108
Wind River at Riverton, Wyo 109
Big Horn River at Thermopolis, Wyo 110
Big Horn River at Kane, Wyo 111
Big Horn River near Hardin, Mont 112
Dinwoody Creek near Burris, Wyo 113
Dry Creek near Burris, Wyo 114
Willow Creek near Crowheart, Wyo 115
Bull Lake Creek near Lenore, Wyo 116
Little Wind River near Fort Washakie, Wyo 117
North Fork of Little Wind River at Fort Washakie, Wyo 118
South Fork of Owl Creek near Thermopolis, Wyo 119
Greybull River at Meeteetse, Wyo 120
Shoshone River below Shoshone Reservoir, Wyo 121
Shoshone River at Byron, Wyo 122
Little Horn River near Crow Agency, Mont 123
Tongue River near Dayton, Wyo 124
Tongue River near Decker, Mont 125
Tongue River near Miles City, Mont 126
Powder River at Arvada, Wyo 127
Powder River at Moorhead, Mont 128
Powder River near Mizpah, Mont 129
Middle Fork of Powder River at Kaycee, Wyo 130
Red Fork near Barnum, Wyo 131

Gaging-station records—Continued.
Yellowstone River Basin—Continued. Page
North Fork of Powder River near Kaycee, Wyo 132
Crazy Woman Creek near Buffalo, Wyo 133
Clear Creek near Arvada, Wyo 134
Little Missouri River Basin 135
Little Missouri River near Alzada, Mont 135
Little Missouri River at Medora, N. Dak 136
Knife River Basin 137
Knife River at Hazen, N. Dak 137
Heart River Basin 138
Heart River at Sunny, N. Dak 138
Cannonball River Basin 139
Cannonball River near Timmer, N. Dak 139
Grand River Basin 140
Grand River near Wakpala, S. Dak 140
Moreau River Basin 141
Moreau River at Promise, S. Dak 141
Cheyenne River Basin 142
Cheyenne River at Edgemont, S. Dak 142
Cheyenne River near Wasta, S. Dak 143
Cheyenne River near Carlin, S. Dak 144
Beaver Creek near Burdock, S. Dak 145
Rapid Creek near Pactola, S. Dak 145
Rapid Creek at Creston, S. Dak 147
Belle Fourche River near Moorcraft, Wyo 148
Belle Fourche River at Hulett, Wyo 149
Belle Fourche River near Belle Fourche, S. Dak 150
Belle Fourche River near Elm Springs, S. Dak 151
Redwater Creek near Beulah, Wyo 152
Bad River Basin 153
Bad River near Fort Pierre, S. Dak 153
White River Basin 154
White River near Interior, S. Dak 154
White River near Oacoma, S. Dak 155
South Fork of White River near White River, S. Dak 156
Niobrara River Basin 157
Niobrara River near Gordon, Nebr 157
Niobrara River near Valentine, Nebr 158
Niobrara River near Spencer, Nebr 159
James River Basin 160
James River at Jamestown, N. Dak 160
James River at Huron, S. Dak 161
James River near Scotland, S. Dak 162
Big Sioux River Basin 163
Big Sioux River near Flandreau, S. Dak 163
Big Sioux River at Akron, Iowa 164
Little Sioux River Basin 165
Little Sioux River at Correctionville, Iowa 165
Platte River Basin 166
Grizzly Creek near Walden, Colo 166
North Platte River near Walden, Colo 167
North Platte River near Northgate, Colo 168
North Platte River at Saratoga, Wyo 169

Gaging-station records—Continued.
Platte River Basin—Continued. Page
North Platte River above Pathfinder Reservoir, Wyo 170
North Platte River below Pathfinder Reservoir, Wyo 171
North Platte River at Casper, Wyo 172
North Platte River at Douglas, Wyo 173
North Platte River below Guernsey Reservoir, Wyo 174
North Platte River below Whalen, Wyo 175
North Platte River at Wyoming-Nebraska line 176
Platte River near Duncan, Nebr 177
Platte River near Ashland, Nebr 178
Roaring Fork near Walden, Colo 179
Michigan River at Walden, Colo 180
Illinois Creek at Walden, Colo 181
Canadian River at Cowdrey, Colo 182
Encampment River at Encampment, Wyo 183
Pass Creek near Saratoga, Wyo 184
Rock Creek near Rock River, Wyo 185
Deer Creek at Glenrock, Wyo 186
Boxelder Creek near Careyhurst, Wyo 187
La Prele Creek near Douglas, Wyo 188
La Prele Creek near Orpha, Wyo 189
Wagonhound Creek near La Bonte, Wyo 190
La Bonte Creek near La Bonte, Wyo 191
Horseshoe Creek near Glendo, Wyo 192
Cottonwood Creek at Wendover, Wyo 193
Laramie River near Glendevey, Colo 194
Laramie River near Jelm, Wyo 195
Laramie River at Fort Laramie, Wyo 196
Rawhide Creek near Lingle, Wyo 197
Katzer Drain near Henry, Nebr 198
Horse Creek near Yoder, Wyo 199
South Platte River at South Platte, Colo 200
North Fork of South Platte River at South Platte, Colo 201
West Fork of Clear Creek near Empire, Colo 202
Clear Creek near Golden, Colo 203
North St. Vrain Creek near Allens Park, Colo 204
South St. Vrain Creek near Ward, Colo 205
Middle St. Vrain Creek near Allens Park, Colo 206
Lefthand Creek near Boulder, Colo 207
North Boulder Creek near Nederland, Colo 208
Thompson River below power house, near Drake, Colo 209
Thompson River at mouth of canyon, near Drake, Colo 210
Little Thompson River near Berthoud, Colo 211
Cache la Poudre River above Chambers Lake outlet, Colo 212
Cache la Poudre River near Log Cabin, Colo 213
South Fork of Cache la Poudre River near Eggers, Colo 214
North Fork of Cache la Poudre River at Livermore, Colo 215
Middle Loup River at St. Paul, Nebr 216
Loup River near Genoa, Nebr 217
North Loup River near St. Paul, Nebr 218
Elkhorn River at Waterloo, Nebr 219
Tarkio River Basin 220
Tarkio River at Fairfax, Mo 220

Gaging-station records—Continued. Page
Nodaway River Basin 221
Nodaway River near Burlington Junction, Mo 221
Platte River Basin (Iowa-Missouri) 222
Platte River at Conception Junction, Mo 222
Platte River at Agency, Mo 223
Kansas River Basin 224
Republican River at Max, Nebr 224
Republican River near Bloomington, Nebr 225
Republican River at Scandia, Kans 226
Republican River at Wakefield, Kans 227
Kansas River at Ogden, Kans 228
Kansas River at Wamego, Kans 229
Kansas River at Topeka, Kans 230
Kansas River at Bonner Springs, Kans 231
Frenchman Creek near Hamlet, Nebr 232
Sappa Creek near Oberlin, Kans 233
Beaver Creek at Ludell, Kans 234
Prairie Dog Creek near Woodruff, Kans 235
Smoky Hill River at Jerome, Kans 236
Smoky Hill River at Pfeifer, Kans 237
Smoky Hill River at Ellsworth, Kans 238
Smoky Hill River near Mentor, Kans 239
Smoky Hill River at Solomon, Kans 240
Saline River near Wilson, Kans 241
Saline River at Tescott, Kans 242
South Fork of Solomon River at Alton, Kans 243
Solomon River at Beloit, Kans 244
Solomon River at Niles, Kans 245
North Fork of Solomon River at Kirwin, Kans 246
Big Blue River at Hull, Kans 247
Big Blue River at Randolph, Kans 248
Little Blue River near Endicott, Nebr 249
Little Blue River at Waterville, Kans 250
Soldier Creek at Topeka, Kans 251
Delaware River at Valley Falls, Kans 252
Wakarusa River near Lawrence, Kans 253
Stranger Creek near Tonganoxie, Kans 254
Grand River Basin 255
Grand River near Gallatin, Mo 255
Grand River near Sumner, Mo 256
Thompson River at Trenton, Mo 257
Medicine Creek near Galt, Mo 258
Locust Creek near Milan, Mo 259
Locust Creek near Linneus, Mo 260
Yellow Creek near Rothville, Mo 261
Chariton River Basin 262
Chariton River at Elmer, Mo 262
Chariton River near Keytesville, Mo 263
Lamine River Basin 264
Lamine River at Clifton City, Mo 264

Gaging-station records—Continued. Page
Osage (Marais des Cygnes) River Basin 265
Osage River near Quenemo, Kans 265
Osage River near Ottawa, Kans 266
Osage River at Trading Post, Kans 267
Osage River at Warsaw, Mo 268
Osage River near Bagnell, Mo 269
Little Osage River at Stotesbury, Mo 270
Marmaton River near Fort Scott, Kans 271
Sac River near Stockton, Mo 272
Little Sac River near Springfield, Mo 273
South Grand River near Brownington, Mo 274
Niangua River near Roach, Mo 275
Bennett Spring at Brice, Mo 276
Gasconade River Basin 277
Gasconade River near Hazlegreen, Mo 277
Gasconade River near Waynesville, Mo 278
Gasconade River at Jerome, Mo 279
Gasconade River near Rich Fountain, Mo 280
Piney Creek near Big Piney, Mo 281
Little Piney Creek at Newburg, Mo 282
Miscellaneous discharge measurements 283
Index 285

ILLUSTRATION

Page
FIGURE 1. Typical river-measurement station showing concrete well and house for water-stage recorder and staff gages, cable, and car 4

SURFACE WATER SUPPLY OF MISSOURI RIVER BASIN, 1929

AUTHORIZATION AND SCOPE OF WORK

This volume is one of a series of 14 reports presenting results of measurements of flow made on streams in the United States during the year ending September 30, 1929.

The data presented in these reports were collected by the United States Geological Survey under the following authority contained in the organic law (20 Stat. L., p. 394):

> *Provided,* That this officer [the Director] shall have the direction of the Geological Survey and the classification of public lands and examination of the geological structure, mineral resources, and products of the national domain.

The work was begun in 1888 in connection with special studies relating to irrigation. Since the fiscal year ending June 30, 1895, successive appropriation bills passed by Congress have carried the following items:

> For gaging the streams and determining the water supply of the United States, and for the investigation of underground currents and artesian wells, and for the preparation of reports upon the best methods of utilizing the water resources.

Annual appropriations for the fiscal years ending June 30, 1895–1930

1895	$12,500.00	1919	$148,244.10
1896	24,500.00	1920	175,000.00
1897–1899	50,000.00	1921–1923	180,000.00
1900	70,000.00	1924–25	170,000.00
1901–2	100.000,00	1926	165,000.00
1903–1906	200,000.00	1927	151,000.00
1907	150,000.00	1928	147,000.00
1908–1910	100,000.00	1929	270,500.00
1911–1917	150,000.00	1930	275,000.00
1918	175,000.00		

In the execution of the work many private and State organizations have cooperated, either by furnishing data or by assisting in collecting data. Acknowledgments for cooperation of the first kind are made in connection with the description of each station affected; cooperation of the second kind is acknowledged on page 10.

Measurements of stream flow have been made at about 5,830 points in the United States and also at many points in Alaska and the Hawaiian Islands. In July, 1929, 2,240 gaging stations were being

maintained by the Geological Survey and the cooperating organizations. Many miscellaneous discharge measurements were made at other points. In connection with this work, data were also collected in regard to precipitation, evaporation, storage reservoirs, river profiles, and water power in many sections of the country and will be made available in water-supply papers from time to time.

DEFINITION OF TERMS

The volume of water flowing in a stream—the "run-off" or "discharge"—is expressed in various terms, each of which has become associated with a certain class of work. These terms may be divided into two groups—(1) those that represent a rate of flow, as second-feet, gallons per minute, miner's inches, and discharge in second-feet per square mile, and (2) those that represent the actual quantity of water, as run-off in inches, acre-feet, and millions of cubic feet. The principal terms used in this series of reports are second-feet, second-feet per square mile, run-off in inches, and acre-feet. They may be defined as follows:

"Second-feet" is an abbreviation for "cubic feet per second." A second-foot is the rate of discharge of water flowing in a channel of rectangular cross section 1 foot wide and 1 foot deep at an average velocity of 1 foot per second. It is generally used as a fundamental unit from which others are computed.

"Second-feet per square mile" is the average number of cubic feet of water flowing per second from each square mile of area drained, on the assumption that the run-off is distributed uniformly both as regards time and area.

"Run-off in inches" is the depth to which an area would be covered if all the water flowing from it in a given period were uniformly distributed on the surface. It is used for comparing run-off with rainfall, which is usually expressed in inches.

An "acre-foot," equivalent to 43,560 cubic feet, is the quantity required to cover an acre to the depth of 1 foot. The term is commonly used in connection with storage for irrigation.

The following terms not in common use are here defined.

"Stage-discharge relation," an abbreviation for the term "relation of gage height to discharge."

"Control," a term used to designate the natural section or stretch of the channel or artificial structure below the gage which determines the stage-discharge relation at the gage.

EXPLANATION OF DATA

The data presented in this report cover the year beginning October 1, 1928, and ending September 30, 1929. At the beginning of January in most parts of the United States much of the precipitation in

the preceding three months is stored in the form of snow or ice, or in ponds, lakes, and swamps, or as underground water, and this stored water passes off in the streams during the spring break-up. At the end of September, on the other hand, the only stored water available for run-off is possibly a small quantity in the ground; therefore the run-off for the year beginning October 1 is practically all derived from precipitation within that year.

The base data collected at gaging stations consist of records of stage, measurements of discharge, and general information used to supplement the gage heights and discharge measurements in determining the daily flow. The records of stage are obtained either from direct readings on a staff or chain gage or from a water-stage recorder that gives a continuous record of the fluctuations. Measurements of discharge are made with a current meter by the general methods outlined in standard textbooks on the measurement of river discharge. A typical gaging station, equipped with water-stage recorder and measuring cable and car, is shown in Figure 1.

From the discharge measurements rating tables are prepared that give the discharge for any stage. The application of the daily gage height to these rating tables gives the daily discharge from which the monthly and yearly mean discharge is computed.

The data presented for each gaging station in the area covered by this report comprise a description of the station, a table showing the daily discharge of the stream, and a table of monthly and yearly discharge and run-off.

The description of the station gives, in addition to statements regarding location and type of gage, information as to diversions that decrease the flow at the gage, artificial regulation, maximum and minimum recorded stages, and the accuracy of the records. The maximum discharge given under "Extremes" does not represent the crest discharge unless a water-stage recorder was in operation or unless a nonrecording gage was read at the time of the crest.

The table of daily discharge gives, in general, the discharge in second-feet corresponding to the daily gage height which may be a once-daily reading or the mean of twice-daily readings of a nonrecording gage, or the mean daily gage height obtained from a water-stage recorder graph.

At stations on streams subject to sudden or rapid diurnal fluctuation the discharge obtained from the rating table and the mean daily gage height may not be the true mean discharge for the day. If such stations are equipped with water-stage recorders the mean daily discharge may be obtained by averaging discharge at regular intervals during the day or by using the discharge integrator, an instrument for obtaining mean daily discharge from a continuous gage-height graph and containing as an essential element the rating curve of the station.

In the table of monthly discharge the column headed "Maximum" gives the maximum daily discharge, and not the discharge when the water surface was at crest height. Likewise, in the column headed "Minimum" the quantity given is the minimum daily discharge. The column headed "Mean" is the average flow in cubic feet per

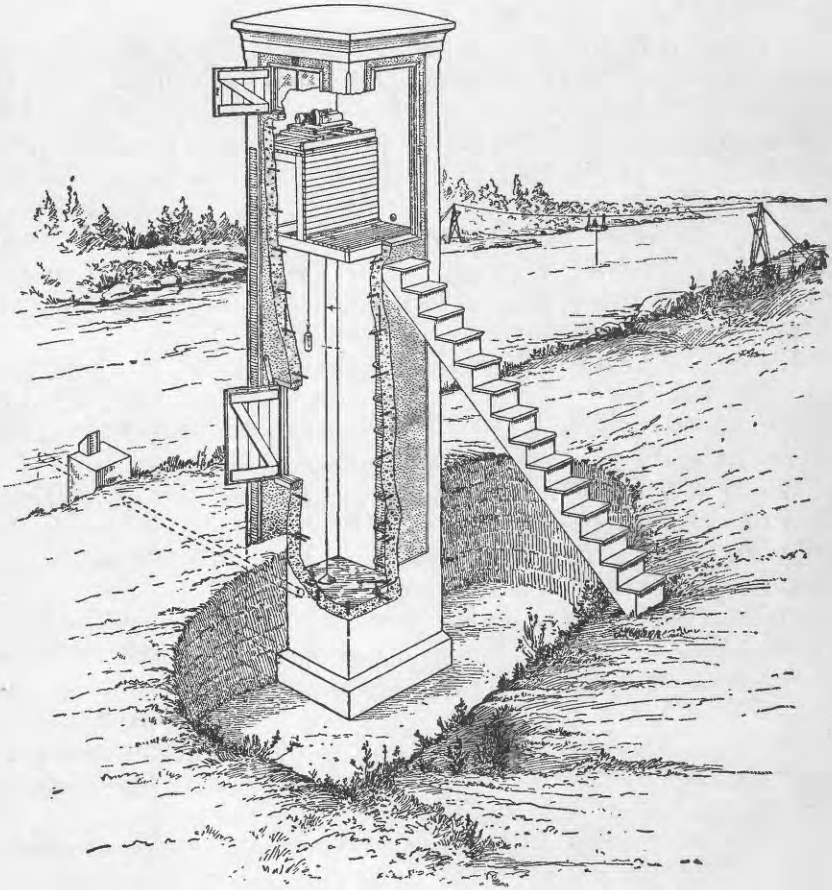

FIGURE 1.—Typical river-measurement station showing concrete well and house for water-stage recorder and staff gages, cable, and car

second during the month. On this average flow are based computations recorded in the remaining columns, which are defined on page 2.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

The accuracy of stream-flow data depends primarily (1) on the permanency of the stage-discharge relation and (2) on the accuracy of observation of stage, measurements of flow, and interpretation of records.

The station description gives a statement in regard to the general accuracy of the records. "Excellent" indicates that records are accurate within 5 per cent; "good," within 10 per cent; "fair," within 15 per cent; and "poor," 20 per cent or more.

The monthly means for any station may represent with high accuracy the quantity of water flowing past the gage, but the figures showing discharge per square mile and run-off in inches may be subject to gross errors caused by the inclusion of large noncontributing districts in the measured drainage area, by lack of information concerning water diverted for irrigation or other use, or by inability to interpret the effect of artificial regulation of the flow of the river above the station. "Second-feet per square mile" and "run-off in inches" are therefore not computed if such errors appear probable. The computations are also omitted for stations on streams draining areas in which the annual rainfall is less than 20 inches.

The table of monthly discharge gives a general idea of the flow at the station. The table of daily discharge allows more detailed studies of the variation in flow. It should be borne in mind, however, that the observations in each succeeding year may be expected to throw new light on data previously published.

Many gaging stations on streams in the irrigated areas of the United States are situated above most of the diversions from those streams, and the discharge recorded does not show the water supply available for further development, as prior appropriations below the stations must first be satisfied.

PUBLICATIONS

Investigation of water resources by the United States Geological Survey has consisted in large part of measurements of the volume of flow of streams and studies of the conditions affecting that flow, but it has comprised also investigation of such closely allied subjects as irrigation, water storage, water powers, underground waters, and quality of waters. Most of the results of these investigations have been published in the series of water-supply papers, but some have appeared in the bulletins, professional papers, annual reports, and monographs.

The results of stream-flow measurements are now published annually in 12 parts, each part covering an area whose boundaries coincide with natural-drainage features as indicated below:

Part I. North Atlantic slope basins (St. John River to York River).
II. South Atlantic slope and eastern Gulf of Mexico basins (James River to the Mississippi).
III. Ohio River Basin.
IV. St. Lawrence River Basin.
V. Hudson Bay and upper Mississippi River Basins.
VI. Missouri River Basin.
VII. Lower Mississippi River Basin.

VIII. Western Gulf of Mexico basins.
IX. Colorado River Basin.
X. The Great Basin.
XI. Pacific slope basins in California.
XII. North Pacific slope drainage basins, in three parts:
A, Pacific slope basins in Washington and upper Columbia River Basin.
B, Snake River Basin.
C, Pacific slope basins in Oregon and lower Columbia River Basin.

Water-supply papers and other publications of the United States Geological Survey containing data in regard to the water resources of the United States may be obtained or consulted as indicated below.

1. Copies may be purchased at nominal cost from the Superintendent of Documents, Government Printing Office, Washington, D. C., who will, on application, furnish lists giving prices.

2. Sets of the reports may be consulted in the libraries of the principal cities in the United States.

3. Sets are available for consultation in the local offices of the water-resources branch of the Geological Survey, as follows:

Augusta, Me., Statehouse.
Boston, Mass., 2500 Customhouse.
Hartford, Conn., 318 State Office Building.
Albany, N. Y., 506 Broadway-Arcade Building.
Trenton, N. J., 710 Trenton Trust Building.
Harrisburg, Pa., Closter Building.
Charlottesville, Va., Brooks Museum, University of Virginia.
South Charleston, W. Va., Naval Ordnance Plant.
Asheville, N. C., 220 Post Office Building.
Columbia, S. C., 801 National Loan & Exchange Bank Building.
Ocala, Fla., Post Office Building.
Tuscaloosa, Ala., Post Office Building.
Chattanooga, Tenn., 630 Power Building.
Columbus, Ohio, Engineering Experiment Station, Ohio State University.
Indianapolis, Ind., 319 Federal Building.
Chicago, Ill., 1503 Consumers Building.
Madison, Wis., 337N State Capitol.
St. Paul, Minn., 202 Old State Capitol.
Topeka, Kans., 23 Federal Building.
Rolla, Mo., Rolla Building, School of Mines and Metallurgy.
Fort Smith, Ark., Post Office Building.
Austin, Tex., State Capitol.
Santa Fe, N. Mex., State Capitol.
Tuscon, Ariz., 210 Post Office Building.
Denver, Colo., 403 Post Office Building.
Salt Lake City, Utah, 313 Federal Building.
Idaho Falls, Idaho, 228 Federal Building.
Boise, Idaho, Federal Building.
Helena, Mont., 416 Power Block.
Tacoma, Wash., 406 Federal Building.
Portland, Oreg., 606 Post Office Building.
San Francisco, Calif., 303 Customhouse.
Los Angeles, Calif., 751 South Figueroa Street, room 510.
Honolulu, Hawaii, Territorial Office Building.

A list of the Geological Survey's publications may be obtained by applying to the Director, United States Geological Survey, Washington, D. C.

Stream-flow records have been obtained at about 5,830 points in the United States, and the data obtained have been published in the reports tabulated below.

Stream-flow data in reports of the United States Geological Survey

[A=Annual Report; B=Bulletin; W=Water-Supply Paper]

Report	Character of data	Year
10th A, pt. 2	Descriptive information only	
11th A, pt. 2	Monthly discharge and descriptive information	1884 to Sept., 1890.
12th A, pt. 2	do	1884 to June 30, 1891.
13th A, pt. 3	Mean discharge in second-feet	1884 to Dec. 31, 1892.
14th A, pt. 2	Monthly discharge (long-time records, 1871 to 1893)	1888 to Dec. 31, 1893.
B 131	Descriptions, measurements, gage heights, and ratings	1893 and 1894.
16th A, pt. 2	Descriptive information only	
B 140	Descriptions, measurements, gage heights, ratings, and monthly discharge (also many data covering earlier years).	1895.
W 11	Gage heights (also gage heights for earlier years)	1896.
18th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also similar data for some earlier years).	1895 and 1896.
W 15	Descriptions, measurements, and gage heights, eastern United States, eastern Mississippi River, and Missouri River above junction with Kansas.	1897.
W 16	Descriptions, measurements, and gage heights, western Mississippi River below junction of Missouri and Platte, and western United States.	1897.
19th A, pt. 4	Descriptions, measurements, ratings, and monthly discharge (also some long-time records).	1897.
W 27	Measurements, ratings, and gage heights eastern United States, eastern Mississippi River, and Missouri River.	1898.
W 28	Measurements, ratings, and gage heights, Arkansas River and western United States.	1898.
20th A, pt. 4	Monthly discharge (also for many earlier years)	1898.
W 35 to 39	Descriptions, measurements, gage heights, and ratings	1899.
21st A, pt. 4	Monthly discharge	1899.
W 47 to 52	Descriptions, measurements, gage heights, and ratings	1900.
22d A, pt. 4	Monthly discharge	1900.
W 65, 66	Descriptions, measurements, gage heights, and ratings	1901.
W 75	Monthly discharge	1901.
W 82 to 85	Complete data	1902.
W 97 to 100	do	1903.
W 124 to 135	do	1904.
W 165 to 178	do	1905.
W 201 to 214	do	1906.
W 241 to 252	do	1907–8.
W 261 to 272	do	1909.
W 281 to 292	do	1910.
W 301 to 312	do	1911.
W 321 to 332	do	1912.
W 351 to 362	do	1913.
W 381 to 394	do	1914.
W 401 to 414	do	1915.
W 431 to 444	do	1916.
W 451 to 464	do	1917.
W 471 to 484	do	1918.
W 501 to 514	do	1919–20.
W 521 to 534	do	1921.
W 541 to 554	do	1922.
W 561 to 574	do	1923.
W 581 to 594	do	1924.
W 601 to 614	do	1925.
W 621 to 634	do	1926.
W 641 to 654	do	1927.
W 661 to 674	do	1928.
W 681 to 694	do	1929.

The records at most of the stations discussed in these reports extend over a series of years. Miscellaneous measurements at many points other than regular gaging stations have been made each year and are published under "Miscellaneous discharge measurements" at the end of each report in the same relative order as the regular gaging stations. An index of the reports containing records obtained prior to 1904 has been published in Water-Supply Paper 119.

The following table gives, by years and drainage basins, the numbers of the papers on surface-water supply published from 1899 to 1929. The data for any particular station will, as a rule, be found in the reports covering the years during which the station was maintained. For example, data for 1910 to 1920 for any station in the area covered by Part III are published in Water-Supply Papers 283, 303, 323, 353, 383, 403, 433, 453, 473, and 503, which contain records for the Ohio River Basin for those years.

Numbers of water-supply papers containing results of stream measurements, 1899–1929

[For basins included see p. 5]

Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII-A	XII-B	XII-C
1899 [a]	35	[b] 35, 36	36	36	36	[c] 36, 37	37	37	[d] 37, 38	38, [e] 39	38, [f] 39	38	38	38
1900 [g]	47, [h] 48	48	48, [i] 49	49	49	49, [j] 50	50	50	50	51	51	51	51	51
1901	65, 75	65, 75	65, 75	65, 75	[k] 65, 66, 75	66, 75	[k] 65, 66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75	66, 75
1902	82	[b] 82, 83	83	[l] 82, 83	[k] 83, 85	84	[k] 83, 84	84	85	85	85	85	85	85
1903	97	[b] 97, 98	98	97	[k] 98, 99, [m] 100	99	[k] 98, 99	99	100	100	100	100	100	100
1904	[n] 124, [o] 125 [p] 126	[p] 126, 127	128	129	[k] 128, 130	130, [q] 131	[k] 128, 131	132	133	133, [r] 134	134	135	135	135
1905	[n] 165, [o] 166 [p] 167	[p] 167, 168	169	170	171	172	[k] 169, 173	174	175, [s] 177	176, [r] 177	177	178	178	[t] 177, 178
1906	[n] 201, [o] 202, [p] 203	[p] 203, 204	205	206	207	208	[k] 205, 209	210	211, [s] 213	212, [r] 213	213	214	214	214
1907–8	241	242	243	244	245	246	247	248	249	250, [r] 251	251	252	252	252
1909	261	262	263	264	265	266	267	268	269	270, [r] 271	271	272	272	272
1910	281	282	283	284	285	286	287	288	289	290	291	292	292	292
1911	301	302	303	304	305	306	307	308	309	310	311	312	312	312
1912	321	322	323	324	325	326	328	328	329	330	331	332–A	332–B	332–C
1913	351	352	353	354	355	356	357	358	359	360	361	362–A	362–B	362–C
1914	381	382	383	384	385	386	387	388	389	390	391	392	393	394
1915	401	402	403	404	405	406	407	408	409	410	411	412	413	414
1916	431	432	433	434	435	436	437	438	439	440	441	442	443	444
1917	451	452	453	454	455	456	457	458	459	460	461	462	463	464
1918	471	472	473	474	475	476	477	478	479	480	481	482	483	484
1919–20	501	502	503	504	505	506	507	508	509	510	511	512	513	514
1921	521	522	523	524	525	526	527	528	529	530	531	532	533	534
1922	541	542	543	544	545	546	547	548	549	550	551	552	553	554
1923	561	562	563	564	565	566	567	568	569	570	571	572	573	574
1924	581	582	583	584	585	586	587	588	589	590	591	592	593	594
1925	601	602	603	604	605	606	607	608	609	610	611	612	613	614
1926	621	622	623	624	625	626	627	628	629	630	631	632	633	634
1927	641	642	643	644	645	646	647	648	649	650	651	652	653	654
1928	661	662	663	664	665	666	667	668	669	670	671	672	673	674
1929	681	682	683	684	685	686	687	688	689	690	691	692	693	694

[a] Rating tables and index to Water-Supply Papers 35–39 contained in Water-Supply Paper 39. Tables of monthly discharge for 1899 in Twenty-first Annual Report, Part IV.
[b] James River only.
[c] Gallatin River.
[d] Green and Gunnison Rivers and Grand River above junction with Gunnison.
[e] Mohave River only.
[f] Kings and Kern Rivers and South Pacific slope basins.
[g] Rating tables and index to Water-Supply Papers 47–52 and data on precipitation, wells and irrigation in California and Utah contained in Water-Supply Paper 52. Tables of monthly discharge for 1900 in Twenty-second Annual Report, Part IV.
[h] Wissahickon and Schuylkill Rivers to James River.
[i] Scioto River.
[j] Loup and Platte Rivers near Columbus, Nebr., and all tributaries below junction with Platte.
[k] Tributaries of Mississippi from east.
[l] Lake Ontario and tributaries of St. Lawrence River proper.
[m] Hudson Bay only.
[n] New England rivers only.
[o] Hudson River to Delaware River, inclusive.
[p] Susquehanna River to Yadkin River, inclusive.
[q] Platte and Kansas Rivers.
[r] Great Basin in California except Truckee and Carson River basins.
[s] Below junction with Gila.
[t] Rogue, Umpqua, and Siletz Rivers only.

COOPERATION

The legislature of Montana made an appropriation for stream-gaging work which was expended in cooperation with J. S. James, State engineer, largely in connection with the several Carey Act projects and irrigation districts in Montana. The work in the Milk River Basin was carried on jointly with the Dominion Water Power and Reclamation Service, Department of the Interior, Canada, under the Waterways Treaty. Financial assistance was also rendered by The Liberty-Montana Mines Co.

Officials of the Yellowstone National Park have furnished observers for gaging stations operated in the park and have paid for a part of the expense of the work.

In Wyoming the work was done in cooperation with the State through John A. Whiting, State engineer. The station on North Platte River at Wyoming-Nebraska line was also maintained in cooperation with the State of Nebraska through R. H. Willis, chief, Bureau of Irrigation, Power and Drainage, Department of Public Works. Financial assistance was rendered by the Bureau of Reclamation, the United States Indian Service, and the Midwest Refining Co.

In Colorado the work was carried on in cooperation with the State engineer, M. C. Hinderlider. Financial assistance was also rendered by the city of Loveland and Barton M. Jones.

In Kansas the work was done in cooperation with the Kansas Water Resources Division of the State Board of Agriculture, Geo. S. Knapp, chief engineer.

In Missouri and the station on Missouri River at Leavenworth, Kans., the work was carried on in cooperation with the Missouri Bureau of Geology and Mines, through H. A. Buehler, State Geologist. Financial assistance was also rendered by the Missouri Game and Fish Department, Chicago Great Western Railroad Co., Missouri Hydroelectric Power Co., and Gasconade River Power Co.

Acknowledgment is due also to the Corps of Engineers, U. S. Army, for financial assistance in collecting records published herein.

DIVISION OF WORK

Data for stations in the upper Missouri River and Yellowstone River Basins in Montana were collected and prepared for publication under the direction of W. A. Lamb, district engineer, assisted by A. H. Tuttle, C. S. Heidel, G. C. Sanders, W. J. Parsons, jr., and Mrs. G. Thompson.

Data for stations in Yellowstone National Park were collected and prepared for publication under the direction of C. G. Paulsen, district engineer, assisted by Berkeley Johnson, F. M. Veatch, M. C. Boyer, Miss E. H. Haugse, and Miss Josephine Ruick.

Data for stations in Colorado, Wyoming, South Dakota, and Nebraska were collected and prepared for publication under the direction of Robert Follansbee, district engineer, assisted by P. V. Hodges, F. F. Le Fever, R. E. Cabell, H. P. Eisenhuth, D. S. Jenkins, F. B. Campbell, Miss Nellie L. Esterly, and Mrs. Elsie L. Yeatman.

Data for stations in Kansas were collected and prepared for publication under the direction of J. B. Spiegel, district engineer, assisted by Charles Wells, W. M. Littlefield, R. V. Smrha, and Mrs. Maude Moon.

Data for stations in Missouri and for stations on Missouri River at Nebraska City, Nebr., and Leavenworth, Kans., were collected and prepared for publication under the direction of H. C. Beckman, district engineer, assisted by V. L. Austin, C. H. Jennings, H. C. Bolon, and R. D. Schmickel.

The records were reviewed and manuscript assembled by Warren Withee.

GAGING-STATION RECORDS

MISSOURI RIVER PROPER

RED ROCK RIVER AT METZEL FORD, NEAR MONIDA, MONT.

LOCATION.—Water-stage recorder near center of north line of sec. 34, T. 13 S., R. 3 W., 1 mile below Metzel Ford and 20 miles east of Monida.

RECORDS AVAILABLE.—April, 1925, to October, 1929; discontinued.

EXTREMES.—Maximum discharge during year, 400 second-feet May 17 (gage height, 3.75 feet); minimum, 5.6 second-feet Sept. 15 (gage height, 1.36 feet).

1925–1929: Maximum discharge, 586 second-feet May 17, 1927 (gage height, 4.20 feet); minimum, 2.7 second-feet Sept. 23, 1926 (gage height, 1.36 feet).

REMARKS.—Records fair. Discharge estimated July 18–26. Observations discontinued Oct. 1–8, Oct. 18 to May 15, and June 6–26. No diversions. Natural storage in Red Rock Lake.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	May	June	July	Aug.	Sept.	Oct.
1			179	71	16	14	21
2			143	66	16	11	33
3			146	60	15	8.8	32
4			149	53	16	12	27
5			152	52	16	13	32
6				46	15	14	30
7				36	15	15	33
8				32	16	14	39
9	17			47	16	14	40
10	12			43	14	14	42
11	11			38	14	13	36
12	11			31	13	13	46
13	11			34	11	9.6	47
14	11			35	10	8.8	47
15	11			32	10	7.4	45
16	8.6	347		31	9.6	10	47
17	7.4	378		26	8.0	14	45
18		362		26	8.8	13	37
19		368		25	10	13	39
20		301		24	10	14	36
21		280		23	8.8	20	
22		264		22	8.0	21	
23		250		21	9.6	22	
24		235		20	8.8	26	
25		223		20	7.4	28	
26		244		19	8.0	32	
27		246	82	19	7.4	30	
28		227	87	17	8.8	31	
29		205	82	17	12	31	
30		201	80	17	12	32	
31		201		15	14		

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1928–29				
October 9–17	17	7.4	11.1	198
May 16–31	378	201	270	8,570
July	71	15	32.8	2,020
August	16	7.4	11.7	719
September	32	7.4	17.3	1,030
1929				
October 1–20	47	27	38.2	1,520

RED ROCK RIVER BELOW RED ROCK RESERVOIR, NEAR MONIDA, MONT.

LOCATION.—Staff gage in SW. ¼ sec. 32, T. 13 S., R. 6 W., just below Red Rock Reservoir, 8 miles northwest of Monida.

RECORDS AVAILABLE.—July, 1911, to September, 1918; May, 1925, to September, 1929.

EXTREMES.—Maximum discharge during year, 683 second-feet May 12 and 13 (gage height, 2.35 feet); minimum, 20 second-feet Mar. 24 and 29 (gage height, 0.20 foot).

1911–1918, 1925–1929: Maximum discharge, 1,220 second-feet Apr. 28, 1914 (gage height, 3.2 feet); minimum, 5 second-feet Jan. 1 to Apr. 10, 1913 (gage height, 0.10 foot).

REMARKS.—Records good. Observations discontinued Dec. 16 to Mar. 23. No diversions above station. Flood water stored in reservoir.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	22	38	59	-------	21	414	227	479	34	102
2	22	38	61	-------	21	523	227	457	34	102
3	23	58	59	-------	21	546	227	479	35	99
4	23	73	51	-------	21	546	227	457	35	97
5	23	73	38	-------	20	568	211	435	34	90
6	23	78	34	-------	21	591	211	457	34	85
7	22	78	34	-------	21	614	211	479	34	80
8	22	78	34	-------	22	637	211	479	34	73
9	22	75	34	-------	22	660	211	479	34	68
10	22	75	34	-------	22	660	211	501	56	66
11	23	75	34	-------	22	660	211	334	78	64
12	23	75	34	-------	22	683	211	211	78	61
13	23	75	34	-------	22	683	211	211	78	59
14	22	75	34	-------	22	660	211	211	78	58
15	22	76	34	-------	22	660	211	211	78	55
16	23	76	-------	-------	22	614	211	211	78	51
17	23	75	-------	-------	22	523	196	211	78	45
18	23	71	-------	-------	22	457	314	211	92	41
19	23	70	-------	-------	22	414	314	211	106	35
20	22	68	-------	-------	22	393	260	211	104	34
21	22	68	-------	-------	27	334	211	211	106	34
22	22	64	-------	-------	34	314	211	211	106	32
23	21	61	-------	-------	48	296	196	211	106	31
24	21	61	-------	20	71	277	196	211	106	21
25	23	61	-------	21	92	243	196	211	106	29
26	24	64	-------	21	104	227	169	109	104	28
27	27	64	-------	21	117	243	227	38	104	27
28	28	64	-------	21	156	243	393	37	102	27
29	32	61	-------	20	227	227	373	37	104	26
30	35	61	-------	21	296	227	414	35	102	24
31	37	-------	-------	21	-------	227	-------	34	102	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	37	21	24.0	1,480
November	78	38	67.6	4,020
December 1–15	61	34	40.5	1,200
March 24–31	21	20	20.8	330
April	296	20	53.5	3,180
May	683	227	463	28,500
June	414	169	239	14,200
July	501	34	267	16,400
August	106	34	76.1	4,680
September	102	24	55.1	3,280

BEAVERHEAD RIVER AT BARRATTS, MONT.

LOCATION.—Chain gage in SE. ¼ SW. ¼ sec. 20, T. 8 S., R. 9 W., 1 mile above Barratts and 10 miles southwest of Dillon.

DRAINAGE AREA.—2,850 square miles.

RECORDS AVAILABLE.—August, 1907, to September, 1929.

EXTREMES.—Maximum discharge during year, 952 second-feet June 18 (gage height, 2.30 feet); minimum, 168 second-feet Aug. 30 to Sept. 4 (gage height, 0.60 foot).

1907–1929: Maximum discharge, 3,640 second-feet June 19 and 20, 1908 (gage height, 6.0 feet); minimum, 106 second-feet July 27, 29, Aug. 19–31, Sept. 1, and 10–17, 1919 (gage height, 0.50 foot).

REMARKS.—Records good. Observations discontinued Jan. 1 to Mar. 9. Numerous diversions above station. Flow regulated by storage in Red Rock Reservoir.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	180	264	358	-------	338	568	338	230	230	168
2	180	264	338	-------	379	568	338	230	230	168
3	180	264	338	-------	423	568	338	198	230	168
4	180	264	319	-------	494	780	338	198	230	168
5	186	300	319	-------	543	780	338	230	264	180
6	186	319	319	-------	423	780	300	230	247	180
7	186	358	319	-------	423	836	300	230	247	180
8	186	358	319	-------	379	894	300	230	230	180
9	186	358	319	-------	379	894	300	264	230	180
10	186	379	319	338	338	894	300	264	230	186
11	192	379	319	300	338	836	470	230	230	186
12	192	379	319	300	338	836	620	230	230	186
13	211	379	319	300	338	836	620	230	230	186
14	224	379	300	338	338	894	568	338	230	186
15	224	358	300	300	338	836	568	338	230	186
16	224	358	300	300	379	836	620	338	230	186
17	224	358	300	300	423	836	894	338	198	186
18	230	358	300	338	518	726	952	338	198	186
19	230	358	300	338	518	726	894	470	198	186
20	230	358	300	338	518	620	726	518	198	186
21	247	358	300	338	518	568	518	470	198	186
22	247	358	300	338	470	568	423	423	198	186
23	247	358	300	338	518	518	379	379	192	186
24	264	358	282	338	518	568	379	338	192	186
25	264	358	282	300	423	518	319	319	192	198
26	264	358	264	300	423	518	264	300	183	198
27	247	358	264	319	518	726	264	300	180	264
28	247	358	264	358	518	726	264	300	180	282
29	247	358	264	379	518	568	264	264	180	247
30	264	358	264	338	568	518	264	264	168	247
31	264	-------	264	338	-------	338	-------	264	168	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	264	180	220	13,500
November	379	264	346	20,600
December	358	264	302	18,600
March 10–31	379	300	326	14,200
April	568	338	439	26,100
May	894	338	699	43,000
June	952	264	449	26,700
July	518	198	300	18,400
August	264	168	212	13,000
September	282	168	193	11,500

JEFFERSON RIVER NEAR SILVERSTAR, MONT.

LOCATION.—Cable gage in SE. ¼ sec. 23, T. 2 S., R. 6 W., at highway bridge 5 miles southwest of Silverstar and 5 miles below junction of Beaverhead and Big Hole Rivers.

DRAINAGE AREA.—7,840 square miles.

RECORDS AVAILABLE.—August, 1910, to September, 1916; July, 1920, to September, 1929.

EXTREMES.—Maximum discharge during year, 7,800 second-feet June 19 (gage height, 5.70 feet); minimum, 122 second-feet Aug. 23 (gage height, 1.28 feet).

1910–1916, 1920–1929: Maximum discharge, 19,800 second-feet June 15, 1927 (gage height, 9.85 feet); minimum, that of Aug. 23, 1929.

REMARKS.—Records good. Observations discontinued Dec. 16 to Mar. 13. Numerous diversions. Flow partly regulated by two reservoirs upstream.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	712	970	1,080	--------	1,200	3,420	2,600	2,000	383	170
2	712	970	1,080	--------	1,200	2,600	3,000	1,770	369	170
3	712	1,080	1,080	--------	1,200	2,800	3,210	1,540	363	179
4	712	1,080	1,140	--------	1,260	2,800	3,210	1,470	363	196
5	712	1,140	1,140	--------	1,400	2,800	2,800	1,400	363	201
6	712	1,200	1,200	--------	1,330	2,800	3,000	1,260	356	239
7	712	1,200	1,200	--------	1,260	2,240	3,000	1,140	349	272
8	860	1,140	1,200	--------	1,200	2,240	3,640	1,080	337	337
9	860	1,140	1,200	--------	1,260	2,410	4,090	1,140	325	349
10	915	1,200	1,200	--------	1,140	2,410	4,320	1,080	318	447
11	1,020	1,200	1,200	--------	1,080	2,410	4,550	1,020	300	492
12	915	1,200	1,200	--------	1,080	2,410	4,780	970	261	492
13	915	1,140	1,140	--------	1,080	2,600	4,780	860	239	477
14	915	1,140	1,140	1,140	1,080	3,000	5,010	860	239	492
15	970	1,140	1,200	1,140	1,080	3,000	5,010	915	239	462
16	970	1,200	--------	1,080	1,020	3,000	5,240	860	220	477
17	1,020	1,200	--------	1,020	1,140	3,210	6,730	810	211	477
18	1 020	1,200	--------	1,080	1,140	3,210	7,530	810	196	462
19	1,020	1,200	--------	1,080	1,620	3,210	7,800	810	183	462
20	970	1,200	--------	1,080	2,000	3,420	6,730	915	175	477
21	970	1,200	--------	1,080	2,160	3,420	5,480	915	162	534
22	970	1,200	--------	1,080	2,000	3,640	4,780	860	158	534
23	970	1,200	--------	1,140	2,160	3,860	3,860	810	122	575
24	970	1,200	--------	1,080	2,410	4,780	3,420	620	142	665
25	970	1,200	--------	1,080	2,240	5,240	3,000	620	146	712
26	970	1,200	--------	1,080	2,240	5,240	2,800	575	162	760
27	970	1,200	--------	1,140	2,600	4,780	2,600	469	162	810
28	970	1,140	--------	1,140	3,000	4,320	2,240	455	170	860
29	970	1,020	--------	1,140	4,090	3,640	2,160	405	175	915
30	1,020	1,080	--------	1,470	4,320	3,420	2,160	390	175	860
31	915	--------	--------	1,330	--------	2,800	--------	390	175	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,020	712	904	55,600
November	1,200	970	1,150	68,400
December 1–15	1,200	1,080	1,160	34,500
March 14–31	1,470	1,020	1,130	40,300
April	4,320	1,020	1,730	103,000
May	5,240	2,240	3,260	200,000
June	7,800	2,160	4,120	246,000
July	2,000	390	943	58,000
August	383	122	243	14,900
September	915	170	485	28,900

MISSOURI RIVER BELOW HAUSER LAKE DAM, NEAR HELENA, MONT.

LOCATION.—Water-stage recorder in SW. ¼ sec. 29, T. 12 N., R. 2 W., at Hauser Lake power plant 15 miles northeast of Helena.

DRAINAGE AREA.—16,600 square miles.

RECORDS AVAILABLE.—December, 1922, to September, 1929.

EXTREMES.—Maximum discharge during year, 18,000 second-feet June 19 (gage height, 74.20 feet); minimum, 875 second-feet Dec. 25 (gage height, 66.05 feet).

1922–1929: Maximum discharge, 33,300 second-feet June 14, 15, and 18, 1927 (gage height, 78.80 feet); minimum, 500 second-feet Sept. 14, 1924 (gage height, 65.40 feet).

REMARKS.—Records good. Numerous diversions. Flow partly regulated by reservoirs and power plants above station. Complete records furnished by Montana Power Co.

Daily and monthly discharge, in second-feet, 1928-29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,600	4,540	4,390	4,380	4,340	4,220	4,910	7,040	9,140	6,530	3,660	3,900
2	3,920	4,440	2,670	4,420	4,240	4,040	4,940	8,380	8,630	5,870	3,840	1,200
3	3,920	4,380	4,400	4,460	2,760	4,240	4,900	8,140	8,400	6,600	3,460	3,100
4	4,100	4,080	4,500	4,260	4,140	4,280	4,860	7,470	8,800	4,330	1,200	4,440
5	4,420	3,740	4,320	4,440	4,320	4,550	4,880	7,030	9,060	3,330	2,410	4,460
6	4,170	3,480	3,600	4,440	4,290	5,090	4,880	6,590	8,840	4,230	3,680	4,460
7	3,080	3,600	3,760	4,440	4,260	5,520	4,820	6,470	8,210	3,000	4,300	4,460
8	3,240	3,800	4,480	4,420	4,230	5,930	4,760	6,270	6,400	4,200	3,120	3,420
9	3,560	4,080	2,440	3,800	4,200	5,040	4,860	5,990	6,830	3,850	3,680	4,360
10	4,320	4,200	2,180	4,100	3,580	4,410	4,820	5,890	7,840	3,620	3,980	4,510
11	4,410	3,560	3,180	4,340	3,180	4,180	4,810	5,830	8,680	3,720	3,340	4,480
12	4,560	4,080	4,220	4,410	3,340	4,540	4,810	5,360	9,230	3,250	3,330	4,480
13	4,360	4,460	4,250	3,380	3,560	4,600	4,840	5,490	8,600	3,450	3,860	4,480
14	2,260	3,920	4,460	3,680	3,960	4,740	4,820	5,810	8,060	4,350	4,240	4,500
15	2,900	3,760	4,410	4,460	4,060	4,540	4,540	5,850	9,370	3,620	4,180	4,520
16	3,870	4,380	4,080	4,460	4,100	4,430	4,600	6,110	11,400	3,500	4,440	4,480
17	3,760	4,400	4,010	4,460	3,560	4,220	4,650	6,390	13,000	3,820	4,080	4,480
18	3,900	3,460	4,460	4,470	4,000	4,580	4,700	6,710	13,800	4,340	1,540	4,530
19	3,600	3,650	4,460	4,440	4,100	4,520	4,860	6,270	14,800	3,960	3,060	4,500
20	3,780	4,470	4,380	4,470	4,100	4,520	5,030	8,120	14,800	3,780	4,160	4,480
21	2,720	4,470	3,840	4,400	4,100	4,580	4,940	8,800	13,400	2,220	4,440	4,500
22	4,400	3,910	3,820	4,470	4,080	4,710	4,640	8,160	11,500	2,820	4,180	4,200
23	4,360	4,340	3,930	4,470	4,050	4,620	4,880	8,160	10,500	3,880	4,510	3,740
24	4,590	4,260	3,040	4,460	4,060	4,580	5,040	8,240	7,700	3,420	4,420	4,500
25	4,580	3,390	1,180	4,460	4,100	4,560	5,260	9,780	5,770	3,720	2,120	4,530
26	4,580	3,820	2,790	4,470	4,160	4,480	5,490	10,600	5,610	4,050	3,620	4,270
27	4,530	4,500	3,740	4,470	4,170	4,520	5,690	11,700	6,550	4,300	4,360	4,330
28	3,640	4,100	4,380	4,400	4,200	4,640	6,090	13,300	6,650	3,000	4,420	4,500
29	3,880	4,120	4,380	4,420	------	4,590	5,970	12,500	7,660	2,520	4,420	4,340
30	4,560	4,390	3,500	4,420	------	4,650	6,470	11,200	7,010	3,300	4,420	4,160
31	4,560	------	3,550	4,380	------	4,260	------	10,100	------	3,680	4,420	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	4,590	2,260	3,940	242,000
November	4,540	3,390	4,060	242,000
December	4,500	1,180	3,770	232,000
January	4,470	3,380	4,340	267,000
February	4,340	2,760	3,970	220,000
March	5,930	4,040	4,590	282,000
April	6,470	4,540	5,030	299,000
May	13,300	5,360	7,860	483,000
June	14,800	5,610	9,210	548,000
July	6,600	2,220	3,880	239,000
August	4,510	1,200	3,710	228,000
September	4,530	1,200	4,210	251,000
The year	14,800	1,180	4,880	3,530,000

MISSOURI RIVER AT FORT BENTON, MONT.

LOCATION.—Water-stage recorder in NE. ¼ sec. 26, T. 24 N., R. 8 E. at highway bridge at Fort Benton.

DRAINAGE AREA.—24,600 square miles.

RECORDS AVAILABLE.—July, 1881, to November, 1891; July, 1902, to September, 1929.

EXTREMES.—Maximum discharge during year, 20,800 second-feet May 29, 30, and June 2 and 19 (gage height, 5.5 feet); minimum, 3,030 second-feet Aug. 13 (gage height, 0.96 foot).

1881–1891, 1902–1929: Maximum discharge, 107,000 second-feet June 7, 1908 (gage height, 16.3 feet); minimum, 1,420 second-feet Aug. 17, 1919. Prior to 1918 open-season records only were obtained; discharge may have been lower during winter.

REMARKS.—Records good except those for period of ice effect, Nov. 29 to Mar. 18, which are fair. Discharge determined from flow at Volta power plant Oct. 16 to Nov. 8 and Nov. 28 to May 16. Numerous diversions from tributaries. Flow partly regulated by storage in reservoirs.

Daily and monthly discharge, in second-feet, 1928-29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	5,500	4,820	4,850	4,970	4,740	5,320	6,140	9,480	19,100	10,500	4,560	4,860
2	5,500	5,090	4,790	4,250	4 950	5,330	5,780	7,810	20,800	10,500	4,600	4,260
3	5,530	5,030	4,480	4,370	5,220	5,390	5,510	9,180	20,200	8,900	4,720	4,800
4	5,630	5,030	3,820	5,030	5,390	4,730	5,480	13,000	19,100	8.000	4,500	4,890
5	5,950	4,910	3 780	5,090	4,960	5,380	5,390	12,600	18,000	8,180	4,330	4,950
6	5,960	4,980	5,090	4,850	5,050	5,720	5,510	11,700	16,400	8,180	4,720	4,900
7	5,940	5,210	5,930	3,760	5,030	5,660	5,750	10,300	16,400	6,080	4,980	5,100
8	5,130	5,150	5,750	4,790	5,210	5,950	5,230	9,970	16,400	6,250	4,600	4,920
9	5,780	5,370	5,330	5,090	5,500	6,090	5,780	9,340	16,400	6,420	4,790	4,500
10	5,580	5,820	4,970	5,690	5,720	5,650	5,310	8,740	14,900	6,590	4,800	5,270
11	5,560	5,440	5,600	5,030	4,940	4,850	5,560	9,340	14,900	5,920	4,510	4,970
12	5,550	5,500	5,570	5,030	5,500	5,660	5,880	9,800	15,900	6,080	3,680	4,960
13	5,780	5,660	4,820	4,990	5,710	6,030	6,000	9,360	15,900	5,600	4,730	5,650
14	5,830	5,710	4,720	4,760	5,490	5,690	5,780	9,430	15,400	5,790	4,570	5,040
15	5,560	5,900	4,940	4,850	5,380	5,520	5,900	10,500	15,900	4,090	4,420	4,660
16	5,320	5,330	4,910	4,670	5,340	5,550	5,870	11,100	13,600	5,500	5,040	4,310
17	5,140	5,760	4,310	4,010	5,350	5,450	6,000	11,300	14,700	5,350	4,110	5,300
18	5,090	5,630	4,540	4,790	4,900	5,390	6,200	11,300	19,100	4,920	4,780	5,130
19	5,080	5,580	5,030	4,910	5,450	5,690	6,400	12,100	20,200	4,790	4,380	5,230
20	5,030	5,590	4,160	4,410	5,350	5,640	6,450	14,900	19,600	5,200	4,690	5,280
21	5,320	5,430	4,940	4,160	5,270	6,100	6,110	15,900	19,100	5,170	4,690	5,230
22	5,000	5,660	5,510	4,880	5,210	5,990	5,740	17,400	18,600	4,300	4,590	4,640
23	5,040	5,660	5,330	5,030	5,310	5,930	6,280	19,100	16,900	4,830	4,840	5,090
24	5,140	5,500	5,330	5,300	5,270	5,330	6,430	19,600	15,900	4,770	4,670	5,270
25	4,840	5,590	5,330	5,090	4,520	4,730	7,040	20,200	14,900	4,800	4,830	5,400
26	4,850	5,170	5,270	4,610	5,330	5,800	8,640	18,600	11,800	4,520	4,400	5,070
27	5,020	5,380	5,160	5,060	5,330	5,890	8,260	15,900	8,710	4,730	4,970	5,750
28	5,470	5,890	5,230	4,790	5,200	5,210	7,760	18,000	7,040	4,620	4,700	5,500
29	4,370	4,970	5,300	5,450	------	5,450	8,300	20,800	8,760	3 850	4,930	4,770
30	5,120	4,850	5,150	4,820	------	6,120	9,280	20,800	10,500	4,280	4,790	5,090
31	4,910	------	4,670	4,970	------	6,560	------	19,100	------	4,450	4,910	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	5,960	4,370	5,340	328,000
November	5,900	4,820	5,390	321,000
December	5,930	3,780	4,990	307,000
January	5,690	3,760	4,820	296,000
February	5,720	4,520	5,240	291,000
March	6,560	4,730	5,610	345,000
April	9,280	5,230	6,330	377,000
May	20,800	7,810	13,400	824,000
June	20,800	7,040	15,800	940,000
July	10,500	3,850	5,910	363,000
August	5,040	3,680	4,640	285,000
September	5,750	4,260	5,030	299,000
The year	20,800	3,680	6,880	4,980 000

MISSOURI RIVER NEAR WILLISTON, N. DAK.

LOCATION.—Water-stage recorder in sec. 31, T. 154 N., R. 101 W., at Lewis and Clark Highway bridge 7 miles west of Williston.

RECORDS AVAILABLE.—September, 1928, to September, 1929.

EXTREMES.—Maximum discharge during period, 109,000 second-feet June 8; maximum stage, 16.4 feet Mar. 22, caused by ice gorge. Minimum discharge (estimated), 5,650 second-feet Jan. 30 and 31.

REMARKS.—Records good except those for period of ice effect, Nov. 30 to Mar. 9, which are fair. Discharge estimated Sept. 16, 23, 30, Oct. 7, 14, 1928, and June 29 to July 5, July 7–11, 13–18, and 20–22, 1929. Observations discontinued Mar. 10–23. Numerous diversions above station. Several storage reservoirs on tributaries.

Daily and monthly discharge, in second-feet, 1928–29

Day	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	14,000	15,400	12,300	13,100	5,910	8,380	45,000	27,200	76,100	55,300	12,300	8,380
2	-------	14,000	14,700	12,300	13,400	6,100	8,720	52,400	28,700	58,300	56,300	11,800	8,380
3	-------	13,400	14,700	12,300	13,400	6,100	9,080	52,400	30,200	54,400	57,300	11,800	8,720
4	-------	13,400	14,700	12,300	13,100	6,400	9,080	38,000	28,700	54,400	58,300	11,300	9,080
5	-------	13,400	14,000	11,800	12,000	6,510	9,080	30,200	30,200	56,400	59,300	10,800	9,080
6	-------	13,400	14,700	11,800	11,300	6,730	9,080	30,200	31,700	66,500	60,200	10,300	9,080
7	-------	13,400	14,700	11,800	10,400	6,830	9,080	33,200	31,700	84,200	57,100	10,800	9,080
8	-------	13,400	14,000	11,800	9,660	6,730	9,460	34,800	27,200	105,000	54,000	10,800	9,460
9	-------	13,400	13,400	11,300	9,080	7,100	10,800	38,000	27,200	72,100	50,900	10,800	10,300
10	-------	13,400	14,000	10,800	8,380	7,480	-------	31,700	30,200	60,200	47,800	10,800	10,800
11	-------	13,400	14,000	9,460	7,910	8,060	-------	24,500	33,200	64,200	44,700	10,800	11,300
12	-------	13,400	13,400	9,080	8,220	8,550	-------	23,200	31,700	84,200	41,500	10,800	12,900
13	-------	13,400	13,400	9,080	8,380	9,080	-------	20,800	31,700	86,300	39,700	10,300	13,400
14	15,400	13,700	13,400	10,300	8,380	9,270	-------	19,800	25,800	84,200	38,900	9,870	13,400
15	15,400	14,000	13,400	11,300	8,220	8,900	-------	17,300	23,200	84,200	37,000	10,800	13,400
16	15,800	14,700	13,400	11,800	8,720	8,720	-------	18,700	19,800	82,200	35,200	10,800	13,400
17	16,100	14,700	13,400		9,080	8,720	-------	13,700	19,800	80,200	33,400	9,870	13,400
18	15,400	14,700	13,400		9,080	8,900	-------	18,700	19,800	78,100	31,500	9,460	12,900
19	15,400	14,700	13,400		9,460	9,270	-------	17,800	22,000	80,200	28,700	9,080	12,300
20	15,400	15,400	12,900		9,660	9,270	-------	17,800	27,200	80,200	28,000	9,080	12,300
21	15,400	16,100	13,400		9,270	9,460	-------	17,800	31,700	82,200	27,200	8,720	12,300
22	15,400	16,100	13,400		8,900	9,460	-------	18,700	38,000	76,100	26,500	8,380	12,300
23	14,700	16,100	13,400		8,380	9,660	-------	18,700	38,000	62,200	25,800	8,380	12,300
24	14,700	16,900	13,400	12,000	7,910	9,460	97,300	19,800	39,800	58,300	25,800	8,380	12,300
25	14,000	17,800	12,900		7,350	9,460	62,200	20,800	43,200	56,400	23,200	8,380	12,900
26	14,000	16,900	12,900		6,850	9,080	48,600	23,200	54,400	54,400	20,800	8,380	13,400
27	14,000	16,100	12,900		6,510	8,900	39,800	24,500	68,100	52,400	17,800	8,380	13,400
28	14,000	16,100	12,900		6,300	8,720	36,400	24,500	76,100	52,400	15,400	8,380	13,400
29	13,400	16,100	12,300		5,820	-------	56,600	24,500	86,300	53,400	15,400	8,060	14,000
30	13,700	15,400	12,300		5,650	-------	55,700	27,200	88,300	54,400	13,400	8,380	14,700
31	-------	15,400	-------		5,650	-------	39,800	-------	92,400	-------	12,900	8,380	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1928				
September 14-30	16,100	13,400	14,800	499,000
1928–29				
October	17,800	13,400	14,700	904,000
November	15,400	12,300	13,600	809,000
December	-------	-------	11,600	713,000
January	13,400	5,650	9,020	555,000
February	9,660	5,910	8,170	454,000
April	52,400	17,800	26,800	1,590,000
May	92,400	19,800	38,800	2,390,000
June	105,000	52,400	69,800	4,150,000
July	60,200	12,900	36,800	2,260,000
August	12,300	8,060	9,820	604,000
September	14,700	8,380	11,700	696,000

MISSOURI RIVER AT SANISH, N. DAK.

LOCATION.—Wire gage in sec. 14, T. 152 N., R. 93 W., at highway bridge at Sanish.

RECORDS AVAILABLE.—September, 1928, to September, 1929.

EXTREMES.—Maximum discharge during period, 90,000 second-feet June 9; maximum stage, 14.2 feet Mar. 19, caused by ice gorge. Minimum discharge (estimated), 5,180 second-feet Feb. 3.

REMARKS.—Records good except those for period of ice effect, Nov. 19 to Mar. 10, which are fair. Discharge not determined Mar. 11–25. Numerous diversions above station. Several storage reservoirs on tributaries.

Daily and monthly discharge, in second-feet, 1928–29

Day	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	13,500	15,400	12,300	11,000	5,720	9,260	38,800	32,000	74,600	57,400	15,400	8,000
2	-------	13,500	15,400	12,300		5,440	8,820	50,900	33,100	65,200	58,700	14,100	8,400
3	-------	13,500	15,400	12,300		5,180	8,820	48,400	34,200	61,300	58,700	13,500	8,820
4	-------	13,500	15,400	11,700		5,440	8,820	41,200	34,200	61,300	58,700	12,800	8,820
5	-------	14,100	14,700	11,200		5,720	10,200	36,400	35,300	65,200	53,500	11,700	8,820
6	-------	14,100	14,700	12,300	10,200	6,600	10,200	33,100	36,400	70,400	52,200	11,200	8,400
7	-------	13,500	14,100	12,300	10,200	6,600	9,700	29,800	36,400	74,600	49,600	11,200	9,260
8	-------	13,500	14,700	12,300	9,700	6,300	8,820	35,300	37,600	83,000	49,600	10,700	8,820
9	-------	13,500	14,700	12,300	9,700	6,300	8,820	34,200	38,800	90,000	47,200	10,700	9,260
10	-------	13,500	14,700	11,200	9,700	6,300	9,260	33,100	34,200	67,800	44,800	9,700	9,260
11	-------	13,500	14,700	10,700	8,820	6,300	-------	35,300	36,400	63,900	42,400	11,200	11,200
12	-------	13,500	14,700	10,200	8,400	6,600	-------	28,700	37,600	77,400	41,200	10,700	11,200
13	-------	13,500	14,700	10,200	9,260	6,920	-------	27,600	37,600	84,400	37,600	10,200	12,900
14	-------	13,500	14,100	10,200	8,820	7,260	-------	25,500	34,200	78,800	36,400	10,200	12,900
15	-------	12,900	14,100	9,700	8,820	8,400	-------	23,500	30,900	77,400	32,000	10,200	14,100
16	-------	12,900	14,100	9,260	8,820	8,400	-------	23,500	30,900	73,200	29,800	10,200	13,500
17	-------	14,100	14,100	9,260	8,820	8,400	-------	22,500	29,800	71,800	26,600	10,200	13,500
18	-------	14,700	14,100	9,700	8,820	8,820	-------	20,700	28,700	76,000	26,600	9,700	12,900
19	-------	14,700	14,100	9,700	8,400	8,820	-------	20,700	28,700	76,000	28,700	9,700	12,900
20	-------	15,400	14,100	10,000	8,400	8,820	-------	20,700	29,800	77,400	27,600	9,260	12,900
21	-------	15,400	13,500		8,820	8,820	-------	19,900	37,600	78,800	26,600	9,260	12,300
22	-------	16,100	14,100		9,700	8,400	-------	20,700	42,400	73,200	29,800	8,820	12,900
23	15,400	16,100	14,100		9,700	8,000	-------	21,600	46,000	66,500	29,800	8,400	14,100
24	14,700	16,800	13,500		9,260	9,700	-------	22,500	47,200	61,300	26,600	8,000	14,100
25	14,100	16,800	13,500		8,820	9,700	-------	23,500	47,200	58,700	25,500	8,400	13,500
26	13,500	17,600	13,500		8,400	9,700	85,800	26,600	50,900	57,400	23,500	8,400	12,900
27	13,500	18,300	13,500		8,400	9,700	63,900	28,700	62,600	58,700	23,500	8,400	12,300
28	13,500	17,600	13,500		8,400	9,260	50,900	29,800	67,800	54,800	21,600	8,000	12,900
29	13,500	16,800	13,500		7,260	-------	41,200	32,000	71,800	53,500	21,600	8,000	13,500
30	13,500	16,100	12,900		7,260	-------	63,900	33,100	74,600	52,200	16,800	7,620	14,100
31	-------	16,100	-------		6,920	-------	52,200	-------	84,400	-------	16,800	8,000	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1928				
September 23–30	15,400	13,500	14,000	222,000
1928–29				
October	18,300	12,900	14,800	910,000
November	15,400	12,900	14,300	851,000
December	----------	----------	10,600	652,000
January	----------	----------	9,190	565,000
February	9,700	5,180	7,560	420,000
April	50,900	19,900	29,600	1,760,000
May	84,400	28,700	42,200	2,590,000
June	90,000	52,200	69,500	4,140,000
July	58,700	16,800	36,200	2,230,000
August	15,400	7,620	10,100	621,000
September	14,100	8,000	11,600	690,000

MISSOURI RIVER AT BISMARCK, N. DAK.

LOCATION.—Water-stage recorder in sec. 31, T. 139 N., R. 80 W., at city water plant at Bismarck. Prior to Oct. 17, 1928, a chain gage at railroad bridge 0.4 mile upstream was used.

DRAINAGE AREA.—187,280 square miles.

RECORDS AVAILABLE.—September, 1904, to December, 1905; October, 1927, to September, 1929.

EXTREMES.—Maximum discharge during year, 112,000 second-feet June 10; maximum stage, 17.8 feet Mar. 27, caused by ice gorge; minimum discharge (estimated), 5,800 second-feet Feb. 5-7.

1927–1929: Maximum discharge, 201,000 second-feet Mar. 24, 1928; maximum stage, that of Mar. 27, 1929; minimum discharge, that of Feb. 5–7, 1929.

REMARKS.—Records good except those for period of ice effect, Dec. 2 to Mar. 28, which are fair. Numerous diversions above station. Tributaries partly regulated by storage reservoirs.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13,400	17,600	12,400		7,120	10,200	59,500	31,700	97,400	50,200	21,900	10,200
2	13,400	17,200	12,000		6,740	10,200	52,600	33,900	97,400	53,300	20,700	9,850
3	13,400	16,800	11,400		6,080	9,600	56,700	33,900	87,600	58,100	19,500	9,850
4	14,000	16,400	11,400		6,080	9,040	60,900	33,900	72,400	58,100	18,400	9,850
5	14,000	16,400	11,400		5,800	9,040	54,000	32,800	63,300	56,500	17,900	9,850
				12,000								
6	14,000	15,600	10,800		5,800	9,040	46,100	33,900	63,300	58,100	16,900	9,850
7	14,000	15,600	12,000		5,800	9,600	38,600	33,900	68,700	54,900	16,400	9,850
8	14,000	15,600	11,400		6,080	9,600	33,900	33,900	76,100	50,200	15,400	9,850
9	14,000	15,600	11,400		6,080	9,600	36,200	35,100	95,400	48,700	15,400	9,850
10	14,000	16,000	11,400		6,400	10,200	43,600	35,100	105,000	47,200	14,900	9,850
11	13,400	16,000	10,200	11,300	6,400	10,200	42,300	31,700	83,700	44,300	14,400	9,850
12	13,400	15,600	9,040	10,800	6,740	10,800	38,600	32,800	63,300	40,300	14,400	9,850
13	12,800	15,600	9,040	10,200	6,740	11,400	32,800	36,200	66,800	36,600	14,400	10,200
14	12,800	15,600	9,040	9,600	7,120	12,000	30,600	38,600	79,900	35,500	14,000	10,600
15	12,800	15,600	9,600	9,040	7,540	13,400	27,300	37,400	78,000	33,300	14,000	11,000
16	12,800	16,000	9,600	8,500	8,500		25,300	33,900	72,400	31,300	14,000	11,400
17	12,800	15,600	10,200	8,500	10,200		24,300	32,800	70,500	29,500	13,500	12,200
18	13,700	14,800	10,200	8,500	10,500		23,800	31,700	70,500	27,700	13,100	12,600
19	14,100	14,800	9,040	8,500	10,800		23,300	30,600	68,700	26,900	13,100	13,100
20	14,800	14,400	8,000	8,500	10,800		23,800	30,600	72,400	26,100	13,500	12,600
21	15,200	14,800	8,000	9,040	10,800		22,400	29,500	78,000	26,900	13,100	12,600
22	15,200	13,700		9,600	9,600	15,200	22,800	31,700	81,800	27,700	12,200	12,600
23	15,600	13,700		9,600	10,200		22,300	33,900	79,900	27,700	11,800	12,200
24	16,000	13,400		10,200	9,600		23,800	38,600	68,700	28,600	11,400	12,200
25	16,400	13,400		10,800	10,200		24,300	41,100	61,500	30,400	11,000	12,200
26	16,800	14,400	8,000	11,400	10,200		25,300	41,100	58,100	29,500	10,600	12,200
27	17,200	14,400		11,400	10,200		26,300	38,600	56,500	27,700	10,200	12,200
28	17,600	13,700		10,200	10,800		27,300	62,300	53,300	27,700	10,200	12,200
29	18,000	13,000		9,600	-------	77,300	28,400	74,200	51,700	26,900	10,200	11,800
30	18,000	13,000		9,040	-------	52,600	31,700	83,800	51,700	25,400	10,200	11,800
31	18,000	-------		8,000	-------	62,300	-------	93,900	-------	23,200	10,200	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	18,000	12,800	14,700	904,000
November	17,600	13,000	15,100	898,000
December	----------	----------	9,600	590,000
January	----------	----------	10,400	640,000
February	10,800	5,800	8,180	454,000
March	77,300	9,040	17,500	1,080,000
April	60,900	22,300	34,300	2,040,000
May	93,900	29,500	40,100	2,470,000
June	105,000	51,700	73,100	4,350,000
July	58,100	23,200	37,700	2,320,000
August	21,900	10,200	14,100	867,000
September	13,100	9,850	11,100	660,000
The year	105,000	5,800	23,900	17,300,000

MISSOURI RIVER NEAR MOBRIDGE, S. DAK.

LOCATION.—Chain gage in sec. 7, T. 18 N., R. 30 E., 3 miles west of Mobridge. Prior to March 28, 1929, station was 5 miles upstream in sec. 29, T. 19 N., R. 30 E., above mouth of Grand River, but records include flow of the Grand River, as discharge measurements for that station were made at site of present station. Zero of present gage is 1,529.25 feet above mean sea level.

DRAINAGE AREA.—209,000 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 164,000 second-feet Mar. 29 (gage height, 11.4 feet); minimum occurred during winter.

REMARKS.—Records good except those for period of ice effect, Dec. 4 to Mar. 19, and for estimated periods, July 10–16 and July 28 to Aug. 3, which are fair.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14,600	17,100	14,100				66,100	26,200	113,000	59,300	26,000	11,600
2	14,400	17,000	12,400				53,000	27,800	124,000	58,600	23,000	11,600
3	14,400	16,800	12,100			11,000	45,200	28,500	122,000	59,300	21,000	11,500
4	14,300	16,700					52,400	30,100	103,000	67,600	19,400	11,200
5	14,300	16,500		13,400	8,200		56,100	31,500	79,600	69,700	19,000	11,000
6	14,300	16,200	9,400				45,600	32,200	70,200	69,700	18,300	10,900
7	14,200	16,200					39,400	33,000	73,600	71,500	17,600	10,900
8	14,200	16,200					34,400	33,700	82,000	65,200	16,900	10,900
9	14,300	16,000				11,000	32,700	35,200	102,000	60,000	16,300	10,900
10	14,200	15,900					34,100	36,800	138,000	57,000	16,000	10,900
11	14,200	16,100					40,300	37,200	138,000	52,000	15,800	11,300
12	14,000	15,900					40,200	36,100	101,000	48,000	15,700	11,100
13	14,000	15,900					37,400	33,800	68,200	46,000	15,500	10,900
14	14,200	16,000					31,700	36,300	87,900	45,000	15,200	10,900
15	14,200	16,200					29,900	39,100	100,000	44,000	14,900	11,100
16	14,200	15,900	8,400	11,400	9,370	18,000	28,000	40,100	93,100	38,000	15,000	11,200
17	14,200	16,200					27,400	38,200	83,100	33,400	15,100	11,600
18	14,400	16,500					25,400	36,100	80,900	32,200	15,000	12,200
19	14,700	16,700					24,600	32,600	78,800	29,800	14,300	12,800
20	14,600	16,700				33,800	23,900	32,200	82,500	28,900	14,300	13,100
21	15,200	16,700				96,000	23,200	31,900	90,400	28,600	14,900	13,800
22	15,500	17,300				63,300	22,200	30,500	99,300	28,400	14,100	14,100
23	15,800	16,800				53,900	22,300	30,800	101,000	29,300	14,000	14,000
24	15,700	16,700				48,200	22,100	34,600	97,600	30,200	13,400	14,000
25	15,700	16,800			11,300	44,200	22,000	36,600	79,300	29,400	13,100	14,000
26	15,900	16,500	9,100	9,850		44,200	22,300	48,600	74,200	30,100	12,900	14,000
27	16,200	16,300				61,000	22,900	48,400	65,200	30,600	12,600	14,000
28	16,400	16,300				104,000	23,100	54,100	64,300	30,000	12,100	13,500
29	16,600	13,800				153,000	24,200	73,000	60,000	29,000	11,800	13,300
30	16,800	13,900			-------	115,000	25,200	89,600	59,600	29,000	11,700	13,200
31	17,100	-------			-------	53,200	-------	106,000	-------	28,000	11,700	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	17,100	14,000	14,900	916,000
November	17,100	13,800	16,300	970,000
December	----------	----------	9,310	572,000
January	----------	----------	11,500	707,000
February	----------	----------	9,500	528,000
March	153,000	----------	36,300	2,230,000
April	66,100	22,000	33,200	1,980,000
May	106,000	26,200	40,700	2,500,000
June	138,000	59,600	90,400	5,380,000
July	71,500	28,000	43,800	2,690,000
August	26,000	11,700	15,700	965,000
September	14,100	10,900	12,200	726,000
The year	153,000	----------	27,900	20,200,000

MISSOURI RIVER AT CHAMBERLAIN, S. DAK.

LOCATION.—Staff gage in sec. 16, T. 104 N., R. 71 W., at Chamberlain. Zero of gage is 1,330.8 feet above mean sea level.

DRAINAGE AREA.—250,000 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1929; discontinued.

EXTREMES.—Maximum discharge during year, 151,000 second-feet June 4; maximum gage height, 9.26 feet Mar. 30; minimum discharge, 7,680 second-feet Dec. 11 (gage height, −1.2 feet).

REMARKS.—Records fair. Discharge estimated because of ice Jan. 1 to Mar. 16.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15,800	15,600	15,100				77,000	25,100	113,000	65,300	27,700	12,300
2	15,800	16,500	14,700				69,100	24,700	118,000	63,100	27,400	11,900
3	15,800	16,800	13,600			16,000	75,400	25,800	140,000	61,200	26,000	12,300
4	15,600	16,800	10,400				68,000	27,300	146,000	60,100	23,800	11,900
5	15,300	17,400	12,300	13,00	8,600		61,600	29,200	138,000	59,000	22,600	11,900
6	15,300	17,400	10,800				66,800	31,500	117,000	62,300	21,900	11,900
7	15,300	17,400	8,620				66,600	33,000	96,600	68,200	20,600	12,300
8	15,300	17,400	9,160			18,000	57,300	34,600	89,000	68,400	20,000	12,300
9	15,300	17,400	8,490				52,800	36,400	93,000	70,000	19,100	12,700
10	15,000	17,100	7,820				53,800	38,400	100,000	68,400	18,600	12,300
11	15,000	16,800	7,680				56,500	39,200	122,000	62,400	18,100	12,300
12	14,800	16,800	7,820				53,200	39,300	147,000	55,600	18,000	12,300
13	15,300	16,800	9,570				52,400	40,700	131,000	54,000	17,900	12,300
14	15,300	17,100	9,710			35,000	52,200	41,200	97,000	54,000	17,500	11,800
15	15,800	16,200	9,850	12,500	9,800		50,600	40,300	85,600	51,400	17,300	11,400
16	15,800	16,200	9,710				44,800	38,800	100,000	44,400	16,600	11,300
17	15,800	16,800	9,160			52,800	39,600	38,900	106,000	39,900	16,100	11,200
18	15,800	16,500	8,490			39,600	37,900	39,200	98,600	37,900	15,600	11,000
19	14,800	17,100	8,360			31,600	35,500	42,600	96,000	37,900	15,500	11,000
20	14,800	16,800	8,080			27,500	32,400	42,400	88,200	36,700	15,200	11,000
21	14,800	16,800	9,160			46,600	29,000	39,600	97,800	36,100	14,600	11,400
22	14,800	16,800	9,300			61,200	28,200	37,200	94,200	32,400	14,400	11,400
23	14,800	16,800	9,440			84,000	26,800	33,200	103,000	31,900	14,200	12,000
24	14,800	16,600	9,570			82,100	26,800	31,200	105,000	31,600	13,900	12,500
25	14,600	16,200	9,030		11,800	77,400	33,300	30,900	97,200	29,800	13,300	13,100
26	15,000	16,200	8,760	10,300		63,800	32,000	28,400	81,900	31,200	13,400	13,700
27	15,100	15,600	9,160			54,600	27,800	30,400	76,000	32,200	13,500	14,300
28	15,200	15,100	9,300			55,400	32,800	36,600	71,600	32,100	13,500	14,300
29	15,200	15,000	10,800		-------	80,200	29,300	50,300	72,500	31,400	13,300	14,300
30	15,200	15,200	10,900		-------	120,000	27,300	84,000	68,900	31,900	12,300	14,300
31	15,600	-------	10,800		-------	103,000	-------	91,600	--------	30,700	12,300	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	15,800	14,600	15,300	941,000
November	17,400	15,000	16,600	988,000
December	15,100	7,680	9,860	606,000
January	----------	----------	11,900	732,000
February	----------	----------	9,940	552,000
March	120,000	----------	43,900	2,700,000
April	77,000	26,800	46,600	2,770,000
May	91,600	24,700	38,800	2,390,000
June	147,000	68,900	103,000	6,130,000
July	70,000	29,800	47,500	2,920,000
August	27,700	12,300	17,600	1,080,000
September	14,300	11,000	12,300	732,000
The year	147,000	----------	31,100	22,500,000

MISSOURI RIVER AT SIOUX CITY, IOWA

LOCATION.—Chain gage in Sioux City, half a mile below Big Sioux River. Zero of gage is 1,078.64 feet above mean sea level.

DRAINAGE AREA.—314,000 square miles.

RECORDS AVAILABLE.—September, 1928, to September, 1929.

EXTREMES.—Maximum discharge during period, 180,000 second-feet June 5 and 6 (gage height, 11.9 feet); minimum (estimated), 6,750 second-feet Dec. 26–28.

REMARKS.—Records good except those for estimated periods, Dec. 19 to Mar. 15 and Apr. 28–30, which are fair. Daily discharge not determined for February.

Daily and monthly discharge, in second-feet, 1928–29

Day	Sept.	Oct.	Nov.	Dec.	Jan.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	23,000	17,000	16,700	17,400		17,900	152,000	39,200	104,000	71,400	30,900	14,600
2	23,000	17,400	16,700	17,600		18,500	84,800	33,300	150,000	68,900	32,100	14,400
3	22,200	17,400	16,700	17,600	7,200	20,000	62,100	31,700	166,000	67,600	31,500	14,100
4	21,600	18,200	18,300	17,200		18,700	55,400	30,600	171,000	62,800	30,900	14,100
5	20,700	18,200	16,700	14,900		21,900	79,500	30,600	174,000	59,400	29,800	13,600
6	20,600	17,400	16,700	12,000		24,800	64,500	31,700	177,000	61,700	27,600	13,100
7	20,600	17,400	17,100	11,500		26,300	61,000	35,000	169,000	64,000	26,500	12,700
8	19,800	18,200	18,300	11,200	8,800	28,100	66,900	37,000	131,000	65,000	24,400	12,700
9	18,900	17,400	19,100	11,500		27,500	61,000	37,700	103,000	68,600	22,400	12,900
10	19,800	16,600	19,100	10,900		35,500	53,400	41,600	95,700	72,400	22,400	14,100
11	20,600	16,600	19,100	9,650		51,200	62,100	44,200	98,600	68,900	20,600	14,100
12	21,400	17,000	19,100	9,650		68,500	59,800	42,500	118,000	64,000	20,100	13,600
13	23,700	18,200	19,300	9,520	10,300	32,200	56,500	42,500	160,000	61,700	19,300	12,700
14	24,600	17,000	19,600	10,000		52,000	52,500	41,600	161,000	58,300	18,600	12,500
15	22,500	15,900	19,600	10,600		83,500	48,800	41,600	118,000	56,200	18,600	12,300
16	22,100	22,200	19,600	10,900		55,800	51,400	39,900	91,400	60,500	19,000	12,300
17	21,200	22,600	19,800	10,000		43,000	56,500	46,900	81,800	58,300	19,000	12,300
18	21,000	20,800	19,800	9,650	12,500	67,400	51,400	40,800	94,300	52,100	19,000	12,300
19	21,500	22,600	19,300	6,900		85,300	47,000	40,800	102,000	47,500	19,000	12,400
20	21,000	20,800	19,500	7,500		60,200	42,700	39,900	88,600	45,700	19,000	12,400
21	19,900	19,900	18,700	9,500		44,800	37,800	38,400	84,500	43,100	17,500	12,400
22	19,100	18,700	18,800	8,600		36,000	40,100	37,000	84,500	40,600	18,200	12,200
23	41,100	17,500	18,800	7,600	11,500	65,000	37,100	37,000	81,800	40,600	17,500	11,600
24	36,000	17,500	19,000	7,600		98,000	37,800	34,400	77,900	39,000	17,200	11,600
25	27,200	16,700	19,300	7,600		100,000	38,600	33,900	81,800	39,800	16,900	11,600
26	20,000	16,300	19,300	6,750		90,800	45,300	32,800	90,000	38,200	16,300	11,600
27	19,200	16,000	19,200	6,750		80,000	43,500	31,700	99,400	36,000	16,300	12,100
28	17,800	16,000	19,000	6,750	10,900	61,400	41,000	35,000	85,600	34,000	16,000	13,600
29	17,400	16,000	18,800	7,000		55,800	40,000	51,400	70,200	33,400	15,100	15,200
30	17,000	16,000	18,100	7,100		60,200	40,000	70,400	66,400	33,400	14,600	14,600
31	-------	16,700	-------	7,150		123,000	-------	65,500	--------	33,400	14,600	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1928				
September	41,100	17,000	22,200	1,320,000
1928–29				
October	22,600	15,900	17,900	1,100,000
November	19,800	16,700	18,600	1,110,000
December	17,600	6,750	10,300	633,000
January	----------	----------	10,200	627,000
February	----------	----------	[a] 11,500	639,000
March	123,000	17,900	53,300	3,280,000
April	152,000	37,100	55,700	3,310,000
May	74,000	30,600	39,900	2,450,000
June	177,000	66,400	113,000	6,720,000
July	72,400	33,400	53,100	3,260,000
August	32,100	14,600	21,000	1,290,000
September	15,200	11,600	13,000	774,000
The year	177,000	----------	34,800	25,200,000

[a] Estimated.

MISSOURI RIVER AT OMAHA, NEBR.

LOCATION.—Chain gage in sec. 22, T. 75 N., R. 44 W., at Illinois Central Railroad bridge at Omaha. Zero of gage is 962.68 feet above mean sea level.

DRAINAGE AREA.—323,000 square miles.

RECORDS AVAILABLE.—September, 1928, to September, 1929.

EXTREMES.—Maximum discharge during period, 198,000 second-feet June 7 (gage height, 14.28 feet); minimum occurred during winter.

REMARKS.—Records good except those for estimated period, Jan. 1 to Mar. 11, which are fair.

Daily and monthly discharge, in second-feet, 1928–29

Day	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28,000	20,300	19,000	18,800	6,400	10,800	18,900	130,000	47,400	53,000	68,200	32,200	15,700
2	29,000	19,800	20,400	18,600			18,700	164,000	41,100	107,000	68,000	32,200	15,500
3	27,200	19,600	20,500	18,000			19,300	119,000	36,300	139,000	65,200	31,000	15,200
4	26,200	19,300	20,300	16,900			20,800	87,600	34,600	160,000	64,400	30,300	15,500
5	25,000	19,000	20,500	17,500			19,500	81,800	33,500	171,000	60,400	28,700	15,500
6	24,500	18,000	20,300	9,310	6,900	11,100	23,100	90,300	34,400	186,000	61,400	28,600	15,300
7	24,500	17,800	20,300	10,100			26,000	79,200	34,700	198,000	62,600	27,300	14,500
8	24,000	18,000	20,600	10,300			27,500	73,400	35,100	184,000	64,000	28,200	14,800
9	23,400	17,800	21,200	9,880			29,300	74,500	36,500	143,000	63,000	26,200	15,800
10	22,400	17,300	21,000	9,840			31,500	71,400	37,800	112,000	66,000	25,200	15,600
11	22,400	16,600	22,100	7,650	8,300	11,400	39,700	71,000	44,200	99,800	72,300	24,300	15,300
12	26,600	26,200	22,200	7,880			55,500	66,800	42,100	99,100	72,500	24,200	15,300
13	25,600	21,400	20,600	8,390			73,600	62,400	42,600	115,000	78,200	23,000	15,100
14	24,700	18,600	21,300	9,310			38,200	62,000	43,700	148,000	79,700	22,200	15,000
15	26,600	18,300	21,500	10,200			57,700	57,700	43,700	148,000	63,200	21,500	15,000
16	28,300	19,000	21,400	14,700	10,200	11,800	88,600	56,600	44,800	119,000	58,900	20,700	14,000
17	25,300	22,100	21,400	11,900			64,400	56,000	42,100	99,300	61,400	20,400	13,400
18	24,200	25,300	21,500	11,500			46,600	60,000	47,400	93,300	57,200	20,500	13,400
19	23,700	23,700	21,100	10,500			87,800	54,800	45,400	101,000	49,600	20,100	14,100
20	22,900	22,900	20,000	9,360			95,300	50,100	42,900	99,100	44,800	19,700	13,900
21	22,700	21,500	20,500	6,790	12,000	13,000	64,400	45,100	41,000	87,600	43,400	18,800	13,800
22	22,100	21,000	20,400	6,800			48,300	43,400	38,200	82,800	42,100	18,400	13,700
23	21,900	20,000	20,100	14,000			43,300	42,000	36,700	80,600	42,200	18,200	13,400
24	35,000	19,400	20,000	10,200			65,800	40,300	36,800	78,000	42,400	17,300	12,900
25	37,500	19,000	20,000	8,130			101,000	36,800	36,100	78,000	41,400	17,300	12,600
26	30,800	18,700	19,200	8,220	11,500		108,000	41,400	34,800	83,500	38,200	16,900	12,400
27	25,600	17,700	19,000	8,260			104,000	41,500	34,200	96,300	35,600	16,700	11,900
28	22,900	17,700	19,000	6,870			91,800	39,900	32,300	98,000	35,000	16,500	12,500
29	22,100	17,900	18,800	6,740		-------	76,300	47,200	33,300	87,800	35,100	16,300	13,100
30	21,100	17,800	18,800	6,960		-------	64,400	56,400	39,900	69,700	34,600	16,000	14,300
31	-------	17,700	-------	7,360		-------	84,700	-------	55,500	-------	33,800	15,800	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1928				
September	37,500	21,100	25,500	1,520,000
1928–29				
October	26,200	16,600	19,700	1,210,000
November	22,200	18,800	20,400	1,210,000
December	18,800	6,740	10,700	658,000
January	----------	----------	9,290	571,000
February	----------	----------	11,800	655,000
March	108,000	18,700	55,900	3,440,000
April	164,000	36,800	66,800	3,970,000
May	55,500	32,300	39,600	2,430,000
June	198,000	69,700	114,000	6,780,000
July	79,700	33,800	55,000	3,380,000
August	32,200	15,800	22,400	1,380,000
September	15,800	11,900	14,300	851,000
The year	198,000	----------	36,700	26,500,000

MISSOURI RIVER AT NEBRASKA CITY, NEBR.

LOCATION.—Chain gage in sec. 10, T. 8 N., R. 14 E., at Chicago, Burlington & Quincy Railroad bridge at Nebraska City. Zero of gage is 905.32 feet above mean sea level.

RECORDS AVAILABLE.—August to September, 1929.

EXTREMES.—Maximum discharge during period, 27,600 second-feet Aug. 11 (gage height, 7.35 feet); minimum, 16,200 second-feet Sept. 3 (gage height, 5.72 feet).

REMARKS.—Records good.

Daily and monthly discharge, in second-feet, 1929

Day	Aug.	Sept.	Day	Aug.	Sept.
1		17,600	16	23,400	19,500
2		16,900	17	22,100	18,800
3		16,200	18	22,100	18,800
4		16,900	19	20,800	18,800
5		18,200	20	20,800	19,500
6		18,200	21	20,800	19,500
7		16,900	22	20,200	19,500
8		17,600	23	19,500	19,500
9		19,500	24	20,200	18,800
10		20,200	25	20,200	18,800
11	27,600	20,800	26	19,500	18,200
12	26,900	20,800	27	19,500	18,200
13	26,900	20,800	28	18,800	18,200
14	24,800	20,800	29	17,600	18,800
15	22,400	19,500	30	17,600	19,500
			31	18,200	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
August 11-31	27,600	17,600	21,500	894,000
September	20,800	16,200	18,800	1,120,000
The period				2,010,000

MISSOURI RIVER AT ST. JOSEPH, MO.

LOCATION.—Chain gage in sec. 17, T. 57 N., R. 35 W., at St. Joseph & Grand Island Railway bridge at St. Joseph, Buchanan County. Zero of gage is 794.93 feet above mean sea level.

DRAINAGE AREA.—427,000 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 196,000 second-feet June 4 (gage height, 10.1 feet); minimum discharge, 9,600 second-feet Dec. 23 and Jan. 8–10; minimum gage height, −1.1 feet Dec. 23.

1928–29: Maximum and minimum discharge and gage height, same as given above.

Maximum stage known, 21.7 feet Apr. 29, 1881.

REMARKS.—Records good except those for period of ice effect, Jan. 4 to Mar. 8, which are poor. Gage-height record furnished by United States Weather Bureau.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28,600	25,200	30,400	17,500	20,000	28,600	83,000	75,000	68,600	100,000	58,600	20,400
2	27,700	32,200	30,400	14,900	20,000	27,700	106,000	81,400	121,000	92,100	45,600	20,400
3	26,800	40,100	29,500	11,600	19,300	27,700	134,000	68,600	151,000	86,400	41,200	19,500
4	26,000	38,000	26,000	10,800	19,300	28,600	129,000	58,600	196,000	81,000	39,000	19,100
5	24,400	34,000	26,000	10,000	18,700	30,400	95,600	53,800	190,000	81,000	37,000	18,300
6	21,400	31,300	26,000	10,000	18,700	33,100	78,200	51,400	175,000	134,000	37,000	18,300
7	23,600	29,500	22,100	10,000	18,100	37,000	90,200	47,800	184,000	170,000	35,000	18,300
8	21,400	28,600	15,400	9,600	18,100	40,100	90,200	45,600	187,000	134,000	35,700	18,300
9	20,700	29,500	12,000	9,600	18,100	45,600	76,600	44,500	190,000	92,000	34,100	19,500
10	21,400	31,300	12,400	9,600	18,100	47,800	75,000	44,500	172,000	78,200	34,100	23,500
11	21,400	31,300	14,400	10,000	18,100	67,000	86,600	47,800	144,000	81,400	32,500	21,900
12	21,400	32,200	16,400	10,000	18,100	57,400	79,800	76,600	126,000	102,000	30,900	21,900
13	21,400	28,600	16,900	10,000	17,500	78,200	73,400	70,200	116,000	83,000	29,500	21,400
14	35,000	31,300	22,100	10,000	16,900	114,000	71,800	62,800	118,000	75,000	28,800	21,900
15	35,000	30,400	26,000	10,000	16,400	154,000	78,200	61,400	139,000	83,000	28,100	21,400
16	32,200	31,300	26,800	10,800	16,400	88,400	71,800	56,200	156,000	108,000	26,000	20,900
17	28,600	42,300	26,000	11,600	15,900	114,000	62,800	50,200	147,000	92,000	24,100	20,400
18	27,700	52,600	28,600	11,600	15,400	90,200	60,000	52,600	118,000	81,400	24,100	19,500
19	30,400	46,700	26,800	12,400	14,900	75,000	64,200	49,000	114,000	75,000	24,100	19,500
20	39,000	39,000	23,600	12,400	14,900	75,000	90,200	51,400	111,000	67,000	22,900	19,900
21	35,000	34,000	20,700	13,400	15,900	102,000	81,400	51,400	136,000	60,000	23,500	19,900
22	34,000	33,100	14,400	13,900	18,700	84,800	92,000	46,700	126,000	53,800	23,500	21,400
23	28,600	30,100	9,600	14,400	22,100	68,600	71,800	47,800	184,000	51,400	24,100	20,900
24	28,600	30,400	10,400	16,400	25,200	61,400	64,200	44,500	150,000	49,000	24,100	20,900
25	24,400	29,500	12,400	16,900	29,500	73,400	64,200	47,800	116,000	49,000	24,100	20,400
26	26,000	28,600	12,400	17,500	33,100	95,600	67,000	50,200	100,000	50,200	22,900	20,400
27	25,200	28,600	26,000	18,700	36,000	112,000	68,600	45,600	98,400	47,800	22,400	19,900
28	26,000	28,600	16,400	18,700	32,200	106,000	70,200	43,400	107,000	46,700	21,400	19,500
29	26,000	26,800	16,900	20,000	-------	99,600	75,000	42,300	116,000	41,200	20,900	19,100
30	25,200	31,300	18,700	20,000	-------	88,400	64,200	45,600	116,000	40,100	19,900	19,100
31	23,600	-------	18,700	20,000	-------	84,800	-------	46,700	-------	71,800	20,400	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	39,000	20,700	27,000	1,660,000
November	52,600	25,200	32,900	1,960,000
December	30,400	9,600	20,500	1,260,000
January	20,000	9,600	13,300	818,000
February	36,000	14,900	20,200	1,120,000
March	154,000	27,700	72,100	4,430,000
April	134,000	60,000	80,500	4,790,000
May	81,400	42,300	53,600	3,300,000
June	196,000	68,600	139,000	8,270,000
July	170,000	40,100	79,300	4,880,000
August	58,600	19,900	29,500	1,810,000
September	23,500	18,300	20,200	1,200,000
The year	196,000	9,600	49,000	35,500,000

MISSOURI RIVER AT LEAVENWORTH, KANS.

LOCATION.—Chain gage in sec. 36, T. 8. S, R. 22 E., at Chicago Great Western Railroad bridge in Leavenworth. Zero of gage is 713.53 feet above mean sea level.

DRAINAGE AREA.—428,000 square miles.

RECORDS AVAILABLE.—April, 1922, to September, 1929.

EXTREMES.—Maximum discharge during year, 212,000 second-feet June 4; maximum gage height, 48.0 feet June 23; minimum discharge, 10,600 second-feet Jan. 6–12.

1922–1929: Maximum discharge, 241,000 second-feet July 7 and 8, 1923; maximum gage height, 49.3 feet June 28, 1924, and May 17, 18, June 29, and 30, 1927; minimum discharge, 3,450 second-feet Dec. 22, 1924.

Maximum stage known, 53.0 feet Apr. 29 and 30, 1881.

ACCURACY.—Records fair except those for periods of ice effect, Jan. 3 to Mar. 4, which are poor.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27,500	28,300	38,500	20,000	21,800	37,500	80,200	66,400	88,600	104,000	65,100	21,700
2	23,100	33,100	35,500	12,200	21,800	34,700	104,000	65,100	146,000	98,000	49,900	21,700
3	21,200	43,500	35,500	11,800	20,600	32,300	134,000	63,800	172,000	90,400	42,500	21,700
4	25,900	43,500	33,100	11,000	20,000	30,700	134,000	63,800	211,000	88,600	43,500	20,500
5	25,200	43,500	31,500	11,000	19,400	29,900	98,000	65,100	211,000	83,400	39,500	20,500
6	24,500	39,500	30,700	10,600	18,800	30,700	80,200	62,500	197,000	132,000	38,500	20,500
7	24,500	36,500	27,500	10,600	18,200	34,700	88,600	47,700	197,000	164,000	38,500	20,500
8	23,800	35,500	19,400	10,600	18,200	66,400	98,000	44,500	208,000	144,000	38,500	20,500
9	23,800	34,700	14,700	10,600	18,200	52,100	80,200	43,500	208,000	92,200	37,500	20,500
10	23,100	36,500	13,400	10,600	18,200	52,100	80,200	44,500	194,000	81,800	37,500	22,300
11	23,100	36,500	14,200	10,600	18,200	60,100	85,000	45,500	159,000	80,200	36,500	25,000
12	23,100	36,500	17,200	10,600	18,200	55,400	81,800	67,700	137,000	104,000	34,700	24,300
13	23,800	35,500	19,400	11,000	18,800	65,100	80,200	69,000	122,000	83,400	33,800	23,600
14	26,700	35,500	24,500	11,000	18,200	94,000	73,800	62,500	122,000	77,000	32,900	22,900
15	36,500	37,500	25,200	11,000	18,200	149,000	80,200	62,500	137,000	78,600	31,300	22,900
16	34,700	38,500	27,500	11,400	17,700	94,000	78,600	56,500	154,000	108,000	30,500	22,300
17	30,700	55,400	28,300	11,800	17,200	113,000	69,000	53,200	144,000	88,600	28,900	21,100
18	28,300	57,700	29,900	12,200	16,700	100,000	67,700	54,300	117,000	81,800	28,100	21,100
19	23,800	58,900	29,900	12,600	16,200	83,400	72,200	52,100	108,000	75,400	26,500	20,500
20	37,500	51,000	25,900	13,400	15,700	73,800	98,000	52,100	108,000	70,600	25,700	20,500
21	40,500	55,400	23,100	14,200	15,700	127,000	100,000	53,200	127,000	67,700	25,700	21,100
22	35,500	43,500	17,700	15,700	16,700	90,400	111,000	51,000	141,000	61,300	25,700	21,700
23	40,500	41,500	13,000	17,200	18,200	73,800	90,400	48,800	177,000	56,500	24,300	22,300
24	39,500	40,500	12,200	18,200	23,800	65,000	90,400	48,800	151,000	52,100	24,300	21,700
25	37,500	38,500	11,800	19,400	35,500	69,000	81,800	49,900	117,000	52,100	24,300	21,100
26	27,500	36,500	12,600	20,600	41,500	88,600	75,400	53,200	108,000	52,100	24,300	20,500
27	27,500	35,500	17,700	21,200	43,500	111,000	65,100	52,100	102,000	49,900	22,900	20,500
28	28,300	35,500	23,800	21,800	42,500	108,000	67,700	48,800	108,000	47,700	22,900	20,000
29	27,500	35,500	17,700	21,800	-------	98,000	72,200	45,500	120,000	43,500	22,900	19,500
30	26,700	36,500	18,800	21,800	-------	90,400	65,100	45,500	117,000	40,500	22,300	19,500
31	26,700	-------	23,800	22,400	-------	80,200	-------	52,100	-------	61,300	21,700	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	40,500	21,200	28,700	1,760,000
November	58,900	28,300	40,600	2,420,000
December	38,500	12,200	23,000	1,410,000
January	22,400	10,600	14,500	892,000
February	43,500	15,700	21,700	1,210,000
March	149,000	29,900	73,900	4,540,000
April	134,000	65,100	86,100	5,120,000
May	69,000	43,500	54,600	3,360,000
June	211,000	88,600	147,000	8,750,000
July	164,000	40,500	81,000	4,980,000
August	65,100	21,700	32,300	1,990,000
September	25,000	19,500	21,400	1,270,000
The year	211,000	10,600	52,100	37,700,000

MISSOURI RIVER AT KANSAS CITY, MO.

LOCATION.—Chain gage in sec. 31, T. 50 N., R. 33 W., at Chicago, Burlington & Quincy Railroad bridge at Kansas City, 1 mile below Kansas River. Zero of gage is 716.93 feet above mean sea level.

DRAINAGE AREA.—492,000 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 254,000 second-feet June 5 (gage height, 23.4 feet); minimum discharge, 16,200 second-feet Jan. 7–12; minimum gage height, 4.1 feet Sept. 30.

1928–29: Maximum and minimum discharge and gage height, same as given above.

Maximum stage known, 38.0 feet June 20, 1844.

REMARKS.—Records good except those for period of ice effect, Jan. 4 to Mar. 3, which are poor. Gage-height record furnished by United States Weather Bureau.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	30,200	31,500	45,500	26,000	26,000	56,800	99,700	82,600	114,000	120,000	67,600	22,900
2	29,000	37,100	47,600	26,000	25,400	51,200	106,000	95,600	185,000	105,000	60,400	22,400
3	27,800	46,200	46,200	19,600	24,900	48,300	127,000	88,600	240,000	95,600	51,200	22,400
4	27,200	53,600	44,800	20,400	23,900	47,600	136,000	77,600	248,000	89,600	48,300	24,400
5	27,200	55,200	42,700	17,400	23,900	46,200	112,000	72,100	254,000	84,600	45,500	23,900
6	26,600	52,800	39,200	16,500	23,900	47,600	93,600	67,600	230,000	88,600	43,400	23,400
7	26,000	52,000	37,100	16,200	23,900	64,900	90,600	64,900	213,000	165,000	42,700	23,900
8	25,400	49,700	34,300	16,200	22,900	89,600	112,000	62,200	215,000	174,000	41,300	22,900
9	24,900	46,200	27,200	16,200	22,900	82,600	94,600	60,400	222,000	126,000	40,600	22,900
10	24,900	44,100	23,400	16,200	22,900	77,600	90,600	59,500	217,000	110,000	39,200	22,900
11	24,400	44,800	22,000	16,200	22,900	73,000	94,600	59,500	186,000	104,000	39,200	26,000
12	24,400	44,100	23,900	16,200	22,900	79,600	98,600	89,600	160,000	111,000	37,100	26,000
13	23,900	43,400	26,600	16,500	23,400	80,600	92,600	116,000	147,000	107,000	34,300	24,900
14	24,400	42,000	31,500	16,500	23,900	103,000	87,600	115,000	152,000	93,600	35,700	24,900
15	36,400	42,000	32,900	17,100	24,400	147,000	87,600	111,000	160,000	96,600	35,700	24,400
16	36,400	44,800	35,700	17,700	24,900	127,000	88,600	99,700	181,000	115,000	33,600	23,900
17	32,900	105,000	38,500	18,300	26,000	125,000	83,600	89,600	183,000	116,000	31,500	23,400
18	29,600	108,000	38,500	19,300	26,600	126,000	77,600	83,600	152,000	107,000	29,600	22,900
19	35,000	122,000	37,800	20,400	27,800	108,000	74,800	83,600	140,000	94,600	29,000	22,000
20	40,600	105,000	33,600	22,000	29,000	93,600	103,000	78,600	136,000	86,600	28,400	22,000
21	46,900	89,600	30,800	22,900	30,200	111,000	183,000	77,600	149,000	76,600	27,800	22,000
22	46,900	75,700	28,400	23,900	31,500	107,000	212,000	74,800	161,000	67,600	27,200	22,000
23	42,000	65,800	24,400	24,400	33,600	94,600	188,000	69,400	219,000	63,100	27,200	22,000
24	39,900	59,500	20,800	24,900	36,400	84,600	140,000	67,600	224,000	59,500	27,200	22,400
25	37,100	50,400	20,000	25,400	44,800	81,600	119,000	65,800	179,000	56,000	26,600	21,600
26	35,700	46,900	19,600	26,000	52,000	98,600	113,000	67,600	147,000	56,000	26,000	20,800
27	33,600	44,100	22,000	26,000	61,300	114,000	99,700	67,600	130,000	55,200	26,600	20,400
28	33,600	44,800	30,800	26,000	59,500	112,000	98,600	63,100	127,000	52,800	26,000	20,400
29	33,600	44,100	26,600	26,600	-------	107,000	94,600	60,400	133,000	49,700	24,900	20,400
30	32,900	44,100	25,400	26,600	-------	99,700	91,600	57,700	130,000	46,900	23,400	20,000
31	31,500	-------	26,000	26,000	-------	96,600	-------	67,600	-------	46,900	22,900	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	46,900	23,900	32,000	1,970,000
November	122,000	31,500	57,800	3,440,000
December	47,600	19,600	31,700	1,950,000
January	26,600	16,200	21,000	1,290,000
February	61,300	22,900	30,100	1,670,000
March	147,000	46,200	89,700	5,520,000
April	212,000	74,800	110,000	6,550,000
May	116,000	57,700	77,300	4,750,000
June	254,000	114,000	178,000	10,600,000
July	174,000	46,900	91,000	5,600,000
August	67,600	22,900	35,500	2,180,000
September	26,000	20,000	22,800	1,360,000
The year	254,000	16,200	64,700	46,900,000

MISSOURI RIVER AT WAVERLY, MO.

LOCATION.—Chain gage in sec. 14, T. 51 N., R. 24 W., at bridge on State highway No. 24 at Waverly. Zero of gage is 641.54 feet above mean sea level.
DRAINAGE AREA.—494,000 square miles.
RECORDS AVAILABLE.—March to September, 1929.
EXTREMES.—Maximum discharge during period, 263,000 second-feet June 5 (gage height, 24.9 feet); minimum, 21,300 second-feet Sept. 30 (gage height, 8.5 feet).
Maximum stage known, 25.9 feet July 22, 1915.
REMARKS.—Records fair. Discharge estimated Sept. 6–10. Gage-height record furnished by United States Weather Bureau.

Daily and monthly discharge, in second-feet, 1929

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	97,600	127,000	100,000	77,000	132,000	58 600	24,700
2	92,000	127,000	90.600	153,000	111,000	70 400	24,200
3	79,200	135,000	102,000	208,000	100,000	59 500	23,700
4	70,400	153,000	92,000	245,000	92,000	50 800	23,700
5	70,400	143,000	77,000	263,000	85,200	48 400	23,700
6	68,400	116,000	72,600	254,000	80,400	44 400	25,200
7	68,400	105,000	66,400	242,000	137,000	43 600	24,800
8	100,000	124,000	62,400	228,000	180,000	42 800	24,400
9	106,000	124,000	59,500	233,000	151,000	43 600	24,000
10	93,400	116,000	55,900	233,000	119,000	39 900	23,600
11	79,200	122,000	54,100	219,000	108,000	39 200	23,300
12	94,800	125,000	79,200	177,000	106,000	39 200	26,200
13	99,000	119,000	125,000	157,000	117,000	36 400	26,700
14	108,000	109,000	122,000	151,000	99,000	35 000	26,200
15	155,000	105,000	114,000	155,000	92,000	34 400	25,700
16	175,000	109,000	105,000	170,000	102,000	34 400	24,700
17	147,000	105,000	92,000	177,000	125,000	32 600	24,200
18	127,000	96,200	90,600	163,000	116,000	32 000	23,700
19	130,000	92,000	81,600	145,000	105,000	30 800	22,100
20	114,000	108,000	77,000	139,000	94,800	30 200	22,500
21	106,000	172,000	71,500	141,000	85,200	29 700	22,500
22	127,000	219,000	71,500	170,000	75,900	28 200	22,500
23	105,000	236,000	66,400	211,000	68,400	28 200	22,500
24	92,000	195,000	63,400	225,000	64,400	27,700	22,900
25	79,200	147,000	62,400	214,000	61,400	27,700	22,500
26	105,000	125,000	59,500	168,000	57,700	27,700	22,500
27	125,000	117,000	62,400	137,000	58,600	27,700	22,100
28	135,000	103,000	61,400	130,000	56,800	27,200	22,100
29	132,000	105,000	57,700	130,000	54,100	27,200	21,700
30	122,000	105,000	55,900	137,000	50,800	26 200	21,300
31	119,000	----------	60,400	----------	46,800	25 700	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March	175,000	68,400	107,000	6,580,000
April	236,000	92,000	129,000	7,680,000
May	125,000	54,100	77,800	4,780,000
June	263,000	77,000	182,000	10,800,000
July	180,000	46,800	94,600	5,820,000
August	70,400	25,700	37,100	2,280,000
September	26,700	21,300	23,700	1,410,000
The period	----------	----------	----------	39,400,000

MISSOURI RIVER AT BOONVILLE, MO.

LOCATION.—Chain gage in sec. 35, T. 49 N., R. 17 W., at Missouri-Kansas-Texas Railroad bridge at Boonville. Zero of gage is 565.87 feet above mean sea level. Prior to October 1, 1928, a chain gage on highway bridge one-fourth mile downstream was used; elevation of zero, 562.71 feet above mean sea level.

DRAINAGE AREA.—508,000 square miles.

RECORDS AVAILABLE.—October, 1925, to September, 1929.

EXTREMES.—Maximum discharge during year, 344,000 second-feet June 7 (gage height, 23.7 feet); minimum discharge, 19,400 second-feet Jan. 7 and 8; minimum gage height, 5.0 feet Sept. 8–10.

1925–1929: Maximum discharge, 381,000 second-feet Apr. 23, 1927 (gage height, 23.9 feet present datum); minimum discharge, 12,400 second-feet Dec. 15–18, 1927; minimum gage height, 4.8 feet present datum, Dec. 21, 1927. Maximum stage known, 32.7 feet present datum, June 21, 1844.

REMARKS.—Records good except those for periods of ice effect. Jan. 12–16 and Jan. 23 to Feb. 10, which are poor. Gage-height record furnished by United States Weather Bureau.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	40,200	36,600	55,400	28,700	26,800	114,000	168,000	137,000	90,000	131,000	52,200	26,200
2	34,400	34,400	56,800	27,400	26,800	104,000	188,000	136,000	139,000	125,000	60,100	25,600
3	32,500	51,200	62,400	27,400	26,200	100,000	186,000	131,000	210,000	113,000	74,400	25,000
4	30,700	74,400	61,000	24,400	26,200	103,000	200,000	131,000	260,000	103,000	62,400	24,400
5	30,700	87,200	55,400	21,300	26,200	103,000	190,000	109,000	307,000	96,000	54,900	25,600
6	29,800	92,000	53,100	21,300	26,200	98,800	164,000	96,000	332,000	91,200	52,100	26,200
7	28,900	97,400	48,600	19,400	25,600	94,800	128,000	88,800	344,000	93,600	49,500	25,600
8	28,000	99,200	45,000	19,400	25,000	103,000	125,000	82,800	341,000	150,000	47,700	23,900
9	27,200	93,800	41,500	19,900	24,400	116,000	152,000	75,600	321,000	186,000	47,700	23,900
10	27,200	74,400	36,700	20,400	23,400	127,000	166,000	69,600	293,000	166,000	47,700	23,900
11	26,500	58,200	32,100	24,400	23,400	123,000	164,000	66,000	262,000	144,000	45,900	24,400
12	25,800	52,600	29,400	25,000	22,800	121,000	164,000	87,600	230,000	136,000	43,200	29,400
13	25,800	51,200	28,000	29,400	22,800	127,000	156,000	139,000	200,000	133,000	43,200	30,700
14	25,100	48,400	33,500	30,700	22,300	124,000	133,000	190,000	177,000	136,000	40,700	30,700
15	25,100	48,400	46,800	26,800	23,400	150,000	120,000	186,000	166,000	120,000	38,300	28,700
16	25,800	54,000	54,900	24,400	23,400	213,000	113,000	160,000	158,000	110,000	37,500	27,400
17	40,200	123,000	70,800	22,800	25,000	218,000	118,000	133,000	162,000	116,000	37,500	26,200
18	41,400	254,000	88,800	22,300	28,000	200,000	116,000	124,000	170,000	133,000	36,700	26,200
19	51,200	316,000	88,800	24,400	30,700	200,000	104,000	127,000	162,000	124,000	34,300	25,600
20	58,200	338,000	73,200	28,000	35,900	158,000	102,000	141,000	150,000	113,000	32,800	25,000
21	65,200	330,000	60,100	28,700	33,500	131,000	146,000	124,000	152,000	102,000	32,100	23,900
22	77,600	296,000	50,400	28,000	35,900	128,000	210,000	114,000	158,000	93,600	30,700	26,800
23	68,000	243,000	41,500	27,400	37,500	137,000	251,000	88,800	175,000	86,400	30,700	28,000
24	65,200	198,000	34,300	28,700	38,300	121,000	296,000	80,400	208,000	79,200	29,400	26,200
25	62,400	160,000	28,700	29,400	41,500	110,000	318,000	73,200	228,000	72,000	29,400	25,600
26	52,600	124,000	26,200	29,400	63,600	100,000	296,000	70,800	225,000	66,000	28,700	25,000
27	42,800	92,000	25,000	29,400	79,200	114,000	251,000	70,800	177,000	62,400	30,700	23,900
28	36,600	77,600	25,000	28,000	134,000	134,000	205,000	73,200	139,000	61,200	29,400	23,900
29	39,000	68,000	26,200	28,000	-------	143,000	170,000	70,800	128,000	60,100	28,700	23,900
30	47,000	61,000	32,800	27,400	-------	137,000	148,000	67,200	128,000	57,900	27,400	23,400
31	42,800	-------	31,400	27,400	-------	131,000	-------	79,200	-------	54,900	26,800	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	77,600	25,100	40,400	2,480,000
November	338,000	34,400	124,000	7,380,000
December	88,800	25,000	46,600	2,870,000
January	30,700	19,400	25,800	1,590,000
February	134,000	22,300	34,900	1,940,000
March	218,000	94,800	132,000	8,120,000
April	318,000	104,000	175,000	10,400,000
May	190,000	66,000	107,000	6,580,000
June	344,000	90,000	206,000	12,300,000
July	186,000	54,900	107,000	6,580,000
August	74,400	26,800	40,700	2,500,000
September	30,700	23,400	25,800	1,540,000
The year	344,000	19,400	88,800	64,300,000

MISSOURI RIVER AT ISBELL, MO.

LOCATION.—Staff gage in SW. ¼ sec. 34, T. 45 N., R. 9 W., at Isbell. Zero of gage is 510.0 feet above mean sea level.

DRAINAGE AREA.—524,000 square miles.

RECORDS AVAILABLE.—December, 1928, to September, 1929.

EXTREMES.—Maximum discharge during period, 399,000 second-feet June 8 (gage height, 21.1 feet); minimum discharge, 24,100 second-feet Sept. 30; minimum gage height, 2.6 feet Sept. 11.

REMARKS.—Records fair except those for period of ice effect, Jan. 3 to Feb. 10, which are poor. Discharge estimated Feb. 18–21 and Aug. 15–26.

Daily and monthly discharge, in second-feet, 1928–29

Day	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	117,000	40,000	32,600	149,000	162,000	203,000	99,900	145,000	52,300	27,200
2	107,000	36,500	32,600	136,000	189,000	224,000	154,000	136,000	49,200	27,200
3	99,900	33,800	32,000	128,000	189,000	243,000	262,000	123,000	62,200	26,500
4	91,400	31,200	31,300	128,000	194,000	224,000	321,000	107,000	69,800	25,900
5	75,400	29,900	30,600	123,000	203,000	218,000	355,000	96,500	60,500	27,200
6	63,300	31,200	30,000	119,000	194,000	189,000	376,000	86,300	54,200	27,900
7	56,700	32,500	30,000	113,000	162,000	159,000	396,000	82,900	52,200	28,600
8	51,200	33,800	28,700	102,000	167,000	147,000	399,000	105,000	50,300	27,200
9	47,400	37,900	28,700	113,000	180,000	147,000	379,000	183,000	49,400	27,200
10	44,200	42,100	28,000	138,000	247,000	143,000	345,000	192,000	48,500	25,900
11	39,600	46,700	27,400	134,000	247,000	136,000	304,000	159,000	51,200	25,300
12	36,100	52,600	26,800	127,000	238,000	159,000	272,000	143,000	49,400	27,200
13	34,700	59,200	26,800	136,000	235,000	221,000	281,000	136,000	47,600	30,800
14	34,000	60,300	26,200	132,000	219,000	308,000	227,000	143,000	44,900	32,400
15	38,900	55,900	26,200	152,000	197,000	311,000	206,000	143,000	38,900	30,800
16	51,200	53,700	26,200	256,000	164,000	288,000	197,000	126,000	37,300	29,300
17	67,200	50,800	25,600	265,000	147,000	246,000	189,000	122,000	36,500	28,600
18	98,200	48,300	26,200	230,000	149,000	288,000	200,000	137,000	36,000	27,900
19	117,000	46,700	28,700	218,000	136,000	338,000	200,000	137,000	34,400	27,200
20	113,000	45,100	31,300	192,000	123,000	314,000	175,000	128,000	32,600	25,900
21	99,900	43,500	35,400	157,000	154,000	281,000	167,000	108,000	31,000	25,900
22	86,300	42,800	35,400	132,000	243,000	246,000	178,000	98,000	31,000	25,900
23	72,400	41,400	35,400	140,000	294,000	224,000	206,000	87,900	30,300	25,900
24	63,300	38,200	34,700	136,000	328,000	203,000	243,000	80,400	29,800	29,300
25	53,400	37,500	36,100	117,000	352,000	194,000	281,000	74,800	29,400	27,900
26	44,200	36,800	52,300	127,000	366,000	183,000	294,000	67,200	28,900	26,500
27	37,500	36,100	78,400	125,000	332,000	175,000	259,000	63,900	29,300	26,500
28	34,700	35,400	99,900	143,000	284,000	157,000	212,000	61,700	30,800	25,900
29	33,300	34,700	-------	162,000	239,000	138,000	183,000	61,700	27,900	24,700
30	34,700	34,000	-------	154,000	224,000	107,000	157,000	59,500	27,200	24,100
31	38,200	33,300	-------	140,000	-------	84,600	-------	54,500	27,200	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
December	117,000	33,300	63,900	3,930,000
January	60,300	29,900	41,400	2,550,000
February	99,900	25,600	35,100	1,950,000
March	265,000	102,000	149,000	9,160,000
April	366,000	123,000	219,000	13,000,000
May	338,000	84,600	210,000	12,900,000
June	399,000	99,900	251,000	14,900,000
July	192,000	54,500	111,000	6,820,000
August	69,800	27,200	41,300	2,540,000
September	32,400	24,100	27,300	1,620,000
The period	----------	----------	----------	69,370,000

MISSOURI RIVER AT HERMANN, MO.

LOCATION.—Staff gage in SW. ¼ sec. 25, T. 46 N., R. 5 W., at Hermann. Zero of gage is 481.72 feet above mean sea level.

DRAINAGE AREA.—528,000 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 407,000 second-feet June 8 (gage height, 24.6 feet); minimum, 25,500 second-feet Sept. 30 (gage height, 2.6 feet).

1928–29: Maximum and minimum discharge, same as given above. Maximum stage known, 35.7 feet in June, 1844.

REMARKS.—Records good except those for period of ice effect, Jan. 3 to Feb. 11, which are poor. Discharge estimated Aug. 6–9. Gage-height record furnished by United States Weather Bureau.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	46,100	46,100	119,000	44,300	36,100	156,000	147,000	197,000	114,000	147,000	51,500	29,100
2	43,400	43,400	110,000	41,700	34,600	143,000	197,000	197,000	153,000	141,000	50,600	28,700
3	38,500	36,900	100,000	39,300	34,600	134,000	204,000	254,000	252,000	126,000	59,000	28,300
4	34,600	43,400	93,500	34,600	33,800	130,000	207,000	235,000	330,000	107,000	70,000	27,900
5	33,800	71,500	81,400	32,400	33,100	128,000	222,000	222,000	368,000	95,500	64,000	27,500
6	33,800	83,000	69,700	32,400	32,400	121,000	212,000	182,000	380,000	86,600	56,000	28,700
7	33,100	87,800	60,000	33,800	31,700	110,000	182,000	194,000	398,000	81,800	54,000	29,100
8	31,700	89,000	54,000	36,100	31,000	107,000	149,000	182,000	407,000	85,400	52,000	29,500
9	31,000	90,300	50,000	38,500	30,400	114,000	164,000	184,000	398,000	156,000	51,000	28,700
10	30,400	85,400	46,400	40,900	29,700	135,000	252,000	184,000	356,000	197,000	49,800	27,900
11	29,700	72,600	41,900	45,200	29,000	138,000	282,000	175,000	318,000	169,000	49,800	27,500
12	29,000	60,000	38,300	52,400	29,000	131,000	274,000	164,000	281,000	145,000	53,300	27,500
13	28,400	53,300	35,700	57,000	28,400	138,000	271,000	220,000	304,000	137,000	48,200	29,500
14	27,800	50,600	84,100	64,000	27,800	140,000	252,000	316,000	251,000	135,000	47,400	32,000
15	27,200	48,800	39,300	61,000	27,200	134,000	217,000	335,000	212,000	145,000	44,400	32,500
16	26,600	48,800	47,400	56,000	27,200	268,000	182,000	318,000	192,000	135,000	41,600	31,000
17	29,000	74,800	61,000	54,200	26,600	282,000	160,000	287,000	187,000	125,000	39,600	28,300
18	36,100	175,000	92,000	52,400	26,600	252,000	160,000	253,000	192,000	126,000	38,400	27,900
19	41,700	274,000	116,000	48,800	29,000	230,000	151,000	395,000	207,000	147,000	37,800	27,200
20	45,200	305,000	120,000	47,000	33,800	214,000	135,000	353,000	192,000	137,000	36,000	27,200
21	53,300	308,000	111,000	45,200	38,500	178,000	151,000	304,000	171,000	119,000	34,200	26,400
22	58,000	305,000	95,000	44,300	39,300	147,000	224,000	267,000	169,000	107,000	33,600	26,100
23	66,000	288,000	81,600	43,400	39,300	141,000	280,000	242,000	192,000	97,000	32,500	26,400
24	65,000	257,000	68,700	42,600	39,300	143,000	310,000	223,000	222,000	88,400	31,500	28,700
25	61,000	227,000	59,000	41,700	40,900	126,000	353,000	227,000	277,000	80,000	31,000	28,300
26	60,000	202,000	50,100	40,900	51,500	137,000	368,000	195,000	296,000	73,000	30,500	27,200
27	53,300	175,000	41,100	40,100	77,000	133,000	341,000	185,000	277,000	68,000	30,000	26,800
28	49,700	153,000	36,700	39,300	92,900	135,000	288,000	177,000	224,000	64,000	31,000	26,400
29	42,600	139,000	36,300	38,500	-------	158,000	246,000	154,000	190,000	62,000	30,500	25,800
30	40,100	130,000	36,300	37,700	-------	160,000	220,000	120,000	162,000	60,000	29,500	25,500
31	47,000	-------	43,400	36,900	-------	153,000	-------	107,000	-------	57,000	29,100	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	66,000	26,600	41,100	2,530,000
November	308,000	36,900	134,000	7,970,000
December	120,000	34,100	66,700	4,100,000
January	64,000	32,400	44,000	2,710,000
February	92,900	26,600	36,800	2,040,000
March	282,000	107,000	155,000	9,530,000
April	368,000	135,000	227,000	13,500,000
May	395,000	107,000	227,000	14,000,000
June	407,000	114,000	256,000	15,200,000
July	197,000	57,000	113,000	6,950,000
August	70,000	29,100	43,200	2,660,000
September	32,500	25,500	28,100	1,670,000
The year	407,000	25,500	114,000	82,860,000

GRASSHOPPER CREEK BASIN

GRASSHOPPER CREEK NEAR DILLON, MONT.

LOCATION.—Chain gage in NW. ¼ sec. 26, T. 8 S., R. 10 W., 5 miles above Barratts and 14 miles above Dillon.

DRAINAGE AREA.—360 square miles.

RECORDS AVAILABLE.—March, 1921, to September, 1929.

EXTREMES.—Maximum discharge during year, 172 second-feet June 18 (gage height, 5.45 feet); minimum (estimated), 3 second-feet Aug. 20–28.

1921–1929: Maximum discharge, 557 second-feet June 5, 1925 (gage height, 6.52 feet); minimum, 0.5 second-foot Aug. 28 to Sept. 3, 1924 (gage height, 3.85 feet).

REMARKS.—Records good except those for Nov. 16–19, 28–30, and Aug. 20–28, which are estimated. Observations discontinued Dec. 1 to Mar. 9 and Sept. 15–30. Numerous small diversions above gage.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept
1	13	37	--------	73	64	51	29	8	6
2	13	37	--------	70	76	59	26	27	6
3	14	37	--------	128	82	61	24	22	5
4	14	37	--------	96	82	64	21	19	5
5	16	37	--------	128	82	43	19	16	5
6	17	37	--------	96	82	43	19	15	6
7	19	37	--------	67	82	48	22	15	6
8	18	37	--------	64	85	53	21	14	7
9	21	37	--------	59	82	61	18	13	7
10	21	37	26	53	79	73	18	11	7
11	22	33	30	48	73	76	15	10	7
12	24	35	32	43	73	73	7	10	8
13	24	35	28	43	79	73	7	9	8
14	24	37	23	51	89	76	7	9	8
15	26	37	26	59	82	79	11	7	--------
16	29	37	28	61	82	96	14	7	--------
17	33	37	28	85	85	161	10	7	--------
18	33	37	28	107	89	172	10	7	--------
19	31	37	28	118	99	161	11	6	--------
20	31	37	23	92	107	161	14	3	--------
21	31	35	28	96	110	114	19	3	--------
22	31	33	26	103	118	89	18	3	--------
23	31	33	25	110	139	73	14	3	--------
24	31	33	26	96	161	59	16	3	--------
25	33	33	28	67	139	51	15	3	--------
26	33	33	30	85	128	51	13	3	--------
27	33	33	32	96	118	43	13	3	--------
28	33	33	40	99	103	41	11	3	--------
29	33	30	36	107	92	39	10	4	--------
30	35	30	90	92	82	33	9	5	--------
31	35	--------	56	--------	59	--------	9	6	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	35	13	25.9	1,590
November	37	30	35.3	2,100
March 10–31	90	23	32.6	1,420
April	128	43	83.1	4,940
May	161	59	93.6	5,760
June	172	33	75.9	4,520
July	29	7	15.2	935
August	27	3	8.8	541
September 1–14	8	5	6.5	180

RUBY RIVER BASIN

RUBY RIVER NEAR ALDER, MONT.

LOCATION.—Staff gage in SW. ¼ sec. 21, T. 6 S., R. 4 W., 1,000 feet below highway bridge and 1½ miles south of Alder.

RECORDS AVAILABLE.—April to September, 1929.

EXTREMES.—Maximum discharge during period, 745 second-feet May 25 (gage height, 3.55 feet); minimum, 5.0 second-feet Aug. 30 (gage height, 0.50 foot).

REMARKS.—Records good. Numerous diversions above station.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	-------	147	336	112	17	10	16	-------	213	400	74	19	85
2	-------	138	409	104	17	11	17	-------	239	472	79	19	79
3	-------	138	239	82	16	13	18	-------	226	400	68	19	76
4	-------	147	213	79	17	17	19	-------	266	350	213	21	62
5	-------	138	226	79	25	27	20	-------	336	322	167	19	79
6	-------	129	294	74	29	34	21	-------	379	294	189	25	81
7	-------	129	350	68	19	68	22	-------	505	294	112	23	129
8	-------	120	409	65	19	74	23	-------	606	266	68	16	97
9	-------	129	409	54	23	79	24	-------	572	213	65	16	104
10	-------	129	440	51	16	82	25	-------	745	213	41	14	104
11	-------	120	350	41	19	85	26	-------	538	189	41	16	104
12	-------	120	379	31	19	82	27	-------	350	167	41	11	112
13	-------	213	350	23	17	82	28	147	322	167	17	7.4	112
14	-------	239	409	41	17	79	29	157	294	147	17	6.2	112
15	-------	213	409	41	16	76	30	167	213	147	19	5.0	104
							31	-------	266	-------	19	8.6	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 28-30	167	147	157	934
May	745	120	268	16,500
June	472	147	309	18,400
July	213	17	70.2	4,320
August	29	5.0	17.1	1,050
September	129	10	75.3	4,480
The period	----------	----------	----------	45,700

BIG HOLE RIVER BASIN

BIG HOLE RIVER NEAR MELROSE, MONT.

LOCATION.—Chain gage in SE. ¼ sec. 27, T. 3 S., R. 9 W., at highway bridge at Browns siding on Oregon Short Line Railroad 6 miles south of Melrose.

RECORDS AVAILABLE.—March, 1924, to September, 1929.

EXTREMES.—Maximum discharge during year, 7,100 second-feet June 19 (gage height, 6.38 feet); minimum, 216 second-feet Mar. 26 (gage height, 1.12 feet).

1924–1929: Maximum stage, from high-water mark, 14.0 feet June 10, 1927 (discharge not determined); minimum discharge, that of Mar. 26, 1929.

REMARKS.—Records good except those for Dec. 2–4, Mar. 31, and Apr. 2–13, which are estimated. Observations discontinued Dec. 17 to Mar. 16. Some small diversions above station. Flow partly regulated.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	460	500	365	--------	327	1,570	3,030	1,860	449	288
2	480	525	353	--------		1,260	3,370	1,640	449	300
3	500	500	341	--------		1,210	3,200	1,570	449	288
4	500	500	329	--------		1,160	3,030	1,440	428	288
5	500	500	318	--------		1,060	2,860	1,440	428	288
6	550	525	340	--------		1,000	3,200	1,210	428	276
7	550	460	340	--------		1,060	3,540	1,060	428	276
8	525	460	352	--------	330	1,100	4,040	1,000	410	276
9	500	500	340	--------		1,100	4,220	1,060	391	288
10	525	580	352	--------		1,160	4,400	960	374	300
11	500	500	352	--------		1,210	4,580	915	374	288
12	500	500	365	--------		1,380	4,940	798	357	288
13	480	480	365	--------		1,640	4,940	760	342	288
14	525	460	365	--------	327	2,020	5,120	691	342	276
15	580	480	379	--------	357	1,860	5,120	691	327	276
16	610	460	379	--------	410	1,710	5,880	659	314	276
17	610	460	--------	357	517	2,020	6,680	659	300	276
18	645	379	--------	300	569	2,180	6,890	659	300	276
19	645	379	--------	300	659	2,520	7,100	691	288	276
20	610	460	--------	288	760	2,690	5,500	691	288	276
21	610	460	--------	300	875	2,860	4,760	835	276	276
22	580	442	--------	288	1,000	3,370	3,870	659	276	288
23	550	442	--------	288	1,260	4,040	3,370	627	265	288
24	550	425	--------	288	1,100	4,040	3,030	598	254	300
25	550	409	--------	225	1,160	4,040	2,690	543	265	300
26	525	393	--------	216	1,260	4,040	2,860	517	254	300
27	500	425	--------	494	2,350	4,040	2,690	470	254	314
28	500	460	--------	470	1,640	3,540	2,690	470	265	314
29	525	409	--------	428	3,030	3,030	2,520	449	254	327
30	500	379	--------	410	2,860	2,860	2,350	449	254	327
31	500	--------	--------	368	--------	2,690	--------	449	265	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	645	460	538	33,100
November	580	379	462	27,500
December 1–16	379	318	352	11,200
March 17–31	494	216	335	9,970
April	3,030	327	814	48,400
May	4,040	1,000	2,240	138,000
June	7,100	2,350	4,080	243,000
July	1,860	449	855	52,600
August	449	254	334	20,500
September	327	276	290	17,300

BOULDER RIVER BASIN

BOULDER RIVER NEAR BOULDER, MONT.

LOCATION.—Wire gage in sec. 32, T. 6 N., R. 4 W., at highway bridge 2 miles southeast of Boulder.

RECORDS AVAILABLE.—April to September, 1929.

EXTREMES.—Maximum discharge during period, 1,480 second-feet May 25 (gage height, 9.90 feet); minimum, 8 second-feet Aug. 20 and 22 (gage height, 5.80 feet).

REMARKS.—Records good. Discharge estimated July 12–14, Aug. 4, and 5. Numerous diversions above station.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	------	250	978	222	14	14	16	------	502	778	90	14	22
2	------	280	1,080	196	22	14	17	------	682	978	84	22	52
3	------	382	878	172	22	14	18	------	682	778	78	41	22
4	------	346	778	140	22	22	19	------	778	737	72	14	14
5	------	346	928	130	22	31	20	------	878	637	66	8	22
6	------	150	828	130	22	22	21	------	1,030	597	61	18	31
7	------	150	878	150	22	22	22	------	1,200	548	56	8	41
8	------	150	928	196	14	14	23	------	1,300	467	51	14	31
9	------	196	828	172	22	14	24	------	1,420	420	46	14	41
10	------	172	778	130	31	22	25	------	1,480	382	41	14	52
11	------	209	978	120	18	31	26	------	1,030	382	26	14	52
12	------	346	878	114	14	31	27	------	928	346	22	11	52
13	------	502	778	108	18	41	28	------	878	280	22	22	65
14	------	502	682	102	8	22	29	546	778	280	22	22	65
15	------	460	636	96	14	22	30	382	730	250	22	14	52
							31	------	878	------	22	14	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 29–30	546	382	464	1,840
May	1,480	150	633	38,900
June	1,080	250	689	41,000
July	222	22	95.5	5,870
August	41	8	17.7	1,090
September	65	14	31.7	1,890
The period				90,600

SOUTH BOULDER CREEK BASIN

SOUTH BOULDER CREEK NEAR JEFFERSON ISLAND, MONT.

LOCATION.—Water-stage recorder in sec. 18, T. 2 S., R. 3 W., 200 feet above headworks of power pipe line of Liberty-Montana Mines Co. and 16 miles southwest of Jefferson Island.

RECORDS AVAILABLE.—May, 1926, to September, 1929.

EXTREMES.—Maximum discharge during year, 434 second-feet June 16 (gage height, 3.50 feet); minimum, 2.0 second-feet Apr. 12 (gage height, 0.90 foot).

1926-1929: Maximum and minimum discharge, same as given above.

REMARKS.—Records good except those for estimated periods, which are fair. No diversions.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15.0	10.6							114	152	47	23
2	15.0	11.0							112	145	46	25
3	15.5	16.0							105	[a] 136	44	23
4	15.0								101	[a] 127	41	23
5	15.5		11.0						107	[a] 119	38	23
6	15.5							[a] 4.5	128	111	38	23
7	15.0			10.2					152	105	37	22
8	15.0					4.6			163	89	35	21
9	15.0								171	84	34	22
10	15.0	12.0	8.4		10.2				177	88	31	23
11	13.5			11.0				5.8	179	89	29	23
12	14.0						2.0	[a] 8.2	181	89	28	22
13	18.0							[a] 10.6	194	85	27	21
14						2.8		13	220	84	27	21
15					5.2		2.8	[a] 16	211	83	26	23
16		11.0	8.4					[a] 21	310	83	26	21
17								[a] 26	169	83	25	21
18								[a] 33	125	79	26	21
19				8.4		4.0		40	108	79	25	20
20								47	100	79	26	23
21	15.0				4.6		4.0	63	101	71	25	28
22		12.0						80	101	69	25	25
23				7.0				101	[a] 113	66	25	26
24								127	[a] 125	61	26	26
25						3.2		130	138	61	27	26
26								114	152	61	26	26
27					4.0			96	146	57	27	25
28								85	171	52	27	[a] 25
29		11.0		7.8				79	173	51	28	[a] 25
30	12.0							78	163	48	28	[a] 25
31	10.6							87		48	25	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	18.0	10.6	14.8	910
November			[a] 11.0	655
December			[a] 9.0	553
January			[a] 8.0	492
February			[a] 6.5	361
March			[a] 3.5	215
April			[a] 3.0	179
May	130	4.5	42.1	2,590
June	310	101	150	8,930
July	152	48	85.0	5,230
August	47	25	30.5	1,880
September	28	21	23.4	1,390
The year	310		32.3	23,400

[a] Estimated.

WILLOW CREEK BASIN

WILLOW CREEK NEAR WILLOW CREEK, MONT.

LOCATION.—Wire gage in SW. ¼ sec. 18, T. 1 S., R. 1 E., at highway bridge 7 miles south of Willow Creek.

DRAINAGE AREA.—164 square miles.

RECORDS AVAILABLE.—September, 1919, to September, 1929.

EXTREMES.—Maximum discharge during year, 222 second-feet June 24 (gage height, 3.00 feet); minimum, 11 second-feet Aug. 27 (gage height, 1.10 feet). 1919–1929: Maximum discharge, 456 second-feet June 21 and 22, 1922 (gage height, 3.40 feet); minimum, 3 second-feet Nov. 27, 1926.

REMARKS.—Records fair prior to Apr. 25 and good thereafter. Observations discontinued Dec. 1 to Mar. 29. Numerous diversions above and below station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	23	43	-------	60	82	82	105	34	17
2	25	45	-------	59	82	82	105	34	17
3	20	43	-------	58	82	76	88	32	18
4	21	47	-------	58	82	71	82	30	20
5	20	45	-------	55	82	76	66	32	21
6	21	39	-------	53	88	71	71	32	23
7	24	38	-------	58	88	71	71	30	21
8	21	36	-------	60	88	71	66	26	24
9	21	34	-------	66	93	71	54	26	24
10	25	34	-------	59	88	71	45	23	27
11	28	36	-------	56	82	66	43	23	26
12	27	34	-------	58	82	66	41	23	24
13	27	29	-------	53	93	82	39	20	24
14	28	27	-------	57	117	129	53	18	23
15	30	27	-------	60	117	180	71	18	22
16	30	26	-------	58	123	194	58	17	22
17	28	27	-------	60	135	194	54	16	21
18	31	24	-------	66	123	194	51	17	21
19	33	26	-------	71	129	194	46	17	23
20	28	27	-------	71	129	194	46	16	24
21	33	26	-------	76	135	194	45	16	28
22	33	24	-------	71	135	208	46	15	50
23	31		-------	88	141	208	45	15	71
24	31		-------	71	167	222	43	15	49
25	30		-------	66	180	154	52	13	43
26	33	25	-------	71	194	105	48	13	37
27	35		-------	76	194	105	43	11	41
28	35		-------	82	154	117	41	17	42
29	37		-------	82	117	117	39	21	43
30	37		40	82	111	105	37	18	45
31	38	-------	50	-------	105	-------	36	17	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	38	20	28.5	1,750
November	47	24	31.2	1,860
April	88	53	65.4	3,890
May	194	82	117	7,190
June	222	66	126	7,500
July	105	36	55.8	3,430
August	34	11	21.1	1,300
September	71	17	29.7	1,770

MADISON RIVER BASIN

MADISON RIVER NEAR WEST YELLOWSTONE, MONT.

LOCATION.—Water-stage recorder just north of highway to West Yellowstone, and 4 miles east of West Yellowstone and west boundary of Yellowstone National Park. Staff gage at Riverside ranger station, 3 miles downstream, was used from Dec. 1 to Apr. 20.

DRAINAGE AREA.—410 square miles.

RECORDS AVAILABLE.—June, 1913, to September, 1929.

EXTREMES.—Maximum discharge during year, 1,330 second-feet May 25 (gage height, 2.02 feet); minimum, 327 second-feet Aug. 31 (gage height, 1.13 feet).

1913–1929: Maximum discharge, 1,950 second-feet June 10, 1917; minimum, 284 second-feet Feb. 2, 1924.

REMARKS.—Records good except those for estimated periods, which are fair. No diversions or regulation above station. Attendant for recorder and observer for staff gage furnished by National Park Service.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	452	424	434	[a] 424	434	[a] 425	[a] 413	[a] 520	840	522	433	[a] 333
2	433	414	434	424	434	424	[a] 413	[a] 510	902	484	433	[a] 338
3	462	424	434	424	[a] 434	[a] 426	413	[a] 510	802	475	414	[a] 344
4	471	433	424	424	434	[a] 429	[a] 408	[a] 510	710	471	424	[a] 350
5	471	433	434	424		[a] 432	402	[a] 500	732	462	442	[a] 355
6	462	462	[a] 434	[a] 422		434	402	[a] 500	815	452	414	361
7	462	442	[a] 434	[a] 420		[a] 434	[a] 402	[a] 500	828	452	395	395
8	452	442	434	[a] 417		434	[a] 402	[a] 500	828	462	395	386
9	433	433	[a] 434	[a] 415		434	402	[a] 500	890	442	378	386
10	452	433	434	413	[a] 400	[a] 431	402	[a] 500	878	433	378	386
11	480	414	444	402		[a] 427	[a] 397	[a] 500	852	433	378	386
12	452	404	434	392		424	392	[a] 550	890	424	370	386
13	471	414	434	[a] 397		424	392	[a] 590	828	[a] 438	378	378
14	471	414	434	[a] 401		[a] 420	402	602	840	452	378	378
15	452	404	424	[a] 406		[a] 417	[a] 418	560	828	452	378	370
16	462	386	[a] 418	[a] 410	392	413	[a] 434	570	[a] 900	433	386	370
17	452	395	413	[a] 415	382	[a] 418	[a] 450	602	[a] 850	424	386	361
18	490	386	413	[a] 419	[a] 391	424	466	570	[a] 800	414	395	361
19	452	[a] 390	413	424	[a] 399	424	[a] 477	622	[a] 750	414	386	370
20	442	[a] 393	413		[a] 408	424	488	686	[a] 700	424	370	370
21	462	[a] 397	[a] 413		[a] 417	402	[a] 475	767	[a] 675	424	370	424
22	452	[a] 401	[a] 413		[a] 425	392	[a] 470	828	654	414	370	[a] 424
23	433	[a] 404	[a] 413		434	[a] 399	[a] 460	928	675	404	370	[a] 424
24	433	[a] 408	[a] 413		[a] 433	[a] 406	[a] 455	1,020	664	404	370	[a] 424
25	433	[a] 412	[a] 413	[a] 420	[a] 431	413	[a] 450	1,220	664	404	361	[a] 424
26	433	[a] 416	413		[a] 430	413	[a] 450	978	654	404	352	[a] 424
27	433	[a] 419	413		[a] 428	[a] 418	[a] 450	790	633	395	370	[a] 424
28	433	[a] 423	434		[a] 427	424	[a] 475	721	612	395	344	424
29	433	[a] 427	434		-------	[a] 418	[a] 525	710	602	386	344	[a] 425
30	433	[a] 430	424		-------	413	[a] 525	654	560	395	370	[a] 425
31	433	-------	424		-------	[a] 413	-------	710	-------	414	327	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	490	433	451	1.10	1.27	27,700
November	462	386	416	1.01	1.13	24,800
December	444	413	425	1.04	1.20	26,100
January	----------	392	417	1.02	1.18	25,600
February	----------	382	412	1.00	1.04	22,900
March	434	392	420	1.02	1.18	25,800
April	525	392	437	1.07	1.19	26,000
May	1,220	500	653	1.59	1.83	40,200
June	902	560	762	1.86	2.08	45,300
July	522	386	432	1.05	1.21	26,600
August	442	327	383	.934	1.08	23,600
September	425	333	387	.944	1.05	23,000
The year	1,220	327	466	1.14	15.44	338,000

[a] Estimated.

MADISON RIVER AT LYON, MONT.

LOCATION.—Staff gage in SE. ¼ sec. 29, T. 10 S., R. 1 E., at highway bridge at Lyon.

RECORDS AVAILABLE.—August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 3,360 second-feet several days during August (gage height, 2.40 feet); minimum, 385 second-feet July 9 (gage height, 0.65 foot).

1928–29: Maximum and minimum discharge, same as given above.

REMARKS.—Records good. No diversions. Complete regulation at Hebgen Reservoir.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,470	950	950	2,090	2,190	2,190	950	680	1,020	810	2,700	3,130
2	1,160	950	950	1,900	2,290	2,190	950	680	680	810	2,910	3,130
3	1,090	1,090	950	1,900	2,090	2,190	1,020	745	810	680	2,910	3,020
4	1,090	1,020	950	2,090	2,190	2,390	950	745	810	680	2,910	2,910
5	1,090	1,090	950	2,090	2,290	2,700	1,090	680	1,090	584	2,910	2,800
6	1,160	1,090	1,090	1,900	2,290	2,700	950	680	1,390	500	2,910	2,700
7	1,320	1,090	1,060	1,720	2,490	2,090	950	680	1,550	440	2,910	2,700
8	1,470	1,090	1,060	1,720	2,490	2,090	1,090	706	1,810	440	3,130	2,700
9	1,390	1,090	1,240	1,470	2,290	2,090	1,090	745	2,190	385	3,130	2,700
10	1,320	1,020	1,240	1,240	2,290	1,720	950	784	2,190	418	3,130	2,700
11	1,240	1,020	1,240	1,160	2,290	1,470	1,090	810	2,090	810	2,700	2,700
12	1,240	1,090	1,240	1,090	2,090	1,320	950	810	1,720	950	2,910	2,700
13	1,090	1,160	1,090	1,160	2,090	1,240	950	810	1,470	1,160	3,360	2,620
14	1,020	1,240	1,240	1,160	2,290	1,240	950	745	1,390	1,240	3,360	2,490
15	1,020	1,210	1,240	1,090	2,290	1,240	950	810	1,720	1,090	3,130	2,490
16	1,090	810	1,240	950	2,390	1,240	1,090	784	1,550	1,090	3,130	2,290
17	1,090	745	1,160	1,020	2,700	1,240	950	706	1,240	1,240	3,130	2,290
18	1,090	745	1,090	950	1,720	1,240	950	745	1,240	1,390	3,130	2,190
19	1,060	810	1,320	950	1,720	1,240	1,020	950	950	1,720	3,360	2,090
20	978	810	1,240	1,020	1,900	1,090	950	1,240	620	1,720	3,360	2,090
21	950	838	1,240	1,240	1,900	950	950	1,390	890	1,390	3,240	2,090
22	880	978	1,160	1,470	1,900	950	950	1,550	890	1,550	3,360	2,090
23	810	1,020	1,090	1,720	1,900	950	680	1,810	1,090	1,550	3,360	2,290
24	680	978	1,240	2,000	1,900	950	680	2,000	1,240	1,720	3,360	2,290
25	1,090	1,060	1,390	2,090	1,900	1,020	810	1,210	1,390	1,720	3,130	2,090
26	1,090	1,090	1,390	2,390	1,900	1,160	745	1,120	1,390	2,090	3,130	2,190
27	1,090	1,020	1,390	2,490	1,900	1,090	810	1,020	1,390	2,090	3,130	2,090
28	1,020	838	1,390	2,490	2,090	1,020	680	745	1,390	2,090	3,020	2,090
29	1,090	880	1,390	2,490	-------	950	680	880	1,390	2,090	2,910	1,550
30	950	950	1,640	2,290	-------	950	745	880	1,090	2,290	2,800	1,390
31	978	-------	1,810	2,190	-------	950	-------	950	-------	2,290	2,910	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,470	680	1,100	67,600
November	1,240	745	992	59,000
December	1,810	950	1,220	75,000
January	2,490	950	1,660	102,000
February	2,700	1,720	2,130	118,000
March	2,700	950	1,480	91,000
April	1,090	680	919	54,700
May	2,000	680	938	57,700
June	2,190	620	1,320	78,600
July	2,290	385	1,260	77,500
August	3,360	2,700	3,080	189,000
September	3,130	1,390	2,420	144,000
The year	3,360	385	1,540	1,110,000

MADISON RIVER NEAR THREE FORKS, MONT.

LOCATION.—Wire gage in sec. 29, T. 2 N., R. 2 E., at highway bridge 1½ miles east of Three Forks.

RECORDS AVAILABLE.—November, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 3,280 second-feet Sept. 4 (gage height, 3.58 feet); minimum, 795 second-feet Nov. 19 (gage height, 2.34 feet).

REMARKS.—Records good except those for periods of ice effect, Dec. 3–13, 22–31, and Jan. 1–6, which are fair. Observations discontinued Jan. 17 to Mar. 12. Flow regulated for power by storage in Hebgen Reservoir and by Madison River power dam. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Nov.	Dec.	Jan.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	1,100		-------	1,610	1,610	1,610	1,540	2,440	3,130
2	-------	840		-------	1,610	1,610	1,610	1,470	2,440	3,130
3	-------	880		-------	1,540	1,610	1,610	1,540	2,700	3,130
4	-------	920	2,430	-------	1,540	1,610	1,610	1,470	3,130	3,280
5	-------	960		-------	1,610	1,610	1,610	1,470	3,130	3,130
6	-------	1,000		-------	1,610	1,610	1,610	1,240	2,980	3,130
7	-------	1,040	2,570	-------	1,610	1,610	1,540	1,140	2,980	3,130
8	1,040	1,080	2,570	-------	1,610	1,610	1,540	1,040	3,130	3,130
9	1,040	1,120	2,570	-------	1,610	1,610	1,610	1,090	2,980	2,980
10	1,040	1,160	2,440	-------	1,540	1,540	1,610	1,090	3,130	2,840
11	1,040	1,200	2,200	-------	1,540	1,540	1,610	1,090	3,130	2,700
12	1,210	1,240	2,200	-------	1,540	1,540	1,610	1,090	3,130	2,700
13	1,390	1,280	1,980	1,880	1,540	1,540	1,610	1,140	2,980	2,700
14	1,390	1,310	1,980	1,780	1,540	1,540	1,700	1,300	3,130	2,700
15	1,310	1,310	1,700	1,700	1,610	1,540	1,700	1,240	3,130	2,700
16	1,270	1,310	1,540	1,610	1,610	1,610	1,780	1,240	2,980	2,700
17	1,270	1,390	-------	1,610	1,610	1,610	1,880	1,240	2,980	2,700
18	1,040	1,310	-------	1,610	1,610	1,610	2,700	1,190	2,980	2,700
19	795	1,570	-------	1,610	1,610	1,610	2,440	1,140	3,130	2,700
20	1,040	1,570	-------	1,610	1,610	1,610	1,980	1,140	3,130	2,570
21	1,310	1,750	-------	1,610	1,610	1,610	2,200	1,470	3,130	2,570
22	1,210		-------	1,610	1,540	1,610	2,440	1,540	3,130	2,570
23	1,310		-------	1,610	1,610	1,610	1,610	1,700	3,130	2,570
24	1,040		-------	1,610	1,540	1,610	1,610	1,780	3,130	2,440
25	1,040		-------	1,610	1,610	1,610	1,610	1,880	3,130	2,440
26	840	2,020	-------	1,610	1,540	1,610	1,610	1,980	2,980	2,320
27	1,270		-------	1,540	1,610	1,610	1,350	2,090	3,130	2,320
28	990		-------	1,610	1,610	1,610	1,350	2,090	3,130	2,320
29	990		-------	1,610	1,610	1,610	1,470	2,090	3,130	2,320
30	1,040		-------	1,610	1,610	1,610	1,540	2,200	3,130	2,320
31	-------		-------	1,610	-------	1,610	-------	2,440	3,130	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
November 8–30	1,390	795	1,130	51,600
December	----------	840	1,470	90,400
January 1–16	----------	1,540	2,270	72,000
March 13–31	1,880	1,610	1,630	61,400
April	1,610	1,540	1,590	94,600
May	1,610	1,540	1,600	98,400
June	2,700	1,350	1,730	103,000
July	2,440	1,090	1,490	91,600
August	3,130	2,440	3,030	186,000
September	3,280	2,320	2,740	163,000

GALLATIN RIVER BASIN

GALLATIN RIVER AT LOGAN, MONT.

LOCATION.—Wire gage at highway bridge in sec. 26, T. 2 N., R. 2 E., half a mile west of Logan.

RECORDS AVAILABLE.—August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 4,570 second-feet June 17 (gage height, 6.44 feet); minimum, 265 second-feet Aug. 5 (gage height, 2.56 feet). 1928–29: Maximum and minimum discharge, same as given above.

REMARKS.—Records excellent except those for period of ice effect, Dec. 6 to Mar. 2, which are fair. Discharge estimated Sept. 21–28.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	695	945	790	645	800	620	758	988	2,120	2,120	305	370
2	725	865	790	735	870	620	828	905	2,820	1,870	285	370
3	725	828	758	675	905	638	1,210	945	2,670	1,750	285	392
4	790	865	695	675	800	638	1,080	905	2,250	1,520	285	415
5	790	905	638	675	735	725	1,030	905	2,120	1,310	265	415
6	758	945	705	705	620	1,030	945	828	2,250	1,210	285	460
7	790	945	705	735	545	1,030	865	828	2,670	945	285	460
8	790	945	765	765	480	1,120	790	790	2,820	865	325	460
9	790	945	765	765	430	905	758	790	3,130	758	325	460
10	828	945	835	765	465	1,030	758	905	3,130	665	305	460
11	865	945	735	765	500	1,120	758	865	3,130	560	305	485
12	945	905	705	735	480	905	725	828	3,130	560	305	485
13	865	905	735	735	500	790	758	865	3,130	535	325	460
14	945	988	800	705	480	725	790	1,160	3,130	560	305	460
15	945	945	675	705	500	695	865	1,210	3,810	610	305	460
16	945	905	675	675	525	665	905	1,160	4,370	585	285	485
17	945	905	705	675	500	695	945	1,310	4,370	585	305	485
18	988	905	735	675	500	725	945	1,520	3,630	560	348	485
19	988	828	800	620	500	725	905	1,630	3,290	560	348	510
20	988	865	735	620	480	695	945	1,870	2,670	610	325	510
21	988	905	705	570	765	725	1,030	1,990	2,670	610	325	524
22	988	865	735	525	620	725	1,030	2,390	2,390	560	325	538
23	988	865	675	430	465	725	905	2,820	2,390	535	325	553
24	945	865	705	395	480	665	988	3,460	2,390	510	325	567
25	945	828	735	290	525	665	865	4,180	2,390	665	325	581
26	945	865	835	500	545	695	828	3,460	2,390	392	325	596
27	945	865	705	595	525	790	790	2,820	2,530	325	325	610
28	945	865	735	645	620	905	865	2,390	2,390	305	325	624
29	905	758	705	705	------	758	865	2,250	2,390	305	348	638
30	905	725	675	800	------	1,030	1,030	1,870	2,390	285	370	638
31	945	------	675	800	------	865	------	1,870	------	285	392	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	988	695	889	54,700
November	988	725	888	52,800
December	835	638	730	44,900
January	800	290	655	40,300
February	905	430	577	32,000
March	1,120	620	795	48,900
April	1,210	725	892	53,100
May	4,180	790	1,640	101,000
June	4,370	2,120	2,830	168,000
July	2,120	285	759	46,700
August	392	265	317	19,500
September	638	370	499	29,700
The year	4,370	265	955	692,000

CROW CREEK BASIN

CROW CREEK NEAR RADERSBURG, MONT.

LOCATION.—Water-stage recorder in NE. ¼ sec. 23, T. 6 N., R. 1 W., at Glendale ranger station 1 mile above mouth of Slim Sam Creek and 6 miles northwest of Radersburg.

RECORDS AVAILABLE.—April, 1924, to September, 1929; discontinued. May, 1919, to September, 1922, at old location 600 feet below mouth of Slim Sam Creek. Records comparable except during spring run-off.

EXTREMES.—Maximum discharge during year, 537 second-feet May 24 (gage height, 3.42 feet); minimum, 7.2 second-feet Nov. 8 (gage height, 1.00 foot).

1919–1922, 1924–1929: Maximum discharge, 817 second-feet June 8, 1920; minimum, 2.1 second-feet Dec. 13, 1924 (gage height, 0.73 foot).

REMARKS.—Records fair. Discharge estimated Oct. 7–15 and Nov. 2–4. Observations discontinued Nov. 10 to Apr. 25. No diversions above gage.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	13	11	-------	30	232	86	23	14
2	12	11	-------	29	257	80	25	16
3	16	13	-------	32	214	78	25	17
4	16	13	-------	34	183	72	28	18
5	16	15	-------	32	179	66	24	18
6	15	13	-------	30	197	63	22	20
7	15	11	-------	28	230	62	22	20
8	15	11	-------	27	251	73	21	20
9	15	12	-------	30	257	61	20	19
10	15	-------	-------	31	240	54	19	26
11	15	-------	-------	33	243	48	18	23
12	15	-------	-------	49	243	44	17	20
13	15	-------	-------	78	206	41	16	17
14	15	-------	-------	84	197	39	16	17
15	15	-------	-------	75	185	36	15	23
16	15	-------	-------	87	197	32	15	20
17	18	-------	-------	105	224	30	16	18
18	20	-------	-------	122	188	28	17	17
19	17	-------	-------	141	166	28	17	16
20	16	-------	-------	183	147	25	17	16
21	15	-------	-------	251	132	24	16	19
22	14	-------	-------	333	125	22	16	24
23	14	-------	-------	414	122	22	16	20
24	13	-------	-------	448	118	21	16	22
25	13	-------	-------	363	110	20	15	22
26	13	-------	20	240	109	21	15	23
27	13	-------	22	181	100	22	15	22
28	13	-------	28	160	96	22	15	23
29	13	-------	38	147	94	22	15	23
30	14	-------	37	140	90	22	17	22
31	14	-------	-------	172	-------	22	14	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	20	12	14.8	910
November 1-9	15	11	12.2	218
April 26-30	38	20	29.0	288
May	448	27	133	8,180
June	257	90	178	10,600
July	86	20	41.5	2,550
August	28	14	18.2	1,120
September	26	14	19.8	1,180

PRICKLY PEAR CREEK BASIN

PRICKLY PEAR CREEK NEAR CLANCY, MONT.

LOCATION.—Staff gage in SW. ¼ sec. 34, T. 9 N., R. 3 W., one-fourth mile below mouth of Lump Gulch Creek and 1¼ miles north of Clancy.

DRAINAGE AREA.—178 square miles.

RECORDS AVAILABLE.—July, 1910, to September, 1916; July, 1921, to September, 1929. July, 1908, to June, 1909, at old site 1 mile below.

EXTREMES.—Maximum discharge during year, 273 second-feet May 22–24 (gage height, 2.6 feet); minimum, 13 second-feet Aug. 25, 26, Sept. 3, 4, and 8 (gage height, 0.71 foot).

1908–1916, 1921–1929: Maximum discharge, 492 second-feet June 3, 1927 (gage height, 3.8 feet); minimum, 9.3 second-feet Sept. 9, 1924 (gage height, 0.71 foot).

REMARKS.—Records good prior to Aug. 6 and fair thereafter. Observations discontinued Nov. 26 to Mar. 5. Several diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20	33	-------	41	92	207	50	29	14
2	19	31	-------	41	99	198	50	29	14
3	20	30	-------	42	99	189	51	29	13
4	20	30	-------	53	106	216	51	29	13
5	20	28	-------	44	73	198	50	29	16
6	20	27	43	53	81	198	51	28	20
7	20	30	45	41	85	198	51	28	21
8	20	29	42	48	92	198	51	26	13
9	22	29	46	49	92	172	51	23	14
10	25	26	48	45	73	163	51	23	16
11	28	26	44	43	88	189	51	22	33
12	30	26	43	44	122	198	50	20	40
13	31	25	40	46	138	198	50	19	29
14	31	25	36	54	122	207	44	16	20
15	31	25	45	57	130	172	38	15	22
16	32	25	44	65	122	172	36	14	23
17	35	25	37	58	163	207	34	14	23
18	36	25	36	58	114	172	34	16	22
19	36	25	35	65	146	154	34	16	21
20	32	25	37	59	146	138	32	16	21
21	30	25	38	64	216	122	33	16	22
22	32	25	38	78	273	114	34	15	32
23	30	25	38	76	273	114	34	15	30
24	30	25	48	67	273	99	30	14	32
25	30	26	37	58	254	92	29	13	31
26	30	-------	38	67	216	67	29	13	32
27	30	-------	50	78	235	51	28	[a] 14	33
28	30	-------	62	70	244	51	29	[a] 15	36
29	32	-------	67	85	207	51	29	[a] 15	36
30	33	-------	43	106	207	54	29	16	36
31	32	-------	49	-------	207	-------	29	16	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	36	19	28.0	1,720
November 1–25	33	25	26.8	1,340
March 6–31	67	35	43.4	2,240
April	106	41	58.5	3,480
May	273	73	154	9,470
June	216	51	152	9,040
July	51	28	40.1	2,470
August	29	13	19.5	1,200
September	40	13	24.3	1,450

[a] Estimated.

TENMILE CREEK NEAR RIMINI, MONT.

LOCATION.—Water-stage recorder in NE. ¼ sec. 20, T. 9 N., R. 5 W., at Moose Creek ranger station, 500 feet above mouth of Moose Creek and 3 miles north of Rimini.

DRAINAGE AREA.—34 square miles.

RECORDS AVAILABLE.—March, 1915, to September, 1929.

EXTREMES.—Maximum discharge during year, 400 second-feet May 23 (gage height, 2.58 feet); no flow at times in October, August, and September.

1915–1929: Maximum discharge, 948 second-feet May 15, 1917 (gage height, 4.87 feet); no flow at times in 1928 and 1929.

REMARKS.—Records good. Discharge estimated Oct. 13–17. No record Nov. 13 to Apr. 30. Small diversions above station. Flow partly regulated by reservoir on one tributary above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	May	June	July	Aug.	Day	Oct.	Nov.	May	June	July	Aug.
1	0	0.6	18	201	8.0	1.1	16	4.4	-------	98	72	4.3	0
2	0	.8	18	190	6.9	2.4	17	5.2	-------	114	88	3.1	0
3	0	1.0	21	150	6.1	.5	18	6.1	-------	130	62	1.7	0
4	0	2.1	21	135	5.8	.2	19	4.7	-------	160	60	1.1	0
5	0	1.3	18	145	5.5	.1	20	4.5	-------	187	49	.8	0
6	.3	1.9	16	155	5.3	0	21	3.5	-------	223	39	.6	0
7	.7	2.7	16	155	7.2	0	22	2.7	-------	258	33	.5	0
8	.5	2.4	17	152	9.3	0	23	2.2	-------	313	28	.4	0
9	.4	3.1	21	137	9.3	0	24	2.2	-------	335	24	.3	0
10	.8	1.9	23	120	8.4	0	25	1.7	-------	258	22	1.9	0
11	1.1	2.4	39	118	8.0	0	26	1.7	-------	192	18	1.4	0
12	1.0	.8	50	105	6.4	0	27	1.3	-------	160	16	.4	0
13	1.8	-------	69	86	5.5	0	28	.9	-------	150	13	2.5	0
14	2.7	-------	78	72	5.0	0	29	.6	-------	140	11	1.4	0
15	3.6	-------	82	62	5.5	0	30	.8	-------	142	9.3	.4	0
							31	.3	-------	179	-------	.4	0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	6.1	0	1.80	111
November 1–12	3.1	.6	1.75	50
May	335	16	114	7,010
June	201	9.3	84.2	5,010
July	9.3	.3	3.98	245
August	2.4	0	.14	8.6

NOTE.—No flow during September.

TENMILE CREEK NEAR HELENA, MONT.

LOCATION.—Water-stage recorder in SE. ¼ sec. 22, T. 10 N., R. 4 W., opposite Broadwater Hotel, near Helena. Prior to Mar. 16, 1929, gage was 100 feet downstream and at different datum.

DRAINAGE AREA.—103 square miles.

RECORDS AVAILABLE.—July, 1908, to September, 1929.

EXTREMES.—Maximum discharge during year, 450 second-feet May 23 (gage height, 2.70 feet); no flow July 26 to Sept. 19.

1908–1929: Maximum discharge, 865 second-feet May 28, 1917, and June 11, 1927; maximum gage height, 6.58 feet, old datum, June 11, 1927; no flow for several periods during record.

REMARKS.—Records good. Discharge interpolated Mar. 10–16 and June 16–21 and estimated Sept. 7–15. No record Oct. 1 to Mar. 6 and Sept. 25–30. Diversions for irrigation and city water supply of Helena above station.

Daily and monthly discharge, in second-feet, 1928

Day	Mar.	Apr.	May	June	July	Sept.	Day	Mar.	Apr.	May	June	July	Sept.
1	-------	8.7	41	197	22	0	16	5.8	12	112	63	7.0	0
2	-------	11	36	207	20	0	17	5.8	16	137	60	3.7	0
3	-------	11	41	152	18	0	18	5.8	18	137	57	2.4	0
4	-------	12	38	140	15	0	19	5.8	18	177	54	1.0	0
5	4.8	12	36	143	13	0	20	5.8	22	211	51	1.0	.1
6	4.5	12	34	143	11	0	21	5.8	26	261	48	.8	.3
7	4.8	12	33	130	12		22	5.8	27	302	46	.8	.5
8	4.5	11	30	134	14		23	5.8	30	340	45	.6	1.0
9	4.8	7.3	37	137	11		24	5.8	24	336	38	.5	1.3
10	4.9	8.7	39	124	7.3		25	4.7	21	323	32	.1	------
11	5.0	7.0	45	108	7.2	0	26	5.1	22	240	29	0	------
12	5.1	7.3	72	105	7.2		27	6.2	25	215	22	0	------
13	5.2	6.6	92	86	7.1		28	12	38	184	18	0	------
14	5.4	8.2	101	69	7.0		29	15	53	170	17	0	------
15	5.6	11	92	66	7.3		30	12	51	155	21	0	------
							31	12	-------	190	-------	0	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March 5-31	15	4.5	6.44	349
April	53	6.6	18.3	1,090
May	340	30	137	8,420
June	207	17	84.7	5,040
July	22	0	6.35	390
September 1-24	1.3	0	.10	

NOTE.—No flow during August.

LITTLE PRICKLY PEAR CREEK BASIN

LITTLE PRICKLY PEAR CREEK NEAR MARYSVILLE, MONT.

LOCATION.—Staff gage in SW. ¼ sec. 18, T. 12 N., R. 6 W., one-fourth mile below mouth of Deadman Creek and 6 miles northwest of Marysville.

DRAINAGE AREA.—69 square miles.

RECORDS AVAILABLE.—May, 1913, to September, 1929. April to May, 1913, at site one-fourth mile upstream. May, 1909, to December, 1911, at station above mouth of Deadman Creek.

EXTREMES.—Maximum discharge during year, 146 second-feet May 24 (gage height, 1.64 feet); minimum, 11 second-feet Nov. 15 to Dec. 16 (gage height, 0.40 foot).

1909–1911, 1913–1929: Maximum discharge, 454 second-feet May 25 and 26, 1917 (gage height, 3.8 feet); minimum, 1.2 second-feet Mar. 7–13, 1911 (gage height, 2.28 feet, old gage).

REMARKS.—Records good prior to July 6 and fair thereafter. Observations discontinued Dec. 17 to Apr. 20. Some diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Apr.	May	June	July	Aug.	Sept.
1	17	15	11	-------	22	60	33	16	13
2	17	15	11	-------	22	65	32	16	13
3	17	15	11	-------	22	68	32	16	13
4	17	15	11	-------	22	62	30	16	12
5	17	15	11	-------	22	58	29	16	12
6	17	15	11	-------	23	56	29	16	12
7	17	15	11	-------	24	54	28	16	12
8	17	15	11	-------	23	52	28	16	13
9	17	13	11	-------	23	52	27	16	13
10	17	13	11	-------	25	51	26	16	13
11	17	13	11	-------	25	50	25	15	13
12	17	13	11	-------	28	50	24	15	13
13	17	13	11	-------	38	49	24	15	13
14	17	13	11	-------	50	48	22	14	13
15	17	11	11	-------	55	48	22	13	13
16	17	11	11	-------	57	46	22	13	13
17	17	11	-------	-------	59	45	22	13	13
18	17	11	-------	-------	65	45	20	13	12
19	17	11	-------	-------	71	43	20	13	12
20	17	11	-------	-------	82	41	19	13	12
21	17	11	-------	16	99	41	19	13	12
22	17	11	-------	16	113	40	19	13	12
23	16	11	-------	16	126	38	19	13	12
24	16	11	-------	16	136	38	18	13	12
25	16	11	-------	16	136	37	18	13	12
26	16	11	-------	16	111	34	18	13	12
27	16	11	-------	16	93	33	18	13	15
28	16	11	-------	19	79	33	18	13	14
29	16	11	-------	20	70	33	17	13	14
30	16	11	-------	22	65	33	16	13	14
31	16	-------	-------	-------	61	-------	16	13	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	17	16	16.7	1,030
November	15	11	12.5	744
December 1–16	11	11	11	349
April 21–30	22	16	17.3	343
May	136	22	59.6	3,660
June	68	33	46.8	2,780
July	33	16	22.9	1,410
August	16	13	14.2	873
September	15	12	12.7	756

DEARBORN RIVER BASIN

DEARBORN RIVER NEAR CLEMONS, MONT.

LOCATION.—Wire gage in NW. ¼ sec. 26, T. 18 N., R. 7 W., 300 feet above highway bridge, 2 miles below mouth of Falls Creek, and 5 miles southwest of Clemons.

DRAINAGE AREA.—122 square miles.

RECORDS AVAILABLE.—April, 1921, to September, 1923; May to September, 1929. May, 1908, to December, 1911, at station half a mile above mouth of Falls Creek.

EXTREMES.—Maximum discharge during year, 958 second-feet May 24 (gage height, 3.11 feet); minimum, 19 second-feet Sept. 24 (gage height, 0.81 foot).

1921–1923, 1929: Maximum discharge, 1,340 second-feet June 6, 1922 (gage height, 3.70 feet); minimum, 10 second-feet Oct. 17–21, 1922 (gage height, 0.84 foot).

REMARKS.—Records good except those for Sept. 24–30, which are fair. Several small diversions above gage.

Daily and monthly discharge, in second-feet, 1929

Day	May	July	Aug.	Sept.	Day	May	July	Aug.	Sept.
1		116	35	24	16		66	25	22
2		111	31	24	17		51	25	22
3		102	31	24	18		39	25	22
4		97	31	24	19		38	25	20
5		97	29	24	20		39	25	20
6		97	28	24	21		41	25	20
7		109	27	24	22		41	25	20
8		95	27	24	23		41	25	20
9		89	27	24	24	[a] 958	41	25	19
10	[a] 152	89	27	24	25		40	25	20
11		86	27	24	26		39	25	23
12		76	25	24	27		38	25	32
13		68	25	23	28		37	25	44
14		68	25	22	29		36	25	44
15		67	25	22	30	[a] 351	37	24	40
					31		37	24	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
July	116	36	65.4	4,020
August	35	24	26.4	1,620
September	44	19	24.8	1,480
The period				7,120

[a] Result of discharge measurement.

SMITH RIVER BASIN

SMITH RIVER NEAR WHITE SULPHUR SPRINGS, MONT.

LOCATION.—Wire gage in SW. ¼ sec. 33, T. 11 N., R. 8 E., at Meachem ranch, 14 miles northeast of White Sulphur Springs.

RECORDS AVAILABLE.—September, 1922, to September, 1929.

EXTREMES.—Maximum discharge during year, 64 second-feet May 24 (gage height, 2.50 feet); minimum, 3.9 second-feet Sept. 1 and 18–20 (gage height, 1.83 feet).

1922–1929: Maximum discharge, 224 second-feet June 21, 1923 (gage height, 3.05 feet); minimum, 3.1 second-feet Mar. 8, 1923.

REMARKS.—Records good except those for periods of ice effect, Nov. 1–9, 11, 12, 15–20, and 23–30, which are fair. Observations discontinued Dec. 1 to Apr. 27. Small diversions above gage.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	12	14	-------	29	39	25	12	3.9
2	12	14	-------	25	54	25	13	5.1
3	13	14	-------	23	58	22	14	5.1
4	14	13	-------	25	56	21	14	5.1
5	13	13	-------	23	54	21	14	5.1
6	12	13	-------	22	48	21	11	5.1
7	12	13	-------	23	50	21	11	5.5
8	12	12	-------	26	50	20	11	5.8
9	12	12	-------	25	46	20	11	5.8
10	13	12	-------	25	46	16	9.2	5.8
11	12	12	-------	25	48	14	9.7	5.8
12	14	13	-------	27	44	14	9.2	5.5
13	18	13	-------	25	40	14	9.2	5.5
14	12	9	-------	25	40	15	8.4	5.1
15	13	9	-------	21	40	14	8.4	5.1
16	12	10	-------	21	39	14	8.4	4.7
17	13	10	-------	20	42	12	7.9	4.7
18	12	11	-------	20	40	12	7.9	3.9
19	13	11	-------	21	36	12	8.4	3.9
20	10	12	-------	22	33	13	7.9	3.9
21	10	12	-------	30	31	10	7.5	4.7
22	10	14	-------	42	29	9.7	7.0	5.8
23	9.5	-------	-------	48	28	9.7	7.0	6.2
24	10	-------	-------	64	24	11	7.0	7.5
25	9.5	-------	-------	59	24	11	6.2	7.5
26	9.5	-------	-------	62	21	10	5.5	7.0
27	10	-------	-------	59	20	7.5	4.7	7.0
28	10	-------	46	59	20	11	4.7	7.0
29	10	-------	46	45	20	11	5.1	6.2
30	13	-------	31	36	24	11	4.3	6.6
31	14	-------	-------	36	-------	12	4.3	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	18	9.5	11.9	732
November 1-22	14	9.0	12.1	528
May	64	20	32.7	2,010
June	58	20	38.1	2,270
July	25	7.5	14.8	910
August	14	4.3	8.67	533
September	7.5	3.9	5.53	329

SMITH RIVER AT TRULY, MONT.

LOCATION.—Wire gage at highway bridge in SW. ¼ sec. 35, T. 9 N., R. 2 E., at former post office of Truly.

RECORDS AVAILABLE.—March, 1905, to June, 1907; March to September, 1929.

EXTREMES.—Maximum discharge during year, 2,500 second-feet May 25 (gage height, 4.90 feet); minimum, 64 second-feet Sept. 1 and 2 (gage height, 1.03 feet).

1905–1907, 1929: Maximum discharge, 4,010 second-feet June 24, 1907 (gage height, 9.00 feet, old datum); minimum, 26 second-feet Sept. 22–28, 1905 (gage height, 1.15 feet).

REMARKS.—Records good. Several diversions above station.

Daily and monthly discharge, in second-feet, 1929

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	392	983	1,740	501	127	64
2	-------	352	913	2,200	478	135	64
3	-------	392	913	2,200	456	142	74
4	-------	413	848	1,820	434	142	81
5	-------	434	848	1,640	413	137	93
6	-------	392	788	1,560	413	127	97
7	-------	352	730	1,460	456	119	100
8	-------	352	730	1,560	501	114	100
9	-------	352	788	1,640	478	112	112
10	-------	275	913	1,640	434	109	122
11	-------	294	913	1,640	392	107	112
12	-------	313	1,130	1,640	372	102	112
13	-------	313	1,560	1,560	352	97	112
14	-------	313	1,740	1,460	332	95	112
15	-------	352	1,460	1,290	332	91	109
16	-------	352	1,380	1,290	313	89	107
17	-------	478	1,560	1,290	294	89	105
18	-------	548	1,560	1,290	275	81	100
19	-------	572	1,560	1,130	257	81	97
20	239	597	1,640	1,060	239	79	97
21	275	674	1,820	913	229	79	100
22	275	730	2,110	848	215	77	117
23	189	788	2,200	788	192	75	117
24	167	730	2,400	730	179	70	137
25	173	622	2,500	702	167	70	148
26	189	597	2,200	648	162	70	189
27	222	674	2,020	597	153	69	189
28	332	848	1,820	597	142	69	205
29	674	1,130	1,640	548	137	68	189
30	572	1,210	1,460	501	129	66	189
31	434	-------	1,460	-------	129	66	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March 20–31	674	167	312	7,430
April	1,210	275	528	31,400
May	2,500	730	1,440	88,500
June	2,200	501	1,270	75,600
July	501	129	308	18,900
August	142	66	95.3	5,860
September	205	64	118	7,020
The period	-------	-------	-------	235,000

MARIAS RIVER BASIN

MARIAS RIVER NEAR SHELBY, MONT.

LOCATION.—Water-stage recorder in sec. 20, T. 31 N., R. 2 W., at highway bridge 7 miles south of Shelby. Gage moved 100 feet downstream Nov. 28, 1929.

DRAINAGE AREA.—2,610 square miles.

RECORDS AVAILABLE.—April, 1902, to January, 1908; April, 1911, to September, 1929.

EXTREMES.—Maximum discharge during year, 4,460 second-feet June 3 (gage height, 6.16 feet); minimum, 161 second-feet Aug. 21 (gage height, 2.00 feet).

1902–1908, 1911–1929: Maximum discharge 29,500 second-feet June 24, 1907 (gage height, 14.9 feet); minimum, 10 second-feet Aug. 20, 1919 (gage height, 1.50 feet).

REMARKS.—Records good. Discharge estimated July 13–18 and 24–31. Observations discontinued Oct. 20 to Nov. 27, Dec. 2 to Mar. 4, Aug. 1–17, and Sept. 2–30. Numerous diversions from tributary. Storage in several reservoirs on tributaries partly controls flow.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	298		303		636	1,810	2,290	882		192
2	298				609	1,700	3,380	834		
3	298				616	1,590	4,380	720		
4	293				636	1,700	4,120	662		
5	298			1,640	554	1,760	3,460	629		
6	360			1,640	373	1,540	3,000	629		
7	381			1,480	359	1,380	2,850	698		
8	386			1,480	359	1,330	2,780	850		
9	408			1,480	359	1,380	2,850	810		
10	506			1,480	345	1,480	2,850	539		
11	748			1,480	345	1,480	2,920	486		
12	898			1,480	340	1,640	3,080	452		
13	852			1,480	459	2,220	2,920	430		
14	822			1,430	388	2,850	2,780	447		
15	800			1,430	419	3,150	2,560	444		
16	748			1,430	486	2,780	2,560	442		
17	720			1,430	677	2,560	2,420	440		
18	785			1,380	772	2,560	2,160	438	186	
19	913			1,380	706	2,560	1,920	436	171	
20				980	677	2,780	1,700	409	171	
21				866	772	3,080	1,590	378	168	
22				858	818	3,460	1,380	363	174	
23				720	1,000	3,780	1,330	359	176	
24				677	1,190	4,040	1,280		174	
25				655	1,060	4,200	1,200		176	
26				590	990	3,950	1,100		176	
27				552	1,130	3,150	1,060	275	178	
28		354		684	1,480	2,780	1,030		181	
29		288		980	1,700	2,420	962		184	
30		259		944	1,920	2,160	917		192	
31				713		2,160			194	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October 1–19	913	293	560	21,400
March 5–31	1,640	552	1,160	62,100
April	1,920	340	730	43,800
May	4,200	1,330	2,430	149,000
June	4,380	917	2,290	136,000
July	882	275	48[illegible]	29,700
August 18–31	194	168	179	4,970

MARIAS RIVER NEAR BRINKMAN, MONT.

LOCATION.—Wire gage in NW. ¼ sec. 21, T. 29 N., R. 8 E., at Brinkman ranch, 4 miles southwest of Brinkman post office.

RECORDS AVAILABLE.—October, 1921, to September, 1929.

EXTREMES.—Maximum discharge during year, 4,880 second-feet June 3 (gage height, 4.78 feet); minimum, 139 second-feet Aug. 26 (gage height, 0.70 foot).

1921–1929: Maximum discharge, 14,300 second-feet June 1, 1927 (gage height, 9.2 feet); minimum, 106 second-feet Aug. 26–29, 1926 (gage height, 0.68 foot).

Maximum stage known 18.0 feet, from high-water marks, during flood of 1908 (discharge not determined).

REMARKS.—Records good except those for Dec. 1 to Mar. 25, which are estimated. Numerous diversions from tributaries. Storage in several reservoirs on tributaries.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	385	570					742	1,820	2,330	990	262	155
2	378	610					742	1,820	2,610	990	262	155
3	372	570					695	1,700	4,360	945	262	164
4	372	530					695	1,590	4,360	902	262	164
5	372	530					610	1,590	3,710	818	352	155
6	359	530				250	570	1,700	3,100	734	376	164
7	359	492					455	1,590	2,660	692	294	168
8	372	455					413	1,390	2,660	692	257	172
9	385	455					378	1,340	2,660	775	241	180
10	399	455					413	1,290	2,800	860	241	189
11	413	455					455	1,490	2,800	902	226	194
12	530	455					455	1,590	2,800	775	208	189
13	840	455					448	1,590	2,800	692	246	189
14	890	455					492	2,200	2,660	692	189	189
15	890	455			200		492	2,900	2,660	651	180	189
16	890	492	300	250		500	570	3,050	2,520	651	168	180
17	890	455					695	2,610	2,520	610	160	180
18	890	455					890	2,470	2,380	571	155	176
19	890	455					990	2,470	2,120	532	147	180
20	890	434					990	2,610	1,870	496	151	172
21	940	530					990	2,750	1,750	996	147	172
22	940	610					990	2,900	1,530	427	151	180
23	840	610				2,000	1,040	3,350	1,420	394	147	189
24	840	570					1,090	3,660	1,320	388	147	194
25	742	492					1,140	3,820	1,320	364	147	180
26	742	492				1,190	1,290	3,820	1,270	339	139	172
27	695	492				742	1,190	3,500	1,220	288	160	180
28	695	455				790	1,140	3,050	1,120	294	155	185
29	652	492			-------	652	1,390	2,610	1,080	283	155	189
30	610	530			-------	840	1,700	2,330	1,040	272	164	189
31	610	-------			-------	840	-------	2,330	-------	267	164	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	990	359	651	40,000
November	610	434	501	29,900
December	----------	----------	300	18,400
January	----------	----------	250	15,400
February	----------	----------	200	11,100
March	----------	----------	728	44,800
April	1,700	378	805	47,900
May	3,820	1,290	2,350	144,000
June	4,360	1,040	2,320	138,000
July	990	267	606	37,300
August	376	139	204	12,500
September	194	155	178	10,600
The year	----------	----------	760	426,000

BIRCH CREEK AT SWIFT DAM, NEAR DUPUYER, MONT.

LOCATION.—Staff gage near southwest corner of sec. 23, T. 28 N., R. 10 W., just below Swift Dam and 20 miles west of Dupuyer.

DRAINAGE AREA.—75 square miles.

RECORDS AVAILABLE.—March, 1913, to September, 1926; October, 1927, to September, 1929.

EXTREMES.—Maximum discharge during year, 757 second-feet Aug. 12 (gage height, 3.74 feet); minimum, 8 second-feet Oct. 12 to Mar. 14 and Apr. 27 to May 29 (gage height, 1.76 feet).

1913–1926, 1927–1929: Maximum discharge, 5,275 second-feet June 21, 1916; no flow Oct. 2, 1918, and Jan. 2 and 3, 1920.

REMARKS.—Records good. Two small diversions above station. Flow regulated by gate operations at Swift Dam except when water overflows into spillway. Complete data furnished by Valier-Montana Land & Water Co.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	215	8	8	8	8	8	9	8	9	217	161	68
2	215	8	8	8	8	8	9	8	9	418	158	67
3	215	8	8	8	8	8	9	8	9	418	158	45
4	215	8	8	8	8	8	9	8	9	418	158	34
5	215	8	8	8	8	8	9	8	9	407	158	25
6	168	8	8	8	8	8	9	8	9	350	158	14
7	60	8	8	8	8	8	9	8	9	350	457	10
8	17	8	8	8	8	8	9	8	9	350	705	10
9	17	8	8	8	8	8	9	8	9	350	616	10
10	17	8	8	8	8	8	9	8	9	350	151	10
11	12	8	8	8	8	8	9	8	9	350	210	10
12	8	8	8	8	8	8	9	8	9	350	757	10
13	8	8	8	8	8	8	28	8	10	350	720	10
14	8	8	8	8	8	8	65	8	10	350	703	10
15	8	8	8	8	8	12	65	8	10	350	642	10
16	8	8	8	8	8	17	77	8	10	350	618	10
17	8	8	8	8	8	17	95	8	10	350	450	10
18	8	8	8	8	8	13	121	8	10	368	340	10
19	8	8	8	8	8	9	166	8	10	387	352	10
20	8	8	8	8	8	9	241	8	10	387	486	10
21	8	8	8	8	8	9	280	8	10	387	405	10
22	8	8	8	8	8	9	280	8	10	387	83	10
23	8	8	8	8	8	9	280	8	10	411	77	10
24	8	8	8	8	8	9	192	8	10	431	77	10
25	8	8	8	8	8	9	17	8	10	424	75	10
26	8	8	8	8	8	9	11	8	11	418	68	10
27	8	8	8	8	8	9	8	8	11	411	68	10
28	8	8	8	8	8	9	8	8	10	378	68	10
29	8	8	8	8	------	9	8	8	10	161	68	10
30	8	8	8	8	------	9	8	9	10	161	68	10
31	8	------	8	8	------	9	------	9	------	161	68	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	215	8	49.2	3,030
November	8	8	8.0	476
December	8	8	8.0	492
January	8	8	8.0	422
February	8	8	8.0	444
March	17	8	9.3	572
April	280	8	68.6	4,080
May	9	8	8.1	498
June	11	9	9.7	577
July	431	161	353	21,700
August	757	68	300	18,400
September	68	10	16.4	976
The year	757	8	71.5	51,700

BIRCH CREEK NEAR DUPUYER, MONT.

LOCATION.—Staff gage in sec. 28, T. 29 N., R. 8 W., half a mile above B Canal head gates and 12 miles northwest of Dupuyer.

DRAINAGE AREA.—110 square miles.

RECORDS AVAILABLE.—July, 1907, to September, 1926; October, 1927, to September, 1929.

EXTREMES.—Maximum discharge during year, 817 second-feet Aug. 13 (gage height, 2.56 feet); minimum, less than 10 second-feet during December.

1907–1926, 1927–1929: Maximum discharge (estimated), 5,000 second-feet June 21, 1916 (gage height, 10. 0 feet); minimum, 3 second-feet Apr. 7, 1921.

REMARKS.—Records good except those for period of ice effect, Nov. 2 to Mar. 14, which are fair. Two or three small diversions above station. Flow largely controlled by gate operations at Swift Dam. Complete records furnished by Valier-Montana Land & Water Co.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	203	23				12	24	66	511	243	184	99
2	210	23				12	24	63	551	437	188	99
3	210	23				12	30	60	437	443	181	99
4	210	22				12	22	58	362	460	178	66
5	210	22				12	14	57	348	466	175	59
6	210	22				13	24	66	414	420	175	26
7	136	21				14	27	96	426	404	290	28
8	60	21				15	23	128	414	393	676	28
9	47	21				16	21	158	426	393	782	28
10	46	20				17	33	161	426	383	251	28
11	46	20				18	20	190	449	383	208	24
12	41	19				19	20	326	404	378	757	24
13	36	19				19	20	426	383	383	800	22
14	34	18				19	20	459	372	383	782	21
15	34	18			11	19	20	351	343	383	700	20
16	33	17	10	11		18	18	312	338	383	669	18
17	31	17				24	20	336	307	383	558	18
18	30	16				24	23	334	262	383	420	18
19	28	16				15	111	383	251	426	404	18
20	26	15				18	173	443	222	426	518	17
21	25	15				15	267	511	215	420	537	17
22	25	14				16	292	594	208	414	258	16
23	25	14				15	307	700	215	414	149	16
24	25	13				16	302	700	201	460	134	16
25	25	13				24	88	601	204	460	123	17
26	25	12				20	87	455	201	449	115	22
27	24	11				25	66	404	191	449	112	20
28	24	10				22	57	357	188	437	104	18
29	24	10			-------	28	76	324	188	208	102	18
30	24	10			-------	29	71	338	181	184	104	17
31	23	-------			-------	31	-------	388	-------	184	104	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	210	23	69.4	4,270
November	23	10	17.2	1,020
December	----------	----------	10	615
January	----------	----------	11	676
February	----------	----------	11	611
March	31	12	18.4	1,130
April	307	14	76.7	4,560
May	700	57	318	19,600
June	551	181	321	19,100
July	466	184	388	23,900
August	800	102	346	21,300
September	99	16	31.2	1,860
The year	800	----------	136	98,600

DUPUYER CREEK NEAR VALIER, MONT.

LOCATION.—Water stage recorder in NE. ¼ NW. ¼ sec. 33, T. 29 N., R. 6 W., 1,000 feet above diversion dam at head of D Canal, 6 miles below mouth of Sheep Creek, and 11 miles southwest of Valier.

DRAINAGE AREA.—111 square miles.

RECORDS AVAILABLE.—July, 1912, to September, 1926; October, 1927, to September, 1929.

EXTREMES.—Maximum discharge during year, 170 second-feet June 2 (gage height, 3.70 feet); no flow Sept. 1 and 2.

1912–1926, 1927–1929: Maximum discharge, 2,180 second-feet June 21, 1916 (gage height, 6.5 feet); no flow Sept. 19, 1919, and Sept. 1 and 2, 1929.

REMARKS.—Records good except those for periods of ice effect, which are fair. Several diversions above station. Flow somewhat regulated by operation of head gates above station. Complete records furnished by Valier-Montana Land & Water Co.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	30	[a] 30				[a] 10	64	102	135	27	5	0
2	31	[a] 30				[a] 10	49	95	170	23	6	0
3	31	[a] 28				[a] 15	42	93	131	19	7	2
4	31	[a] 26				[a] 15	49	97	108	18	8	3
5	31	25				[a] 15	[a] 40	86	97	16	9	4
6	31	35				[a] 15	[a] 40	80	88	15	9	5
7	31	40				[a] 20	[a] 40	76	78	20	9	6
8	30	31				[a] 20	[a] 40	75	75	32	8	5
9	30	31				[a] 35	[a] 30	78	73	36	7	7
10	31	31				[a] 40	[a] 30	86	75	30	7	7
11	[a] 24	30				[a] 20	[a] 30	93	95	28	6	6
12	[a] 18	30				[a] 15	[a] 30	110	83	25	7	5
13	[a] 30	29				[a] 20	42	126	70	24	7	5
14	34	29				[a] 30	50	131	64	22	8	5
15	34	[a] 25			[a] 10.0	[a] 40	56	120	66	19	7	5
16	35	25	[a] 14	[a] 11		[a] 50	59	110	69	18	6	3
17	35	29				[a] 50	57	116	63	15	6	4
18	40	27				[a] 50	63	120	60	15	6	5
19	42	[a] 28				[a] 42	62	120	56	14	6	5
20	41	31				[a] 45	66	120	54	13	5	5
21	40	29				[a] 53	67	126	49	10	5	4
22	37	28				[a] 55	70	133	45	9	5	4
23	38	28				[a] 55	81	139	54	8	2	4
24	38	29				[a] 55	70	142	50	8	2	5
25	37	[a] 25				[a] 55	75	133	44	7	1	6
26	36	[a] 25				64	95	122	43	6	1	13
27	36	[a] 25				55	104	120	38	5	1	18
28	36	[a] 25				55	106	124	35	5	1	16
29	35	[a] 25			-------	[a] 50	114	108	30	5	1	13
30	34	[a] 25			-------	[a] 50	114	100	27	5	1	13
31	33	-------			-------	[a] 50	-------	97	-------	4	1	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	42	18	33.5	2,060
November	40	25	28.5	1,700
December	-------	-------	14.0	861
January	-------	-------	11.0	676
February	-------	-------	10.0	555
March	64	10	37.2	2,290
April	114	30	61.2	3,640
May	142	75	109	6,700
June	170	27	71.8	4,210
July	36	4	16.2	996
August	9	1	5.2	320
September	18	0	6.1	363
The year	170	0	33.7	24,400

[a] Stage-discharge relation affected by ice.

DRY FORK OF MARIAS RIVER AT FOWLER, MONT.

LOCATION.—Wire gage near center of sec. 31, T. 30 N., R. 1 W., at highway bridge one-fourth mile northeast of depot at Fowler.

RECORDS AVAILABLE.—March, 1920, to September, 1929.

EXTREMES.—Maximum discharge during year, 189 second-feet June 3 (gage height, 1.82 feet); minimum, 2.2 second-feet Nov. 1 and 8 (gage height, 0.28 foot).

1920–1929: Maximum discharge, 1,220 second-feet Apr. 14, 1920 (gage height, 6.20 feet); no flow at times.

REMARKS.—Records good. Observations discontinued Nov. 22 to Mar. 25. Practically all flow diverted and controlled.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.1	2.4	-------	44	51	9.4	8.1	34	6.1
2	4.3	3.7	-------	32	44	127	8.5	34	6.5
3	4.9	5.2	-------	44	46	189	9.0	31	6.1
4	5.8	5.2	-------	55	44	104	7.7	189	6.9
5	5.5	4.6	-------	40	40	80	7.7	146	7.7
6	4.3	3.1	-------	32	46	55	8.5	94	7.3
7	4.6	2.8	-------	8.1	48	32	19	34	6.9
8	4.9	2.4	-------	8.1	29	26	38	26	6.9
9	6.2	4.6	-------	8.1	34	23	34	25	6.1
10	8.0	6.2	-------	8.1	31	22	28	25	6.5
11	6.9	5.8	-------	8.1	34	44	25	25	6.1
12	6.6	5.5	-------	7.7	31	62	23	23	6.1
13	9.8	5.2	-------	42	29	80	19	22	5.7
15	12.4	5.2	-------	57	35	55	18	19	5.3
14	11.9	4.9	-------	84	25	34	13	19	6.1
16	11.1	4.9	-------	136	13	20	12.1	19	5.3
17	9.8	4.6	-------	127	9.4	40	11.2	18	6.1
18	8.6	5.5	-------	100	8.5	28	11.2	19	6.1
19	8.6	6.2	-------	110	6.9	17	12.1	16	5.7
20	7.6	9.0	-------	127	5.3	15	13.0	17	6.1
21	8.0	4.3	-------	100	4.5	8.5	19	13.0	6.1
22	6.6	-------	-------	94	5.7	8.5	26	11.2	5.7
23	6.9	-------	-------	86	4.1	10.3	29	8.5	6.5
24	7.2	-------	-------	86	4.1	9.4	29	7.7	6.9
25	7.6	-------	-------	79	4.3	10.3	34	8.5	5.3
26	6.9	-------	41	80	4.5	10.3	36	6.9	6.9
27	5.8	-------	52	100	4.5	9.8	36	7.7	8.5
28	5.2	-------	59	94	5.3	10.8	34	7.7	10.3
29	4.9	-------	63	77	8.5	10.3	36	7.3	10.3
30	4.0	-------	60	55	8.5	7.7	36	6.9	8.5
31	2.5	-------	66	-------	8.1	-------	32	6.9	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	12.4	2.5	6.79	418
November 1–21	9.0	2.4	4.59	191
March 26–31	66	41	56.8	676
April	127	7.7	64.3	3,830
May	51	4.1	21.7	1,330
June	189	7.7	38.6	2,300
July	38	7.7	21.7	1,330
August	189	6.9	29.9	1,840
September	10.3	5.3	6.69	398

TETON RIVER NEAR FORT BENTON, MONT.

LOCATION.—Wire gage in SE. ¼ sec. 31, T. 25 N., R., 9 E., at Embletcn ranch, 6 miles north of Fort Benton.

RECORDS AVAILABLE.—March to September, 1929.

EXTREMES.—Maximum discharge during period, 668 second-feet June 10 (gage-height, 2.96 feet); no flow Aug. 22 to Sept. 18.

REMARKS.—Records good. Flow regulated by storage and diversions for irrigation.

Daily and monthly discharge, in second-feet, 1929

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	--------	304	247	146	90	8.0	0
2	--------	264	243	230	85	9.6	0
3	--------	256	234	217	74	10	0
4	--------	243	221	570	68	14	0
5	--------	217	209	482	66	2'	0
6	--------	234	201	351	59	2'	0
7	--------	168	196	304	59	22	0
8	--------	118	192	260	63	17	0
9	--------	161	176	234	66	13	0
10	--------	188	172	428	68	10	0
11	--------	138	161	328	70	7.5	0
12	--------	153	149	304	66	7.0	0
13	--------	196	146	304	57	6.5	0
14	--------	196	153	304	50	4.5	0
15	--------	247	161	304	53	3.5	0
16	--------	328	165	304	50	2.7	0
17	--------	304	176	282	44	1.9	0
18	--------	304	172	264	39	1.0	0
19	--------	282	161	251	39	1.9	.2
20	--------	256	153	226	39	1.3	3.5
21	--------	247	146	205	38	.1	5.5
22	449	238	146	180	32	0	7.0
23	356	234	146	172	27	0	6.0
24	323	243	165	161	25	0	16
25	251	234	192	153	21	0	15
26	221	238	176	146	15	0	14
27	243	243	188	131	12	0	13
28	256	251	188	115	10	0	16
29	361	260	168	108	8.8	0	21
30	449	251	157	102	9.6	0	29
31	401	--------	146	--------	10	0	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March 21-31	449	221	331	6,570
April	328	118	233	13,900
May	247	146	178	10,900
June	570	102	252	15,000
July	90	8.8	45.6	2,800
August	24	0	6.11	376
September	29	0	4.87	290
The period	----------	----------	----------	49,800

JUDITH RIVER BASIN

JUDITH RIVER NEAR UTICA, MONT.

LOCATION.—Wire gage in NW. ¼ sec. 17, T. 13 N., R. 12 E., at private wagon bridge on Noel ranch, 10 miles above Utica.

DRAINAGE AREA.—326 square miles.

RECORDS AVAILABLE.—October, 1919, to September, 1929.

EXTREMES.—Maximum discharge during year, 452 second-feet June 1 (gage height, 3.78 feet); minimum, 1.3 second-feet Mar. 10 (gage height, 0.83 foot).

1919–1929: Maximum discharge, 1,070 second-feet June 11, 1927 (gage height, 5.70 feet); minimum, 0.5 second-foot Nov. 16 to Dec. 1, 1919, and Mar. 31 to Apr. 20, 1922 (gage height, 1.00 foot).

REMARKS.—Records good. Observations discontinued Jan. 1 to Mar. 9. Several diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	19	19	17	--------	3.8	9.6	366	86	25	13
2	19	19	17	--------	3.6	9.9	423	80	22	14
3	19	19	17	--------	3.8	10	423	78	22	13
4	21	19	17	--------	4.2	11	423	75	22	13
5	21	17	17	--------	4.4	12	394	69	22	13
6	21	17	17	--------	4.0	12	324	72	21	13
7	21	17	17	--------	3.6	12	310	75	22	12
8	21	17	17	--------	3.6	12	310	82	21	12
9	21	17	17	--------	3.6	14	324	75	21	11
10	21	17	17	1.4	4.0	16	324	69	21	12
11	21	17	17	1.5	3.8	18	338	57	20	12
12	22	17	17	1.5	3.6	19	338	49	19	11
13	22	17	17	1.5	4.0	19	338	46	18	11
14	22	17	17	1.5	4.4	37	338	48	17	11
15	22	17	17	1.8	5.5	38	174	41	17	10
16	23	17	17	2.1	5.8	48	174	39	16	10
17	23	17	17	2.3	6.8	55	269	36	15	10
18	22	17	17	2.3	6.8	66	195	36	15	10
19	23	17	17	2.3	7.0	99	174	34	15	10
20	21	17	17	2.3	6.8	118	90	33	15	10
21	21	17	17	2.3	6.5	145	90	32	15	9.3
22	22	17	17	2.3	6.0	184	108	31	14	9.3
23	21	17	17	2.3	6.2	246	118	31	14	8.7
24	21	17	17	2.3	6.2	296	145	29	14	9.0
25	23	17	17	2.5	6.2	296	127	28	14	8.7
26	23	17	17	2.9	6.2	282	118	28	15	8.4
27	21	17	17	6.2	6.0	256	110	28	15	8.1
28	21	17	17	11	6.8	218	102	28	14	8.1
29	20	17	17	4.4	8.4	218	97	27	14	7.8
30	19	17	17	3.8	9.3	184	92	27	13	7.8
31	19	--------	17	3.6	--------	218	--------	26	13	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	23	19	21.2	1,300
November	19	17	17.3	1,030
December	17	17	17.0	1,050
March 10-31	11	1.4	2.82	123
April	9.3	3.6	5.36	319
May	296	9.6	103	6,330
June	423	90	239	14,200
July	86	26	48.2	2,960
August	25	13	17.5	1,080
September	14	7.8	10.5	625

JUDITH RIVER NEAR WINIFRED, MONT.

LOCATION.—Wire gage near center of sec. 30, T. 21 N., R. 17 E., at the Anderson ranch, 10 miles west of Winifred.

RECORDS AVAILABLE.—May to September, 1929.

EXTREMES.—Maximum discharge during period, about 3,410 second-feet June 2 (gage height, 4.10 feet); minimum, 187 second-feet July 31, Aug. 1, 5, 6, 11, and 12 (gage height, 0.42 foot).

REMARKS.—Records good below 1,200 second-feet and fair above. Numerous diversions above station.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	------	998	519	187	213	16	550	918	319	196	260
2	------	3,410	519	196	213	17	550	838	299	213	250
3	------	3,300	488	196	222	18	519	1,040	269	204	260
4	------	1,820	519	196	222	19	550	918	260	204	269
5	------	2,220	488	187	222	20	519	918	241	196	279
6	------	1,920	519	187	213	21	550	918	241	204	279
7	------	1,820	488	196	222	22	550	838	250	196	309
8	------	1,250	488	213	250	23	616	800	241	196	319
9	------	1,250	488	204	250	24	686	761	241	196	319
10	------	1,080	458	196	231	25	918	686	213	204	309
11	------	1,040	428	187	231	26	1,040	616	213	213	319
12	------	998	400	187	241	27	1,165	583	213	213	319
13	------	998	400	196	241	28	1,250	550	196	204	319
14	------	918	361	204	250	29	1,040	519	204	213	319
15	550	918	330	204	260	30	918	519	196	204	330
						31	998	------	187	204	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May 15-31	1,250	519	763	25,700
June	3,410	519	1,180	70,200
July	519	187	344	21,200
August	213	187	200	12,300
September	330	213	265	15,800
The period	------	------	------	145,000

MUSSELSHELL RIVER BASIN

NORTH FORK OF MUSSELSHELL RIVER AT DELPINE, MONT.

LOCATION.—Wire gage in SW. ¼ sec. 35, T. 10 N., R. 9 E., at Delpine.
DRAINAGE AREA.—48 square miles.
RECORDS AVAILABLE.—May, 1909, to October, 1911; March, 1922, to September, 1929.
EXTREMES.—Maximum discharge during year, 76 second-feet Apr. 17 (gage height, 2.34 feet); minimum, 1.2 second-feet Aug. 26 (gage height, 1.33 feet). 1909–1911, 1922–1929: Maximum discharge, about 545 second-feet July 21, 1923 (gage height, 4.5 feet); minimum, that of Aug. 26, 1929.
REMARKS.—Records fair. Stage-discharge relation affected by ice Nov. 1, 20–23, and 28–30. Observations discontinued Dec. 1 to Mar. 23. One small ditch above gage.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.2	8.0	-------	13	27	26	9.5	7.5	2.6
2	6.2	8.5	-------	15	22	26	9.0	8.0	3.0
3	7.0	9.0	-------	4.6	23	25	9.5	8.5	3.8
4	6.6	8.0	-------	38	24	24	9.5	9.0	5.0
5	6.2	8.0	-------	6.2	21	24	8.5	10.0	4.2
6	6.2	9.0	-------	13	21	23	7.5	10.0	5.8
7	6.2	10.0	-------	10.0	19	22	7.5	9.5	6.6
8	6.6	9.5	-------	12	18	22	9.5	9.5	6.2
9	6.6	9.0	-------	5.4	16	24	8.5	9.0	6.2
10	9.0	9.0	-------	5.0	16	24	7.5	9.0	5.8
11	8.0	8.5	-------	4.6	15	25	7.5	8.5	5.0
12	7.0	9.0	-------	5.8	15	24	6.6	8.5	3.8
13	7.0	9.0	-------	9.0	16	24	6.6	8.5	3.2
14	7.0	8.5	-------	14	19	22	7.0	8.0	3.2
15	9.0	8.5	-------	38	17	22	7.0	8.5	3.5
16	7.5	7.5	-------	51	17	19	6.6	7.5	3.5
17	7.0	7.0	-------	76	14	17	7.0	7.0	3.2
18	6.6	7.5	-------	37	15	16	7.0	6.6	3.5
19	6.6	7.5	-------	25	16	14	7.0	6.6	3.5
20	6.6	7.1	-------	46	19	13	6.6	6.6	3.7
21	7.0	6.8	-------	47	18	12	6.6	7.0	4.0
22	7.0	6.6	-------	21	17	12	6.6	5.8	5.6
23	6.6	6.4	-------	17	18	11	6.6	5.8	7.3
24	6.6	6.2	2.8	10	23	10.5	6.6	5.4	7.6
25	6.2	6.6	3.0	19	23	10.5	6.6	2.0	7.3
26	6.2	6.2	2.8	22	29	10.0	6.2	1.2	8.7
27	6.2	7.0	3.0	36	32	9.5	5.8	1.4	8.7
28	5.8	6.8	3.4	24	26	9.5	5.8	1.6	9.0
29	5.8	6.6	4.2	37	27	9.5	5.8	2.0	8.3
30	7.0	6.2	5.4	25	26	9.0	5.8	2.2	7.9
31	8.0	-------	5.0	-------	26	-------	7.0	2.6	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	9.0	5.8	6.82	419
November	10.0	6.2	7.78	463
March 24-31	5.4	2.8	3.70	58.6
April	76	4.6	22.9	1,360
May	32	14	20.5	1,260
June	26	9.0	18.0	1,070
July	9.5	5.8	7.25	446
August	10.0	1.2	6.56	403
September	9.0	2.6	5.32	317

MUSSELSHELL RIVER AT HARLOWTON, MONT.

LOCATION.—Chain gage in sec. 26, T. 8 N., R. 15 E., at highway bridge 1 mile south of Harlowton.

DRAINAGE AREA.—1,130 square miles.

RECORDS AVAILABLE.—July, 1907, to September, 1929.

EXTREMES.—Maximum discharge during year, 775 second-feet June 3 (gage height, 4.40 feet); no flow parts of July, August, and September.

1907–1929: Maximum discharge, 4,020 second-feet May 27, 1917 (gage height, 7.3 feet present datum); no flow Aug. 4-11, 1910, Sept. 11–15, 1919, and parts of July, August, and September, 1929.

REMARKS.—Records good. Discharge estimated Nov. 3–6. Observations discontinued Dec. 1 to Mar. 27. Numerous diversions.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	65	80	--------	82	227	173	78	1.0	0
2	67	86	--------	107	184	600	66	2.2	0
3	80	86	--------	118	169	730	50	1.3	0
4	82	85	--------	124	184	486	50	1.3	0
5	80	85	--------	128	197	384	55	1.0	0
6	78	84	--------	86	176	302	48	.9	0
7	78	84	--------	91	162	275	46	0	0
8	76	86	--------	99	143	265	48	0	0
9	73	86	--------	84	150	302	48	0	0
10	78	91	--------	69	137	302	38	0	0
11	82	91	--------	76	150	286	36	0	0
12	86	82	--------	73	137	297	27	0	0
13	86	89	--------	76	150	286	25	0	0
14	86	89	--------	78	214	251	26	0	0
15	91	91	--------	86	241	236	24	0	0
16	89	82	--------	96	205	222	24	0	0
17	89	82	--------	128	201	256	0	0	0
18	86	69	--------	154	236	241	20	0	0
19	89	56	--------	188	241	214	20	0	0
20	86	91	--------	165	209	193	17	0	.1
21	91	84	--------	180	214	162	14	0	0
22	86	78	--------	193	241	142	8.0	0	.2
23	82	78	--------	197	292	144	4.9	0	.3
24	82	69	--------	197	319	138	3.7	0	.9
25	84	51	--------	162	417	127	1.9	0	2.2
26	84	76	--------	128	450	130	1.6	0	17
27	86	76	--------	134	354	115	1.0	0	23
28	84	71	197	180	292	101	1.0	0	27
29	102	40	137	205	251	85	.9	0	33
30	89	45	107	246	205	92	1.0	0	30
31	91	--------	102	--------	169	--------	.9	0	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	102	65	83.5	5,130
November	91	40	78.1	4,650
March 28–31	197	102	136	1,080
April	246	69	131	7,800
May	450	137	223	13,700
June	730	85	251	14,900
July	78	0	25.3	1,560
August	2.2	0	.25	15.4
September	33	0	4.46	265

MUSSELSHELL RIVER AT MUSSELSHELL, MONT.

LOCATION.—Wire gage in NW. ¼ sec. 28, T. 9 N., R. 29 E., at highway bridge at Musselshell, half a mile south of railroad station on Chicago, Milwaukee, St. Paul & Pacific Railroad.

RECORDS AVAILABLE.—August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 882 second-feet June 5 (gage height, 3.76 feet); no flow Sept 1, 3–5, and 8–25.

1928–29: Maximum and minimum discharge, same as given above.

REMARKS.—Records fair. Discharge estimated Oct. 1–6, June 2, and 3. Observations discontinued Nov. 11 to Mar. 13. Numerous diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	100	195	-------	479	300	341	111	3.1	0
2	102	195	-------	504	363	460	94	3.4	.1
3	105	195	-------	262	385	579	72	3.4	0
4	108	211	-------	300	408	698	68	2.1	0
5	111	211	-------	363	363	820	59	2.2	0
6	114	211	-------	455	341	612	55	1.3	.1
7	117	227	-------	455	320	479	52	1.8	.1
8	122	227	-------	341	300	363	40	1.2	0
9	126	227	-------	300	281	363	38	1.4	0
10	128	227	-------	281	262	341	40	1.8	0
11	138	-------	-------	281	244	281	21	1.4	0
12	145	-------	-------	244	244	244	18	1.2	0
13	156	-------	-------	262	244	227	17	1.0	0
14	161	-------	557	227	227	320	17	1.0	0
15	163	-------	385	227	211	557	15	1.0	0
16	166	-------	262	244	227	281	15	.9	0
17	166	-------	385	227	262	311	11	1.6	0
18	180	-------	363	227	281	262	18	1.1	0
19	180	-------	341	262	262	211	15	1.2	0
20	180	-------	320	262	244	262	9.9	.6	0
21	211	-------	320	341	244	244	14	.5	0
22	211	-------	385	363	244	211	5.1	.5	0
23	195	-------	363	385	244	227	8.6	.8	0
24	166	-------	281	363	244	195	5.8	.4	0
25	161	-------	262	363	262	180	2.4	.4	0
26	161	-------	320	363	281	166	3.6	.3	.1
27	166	-------	244	341	281	148	2.5	.3	.5
28	166	-------	262	300	320	145	2.6	.5	.4
29	180	-------	281	281	455	145	2.0	.2	.5
30	180	-------	385	300	431	128	1.4	.2	.4
31	180	-------	698	-------	408	-------	2.4	.1	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	211	100	153	9,410
November 1–10	227	195	213	4,220
March 14–31	698	244	356	12,700
April	504	227	320	19,000
May	455	211	296	18,200
June	820	128	323	19,200
July	111	1.4	27.0	1,660
August	3.4	.1	1.19	73.2
September	.5	0	.07	4.2

MUSSELSHELL RIVER AT MOSBY, MONT.

LOCATION.—Wire gage in sec. 3, T. 14 N., R. 30 E., at highway bridge half a mile west of Mosby.

RECORDS AVAILABLE.—May to September, 1929.

EXTREMES.—Maximum discharge during period, about 3,280 second-feet July 19 (gage height, 5.60 feet); no flow Aug. 2, 3, and Aug. 5 to Sept. 30.

REMARKS.—Records for low and medium stages good; others fair. Numerous diversions.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.	Day	May	June	July	Aug.
1		578	141	0.3	16	345	395	18	0
2		497	138	0	17	345	370	16	0
3		471	116	0	18	345	370	20	0
4		420	79	.3	19	345	345	1,290	0
5		785	71	0	20	345	345	35	0
6		785	58	0	21	345	370	33	0
7		723	62	0	22	321	345	12	0
8		663	66	0	23	321	321	7.6	0
9		550	51	0	24	321	274	4.0	0
10		497	44	0	25	321	251	2.0	0
11		445	41	0	26	321	242	1.8	0
12		445	35	0	27	345	225	1.5	0
13		445	30	0	28	445	208	1.5	0
14		445	26	0	29	550	200	1.2	0
15		445	21	0	30	605	177	.9	0
					31	605		.8	0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May 16-31	605	321	389	12,300
June	785	177	421	25,100
July	1,290	.8	78.4	4,820
August	.3	0	.02	1.2
The period				42,200

NOTE.—No flow during September.

CHECKERBOARD CREEK AT DELPINE, MONT.

LOCATION.—Staff gage in NE. ¼ sec. 2, T. 9 N., R. 9 E., just below highway bridge one-fourth mile southeast of Delpine and half a mile above junction with North Fork of Musselshell River.

DRAINAGE AREA.—24.3 square miles.

RECORDS AVAILABLE.—March, 1922, to September, 1929. May, 1909, to December 1911, and May, 1913, to December, 1914, at ranch 2 miles upstream.

EXTREMES.—Maximum discharge during year, 21.7 second-feet May 25 (gage height, 1.68 feet); minimum, 1.0 second-foot Dec. 18 and Aug. 24–26.

1909–1911, 1913–14, 1922–1929: Maximum discharge, 167 second-feet July 16, 1923 (gage height, 3.1 feet); minimum, 0.7 second-foot Sept. 10, 1924 (gage height, 0.38 foot).

REMARKS.—Records good. Observations discontinued Dec. 19 to Mar. 23. One small diversion above gage.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.6	5.1	4.4	-------	4.0	9.1	17.9	6.2	3.3	1.7
2	6.0	5.3	4.2	-------	5.1	10.5	17.0	5.7	3.1	1.8
3	6.4	5.3	4.2	-------	4.4	9.4	17.4	5.3	3.1	1.7
4	6.0	5.1	3.7	-------	5.1	10.1	15.6	5.1	3.1	1.8
5	6.0	5.1	3.5	-------	4.9	10.8	14.8	4.9	3.1	1.8
6	5.7	5.1	3.1	-------	10.1	10.5	13.4	4.6	3.1	2.0
7	6.0	4.9	3.5	-------	4.4	7.9	12.3	4.6	2.9	2.1
8	5.7	4.9	2.8	-------	4.2	8.2	10.5	4.4	3.1	2.1
9	5.7	5.1	2.1	-------	4.2	8.2	10.5	4.2	3.1	1.8
10	7.9	5.1	1.8	-------	6.0	8.2	10.5	4.2	2.9	1.8
11	7.0	5.1	1.7	-------	5.5	8.8	10.8	4.2	2.9	2.0
12	6.2	5.1	1.6	-------	5.1	8.8	10.5	4.2	2.9	2.3
13	6.0	5.1	1.4	-------	5.3	9.4	10.5	4.2	2.6	2.3
14	6.0	5.1	1.4	-------	4.4	10.1	10.1	4.2	2.6	2.1
15	6.4	5.1	1.4	-------	4.9	9.8	9.4	4.0	2.3	2.1
16	6.2	4.9	1.3	-------	6.0	8.8	8.8	4.0	1.8	2.1
17	6.0	4.6	1.1	-------	6.4	9.8	8.2	3.8	1.7	2.1
18	6.0	4.9	1.0	-------	6.0	10.5	7.6	3.8	1.7	2.3
19	5.7	5.1	-------	-------	6.0	12.3	7.6	3.7	1.4	2.3
20	5.7	4.6	-------	-------	7.6	13.0	7.3	3.5	1.3	2.4
21	6.0	4.9	-------	-------	10.1	13.9	7.3	3.5	1.3	2.8
22	6.0	4.6	-------	-------	9.4	14.8	7.3	3.5	1.3	2.6
23	5.7	4.6	-------	-------	8.8	16.1	7.0	3.3	1.3	2.4
24	5.7	4.6	-------	3.7	7.6	16.5	7.0	3.3	1.0	2.6
25	5.7	4.6	-------	3.8	7.3	21.7	7.0	3.3	1.0	2.1
26	5.7	4.4	-------	3.8	7.6	19.6	7.3	3.3	1.0	2.0
27	5.5	4.4	-------	4.0	7.9	21.2	6.7	3.3	1.1	2.1
28	5.5	4.2	-------	4.2	9.4	13.9	6.4	3.3	1.1	2.1
29	5.5	4.2	-------	3.8	13.0	13.4	6.2	3.3	1.3	2.0
30	5.3	4.6	-------	4.6	9.8	12.3	6.0	3.3	1.3	2.0
31	5.3	-------	-------	3.7	-------	12.6	-------	3.1	1.5	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	7.9	4.6	5.91	363
November	5.3	4.2	4.86	289
December 1-18	4.4	1.0	2.46	88
March 24-31	4.6	3.7	3.95	63
April	13.0	4.0	6.68	397
May	21.7	7.9	11.9	732
June	17.9	6.0	9.96	593
July	6.2	3.1	4.04	248
August	3.3	1.0	2.10	129
September	2.8	1.7	2.11	126

AMERICAN FORK NEAR HARLOWTON, MONT.

LOCATION.—Chain gage in SW. ¼ sec. 12, T. 7 N., R. 15 E., half a mile above junction of American Fork and Lebo Creek and 5 miles southeast of Harlowton.

RECORDS AVAILABLE.—July, 1907, to December, 1911; May to December, 1913; May, 1924, to September, 1929.

EXTREMES.—Maximum discharge during year, 196 second-feet June 2 (gage height, 2.80 feet); no flow parts of July, August, and September.

1907–1911, 1913, 1924–1929: Maximum discharge, 870 second-feet June 1, 1908 (gage height, 4.40 feet); no flow at times.

REMARKS.—Records fair. Observations discontinued Dec. 5 to Mar. 16. No diversions.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.9	5.5	3.9	-------	9.8	4.7	3.5	3.4	0	0
2	3.5	5.1	3.5	-------	11	4.7	196	3.4	0	0
3	3.9	4.3	3.5	-------	11	4.7	111	2.4	0	0
4	4.7	4.3	3.5	-------	9.8	4.7	98	2.3	.2	0
5	5.1	4.3	-------	-------	7.5	4.7	75	2.3	0	0
6	4.7	5.1	-------	-------	5.5	4.7	55	1.8	0	0
7	4.3	5.1	-------	-------	5.5	3.5	37	1.8	0	0
8	4.3	5.5	-------	-------	5.5	3.5	30	1.4	0	0
9	4.3	5.5	-------	-------	5.5	4.3	49	1.3	0	0
10	6.5	5.5	-------	-------	6.0	3.2	45	.8	0	0
11	7.0	5.5	-------	-------	3.5	3.2	51	.4	0	0
12	6.5	5.5	-------	-------	5.5	3.2	45	.3	0	0
13	6.5	5.1	-------	-------	5.1	3.9	47	.2	0	0
14	7.0	5.1	-------	-------	6.0	3.5	49	.3	0	0
15	7.2	4.7	-------	-------	6.0	3.5	51	.4	0	0
16	6.5	4.7	-------	-------	6.5	3.5	55	.2	0	0
17	6.5	4.7	-------	16	8.0	3.5	60	.2	0	0
18	6.0	5.5	-------	11	5.5	3.5	51	.3	0	0
19	6.0	5.5	-------	15	6.0	2.0	51	.2	0	0
20	7.0	6.0	-------	19	6.0	2.0	45	.2	0	0
21	7.0	6.0	-------	11	6.0	1.2	26	.2	0	0
22	7.0	5.5	-------	8.0	6.0	1.2	25	.1	0	0
23	6.5	5.5	-------	8.0	6.5	1.8	24	.2	0	0
24	6.0	5.5	-------	11	5.5	65	19	.2	0	1.2
25	6.0	5.1	-------	8.0	5.1	70	17	.2	0	1.2
26	6.0	4.3	-------	7.0	4.7	70	15	.2	0	2.6
27	5.5	3.9	-------	8.0	4.3	75	14	0	0	2.6
28	5.5	3.9	-------	12	5.3	86	13	0	0	2.6
29	5.5	3.9	-------	8.6	5.5	86	4.7	0	0	2.6
30	6.0	3.9	-------	9.8	6.5	75	4.7	0	0	2.6
31	6.0	-------	-------	8.0	-------	3.5	-------	0	0	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	7.2	3.5	5.75	354
November	6.0	3.9	5.00	298
March 17–31	19	7.0	10.7	318
April	11	3.5	63.5	378
May	86	1.2	19.7	1,210
June	196	3.5	45.6	2,710
July	3.4	0	.80	49.2
August	.2	0	.006	.4
September	2.6	0	.51	30.3

LEBO CREEK NEAR HARLOWTON, MONT.

LOCATION.—Staff gage in SW. ¼ sec. 12, T. 7 N., R. 15 E., half a mile above junction with American Fork and 5 miles southeast of Harlowton.

DRAINAGE AREA.—48 square miles.

RECORDS AVAILABLE.—July, 1907, to December, 1911; May to November, 1913; May, 1924, to September, 1929.

EXTREMES.—Maximum discharge during year, 46 second-feet Mar. 20–21, and 26 (gage height, 2.62 feet); no flow Dec. 2–4.

1907–1911, 1913, 1924–1929: Maximum discharge, about 417 second-feet July 6, 1928 (gage height, 6.90 feet); no flow at times during 1928 and 1929.

REMARKS.—Records fair. Observations discontinued Dec. 5 to Mar. 19. Numerous diversions and some storage above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	12	21	4.2	-------	15	21	2.0	1.9	1.2	2.7
2	12	30	0	-------	35	18	2.0	1.9	1.3	2.7
3	16	40	0	-------	35	18	2.4	2.2	1.3	3.4
4	16	40	0	-------	25	18	2.0	2.2	1.3	3.4
5	15	30	-------	-------	25	18	1.9	2.2	1.2	3.0
6	15	21	-------	-------	8.0	21	1.9	1.3	1.2	3.0
7	15	16	-------	-------	25	18	1.9	1.3	1.3	2.7
8	15	12	-------	-------	25	18	1.9	1.3	1.3	3.0
9	15	10	-------	-------	20	18	1.9	1.3	1.3	7.3
10	16	10	-------	-------	22	18	3.0	1.2	1.3	3.4
11	17	16	-------	-------	20	21	3.0	1.1	1.4	3.4
12	16	16	-------	-------	22	18	3.0	1.1	1.4	4.3
13	18	16	-------	-------	24	14	3.0	1.1	1.4	4.3
14	21	18	-------	-------	24	14	3.0	.8	1.4	4.3
15	20	18	-------	-------	22	14	3.0	.8	1.4	4.3
16	18	20	-------	-------	22	9.9	4.3	.8	1.4	4.3
17	16	20	-------	-------	24	7.0	6.3	.8	1.4	4.3
18	16	20	-------	-------	20	7.0	4.3	.8	2.4	4.3
19	16	21	-------	-------	20	7.0	3.5	.8	2.4	4.3
20	16	21	-------	46	20	4.9	3.5	.8	2.4	4.3
21	18	24	-------	46	24	4.9	2.7	.8	2.4	4.5
22	18	21	-------	20	24	9.9	2.4	.8	2.4	4.5
23	16	21	-------	20	24	9.9	3.4	.8	2.5	3.0
24	16	21	-------	20	22	7.0	3.4	2.1	7.0	4.5
25	17	24	-------	26	24	4.9	3.4	1.9	5.8	5.4
26	17	28	-------	46	24	4.9	2.5	2.0	4.0	5.4
27	16	24	-------	43	19	18	2.3	1.2	2.5	6.6
28	16	21	-------	40	22	7.0	2.3	1.2	2.5	7.8
29	16	21	-------	30	22	4.9	2.3	1.2	2.5	7.8
30	16	16	-------	30	22	4.9	2.3	1.2	2.5	6.6
31	16	-------	-------	35	-------	4.9	-------	1.2	2.5	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	21	12	16.2	996
November	40	10	21.2	1,260
March 20–31	46	20	33.5	797
April	35	8.0	22.7	1,350
May	21	4.9	12.4	762
June	6.3	1.9	2.83	168
July	2.2	.8	1.29	79.3
August	7.0	1.2	2.14	132
September	7.8	2.7	4.43	264

FLATWILLOW CREEK NEAR FLATWILLOW, MONT.

LOCATION.—Chain gage in NE. ¼ sec. 19, T. 12 N., R. 25 E., on Flatwillow Land & Livestock Co.'s ranch, 12 miles above Flatwillow.

DRAINAGE AREA.—195 square miles.

RECORDS AVAILABLE.—April, 1918, to September, 1929. May, 1911, to April, 1918, at station in sec. 23, T. 12 N., R. 25 E., 4 miles downstream.

EXTREMES.—Maximum discharge during year, 160 second-feet June 4 (gage height, 3.42 feet); minimum, 0.1 second-foot July 20–24, 29, and Aug. 1 (gage height, 0.77 foot).

1911–1929: Maximum discharge, about 954 second-feet at old location June 4–10, 1917 (gage height, estimated, 9.0 feet); no flow at times.

REMARKS.—Records fair. Observations discontinued Oct. 15 to Apr. 30. Several diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	May	June	July	Aug.	Sept.	Day	Oct.	May	June	July	Aug.	Sept.
1	16	64	89	15	0.1	0.9	16	-------	78	42	0.6	6.6	1.6
2	16	64	96	16	.2	.8	17	-------	72	61	.6	7.4	1.8
3	16	64	151	13	.6	.5	18	-------	72	68	.6	7.4	1.8
4	16	72	160	9.8	1.6	1.6	19	-------	72	64	.4	6.6	2.4
5	16	75	143	7.4	1.2	2.8	20	-------	75	68	.1	5.0	4.2
6	16	72	135	3.4	9.0	7.4	21	-------	72	64	.1	3.4	8.2
7	16	64	127	2.0	9.0	8.2	22	-------	75	52	.1	3.4	11
8	18	58	111	1.2	9.8	5.8	23	-------	78	52	.1	2.8	11
9	16	58	103	.9	9.8	3.4	24	-------	75	55	.1	2.4	11
10	16	58	103	.9	4.2	2.4	25	-------	82	55	.2	2.4	11
11	18	64	89	.9	6.6	2.4	26	-------	82	58	.2	2.8	11
12	20	68	78	.9	6.6	2.0	27	-------	103	46	.2	1.2	15
13	20	72	64	.9	6.6	1.2	28	-------	103	40	.2	1.2	15
14	22	78	52	.6	7.4	1.6	29	-------	111	33	.1	1.2	16
15	-------	78	52	.6	6.6	1.6	30	-------	103	24	.4	1.2	16
							31	-------	89	-------	.2	1.2	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October 1–14	22	16	17.3	480
May	111	58	78.8	4,660
June	160	24	77.8	4,630
July	16	.1	2.51	154
August	9.8	.1	4.37	269
September	16	.5	5.99	356

FLATWILLOW CREEK AT PETROLIA, MONT.

LOCATION.—Chain gage in NE. ¼ sec. 25, T. 14 N., R. 28 E., 2 miles above junction with Box Elder Creek, 1 mile south of Petrolia, and 16 miles southeast of Winnett, the nearest railway point.

DRAINAGE AREA.—650 square miles.

RECORDS AVAILABLE.—June, 1921, to September, 1929.

EXTREMES.—Maximum discharge during year, 414 second-feet Mar. 29 (gage height, 4.00 feet); no flow July 19 to Sept. 30.

1921–1929: Maximum discharge (estimated), 3,700 second-feet July 5, 1923 (gage height, 12.94 feet); no flow at times.

REMARKS.—Records fair. Observations discontinued Nov. 29 to Mar. 9. Numerous diversions.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Mar.	Apr.	May	June	July
1	7.5	18	--------	54	46	145	35
2	7.5	18	--------	40	44	114	33
3	7.5	6.5	--------	36	58	100	33
4	9.5	16	--------	42	63	129	28
5	12	18	--------	32	65	129	20
6	12	18	--------	31	64	137	20
7	12	20	--------	31	64	129	20
8	12	20	--------	31	64	129	19
9	12	14	--------	31	64	114	15
10	12	14	327	31	62	100	15
11	12	12	178	27	56	100	14
12	14	12	129	27	56	87	1.3
13	14	12	153	26	54	70	1.1
14	14	14	153	26	54	75	5.0
15	16	14	114	24	54	75	5.0
16	18	14	81	21	49	75	9.0
17	18	12	178	18	51	75	5.0
18	18	12	286	20	55	64	1.1
19	18	10	145	24	55	70	0
20	18	10	114	26	55	75	0
21	18	9.5	87	34	48	70	0
22	18	8.5	54	61	48	64	0
23	18	7.5	54	61	46	70	0
24	18	7.5	42	52	50	49	0
25	18	9.5	94	50	56	57	0
26	18	8.5	122	52	64	57	0
27	16	8.5	122	50	75	57	0
28	16	9.5	122	46	87	55	0
29	16	--------	414	46	114	53	0
30	16	--------	114	46	114	45	0
31	16	--------	42	--------	81	--------	0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	18	7.5	14.6	898
November 1–28	20	6.5	12.6	700
March 10–31	414	42	142	6,200
April	61	18	36.5	2,170
May	114	44	61.8	3,800
June	145	45	85.6	5,090
July	35	0	9.02	555

NOTE.—No flow during August and September.

MILK RIVER BASIN

SOUTH FORK OF MILK RIVER NEAR INTERNATIONAL BOUNDARY

LOCATION.—Water-stage recorder in NW. ¼ sec. 29, T. 37 N., R. 9 W., just above Kennedy Coulee, 5 miles south of international boundary, and 30 miles northeast of Browning, Mont.

DRAINAGE AREA.—288 square miles.

RECORDS AVAILABLE.—April, 1905, to September, 1929.

EXTREMES.—Maximum discharge during year, 597 second-feet June 3 (gage height, 3.77 feet); minimum, 0.8 second-foot Sept. 2 (gage height, 1.58 feet).

1905–1929: Maximum stage, from high-water mark, 15.4 feet June 6, 1908 (discharge not determined); no flow Aug. 1–8 and Aug. 18 to Sept. 2, 1919.

REMARKS.—Records good. Discharge estimated Apr. 1–4. Observations discontinued Nov. 1 to Mar. 31. No diversions. Station maintained jointly with the Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Apr.	May	June	July	Aug.	Sept.
1	36.8	120	237	124	42.4	17.0	1.4
2	37.6	130	229	491	38.5	17.0	1.2
3	38.4	120	217	548	37.2	19.0	1.4
4	44.2	147	205	409	33.3	17.0	2.8
5	48.4	163	194	313	34.6	14.0	5.2
6	49.8	144	160	243	42.4	12.0	6.0
7	54	139	144	188	73	12.0	6.0
8	60	135	135	148	188	12.0	5.2
9	64	130	135	163	144	11.0	5.2
10	72	128	148	208	87	11.0	5.2
11	191	124	243	234	64	11.0	6.0
12	194	122	243	232	55	12.0	5.2
13	143	119	226	234	46.4	11.0	5.2
14	95	135	243	220	43.7	12.0	5.2
15	110	185	234	194	35.9	13.0	6.8
16	146	246	237	171	33.3	14.0	9.2
17	149	270	211	166	30.8	14.0	11.0
18	146	302	185	133	28.4	13.0	11.0
19	115	234	158	89	29.6	13.0	12.0
20	91	220	148	66	26.0	14.0	11.0
21	78	197	148	64	21.2	13.0	11.0
22	60	208	151	62	20.0	12.0	10.0
23	49.8	191	151	76	20.0	10.0	11.0
24	44.2	139	148	95	19.0	10.0	12.0
25	36.8	182	142	84	17.0	7.6	17.0
26	39.2	284	130	73	15.0	7.6	20.0
27	38.4	409	119	66	14.0	6.8	22.4
28	36.0	396	117	58	16.0	4.4	22.4
29	35.2	371	117	52	17.0	1.8	21.2
30	34.4	291	113	43.6	18.0	1.4	19.0
31	24.3	-------	99	-------	17.0	1.4	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	194	24.3	76.2	4,690
April	409	119	199	11,800
May	243	99	173	10,600
June	548	43.6	175	10,400
July	188	14.0	42.2	2,590
August	19.0	1.4	11.1	682
September	22.4	1.2	9.6	572

MILK RIVER AT MILK RIVER, ALBERTA

LOCATION.—Water-stage recorder in SE. ¼ sec. 28, T. 2 N., R. 16 W. fourth meridian, at Milk River, Alberta.

DRAINAGE AREA.—1,104 square miles.

RECORDS AVAILABLE.—Open-water seasons July, 1909, to December, 1911; complete records January, 1912, to September, 1929. Prior to October, 1920, maintained by Department of the Interior, Canada.

EXTREMES.—Maximum discharge during year, 1,960 second-feet June 3 (gage height, 4.98 feet); minimum (estimated), 25.1 second-feet Jan. 31.

1909–1929: Maximum discharge (estimated), 7,460 second-feet May 22, 1927 (gage height, 11.41 feet); no flow at times during 1922, 1923, and 1927.

REMARKS.—Records good except those for periods of ice effect, Oct. 29 to Mar. 29 and Apr. 5-10, which are fair. Flow increased by water from St. Mary Canal during irrigation season. Station maintained jointly with the Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	110	103	70	55	26.2	27.3	459	840	493	488	509	387
2	110	103	66	55	26.2	28.4	495	758	1,660	483	498	364
3	110	108	62	55	26.2	30.6	444	719	1,920	483	498	369
4	114	154	62	55	27.3	32.8	525	665	1,630	477	498	374
5	114	180	62	55	28.4	35.0	154	630	1,300	488	498	369
6	116	195	62	55	29.5	37.6	170	580	1,040	493	504	369
7	116	170	62	55	30.6	116	185	467	898	552	509	369
8	124	170	62	55	31.7	144	200	403	830	746	504	364
9	124	195	62	55	32.8	121	220	384	778	827	504	369
10	126	173	61	55	32.8	147	240	412	772	781	498	374
11	138	154	61	54	38.9	298	264	408	922	735	493	364
12	128	187	61	52	52	298	419	563	1,060	677	483	364
13	157	154	61	51	54	243	505	477	871	619	477	364
14	173	134	61	49.4	59	226	444	467	771	602	472	360
15	198	110	59	48.0	64	284	617	558	585	591	467	374
16	226	102	59	45.4	36.3	422	943	462	422	569	467	360
17	289	97	59	44.1	31.7	411	1,000	493	432	558	462	356
18	308	81	59	41.5	26.2	400	882	437	417	558	462	356
19	279	86	59	40.2	26.2	384	719	388	393	558	462	317
20	238	90	58	37.6	26.2	566	617	346	467	552	462	263
21	202	90	58	36.3	28.4	549	597	327	432	547	452	248
22	184	88	58	33.9	31.7	390	540	323	492	547	442	240
23	173	88	58	32.8	54	400	617	314	493	542	442	237
24	160	86	58	31.7	62	509	566	306	536	536	447	233
25	160	86	56	30.6	48.0	578	546	288	580	530	447	244
26	151	84	56	30.6	41.5	682	654	276	583	530	452	244
27	147	82	56	29.5	33.9	752	876	260	525	525	450	244
28	138	81	56	28.4	26.2	1,720	1,000	248	509	520	440	248
29	138	77	56	27.3	------	1,230	961	248	509	525	406	240
30	116	74	56	26.2	------	1,050	980	318	498	520	401	222
31	114	------	55	25.1	------	757	------	408	------	514	397	------

Month	Maximum	Minimum	Mean	Run-off in acre feet
October	308	110	161	9,900
November	195	74	119	7,080
December	70	55	59.7	3,670
January	55	25.1	43.4	2,670
February	64	26.2	36.9	2,050
March	1,720	27.3	415	25,500
April	1,000	154	561	33,400
May	840	248	444	27,300
June	1,920	393	753	44,800
July	827	477	570	35,000
August	509	397	468	28,800
September	387	222	320	19,000
The year	1,920	25.1	330	239,000

MILK RIVER AT EASTERN CROSSING OF INTERNATIONAL BOUNDARY

LOCATION.—Water-stage recorder in NE. ¼ sec. 6, T. 37 N., R. 9 E., at eastern crossing of international boundary, 30 miles north of Rudyard, Mont., and 37 miles south of Many Berries, Alberta. Zero of gage is 2,698.92 feet above mean sea level.

DRAINAGE AREA.—2,514 square miles.

RECORDS AVAILABLE.—April, 1913, to September, 1929. From August, 1909, to November, 1912, maintained by Irrigation Branch, Department of the Interior, Canada.

EXTREMES.—Maximum discharge during year, 3,050 second-feet June 3 (gage height, 4.42 feet); minimum (estimated), 30 second-feet Mar. 1 and 2.

1909–1929: Maximum discharge, about 12,000 second-feet May 23, 1927 (gage height, 10.16 feet); no flow Aug. 3–17, 22, 23, 1914, Feb. 1 to Mar. 13, 1922, and Mar. 1–5, 1923.

REMARKS.—Records good except those for estimated periods, which are fair. Observations discontinued Nov. 1 to Feb. 28. No diversions. Flow increased by water from St. Mary Canal during irrigation season. Station maintained jointly with the Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	91	[a] 30	968	1,320	380	518	422	380
2	93	[a] 30	672	1,150	687	496	422	380
3	97	[a] 35	573	968	1,800	462	417	389
4	95	[a] 50	600	916	2,720	437	417	376
5	89	[a] 65	649	916	2,190	437	417	362
6	89		398	783	1,470	417	422	366
7	84		186	726	[a] 1,300	[a] 445	422	366
8	86	[a] 85	245	695	1,140	474	417	366
9	86		209	672	[a] 1,040	484	422	362
10	93		217	840	942	573	422	350
11	97	[a] 102	226	865	916	758	422	358
12	97	[a] 142	457	641	899	656	422	358
13	102	[a] 255	398	634	1,160	561	427	358
14	118	[a] 270	490	718	1,150	490	417	354
15	120	[a] 280	656	799	849	490	417	346
16	113	[a] 380	672	710	783	484	412	329
17	182	[a] 516	1,020	672	[a] 680	474	412	325
18	199	[a] 658	1,260	621	580	468	407	325
19	217	[a] 931	1,130	600	664	468	407	321
20	293	[a] 783	968	607	536	479	422	317
21	270	[a] 652	882	536	484	484	442	314
22	244	[a] 707	824	496	501	484	427	242
23	196	[a] 722	799	474	496	484	457	226
24	179	[a] 607	783	462	[a] 516	474	432	212
25	160	[a] 492	807	457	536	468	412	217
26	144	[a] 422	703	437	649	474	412	215
27	140	[a] 397	607	407	627	442	417	215
28	125	468	775	389	600	412	417	220
29	[a] 125	783	1,090	376	580	417	412	217
30	125	1,820	1,310	380	567	407	407	220
31	[a] 125	1,640	--------	384	--------	422	398	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	293	84	138	8,480
March	1,820	30	441	27,100
April	1,310	186	686	40,800
May	1,320	376	666	41,000
June	2,720	380	915	54,400
July	758	407	485	29,800
August	457	398	419	25,800
September	389	212	313	18,600

[a] Estimated because of ice or missing gage height.

MILK RIVER ABOVE HAVRE, MONT.

LOCATION.—Water-stage recorder in SW. ¼ sec. 32, T. 33 N., R. 15 E., one-fourth mile above mouth of Big Sandy Creek and 6 miles west of Havre.

RECORDS AVAILABLE.—May, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 2,380 second-feet June 5 (gage height, 5.72 feet); minimum, 79 second-feet Oct. 8 (gage height, 2.60 feet).

1928–29: Maximum discharge, 2,540 second-feet June 21, 1928 (gage height, 5.42 feet); minimum, that of Oct. 8, 1928.

REMARKS.—Records fair. Discharge estimated Oct. 28–31, Apr. 6–14, May 10 and 11. Observations discontinued Nov. 1 to Mar. 19. No diversions. Flow increased by discharge of St. Mary Canal during irrigation season.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	87	--------	1,470	1,430	362	550	378	419
2	87	--------	1,280	1,430	396	527	388	410
3	89	--------	1,100	1,360	494	468	388	396
4	85	--------	1,000	1,240	1,670	444	388	401
5	82	--------	1,000	1,100	2,210	419	392	406
6	85	--------	750	1,100	1,960	429	392	392
7	82	--------	750	990	1,810	510	406	368
8	82	--------	600	890	1,640	544	406	374
9	82	--------	400	820	1,390	550	392	378
10	85	--------	220	810	1,200	578	406	383
11	90	--------	250	800	1,100	666	414	370
12	89	--------	350	790	1,040	609	410	388
13	84	--------	480	790	1,000	544	406	370
14	90	--------	600	733	990	468	406	345
15	97	--------	693	782	1,010	439	410	314
16	109	--------	830	798	956	424	419	333
17	112	--------	830	740	922	429	410	329
18	116	--------	1,040	686	890	439	401	278
19	123	--------	1,240	692	850	444	406	306
20	150	1,040	1,180	621	782	424	414	310
21	168	1,070	1,140	609	640	419	401	310
22	228	1,000	1,040	532	521	453	419	314
23	260	1,000	1,000	538	468	439	419	288
24	238	965	930	489	473	429	410	278
25	231	965	862	453	479	424	424	257
26	208	965	771	429	484	424	414	257
27	186	895	688	468	516	429	410	247
28	165	753	670	453	555	406	401	234
29	145	798	895	406	597	410	406	234
30	140	886	1,320	396	571	388	410	228
31	130	1,470	--------	396	--------	370	434	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	260	82	129	7,930
March 20–31	1,470	753	984	23,400
April	1,470	220	844	50,200
May	1,430	396	767	47,200
June	2,210	362	933	55,500
July	666	370	468	28,800
August	434	378	406	25,000
September	419	228	331	19,700

MILK RIVER NEAR VANDALIA, MONT.

LOCATION.—Staff gage in NE. ¼ sec. 7, T. 30 N., R. 37 E., just below Putnam Dam and 2 miles west of Vandalia.

RECORDS AVAILABLE.—May, 1915, to September, 1920; April to September, 1929.

EXTREMES.—Maximum discharge during year, 2,540 second-feet June 10 (gage height, 12.3 feet); no flow, gates in dam closed, Sept. 4 and 8–16.

1915–1920, 1929: Maximum discharge, 25,200 second-feet Apr. 11, 1917 (gage height, 34.5 feet); no flow Aug. 9–13, 1910, June 5, 1919, and Sept. 4 and 8–16, 1929.

REMARKS.—Records good. Numerous diversions from main stream and tributaries upstream. Vandalia Canal diverts at dam above gage. Some regulation at dam and some storage in Nelson Reservoir.

Daily and monthly discharge, in second-feet, 1928–29

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	-------	2,050	760	540	139	61	16	-------	1,230	1,230	180	61	0
2	-------	1,730	1,090	432	95	61	17	-------	1,230	1,520	139	61	22
3	-------	1,460	930	405	95	22	18	-------	1,230	1,610	95	61	95
4	-------	1,440	615	405	95	0	19	-------	1,230	2,080	95	61	105
5	-------	1,670	665	300	77	1,010	20	-------	1,230	1,730	95	61	139
6	-------	2,030	715	300	77	405	21	-------	1,230	1,550	127	61	166
7	-------	2,360	970	300	77	61	22	-------	1,230	1,260	166	61	180
8	-------	2,210	1,780	300	77	0	23	665	890	1,440	139	61	193
9	-------	1,870	2,260	193	77	0	24	1,120	850	1,520	115	61	193
10	-------	1,700	2,480	180	77	0	25	1,400	850	1,090	139	61	193
11	-------	1,440	2,440	139	61	0	26	1,630	760	1,050	166	61	193
12	-------	1,160	2,410	115	61	0	27	1,700	665	1,010	95	61	193
13	-------	970	2,210	115	61	0	28	1,700	540	760	95	61	223
14	-------	970	1,890	115	61	0	29	1,780	515	760	95	61	223
15	-------	1,440	1,730	166	61	0	30	2,000	460	805	95	61	223
							31	-------	515	-------	193	61	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 23–30	2,000	665	1,500	23,800
May	2,360	460	1,260	77,500
June	2,480	615	1,410	83,900
July	540	95	195	12,000
August	139	61	69.9	4,300
September	1,010	0	132	7,860
The period	----------	----------	----------	209,000

NORTH FORK OF MILK RIVER ABOVE ST. MARY CANAL, NEAR BROWNING, MONT.

LOCATION.—Water-stage recorder in SW. ¼ sec. 16, T. 37 N., R. 11 W., 1¼ miles above outlet of canal, 3 miles south of international boundary, and 30 miles north of Browning.

DRAINAGE AREA.—62 square miles.

RECORDS AVAILABLE.—June, 1921, to September, 1929. Records obtained only during period when St. Mary Canal is in operation.

EXTREMES.—Maximum discharge during year, 142 second-feet June 2 (gage height, 2.45 feet); minimum, 18.4 second-feet Aug. 16 (gage height, 0.69 foot).

1921–1929: Maximum discharge, 363 second-feet May 29, 1927 (gage height, 4.93 feet); minimum, 7.3 second-feet Sept. 22, 1922.

REMARKS.—Records good. Discharge estimated May 6 and Sept. 17–19. No diversions or regulation. Station maintained jointly with the Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	-------	64	52	27.3	21.7	19.8	16	-------	64	34.9	23.3	18.4	21.3
2	-------	57	95	26.4	21.3	20.9	17	-------	58	33.7	22.5	18.7	21.3
3	-------	50	67	25.5	21.7	22.9	18	-------	54	33.2	22.9	19.0	21.3
4	-------	50	54	25.5	21.7	21.7	19	-------	54	32.7	22.9	19.0	21.7
5	-------	50	46.6	25.9	21.7	21.7	20	-------	54	31.7	21.7	19.0	21.7
6	-------	48.0	43.0	34.3	21.7	22.1	21	-------	52	31.2	21.3	19.4	22.1
7	-------	45.9	40.7	45.3	20.9	21.7	22	-------	50	33.7	22.1	19.4	21.7
8	-------	46.6	38.9	38.3	20.9	21.7	23	-------	49.1	36.0	21.7	19.8	22.9
9	-------	54	44.1	31.2	20.1	22.1	24	-------	47.2	33.2	21.7	19.8	22.9
10	-------	62	65	28.7	20.1	22.5	25	-------	43.6	30.7	21.7	19.8	23.7
11	-------	67	62	26.9	19.8	22.1	26	-------	40.7	29.7	21.7	19.8	23.3
12	-------	60	50	26.9	19.8	21.7	27	-------	40.1	28.7	21.7	19.8	23.7
13	-------	62	44.7	25.9	19.8	21.7	28	70	39.5	28.2	21.7	19.4	22.9
14	-------	63	40.7	25.0	19.4	21.3	29	64	37.8	28.2	21.7	19.0	22.9
15	-------	58	36.6	24.1	19.4	21.7	30	64	36.6	27.8	21.3	19.4	22.5
							31	-------	37.8	-------	21.3	19.4	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 28–30	70.0	64.0	66.0	393
May	67.0	36.6	51.5	3,170
June	95.0	27.8	41.8	2,490
July	45.3	21.3	25.4	1,560
August	21.7	18.4	20.0	1,230
September	23.7	19.8	22.0	1,310
The period				10,200

NORTH FORK OF MILK RIVER NEAR INTERNATIONAL BOUNDARY

LOCATION.—Water-stage recorder in NE. ¼ sec. 11, T. 1, R. 23 W. fourth meridian, 300 yards above highway bridge at Peters ranch, 2 miles north of international boundary, and 18 miles east of Kimball, Alberta.

DRAINAGE AREA—101 square miles.

RECORDS AVAILABLE—January, 1913, to September, 1929. July, 1909, to December, 1912, maintained by Irrigation Branch of the Department of the Interior, Canada, in NE. ¼ sec. 13, 2 miles downstream. May, 1911, to December, 1912, at Alexander Dubray ranch, 2 miles south of international boundary.

EXTREMES.—Maximum discharge during year, 727 second-feet June 2 (gage height, 3.32 feet); minimum, about 12.2 second-feet Mar. 1.

1909–1929: Maximum discharge, 1,070 second-feet May 8, 1920 (gage height, 4.14 feet); minimum, 3.2 second-feet Mar. 1, 1927.

REMARKS.—Records good except those for period of ice effect, Mar. 1 to Apr. 17, which are fair. Observations discontinued Nov. 1 to Feb. 28. No diversions. Flow increased by discharge of St. Mary Canal during irrigation season. Station maintained jointly with the Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	43.0	12.2	58	214	346	441	477	394
2	44.5	13.4	58	210	645	446	472	389
3	44.5	14.6	75	178	579	456	472	389
4	44.5	15.8	77	169	492	461	472	380
5	43.0	17.0	30.4	156	422	461	466	367
6	43.0	17.7	53	106	446	487	472	350
7	43.0	19.8	59	89	451	600	466	358
8	43.0	22.6	58	87	451	574	466	354
9	44.5	27.2	45.4	96	461	512	466	354
10	50	28.8	39.2	102	456	512	466	350
11	47.5	27.2	43.2	121	456	507	472	350
12	67	28.0	46.5	110	446	507	472	341
13	79	32.0	58	106	436	507	472	341
14	62	41.0	66	121	333	507	466	341
15	77	60	162	121	242	502	472	341
16	84	60	196	117	224	502	482	341
17	79	59	95	110	214	497	487	341
18	64	58	74	95	242	497	487	296
19	54	56	72	93	354	492	487	231
20	50	56	74	91	358	487	487	220
21	49.0	55	74	87	358	487	477	217
22	47.5	55	91	84	358	482	477	214
23	46.0	55	75	80	403	482	466	207
24	44.5	55	77	79	446	482	466	210
25	46.0	55	77	75	446	482	466	217
26	49.0	52	124	67	436	487	466	224
27	50	48.7	135	67	436	477	461	224
28	47.5	66	147	68	446	472	436	217
29	50	55	164	197	451	477	427	194
30	49.0	58	184	238	446	477	427	156
31	45.0	60	-------	284	-------	477	417	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	84	43.0	52.6	3,230
March	66	12.2	41.3	2,540
April	196	30.4	86.2	5,130
May	284	67	123	7,560
June	645	214	409	24,300
July	600	441	492	30,300
August	487	417	467	28,700
September	394	156	297	17,700

BIG SANDY CREEK NEAR BOXELDER, MONT.

LOCATION.—Staff gage in NE. ¼ sec. 13, T. 30 N., R. 13 E., at Cowan ranch, 3 miles north of Boxelder.

RECORDS AVAILABLE.—March, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 206 second-feet June 8 (gage height, 8.59 feet); no flow March 17 (gates closed at dam).

1928–29: Maximum discharge, 338 second-feet Mar. 25, 1928 (gage height, 10.96 feet); no flow Mar. 17 1929 (gates closed at dam).

REMARKS.—Records good. Observations discontinued Dec. 16 to Mar. 9. Flow regulated by storage in Cowan Reservoir. Small diversion for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.5	3.6	3.5	-------	63	34	52	52	3.7	1.1
2	3.5	3.6	3.5	-------	52	30	56	6.0	3.3	1.0
3	3.5	3.6	3.5	-------	49	31	66	4.5	3.2	1.1
4	3.5	3.6	3.5	-------	63	31	94	5.2	4.0	1.2
5	3.5	27	3.5	-------	70	46	130	10	4.0	1.1
6	3.5	38	3.5	-------	49	63	126	9.5	3.5	1.0
7	3.5	33	3.5	-------	46	38	146	6.8	3.5	1.0
8	3.5	16	3.5	-------	34	31	202	6.8	3.2	1.0
9	3.5	4.4	3.5	-------	33	38	170	15	3.2	1.0
10	3.5	31	3.5	3.8	30	42	98	24	3.2	1.0
11	3.5	33	3.5	7.7	30	42	84	24	2.7	1.0
12	3.5	10	3.5	16	28	39	130	21	2.5	1.0
13	3.5	4.2	3.5	46	25	46	110	21	2.1	1.0
14	3.5	4.0	3.5	49	20	56	91	18	2.0	1.0
15	3.5	3.8	3.5	2.0	18	110	76	17	2.0	1.0
16	3.5	3.7	-------	2.0	20	98	66	8.6	2.0	1.0
17	42	3.7	-------	0	22	84	34	3.8	2.0	1.0
18	21	3.7	-------	.2	21	52	42	4.5	1.8	1.0
19	4.2	3.7	-------	1.0	6.0	46	63	4.5	1.8	1.0
20	4.0	3.7	-------	6.0	.5	56	76	5.2	2.0	1.0
21	4.0	3.8	-------	14	18	80	80	5.8	1.8	1.0
22	4.0	3.8	-------	14	80	63	84	4.8	1.8	1.0
23	3.8	3.8	-------	49	4.2	42	87	5.2	1.8	1.0
24	3.7	3.7	-------	42	.3	27	87	4.5	1.8	1.2
25	3.7	3.6	-------	39	28	31	87	3.8	1.5	1.0
26	3.7	3.6	-------	42	28	31	87	3.8	1.4	1.0
27	3.7	3.6	-------	39	28	34	76	3.8	1.8	1.0
28	3.7	3.6	-------	42	33	42	73	3.8	1.8	1.0
29	3.7	3.6	-------	59	30	56	63	3.8	1.8	1.0
30	3.7	3.6	-------	84	31	73	158	3.8	1.6	1.0
31	3.7	-------	-------	76	-------	76	-------	3.8	1.2	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	42	3.5	5.44	334
November	38	3.6	9.13	543
December 1–15	3.5	3.5	3.50	104
March 10–31	84	0	28.8	1,260
April	80	.3	32.0	1,900
May	110	27	50.6	3,110
June	202	34	93.1	5,540
July	52	3.8	10.1	621
August	4.0	1.2	2.39	147
September	1.2	1.0	1.02	60.7

LODGE CREEK AT INTERNATIONAL BOUNDARY

LOCATION.—Water-stage recorder in SE. ¼ sec. 12, T. 1, R. 29 W., third meridian, 1 mile north of international boundary, in Saskatchewan, Canada, and 30 miles northwest of Havre, Mont.

DRAINAGE AREA.—797 square miles.

RECORDS AVAILABLE.—April, 1917, to September, 1929. April, 1910, to October, 1916, maintained by Irrigation Branch, Department of the Interior, Canada.

EXTREMES.—Maximum discharge during year, 1,080 second-feet May 1 (gage height, 7.10 feet); no flow at times during year.

1917–1929: Maximum discharge, 3,680 second-feet May 23, 1927 (gage height, 12.41 feet); no flow at times.

REMARKS.—Records good except those for period of ice effect, Mar. 1–29, which are fair. Observations discontinued Nov. 1 to Feb. 28. Several diversions above gage. Station maintained jointly with the Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1928–29

Day	Mar.	Apr.	May	June	July	Day	Mar.	Apr.	May	June	July
1	0	145	889	6.6	0.5	16	0.3	123	49.4	3.2	0
2	0	71	548	9.2	.5	17	.4	202	51	3.4	0
3	0	68	404	10.6	.2	18	.2	249	44.8	3.1	0
4	0	74	292	8.7	0	19	2.6	268	44.8	2.9	0
5	0	121	271	7.9	0	20	3.1	236	40.6	2.7	0
6	0	123	134	6.6	0	21	3.2	218	34.0	2.5	0
7	0	73	107	5.8	0	22	3.3	239	28.6	2.3	0
8	0	64	71	5.4	0	23	3.5	295	27.1	2.1	0
9	0	68	56	5.3	0	24	3.6	334	25.0	1.9	0
10	0	56	51	4.4	0	25	3.9	271	21.4	1.8	0
11	0	36.4	49.4	3.8	0	26	5.4	170	18.7	1.6	0
12	0	31.6	54	3.4	0	27	9.2	113	17.4	1.4	0
13	0	27.8	44.0	2.9	0	28	5.8	88	16.7	1.3	0
14	.1	25.7	49.4	2.8	0	29	106	100	14.8	.9	0
15	.2	30.0	49.4	2.9	0	30	223	308	11.8	.8	0
						31	231	-------	7.9	-------	0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March	231	0	19.5	1,200
April	334	25.7	141	8,390
May	889	7.9	114	7,010
June	10.6	.8	3,94	234
July	.5	0	.04	2.5

NOTE.—No flow during October, August, and September.

McREA COULEE AT INTERNATIONAL BOUNDARY

LOCATION.—Water-stage recorder in NW. ¼ sec. 5, T. 1, R. 28 W., one-fourth mile above mouth and three-fourths mile north of international boundary, in Saskatchewan, Canada.

DRAINAGE AREA.—53 square miles.

RECORDS AVAILABLE.—March, 1927, to September, 1929.

EXTREMES.—Creek dry or at pool stage during entire season.

1927–1929: Maximum discharge, 486 second-feet May 23, 1927 (gage height, 5.74 feet); no flow at times.

REMARKS.—No flow during season of 1929. Observations discontinued during winter. Station maintained jointly with the Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

NORTH CHINOOK CANAL NEAR HAVRE, MONT.

LOCATION.—Staff gage in SE. ¼ sec. 2, T. 35 N., R. 17 E., 1 mile below headworks and 23 miles northeast of Havre.

RECORDS AVAILABLE.—May, 1928, to September, 1929.

REMARKS.—Records good except those for Apr. 11–24, which are estimated. This canal diverts flood water from Lodge Creek in sec. 3, T. 35 N., R. 17 E., and stores it in North Chinook Reservoir for irrigation of lands between Lodge Creek and Battle Creek north of Chinook, Mont.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	Day	Apr.	May	June	Day	Apr.	May	June
1	------	56	9.7	11	25	28	5.8	21	66	24	0.3
2	------	48	10.4	12		27	6.8	22	66	24	.1
3	------	48	19.2	13		27	9.8	23	66	22	.1
4	------	51	21	14		27	6.7	24	66	21	0
5	------	49	17.6	15		26	4.0	25	67	21	------
6	------	42	10.9	16		26	2.9	26	63	18.6	------
7	------	36	9.1	17		26	1.7	27	63	17.2	------
8	------	34	8.2	18		27	1.3	28	63	19.2	------
9	------	31	6.3	19		26	1.1	29	53	15.2	------
10	------	28	5.6	20		26	.4	30	56	13.0	------
								31	------	13.0	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 11–30	67	25	44.0	1,750
May	56	13.0	28.9	1,780
June 1–24	21	0	6.62	315
The period	------	------	------	3,840

NOTE.—Canal opened Apr. 11; closed June 25.

BATTLE CREEK AT INTERNATIONAL BOUNDARY

LOCATION.—Water-stage recorder in SE. ¼ sec. 4, T. 1, R. 26 W. third meridian, in Saskatchewan, Canada, one-fourth mile above point where creek crosses international boundary and 35 miles north of Chinook, Mont.

DRAINAGE AREA.—726 square miles.

RECORDS AVAILABLE.—April, 1917, to September, 1929.

EXTREMES.—Maximum discharge during year, 763 second-feet Apr. 26 (gage height, 5.07 feet); no flow at times during year.

1917–1929: Maximum discharge, 3,200 second-feet Apr. 13, 1917 (gage height, 8.50 feet); no flow at times.

REMARKS.—Records good except those for period of ice effect, Mar. 13 to Apr. 14, which are fair. Observations discontinued Nov. 1 to Feb. 28. Numerous diversions above station. Station maintained jointly with the Dominion Water Power and Hydrometric Bureau, Department of the Interior Canada.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Mar.	Apr.	May	June	July	Aug.
1	16.3	0	58	258	81	30.8	1.4
2	17.1	0	66	221	81	28.6	.9
3	18.6	0	70	185	88	26.4	.9
4	19.4	0	75	162	104	24.2	.4
5	20.1	0	66	151	101	22.0	.4
6	20.1	0	58	157	104	23.1	.2
7	20.9	0	66	140	91	23.1	.2
8	21.8	0	58	122	81	24.2	.2
9	23.8	0	75	114	72	25.3	0
10	23.8	0	85	109	64	22.0	0
11	23.8	0	95	105	63	20.3	0
12	23.8	0	106	107	57	20.3	0
13	24.7	0	116	112	56	19.4	0
14	27.6	1.0	137	107	53	20.3	0
15	30.4	2.7	107	104	50	17.8	0
16	39.2	6.0	117	107	46.0	15.2	0
17	35.4	7.5	117	110	46.0	13.5	0
18	34.2	63	116	107	44.7	12.4	0
19	34.2	52	121	102	44.7	11.3	0
20	32.9	48.8	177	104	46.0	10.8	0
21	31.7	28.5	177	97	46.0	9.1	0
22	30.4	20.9	193	94	46.0	8.0	0
23	29.4	16.3	275	88	44.7	7.3	0
24	27.6	20.9	470	86	43.4	6.9	0
25	27.6	24.7	656	85	42.1	5.8	0
26	27.6	34.2	592	80	39.5	5.4	0
27	27.6	36.7	258	81	38.2	5.0	0
28	28.5	43.0	233	86	34.3	3.6	0
29	25.6	50	239	81	33.0	3.0	0
30	26.6	43.0	258	77	30.8	2.0	0
31	20.1	36.7	--------	83	--------	1.7	0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	39.2	16.3	26.2	1,610
March	63.0	0	17.3	1,060
April	656	58.0	175	10,400
May	258	77.0	117	7,190
June	104	30.8	59.0	3,510
July	30.8	1.7	15.1	928
August	1.4	0	.15	9.2

NOTE.—No flow during September.

WOODPILE COULEE NEAR INTERNATIONAL BOUNDARY

LOCATION.—Water-stage recorder in NW. ¼ sec. 8, T. 37 N., R. 17 E., just below Antelope Coulee, 2 miles east of Phipps, Mont., and 4 miles south of international boundary.

DRAINAGE AREA.—70 square miles.

RECORDS AVAILABLE.—March, 1927, to September, 1929.

EXTREMES.—Maximum discharge during year, 35.8 second-feet June 2 (gage height, 2.14 feet); no flow at times during year.

1927–1929: Maximum discharge, 423 second-feet Apr. 4, 1927 (gage height, 16.69 feet); no flow at times.

REMARKS.—Records good. Observations discontinued Nov. 1 to Feb. 28. No diversions. Station maintained jointly with the Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1927–29

Day	Apr.	May	June	Day	Apr.	May	June	Day	Apr.	May	June
1	0	5.4	0.1	11	0	0.04		21	0	0	0
2	0	1.1	2.5	12	0	.01		22	0	0	0
3	0	4.8	22.2	13	0	0	0.8	23	0	0	0
4	0	7.4	5.4	14	0	0		24	0	0	0
5	0	1.9	2.0	15	0	0		25	0	0	0
6	0	.4		16	0	0		26	0	0	0
7	0	.2		17	0	0	.2	27	0	0	0
8	0	.1	1.5	18	0	0		28	0	0	0
9	0	.1		19	0	0	.03	29	0	0	0
10	0	.1		20	0	0	0	30	8.4	.1	0
								31	------	.1	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April	8.4	0	0.280	16.7
May	5.4	0	.702	43.2
June	22.2	0	1.48	88.1

NOTE.—No flow during October, March, July, August, and September.

EAST FORK OF BATTLE CREEK NEAR INTERNATIONAL BOUNDARY

LOCATION.—Water-stage recorder in NW. ¼ sec. 17, T. 37 N., R. 20 E., 2 miles south of international boundary and 7 miles east of Norheim, Mont.

DRAINAGE AREA.—98 square miles.

RECORDS AVAILABLE.—March, 1927, to September, 1929.

EXTREMES.—Maximum discharge during year, 79 second-feet Apr. 15 (gage height, 2.39 feet); no flow at times during year.

1927–1929: Maximum discharge, 432 second-feet Apr. 1, 1928 (gage height, 5.48 feet); no flow at times.

REMARKS.—Records good except those for period of ice effect, Mar. 16–31, and for estimated period, Apr. 8–12, which are fair. Observations discontinued Nov. 1 to Feb. 28. No diversions. Station maintained jointly with the Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1928–29

Day	Mar.	Apr.	May	June	Day	Mar.	Apr.	May	June
1	0	0.9	23.7	1.3	16	0	15.2	0.3	0.01
2	0	.4	6.0	1.9	17	0	6.0	.3	.1
3	0	.3	8.1	19.5	18	.5	3.2	.2	.1
4	0	.3	13.7	18.6	19	.6	1.5	.2	.1
5	0	.4	5.4	4.9	20	.3	.9	.1	.1
6	0	.2	2.0	2.0	21	.2	.7	.1	.02
7	0	.1	.9	1.0	22	.2	.5	.04	.01
8	0	.1	.4	.5	23	.1	.4	.02	.01
9	0	.1	.3	.3	24	.1	.3	.02	.01
10	0	.2	.3	.2	25	.3	.2	.02	0
11	0	.5	.3	.2	26	.3	.2	.01	0
12	0	1.0	.4	.1	27	.3	.2	.2	0
13	0	1.5	.5	.1	28	.3	.1	17.1	0
14	0	13.7	.4	.02	29	.4	.3	14.0	0
15	0	47.2	.4	.01	30	.4	10.1	3.7	0
					31	.8	-------	2.4	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March	0.8	0	0.16	9.8
April	47.2	.1	3.56	212
May	23.7	.01	3.27	201
June	19.5	0	1.70	101

NOTE.—No flow during October, July, August, and September.

LYONS COULEE AT INTERNATIONAL BOUNDARY

LOCATION.—Chain gage in NE. ¼ sec. 4, T. 37 N., R. 19 E., half a mile south of international boundary and 1 mile east of Norheim, Mont.

DRAINAGE AREA.—47 square miles.

RECORDS AVAILABLE.—March, 1927, to September, 1929.

EXTREMES.—Maximum discharge during year, 21.3 second-feet June 4 (gage height, 3.68 feet); no flow at times during year.

1927–1929: Maximum discharge, 668 second-feet Apr. 3, 1927 (gage height, 7.65 feet); no flow at times.

REMARKS.—Records good. Observations discontinued Nov. 1 to Feb. 28. Small diversions above gage. Station maintained jointly with the Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1928–29

Day	May	June	Day	May	June	Day	May	June
1	2.0	0.8	11	0.2	19.9	21	0	0.2
2	2.6	1.4	12	.05	8.3	22	0	.04
3	4.0	5.3	13	.04	5.3	23	0	.04
4	7.9	21.3	14	.03	2.1	24	0	.04
5	4.6	7.3	15	.02	1.6	25	0	.03
6	3.1	5.7	16	.02	.8	26	0	.02
7	1.5	3.1	17	.02	.9	27	0	.01
8	.3	1.9	18	.01	.8	28	0	0
9	2.8	1.3	19	0	.6	29	0	0
10	.6	.8	20	0	.7	30	0	0
						31	.5	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May	7.9	0	0.977	60.1
June	21.3	0	3.01	179

NOTE.—No flow during October, March, April, July, August, and September.

MATHESON CANAL NEAR CHINOOK, MONT.

LOCATION.—Staff gage in NW. ¼ sec. 29, T. 33 N., R. 30 E., at head works 3½ miles east of Chinook

RECORDS AVAILABLE.—April, 1905, to October, 1921; May, 1928, to June, 1929.

REMARKS.—Records poor. This canal diverts from right bank of Battle Creek for irrigation of lands between Battle Creek and Milk River.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May
1		4.0
2		3.0
3		2.0
4	3.0	.7
5		.8
6		.9
7		1.0
8		1.2
9		
10		
11		
12		
13		
14	5.0	.5
15		
16		
17		
18		
19		.2
20		.1
21		.1
22		.1
23		.05
24		.05
25	5.0	.05
26		0
27		
28	5.0	
29		
30		
31		

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 4-30	5.0	3.0	4.92	264
May 1-26	4.0	0	.74	38.2
The period				292

NOTE.—Canal opened Apr. 4; closed May 27

WHITEWATER CREEK NEAR INTERNATIONAL BOUNDARY

LOCATION.—Water-stage recorder in NW. ¼ sec. 24, T. 37 N., R. 29 E., just below mouth of North Fork of Whitewater Creek, 3½ miles south of international boundary, 5 miles northeast of Lowrane, Mont., and 18 miles south of Roche Plain, Saskatchewan.

RECORDS AVAILABLE.—March, 1927, to September, 1929.

EXTREMES.—Maximum discharge during year, 5.6 second-feet Apr. 30 (gage height, 1.31 feet); no flow at times during year.

1927–1929: Maximum discharge, 1,140 second-feet Apr. 5, 1927 (gage height, 4.71 feet); no flow at times in 1927 and 1929.

REMARKS.—Records good. Discharge estimated Oct. 30, 31, and Mar. 15–18. Observations discontinued Nov. 1 to Mar. 14. No diversions. Station maintained jointly with the Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.2	--------	1.3	2.2	0.5	0	0.05	0
2	.3	--------	1.1	1.6	1.0	0	.04	0
3	.3	--------	.8	1.2	2.3	0	.04	0
4	.4	--------	.9	1.0	1.8	0	.05	0
5	.4	--------	1.0	.9	1.1	0	.05	0
6	.4	--------	1.6	.8	.8	0	.05	.02
7	.4	--------	1.0	.8	.8	.05	.05	.1
8	.4	--------	1.0	.7	.8	.1	.05	.1
9	.4	--------	.9	.9	.8	.1	.10	.1
10	.4	--------	.8	1.5	.9	.05	.05	.1
11	.4	--------	.8	1.4	.8	.05	.05	.2
12	.4	--------	1.0	1.1	.6	.04	.05	.2
13	.4	--------	.8	1.0	.5	.02	.04	.1
14	.4	--------	.9	.9	.5	0	0	1
15	.4	1.8	.8	.8	.6	.01	0	1
16	.3	1.9	1.0	.8	.7	.01	0	.1
17	.3	1.8	.8	.8	1.2	.01	0	.1
18	.3	1.7	.8	.8	2.2	.02	0	.1
19	.3	1.7	.8	.8	1.8	.05	0	.1
20	.3	1.3	.7	.6	1.1	.02	0	.1
21	.3	1.4	.7	.6	.8	0	0	.1
22	.3	1.4	.8	.6	.5	0	0	.1
23	.4	1.1	.8	.6	.3	0	0	.2
24	.4	1.3	.8	.6	.2	0	0	.4
25	.4	1.3	.8	.6	.1	0	0	.3
26	.4	1.0	.8	.6	.02	0	0	.2
27	.4	.9	.8	.8	.01	0	0	.3
28	.4	1.2	.8	1.0	0	0	0	.3
29	.5	1.7	1.2	1.7	0	.01	0	.3
30	.5	1.2	4.7	1.1	0	.05	0	.3
31	.5	1.4	--------	.6	--------	.05	0	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	0.5	0.2	0.37	22.8
March 15–31	1.9	.9	1.42	47.9
April	4.7	.7	1.03	61.3
May	2.2	.6	.95	58.4
June	2.3	0	.758	45.1
July	.1	0	.021	1.3
August	.1	0	.022	1.4
September	.4	0	.137	8.2

FRENCHMAN RIVER AT INTERNATIONAL BOUNDARY

LOCATION.—Water-stage recorder in SW. ¼ sec. 4, T. 1, R. 10 W. third meridian, in Saskatchewan, Canada, just across international boundary from east side of lot 3, sec. 6, T. 37 N., R. 34 E.

DRAINAGE AREA.—1,875 square miles.

RECORDS AVAILABLE.—April, 1917, to September, 1929.

EXTREMES.—Maximum discharge during year, 637 second-feet Apr. 29 (gage height, 4.37 feet); no flow Sept. 3–28.

1917–1929: Maximum discharge, 5,440 second-feet Mar. 29, 1925 (gage height, 13.12 feet); no flow at times.

REMARKS.—Records good except those for period of ice effect, Mar. 1 to Apr. 3, and for estimated periods, which are fair. Observations discontinued Nov. 1 to Feb. 28. Numerous diversions in Canada. Station maintained jointly with the Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20.8	4.0	160	294	[a] 89	[a] 56	[a] 7.1	[a] 0.1
2	20.8	4.0	125	270	[a] 94	51	6.0	.1
3	20.8	4.0	101	270	[a] 100	[a] 48	[a] 6.9	[a] 0
4	20.8	4.0	122	249	107	42.5	[a] 7.8	0
5	22.0	4.0	124	226	[a] 108	[a] 40.6	8.7	[a] 0
6	22.9	4.5	122	211	109	38.8	[a] 10.0	[a] 0
7	23.8	5.0	138	182	[a] 100	[a] 38.2	16.7	0
8	24.7	4.5	84	166	90	37.6	[a] 12.3	[a] 0
9	24.7	4.0	98	158	[a] 95	[a] 38.2	[a] 8.0	0
10	25.6	10.9	86	163	129	38.8	3.6	[a] 0
11	27.4	19.0	193	156	[a] 110	[a] 35.2	[a] 3.4	0
12	28.3	24.0	193	150	96	31.6	3.2	[a] 0
13	28.3	28.0	214	143	[a] 85	[a] 30.3	2.6	0
14	28.3	25.0	233	138	75	[a] 29.1	2.4	[a] 0
15	27.4	22.9	185	131	[a] 75	27.8	[a] 2.9	[a] 0
16	26.5	18.0	168	129	[a] 80	[a] 28.8	3.4	[a] 0
17	25.6	13.6	163	129	143	29.7	[a] 2.9	0
18	25.6	13.0	148	129	[a] 100	[a] 28.8	[a] 2.4	[a] 0
19	25.6	13.6	143	131	64	27.8	1.9	0
20	25.6	25.6	150	133	[a] 64	[a] 24.5	[a] 1.6	[a] 0
21	24.7	75	156	146	[a] 64	[a] 21.3	1.2	0
22	25.6	123	174	140	[a] 64	18.1	[a] 1.1	[a] 0
23	24.7	88	270	131	64	[a] 17.4	1.0	0
24	25.6	86	381	122	[a] 61	16.7	[a] .9	[a] 0
25	26.5	84	490	117	58	[a] 15.4	[a] .7	[a] 0
26	25.6	93	560	109	[a] 68	14.1	.6	[a] 0
27	25.6	76	601	107	79	[a] 12.7	[a] .5	0
28	25.6	80	627	104	[a] 73	[a] 11.2	.4	[a] 0
29	26.5	86	606	98	67	9.8	[a] .3	[a] 3.6
30	27.4	100	420	94	[a] 62	[a] 9.0	.2	7.1
31	[a] 27.0	189	--------	84	--------	8.2	[a] .2	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	28.3	20.8	25.2	1,550
March	189	4.0	43.0	2,640
April	627	84	241	14,300
May	294	84	155	9,530
June	143	58	85.8	5,110
July	56	8.2	28.3	1,740
August	16.7	.2	3.90	240
September	7.1	0	.36	21

[a] Estimated.

FRENCHMAN CANAL NEAR SACO, MONT.

LOCATION.—Staff gage in NE. ¼ sec. 27, T. 33 N., R. 34 E., 14 miles northeast of Saco.

RECORDS AVAILABLE.—May, 1928, to August, 1929, irrigation seasons only.

REMARKS.—Records fair. This canal diverts from Frenchman River for irrigation of land along the river.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Day	Apr.	May	June	July	Aug.
1	------	5.5	7.3	2.4	7.6	16	------	5.3	7.9	11.0	5.8
2	------	4.9	7.4	3.7	7.5	17	------	5.3	9.2	10.8	5.2
3	------	4.5	7.4	8.0	7.5	18	------	5.3	7.1	11.0	4.8
4	------	4.5	7.5	7.9	7.5	19	------	5.2	4.1	11.0	4.4
5	------	4.5	7.3	2.4	7.2	20	------	5.2	7.2	11.0	3.8
6	------	4.5	7.5	5.4	6.6	21	------	5.2	8.5	11.0	3.1
7	------	5.6	7.5	10.4	6.4	22	------	5.2	4.8	5.5	1.4
8	------	2.8	7.0	10.5	6.0	23	------	5.2	9.0	0	------
9	------	4.0	6.4	10.6	5.9	24	8.3	6.2	9.1	0	------
10	------	4.1	6.4	10.7	6.0	25	8.3	7.7	9.2	7.8	------
11	------	4.4	6.5	10.8	6.0	26	9.8	7.7	9.2	9.1	------
12	------	4.8	6.5	10.9	7.8	27	9.8	7.6	9.6	8.8	------
13	------	5.3	6.7	11.0	7.4	28	9.8	7.6	9.6	8.9	------
14	------	5.4	6.5	11.0	6.8	29	9.8	7.5	9.2	8.4	------
15	------	5.3	7.1	11.0	6.4	30	6.9	7.5	8.8	8.0	------
						31	------	7.4	------	7.6	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 24-30	9.8	6.9	8.96	124
May	7.7	2.8	5.52	339
June	9.6	4.1	7.58	451
July	11.0	0	8.28	509
August 1-22	7.8	1.4	5.96	260
The period	------	------	------	1,680

NOTE.—Canal opened Apr. 24; closed July 22; opened July 25; closed Aug. 22.

ROCK CREEK AT INTERNATIONAL BOUNDARY

LOCATION.—Chain gage in SW. ¼ sec. 1, T. 37 N., R. 37 E., at Bowrey ranch, three-fourths mile south of international boundary, 2 miles above Horse Creek, and 5 miles west of Barnard, Mont.

DRAINAGE AREA.—242 square miles.

RECORDS AVAILABLE.—March, 1927, to September, 1929.

EXTREMES.—Maximum discharge during year, 56 second-feet Mar. 30 (gage height, 3.74 feet); no flow June 13–18, Sept. 27 and 28.

1927–1929: Maximum discharge, 982 second-feet Apr. 6, 1927 (gage height, 10.51 feet); no flow Mar. 1–17, 1927, and June 13–18, Sept. 27 and 28, 1929.

REMARKS.—Records good except those for period of ice effect, Mar. 18–27, and for estimated periods, which are fair. Observations discontinued Nov. 1 to Mar. 17. One small diversion above gage. Station maintained jointly with the Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		-------	23.2	7.4	9.3	2.3	0.2	0.1
2		-------	19.8	8.5	5.7	[a] 2.2	[a] .2	.1
3	[a] 3.8	-------	17.7	9.0	6.2	[a] 2.1	.1	.1
4		-------	19.2	8.8	5.7	[a] 2.1	.1	.1
5		-------	16.3	7.7	5.7	2.0	.1	.04
6		-------	15.4	6.7	5.2	1.8	.2	.04
7		-------	14.6	6.0	5.0	1.8	.2	.02
8	[a] 3.8	-------	13.2	5.7	4.6	1.8	.1	.02
9		-------	11.8	5.5	[a] 4.3	1.7	.1	[a] .02
10		-------	1.6	7.2	4.0	1.6	[a] .2	[a] .02
11		-------	2.8	9.8	3.9	1.5	.4	[a] .02
12		-------	1.5	11.8	3.9	1.5	.4	.02
13		-------	3.1	8.8	0	1.4	.1	.1
14		-------	.8	[a] 10.3	0	1.3	.1	.04
15	[a] 3.7	-------	[a] 5.0	11.8	0	1.2	.2	[a] .03
16		-------	9.3	12.1	[a] 0	1.2	.1	.02
17		-------	11.8	11.5	0	1.1	.1	[a] .02
18		10.6	9.8	9.3	0	1.0	.2	.02
19		15.0	10.9	9.0	1.1	.9	.1	.04
20		25.0	9.0	7.7	.2	.9	.1	[a] .05
21		15.5	7.7	7.7	.2	.8	.1	.1
22		31.8	7.4	7.2	.2	.7	.1	.04
23		14.4	7.4	7.2	.2	.6	.1	.1
24		13.1	9.3	6.4	1.0	.6	.2	[a] .1
25		12.4	10.9	6.0	.6	.5	.1	[a] .1
26	[a] 3.7	13.6	6.0	9.3	1.2	.4	.1	[a] .02
27		20.3	5.5	8.5	3.1	[a] .3	.1	0
28		40.2	6.0	[a] 8.4	1.1	.3	.1	0
29		49.2	6.0	8.2	2.4	.2	.1	.1
30		56	6.9	7.4	2.3	.2	.1	[a] .1
31		38.4	-------	10.9	-------	.2	.1	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	-------	-------	3.73	229
March 18–31	56.0	10.6	25.4	705
April	23.2	.8	9.67	575
May	12.1	5.5	8.45	520
June	9.3	0	2.57	153
July	2.3	.2	1.17	71.9
August	.4	.1	.14	8.6
September	.1	0	.055	3.2

[a] Estimated.

HORSE CREEK AT INTERNATIONAL BOUNDARY

LOCATION.—Staff gage in SE. ¼ sec. 3, T. 37 N., R. 37 E., three-quarters of a mile south of international boundary and 8 miles west of Barnard, Mont.

DRAINAGE AREA.—71 square miles.

RECORDS AVAILABLE.—March, 1927, to September, 1929. May, 1914, to October, 1926, station maintained by Department of the Interior, Canada.

EXTREMES.—Maximum discharge during year, 31.7 second-feet Mar. 29 (gage height, 3.59 feet); no flow at times during year.

1914–1929: Maximum discharge, 1,040 second-feet Mar. 30, 1925 (gage height, 10.85 feet); no flow at times.

REMARKS.—Records fair. Stage-discharge relation affected by ice Oct. 29–31 and Mar. 12–26. Observations discontinued Nov. 1 to Feb. 28. No diversions. Station maintained jointly with the Dominion Water Power and Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Mar.	Apr.	May	June	July	Day	Oct.	Mar.	Apr.	May	June	July
1	0.10	0	7.4	[a] 0.4	[a] 0.10	[a] 0.01	16	[a] 0.04	0.2	[a] 1.6	[a] 0.6	[a] 0.10	[a] 0
2	[a] .10	0	6.3	.4	[a] .10	.01	17	[a] .04	[a] .2	1.4	[a] .5	.10	[a] 0
3	[a] .10	0	[a] 4.0	[a] .4	.10	[a] .01	18	[a] .03	.3	1.3	[a] .5	[a] .10	[a] 0
4	[a] .10	0	3.7	.4	.10	[a] .01	19	[a] .03	.2	[a] 1.3	[a] .4	[a] .10	[a] 0
5	[a] .10	0	4.7	[a] .4	[a] .10	0	20	[a] .02	2.0	1.2	[a] .4	.04	[a] 0
6	[a] .10	0	1.4	.3	[a] .10	[a] 0	21	.02	2.0	1.1	.3	[a] .03	[a] 0
7	[a] .10	0	2.0	[a] .3	.10	[a] 0	22	[a] .02	7.1	[a] 1.0	[a] .3	[a] .02	[a] 0
8	[a] .10	0	2.2	.3	[a] .10	0	23	[a] .02	4.3	[a] 1.0	.3	[a] .02	[a] 0
9	[a] .10	0	2.2	[a] .3	.10	[a] 0	24	[a] .02	3.1	.9	[a] .2	.01	[a] 0
10	.10	0	1.2	[a] .3	[a] .10	[a] 0	25	[a] .02	8.7	[a] .2	.1	.02	0
11	[a] .10	0	1.3	.3	.10	0	26	[a] .02	10.4	[a] .7	[a] .1	.01	[a] 0
12	[a] .10	[a] .1	[a] 1.3	.3	[a] .04	[a] 0	27	[a] .02	6.6	[a] .6	.1	[a] .01	[a] 0
13	[a] .10	[a] .1	1.3	[a] .4	[a] .03	[a] 0	28	.02	18.0	.5	[a] .1	[a] .01	0
14	.10	[a] .1	1.0	[a] .5	.02	0	29	[a] .02	28.4	.5	[a] .1	[a] .01	[a] 0
15	[a] .10	[a] .1	1.7	.6	[a] .04	[a] 0	30	[a] .02	14.9	[a] .5	.1	[a] .01	[a] 0
							31	.03	13.5	-------	[a] .1	-------	[a] 0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	0.10	0.02	0.061	3.8
March	28.4	0	3.88	239
April	7.4	.5	1.87	111
May	.6	.1	.32	19.7
June	.1	.01	.061	3.6
July	.01	0	.001	.1

[a] Estimated.

NOTE.—No flow during August and September.

McEACHERN CREEK AT INTERNATIONAL BOUNDARY

LOCATION.—Staff gage in SW. ¼ sec. 1, T. 37 N., R. 36 E., half a mile south of international boundary at Dolson ranch and 7 miles north of Thoeny, Mont.

DRAINAGE AREA.—160 square miles.

RECORDS AVAILABLE.—March, 1927, to September, 1929. March, 1924, to October, 1926, station maintained by the Department of the Interior, Canada, above east fork of this stream.

EXTREMES.—Maximum discharge during year, about 72 second-feet Mar. 30 (gage height, 3.38 feet); no flow at times during year.

1927–1929: Maximum discharge, 1,850 second-feet Apr. 9, 1927 (gage height, 10.42 feet); no flow at times.

REMARKS.—Records good below 50 second-feet and fair above. Stage-discharge relation affected by ice Mar. 14 to Apr. 2. Observations discontinued Nov. 1 to Feb. 28. Station maintained jointly with the Dominion Water and Hydrometric Bureau, Department of the Interior, Canada.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Mar.	Apr.	May	June	Day	Oct.	Mar.	Apr.	May	June
1	0.01	0	33.8	0.4	0.1	16	0.01	0.2	1.2	0.2	0.1
2	.01	0	13.8	.4	.1	17	.01	1.7	1.2	.2	.1
3	.01	0	12.2	.3	.1	18	01	4.0	1.2	.2	.1
4	.01	0	12.9	.2	.1	19	.01	9.0	1.1	.2	.1
5	.01	0	15.4	.2	.1	20	.01	20.1	1.1	.2	.1
6	.01	0	13.2	.2	.1	21	.01	16.6	.9	.1	.1
7	.01	0	10.2	.2	.1	22	.01	25.1	.9	.1	.02
8	.01	0	7.2	.2	.1	23	.01	26.9	.7	.1	.02
9	.01	0	3.6	.2	.1	24	.01	31.6	.6	.1	.01
10	.01	0	3.0	.2	.1	25	.01	17.6	.5	.1	0
11	.01	0	2.2	.2	.1	26	.01	12.8	.5	.1	0
12	.01	0	1.8	.2	.1	27	.01	12.1	.5	.1	0
13	.01	0	1.4	.2	.1	28	.01	13.8	.5	.1	0
14	.01	.1	1.2	.2	.1	29	.01	41.1	.4	.1	0
15	.01	.1	1.1	.2	.1	30	.01	63.0	.4	.1	0
						31	.01	51.0	-------	.1	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	0.01	0.01	0.010	0.6
March	63	0	11.2	689
April	33.8	.4	4.82	287
May	.4	.1	.18	11.1
June	.1	0	.072	4.3

NOTE.—No flow during July, August, and September.

YELLOWSTONE RIVER BASIN

YELLOWSTONE LAKE AT LAKE HOTEL, YELLOWSTONE NATIONAL PARK

LOCATION.—Staff gage at boat landing directly in front of Lake Hotel and 1½ miles southwest of outlet of Yellowstone Lake. Zero of gage is 7,729.51 feet above mean sea level.

DRAINAGE AREA.—1,010 square miles.

RECORDS AVAILABLE.—October, 1921, to September, 1929.

EXTREMES.—Maximum stage during year, 4.04 feet July 5; minimum, 0.95 foot Nov. 18. Lower stage occurred during period when lake was frozen.

1921–1929: Maximum stage, 6.12 feet June 30, 1927; minimum, 0.36 foot Dec. 17, 1921. Lower stage may have occurred at times during winter.

REMARKS.—Records good. Observations discontinued during winter. No artificial regulation.

Daily gage height, in feet, 1928–29

Day	Oct.	Nov.	June	July	Aug.	Sept.	Day	Oct.	Nov.	June	July	Aug.	Sept.
1	------	------	------	3.91	2.98	1.90	16	1.30	------	3.27	3.61	2.35	1.50
2	------	1.10	------	3.95	2.93	1.88	17	------	1.00	3.25	3.58	2.32	1.48
3	1.60	------	------	3.95	2.89	1.90	18	1.30	.95	3.45	3.55	2.29	1.42
4	1.58	1.10	------	3.97	2.87	1.88	19	------	------	3.47	------	2.23	1.40
5	1.50	------	------	4.04	2.84	1.82	20	1.20	------	3.47	3.45	2.14	------
6	------	1.10	------	4.00	2.79	1.76	21	------	------	3.48	3.48	2.17	1.40
7	1.38	------	2.18	3.93	2.76	1.76	22	1.20	------	3.56	3.43	2.14	------
8	------	1.00	2.26	3.89	2.72	1.74	23	------	------	3.56	3.40	2.12	1.40
9	1.36	------	------	3.82	2.67	1.70	24	1.20	------	3.59	3.35	2.06	------
10	------	1.00	------	3.79	2.63	1.68	25	------	------	3.62	3.30	2.02	------
11	1.36	1.00	2.65	3.75	2.57	1.66	26	------	------	3.67	3.25	2.01	------
12	------	------	2.78	3.75	2.54	1.60	27	1.20	------	3.70	3.20	1.98	1.38
13	1.36	1.00	2.82	3.69	2.47	1.60	28	------	------	3.79	3.18	1.95	1.36
14	------	------	------	3.64	2.43	1.55	29	1.20	------	3.81	3.17	1.92	------
15	------	1.00	3.05	3.62	2.40	------	30	------	------	3.88	3.06	1.95	------
							31	1.20	------	------	3.04	1.91	------

YELLOWSTONE RIVER AT YELLOWSTONE LAKE OUTLET, YELLOWSTONE NATIONAL PARK

LOCATION.—Water-stage recorder installed Oct. 2, 1928, 550 feet below Fishing Bridge, a quarter of a mile below outlet of Yellowstone Lake; elevation of zero, 7,727.84 feet above mean sea level. Staff gage at Fishing Bridge is also used, zero of which is 7,728.90 feet above mean sea level.

DRAINAGE AREA.—1,010 square miles.

RECORDS AVAILABLE.—December, 1922, to September, 1929. Gage-height records only prior to October, 1926.

EXTREMES.—Maximum discharge during year, 3,700 second-feet July 2–5; maximum gage height at Fishing Bridge site, 4.38 feet July 5; minimum discharge, 515 second-feet Jan. 25 (gage height, 0.74 foot at Fishing Bridge site).

1922–1929: Maximum discharge, 7,420 second-feet June 29, 30, and July 1, 1927 (gage height, 6.3 feet at Fishing Bridge site); minimum, that of Jan. 25, 1929.

REMARKS.—Records good above 1,000 second-feet; others fair to poor. Records for period Dec. 9 to May 18, which were estimated in part, were obtained at Fishing Bridge site; records for remainder of year were obtained at recorder site, 550 feet below. No regulation.

Daily gage height, in feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		1.43					1.17			4.32	3.40	2.34
2		1.43		1.03				1.03		4.33	3.39	2.32
3	2.03									4.37	3.33	2.33
4		1.43	1.13							4.36	3.33	2.32
5	2.03						.98			4.38	3.30	2.29
6										4.33	3.24	2.27
7					1.18	1.23			2.73	4.27	3.22	2.25
8		1.48						1.13	2.77	4.23	3.18	2.21
9			1.11							4.21	3.14	2.19
10										4.14	3.10	2.17
11									3.17	4.09	3.04	2.15
12				.94					3.23	4.07	3.00	2.13
13		1.43					1.13		3.32	4.07	2.94	2.11
14										4.03	2.89	2.05
15		1.33				1.23			3.47	4.03	2.84	
16			1.08		1.23			1.13	3.59	4.01	2.83	2.03
17									3.79	3.99	2.79	2.01
18		1.39							3.93	3.94	2.78	1.95
19				.93					3.88		2.75	1.93
20					1.24	1.13			3.90	3.87	2.67	1.91
21									3.93	3.85	2.71	1.91
22							1.03		3.93	3.84	2.63	1.93
23									3.99	3.78		1.91
24		1.33	.93						4.03	3.72	2.55	
25	1.63			.74					4.04	3.69	2.52	1.85
26					1.28				4.08	3.63	2.51	
27						1.13			4.11	3.60	2.48	1.91
28		1.23							4.16	3.54	2.47	1.88
29	1.53								4.14	3.51	2.43	
30								2.23	4.28	3.47	2.43	
31										3.42	2.41	

NOTE.—The gage-height record, collected at the Fishing Bridge gage, shows approximate stages in Yellowstone Lake, but owing to a small amount of fall between main body of lake and gage, daily stages as obtained vary slightly from elevations determined at gage in Yellowstone Lake at the Lake Hotel. Add 7,728.90 feet to above readings to reduce to mean sea level datum.

Daily and monthly discharge, in second-feet, of Yellowstone River at Yellowstone Lake outlet, Yellowstone National Park, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,040	772	630	585	577	655	615	588	1,200	3,620	2,300	1,290
2	1,040	750	630	588	586	654	605	588	1,290	3,700	2,230	1,290
3	1,040	750	630	585	595	652	595	592	1,340	3,700	2,170	1,240
4	1,000	750	615	583	604	650	585	597	1,380	3,700	2,170	1,240
5	1,000	750	600	580	612	648	575	602	1,380	3,700	2,110	1,200
6	970	750	585	578	621	647	580	606	1,470	3,620	2,050	1,200
7	970	772	590	575	630	645	585	610	1,520	3,620	2,050	1,200
8	938	750	595	572	632	645	590	615	1,620	3,540	1,990	1,160
9	938	750	600	570	633	645	595	613	1,720	3,460	1,940	1,120
10	938	750	600	567	635	645	600	611	1,820	3,380	1,880	1,120
11	938	728	600	565	637	645	605	610	1,940	3,380	1,880	1,120
12	905	728	600	562	638	645	610	608	2,050	3,300	1,820	1,080
13	905	728	600	562	640	655	615	606	2,170	3,220	1,770	1,080
14	905	728	600	562	642	645	612	604	2,230	3,140	1,720	1,040
15	875	705	600	562	643	645	609	602	2,360	3,140	1,720	1,040
16	875	705	600	562	645	639	606	600	2,560	3,140	1,670	1,040
17	875	705	595	562	645	633	603	615	2,840	3,070	1,620	1,000
18	875	705	590	562	645	627	600	615	3,000	3,000	1,620	1,000
19	845	705	586	562	645	621	597	630	3,000	3,000	1,570	970
20	845	685	581	554	645	615	594	648	3,070	3,000	1,520	970
21	845	685	576	546	648	615	591	685	3,070	2,920	1,520	970
22	845	665	572	538	650	615	588	728	3,070	2,840	1,470	970
23	820	665	567	531	652	615	588	772	3,140	2,770	1,470	970
24	820	665	562	523	655	615	588	845	3,220	2,700	1,420	938
25	820	665	565	515	658	615	588	938	3,220	2,700	1,380	938
26	795	665	568	524	660	615	588	1,040	3,300	2,630	1,380	938
27	795	648	571	533	659	615	588	1,080	3,380	2,560	1,380	938
28	795	648	574	542	657	615	588	1,120	3,460	2,490	1,340	938
29	795	648	576	550	-------	615	588	1,120	3,540	2,420	1,340	905
30	772	648	579	559	-------	615	588	1,160	3,620	2,360	1,340	905
31	772	-------	582	568	-------	615	-------	1,160	-------	2,360	1,340	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	1,040	772	890	0.881	1.02	54,700
November	772	648	709	.702	.78	42,200
December	630	562	591	.585	.67	36,300
January	588	515	559	.553	.64	34,400
February	660	577	635	.629	.66	35,300
March	655	615	633	.627	.72	38,900
April	615	575	595	.589	.66	35,400
May	1,160	588	736	.729	.84	45,300
June	3,620	1,200	2,430	2.41	2.69	145,000
July	3,700	2,360	3,100	3.07	3.54	191,000
August	2,300	1,340	1,720	1.70	1.96	106,000
September	1,290	905	1,060	1.05	1.17	63,100
The year	3,700	515	1,140	1.13	15.35	828,000

YELLOWSTONE RIVER NEAR CANYON HOTEL, YELLOWSTONE NATIONAL PARK

LOCATION.—Water-stage recorder half a mile upstream from Upper Falls and Canyon ranger station, 1¼ miles south of Canyon Hotel, and 13 miles below outlet of Yellowstone Lake.

DRAINAGE AREA.—1,160 square miles (revised).

RECORDS AVAILABLE.—June, 1913, to September, 1929.

EXTREMES.—Maximum discharge during year, 3,740 second-feet July 2 (gage height, 2.8 feet); minimum, 932 second-feet Sept. 30 (gage height, 1.05 feet).

1913–1929: Maximum discharge, 8,550 second-feet June 27, 1918 (gage height, 4.50 feet); minimum, 664 second-feet Sept. 6, 1919 (gage height, 0.72 foot). Lower stages probably occurred during periods of no record.

REMARKS.—Records excellent. Discharge estimated Oct. 1, Aug. 17, and 18. Observations discontinued Oct. 6 to May 30. No regulation or diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	May	June	July	Aug.	Sept.	Day	Oct.	May	June	July	Aug.	Sept.
1	1,080	------	1,700	3,640	2,370	1,350	16	------	------	2,920	3,120	1,730	1,060
2	1,060	------	1,680	3,740	2,330	1,340	17	------	------	3,120	3,120	1,700	1,050
3	1,050	------	1,660	3,640	2,280	1,340	18	------	------	3,420	3,120	1,670	1,030
4	1,050	------	1,650	3,640	2,260	1,290	19	------	------	3,320	3,120	1,640	1,020
5	1,040	------	1,700	3,640	2,220	1,260	20	------	------	3,320	3,020	1,620	1,010
6	------	------	1,760	3,640	2,170	1,240	21	------	------	3,320	2,920	1,580	1,020
7	------	------	1,920	3,530	2,130	1,230	22	------	------	3,320	2,920	1,540	1,020
8	------	------	2,060	3,530	2,080	1,220	23	------	------	3,220	2,830	1,510	1,000
9	------	------	2,190	3,640	2,030	1,200	24	------	------	3,320	2,830	1,500	984
10	------	------	2,300	3,640	1,960	1,180	25	------	------	3,320	2,730	1,460	958
11	------	------	2,460	3,420	1,920	1,160	26	------	------	3,420	2,730	1,430	966
12	------	------	2,540	3,320	1,890	1,140	27	------	------	3,420	2,640	1,420	984
13	------	------	2,640	3,320	1,850	1,120	28	------	------	3,530	2,540	1,410	975
14	------	------	2,730	3,220	1,790	1,100	29	------	------	3,640	2,520	1,400	958
15	------	------	2,830	3,120	1,760	1,080	30	------	------	3,640	2,460	1,400	941
							31	------	1,660	------	2,410	1,370	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October 1–5	1,080	1,040	1,060	0.914	0.17	10,500
June	3,640	1,650	2,740	2.36	2.63	163,000
July	3,740	2,410	3,150	2.72	3.14	194,000
August	2,370	1,370	1,790	1.54	1.78	110,000
September	1,350	941	1,110	.957	1.07	66,000

YELLOWSTONE RIVER AT CORWIN SPRINGS, MONT.

LOCATION.—Chain gage in NE. ¼ sec. 30, T. 8 S., R. 8 E., at highway bridge in canyon at Corwin Springs, 8 miles north of Gardiner.

DRAINAGE AREA.—2,630 square miles.

RECORDS AVAILABLE.—September, 1910, to September, 1929.

EXTREMES.—Maximum discharge during year, 14,400 second-feet June 17 (gage height, 7.4 feet); minimum, 800 second-feet Jan. 20 to Mar. 3.

1910–1929: Maximum discharge, about 26,500 second-feet June 14 and 15, 1918 (gage height, 11.5 feet); minimum (estimated), 720 second-feet Jan. 8–10, 1920.

REMARKS.—Records excellent except those for estimated periods, which are fair. No diversions. Natural storage in Yellowstone Lake.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,700	1,310	1,080	950	[a] 800	890	1,010	1,310	7,350	10,200	3,510	1,930
2	1,700	1,220	1,010	950	[a] 800	800	1,010	1,310	9,560	9,860	3,510	1,930
3	1,700	1,220	1,010	950	800	800	1,010	1,220	6,840	9,270	3,350	1,930
4	1,700	1,220	1,010	950	800	845	1,010	1,140	5,650	8,980	3,350	1,930
5	1,700	1,220	[a] 1,010	950	800	845	1,080	1,140	7,090	8,150	3,350	1,810
6	1,700	1,310	[a] 1,010	[a] 950	800	895	1,080	1,140	8,150	7,610	3,190	1,810
7	1,700	1,310	[a] 1,010	[a] 922	800	895	1,010	1,140	9,560	7,350	3,190	1,810
8	1,700	1,310	[a] 1,010	895	[a] 800	950	1,010	1,140	11,100	6,840	3,030	1,810
9	1,700	1,310	1,010	895	[a] 800	950	1,010	1,140	11,400	6,590	3,030	1,700
10	1,600	1,310	1,010	950	[a] 800	950	1,010	1,220	11,700	6,350	2,880	1,700
11	1,600	1,310	[a] 1,010	950	[a] 800	950	1,010	1,220	10,800	6,350	2,740	1,700
12	1,600	1,310	[a] 1,010	895	[a] 800	950	1,010	1,310	10,500	6,110	2,740	1,700
13	1,600	1,220	1,010	895	[a] 800	950	1,010	1,700	11,400	5,880	2,600	1,600
14	1,600	1,220	1,010	895	[a] 800	950	1,010	2,060	13,000	5,880	2,460	1,600
15	1,600	1,220	1,010	895	[a] 800	950	1,010	2,190	13,700	5,650	2,320	1,600
16	1,600	1,220	950	895	[a] 800	950	1,010	2,460	14,000	5,430	2,460	1,500
17	1,600	1,220	950	950	[a] 800	950	1,080	3,190	14,400	5,430	2,460	1,500
18	1,600	1,220	950	895	[a] 800	1,010	1,080	3,350	11,100	5,210	2,320	1,500
19	1,500	1,220	950	845	[a] 800	1,010	1,080	3,680	9,860	5,430	2,320	1,400
20	1,500	1,140	[a] 950	[a] 800	800	1,010	1,080	5,000	8,700	5,210	2,320	1,400
21	1,500	1,140	[a] 950	[a] 800	800	1,010	1,140	6,110	8,980	5,000	2,190	1,400
22	1,500	1,140	[a] 950	[a] 800	800	1,010	1,140	7,350	9,270	4,590	2,190	1,400
23	1,500	1,080	[a] 950	[a] 800	800	950	1,140	8,980	9,860	4,400	2,190	1,500
24	1,500	1,080	[a] 950	[a] 800	800	950	1,140	9,860	9,860	4,210	2,060	1,500
25	1,500	1,080	950	[a] 800	800	950	1,080	13,000	10,500	4,210	1,930	1,500
26	1,500	1,080	950	[a] 800	800	950	1,080	10,500	11,100	4,210	1,930	1,600
27	1,500	1,080	950	[a] 800	800	950	1,080	5,650	11,400	4,030	1,930	1,600
28	1,500	1,080	950	[a] 800	800	1,010	1,140	4,790	11,100	3,850	1,930	1,600
29	1,400	1,080	950	[a] 800	-------	1,010	1,310	4,590	11,700	3,680	1,930	1,500
30	1,400	1,080	950	[a] 800	-------	1,010	1,400	4,590	11,400	3,510	2,060	1,500
31	1,400	-------	950	[a] 800	-------	1,010	-------	6,110	-------	3,510	1,930	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	1,700	1,400	1,580	0.601	0.69	97,200
November	1,310	1,080	1,200	.456	.51	71,400
December	1,080	950	981	.373	.43	60,300
January	950	800	873	.332	.38	53,700
February	800	800	800	.304	.32	44,400
March	1,010	800	943	.359	.41	58,000
April	1,400	1,010	1,080	.411	.46	64,200
May	13,000	1,140	3,860	1.47	1.70	237,000
June	14,400	5,650	10,400	3.95	4.41	619,000
July	10,200	3,510	5,900	2.24	2.58	363,000
August	3,510	1,930	2,560	.973	1.12	157,000
September	1,930	1,400	1,630	.620	.69	97,000
The year	14,400	800	2,650	1.01	13.70	1,920,000

[a] Estimated because of ice.

YELLOWSTONE RIVER NEAR LIVINGSTON, MONT.

LOCATION.—Chain gage in NW. ¼ sec. 12, T. 3 S., R. 9 E., at highway bridge on Yellowstone Trail, 5 miles south of Livingston.

DRAINAGE AREA.—3,580 square miles.

RECORDS AVAILABLE.—May, 1897, to December, 1905; August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 19,000 second-feet June 17 (gage height, 7.42 feet); minimum, 930 second-feet Jan. 25 (gage height, 0.94 foot).

1897–1905, 1928–29: Maximum discharge, 26,800 second-feet June 1, 1897; minimum, that of Jan. 25, 1929.

REMARKS.—Records good except those for estimated periods, Oct. 1–7, 18–26, and Jan. 23, which are fair. Some diversions.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		1,930	1,540	1,420	1,140	1,190	1,300	1,800	7,200	13,400	3,930	2,480
2		1,800	1,540	1,420	1,360	1,240	1,420	1,670	11,300	12,900	3,930	2,340
3		1,800	1,540	1,420	1,360	1,300	1,420	1,670	7,800	11,700	3,740	2,340
4	2,530	1,800	1,540	1,480	1,420	1,300	1,480	1,670	7,200	11,300	3,560	2,340
5		1,930	1,360	1,480	1,420	1,420	1,600	1,670	7,800	9,800	3,740	2,340
6		1,930	1,360	1,190	1,360	1,480	1,540	1,670	9,800	8,750	3,560	2,340
7		1,930	1,420	1,240	1,240	1,540	1,420	1,600	11,300	8,750	3,560	2,340
8	2,480	1,930	1,420	1,240	1,140	1,600	1,300	1,600	14,000	8,400	3,390	2,340
9	2,480	1,800	1,360	1,420	1,080	1,600	1,300	1,600	16,300	7,800	3,230	2,340
10	2,480	1,800	1,420	1,360	1,140	1,600	1,420	1,670	15,500	7,500	3,070	2,200
11	2,480	1,930	1,600	1,360	1,190	1,540	1,420	1,670	14,200	6,900	3,070	2,200
12	2,480	1,800	1,480	1,240	1,240	1,600	1,360	1,670	13,800	6,900	3,070	2,200
13	2,480	1,800	1,540	1,360	1,300	1,540	1,420	2,060	14,200	6,600	3,070	2,200
14	2,480	1,930	1,540	1,420	1,300	1,480	1,420	2,480	16,300	6,900	3,070	2,200
15	2,480	1,800	1,540	1,420	1,300	1,420	1,420	2,770	17,200	6,600	2,920	2,200
16	2,480	1,800	1,480	1,420	1,240	1,420	1,420	2,770	18,600	6,050	2,920	2,060
17	2,480	1,800	1,480	1,420	1,240	1,480	1,540	3,390	19,000	6,050	2,770	2,060
18	2,440	1,800	1,480	1,360	1,140	1,480	1,540	3,560	14,000	5,800	2,770	2,060
19	2,400	1,540	1,360	1,080	1,240	1,420	1,600	3,930	12,900	6,300	2,770	2,060
20	2,360	1,800	1,240	1,140	1,300	1,420	1,540	5,300	10,900	5,800	2,770	2,060
21	2,320	1,800	1,360	1,140	1,240	1,420	1,670	6,300	10,500	5,800	2,620	2,060
22	2,270	1,670	1,300	1,140	1,240	1,480	1,670	9,100	11,300	5,050	2,620	2,060
23	2,230	1,800	1,360	1,110	1,240	1,420	1,540	11,300	12,500	5,050	2,620	2,060
24	2,190	1,800	1,360	1,080	1,240	1,360	1,540	12,100	12,100	4,810	2,620	2,060
25	2,150	1,670	1,420	930	1,190	1,360	1,480	17,600	13,400	4,570	2,480	2,060
26	2,100	1,670	1,420	1,140	1,240	1,360	1,480	10,500	14,000	4,340	2,480	2,060
27	2,060	1,670	1,420	1,140	1,300	1,420	1,480	7,200	15,500	4,340	2,480	2,060
28	2,060	1,670	1,420	1,080	1,190	1,480	1,540	5,550	15,500	4,130	2,480	2,060
29	1,930	1,670	1,480	1,080	------	1,600	1,800	5,300	16,300	4,130	2,480	2,060
30	1,800	1,540	1,540	1,190	------	1,480	1,800	5,050	15,500	3,930	2,620	2,060
31	1,930	------	1,600	1,240	------	1,420	------	6,600	------	3,930	2,480	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,530	1,800	2,350	144,000
November	1,930	1,540	1,790	107,000
December	1,600	1,240	1,450	89,200
January	1,480	930	1,260	77,500
February	1,420	1,080	1,250	69,400
March	1,600	1,190	1,440	88,500
April	1,800	1,300	1,500	89,300
May	17,600	1,600	4,610	283,000
June	19,000	7,200	13,200	786,000
July	13,400	3,930	6,910	425,000
August	3,930	2,480	3,000	184,000
September	2,480	2,060	2,180	130,000
The year	19,000	930	3,410	2,470,000

YELLOWSTONE RIVER AT BILLINGS, MONT.

LOCATION.—Wire gage in NE. ¼ sec. 34, T. 1 N., R. 26 E., at bridge on Custer Battlefield highway at Billings.

RECORDS AVAILABLE.—August, 1928, to September, 1929. May, 1904, to December, 1905, at highway bridge 2 miles east of Billings

EXTREMES.—Maximum discharge during year, 31,500 second-feet June 16 and 17 (gage height, 9.10 feet); minimum, less than 2,600 second-feet during February.

1904–5, 1928–29: Maximum discharge, 32,600 second-feet June 20, 1904 (gage height, 10.6 feet); minimum, less than 2,600 second-feet during February, 1929.

REMARKS.—Records fair. Discharge estimated Nov. 30 to Mar. 7, July 21 to Aug. 2, and Sept. 23–30, because of ice or missing gage heights. Numerous diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,760	4,570				3,250	4,220	4,950	12,300	25,000	7,000	3,880
2	4,760	4,570				3,370	4,220	4,950	17,100	23,200	6,650	3,880
3	4,570	4,390				3,630	4,570	4,760	21,400	21,900	6,300	3,880
4	4,570	4,390				3,630	4,570	4,760	15,400	20,500	6,300	4,070
5	4,570	4,390				3,630	4,950	4,760	14,600	19,700	6,300	4,260
6	4,570	4,390	3,100	2,830	2,600	3,500	4,760	4,760	14,600	17,700	6,300	4,460
7	4,570	4,390				4,950	4,060	4,760	16,600	16,400	6,040	4,670
8	4,570	4,390				6,300	3,770	4,760	20,100	16,800	5,790	4,460
9	4,570	4,220				6,550	3,630	4,570	24,100	14,800	5,550	4,460
10	4,570	4,060				6,550	3,770	4,950	26,800	13,200	5,320	4,260
11	5,150	4,060				5,580	3,500	4,950	25,900	13,200	5,100	4,070
12	5,150	4,060				4,760	3,500	4,760	25,000	13,200	4,880	4,070
13	5,150	4,060				4,220	3,500	4,950	23,600	13,200	4,460	4,070
14	5,150	4,060				3,910	3,370	5,150	26,400	13,200	4,260	3,880
15	5,150	4,060	3,300	3,200	2,700	3,910	3,500	6,550	30,600	14,000	4,070	3,880
16	4,950	4,220				4,060	3,500	6,810	31,500	13,200	4,070	3,700
17	4,950	4,220				4,060	3,770	6,810	31,500	12,900	3,880	3,700
18	4,950	4,060				4,060	3,910	7,350	30,100	12,500	3,880	3,530
19	4,950	4,060				4,220	4,060	8,200	24,600	12,900	4,070	3,530
20	4,950	4,060				4,060	4,220	8,500	21,400	13,600	3,880	3,360
21	4,950	4,060				3,910	4,390	9,800	17,900	13,000	3,880	3,360
22	4,950	4,060				3,770	4,570	11,600	17,500	12,000	3,880	3,360
23	4,950	4,060				3,630	4,390	14,600	18,300	11,000	3,700	
24	4,760	4,060				3,500	4,390	19,700	19,200	10,000	3,700	
25	4,760	4,220			3,000	3,500	4,570	24,100	19,200	9,500	3,700	
26	4,760	4,060	3,670	2,750		3,370	4,390	28,700	20,500	9,000	3,700	3,300
27	4,760	4,060				3,500	4,570	22,800	23,600	8,500	3,700	
28	4,760	4,060				3,630	4,220	17,500	23,600	8,300	3,700	
29	4,760	3,910			-------	5,150	4,760	14,200	24,100	7,900	3,700	
30	4,570	3,770			-------	5,810	4,950	13,000	26,800	7,600	3,700	
31	4,570	-------			-------	4,390	-------	11,600	-------	7,300	3,880	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	5,150	4,570	4,810	296,000
November	4,570	3,770	4,170	248,000
December	-------	-------	3,370	207,000
January	-------	-------	2,920	180,000
February	-------	-------	2,750	153,000
March	6,550	3,250	4,270	263,000
April	4,950	3,370	4,150	247,000
May	28,700	4,570	9,660	594,000
June	31,500	12,300	22,100	1,320,000
July	25,000	7,300	13,700	842,000
August	7,000	3,700	4,690	288,000
September	4,670	-------	3,770	224,000
The year	31,500	-------	6,710	4,860,000

YELLOWSTONE RIVER AT MILES CITY, MONT.

LOCATION.—Wire gage at highway bridge just below mouth of Tongue River at Miles City, Custer County. Prior to May 6, 1929, a staff gage at Chicago, Milwaukee & St. Paul Railway Co.'s pumping plant half a mile below bridge was used. New gage at independent datum.

RECORDS AVAILABLE.—September, 1922, to August, 1923; August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 60,300 second-feet June 18 and 19 (gage height, 11.2 feet); minimum, 4,000 second-feet Jan. 7.

1922–23, 1928–29: Maximum discharge, that of June 18 and 19, 1929 minimum (estimated), 1,800 second-feet Dec. 7, 1922.

REMARKS.—Records prior to May 5, fair; thereafter good. Observations discontinued Dec. 2 to Mar. 16, Sept. 3–11, and 15–30. Numerous diversions from main stream and tributaries above gage. Some storage on tributaries.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7,320	7,320	7,000	------	------	------	20,500	9,200	32,000	43,000	8,580	4,700
2	7,320	7,320	------	------	------	------	12,200	9,200	37,300	44,600	8,200	4,700
3	7,320	7,320	------	------	------	------	10,400	9,610	36,500	44,600	8,200	------
4	7,320	7,320	------	------	------	------	11,800	10,400	40,500	38,900	8,200	------
5	7,000	7,320	------	------	------	------	9,610	10,400	43,000	37,300	8,200	------
6	7,000	7,320	------	------	------	------	10,400	14,100	38,900	35,800	8,200	------
7	7,000	7,320	------	[a]4,000	------	------	11,300	13,200	33,500	32,700	8,200	------
8	7,000	7,320	------	------	------	------	11,800	13,600	34,200	32,700	7,830	------
9	6,690	7,320	------	------	------	------	10,400	14,100	35,800	29,100	7,830	------
10	6,690	7,320	------	------	------	------	8,800	14,100	44,600	27,000	7,830	------
11	7,000	7,660	------	------	------	------	7,320	13,600	49,800	23,700	7,130	------
12	7,660	7,660	------	------	------	------	6,390	13,600	50,700	21,200	7,130	7,470
13	8,020	7,660	------	------	------	------	6,100	13,200	50,700	21,800	6,810	7,470
14	8,020	7,660	------	------	------	------	5,820	12,700	53,300	20,000	5,960	7,470
15	8,020	7,660	------	------	[a]4,280	------	5,820	12,700	52,400	19,400	5,960	------
16	8,020	7,320	------	------	------	------	5,820	14,600	53,300	19,400	5,190	------
17	8,400	7,000	------	------	------	12,800	5,820	[b]15,400	55,900	18,800	5,190	------
18	8,400	6,690	------	------	------	10,000	5,820	16,100	60,300	18,800	4,940	------
19	8,800	6,690	------	------	------	13,800	5,820	17,200	60,300	25,000	4,700	------
20	8,400	6,390	------	------	------	16,200	7,000	18,200	55,900	20,600	4,940	------
21	8,800	6,390	------	------	------	15,600	7,320	22,400	44,600	18,800	4,700	------
22	8,800	6,390	------	------	------	15,600	7,660	27,000	[b]42,400	18,200	4,940	------
23	8,400	6,390	------	------	------	15,600	7,660	26,300	[b]40,200	16,100	4,940	------
24	8,400	6,390	------	------	------	15,000	8,020	29,800	[b]37,900	14,600	4,700	------
25	8,400	6,390	------	------	------	13,800	8,400	32,700	[b]35,700	13,200	4,460	------
26	8,020	6,390	------	------	------	12,200	9,200	40,500	33,500	12,700	4,460	------
27	8,020	6,390	------	------	------	8,400	10,000	53,300	33,500	12,700	4,460	------
28	7,660	6,690	------	------	------	7,660	9,200	55,900	35,800	9,780	4,460	------
29	7,660	6,690	------	------	------	7,660	9,200	50,700	39,700	9,370	4,460	------
30	7,660	7,000	------	------	------	12,800	9,200	42,100	40,500	9,370	4,460	------
31	7,660	------	------	------	------	20,500	------	37,300	------	8,970	4,460	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	8,800	6,690	7,770	478,000
November	7,660	6,390	7,020	418,000
March 17–31	20,500	7,660	13,200	393,000
April	20,500	5,820	8,830	525,000
May	55,900	9,200	22,000	1,350,000
June	60,300	32,000	43,400	2,580,000
July	44,600	8,970	23,200	1,430,000
August	8,580	4,460	6,120	376,000

[a] Result of discharge measurement. [b] Estimated.

YELLOWSTONE RIVER AT INTAKE, MONT.

LOCATION.—Chain gage in NW. ¼ sec. 36, T. 18 N., R. 56 E., at Lower Yellowstone diversion dam at Intake.

DRAINAGE AREA.—66,800 square miles.

RECORDS AVAILABLE.—January, 1911, to September, 1929. August, 1903, to December, 1910, at Glendive, 18 miles upstream.

EXTREMES.—Maximum discharge during year, 94,600 second-feet June 7 (gage height, 9.00 feet); minimum, 1,930 second-feet Dec. 8 and 9 (gage height, 0.45 foot).

1903–1929: Maximum discharge, 159,000 second-feet June 21, 1921 (gage height, 12.6 feet); minimum (estimated), 1,200 second-feet Dec. 6–8, 1922, and Jan. 6 and 7, 1923.

REMARKS.—Records good except those for periods of ice effect, Dec. 29 to Jan. 5 and Jan. 14 to Mar. 9, which are fair. Discharge estimated Nov. 25 and 26. Head gates of Lower Yellowstone Canal are at left end of dam. Many other diversions above station. Some storage on tributaries.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7,810	7,810	6,500	7,010	4,350	7,010	33,800	15,100	39,600	38,400	10,800	6,250
2	7,540	7,810	6,250	6,750	4,810	7,270	27,600	15,100	36,000	41,000	10,800	6,750
3	7,270	7,810	6,250	7,010	4,810	7,270	19,800	15,800	37,200	41,000	9,550	6,750
4	7,540	7,810	5,040	6,750	5,280	7,270	16,600	15,800	46,400	37,200	9,550	6,750
5	7,810	7,810	4,350	6,750	5,280	7,810	16,600	15,100	52,200	34,900	9,550	6,750
6	7,540	7,540	4,350	6,540	5,520	8,370	19,800	12,800	49,400	33,800	10,200	7,270
7	7,270	7,270	3,900	6,250	5,520	12,200	24,900	12,200	84,800	32,700	10,200	7,270
8	7,270	7,540	1,930	6,250	5,520	21,500	24,000	12,200	39,600	29,600	9,550	7,810
9	7,270	7,810	1,930	7,270	5,520	23,200	19,800	12,800	37,200	28,600	9,550	8,370
10	7,270	7,810	2,570	7,270	5,760	39,600	17,400	14,300	43,600	27,600	9,550	9,550
11	7,270	7,810	3,230	7,010	5,760	39,600	15,100	13,600	59,800	25,800	9,550	9,550
12	7,270	7,810	4,120	7,010	5,760	41,000	14,300	12,800	56,800	23,200	9,550	9,550
13	7,270	7,810	5,040	7,010	5,760	62,900	12,800	12,200	56,600	21,500	9,550	9,550
14	7,270	7,810	6,500	7,010	6,000	62,900	12,800	11,500	53,800	21,500	9,550	9,550
15	7,540	7,810	5,040	6,500	6,000	45,000	12,200	12,200	50,800	19,800	8,950	8,950
16	7,810	7,810	4,810	6,250	6,000	26,700	11,500	11,500	47,800	19,800	8,370	8,950
17	8,370	7,810	6,500	6,000	5,760	19,800	10,800	12,800	53,800	21,500	7,810	8,370
18	8,370	7,810	6,250	5,760	5,520	18,200	10,800	15,100	58,200	20,600	7,270	8,370
19	8,370	7,810	6,500	5,520	5,280	19,800	10,800	15,400	61,400	19,800	7,010	8,370
20	8,370	7,810	7,010	5,520	5,760	23,200	10,800	17,400	59,800	23,200	6,750	8,370
21	8,950	7,810	6,500	5,520	6,000	26,700	11,500	19,800	50,800	20,600	6,750	8,370
22	8,950	7,810	7,270	5,280	6,000	28,600	11,500	20,600	56,800	19,800	6,750	8,370
23	8,950	7,810	6,750	5,040	5,760	28,600	12,200	21,500	34,900	19,800	6,500	8,370
24	8,370	7,270	7,010	4,810	6,000	25,800	12,800	24,000	31,600	18,200	6,500	8,370
25	8,370	7,100	6,250	4,810	6,000	22,300	13,600	27,600	31,600	16,600	6,250	8,370
26	8,370	6,930	7,010	4,580	6,250	18,200	13,600	36,000	31,600	15,100	6,250	8,950
27	8,370	6,750	7,010	4,580	6,500	16,600	15,100	47,900	31,600	14,300	6,250	8,950
28	8,370	6,750	7,010	4,580	6,750	15,100	16,600	62,900	32,700	13,600	6,250	9,550
29	7,810	6,750	6,750	4,580	-------	16,600	15,100	67,600	34,900	12,800	6,250	9,550
30	7,810	6,750	6,750	4,580	-------	19,800	15,100	72,200	38,400	12,200	6,250	9,550
31	7,810	-------	6,750	4,350	-------	26,700	-------	50,800	-------	11,500	6,250	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	8,950	7,270	7,890	485,000
November	7,810	6,750	7,560	450,000
December	7,270	1,930	5,580	343,000
January	7,270	4,350	5,940	365,000
February	6,750	4,350	5,690	316,000
March	62,900	7,010	24,100	1,480,000
April	33,800	10,800	16,000	952,000
May	72,200	11,500	23,400	1,440,000
June	84,800	31,600	46,700	2,780,000
July	41,000	11,500	23,800	1,460,000
August	10,800	6,250	8,190	504,000
September	9,550	6,250	8,380	499,000
The year	84,800	1,930	15,300	11,100,000

TOWER CREEK AT TOWER FALLS, YELLOWSTONE NATIONAL PARK

LOCATION.—Staff gage a short distance above Tower Falls and bridge on highway leading to Camp Roosevelt, a quarter of a mile above junction with Yellowstone River, and 2 miles southeast of Camp Roosevelt.

DRAINAGE AREA.—51 square miles.

RECORDS AVAILABLE.—September, 1922, to September, 1929.

EXTREMES.—Maximum discharge during year, 284 second-feet June 15 (gage height, 5.33 feet); minimum (estimated), 15 second-feet Jan. 18–31.

1922–1929: Maximum discharge, 642 second-feet May 30, 1925 (gage height, 6.16 feet); minimum, that of Jan. 18–31, 1929. Probably not actual extremes.

REMARKS.—Records good June to September; others fair. No diversions or regulation.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	29	25					18	19	[a] 109	188	[a] 42	[a] 28
2	29	25					18	19	125	[a] 162	41	28
3	[a] 29	25					18	19	[a] 101	150	[a] 40	28
4	29	25					18	[a] 19	70	138	39	27
5	29	[a] 25					17	19	80	[a] 126	[a] 38	[a] 27
6	29	25					17	19	[a] 101	118	38	27
7	29	25	22				17	18	132	110	[a] 37	[a] 27
8	28	25			16		17	18	[a] 162	102	37	27
9	28	25		18			16	18	200	94	36	[a] 27
10	28	24				17	16	[a] 18	[a] 193	[a] 86	[a] 36	27
11	28	24					16	20	[a] 193	83	[a] 33	[a] 27
12	28	24					16	30	[a] 241	79	32	27
13	[a] 28	24					[a] 16	40	248	[a] 76	[a] 31	27
14	28	[a] 24					16	40	[a] 255	70	31	[a] 27
15	28						16	45	[a] 284	[a] 64	[a] 31	27
16	29						16	45	275	64	31	[a] 27
17	29						17	[a] 44	[a] 228	63	[a] 31	28
18	[a] 29						17	45	222	[a] 63	[a] 30	[a] 28
19	29						17	50	[a] 216	62	30	28
20	28					[a] 17	18	60	199	[a] 62	30	28
21	28					17	18	80	[a] 182	[a] 56	[a] 30	[a] 28
22	27	24	20		17	17	18	100	186	52	29	28
23	27					18	[a] 18	120	191	[a] 49	29	[a] 28
24	26			15		18	18	150	195	[a] 49	[a] 28	29
25	[a] 26					18	18	[a] 172	200	48	28	30
26	26					19	18	120	[a] 204	[a] 48	[a] 29	[a] 31
27	26					19	18	80	216	[a] 45	28	31
28	26					[a] 19	18	60	229	[a] 45	[a] 28	[a] 31
29	26				-------	19	19	60	[a] 241	44	28	30
30	26				-------	19	19	75	215	[a] 44	28	29
31	25	-------			-------	19	-------	100	-------	43	[a] 28	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	29	25	27.7	0.543	0.63	1,700
November	----------	----------	24.3	.476	.53	1,450
December	----------	----------	20.9	.410	.47	1,290
January	----------	----------	16.6	.325	.37	1,020
February	----------	----------	16.5	.324	.34	916
March	----------	----------	17.5	.343	.40	1,080
April	19	16	17.3	.339	.38	1,030
May	172	18	55.5	1.09	1.26	3,410
June	284	----------	190	3.73	4.16	11,300
July	188	43	80.1	1.57	1.81	4,930
August	42	28	32.5	.637	.73	2,000
September	31	27	28.1	.551	.61	1,670
The year	284	----------	43.9	.861	11.69	31,800

[a] Gage read on these days; discharge estimated for other days.

LAMAR RIVER NEAR TOWER FALLS RANGER STATION, YELLOWSTONE NATIONAL PARK

LOCATION.—Water-stage recorder half a mile north of Cooke City road, three-quarters of a mile above junction with Yellowstone River, and 2 miles northeast of Tower Falls ranger station.

DRAINAGE AREA.—640 square miles.

RECORDS AVAILABLE.—September, 1922, to September, 1929.

EXTREMES.—Maximum discharge during year, 8,080 second-feet June 15 (gage height, 7.56 feet); minimum (estimated), 125 second-feet Jan. 16–31.

1922–1929: Maximum discharge, 13,600 second-feet May 25, 1928 (gage height, 9.75 feet); minimum, 104 second-feet Apr. 20, 1924 (gage height, −0.08 foot).

REMARKS.—Records good except those for estimated periods, Nov. 17 to Apr. 26, Apr. 28–30, May 1–5, 7–10, and 12. No regulation or diversions above station. Attendant for recorder furnished by National Park Service.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	181	168						194	3,220	3,660	455	175
2	184	202						195	4,050	3,360	450	172
3	193	226						196	2,700	3,080	440	170
4	202	175						197	2,240	2,820	415	196
5	199	168						198	2,880	2,400	420	202
6	196	165						199	3,580	2,080	420	196
7	216	160						199	4,470	1,980	382	193
8	219	160		150			175	199	5,570	1,790	356	184
9	208	158						199	6,170	1,560	333	175
10	208	160						199	5,380	1,470	311	175
11	244	160						199	4,640	1,420	295	172
12	212	160						330	4,820	1,380	283	168
13	230	160						460	5,190	1,300	283	160
14	236	168						730	6,170	1,300	307	155
15	222	158			130			813	6,580	1,250	283	152
16	216	155	155			160		997	6,580	1,170	261	148
17	216							1,380	6,370	1,210	240	148
18	236	150						1,340	4,130	1,120	230	144
19	236							1,650	3,440	1,100	233	140
20	230							2,190	2,820	1,020	226	138
21	250						190	2,820	2,820	942	226	140
22	233							3,580	3,220	841	205	168
23	219							4,380	3,510	757	202	168
24	208			125				5,000	3,510	685	202	155
25	202	170						5,770	3,970	643	196	150
26	205							3,220	4,380	613	193	152
27	196						190	2,240	4,560	589	187	172
28	193						191	1,740	4,470	554	184	187
29	190				-------		192	1,650	4,820	521	187	190
30	175				-------		193	1,600	4,300	488	233	175
31	178	-------			-------		-------	2,300	-------	460	208	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	250	175	211	0.330	0.38	13,000
November	226	----------	167	.261	.29	9,940
December	----------	----------	155	.242	.28	9,530
January	----------	----------	137	.214	.25	8,420
February	----------	----------	130	.203	.21	7,220
March	----------	----------	160	.250	.29	9,840
April	----------	----------	183	.286	.32	10,900
May	5,770	194	1,500	2.34	2.70	92,200
June	6,580	2,240	4,350	6.80	7.59	259,000
July	3,660	460	1,410	2.20	2.54	86,700
August	455	184	285	.445	.51	17,500
September	202	138	167	.261	.29	9,940
The year	6,580	----------	737	1.15	15.65	534,000

GARDINER RIVER AT MAMMOTH HOTEL, YELLOWSTONE NATIONAL PARK

LOCATION.—Water-stage recorder a quarter of a mile downstream from footbridge on trail crossing leading to Mount Everts, three-eighths mile below inflow from Mammoth Hot Springs, and 0.9 mile northeast of Mammoth Hotel.

DRAINAGE AREA.—201 square miles.

RECORDS AVAILABLE.—September, 1922, to September, 1929.

EXTREMES.—Maximum discharge during year, 800 second-feet June 15 (gage height, 2.52 feet); minimum, 36 second-feet Mar. 15 (gage height, 0.61 foot).

1922–1929: Maximum discharge, 1,790 second-feet May 28, 1928 (gage height, 3.59 feet); minimum, 31 second-feet Apr. 7, 1928 (gage height, 0.55 foot). Lower flow may have occurred during extreme cold period, Dec. 17–26, 1924, when gage was not read.

REMARKS.—Records excellent. Discharge estimated Oct. 1–3, Jan. 20–24, and Feb. 7–11. No regulation or diversions above gage. Attendant for recorder furnished by National Park Service.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	126	105	96	85	74	76	74	114	416	480	156	105
2	127	98	83	87	76	76	70	112	450	430	161	102
3	128	102	80	87	76	76	70	126	385	398	145	105
4	129	109	66	87	76	76	76	126	338	376	145	105
5	129	112	70	72	76	76	78	119	359	346	147	109
6	129	112	74	89	72	72	70	107	403	314	139	112
7	124	100	76	83	70	74	68	114	460	302	134	112
8	122	107	85	83	70	74	66	112	524	283	129	107
9	119	102	89	91	72	74	70	112	595	264	124	105
10	122	105	96	85	72	76	68	112	614	250	122	105
11	116	100	100	85	74	76	68	107	577	243	116	107
12	116	100	96	85	74	74	68	145	559	236	114	102
13	126	107	91	85	76	74	68	223	595	240	114	102
14	124	105	98	85	74	70	68	246	674	264	112	100
15	124	102	91	85	74	70	70	207	709	232	109	98
16	124	93	91	85	72	72	76	246	723	223	109	98
17	134	96	85	83	76	74	83	240	688	246	107	98
18	136	70	85	85	76	70	85	226	577	223	109	96
19	124	93	76	74	76	70	87	254	524	223	109	96
20	122	105	87	70	74	72	89	283	450	207	105	96
21	129	98	87	72	74	76	89	318	435	194	102	109
22	119	98	85	65	72	72	87	372	440	185	100	112
23	114	98	80	65	74	72	87	440	450	176	100	107
24	109	91	80	70	76	72	80	559	450	167	100	107
25	109	98	87	74	76	74	78	660	475	164	98	105
26	109	96	87	74	76	74	80	480	524	161	100	112
27	107	100	91	74	74	76	87	394	518	156	100	114
28	109	91	89	72	74	78	107	330	502	153	102	109
29	107	74	87	74	------	80	132	294	541	147	116	105
30	107	98	89	74	------	74	129	322	530	147	132	100
31	109	------	85	70	------	66	------	326	------	147	109	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off	
					Inches	Acre-feet
October	136	107	120	0.597	0.69	7,380
November	112	70	98.8	.492	.55	5,880
December	100	66	85.9	.427	.49	5,280
January	91	65	79.2	.394	.45	4,870
February	76	70	74.1	.369	.38	4,120
March	80	66	73.7	.367	.42	4,530
April	132	66	80.9	.402	.45	4,810
May	660	107	252	1.25	1.44	15,500
June	723	338	516	2.57	2.87	30,700
July	480	147	244	1.21	1.40	15,000
August	161	98	118	.587	.68	7,260
September	114	96	105	.522	.58	6,250
The year	723	65	154	.766	10.40	112,000

SHIELDS RIVER AT CLYDE PARK, MONT.

LOCATION.—Wire gage in NW. ¼ sec. 33, T. 2 N., R. 9 E., at highway bridge one-fourth mile northwest of Clyde Park and 2 miles south of Brackett Creek.

DRAINAGE AREA.—544 square miles.

RECORDS AVAILABLE.—March, 1921, to September, 1923; April to September, 1929.

EXTREMES.—Maximum discharge during year, 1,040 second-feet May 25 (gage height, 3.21 feet); minimum, 16 second-feet Aug. 16 and 18 (gage height, 1.09 feet).

1921–1923, 1929: Maximum discharge, 1,880 second-feet May 26, 1923; minimum, 5.4 second-feet Aug. 9, 1921 (gage height, 1.06 feet).

REMARKS.—Records good. Discharge estimated Sept. 15–21. Numerous diversions above and below station.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	-------	198	577	268	23	22	16	-------	381	613	36	16	38
2	-------	250	951	224	27	23	17	-------	473	652	37	18	38
3	-------	259	816	194	26	24	18	-------	473	690	34	16	39
4	-------	250	577	186	27	27	19	-------	507	652	36	18	39
5	-------	241	507	179	24	29	20	-------	541	577	34	19	40
6	-------	219	507	139	22	31	21	-------	613	473	34	19	40
7	-------	219	507	153	21	31	22	-------	690	442	32	18	40
8	-------	228	541	113	21	31	23	-------	816	410	34	19	43
9	-------	219	577	126	22	33	24	-------	906	381	34	19	37
10	-------	215	577	85	23	34	25	-------	1,040	336	32	19	37
11	-------	232	577	.57	20	33	26	-------	732	326	30	18	43
12	-------	259	652	50	19	34	27	194	652	326	29	17	47
13	-------	381	613	47	20	36	28	310	577	304	27	18	50
14	-------	352	577	50	19	37	29	299	473	290	26	19	37
15	-------	352	613	43	18	37	30	194	381	276	26	19	40
							31	-------	410	-------	24	18	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 27–30	310	194	249	1,980
May	1,040	198	437	26,900
June	951	276	531	31,600
July	268	24	78.0	4,800
August	27	16	20.1	1,240
September	50	22	35.7	2,120
The period	-------	-------	-------	68,600

BOULDER RIVER NEAR CONTACT, MONT.

LOCATION.—Staff gage in SE. ¼ sec. 14, T. 3 S., R. 12 E., at Buffrey ranch, 8 miles south of McLeod, 4 miles from Contact, and 2½ miles below the Boulder Falls.

DRAINAGE AREA.—236 square miles.

RECORDS AVAILABLE.—May, 1910, to September, 1916; April to August, 1929; discontinued.

EXTREMES.—Maximum discharge during year, 3,170 second-feet June 14 and 15 (gage height, 5.60 feet); minimum, 68 second-feet Apr. 27 (gage height, 1.02 feet).

1910–1916, 1929: Maximum discharge, 4,750 second-feet June 27, 1916 (gage height, 8.4 feet old datum); minimum, 20 second-feet Nov. 22–24, 1914, and Mar. 21–24, 1915.

REMARKS.—Records good except those for June 18–20, July 4, 9–11, 13–28, and July 30 to Aug. 20, which are estimated. No diversions.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Day	Apr.	May	June	July	Aug.
1	-------	90	887	2,190	324	16	-------	215	2,810	923	197
2	-------	92	1,320	2,030	315	17	-------	284	2,720	879	189
3	-------	94	1,030	1,870	306	18	-------	305	2,340	835	181
4	-------	86	853	1,680	297	19	-------	376	1,950	791	173
5	-------	90	957	1,480	288	20	-------	482	1,560	747	165
6	-------	82	1,320	1,250	279	21	-------	721	1,180	703	157
7	-------	78	1,550	1,320	270	22	-------	957	1,320	659	148
8	-------	78	2,030	1,100	261	23	-------	1,180	1,400	615	145
9	-------	88	2,280	1,100	253	24	-------	1,630	1,400	571	140
10	-------	84	2,280	1,100	245	25	-------	2,190	1,630	527	140
11	-------	78	1,870	1,100	237	26	-------	1,250	1,710	483	137
12	-------	94	1,550	1,100	229	27	68	957	2,110	439	137
13	-------	137	1,950	1,060	221	28	78	753	2,110	395	137
14	-------	197	2,810	1,010	213	29	82	567	2,450	351	160
15	-------	215	2,810	967	205	30	92	538	2,450	342	186
						31	-------	658	-------	333	160

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 27–30	92	78	80.0	635
May	2,190	78	472	29,000
June	2,810	853	1,820	108,000
July	2,190	333	966	59,400
August	324	137	210	12,900
The period	-------	-------	-------	210,000

STILLWATER RIVER NEAR NYE, MONT.

LOCATION.—Chain gage in SE. ¼ sec. 32, T. 5 S., R. 15 E., at Beartooth ranch, 1,000 feet below mouth of Woodbine Creek and 8 miles south of Nye.

RECORDS AVAILABLE.—May to September, 1929. May, 1926, to September, 1927, at site 1,000 feet above Woodbine Creek.

EXTREMES.—Maximum discharge during year, 2,930 second-feet June 17 (gage height, 6.37 feet); minimum, 98 second-feet Sept. 19.

1926–27, 1929: Maximum discharge, 6,520 second-feet June 27, 1927 (gage height, 6.75 feet, old datum); minimum, 20 second-feet Feb. 28, 1926.

REMARKS.—Records good prior to Aug. 20 and fair thereafter. No diversions.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	------	870	2,100	373	190	16	190	2,580	915	226	112
2	------	1,360	1,810	396	190	17	226	2,580	1,010	226	105
3	------	825	1,950	373	190	18	240	1,290	870	226	105
4	------	627	1,810	373	180	19	290	960	915	226	98
5	------	664	1,360	396	161	20	350	740	825	226	105
6	------	960	1,010	350	152	21	501	780	740	226	105
7	------	1,360	1,120	330	144	22	825	870	627	213	112
8	------	1,810	870	309	144	23	1,290	1,010	561	213	112
9	------	2,100	700	290	136	24	1,950	1,060	501	202	112
10	------	1,620	700	272	128	25	2,410	1,420	501	202	105
11	------	1,480	825	256	128	26	1,420	1,810	501	202	105
12	112	1,360	915	256	120	27	740	1,810	474	202	112
13	128	1,680	825	240	120	28	531	2,100	421	202	105
14	144	2,410	960	226	112	29	474	2,750	396	190	105
15	170	2,580	915	226	112	30	421	2,580	373	190	105
						31	561	------	373	190	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May 12–31	2,410	112	649	25,700
June	2,750	627	1,530	91,000
July	2,100	373	899	55,300
August	396	190	259	15,900
September	190	98	127	7,560
The period	------	------	------	195,000

CLARK FORK BELOW CRANDALL CREEK, WYO.

LOCATION.—Water-stage recorder in sec. 1, T. 56 N., R. 106 W., 2 miles below mouth of Crandall Creek.
DRAINAGE AREA.—401 square miles.
RECORDS AVAILABLE.—August and September, 1929.
REMARKS.—Records excellent. No diversions above station.

Daily and monthly discharge, in second-feet, 1929

Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.
1	------	259	11	428	153	21	338	146
2	------	268	12	405	146	22	320	158
3	------	281	13	396	141	23	307	158
4	------	276	14	387	133	24	298	151
5	------	238	15	378	131	25	285	144
6	------	223	16	360	131	26	276	153
7	------	208	17	356	128	27	272	185
8	------	194	18	351	126	28	268	194
9	459	175	19	347	126	29	268	169
10	450	166	20	338	135	30	294	153
						31	264	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
August 9-31	459	264	341	15,600
September	281	126	175	10,400
The period	------	------	------	25,900

CLARK FORK AT CHANCE, MONT.

LOCATION.—Staff gage in NW. ¼ NW. ¼ sec. 32, T. 9 S., R. 22 E., at highway bridge at Chance, just above mouth of Sand Coulee and half a mile north of the Wyoming-Montana State line.

RECORDS AVAILABLE.—July, 1921, to September, 1929.

EXTREMES.—Maximum discharge during year, 5,870 second-feet June 15 (gage height, 4.75 feet); minimum, 109 second-feet Apr. 10 and 13 (gage height, 0.70 foot).

1921–1929: Maximum discharge, 10,900 second-feet May 26, 1928 (gage height, 6.5 feet); minimum, 72 second-feet Mar. 19, 1927 (gage height, 0.50 foot).

REMARKS.—Records good. Discharge estimated because of ice Dec. 2–6. Observations discontinued Dec. 23 to Mar. 16. Numerous diversions.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	313	268	190	-------	149	410	2,870	4,620	970	443
2	298	243	190	-------	160	376	3,930	4,380	920	436
3	278	264	190	-------	226	359	3,280	4,380	870	436
4	268	318	190	-------	318	383	2,680	3,930	920	443
5	268	313	190	-------	335	313	2,870	3,710	1,020	443
6	268	308	190	-------	264	318	2,870	3,070	970	443
7	293	308	190	-------	197	341	3,490	2,680	822	443
8	313	278	190	-------	155	293	3,710	2,500	775	480
9	293	313	190	-------	146	318	3,930	2,020	685	443
10	278	324	197	-------	133	376	4,870	2,020	642	443
11	341	268	212	-------	128	308	4,380	2,170	685	443
12	353	268	212	-------	133	353	4,150	2,170	685	443
13	318	268	194	-------	128	730	4,150	2,500	600	376
14	318	273	190	-------	128	1,460	5,370	2,330	559	318
15	330	251	190	-------	160	1,260	5,620	2,500	518	293
16	376	247	175	-------	152	1,330	5,620	2,500	480	255
17	376	251	163	190	204	1,460	5,620	2,500	480	230
18	364	208	152	187	247	1,590	4,620	2,330	480	222
19	353	201	172	190	247	1,730	3,490	2,680	518	222
20	353	222	160	175	268	2,170	2,680	2,500	480	219
21	364	268	133	178	318	2,680	2,500	2,170	480	215
22	353	234	144	175	278	3,070	2,870	2,020	480	226
23	359	226	-------	152	288	3,710	3,280	1,870	480	222
24	318	226	-------	166	264	4,380	3,280	1,660	436	230
25	293	219	-------	155	222	4,620	3,930	1,660	416	247
26	318	226	-------	138	204	4,620	3,930	1,660	423	293
27	318	197	-------	157	247	3,490	4,620	1,520	436	283
28	268	190	-------	219	330	2,680	4,620	1,330	436	288
29	268	146	-------	288	518	2,330	5,370	1,260	436	293
30	268	190	-------	219	685	2,020	5,120	1,020	436	293
31	226	-------	-------	149	-------	2,500	-------	920	443	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	376	226	313	19,200
November	324	146	250	14,900
December 1–22	212	133	182	7,900
March 17–31	288	138	182	5,420
April	685	128	241	14,300
May	4,620	293	1,680	100,000
June	5,620	2,500	3,990	237,000
July	4,620	920	2,400	148,000
August	1,020	416	612	37,600
September	480	215	335	19,900

CLARK FORK AT EDGAR, MONT.

LOCATION.—Wire gage in SW. ¼ sec. 24, T. 4 S., R. 23 E., at highway bridge half a mile east of Edgar. Datum of gage changed June 8.

RECORDS AVAILABLE.—July, 1921, to September, 1929.

EXTREMES.—Maximum discharge during year, 5,630 second-feet June 16 (gage height, 6.92 feet); minimum, 84 second-feet Mar. 9 (gage height, 1.85 feet).

1921–1929: Maximum discharge, 10,600 second-feet May 26, 1928 (gage height, 8.25 feet); minimum, that of Mar. 9, 1929.

REMARKS.—Records good. Observations discontinued Dec. 4 to Mar. 7. Numerous diversions.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	390	390	304	--------	278	605	2,260	4,540	720	471
2	390	390	230	--------	278	422	3,070	4,200	720	471
3	390	422	186	--------	304	455	3,430	4,040	755	471
4	390	455	--------	--------	422	455	2,730	3,880	755	499
5	390	455	--------	--------	491	455	2,260	3,720	790	558
6	378	455	--------	--------	390	455	2,730	3,880	790	558
7	378	455	--------	--------	304	422	2,730	2,850	755	589
8	378	390	--------	186	278	455	3,270	2,850	620	528
9	378	390	--------	84	254	390	3,420	2,450	652	528
10	378	390	--------	166	254	455	3,570	2,320	589	499
11	455	378	--------	360	230	455	3,570	2,190	558	471
12	384	331	--------	566	230	390	3,420	2,320	528	471
13	360	343	--------	360	230	422	3,570	2,320	471	443
14	390	422	--------	605	230	685	4,200	2,320	443	499
15	422	422	--------	685	230	1,280	5,260	2,450	416	416
16	422	390	--------	331	230	945	5,630	2,450	390	416
17	455	378	--------	455	278	1,400	5,260	2,320	390	390
18	455	390	--------	491	304	1,400	4,370	2,320	443	365
19	455	390	--------	455	331	1,460	3,420	2,320	471	365
20	527	390	--------	455	360	1,830	2,710	2,320	443	365
21	527	390	--------	254	390	2,110	2,320	2,320	443	365
22	491	390	--------	254	390	2,410	2,450	1,950	416	390
23	455	390	--------	230	390	3,250	2,710	1,620	416	390
24	455	390	--------	230	527	3,800	2,850	1,510	416	390
25	390	390	--------	278	455	4,590	3,130	1,230	416	416
26	390	390	--------	230	360	4,990	3,570	1,060	416	443
27	422	390	--------	254	331	3,800	4,200	1,140	416	416
28	390	390	--------	390	331	2,730	4,370	1,060	416	471
29	390	390	--------	685	422	2,110	4,720	1,020	416	499
30	390	390	--------	491	566	1,970	5,260	862	416	499
31	390	--------	--------	331	--------	1,970	--------	755	416	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	527	360	415	25,500
November	455	331	393	23,700
March 8–31	685	84	363	17,500
April	566	230	335	20,000
May	4,990	390	1,570	96,500
June	5,630	2,260	3,550	211,000
July	4,540	755	2,340	144,000
August	790	390	523	32,300
September	589	365	455	27,000

SUNLIGHT CREEK NEAR PAINTER, WYO.

LOCATION.—Water-stage recorder in sec. 16, T. 55 N., R. 105 W., 1 mile east of Painter.
DRAINAGE AREA.—139 square miles.
RECORDS AVAILABLE.—August and September, 1929.
REMARKS.—Records excellent. Minor diversion for irrigation above station.

Daily and monthly discharge, in second-feet, 1929

Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.
1	------	100	11	------	80	21	98	65
2	------	98	12	------	76	22	96	66
3	------	106	13	------	73	23	94	66
4	------	113	14	------	71	24	94	66
5	------	110	15	------	71	25	94	66
6	------	107	16	100	67	26	94	72
7	------	107	17	106	65	27	106	80
8	------	100	18	108	64	28	103	86
9	------	90	19	106	64	29	104	78
10	------	85	20	101	64	30	112	72
						31	104	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
August 16–31	112	94	101	3,200
September	113	64	80.9	4,810
The period	------	------	------	8,010

WIND RIVER AT RIVERTON, WYO.

LOCATION.—Chain gage in sec. 2, T. 1 S., R. 4 E., three-quarters of a mile east of Riverton. Zero of gage is 4,844.38 feet above mean sea level. Gage was moved 500 feet upstream on Apr. 26, 1929.

DRAINAGE AREA.—2,320 square miles.

RECORDS AVAILABLE.—May, 1911, to September, 1927; October, 1928, to September 1929. May, 1906, to November, 1908, at Walkers Ferry, 1 mile upstream.

EXTREMES.—Maximum discharge during year, 4,730 second-feet May 25 (gage height, 6.0 feet); minimum occurred during winter.

1906–1908, 1911–1927, 1928–29: Maximum discharge, 12,300 second-feet June 14, 1906; minimum, 170 second-feet Dec. 16, 1926.

REMARKS.—Records good. Discharge not determined Dec. 6 to Apr. 25. Diversions for irrigation above station. Slight regulation owing to operation of Pilot Butte Canal which diverts water 30 miles above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Apr.	May	June	July	Aug.	Sept.
1	500	455	370	-------	393	1,720	3,280	1,180	1,060
2	500	432	318	-------	393	2,180	3,140	1,120	1,120
3	500	410	270	-------	375	2,640	2,970	1,380	1,180
4	500	410	270	-------	360	1,860	2,890	1,510	1,380
5	500	455	270	-------	360	1,720	2,720	1,440	1,440
6	500	455	-------	-------	360	2,480	2,320	1,440	1,440
7	500	455	-------	-------	345	3,140	2,020	1,380	1,310
8	500	455	-------	-------	360	3,560	1,860	1,440	1,180
9	500	455	-------	-------	375	3,560	1,510	1,310	1,060
10	500	455	-------	-------	375	3,830	1,440	1,180	940
11	500	478	-------	-------	393	3,480	1,310	1,030	835
12	500	478	-------	-------	411	2,890	1,310	888	785
13	550	478	-------	-------	433	2,400	1,380	785	735
14	550	500	-------	-------	455	3,650	1,380	785	690
15	605	500	-------	-------	505	3,830	1,440	735	645
16	660	478	-------	-------	785	4,010	1,510	785	608
17	720	478	-------	-------	940	4,010	1,510	785	608
18	720	455	-------	-------	1,060	3,740	1,510	888	570
19	720	410	-------	-------	1,120	2,720	1,860	888	538
20	660	390	-------	-------	1,440	2,020	2,020	888	505
21	605	390	-------	-------	2,020	1,720	2,020	888	538
22	550	390	-------	-------	2,320	2,020	2,020	888	608
23	500	410	-------	-------	2,890	2,160	1,860	888	608
24	455	410	-------	-------	3,400	2,240	1,790	888	690
25	410	410	-------	-------	4,730	2,320	1,720	888	735
26	352	410	-------	455	3,830	2,400	1,580	888	785
27	410	410	-------	455	3,140	2,560	1,440	888	735
28	455	410	-------	505	2,320	2,800	1,380	888	735
29	500	390	-------	455	1,860	3,110	1,380	998	735
30	455	432	-------	411	1,580	3,140	1,310	1,060	735
31	455	-------	-------	-------	1,310	-------	1,180	998	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	720	352	527	32,400
November	500	390	438	26,100
December 1–5	370	270	300	2,980
April 26–30	505	411	456	4,520
May	4,730	345	1,310	80,600
June	4,010	1,720	2,800	167,000
July	3,280	1,180	1,840	113,000
August	1,510	735	1,030	63,300
September	1,440	505	851	50,600

BIG HORN RIVER AT THERMOPOLIS, WYO.

LOCATION.—Chain gage in sec. 36, T. 43 N., R. 95 W., at Thermopolis. Zero of gage is 4,304.80 feet above mean sea level.

DRAINAGE AREA.—8,080 square miles.

RECORDS AVAILABLE.—May, 1900, to December, 1905; June, 1910, to September, 1929.

EXTREMES.—Maximum discharge during year, 14,000 second-feet Mar. 11 (gage height, 9.25 feet); minimum, 420 second-feet Feb. 14 (gage height, 0.34 foot).

1900–1905, 1910–1929: Maximum discharge, 29,800 second-feet July 24, 1923 (gage height, 16.2 feet); minimum, 180 second-feet Apr. 5, 1904 (gage height, 0.2 foot).

REMARKS.—Records good except those for estimated periods, Jan. 27 to Feb. 13 and Feb. 15–24, which are fair. Practically no diversions between mouth of Wind River and Thermopolis.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	762	850	549	549		635	1,560	1,460	3,870	4,760	1,550	1,270
2	790	820	526	517		656	1,230	1,400	4,220	4,760	1,450	1,320
3	762	762	458	496	450	740	1,070	1,180	4,940	4,580	1,400	1,320
4	762	693	480	488		1,020	1,470	1,160	4,760	4,220	1,450	1,230
5	762	790	480	480		1,270	1,770	1,190	4,040	4,220	1,550	1,360
6	762	820	488	501		1,350	1,320	1,260	3,870	3,550	1,550	1,660
7	762	882	423	530		1,490	1,460	1,300	4,580	3,250	1,450	1,400
8	762	915	513	522	430	3,570	1,430	1,180	5,500	2,970	1,550	1,450
9	735	735	583	488		6,350	1,060	1,140	5,680	2,830	1,550	1,550
10	762	850	568	484		11,100	922	1,160	6,420	2,690	1,450	1,450
11	762	790	656	496		13,600	882	1,160	6,790	2,270	1,320	1,450
12	790	820	614	530	420	11,400	870	1,250	6,420	2,050	1,190	1,450
13	915	820	661	535		3,550	838	1,300	6,790	2,050	1,190	1,450
14	1,050	820	666	526		1,000	820	1,730	6,980	1,890	1,020	1,320
15	1,160	820	677	522		1,160	762	2,190	6,790	2,010	948	1,270
16	1,160	820	625	568		1,340	730	2,540	6,980	2,010	915	1,320
17	1,190	820	599	568	430	1,250	810	2,600	7,530	2,010	980	1,320
18	1,190	762	599	540		1,270	1,070	2,550	7,900	2,010	980	1,270
19	1,190	672	599	544		1,250	1,350	2,490	6,420	2,010	1,050	1,190
20	1,190	564	578	609		1,650	1,570	2,520	4,580	1,890	1,080	1,050
21	1,190	583	483	578		1,320	810	2,620	3,550	2,140	1,080	934
22	1,160	583	614	573	450	876	1,430	2,760	2,970	2,140	1,120	850
23	1,080	666	651	559		1,110	3,500	2,870	3,870	2,140	1,160	850
24	1,020	762	564	530		1,060	4,960	2,830	3,870	2,140	1,120	915
25	882	790	559	505	458	1,210	3,400	2,870	3,870	2,010	1,160	980
26	850	790	568	461	461	1,090	3,420	2,970	3,870	1,890	1,120	1,050
27	790	762	530		554	1,010	3,030	3,170	4,040	1,770	1,120	1,120
28	790	762	535		604	1,110	2,030	3,310	4,400	1,770	1,120	1,120
29	850	708	549	440	-------	2,060	1,570	3,900	4,220	1,660	1,120	1,160
30	820	609	559		-------	1,320	1,490	3,880	3,110	1,550	1,160	1,230
31	850	-------	568		-------	1,740	-------	3,690	-------	1,550	1,230	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,190	735	919	56,500
November	915	564	761	45,300
December	677	423	568	34,900
January	609	440	513	31,500
February	604	420	448	24,900
March	13,600	635	2,570	158,000
April	4,960	730	1,620	96,400
May	3,900	1,140	2,180	134,000
June	7,900	2,970	5,090	303,000
July	4,760	1,550	2,540	156,000
August	1,550	915	1,230	75,600
September	1,660	850	1,240	73,800
The year	13,600	420	1,640	1,190,000

BIG HORN RIVER AT KANE, WYO.

LOCATION.—Chain gage in sec. 4, T. 56 N., R. 93 W., half a mile east of Kane. Zero of gage is 3,610.23 feet above mean sea level.

DRAINAGE AREA.—15,900 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 13,700 second-feet June 11 (gage height, 6.8 feet); minimum occurred during winter.

REMARKS.—Records good except those for estimated periods, which are fair. Daily discharge not determined Dec. 4 to Mar. 31. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	[a]1,280	1,600	1,230				4,540	3,000	6,070	6,540	1,530	1,110
2	[a]1,290	1,590	1,140				4,230	2,800	6,140	6,160	1,510	1,220
3	[a]1,300	1,530	1,080				4,520	2,550	10,400	5,960	1,440	1,340
4	[a]1,300	1,530	907				[a]4,520	2,410	8,560	5,290	1,420	1,440
5	[a]1,300	1,590	839				[a]4,520	2,340	7,610	4,950	1,420	1,580
6	[a]1,300	1,580	800				4,520	2,340	6,430	4,760	1,550	2,000
7	1,310	1,550	800				3,900	2,250	5,880	4,230	1,530	2,620
8	1,300	1,570	800				3,350	2,210	8,850	3,930	1,620	2,560
9	1,300	1,670	800				2,500	2,190	9,980	3,450	1,750	2,460
10	1,300	1,610					2,090	2,180	11,600	3,060	1,670	2,340
11	1,290	1,590					1,780	2,150	13,000	2,720	1,540	2,190
12	1,460	1,600					1,630	2,180	10,000	2,370	1,500	2,120
13	1,630	1,590					1,580	2,370	8,820	2,310	1,350	2,000
14	1,980	1,620					1,580	3,120	8,370	2,220	1,270	1,880
15	2,410	1,660			784		1,440	4,170	8,540	2,250	1,160	1,800
16	2,180	1,640					1,400	4,700	17,980	2,250	935	1,750
17	2,100	1,580					1,540	5,370	10,700	2,330	852	1,710
18	1,900	1,510		879			1,700	5,850	11,300	2,280	846	1,620
19	1,960	1,440					2,270	6,250	1,500	2,420	820	1,540
20	1,840	1,430					3,810	6,450	7,940	2,800	788	1,470
21	1,860	1,470					2,320	6,740	7,240	2,560	794	1,420
22	1,880	1,510					1,940	7,240	5,220	2,370	788	1,430
23	1,770	1,550					2,190	8,560	5,910	2,650	788	1,530
24	1,770	1,570					2,300	9,950	4,260	2,470	788	1,470
25	1,790	1,570				2,760	2,860	11,000	5,240	2,260	900	1,600
26	1,660	1,570					2,890	12,800	5,390	2,150	988	1,630
27	1,610	1,550					2,790	13,100	5,630	1,950	965	1,720
28	1,550	1,470					2,660	11,800	5,880	1,760	950	1,700
29	1,480	1,400					2,760	9,700	5,920	1,730	1,010	1,680
30	1,580	1,320					2,830	7,660	6,030	1,630	1,020	1,780
31	1,600							6,250		1,600	1,140	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,410	1,280	1,620	99,600
November	1,670	1,320	1,550	92,200
December			[a] 975	60,000
January			[a] 880	54,100
February			[a] 770	42,800
March			[a] 5,150	317,000
April	4,540	1,400	2,770	165,000
May	13,100	2,150	5,540	341,000
June	13,000	4,910	7,880	469,000
July	6,540	1,600	3,080	189,000
August	1,750	788	1,180	72,600
September	2,620	1,110	1,760	105,000
The year	13,100		2,770	2,010,000

[a] Estimated.

BIG HORN RIVER NEAR HARDIN, MONT.

LOCATION.—Chain gage in N.W. ¼ sec. 19, T. 1 S., R. 34 E., at highway bridge on Crow Indian Reservation, half a mile above Little Horn River and 2 miles northeast of Hardin.

DRAINAGE AREA.—20,700 square miles.

RECORDS AVAILABLE.—June, 1904, to May, 1925; August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 45,900 second-feet Mar. 11 (gage height, 11.1 feet); minimum, less than 915 second-feet during January.

1904–1925, 1928–29: Maximum discharge, that of Mar. 11, 1929; minimum, 516 second-feet July 15–18, 1919 (gage height, 2.28 feet).

REMARKS.—Records good except those for period of ice effect, Nov. 28 to Mar. 5, which are fair. Numerous diversions. Some storage on tributaries.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,330	2,510					6,470	3,550	9,600	14,500	2,880	1,980
2	2,330	2,510					3,940	3,740	10,600	14,500	3,040	2,080
3	2,330	2,510				2,520	3,530	3,740	13,300	12,700	3,200	2,190
4	2,330	2,510					3,370	3,550	14,500	12,290	3,040	2,190
5	2,330	2,510					3,940	3,370	12,700	11,600	3,040	2,310
			1,780	1,860	1,380							
6	2,330	2,510				30,800	4,830	3,200	10,600	10,600	2,880	2,730
7	2,330	2,330				16,400	4,360	3,370	10,100	9,150	2,880	3,040
8	2,330	2,330				13,300	3,940	3,200	12,700	8,290	2,880	3,940
9	2,330	2,510				12,200	3,740	3,370	15,100	7,150	2,880	3,550
10	2,160	2,510				17,000	3,040	3,200	16,400	6,160	2,880	3,370
11	2,160	2,330				33,100	2,880	3,200	18,300	5,590	2,730	3,370
12	2,330	2,330				33,900	2,580	3,200	19,000	5,870	2,730	3,200
13	2,330	2,330				33,100	2,580	3,200	17,000	4,360	2,580	2,880
14	2,330	2,330				12,200	2,580	3,370	15,700	4,360	2,440	3,200
15	2,700	2,330				7,150	2,580	3,740	15,700	4,360	2,310	3,040
			2,100	1,550	1,540							
16	3,290	2,330				4,360	2,580	4,360	18,300	4,590	2,190	2,880
17	2,890	2,330				4,590	2,580	5,320	21,100	4,360	2,080	2,730
18	2,700	2,330				9,600	2,580	6,160	21,800	4,590	1,980	2,580
19	2,700	2,330				7,890	2,580	6,160	20,400	4,140	1,880	2,580
20	2,700	2,330				9,150	2,580	6,800	16,400	4,360	1,880	2,880
21	2,700	2,160				8,710	3,040	7,150	13,300	4,590	1,880	2,580
22	2,700	2,080				7,150	3,370	7,150	11,100	4,360	1,880	2,440
23	2,700	2,080				5,590	3,370	8,710	9,600	4,360	1,880	2,440
24	2,510	2,080				5,590	3,370	12,200	9,600	4,140	1,880	2,580
25	2,510	2,080				3,940	3,370	13,900	10,100	3,740	1,980	2,730
			2,190	915	1,540							
26	2,510	2,080				3,550	3,550	18,300	8,710	3,740	1,880	2,880
27	2,510	2,000				3,200	3,370	21,100	10,600	3,370	1,880	2,880
28	2,510					3,550	3,200	20,400	11,600	3,200	1,980	3,040
29	2,700	2,000				7,890	3,370	16,400	12,700	3,200	1,980	3,040
30	2,510				-------	12,700	3,370	15,100	13,300	3,200	2,080	3,040
31	2,510				-------	11,600	-------	10,600	-------	3,040	1,980	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	3,290	2,160	2,500	154,000
November	2,510	2,000	2,290	136,000
December	----------	----------	2,030	125,000
January	----------	----------	1,420	87,300
February	----------	----------	1,480	82,200
March	33,900	----------	10,700	658,000
April	6,470	2,580	3,360	199,000
May	21,100	3,200	7,450	458,000
June	21,800	8,710	14,000	833,000
July	14,500	3,040	6,270	386,000
August	3,200	1,880	2,380	146,000
September	3,940	1,980	2,810	167,000
The year	33,900	----------	4,740	3,430,000

DINWOODY CREEK NEAR BURRIS, WYO.

LOCATION.—Water-stage recorder in sec. 10, T. 5 N., R. 5 W., 6 miles northwest of Burris. Zero of gage is 6,195.39 feet above mean sea level.

DRAINAGE AREA.—114 square miles.

RECORDS AVAILABLE.—January to October, 1909; May, 1918, to September, 1929.

EXTREMES.—Maximum discharge during year, 767 second-feet July 20 (gage height, 2.98 feet); minimum occurred during winter.

1918–1929: Maximum discharge, 1,710 second-feet July 25, 1923 (gage height, 3.75 feet); minimum, 8 second-feet Apr. 17, 1922.

REMARKS.—Records good except those for estimated periods, which are fair. Daily discharge not determined Dec. 1–28 and Dec. 30 to Feb. 24. Natural regulation by Dinwoody Lake and other small lakes. Practically no diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	65	39	------	16	------	13	[a] 14	21	109	511	472	511
2	65	38	------	[a] 16	------	[a] 13	13	[a] 21	122	528	522	500
3	60	36	------	16	------	[a] 13	[a] 13	[a] 20	178	522	588	478
4	60	32	------	[a] 15	------	[a] 12	13	20	183	533	610	462
5	59	29	------	15	------	12	[a] 13	[a] 20	175	522	621	418
6	56	32	------	[a] 16	------	[a] 12	13	[a] 20	169	467	599	317
7	53	31	------	17	------	13	[a] 14	20	189	429	550	254
8	52	27	------	[a] 16	------	[a] 14	15	19	232	403	506	202
9	50	28	------	16	------	15	[a] 15	[a] 20	286	376	445	169
10	53	25	------	[a] 16	------	[a] 14	[a] 15	[a] 21	303	418	413	148
11	64	23	------	[a] 15	------	[a] 13	[a] 16	23	258	371	392	129
12	58	23	------	15	------	13	16	[a] 28	222	356	392	111
13	49	26	------	[a] 14	------	[a] 13	[a] 16	[a] 34	212	397	397	103
14	50	24	------	[a] 13	------	13	16	40	222	440	403	103
15	[a] 49	23	------	13	------	[a] 13	[a] 16	[a] 51	278	472	413	102
16	[a] 48	[a] 22	------	[a] 14	------	[a] 13	[a] 16	62	340	500	429	96
17	[a] 46	[a] 20	------	16	------	[a] 13	16	[a] 65	403	533	445	89
18	[a] 44	[a] 19	------	[a] 15	------	[a] 13	[a] 16	68	397	566	450	80
19	[a] 42	[a] 18	------	[a] 13	------	13	[a] 16	[a] 56	282	621	472	75
20	41	[a] 20	------	[a] 11	------	[a] 14	16	43	215	728	462	80
21	43	[a] 22	------		------	15	[a] 16	[a] 45	175	683	434	89
22	41	23	------		------	[a] 15	16	[a] 47	166	660	424	[a] 95
23	40	[a] 23	------		------	15	[a] 17	[a] 50	186	621	403	[a] 99
24	40	23	------		------	[a] 15	[a] 17	53	205	599	408	[a] 102
25	40	[a] 21	------		14	[a] 14	[a] 18	133	215	572	413	[a] 92
26	39	[a] 20	------	[a] 11	[a] 13	14	19	[a] 216	229	582	413	[a] 85
27	40	19	------		13	[a] 15	21	299	278	599	456	[a] 80
28	40	[a] 18	------		[a] 13	16	[a] 21	236	335	550	450	75
29	38	17	16		------	[a] 15	21	189	392	500	489	75
30	37	[a] 17	------		------	[a] 15	[a] 21	150	434	489	538	72
31	38	------	------		------	15	------	124	------	484	538	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	65	37	48.4	2,980
November	39	17	24.6	1,460
December	------	------	[a] 16.0	984
January	17	11	13.5	830
February	------	------	[a] 14.0	778
March	16	12	13.7	842
April	21	13	16.2	964
May	299	19	71.4	4,390
June	434	109	246	14,600
July	728	356	517	31,800
August	621	392	469	28,800
September	511	72	176	10,500
The year	728	------	137	98,900

[a] Estimated.

DRY CREEK NEAR BURRIS, WYO.

LOCATION.—Water-stage recorder in sec. 12, T. 4 N., R. 5 W., 2 miles south of Burris.

DRAINAGE AREA.—73 square miles.

RECORDS AVAILABLE.—May, 1921, to September, 1929.

EXTREMES.—Maximum discharge during year, 272 second-feet May 25 (gage height, 2.05 feet); minimum occurred during winter.

1921–1929: Maximum discharge, 1,100 second-feet June 12, 1921 (gage height, 3.9 feet); minimum, 2 second-feet Feb. 23, 1921.

REMARKS.—Records good. Discharge not determined Oct. 1 to Apr. 26. Small ditch diverts water for irrigation above station.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	-------	4.5	102	180	73	47	16	-------	46	180	95	40	23
2	-------	4.0	137	165	78	49	17	-------	53	199	96	42	20
3	-------	5.0	98	157	75	52	18	-------	57	134	95	43	18
4	-------	6.0	85	147	74	58	19	-------	79	107	105	43	17
5	-------	4.0	101	134	74	56	20	-------	95	93	105	43	18
6	-------	3.5	134	115	69	56	21	-------	111	93	102	42	18
7	-------	2.9	145	104	64	52	22	-------	116	119	95	40	23
8	-------	3.0	157	92	60	47	23	-------	128	127	88	40	27
9	-------	6.0	163	79	56	41	24	-------	170	111	85	41	27
10	-------	9.8	132	73	51	37	25	-------	222	119	85	41	27
11	-------	9.8	126	73	47	34	26	-------	149	137	86	41	30
12	-------	14	121	81	44	30	27	2.1	111	147	82	40	30
13	-------	24	121	87	42	27	28	2.6	93	153	76	42	24
14	-------	39	149	91	42	24	29	6.0	80	165	70	43	23
15	-------	42	172	93	40	23	30	13	78	173	67	45	20
							31	-------	87	-------	70	46	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 27–30	13	2.1	5.92	46.9
May	222	2.9	59.8	3,680
June	199	85	134	7,970
July	180	67	99.1	6,090
August	78	40	50.4	3,100
September	58	17	32.6	1,940
The period	-------	-------	-------	22,800

WILLOW CREEK NEAR CROWHEART, WYO.

LOCATION.—Water-stage recorder in sec. 20, T. 3 N., R. 4 W., 500 feet above diversion dam for Willow Creek ditch and 2 miles southwest of Crowheart.

RECORDS AVAILABLE.—May to October, 1909; May, 1921, to June, 1923; April, 1925, to September, 1929.

EXTREMES.—Maximum discharge during year, 151 second-feet June 17 (gage height, 2.15 feet) minimum occurred during winter.

1921–1923, 1925–1929: Maximum discharge, 750 second-feet July 26, 1923 (gage height, 4.50 feet, old datum); minimum, 7 second-feet Jan. 14, 1921.

REMARKS.—Records good except those for estimated period, Oct. 21–31, which are fair. Observations discontinued Nov. 1 to Apr. 30. No diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	May	June	July	Aug.	Sept.	Day	Oct.	May	June	July	Aug.	Sept.
1	11	5.5	42	51	11	8.2	16	11	6.7	117	19	9.8	9.0
2	11	5.9	58	42	11	7.8	17	11	6.7	107	18	10	8.6
3	11	6.2	46	39	11	9.0	18	12	7.0	68	18	9.8	7.8
4	11	6.4	46	38	11	9.0	19	12	7.0	60	24	9.8	7.8
5	11	6.4	59	33	10	8.6	20	12	7.8	53	18	9.4	7.8
6	11	6.4	79	28	10	9.8	21	12	9.0	65	17	9.0	8.6
7	11	6.4	85	28	11	10	22		9.8	79	15	9.0	9.4
8	11	6.4	101	25	11	10	23		19	65	14	9.0	9.0
9	11	6.4	113	21	11	9.8	24		36	60	13	9.4	8.6
10	11	6.4	104	21	11	9.8	25		78	65	12	9.0	9.0
11	11	6.4	93	21	9.4	9.4	26	11	54	65	12	8.6	10
12	12	6.4	84	20	9.8	8.6	27		34	61	12	8.2	9.4
13	12	6.4	89	20	9.8	9.0	28		29	61	12	8.6	9.4
14	12	6.4	110	20	9.8	9.0	29		24	56	11	8.6	9.4
15	11	6.4	114	18	9.0	9.4	30	10	22	56	11	7.8	9.4
							31		28	-------	11	7.8	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	12	10	11.2	689
May	78	5.5	15.2	935
June	117	42	75.4	4,490
July	51	11	21.4	1,320
August	11	7.8	9.66	594
September	10	7.8	9.03	537

BULL LAKE CREEK NEAR LENORE, WYO.

LOCATION.—Water-stage recorder in sec. 17, T. 3 N., R. 2 W., one-fourth mile above mouth and 14 miles southeast of Lenore.

DRAINAGE AREA.—132 square miles.

RECORDS AVAILABLE.—May, 1918, to September, 1929.

EXTREMES.—Maximum discharge during year, 1,430 second-feet June 17 (gage height, 5.89 feet); minimum occurred during winter.

1918–1929: Maximum discharge, 3,990 second-feet June 16, 1918 (gage height, 4.3 feet, old datum); minimum, 17.8 second-feet Feb. 1, 1919.

REMARKS.—Records excellent except those for estimated periods, which are fair. Flow naturally regulated by Bull Lake. Minor diversion for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	96	77					26	47	410	1,190	521	450
2	[a] 100	[a] 70					[a] 27	47	493	1,210	539	445
3	[a] 104	[a] 50					[a] 28	47	527	1,130	582	445
4	108	[a] 40					[a] 30	47	493	1,060	601	455
5	[a] 106	50					[a] 32	47	476	1,010	601	440
6	[a] 100	47					[a] 30	47	533	933	588	430
7	96	47		29			[a] 29	47	627	793	575	380
8	[a] 98	45					28	47	725	725	539	338
9	[a] 98	45					[a] 28	52	865	654	493	306
10	[a] 98	45					[a] 28	50	968	594	450	274
11	[a] 100	44				26	[a] 28	47	933	545	430	254
12	[a] 98	43					[a] 28	45	849	539	410	226
13	[a] 98	43					[a] 28	47	793	582	395	211
14	[a] 96	43		27			[a] 28	67	841	614	395	203
15	96	43					28	88	995	647	410	182
16	[a] 94	42					[a] 29	113	1,100	661	405	164
17	[a] 92	42					[a] 29	141	1,280	668	410	160
18	[a] 90	42			23	24	[a] 30	171	1,310	696	425	154
19	85	42					[a] 30	203	995	725	420	147
20	[a] 80	[a] 40					[a] 32	246	740	778	420	144
21	[a] 80	[a] 40					[a] 33	328	608	778	425	138
22	74	[a] 40					35	405	582	755	420	147
23	74	[a] 42					40	466	647	725	400	164
24	67	[a] 43	29				52	594	675	696	390	230
25	64	[a] 42			23	27	50	825	703	682	385	246
26	64	40					45	995	748	668	390	262
27	59	[a] 40					44	865	841	654	395	266
28	57	[a] 38					43	675	950	634	400	258
29	57	[a] 38					44	551	1,030	594	420	246
30	55	[a] 37					47	445	1,120	557	420	226
31	57							405		533	440	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	108	55	85.2	5,240
November	77	37	44.7	2,660
December			[a] 30	1,840
January			[a] 26	1,600
February			[a] 24	1,330
March			[a] 25	1,540
April	52	26	33.6	2,000
May	995	45	265	16,300
June	1,310	410	795	47,300
July	1,210	533	743	45,700
August	601	385	455	28,000
September	455	138	266	15,800
The year	1,310		228	169,000

[a] Estimated.

LITTLE WIND RIVER NEAR FORT WASHAKIE, WYO.

LOCATION.—Water-stage recorder in sec. 1, T. 1 S., R. 2 W., above Ray ditch, 2½ miles southwest of Fort Washakie.

DRAINAGE AREA.—134 square miles.

RECORDS AVAILABLE.—May, 1921, to September, 1929.

EXTREMES.—Maximum discharge during year, 1,080 second-feet June 17 (gage height, 4.50 feet); minimum occurred during winter.

1921–1929: Maximum discharge, 5,220 second-feet July 9, 1926 (gage height, 7.59 feet); minimum, 14 second-feet Feb. 22, 1921.

REMARKS.—Records excellent except those for Oct. 14–19, Nov. 4–9, 17–21, 25–30, Apr. 1–12, 21–30, and May 1–3, which are estimated. Observations discontinued Dec. 1 to Mar. 31. Water diverted for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	46	34		53	267	504	143	81
2	46	33		51	362	444	144	79
3	46	32		49	246	393	143	85
4	46	32		47	228	368	143	92
5	50	33		38	330	330	137	96
6	44	33		34	420	282	130	108
7	45	34	18	33	393	267	125	103
8	44	35		41	496	246	113	100
9	44	36		56	583	220	112	93
10	44	36		54	496	204	104	90
11	44	34		57	456	208	97	86
12	44	32		67	382	218	92	83
13	44	34	18	102	452	222	83	78
14	44	33	18	135	596	225	67	75
15	44	33	17	123	655	232	59	74
16	45	33	17	137	755	240	59	72
17	45		20	171	860	240	59	70
18	46		25	167	476	255	59	66
19	46	30	28	193	358	232	59	62
20	46		29	230	306	225	62	59
21	46		26	264	337	213	61	63
22	44	34	22	225	460	200	61	90
23	40	32	23	321	460	187	61	112
24	37	33	25	390	444	179	65	110
25	37		30	524	456	175	68	104
26	36		40	390	496	173	65	112
27	35	30	50	306	520	169	63	106
28	36		62	249	508	162	66	97
29	35		58	206	516	150	72	92
30	34		55	195	520	144	81	86
31	36	--------	--------	215	--------	143	83	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	50	34	42.5	2,610
November	36	30	32.8	1,560
April	62	17	31.3	1,120
May	524	33	165	10,100
June	860	228	461	27,400
July	504	143	240	14,800
August	146	58	88.5	5,440
September	112	59	87.5	5,210

NORTH FORK OF LITTLE WIND RIVER AT FORT WASHAKIE, WYO.

LOCATION.—Water-stage recorder in sec. 33, T. 1 N., R. 1 W., at Fort Washakie, a quarter of a mile above mouth.

DRAINAGE AREA.—138 square miles.

RECORDS AVAILABLE.—May, 1921, to September, 1929.

EXTREMES.—Maximum discharge during year, 890 second-feet June 17 (gage height, 3.00 feet); minimum occurred during winter.

1921–1929: Maximum discharge, 2,640 second-feet July 9, 1926 (gage height, 4.85 feet); minimum, 16 second-feet Jan. 9, 1922.

REMARKS.—Records excellent except those for Oct. 7–19, Nov. 4–9, and 17–24, which are estimated. Observations discontinued Nov. 25 to May 10. Water diverted for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	May	June	July	Aug.	Sept.
1	26	31	-------	280	396	92	53
2	26	31	-------	336	376	90	56
3	25	35	-------	294	353	84	58
4	24	34	-------	270	325	82	64
5	24	34	-------	311	300	80	76
6	24	33	-------	364	276	78	86
7	26	33	-------	388	250	76	94
8	27	32	-------	445	231	72	98
9	29	32	-------	535	208	68	96
10	30	31	-------	525	186	65	92
11	32	30	51	480	168	62	86
12	33	29	57	418	158	58	82
13	35	30	94	404	158	55	78
14	36	29	150	490	155	52	76
15	38	27	168	594	155	48	74
16	40		158	677	152	46	68
17	41		173	818	150	46	65
18	43		160	616	150	48	61
19	44		170	455	158	47	58
20	46		189	360	155	50	55
21	46		208	332	143	51	55
22	42		181	353	143	46	57
23	40	25	240	372	152	46	57
24	39		287	364	145	48	60
25	39		455	372	118	47	62
26	37		470	388	127	46	74
27	35		388	400	120	46	78
28	32		318	414	111	47	80
29	32		273	409	102	50	80
30	30		244	404	96	50	78
31	31		237	-------	92	51	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	46	24	33.9	2,080
November	35	-------	28.2	1,680
May 11–31	470	51	222	9,250
June	818	270	429	25,500
July	396	92	187	11,500
August	92	46	58.9	3,620
September	98	53	71.9	4,280

SOUTH FORK OF OWL CREEK NEAR THERMOPOLIS, WYO.[1]

LOCATION.—Staff gage in sec. 33, T. 9 N., R. 2 E., 26 miles northwest of Thermopolis. Red Creek enters just above station.

DRAINAGE AREA.—272 square miles.

RECORDS AVAILABLE.—July, 1921, to September, 1922; May to September, 1929.

EXTREMES.—Maximum discharge during year, 418 second-feet May 25 (gage height, 3.85 feet); minimum, 1.4 second-feet Aug. 17 (gage height, 0.72 foot). 1921–22, 1929: Maximum and minimum discharge, same as given above.

REMARKS.—Records good except those for May 31 to June 30, which are fair. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	------	162	58	13	3.6	16	142	219	40	2.4	16
2	------	225	50	15	5.1	17	167	189	47	1.4	16
3	------	121	50	12	10	18	142	101	50	3.6	19
4	------	101	50	13	24	19	150	108	45	4.2	20
5	------	114	55	12	25	20	167	74	45	3.6	18
6	------	114	53	10	24	21	221	77	43	4.2	16
7	------	118	47	8.8	26	22	241	79	49	3.6	13
8	------	150	47	6.8	25	23	301	101	35	3.6	12
9	------	255	34	7.6	24	24	330	95	30	3.6	3.0
10	------	199	36	10	20	25	305	95	22	3.6	6.8
11	------	142	35	6.8	18	26	140	95	22	3.6	7.6
12	------	142	29	5.1	18	27	93	84	20	3.6	5.1
13	------	157	35	4.2	20	28	67	90	12	3.6	4.2
14	------	213	34	5.1	18	29	63	84	14	3.6	6.0
15	112	203	32	2.4	18	30	63	84	12	4.2	4.2
						31	114	------	15	3.6	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May 15-31	330	63	166	5,600
June	255	74	133	7,910
July	58	12	37.0	2,280
August	15	1.4	6.06	373
September	26	3.0	14.8	881
The period	------	------	------	17,000

[1] Formerly published as Owl Creek near Embar, Wyo.

GREYBULL RIVER AT MEETEETSE, WYO.

LOCATION.—Water-stage recorder in sec. 4, T. 48 N., R. 100 W., at Meeteetse. Zero of gage is 5,718.63 feet above mean sea level. Gage moved one-fourth mile downstream April 17, 1930.

DRAINAGE AREA.—690 square miles.

RECORDS AVAILABLE.—June to September, 1897; April to October, 1903; July, 1920, to September, 1929.

EXTREMES.—Maximum discharge during year, 4,000 second-feet June 6 (gage height, 6.37 feet); minimum occured during winter.

1920–1929: Maximum discharge, 6,350 second-feet July 9, 1926; minimum, 63 second-feet Mar. 4, 1922.

REMARKS.—Records fair. Discharge estimated Oct. 14–31, Apr. 16, Aug. 12–19, and Sept. 9–14. Observations discontinued Nov. 1 to Apr. 14. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Apr.	May	June	July	Aug.	Sept.
1	287	--------	172	2,500	1,260	328	162
2	287	--------	172	2,820	1,160	344	135
3	287	--------	205	3,140	1,210	344	125
4	287	--------	225	3,500	1,140	295	120
5	287	--------	220	3,610	873	290	114
6	291	--------	185	3,680	698	280	117
7	287	--------	190	3,460	810	290	114
8	287	--------	161	3,170	559	280	108
9	287	--------	215	2,400	430	245	108
10	287	--------	275	2,080	439	231	107
11	287	--------	231	1,610	422	226	107
12	307	--------	316	1,580	439	224	110
13	344	--------	641	1,690	430	222	150
14	300	--------	980	2,290	493	220	175
15	275	125	980	2,400	520	218	207
16	250	150	1,140	2,400	484	216	202
17	225	175	1,380	1,980	493	214	194
18	200	168	1,190	1,040	493	211	186
19	175	154	1,410	89[illegible]	502	209	182
20	170	147	834	79[illegible]	466	207	178
21	168	140	1,440	83[illegible]	484	202	178
22	168	138	2,190	933	466	194	216
23	168	154	2,510	990	415	186	216
24	165	122	2,540	957	408	182	202
25	165	118	2,990	1,140	430	182	190
26	160	122	3,200	1,310	484	182	198
27		140	2,360	1,360	448	178	198
28		195	2,020	1,360	355	194	190
29		287	1,780	1,440	316	194	186
30		281	1,640	1,420	316	212	176
31		--------	2,130	--------	338	186	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	344	160	232	14,300
April 15–30	287	118	164	5,210
May	3,200	161	1,160	71,300
June	3,680	794	1,960	117,000
July	1,260	316	574	35,300
August	344	178	232	14,300
September	216	107	162	9,640

SHOSHONE RIVER BELOW SHOSHONE RESERVOIR, WYO.

LOCATION.—Water-stage recorder in lot 76, T. 52 N., R. 102 W., 3½ miles below Shoshone Dam and 4½ miles west of Cody.
DRAINAGE AREA.—1,470 square miles.
RECORDS AVAILABLE.—January, 1921, to September, 1929.
REMARKS.—Complete records furnished by United States Bureau of Reclamation.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	674	483	395	320	286	261	317	387	2,990	6,280	1,860	743
2	663	473	391	320	286	261	317	404	3,040	5,790	1,860	743
3	648	473	387	320	283	261	317	400	3,040	5,450	1,820	743
4	642	450	382	317	283	261	317	409	3,010	5,210	1,770	743
5	632	445	378	317	279	261	317	413	2,960	4,680	1,670	743
6	622	445	373	313	279	261	317	459	2,960	4,060	1,540	743
7	611	445	369	313	276	261	317	684	2,990	3,720	1,410	743
8	606	445	365	313	276	265	317	674	3,110	3,390	1,310	743
9	596	441	361	309	272	272	317	684	3,470	2,920	1,220	743
10	586	441	361	309	272	276	317	690	4,320	3,680	1,150	743
11	576	445	357	309	272	286	317	690	5,330	3,100	1,120	733
12	571	445	357	309	272	286	317	684	5,640	2,170	1,090	722
13	566	445	357	286	268	286	317	706	5,330	2,270	1,070	711
14	556	445	353	309	268	286	317	754	5,030	2,340	1,040	700
15	556	441	353	301	268	294	317	810	5,640	2,400	1,020	690
16	556	441	361	301	268	294	317	867	6,220	2,430	999	684
17	556	436	361	309	265	298	313	950	6,350	2,450	987	674
18	551	427	353	301	265	298	317	999	5,610	2,410	950	669
19	551	422	344	301	265	301	324	1,060	4,740	2,410	938	663
20	551	418	336	301	265	301	320	1,170	4,060	2,330	914	658
21	546	413	336	301	265	301	317	1,300	3,710	2,210	903	658
22	541	413	332	298	265	305	320	2,170	3,730	2,110	873	642
23	536	409	328	298	265	305	328	2,730	3,910	2,000	862	642
24	532	409	332	294	265	305	328	2,990	3,810	1,890	844	637
25	679	409	332	294	261	305	340	3,500	3,380	1,800	821	632
26	838	409	328	294	261	305	336	4,060	4,350	1,770	810	627
27	833	409	324	290	261	305	340	4,000	5,100	1,740	793	622
28	815	409	324	290	261	313	344	3,500	5,610	1,700	782	622
29	799	404	328	290	------	313	357	3,200	6,120	1,650	765	622
30	787	395	324	290	------	317	369	3,080	6,420	1,610	760	622
31	684	------	324	290	------	317	------	3,010	------	1,880	754	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	838	532	628	38,600
November	483	395	433	25,800
December	395	324	352	21,600
January	320	286	303	18,600
February	286	261	270	15,000
March	317	261	289	17,800
April	369	313	324	19,300
May	4,060	387	1,530	94,100
June	6,420	2,960	4,400	262,000
July	6,280	1,610	2,900	178,000
August	1,860	754	1,120	68,900
September	743	622	689	41,000
The year	6,420	261	1,110	801,000

SHOSHONE RIVER AT BYRON, WYO.

LOCATION.—Chain gage in sec. 34, T. 56 N., R. 97 W., at Byron.
DRAINAGE AREA.—2,300 square miles.
RECORDS AVAILABLE.—January to September, 1929.
EXTREMES.—Maximum discharge during year, 6,420 second-feet June 16, 30, and July 1 (gage height, 5.70 feet); minimum probably occurred during winter.
REMARKS.—Records good except those for Jan. 18 to Mar. 10, which were affected by ice. Water diverted for irrigation above station. Flow regulated at Shoshone Reservoir.

Daily and monthly discharge, in second-feet, 1929

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	267	808	438	294	2,260	6,180	1,280	277
2	-------			474	261	2,260	6,180	1,030	313
3	-------			516	267	2,440	5,700	938	298
4	-------			680	212	2,350	5,460	1,460	432
5	-------			641	235	2,260	4,760	983	641
6	-------	262	1,760	449	246	2,260	3,870	806	722
7	-------			449	432	2,260	3,870	763	722
8	-------			410	390	2,260	3,650	722	680
9	-------			400	382	2,440	3,030	602	641
10	-------			410	372	3,440	2,350	400	641
11	-------		2,170	410	390	3,650	4,760	523	680
12	-------		1,170	351	400	3,650	3,030	495	680
13	-------		1,070	443	395	3,650	1,830	488	722
14	-------		1,030	495	302	4,310	2,350	432	722
15	-------		806	421	368	5,220	3,030	368	566
16	-------	257	602	449	368	6,180	2,000	359	530
17	-------	285	602	449	382	5,940	2,000	351	502
18	362		763	454	351	5,940	1,910	320	449
19			680	481	372	4,990	1,910	355	454
20			641	523	395	4,310	1,910	313	432
21	312	449	602	680	421	3,870	1,750	309	421
22			566	410	602	3,650	1,750	267	415
23			566	474	1,600	3,870	1,340	270	438
24			530	481	1,830	4,090	1,070	261	894
25			438	488	2,540	3,440	983	261	763
26	267		566	460	3,650	3,870	894	287	763
27			502	449	3,440	4,530	806	270	722
28			680	404	3,230	5,460	806	280	763
29		-------	680	332	2,830	6,180	850	283	722
30		-------	641	336	2,540	6,420	763	280	722
31		-------	540	-------	2,350	-------	850	273	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
January 18-31	-------	-------	296	8,220
February	-------	-------	319	17,700
March	2,170	-------	925	56,900
April	680	322	462	27,500
May	3,650	212	1,030	63,300
June	6,400	2,260	3,920	233,000
July	6,180	763	2,630	162,000
August	1,460	261	517	31,800
September	894	277	591	35,200
The period	-------	-------	-------	636,000

LITTLE HORN RIVER NEAR CROW AGENCY, MONT.

LOCATION.—Water-stage recorder in NE. ¼ sec. 13, T. 3 S., R. 34 E., at Chicago, Burlington & Quincy Railroad bridge 2 miles south of Crow Agency and 14 miles above junction with Big Horn River.

DRAINAGE AREA.—1,190 square miles.

RECORDS AVAILABLE.—September, 1911, to September, 1924; August, 1928, to September, 1929. March, 1905, to June, 1906, at Crow Agency, 2 miles below present site. Crow Agency ditch diverts between the stations.

EXTREMES.—Maximum discharge during year, 3,080 second-feet Mar. 11 (gage height, 9.19 feet); minimum, 5 second-feet Jan. 23.

1905–6, 1911–1924, 1928–29: Maximum discharge, 8,200 second-feet July 23, 1923 (gage height, 14.0 feet); no flow July 28 to Aug. 6, 1921.

REMARKS.—Records fair. Stage-discharge relation affected by ice Dec. 5 to Mar. 6. Several diversions above station. Some regulation caused by head-gate operations above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	193	201	129	228	74	185	560	905	965	621	153	36
2	189	181	141	185	89	185	462	785	1,140	582	153	31
3	185	141	181	165	89	107	1,180	755	1,460	550	157	52
4	181	181	197	165	107	145	1,270	725	1,500	522	153	80
5	185	165	205	165	107	250	1,800	677	1,370	500	149	86
6	185	189	205	89	185	1,460	1,400	719	1,270	506	153	103
7	193	189	205	59	125	1,630	725	701	1,340	544	161	118
8	193	185	205	145	145	2,150	516	725	1,530	671	169	121
9	197	181	205	165	125	1,870	506	707	1,630	660	165	125
10	185	181	205	185	107	2,520	472	755	1,660	582	153	125
11	185	181	185	165	89	3,080	450	588	1,600	528	141	118
12	218	177	185	165	107	1,730	425	533	1,400	516	125	129
13	223	177	185	178	125	935	456	560	1,370	506	103	129
14	218	181	185	145	148	506	511	572	1,430	484	93	111
15	218	181	165	125	185	560	638	638	1,460	462	83	103
16	214	181	165	107	185	566	689	725	1,530	370	80	93
17	218	197	145	89	185	544	785	719	1,460	355	83	93
18	223	181	165	107	205	538	755	725	1,240	330	68	86
19	214	169	165	145	228	935	755	755	1,120	310	56	83
20	232	197	165	74	125	695	755	785	1,020	286	59	74
21	246	228	185	34	107	572	707	815	965	268	54	68
22	259	223	185	16	185	660	755	875	935	264	59	83
23	228	218	185	5	228	755	845	965	875	241	62	100
24	241	228	185	21	228	604	785	1,080	815	223	65	129
25	223	236	165	10	205	478	713	1,240	785	201	56	125
26	214	254	185	10	205	365	935	1,500	785	193	59	125
27	201	272	205	10	185	701	965	1,630	755	181	65	137
28	197	272	185	28	185	905	845	1,370	719	169	59	133
29	197	272	185	21	------	1,660	875	1,120	695	161	49	129
30	189	272	185	28	------	1,180	965	995	654	161	44	125
31	189	------	228	59	------	845	------	935	------	153	36	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	259	181	208	12,800
November	272	141	203	12,100
December	228	129	183	11,300
January	228	5	99.8	6,140
February	228	74	152	8,440
March	3,080	107	946	58,200
April	1,800	425	783	46,600
May	1,630	533	857	52,700
June	1,660	654	1,180	70,200
July	621	153	390	24,000
August	169	36	98.9	6,080
September	137	31	102	6,070
The year	3,080	5	434	314,000

TONGUE RIVER NEAR DAYTON, WYO.

LOCATION.—Water-stage recorder in sec. 2, T. 56 N., R. 87 W., 3½ miles southwest of Dayton.

DRAINAGE AREA.—204 square miles.

RECORDS AVAILABLE.—November, 1918, to September, 1929; discontinued.

EXTREMES.—Maximum discharge during year, 2,160 second-feet June 1 (gage height, 5.30 feet); minimum occurred during winter.

1918–1929: Maximum discharge, 2,460 second-feet June 15, 1924 (gage height, 5.57 feet); minimum, 15 second-feet Nov. 29, 1919 (gage height, 1.00 foot).

REMARKS.—Records excellent except those for Dec. 11–13, Jan. 20 to Feb. 20, July 1, and 2, which are estimated. Minor diversion for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	136	86	77	70		60	62	127	1,360	580	188	105
2	136	105	68	75		58	63	117	1,760	540	185	107
3	132	75	53	70		56	66	119	1,280	495	182	124
4	132	103	53	68		60	80	115	1,130	490	182	124
5	129	103	65	66		60	82	115	1,020	461	176	122
6	127	94	77	75	50	60	70	112	1,090	441	197	124
7	124	75	82	61		60	68	107	1,480	432	200	119
8	124	94	90	70		59	63	97	1,520	470	191	117
9	122	80	84	66		60	65	115	1,720	441	171	119
10	122	101	84	68		62	68	134	1,520	379	162	117
11	129	97	83	65		63	63	129	1,480	360	157	115
12	117	92	83	71		58	65	152	1,200	344	149	115
13	139	103	83	71		53	60	212	1,130	340	144	112
14	154	105	82	68		52	65	295	1,320	340	142	107
15	136	97	82	63		56	68	323	1,360	312	139	107
16	139	75	82	63	55	58	71	285	1,400	299	136	105
17	134	105	80	70		60	79	387	1,440	285	134	103
18	134	75	75	68		60	82	409	1,090	278	134	99
19	127	79	71	60		60	86	475	980	282	136	97
20	129	90	77	58		60	97	586	860	278	134	94
21	129	103	77	56	62	59	97	784	850	269	129	94
22	122	92	77	54	63	59	94	1,020	812	259	124	119
23	136	92	77	52	63	60	115	1,320	790	243	122	132
24	124	86	75	50	63	59	86	1,600	712	243	122	122
25	119	88	73	48	60	59	75	1,960	690	228	122	117
26	122	88	73	48	60	56	79	1,440	730	221	127	115
27	110	92	73	48	59	59	92	1,020	705	215	122	112
28	115	80	75	50	60	65	105	819	640	208	119	110
29	105	68	75	50	-------	73	136	718	630	194	119	105
30	97	70	75	50	-------	65	149	757	622	185	115	101
31	103	-------	73	50	-------	62	-------	980	-------	188	107	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	154	97	126	7,750
November	105	68	89.8	5,340
December	90	53	75.9	4,670
January	75	48	61.7	3,790
February	63	----------	55.0	3,050
March	73	52	59.7	3,670
April	149	60	81.7	4,860
May	1,960	97	543	33,400
June	1,760	622	1,110	66,000
July	580	185	332	20,400
August	200	107	147	9,040
September	132	94	112	6,660
The year	1,960	----------	233	169,000

TONGUE RIVER NEAR DECKER, MONT.

LOCATION.—Chain gage in sec. 23, T. 9 S., R. 40 E., 1½ miles east of Decker and 2 miles above Deer Creek.

DRAINAGE AREA.—1,610 square miles.

RECORDS AVAILABLE.—April, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 7,220 second-feet June 2 (gage height, 8.25 feet); minimum probably occurred during winter.

1928–29: Maximum discharge, that of June 2, 1929; minimum probably occurred during winter.

REMARKS.—Records good except those for June 5 to July 21, and for estimated periods, Aug. 11–20, and Aug. 31 to Sept. 7, which are fair. Observations discontinued Oct. 1 to Mar. 31. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	221	1,300	3,460	1,380	192	130	16	575	1,520	3,570	903	162	217
2	478	1,130	6,300	1,320	178	126	17	702	1,490	3,470	818	157	229
3	726	996	6,020	1,180	162	127	18	928	1,540	3,750	718	152	234
4	1,330	1,160	4,880	1,120	152	132	19	928	1,830	2,990	776	149	248
5	1,720	1,400	5,310	1,150	152	151	20	988	2,050	2,280	582	147	221
6	1,380	1,270	3,780	1,100	162	160	21	1,130	2,480	1,860	522	146	225
7	920	1,210	4,160	1,190	152	168	22	1,120	2,880	1,460	485	145	225
8	750	1,270	4,550	1,200	159	178	23	1,050	3,380	1,570	363	145	200
9	598	1,220	4,400	1,060	168	189	24	1,220	4,060	1,680	335	141	248
10	530	1,200	4,020	920	176	200	25	1,500	4,550	1,510	288	143	277
11	433	1,120	4,540	810	190	217	26	1,330	5,300	1,780	254	137	363
12	419	1,080	4,250	810	188	217	27	1,520	4,820	1,600	248	139	328
13	492	1,020	3,570	742	183	208	28	1,450	3,680	1,450	221	139	321
14	478	1,160	3,600	784	176	221	29	1,340	3,080	1,450	200	139	307
15	508	1,390	3,880	852	167	221	30	1,390	3,030	1,330	213	134	335
							31	-------	3,370	-------	204	130	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April	1,720	221	938	55,800
May	5,300	996	2,160	133,000
June	6,300	1,330	3,280	195,000
July	1,380	200	734	45,100
August	192	130	157	9,650
September	363	126	221	13,200
The period	----------	----------	----------	452,000

TONGUE RIVER NEAR MILES CITY, MONT.

LOCATION.—Staff gage on right abutment of Tongue and Yellowstone River Irrigation District Dam in NE. ¼ SW. ¼ sec. 29, T. 6 N., R. 48 E., 12 miles south of Miles City.

RECORDS AVAILABLE.—May to September, 1929.

EXTREMES.—Maximum discharge during period, 5,910 second-feet June 5 (gage height, 4.4 feet); minimum, 15 second-feet Aug. 30 and 31 (gage height, 0.80 foot).

REMARKS.—Records good. Water diverted for irrigation at diversion dam 50 miles upstream; by irrigation district canal 20 feet upstream from gage; and by minor ranch canals.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	------	2,620	1,310	135	40	16	------	3,610	590	40	305
2	------	3,010	1,230	135	28	17	------	3,210	590	40	305
3	------	5,280	1,230	135	40	18	------	3,210	590	40	305
4	------	4,860	1,230	135	40	19	1,390	3,210	590	40	305
5	------	5,910	1,070	108	40	20	1,560	2,810	530	40	305
6	------	4,230	920	108	40	21	1,820	2,160	590	28	258
7	------	3,610	920	135	40	22	1,900	1,980	472	28	210
8	------	3,410	850	135	40	23	2,250	1,900	472	28	305
9	------	3,410	780	108	60	24	2,620	1,560	415	28	415
10	------	3,410	780	108	60	25	3,010	1,560	415	40	305
11	------	4,230	780	80	80	26	3,610	1,560	415	28	305
12	------	4,230	715	80	108	27	4,020	1,310	305	28	305
13	------	4,020	715	80	108	28	4,650	1,230	305	28	305
14	------	3,610	780	80	108	29	5,070	1,310	258	28	305
15	------	3,210	650	60	530	30	3,410	1,390	210	15	305
						31	2,810	------	210	15	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May 19-31	5,070	1,390	2,930	75,600
June	5,910	1,230	3,040	181,000
July	1,310	210	675	41,500
August	135	15	68.3	4,200
September	530	28	197	11,700
The period	------	------	------	314,000

POWDER RIVER AT ARVADA, WYO.

LOCATION.—Chain gage in sec. 16, T. 54 N., R. 77 W., at Arvada, a quarter of a mile above Wildhorse Creek. Zero of gage is 3,623.8 feet above mean sea level.

DRAINAGE AREA.—6,050 square miles.

RECORDS AVAILABLE.—May, 1919, to September, 1929.

EXTREMES.—Maximum discharge during year, about 10,300 second-feet Mar. 7 (gage height, 8.80 feet); minimum, 2 second-feet Sept. 3 and 5 (gage height, 0.06 foot).

1919–1929: Maximum discharge, determined by slope-area method, about 95,000 second-feet (gage height, from high-water mark, 23.7 feet); river dry during parts of summers 1919, 1921, 1922, and 1923.

REMARKS.—Records good except those for Mar. 1–7, which are estimated. Observations discontinued Dec. 1 to Feb. 28. Diversions from tributaries entering above.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	73	163	200	1,630	1,540	2,050	437	52	3
2	77	151	400	1,060	1,620	1,900	725	42	3
3	77	128	600	1,570	1,030	2,670	622	40	2
4	86	128	1,000	4,840	965	3,200	405	30	3
5	93	188	2,000	6,000	965	2,050	347	28	2
6	86	210	3,000	3,280	1,600	1,730	321	31	4
7	75	221	8,500	1,650	2,140	1,660	369	55	7
8	79	198	4,610	939	1,560	2,020	632	492	10
9	79	198	4,400	642	1,040	1,760	437	2.180	12
10	81	204	4,290	548	758	1,570	369	613	40
11	110	188	7,230	453	681	1,560	340	265	70
12	142	171	4,400	445	660	1,480	308	166	68
13	128	176	2,080	429	632	1,570	271	81	59
14	133	171	494	521	651	1,480	3,600	57	53
15	182	188	308	477	1,400	1,330	437	47	47
16	198	188	503	469	1,790	1,130	2,060	37	48
17	171	210	1,230	477	1,950	939	1,200	31	48
18	160	204	469	503	1,980	888	557	29	52
19	182	182	530	469	2,290	852	383	24	52
20	151	182	494	548	2,270	816	283	18	52
21	166	166	622	575	2,160	747	221	17	52
22	160	142	1,060	1,240	2,270	703	232	16	59
23	151	193	850	1,070	2,500	670	193	14	57
24	182	176	613	1,220	2,800	736	193	12	61
25	151	188	437	2,180	2,780	714	156	10	59
26	166	176	269	1,870	2,900	651	124	9	75
27	151	193	429	2,100	3,920	613	99	6	99
28	171	221	769	1,700	3,600	539	86	7	539
29	182	57	4,210	1,390	2,660	485	75	6	453
30	151	57	7,410	1,460	4,510	530	62	5	321
31	142	-------	3,310	-------	2,910	-------	55	4	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	198	73	133	8,180
November	221	57	174	10,400
March	8,500	200	2,160	133,000
April	6,000	429	1,390	82,700
May	4,510	632	1,950	120,000
June	3,200	485	1,300	77,400
July	3,600	55	503	30,900
August	2,180	4	143	8,790
September	539	2	80.3	4,780

POWDER RIVER AT MOORHEAD, MONT.

LOCATION.—Staff gage in sec. 5, T. 9 S., R. 48 E., at Moorhead.
RECORDS AVAILABLE.—May to September, 1929.
EXTREMES.—Maximum discharge during period, 8,610 second-feet June 3 (gage height, 7.90 feet); minimum, 43 second-feet Aug. 6–8 (gage height, 2.80 feet).
REMARKS.—Records good. Discharge estimated July 27–31 and Aug. 8. Observations discontinued Aug. 13 to Sept. 11 and Sept 15–26. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	------	4,250	1,240	149	------	16	------	3,200	820	------	------
2	------	6,500	1,180	131	------	17	------	3,000	2,620	------	------
3	------	8,610	1,310	117	------	18	------	3,000	1,240	------	------
4	------	6,500	1,180	117	------	19	------	2,620	820	------	------
5	------	5,120	1,050	77	------	20	------	2,080	675	------	------
6	------	6,500	930	43	------	21	------	1,910	630	------	------
7	------	5,810	930	43	------	22	------	1,680	545	------	------
8	------	5,120	820	43	------	23	4,460	1,600	505	------	------
9	------	4,680	930	3,000	------	24	5,120	1,680	430	------	------
10	------	4,680	770	1,120	------	25	5,580	1,600	317	------	------
11	------	4,250	675	675	------	26	6,960	1,450	242	------	------
12	------	4,250	588	415	317	27	6,730	1,380	226	------	317
13	------	3,410	505	------	329	28	5,810	1,310	211	------	299
14	------	3,410	430	------	305	29	4,900	1,240	195	------	930
15	------	3,410	1,680	------	------	30	4,900	1,120	180	------	630
						31		6,500	------	164	------	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May 23–31	6,960	4,460	5,660	101,000
June	8,610	1,120	3,510	209,000
July	2,620	164	775	47,700
August 1–12	3,000	43	494	11,800

POWDER RIVER NEAR MIZPAH, MONT.

LOCATION.—Wire gage near center of sec. 30, T. 6 N., R. 52 E., at highway bridge 2 miles southeast of Mizpah and 36 miles southeast of Miles City.

RECORDS AVAILABLE.—August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 14,700 second-feet Mar. 12 (gage height, 8.9 feet); minimum, 12 second-feet Sept. 5 (gage height, 2.04 feet). 1928–29: Maximum and minimum discharge, same as given above.

REMARKS.—Records good. Observations discontinued Dec. 5 to Mar. 6. No sizable diversions.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	223	344	188	--------	6,920	2,500	10,200	1,150	121	31
2	196	283	103	--------	5,230	2,610	6,920	1,550	91	29
3	196	294	97	--------	4,450	2,830	6,050	1,150	97	21
4	196	294	66	--------	4,970	2,390	8,400	1,250	86	17
5	196	344	34	--------	6,050	2,080	6,920	825	76	12
6	196	331	--------	--------	11,100	1,660	4,800	762	50	21
7	196	331	--------	7,210	9,900	1,660	6,630	762	81	27
8	196	344	--------	10,800	6,920	2,500	4,450	1,250	68	29
9	196	370	--------	9,900	3,730	2,830	4,970	975	58	37
10	196	398	--------	8,700	3,050	2,500	5,230	900	40	42
11	196	412	--------	12,000	2,500	1,450	4,970	900	825	46
12	196	419	--------	14,700	1,860	1,250	4,450	524	762	40
13	214	398	--------	12,300	1,350	1,250	4,450	524	490	58
14	257	319	--------	6,920	1,350	1,150	3,960	524	344	103
15	306	331	--------	4,200	1,350	1,150	3,730	442	262	172
16	294	442	--------	2,830	1,350	1,450	3,730	2,390	196	180
17	283	442	--------	2,280	1,250	2,280	3,500	4,710	124	1,350
18	241	458	--------	2,080	1,250	5,500	3,050	900	121	515
19	244	474	--------	3,500	1,150	5,500	3,270	2,080	115	156
20	356	412	--------	4,450	1,150	3,500	2,830	1,150	97	149
21	426	384	--------	5,770	1,250	3,500	2,390	762	86	900
22	426	384	--------	6,630	1,150	3,270	2,180	596	76	135
23	337	344	--------	6,340	1,250	4,200	2,080	474	58	1,350
24	412	331	--------	5,230	1,450	4,200	1,970	490	76	180
25	370	306	--------	4,200	1,760	4,710	1,970	458	50	180
26	344	319	--------	3,050	2,080	8,700	1,970	426	46	176
27	344	331	--------	3,160	3,270	6,630	1,760	273	37	172
28	344	412	--------	3,270	3,050	7,500	1,550	262	46	180
29	319	306	--------	3,960	3,500	9,900	1,550	205	40	180
30	344	283	--------	9,300	2,830	9,000	1,250	172	42	205
31	370	--------	--------	11,100	--------	8,100	--------	132	43	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	426	196	281	17,300
November	474	283	361	21,500
December 1–5	188	34	97.6	968
March 7–31	14,700	2,080	6,560	325,000
April	11,100	1,150	3,280	195,000
May	9,900	1,150	3,800	234,000
June	10,200	1,250	4,140	246,000
July	4,710	132	934	57,400
August	825	37	152	9,350
September	1,350	12	223	13,300

MIDDLE FORK OF POWDER RIVER AT KAYCEE, WYO.

LOCATION.—Chain gage in sec. 1, T. 43 N., R. 82 W., at Kaycee.
DRAINAGE AREA.—647 square miles.
RECORDS AVAILABLE.—May, 1911, to October, 1912; May to September,
EXTREMES.—Maximum discharge during year, 1,610 second-feet June 2 height, 6.42 feet); minimum, 46 second-feet Aug. 23–26 (gage heigh foot).

1911–12, 1929: Maximum discharge, that of June 2, 1929; min probably occurred during winter.

REMARKS.—Records good except those for June 9–15, July 24, Sept. 6 a which are estimated. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug
1		1,160	172	75	54	16		450	181	5
2		1,410	172	72	51	17		425	130	5
3		1,100	155	70	60	18		372	122	5
4		880	146	67	71	19		350	117	5
5		880	146	67	63	20		330	106	4
6		850	138	65	78	21		300	106	4
7		880	138	75	92	22		280	106	4
8		790	146	70	86	23		280	98	4
9		710	122	62	82	24		270	90	4
10		645	119	60	82	25		260	81	4
11		635	116	55	82	26		240	86	4
12		610	109	55	82	27	1,090	200	82	5
13		550	106	55	78	28	1,030	200	81	5
14		490	104	52	84	29	1,380	190	81	5
15		460	230	52	90	30	970	181	80	5
						31	970		75	5

Month	Maximum	Minimum	Mean	Ru ac
May 27–31	1,380	970	1,090	
June	1,410	18	546	
July	230	7	121	
August	75	4	56.8	
September	103	51	82.3	
The period				

RED FORK NEAR BARNUM, WYO.

LOCATION.—Chain gage in sec. 34, T. 43 N., R. 83 W., 6 miles east of Barnum.
DRAINAGE AREA.—149 square miles.
RECORDS AVAILABLE.—May to September, 1929.
EXTREMES.—Maximum discharge during year, 754 second-feet May 25 (gage height, 3.57 feet); minimum, 12 second-feet Aug. 24 (gage height, 0.45 foot).
REMARKS.—Records good. Small diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	-------	322	67	24	16	16	-------	126	37	13	24
2	-------	350	71	19	16	17	-------	124	34	14	24
3	-------	285	66	18	19	18	-------	115	37	13	24
4	-------	248	63	19	19	19	-------	115	35	13	24
5	-------	235	63	17	19	20	-------	106	29	13	24
6	-------	272	64	16	24	21	-------	105	44	12	23
7	-------	222	63	18	23	22	-------	102	43	13	24
8	-------	210	66	19	23	23	-------	98	40	15	22
9	-------	185	66	17	23	24	485	95	32	14	15
10	-------	175	58	19	21	25	660	88	34	13	16
11	-------	185	55	15	21	26	625	82	31	15	18
12	-------	175	45	14	24	27	380	67	29	20	16
13	-------	145	39	14	24	28	335	60	27	22	15
14	-------	137	43	13	24	29	350	58	27	24	15
15	-------	132	44	13	23	30	298	56	24	23	15
						31	285	-------	23	19	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May 24-31	660	285	427	6,770
June	350	56	156	9,280
July	71	23	45.1	2,770
August	24	12	16.5	1,010
September	24	15	20.6	1,230
The period	----------	----------	----------	21,100

NORTH FORK OF POWDER RIVER NEAR KAYCEE, WYO.

LOCATION.—Chain gage in sec. 13, T. 44 N., R. 82 W., 5 miles north

DRAINAGE AREA.—244 square miles.

RECORDS AVAILABLE.—May to November, 1911; May to September,

EXTREMES.—Maximum discharge during year, 617 second-feet May height, 2.77 feet); minimum, 2.2 second-feet Aug. 1, 22, and 23 (ga 0.42 foot).

1911, 1929: Maximum discharge, that of May 26, 1929; minim second-foot July 28 and 29, 1911.

REMARKS.—Records good. Water diverted for irrigation above statio

Daily and monthly discharge in second-feet, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Au
1		325	33	2.3	4.8	16		125	16	2.
2		551	30	3.9	5.2	17		120	14	2.
3		300	26	4.0	8.4	18		104	15	2.
4		270	24	2.3	11	19		89	32	2.
5		240	23	2.8	13	20		76	17	2.
6		285	23	3.5	21	21		65	16	2.3
7		384	23	3.5	25	22		45	14	2.2
8		310	13	3.3	23	23		50	11	2.2
9		310	26	2.5	23	24		49	9.2	2.3
10		290	24	2.4	26	25		52	7.2	2.4
11		295	20	2.4	26	26	587	46	6.6	2.6
12		270	18	2.4	23	27	346	43	5.6	2.8
13		174	17	2.5	23	28	231	41	3.2	2.8
14		154	17	2.7	20	29	373	37	3.0	3.2
15		142	17	2.4	21	30	213	36	3.0	3.4
						31	204		2.8	4.0

Month	Maximum	Minimum	Mean	Run-o acre-fe
May 26–31	587	204	326	3,
June	551	36	176	10,
July	33	2.8	16.8	1,
August	4.0	2.2	2.76	
September	50	4.8	24.7	1,
The period				17,0

CRAZY WOMAN CREEK NEAR BUFFALO, WYO.

LOCATION.—Chain gage in sec. 36, T. 48 N., R. 81 W., 21 miles southeast of Buffalo.

DRAINAGE AREA.—464 square miles.

RECORDS AVAILABLE.—May to September, 1929.

EXTREMES.—Maximum discharge during year, about 2,640 second-feet June 2 (gage height, 5.36 feet); minimum, 8.8 second-feet several days in August (gage height, 0.94 foot).

REMARKS.—Records good. Discharge estimated July 4, 21, 28, Aug. 11, 18, 25, Sept. 8, 15, 22, and 29. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	------	630	88	10	11	16	------	414	21	10	21
2	------	1,880	82	9.4	11	17	------	370	19	10	22
3	------	1,200	68	8.8	10	18	------	320	17	10	21
4	------	714	61	10	11	19	------	270	22	10	21
5	------	623	55	10	13	20	------	235	32	10	21
6	------	623	49	10	17	21	------	205	22	9.6	18
7	------	805	49	10	19	22	------	225	14	9.2	20
8	------	714	53	10	20	23	------	270	13	9.2	23
9	------	604	60	11	22	24	------	245	13	8.8	24
10	------	571	56	10	21	25	------	185	12	8.8	26
11	------	571	38	9.8	21	26	------	170	11	8.8	29
12	------	662	30	9.6	25	27	------	134	10	9.2	34
13	------	521	26	9.0	23	28	------	114	9.8	10	37
14	------	437	27	9.2	22	29	------	108	9.6	12	33
15	------	398	24	10	22	30	618	91	9.8	10	29
						31	636	------	9.4	12	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
June	1,880	91	477	28,400
July	88	9.4	32.6	2,000
August	12	8.8	9.82	604
September	37	10	21.6	1,280
The period	------	------	------	32,300

CLEAR CREEK NEAR ARVADA, WYO.

LOCATION.—Chain gage in sec. 1, T. 56 N., R. 77 W., 16 miles north of Arvada.
DRAINAGE AREA.—1,110 square miles.
RECORDS AVAILABLE.—July, 1915, to April, 1919; April, 1928, to May, 1929.
EXTREMES.—Maximum discharge during year, 8,600 second-feet May 30 (gage height, from high-water mark, 11.0 feet); minimum probably occurred during winter.

1915–1919, 1928–29: Maximum discharge, that of May 30, 1929; minimum, 1 second-foot several days in September, 1916.

REMARKS.—Records good. Observations discontinued Dec. 1 to Mar. 10. Gage washed out May 26. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Mar.	Apr.	May	Day	Oct.	Nov.	Mar.	Apr.	May
1	115	141	-------	295	615	16	181	147	133	335	870
2	115	130	-------	335	490	17	162	141	130	355	995
3	120	117	-------	515	445	18	153	130	120	468	810
4	120	80	-------	1,350	515	19	153	95	190	490	1,120
5	128	171	-------	810	565	20	159	105	580	490	1,410
6	120	153	-------	590	540	21	153	105	468	540	1,640
7	110	141	-------	468	445	22	153	130	695	540	1,960
8	105	147	-------	378	468	23	162	141	590	422	1,960
9	110	141	-------	335	422	24	159	136	315	695	2,440
10	105	136	-------	258	400	25	159	136	295	540	2,800
11	117	122	1,310	275	468	26	150	103	258	468	3,340
12	125	136	995	295	422	27	150	75	295	468	------
13	130	130	378	295	468	28	133		615	490	------
14	136	133	193	315	750	29	136		1,410	515	------
15	147	136	171	335	1,060	30	130		468	615	------
						31	136	-------	445	-------	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	181	105	136	8,360
November	171	----------	123	7,320
March 11–31	1,410	120	479	20,000
April	1,350	258	476	28,300
May 1–26	3,340	400	1,050	54,100

LITTLE MISSOURI RIVER BASIN

LITTLE MISSOURI RIVER NEAR ALZADA, MONT.

LOCATION.—Chain gage near southwest corner of T. 8 S., R. 60 E., at Walker ranch, 2 miles below mouth of Thompson Creek and 4 miles below Alzada.

DRAINAGE AREA.—780 square miles.

RECORDS AVAILABLE.—June, 1911, to September, 1925; August, 1927, to September, 1929.

EXTREMES.—Maximum discharge during year, 4,000 second-feet May 30 (gage height, 14.50 feet); minimum, 0.1 second-foot Oct. 17 (gage height, 2.04 feet).

1911-1925, 1928-29: Maximum discharge, 4,550 second-feet Apr. 6, 1912 (gage height, 15.3 feet); no flow at times.

REMARKS.—Records good. Discharge estimated because of ice Mar. 8-10. Observations discontinued Dec. 22 to Mar. 7. Some small diversions. Small storage in coulees.

Daily and monthly discharge, in second-feet, 1928-29

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0.4	0.4	0.5	--------	1,950	72	3,050	16	5.1	5.1
2	.4	.4	.5	--------	1,060	62	1,340	16	4.5	.6
3	.4	.4	.5	--------	794	58	1,550	28	3.8	.6
4	.3	.4	.3	--------	1,000	56	1,340	30	10	.7
5	.4	.4	.5	--------	1,800	59	794	25	53	.7
6	.4	.5	.4	--------	2,460	86	424	23	71	.7
7	.5	1.3	.3	--------	3,350	72	456	83	82	.7
8	.5	.5	.5	424	1,980	63	900	77	63	.7
9	.7	.4	.3	262	552	76	234	52	21	.5
10	.7	.4	.3	488	290	59	102	46	20	.5
11	.2	.4	.4	1,680	248	113	72	29	9.4	.5
12	.3	.5	.4	1,980	248	65	62	24	7.0	.5
13	.3	.4	.5	1,570	154	53	51	20	5.7	.5
14	.4	.4	.5	1,440	154	43	43	18	7.0	.5
15	.3	.5	.5	922	209	63	40	13	5.1	.5
16	.2	.5	.4	276	221	42	36	13	3.2	.5
17	.2	.6	.4	186	262	35	31	424	.7	.5
18	.2	.6	.4	197	234	29	31	262	.6	.5
19	.2	.5	.4	154	209	28	27	36	.7	.5
20	.2	.5	.5	738	197	26	24	16	1.3	.5
21	.3	.5	.4	1,920	175	25	24	13	.6	.5
22	2.0	7.0	--------	2,300	144	25	15	13	.6	.4
23	1.3	3.8	--------	2,260	130	22	23	10	.6	.7
24	.7	.6	--------	2,460	290	21	23	9.4	.5	67
25	.5	.5	--------	1,660	520	20	20	8.6	.6	72
26	.4	.4	--------	1,060	393	1,310	19	7.8	.6	234
27	.3	.4	--------	876	262	2,780	19	7.8	.6	132
28	.4	.3	--------	1,420	118	2,740	17	6.4	.5	40
29	.4	.3	--------	1,980	93	3,000	17	6.4	.4	20
30	.3	.4	--------	2,620	76	3,650	17	5.7	.6	53
31	.3	--------	--------	2,780	--------	3,650	--------	6.4	9.4	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2.0	0.2	0.46	28.3
November	7.0	.3	.81	48.2
December 1-21	.5	.3	.42	17.5
March 8-31	2,780	154	1,320	62,800
April	3,350	76	652	38,800
May	3,650	20	594	36,500
June	3,050	15	360	21,400
July	424	5.7	43.4	2,670
August	82	.4	12.6	775
September	234	.4	21.2	1,260

LITTLE MISSOURI RIVER AT MEDORA, N. DAK.

LOCATION.—Wire gage in NE. ¼ sec. 27, T. 140 N., R. 102 W., at highway bridge at Medora.

DRAINAGE AREA.—6,190 square miles.

RECORDS AVAILABLE.—May, 1903, to October, 1908; October, 1921, to September, 1924; August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 38,700 second-feet June 7 (gage height, 17.2 feet); minimum, 2.2 second-feet Jan. 8 (gage height, 2.46 feet).

1903-1908, 1921-1924, 1928-29: Maximum discharge, that of June 7, 1929; minimum, 2 second-feet Sept. 28, 1905 (gage height, 2.4 feet, old datum).

REMARKS.—Records good. Discharge estimated Oct. 17-22, Apr. 4, and Aug. 3-7. Observations discontinued Nov. 27 to Mar. 10. Small diversions for irrigation from headwater tributaries.

Daily and monthly discharge, in second-feet, 1928-29

Day	Oct.	Nov.	Jan.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	89	69			13,100	1,050	19,000	251	111	29
2	67	69			8,530	1,300	11,900	218	111	28
3	55	69			6,750	1,130	9,700	218	115	111
4	51	65			5,720	1,130	9,400	218	130	234
5	48	57			4,700	929	6,070	218	144	102
6	44	44			5,050	852	4,540	188	159	86
7	31	48			4,540	778	33,700	203	174	82
8	20	37	[a] 2.2		4,380	778	14,100	286	188	62
9	20	31			4,090	674	5,050	286	134	52
10	20	28			3,690	674	3,690	251	134	50
11	20	30		1,130	4,090	642	3,690	188	90	39
12	20	36		3,200	3,320	610	4,870	174	94	31
13	34	36		3,690	2,760	550	2,550	158	72	29
14	20	30		2,550	2,140	522	2,240	163	56	29
15	20	24		3,090	1,950	580	1,390	174	52	24
16	27	19		3,090	1,760	550	1,300	368	56	33
17	31	17		2,550	1,760	550	1,130	286	72	34
18	35	16		3,320	1,660	778	968	251	78	31
19	39	16		4,380	1,660	852	742	188	72	28
20	43	67		4,700	1,570	778	674	234	62	24
21	47	109		5,440	1,570	610	550	346	56	29
22	59	109		6,990	1,570	550	522	218	56	24
23	71	34		6,520	1,480	522	493	155	47	36
24	94	61		11,900	1,390	466	440	174	47	34
25	160	34		12,200	1,390	416	416	188	50	47
26	174	27		9,700	1,220	929	391	251	44	36
27	174			6,520	1,220	5,650	326	188	33	78
28	146			7,480	1,130	6,520	305	144	31	111
29	119			12,200	1,050	9,400	368	124	33	56
30	109			13,500	1,050	27,300	251	160	31	75
31	89			11,900		28,800		115	29	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	174	20	63.7	3,920
November 1-26	109	16	45.5	2,350
March 11-31	13,500	1,130	6,470	269,000
April	13,100	1,050	3,210	191,000
May	28,800	416	3,120	192,000
June	33,700	251	4,690	279,000
July	368	115	212	13,000
August	188	29	82.6	5,080
September	234	24	55.5	3,300

[a] Result of discharge measurement.

KNIFE RIVER BASIN

KNIFE RIVER AT HAZEN, N. DAK.

LOCATION.—Wire gage in NE. ¼ sec. 19, T. 144 N., R. 86 W., at Hazen.
RECORDS AVAILABLE.—October, 1928, to September, 1929.
EXTREMES.—Maximum discharge during year, 845 second-feet June 3; maximum gage height, 13.82 feet Mar. 20, caused by ice; minimum discharge, 1.2 second-feet Aug. 27.
REMARKS.—Records good prior to Aug. 16 and poor thereafter. Discharge estimated Nov. 11–22. Observations discontinued Nov. 24 to Mar. 25 and May 5–31.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		26		680	34	755	28	12	7.4
2		44		486	39	800	26	11	8.0
3		44		305	39	845	21	12	7.4
4		39		215	41	305	19	12	5.0
5		29		165		215	18	12	5.0
6		28		165		155	16	11	5.6
7		38		155		110	24	12	5.9
8		47		205		100	22	13	3.5
9		31		185		100	21	12	2.6
10		30		135		100	20	11	3.8
11		30		110		175	18	11	5.3
12		29		92		345	21	10	4.7
13		29		78		215	13	15	5.3
14		28		69		285	9	15	5.9
15		28		47		215	14	12	12
16		27		47		165	16	6.5	2.3
17		27		49		135	17	6.5	1.4
18		26		51		195	15	5.9	7.7
19	25	26		56		165	17	5.9	6.5
20	26	25		51		51	14	5.3	6.5
21	27	25		51		45	245	2.6	5.9
22	27	24		49		38	42	3.8	16
23	26	24		47		37	25	5.6	3.5
24	27			46		31	20	5.0	3.5
25	26			44		28	19	5.0	5.9
26	26		474	42		28	17	2.0	8.4
27	27		429	41		31	15	1.2	8.4
28	24		315	36		28	13	6.8	17
29	26		429	39		28	13	8.0	6.5
30	26		418	35		26	12	5.0	7.1
31	27		548				12	5.0	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October 19–31	27	24	26.1	673
November 1–23	47	24	30.6	1,400
March 26–31	548	315	436	5,190
April	680	35	124	7,380
May 1–4	41	34	38	301
June	845	26	192	11,400
July	245	9	25.9	1,590
August	15	1.2	8.42	518
September	17	1.4	6.47	385

HEART RIVER BASIN

HEART RIVER AT SUNNY, N. DAK.

LOCATION.—Chain gage in NE. ¼ sec. 25, T. 39 N., R. 82 W., at highway bridge 0.9 mile west of Sunny.

DRAINAGE AREA.—3,320 square miles.

RECORDS AVAILABLE.—April to September, 1924; March, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 2,750 second-feet June 3 (gage height, 10.56 feet); no flow Aug. 20.

1924, 1928–29: Maximum stage, 13.6 feet June 19, 1924 (discharge not determined); no flow Aug. 20, 1929.

REMARKS.—Records fair except those for period of ice effect, Nov. 30 to Mar. 18, which are poor. No diversions.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8	16					2,330	103	1,930	88	27	2.1
2	8	24					1,380	103	2,690	76	24	2.1
3	6	32				[a] 30	1,080	96	2,690	70	19	2.1
4	6	32					870	96	[a] 2,000	67	19	7.0
5	6	40					615	88	[a] 1,310	65	18	7.0
6	8	58			[a] 8		615	82	615	63	18	6.1
7	8	58					570	82	438	61	16	6.1
8	4	49				[a] 25	661	76	358	58	21	6.1
9	4	24					570	76	253	65	18	5.2
10	[a] 6	24					481	88	253	63	15	5.2
11	8	24					397	82	253	56	12	5.2
12	16	24					304	76	753	48	10	5.2
13	8	24				[a] 200	222	70	[a] 800	46	10	8.0
14	8	24					238	70	847	41	10	8.0
15	8	24	[a] 25	[a] 10			222	70	988	41	10	8.0
16	8	32			[a] 10		222	65	1,080	39	10	7.0
17	8	32				[a] 500	[a] 208	61	1,490	37	10	6.1
18	8	32					193	63	800	33	9.0	5.2
19	16	32				1,710	166	63	548	32	1.6	5.2
20	[a] 16	32				2,510	166	61	397	30	0	4.4
21	[a] 16	32				1,990	142	61	288	30	4.4	4.4
22	16	32				2,100	142	58	253	29	4.4	4.4
23	16	40				1,280	142	56	222	33	3.5	6.1
24	24	58				1,080	142	56	180	24	3.5	8.0
25	24	58			[a] 20	894	132	56	142	18	2.6	10
26	16	49				894	121	58	127	12	2.6	13
27	32	40				847	112	76	96	11	2.6	16
28	32	32				1,040	103	63	142	11	2.6	13
29	32	32			-------	1,180	103	70	103	11	2.6	11
30	32	[a] 32			-------	2,330	103	397	96	10	2.1	10
31	24	-------			-------	2,390	-------	1,180	-------	10	2.1	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	32	4	13.9	855
November	58	16	34.7	2,060
December	-------	-------	25.0	1,540
January	-------	-------	10.0	615
February	-------	-------	12.1	672
March	2,510	-------	743	45,700
April	2,330	103	425	25,300
May	1,180	56	119	7,320
June	2,690	96	738	43,900
July	88	10	41.2	2,530
August	27	0	10.0	615
September	16	2.1	6.91	411
The year	2,690	0	182	132,000

[a] Estimated.

CANNONBALL RIVER BASIN

CANNONBALL RIVER NEAR TIMMER, N. DAK.

LOCATION.—Chain gage in NW. ¼ sec. 21, T. 133 N., R. 82 W., at boundary of former Standing Rock Indian Reservation, 4 miles southeast of Timmer and 4 miles above Dogtooth Creek.

DRAINAGE AREA.—3,650 square miles.

RECORDS AVAILABLE.—June, 1903, to November, 1908; October, 1921, to September, 1922; October, 1923, to September, 1924; March, 1928, to September, 1929. August, 1911, to September, 1918, at site 1 mile upstream.

EXTREMES.—Maximum discharge during year, 6,520 second-feet Mar. 18 (gage height, 11.1 feet); no flow Sept. 2, 3, 11, 12, 15, 16, and 19.

1903–1908, 1911–1918, 1921–22, 1923–24, 1928–29: Maximum discharge, that of Mar. 18, 1929; no flow during periods each year 1904–1908, 1913, and 1929.

REMARKS.—Records poor for October and November; others good. Observations discontinued Nov. 24 to Mar. 11. No diversions.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov	Mar.	Apr.	May	June	July	Aug.	Sept.
1	21	4.2	--------	950	108	303	53	2.3	0.1
2	21	4.2	--------	1,340	86	620	48	133	0
3	21	4.2	--------	1,140	83	1,270	43	32	0
4	21	4.2	--------	832	73	1,410	39	100	.1
5	21	4.2	--------	620	67	1,140	34	51	.1
6	21	4.2	--------	1,010	61	722	32	30	.1
7	21	12	--------	620	59	573	39	19	.1
8	12	12	--------	573	53	373	34	23	.1
9	4.2	12	--------	409	51	271	30	18	.1
10	4.2	12	--------	337	59	227	28	11	.1
11	4.2	21	--------	271	83	618	26	8.8	0
12	4.2	21	2,400	241	59	1,010	23	8.8	0
13	4.2	21	1,480	213	51	1,270	21	6.2	.1
14	4.2	21	1,620	187	46	670	19	5.3	.1
15	4.2	21	1,270	175	51	428	18	6.5	0
16	4.2	12	2,590	163	59	670	16	4.7	0
17	4.2	12	5,380	163	46	573	14	3.1	.1
18	4.2	12	6,390	152	43	373	12	2.7	.1
19	4.2	12	5,120	140	39	271	11	1.9	0
20	4.2	21	4,880	130	41	213	10	1.3	.1
21	4.2	21	5,620	119	39	175	8.8	1.0	.1
22	21	12	4,750	108	39	140	7.7	.8	.1
23	12	12	3,460	100	37	119	6.5	.5	6.5
24	12	--------	2,030	93	34	104	5.9	.3	11
25	12	--------	1,700	90	32	97	5.3	.3	19
26	12	--------	1,480	83	34	93	4.7	.2	28
27	4.2	--------	1,550	80	48	73	4.1	.2	30
28	4.2	--------	3,010	77	46	67	3.5	.1	19
29	4.2	--------	2,030	73	41	64	3.1	.1	10
30	4.2	--------	1,700	93	37	59	3.1	.1	8.8
31	4.2	--------	1,140	--------	573	--------	2.7	.1	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	21	4.2	9.79	602
November 1–23	21	4.2	12.7	579
March 12–31	6,390	1,140	2,980	118,000
April	1,340	73	353	21,000
May	573	32	70.3	4,320
June	1,410	59	467	27,800
July	53	2.7	19.5	1,200
August	163	.1	16.2	996
September	30	0	4.46	265

GRAND RIVER BASIN

GRAND RIVER NEAR WAKPALA, S. DAK.

LOCATION.—Chain gage in sec. 26, T. 19 N., R. 29 E., 5 miles south of Wakpala.
DRAINAGE AREA.—5,640 square miles.
RECORDS AVAILABLE.—August, 1928, to September, 1929. September, 1911, to March, 1918, at point about 5 miles upstream.
EXTREMES.—Maximum discharge during year, 4,860 second-feet Mar. 14 (gage height, 10.3 feet); no flow Sept. 13.
1911–1918, 1928–29: Maximum discharge, 7,130 second-feet June 17 and 19, 1915; no flow Sept. 13, 1929.
REMARKS.—Records fair. Discharge estimated Nov. 26–30 and Mar. 10–12. Observations discontinued Dec. 1 to Mar. 9. No diversions.

Daily and monthly discharge, in second-feet, 1928–29.

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	122	45	--------	1,780	395	1,900	122	9.1	4.3
2	117	45	--------	1,540	350	2,200	122	11	3.3
3	112	45	--------	1,000	230	2,080	112	9.7	3.7
4	101	45	--------	900	210	1,100	110	9.1	9.2
5	90	52	--------	850	190	322	108	8.8	6.8
6	86	56	--------	850	181	350	97	7.3	4.3
7	83	45	--------	1,380	172	546	102	7.6	3.5
8	80	44	--------	1,050	154	1,050	100	8.8	2.5
9	74	42	--------	950	172	716	96	8.8	1.8
10	72	40	920	805	163	365	92	8.2	1.2
11	66	52	1,200	716	154	546	82	7.9	.7
12	63	55	3,000	673	130	466	79	8.5	.3
13	60	56	4,540	588	130	365	75	7.9	0
14	60	58	4,780	466	130	285	79	7.3	.1
15	60	60	4,060	588	130	336	78	6.5	.3
16	59	58	2,590	546	130	322	79	5.8	.5
17	58	56	2,940	526	138	309	76	4.8	.5
18	56	53	3,990	505	122	285	71	4.3	.9
19	53	53	3,990	466	122	274	42	3.3	1.4
20	55	56	3,430	395	138	252	42	1.9	1.3
21	56	53	3,710	285	130	263	41	.8	1.6
22	55	53	3,710	274	122	230	122	.6	3.3
23	53	51	3,850	263	130	200	181	1.4	4.8
24	51	47	3,640	322	122	297	75	3.1	5.5
25	49	47	2,590	673	130	172	54	2.9	6.2
26	47	46	2,020	760	122	154	44	2.5	7.3
27	45	45	1,160	526	112	146	31	2.2	8.2
28	45	45	1,380	505	102	146	24	3.9	7.6
29	45	45	3,360	252	309	138	22	5.2	73
30	45	45	2,940	336	1,660	130	19	4.3	181
31	45	--------	2,520	--------	2,020	--------	12	3.7	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	117	45	66.6	4,100
November	60	40	49.8	2,960
March 10-31	4,780	920	3,010	131,000
April	1,780	252	692	41,200
May	2,020	102	274	16,800
June	2,200	130	532	31,700
July	181	12	77.1	4,740
August	11	.6	5.72	352
September	181	0	11.4	678

MOREAU RIVER BASIN

MOREAU RIVER AT PROMISE, S. DAK.

LOCATION.—Chain gage in sec. 17, T. 16 N., R. 29 E., half a mile below Virgin Creek and three-quarters of a mile north of Promise.

DRAINAGE AREA.—5,220 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 8,760 second-feet Mar. 24 (gage height, 11.56 feet); no flow parts of August and September.

1928–29: Maximum discharge, 13,400 second-feet Sept. 17, 1928 (gage height, 14.6 feet); no flow parts of August and September, 1929.

REMARKS.—Records good except those for estimated periods, Oct. 1–6 and Nov. 24–30, which are fair. Observations discontinued Dec. 1 to Mar. 6. No diversions.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	91	37	-------	1,850	61	3,340	37	5.5	0
2	84	37	-------	1,501	54	4,150	36	5.5	0
3	77	32	-------	1,090	50	2,880	36	5.0	0
4	70	28	-------	820	50	1,470	33	4.5	0
5	63	38	-------	625	48	1,100	31	2.9	0
6	57	35	-------	435	44	2,230	30	2.9	0
7	51	36	788	416	42	2,310	30	.5	0
8	47	35	697	530	39	1,410	31	.9	0
9	48	34	1,400	549	40	1,250	30	.5	0
10	47	36	1,420	663	40	956	29	.5	0
11	45	38	5,100	549	38	663	28	.4	0
12	44	38	5,660	380	38	464	31	.4	0
13	44	37	7,060	276	36	335	40	.4	0
14	42	38	7,340	326	31	270	58	.4	0
15	44	40	3,700	309	31	226	45	.3	0
16	44	37	2,200	260	34	187	43	.1	0
17	42	37	2,530	260	34	154	36	0	0
18	42	37	3,170	244	32	126	33	0	0
19	42	37	3,430	180	32	102	33	0	0
20	40	34	3,300	142	30	89	28	0	0
21	40	34	3,300	136	30	79	28	0	0
22	39	37	4,120	115	74	72	25	0	0
23	38	34	7,620	106	33	73	20	0	0
24	38	33	8,320	102	27	64	16	0	0
25	37	29	5,520	309	24	58	14	0	.1
26	37	27	2,440	115	31	55	13	0	.3
27	37	26	2,200	86	30	49	10	0	.2
28	37	22	4,120	74	35	45	8.8	0	.1
29	37	22	2,930	69	31	42	7.4	0	.1
30	37	22	2,360	65	3,340	40	5.5	0	0
31	37	-------	2,280	-------	3,220	-------	5.5	0	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	91	37	47.7	2,930
November	40	22	33.6	2,000
March 7–31	8,320	697	3,720	185,000
April	1,850	65	420	25,000
May	3,340	24	248	15,200
June	4,150	40	810	48,200
July	58	5.5	27.4	1,680
August	5.5	0	.9[1]	61
September	.3	0	.0[1]	2

CHEYENNE RIVER BASIN

CHEYENNE RIVER AT EDGEMONT, S. DAK.

LOCATION.—Chain gage in sec. 36, T. 8 S., R. 2 E., at Edgemont, 600 feet above Cottonwood Creek. Zero of gage is 3,416.2 feet above mean sea level.

DRAINAGE AREA.—6,050 square miles.

RECORDS AVAILABLE.—June, 1903, to November, 1906; April, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, about 10,500 second-feet June 3 (gage height, 7.86 feet); no flow Jan. 5.

1928–29: Maximum and minimum discharge, same as given above. Maximum stage known, 12.0 feet, present datum, about May 1, 1922.

REMARKS.—Records fair. Daily discharge not determined Dec. 1 to Feb. 28. Minor diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	48	15	------	------	[a] 150	1,600	396	1,600	79	25	110
2	58	27	------	------	[a] 200	811	410	3,180	205	22	52
3	55	7	------	------	[a] 300	619	363	8,760	106	18	38
4	32	7	------	------	[a] 400	1,100	298	3,400	209	15	30
5	32	32	[b] 0	------	[a] 600	2,700	234	1,100	282	14	29
6	32	39	------	------	[a] 800	3,590	213	710	522	366	43
7	32	25	------	------	1,030	2,960	282	538	399	92	49
8	32	27	------	------	811	1,570	310	406	333	1,460	52
9	27	30	------	------	760	730	260	392	205	333	43
10	30	22	------	------	1,130	518	234	349	128	140	32
11	27	22	------	------	899	418	194	287	96	106	32
12	27	22	------	------	1,720	337	167	349	63	63	32
13	20	22	------	------	1,500	303	146	333	46	49	29
14	18	25	------	------	637	292	121	220	121	49	25
15	22	25	------	------	292	325	103	200	1,680	35	25
16	10	18	------	------	194	320	92	168	2,030	30	25
17	10	15	------	------	216	343	85	160	1,030	22	25
18	10	7	------	------	230	379	79	152	637	24	27
19	10	[a] 12	------	------	379	343	76	140	265	15	29
20	10	[a] 20	------	------	525	379	63	128	214	13	29
21	10	[a] 25	------	------	682	373	47	103	156	13	20
22	10	[a] 25	------	------	1,100	355	41	96	117	9	25
23	10	[a] 20	------	------	1,450	343	22	124	214	18	22
24	10	[a] 24	------	[b] 35	1,150	488	14	121	182	10	18
25	10	[a] 23	------	------	691	465	12	110	117	6	27
26	10	[a] 20	------	------	534	437	1,880	96	152	6	73
27	10	[a] 17	------	------	458	411	3,680	88	103	6	420
28	7	[a] 14	------	------	458	361	3,310	88	70	24	682
29	8	[a] 12	------	------	628	273	3,220	77	57	160	515
30	8	[a] 8	------	------	2,010	398	6,320	70	49	234	304
31	13	------	------	------	2,560	------	5,420	------	32	245	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	58	7	20.9	1,290
November	39	7	20.2	1,200
December	------	------	[a] 5	307
January	------	0	[a] 3	184
February	------	------	[a] 50	2,780
March	2,560	150	791	48,600
April	3,590	292	788	46,900
May	6,320	12	906	55,700
June	8,760	70	785	46,700
July	2,030	32	319	19,600
August	1,460	6	117	7,190
September	682	18	95.4	5,680
The year	8,760	0	326	236,000

[a] Estimated. [b] Result of discharge measurement.

CHEYENNE RIVER NEAR WASTA, S. DAK.

LOCATION.—Chain gage in sec. 2, T. 1 N., R. 14 E., 3 miles east of Wasta. Zero of gage is 2,263.4 feet above mean sea level.

DRAINAGE AREA.—11,700 square miles.

RECORDS AVAILABLE.—August, 1914, to June, 1915; August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 16,800 second-feet June 2 (gage height, 8.0 feet); minimum occurred during winter.

1914–15, 1928–29: Maximum discharge, 34,200 second-feet June 13, 1915 (gage height, 12.5 feet); minimum, 56 second-feet Sept. 28 to Oct. 1, 1914.

REMARKS.—Records good except those for estimated periods, which are fair. Daily discharge not determined Dec. 3 to Jan. 31. Minor diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	194	130	193			[a] 300	2,880	1,240	5,390	914	620	215
2	194	140	193			[a] 300	2,740	1,240	16,500	775	557	207
3	179	146				[a] 300	1,960	1,240	15,600	784	504	200
4	167	146				326	1,550	1,240	8,400	784	[a] 485	211
5	160	186				290	1,370	1,240	4,700	1,360	[a] 485	204
6	160	290				[a] 1,000	2,020	1,240	4,510	1,430	[a] 500	193
7	152	359		[b] 116		[a] 2,000	3,460	1,250	4,060	1,490	[a] 725	196
8	146	359			[a] 100	2,320	3,840	1,670	3,970	1,420	[a] 650	253
9	149	374				2,330	2,860	1,660	2,470	1,220	[a] 700	467
10	146	390				2,130	1,340	1,640	2,430	1,180	[a] 800	672
11	140	398				3,000	1,720	1,620	2,370	1,060	905	727
12	146	376				2,980	1,730	1,240	2,370	1,030	843	767
13	146	360				3,100	1,660	1,180	2,220	1,040	792	811
14	152	350				3,360	1,980	1,160	2,020	1,090	672	932
15	206	253				3,560	1,720	1,170	1,890	887	578	950
16	237	261				2,980	1,460	1,060	1,790	969	498	932
17	206	253				1,990	1,430	878	1,560	1,610	341	878
18	182	257			[a] 125	1,800	1,330	818	1,490	1,900	257	826
19	171	245				1,150	1,250	852	1,420	1,340	241	743
20	175	237				1,140	1,090	843	1,430	1,580	241	650
21	182	226				1,140	1,010	775	1,400	1,340	233	680
22	186	218				1,020	1,020	735	1,310	978	233	628
23	182	215			[a] 150	1,180	998	719	1,280	896	233	564
24	175	207				1,400	1,140	703	1,340	852	218	498
25	171	218				1,500	2,400	703	1,210	800	218	461
26	163	211				2,050	2,040	711	1,180	751	281	425
27	152	211				2,140	1,780	1,090	1,130	719	321	408
28	146	215			[a] 250	2,100	1,620	3,560	1,070	719	299	420
29	140	207				2,110	1,350	4,180	1,040	672	281	403
30	133	200				1,630	1,350	5,140	1,010	635	226	414
31	127					1,430		5,290		635	215	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	237	127	167	10,300
November	398	130	255	15,200
December			[a] 140	8,610
January			[a] 110	6,760
February			[a] 129	7,160
March	3,560	290	1,740	107,000
April	3,840	998	1,800	107,000
May	5,290	703	1,550	95,300
June	16,500	1,010	3,290	196,000
July	1,900	635	1,060	65,200
August	905	215	457	28,100
September	950	193	531	31,600
The year	16,500		937	678,000

[a] Estimated. [b] Result of discharge measurement.

CHEYENNE RIVER NEAR CARLIN, S. DAK.

LOCATION.—Chain gage in sec. 31, T. 9 N., R. 24 E., half a mile above Hermaphrodite Creek and 4 miles northeast of Carlin.

DRAINAGE AREA.—23,400 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 49,600 second-feet June 3; maximum gage height, 10.12 feet June 3 and 6; minimum discharge occurred during winter.

1928–29: Maximum and minimum discharge, same as given above.

REMARKS.—Records fair. Observations discontinued Dec. 1 to Mar. 9. Daily discharge not determined Sept. 4–30. Small diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	[a] 830	415	-------	9,380	2,950	30,400	1,590	700	481
2	[a] 800	404	-------	9,260	[a] 2,850	39,400	[a] 1,570	700	523
3	[a] 750	415	-------	8,480	[a] 2,700	47,900	[a] 1,550	700	548
4	[a] 700	452	-------	6,820	[a] 2,600	43,400	[a] 1,600	685	-------
5	[a] 650	475	-------	[a] 6,600	2,500	44,600	[a] 1,700	685	-------
6	[a] 620	553	-------	[a] 8,500	2,490	44,200	[a] 1,850	722	-------
7	[a] 570	680	-------	9,850	2,540	30,000	2,020	927	-------
8	[a] 480	779	-------	13,700	2,640	12,000	1,780	1,010	-------
9	415	702	-------	22,000	2,930	5,400	1,690	1,100	-------
10	404	610	2,660	22,200	3,240	4,660	1,710	1,190	-------
11	404	460	2,890	9,820	3,340	4,400	1,620	[a] 1,500	-------
12	393	452	3,190	6,530	2,330	4,070	[a] 1,600	1,760	-------
13	393	499	4,220	6,150	2,390	3,870	[a] 1,600	1,480	[b] 799
14	393	482	2,930	6,030	2,500	3,440	[a] 1,600	1,140	-------
15	404	490	2,700	5,680	2,490	3,070	[a] 1,600	952	-------
16	415	508	3,020	4,070	2,450	2,930	[a] 1,600	777	-------
17	430	526	3,990	3,360	2,470	2,910	[a] 1,600	768	-------
18	[a] 438	517	4,100	3,120	2,410	2,640	1,620	614	-------
19	445	475	4,100	3,040	2,370	2,640	2,680	586	-------
20	460	430	3,900	3,000	2,300	2,470	2,370	568	-------
21	468	382	3,340	2,930	2,020	2,300	2,110	542	-------
22	438	328	13,600	2,870	1,760	2,180	1,780	529	-------
23	388	328	15,800	2,680	1,590	2,240	1,560	529	-------
24	376	324	13,700	3,900	1,320	2,220	1,380	523	-------
25	393	320	11,700	6,780	1,570	2,170	1,260	511	-------
26	430	324	6,370	5,680	[a] 2,000	2,040	1,150	499	-------
27	445	328	5,430	3,550	2,080	1,910	1,040	548	-------
28	430	[a] 320	5,960	3,310	6,860	1,880	970	499	-------
29	415	[a] 320	6,950	3,210	11,000	1,810	868	511	-------
30	422	[a] 320	8,150	3,160	19,500	1,620	777	548	-------
31	404	-------	8,780	-------	26,500	-------	715	511	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	830	376	484	29,800
November	779	320	454	27,000
March 10–31	15,800	2,660	6,250	273,000
April	22,200	2,680	6,850	408,000
May	26,500	1,320	4,150	255,000
June	47,900	1,620	11,800	702,000
July	2,680	715	1,570	96,500
August	1,760	499	784	48,200
September	----------	----------	[a] 1,080	64,300

[a] Estimated. [b] Result of discharge measurement.

BEAVER CREEK NEAR BURDOCK, S. DAK.

LOCATION.—Chain gage in sec. 8, T. 7 S., R. 1 E., 2 miles west of Burdock. Zero of gage is 3,547.1 feet above mean sea level.
DRAINAGE AREA.—1,480 square miles.
RECORDS AVAILABLE.—April, 1905, to November, 1906 (published as "Beaver Creek near Edgemont"); April to September, 1929.
EXTREMES.—Maximum discharge during year, 3,280 second-feet May 31 (gage height, 9.05 feet); minimum, 10 second-feet Aug. 25 (gage height, 1.24 foot). 1905–6, 1929: Maximum discharge, 3,530 second-feet Mar. 26, 1906; no flow Aug. 13, 1906.
REMARKS.—Records good below 700 second-feet and fair above. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	-------	62	337	56	26	31	16	-------	45	56	544	25	23
2	-------	59	1,300	69	24	25	17	-------	41	54	186	22	22
3	-------	59	2,590	79	29	21	18	-------	38	52	156	21	22
4	-------	59	592	94	16	22	19	129	41	48	102	18	23
5	-------	59	296	56	17	22	20	127	37	46	87	15	22
6	-------	59	348	43	18	31	21	125	34	40	63	16	22
7	-------	58	234	142	47	31	22	104	22	40	93	30	22
8	-------	62	160	135	276	29	23	100	18	50	79	23	24
9	-------	60	124	75	124	28	24	197	14	50	102	14	21
10	-------	60	108	58	117	26	25	158	12	42	80	10	34
11	-------	59	94	50	51	26	26	110	436	41	80	12	108
12	-------	58	282	36	33	25	27	102	1,380	36	61	15	122
13	-------	55	94	42	48	24	28	85	921	40	47	41	276
14	-------	50	80	302	35	24	29	78	733	36	35	38	122
15	-------	48	66	880	27	24	30	66	1,880	35	32	38	119
							31	-------	2,900	-------	27	89	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 19–30	197	66	115	2,740
May	2,900	12	304	18,700
June	2,590	35	246	14,600
July	880	27	126	7,750
August	276	10	42.4	2,610
September	276	21	45.7	2,720
The period	----------	----------	----------	49,100

RAPID CREEK NEAR PACTOLA, S. DAK.

LOCATION.—Staff gage in sec. 2, T. 1 N., R. 5 E., at Dakota Power & Light Co.'s flume crossing, half a mile below Pactola.
DRAINAGE AREA.—319 square miles.
RECORDS AVAILABLE.—April to September, 1929.
EXTREMES.—Maximum combined discharge of creek and flume during period, 794 second-feet June 3; minimum, 51 second-feet Sept. 22.
REMARKS.—Records good except those for estimated periods, which are fair. Flow of creek regulated by power flume which diverts three-quarters of a mile above station.

Daily and monthly discharge, in second-feet, of Rapid Creek near Pactola, S. Dak., 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	-------	231	370	[a] 116	23	5	16	-------	184	290	[a] 110	3	2
2	-------	202	537	109	21	3	17	-------	174	290	[a] 113	3	1
3	-------	193	717	102	18	5	18	-------	164	290	[a] 85	3	2
4	-------	193	625	98	15	10	19	-------	164	222	[a] 86	3	2
5	-------	193	603	132	13	7	20	-------	155	193	[a] 72	3	1
6	-------	174	537	[a] 125	24	7	21	83	146	193	[a] 65	3	1
7	-------	174	537	[a] 105	83	10	22	136	146	272	[a] 66	3	1
8	-------	155	494	[a] 119	38	13	23	212	136	193	[a] 55	2	3
9	-------	155	452	[a] 100	26	10	24	231	[a] 135	290	[a] 50	1	3
10	-------	193	410	[a] 87	24	6	25	174	[a] 150	272	[a] 40	3	20
11	-------	174	410	[a] 69	18	4	26	193	280	194	27	4	52
12	-------	174	431	[a] 58	14	3	27	202	350	146	[a] 25	11	46
13	-------	174	370	[a] 61	10	3	28	193	300	146	23	21	25
14	-------	193	330	[a] 200	8	1	29	[a] 220	370	[a] 135	23	14	16
15	-------	193	300	[a] 135	6	2	30	231	390	[a] 125	24	10	14
							31	-------	370	-------	20	10	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 21-30	231	83	188	3,730
May	390	135	206	12,700
June	717	125	337	20,100
July	200	20	80.6	4,960
August	83	1	14.1	867
September	52	1	9.3	553
The period	----------	----------	----------	42,900

[a] Estimated.

Combined daily and monthly discharge, in second-feet, of Rapid Creek and Dakota Power & Light Co.'s flume near Pactola, S. Dak., 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	-------	310	447	186	101	76	16	-------	263	354	190	81	61
2	-------	278	629	186	100	69	17	-------	250	342	193	79	59
3	-------	269	789	179	95	75	18	-------	240	303	165	78	59
4	-------	269	688	176	93	86	19	-------	240	292	166	75	60
5	-------	263	679	213	92	82	20	-------	231	289	152	73	57
6	-------	239	613	205	111	84	21	164	222	272	145	69	55
7	-------	247	615	185	162	89	22	144	223	290	146	65	52
8	-------	224	570	199	119	92	23	212	212	274	135	60	61
9	-------	227	530	180	105	87	24	238	211	290	130	57	63
10	-------	269	486	167	105	82	25	204	225	290	120	59	96
11	-------	251	490	149	95	78	26	236	354	275	106	75	132
12	-------	250	507	138	93	72	27	269	421	273	103	89	122
13	-------	253	446	141	87	70	28	275	377	209	101	98	104
14	-------	270	406	280	87	64	29	301	449	274	99	90	93
15	-------	272	374	215	84	63	30	312	470	203	101	90	90
							31	-------	448	-------	97	85	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 21-30	312	144	236	4,680
May	470	211	282	17,300
June	789	203	407	24,200
July	280	97	159	9,780
August	162	57	88.7	5,450
September	132	52	77.8	4,630
The period	----------	----------	----------	66,000

RAPID CREEK AT CRESTON, S. DAK.

LOCATION.—Staff gage in sec. 33, T. 1 S., R. 12 E., half a mile west of Creston.
DRAINAGE AREA.—710 square miles.
RECORDS AVAILABLE.—April to September, 1929.
EXTREMES.—Maximum discharge during period, 2,740 second-feet June 2 (gage height, 8.6 feet); minimum, 26 second-feet Aug. 24 (gage height, 1.86 feet).
REMARKS.—Records fair. Diversions for irrigation above station.

Daily discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	-------	518	538	230	73	50	16	-------	335	510	305	58	79
2	-------	552	1,690	246	70	54	17	-------	341	472	233	44	81
3	-------	518	1,920	217	81	62	18	-------	335	398	214	50	79
4	-------	430	1,330	244	73	42	19	-------	249	356	196	50	79
5	-------	335	1,240	233	71	48	20	-------	246	338	193	45	79
6	-------	350	1,090	244	73	51	21	-------	260	314	183	44	79
7	-------	412	996	225	70	55	22	217	249	305	178	41	86
8	-------	412	744	217	74	63	23	423	266	329	302	35	86
9	-------	365	700	230	66	60	24	712	249	344	167	27	89
10	-------	350	780	225	108	55	25	672	246	347	160	29	95
11	-------	350	776	225	100	51	26	448	271	305	144	28	97
12	-------	350	744	183	102	54	27	350	311	288	147	31	98
13	-------	320	720	157	88	62	28	263	347	271	121	35	93
14	-------	320	626	201	78	70	29	680	420	249	119	35	95
15	-------	320	570	260	66	76	30	622	535	236	113	66	91
							31	-------	538	-------	76	58	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 22-30	712	217	487	8,690
May	552	246	358	22,000
June	1,920	236	651	38,700
July	305	76	200	12,300
August	108	27	60.3	3,710
September	98	42	72.0	4,280
The period	----------	----------	----------	89,700

BELLE FOURCHE RIVER NEAR MOORCROFT, WYO.

LOCATION.—Chain gage in sec. 36, T. 50 N., R. 68 W., 1½ miles west of Moorcroft. Zero of gage is 4,133.44 feet above mean sea level.

DRAINAGE AREA.—1,380 square miles.

RECORDS AVAILABLE.—September, 1923, to September, 1929.

EXTREMES.—Maximum discharge during year, 9,060 second-feet Apr. 5 (gage height, 12.36 feet); no flow Oct. 1–13, 15, 28, and 29.

1923–1929: Maximum discharge, 12,500 second-feet Apr. 7, 1924 (gage height, 12.6 feet); no flow several days in September and October, 1928.

REMARKS.—Records good except those for estimated periods, Mar. 1–9 and 14–28, which are fair. Observations discontinued Nov. 4 to Feb. 28. Small diversion by pumping for railroad just above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	0	2		1,310	139	2,470	14	6	5
2	0	1		974	148	1,020	14	6	4
3	0	1		1,630	142	1,290	13	6	3
4	0	--------		3,780	106	1,140	13	6	3
5	0	--------	100	8,750	89	533	232	5	
6	0	--------		6,040	59	425	193	5	3
7	0	--------		2,140	62	372	89	5	3
8	0	--------		1,020	103	307	40	5	3
9	0	--------	131	719	72	243	25	5	3
10	0	--------	1,080	554	51	207	18	11	3
11	0	--------	2,200	436	27	181	16	8	3
12	0	--------	2,880	387	16	251	13	6	3
13	0	--------	2,500	393	12	163	12	5	3
14	.2	--------	1,000	384	11	120	638	5	3
15	0	--------	100	375	9	106	145	5	3
16	.4	--------	75	364	8	89	45	4	3
17	.2	--------	50	372	7	67	32	4	3
18	.2	--------	25	358	6	62	18	4	3
19	.2	--------	30	302	6	59	12	3	3
20	.2	--------	60	257	5	51	11	3	3
21	.4	--------	150	215	5	45	9	3	2
22	.2	--------	300	207	5	40	8	3	2
23	.2	--------	180	204	4	40	8	3	3
24	.2	--------	70	327	4	43	8	3	3
25	.2	--------	30	285	6	72	8	3	38
26	.2	--------	20	215	296	48	7	3	324
27	.2	--------	50	181	842	35	7	3	243
28	0	--------	250	165	198	22	7	3	59
29	0	--------	2,280	156	1,270	19	6	3	12
30	.8	--------	2,330	179	1,680	17	6	3	8
31	1.0	--------	1,680	--------	497	--------	6	7	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1	0	0.15	9.2
March	2,880	20	589	36,200
April	8,750	156	1,090	64,900
May	1,680	4	190	11,700
June	2,470	17	318	18,900
July	638	6	54.0	3,320
August	11	3	4.65	286
September	324	2	25.2	1,500

BELLE FOURCHE RIVER AT HULETT, WYO.

LOCATION.—Chain gage in sec. 12, T. 54 N., R. 65 W., at south edge of Hulett. Zero of gage is 3,742.05 feet above mean sea level.
DRAINAGE AREA.—2,800 square miles.
RECORDS AVAILABLE.—April to September, 1929.
EXTREMES.—Maximum discharge during year, about 6,230 second-feet May 31 (gage height, 8.9 feet); minimum, 22 second-feet Sept. 1 and 2 (gage height, 1.63 feet).
REMARKS.—Records good. No diversions above station.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	------	527	4,230	138	56	22	16	------	305	270	437	40	24
2	------	486	3,650	143	54	22	17	------	284	250	198	42	23
3	------	473	2,220	143	52	23	18	------	274	228	179	39	23
4	------	478	2,040	138	52	25	19	------	260	218	146	38	23
5	------	455	1,680	132	59	25	20	------	232	194	143	36	23
6	------	414	850	143	117	23	21	------	232	191	135	34	23
7	------	410	710	305	124	29	22	------	228	191	127	34	23
8	------	419	615	242	107	28	23	------	211	169	65	32	24
9	------	419	514	179	80	28	24	------	205	185	63	30	23
10	------	406	432	143	61	28	25	------	198	166	59	30	25
11	------	342	370	124	50	26	26	------	563	172	59	30	42
12	------	334	362	112	49	26	27	------	690	188	59	29	1,150
13	------	323	350	112	45	25	28	------	274	176	65	28	1,020
14	------	319	319	160	42	25	29	554	2,480	160	59	26	313
15	------	323	278	326	40	25	30	545	5,390	154	59	25	176
							31	------	6,180	------	58	25	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 29-30	554	545	550	2,180
May	6,180	198	779	47,900
June	4,230	154	718	42,700
July	437	58	144	8,850
August	124	25	48.6	2,990
September	1,150	22	110	6,550
The period	------	------	------	111,000

BELLE FOURCHE RIVER NEAR BELLE FOURCHE, S. DAK.

LOCATION.—Staff gage in sec. 2, T. 8 N., R. 2 E., at diversion dam of Belle Fourche irrigation project 1½ miles below Belle Fourche.

DRAINAGE AREA.—4,310 square miles.

RECORDS AVAILABLE.—May to November, 1906; January, 1912, to September, 1929.

EXTREMES.—Maximum discharge during year, 15,000 second-feet Apr. 8; minimum, 61 second-feet Jan. 25.

1912–1929: Maximum discharge, 22,400 second-feet Apr. 9, 1924; no flow for several days during 1914 and 1919.

REMARKS.—Records include flow diverted at Belle Fourche diversion dam. Other diversions for irrigation above station. Flow regulated by Belle Fourche Reservoir. Complete records furnished by the United States Bureau of Reclamation.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	226	186	178	167	127	140	4,640	1,400	7,130	432	102	70
2	179	186	175	191	132	141	4,640	1,370	5,260	432	101	70
3	198	178	174	186	137	141	3,300	1,340	3,550	428	98	70
4	193	178	160	133	140	141	3,380	1,250	2,050	424	81	71
5	193	187	198	134	151	349	4,880	1,150	2,760	428	96	71
6	193	482	154	138	115	3,160	2,870	1,150	2,760	424	78	71
7	192	274	154	201	119	856	13,900	1,150	1,840	439	79	71
8	192	260	180	196	128	862	15,000	1,300	1,250	439	104	71
9	194	267	172	196	131	482	5,240	1,300	1,250	438	104	71
10	194	260	162	170	135	358	3,760	1,360	1,010	442	104	71
11	194	260	160	160	141	759	2,680	1,030	963	438	106	71
12	186	267	161	171	141	906	2,450	1,030	967	438	97	71
13	199	240	160	165	145	1,040	1,760	1,030	828	436	104	71
14	199	184	158	163	146	3,580	1,880	1,030	704	438	104	71
15	199	201	160	145	149	4,580	1,760	950	828	435	103	71
16	199	217	157	150	145	3,080	1,880	950	599	405	103	71
17	199	200	149	134	143	1,230	1,980	950	587	425	103	133
18	199	185	152	140	141	750	1,920	1,070	676	425	102	133
19	199	161	189	118	135	737	1,920	822	676	418	102	133
20	213	158	192	117	144	2,170	2,010	827	676	418	99	162
21	216	192	227	113	144	5,450	1,730	777	553	412	68	179
22	216	197	215	174	142	2,460	1,660	777	553	379	70	190
23	216	197	173	126	144	2,040	1,660	715	553	311	70	190
24	216	197	179	122	145	1,850	2,630	715	532	236	70	189
25	216	173	176	61	141	1,640	2,260	715	439	221	70	241
26	213	176	174	118	141	1,490	1,940	1,560	439	170	70	468
27	212	180	186	125	141	1,370	1,850	2,710	439	180	70	367
28	199	180	186	113	140	1,930	1,730	1,880	439	145	70	279
29	203	180	171	121	------	2,470	1,670	4,160	439	101	70	575
30	205	180	229	118	------	3,430	1,670	3,340	439	102	70	511
31	102	------	162	118	------	4,500	------	6,340	------	102	70	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	226	102	199	12,200
November	482	158	213	12,700
December	229	149	175	10,800
January	201	61	145	8,920
February	151	115	139	7,720
March	5,450	140	1,740	107,000
April	15,000	1,660	3,360	200,000
May	6,340	715	1,490	91,600
June	7,130	439	1,370	81,500
July	442	101	354	21,800
August	106	68	88.0	5,410
September	575	70	163	9,700
The year	15,000	61	786	569,000

BELLE FOURCHE RIVER NEAR ELM SPRINGS, S. DAK.

LOCATION.—Chain gage in sec. 26, T. 5 N., R. 13 E., 6 miles northeast of Elm Springs.

DRAINAGE AREA.—7,130 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 33,500 second-feet June 3 (gage height, 11.3 feet); minimum, 42 second-feet Nov. 26.

REMARKS.—Records good below 8,000 second-feet except those for estimated periods; others fair. Observations discontinued Dec. 1 to Mar. 9. Diversions for irrigation above station. Flow partly regulated by Belle Fourche Reservoir.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	[a] 414	279	--------	4,860	1,170	14,200	350	279	376
2	[a] 416	335	--------	5,690	1,210	22,600	343	277	376
3	[a] 418	279	--------	4,320	1,130	28,500	324	279	402
4	[a] 420	342	--------	3,790	1,050	11,300	306	259	434
5	[a] 422	335	--------	3,230	999	8,980	324	259	495
6	[a] 424	473	--------	6,520	954	7,090	369	396	530
7	[a] 425	361	--------	9,480	918	5,520	685	356	552
8	426	213	--------	16,700	1,060	3,380	762	552	590
9	374	196	--------	23,100	1,020	2,460	753	645	598
10	354	285	2,330	7,720	1,250	2,210	582	530	613
11	374	285	1,570	3,980	981	[a] 1,800	530	545	552
12	291	285	1,590	2,810	1,270	1,270	575	509	523
13	298	273	1,070	2,580	1,260	1,160	454	434	516
14	316	261	[a] 1,100	2,000	1,230	1,080	395	376	[a] 520
15	316	304	1,490	1,660	1,210	954	467	390	523
16	304	174	3,350	1,660	1,230	844	516	276	454
17	310	114	2,190	1,380	1,250	804	481	270	440
18	298	92	1,080	1,520	1,200	719	395	264	434
19	310	66	999	1,440	1,170	621	376	276	440
20	285	55	900	1,470	669	568	552	300	428
21	267	64	10,700	1,440	575	495	598	324	428
22	273	69	14,900	1,300	530	460	488	318	395
23	298	71	7,130	1,230	421	590	421	300	375
24	285	84	4,150	1,310	356	414	362	300	356
25	285	87	2,410	2,690	382	395	300	336	388
26	279	48	2,250	1,960	408	382	242	318	560
27	279	[a] 50	3,280	1,570	4,800	434	220	343	1,740
28	261	[a] 50	4,740	1,280	6,440	447	205	369	1,200
29	267	[a] 50	4,440	1,350	17,800	421	200	300	873
30	273	[a] 50	4,350	1,160	17,200	382	195	324	509
31	279	--------	4,180	--------	9,610	--------	220	343	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	426	261	330	20,300
November	473	48	188	11,200
March 10–31	14,900	900	3,650	159,000
April	23,100	1,160	4,040	240,000
May	17,800	356	2,600	160,000
June	28,500	382	4,020	239,000
July	762	195	419	25,800
August	645	220	348	21,400
September	1,740	356	554	33,000

[a] Estimated.

REDWATER CREEK NEAR BEULAH, WYO.

LOCATION.—Staff gage in sec. 29, T. 7 N., R. 60 W., 1½ miles downstream from Beulah.

DRAINAGE AREA.—459 square miles.

RECORDS AVAILABLE.—April to September, 1929.

EXTREMES.—Maximum discharge during period, 515 second-feet May 26 and 27 (gage height, 6.20 feet); no flow Aug. 13–15.

REMARKS.—Records good. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	-------	163	242	89	67	62	16	-------	184	109	89	65	62
2	-------	156	300	98	67	62	17	-------	163	92	82	65	62
3	-------	133	280	92	61	62	18	-------	167	92	78	70	62
4	-------	150	219	92	68	62	19	-------	146	90	75	63	62
5	-------	140	205	92	68	62	20	-------	140	92	75	60	62
6	-------	120	201	92	82	62	21	-------	127	92	75	60	62
7	-------	120	173	92	75	62	22	-------	127	92	75	60	62
8	-------	120	173	92	75	62	23	-------	120	92	75	60	62
9	-------	136	146	92	72	62	24	-------	114	95	75	60	62
10	-------	150	130	90	72	62	25	146	114	92	75	60	74
11	-------	130	123	92	67	62	26	153	389	92	71	60	72
12	-------	146	133	92	67	62	27	136	425	92	67	60	72
13	-------	153	120	92	0	62	28	120	242	92	67	60	72
14	-------	160	114	92	0	62	29	153	280	92	65	59	72
15	-------	205	109	89	0	62	30	173	340	92	65	58	72
							31	-------	261	-------	67	60	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 25–30	173	120	147	1,750
May	425	114	178	10,900
June	300	90	136	8,090
July	98	65	82.4	5,070
August	82	0	58.7	3,610
September	74	62	64.1	3,810
The period	-------	-------	-------	33,200

BAD RIVER BASIN

BAD RIVER NEAR FORT PIERRE, S. DAK.

LOCATION.—Chain gage in sec. 10, T. 4 N., R. 31 E., 2½ miles south of Fort Pierre.
DRAINAGE AREA.—3,170 square miles. Zero of gage is 1,427.83 feet above mean sea level.
RECORDS AVAILABLE.—August, 1928, to September, 1929.
EXTREMES.—Maximum discharge during year, 11,100 second-feet Apr. 25 (gage height, 21.18 feet); no flow during several months.
Maximum stage known, 30.89 feet in 1905, and in April, 1927.
REMARKS.—Records good. No diversions.

Daily and monthly discharge, in second-feet, 1928–29

Day	Mar.	Apr.	May	June	July	Day	Mar.	Apr.	May	June	July
1	[a] 50	587	175	206	0	16	243	1,740	47	154	4.1
2	[a] 100	253	133	58	0	17	161	900	39	79	2.7
3	[a] 200	161	108	307	0	18	126	380	32	45	1.0
4	263	106	88	140	0	19	89	198	23	24	0
5	1,540	71	75	54	0	20	60	133	15	19	0
6	2,750	50	64	621	0	21	49	87	13	12	0
7	1,300	67	55	243	0	22	434	60	11	7.6	0
8	1,110	58	53	175	0	23	621	40	6.9	3.4	0
9	830	39	50	95	0	24	587	2,450	4.1	1.0	0
10	1,040	22	46	62	168	25	330	6,900	0	0	0
11	1,040	38	40	65	78	26	224	3,500	13	0	0
12	865	109	34	47	47	27	234	2,100	87	0	0
13	760	655	79	45	21	28	126	1,080	43	0	0
14	434	1,180	89	621	18	29	97	434	31	0	0
15	307	1,380	68	463	9.8	30	725	253	15	0	0
						31	1,080	-------	524	-------	0

Month	Maximum	Minimum	Mean	Run-off in acre-feet
February	----------	----------	[a] 10	555
March	2,750	49	573	35,200
April	6,900	22	834	49,600
May	524	0	66.5	4,090
June	621	0	118	7,020
July	168	0	11.3	695
The year	6,900	0	134	97,200

[a] Estimated.
NOTE.—No flow during October to January, August, and September. Daily discharge not determined for February.

WHITE RIVER BASIN

WHITE RIVER NEAR INTERIOR, S. DAK.

LOCATION.—Staff gage in sec. 7, T. 4 S., R. 18 E., 3 miles southwest of Interior.
DRAINAGE AREA.—4,120 square miles.
RECORDS AVAILABLE.—June, 1904, to November, 1906; August, 1911, to September, 1918; August, 1928, to September, 1929.
EXTREMES.—Maximum discharge during year, 4,600 second-feet Mar. 5 (gage height, 7.5 feet); minimum, 11 second-feet Oct. 10, 11, and Sept. 2.
1904–1906, 1911–1918, 1928–29: Maximum discharge, 16,500 second-feet Mar. 8, 1905 (gage height, 14 feet, present datum); no flow July 13–15, 19–29, and Sept. 26 to Oct. 4, 1914.
REMARKS.—Records fair. Daily discharge not determined Dec. 1 to Feb. 28. No diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14	51	[a] 500	575	255	679	60	19	12
2	17	47	[a] 1,000	535	214	2,090	64	214	11
3	17	41	[a] 1,500	515	190	3,080	106	49	14
4	20	85	[a] 2,000	325	190	994	124	22	17
5	19	198	[a] 2,800	248	204	679	621	14	15
6	17	277	2,520	220	262	396	1,110	14	81
7	16	364	1,480	190	355	520	485	450	565
8	13	325	1,240	190	420	510	273	410	289
9	12	168	970	195	440	312	364	255	844
10	11	137	679	400	269	575	165	94	485
11	11	128	490	545	201	880	342	83	204
12	16	130	626	1,510	181	970	187	83	184
13	17	120	214	1,010	168	425	110	59	130
14	22	101	108	674	150	262	1,030	55	148
15	610	100	190	550	143	204	304	42	93
16	207	[a] 90	712	480	137	184	162	30	65
17	89		850	405	132	158	292	25	55
18	57		880	321	128	132	89	18	46
19	65		1,130	227	122	118	68	14	39
20	59	60	934	178	118	105	56	14	34
21	56	86	856	160	116	93	54	46	28
22	56	86	1,050	148	118	89	46	55	27
23	59	86	1,300	137	118	124	47	22	37
24	54	85	820	1,160	110	560	55	14	34
25	53	42	791	2,260	105	308	61	18	86
26	47	60	1,050	803	106	130	78	25	595
27	45	62	1,240	585	234	108	45	105	415
28	44	47	976	545	187	85	45	49	137
29	45	26	652	475	525	75	30	22	80
30	49	34	475	351	244	69	25	15	64
31	53	-------	470	-------	308	-------	17	12	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	610	11	60.3	3,710
November	364	26	110	6,550
December	-------	-------	[a] 30	1,840
January	-------	-------	[a] 25	1,540
February	-------	-------	[a] 25	1,390
March	2,800	108	984	60,500
April	2,260	137	531	31,600
May	525	105	208	12,800
June	3,080	69	497	29,600
July	1,110	17	210	12,900
August	450	12	75.7	4,650
September	844	11	161	9,580
The year	2,800	11	244	177,000

[a] Estimated.

WHITE RIVER NEAR OACOMA, S. DAK.

LOCATION.—Chain gage in sec. 21, T. 103 N., R. 72 W., 6 miles southwest of Oacoma.
DRAINAGE AREA.—10,100 square miles.
RECORDS AVAILABLE.—August, 1928, to September ,1929.
EXTREMES.—Maximum discharge during year, 9,720 second-feet Mar. 10 (gage height, 6.6 feet); minimum occurred during winter.
REMARKS.—Records fair. No diversions.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	116	212	[a] 97				1,530	1,320	850	352	80	70
2	101	200	[a] 80				1,380	1,130	490	328	80	66
3	97	188	[a] 70		[a] 65	[a] 150	955	1,130	850	287	80	55
4	97	172	61				2,270	1,010	955	278	68	63
5	80	245	[a] 70	[a] 80			800	600	4,690	270	47	74
6	84	274	[a] 100				800	700	2,800	261	122	70
7	76	257	122			1,000	800	650	2,370	253	188	74
8	76	347	128		[a] 51		955	220	1,880	236	164	78
9	72	274	156			7,020	650	220	1,320	228	148	82
10	72	403	212			9,120	520	378	900	1,460	128	99
11	72	650	245			4,420	520	700	900	1,250	108	88
12	68	[a] 600	278			2,070	520	700	900	650	82	88
13	80	[a] 500	261	[a] 48	[a] 61	1,790	520	1,880	700	490	378	800
14	80	[a] 450	236			1,620	600	1,010	800	700	338	900
15	116	[a] 600	253			1,880	3,390	650	560	520	265	600
16	164	[a] 500	245			1,620	2,070	378	1,130	304	224	459
17	140	[a] 350	245			1,250	2,070	378	1,130	352	176	342
18	1,320	282	212	[a] 40	[a] 64	850	1,380	520	600	295	137	287
19	1,190	282	[a] 200			490	955	490	459	800	119	270
20	800	[a] 290	[a] 180			431	900	459	378	800	108	212
21	490	291	172			3,150	700	459	378	287	52	196
22	403	378	172			2,370	600	431	287	1,010	99	172
23	388	333	156	[a] 39		2,170	600	431	295	700	192	148
24	295	287	148			2,170	700	378	261	333	224	122
25	261	270	188		[a] 78	2,680	750	304	236	204	131	128
26	228	236	188			2,170	7,620	342	236	140	119	116
27	220	236	[a] 180			1,980	4,690	342	212	140	113	106
28	204	245	[a] 170			1,620	3,640	431	196	116	101	101
29	204	270	[a] 160	[a] 48	-------	1,620	2,470	403	228	116	95	101
30	196	[a] 250	[a] 150		-------	2,470	1,530	342	850	110	90	88
31	204	-------	[a] 150		-------	2,370	-------	342	-------	106	78	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,320	68	256	15,700
November	650	172	329	19,600
December	278	61	170	10,500
January	----------	----------	54	3,320
February	----------	----------	65	3,610
March	9,120	----------	1,970	121,000
April	7,620	520	1,560	92,800
May	1,880	220	604	37,100
June	4,690	196	928	55,200
July	1,460	106	431	26,500
August	378	47	140	8,610
September	900	55	202	12,000
The year	9,120	----------	561	406,000

[a] Estimated.

SOUTH FORK OF WHITE RIVER NEAR WHITE RIVER, S. DAK.

LOCATION.—Chain gage in sec. 14, T. 41 N., R. 28 E., 4½ miles south of White River.

DRAINAGE AREA.—1,390 square miles.

RECORDS AVAILABLE.—April to September, 1929.

EXTREMES.—Maximum discharge during period, 450 second-feet Apr. 24; minimum, 40 second-feet Aug. 25 (gage height, 2.30 feet).

REMARKS.—Records good. Discharge estimated Sept. 10 and 11.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	-------	380	180	84	62	42	16	267	230	144	82	44	86
2	-------	355	262	82	66	50	17	278	221	134	100	44	79
3	-------	267	208	72	62	51	18	286	211	126	82	44	75
4	-------	235	182	86	57	52	19	289	188	112	79	63	75
5	-------	230	180	88	57	57	20	267	182	109	77	48	81
6	-------	249	174	91	55	72	21	238	174	104	75	47	79
7	-------	235	195	91	57	79	22	245	185	107	81	45	79
8	-------	235	198	79	52	86	23	221	185	107	77	42	84
9	259	221	185	81	52	98	24	331	180	109	73	41	86
10	278	288	182	75	52	90	25	405	171	98	73	40	98
11	274	288	185	79	50	82	26	365	166	100	70	95	98
12	267	262	177	75	51	73	27	355	157	95	70	73	86
13	267	262	157	72	48	82	28	314	168	91	68	62	95
14	274	253	152	81	46	98	29	340	174	84	65	51	86
15	274	230	157	91	45	91	30	360	163	88	63	52	82
							31	-------	168	-------	62	47	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 9-30	405	221	293	12,800
May	380	157	223	13,700
June	262	84	146	8,690
July	100	62	78.2	4,810
August	95	40	53.2	3,270
September	98	42	79.1	4,710
The period	----------	----------	----------	48,000

NIOBRARA RIVER BASIN

NIOBRARA RIVER NEAR GORDON, NEBR.

LOCATION.—Staff gage in sec. 15, T. 31 N., R. 41 W., 14 miles southeast of Gordon.

DRAINAGE AREA.—3,050 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, about 1,230 second-feet June 2 (gage height, 1.80 feet); minimum, 61 second-feet July 25.

1928–29: Maximum and minimum discharge, same as given above.

REMARKS.—Records fair. Observations discontinued Dec. 6 to Feb. 28. No diversions.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	109	168	192	[a] 120	256	146	1,080	131	66	74
2	108	151	[a] 174	[a] 140	238	143	1,190	143	68	78
3	112	178	156	[a] 160	256	150	1,070	139	66	80
4	118	206	[a] 137	[a] 180	280	156	215	131	70	103
5	113	199	[a] 118	[a] 200	256	170	[a] 160	156	70	131
6	116	230	-------	[a] 300	247	167	[a] 120	713	69	163
7	113	216	-------	[a] 400	233	156	105	324	111	219
8	114	178	-------	[a] 500	224	143	100	178	109	190
9	113	185	-------	[a] 500	247	146	80	146	[a] 108	186
10	113	185	-------	462	286	182	64	124	107	167
11	111	174	-------	436	274	170	76	114	103	153
12	113	182	-------	[a] 300	286	163	78	134	109	131
13	120	182	-------	[a] 200	286	163	80	160	103	124
14	136	185	-------	139	354	170	100	774	90	121
15	410	192	-------	170	262	182	121	310	94	118
16	268	182	-------	206	256	143	124	602	96	118
17	216	[a] 182	-------	304	251	150	114	186	[a] 90	124
18	188	182	-------	280	251	156	114	134	82	116
19	168	178	-------	346	251	190	114	118	84	118
20	164	182	-------	304	256	186	111	100	84	134
21	156	192	-------	292	251	190	105	94	[a] 83	134
22	168	185	-------	280	274	210	105	92	[a] 83	139
23	185	178	-------	280	242	233	242	86	82	136
24	196	185	-------	256	453	202	215	70	80	124
25	185	185	-------	268	324	178	206	64	84	121
26	164	182	-------	[a] 260	316	304	198	63	74	160
27	156	185	-------	251	292	215	167	69	72	167
28	161	178	-------	247	280	268	134	69	84	153
29	166	182	-------	228	219	219	126	72	76	153
30	174	188	-------	219	163	219	139	76	78	156
31	178	-------	-------	233	-------	572	-------	72	82	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	410	108	158	9,710
November	230	151	185	11,000
March	500	120	27[illegible]	16,800
April	453	163	268	15,900
May	572	143	195	12,000
June	1,190	64	22[illegible]	13,600
July	713	63	182	11,200
August	111	66	85.7	5,270
September	219	74	13[illegible]	8,090

[a] Estimated.

NIOBRARA RIVER NEAR VALENTINE, NEBR.

LOCATION.—Chain gage in sec. 30, T. 33 N., R. 28 W., 7 miles southwest of Valentine.

DRAINAGE AREA.—6,160 square miles.

RECORDS AVAILABLE.—June, 1897, to December, 1906; August, 1928, to September, 1929.

REMARKS.—Records fair. Discharge estimated except on days when current-meter measurements were made. No diversions.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	785	915				1,110	1,110	840	1,630	730	650	760
2		[a] 914	[a] 924									
3												
4		920										[a] 780
5	[a] 786		[a] 692						[a] 1,130			
6	790	980				1,480	1,070	850	830	1,020	670	890
7												
8											[a] 686	
9												
10												
11	820	980				1,200	1,120	870	630	1,140	740	870
12												
13												
14												
15												
16	980	[a] 987		[a] 719		1,170	1,070	840	670	1,120	700	720
17												
18		985										
19												
20					[a] 697			[a] 858				
21	850	960				1,200	[a] 1,030	890			720	[a] 713
22									[a] 670	[a] 738		
23							1,150		720	740		720
24												
25												
26	860	940				1,170	1,030	1,090	700	710	700	780
27						1,170						
28						[a] 1,170						
29												
30						1,170						
31												

Month	Mean	Run-off in acre-feet	Month	Mean	Run-off in acre-feet
October	846	52,000	May	903	55,500
November	960	57,100	June	844	50,200
December	700	43,000	July	916	56,300
January	650	40,000	August	700	43,000
February	675	37,500	September	794	47,200
March	1,220	75,000			
April	1,090	64,900	The year	859	622,000

[a] Result of discharge measurement.

NIOBRARA RIVER NEAR SPENCER, NEBR.

LOCATION.—At power plant of Northern Nebraska Power Co. in N. ½ sec. 30, T. 33 N., R. 11 W., 5 miles southeast of Spencer.

DRAINAGE AREA.—10,800 square miles.

RECORDS AVAILABLE.—May to December, 1908; August, 1927, to September, 1929.

EXTREMES.—Maximum discharge during year, 6,720 second-feet June 6; minimum, 20 second-feet leakage through gates.

1927–1929: Maximum discharge occurred during 1929.

REMARKS.—Records good except those for winter period, which are fair. Flow regulated by Spencer Reservoir; capacity, 2,300 acre-feet. Discharge computed from flow over dam and through gates and turbines. Base data furnished by Northern Nebraska Power Co.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,190	1,400	1,190	641	694	973	1,680	1,490	1,090	944	851	718
2	1,130	1,060	1,250	638	756	1,100	1,270	1,520	2,320	905	946	713
3	1,130	1,110	969	435	611	1,030	1,280	1,410	3,110	1,010	850	755
4	1,080	1,280	699	1,060	820	1,160	1,250	1,530	3,420	790	679	1,680
5	1,110	1,720	502	767	764	1,310	1,270	829	3,000	925	1,210	1,450
6	1,150	1,950	883	390	758	1,540	1,280	1,620	5,470	1,280	760	964
7	1,120	1,480	947	484	849	1,550	1,290	1,580	4,850	899	792	1,350
8	1,360	1,220	1,010	343	903	1,920	1,190	1,610	3,160	1,620	786	1,200
9	1,200	1,510	900	350	967	1,960	1,070	1,540	1,990	1,470	872	1,900
10	1,110	1,520	1,030	266	802	2,780	1,320	1,570	2,290	1,150	869	1,550
11	1,020	1,400	1,130	391	817	3,790	1,590	1,630	1,470	1,030	690	1,170
12	1,040	1,290	1,470	1,040	849	5,250	1,460	900	1,360	976	1,120	1,390
13	1,130	1,580	1,470	879	949	5,240	1,290	1,540	1,460	876	850	980
14	1,220	1,500	1,690	1,050	868	4,290	1,280	1,480	1,300	1,080	783	1,210
15	1,340	1,290	1,700	980	903	3,160	1,500	1,360	1,150	1,560	827	818
16	1,430	1,360	1,450	950	977	2,350	1,500	1,390	740	966	654	1,280
17	2,110	1,490	1,360	872	816	2,430	997	1,150	1,130	1,190	756	925
18	1,760	1,380	883	881	983	2,630	1,010	1,270	1,080	2,600	506	970
19	1,240	1,690	773	1,020	968	2,370	1,020	892	916	1,550	864	971
20	1,280	1,110	415	791	948	2,020	1,080	1,660	1,090	936	846	986
21	1,090	1,400	825	855	877	1,770	936	1,160	890	796	832	1,000
22	1,350	1,060	793	661	902	1,600	993	1,090	928	1,100	664	762
23	1,160	1,200	801	749	993	1,660	954	1,130	688	1,040	961	1,180
24	1,030	1,310	1,340	500	858	1,440	1,710	900	1,180	997	938	901
25	1,010	1,060	1,160	423	959	1,550	1,850	1,280	937	970	668	905
26	1,240	1,170	1,650	473	983	1,470	1,900	644	1,130	879	752	2,640
27	1,190	1,250	1,540	317	1,050	1,470	1,880	1,510	1,490	963	700	1,590
28	1,160	1,390	2,020	340	1,010	1,420	1,690	1,030	899	742	744	1,030
29	1,220	1,250	1,780	377	-------	1,190	1,560	1,920	930	874	779	1,140
30	1,390	1,140	1,460	538	-------	1,180	1,540	1,580	687	761	938	1,430
31	1,520	-------	1,500	523	-------	1,540	-------	1,550	-------	522	831	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,110	1,010	1,240	76,200
November	1,950	1,060	1,350	80,300
December	2,020	415	1,180	72,600
January	1,060	266	645	39,700
February	1,050	611	880	48,900
March	5,250	973	2,100	129,000
April	1,900	936	1,350	80,300
May	1,920	644	1,350	83,000
June	5,470	687	1,740	104,000
July	2,600	522	1,080	66,400
August	1,210	506	817	50,200
September	2,640	713	1,180	70,800
The year	5,470	266	1,240	901,000

JAMES RIVER BASIN

JAMES RIVER AT JAMESTOWN, N. DAK.

LOCATION.—Staff gage in SE. ¼ sec. 36, T. 140 N., R. 64 W., 1 mile southeast of the Northern Pacific Railway depot at Jamestown.
DRAINAGE AREA.—3,140 square miles.
RECORDS AVAILABLE.—June, 1928, to September, 1929.
EXTREMES.—Maximum discharge during year, 1,100 second-feet Mar. 14 (gage height, 14.2 feet); minimum, 0.2 second-foot September 6, 7, and 15–18.
1928–29: Maximum and minimum discharge, same as given above.
REMARKS.—Records fair. No diversions.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	15	2.0	4.0	2.0	2.0	2.0	43	43	19	8.4	0.6	1.0
2	15	2.0	4.0	2.0	2.0	2.0	52	43	19	8.4	.6	.6
3	15	2.0	4.0	2.0	2.0	2.0	43	43	14	8.4	.6	.6
4	15	2.0	4.0	2.0	2.0	2.0	43	35	14	8.4	.6	.6
5	15	4.0	2.0	2.0	2.0	2.0	43	34	14	8.4	.6	.8
6	15	4.0	2.0	2.0	2.0	2.0	43	34	14	8.4	.6	.2
7	15	4.0	2.0	2.0	2.0	2.0	53	34	14	5.2	.6	.2
8	15	4.0	2.0	2.0	2.0	2.0	43	33	14	5.2	.6	.4
9	15	4.0	2.0	2.0	2.0	2.0	43	26	14	5.2	.6	.4
10	15	4.0	2.0	2.0	2.0	10.2	43	33	14	5.2	.6	.4
11	15	4.0	2.0	2.0	2.0	102	44	33	14	5.2	.6	.4
12	10.2	4.0	2.0	2.0	2.0	276	44	33	14	5.2	.6	.6
13	10.2	4.0	2.0	2.0	2.0	626	44	33	14	5.2	.6	.6
14	10.2	6.5	4.0	2.0	2.0	989	44	33	14	3.0	.6	.6
15	10.2	6.5	4.0	2.0	2.0	887	44	26	14	3.0	.6	.2
16	10.2	10.2	4.0	2.0	2.0	535	44	26	13	2.8	.6	.2
17	10.2	10.2	4.0	2.0	2.0	430	44	26	13	2.8	.6	.2
18	10.2	10.2	2.0	2.0	2.0	416	44	26	8.7	2.8	.6	.2
19	10.2	10.2	2.0	2.0	2.0	276	44	26	8.7	2.8	.6	.4
20	10.2	6.5	2.0	2.0	2.0	184	44	20	8.7	2.8	.6	.4
21	10.2	6.5	2.0	2.0	2.0	172	44	19	8.7	2.8	.8	2.0
22	10.2	6.5	2.0	2.0	2.0	124	36	19	8.7	2.8	2.8	2.0
23	6.5	6.5	2.0	2.0	2.0	102	28	19	8.7	2.8	.8	2.0
24	6.5	6.5	2.0	2.0	2.0	102	28	19	8.7	2.8	.8	2.0
25	6.5	6.5	2.0	2.0	2.0	70	36	19	8.7	2.8	.8	2.0
26	6.5	6.5	2.0	2.0	2.0	70	36	19	8.7	2.8	.8	2.2
27	6.5	6.5	2.0	2.0	2.0	80	36	19	8.7	2.8	.8	2.2
28	6.5	6.5	2.0	2.0	2.0	60	35	19	8.7	.8	1.0	2.2
29	6.5	6.5	2.0	2.0	2.0	51	35	19	8.7	.8	1.0	2.2
30	4.0	4.0	2.0	2.0	-------	42	43	19	8.7	.8	1.0	2.2
31	2.0	-------	2.0	2.0	-------	27	-------	19	-------	.8	1.0	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	15.0	2.0	10.6	652
November	10.2	2.0	5.56	331
December	4.0	2.0	2.52	155
January	2.0	2.0	2.00	123
February	2.0	2.0	2.00	111
March	989	2.0	182	11,200
April	53	28	41.6	2,480
May	43	19	27.4	1,680
June	19	8.7	12.0	714
July	8.4	.8	4.18	257
August	2.8	.6	.76	46.7
September	2.2	.2	1.00	59.5
The year	989	.2	24.6	17,800

JAMES RIVER AT HURON, S. DAK.

LOCATION.—Staff gage in sec. 6, T. 110 N., R. 61 W., at Huron. Zero of gage is 1,228.70 feet above mean sea level. Gage moved to new highway bridge just downstream on March 16, 1929.

DRAINAGE AREA.—11,500 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 2,110 second-feet Mar. 20 (gage height, 12.0 feet); minimum, 6.5 second-feet Sept. 17–24 (gage height, 0.3 foot).

1928–29: Maximum and minimum discharge, same as given above.

REMARKS.—Records fair. Discharge estimated Oct. 1–29, Nov. 24–28, Aug. 6–16, and 18. Observations discontinued Dec. 2 to Mar. 9. Minor diversions for city water supplies above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	175	166	82	-------	1,040	962	453	81	18	15.0
2		166	-------	-------	1,040	962	430	74	16	9.5
3		166	-------	-------	1,010	936	430	74	16	16.0
4		166	-------	-------	1,010	936	430	74	16	16.0
5		157	-------	-------	1,030	936	407	74	14	9.5
6		157	-------	-------	1,040	936	407	74	14	9.5
7		148	-------	-------	1,040	910	407	74	14	9.5
8		148	-------	-------	1,010	910	384	74	14	9.5
9		148	-------	-------	1,010	910	361	74	14	12.0
10		148	-------	74	1,010	910	361	74	14	13.0
11	170	148	-------	148	988	884	338	74	15	12.0
12		148	-------	780	1,010	884	269	68	15	11.0
13		148	-------	1,530	1,010	832	246	68	15	11.0
14		148	-------	1,740	988	910	247	68	13	9.5
15		166	-------	1,690	988	832	225	68	11	9.5
16	185	176	-------	1,590	988	754	205	68	10	6.6
17	192	176	-------	1,660	1,010	728	185	60	8.3	6.5
18	207	157	-------	1,980	1,010	728	185	48	8.6	6.5
19	207	148	-------	2,080	988	702	185	50	8.8	6.5
20	188	148	-------	2,110	988	650	166	50	9.5	6.5
21	178	148	-------	2,080	988	650	148	48	9.5	6.5
22	170	148	-------	2,030	988	650	148	38	11	6.5
23	166	113	-------	2,000	988	625	139	38	11	6.5
24	166	100	-------	1,740	988	625	130	42	11	6.5
25	162	95	-------	1,690	988	575	148	46	16	9.5
26	162	92	-------	1,510	988	575	139	44	27	12.0
27	164	90	-------	1,350	988	575	94	42	30	12.0
28	165	88	-------	1,250	988	525	89	35	34	12.0
29	165	87	-------	1,140	962	525	89	29	36	12.0
30	166	87	-------	1,120	936	525	89	22	29	12.0
31	166	-------	-------	1,090	-------	477	-------	21	17	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	-------	-------	174	10,700
November	176	87	139	8,270
March 10–31	2,110	74	1,470	64,200
April	1,040	936	1,000	60,000
May	962	477	759	46,700
June	453	89	251	14,900
July	81	21	57.2	3,520
August	36	8.3	16.0	984
September	16	6.5	10.0	595

JAMES RIVER NEAR SCOTLAND, S. DAK.

LOCATION.—Chain gage in sec. 30, T. 97 N., R. 57 W., 600 feet above Dawson Creek and 5 miles northeast of Scotland.

DRAINAGE AREA.—15,800 square miles.

RECORDS AVAILABLE.—September, 1928, to September, 1929.

EXTREMES.—Maximum discharge during period of record, 2,970 second-feet Mar. 31 (gage height, 11.92 feet); minimum, 14 second-feet Sept. 16, 1929.

REMARKS.—Records good except those for estimated periods, Nov. 4–24, 26–30, and July 25 to Aug. 17, which are fair. Observations discontinued Dec. 1 to Mar. 9. Operation of water-power plant 20 miles upstream may affect flow slightly.

Daily and monthly discharge, in second-feet, 1928–29

Day	Sept.	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	109	191	176	--------	2,930	1,330	1,210	148		22
2	112	184	176	--------	2,820	1,300	875	134		20
3	109	184	184	--------	2,750	1,240	719	127		19
4	109	184	182	--------	2,640	1,210	623	114		27
5	109	184	180	--------	2,350	1,160	599	103	75	23
6	109	184	178	--------	2,170	1,130	575	90		16
7	112	184	175	--------	1,850	986	552	93		17
8	112	184	172	--------	1,700	1,070	508	95		19
9	109	191	160	--------	1,460	1,040	486	85		21
10	111	184	156	795	1,360	1,010	486	120		17
11	112	184	158	986	1,360	1,010	465	120		16
12	112	184	156	1,130	1,330	986	465	120		16
13	153	184	160	1,180	1,300	930	695	120		16
14	225	191	162	1,300	1,270	902	930	127	50	16
15	262	191	162	1,460	1,270	902	795	245		15
16	266	208	170	1,780	1,240	902	647	302		14
17	185	208	185	2,030	1,240	848	508	264		16
18	180	226	178	2,210	1,210	848	423	191	25	16
19	185	264	170	2,240	1,210	821	362	162	26	20
20	194	236	160	2,350	1,240	795	322	134	28	19
21	235	226	156	2,460	1,240	744	322	127	36	20
22	190	217	152	2,570	1,240	719	322	120	38	19
23	190	200	150	2,600	1,240	719	302	120	38	15
24	182	200	149	2,780	1,360	671	264	120	38	15
25	183	184	148	2,780	1,530	647	245		38	16
26	183	184	140	2,820	1,630	599	217		35	49
27	201	169	136	2,890	1,490	575	169	114	40	53
28	201	176	128	2,930	1,430	695	176		41	30
29	204	176	120	2,930	1,390	1,670	162		41	17
30	201	169	110	2,960	1,360	1,850	162		40	16
31	--------	162	--------	2,960	--------	1,560	--------	--------	30	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
1928				
September	266	109	165	9,820
1928–29				
October	264	162	193	11,900
November	185	110	160	9,520
March 10–31	2,960	795	2,190	95,500
April	2,930	1,210	1,620	96,400
May	1,850	575	996	61,200
June	1,210	162	486	28,900
July	302	85	135	8,300
August	--------	25	51.5	3,170
September	53	14	20.5	1,220

BIG SIOUX RIVER BASIN

BIG SIOUX RIVER NEAR FLANDREAU, S. DAK.

LOCATION.—Chain gage in sec. 9, T. 107 N., R. 48 W., 2 miles north of Flandreau.
DRAINAGE AREA.—2,520 square miles.
RECORDS AVAILABLE.—August, 1928, to September, 1929.
EXTREMES.—Maximum discharge during year, 5,200 second-feet Mar. 15 (gage height, 14.04 feet); minimum occurred during winter.
1928–29: Maximum and minimum discharge, same as given above.
REMARKS.—Records good. Discharge estimated Nov. 2–6, 17–30, and Sept. 30. Observations discontinued Dec. 1 to Mar. 11. No diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	29	35	--------	245	355	190	22	29	13
2	26	33	--------	235	315	175	20	27	12
3	26	31	--------	220	275	118	20	26	10
4	22	30	--------	212	265	100	17	23	17
5	26	32	--------	205	245	92	18	28	19
6	29	34	--------	198	228	87	21	27	19
7	28	39	--------	190	220	75	27	34	20
8	26	42	--------	182	198	72	23	40	25
9	24	43	--------	175	190	65	20	36	31
10	26	41	--------	153	182	61	18	29	30
11	30	38	--------	132	182	87	17	27	30
12	30	39	1,720	153	168	72	16	26	28
13	29	37	3,540	182	168	69	14	23	27
14	32	38	4,640	198	160	64	16	21	25
15	36	42	5,200	212	160	58	18	19	25
16	38	42	4,260	355	153	52	21	18	25
17	40	40	3,700	615	146	48	24	16	24
18	39	38	3,120	645	139	44	24	16	24
19	41	35	2,520	590	139	41	21	16	22
20	35	30	1,720	490	132	37	25	14	22
21	41	25	995	415	132	35	25	14	22
22	39	20	675	355	132	35	20	12	21
23	38	15	490	315	132	36	41	11	19
24	38	11	415	335	125	35	49	11	18
25	37	11	315	415	111	33	40	14	30
26	36	11	295	615	111	31	37	16	55
27	34	11	275	590	94	28	30	15	63
28	34	11	265	540	99	27	22	15	72
29	34	11	255	490	125	26	35	16	79
30	33	11	245	415	168	25	37	15	78
31	33	--------	245	--------	220	--------	31	15	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	41	22	32.5	2,000
November	43	11	29.2	1,740
March 12–31	5,200	245	1,740	69,000
April	645	132	336	20,000
May	355	94	176	10,800
June	190	25	63.9	3,800
July	49	14	24.8	1,520
August	40	11	20.9	1,290
September	79	10	30.2	1,800

BIG SIOUX RIVER AT AKRON, IOWA

LOCATION.—Chain gage in sec. 31, T. 93 N., R. 48 W., at west edge of Akron.
DRAINAGE AREA.—7,080 square miles.
RECORDS AVAILABLE.—October, 1928, to September, 1929.
EXTREMES.—Maximum discharge during year, 14,000 second-feet Mar. 15 (gage height, 18.63 feet); minimum occurred during winter.
REMARKS.—Records good. Discharge estimated Dec. 19–23 and Mar. 11. Observations discontinued Jan. 1 to Mar. 10. No diversions.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	111	268	201	--------	1,190	1,620	6,160	424	668	109
2	94	214	188	--------	1,110	1,440	4,680	395	575	104
3	125	214	151	--------	1,070	1,270	2,420	366	514	132
4	113	214	164	--------	1,150	1,230	1,800	352	439	141
5	116	214	151	--------	1,110	1,070	1,540	337	439	144
6	111	201	188	--------	1,110	1,030	1,360	380	410	164
7	118	227	176	--------	1,270	950	1,230	454	352	188
8	106	240	188	--------	1,150	870	1,110	337	352	188
9	120	254	139	--------	1,190	800	950	366	323	201
10	87	254	164	--------	1,150	765	870	484	281	201
11	122	254	139	1,200	1,150	765	835	484	268	188
12	100	227	151	3,220	1,110	732	1,190	575	240	188
13	149	227	188	5,510	1,070	700	2,980	514	268	188
14	125	214	201	8,020	910	700	1,310	484	214	176
15	151	201	227	13,200	1,070	637	1,310	1,150	214	201
16	637	201	201	12,600	1,030	606	1,030	765	201	174
17	1,030	227	164	11,100	1,070	606	910	514	188	171
18	637	201	139	8,520	1,110	575	870	454	176	158
19	439	214	140	7,180	1,110	544	800	395	176	164
20	366	201	140	7,300	1,110	514	700	337	168	156
21	295	201	140	7,180	1,150	575	765	309	171	158
22	281	201	150	6,600	1,190	544	700	281	164	151
23	268	201	170	5,310	1,190	514	700	281	149	141
24	240	201	201	4,120	1,110	484	700	281	134	171
25	240	151	201	3,040	1,140	454	575	910	176	134
26	214	176	201	2,300	1,800	410	575	2,000	168	149
27	227	174	188	1,950	1,900	410	606	2,980	151	214
28	214	201	188	1,720	2,150	544	484	2,580	132	337
29	214	201	176	1,490	2,520	2,690	454	1,400	141	484
30	214	201	176	1,360	1,760	5,610	454	990	125	484
31	214	--------	150	1,270	--------	6,940	--------	800	122	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,030	87	241	14,800
November	268	151	212	12,600
December	227	139	172	10,600
March 11–31	13,200	1,200	5,440	227,000
April	2,520	910	1,270	75,600
May	6,940	410	1,180	72,600
June	6,160	454	1,340	79,700
July	2,980	281	722	44,400
August	668	122	261	16,000
September	484	104	192	11,400

LITTLE SIOUX RIVER BASIN

LITTLE SIOUX RIVER AT CORRECTIONVILLE, IOWA

LOCATION.—Chain gage in sec. 34, T. 89 N., R. 42 W., 1,000 feet above Bacon Creek and half a mile west of Correctionville. Prior to July 15, 1929, gage was 1,000 feet downstream.

DRAINAGE AREA.—2,450 square miles.

RECORDS AVAILABLE.—May, 1918, to September, 1924; October, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 6,250 second-feet Mar. 14 (gage height, 16.16 feet); minimum occurred during winter.

1918–1924, 1928–29: Maximum discharge (estimated), 20,700 second-feet Mar. 12, 1919 (gage height, 19.57 feet); minimum, 5 second-feet Aug. 18, 1922.

REMARKS.—Records good. Observations discontinued Dec. 4 to Mar. 9. No diversions.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	160	129	-------	900	1,580	391	801	100	43
2	-------	160	136	-------	834	1,380	575	377	99	43
3	-------	158	121	-------	834	1,180	801	242	93	42
4	-------	150	-------	-------	900	1,070	900	180	86	68
5	-------	152	-------	-------	1,070	968	801	192	92	73
6	-------	160	-------	-------	1,100	867	671	216	91	61
7	-------	203	-------	-------	1,220	801	671	203	86	55
8	-------	282	-------	-------	1,260	735	575	180	80	52
9	-------	320	-------	-------	1,180	671	482	180	75	68
10	-------	332	-------	4,100	1,100	639	451	180	71	77
11	-------	332	-------	4,220	1,070	671	420	170	68	68
12	-------	332	-------	4,340	1,040	703	391	160	88	73
13	-------	319	-------	5,110	1,000	639	363	154	73	74
14	-------	296	-------	6,120	1,000	607	350	160	62	69
15	-------	282	-------	5,740	1,040	544	350	174	58	65
16	-------	268	-------	4,220	1,040	544	768	217	53	61
17	-------	255	-------	4,410	1,070	513	1,860	217	50	57
18	-------	242	-------	5,530	1,070	482	834	198	48	55
19	-------	242	-------	5,530	1,040	420	607	179	49	52
20	-------	216	-------	4,620	1,000	406	513	170	48	52
21	-------	203	-------	3,440	934	391	482	161	48	49
22	-------	192	-------	2,710	900	391	451	152	48	46
23	-------	180	-------	2,310	834	377	420	135	47	45
24	-------	156	-------	1,940	834	391	391	135	47	44
25	-------	139	-------	1,580	1,000	406	363	135	46	43
26	-------	132	-------	1,420	1,140	391	575	135	45	43
27	-------	147	-------	1,260	1,380	377	607	152	43	46
28	-------	170	-------	1,140	1,580	350	377	135	43	47
29	138	152	-------	1,070	1,680	336	332	128	43	49
30	129	139	-------	1,000	1,720	332	319	120	42	55
31	122	-------	-------	934	-------	336	-------	113	45	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
November	332	132	216	12,900
March 10-31	6,120	934	3,310	144,000
April	1,720	834	1,090	64,900
May	1,580	332	629	38,700
June	1,860	319	570	33,900
July	801	113	195	12,000
August	100	42	63.5	3,900
September	77	43	55.8	3,320

PLATTE RIVER BASIN

GRIZZLY CREEK NEAR WALDEN, COLO.

LOCATION.—Water-stage recorder in sec. 29, T. 8 N., R. 80 W., half a mile above Little Grizzly Creek and 10 miles south of Walden.

DRAINAGE AREA.—234 square miles.

RECORDS AVAILABLE.—May, 1904, to October, 1905; May to September, 1923; October, 1926, to September, 1929.

EXTREMES.—Maximum discharge during year, 731 second-feet May 17 (gage height, 4.40 feet); minimum occurred during winter.

1904–5, 1923, 1926–1929: Maximum discharge, 1,340 second-feet June 10, 1923 (gage height, 4.8 feet); minimum, 1 second-foot Aug. 24–28, 1905.

REMARKS.—Records good except those for estimated periods, which are fair. Observations discontinued Nov. 5 to May 11. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29.

Day	Oct.	Nov.	May	June	July	Aug.	Sept.
1	16	25	-------	329	164	85	31
2	16	25	-------	362	136	96	31
3	14	25	-------	388	119	80	37
4	14	18	-------	362	102	62	40
5	16	-------	-------	355	106	56	[a] 52
6	17	-------	-------	355	88	74	[a] 70
7	17	-------	-------	375	66	122	89
8	17	-------	-------	365	54	91	124
9	17	-------	-------	385	46	66	112
10	18	-------	-------	402	41	58	98
11	17	-------	-------	402	38	52	89
12	17	-------	234	392	37	[a] 50	77
13	17	-------	331	398	36	[a] 48	65
14	14	-------	428	370	35	[a] 46	[a] 68
15	14	-------	526	350	37	[a] 44	71
16	18	-------	642	358	46	[a] 42	68
17	23	-------	653	329	45	[a] 52	66
18	22	-------	547	412	45	[a] 60	63
19	22	-------	588	348	43	[a] 55	60
20	25	-------	523	271	41	[a] 50	59
21	23	-------	550	264	38	[a] 48	59
22	22	-------	552	255	33	[a] 45	56
23	21	-------	515	259	45	[a] 42	[a] 62
24	20	-------	563	257	70	[a] 40	[a] 76
25	20	-------	512	248	51	[a] 38	[a] 80
26	22	-------	520	225	86	[a] 34	[a] 52
27	24	-------	528	205	85	[a] 30	[a] 38
28	24	-------	481	189	62	29	[a] 31
29	22	-------	507	174	57	38	31
30	25	-------	402	168	55	39	31
31	26	-------	322	-------	50	36	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	26	14	19.4	1,190
May 12–31	653	234	496	19,700
June	412	168	318	18,900
July	164	33	63.1	3,880
August	122	29	55.1	3,390
September	124	31	62.9	3,740

[a] Estimated.

NORTH PLATTE RIVER NEAR WALDEN, COLO.

LOCATION.—Water-stage recorder in sec. 5, T. 8 N., R. 80 W., 8 miles southwest of Walden.

DRAINAGE AREA.—446 square miles.

RECORDS AVAILABLE.—May, 1904, to October, 1905; October, 1923, to September, 1929.

EXTREMES.—Maximum discharge during year, 1,530 second-feet June 28 (gage height, 4.72 feet); minimum occurred during winter.

1904–5, 1923–1929: Maximum discharge, 1,930 second-feet June 1, 1928 (gage height, 5.33 feet); minimum, 15 second-feet Sept. 13–18, 1905.

REMARKS.—Records good except those for estimated periods, which are fair. Observations discontinued Nov. 18 to Apr. 20. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29.

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	50	58	-------	[a] 330	[a] 740	1,180	285	106
2	47	[a] 60	-------	[a] 340	790	[a] 1,080	273	97
3	43	[a] 60	-------	[a] 350	815	[a] 960	246	97
4	41	[a] 60	-------	359	815	[a] 870	226	126
5	43	[a] 64	-------	359	865	[a] 850	223	159
6	46	66	-------	373	940	[a] 760	[a] 270	204
7	46	[a] 66	-------	439	1,020	625	380	232
8	45	[a] 65	-------	580	1,040	527	257	[a] 290
9	48	[a] 65	-------	670	1,120	419	210	[a] 250
10	43	65	-------	[a] 780	1,230	352	179	[a] 215
11	40	[a] 65	-------	[a] 860	1,260	325	150	[a] 205
12	40	[a] 65	-------	[a] 810	1,200	300	138	196
13	41	[a] 66	-------	[a] 780	1,200	303	130	196
14	41	66	-------	[a] 940	[a] 1,160	345	132	191
15	45	58	-------	1,260	[a] 1,140	306	122	189
16	54	[a] 58	-------	1,260	1,120	309	119	186
17	59	[a] 56	-------	1,150	1,200	312	119	184
18	56	-------	-------	1,150	1,400	366	140	165
19	54	-------	-------	1,060	1,020	270	126	138
20	56	-------	-------	1,060	790	223	122	120
21	56	-------	670	1,090	840	212	117	124
22	56	-------	580	1,060	990	240	130	126
23	53	-------	580	[a] 1,040	1,200	210	119	138
24	51	-------	566	[a] 1,110	1,400	345	109	182
25	48	-------	390	[a] 1,180	1,340	294	108	182
26	55	-------	342	1,260	1,340	249	99	159
27	61	-------	356	1,230	1,400	315	97	140
28	62	-------	373	1,040	1,460	261	96	130
29	69	-------	[a] 440	1,040	1,400	235	97	130
30	71	-------	[a] 380	790	1,400	235	101	130
31	74	-------	-------	[a] 660	-------	232	108	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	74	40	51.4	3,160
November 1–17	66	56	62.5	2,120
April 21–30	670	342	468	9,280
May	1,260	330	852	52,400
June	1,460	740	1,120	66,600
July	1,180	210	436	26,800
August	380	96	163	10,000
September	290	97	166	9,880

[a] Estimated.

NORTH PLATTE RIVER NEAR NORTHGATE, COLO.

LOCATION.—Water-stage recorder in sec. 11, T. 11 N., R. 80 W., 6 miles south of Colorado-Wyoming line and 6 miles northwest of Northgate.

DRAINAGE AREA.—1,440 square miles.

RECORDS AVAILABLE.—May, 1915, to September, 1929.

EXTREMES.—Maximum discharge during year, 3,550 second-feet June 12 (gage height, 4.55 feet); minimum occurred during winter.

1915–1929: Maximum discharge, 6,720 second-feet June 11, 1923 (gage height, 6.24 feet); minimum, 67 second-feet Oct. 7 and 20, 1922 (gage height, 1.17 feet).

REMARKS.—Records good. Discharge estimated Oct. 13–15, July 28, and 29. Observations discontinued Nov. 1 to Apr. 25. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct	Apr	May	June	July	Aug.	Sept.
1	121	--------	1,790	1,620	2,470	810	314
2	112	--------	1,170	1,730	2,320	785	286
3	106	--------	952	2,040	1,970	704	277
4	108	--------	962	2,170	1,790	665	318
5	114	--------	944	2,320	1,680	688	414
6	121	--------	914	2,470	1,620	735	614
7	121	--------	1,070	2,640	1,400	981	681
8	121	--------	1,620	2,720	1,200	876	885
9	121	--------	2,100	2,890	1,070	673	990
10	119	--------	2,390	3,070	895	551	876
11	119	--------	2,320	3,360	768	480	752
12	119	--------	1,480	3,450	712	449	681
13	130	--------	1,470	3,450	681	397	600
14	155	--------	1,850	3,160	735	364	564
15	180	--------	2,320	2,980	785	323	537
16	199	--------	2,720	2,980	760	304	530
17	203	--------	2,720	2,890	744	299	510
18	210	--------	2,470	3,260	838	337	467
19	214	--------	2,170	2,390	777	353	420
20	206	--------	1,970	1,850	727	332	397
21	214	--------	1,910	1,850	704	309	375
22	206	--------	1,970	2,040	688	332	375
23	180	--------	1,970	2,240	643	348	397
24	167	--------	2,100	2,470	600	323	443
25	167	--------	2,320	2,390	643	304	461
26	177	1,040	2,550	2,240	600	309	426
27	199	971	2,980	2,240	592	295	397
28	203	990	3,160	2,320	600	299	364
29	210	1,460	3,360	2,240	680	332	353
30	210	2,040	2,470	2,390	768	318	353
31	210	--------	1,850	--------	735	314	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	214	106	163	10,000
April 26-30	2,040	971	1,300	12,900
May	3,360	914	2,000	123,000
June	3,450	1,620	2,530	151,000
July	2,470	592	1,010	62,100
August	981	295	471	29,000
September	990	277	502	29,900

NORTH PLATTE RIVER AT SARATOGA, WYO.

LOCATION.—Chain gage in sec. 14, T. 17 N., R. 84 W., at Saratoga. Zero of gage is 6,773.8 feet above mean sea level.

DRAINAGE AREA.—2,880 square miles.

RECORDS AVAILABLE.—June, 1903, to October, 1906; April to December, 1909; April, 1911, to September, 1929.

EXTREMES.—Maximum discharge during year, 10,600 second-feet June 11 (gage height, 9.10 feet); minimum occurred during winter.

1903–1906, 1909, 1911–1929: Maximum discharge, about 18,000 second-feet June 8, 1909 (gage height, 11.06 feet); minimum, 87 second-feet Sept. 7, 1924.

REMARKS.—Records good except those for periods of ice effect, Nov. 19–30, Dec. 3 to Mar. 1, Mar. 15–20, 22, and 25–28, which are fair. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	266	504	310			315	702	2,800	5,120	6,370	1,260	546
2	266	435	294			333	621	2,040	6,100	6,100	1,260	546
3	276	415		289	272	328	835	1,720	6,370	5,350	1,140	546
4	299	421	271			328	1,140	1,650	6,640	4,460	1,140	702
5	330	448				328	1,320	1,650	7,180	4,020	1,140	790
6	304	462				328	1,030	1,580	7,750	3,800	1,380	882
7	299	518				333	882	1,650	8,330	3,380	1,720	1,080
8	299	533	253	280	262	414	835	2,450	8,620	2,990	1,440	1,260
9	309	547				458	930	2,990	9,230	2,620	1,140	1,440
10	304	518				485	835	3,590	9,550	2,280	1,030	1,380
11	299	518				452	745	3,180	10,200	1,960	930	1,260
12	299	511				377	882	3,180	9,880	1,960	835	1,200
13	299	525	255	272	260	308	980	2,800	8,920	1,800	745	1,080
14	324	518				313	1,140	3,380	9,230	1,800	702	930
15	408	504				303	1,650	4,240	9,550	1,800	660	835
16	475	468				308	2,280	5,120	9,880	1,800	582	790
17	475	385				313	4,680	5,120	9,230	1,800	582	835
18	489	362	272	271	267	323	6,370	5,350	8,040	1,800	546	745
19	489	350				333	6,370	5,120	7,460	1,720	745	702
20	497	350				328	5,350	5,350	6,910	1,650	702	660
21	504					371	4,020	5,350	6,370	1,440	621	660
22	489					355	2,620	5,590	6,640	1,380	582	702
23	497	350	270	264	265	355	2,280	6,370	7,180	1,260	582	745
24	489					344	2,450	6,910	6,640	1,260	582	882
25	462					333	1,880	7,750	6,640	1,200	582	835
26	455					323	1,650	8,330	6,370	1,140	546	882
27	462				295	339	1,510	7,180	6,640	1,140	511	835
28	475	325	300	253		395	1,580	6,910	6,640	1,140	511	702
29	489				-------	504	1,960	6,370	6,640	1,080	546	745
30	475				-------	902	2,800	5,590	6,100	1,080	582	702
31	511	-------			-------	568	-------	5,120	-------	1,140	582	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	511	266	397	24,400
November	547	----------	422	25,100
December	310	----------	273	16,800
January	----------	----------	271	16,700
February	----------	----------	268	14,900
March	902	303	381	23,400
April	6,370	621	2,080	124,000
May	8,330	1,580	4,400	271,000
June	10,200	5,120	7,670	456,000
July	6,370	1,080	2,350	144,000
August	1,720	511	838	51,400
September	1,440	546	863	51,400
The year	10,200	----------	1,680	1,220,000

NORTH PLATTE RIVER ABOVE PATHFINDER RESERVOIR, WYO.

LOCATION.—Water-stage recorder in sec. 27, T. 86 N., R. 84 W., 900 mouth of Lost Creek and 2½ miles above upper end of Pathfinder

DRAINAGE AREA.—7,410 square miles.

RECORDS AVAILABLE.—October, 1913, to September, 1925; June to 1929.

EXTREMES.—Maximum discharge during year (estimated), 12,800 s June 13; minimum, 570 second-feet Aug. 25 and 28 (gage height, 1 1913–1925, 1929: Maximum discharge, 18,800 second-feet June (gage height, 6.2 feet); minimum, 72 second-feet Nov. 14, 1922.

REMARKS.—Records good except those for estimated period, June 1–1 are fair. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1929

Day	June	July	Aug.	Sept.	Day	June	July	Aug
1	6,200	8,410	1,120	644	16	12,200	2,100	77
2	6,400	8,460	1,150	653	17	12,400	2,000	71
3	6,700	7,540	1,290	635	18	12,500	1,940	680
4	7,200	6,770	1,290	825	19	11,500	1,960	653
5	7,700	5,990	1,210	825	20	10,500	2,020	627
6	8,200	5,350	1,180	847	21	9,480	2,020	635
7	8,700	4,830	1,210	935	22	8,560	1,760	662
8	9,200	4,300	1,560	1,010	23	8,660	1,580	635
9	9,800	3,770	1,700	1,150	24	8,970	1,520	578
10	10,500	3,250	1,510	1,310	25	9,120	1,460	570
11	11,400	2,910	1,260	1,460	26	8,970	1,420	578
12	12,000	2,750	1,080	1,460	27	8,760	1,390	578
13	12,600	2,260	1,000	1,400	28	8,810	1,320	570
14	12,200	2,080	924	1,270	29	8,610	1,240	735
15	11,900	2,140	847	1,170	30	8,710	1,200	586
					31		1,150	578

Month	Maximum	Minimum	Mean	Run-of acre-fe
June	12,600	6,200	9,620	572,
July	8,460	1,150	3,130	192,
August	1,700	570	919	56,
September	1,460	635	960	57,
The period				878, 0

NORTH PLATTE RIVER BELOW PATHFINDER RESERVOIR, WYO.

LOCATION.—Chain gage in sec. 24, T. 29 N., R. 84 W., a quarter of a mile below Pathfinder Dam.

DRAINAGE AREA.—10,700 square miles.

RECORDS AVAILABLE.—May, 1905, to September, 1929.

EXTREMES.—Since completion of reservoir: Maximum discharge, 18,900 second-feet June 25–27, 1917; no flow Nov. 23, 1928.

REMARKS.—Flow regulated by Pathfinder Reservoir. Complete records furnished by United States Bureau of Reclamation.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug	Sept.
1	2,000	50	75	75	75	100	75	75	9,520	8,200	6,050	6,030
2	2,000	50	75	75	75	100	75	75	9,220	8,120	6,040	6,000
3	1,980	50	75	75	75	100	75	75	8,840	7,990	6,010	6,070
4	1,980	50	75	75	75	100	75	75	8,660	7,700	6,040	6,070
5	2,070	50	120	75	75	100	75	75	8,700	7,250	6,070	5,700
6	2,070	50	120	75	75	100	75	75	8,830	6,780	6,050	5,550
7	2,070	50	120	75	75	75	75	75	9,020	6,330	6,010	5,530
8	2,070	50	95	75	75	75	75	75	9,290	5,620	5,990	4,420
9	2,070	50	75	75	75	75	75	75	9,570	5,340	6,010	4,010
10	2,070	50	75	75	75	75	130	75	9,810	4,910	6,010	4,040
11	2,070	50	75	75	75	75	160	75	10,100	4,490	5,600	2,260
12	2,070	50	75	75	75	75	160	75	11,600	4,040	5,500	2,020
13	2,070	50	75	75	75	75	160	75	11,900	3,620	5,540	2,020
14	2,070	50	75	75	75	200	60	75	12,200	3,280	5,520	2,010
15	2,070	50	75	75	110	75	60	75	12,200	3,000	5,480	2,010
16	150	50	75	75	130	75	60	75	12,000	2,820	5,540	2,010
17	50	50	75	75	100	75	60	75	11,800	2,640	5,550	2,020
18	50	50	75	75	100	75	60	75	11,500	2,500	5,550	2,020
19	50	50	75	75	100	75	75	75	11,400	2,420	5,540	2,020
20	50	80	75	75	100	75	75	75	11,200	5,540	5,520	2,020
21	50	80	75	75	100	75	75	50	10,600	6,100	5,500	2,020
22	50	80	75	75	100	75	75	170	9,960	7,510	5,480	2,020
23	50	0	75	75	100	75	75	1,410	9,390	7,400	5,480	2,030
24	50	155	75	75	100	75	75	3,960	9,030	7,340	5,470	2,030
25	50	75	75	75	100	75	75	3,860	8,860	6,100	5,550	2,030
26	50	75	75	75	100	75	75	5,560	8,750	6,030	5,540	4,490
27	50	75	75	75	100	75	75	7,140	8,620	6,010	5,520	5,980
28	50	75	75	75	100	75	75	8,250	8,520	5,960	5,490	5,960
29	50	75	75	75	------	75	75	9,140	8,430	6,050	5,910	5,920
30	50	75	75	75	------	75	75	9,730	8,310	6,030	6,070	5,890
31	50	------	75	75	------	75	------	9,800	------	5,990	6,060	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,070	50	1,020	62,700
November	155	0	59.8	3,560
December	120	75	80.0	4,920
January	75	75	75.0	4,610
February	130	75	88.9	4,940
March	200	75	83.9	5,160
April	160	60	83.8	4,990
May	9,800	75	1,950	120,000
June	12,200	8,310	9,930	591,000
July	8,200	2,420	5,580	343,000
August	6,070	5,470	5,730	352,000
September	6,070	2,010	3,740	223,000
The year	12,200	0	2,380	1,720,000

NORTH PLATTE RIVER AT CASPER, WYO.

LOCATION.—Chain gage in sec. 4, T. 33 N., R. 79 W., at Casper, 1½ miles below mouth of Casper creek. Staff gage 300 feet upstream used June 10 to July 11 and July 27 to August 5, 1929.

DRAINAGE AREA.—12,500 square miles.

RECORDS AVAILABLE.—May to September, 1929.

EXTREMES.—Maximum discharge during period, 13,800 second-feet May 30 (gage height, 8.00 feet); minimum (estimated), 250 second-feet May 3.

REMARKS.—Records fair prior to June 30 and good thereafter. Discharge estimated May 1–6. Flow regulated by Pathfinder Reservoir.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	300	11,100	8,870	6,220	6,260	16	570	12,500	3,060	5,740	2,120
2	260	10,900	8,690	6,220	6,240	17	468	12,500	2,810	5,740	2,090
3	250	9,650	8,490	6,280	6,290	18	523	12,100	2,780	5,820	2,090
4	280	8,900	8,090	6,320	6,310	19	392	12,100	2,490	5,780	2,060
5	320	9,150	7,570	6,320	5,690	20	345	12,100	6,060	5,740	2,110
6	300	9,780	7,070	6,220	5,740	21	296	11,200	6,450	5,740	2,090
7	303	9,150	6,450	6,220	5,650	22	296	10,500	7,940	5,740	2,090
8	284	9,400	5,810	6,200	4,580	23	738	9,860	7,820	5,690	2,150
9	309	10,000	5,760	6,240	4,010	24	4,880	9,440	7,820	5,690	2,140
10	338	10,800	5,040	6,200	4,110	25	3,690	9,350	6,520	5,740	2,180
11	345	11,000	4,520	5,690	2,240	26	4,670	9,470	6,290	5,840	4,410
12	330	11,700	4,050	5,620	2,090	27	7,400	9,440	6,400	5,740	6,150
13	322	12,300	3,950	5,600	2,030	28	9,400	9,170	6,120	5,740	6,180
14	353	12,500	3,660	5,650	2,030	29	12,500	9,110	6,220	6,290	6,240
15	485	12,700	3,260	5,620	2,090	30	12,800	8,930	6,180	6,240	6,200
						31	11,200	-------	6,180	6,310	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May	12,800	250	2,420	149,000
June	12,700	8,900	10,600	631,000
July	8,870	2,490	5,880	362,000
August	6,320	5,600	5,940	365,000
September	6,310	2,030	3,860	230,000
The period	----------	----------	----------	1,740,000

NORTH PLATTE RIVER AT DOUGLAS, WYO.

LOCATION.—Chain gage in sec. 5, T. 32 N., R. 71 W., at highway bridge half a mile northwest of Douglas.

DRAINAGE AREA.—14,200 square miles.

RECORDS AVAILABLE.—April to September, 1929.

EXTREMES.—Maximum discharge during period, 13,800 second-feet May 30 (gage height, 7.62 feet); minimum, 450 second-feet Apr. 13 (gage height, 1.72 feet).

REMARKS.—Records good except those for estimated period, Apr. 1–6, which are fair. Flow regulated by Pathfinder Reservoir.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	750	1,600	11,800	8,390	5,970	5,970	16	520	2,630	13,300	3,130	5,280	2,160
2	750	1,360	11,400	8,100	5,970	5,730	17	610	2,630	12,900	2,960	5,500	2,160
3	800	1,300	10,300	8,100	5,970	5,970	18	790	2,470	12,500	2,790	5,730	2,160
4	800	1,420	9,620	7,810	5,970	5,970	19	946	2,470	12,200	2,630	5,280	2,160
5	850	1,600	9,620	7,530	5,970	5,970	20	914	2,470	11,800	3,500	5,280	2,160
6	900	1,540	9,960	6,980	5,970	6,460	21	904	2,310	10,700	5,500	5,280	2,160
7	977	1,420	9,960	6,460	6,210	5,970	22	904	2,310	10,700	5,730	5,280	2,160
8	760	1,540	9,960	5,970	5,970	5,280	23	935	2,160	9,960	6,980	5,280	2,160
9	650	1,660	9,960	5,970	5,730	4,270	24	977	2,310	9,300	6,980	5,280	2,160
10	650	1,870	10,700	5,280	5,730	4,070	25	851	4,270	8,690	6,460	5,280	2,160
11	580	1,940	11,400	4,870	5,970	4,070	26	851	5,970	8,690	5,970	5,280	2,160
12	470	2,010	12,200	4,670	5,500	2,630	27	862	7,530	8,100	5,970	5,280	5,070
13	450	2,010	12,900	4,070	5,500	2,470	28	946	8,690	8,390	5,730	5,280	5,500
14	460	2,160	13,300	3,880	5,280	2,310	29	1,120	11,000	8,390	5,730	5,280	5,500
15	480	2,630	13,300	4,270	5,280	2,160	30	1,480	13,700	8,390	5,970	5,970	5,730
							31	------	12,200	------	5,730	5,970	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April	1,480	450	798	47,500
May	13,700	1,300	3,590	221,000
June	13,300	8,100	10,700	637,000
July	8,390	2,630	5,620	346,000
August	6,210	5,280	5,600	344,000
September	6,460	2,160	3,830	228,000
The period	----------	----------	----------	1,820,000

NORTH PLATTE RIVER BELOW GUERNSEY RESERVOIR, WYO.

LOCATION.—Water-stage recorder in sec. 35, T. 27 N., R. 66 W., three-fourths mile below Guernsey Dam and 1 mile northwest of Guernsey.

DRAINAGE AREA.—16,200 square miles.

RECORDS AVAILABLE.—June, 1900, to November, 1908; March to October, 1912; January, 1928, to September, 1929.

REMARKS.—Flow regulated by Pathfinder and Guernsey Reservoirs. Complete records furnished by United States Bureau of Reclamation.

Daily and monthly discharge, in second-feet, 1928-29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,580	350	350	315	371	310	1,080	885	14,100	7,450	5,750	5,650
2	2,600	450	280	410	377	337	1,180	1,040	14,000	7,530	5,300	5,650
3	2,360	470	370	430	294	272	1,200	1,210	13,600	7,250	5,150	5,750
4	1,770	400	380	405	376	313	1,210	1,320	10,700	7,050	5,200	5,780
5	1,800	550	400	397	390	294	1,200	1,300	9,740	7,100	5,200	5,700
6	1,670	500	390	375	359	294	1,190	1,480	10,200	6,850	5,150	4,600
7	1,840	475	415	400	373	295	1,080	2,400	10,300	6,650	5,200	3,850
8	1,530	490	390	390	335	336	1,120	2,380	10,600	6,350	5,220	3,650
9	1,500	512	315	370	323	337	1,150	2,500	11,000	6,300	5,080	3,680
10	1,570	555	345	375	293	257	1,100	2,580	12,200	4,830	5,080	3,680
11	1,400	486	350	380	322	280	1,120	3,720	12,400	5,350	5,480	3,480
12	1,180	495	365	350	321	750	1,090	2,800	12,300	5,400	5,950	3,380
13	1,290	573	375	285	326	1,150	1,140	3,000	12,400	5,450	5,780	3,300
14	1,300	630	398	344	321	1,520	1,030	2,950	13,000	6,150	5,780	3,220
15	1,180	600	400	365	321	1,880	1,080	3,000	13,300	5,600	5,800	3,080
16	1,000	515	355	385	298	2,180	1,070	3,580	13,600	5,600	5,820	2,980
17	430	540	375	345	278	2,230	1,030	4,380	13,700	5,550	5,750	3,320
18	300	450	440	360	366	2,220	1,050	4,700	13,200	5,600	5,580	3,250
19	310	575	480	360	356	1,850	1,060	4,580	13,000	5,300	5,580	3,250
20	600	550	450	340	345	1,820	1,040	4,380	11,200	4,990	5,540	3,150
21	350	645	427	440	342	1,850	925	3,880	10,000	4,400	5,540	3,080
22	380	560	425	431	320	1,760	1,040	3,880	10,600	4,700	5,520	3,000
23	440	445	376	440	323	1,760	1,060	3,850	10,600	5,250	5,550	3,320
24	500	410	415	403	272	1,420	975	3,850	9,700	5,750	5,550	3,400
25	420	345	340	343	318	840	1,020	3,650	8,000	6,300	5,600	3,250
26	380	350	380	371	290	1,860	1,060	3,400	7,800	6,150	5,650	3,050
27	350	400	413	292	265	1,720	1,120	4,450	8,000	6,100	5,650	3,550
28	330	380	400	382	318	1,640	1,800	6,950	7,900	6,150	5,450	5,700
29	340	280	400	381	------	615	1,820	10,600	7,700	6,200	5,580	8,300
30	380	340	325	380	------	310	560	11,200	7,200	6,280	5,700	6,550
31	280	------	400	373	------	490	------	12,000	------	6,050	5,750	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,600	280	1,040	64,000
November	645	280	478	28,400
December	427	280	384	23,600
January	440	285	375	23,100
February	377	265	328	18,200
March	2,230	272	1,070	65,800
April	1,820	560	1,120	66,600
May	12,000	885	3,930	242,000
June	14,100	7,200	11,100	660,000
July	7,530	4,400	5,990	368,000
August	5,950	5,080	5,510	339,000
September	5,780	2,980	4,120	245 000
The year	14,100	265	2,960	2,140,000

NORTH PLATTE RIVER BELOW WHALEN, WYO.

LOCATION.—In sec. 11, T. 26 N., R. 65 W., at diversion dam at Whalen, 7 miles below Guernsey Dam.

DRAINAGE AREA.—16,300 square miles.

RECORDS AVAILABLE.—May, 1909, to September, 1929.

REMARKS.—Discharge below Whalen obtained by deducting flow of Interstate and Fort Laramie Canals from flow of North Platte River below Guernsey Reservoir. Flow of canals is computed from gate openings. Complete records furnished by United States Bureau of Reclamation.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	721	350	350	315	321	216	1,080	103	11,700	3,380	2,230	2,040
2	789	450	280	410	330	261	1,180	190	12,000	3,930	1,710	2,070
3	710	470	370	430	244	217	1,200	280	11,800	3,660	1,570	2,180
4	465	400	380	405	326	226	1,210	370	8,940	3,420	1,610	2,240
5	695	550	400	397	344	208	1,200	350	7,910	3,450	1,590	2,240
6	565	500	390	375	322	294	1,190	517	8,440	3,180	1,560	1,560
7	760	475	415	400	327	295	1,080	1,440	8,540	2,980	1,620	1,750
8	483	490	390	390	205	290	1,120	1,420	8,860	2,690	1,680	1,600
9	485	512	315	370	227	292	1,150	1,460	9,300	2,630	1,500	1,800
10	649	555	345	375	212	232	1,100	1,620	10,400	2,330	1,490	1,830
11	507	486	350	380	217	280	1,120	2,760	10,500	1,740	1,880	1,610
12	314	495	365	350	206	750	1,090	1,760	10,200	1,750	2,360	1,640
13	397	573	375	285	225	1,150	1,140	1,950	10,200	1,810	2,200	1,580
14	407	630	398	344	210	1,520	1,030	1,890	10,860	2,720	2,160	1,500
15	287	600	400	365	232	1,880	1,080	1,860	11,000	1,960	2,180	1,340
16	160	515	355	385	223	2,180	940	2,420	11,200	1,960	2,200	1,330
17	69	540	375	345	209	2,230	530	3,050	11,100	1,910	2,130	1,770
18	300	450	440	360	332	2,220	450	3,310	10,500	1,960	1,950	1,730
19	310	575	480	360	238	1,850	460	3,290	10,200	1,650	1,950	1,730
20	600	550	450	340	247	1,820	640	2,990	8,250	1,350	1,910	1,580
21	350	645	427	440	226	1,850	525	2,390	7,030	760	1,930	1,440
22	380	560	425	431	235	1,760	590	2,340	7,520	1,060	1,920	1,320
23	440	445	376	440	250	1,760	560	2,310	7,410	1,610	1,950	1,580
24	500	410	415	172	214	1,420	892	2,130	6,520	2,110	1,930	1,550
25	420	345	340	258	235	840	1,020	1,780	4,830	2,660	1,980	1.400
26	380	350	380	280	190	1,060	660	1,510	4,520	2,540	2,020	1,230
27	350	400	413	232	182	1,720	620	2,480	4,690	2,490	2,020	1,720
28	330	380	400	336	236	1,640	1,300	4,910	4,490	2,580	1,820	3,880
29	340	280	400	336	------	615	1,290	8,450	4,230	2,660	1,950	6,640
30	380	340	325	330	------	310	23	9,000	3,660	2,780	2,070	5,080
31	280	------	400	329	------	490	------	9,690	------	2,510	2,110	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	789	69	449	27,400
November	645	280	477	28,400
December	480	280	385	23,700
January	440	172	354	21,800
February	344	182	249	13,800
March	2,230	208	1,057	64,600
April	1,300	23	919	54,500
May	9,690	103	2,589	159,000
June	12,000	3,660	8,560	509,000
July	3,930	760	2,417	148,000
August	2,360	1,490	1,917	117,000
September	6,640	1,230	2,037	121,000
The year	12,000	23	1,789	1,290,000

NORTH PLATTE RIVER AT WYOMING-NEBRASKA LINE

LOCATION.—Chain gage in sec. 10, T. 23 N., R. 60 W., one-fourth mile west of Wyoming-Nebraska line and 1 mile southwest of Henry. Mitchell Canal diverts 500 feet above and Gering Canal 1,900 feet below gage.

DRAINAGE AREA.—22,100 square miles.

RECORDS AVAILABLE.—April to September, 1929.

EXTREMES.—Maximum discharge during period, about 17,900 second-feet June 2 (gage height, 6.04 feet); minimum, 1,460 second-feet Apr. 27 (gage height, 2.10 feet).

REMARKS.—Records good. Discharge estimated Apr. 28. Large diversions for irrigation above station. Flow regulated by Pathfinder and Guernsey Reservoirs.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	------	1,800	15,800	5,560	2,820	2,450	16	------	3,770	11,800	2,940	2,120	1,880
2	------	1,890	17,600	5,780	2,630	2,330	17	------	4,670	11,700	2,820	2,280	1,880
3	------	1,760	16,000	5,560	2,230	2,480	18	------	5,150	11,700	2,940	1,970	2,030
4	------	1,710	15,300	5,090	2,090	2,330	19	------	5,720	10,800	2,920	1,990	2,140
5	------	1,990	11,800	4,810	1,860	2,400	20	------	5,520	10,100	2,900	2,050	1,920
6	------	1,970	11,200	4,850	1,990	2,700	21	------	4,610	8,000	2,610	1,970	1,920
7	------	2,130	10,700	4,850	1,970	3,320	22	------	4,050	8,000	1,910	1,900	1,800
8	------	2,900	10,500	4,450	1,990	2,900	23	------	3,800	8,830	1,880	1,860	1,690
9	------	3,070	10,500	4,090	2,050	2,820	24	------	3,880	8,880	2,000	1,990	1,800
10	------	3,360	10,400	4,780	1,840	2,700	25	------	3,410	7,240	2,500	2,080	1,800
11	------	3,440	11,700	3,170	1,780	2,600	26	2,090	3,170	5,830	3,250	2,100	1,710
12	------	3,570	10,700	2,730	1,900	2,330	27	1,460	3,000	5,720	2,940	2,210	1,610
13	------	3,680	10,900	2,630	2,430	2,280	28	1,880	4,110	5,600	3,170	2,360	1,950
14	------	3,880	11,100	2,940	2,280	2,190	29	2,300	7,960	5,520	3,000	2,310	4,330
15	------	3,770	11,400	3,140	2,260	2,210	30	2,470	12,800	5,560	3,120	2,430	6,460
							31	------	13,700	------	3,000	2,360	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 26-30	2,470	1,460	2,040	20,200
May	13,700	1,710	4,200	258,000
June	17,600	5,520	10,400	619,000
July	5,780	1,880	3,490	215,000
August	2,820	1,780	2,130	131,000
September	6,460	1,610	2,430	145,000
The period	------	------	------	1,390,000

PLATTE RIVER NEAR DUNCAN, NEBR.

LOCATION.—Staff gage in sec. 12, T. 16 N., R. 2 W., 1½ miles south of Duncan. Zero of gage is 1,478.7 feet above mean sea level.

DRAINAGE AREA.—61,600 square miles.

RECORDS AVAILABLE.—October, 1928, to September, 1929. June, 1895, to September, 1915, at point 7 miles downstream.

EXTREMES.—Maximum discharge during year, 28,200 second-feet June 9 (gage height, 5.03 feet); minimum, 3 second-feet Sept. 2 and 3.

REMARKS.—Records good. Observations discontinued Dec. 1 to Mar. 12. Numerous diversions from headwaters. Flow partly regulated by reservoirs in Wyoming.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	--------	4,000	--------	4,940	5,630	7,960	4,570	136	9
2	--------	5,880	--------	4,940	5,880	8,170	4,360	56	3
3	--------	4,460	--------	4,210	5,560	6,240	4,830	29	3
4	--------	3,220	--------	4,070	5,630	5,340	4,570	19	9
5	--------	3,790	--------	4,680	4,650	4,410	3,130	16	9
6	--------	4,980	--------	4,570	4,560	8,530	3,170	16	9
7	--------	4,000	--------	4,020	4,700	16,800	2,550	12	9
8	--------	3,590	--------	3,540	5,380	21,900	2,120	12	14
9	--------	3,790	--------	3,080	5,560	26,500	2,550	12	25
10	--------	4,700	--------	3,450	6,920	21,500	2,120	12	16
11	--------	4,460	--------	3,310	10,400	19,100	2,060	12	12
12	--------	4,220	--------	3,360	7,760	14,600	2,720	12	39
13	--------	3,790	19,000	3,400	6,170	12,000	2,480	10	1,450
14	--------	3,390	11,600	3,080	5,500	11,400	2,230	10	1,980
15	--------	3,040	11,600	3,360	4,760	9,780	1,690	12	2,480
16	--------	3,040	8,460	3,470	4,860	9,370	1,890	5	2,950
17	--------	3,220	7,070	4,360	5,140	9,370	1,600	4	3,040
18	--------	3,220	5,220	4,090	4,700	9,960	1,510	5	2,850
19	--------	3,220	4,410	4,050	4,320	9,600	1,380	5	2,670
20	--------	3,390	3,450	4,270	4,130	11,700	1,470	9	2,670
21	--------	3,390	2,990	4,270	4,460	9,600	1,730	5	2,760
22	--------	3,040	2,990	4,980	4,600	9,210	1,240	7	2,760
23	--------	3,040	3,450	5,030	4,410	9,600	974	5	2,790
24	--------	3,220	4,680	5,030	4,510	9,440	846	4	2,670
25	2,320	3,220	4,680	4,920	4,400	8,900	858	5	2,590
26	2,180	3,220	4,940	12,500	5,750	8,460	522	4	2,560
27	1,930	3,220	4,940	9,160	6,380	7,540	266	4	2,620
28	2,060	3,040	5,220	11,100	5,630	6,490	118	10	2,950
29	2,320	3,220	5,810	8,490	4,940	5,340	122	5	3,280
30	2,590	3,040	5,220	6,840	4,070	4,310	180	4	2,730
31	2,880	--------	5,220	--------	6,420	--------	97	5	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October 25–31	2,880	1,930	2,330	32,300
November	5,880	3,040	3,640	217,000
March 13–31	19,000	2,990	6,370	240,000
April	12,500	3,080	5,020	299,000
May	10,400	4,070	5,410	333,000
June	26,500	4,310	10,800	643,000
July	4,830	97	1,930	119,000
August	136	4	14.9	916
September	3,280	3	1,600	95,200

PLATTE RIVER NEAR ASHLAND, NEBR.

LOCATION.—Chain gage in sec. 29, T. 13 N., R. 10 E., 3 miles northeast of Ashland. Zero of gage is 1,021.1 feet above mean sea level.

DRAINAGE AREA.—83,800 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year (estimated), 36,000 second-feet Mar. 13; minimum, 1,750 second-feet Aug. 12.

1928–29: Maximum and minimum discharge, same as given above.

REMARKS.—Records good except those for estimated periods, which are fair. Daily discharge not determined Jan. 1 to Feb. 28. Numerous diversions from headwaters. No regulation except on North Platte River.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,390	7,160	5,510	------	------		9,840	14,400	13,300	9,190	3,100	2,550
2	2,430	9,510	5,070	------	------		9,710	12,600	15,100	7,150	2,240	2,380
3	2,430	8,270	5,040	------	------	[a]5,300	9,130	11,900	14,200	6,560	2,020	2,220
4	2,390	7,530	4,850	------	------		8,750	10,800	13,900	5,990	1,950	2,200
5	2,330	6,520	4,720	------	------		8,820	9,970	14,600	7,150	1,900	2,260
6	2,330	6,850	4,560	------	------		8,880	9,520	11,900	10,200	1,900	2,180
7	2,410	9,340	4,240	------	------		9,450	9,770	14,400	9,070	1,890	2,260
8	2,450	8,700		------	------	[a]9,200	8,380	9,770	20,200	7,330	1,830	2,840
9	2,450	8,380		------	------		8,820	10,300	20,900	11,300	1,840	3,860
10	2,510	7,820		------	------	[b]13,100	8,190	10,900	21,300	9,260	1,810	5,000
11	2,600	8,070		------	------	[a]20,000	9,320	12,200	21,200	7,760	1,790	5,220
12	4,800	7,870	[a]4,000	------	------	[b]23,100	9,070	17,400	20,400	6,450	1,750	4,900
13	4,800	7,870		------	------	[a]36,000	7,940	14,600	18,400	5,880	1,800	4,160
14	4,740	7,720		------	------	28,500	7,880	12,900	16,300	6,040	1,850	3,570
15	4,720	7,250		------	------	22,100	7,150	12,600	15,100	10,800	2,220	3,210
16	5,100	7,070		------	------	19,300	7,510	11,200	14,200	13,000	2,000	4,620
17	5,860	7,160		------	------	15,800	7,760	10,600	14,400	9,450	1,920	5,600
18	7,160	7,250	[a]4,100	------	[b]3,500	13,900	8,190	11,800	15,000	7,760	1,880	6,040
19	5,930	7,340		------	------	12,400	9,390	10,000	27,600	6,100	1,860	6,100
20	5,380	7,210		------	------	11,400	11,200	8,940	21,800	5,880	1,900	5,990
21	5,260	7,120		------	------	10,600	10,800	9,070	17,900	6,740	1,930	6,100
22	4,800	7,070		------	------	9,390	11,100	8,190	17,600	4,710	1,930	5,650
23	4,610	6,940	[a]4,200	------	------	8,750	10,300	7,940	15,300	4,710	2,260	5,380
24	4,690	6,900		------	------	8,690	10,500	7,330	13,700	3,860	2,810	5,380
25	4,990	6,810		------	------	9,640	12,900	6,740	11,700	6,920	2,740	4,760
26	5,150	6,940		------	------	9,840	16,800	6,330	11,000	3,940	2,740	4,340
27	4,960	7,030		------	------	9,710	20,700	6,920	11,300	3,060	2,260	4,160
28	4,880	6,940	[a]4,000	[b]2,980	------	9,390	17,000	8,000	14,400	2,450	2,380	4,380
29	4,720	6,690		------	------	9,190	18,100	8,890	11,500	2,050	2,420	4,810
30	4,900	6,810		------	------	9,510	16,100	9,640	10,100	2,400	2,650	5,930
31	5,450	------		------	------	9,320	------	15,900	------	2,300	2,680	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	7,160	2,330	4,180	257,000
November	9,510	6,520	7,470	444,000
December	------	------	4,240	261,000
January	------	------	[a]3,500	215,000
February	------	------	[a]3,400	189,000
March	36,000	------	12,400	762,000
April	20,700	7,150	10,700	637,000
May	17,400	6,330	10,600	652,000
June	27,600	10,100	16,000	952,000
July	13,000	2,050	6,630	408,000
August	3,100	1,750	2,140	132,000
September	6,100	2,180	4,270	254,000
The year	36,000	------	7,120	5,160,000

[a] Estimated. [b] Result of discharge measurement.

ROARING FORK NEAR WALDEN, COLO.

LOCATION.—Water-stage recorder in sec. 10, T. 8 N., R. 81 W., 1½ miles above mouth and 11 miles southwest of Walden.

DRAINAGE AREA.—84 square miles.

RECORDS AVAILABLE.—May, 1904, to October, 1905; October, 1923, to September, 1929.

EXTREMES.—Maximum discharge during year, 539 second-feet July 1 (gage height, 3.22 feet); minimum probably occurred during winter.

1904–5, 1923–1929: Maximum discharge, 790 second-feet June 15, 1924 (gage height, 3.73 feet); minimum, 2 second-feet Aug. 15, 1904.

REMARKS.—Records good. Daily discharge not determined Nov. 2–13, 17–21, and 25–30. Observations discontinued Dec. 1 to Apr. 24. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	22	20	-------	68	60	493	113	56
2	22	-------	-------	70	132	433	110	53
3	21	-------	-------	74	144	370	107	59
4	20	-------	-------	72	154	348	105	83
5	21	-------	-------	78	173	325	105	88
6	22	-------	-------	76	224	270	132	107
7	22	-------	-------	99	247	222	134	104
8	22	-------	-------	107	320	191	120	117
9	22	-------	-------	122	330	185	110	105
10	19	-------	-------	129	394	144	107	99
11	20	-------	-------	99	383	137	92	89
12	18	-------	-------	96	325	136	76	88
13	20	-------	-------	120	312	130	75	74
14	21	21	-------	142	304	141	64	74
15	22	20	-------	168	380	134	63	72
16	24	19	-------	171	307	132	64	[a] 70
17	26	-------	-------	161	442	137	78	[a] 66
18	24	-------	-------	180	338	156	96	[a] 62
19	22	-------	-------	170	187	137	86	[a] 58
20	23	-------	-------	163	176	124	83	54
21	25	-------	-------	136	222	132	78	[a] 60
22	25	20	-------	134	333	142	81	[a] 65
23	23	20	-------	144	417	134	76	[a] 70
24	22	20	-------	166	414	146	70	[a] 75
25	21	-------	86	198	383	134	68	[a] 80
26	25	-------	64	243	417	127	60	[a] 70
27	25	-------	68	185	490	120	56	63
28	25	-------	80	152	487	113	56	62
29	29	-------	117	120	474	122	53	62
30	22	-------	83	78	468	107	54	63
31	22	-------	-------	60	-------	105	59	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	29	18	22.5	1,380
November	-------	-------	[a] 20	1,190
April 25–30	117	64	83	988
May	243	60	128	7,870
June	490	60	315	18,700
July	493	105	185	11,400
August	134	53	84.9	5,220
September	117	53	74.9	4,460

[a] Estimated.

MICHIGAN RIVER[2] AT WALDEN, COLO.

LOCATION.—Water-stage recorder in sec. 21, T. 9 N., R. 79 W., half a mile north of Walden. Zero of gage is 8,044.87 feet above mean sea level.

DRAINAGE AREA.—185 square miles.

RECORDS AVAILABLE.—May, 1904, to October, 1905; May, 1923, to September, 1929.

EXTREMES.—Maximum discharge during year, 746 second-feet May 15 (gage height, 3.08 feet); minimum probably occurred during winter.

1904–5, 1923–1929: Maximum discharge, 1,070 second-feet June 10, 1923 (gage height, 3.3 feet); minimum, 4 second-feet Aug. 28–31, 1924.

REMARKS.—Records good. Observations discontinued Nov. 14 to Apr. 21. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	17	27	-------	[a] 120	381	410	[a] 118	33
2	19	26	-------	93	415	358	[a] 116	32
3	20	26	-------	93	537	310	[a] 110	38
4	25	26	-------	88	537	278	105	61
5	25	27	-------	86	520	255	105	88
6	26	29	-------	90	503	232	120	107
7	24	30	-------	155	514	197	141	112
8	22	34	-------	344	492	172	122	[a] 128
9	20	23	-------	420	543	135	102	138
10	20	24	-------	471	597	105	88	130
11	20	28	-------	362	629	84	79	122
12	19	26	-------	232	597	73	70	115
13	18	28	-------	327	566	73	61	100
14	20	-------	-------	455	526	110	55	93
15	23	-------	-------	572	503	110	50	93
16	26	-------	-------	591	498	107	47	93
17	26	-------	-------	498	459	98	[a] 46	95
18	29	-------	-------	405	532	98	55	88
19	34	-------	-------	336	420	110	48	81
20	33	-------	-------	323	410	105	44	79
21	31	-------	-------	319	420	81	47	75
22	34	-------	178	323	514	79	50	75
23	26	-------	141	344	543	79	44	77
24	24	-------	133	386	543	86	42	84
25	26	-------	128	395	498	98	44	88
26	31	-------	125	430	455	88	44	84
27	30	-------	144	532	455	81	41	79
28	29	-------	172	526	471	73	37	79
29	30	-------	282	503	435	77	40	79
30	30	-------	[a] 180	405	435	86	38	[a] 79
31	28	-------	-------	390	-------	115	34	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	34	17	25.3	1,560
November 1-13	34	23	27.2	701
April 22-30	282	125	165	2,940
May	591	86	342	21,000
June	629	381	501	29,800
July	410	73	141	8,670
August	144	34	69.1	4,250
September	138	32	87.5	5,210

[a] Estimated.

[2] Formerly published as Michigan Creek at Walden.

ILLINOIS CREEK AT WALDEN, COLO.

LOCATION.—Staff gage in sec. 29, T. 9 N., R. 79 W., half a mile southwest of Walden.

DRAINAGE AREA.—254 square miles.

RECORDS AVAILABLE.—May, 1923, to September, 1929.

EXTREMES.—Maximum discharge during year, 1,650 second-feet Apr. 18 (gage height, 5.0 feet); minimum, 3 second-feet Oct. 2 and 3.

1923–1929: Maximum discharge, 2,520 second-feet May 28, 1926 (gage height, 6.4 feet); minimum, 0.3 second-foot Sept. 7 and 8, 1924 (gage height, 0.42 foot).

REMARKS.—Records good. Observations discontinued Nov. 11 to Apr. 15. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	3	23	-------	240	217	168	53	24
2	3	21	-------	171	237	162	58	24
3	4	21	-------	159	339	124	60	24
4	5	16	-------	124	366	102	54	36
5	9	18	-------	111	382	93	47	43
6	9	18	-------	117	410	95	69	46
7	10	20	-------	196	394	89	97	54
8	9	20	-------	346	410	69	95	74
9	8	18	-------	320	386	56	65	109
10	8	16	-------	378	382	48	48	127
11	7	-------	-------	298	402	38	40	134
12	7	-------	-------	153	439	34	37	129
13	5	-------	-------	147	468	31	34	84
14	4	-------	-------	177	423	29	34	70
15	5	-------	-------	246	339	28	24	65
16	9	-------	925	263	298	26	22	65
17	10	-------	950	284	280	26	21	60
18	13	-------	1,650	280	316	25	19	58
19	16	-------	1,050	250	402	28	31	48
20	16	-------	625	196	274	31	25	48
21	18	-------	513	196	205	32	31	40
22	18	-------	312	165	192	25	33	38
23	16	-------	257	153	186	31	36	40
24	16	-------	243	202	211	32	37	48
25	18	-------	147	237	217	25	32	56
26	18	-------	142	280	224	25	31	56
27	15	-------	150	410	180	26	29	52
28	16	-------	183	542	174	28	29	45
29	18	-------	331	578	156	28	28	40
30	21	-------	452	488	150	38	26	40
31	21	-------	-------	342	-------	40	25	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	21	3	11.5	707
November 1–10	23	16	19.1	379
April 15–30	1,650	142	529	15,700
May	578	111	260	16,000
June	468	150	302	18,000
July	168	25	52.7	3,240
August	97	19	41.2	2,530
September	134	24	59.2	3,520

CANADIAN RIVER AT COWDREY, COLO.

LOCATION.—Chain gage in sec. 6, T. 10 N., R. 79 W., half a mile northeast of Cowdrey. Government Creek enters a third of a mile downstream. Zero of gage is 7,870.73 feet above mean sea level.

DRAINAGE AREA.—201 square miles.

RECORDS AVAILABLE.—May, 1904, to October, 1905; May to September, 1929.

EXTREMES.—Maximum discharge during year, 434 second-feet June 12 (gage height, 4.6 feet); minimum, 25 second-feet Aug. 31 to Sept. 2 (gage height, 2.20 feet).

1904–5, 1929: Maximum discharge, 600 second-feet June 10, 1905; minimum, 2 second-feet Aug. 26, 1905.

REMARKS.—Records good. Discharge estimated July 22. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	-------	257	172	48	25	16	-------	348	50	26	60
2	-------	257	172	49	25	17	-------	327	46	26	60
3	-------	297	172	49	26	18	-------	327	46	28	53
4	-------	327	190	53	27	19	-------	307	45	32	53
5	-------	327	172	53	28	20	-------	277	44	35	53
6	-------	327	130	52	44	21	-------	247	45	37	53
7	-------	348	114	61	75	22	-------	247	47	33	52
8	-------	348	85	51	92	23	247	247	49	33	51
9	-------	348	75	50	98	24	287	218	49	32	51
10	-------	390	72	48	72	25	297	199	48	31	50
11	-------	390	58	41	65	26	307	190	44	28	49
12	-------	434	50	36	63	27	390	190	45	28	48
13	-------	390	45	33	63	28	390	172	44	28	46
14	-------	369	43	29	63	29	390	172	44	28	46
15	-------	327	45	27	60	30	348	181	44	28	46
						31	267	-------	44	25	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May 23–31	390	247	325	5,800
June	434	172	293	17,400
July	190	43	75.1	4,620
August	61	25	37.4	2,300
September	98	25	53.2	3,170
The period	-------	-------	-------	33,300

ENCAMPMENT RIVER AT ENCAMPMENT, WYO.

LOCATION.—Chain gage in sec. 6, T. 14 N., R. 83 W., at Encampment. Zero of gage is 7,141.53 feet above mean sea level.

DRAINAGE AREA.—219 square miles.

RECORDS AVAILABLE.—May to September, 1900; May, 1911, to August, 1924; May to September, 1929.

EXTREMES.—Maximum discharge during year, 3,740 second-feet June 17 (gage height, 8.1 feet); minimum, 26 second-feet Sept. 2 (gage height, 3.70 feet).

1900, 1911–1924, 1929: Maximum discharge, 4,680 second-feet May 29, 1900; minimum, 3 second-feet July 24, 1919.

REMARKS.—Records fair. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	------	1,630	1,570	112	30	16	------	2,780	360	46	96
2	------	2,030	1,340	96	26	17	------	3,260	340	49	88
3	------	1,890	1,180	85	37	18	------	2,030	340	57	79
4	------	2,170	1,080	96	108	19	------	1,890	301	55	74
5	------	2,320	948	92	61	20	------	2,030	301	54	71
6	------	2,620	825	198	92	21	1,570	2,030	285	45	64
7	------	2,780	715	150	117	22	1,760	2,170	248	39	114
8	------	2,940	615	76	130	23	2,030	2,170	235	35	155
9	------	3,100	528	74	108	24	2,170	1,890	235	33	165
10	------	3,260	500	71	145	25	2,620	1,760	192	37	121
11	------	3,100	475	68	140	26	2,470	1,890	138	35	242
12	------	2,620	450	58	130	27	1,700	2,030	145	30	160
13	------	2,620	528	54	133	28	1,290	1,890	117	39	117
14	------	2,780	450	48	130	29	1,080	1,760	119	42	108
15	------	2,780	428	48	106	30	1,040	1,700	112	41	104
						31	1,180	------	112	36	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May 21–31	2,620	1,040	1,720	37,500
June	3,260	1,630	2,330	139,000
July	1,570	112	491	30,200
August	198	30	64.5	3,970
September	242	26	108	6,430
The period	------	------	------	217,000

PASS CREEK NEAR SARATOGA, WYO.

LOCATION.—Staff gage in sec. 29, T. 19 N., R. 82 W., 12 miles northeast of Saratoga.
DRAINAGE AREA.—119 square miles.
RECORDS AVAILABLE.—May to September, 1929.
EXTREMES.—Maximum discharge during period, 450 second-feet May 23 (gage height, 5.5 feet); minimum, 11 second-feet Aug. 28 to Sept. 1.
REMARKS.—Records good. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	-------	312	106	19	11	16	-------	244	18	12	16
2	-------	312	101	19	12	17	-------	312	18	13	15
3	-------	277	77	20	14	18	-------	187	16	14	14
4	-------	277	68	15	22	19	-------	174	17	17	13
5	-------	312	59	17	17	20	260	162	16	16	13
6	-------	312	64	28	18	21	277	156	16	14	14
7	-------	312	43	30	18	22	277	162	16	14	17
8	-------	312	43	23	20	23	312	162	16	13	22
9	-------	312	36	16	19	24	350	156	14	12	18
10	-------	331	29	15	17	25	331	132	13	13	17
11	-------	331	26	14	17	26	390	127	12	14	20
12	-------	294	23	14	17	27	244	127	12	12	59
13	-------	244	26	13	16	28	294	116	15	11	18
14	-------	277	29	13	15	29	244	111	16	11	17
15	-------	277	25	12	14	30	294	101	16	11	16
						31	294	-------	17	11	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May 20-31	390	244	297	7,070
June	331	101	231	13,700
July	106	12	32.4	1,990
August	30	11	15.4	947
September	59	11	17.9	1,070
The period	----------	----------	----------	24,800

ROCK CREEK NEAR ROCK RIVER, WYO.

LOCATION.—Water-stage recorder in sec. 4, T. 20 N., R. 76 W., 1½ miles southeast of Rock River.

DRAINAGE AREA.—184 square miles.

RECORDS AVAILABLE.—May, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 1,040 second-feet June 11 (gage height, 4.38 feet); minimum, 3.3 second-feet Oct. 1 (gage height, 0.29 foot).

1928–29: Maximum discharge, 1,180 second-feet May 29 and 30, 1928 (gage height, 4.53 feet); minimum, 2.7 second-feet Sept. 30, 1928 (gage height, 0.26 foot).

REMARKS.—Records good except those for estimated periods, Nov. 21 to Apr. 20 and July 16–20, which are fair. Diversions for irrigation above station. Flow partly regulated by two reservoirs.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3.3	8.0						125	197	342	12	7.6
2	3.8	10						112	261	318	12	8.0
3	3.8	11					30	118	318	245	9.5	9.5
4	4.9	12						126	370	205	8.5	14
5	5.2	10	9	11	10	13		108	432	178	12	15
6	5.2	9.5						92	520	166	12	23
7	5.2	10						87	600	123	25	26
8	5.2	18					25	104	660	98	23	34
9	4.9	14						109	765	85	12	36
10	5.2	12						120	900	81	14	28
11	5.2	9.5						109	945	69	12	25
12	5.2	9.0						102	878	57	15	20
13	5.6	8.5				11	50	106	640	65	12	15
14	6.3	9.0						115	600	70	12	13
15	15	9.5	10	11	11			126	720	56	11	12
16	13	9.0						122	832	52	12	16
17	14	9.5						126	855	47	12	14
18	19	9.0					100	133	720	42	9.0	11
19	18	9.5						137	720	38	11	10
20	12	10				14		134	342	35	12	9.5
21	9.0						143	146	415	31	12	9.5
22	8.5						148	162	580	27	12	9.5
23	6.3						126	186	640	24	9.0	9.5
24	6.3						120	233	540	24	9.5	10
25	5.6	9.0			12		120	245	485	19	9.5	8.0
26	6.0		11	9			101	330	432	19	7.6	16
27	6.0						122	342	520	19	6.8	16
28	5.6					16	205	370	540	14	6.0	17
29	6.0						188	415	450	13	22	14
30	6.6				-------		169	229	385	12	12	13
31	7.5	-------			-------		-------	190	-------	12	8.5	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	19	3.3	7.53	463
November	18	-------	9.90	589
December	-------	-------	10.0	615
January	-------	-------	10.3	633
February	-------	-------	10.9	605
March	-------	-------	13.6	836
April	205	-------	82.2	4,890
May	415	87	166	10,200
June	945	197	575	34,200
July	342	12	83.4	5,130
August	25	6.0	12.4	762
September	36	7.6	15.6	928
The year	945	-------	82.8	59,800

DEER CREEK AT GLENROCK, WYO.

LOCATION.—Staff gage in sec. 4, T. 33 N., R. 75 W., at Glenrock, a quarter of a mile above mouth.

DRAINAGE AREA.—216 square miles.

RECORDS AVAILABLE.—April, 1916, to September, 1924; May, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 1,650 second-feet May 15 (gage height, 5.84 feet); minimum, 0.2 second-foot July 16 to Aug. 9 and Aug. 11–27 (gage height, 1.49 feet).

1916–1924, 1928–29: Maximum discharge, 4,600 second-feet Apr. 15, 1924; creek dry during summers of 1919 and 1922.

REMARKS.—Records good. Discharge estimated Mar. 13. Observations discontinued Nov. 1 to Mar. 9. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	9.8	--------	39	418	446	6.0	0.2	1.1
2	10.9	--------	37	380	482	6.0	.2	1.1
3	10.9	--------	47	436	397	11	.2	1.3
4	12.6	--------	66	544	341	8.0	.2	4.0
5	12.6	--------	142	526	284	8.0	.2	4.0
6	13.2	--------	170	418	266	6.0	.2	6.0
7	14.3	--------	122	446	249	2.1	.2	3.5
8	13.2	--------	116	536	209	1.6	.2	2.6
9	13.2	--------	113	648	179	1.1	.2	2.6
10	12.0	45	109	695	146	1.2	.3	2.6
11	11.5	49	105	644	125	1.0	.2	2.6
12	12.0	54	88	745	109	1.2	.2	8.0
13	14.3	60	88	930	113	1.2	.2	12
14	16.6	69	88	1,200	96	1.2	.2	12
15	18.9	77	92	1,470	73	.7	.2	12
16	20.0	80	107	1,140	60	.2	.2	12
17	22.4	75	190	1,180	45	.2	.2	12
18	22.4	48	314	1,120	36	.2	.2	12
19	20.0	39	364	1,030	27	.2	.2	12
20	15.4	37	299	957	17	.2	.2	12
21	22.4	40	295	952	14	.2	.2	10
22	22.4	40	284	825	12	.2	.2	9.0
23	24.7	41	337	725	10	.2	.2	9.0
24	22.4	40	284	648	8.0	.2	.2	9.0
25	22.4	41	170	695	6.0	.2	.2	12
26	22.4	40	181	864	3.7	.2	.2	15
27	23.5	40	228	695	1.8	.2	.2	17
28	22.4	40	380	508	.6	.2	15	16
29	22.4	41	472	690	1.6	.2	14	18
30	22.4	42	648	639	4.5	.2	6.0	17
31	22.4	42	--------	468	--------	.2	1.8	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	24.7	9.8	17.6	1,080
March 10-31	80	37	49.1	2,140
April	648	37	199	11,800
May	1,470	380	747	45,900
June	482	.6	125	7,440
July	11	.2	1.92	118
August	15	.2	1.36	84
September	18	1.1	8.91	530

BOXELDER CREEK NEAR CAREYHURST, WYO.

LOCATION.—Water-stage recorder in sec. 13, T. 33 N., R. 74 W., 2 miles upstream from Careyhurst. Prior to Oct. 5, 1928, a staff gage 30 feet upstream was used; both gages set to same datum.

DRAINAGE AREA.—202 square miles.

RECORDS AVAILABLE.—May to October, 1911; April, 1916, to September, 1924; May, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 994 second-feet May 15 (gage height, 5.46 feet); no flow July 23, 24, and July 26 to Aug. 4.

1911, 1916–1924, 1928–29: Maximum discharge, 2,050 second-feet May 22, 1922; no flow during periods in 1922 and 1929.

REMARKS.—Records good except those for estimated periods, Oct. 1–4, Apr. 1–6, and 9-13, which are fair. Observations discontinued Nov. 19 to Mar. 31. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	6.0	13.2	45	374	416	4.4	0	1.5
2	6.4	12.7	45	329	434	2.3	0	1.5
3	6.8	12.2	50	374	371	1.2	0	1.9
4	7.2	12.7	100	538	317	1.0	0	2.3
5	7.6	13.2	145	538	275	.8	.2	2.3
6	8.1	13.7	180	388	252	.9	.4	2.8
7	9.0	14.7	239	388	231	.9	.7	2.3
8	9.4	14.7	143	458	206	.9	.9	2.3
9	9.4	16.2	135	483	183	.8	1.1	2.3
10	9.9	18.4	125	506	166	.9	1.3	2.3
11	8.5	18.4	110	486	143	.8	1.5	2.3
12	8.1	18.4	85	498	128	.7	1.5	1.5
13	7.6	17.8	80	606	116	.9	1.4	1.9
14	8.1	18.4	74	762	90	.8	1.4	1.9
15	12.2	18.4	114	878	65	.6	1.4	2.3
16	16.2	18.4	168	754	51	.4	1.5	1.4
17	15.7	18.4	260	822	44	.4	1.9	1.0
18	14.7	18.4	364	774	33	.3	2.3	1.0
19	15.7	--------	350	738	21	.2	2.3	.8
20	16.7	--------	272	742	19	.3	2.3	.6
21	16.7	--------	234	754	16	.2	1.9	1.0
22	16.7	--------	247	718	12	.1	1.5	4.9
23	15.2	--------	252	670	12	0	1.5	5.7
24	14.2	--------	308	630	15	0	1.4	5.7
25	13.7	--------	284	686	11	.2	1.5	6.2
26	12.7	--------	211	830	7.8	0	1.5	7.3
27	12.2	--------	221	702	5.7	0	1.5	7.3
28	12.2	--------	255	546	5.7	0	1.4	7.8
29	12.2	--------	522	610	5.3	0	1.4	8.4
30	12.2	--------	658	483	4.9	0	1.5	7.8
31	12.2	--------	--------	406	--------	0	1.4	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	16.7	6.0	11.4	701
November 1–18	18.4	12.2	16.0	571
April	658	45	209	12,400
May	878	329	596	36,600
June	434	4.9	122	7,260
July	4.4	0	.645	39.7
August	2.3	0	1.25	76.9
September	8.4	.6	3.28	195

LA PRELE CREEK NEAR DOUGLAS, WYO.

LOCATION.—Water-stage recorder in sec. 6, T. 31 N., R. 73 W., 16 miles southwest of Douglas.

DRAINAGE AREA.—146 square miles.

RECORDS AVAILABLE.—August, 1919, to September, 1929.

EXTREMES.—Maximum discharge during year, 716 second-feet Apr. 29 (gage height, 9.05 feet); minimum, 3.9 second-feet Aug. 3–6 (gage height, 3.39 feet).

1919–1929: Maximum discharge, 1,220 second-feet May 11, 1920 (gage height, 11.4 feet); minimum, 0.4 second-foot Oct. 2, 1919 (gage height, 3.29 feet).

REMARKS.—Records fair. Daily discharge not determined Dec. 1 to Feb. 28. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29.

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	6.9	12	*17	30	318	276	6.7	4.3	5.0
2	6.9	11	*22	32	297	297	6.3	4.3	5.2
3	7.1	13	30	49	353	262	6.1	3.9	5.4
4	7.1	12	40	128	405	230	5.5	3.9	5.5
5	7.3	12	77	210	368	204	5.5	3.9	5.7
6	7.5	12	93	101	325	204	5.4	3.9	7.5
7	7.5	13	85	78	318	184	5.4	4.0	8.8
8	7.5	13	77	72	339	171	5.4	4.0	9.0
9	7.3	13	58	59	375	161	5.4	4.2	9.0
10	7.8	12	53	53	375	144	5.4	4.3	10
11	8.0	13	53	49	353	122	5.2	4.3	11
12	8.2	14	81	48	353	118	5.2	4.3	10
13	9.0	15	107	*64	405	91	5.7	4.3	8.5
14	9.5	16	68	79	486	70	5.5	4.4	7.8
15	11	14	*59	97	503	50	5.5	4.4	7.3
16	11	14	*55	140	452	46	6.3	4.4	7.1
17	11	14	*50	204	452	36	7.3	4.4	7.1
18	13	*14	*50	236	436	29	11	4.4	7.1
19	14	*14	*50	213	420	23	8.8	4.4	6.7
20	15	*14	*50	194	420	20	7.5	4.4	6.7
21	14	15	*49	*178	436	17	7.1	4.6	6.7
22	14	15	*48	162	412	14	7.1	4.6	6.7
23	13	15	48	184	405	11	6.9	4.6	6.5
24	13	15	44	115	405	11	6.9	4.4	6.3
25	12	14	38	159	436	9.8	6.7	4.2	6.7
26	12	13	37	184	486	9.2	5.9	4.0	8.8
27	12	13	35	216	398	6.5	5.2	4.0	10
28	*12	14	41	304	325	6.1	5.0	36	9.5
29	*12	14	50	486	339	5.7	4.9	7.8	9.2
30	12	*13	54	469	290	6.2	4.8	6.3	8.8
31	13	-------	39	-------	283	-------	4.4	4.9	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	15	6.9	10.4	640
November	16	11	13.5	803
December	-------	-------	*12	738
January	-------	-------	*10	615
February	-------	-------	*11	611
March	107	17	53.5	3,290
April	486	30	153	9,100
May	503	283	386	23,700
June	297	5.7	94.5	5,620
July	11	4.4	6.13	377
August	36	3.9	5.48	337
September	11	5.0	7.65	455
The year	503	3.9	64.0	46,300

* Estimated.

LA PRELE CREEK NEAR ORPHA, WYO.[3]

LOCATION.—Staff gage in sec. 16, T. 33 N., R. 72 W., 1 mile south of Orpha and three-quarters of a mile above mouth.

DRAINAGE AREA.—227 square miles.

RECORDS AVAILABLE.—April to August, 1916; April to September, 1918; April, 1923, to September, 1924; May, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 370 second-feet May 27 (gage height, 3.84 feet); minimum, 2.7 second-feet July 25 (gage height, 0.37 foot).

1916, 1918, 1923–24, 1928–29: Maximum discharge, 437 second-feet May 10, 1918; minimum, 1 second-foot during summer of 1919.

REMARKS.—Records good except those for estimated periods (Mar. 1–9 and Sept. 18–30), which are fair. Observations discontinued Nov. 1 to Feb. 28. Diversions for irrigation above station. Flow regulated by La Prele Reservoir.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	25	25	95	16	42	15	6.6	13
2	23	25	52	18	42	18	12	12
3	18	25	43	21	35	20	20	9.0
4	14	30	36	24	58	22	24	7.2
5	8.2	40	29	64	187	19	27	9.0
6	5.8	45	24	199	256	16	26	12
7	6.6	42	22	217	280	18	35	16
8	8.6	41	20	236	137	16	40	25
9	10	40	18	252	66	15	42	40
10	8.2	42	18	293	54	10	44	50
11	7.4	37	22	327	36	12	48	55
12	8.2	39	22	339	29	15	46	53
13	9.0	43	21	332	19	16	50	31
14	10	43	22	329	13	15	51	27
15	12	40	24	336	11	12	53	25
16	14	37	25	329	11	10	54	22
17	17	38	23	327	10	7.8	56	22
18	18	39	21	338	8.4	6.6	57	
19	13	34	19	341	7.8	5.6	60	
20	8.2	30	15	334	7.2	5.0	60	
21	7.4	27	16	332	7.5	4.0	57	
22	6.6	26	15	330	7.2	3.6	54	
23	7.0	24	14	336	8.7	3.2	54	
24	8.6	22	16	336	21	2.9	58	25
25	9.0	20	19	352	22	2.7	57	
26	7.4	26	21	364	24	2.9	48	
27	6.2	33	21	368	21	3.6	43	
28	6.6	42	21	358	19	3.4	39	
29	7.4	77	19	345	16	3.0	34	
30	7.4	130	18	349	13	2.8	18	
31	6.6	104	-------	77	-------	3.6	15	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	25	5.8	10.5	646
March	130	20	40.8	2,510
April	95	14	25	1,490
May	368	16	265	16,300
June	280	7.2	49	2,920
July	22	2.7	10	615
August	60	6.6	41.6	2,560
September	55	7.2	25.1	1,490

[3] Prior to 1928 published as La Prele Creek near Fetterman, Wyo.

WAGONHOUND CREEK NEAR LA BONTE, WYO.

LOCATION.—Staff gage in sec. 16, T. 31 N., R. 71 W., near mouth of cre
east of La Bonte.

DRAINAGE AREA.—125 square miles.

RECORDS AVAILABLE.—April, 1916, to September, 1924; May to Augu

EXTREMES.—Maximum discharge during year, 186 second-feet May
height, 5.52 feet); minimum, 2.5 second-feet July 13–15 and 20 (gag
1.12 feet).

1916–1924, 1929: Maximum discharge, 907 second-feet May 11
1920; no flow during summers of 1918, 1919, and 1922.

REMARKS.—Records good except those for May 1–4, which are estimated.
sion for irrigation above station.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.
1	170	46	10.5	5.0
2	165	38	10.2	5.0
3	165	38	9.3	5.0
4	170	30	8.2	5.0
5	181	26	8.2	------
6	176	26	8.2	------
7	153	26	7.7	------
8	158	26	7.1	------
9	163	21	7.1	------
10	161	19	4.8	------
11	140	15	5.0	------
12	134	10.5	3.0	------
13	136	5.0	2.5	------
14	139	5.0	2.5	------
15	141	2.5	2.5	------
16	111	3.0	3.0	
17	105	2.8	3.0	
18	90	11.1	3.0	
19	85	10.5	3.0	
20	75	9.3	2.5	
21	66	10.5	8.2	
22	60	12.4	7.7	
23	51	13.6	7.7	
24	36	14.2	7.7	
25	30	13.6	6.5	
26	47	14.2	5.0	
27	47	13.6	5.3	
28	73	12.4	5.5	
29	80	11.8	5.0	
30	70	11.1	5.0	
31	54	------	5.0	

Month	Maximum	Minimum	Mean	Run-off acre-fee
May	181	30	111	6,
June	46	2.8	16.6	9
July	10.5	2.5	5.81	3
August 1–4	5.0	5.0	5.00	4
The period	------	------	------	8, 2

LA BONTE CREEK NEAR LA BONTE, WYO.

LOCATION.—Staff gage in sec. 21, T. 31 N., R. 71 W., 1½ miles above mouth and 3 miles east of La Bonte.

DRAINAGE AREA.—302 square miles.

RECORDS AVAILABLE.—April, 1916, to September, 1924; May, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 1,100 second-feet Apr. 30 and May 15 (gage height, 3.70 feet); minimum, 3.0 second-feet Sept. 26.

1916–1924, 1928–29: Maximum discharge, 2,750 second-feet May 22 and 23, 1923 (gage height, 7.5 feet); no flow during summers of 1917 and 1918.

REMARKS.—Records good except those for estimated periods, Mar. 1–9 and 12–16, which are fair. Observations discontinued Nov. 1 to Feb. 28. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7.8	20	66	728	428	13	4.3	4.7
2	7.8	20	74	650	388	11	4.3	4.7
3	8.2	20	106	630	333	8.2	4.7	5.1
4	8.2	20	172	750	278	7.8	4.3	5.1
5	7.8	20	224	711	244	8.2	4.3	5.1
6	8.2	25	179	566	234	8.2	3.9	5.9
7	8.7	30	146	595	206	8.2	3.9	7.8
8	9.2	35	100	676	201	8.2	3.7	7.4
9	9.2	40	121	690	174	8.2	3.5	7.4
10	9.6	44	123	744	152	7.4	3.5	6.3
11	10	33	99	700	133	7.4	3.2	6.2
12	10	33	104	766	133	7.4	3.2	5.5
13	11	33	110	766	117	7.0	3.5	5.5
14	11	30	141	950	88	7.0	3.5	4.7
15	14	33	155	1,030	79	7.4	3.7	4.3
16	14	33	192	870	72	7.4	3.9	4.3
17	13	33	250	865	67	6.6	3.9	4.3
18	13	34	410	804	55	6.6	3.9	4.1
19	12	41	365	744	37	6.6	4.1	3.9
20	12	39	349	675	36	7.0	4.3	3.7
21	18	36	365	660	30	6.6	4.7	3.5
22	18	35	341	620	30	6.6	4.7	3.5
23	16	39	345	575	28	5.9	5.1	3.5
24	16	31	374	560	25	5.1	5.5	3.5
25	16	33	378	520	22	4.3	5.1	3.2
26	17	34	401	680	20	3.9	5.5	3.0
27	16	36	550	620	18	3.7	5.1	3.5
28	16	41	660	464	17	3.9	5.5	3.5
29	16	88	950	799	16	3.7	5.5	5.9
30	15	123	1,050	560	16	3.7	5.1	8.2
31	16	74	-------	432	-------	3.9	5.1	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	18	7.8	12.4	762
March	123	20	38.3	2,360
April	1,050	66	297	17,700
May	1,030	432	693	42,600
June	428	16	123	7,320
July	13	3.7	6.77	416
August	5.5	3.2	4.34	267
September	8.2	3.0	4.91	292

HORSESHOE CREEK NEAR GLENDO, WYO.

LOCATION.—Staff gage in sec. 26, T. 29 N., R. 68 W., 4 miles southeast of Glendo. Datum of gage raised 0.30 foot Mar. 1, 1929.

DRAINAGE AREA.—203 square miles.

RECORDS AVAILABLE.—April, 1916, to September, 1919; April, 1921, to September, 1924; May, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, determined by slope-area method, about 1,210 second-feet June 2 (gage height, 6.8 feet); minimum, 0.2 second-foot Mar. 16 (gage height, 0.3 foot).

1916–1919, 1921–1924, 1928–29: Maximum discharge, that of June 2, 1929; no flow during summers of 1918 and 1919.

REMARKS.—Records good. Observations discontinued Nov. 11 to Feb. 28. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.0	8.0	2.2	30	385	256	6.0	2.2	2.0
2	4.0	8.0	2.2	38	363	850	3.1	2.0	1.6
3	3.8	8.0	2.2	38	382	275	5.8	1.7	1.7
4	3.8	8.0	2.2	77	360	269	3.5	2.2	1.7
5	4.0	9.7	4.0	166	380	232	3.5	2.1	2.0
6	3.8	9.7	7.6	99	351	248	3.1	2.1	2.0
7	3.8	9.7	6.2	77	322	215	2.9	2.1	2.0
8	3.8	9.7	6.2	54	332	196	2.7	2.2	1.7
9	3.8	9.7	4.0	54	341	156	2.4	2.2	1.8
10	3.8	9.7	6.2	41	341	140	2.2	2.1	1.8
11	3.8	--------	4.0	41	344	128	2.4	2.2	1.8
12	3.8	--------	4.0	41	334	128	2.4	2.0	1.8
13	3.8	--------	2.2	41	351	116	2.6	2.0	2.0
14	3.8	--------	2.2	72	390	105	2.2	2.1	2.1
15	4.0	--------	1.0	82	442	88	2.2	2.0	2.2
16	4.0	--------	.2	88	385	86	2.4	2.0	2.0
17	4.0	--------	6.2	105	370	70	2.2	2.0	2.2
18	4.0	--------	10	151	356	67	2.6	2.2	2.4
19	4.0	--------	6.2	158	304	62	2.4	2.0	2.4
20	4.0	--------	9.0	174	281	44	2.6	1.7	2.2
21	4.3	--------	6.2	199	248	30	2.6	1.7	2.2
22	4.0	--------	7.6	174	240	26	2.2	2.0	2.2
23	4.3	--------	9.0	221	232	23	2.2	2.0	2.2
24	4.8	--------	10	476	176	22	2.6	1.7	2.2
25	5.6	--------	9.0	244	199	16	2.2	1.8	2.2
26	6.2	--------	12	250	346	11	2.2	2.0	2.4
27	6.8	--------	12	304	286	10	2.2	1.7	2.4
28	7.4	--------	16	332	348	9.3	2.2	2.0	2.4
29	8.0	--------	16	432	422	6.8	2.2	1.8	2.2
30	8.0	--------	41	470	304	6.2	2.2	1.7	2.2
31	8.0	--------	30	--------	275	--------	2.2	2.0	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	8.0	3.8	4.68	288
November 1–10	9.7	8.0	9.02	179
March	41	.2	8.28	509
April	476	30	158	9,400
May	442	176	329	20,200
June	850	6.2	130	7,740
July	6	2.2	2.72	167
August	2.2	1.7	1.98	122
September	2.4	1.6	2.07	123

COTTONWOOD CREEK AT WENDOVER, WYO.

LOCATION.—Chain gage in sec. 15, T. 27 N., R. 67 W., at Wendover, half a mile above mouth of creek.

DRAINAGE AREA.—159 square miles.

RECORDS AVAILABLE.—April, 1916, to September, 1924; May to September, 1929.

EXTREMES.—Maximum discharge during year, determined by slope-area method, about 840 second-feet June 1 (gage height, 5.02 feet); minimum, 3.3 second-feet July 10 (gage height, 1.66 feet).

1916–1924,1929: Maximum discharge, that of June 1, 1929; minimum, 0.2 second-foot June 21 to Sept. 30, 1919.

Maximum stage known, 10.6 feet Aug. 15, 1927 (discharge, about 5,800 second-feet).

REMARKS.—Records good except those for estimated periods, which are fair. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	125	282	[a] 4.2	7.9	[a] 5.5	16	58	20	4.0	7.2	[a] 5.0
2	122	274	4.0	[a] 7.7		17	54	16	3.8	8.6	[a] 5.0
3	112	117	4.0	7.6		18	58	9.3	4.5	171	[a] 5.0
4	112	92	4.5	7.9		19	50	6.8	4.0	6.8	[a] 4.5
5	118	92	4.5	7.2		20	42	7.2	3.8	6.5	4.5
6	120	106	4.0	7.9		21	32	6.0	[a] 3.9	6.2	4.5
7	108	106	4.0	7.9		22	25	6.0	4.0	6.5	4.5
8	90	101	4.2	8.6		23	20	[a] 6.0	12	[a] 6.0	4.5
9	90	82	3.6	[a] 8.6		24	23	6.0	11	[a] 5.5	[a] 5.8
10	85	73	3.3	8.6		25	20	5.5	10	[a] 5.0	7.2
11	81	55	4.2	9.3		26	24	4.8	8.6	[a] 4.5	6.5
12	81	52	3.8	7.9		27	33	4.2	[a] 9.0	4.0	[a] 7.2
13	69	36	5.2	[a] 7.9		28	36	4.0	9.3	6.5	7.9
14	63	33	5.8	[a] 7.6		29	108	4.0	9.3	6.0	7.2
15	63	31	4.2	[a] 7.2		30	102	4.5	9.3	6.0	7.2
						31	81	-------	9.0	6.0	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May	125	20	71.1	4,370
June	282	4.0	54.7	3,250
July	12	3.3	5.77	355
August	171	4.0	12.3	756
September	7.9	4.5	5.63	335
The period	----------	----------	----------	9,070

[a] Estimated.

LARAMIE RIVER NEAR GLENDEVEY, COLO.

LOCATION.—Water-stage recorder in sec. 25, T. 10 N., R. 76 W., 3 miles east of Glendevey. Gage moved 100 feet upstream on July 9, 1929.

DRAINAGE AREA.—101 square miles.

RECORDS AVAILABLE.—June, 1904, to October, 1905; August, 1910, to September, 1929.

EXTREMES.—Maximum discharge during year, 780 second-feet June 9 (gage height, 3.00 feet); minimum occurred during winter.

1904–5, 1910–1929: Maximum discharge, 2,240 second-feet June 9, 1923 (gage height, 4.55 feet, old datum); minimum, 5 second-feet Feb. 14 and 15, 1911.

REMARKS.—Records good except those for estimated periods, which are fair. Observations discontinued Dec. 1 to Apr. 27. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	20	26	--------	51	450	352	104	34
2	20	25	--------	42	560	293	93	34
3	18	20	--------	41	530	285	74	41
4	18	[a] 20	--------	41	600	258	65	54
5	18	[a] 20	--------	41	610	236	72	51
6	18	[a] 22	--------	47	615	214	114	61
7	18	[a] 22	--------	58	645	185	88	67
8	16	[a] 22	--------	77	684	178	67	58
9	17	[a] 22	--------	86	696	123	63	49
10	16	24	--------	82	[a] 720	126	61	56
11	17	23	--------	80	[a] 710	131	56	61
12	18	23	--------	77	[a] 650	131	49	58
13	24	23	--------	95	[a] 620	143	44	54
14	28	24	--------	107	[a] 590	129	42	47
15	34	21	--------	127	[a] 600	131	41	46
16	39	21	--------	146	[a] 500	126	40	44
17	40	27	--------	157	[a] 580	117	44	42
18	42		--------	173	[a] 460	104	51	42
19	38		--------	168	365	96	46	41
20	37		--------	173	401	104	41	41
21	37		--------	236	430	91	40	46
22	32		--------	285	465	98	38	44
23	34		--------	406	455	104	35	41
24	34	[a] 25	--------	455	415	98	38	41
25	33		--------	510	410	91	36	40
26	35		--------	480	445	86	30	38
27	32		--------	361	445	91	30	34
28	34		--------	323	430	79	32	35
29	36		40	251	415	76	21	35
30	30		55	239	365	104	32	31
31	34	--------	60	323	--------	104	34	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	42	16	28.0	1,720
November	27	20	23.7	1,410
May	510	41	185	11,400
June	720	365	529	31,500
July	352	76	145	8,920
August	114	30	52.6	3,230
September	67	31	45.5	2,710

[a] Estimated.

LARAMIE RIVER NEAR JELM, WYO.

LOCATION.—Water-stage recorder in sec. 15, T. 12 N., R. 77 W., one-fourth mile north of Colorado-Wyoming line and 4 miles south of old Jelm. Zero of gage is 7,685.32 feet above mean sea level.

DRAINAGE AREA.—297 square miles.

RECORDS AVAILABLE.—June, 1904, to October, 1905; May, 1911, to September, 1929.

EXTREMES.—Maximum discharge during year, 1,960 second-feet June 10 (gage height, 3.46 feet); minimum occurred during winter.

1904–5, 1911–1929: Maximum discharge, 4,200 second-feet June 9, 1923 (gage height, 4.15 feet); minimum, 22 second-feet Sept. 22-24, Oct. 4–8, 18–23, and 28–31, 1905.

REMARKS.—Records good except those for Oct. 9–11, Nov. 3–11, and 18–30, which are estimated. Observations discontinued Dec. 1 to Apr. 22. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	45	51	--------	144	995	892	242	52
2	45	54	--------	121	1,280	723	216	52
3	44	50	--------	126	1,270	639	176	57
4	44	50	--------	126	1,320	591	163	87
5	49	50	--------	116	1,390	546	173	92
6	54	50	--------	110	1,480	504	213	144
7	54	50	--------	132	1,480	404	227	157
8	54	50	--------	166	1,620	388	163	157
9	52	50	--------	206	1,720	350	141	132
10	50	50	--------	220	1,780	310	132	129
11	45	50	--------	166	1,760	294	126	135
12	43	52	--------	138	1,590	294	110	124
13	46	54	--------	182	1,450	298	92	148
14	49	51	--------	250	1,410	289	84	135
15	63	54	--------	310	1,500	306	75	121
16	63	58	--------	306	1,270	319	70	107
17	58	58	--------	324	1,450	277	82	102
18	73	50	--------	350	1,170	306	90	90
19	71	45	--------	341	963	246	84	80
20	75	40	--------	364	995	250	73	77
21	75	40	--------	471	1,020	227	68	77
22	64	45	--------	576	1,130	202	68	77
23	55	50	121	757	1,180	220	64	84
24	55	52	116	912	1,010	261	59	107
25	56	55	100	1,100	974	206	70	77
26	63	52	94	1,140	963	186	62	70
27	66	50	97	882	962	189	57	62
28	63	50	110	933	953	186	66	59
29	68	45	166	757	923	163	68	57
30	63	35	186	639	852	199	62	64
31	61	--------	--------	814	--------	235	57	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	75	43	57.0	3,500
November	58	35	49.7	2,960
April 23–30	186	94	124	1,970
May	1,140	110	425	26,100
June	1,780	852	1,260	75,000
July	892	163	339	20,800
August	242	57	111	6,820
September	157	52	97.1	5,780

LARAMIE RIVER AT FORT LARAMIE, WYO.

LOCATION.—Staff gage in sec. 25, T. 26 N., R. 65 W., at siphon crossing of Fort Laramie Canal, 3 miles west of Fort Laramie.

DRAINAGE AREA.—4,580 square miles.

RECORDS AVAILABLE.—April, 1915, to September, 1929.

REMARKS.—Diversions for irrigation above station. Flow regulated by Wheatland Reservoir. Complete records furnished by United States Bureau of Reclamation.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	92	178	159	165	105	135	250	1,350	2,000	335	92	120
2	92	177	180	138	125	135	250	1,200	2,500	195	92	150
3	84	188	115	145	135	135	230	1,110	2,100	195	78	130
4	84	170	105	155	135	165	220	1,250	2,000	145	78	130
5	76	186	105	126	145	165	245	1,350	2,000	145	145	130
6	76	199	115	126	145	190	590	1,400	1,900	112	92	170
7	113	215	115	126	105	230	840	1,350	1,800	112	78	260
8	113	196	128	151	105	225	590	1,200	1,700	335	78	412
9	92	192	141	178	105	230	565	1,350	1,450	145	78	490
10	106	208	141	155	110	230	540	1,400	1,400	112	78	335
11	100	179	141	155	105	240	425	1,400	1,150	112	78	320
12	110	167	141	151	115	240	465	1,400	1,200	92	112	320
13	120	169	151	165	115	240	425	1,450	1,450	92	92	320
14	125	165	151	165	115	190	445	1,500	955	92	78	280
15	145	169	147	155	115	240	395	1,600	840	412	67	280
16	150	173	148	165	115	240	480	1,700	800	145	67	280
17	150	169	122	165	115	222	935	1,750	722	412	67	280
18	167	149	112	158	115	226	960	1,750	567	260	67	200
19	150	145	106	138	115	231	1,020	1,800	490	335	67	200
20	148	145	85	102	120	231	935	1,780	450	195	78	200
21	142	135	100	102	120	231	905	1,500	375	145	67	200
22	142	159	115	114	115	231	765	1,400	335	260	90	200
23	142	145	122	95	115	238	710	1,200	335	145	90	200
24	140	149	128	95	115	238	710	1,150	412	112	90	200
25	140	149	128	95	115	238	1,050	1,110	260	567	90	200
26	145	141	128	110	115	224	722	1,110	260	260	150	200
27	145	155	140	110	140	211	727	1,500	195	145	100	200
28	142	169	147	110	140	211	805	1,780	145	112	100	320
29	142	167	160	110	------	227	960	1,800	112	260	150	280
30	145	167	150	110	------	221	1,110	2,000	145	112	100	280
31	148	------	165	110	------	266	------	2,000	------	112	100	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	167	76	125	7,690
November	215	135	169	10,100
December	180	85	132	8,120
January	178	95	134	8,240
February	145	105	119	6,610
March	266	135	215	13,200
April	1,110	220	642	38,200
May	2,000	1,110	1,470	90,400
June	2,500	112	1,010	60,160
July	567	92	200	12,300
August	150	67	90.0	5,530
September	490	120	243	14,500
The year	2,500	67	380	275,000

RAWHIDE CREEK NEAR LINGLE, WYO.

LOCATION.—Staff gage in sec. 17, T. 25 N., R. 62 W., 1 mile east of Lingle and 2 miles above mouth.

DRAINAGE AREA.—510 square miles.

RECORDS AVAILABLE.—May, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 340 second-feet June 2 (gage height, 5.5 feet); minimum probably occurred during winter.

1928–29: Maximum and minimum discharge, same as given above.

REMARKS.—Records good except those for estimated periods, Apr. 1–5, 7–15, and July 4, which are fair. Observations discontinued Nov. 10 to Mar. 31. No diversions. Low-water flow represents return seepage from Interstate Canal.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	50	40	20	31	30	22	36	49
2	118	45	20	29	266	18	47	71
3	85	39	22	32	56	14	56	63
4	50	39	26	33	37	16	42	64
5	52	38	30	39	31	16	74	89
6	54	36	32	42	31	21	70	83
7	65	39	34	42	30	24	78	113
8	53	42	34	56	29	24	74	126
9	68	40	35	50	28	27	34	119
10	65	--------	35	46	26	28	58	119
11	56	--------	36	34	24	32	61	98
12	65	--------	34	45	30	31	57	92
13	37	--------	30	45	31	30	61	88
14	39	--------	26	43	32	39	66	85
15	51	--------	22	38	30	33	58	66
16	52	--------	21	30	28	71	54	42
17	48	--------	21	30	28	59	46	65
18	44	--------	23	32	24	36	43	36
19	40	--------	36	28	20	21	76	37
20	44	--------	60	27	24	41	93	35
21	40	--------	58	28	38	35	99	32
22	40	--------	48	26	20	33	81	26
23	46	--------	36	25	23	59	36	34
24	85	--------	54	24	21	46	32	36
25	66	--------	45	23	21	42	36	34
26	56	--------	50	23	18	36	38	36
27	54	--------	45	23	19	27	58	39
28	56	--------	34	24	24	34	52	32
29	50	--------	32	28	23	40	54	67
30	46	--------	32	27	19	31	52	44
31	41	--------	--------	28	--------	43	45	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	118	37	55.4	3,410
November 1–9	45	36	39.8	710
April	60	20	34.4	2,050
May	56	23	33.3	2,050
June	266	19	35.4	2,110
July	71	14	33.2	2,040
August	99	32	57.0	3,500
September	126	26	64.0	3,810

KATZER DRAIN NEAR HENRY, NEBR.

LOCATION.—Staff gage in sec. 12, T. 23 N., R. 60 W., 3 miles southwest of Henry.
RECORDS AVAILABLE.—June, 1928, to September, 1929.
EXTREMES.—Maximum discharge during year, about 1,050 second-feet June 2 (gage height, 9.9 feet).
1928–29: Maximum discharge, that of June 2, 1929.
REMARKS.—Records poor. Discharge estimated Mar. 13–18. Observations discontinued Nov. 1 to Mar. 9, except for occasional readings in November and December. Katzer Drain enters North Platte River in Wyoming, 1 mile above Nebraska line. Flow is return water from area under Fort Laramie Canal.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	20				6	10	18	26	27	41
2	8.6				4	7	412	25	28	37
3	4.9				4	7	19	22	30	47
4	4.9				4	10	10	23	31	46
5	4.7				4	13	10	24	34	47
6	4.7		4		4	11	9	26	29	72
7	4.7				4	10	7	26	29	58
8	4.7				6	10	6	27	29	58
9	4.7				6	9	7	24	28	33
10	4.7			1	7	10	7	21	29	26
11	4.7			1	8	9	7	15	30	27
12	4.7			5	6	10	6	13	34	27
13	4.7			1	6	9	6	25	35	19
14	4.7			1	6	10	8	30	35	16
15	7.8			1	6	9	7	28	30	16
16	4.7	11		1	5	10	7	26	30	16
17	4.7			2	5	10	7	25	30	17
18	4.7			4	6	12	8	25	32	17
19	4.7			9	24	11	7	25	33	17
20	4.7			10	49	11	7	24	33	17
21	4.7			11	20	28	7	26	33	17
22	4.7			10	47	25	7	27	33	18
23	4.7			4	41	30	7	25	38	21
24	4.7			4	81	20	8	25	33	19
25	4.7			6	15	16	12	27	33	13
26	4.7			6	13	16	18	27	36	13
27	4.7	5		4	10	15	27	27	37	15
28	4.7			4	10	15	27	30	36	17
29	4.7			6	9	16	24	32	36	21
30	4.7			6	9	21	27	28	39	17
31	5.6			5		19		26	42	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	20	4.7	5.45	335
March 10–31	11	1	4.64	202
April	81	4	14.2	845
May	30	7	13.5	830
June	412	6	24.6	1,460
July	32	13	25.2	1,550
August	42	27	32.6	2,000
September	72	13	27.5	1,640

HORSE CREEK NEAR YODER, WYO.

LOCATION.—Water-stage recorder in sec. 13, T. 22 N., R. 62 W., 6 miles southeast of Yoder. Prior to Nov. 11, 1928, a staff gage 300 feet downstream was used.

DRAINAGE AREA.—1,320 square miles.

RECORDS AVAILABLE.—May, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 455 second-feet June 8 (gage height, 4.59 feet); no flow several days during July, August, and September. 1928–29: Maximum and minimum discharge, same as given above.

REMARKS.—Records good except those for estimated periods, which are fair. Diversions for irrigation above station. Flow regulated by Hawk Springs Reservoir.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4.5		55				96	212	36	12	0	0
2	7.2		49				58	223	179	10	.9	0
3	7.9		71				43	224	92	12	3.5	0
4	14		74				35	214	168	12	.4	1.5
5	32		58				48	208	293	6.5	0	2.5
6	22	[a] 1.0	56	[a] 17	[a] 14	[a] 20	75	182	255	4.0	.4	17
7	26		54				71	169	226	3.5	.5	35
8	9.7		55				69	165	339	3.0	.8	44
9	5.9		54				79	159	381	1.5	.6	50
10	5.9		53				97	152	268	1.5	.6	54
11	6.9	1.0	52				99	138	183	1.5	.1	56
12	5.4	6.0	54				97	127	145	4.0	.2	49
13	2.8	20	49				93	124	122	3.5	.1	44
14	2.8	34	47				91	119	105	3.5	.1	42
15	3.5	51	45			[a] 30	87	111	90	2.5	.1	41
16	4.0	57	40	[a] 16	[a] 14		79	106	74	7.0	.2	[a] 39
17	2.5	74	38				71	101	61	6.0	.2	[a] 37
18	1.8	108	32				64	100	52	4.0	.2	[a] 36
19	2.0	100	35			[a] 30	70	98	44	3.5	1.0	[a] 35
20	1.7	90	38			[a] 30	111	94	38	3.5	1.0	[a] 34
21	2.0	85	47			[a] 40	127	89	28	2.0	.8	[a] 33
22	4.2	78	59			[a] 60	123	87	23	4.0	.3	32
23	1.8	67	55			[a] 80	111	63	22	3.0	.2	33
24	1.3	72	61			85	151	44	24	2.0	.1	33
25	1.2	93	59		[a] 17	77	212	39	24	.9	.1	35
26	1.0	137	58	[a] 15		74	223	38	16	.6	0	[a] 36
27	1.0	137	52			63	183	35	14	.3	0	[a] 36
28	1.0	146	59			52	174	35	13	.3	0	[a] 37
29	1.0	152	54			53	196	35	12	.1	0	37
30	1.0	133	47		-------	75	217	33	12	0	0	27
31	1.2	-------	41		-------	111	-------	33	-------	0	0	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	32	1.0	5.97	367
November	152	1.0	55.0	3,270
December	74	32	51.6	3,170
January	----------	----------	16	984
February	----------	----------	15	833
March	111	----------	41.0	2,520
April	223	35	108	6,430
May	224	33	115	7,070
June	381	12	111	6,600
July	12	0	3.81	234
August	3.5	0	.40	25
September	56	0	31.9	1,900
The year	381	0	46.2	33,400

[a] Estimated.

SOUTH PLATTE RIVER AT SOUTH PLATTE, COLO.

LOCATION.—Water-stage recorder in sec. 25, T. 7 S., R. 70 W., 375 feet below mouth of North Fork of South Platte River at South Platte. Zero of gage is 6,078.43 feet above mean sea level.

DRAINAGE AREA.—2,550 square miles.

RECORDS AVAILABLE.—March, 1902, to September, 1929.

EXTREMES.—Maximum discharge during year, 2,340 second-feet Aug. 9 (gage height, 4.84 feet); minimum occurred during winter.

1902–1929: Maximum discharge, 6,320 second-feet June 7, 1921 (gage height, 8.95 feet); minimum, 21 second-feet Aug. 4, 1902.

REMARKS.—Daily discharge not determined Dec. 1 to Mar. 31; estimated Apr. 1–17. Diversions for irrigation above station. Flow regulated by Cheesman Reservoir. Complete records furnished by State engineer.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	222	162	159	155	424	402	755	892
2	238	164	155	142	460	456	1,170	850
3	219	132	171	147	409	448	1,690	836
4	190	153	185	151	428	440	1,520	704
5	192	164	194	160	503	424	1,810	716
6	188	192	179	190	440	428	1,660	782
7	213	210	158	202	418	421	1,640	928
8	233	192	146	213	432	405	1,980	1,040
9	230	113	122	236	436	405	2,220	1,100
10	210	104	112	264	413	421	1,850	985
11	197	108	85	274	390	424	1,530	878
12	202	106	155	250	417	394	1,250	822
13	210	108	132	236	398	369	1,060	632
14	219	104	130	284	413	405	907	620
15	238	216	118	331	452	468	822	609
16	255	130	131	405	362	508	762	577
17	253	76	133	331	348	526	762	556
18	192	71	155	341	376	609	775	541
19	192	59	162	327	405	666	788	526
20	185	58	171	338	324	609	762	541
21	183	68	140	383	503	551	710	546
22	180	88	126	381	795	432	704	577
23	210	95	123	387	808	815	736	643
24	197	94	123	460	755	1,140	775	541
25	192	92	123	448	822	729	843	494
26	147	83	119	481	729	691	843	481
27	149	71	123	424	775	678	749	481
28	149	82	130	405	782	742	1,080	531
29	173	54	140	436	536	950	1,240	526
30	208	48	151	369	440	878	1,120	498
31	149	------	------	402	------	775	936	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	255	147	200	12,300
November	216	48	113	6,720
December	------	------	[a] 78	4,800
January	------	------	[a] 94	5,780
February	------	------	[a] 93	5,160
March	------	------	[a] 108	6,640
April	194	85	142	8,450
May	481	142	308	18,900
June	822	324	506	30,100
July	1,140	369	568	34,900
August	2,220	704	1,140	70,100
September	1,100	481	682	40,600
The year	2,220	------	338	244,000

[a] Estimated.

NORTH FORK OF SOUTH PLATTE RIVER AT SOUTH PLATTE, COLO.

LOCATION.—Water-stage recorder in sec. 25, T. 7 S., R. 70 W., one-third mile above South Platte. Zero of gage is 6,090.55 feet above mean sea level.

DRAINAGE AREA.—484 square miles.

RECORDS AVAILABLE.—June, 1909, to September, 1910; April, 1913, to September, 1929.

EXTREMES.—Maximum discharge during year, 857 second-feet Aug. 7 (gage height, 4.04 feet); minimum occurred during winter.

1909–10, 1913–1929: Maximum discharge, 1,910 second-feet June 8, 1921 (gage height, 5.9 feet); minimum, 12 second-feet Dec. 18, 1922 (gage height, 1.5 feet).

REMARKS.—Discharge estimated Nov. 17–23, 28–30, and Apr. 1–10. Observations discontinued Dec. 1 to Mar. 31. Diversions for irrigation above station. Complete records furnished by State engineer.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Apr.	May	June	July	Aug.	Sept.
1	44	49	58	90	271	146	274	258
2	40	31	58	74	324	150	284	239
3	38	33	58	79	301	142	612	290
4	31	45	58	82	264	144	488	255
5	39	47	58	90	258	137	621	248
6	40	50	42	95	255	131	760	293
7	44	52	42	99	242	124	746	321
8	45	48	42	108	256	131	612	363
9	43	44	42	121	258	164	583	345
10	43	42	42	135	242	158	512	311
11	47	46	44	131	218	156	440	299
12	42	44	59	112	207	154	375	287
13	44	45	65	121	189	148	364	264
14	45	45	64	152	177	154	345	258
15	52	40	67	182	191	171	335	264
16	57	40	74	207	175	137	298	258
17	57	38	79	191	171	133	314	239
18	53	36	87	218	158	144	324	224
19	57	36	90	186	150	150	277	221
20	56	34	87	196	144	164	274	215
21	52	34	79	233	139	160	283	209
22	51	32	74	204	139	154	258	202
23	47	32	72	221	139	268	264	199
24	47	30	76	268	137	298	331	194
25	48	40	76	274	148	199	364	182
26	50	48	75	318	150	158	335	177
27	49	40	72	248	150	135	293	166
28	48	40	65	207	150	194	352	164
29	49	40	72	184	148	182	335	162
30	48	40	87	172	148	173	304	160
31	48	-------	-------	212	-------	233	268	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	57	31	46.9	2,880
November	52	30	40.7	2,420
April	90	42	65.5	3,900
May	318	74	168	10,300
June	324	137	197	11,700
July	298	124	164	10,100
August	760	258	394	24,200
September	363	160	242	14,400

WEST FORK OF CLEAR CREEK NEAR EMPIRE, COLO.

LOCATION.—Water-stage recorder in sec. 27, T. 3 S., R. 74 W., 75 feet below Miller Creek and 1 mile east of Empire. Zero of gage is 8,271.27 feet above mean sea level.

DRAINAGE AREA.—57 square miles.

RECORDS AVAILABLE.—June to September, 1929.

EXTREMES.—Maximum discharge during period, 373 second-feet June 10 (gage height, 2.13 feet); minimum, 50 second-feet Sept. 30 (gage height, 0.90 foot).

REMARKS.—Records fair. Discharge estimated June 1–3 and 5. Possibly a few diversions for mining purposes.

Daily and monthly discharge, in second-feet, 1929

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1	160	219	172	68	16	261	123	101	62
2	180	208	152	69	17	273	127	103	59
3	190	193	152	71	18	258	140	98	56
4	193	182	145	69	19	261	134	88	54
5	255	160	148	70	20	269	134	85	54
6	269	145	186	72	21	265	130	85	53
7	281	136	186	74	22	273	132	79	53
8	309	132	168	75	23	273	145	75	53
9	321	119	160	71	24	269	148	74	52
10	329	112	152	70	25	265	138	72	52
11	321	108	138	71	26	261	136	71	53
12	285	105	127	69	27	246	172	71	53
13	238	106	117	67	28	242	215	77	52
14	242	115	112	64	29	238	179	77	52
15	265	119	106	63	30	227	176	75	51
					31	------	160	69	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
June	329	160	257	15,300
July	219	105	147	9,040
August	186	69	114	7,010
September	75	51	61.7	3,670
The period	------	------	------	35,000

CLEAR CREEK NEAR GOLDEN, COLO.

LOCATION.—Water-stage recorder in sec. 32, T. 3 S., R. 70 W., in canyon 1½ miles above Golden.

DRAINAGE AREA.—392 square miles.

RECORDS AVAILABLE.—December, 1908 to December, 1909; June, 1911, to September, 1929.

EXTREMES.—Maximum discharge during year, 1,280 second-feet Aug. 5 (gage height, 4.42 feet); minimum occurred during winter.

1908–9, 1911–1929: Maximum discharge, 4,420 second-feet July 31, 1921; minimum, 18 second-feet Jan. 11, 1918.

REMARKS.—Discharge estimated Oct. 31, Nov. 1–8, and 11. Daily discharge not determined Nov. 12 to Apr. 26. Golden ditch diverts above station. Complete records furnished by State engineer.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	71	46			[a] 34		19	512	559	559	314
2	66	36					41	595	525	498	310
3	80	79		[a] 53			38	624	492	552	319
4	114	87					56	624	488	532	324
5	119	52					50	646	453	588	286
6	66	66	[a] 31				34	661	411	722	305
7	61	66					67	653	37[illegible]	706	276
8	110	80					94	691	39[illegible]	661	319
9	80	56				[a] 50	154	761	350	588	334
10	80	70					125	769	319	573	295
11	80	90					114	676	310	559	286
12	121						130	616	314	525	286
13	63						116	580	310	466	241
14	53						119	653	27[illegible]	447	232
15	114						202	776	479	405	232
16	123						236	588	42[illegible]	393	254
17	80						267	638	40[illegible]	371	228
18	70						245	609	39[illegible]	434	220
19	110						254	588	36[illegible]	382	232
20	76						295	595	39[illegible]	382	232
21	58						319	623	40[illegible]	329	232
22	87						290	631	48[illegible]	340	217
23	80						360	631	53[illegible]	310	217
24	66						399	646	65[illegible]	305	213
25	66						466	616	53[illegible]	319	202
26	87						580	595	472	314	202
27	52					30	518	602	40[illegible]	295	191
28	41			[a] 35		28	485	602	59[illegible]	276	187
29	87					24	376	602	53[illegible]	371	187
30	60					33	334	573	580	382	183
31	80						290		56[illegible]	329	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	123	41	80.7	4,960
November			[b] 52	3,090
December			[b] 44	2,710
January			[b] 42	2,580
February			[b] 34	1,890
March			[b] 38	2,340
April			[b] 44	2,620
May	580	19	228	14,000
June	776	512	633	37,700
July	653	276	445	27,400
August	722	276	449	27,600
September	334	183	252	15,000
The year	776		196	142,000

[a] Result of discharge measurement. [b] Estimated.

NORTH ST. VRAIN CREEK NEAR ALLENS PARK, COLO.

LOCATION.—Water-stage recorder in sec. 14, T. 3 N., R. 73 W., 2½ miles north of Allens Park.

DRAINAGE AREA.—33 square miles.

RECORDS AVAILABLE.—October, 1925, to September, 1929.

EXTREMES.—Maximum discharge during year (estimated), 1,000 second-feet June 9, caused by breaking of Copeland Lake Dam; minimum, 6 second-feet during January and February.

1925–1929: Maximum discharge, that of June 9, 1929; minimum, 6 second-feet Apr. 19, 1928, and during January and February, 1929.

REMARKS.—Records good except those for estimated periods, which are fair. Daily discharge not determined Jan. 1 to Mar. 31. Practically no diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	28	15					18	171	272	170	78
2	26	16				[a] 10	15	211	270	160	100
3	24	[a] 16					17	204	230	180	94
4	25	[a] 16				12	20	213	204	160	90
5	24	[a] 16			[b] 9	10	20	244	204	160	102
6	24	16				10	23	[a] 252	204	170	90
7	25	18	[a] 11			10	29	[a] 270	200	154	97
8	23	17				12	34	[a] 280	182	152	90
9	22	13				7	38	[a] 300	182	132	84
10	21	17				8	37	[a] 235	184	117	78
11	21	16				8	32	217	187	107	78
12	21	16				9	38	192	204	94	67
13	23	12				8	54	187	242	100	71
14	24	11	9			[a] 8	68	192	254	90	73
15	24	10	9			[a] 9	[a] 75	214	224	78	84
16	25	10	[a] 9			[a] 10	[a] 77	[a] 196	217	78	75
17	26	10	9			[a] 11	[a] 79	[a] 210	214	87	71
18	22					[a] 11	[a] 80	[a] 190	200	80	75
19	19	[a] 10	[a] 9			[a] 11	[a] 82	[a] 185	204	90	73
20	19					[a] 12	[a] 90	[a] 245	204	92	71
21	20			[b] 6		[a] 12	102	[a] 260	187	87	75
22	18					[a] 13	104	272	190	84	80
23	19					13	123	250	212	82	80
24	19					12	125	260	214	64	75
25	18		[a] 8			10	162	262	202	54	62
26	18	[a] 12				11	169	260	180	51	62
27	18					10	129	272	184	52	58
28	19		8			11	110	274	217	52	56
29	20					10	91	272	187	69	52
30	19		[a] 8			13	93	267	174	69	48
31	19						116		180	64	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	28	18	21.7	1,330
November	18	10	13.2	786
December	11	8	9.48	583
January			[a] 6	369
February			[a] 6	333
March			[a] 9	553
April	13	7	10.4	619
May	169	15	72.6	4,460
June	300	171	235	14,000
July	272	174	207	12,700
August	180	51	103	6,330
September	102	48	76.3	4,540
The year			64.3	46,600

[a] Estimated. [b] Result of discharge measurement.

SOUTH ST. VRAIN CREEK NEAR WARD, COLO.

LOCATION.—Water-stage recorder between secs. 35 and 36, T. 2 N., R. 73 W., 2 miles northwest of Ward.

DRAINAGE AREA.—15 square miles.

RECORDS AVAILABLE.—May, 1926, to September, 1927; May to September, 1929.

EXTREMES.—Maximum discharge during year, 231 second-feet June 8 (gage height, 2.06 feet); minimum, 18 second-feet May 21 (gage height, 0.63 foot).

1926–27, 1929: Maximum discharge, 313 second-feet June 7, 1926 (gage height, 2.48 feet); minimum occurred during winter.

REMARKS.—Records good. No diversions above station. Flow regulated by several small lakes.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	------	97	146	134	58	16	------	149	125	81	36
2	------	129	129	105	52	17	------	151	124	84	33
3	------	140	129	138	50	18	------	131	1[illegible]	74	30
4	------	136	125	118	46	19	------	108	97	68	31
5	------	136	108	96	45	20	------	131	1[illegible]	70	31
6	------	165	118	148	46	21	20	149	92	90	38
7	------	179	112	129	40	22	24	163	80	80	37
8	------	210	98	88	42	23	46	149	87	69	36
9	------	207	88	75	40	24	60	159	131	80	32
10	------	183	88	68	37	25	66	163	97	78	28
11	------	161	96	63	37	26	70	149	84	64	26
12	------	149	103	55	36	27	87	159	94	64	24
13	------	140	125	54	36	28	75	159	153	68	25
14	------	161	165	60	38	29	60	165	[illegible]	64	24
15	------	173	159	82	41	30	58	163	82	56	22
						31	78	------	1[illegible]	64	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May 21–31	87	20	58.5	1,280
June	210	97	154	9,160
July	165	80	112	6,890
August	148	54	82.8	5,090
September	58	22	36.6	2,180
The period	------	------	------	24,600

MIDDLE ST. VRAIN CREEK NEAR ALLENS PARK, COLO.

LOCATION.—Water-stage recorder in sec. 3, T. 2 N., R. 72 W., 9 miles southeast of Allens Park.

DRAINAGE AREA.—28 square miles.

RECORDS AVAILABLE.—April, 1926, to September, 1929.

EXTREMES.—Maximum discharge during year, 240 second-feet June 8 (gage height, 2.45 feet); minimum, 3.1 second-feet Mar. 5.

1926–1929: Maximum discharge, 322 second-feet June 6, 1926 (gage height, 2.65 feet); minimum, that of Mar. 5, 1929.

REMARKS.—Records good except those for estimated periods, which are fair. Daily discharge not determined Nov. 1 to Apr. 27. Practically no diversions above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Jan.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13				18	166	154	150	56
2	12				17	195	154	134	53
3	12				17	181	152	179	56
4	11			[a] 10	19	179	[b] 130	154	57
5	11		[a] 3.1		20	185	126	150	56
6	11				20	197	[b] 128	183	56
7	10				23	204	130	181	53
8	11				29	224	114	[b] 170	50
9	11				34	213	94	116	47
10	11				39	189	92	[b] 105	45
11	9.8				36	181	[b] 94	[b] 90	43
12	9.8				42	164	96	[b] 75	39
13	9.6				44	157	127	72	40
14	8.6				52	171	152	71	42
15	8.8				62	179	154	67	43
16	9.2				70	162	142	63	37
17	8.6				74	175	138	64	35
18	8.6				76	152	119	62	34
19	8.2				75	145	118	57	36
20	8.6				87	161	132	56	37
21	8.6	[a] 5.4			110	173	118	60	44
22	7.0				119	181	105	63	44
23	7.8				130	173	129	58	40
24	7.0				137	[b] 180	130	56	35
25	7.2				154	[b] 180	116	54	31
26	7.0				166	[b] 180	105	52	29
27	7.2				140	[b] 184	129	51	26
28	8.2			18	127	[b] 185	161	52	24
29	8.4			19	113	[b] 180	106	69	23
30	8.2			22	98	170	102	67	23
31	8.6				122		130	63	

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	13	7	9.29	571
November			[b] 6	357
December			[b] 6	369
January			[b] 5	307
February			[b] 4	222
March			[b] 3	184
April			[b] 12	714
May	166	17	73.2	4,500
June	224	145	179	10,700
July	154	92	125	7,690
August	183	51	91.7	5,640
September	57	23	41.1	2,450
The year	224		46.5	33,700

[a] Result of discharge measurement. [b] Estimated.

LEFTHAND CREEK NEAR BOULDER, COLO.

LOCATION.—Water-stage recorder in sec. 26, T. 2 N., R. 71 W., 9 miles north of Boulder.

DRAINAGE AREA.—48 square miles.

RECORDS AVAILABLE.—May to September, 1929.

EXTREMES.—Maximum discharge during period, 216 second-feet July 17 (gage height, 2.49 feet); minimum, 27 second-feet Sept. 30 (gage height, 1.33 feet).

REMARKS.—Records good. Small ditch diverts water just above station. Water diverted from South St. Vrain Creek enters Lefthand Creek 2½ miles above station.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	------	103	136	129	61	16	75	138	129	54	42
2	------	132	127	105	66	17	78	145	138	54	37
3	------	147	127	140	64	18	75	138	103	53	36
4	------	154	123	138	58	19	72	123	86	48	35
5	------	145	103	129	56	20	81	138	86	47	36
6	------	152	103	180	60	21	90	149	83	50	39
7	------	152	99	182	53	22	88	156	78	48	39
8	------	163	96	152	54	23	97	154	96	45	38
9	------	165	80	127	50	24	101	154	121	45	37
10	------	158	76	107	47	25	107	154	96	51	33
11	------	149	84	88	45	26	119	149	81	57	31
12	------	143	92	80	41	27	121	161	75	55	30
13	------	123	101	69	39	28	105	156	125	54	30
14	------	134	129	65	38	29	76	154	99	69	30
15	------	152	161	57	42	30	66	149	76	66	29
						31	80	------	107	62	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May 16-31	121	66	89.4	2,840
June	165	103	146	8,690
July	161	75	104	6,400
August	182	45	84.1	5,170
September	66	29	43.2	2,570
The period	------	------	------	25,700

NORTH BOULDER CREEK NEAR NEDERLAND, COLO.

LOCATION.—Water-stage recorder in sec. 6, T. 1 S., R. 72 W., 2 miles north of Nederland. Prior to Aug. 28, 1929, a chain gage at same site and datum was used.

DRAINAGE AREA.—25 square miles.

RECORDS AVAILABLE.—June to September, 1929.

EXTREMES.—Maximum discharge during period, 259 second-feet Aug. 5 (gage height, 2.6 feet); minimum, 1.0 second-foot Sept. 18 (gage height, 1.16 feet).

REMARKS.—Records fair prior to Aug. 27 and excellent thereafter. Discharge estimated Aug. 21. Diversion for city of Boulder above station. Flow regulated by several lakes at headwaters.

Daily and monthly discharge, in second-feet, 1929

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1	--------	138	125	61	16	--------	79	17	25
2	--------	130	95	58	17	--------	121	16	16
3	--------	112	134	65	18	--------	106	8	14
4	--------	103	20	52	19	95	95	9	26
5	--------	103	217	51	20	98	65	27	26
6	--------	98	83	54	21	98	67	28	25
7	--------	92	8	54	22	109	37	29	25
8	--------	83	109	55	23	116	147	58	28
9	--------	81	77	55	24	121	109	51	22
10	--------	77	69	49	25	121	83	51	22
11	--------	75	109	41	26	125	81	46	31
12	--------	71	26	34	27	130	79	15	24
13	--------	67	41	33	28	134	95	23	23
14	--------	71	36	26	29	134	95	30	22
15	--------	60	28	24	30	134	106	28	22
					31	--------	103	44	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
June 19-30	134	95	118	2,810
July	147	37	91.3	5,610
August	217	8	53.5	3,290
September	65	14	35.4	2,110
The period				13,800

THOMPSON RIVER BELOW POWER HOUSE, NEAR DRAKE, COLO.

LOCATION.—Water-stage recorder in NW. ¼ sec. 7, T. 5 N., R. 70 W., one-eighth mile above Cedar Creek, a quarter of a mile below city of Loveland's hydroelectric plant, and 4½ miles east of Drake.

DRAINAGE AREA.—277 square miles.

RECORDS AVAILABLE.—October, 1928, to September, 1929. Comparable record at site 3 miles upstream from September, 1917, to December, 1926.

REMARKS.—Records good. Discharge estimated May 27. Observations discontinued Jan. 22 to Apr. 15.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Apr.	May	June	July	Aug.	Sept.
1	58	41	25	18	--------	90	448	597	585	295
2	59	28	28	20	--------	82	578	564	550	278
3	61	19	26	18	--------	80	550	554	597	338
4	58	28	24	17	--------	83	546	526	554	356
5	56	47	26	17	--------	84	597	498	522	329
6	55	46	28	14	--------	90	633	490	673	362
7	53	47	27	16	--------	87	657	466	717	365
8	52	44	25	17	--------	105	709	462	645	353
9	50	41	24	16	--------	124	713	407	571	326
10	49	36	25	15	--------	158	649	398	518	320
11	47	38	24	16	--------	154	629	392	476	315
12	48	38	22	15	--------	147	557	410	445	310
13	48	37	23	15	--------	148	515	473	414	305
14	49	38	22	18	--------	187	550	574	395	308
15	50	36	20	18	--------	241	645	568	365	310
16	51	41	16	17	51	285	582	560	344	310
17	51	38	16	15	57	275	657	536	332	288
18	53	28	17	15	68	300	550	480	386	270
19	56	24	16	16	66	248	484	456	359	260
20	56	23	15	14	77	275	532	484	329	255
21	53	35	15	16	67	338	574	470	312	262
22	51	47	15	--------	67	347	625	445	300	272
23	44	43	13	--------	66	410	633	574	290	270
24	41	37	13	--------	71	431	605	645	278	265
25	39	32	13	--------	52	498	605	540	308	248
26	41	35	14	--------	67	560	597	498	292	239
27	41	37	14	--------	67	500	633	494	265	229
28	38	38	15	--------	66	442	625	741	270	217
29	42	36	16	--------	76	392	621	609	285	209
30	43	30	19	--------	92	335	574	621	335	205
31	41	--------	22	--------	--------	377	--------	609	315	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	61	38	49.5	3,040
November	47	19	36.3	2,160
December	28	13	20.0	1,230
January 1–21	20	14	16.3	679
April 16–30	92	51	67.3	2,000
May	560	80	254	15,600
June	713	448	596	35,500
July	741	392	521	32,000
August	717	265	420	25,800
September	365	205	289	17,200

THOMPSON RIVER AT MOUTH OF CANYON, NEAR DRAKE, COLO.

LOCATION.—Water-stage recorder in sec. 4, T. 5 N., R. 70 W., 1 mile above mouth of canyon and 6 miles east of Drake.

DRAINAGE AREA.—301 square miles.

RECORDS AVAILABLE.—March, 1927, to September, 1929.

EXTREMES.—Maximum discharge during year, 1,600 second-feet July 28 (gage height, 5.76 feet); minimum occurred during winter.

1927–1929: Maximum discharge, 1,800 second-feet May 31, 1928 (gage height, 6.00 feet); minimum, 18 second-feet Dec. 9, 1927.

REMARKS.—Records good except those for estimated periods, which are fair. Observations discontinued Oct. 14 to May 13. Diversion for irrigation above station.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	May	June	July	Aug.	Sept.	Day	Oct.	May	June	July	Aug.	Sept.
1	45	-------	[a] 560	748	805	298	16	-------	179	775	670	387	312
2	49	-------	670	670	720	290	17	-------	197	[a] 740	645	366	288
3	47	-------	630	670	865	378	18	-------	173	[a] 700	530	372	[a] 280
4	44	-------	645	620	695	363	19	-------	260	[a] 630	490	424	[a] 270
5	44	-------	748	552	645	342	20	-------	242	645	552	381	258
6	43	-------	835	552	1,140	387	21	-------	130	720	530	351	[a] 270
7	41	-------	835	490	1,060	372	22	-------	116	805	[a] 530	336	280
8	39	-------	995	490	865	357	23	-------	[a] 120	835	[a] 600	330	278
9	38	-------	1,030	417	720	330	24	-------	[a] 150	775	[a] 700	318	262
10	38	-------	835	405	620	330	25	-------	[a] 200	775	695	288	245
11	38	-------	805	393	552	339	26	-------	[a] 250	740	598	336	235
12	38	-------	670	417	510	327	27	-------	[a] 240	805	620	272	220
13	37	-------	575	510	490	324	28	-------	[a] 220	805	1,240	272	208
14	-------	375	645	670	451	333	29	-------	[a] 200	805	805	303	261
15	-------	258	835	645	417	339	30	-------	[a] 200	720	865	354	199
							31	-------	[a] 300	-------	805	309	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October 1–13	49	37	41.6	1,070
May 14–31	375	116	212	7,570
June	1,030	560	753	44,800
July	1,240	393	617	37,900
August	1,140	272	515	31,700
September	387	199	297	17,700

[a] Estimated.

LITTLE THOMPSON RIVER NEAR BERTHOUD, COLO.

LOCATION.—Water-stage recorder in sec. 2, T. 3 N., R. 70 W., 10 miles southwest of Berthoud.
DRAINAGE AREA.—100 square miles.
RECORDS AVAILABLE.—May to September, 1929.
EXTREMES.—Maximum discharge during period, 180 second-feet July 20 (gage height, 2.65 feet); minimum, 0.7 second-foot July 7 (gage height, 0.39 foot).
REMARKS.—Records good. One small ditch diverts water above station.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	------	17	1.2	15	10	16	------	4.5	1.5	20	16
2	------	15	1.2	10	9.2	17	------	4.0	1.4	18	14
3	------	13	1.2	66	8.8	18	------	3.5	1.5	16	13
4	------	11	1.1	43	11	19	------	2.8	10	22	11
5	------	13	1.1	32	12	20	------	2.4	34	15	11
6	------	14	1.1	61	18	21	------	2.2	24	16	11
7	------	13	1.0	80	21	22	------	2.1	7.6	13	11
8	------	11	1.1	66	21	23	------	2.0	8.4	13	11
9	------	9.6	1.1	57	23	24	------	1.8	24	14	8.4
10	------	8.8	1.0	49	23	25	------	1.7	18	13	7.6
11	------	8.4	1.1	41	23	26	15	1.5	16	13	6.8
12	------	8.8	1.1	35	21	27	13	1.4	15	12	6.3
13	------	9.2	1.1	31	19	28	19	1.2	13	10	6.0
14	------	7.2	1.0	28	18	29	22	1.2	21	8.8	6.0
15	------	6.0	1.1	27	16	30	16	1.2	17	10	6.3
						31	13	------	11	11	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May 26–31	22	13	16.3	194
June	17	1.2	6.62	394
July	34	1.0	7.74	476
August	80	8.8	27.9	1,720
September	23	6.0	13.3	791
The period	------	------	------	3,580

CACHE LA POUDRE RIVER ABOVE CHAMBERS LAKE OUTLET, COLO.

LOCATION.—Water-stage recorder in sec. 28, T. 8 N., R. 75 W., one-fo above Chambers Lake outlet and 11 miles southwest of Home.
DRAINAGE AREA.—91 square miles.
RECORDS AVAILABLE.—May to September, 1929.
EXTREMES.—Maximum discharge during period, 1,720 second-feet June height, 4.4 feet); minimum, 72 second-feet Sept. 29 (gage height, 0.
REMARKS.—Records fair. Discharge estimated May 21 and June 22. N diverted above station. Flow increased by diversion from Colorad Basin.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Au
1	------	892	727	315	92	16	------	1,050	361	112
2	------	1,080	660	254	94	17	------	1,130	342	125
3	------	943	577	227	115	18	------	796	321	123
4	------	943	538	216	137	19	------	820	313	107
5	------	995	500	258	110	20	185	995	297	100
6	------	1,100	465	321	126	21	286	995	282	94
7	------	1,220	448	269	128	22	386	1,000	295	98
8	------	1,370	432	234	126	23	482	1,020	416	87
9	------	1,280	369	203	112	24	577	796	401	94
10	------	1,220	358	181	120	25	750	773	310	90
11	------	1,100	350	159	125	26	843	750	302	88
12	------	868	367	144	151	27	482	796	358	88
13	------	820	448	130	172	28	386	727	401	87
14	------	868	465	123	174	29	318	796	350	96
15	------	1,020	386	118	153	30	3[illegible]	773	416	102
						31	538	------	353	94

Month	Maximum	Minimum	Mean	Run-off acre-fee
May 20-31	750	185	466	11, 1
June	1,370	727	965	57, 4
July	727	282	407	25, 0
August	321	87	153	9, 41
September	174	73	113	6, 72
The period				110, 00

CACHE LA POUDRE RIVER NEAR LOG CABIN, COLO.

LOCATION.—Staff gage in sec. 33, T. 9 N., R. 73 W., half a mile below Sevenmile Creek, half a mile east of Rustic, and 6½ miles southwest of Log Cabin. Zero of gage is 7,092.12 feet above mean sea level.

DRAINAGE AREA.—235 square miles.

RECORDS AVAILABLE.—January, 1909, to December, 1911; May to September, 1929.

EXTREMES.—Maximum discharge during year, 2,750 second-feet June 9 (gage height, 3.60 feet); minimum, 125 second-feet Sept. 26 (gage height, 1.00 foot).

1909–1911, 1929: Maximum discharge, 3,110 second-feet June 19, 1909; minimum, 10 second-feet Feb. 2 and 3, 1911.

REMARKS.—Records good. Diversions for irrigation above station. Flow partly regulated by Chambers Lake.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	------	1,660	1,830	592	391	16	------	2,010	795	265	443
2	------	2,190	1,660	500	443	17	------	2,460	748	322	391
3	------	1,830	1,410	500	500	18	------	1,740	702	343	174
4	------	1,740	1,490	417	500	19	------	1,740	664	322	158
5	------	1,740	1,490	500	500	20	------	1,740	625	302	144
6	------	2,100	1,250	500	472	21	------	1,740	592	284	146
7	------	2,370	1,100	500	302	22	559	1,920	559	284	144
8	------	2,560	960	443	248	23	795	1,920	592	265	140
9	------	2,560	848	417	199	24	900	1,830	702	265	142
10	------	2,560	748	343	191	25	1,020	1,920	592	391	133
11	------	2,460	748	343	205	26	1,580	1,740	559	443	127
12	------	2,100	748	322	218	27	1,100	2,100	559	443	151
13	------	1,580	848	284	248	28	848	2,010	702	443	148
14	------	1,660	900	265	500	29	748	2,010	559	472	148
15	------	2,100	795	248	530	30	795	2,100	592	472	164
						31	900	------	559	417	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May 22–31	1,580	559	924	18,300
June	2,560	1,580	2,010	120,000
July	1,830	559	869	53,400
August	592	248	384	23,600
September	530	127	273	16,200
The period	------	------	------	232,000

SOUTH FORK OF CACHE LA POUDRE RIVER NEAR EGGERS, COLO.

LOCATION.—Water-stage recorder in sec. 36, T. 8 N., R. 73 W., one-third mile above Little Beaver Creek and 8 miles southwest of Eggers.

DRAINAGE AREA.—69 square miles.

RECORDS AVAILABLE.—May to September, 1929.

EXTREMES.—Maximum discharge during period, 359 second-feet June 9 (gage height, 2.38 feet); minimum, 48 second-feet Sept. 29 and 30 (gage height, 1.21 feet).

REMARKS.—Records excellent except those for estimated periods, June 23 and Aug. 27 to Sept. 10, which are fair. Minor diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	------	172	222	185	88	16	------	232	152	75	73
2	------	235	203	185	90	17	------	233	149	76	69
3	------	215	200	177	90	18	------	200	145	78	68
4	------	228	191	152	95	19	------	175	142	78	65
5	------	248	175	147	95	20	------	215	145	75	63
6	------	274	159	175	100	21	------	232	175	72	66
7	------	285	162	140	105	22	------	255	175	73	64
8	------	329	147	115	95	23	112	210	212	68	65
9	------	321	117	104	85	24	162	225	225	71	60
10	------	309	117	95	82	25	213	211	188	75	58
11	------	293	122	90	79	26	266	218	175	69	57
12	------	263	149	85	78	27	248	274	215	67	52
13	------	235	154	82	81	28	280	231	215	75	50
14	------	248	188	79	85	29	124	270	197	78	48
15	------	241	162	76	87	30	79	238	194	82	48
						31	142	------	185	86	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May 23-31	280	79	181	3,230
June	329	172	250	14,900
July	225	117	173	10,600
August	185	67	99.5	6,120
September	105	48	74.7	4,440
The period	------	------	------	39,300

NORTH FORK OF CACHE LA POUDRE RIVER AT LIVERMORE, COLO.

LOCATION.—Chain gage in sec. 32, T. 10 N., R. 70 W., at Livermore. Zero of gage is 5,717.31 feet above mean sea level.

DRAINAGE AREA.—541 square miles.

RECORDS AVAILABLE.—May to September, 1929.

EXTREMES.—Maximum discharge during period, 486 second-feet May 29 (gage height, 2.74 feet); minimum, 6.5 second-feet July 18 and 19 (gage height, 1.16 feet).

Maximum stage known, 16.2 feet May 20, 1904 (estimated discharge, 20,000 second-feet).

REMARKS.—Records good. Diversions for irrigation above station. Flow regulated by Halligan Reservoir.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	------	348	14	12	10	16	------	265	8.5	17	30
2	------	366	14	13	10	17	------	273	7.5	14	27
3	------	373	13	130	12	18	------	276	6.5	14	24
4	------	406	12	54	12	19	------	222	6.5	14	22
5	------	432	13	72	14	20	------	136	19	14	22
6	------	466	13	75	17	21	------	113	11	13	20
7	------	443	12	80	26	22	------	95	13	13	19
8	------	443	12	70	29	23	------	89	12	12	17
9	------	384	10	64	67	24	208	70	9.2	12	16
10	------	417	12	64	80	25	276	64	7.5	12	14
11	------	395	12	59	75	26	305	37	8.5	8.5	14
12	------	363	12	57	75	27	316	20	9.2	10	13
13	------	366	11	57	77	28	373	12	13	9.2	13
14	------	327	11	37	59	29	421	13	12	9.2	14
15	------	291	8.5	22	42	30	312	12	12	10	13
						31	319	------	9.2	10	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May 24-31	421	208	316	5,010
June	466	12	251	14,900
July	19	6.5	11.1	682
August	130	8.5	34.1	2,100
September	80	10	29.4	1,750
The period	------	------	------	24,400

MIDDLE LOUP RIVER AT ST. PAUL, NEBR.

LOCATION.—Chain gage in sec. 10, T. 14 N., R. 10 W., at St. Paul. Zero of gage is 1,778.4 feet above mean sea level.

DRAINAGE AREA.—7,320 square miles.

RECORDS AVAILABLE.—May, 1895, to October, 1897; April to October, 1899; April to November, 1903; August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 9,400 second-feet Mar. 11 (gage height, 3.70 feet); minimum, 302 second-feet Dec. 6 (gage height, 0.96 foot). 1895–1897, 1899, 1903, 1928–29: Maximum discharge, 16,000 second-feet June 6, 1896; minimum, that of Dec. 6, 1928.

REMARKS.—Records fair. Daily discharge not determined for January. No diversions.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	[a] 1,100	2,090					990	1,460	1,570	1,080	700	915
2	[a] 1,000	1,420	[a] 617				1,080	1,570	1,260	1,260	635	840
3	[a] 940	1,260					990	1,570	2,260	1,260	770	840
4	[a] 900	1,490					915	1,570	2,590	1,460	700	840
5	[a] 1,000	1,810	594		[a] 560	[a] 1,500	990	1,570	2,260	1,570	700	1,080
6	[a] 1,100	1,790	302				990	1,960	2,110	2,260	700	1,260
7	1,100	1,790					1,350	2,110	6,480	4,000	700	1,350
8	900	1,630	[a] 372				1,160	2,110	5,120	1,960	635	1,350
9	990	1,570				[b] 2,650	1,080	1,960	2,950	1,570	700	1,460
10	1,020	1,590			[a] 792	[a] 6,500	1,080	2,260	1,700	1,570	770	1,160
11	1,150	1,470				9,400	1,260	3,560	1,570	1,080	1,160	840
12	1,260	1,520				7,380	1,350	2,590	1,260	1,080	915	840
13	1,120	1,380	[a] 440		[b] 809	5,350	1,080	2,110	1,260	990	915	915
14	1,120	1,500				2,420	1,080	1,960	990	1,350	880	915
15	1,080	1,610				1,260	990	1,700	915	1,160	840	990
16	1,500	1,830				840	1,260	1,700	770	915	700	915
17	1,490	1,540	[a] 400		[a] 689	915	1,160	1,570	840	990	700	990
18	1,080	1,350				840	1,160	1,700	1,160	2,260	700	990
19	915	1,180				990	1,160	1,460	1,160	1,460	770	840
20	1,100	1,180	380			990	1,260	1,460	1,080	840	1,460	915
21	915	990	496			1,080	1,350	1,350	915	915	1,160	700
22	1,120	945	380			1,160	1,160	1,260	990	840	1,570	700
23	1,160	990	428			1,350	1,160	1,260	1,160	840	1,160	770
24	1,080	990				1,350	3,140	1,350	1,260	840	990	840
25	1,130	[a] 980			[a] 910	1,260	5,800	1,350	1,160	840	840	990
26	1,130	975	[a] 558			1,160	4,900	1,700	1,350	840	840	1,080
27	1,250	1,080				1,260	2,260	1,570	1,350	700	840	1,460
28	1,320	1,040				1,080	1,260	1,820	1,350	770	840	1,460
29	1,450	1,130			-------	1,080	1,260	5,800	1,460	635	990	1,260
30	1,420	825	706	[b] 521	-------	1,090	1,160	5,120	1,260	635	990	1,160
31	1,490	-------	[a] 700	-------	-------	1,160	-------	3,560	-------	700	915	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,500	900	1,140	70,100
November	2,090	825	1,360	80,900
December	----------	302	487	29,900
January	----------	----------	[a] 550	33,800
February	----------	----------	743	41,300
March	9,400	840	2,080	128,000
April	5,800	915	1,530	91,000
May	5,800	1,260	2,070	127,000
June	6,480	770	1,720	102,000
July	4,000	635	1,250	76,900
August	1,460	635	877	53,900
September	1,460	700	1,020	60,700
The year	9,400	302	1,240	896,000

[a] Estimated. [b] Result of discharge measurement.

LOUP RIVER NEAR GENOA, NEBR.

LOCATION.—Chain gage in sec. 25, T. 17 N., R. 4 W., 2 miles south of Genoa. Zero of gage is 1,542.0 feet above mean sea level.

DRAINAGE AREA.—13,400 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year (estimated), 20,000 second-feet Mar. 12; minimum occurred during winter.

1928–29: Maximum and minimum discharge, same as given above.

REMARKS.—Records fair. Daily discharge not determined Dec. 1 to Feb. 28. No diversions.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,760	5,570		[a] 2,800	4,100	3,300	1,960	1,570	1,870
2	1,820	4,620		[a] 3,000	3,360	3,000	1,840	1,630	1,920
3	1,760	3,060		3,360	3,580	5,380	2,070	1,570	1,600
4	1,760	3,100		[a] 3,450	3,520	3,640	2,070	1,570	1,620
5	1,870	3,100		[a] 3,600	3,150	4,400	2,480	1,510	1,690
6	1,840	3,300	[a] 4,500	3,690	[a] 3,500	4,220	3,250	1,440	1,870
7	2,150	3,420		4,790	3,640	9,300	9,800	1,470	2,340
8	2,150	3,150		[a] 4,000	[a] 3,400	5,700	7,150	1,430	3,420
9	1,920	3,000		[a] 3,050	[a] 3,200	4,600	3,520	1,330	4,280
10	1,820	3,300		[a] 3,000	3,150	4,160	3,000	1,410	3,580
11	1,890	3,420	[a] 15,000	[a] 3,000	7,690	3,520	2,750	1,530	3,200
12	2,570	3,250	[a] 20,000	[a] 3,050	5,780	3,050	1,870	1,890	3,580
13	2,900	3,250	17,200	[a] 3,100	4,920	4,040	1,960	1,420	2,440
14	3,000	3,050	7,780	[a] 2,800	3,980	3,300	1,840	1,470	2,190
15	2,570	2,900	4,980	[a] 2,600	3,690	2,390	2,520	1,430	2,110
16	2,950		2,850	[a] 2,700	3,980	2,440	2,390	1,470	2,070
17	2,390		2,660	2,620	3,200	2,070	1,960	1,330	1,920
18	2,430		1,790	2,850	[a] 3,000	[a] 9,000	2,110	1,330	1,960
19	2,300	[a] 2,530	1,690	3,470	2,700	2,390	3,470	1,430	2,110
20	2,660		2,520	3,640	[a] 2,500	1,790	2,480	1,960	2,150
21	2,390		3,300	4,340	2,620	1,870	2,190	2,630	2,300
22	2,030		2,520	3,200	2,570	1,600	2,700	1,920	1,920
23	2,220	2,150	1,760	5,240	2,520	1,740	2,660	2,530	1,870
24	2,340	[a] 2,200	4,160	5,180	2,520	1,760	2,340	2,260	1,710
25	2,300	[a] 2,230	3,050	12,100	2,440	1,790	1,570	1,820	1,760
26	2,520	[a] 2,250	2,850	13,800	2,440	1,870	1,630	1,710	1,890
27	2,220	[a] 2,250	3,200	10,600	2,750	2,390	1,790	1,730	2,850
28	2,390	[a] 2,100	2,520	5,780	2,660	2,150	1,520	2,260	2,750
29	2,150	[a] 2,100	2,660	3,740	8,250	1,870	1,500	2,000	2,700
30	2,390	[a] 2,000	2,390	3,250	11,100	2,110	1,640	2,300	2,300
31	3,100	--------	2,850	--------	5,120	--------	1,540	2,000	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	3,100	1,760	2,280	140,000
November	----------	----------	2,880	171,000
December	----------	----------	[a] 1,400	86,100
January	----------	----------	[a] 1,450	89,200
February	----------	----------	[a] 1,750	97,200
March	20,000	----------	4,930	303,000
April	13,800	2,600	4,930	261,000
May	11,100	2,440	3,900	240,000
June	9,300	1,600	3,360	200,000
July	9,800	1,500	2,630	162,000
August	2,660	1,350	1,730	106,000
September	4,280	1,600	2,330	139,000
The year	20,000	----------	2,760	1,990,000

[a] Estimated

NORTH LOUP RIVER NEAR ST. PAUL, NEBR.

LOCATION.—Chain gage in sec. 22, T. 15 N., R. 10 W., 3 miles north of St. Paul.
DRAINAGE AREA.—4,040 square miles.
RECORDS AVAILABLE.—May, 1895, to October, 1897; April to October, 1899; April to December 1903; August, 1928, to September, 1929.
EXTREMES.—Maximum discharge during year (estimated), 22,000 second-feet June 18 (gage height, 5.1 feet); minimum, 637 second-feet Feb. 14.
1895–1897, 1899, 1903, 1928–29: Maximum discharge (estimated), 90,000 second-feet June 6, 1896; minimum, 400 second-feet Nov. 17, 1903. The flood of June 6, 1896, is the greatest known.
REMARKS.—Records fair. Daily discharge not determined Dec. 1 to Feb. 28. No diversions.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	810	1,130	------	------	[a]1,900	1,090	1,440	1,090	600	[a] 600	600
2	774	1,260	------	------		1,160	1,320	1,090	600	[a] 760	565
3	756	1,200	------	------		1,240	1,160	1,690	600	640	565
4	729	1,040	------	------		1,240	1,160	1,440	565	600	680
5	774	1,010	------	------		1,240	1,090	1,590	3,780	565	565
6	840	1,100	------	------		1,240	1,090	2,490	1,970	600	890
7	820	1,140	------	------		1,240	1,090	1,890	1,240	600	890
8	830	1,220	------	------		1,320	1,090	1,550	1,020	565	1,090
9	870	1,300	------	------		1,320	1,160	1,330	955	565	1,160
10	860	1,320	------	------		1,240	1,090	1,160	1,090	565	1,020
11	890	1,200	------	------	6,540	1,160	1,810	1,160	1,020	565	1,020
12	956	1,130	------	------	3,780	1,240	1,440	1,090	955	565	890
13	956	1,100	------	------	3,070	1,240	1,440	1,160	890	640	835
14	1,020	1,160	------	[b] 637	1,680	1,160	1,320	1,090	835	640	780
15	1,160	1,220	------	------	1,320	1,090	1,320	1,090	835	680	835
16	1,110	1,190	------	------	1,240	1,020	1,240	955	955	680	730
17	1,080	1,120	------	------	1,090	1,090	1,160	890	835	730	730
18	1,020	993	------	------	1,020	1,090	1,090	5,400	780	680	730
19	1,000	922	------	------	1,020	1,240	890	780	780	780	730
20	944	1,020	------	------	955	1,240	890	600	730	835	730
21	990	1,010	------	------	955	1,240	890	565	730	890	730
22	968	1,030	------	------	955	1,090	890	530	780	780	680
23	956	1,030	------	------	1,020	1,320	955	530	890	890	680
24	933	1,020	------	------	1,160	2,300	955	530	780	835	680
25	956	1,010	------	------	1,320	1,680	955	530	780	780	680
26	944	993	------	------	1,160	1,440	955	565	780	730	890
27	922	968	------	------	1,090	1,320	955	780	730	955	780
28	968	993	------	------	1,020	1,240	1,020	680	[a] 600	730	780
29	1,010	1,020	------	------	1,020	1,160	4,880	680	[a] 660	730	835
30	1,040	1,030	------	------	1,020	1,090	1,810	565	[a] 765	640	780
31	1,050	------	[b] 701	------	1,020	------	1,320	------	[a] 650	680	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,160	729	933	57,400
November	1,320	922	1,100	65,500
December	------	------	[a] 700	43,000
January	------	------	[a] 700	43,000
February	------	637	[a] 750	41,600
March	6,540	------	1,690	104,000
April	2,300	1,020	1,260	75,000
May	4,880	890	1,290	79,300
June	5,400	530	1,180	70,200
July	3,780	565	941	57,900
August	955	565	693	42,600
September	1,160	565	785	46,700
The year	6,540	637	1,000	726,000

[a] Estimated. [b] Result of discharge measurement.

ELKHORN RIVER AT WATERLOO, NEBR.

LOCATION.—Chain gage in sec. 10, T. 15 N., R. 10 E., at Waterloo. Zero of gage is 1,110.1 feet above mean sea level.

DRAINAGE AREA.—6,390 square miles.

RECORDS AVAILABLE.—May, 1911, to July, 1913; August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 6,620 second-feet June 19 (gage height, 5.72 feet); minimum, 273 second-feet Oct. 8 (gage height, 1.64 feet). 1911–1913, 1928–29: Highest flood occurred in April, 1912 (gage height and discharge not determined); minimum discharge, 248 second-feet Sept. 24, 1928.

REMARKS.—Records good except those for Mar. 1–12, which are estimated. Observations discontinued Dec. 6 to Feb. 28. No diversions.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	285	715	702		828	2,150	2,530	1,090	2 690	629
2	290	841	690		820	1,890	4,050	1,790	1 170	510
3	294	709	690	500	869	1,870	3,480	1,120	956	428
4	290	767	664		947	1,590	3,370	930	852	433
5	281	868	690		1,110	1,350	3,410	1,080	716	433
6	281	827	--------	1,100	1,110	1,250	2,170	1,240	687	439
7	281	861	--------	1,100	1,080	1,190	2,690	859	658	480
8	277	922	--------	1,200	1,050	1,150	5,580	1,060	658	504
9	285	1,020	--------	1,300	1,050	1,140	3,300	921	568	568
10	281	1,020	--------	1,400	1,050	1,160	2,360	861	536	609
11	285	970	--------	1,680	1,130	1,640	2,060	844	523	650
12	997	902	--------	3,000	1,410	3,720	1,510	779	616	779
13	915	814	--------	4,560	1,290	2,240	1,300	795	562	709
14	664	794	--------	3,960	1,170	1,670	1,250	771	555	643
15	552	787	--------	2,900	1,140	1,490	1,090	5,620	523	568
16	540	780	--------	1,470	1,090	1,320	1,040	4,440	462	516
17	1,410	773	--------	1,370	984	1,240	1,840	4,350	439	504
18	1,770	741	--------	1,230	939	1,200	2,320	2,230	422	474
19	1,090	722	--------	1,190	1,060	1,130	6,350	2,050	400	486
20	949	690	--------	1,120	1,460	1,090	5,050	1,330	405	480
21	760	670	--------	1,140	1,540	1,000	1,920	1,290	389	468
22	645	651	--------	1,090	1,230	956	2,690	1,160	411	462
23	582	651	--------	1,050	1,110	903	1,720	1,130	394	456
24	552	632	--------	1,020	1,080	836	1,490	1,270	394	456
25	528	607	--------	984	1,130	787	1,040	3,280	433	416
26	528	576	--------	939	1,620	748	974	2,050	416	422
27	499	589	--------	921	1,960	724	1,590	1,560	416	411
28	516	690	--------	895	3,430	693	3,240	1,160	428	433
29	499	626	--------	868	2,690	701	1,570	869	450	450
30	482	683	--------	886	2,210	3,370	1,150	895	439	433
31	510	--------	--------	903	--------	1,270	--------	877	568	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,770	277	584	35,900
November	1,020	576	763	45,400
March	4,560	----------	1,350	83,000
April	3,430	820	1,320	78,600
May	3,720	693	1,400	86,100
June	6,350	974	2,470	147,000
July	5,620	771	1,600	98,400
August	2,690	389	617	37,900
September	779	411	508	30,200

TARKIO RIVER BASIN

TARKIO RIVER AT FAIRFAX, MO.

LOCATION.—Chain gage on line between secs. 22 and 27, T. 64 N., R. 40 W., at highway bridge half a mile west of Fairfax.

DRAINAGE AREA.—508 square miles.

RECORDS AVAILABLE.—March, 1922, to September, 1929.

EXTREMES.—Maximum discharge during year, about 15,000 second-feet July 7 (gage height, 20.33 feet); minimum, 48 second-feet Oct. 11 and 12 (gage height, 0.72 foot).

1922–1929: Maximum discharge, that of July 7, 1929; minimum, 1 second-foot Dec. 21, 1924, to Jan. 4, 1925.

REMARKS.—Records fair except those for periods of ice effect, Dec. 21–28 and Jan. 1 to Feb. 25, which are poor. Discharge estimated July 7.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	70	775	298	146	75	568	218	361	3,870	361	361	116
2	70	1,060	298	146	75	522	180	277	706	180	266	88
3	70	614	298	180	75	1,220	154	266	875	154	237	88
4	70	384	208	256	75	925	146	256	660	146	199	88
5	63	298	116	361	64	950	138	237	490	1,960	190	88
6	58	237	660	361	64	6,350	131	266	453	8,320	199	88
7	54	228	900	298	64	5,180	3,450	256	63[illegible]	9,000	190	88
8	52	180	752	237	64	1,780	476	228	72[illegible]	1,320	199	88
9	50	190	706	237	64	1,280	266	208	522	614	199	522
10	50	180	660	237	64	752	875	190	430	407	246	146
11	48	163	637	199	64	2,000	660	3,870	36[illegible]	3,450	172	116
12	48	154	277	146	64	3,690	430	1,120	36[illegible]	729	228	146
13	58	146	476	131	64	850	361	591	26[illegible]	545	154	124
14	58	172	706	101	64	384	706	825	246	499	138	101
15	58	180	499	88	64	340	706	568	23[illegible]	5,960	131	94
16	82	154	407	75	64	256	499	384	218	2,550	131	108
17	101	1,060	340	75	64	237	298	361	180	900	124	88
18	237	900	266	75	64	277	246	340	277	706	116	82
19	108	545	180	75	64	298	1,120	298	218	499	116	172
20	94	407	180	75	64	266	775	319	29[illegible]	453	116	116
21	82	384	199	75	75	256	1,540	277	180	430	108	108
22	108	319	237	75	88	246	752	256	2,180	361	101	101
23	88	277	277	75	146	237	522	246	40[illegible]	340	146	88
24	75	266	277	75	706	218	752	266	38[illegible]	361	116	82
25	70	256	256	75	660	190	1,030	228	25[illegible]	340	101	75
26	70	208	237	75	591	180	752	237	22[illegible]	277	101	75
27	94	228	218	75	591	163	591	228	24[illegible]	256	94	75
28	70	246	180	75	706	154	614	208	19[illegible]	228	94	75
29	70	218	190	75	-------	146	476	208	190	208	88	82
30	64	298	163	75	-------	146	407	228	172	3,690	88	75
31	64	-------	154	75	-------	218	-------	208	-------	568	101	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	237	48	75.9	0.149	0.17
November	1,060	146	358	.705	.79
December	900	116	363	.715	.82
January	361	75	139	.274	.32
February	706	64	175	.344	.36
March	6,350	146	977	1.92	2.21
April	3,450	131	642	1.26	1.41
May	3,870	190	446	.878	1.01
June	3,870	172	550	1.08	1.20
July	9,000	146	1,480	2.91	3.36
August	361	88	156	.307	.35
September	522	75	113	.222	.25
The year	9,000	48	459	.904	12.25

NODAWAY RIVER BASIN

NODAWAY RIVER NEAR BURLINGTON JUNCTION, MO.

LOCATION.—Chain gage in sec. 17, T. 65 N., R. 37 W., at bridge on State highway No. 18, 1½ miles west of Burlington Junction. Chain gage one-fourth mile upstream used October 24, 1928, to June 11, 1929.

DRAINAGE AREA.—1,240 square miles.

RECORDS AVAILABLE.—March, 1922, to September, 1929.

EXTREMES.—Maximum discharge during year, about 21,000 second-feet July 6 (gage height, 19.40 feet); minimum, 46 second-feet Sept. 3 and 4 (gage height, 2.34 feet).

1922–1929: Maximum discharge, that of July 6, 1929; maximum gage height, 19.5 feet Sept. 3, 1926; minimum discharge, 6 second-feet June 1 and July 26, 1925.

REMARKS.—Records fair except those for period of ice effect, Jan. 2 to Mar. 4, which are poor. Discharge estimated Aug. 5–8 and 29.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	103	170	630	1,100	147	1,100	585	1,100	8,860	282	1,450	80
2	100	2,640	730	970	147	1,100	630	790	2,040	235	1,030	65
3	96	1,800	970	850	147	1,100	540	630	3,180	170	520	46
4	90	2,040	1,030	730	147	1,170	540	540	1,520	182	520	46
5	86	1,380	1,380	630	147	1,310	500	500	420	170	442	54
6	80	1,240	1,520	630	147	5,340	520	480	790	12,000	365	65
7	72	850	1,450	630	147	4,600	3,900	480	480	1,660	288	54
8	72	630	1,450	585	147	3,540	3,360	420	2,370	520	211	47
9	70	500	1,380	500	147	3,450	1,960	402	2,280	368	134	129
10	56	460	1,450	385	147	2,910	1,380	368	1,520	206	147	206
11	59	440	1,450	315	147	4,600	4,300	5,670	910	5,560	105	182
12	62	420	1,520	250	147	11,800	2,460	4,500	585	730	98	182
13	73	368	2,910	220	147	14,000	2,040	4,000	460	206	88	121
14	62	420	2,120	220	147	10,400	1,960	3,360	540	170	80	105
15	56	420	1,960	220	147	4,200	3,360	1,800	368	9,560	85	80
16	134	970	1,730	220	147	2,120	2,280	1,450	368	4,400	78	85
17	170	4,200	1,660	193	147	1,520	1,660	850	282	1,590	76	79
18	500	3,360	1,660	193	147	1,450	1,100	585	402	790	67	54
19	1,240	3,090	3,180	193	147	1,240	4,000	500	282	520	67	98
20	680	2,200	3,090	193	170	1,100	3,720	460	250	402	65	182
21	402	1,240	3,090	193	170	910	7,340	420	193	315	59	220
22	350	910	3,000	193	193	790	3,360	368	2,550	298	59	158
23	250	730	3,000	193	193	790	2,200	350	585	266	67	125
24	193	680	3,000	170	220	790	2,460	402	315	2,200	65	113
25	193	585	2,820	170	250	385	5,010	332	235	1,590	59	85
26	182	500	2,910	170	850	385	3,630	298	220	562	58	76
27	385	480	2,910	170	1,100	368	2,550	266	182	402	59	56
28	298	562	2,820	170	1,170	368	3,450	250	145	182	56	54
29	147	540	1,730	170	-------	350	2,550	220	193	117	54	51
30	143	1,310	1,590	147	-------	350	1,660	500	170	98	51	51
31	129	-------	2,120	147	-------	460	-------	500	-------	2,370	56	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,240	56	211	0.170	0.20
November	4,200	170	1,170	.944	1.05
December	3,180	630	2,010	1.62	1.87
January	1,100	147	359	.290	.33
February	1,170	147	254	.205	.21
March	14,000	350	2,710	2.19	2.52
April	7,340	500	2,500	2.02	2.25
May	5,670	220	1,060	.855	.99
June	8,860	145	1,090	.870	.98
July	12,000	98	1,550	1.25	1.44
August	1,450	51	212	.171	.20
September	220	46	98.3	.079	.09
The year	14,000	46	1,110	.895	12.13

PLATTE RIVER BASIN (IOWA-MISSOURI)

PLATTE RIVER AT CONCEPTION JUNCTION, MO.

LOCATION.—Chain gage on line between NW. ¼ sec. 14 and SW. ¼ sec. 11, T. 63 N., R. 34 W., at highway bridge half a mile west of Conception Junction.

DRAINAGE AREA.—492 square miles.

RECORDS AVAILABLE.—July, 1921, to May, 1925; August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 12,200 second-feet July 6 (gage height, 21.70 feet); minimum, 6 second-feet Aug. 10, 21, Sept. 6 and 16 (gage height, 4.34 feet).

1921–1929: Maximum discharge, that of July 6, 1929; minimum, 0.48 second-foot Jan. 30, 1922.

REMARKS.—Records fair except those for period of ice effect, Jan. 2 to Mar. 3, which are poor. Discharge estimated Nov. 10, May 1, and Aug. 7–9.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	45	124	430	62	45	638	2,080	400	1,560	28	21	13
2	44	3,410	454	53	45	554	845	234	2,920	21	17	49
3	43	2,640	694	45	45	554	717	196	3,410	16	15	92
4	43	1,710	408	45	45	582	373	169	1,710	10	13	18
5	42	1,020	408	37	45	840	234	169	568	21	11	7
6	40	722	342	37	45	1,330	224	160	288	8,990	10	6
7	39	454	238	45	45	1,810	205	151	224	1,810	9	7
8	37	342	101	53	45	1,020	655	151	205	348	8	7
9	36	238	101	53	45	1,920	481	142	323	160	7	8
10	34	210	96	62	45	1,860	597	125	224	92	6	9
11	33	183	91	62	37	1,980	1,380	178	160	1,860	14	8
12	31	174	86	62	37	2,640	1,460	1,280	134	427	14	11
13	53	137	278	62	37	5,550	686	1,610	116	134	13	10
14	30	144	1,760	53	37	5,280	427	568	323	98	11	9
15	30	130	1,610	53	37	2,130	2,130	539	157	3,200	14	12
16	48	238	840	53	37	1,420	950	234	95	1,200	15	6
17	86	4,270	454	53	37	1,200	568	224	86	300	12	7
18	1,290	6,350	478	53	37	950	539	178	80	151	7	7
19	722	2,780	151	53	37	779	779	125	63	108	7	8
20	582	1,170	118	53	37	748	3,410	116	37	62	7	15
21	342	454	112	53	37	597	5,100	108	33	49	6	18
22	278	342	106	53	37	373	3,270	105	59	18	10	24
23	430	278	101	45	62	348	2,300	102	108	28	11	21
24	278	201	86	45	81	323	1,960	95	7[illegible]	21	10	24
25	124	201	81	45	112	373	1,330	92	59	33	10	12
26	112	192	91	45	298	323	2,530	86	2[illegible]	21	7	8
27	192	137	91	45	840	277	1,030	89	33	17	16	10
28	166	151	81	45	900	254	950	83	2[illegible]	15	10	10
29	158	144	91	45	-------	234	2,350	80	2[illegible]	13	8	9
30	101	238	86	45	-------	214	717	74	14	28	9	10
31	106	-------	81	45	-------	277	-------	71	-------	33	11	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,290	30	180	0.366	0.42
November	6,350	124	959	1.95	2.18
December	1,760	81	327	.665	.77
January	62	37	50.3	.102	.12
February	900	37	114	.232	.24
March	5,550	214	1,210	2.46	2.84
April	5,100	205	1,340	2.72	3.04
May	1,610	71	256	.520	.60
June	3,410	14	438	.890	.99
July	8,990	10	623	1.27	1.46
August	21	6	10.9	.022	.03
September	92	6	15.2	.031	.03
The year	8,990	6	461	.937	12.72

PLATTE RIVER AT AGENCY, MO.

LOCATION.—Chain gage in NE. ¼ sec. 29, T. 56 N., R. 34 W., at highway bridge in Agency.

DRAINAGE AREA.—1,790 square miles.

RECORDS AVAILABLE.—May, 1924, to September, 1929.

EXTREMES.—Maximum discharge during year, 22,300 second-feet June 3 (gage height, 26.60 feet); minimum, 55 second-feet Sept. 16, 17, and 30 (gage height, 1.96 feet).

1924–1929: Maximum discharge, 22,600 second-feet Sept. 18, 1926 (gage height, 26.83 feet); minimum discharge, 24 second-feet several days during September and December, 1927, and January, 1928; minimum gage height, 1.42 feet Jan. 30 and 31, 1928.

Maximum stage known, 31.4 feet in July, 1915.

REMARKS.—Records fair except those for period of ice effect, Jan. 2 to Feb. 24, which are poor. Discharge estimated Nov. 10–14.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	156	4,280	3,780	394	144	8,220	3,080	3,300	8,460	552	215	212
2	144	6,110	4,390	334	144	7,860	3,730	2,870	14,800	436	278	218
3	139	8,540	3,350	296	144	6,110	2,320	2,540	21,200	552	244	196
4	134	10,100	2,330	260	144	7,340	1,170	2,110	17,100	458	228	171
5	125	6,050	1,430	196	144	7,860	758	1,540	10,300	602	215	161
6	120	3,950	758	168	144	8,700	577	1,070	5,640	2,760	188	134
7	130	2,540	414	168	144	9,050	436	628	3,410	11,800	166	107
8	116	1,590	628	168	144	8,460	374	481	2,430	19,400	154	96
9	94	1,070	914	168	144	7,730	315	436	1,850	8,540	168	78
10	86	700	1,540	168	144	7,280	706	1,330	1,490	4,620	163	78
11	75	600	2,010	168	120	7,730	2,110	2,330	1,070	2,870	151	75
12	130	520	2,380	168	120	8,140	2,970	3,030	810	1,800	144	70
13	163	480	2,700	144	120	8,620	3,680	2,540	706	4,000	139	66
14	414	450	1,950	144	120	9,500	4,340	2,270	577	3,030	137	63
15	758	2,330	1,540	144	120	10,600	6,340	1,590	810	2,270	132	58
16	1,330	5,930	1,330	144	120	10,300	6,340	1,490	706	1,850	134	55
17	1,950	8,960	1,280	144	120	5,700	5,010	1,380	552	1,170	132	55
18	3,350	15,200	1,280	144	144	4,280	5,760	1,230	374	481	127	66
19	3,680	14,500	1,170	144	144	3,620	7,400	914	458	414	122	70
20	3,510	11,100	1,070	144	168	2,760	10,100	552	2,060	436	374	64
21	2,810	5,990	1,020	144	168	2,060	15,500	414	2,810	414	354	61
22	1,800	2,970	914	144	196	1,540	17,600	374	3,620	374	296	60
23	1,230	1,950	862	144	260	1,070	10,100	334	2,430	354	244	58
24	914	1,280	810	144	862	966	5,120	334	1,750	334	218	70
25	758	1,070	810	144	4,670	966	3,350	315	1,120	278	228	70
26	552	810	758	144	6,220	914	5,180	315	862	185	296	70
27	374	706	552	144	6,860	810	7,400	296	810	125	354	66
28	278	528	458	144	7,280	602	5,930	260	810	109	374	64
29	218	654	458	144	------	481	4,670	260	706	94	278	58
30	154	2,060	436	144	------	1,640	3,890	244	654	84	260	55
31	1,380	------	436	144	------	2,320	------	4,060	------	86	228	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	3,680	75	873	0.488	0.56
November	15,200	450	4,100	2.29	2.56
December	4,390	414	1,410	.788	.91
January	394	144	174	.097	.11
February	7,280	120	1,040	.581	.60
March	10,600	481	5,270	2.94	3.39
April	17,600	315	4,880	2.73	3.05
May	4,060	244	1,320	.737	.85
June	21,200	374	3,680	2.06	2.30
July	19,400	84	2,270	1.27	1.46
August	374	122	217	.121	.14
September	218	55	90.8	.051	.06
The year	21,200	55	2,110	1.18	15.99

KANSAS RIVER BASIN

REPUBLICAN RIVER AT MAX, NEBR.

LOCATION.—Staff gage in sec. 32, T. 2 N., R. 36 W., three-quarters of a mile south of Max. Zero of gage is 2,873.6 feet above mean sea level.

DRAINAGE AREA.—6,220 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 1,160 second-feet June 7 (gage height, 2.60 feet); river dry during parts of July and August.

1928–29: Maximum and mimimum discharge, same as given above.

REMARKS.—Records good except those for Mar. 1–6, which are estimated. Observations discontinued Dec. 3 to Feb. 28. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet 1928–29

Day	Oct.	Nov.	Dec.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	77	338	175	200	190	294	114	46	54	11
2	83	280	175	200	180	294	154	34	61	158
3	83	242	--------	250	190	287	132	74	54	158
4	77	219	--------	300	185	280	118	74	46	9
5	88	224	--------	400	174	336	110	34	31	67
6	88	224	--------	500	154	570	280	27	29	77
7	88	230	--------	511	145	457	819	20	41	136
8	88	219	--------	287	158	382	366	14	34	145
9	94	230	--------	255	174	322	237	14	26	163
10	91	224	--------	237	185	315	185	9	36	145
11	88	208	--------	237	185	294	150	5	29	140
12	99	214	--------	243	185	261	118	0	26	145
13	106	219	--------	255	168	268	122	0	22	140
14	197	208	--------	230	196	249	122	0	20	132
15	186	202	--------	230	185	230	118	0	16	122
16	171	202	--------	249	168	185	118	0	11	107
17	158	208	--------	237	185	218	107	0	5	105
18	141	175	--------	230	196	140	84	0	5	88
19	132	171	--------	224	196	150	77	67	4	93
20	122	145	--------	230	350	163	64	31	4	88
21	122	180	--------	237	493	145	54	9	0	88
22	125	186	--------	243	448	145	51	0	0	88
23	129	162	--------	230	350	145	58	590	0	84
24	125	158	--------	243	329	136	41	493	0	74
25	122	162	--------	243	358	127	34	261	0	67
26	119	158	--------	243	350	114	24	185	0	67
27	116	180	--------	224	350	95	24	140	0	67
28	119	180	--------	190	350	95	20	114	16	67
29	149	180	--------	185	329	158	16	107	16	80
30	158	180	--------	190	308	140	64	84	16	77
31	180	--------	--------	207	--------	118	--------	67	16	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	197	77	120	7,380
November	338	145	204	12,100
March	511	185	256	15,700
April	493	145	247	14,700
May	570	95	229	14,100
June	819	16	133	7,910
July	590	0	80.6	4,960
August	61	0	19.9	1,220
September	163	9	99.6	5,930

REPUBLICAN RIVER NEAR BLOOMINGTON, NEBR.

LOCATION.—Chain gage in sec. 8, T. 1 N., R. 15 W., 2 miles south of Bloomington. Zero of gage is 1,822.5 feet above mean sea level.
DRAINAGE AREA.—19,000 square miles.
RECORDS AVAILABLE.—April to September, 1929.
EXTREMES.—Maximum discharge during period, 10,600 second-feet June 9 (gage height, 8.44 feet); minimum, 109 second-feet Sept. 3.
REMARKS.—Records good. Minor diversions for irrigation.

Daily and monthly discharge, in second-feet 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	-------	1,040	2,650	317	501	115	16	523	755	1,410	283	146	171
2	-------	930	2,190	300	416	120	17	523	722	1,250	283	134	168
3	-------	825	1,740	283	375	109	18	523	690	930	283	136	155
4	-----	755	1,250	283	336	132	19	546	658	825	236	130	161
5	-------	722	965	267	300	134	20	598	658	755	221	128	153
6	-------	755	895	267	267	132	21	658	625	658	416	120	146
7	-------	755	2,460	251	251	126	22	722	625	658	300	115	146
8	-------	825	8,560	336	236	134	23	690	598	570	236	115	138
9	-------	965	8,850	825	216	157	24	790	598	546	755	113	136
10	-------	1,100	4,370	658	202	164	25	2,280	570	501	5,260	111	128
							26	4,220	546	437	8,560	130	132
11	-------	1,140	3,640	479	191	157	27	2,370	570	395	6,570	155	132
12	-------	1,000	2,460	458	184	153	28	1,830	523	395	2,950	146	138
13	501	895	2,010	437	171	166	29	1,490	501	375	1,570	142	134
14	501	860	1,570	375	168	173	30	1,210	4,220	336	825	136	138
15	501	790	1,490	300	157	166	31	-------	2,370	-------	625	124	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 13-30	4,220	501	1,140	40,700
May	4,220	501	922	56,700
June	8,850	336	1,840	109,000
July	8,560	221	1,140	70,100
August	501	111	195	12,000
September	173	109	144	8,570
The period				297,000

REPUBLICAN RIVER AT SCANDIA, KANS.

LOCATION.—Chain gage in NE. ¼ sec. 17, T. 3 S., R. 4 W., at Scandia, 4 miles below Dry Creek.

DRAINAGE AREA.—23,000 square miles.

RECORDS AVAILABLE.—August, 1919 to July, 1925; August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 8,780 second-feet June 10 (gage height, 8.10 feet); minimum, 109 second-feet Aug. 24 (gage height, 1.65 feet).

1919–1925, 1928–29: Maximum discharge, 16,700 second-feet June 12, 1923 (gage height, 11.4 feet); minimum, 2 second-feet Oct. 9, 15, and 16, 1922 (gage height, 1.50 feet).

Maximum stage known, 14.2 feet, present datum, June 30, 1915.

REMARKS.—Records good except those for period of ice effect, Jan. 1 to Mar. 8, which are fair. Discharge estimated July 4. Power-plant operation at Superior, Nebr., probably causes slight fluctuations during low flow.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept
1	150	409	441	545	284	960	620	1,380	3,180	229	912	214
2	150	740	441	473	284	1,620	660	545	2,440	187	509	130
3	157	660	441	545	264	1,740	660	582	2,870	166	582	130
4	150	620	409	545	264	1,880	660	740	2,150	206	441	130
5	157	582	381	473	246	1,880	660	912	1,880	246	409	125
6	157	582	381	353	264	1,500	660	865	1,270	246	246	136
7	150	545	353	353	246	1,380	582	740	1,010	187	229	136
8	142	582	353	353	229	1,380	582	780	912	199	284	157
9	150	545	329	353	246	2,010	582	780	7,730	166	246	166
10	142	545	329	305	246	2,010	582	700	7,520	284	229	157
11	142	545	329	353	284	2,150	660	1,010	4,250	409	246	166
12	545	509	353	353	264	2,010	545	1,440	3,350	545	229	246
13	3,530	509	409	305	246	1,740	545	1,160	4,070	545	199	175
14	1,330	509	473	409	305	1,500	509	1,110	2,150	305	187	246
15	912	473	545	409	381	1,330	740	912	1,880	409	187	150
16	1,010	381	545	353	381	1,220	620	780	1,500	284	187	214
17	1,060	284	545	353	353	1,060	620	780	1,500	353	187	150
18	700	246	582	329	305	960	620	740	1,500	384	187	150
19	264	214	620	305	284	912	660	620	1,160	409	187	157
20	264	229	620	329	264	812	700	812	1,010	305	175	214
21	264	246	582	329	246	780	620	1,270	960	284	150	175
22	246	329	509	353	246	660	780	865	812	214	150	166
23	264	441	409	353	229	545	700	620	1,620	264	142	157
24	305	473	409	305	246	660	660	582	1,220	329	136	136
25	284	441	409	329	381	700	740	620	740	264	175	136
26	264	409	441	381	409	700	700	509	620	264	142	187
27	264	409	473	381	473	660	5,360	620	545	3,530	142	142
28	264	441	545	353	700	620	2,870	865	441	5,550	175	157
29	284	441	582	329	------	700	2,150	509	329	2,870	305	157
30	284	409	620	305	------	660	1,880	582	1,110	2,010	329	150
31	329	------	740	305	------	620	------	620	------	1,740	264	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	3,530	142	462	28,400
November	740	214	458	27,300
December	740	329	471	29,000
January	545	305	372	22,900
February	700	229	306	17,000
March	2,150	545	1,200	73,800
April	5,360	509	964	57,400
May	1,440	509	808	49,700
June	7,730	329	2,060	123,000
July	5,550	166	754	46,400
August	912	136	263	16,200
September	246	125	164	9,760
The year	7,730	125	691	501,000

REPUBLICAN RIVER AT WAKEFIELD, KANS.

LOCATION.—Chain gage in NE. ¼ sec. 5, T. 10 S., R. 4 E., at highway bridge one-fourth mile north of Union Pacific Railroad station at Wakefield.

DRAINAGE AREA.—24,700 square miles.

RECORDS AVAILABLE.—June, 1917, to September, 1929.

EXTREMES.—Maximum discharge during year, 8,560 second-feet June 11 (gage height, 8.60 feet); minimum, 47 second-feet Sept. 21 (gage height, 2.31 feet).

1917–1929: Maximum discharge, 20,100 second-feet June 4, 1923 (gage height, 12.86 feet); minimum, 16 second-feet Oct. 21, 1922.

REMARKS.—Records good except those for period of ice effect, Jan. 5 to Mar. 4, which are fair. Discharge estimated Dec. 12, Jan. 27, 29, 31, and Feb. 25. Regulation caused by operation of power plant at Clay Center.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept
1	480	742	775	570	404	920	920	2,120	679	895	2,250	249
2	422	960	775	460	387	1,080	882	1,890	4,890	855	1,670	246
3	387	1,080	742	570	387	1,680	882	1,560	4,110	744	1,160	238
4	387	1,000	742	545	370	4,040	920	1,460	2,920	649	985	238
5	387	1,080	680	545	370	3,540	882	1,360	2,780	619	815	186
6	387	1,000	595	550	340	3,060	845	1,260	2,250	564	712	128
7	387	960	545	550	370	1,580	742	1,160	2,510	592	619	150
8	387	920	570	525	340	1,470	1,180	1,075	2,000	489	538	208
9	354	1,000	545	500	325	1,470	1,130	1,075	2,640	538	538	175
10	387	1,000	522	500	370	1,680	845	1,030	2,120	513	538	257
11	297	920	650	500	354	1,900	920	1,890	8,350	855	489	316
12	325	982	636	510	387	2,020	845	6,890	5,890	1,120	465	253
13	354	920	622	520	370	2,250	845	4,300	4,490	679	420	215
14	404	845	680	520	354	2,020	845	2,640	3,570	649	377	101
15	2,630	845	680	520	404	1,680	845	2,000	3,070	780	356	150
16	1,900	775	710	480	440	1,580	775	1,670	2,510	592	356	128
17	1,180	1,180	710	440	480	1,470	742	1,360	2,120	538	296	132
18	1,080	1,580	775	440	450	1,370	775	1,260	1,780	513	316	97
19	1,180	1,130	810	460	420	1,270	4,890	1,160	1,670	489	276	94
20	882	920	680	460	400	1,270	6,900	1,260	5,290	465	296	87
21	742	845	650	480	380	1,180	3,930	1,460	3,750	442	276	70
22	680	810	545	480	360	1,040	2,780	1,160	2,250	513	257	142
23	650	810	480	480	350	1,080	1,890	1,260	2,510	420	257	122
24	622	775	545	480	320	1,000	1,560	1,360	7,300	420	780	142
25	650	775	710	404	370	1,000	1,360	985	5,290	356	215	128
26	650	775	810	440	420	1,000	1,160	895	2,780	336	215	128
27	622	775	810	450	460	960	1,160	780	1,890	398	215	118
28	650	775	810	460	500	960	1,120	744	1,360	398	223	118
29	570	810	810	460	-------	1,000	3,750	744	1,160	5,090	253	118
30	622	775	775	460	-------	960	2,780	712	1,030	4,300	215	115
31	650	-------	810	460	-------	920	-------	855	-------	2,920	238	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,630	297	687	42,200
November	1,580	742	922	54,900
December	810	480	684	42,100
January	570	----------	491	30,200
February	----------	----------	389	21,600
March	4,040	920	1,560	95,900
April	6,900	742	1,640	97,600
May	6,890	712	1,590	97,800
June	8,350	679	3,160	188,000
July	5,090	336	927	57,000
August	2,250	215	536	33,000
September	316	70	162	9,640
The year	8,350	70	1,060	770,000

KANSAS RIVER AT OGDEN, KANS.

LOCATION.—Chain gage in SE. ¼ sec. 12, T. 11 S., R. 6 E., three-fourths mile south of Ogden and 10 miles below junction of Smoky Hill and Republican Rivers, which unite to form Kansas River.

DRAINAGE AREA.—45,200 square miles.

RECORDS AVAILABLE.—June, 1917, to September, 1929.

EXTREMES.—Maximum discharge during year, 23,100 second-feet May 12 (gage height, 16.23 feet); minimum, about 600 second-feet probably occurred in February.

1917–1929: Maximum discharge, 32,600 second-feet June 10, 1923 (gage height, 18.15 feet); minimum, 103 second-feet Oct. 30, 1927.

REMARKS.—Records good except those for Nov. 16 to May 15, which are fair. Stage-discharge relation affected by ice Jan. 5–10 and Jan. 13 to Mar. 1. Flow affected by operation of power plants on tributaries.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,620	1,550	1,620	1,420	820	4,230	2,280	3,580	7,760	2,500	5,320	1,120
2	1,620	1,790	1,620	1,360	820	5,730	2,280	3,000	13,000	2,280	4,400	1,120
3	1,620	1,700	1,550	1,300	765	6,160	2,080	2,740	10,900	2,180	3,430	1,120
4	1,550	1,790	1,550	1,240	710	7,050	1,880	2,500	11,700	1,980	2,740	1,060
5	1,480	1,790	1,550	1,150	820	8,240	1,880	2,280	9,200	1,880	2,280	1,000
6	1,480	1,790	1,420	1,060	710	5,320	1,790	2,280	8,720	1,880	2,180	1,000
7	1,480	1,700	1,420	976	710	4,060	1,790	2,080	8,000	1,980	1,980	1,000
8	1,480	1,620	1,420	888	660	3,280	1,700	2,080	7,280	1,880	1,880	1,120
9	1,480	1,700	1,360	800		3,000	2,080	1,980	5,730	1,700	1,790	1,620
10	1,480	1,620	1,360	1,700		2,740	1,980	1,880	6,600	1,700	1,880	1,300
11	1,360	1,700	1,360	1,980	620	2,740	1,790	4,230	11,200	1,790	3,140	1,060
12	1,360	1,620	1,360	2,080		3,140	1,790	22,400	14,400	6,160	3,740	1,060
13	1,420	1,620	1,420	1,700		3,000	1,790	17,500	13,000	13,300	3,000	1,060
14	1,420	1,550	1,420	1,620	660	3,280	1,700	16,000	12,700	12,700	2,180	1,060
15	1,790	1,550	1,420	1,700	710	2,870	2,500	13,800	11,400	12,700	2,080	1,000
16	2,620	1,550	1,360	1,550	660	2,740	2,180	12,200	6,820	10,400	1,790	1,000
17	2,180	8,000	1,420	1,700	1,060	2,620	1,980	10,900	4,930	7,520	1,550	1,000
18	1,880	8,960	1,420	1,700	1,420	2,500	1,880	9,680	4,400	6,380	1,480	940
19	2,280	4,930	1,420	1,880	1,880	2,390	3,000	9,440	3,900	4,930	1,420	1,060
20	2,180	2,870	1,420	1,480	1,420	2,280	14,800	6,820	4,930	3,580	1,060	940
21	1,880	2,280	1,360	1,300	1,240	2,180	18,500	4,750	7,280	2,870	1,360	880
22	1,700	2,080	1,300	1,420	1,180	2,180	13,000	4,060	5,320	2,620	1,240	940
23	1,620	1,880	1,300	1,060	1,700	2,080	10,400	3,740	4,570	2,870	1,240	880
24	1,550	1,880	1,300	1,060	1,180	2,080	9,440	3,900	7,050	3,140	1,240	940
25	1,550	1,790	1,360	940	1,980	2,080	8,960	3,900	10,200	2,870	1,240	940
26	1,480	1,700	1,360	940	1,700	1,980	6,820	3,280	7,050	2,740	1,240	940
27	1,420	1,700	1,360	940	2,280	1,880	4,060	3,000	4,750	2,390	1,180	880
28	1,420	1,620	1,360	1,000	2,740	1,880	3,000	2,740	4,060	2,080	1,240	820
29	1,480	1,620	1,360	1,000	-------	1,880	3,580	2,500	3,280	3,430	1,180	820
30	1,420	1,620	1,300	940	-------	1,880	4,400	2,390	2,740	5,520	1,180	820
31	1,420	-------	1,300	820	-------	2,280	-------	2,500	-------	6,380	1,180	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	2,620	1,360	1,640	101,000
November	8,960	1,550	2,320	138,000
December	1,620	1,300	1,400	86,100
January	2,080	800	1,310	80,600
February	2,740	----------	1,100	61,100
March	8,240	1,880	3,220	198,000
April	18,500	1,700	4,510	26,800
May	22,400	1,880	5,940	365,000
June	14,400	2,740	7,760	462,000
July	13,300	1,700	4,400	271,000
August	5,320	1,060	2,030	125,000
September	1,620	820	1,020	607,000
The year	22,400	----------	3,060	1,980,000

KANSAS RIVER AT WAMEGO, KANS.

LOCATION.—Chain gage in SE. ¼ sec. 9, T. 10 S., R. 10 E., at Wamego, 3 miles below Antelope Creek.

DRAINAGE AREA.—54,900 square miles.

RECORDS AVAILABLE.—January, 1919, to September, 1929.

EXTREMES.—Maximum discharge during year, 38,600 second-feet June 2 (gage height, 13.7 feet); minimum, 1,050 second-feet Oct. 15.

1919–1929: Maximum discharge, 46,600 second-feet June 10, 1923 (gage height, 15.8 feet); minimum, 330 second-feet several days in October, 1922.

REMARKS.—Records good except those for period of ice effect, Jan. 5 to Feb. 18, and those for Apr. 22 to May 27, which are fair. Low flow may be affected by operation of power plants on tributaries. Gage-height record furnished by United States Weather Bureau.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,550	2,170	3,030	2,050		7,790	3,620	7,550	28,200	5,480	7,790	1,630
2	1,410	2,710	2,850	2,050		9,250	3,420	6,400	35,900	5,260	6,860	1,760
3	1,410	3,080	2,680	2,050	1,700	8,030	3,420	5,940	30,900	4,830	5,940	1,630
4	1,410	3,670	3,620	2,050		12,600	3,420	5,260	21,600	4,620	4,830	1,630
5	1,410	5,170	3,030	2,000		18,600	3,030	5,260	19,400	4,020	4,220	1,630
6	1,410	4,730	3,030			17,200	2,850	5,040	14,500	3,820	3,820	1,630
7	1,410	4,300	2,510			20,800	2,680	4,620	12,900	3,820	3,620	1,630
8	1,280	4,300	2,350	2,000		16,200	3,030	4,420	12,000	4,020	3,220	1,500
9	1,280	4,730	2,350			9,510	4,830	4,220	10,300	3,620	3,030	1,500
10	1,280	4,300	2,350			9,250	4,420	4,020	10,000	3,620	3,030	2,680
11	1,160	4,300	2,510			7,320	3,220	4,220	10,300	4,220	3,220	2,200
12	1,160	3,880	2,510		1,600	7,320	2,680	27,300	17,200	4,830	5,040	1,900
13	1,160	3,470	2,350	2,600		7,320	2,680	31,900	15,800	14,500	5,480	1,760
14	1,160	3,270	3,030			7,090	2,680	26,400	15,800	14,200	4,420	1,760
15	1,050	3,080	2,680			6,630	2,850	19,400	13,200	14,200	3,220	1,630
16	4,730	2,890	2,680			5,480	4,420	16,200	10,000	15,200	3,030	1,500
17	8,750	8,450	2,510			5,040	4,420	13,200	8,270	10,800	2,680	1,500
18	9,350	18,100	2,510	2,000		4,830	3,820	11,400	7,090	9,250	2,510	1,500
19	7,610	15,600	2,350		5,200	4,620	14,200	11,100	6,630	8,510	2,050	1,380
20	6,550	8,750	2,350			5,900	4,220	23,600	9,770	9,000	6,860	2,050	1,270
21	5,170	6,400	2,350			5,000	4,020	30,900	8,030	13,200	6,170	2,050	1,170
22	4,090	5,260	2,350			4,600	3,820	28,600	6,400	14,800	5,040	1,900	1,170
23	3,470	5,040	2,350			4,200	3,820	21,600	5,940	17,200	4,620	1,630	1,270
24	3,470	3,820	2,350			4,830	3,820	16,200	5,710	21,200	4,620	1,630	1,270
25	2,890	3,420	2,350			8,750	3,420	14,200	6,630	19,000	4,620	1,630	1,380
26	2,710	3,420	2,200	1,800		10,300	3,420	12,600	6,400	16,200	4,620	1,900	1,380
27	2,350	3,220	2,200			9,510	3,420	9,250	6,170	10,800	4,220	2,050	1,270
28	2,350	3,220	2,200			7,790	3,220	7,550	5,480	9,000	3,620	1,630	1,170
29	2,000	3,220	2,200			-------	3,220	6,630	5,040	7,320	3,620	2,050	1,170
30	1,840	3,220	2,200			-------	3,030	7,320	4,620	6,400	7,320	1,900	1,080
31	1,690	-------	2,200			-------	3,030	-------	4,620	-------	6,170	1,630	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	9,350	1,050	2,860	176,000
November	18,100	2,170	5,040	299,000
December	3,620	2,200	2,530	156,000
January	-------	-------	2,030	125,000
February	-------	-------	3,410	189,000
March	20,800	3,030	7,330	451,000
April	30,900	2,680	8,470	504,000
May	31,900	4,020	9,310	572,000
June	35,900	6,400	14,800	881,000
July	15,200	3,620	6,470	397,000
August	7,790	1,630	3,230	199,000
September	2,680	1,080	1,530	91,000
The year	35,900	1,050	5,580	4,040,000

KANSAS RIVER AT TOPEKA, KANS.

LOCATION.—Chain gage in Topeka, Shawnee County, 1½ miles above Soldier Creek.

DRAINAGE AREA.—56,400 square miles.

RECORDS AVAILABLE.—April to August, 1904; June, 1917, to September, 1929.

EXTREMES.—Maximum discharge during year, 68,300 second-feet Apr. 20 (gage height, 21.82 feet); minimum, 1,310 second-feet Sept. 30 (gage height, 3.0 feet).

1917–1929: Maximum discharge, 73,700 second-feet June 10, 1923; maximum gage height, that of Apr. 20, 1929; minimum discharge, 480 second-feet during January, 1925.

Maximum stage known, 32.7 feet May 30, 1903, from records of United States Weather Bureau.

REMARKS.—Records good except those for period of ice effect, Jan. 1 to Feb. 27, which are fair. Gage-height record furnished by United States Weather Bureau.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,890	2,190	4,440	2,600	2,200	11,700	5,470	8,830	15,400	7,330	7,960	1,980
2	1,890	2,500	4,440			9,270	4,270	7,750	36,200	6,280	8,170	1,840
3	1,750	3,710	4,440			9,930	4,270	6,910	34,600	5,870	7,120	1,840
4	1,750	3,530	4,070			10,400	4,270	6,490	34,600	5,270	6,070	1,840
5	1,620	5,010	3,890			13,400	3,700	6,070	24,800	5,070	5,270	1,980
6	1,620	4,820	3,530	2,500	2,000	19,500	3,320	5,670	18,200	4,870	4,470	1,980
7	1,620	4,630	3,350			17,600	2,960	5,670	15,000	5,070	4,080	1,700
8	1,620	4,440	3,180			22,300	2,960	5,470	18,500	5,070	3,700	1,700
9	1,490	4,440	3,010			15,000	2,960	5,070	14,200	4,470	3,510	1,700
10	1,490	4,440	3,010			11,500	5,670	4,870	11,300	4,270	3,890	1,700
11	1,490	4,250	3,010	3,000	1,980	10,200	5,870	5,870	10,800	4,670	3,890	2,780
12	1,360	4,250	3,010			7,960	4,270	10,400	11,500	5,070	3,890	2,960
13	1,360	4,070	3,180			7,960	3,510	31,900	17,600	5,470	5,270	1,980
14	1,360	3,710	4,250			8,390	3,320	31,900	15,700	15,000	5,470	1,980
15	1,360	3,350	4,630			8,170	3,320	24,800	15,400	13,900	4,470	1,980
16	1,360	3,530	4,630	2,500	1,980	7,330	3,320	19,500	13,400	14,800	3,700	1,980
17	3,530	8,570	3,530		4,080	6,490	4,670	16,600	11,300	14,200	3,510	1,840
18	7,770	34,600	3,530		5,270	5,470	5,070	14,800	8,610	11,000	3,140	1,700
19	7,170	23,400	3,350		5,670	5,270	4,270	13,900	8,170	9,270	2,780	1,840
20	6,770	17,700	3,530		6,280	5,070	66,900	12,400	7,750	8,830	2,270	1,840
21	5,970	9,590	3,350	2,200	6,910	4,670	46,900	11,300	12,490	8,170	2,270	1,700
22	5,200	7,170	3,180		5,270	4,270	39,800	9,050	17,600	5,870	2,270	1,700
23	4,070	5,970	3,010		4,870	4,270	29,300	7,750	26,700	5,270	2,270	1,570
24	3,530	5,200	3,010		5,470	4,670	21,500	7,120	21,900	5,070	1,980	1,570
25	3,180	4,630	2,840		7,960	4,270	16,900	6,910	23,000	5,270	1,980	1,570
26	3,010	4,630	2,840		10,200	3,890	14,800	6,700	20,200	5,270	2,120	1,570
27	2,500	3,890	3,010		12,400	3,700	12,900	6,700	16,300	4,870	2,120	1,570
28	2,190	4,070	3,010		10,400	3,700	9,710	6,910	11,700	4,470	2,120	1,570
29	2,040	4,070	3,180		-------	3,510	8,170	6,280	9,490	4,080	1,980	1,440
30	2,040	4,250	3,010		-------	3,510	7,330	7,120	7,960	3,980	1,980	1,310
31	2,040	-------	2,840		-------	4,270	-------	7,750	-------	7,330	1,980	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	7,770	1,360	2,780	171,000
November	34,600	2,190	6,690	398,000
December	4,630	2,840	3,460	213,000
January	----------	----------	2,490	153,000
February	----------	----------	4,200	233,000
March	22,300	3,510	8,310	511,000
April	66,900	2,960	11,700	696,000
May	31,900	4,870	10,600	652,000
June	36,200	7,750	17,000	1,010,000
July	15,000	3,890	6,950	427,000
August	8,170	1,980	3,730	229,000
September	2,960	1,310	1,820	108,000
The year	66,900	1,310	6,630	4,800,000

KANSAS RIVER AT BONNER SPRINGS, KANS.

LOCATION.—Chain gage in NW. ¼ sec. 32, T. 11 S., R. 23 E., at Bonner Springs, half a mile below Wolf Creek.

DRAINAGE AREA.—59,600 square miles.

RECORDS AVAILABLE.—July, 1917, to September, 1929.

EXTREMES.—Maximum discharge during year, 110,000 second-feet Apr. 21 (gage height, 22.2 feet); minimum, 1,630 second-feet Sept. 28–30 (gage height, 3.5 feet).

1917–1929: Maximum discharge, that of Apr. 21, 1929; maximum stage, 22.2 feet Mar. 17, 1919, and Apr. 21, 1929; minimum discharge, less than 650 second-feet during January, 1925.

REMARKS.—Records good except those for period of ice effect, Jan. 4 to Feb. 25, which are fair. Discharge estimated Nov. 16, May 22, 23, and June 30 Slight regulation caused by operation of power plant at Lawrence.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,710	3,220	6,880	4,500	2,700	18,700	9,550	9,050	24,400	7,730	6,300	2,130
2	2,540	3,980	7,120	3,770	2,700	15,200	8,320	10,100	50,700	7,250	6,770	2,130
3	2,540	4,080	6,410	3,080	2,650	10,600	6,880	9,050	69,600	6,770	6,530	2,000
4	2,450	5,490	5,840	2,800	2,600	10,900	5,260	8,560	52,800	6,530	5,610	2,000
5	2,450	4,930	5,720	2,650	2,550	11,200	4,610	8,080	44,800	5,840	4,940	1,870
6	2,450	4,930	5,260	2,480	2,550	20,800	4,190	7,840	25,400	5,610	4,500	1,870
7	2,450	4,930	4,930	2,650	2,500	21,000	3,980	7,600	17,800	7,490	4,080	1,750
8	2,370	4,930	4,820	2,800	2,450	20,600	3,980	7,360	22,500	6,530	3,670	1,870
9	2,370	4,610	4,720	3,250	2,400	21,000	5,840	7,120	21,500	5,610	3,670	1,750
10	2,290	4,720	4,720	3,500	2,450	12,200	6,180	6,640	15,300	5,380	3,670	1,750
11	2,290	4,720	4,400	3,500	2,500	9,800	7,600	9,300	11,500	5,160	3,670	1,750
12	2,290	4,610	4,300	3,400	2,500	9,550	8,320	31,200	11,200	5,380	3,470	2,000
13	2,290	4,400	4,400	3,300	2,550	10,100	5,950	31,200	14,500	6,530	3,470	2,270
14	2,220	4,190	6,410	3,200	2,600	10,300	4,930	38,100	16,100	6,770	4,290	2,000
15	2,220	4,080	6,640	3,100	2,610	9,550	5,490	29,500	14,500	12,400	4,500	1,870
16	2,450	26,600	6,880	3,100	2,800	8,560	7,360	22,500	13,100	12,100	4,080	2,000
17	2,540	49,400	7,840	3,100	3,570	7,840	6,410	19,200	11,500	12,800	3,470	1,750
18	4,080	60,200	6,880	3,100	7,360	6,880	5,950	17,800	9,710	11,000	3,100	1,750
19	7,120	52,800	5,950	3,100	6,880	6,410	6,410	16,100	9,710	9,210	3,100	1,870
20	7,120	32,900	5,260	3,000	8,080	6,180	52,800	13,400	10,700	8,210	2,750	1,750
21	6,410	22,500	5,040	2,900	6,880	5,950	106,000	12,400	16,100	7,730	2,580	1,750
22	6,180	11,800	4,820	2,750	5,700	5,490	103,000	11,100	15,300	6,300	2,580	1,750
23	5,380	9,050	4,720	2,780	5,040	5,260	64,100	9,800	35,200	5,610	2,270	1,870
24	4,300	8,320	4,610	2,800	4,400	4,930	35,700	8,460	42,400	4,940	2,270	1,630
25	3,980	7,360	4,500	2,800	7,600	4,720	32,900	7,970	37,500	4,940	2,270	1,630
26	3,770	6,640	4,400	2,850	32,300	4,610	23,400	7,970	22,900	4,940	2,420	1,750
27	3,570	6,410	4,300	2,900	28,400	4,400	17,300	7,970	19,200	4,720	2,270	1,750
28	3,280	5,950	4,300	2,850	26,900	4,300	14,400	7,730	14,500	4,500	2,270	1,630
29	2,990	5,720	4,190	2,800	-------	4,080	12,500	7,490	11,200	4,500	2,270	1,630
30	2,710	6,640	4,300	2,800	-------	3,980	10,100	7,250	9,460	4,080	2,270	1,630
31	2,450	-------	4,400	2,750	-------	7,840	-------	8,710	-------	3,870	2,130	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	7,120	2,220	3,370	207,000
November	60,200	3,220	12,700	756,000
December	7,840	4,190	5,320	327,000
January	4,500	2,480	3,050	188,000
February	32,300	2,400	6,580	365,000
March	21,000	3,980	9,770	601,000
April	106,000	3,980	19,600	1,170,000
May	38,100	6,640	13,100	806,000
June	69,600	9,460	23,000	1,370,000
July	12,800	3,870	6,790	418,000
August	6,770	2,130	3,590	221,000
September	2,270	1,630	1,840	109,000
The year	106,000	1,630	9,090	6,540,000

FRENCHMAN CREEK NEAR HAMLET, NEBR.

LOCATION.—Staff gage in sec. 19, T. 5 N., R. 34 W., 1 mile east of
Zero of gage is 2,798.43 feet above mean sea level.
DRAINAGE AREA.—1,420 square miles.
RECORDS AVAILABLE.—April to September, 1929.
EXTREMES.—Maximum discharge during period, 509 second-feet June
height, 6.0 feet); minimum, 60 second-feet Aug. 5 (gage height, 1.
Maximum stage known, 9.1 feet about Aug. 3, 1928.
REMARKS.—Records good. Diversions for irrigation above station.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.
1	------	122	91	73	66	72	16	95	105	101	66	75
2	------	113	92	76	66	66	17	98	104	101	66	73
3	------	110	92	73	67	66	18	107	100	95	74	74
4	------	113	98	72	71	76	19	106	99	93	69	73
5	------	117	91	74	63	82	20	115	90	88	64	69
6	------	139	271	78	67	84	21	120	92	87	64	66
7	------	130	220	74	75	90	22	117	96	87	64	64
8	------	132	180	75	73	94	23	110	98	86	81	65
9	------	126	155	75	73	95	24	509	97	84	81	66
10	------	125	137	73	76	93	25	312	96	87	81	66
11	------	122	136	69	69	97	26	184	91	89	82	66
12	89	119	124	73	75	98	27	157	89	94	81	68
13	87	115	110	68	70	96	28	139	93	98	70	66
14	88	112	101	67	69	93	29	131	97	86	71	67
15	89	110	101	66	74	88	30	125	100	81	73	67
							31	------	90	------	67	69

Month	Maximum	Minimum	Mean	Run-off i acre-feet
April 12-30	509	87	146	5, 50
May	139	89	108	6, 64
June	271	81	112	6, 66
July	82	64	72.3	4, 4
August	76	63	69.3	4, 260
September	98	66	86.1	5, 120
The period	------	------	------	32, 600

SAPPA CREEK NEAR OBERLIN, KANS.

LOCATION.—Staff gage in NW. ¼ sec. 6, T. 3 S., R. 29 W., 1½ miles east of Oberlin.
DRAINAGE AREA.—1,050 square miles.
RECORDS AVAILABLE.—March to September, 1929.
EXTREMES.—Maximum discharge during period, 578 second-feet May 29 (gage height, 9.20 feet); minimum, 0.1 second-foot Sept. 17, 18, and 25–27 (gage height, 0.5 foot).
REMARKS.—Records fair.

Daily and monthly discharge, in second-feet, 1929

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	3	5	42	6	12	0.5
2	-------	3	5	24	8	11	1
3	-------	3	4	22	4	7	.5
4	-------	3	5	17	4	5	.5
5	-------	3	5	22	3	4	.4
6	-------	2	6	194	3	4	1
7	-------	2	6	386	2	3	2
8	-------	2	6	84	2	3	3
9	-------	2	6	24	2	2	.5
10	-------	2	5	39	2	2	.4
11	-------	2	5	89	2	2	.4
12	-------	2	4	28	2	2	.3
13	-------	2	4	22	2	1	.2
14	-------	2	4	17	2	1	.2
15	-------	2	4	14	1	1	.2
16	-------	2	4	12	1	1	.2
17	-------	2	3	10	2	1	.1
18	3	3	3	8	2	1	.1
19	3	5	3	8	2	1	.2
20	3	6	3	7	2	1	.2
21	3	8	3	6	2	1	.3
22	3	6	3	6	2	1	.3
23	3	6	3	6	3	1	.2
24	3	6	3	8	71	.5	.2
25	3	6	2	8	5	.5	.1
26	3	6	2	8	131	1	.1
27	3	5	2	7	75	1	.1
28	3	5	2	7	42	.5	.2
29	2	4	534	6	28	.5	.3
30	3	4	326	5	14	.5	.2
31	3	-------	42	-------	13	.4	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March 18–31	3	2	2.93	81
April	8	2	3.63	216
May	534	2	32.6	2,000
June	386	5	37.9	2,260
July	131	1	14.2	873
August	12	.4	2.35	144
September	3	.1	.46	27
The period	----------	----------	----------	5,600

BEAVER CREEK AT LUDELL, KANS.

LOCATION.—Staff gage in SW. ¼ sec. 30, T. 2 S., R. 32 W., at Chicago, Burlington & Quincy Railroad bridge at Ludell, 6 miles below mouth of Little Beaver Creek.

DRAINAGE AREA.—1,460 square miles.

RECORDS AVAILABLE.—March to September, 1929.

EXTREMES.—Maximum discharge during period, 146 second-feet July 23 (gage height, 7.53 feet); minimum, less than 1 second-foot during August.

REMARKS.—Records fair.

Daily and monthly discharge, in second-feet, 1929

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	--------	11	12	51	5	2	1
2	--------	12	13	29	5	2	1
3	--------	12	13	24	5	2	1
4	--------	11	12	21	5		1
5	--------	11	14	21	4		1
6	--------	11	21	53	5	2	1
7	--------	10	21	75	4		1
8	--------	7	21	43	4		1
9	--------	10	19	31	4		1
10	--------	11	19	22	4		1
11	--------	10	15	17	4		1
12	--------	11	12	17	4		1
13	--------	11	11	17	4		1
14	--------	12	11	14	4		1
15	--------	10	9	12	4	1	1
16	--------	10	8	12	4		1
17	--------	10	8	11	4		1
18	6	10	6	9	4		1
19	5	9	6	8	4	1	1
20	4	15	6	8	4	1	1
21	5	22	6	8	4	1	1
22	4	22	5	8	4	2	1
23	5	15	5	7	94	1	1
24	5	24	5	7	26	1	1
25	5	16	5	6	6	1	1
26	5	18	6	7	4	1	1
27	8	16	7	6	3	1	1
28	11	15	3	6	2	1	1
29	11	14	29	6	2	1	1
30	11	13	73	5	2	1	1
31	11	--------	69	--------	2	1	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March 18-31	11	4	6.86	190
April	24	7	13.0	774
May	73	3	15.2	935
June	75	5	18.7	1,110
July	94	2	7.55	464
August	2	----------	1.35	83
September	1	1	1.00	60
The period	----------	----------	----------	3,620

PRAIRIE DOG CREEK NEAR WOODRUFF, KANS.

LOCATION.—Chain gage in NW. ¼ sec. 9, T. 1 S., R. 19 W., 3 miles west of Woodruff.
DRAINAGE AREA.—900 square miles.
RECORDS AVAILABLE.—March to September, 1929.
EXTREMES.—Maximum discharge during period, about 2,830 second-feet July 25 (gage height, 25.02 feet); minimum, 4 second-feet Sept. 26–30.
REMARKS.—Records fair.

Daily and monthly discharge, in second-feet, 1929

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	--------	15	18	180	21	76	14
2	--------	15	18	115	20	71	12
3	--------	15	17	73	19	64	11
4	--------	15	18	53	19	61	9
5	--------	15	19	45	18	56	19
6	--------	15	20	39	18	48	24
7	--------	15	23	201	18	44	14
8	--------	15	21	838	19	44	36
9	--------	15	20	260	19	42	54
10	--------	16	21	120	19	42	44
11	--------	16	23	69	19	42	28
12	--------	15	31	53	18	42	20
13	--------	16	21	89	18	40	13
14	--------	18	18	140	18	36	10
15	--------	17	18	65	17	32	9
16	--------	17	18	47	17	32	8
17	--------	16	17	34	16	32	9
18	--------	17	17	31	16	28	9
19	14	26	17	26	125	26	8
20	14	41	17	25	73	24	7
21	14	65	17	24	51	22	7
22	14	34	18	25	25	22	6
23	14	23	19	24	19	20	6
24	14	21	18	23	1,210	20	5
25	14	21	17	23	2,560	19	5
26	31	22	17	23	1,750	24	4
27	16	20	17	22	187	38	4
28	15	18	17	22	134	24	4
29	14	19	17	22	110	19	4
30	14	19	17	21	92	18	4
31	15	--------	461	--------	81	16	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March 19–31	31	14	15.6	402
April	65	15	20.4	1,210
May	461	17	33.1	2,040
June	838	21	91.1	5,420
July	2,560	16	218	13,400
August	76	16	36.3	2,230
September	54	4	13.6	809
The period				25,500

SMOKY HILL RIVER AT JEROME, KANS.

LOCATION.—Staff gage in NW. ¼ sec. 23, T. 15 S., R. 29 W., half a mile south of Jerome and 5 miles above Plum Creek.

DRAINAGE AREA.—3,900 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 690 second-feet Sept. 9 (gage height, 5.10 feet); minimum, less than 1 second-foot during winter.

1928–29: Maximum and minimum discharge, same as given above.

REMARKS.—Records fair. Stage-discharge relation affected by ice Dec. 1 to Feb. 28.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2	6				18	13	19	71	6	3	2
2	2	6				11	13	19	77	4	3	2
3	2	5	3			11	13	19	66	4	3	4
4	3	6				17	13	15	47	2	3	4
5	3	6				17	9	21	36	2	3	4
6	3	6				17	10	22	30	1	3	4
7	3	5				15	10	22	70	1	3	6
8	4	5				15	10	19	50	4	3	37
9	4	5				11	10	19	35	1	3	690
10	3	5				11	17	19	30	1	1	45
11	3	5	2			11	14	22	24	1	1	20
12	3	5				11	14	15	19	1	3	400
13	20	5				15	10	15	19	1	3	45
14	6	5				11	14	15	19	1	3	26
15	6	5				11	14	15	15	1	1	17
16	6	5		1	1	16	14	15	19	1	2	13
17	5	5				12	14	15	15	1	2	13
18	5	5				12	14	21	15	49	2	9
19	5	5				12	14	21	11	9	2	7
20	5	6				12	20	19	11	6	2	7
21	5	5				12	20	15	11	4	2	7
22	5	5				12	18	14	11	4	2	7
23	5	5				12	18	14	11	235	2	4
24	5	5	2			12	20	11	10	28	2	4
25	5	5				12	19	11	7	22	2	4
26	5	5				12	19	14	7	18	26	4
27	5	5				12	19	14	7	10	16	2
28	5	5				12	19	14	7	7	6	2
29	5	5				16	19	11	6	5	4	2
30	5	5			-------	12	19	44	6	5	4	2
31	6	-------			-------	12	-------	83	-------	3	2	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	20	2	4.81	296
November	6	5	5.20	309
December	----------	----------	2.16	133
January	----------	----------	1.00	61
February	----------	----------	1.00	56
March	18	11	13.0	799
April	20	9	15.0	893
May	83	11	19.7	1,210
June	77	6	25.4	1,510
July	235	1	14.1	867
August	26	1	3.77	232
September	690	2	46.4	2,760
The year	690	----------	12.6	9,130

SMOKY HILL RIVER AT PFEIFER, KANS.

LOCATION.—Chain gage in SW. ¼ sec. 6, T. 15 S., R. 16 W., at highway bridge 1 mile east of Pfeifer.
DRAINAGE AREA.—6,070 square miles.
RECORDS AVAILABLE.—March to September, 1929.
EXTREMES.—Maximum discharge during period, 6,750 second-feet May 11 (gage height, 11.00 feet); minimum not determined.
REMARKS.—Records poor. Discharge estimated Mar. 30, 31, June 30, July 1, July 3 to Aug. 19, Aug. 22, and 24.

Daily and monthly discharge, in second-feet, 1929

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1	--------	27	8	18	18		12
2	--------	27	8	19	18		10
3	--------	22	7	36			10
4	--------	27	6	42			10
5	--------	29	6	48			12
						20	
6	--------	24	12	77	15		12
7	--------	24	12	52			14
8	--------	22	21	34			12
9	--------	24	22	22			23
10	--------	40	21	21			28
11	--------	58	5,710	27			140
12	--------	52	880	27			103
13	--------	54	499	22	500		93
14	--------	40	245	34			84
15	--------	31	154	52		10	52
16	34	17	111	34			48
17	36	16	84	31			46
18	36	16	74	31	40		40
19	34	18	69	20			42
20	31	22	88	46		11	36
21	31	18	70	34		11	34
22	31	13	64	36		12	34
23	29	12	58	31		13	29
24	29	11	67	27		12	24
25	29	14	64	29		12	27
26	27	14	64	29	30	12	28
27	29	14	58	22		12	22
28	27	13	60	22		12	33
29	31	13	64	21		12	33
30	30	16	40	20		12	23
31	29	--------	40	--------		12	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
March 16-31	36	27	30.8	975
April	58	11	24.3	1,450
May	5,710	6	280	17,200
June	77	18	32.1	1,910
July	----------	----------	103	6,330
August	----------	----------	14.0	861
September	140	10	37.1	2,210
The period	5,710	----------	78.4	30,900

SMOKY HILL RIVER AT ELLSWORTH, KANS.

LOCATION.—Chain gage in SE. ¼ sec. 20, T. 15 S., R. 8 W., in Ellsworth, 2 miles below Turkey Creek.

DRAINAGE AREA.—7,580 square miles.

RECORDS AVAILABLE.—April, 1895, to October, 1905; July, 1918, to September, 1925; August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 17,000 second-feet May 12 (gage height, 21.03 feet); minimum not determined.

1895–1905, 1918–1925, 1928–29: Maximum discharge, 21,000 second-feet July 5, 1895; minimum, 1.6 second-feet Oct. 9 and 10, 1922.

A stage of 25.0 feet was reached in August, 1927 (discharge, about 24,000 second-feet).

REMARKS.—Records good except those for periods of ice effect (Dec. 20–24 and Jan. 1 to Feb. 28) and those for May 13 to July 12, which are fair.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	96	133	96			195	71	68	580	71	256	71
2	96	142	90			172	71	65	320	65	162	71
3	96	133	90	65	58	142	71	65	1,160	65	152	68
4	96	124	90			110	71	71	269	65	142	65
5	90	124	90			103	71	68	209	62	124	65
6	90	110	84			103	71	68	282	62	124	65
7	90	103	84			96	71	68	410	59	116	68
8	90	103	78		55	96	71	65	410	59	116	68
9	90	103	84			96	71	65	320	65	124	71
10	90	103	90	75		90	71	68	294	65	1,620	71
11	90	96	90			90	71	7,980	244	2,920	380	71
12	84	96	90			90	71	13,300	219	8,100	162	71
13	103	96	90			90	71	6,050	195	2,980	133	96
14	103	103	90		65	90	71	2,340	184	960	116	172
15	103	103	90			84	71	1,160	162	580	110	103
16	103	103	90			84	71	760	142	380	96	232
17	103	110	90			78	71	580	133	294	90	116
18	96	133	90	70		78	71	475	133	1,990	90	90
19	96	124	90			78	71	380	124	1,880	84	96
20	96	116				74	78	335	124	880	84	90
21	96	103	80			78	78	335	116	1,570	78	84
22	96	103			55	78	78	320	110	685	74	84
23	96	96				78	78	294	103	510	78	74
24	96	96				74	71	256	142	380	78	71
25	90	96	78			74	68	232	110	365	78	110
26	90	90	78	60		74	65	219	96	320	74	133
27	90	90	78		62	74	71	195	90	380	71	116
28	90	90	78		74	74	71	184	84	320	71	110
29	90	96	78		-------	74	65	172	74	294	71	68
30	96	90	78		-------	74	68	162	74	269	90	65
31	103	-------	84		-------	74	-------	580	-------	232	78	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	103	84	94.6	5,820
November	142	90	107	6,370
December	96	78	85.1	5,230
January	----------	----------	67.5	4,150
February	----------	----------	59	3,280
March	195	74	92.4	5,680
April	78	65	71.3	4,240
May	13,300	65	1,190	73,200
June	1,160	74	230	13,700
July	8,100	59	869	53,400
August	1,620	71	165	10,100
September	232	65	91.2	5,430
The year	13,300	----------	264	191,000

SMOKY HILL RIVER NEAR MENTOR, KANS.

LOCATION.—Chain gage in SE. ¼ sec. 18, T. 15 S., R. 2 W., 1½ miles east of Mentor and 26 miles above Saline River.

DRAINAGE AREA.—8,210 square miles.

RECORDS AVAILABLE.—December, 1923, to September, 1929.

EXTREMES.—Maximum discharge during year, 7,050 second-feet May 15 (gage height, 25.44 feet); minimum, 64 second-feet Nov. 30 (gage height, 3.2 feet).

1923–1929: Maximum discharge, 7,450 second-feet Aug. 17, 1927 (gage height, 25.8 feet); minimum, 12 second-feet several days in August, 1926.

REMARKS.—Records fair. Stage-discharge relation affected by ice Jan. 1 to Mar. 6. Slight regulation caused by operation of milldam upstream. Gage-height record furnished by United States Weather Bureau.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	218	170	161	115	78	191	125	99	4,060	208	500	179
2	208	179	161	115	78	220	134	99	4,060	188	459	179
3	188	188	161	115	78	180	125	107	4,090	179	420	179
4	188	198	152	100	78	186	116	107	4,060	170	394	179
5	198	208	143	75	78	197	116	107	4,120	161	370	161
6	188	208	134	64	71	208	116	99	1,780	161	346	152
7	179	188	134	71	71	218	107	99	931	152	334	161
8	179	179	143	71	71	179	107	99	970	161	323	152
9	170	170	152	71	71	161	107	107	1,440	161	312	152
10	170	161	143	71	71	161	107	107	931	279	312	152
11	161	161	134	78	71	161	107	1,880	749	3,910	500	143
12	161	152	134	78	71	161	99	5,080	650	4,620	1,670	143
13	161	134	134	78	78	161	99	5,490	560	5,320	666	134
14	161	170	125	78	78	161	107	6,030	486	5,670	420	125
15	152	170	125	78	78	161	116	6,750	459	5,760	346	125
16	161	179	134	78	78	152	107	6,390	420	3,410	301	125
17	161	208	143	90	78	152	107	2,460	382	1,140	279	208
18	152	238	143	86	99	143	99	1,210	358	856	268	208
19	152	290	134	86	92	143	99	732	334	749	258	218
20	152	279	134	80	99	134	116	650	312	1,510	258	228
21	161	228	125	71	107	134	134	715	290	1,100	248	248
22	161	188	125	78	107	134	290	635	268	1,370	228	248
23	152	161	116	78	99	134	228	605	268	1,960	208	218
24	152	134	107	78	99	134	198	590	279	1,050	198	170
25	152	125	107	78	107	125	188	545	590	820	198	152
26	152	107	125	85	116	125	188	515	301	698	188	134
27	152	85	134	78	134	116	161	500	290	575	179	125
28	143	71	134	78	162	116	143	472	268	530	179	116
29	143	71	125	78	------	116	116	433	258	500	179	116
30	152	64	134	85	------	116	107	472	238	575	179	107
31	152	------	134	78	------	125	------	2,660	------	530	170	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	218	143	166	10,200
November	290	64	169	10,100
December	161	107	135	8,300
January	115	64	82.0	5,040
February	162	71	89.2	4,950
March	220	116	155	9,530
April	290	99	132	7,860
May	6,750	99	1,480	91,000
June	4,120	238	1,140	6,800
July	5,760	152	1,440	88,500
August	1,670	170	351	21,600
September	248	107	165	9,820
The year	6,750	64	462	335,000

SMOKY HILL RIVER AT SOLOMON, KANS.

LOCATION.—Chain gage in SE. ¼ sec. 19, T. 13 S., R. 1 E., 500 feet below Solomon River and 1 mile south of Solomon.

DRAINAGE AREA.—18,700 square miles.

RECORDS AVAILABLE.—April to July, 1904; October, 1922, to September, 1929.

EXTREMES.—Maximum discharge during year, 12,000 second-feet July 13 (gage height, 24.5 feet); minimum, about 210 second-feet in February.

1904, 1922–1929: Maximum discharge, 18,400 second-feet Aug. 10, 1928 (gage height, 28.0 feet); minimum, 25 second-feet Oct. 14, 1925.

Maximum stage during flood of 1903 was determined by levels to be about 35.0 feet.

REMARKS.—Records fair. Stage-discharge relation affected by ice Jan. 5 to Feb. 28. Regulation caused by operation of mills and power plants up stream. Gage-height record furnished by United States Weather Bureau.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	880	745	664	560	356	2,900	799	691	4,090	908	2,520	560
2	853	772	664	560	308	3,500	638	638	7,620	826	1,950	534
3	853	799	664	534	236	3,180	638	612	7,110	799	1,360	534
4	826	826	664	534	236	2,460	586	586	5,500	799	1,180	508
5	826	826	638	508	236	1,760	560	560	5,500	745	1,050	534
6	799	853	638	508	236	1,720	560	560	4,980	718	992	508
7	799	880	638	482	212	1,120	508	560	3,060	612	908	508
8	799	880	638	456	260	964	508	534	2,050	718	964	718
9	772	853	612	456	308	880	508	534	3,940	638	880	708
10	772	826	612	431	236	853	534	534	6,690	638	1,120	482
11	772	799	612	431	236	826	534	586	7,700	826	3,620	508
12	745	745	586	406	260	799	534	9,200	8,290	10,100	2,250	560
13	745	718	586	406	284	772	508	10,800	8,550	12,000	1,440	534
14	745	691	586	406	308	772	534	9,300	6,970	8,730	1,180	508
15	992	691	586	406	308	745	745	8,460	2,150	6,970	1,020	560
16	745	691	560	400	284	718	772	7,390	1,850	5,500	908	534
17	1,150	964	560	400	284	691	560	7,320	1,790	5,240	826	534
18	1,490	1,020	586	400	356	691	534	7,320	1,400	3,560	772	508
19	1,180	992	586	406	482	664	508	3,450	1,220	2,150	745	534
20	1,020	936	612	406	612	664	853	2,300	1,220	1,620	718	534
21	936	880	612	381	560	638	5,880	1,760	1,760	1,360	691	508
22	880	853	586	356	456	638	7,780	1,620	1,890	2,680	664	508
23	853	799	586	332	308	612	7,940	2,300	2,150	2,400	664	508
24	799	745	612	381	284	612	7,780	2,000	3,120	2,150	612	482
25	772	718	612	406	381	612	3,560	1,540	2,480	2,000	534	482
26	745	691	638	406	406	586	1,400	1,360	2,050	1,580	586	456
27	745	691	612	381	560	586	1,050	1,180	2,090	1,220	664	482
28	718	691	612	356	936	586	880	1,180	1,440	1,120	612	431
29	718	664	586	356	------	586	799	1,080	1,120	1,180	612	406
30	718	664	586	332	------	586	745	992	992	3,620	560	406
31	718	------	586	356	------	612	------	1,120	------	3,120	560	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,490	718	850	52,300
November	1,020	664	797	47,400
December	664	560	610	37,500
January	560	332	424	26,100
February	936	212	355	19,700
March	3,500	586	1,080	66,400
April	7,940	508	1,660	98,800
May	10,800	534	2,840	175,000
June	8,550	992	3,680	219,000
July	12,000	612	2,790	172,000
August	3,620	534	1,070	65,800
September	718	406	519	30,900
The year	12,000	212	1,400	1,010,000

SALINE RIVER NEAR WILSON, KANS.

LOCATION.—Chain gage in SW. ¼ sec. 11, T. 13 S., R. 11 W., three-fourths mile above Hell Creek and 8 miles northwest of Wilson.
DRAINAGE AREA.—1,900 square miles.
RECORDS AVAILABLE.—May to September, 1929.
EXTREMES.—Maximum discharge during period, 3,150 second-feet July 27 (gage height, 12.0 feet); minimum, 5 second-feet July 9 (gage height, 2.45 feet).
REMARKS.—Records fair.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	------	75	14	200	41	16	120	39	624	80	46
2	------	71	13	178	37	17	111	35	560	77	42
3	------	63	11	158	33	18	101	32	1,360	73	39
4	------	56	9	138	30	19	94	28	1,210	65	42
5	------	50	10	128	27	20	80	26	1,170	58	39
6	------	67	9	122	21	21	138	41	791	54	35
7	------	82	8	115	24	22	158	39	138	46	32
8	------	178	6	107	27	23	138	65	115	77	35
9	------	148	5	96	88	24	120	54	100	58	39
10	------	138	6	118	80	25	111	46	222	27	32
11	1,070	98	7	111	67	26	94	44	1,280	82	46
12	1,030	62	24	103	60	27	88	41	2,910	75	46
13	257	56	50	103	56	28	80	37	496	67	39
14	178	56	859	100	52	29	73	33	354	60	42
15	148	46	791	92	52	30	69	28	268	52	39
						31	75	------	234	44	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May 11-31	1,070	69	206	8,580
June	178	26	61.1	3,640
July	2,910	5	440	27,100
August	200	27	92.4	5,680
September	88	21	42.9	2,550
The period	------	------	------	47,600

SALINE RIVER AT TESCOTT, KANS.

LOCATION.—Chain gage in SE. ¼ sec. 16, T. 12 S., R. 5 W., half a mile south of Tescott and half a mile above Dry Creek.

DRAINAGE AREA.—2,800 square miles.

RECORDS AVAILABLE.—September, 1919, to September, 1929.

EXTREMES.—Maximum discharge during year, 1,550 second-feet May 14 (gage height, 17.50 feet); minimum, 54 second-feet Sept. 30 (gage height, 4.58 feet).

1919–1929: Maximum discharge, 6,150 second-feet July 12, 1928 (gage height, 29.48 feet); minimum, 0.5 second-foot July 8, 1926.

REMARKS.—Records fair except those for period of ice effect, Jan. 15 to Mar. 2, which are poor. Discharge estimated Mar. 13, 24, Apr. 4, 25–27, Aug. 12–17, 20, 21, and Sept. 7. Regulation caused by operation of mills upstream.

Daily and monthly discharge, in second-feet, 1929

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	155	143	143	149		201	131	100	173	85	260	73
2	161	137	131	143		243	131	95	755	73	215	73
3	149	143	143	143		284	137	90	428	81	187	66
4	155	143	149	149		222	134	90	201	66	173	66
5	161	137	143			201	131	81	155	69	155	63
6	143	143	149			149	131	95	155	60	143	66
7	131	149	131			143	125	95	149	115	143	66
8	131	143	143			137	131	95	293	57	125	66
9	131	137	149			131	131	95	902	63	125	66
10	143	137	149			125	125	100	505	69	131	66
11	143	143	143			131	131	236	284	81	125	69
12	149	155	137			120	131	1,350	229	66	120	69
13	143	143	131			120	137	1,290	229	66	115	105
14	143	155	143		75	120	125	1,530	244	77	109	77
15	143	155	149			131	137	902	194	392	103	77
16	143	143	149			125	155	392	131	455	97	69
17	143	143	149			143	161	268	115	222	91	85
18	131	137	143	110		137	187	208	105	161	85	69
19	143	143	143			143	208	194	100	110	85	85
20	149	131	149			131	338	167	90	244	80	66
21	143	131	155			143	236	155	100	634	75	66
22	137	131	155			125	208	155	131	401	69	69
23	131	143	137			131	194	180	143	201	69	63
24	143	149	149			131	180	194	100	155	77	63
25	155	155	143			131	158	208	110	120	77	73
26	155	155	143			143	137	173	105	120	77	60
27	149	149	155		117	131	116	155	105	105	77	66
28	149	143	143		159	131	95	143	90	535	73	69
29	143	155	143		-------	131	95	131	77	1,030	77	66
30	143	143	149		-------	143	110	125	66	809	77	54
31	137	-------	149		-------	143	-------	120	-------	410	73	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	161	131	144	8,550
November	155	131	144	8,570
December	155	131	145	8,920
January	149	110	115	7,070
February	159	75	79.5	4,420
March	284	120	149	9,160
April	338	95	152	9,040
May	1,530	81	297	18,300
June	902	66	215	12,800
July	1,030	57	230	14,100
August	260	69	113	6,950
September	105	54	69.7	4,150
The year	1,530	54	155	112,000

SOUTH FORK OF SOLOMON RIVER AT ALTON, KANS.

LOCATION.—Chain gage in SW. ¼ sec. 12, T. 7 S., R. 15 W., three-fourths mile south of Alton.

DRAINAGE AREA.—1,720 square miles.

RECORDS AVAILABLE.—August, 1919, to June, 1925; August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 1,510 second-feet July 25 (gage height, 10.23 feet); minimum, 10 second-feet July 21–23 (gage height, 1.9 feet).

1919–1925, 1928–29: Maximum discharge, 9,340 second-feet Sept. 19, 1919 (gage height, 19.5 feet); minimum, 0.1 second-foot Sept. 7 and 27, 1922.

Maximum stage known, 24.5 feet Aug. 1, 1928.

REMARKS.—Records fair. Stage-discharge relation affected by ice Jan. 6 to Mar. 5. Discharge estimated Mar. 3, 19, 21–23, Sept. 29, and 30. Slight regulation caused by operations at small dam upstream.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	110	118	81	37	33	45	49	52	57	22	103	20
2	110	118	78	40	43	50	50	50	55	20	96	18
3	110	125	76	44	57	62	52	48	52	19	89	18
4	103	125	65	42	55	74	49	50	48	16	82	18
5	103	125	60	50	52	110	52	52	45	16	78	19
6	103	110	60	35	55	156	54	56	46	15	74	19
7	103	110	77	18	59	148	50	57	452	14	70	21
8	103	103	89	26	42	51	50	59	325	20	66	29
9	89	103	82	26	38	103	49	62	180	21	64	34
10	74	96	794	28	43	96	51	60	132	19	64	45
11	70	96	103	30	44	89	54	57	103	17	118	61
12	82	96	96	31	45	81	56	60	89	14	132	55
13	433	96	89	36	45	79	55	61	72	14	96	52
14	271	89	82	45	50	74	51	57	64	14	70	42
15	237	82	78	40	48	65	49	60	66	13	57	33
16	204	89	72	36	51	62	46	62	64	12	52	24
17	188	89	68	28	48	62	51	62	54	10	49	20
18	164	96	60	38	50	62	132	103	62	12	41	18
19	148	96	52	41	51	61	118	379	82	12	39	17
20	62	89	50	26	57	60	96	433	50	12	40	15
21	132	89	48	18	60	60	76	433	42	10	42	14
22	110	82	57	20	57	59	77	361	36	10	36	12
23	118	82	60	22	55	58	79	271	34	10	36	11
24	110	82	54	24	43	57	74	254	26	57	36	12
25	103	82	60	26	49	54	66	140	42	1,370	32	12
26	96	82	82	28	43	55	66	110	35	623	44	11
27	103	82	82	30	32	54	66	81	32	452	36	12
28	103	82	78	32	45	54	61	61	29	196	34	13
29	103	89	74	31	------	55	55	57	25	172	32	13
30	96	89	73	33	------	55	56	57	22	148	28	14
31	103	------	70	32	------	52	------	55	------	118	26	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	433	62	130	8,000
November	125	82	96.4	5,740
December	794	48	95.2	5,850
January	50	18	32.0	1,970
February	60	32	48.2	2,680
March	156	45	71.1	4,370
April	132	46	63.0	3,750
May	433	48	121	7,440
June	452	22	80.7	4,800
July	1,370	10	112	6,890
August	132	26	60.1	3,700
September	61	11	23.4	1,390
The year	1,370	10	78.2	56,600

SOLOMON RIVER AT BELOIT, KANS.

LOCATION.—Chain gage in SW. ¼ sec. 9, T. 7 S., R. 7 W., at highway bridge in Beloit, 93 miles above junction with Smoky Hill River at Solomon, Kans.

DRAINAGE AREA.—5,410 square miles.

RECORDS AVAILABLE.—April to September, 1929.

EXTREMES.—Maximum discharge during period, 11,900 second-feet June 8 (gage height, 26.40 feet); minimum, 5 second-feet occurs during low-water periods when power plant upstream is closed down.

REMARKS.—Records fair except those for August and September, which are poor. Discharge estimated Apr. 14, June 22, July 4, 10, 16, Aug. 20, 25, 29, and Sept. 1–30. Considerable regulation caused by operation of power plant 200 feet above gage.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	-------	174	430	144	390	102	16	124	207	302	100	144	144
2	-------	164	174	164	338	106	17	144	174	326	124	134	124
3	-------	207	164	144	326	102	18	134	254	278	88	71	115
4	-------	144	302	100	266	106	19	1,210	278	254	97	124	106
5	-------	144	218	106	254	106	20	7,160	1,040	690	314	88	106
6	-------	185	230	134	242	106	21	6,350	706	2,130	144	134	102
7	-------	154	5,520	124	196	124	22	934	338	458	144	102	102
8	-------	144	11,900	115	218	124	23	458	254	351	102	84	124
9	-------	144	10,900	115	207	124	24	326	218	754	97	144	144
10	-------	154	2,200	100	196	124	25	254	185	528	124	144	124
11	-------	278	722	326	134	185	26	230	144	364	858	154	106
12	-------	1,770	542	338	185	144	27	207	154	280	5,320	124	106
13	-------	858	658	196	174	207	28	185	144	207	1,530	115	106
14	124	403	500	154	218	174	29	207	124	185	690	154	106
15	154	278	338	115	196	164	30	185	134	164	542	115	97
							31	-------	144	-------	458	134	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 14–30	7,160	124	1,080	36,400
May	1,770	124	313	19,200
June	11,900	164	1,400	83,300
July	5,320	88	423	26,000
August	390	71	178	10,900
September	207	97	124	7,380
The period	----------	----------	----------	183,000

SOLOMON RIVER AT NILES, KANS.

LOCATION.—Chain gage in NW. ¼ sec. 31, T. 12 S., R. 1 W., three-fourths mile west of Niles and 7 miles above mouth of river.

DRAINAGE AREA.—6,710 square miles.

RECORDS AVAILABLE.—May, 1897, to November, 1903; May, 1919, to September, 1929.

EXTREMES.—Maximum discharge during year, 8,860 second-feet June 12 (gage height, 26.67 feet); minimum, 105 second-feet Sept. 30 (gage height, 3.88 feet).

1897–1903, 1919–1929: Maximum discharge, 10,600 second-feet June 3, 1903 (gage height, 33.8 feet, old datum); minimum, 1 second-foot Sept. 4, 1926.

REMARKS.—Records good except those for period of ice effect, Jan. 1 to Feb. 28, and those for Mar. 3 to Apr. 19, which are fair. Flow is regulated by operation of power plants upstream.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	309	322	270			1,360	188	391	1,270	405	625	168
2	309	363	270			1,400	210	363	1,740	363	512	178
3	309	377	270	160		958	199	335	864	349	435	178
4	309	420	270			676	210	322	592	335	391	178
5	296	349	270			512	234	309	450	296	363	168
6	283	363	258		140	480	199	322	420	296	349	168
7	296	405	246			420	188	309	450	283	335	178
8	270	420	258			363	188	309	1,500	283	322	158
9	283	363	258			349	246	309	5,760	270	296	130
10	283	349	210			363	258	309	7,080	283	1,360	168
11	283	322	222	170		349	210	576	8,050	1,360	576	234
12	283	296	234			349	178	1,400	8,750	3,900	309	210
13	270	309	234		130	349	210	1,600	7,400	1,630	296	199
14	283	309	258			335	222	1,670	1,630	608	296	188
15	270	296	270			309	258	1,500	901	465	283	188
16	560	309	258			296	199	761	920	377	270	199
17	1,270	270	258			283	178	544	710	335	258	222
18	864	246	270			258	199	450	592	309	296	199
19	608	335	270			270	188	391	560	270	270	188
20	512	349	270			258	4,850	363	864	246	246	178
21	450	322	258	160	170	270	6,650	450	978	222	234	158
22	377	309	246			246	6,650	920	1,460	222	246	158
23	363	296	222			258	7,450	1,170	2,220	270	222	148
24	335	283	222			246	4,950	676	2,090	309	188	158
25	335	283	322			210	1,240	480	1,110	270	199	148
26	309	270	222		258	234	778	420	1,330	246	222	168
27	309	270	222		480	234	608	377	958	234	199	139
28	309	270	246	140	700	222	512	349	693	234	210	130
29	270	270	222		-------	234	465	309	544	2,740	199	139
30	296	283	234		-------	210	420	296	450	2,610	199	105
31	296	-------	234		-------	234	-------	322	-------	939	188	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	1,270	270	381	23,400
November	420	246	321	19,100
December	322	210	251	15,400
January	----------	----------	159	9,780
February	----------	----------	185	10,300
March	1,400	210	404	24,800
April	7,450	178	1,280	76,200
May	1,670	296	590	36,300
June	8,750	420	2,080	124,000
July	3,900	222	676	41,600
August	1,360	188	335	20,600
September	234	105	171	10,200
The year	8,750	105	569	412,000

NORTH FORK OF SOLOMON RIVER AT KIRWIN, KANS.

LOCATION.—Chain gage in SW. ¼ sec. 34, T. 4 S., R. 16 W., half a mile south of Kirwin and three-fourths mile below Bow Creek.

DRAINAGE AREA.—1,290 square miles.

RECORDS AVAILABLE.—August, 1919, to June, 1925; August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 6,870 second-feet July 26 (gage height, 16.25 feet); minimum, 0.5 second-foot July 20.

1919–1925, 1928–29: Maximum discharge (estimated), 15,500 second-feet Sept. 18, 1919 (gage height, 22.5 feet); minimum, 0.5 second-foot Dec. 5, 1922, Oct. 1, 5, 12, and 19, 1924, and July 20, 1929.

REMARKS.—Records fair. Stage-discharge relation affected by ice Jan. 6 to Feb. 25. Flow is regulated by operation of milldam upstream.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	47	54	31	49		55	34	48	130	22	93	21
2	35	93	33	53		58	33	40	138	17	76	20
3	41	65	33	31		59	34	44	122	23	73	20
4	38	56	31	31		58	37	49	114	28	69	28
5	39	43	37	25		61	42	40	107	11	62	38
					4							
6	34	46	37			61	41	46	86	14	57	30
7	34	43	37			65	44	40	93	9	56	23
8	44	41	35	10		80	42	35	138	34	60	16
9	36	39	35			54	37	51	138	20	56	30
10	36	48	35			65	37	66	107	8	57	27
11	44	42	39			53	37	122	93	27	55	28
12	535	41	57			55	42	86	80	52	48	28
13	535	42	59			59	35	86	66	10	51	27
14	343	39	45			41	36	74	47	9	43	21
15	202	42	38			43	35	57	50	12	48	12
				6	5							
16	122	38	48			53	45	66	54	11	41	20
17	93	41	50			35	43	68	64	5	51	18
18	75	32	28			36	53	73	44	10	47	20
19	66	46	43			46	93	69	56	5	37	20
20	59	36	23			31	74	58	41	12	42	20
21	59	39	38			35	61	56	58	26	35	12
22	61	37	46			39	80	60	46	18	42	6
23	57	35	38		6	33	49	53	64	36	31	17
24	52	37	36			38	36	48	34	437	28	8
25	53	33	41			44	8	62	31	5,180	29	14
				4								
26	53	38	26		10	32	41	54	34	6,390	29	14
27	42	36	51		16	33	42	45	17	277	26	14
28	42	42	44		35	39	47	45	23	182	26	4
29	47	42	45		-------	33	44	51	20	130	26	5
30	47	36	50		-------	36	47	41	30	107	25	12
31	43	-------	50	-------	-------	32	-------	57	-------	86	31	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	535	34	97.2	5,980
November	93	32	43.4	2,580
December	59	23	40.0	2,460
January	49	----------	11.1	682
February	35	----------	6.46	359
March	80	31	47.2	2,900
April	93	8	44.3	2,640
May	122	35	57.7	3,550
June	138	17	70.8	4,210
July	6,390	5	42.6	26,200
August	93	25	46.8	2,880
September	38	4	19.1	1,140
The year	6,390	4	76.8	55,600

BIG BLUE RIVER AT HULL, KANS.

LOCATION.—Chain gage in NW. ¼ sec. 3, T. 2 S., R. 7 E., one-fourth mile west of Hull and 2 miles above Deer Creek.

DRAINAGE AREA.—4,510 square miles.

RECORDS AVAILABLE.—August, 1919, to July, 1925; August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 8,980 second-feet June 2 (gage height, 16.00 feet); minimum, 59 second-feet Oct. 2 (gage height, 2.40 feet).

1919–1925, 1928–29: Maximum discharge, 14,500 second-feet Oct. 3, 1923 (gage height, 20.8 feet); minimum, 2 second-feet Sept. 8 and 14, 1922 (gage height, 1.20 feet).

Maximum stage known, 31.7 feet in May, 1903.

REMARKS.—Records fair except those for estimated periods, which are poor. Flow regulated by operation of power plants upstream.

Daily and monthly discharge, in second-feet, 1928–29.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept
1	157	632				595	365	396	6,170	365		166
2	115	985				559	268	365	6,080	320		186
3	166	1,300			[a] 230	1,070	219	280	3,500	292		197
4	139	1,250				2,790	208	186	1,700	268		139
5	176	1,250				3,960	197	197	1,030	320		90
				[a] 210								
6	219	1,300				[a] 7,100	176	186	670	292		70
7	176	2,000				5,640	2,650	166	595	320		75
8	115	1,760				1,820	746	166	746	320	[a] 350	85
9	130	1,400				1,520	559	122	595	902		176
10	130	1,070				1,520	305	130	524	524		176
					[a] 250							
11	108	902				2,240	305	2,510	490	320		157
12	130	746				2,060	396	3,280	396	350		166
13	242	632				1,640	458	784	350	458		176
14	1,110	524				1,460	2,120	524	320	1,200		166
15	2,860	458	[a] 270	[a] 250		1,460	2,060	524	350	[a] 1,100		96
16	3,800	458			[a] 862	1,350	1,940	350	427	[a] 967	148	130
17	4,860	595			[a] 1,580	1,070	2,000	166	350	[a] 832	116	139
18	3,580	1,160			[a] 2,060	1,030	2,180	166	350	[a] 697	85	122
19	2,310	902			[a] 1,820	943	2,180	166	335	[a] 562	108	148
20	1,300	943			[a] 1,760	708	4,860	427	3,580	[a] 427	115	157
21	985	862			[a] 1,520	490	3,880	396	3,000	292	96	139
22	862	784			[a] 1,250	365	2,310	396	5,550	320	115	96
23	784	524			396	255	985	320	7,220	320	148	90
24	708	595			1,640	186	823	115	5,550	292	102	102
25	524	490			1,520	148	746	242	3,730	320	108	255
				[a] 230								
26	524	157			1,300	186	632	365	1,520	292	242	242
27	335	350			1,030	230	458	396	985		305	108
28	305	320			1,110	292	396	320	670	[a] 475	292	115
29	280	197			--------	396	350	335	524		122	75
30	280	[a] 320			--------	396	350	396	524		208	130
31	280	-------	-------	-------	--------	396	-------	784	-------	-------	157	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	4,860	108	893	54,900
November	2,000	157	829	49,300
December	----------	----------	270	16,600
January	----------	----------	230	14,100
February	2,060	----------	768	42,700
March	7,100	148	1,420	87,300
April	4,860	176	1,170	69,600
May	3,280	115	489	30,100
June	7,220	320	1,930	115,000
July	1,200	268	485	29,800
August	----------	96	249	15,300
September	255	70	139	8,270
The year	7,220	70	735	533,000

[a] Estimated because of ice or missing gage height.

BIG BLUE RIVER AT RANDOLPH, KANS.

LOCATION.—Chain gage in SW. ¼ sec. 12, T. 7 S., R. 6 E., at Randolph, half a mile above Fancy Creek.

DRAINAGE AREA.—8,860 square miles.

RECORDS AVAILABLE.—April, 1918, to September, 1929.

EXTREMES.—Maximum discharge during year, 22,600 second-feet June 1 (gage height, 22.38 feet); minimum, 228 second-feet Aug. 21 (gage height, 2.71 feet).

1918–1929: Maximum discharge, that of June 1, 1929; minimum, 175 second-feet Aug. 9, 1926 (gage height, 2.26 feet).

Maximum stage known, 31.7 feet May 31, 1903.

REMARKS.—Records good except those for period of ice effect, Jan. 6 to Feb. 28, which are fair. Discharge estimated Apr. 29 to May 1. Flow slightly affected by operation of power plants upstream.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	365	805	965	660	480	2,740	755	1,040	22,300	1,020	660	502
2	348	855	910	525	480	3,320	855	965	15,300	1,080	615	502
3	312	2,660	805	855	525	4,780	805	965	14,500	910	548	420
4	330	2,560	660	755	460	7,520	805	855	9,080	805	525	440
5	365	2,240	705	615	470	9,200	660	855	4,450	755	502	440
6	295	2,000	548	570	440	11,100	615	965	2,940	755	525	400
7	330	2,160	548	615	502	14,700	1,270	805	2,740	705	480	312
8	382	2,400	570	525	525	7,400	3,030	855	2,500	705	480	382
9	330	2,160	615	570	502	4,340	1,480	805	2,240	910	440	440
10	330	2,000	660	660	480	3,410	965	855	1,920	1,020	460	382
11	330	1,770	570	615	502	3,030	805	3,500	1,620	1,540	440	615
12	330	1,480	570	615	502	3,120	705	12,900	1,540	1,770	440	502
13	330	1,270	755	660	525	3,030	755	7,880	1,400	1,140	400	460
14	348	1,140	705	548	570	2,940	755	4,890	1,400	1,140	440	382
15	2,480	1,020	660	570	525	1,920	1,020	3,030	1,340	2,480	348	480
16	5,120	910	705	480	570	1,400	1,920	1,840	1,140	1,540	400	420
17	5,600	2,400	705	548	1,480	1,480	965	1,400	1,140	1,080	330	420
18	5,000	4,560	755	480	4,450	1,340	755	1,200	965	1,200	312	365
19	3,700	3,600	570	480	4,230	1,200	7,760	660	855	1,020	348	330
20	2,560	1,840	660	460	2,740	1,020	6,920	805	4,800	755	348	295
21	1,770	1,270	525	525	2,080	965	9,320	1,020	8,120	910	295	330
22	1,540	1,020	570	570	1,690	965	9,440	1,020	7,760	955	330	312
23	1,400	855	570	460	1,540	965	4,340	1,020	13,600	615	420	330
24	1,140	855	570	460	2,840	910	2,480	910	9,680	615	400	330
25	965	755	570	460	5,480	910	2,000	965	7,640	570	400	312
26	805	755	660	460	3,600	965	1,700	1,770	4,800	548	312	330
27	755	705	660	502	2,400	855	1,480	1,480	2,940	525	460	278
28	705	755	705	480	2,080	805	1,270	1,020	1,920	548	480	295
29	705	705	615	480	-------	805	1,190	965	1,480	910	400	312
30	705	755	570	460	-------	805	1,120	855	1,140	805	382	295
31	705	-------	615	480	-------	705	-------	1,340	--------	705	400	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	5,600	295	1,300	79,900
November	4,560	705	1,610	95,800
December	965	525	654	40,200
January	855	460	553	34,000
February	5,480	440	1,520	84,400
March	14,700	705	3,180	188,000
April	9,440	615	2,260	134,000
May	12,900	660	1,920	118,000
June	22,300	855	5,120	305,000
July	2,480	525	966	59,400
August	660	295	430	26,400
September	615	295	387	23,000
The year	22,300	295	1,650	1,190,000

LITTLE BLUE RIVER NEAR ENDICOTT, NEBR.

LOCATION.—Chain gage in sec. 5, T. 1 N., R. 3 E., 1½ miles southwest of Endicott.
DRAINAGE AREA.—2,590 square miles.
RECORDS AVAILABLE.—April to September, 1929.
EXTREMES.—Maximum discharge during period, 1,440 second-feet June 21 (gage height, 4.62 feet); minimum, 54 second-feet Aug. 10 (gage height, 0.21 foot).
REMARKS.—Records fair. No diversions. Diurnal fluctuations caused by operation of power dams above.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	-------	188	198	152	144	136	16	-------	170	120	136	80	112
2	-------	179	144	136	136	120	17	-------	170	128	144	83	112
3	-------	188	198	136	128	104	18	-------	161	120	170	93	112
4	-------	188	170	136	120	104	19	-------	136	112	128	67	112
5	-------	170	152	128	112	96	20	-------	152	435	120	85	96
6	-------	179	161	136	104	96	21	-------	152	1,030	120	93	112
7	-------	170	161	136	104	93	22	-------	152	830	112	78	112
8	-------	179	161	128	112	96	23	-------	144	605	112	75	112
9	-------	179	152	120	112	91	24	-------	136	500	104	91	104
10	-------	170	152	128	78	104	25	218	152	405	104	88	112
11	-------	338	152	136	112	104	26	179	152	291	104	90	112
12	-------	218	144	179	96	120	27	188	144	228	500	228	112
13	-------	170	128	144	96	104	28	188	144	188	270	112	104
14	-------	170	128	128	104	112	29	208	128	179	170	270	104
15	-------	161	128	112	93	112	30	188	152	152	170	248	112
							31	-------	136	-------	144	152	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 25-30	218	179	195	2,320
May	338	128	169	10,400
June	1,030	112	255	15,200
July	500	104	150	9,220
August	270	67	116	7,130
September	136	91	108	6,430
The period	----------	----------	----------	50,700

LITTLE BLUE RIVER AT WATERVILLE, KANS.

Location.—Chain gage in SE. ¼ sec. 16, T. 4 S., R. 6 E., half a mile north of Waterville and 1 mile below Corn Creek.

Drainage area.—3,390 square miles.

Records available.—June, 1922, to June, 1925; August, 1928, to September, 1929.

Extremes.—Maximum discharge during year, 6,210 second-feet May 11 (gage height, 12.35 feet); minimum, 94 second-feet Aug. 26 (gage height, 1.82 feet).

1922–1925, 1928–29: Maximum discharge, about 13,200 second-feet July 13, 1923 (gage height, 15.4 feet); minimum, 76 second-feet Dec. 19 and 20, 1924.

Remarks.—Records good except those for period of ice effect, Jan. 1 to Mar. 6, which are fair.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	118	279	220			522	231	292	1,930	266	173	200
2	118	1,130	220	160		670	210	279	2,000	242	148	173
3	118	873	220			1,040	210	266	2,240	220	140	140
4	118	916	200			1,420	200	254	1,500	210	173	132
5	118	750	210	140		1,790	191	254	670	210	104	125
6	118	710	346			2,170	210	254	520	200	140	125
7	118	670	200			2,420	1,180	254	460	200	132	118
8	118	670	916	130	140	1,040	522	242	374	182	132	125
9	111	592	1,040			916	360	242	360	182	140	148
10	125	522	1,000			670	254	242	332	200	118	242
11	111	430	1,000			556	242	4,120	430	242	140	182
12	111	374	210			522	220	4,520	318	318	140	164
13	111	346	220			490	210	4,360	430	210	132	164
14	750	305	200			402	210	1,220	268	220	111	148
15	2,980	292	210			374	318	710	240	182	118	140
16	3,570	279	191	160		346	242	556	220	173	118	132
17	1,650	402	210			332	231	460	210	173	111	125
18	916	790	210		700	305	220	430	200	191	118	118
19	710	490	210			292	1,860	402	191	173	104	118
20	556	332	200			279	2,230	360	3,270	220	104	118
21	430	266	402			254	2,840	332	1,450	182	111	118
22	402	266	592			220	1,450	346	2,560	140	132	118
23	346	242	592	150	800	220	873	332	2,360	132	104	118
24	318	231	522			210	556	318	1,550	132	104	111
25	292	231	430			200	490	790	1,310	140	104	118
26	266	220	279			191	430	750	950	132	98	111
27	254	231	200		550	191	332	360	550	125	111	111
28	254	220	191	140		191	318	292	374	279	148	104
29	242	220	191		-------	191	318	266	332	292	148	118
30	231	231	191		-------	191	305	254	270	231	191	111
31	231	-------	191		-------	191	-------	242	-------	191	332	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	3,570	111	513	31,500
November	1,130	220	450	26,800
December	1,040	191	362	22,300
January	----------	----------	149	9,160
February	----------	----------	402	22,300
March	2,420	191	607	37,300
April	2,840	191	582	34,600
May	4,520	242	774	47,600
June	3,270	191	930	55,300
July	318	125	200	12,300
August	332	98	135	8,300
September	242	104	136	8,090
The year	4,520	98	436	316,000

SOLDIER CREEK AT TOPEKA, KANS.

LOCATION.—Chain gage in NW. ¼ sec. 18, T. 11 S., R. 15 E., at State Industrial School in Topeka.
DRAINAGE AREA.—304 square miles.
RECORDS AVAILABLE.—May to September, 1929.
EXTREMES.—Maximum discharge during period, 5,010 second-feet June 7 (gage height, 18.30 feet); minimum not determined.
REMARKS.—Records poor.

Daily and monthly discharge, in second-feet, 1929

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1	------	4,000	77	10	[a] 5	16	------	162	51	6	11
2	------	3,380	72	9	5	17	------	153	48	5	10
3	------	1,690	72	8	5	18	------	146	35	5	[a] 10
4	------	1,490	68	8	6	19	------	630	23	5	[a] 9
5	------	572	64	7	6	20	------	2,440	20	4	[a] 9
6	------	438	544	8	5	21	------	1,080	18	4	[a] 8
7	------	2,620	212	8	5	22	------	1,490	17	4	[a] 8
8	------	2,270	118	7	5	23	111	3,560	16	4	7
9	------	544	35	7	5	24	111	1,360	15	4	[a] 7
10	------	386	720	64	5	25	98	295	14	4	[a] 6
11	------	334	490	9	5	26	98	146	13		[a] 6
12	------	282	104	9	7	27	98	98	12		[a] 5
13	------	234	64	8	6	28	98	87	12	[a] 4	4
14	------	162	59	8	6	29	92	82	12		[a] 4
15	------	162	55	7	[a] 8	30	104	82	12		[a] 4
						31	1,360	------	11	4	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May 23-31	1,360	92	241	4,300
June	4,000	82	1,010	60,100
July	720	11	99.5	6,120
August	64	4	7.94	488
September	11	4	6.40	381
The period				71,400

[a] Estimated.

DELAWARE RIVER AT VALLEY FALLS, KANS.

LOCATION.—Chain gage in SW. ¼ sec. 18, T. 8 S., R. 18 E., at Valley Falls, 500 feet below Walnut Creek.

DRAINAGE AREA.—922 square miles.

RECORDS AVAILABLE.—June, 1922, to September, 1929.

EXTREMES.—Maximum discharge during year, about 27,500 second-feet Apr. 19 (gage height, 28.41 feet); minimum, 7 second-feet Sept. 30 (gage height, 2.74 feet).

1922–1929: Maximum discharge, about 30,000 second-feet June 16, 1925 (gage height, 29.72 feet); minimum, 1.3 second-feet Oct. 28, 1922 (gage height, 1.04 feet).

REMARKS.—Records good except those for period of ice effect, Jan. 8 to Mar. 31, and for other estimated periods, which are fair. Observations discontinued Apr. 1 to June 9.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	June	July	Aug.	Sept.
1	50	111	302	344		[a] 570	--------	314	[a] 54	16
2	45	1,380	288	330		490	--------	346	52	17
3	40	945	288	288		346	--------	266	[a] 51	15
4	33	945	302	262		298	--------	235	50	14
5	26	865	302	213		[a] 259	--------	220	50	13
6	23	672	316	202	[a] 250	220	--------	235	50	12
7	21	566	[a] 316	191		[a] 213	--------	232	47	9
8	21	466	316	225		206	--------	298	42	11
9	21	316	316	985		[a] 182	--------	206	39	11
10	22	237	[a] 316	1,020		159	570	178	38	11
11	21	213	316	985		[a] 162	471	298	36	11
12	21	225	330	905		164	434	1,390	34	56
13	30	202	532	905		154	380	346	32	48
14	36	213	945	825	[a] 300	[a] 152	330	250	30	45
15	53	237	905	786		149	314	206	27	50
16	55	5,870	825	672		[a] 149	298	[a] 181	24	44
17	54	9,200	710	466		149	266	[a] 156	24	39
18	51	13,000	636			[a] 146	490	130	22	29
19	58	7,200	600		[a] 500	144	330	[a] 118	22	22
20	60	4,050	600			139	1,800	107	21	17
21	62	1,430	566		530	[a] 142	860	107	22	17
22	70	905	566		650	144	4,440	107	22	17
23	81	672	600		650	149	[a] 16,700	[a] 98	21	14
24	80	532	600	[a] 300	776	154	4,280	90	19	14
25	75	498	600		1,210	[a] 152	902	89	14	11
26	64	466	600		1,120	149	818	73	27	10
27	59	466	600		[a] 885	[a] 144	570	66	57	8
28	75	404	636		650	139	398	66	40	8
29	94	374	636		--------	152	330	38	30	8
30	94	[a] 338	636		--------	162	314	60	26	7
31	108	--------	636		--------	137	--------	55	17	--------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	108	21	51.7	3,180
November	13,000	111	1,770	105,000
December	945	288	521	32,000
January	1,020	191	445	27,400
February	--------	--------	449	24,900
March	570	137	196	12,100
June 10–30	--------	--------	1,680	69,900
July	1,390	38	213	13,100
August	54	14	33.5	2,060
September	56	7	20.1	1,200

[a] Estimated

WAKARUSA RIVER NEAR LAWRENCE, KANS.

LOCATION.—Chain gage in NW. ¼ sec. 24, T. 13 S., R. 19 E., 4 miles southwest of Lawrence and 11 miles above junction with Kansas River.
DRAINAGE AREA.—458 square miles.
RECORDS AVAILABLE.—April to September, 1929.
EXTREMES.—Maximum discharge during period, about 7,550 second-feet May 12 (gage height, 27.87 feet); minimum, 0.4 second-foot Sept. 29 (gage height, 2.04 feet).
REMARKS.—Records fair below 5,000 second-feet and poor above.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	------	250	3,250	54	9	3	16	------	379	88	36	7	1
2	------	339	4,170	57	9	2	17	------	304	76	30	6	1
3	------	282	4,340	52	11	3	18	------	1,420	76	49	30	1
4	------	240	1,020	46	6	3	19	------	1,070	104	28	80	2
5	------	230	408	44	12	2	20	------	339	617	26	46	2
6	------	230	327	44	5	2	21	------	260	282	22	4	2
7	------	230	379	63	5	2	22	------	230	408	22	3	2
8	------	210	1,070	42	5	2	23	------	210	802	16	3	2
9	------	190	304	42	11	2	24	------	180	327	19	2	2
10	------	170	250	44	10	2	25	------	160	210	14	3	2
11	------	979	210	57	14	2	26	------	180	150	14	3	2
12	------	7,360	170	80	15	1	27	304	190	112	11	4	2
13	------	3,550	160	70	25	2	28	579	150	88	14	4	1
14	------	1,020	130	52	15	2	29	393	130	76	13	5	1
15	------	598	100	40	9	1	30	271	190	84	10	4	1
							31	------	2,520	------	9	4	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 27-30	579	271	387	3,070
May	7,360	130	767	47,200
June	4,340	76	660	39,300
July	80	9	36.1	2,220
August	80	2	11.9	732
September	3	1	18.3	109
The period	----------	----------	----------	92,600

STRANGER CREEK NEAR TONGANOXIE, KANS.

LOCATION.—Chain gage in NE. ¼ sec. 13, T. 11 S., R. 21 E., 4 miles east of Tonganoxie and 9 miles above junction with Kansas River.
DRAINAGE AREA.—406 square miles.
RECORDS AVAILABLE.—April to September, 1929.
EXTREMES.—Maximum discharge during period, 15,300 second-feet Apr. 21 (gage height, 27.31 feet); minimum, 1 second-foot Sept. 30 (gage height, 3.20 feet).
REMARKS.—Records fair.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	-------	221	4,250	116	12	5	16	-------	263	123	45	12	7
2	-------	207	9,700	116	11	4	17	-------	221	95	43	8	6
3	-------	179	8,000	102	10	3	18	-------	298	89	41	5	9
4	-------	165	4,800	89	8	3	19	-------	410	113	37	5	3
5	-------	158	1,320	83	7	2	20	-------	235	333	33	5	2
6	-------	165	375	72	9	2	21	15,300	186	270	24	4	9
7	-------	207	382	221	9	2	22	-------	165	1,150	22	4	5
8	-------	186	663	263	10	2	23	-------	151	4,450	22	3	4
9	-------	158	815	144	16	4	24	-------	144	4,930	21	3	4
10	-------	130	305	109	14	4	25	-------	123	5,680	21	3	3
11	-------	375	235	62	13	4	26	-------	123	310	20	14	2
12	-------	2,050	200	83	11	5	27	-------	123	235	18	11	2
13	-------	789	179	95	22	7	28	-------	116	200	17	24	2
14	-------	446	151	72	21	11	29	-------	102	165	16	14	2
15	-------	347	130	55	15	10	30	263	137	137	14	13	1
							31	-------	1,050	-------	13	8	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
May	2,050	102	311	19,100
June	9,700	89	1,660	98,800
July	263	13	67.4	4,140
August	24	3	10.5	646
September	11	1	4.3	256
The period	----------	----------	----------	123,000

GRAND RIVER BASIN

GRAND RIVER NEAR GALLATIN, MO.

LOCATION.—Chain gage in NW. ¼ sec. 16, T. 59 N., R. 27 W., at highway bridge 1,000 feet above Chicago, Rock Island & Pacific Railway bridge, and 2 miles northeast of Gallatin. Zero of gage is 712.83 feet above mean sea level.

DRAINAGE AREA.—2,250 square miles.

RECORDS AVAILABLE.—June, 1921, to September, 1929.

EXTREMES.—Maximum discharge during year, 56,800 second-feet June 2 (gage height, 37.38 feet); minimum discharge, 37 feet Sept. 29 and 30; minimum gage height, 3.45 feet Oct. 12, Sept. 29, and 30.

1921–1929: Maximum discharge, that of June 2, 1929; minimum, 10 second-feet while river was dammed upstream May 15, 1924 (gage height, 1.55 feet).

Maximum stage known, 39.3 feet in July, 1909.

REMARKS.—Records good except those for period of ice effect, Jan. 2 to Feb. 25, which are poor. Discharge estimated May 25 and June 9.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	224	415	6,050	190	226	13,400	6,880	1,710	20,000	208	620	60
2	206	15,600	3,590	190	226	8,030	5,220	1,040	51,400	217	302	60
3	182	22,100	2,240	208	226	6,880	1,960	770	44,800	302	226	60
4	166	24,500	1,810	190	226	10,400	1,040	650	40,100	172	324	78
5	166	12,900	1,520	172	226	9,540	770	565	17,600	244	190	66
6	166	3,460	770	157	226	10,900	590	540	3,400	16,100	172	55
7	158	1,910	740	157	226	15,600	590	590	1,760	27,600	150	55
8	190	1,430	770	142	226	17,600	440	590	2,080	37,100	150	50
9	182	1,150	515	157	226	10,900	368	465	1,540	14,600	142	55
10	151	970	540	172	226	6,950	1,150	415	1,000	2,130	142	262
11	137	900	540	244	226	4,850	4,620	390	800	1,560	134	127
12	123	830	650	900	226	5,600	2,480	770	680	8,190	134	92
13	130	740	830	830	244	9,620	1,480	1,270	590	6,500	134	85
14	772	650	1,390	770	244	9,540	800	1,000	515	1,960	113	78
15	588	650	3,720	710	244	6,720	3,400	770	465	1,110	106	72
16	354	2,300	3,020	650	262	6,050	3,460	590	390	1,080	99	72
17	5,000	20,300	1,810	565	262	3,850	1,150	490	346	900	85	60
18	14,300	37,600	1,710	515	262	2,020	710	415	324	650	85	55
19	11,400	47,800	1,110	465	262	1,610	3,330	390	280	540	78	50
20	5,300	39,100	620	465	262	1,310	23,000	302	970	465	78	50
21	1,270	7,710	415	465	262	1,110	32,100	262	2,300	390	72	55
22	1,080	3,080	346	465	244	900	34,600	226	830	346	72	172
23	3,990	2,600	368	490	244	800	23,000	208	4,340	302	113	150
24	2,480	1,520	390	590	244	680	5,220	190	1,350	280	127	127
25	970	1,270	415	650	262	620	5,900	315	650	262	92	92
26	590	1,080	346	490	10,600	540	8,600	440	440	262	85	72
27	515	1,040	515	346	12,200	490	3,780	302	324	217	78	55
28	2,840	970	465	280	14,800	440	2,540	226	346	208	66	46
29	1,660	970	415	262	-------	390	3,080	190	440	199	67	37
30	680	2,840	440	244	-------	368	2,780	172	244	199	60	37
31	490	-------	415	226	-------	540	-------	935	-------	226	60	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	14,300	123	1,820	0.809	0.93
November	47,800	415	8,610	3.83	4.27
December	6,050	346	1,240	.551	.64
January	900	142	399	.177	.20
February	14,800	226	1,560	.693	.72
March	17,600	368	5,430	2.41	2.78
April	34,600	368	6,170	2.74	3.06
May	1,710	172	554	.246	.28
June	51,400	244	6,680	2.97	3.31
July	37,100	172	4,020	1.79	2.06
August	620	60	141	.063	.07
September	262	37	79.5	.035	.04
The year	51,400	37	3,040	1.35	18.36

GRAND RIVER NEAR SUMNER, MO.

LOCATION.—Chain gage in NE. ¼ sec. 29, T. 56 N., R. 21 W., at highway bridge 80 feet below Chicago, Burlington & Quincy Railroad bridge and 2 miles southwest of Sumner. Zero of gage is 630.77 feet above mean sea level.

DRAINAGE AREA.—6,880 square miles.

RECORDS AVAILABLE.—April, 1924, to September, 1929.

EXTREMES.—Maximum discharge during year, 110,000 second-feet June 4; maximum gage height, 35.35 feet Nov. 20; minimum discharge, 210 second-feet Sept. 8 and 9.

1924–1929: Maximum discharge, that of June 4, 1929; minimum discharge, 162 second-feet Dec. 23–27, 1927; minimum gage height, 2.80 feet Dec. 2, 1924.

Maximum stage known, 36.7 feet July 9, 1909 (discharge, about 150,000 second-feet).

REMARKS.—Records good except those for period of ice effect, Jan. 3 to Feb. 25, which are poor.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	890	2,260	6,860	1,740	1,560	42,800	17,700	9,360	15,700	1,020	500	240
2	850	14,400	10,300	1,230	1,400	46,700	27,300	5,850	35,000	890	1,070	240
3	810	26,500	8,280	1,180	1,280	45,900	16,300	4,430	67,000	850	810	225
4	810	32,300	5,530	1,180	1,230	40,000	9,540	3,680	106,000	930	770	225
5	730	35,300	4,810	1,120	1,180	38,600	5,450	3,230	107,000	850	850	500
6	730	37,900	3,980	1,120	1,180	36,200	4,130	2,950	80,700	890	610	315
7	650	36,800	2,810	1,070	1,180	35,600	3,230	2,950	52,900	19,600	930	240
8	730	26,200	2,530	1,070	1,180	37,400	2,950	2,950	28,900	26,900	570	210
9	730	13,200	2,400	1,070	1,180	38,000	2,670	2,810	14,500	29,300	975	210
10	690	5,530	2,400	1,740	1,180	38,000	3,980	2,460	8,460	31,300	610	1,810
11	610	4,280	2,400	2,400	1,180	33,300	13,400	2,260	4,280	24,900	500	2,530
12	570	3,830	2,400	2,810	1,180	21,600	13,200	8,460	3,760	18,400	500	1,120
13	535	3,530	2,810	3,230	1,180	22,200	8,820	11,100	2,810	20,600	448	570
14	500	2,950	7,380	3,160	1,180	27,700	5,690	10,500	2,200	13,900	395	430
15	1,070	2,950	10,300	3,020	1,230	30,300	4,500	11,400	1,810	6,440	378	345
16	1,740	8,000	12,200	2,810	1,230	31,800	6,690	6,690	1,680	7,120	360	315
17	1,400	30,800	13,700	2,600	1,280	30,800	7,380	4,360	1,500	10,800	330	285
18	11,700	58,900	11,700	2,460	1,280	21,100	4,360	4,200	1,340	9,000	330	270
19	24,100	95,500	7,560	2,400	1,280	11,600	3,230	5,290	1,280	4,200	330	240
20	26,800	103,000	4,890	2,260	1,230	6,600	17,700	4,130	3,090	2,140	315	315
21	22,000	89,500	3,090	2,140	1,230	5,370	40,700	2,810	6,010	1,450	315	4,430
22	8,900	80,800	2,140	2,200	1,230	4,660	76,800	2,260	4,890	1,180	315	2,140
23	8,460	50,600	2,000	2,400	1,230	4,130	85,900	2,000	4,970	1,020	300	850
24	11,800	30,800	1,940	2,600	1,560	3,680	74,200	2,000	7,380	930	285	570
25	7,200	15,600	1,940	2,740	2,070	3,380	57,500	1,880	4,810	850	285	448
26	3,680	7,200	2,000	2,810	20,200	3,460	40,000	3,090	2,140	770	360	395
27	2,600	4,200	2,140	2,600	28,000	2,950	33,800	2,740	1,500	730	345	345
28	7,740	3,600	2,200	2,330	33,800	2,670	20,600	2,140	1,280	650	330	315
29	10,100	3,380	2,260	2,070	-------	2,400	14,700	2,000	1,280	610	300	285
30	5,770	3,380	2,200	1,940	-------	2,260	13,200	1,810	1,230	570	285	270
31	3,020	-------	2,070	1,680	-------	2,670	-------	8,280	-------	535	270	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	26,800	500	5,420	0.788	0.91
November	103,000	2,260	27,800	4.04	4.51
December	13,700	1,940	4,810	.699	.81
January	3,230	1,070	2,100	.305	.35
February	33,800	1,180	4,080	.593	.62
March	46,700	2,260	21,700	3.15	3.63
April	85,900	2,670	21,200	3.08	3.44
May	11,400	1,810	4,520	.657	.76
June	107,000	1,230	19,200	2.79	3.11
July	31,300	535	7,720	1.12	1.29
August	1,070	270	483	.070	.08
September	4,430	210	689	.100	.11
The year	107,000	210	9,940	1.44	19.62

THOMPSON RIVER AT TRENTON, MO.

LOCATION.—Chain gage in SW. ¼ sec. 18, T. 61 N., R. 24 W., at bridge on State highway No. 6, 1 mile northwest of Trenton. Zero of gage is about 737.15 feet above mean sea level.

DRAINAGE AREA.—1,670 square miles.

RECORDS AVAILABLE.—August, 1928, to September, 1929.

EXTREMES.—Maximum discharge during year, 26,700 second-feet Nov. 18 (gage height, 22.31 feet); minimum, 53 second-feet Sept. 7 and 8.

1928–29: Maximum discharge, that of Nov. 18, 1928; minimum, 48 second-feet Sept. 8–10, 1928 (gage height, 2.05 feet).

Maximum stage known, 30.7 feet July 6, 1909.

REMARKS.—Records good except those for period of ice effect, Jan. 2 to Feb. 25, which are poor. Discharge estimated Dec. 9.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	104	210	3,800	178	150	6,880	5,620	1,500	12,500	234	178	64
2	94	12,600	1,930	164	150	3,300	4,200	1,120	24,600	223	157	62
3	94	14,200	1,100	150	150	1,240	1,700	780	20,800	223	478	60
4	90	12,200	1,260	137	150	4,620	1,180	680	7,540	212	150	56
5	85	5,420	1,930	137	150	3,400	890	498	2,440	194	131	56
6	90	2,200	890	125	150	5,390	730	478	1,440	3,500	125	55
7	157	1,420	362	125	150	10,600	630	478	1,000	6,230	580	53
8	104	1,030	505	125	150	9,000	538	422	2,120	1,630	178	53
9	85	830	485	150	150	7,680	1,180	422	1,060	680	131	1,440
10	76	770	465	164	150	5,170	2,620	374	835	630	119	280
11	67	715	428	178	150	3,600	2,620	290	1,300	945	113	108
12	59	640	282	164	164	5,620	2,050	780	730	6,750	108	96
13	63	465	410	150	164	8,550	1,840	538	538	4,000	102	91
14	377	465	3,600	150	178	8,250	1,240	3,300	458	835	91	75
15	137	960	6,020	150	178	7,270	2,200	1,120	498	630	86	75
16	120	715	3,400	150	178	7,680	1,180	730	390	3,700	86	80
17	445	22,200	1,750	150	178	3,400	835	580	374	1,980	80	70
18	12,800	26,500	960	150	164	2,050	680	458	344	730	80	58
19	10,000	19,500	770	150	164	1,630	4,840	358	304	538	80	68
20	4,970	7,100	377	150	164	1,440	23,600	331	292	344	86	1,700
21	1,030	2,830	320	150	164	1,180	20,200	292	280	280	80	256
22	3,400	1,750	308	150	178	1,000	12,300	280	280	245	75	150
23	3,200	1,100	334	164	194	835	8,100	256	358	223	86	113
24	1,100	890	394	164	228	730	3,000	245	304	194	86	91
25	428	715	347	164	525	730	7,010	234	268	178	75	86
26	295	570	445	164	22,200	680	7,540	245	234	178	70	80
27	4,530	445	485	150	7,820	538	3,200	256	256	171	63	75
28	2,290	445	347	150	10,700	498	2,620	268	268	157	66	75
29	410	428	295	150	--------	458	5,980	234	223	150	62	70
30	308	2,290	238	150	--------	422	3,300	234	203	144	60	66
31	238	--------	194	150	--------	630	--------	1,000	--------	331	58	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	12,800	59	1,520	0.910	1.05
November	26,500	210	4,720	2.83	3.16
December	6,020	194	1,110	.665	.77
January	178	125	152	.091	.10
February	12,200	150	1,610	.964	1.00
March	10,600	422	3,690	2.21	2.55
April	23,600	538	4,450	2.66	2.97
May	3,300	234	609	.365	.42
June	24,600	203	2,740	1.64	1.83
July	6,750	144	1,180	.707	.82
August	580	58	126	.075	.09
September	1,700	53	189	.113	.14
The year	26,500	53	1,830	1.10	14.89

MEDICINE CREEK NEAR GALT, MO.

LOCATION.—Chain gage in NW. ¼ sec. 34, T. 62 N., R. 22 W., at Quincy, Omaha & Kansas City Railroad bridge 1 mile above West Medicine Creek and 1½ miles east of Galt.

DRAINAGE AREA.—225 square miles.

RECORDS AVAILABLE.—July, 1921, to September, 1929.

EXTREMES.—Maximum discharge during year, 6,600 second-feet Apr. 20 (gage height, 15.60 feet), which probably was lower than flood of Nov. 18; minimum, 3 second-feet Aug. 29, 30, and Sept. 3–5.

1921–1929: Maximum discharge, that of Apr. 20, 1929; minimum, less than 1 second-foot Aug. 22 and 29, 1922.

REMARKS.—Records fair except those for periods of ice effect, Dec. 19–22 and Jan. 2 to Feb. 26, and those estimated, which are poor. Discharge not determined Oct. 14–18, 21, 23, and Nov. 1 to Dec. 9.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	42	-------	19	75	1,340	750	118	4,460	28	*11	5
2	38	-------	18	75	422	289	80	4,550	26	*9	5
3	38	-------	18	75	380	205	62	3,420	20	*7	3
4	36	-------	18	75	606	64	59	386	26	*6	3
5	33	-------	18	84	750	42	56	210	27	*7	3
6	31	-------	15	84	750	37	59	151	306	*11	5
7	30	-------	15	75	750	30	59	112	151	*150	5
8	28	-------	15	66	720	26	59	118	128	56	6
9	28	-------	18	66	360	22	*53	72	72	38	47
10	28	48	28	59	181	76	*47	56	43	30	140
11	26	52	33	52	169	181	42	52	810	23	*94
12	26	59	38	52	259	140	197	48	582	21	47
13	26	93	38	45	606	72	118	41	340	20	18
14	-------	257	38	45	534	43	386	38	112	16	12
15	-------	530	38	52	259	68	240	43	1,730	13	11
16	-------	171	38	59	205	46	88	41	1,210	13	10
17	-------	137	38	59	112	34	66	37	444	11	10
18	-------	98	38	66	81	30	59	36	157	12	10
19	274	66	38	66	64	40	80	56	81	*10	360
20	148	52	45	66	52	6,600	48	36	56	9	259
21	-------	38	45	59	48	6,450	45	28	49	9	86
22	1,180	33	52	59	40	2,470	38	32	34	7	26
23	-------	23	66	59	36	1,000	36	36	32	6	22
24	240	36	66	66	*32	413	33	45	*27	4	19
25	104	48	93	104	*29	1,700	38	41	*22	5	15
26	75	38	115	148	25	660	45	32	*18	5	14
27	590	38	115	4,110	20	257	52	52	*13	6	12
28	625	42	104	2,250	19	1,090	38	34	*8	5	11
29	225	59	93	-------	19	1,180	30	28	*10	3	9
30	198	33	84	-------	18	197	33	*28	*14	3	6
31	171	42	75	-------	157	-------	52	-------	*8	4	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
December 10–31	530	23	90.6	0.403	0.33
January	115	15	47.5	.211	.24
February	4,110	45	291	1.29	1.34
March	1,340	18	292	1.30	1.50
April	6,600	22	807	3.59	4.00
May	386	30	77.9	.346	.40
June	4,550	28	477	2.12	2.36
July	1,730	8	212	.942	1.09
August	150	3	17.1	.076	.09
September	360	3	42.4	.188	.21

* Estimated.

LOCUST CREEK NEAR MILAN, MO.

LOCATION.—Chain gage in SW. ¼ sec. 8, T. 62 N., R. 20 W., at bridge on State highway No. 6, 3½ miles southwest of Milan.

DRAINAGE AREA.—225 square miles.

RECORDS AVAILABLE.—July, 1921, to September, 1929.

EXTREMES.—Maximum discharge during year, 3,880 second-feet Nov. 18 (gage height, 20.07 feet); minimum discharge, 4 second-feet Oct. 13; minimum gage height, 2.28 feet Sept. 8.

1921–1929: Maximum discharge, that of Nov. 18, 1928; minimum, 0.8 second-foot Oct. 1, 1922.

REMARKS.—Records poor prior to Mar. 4 and fair thereafter. Discharge estimated Oct. 21, 23–25, Dec. 4–10, and July 16–18. Stage-discharge relation affected by ice Jan. 2 to Mar. 4.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	18	746	123	25	67	2,230	1,190	154	2,230	20	14	7
2	18	3,820	123	18	67	2,000	944	116	3,490	16	12	6
3	14	3,780	123	14	67	1,450	206	88	2,800	16	9	6
4	12	3,300	114	14	61	1,580	146	74	2,650	16	8	6
5	9	1,100	104	14	55	1,800	88	46	280	11	9	6
6	8	872	95	11	49	1,940	67	64	138	88	12	5
7	8	828	86	14	44	2,030	61	70	162	1,160	304	5
8	8	300	77	14	44	2,170	44	58	116	256	116	5
9	8	280	68	14	39	686	39	52	162	102	34	95
10	7	152	58	18	39	344	102	46	61	130	18	670
11	7	152	49	22	39	320	116	81	55	1,110	13	130
12	7	152	292	26	39	320	130	146	44	1,320	13	58
13	4	152	292	26	44	706	78	197	39	1,160	12	39
14	6	152	400	30	44	850	55	162	30	162	9	28
15	7	144	856	30	49	504	49	292	26	770	7	21
16	226	806	268	26	49	434	44	102	28	500	6	16
17	226	3,070	179	26	49	332	39	74	28	300	6	12
18	406	3,880	138	26	44	226	34	55	25	150	7	11
19	448	3,850	102	26	39	176	372	42	25	95	7	280
20	332	1,240	52	26	34	152	3,230	39	23	64	7	1,190
21	400	280	52	30	30	129	3,070	34	20	52	6	330
22	462	188	49	34	30	115	2,560	30	24	36	5	102
23	282	146	39	67	39	108	1,220	30	52	30	7	49
24	200	138	30	102	55	101	358	28	28	26	7	34
25	374	138	32	130	102	94	1,500	28	24	22	9	26
26	648	130	39	123	944	73	1,350	30	19	18	52	21
27	938	130	44	116	1,720	66	344	30	20	17	22	18
28	938	130	46	95	2,000	66	330	25	19	11	14	15
29	686	123	44	81	-------	63	1,110	30	17	12	12	14
30	462	123	44	74	-------	63	330	88	19	16	10	13
31	462	-------	49	67	-------	136	-------	32	-------	11	8	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	938	4	246	1.09	1.26
November	3,880	123	1,010	4.49	5.01
December	856	30	131	.582	.67
January	130	11	43.2	.192	.22
February	2,000	30	210	.933	.97
March	2,230	63	686	3.05	3.52
April	3,230	34	640	2.84	3.17
May	292	25	75.6	.336	.39
June	3,490	17	422	1.88	2.10
July	1,320	11	248	1.10	1.27
August	304	5	25.0	.111	.13
September	1,190	5	107	.476	.53
The year	3,880	4	319	1.42	19.24

LOCUST CREEK NEAR LINNEUS, MO.

LOCATION.—Chain gage in NE. ¼ sec. 34, T. 59 N., R. 21 W., at highway bridge 3 miles northwest of Linneus.

DRAINAGE AREA.—550 square miles.

RECORDS AVAILABLE.—April to September, 1929.

EXTREMES.—Maximum discharge during period, 14,100 second-feet Apr. 21 (gage height, 20.89 feet); minimum, 15 second-feet Aug. 22 and Sept. 4 (gage height, 2.83 feet).

REMARKS.—Records fair. Discharge estimated July 19 and 20.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	-------	357	8,680	95	47	21	16	218	399	134	3,040	19	35
2	-------	237	9,440	90	87	19	17	190	228	126	3,040	19	28
3	-------	190	6,720	71	49	17	18	378	199	126	2,950	18	17
4	-------	170	5,550	54	48	15	19	2,710	143	118	2,010	16	277
5	257	143	2,070	45	46	25	20	9,540	118	118	1,070	16	2,710
6	237	152	422	317	378	20	21	13,700	96	118	126	16	2,070
7	208	170	357	1,710	180	22	22	6,630	83	134	101	15	208
8	190	161	247	605	218	16	23	2,790	80	134	87	16	180
9	208	126	555	770	126	68	24	1,500	71	134	74	16	170
10	655	109	237	277	65	1,500	25	4,220	71	118	65	16	80
11	770	1,430	199	297	45	1,020	26	2,870	80	109	58	56	52
12	422	1,430	180	3,290	36	170	27	1,020	87	118	57	47	45
13	297	655	170	2,230	34	80	28	1,360	83	118	47	40	37
14	247	1,360	152	337	25	68	29	1,430	80	96	36	36	30
15	247	480	143	1,850	22	45	30	1,020	770	88	72	26	30
							31	-------	2,870	-------	65	22	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
April 5-30	13,700	190	2,050	3.73	3.61
May	2,870	71	407	.740	.85
June	9,440	88	1,230	2.24	2.50
July	3,290	36	804	1.46	1.68
August	378	15	58.1	.106	.12
September	2,710	15	302	.550	.61

YELLOW CREEK NEAR ROTHVILLE, MO.

LOCATION.—Chain gage on line between NW. ¼ sec. 31, T. 56 N., R. 19 W., and NE. ¼ sec. 36, T. 56 N., R. 20 W., at highway bridge 2½ miles southwest of Rothville.

DRAINAGE AREA.—442 square miles.

RECORDS AVAILABLE.—April to September, 1929.

EXTREMES.—Maximum discharge during period, 6,450 second-feet Apr. 22 (gage height, 21.04 feet); minimum, 4 second-feet Aug. 20, and 23-25 (gage height, 2.5 feet).

REMARKS.—Records good.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	------	322	1,650	64	9	10	16	180	608	52	138	9	20
2	------	224	2,270	45	14	8	17	159	358	43	482	7	13
3	------	194	2,850	35	32	6	18	145	331	39	376	7	10
4	------	159	4,100	28	33	5	19	187	506	349	138	6	8
5	------	120	4,100	26	45	8	20	1,280	288	1,190	69	4	8
6	------	114	2,470	24	35	126	21	2,770	152	494	47	5	166
7	194	114	1,480	37	15	41	22	5,950	102	240	32	5	518
8	322	114	735	304	16	14	23	5,950	84	288	26	4	395
9	437	96	426	173	90	8	24	4,100	74	376	21	4	120
10	842	90	180	166	47	6	25	3,150	64	608	16	4	54
11	1,520	84	114	296	33	5	26	2,850	62	194	15	5	32
12	922	405	145	264	59	272	27	1,870	56	96	12	5	22
13	405	1,090	120	152	47	173	28	1,070	54	248	11	6	15
14	264	1,400	96	264	27	56	29	634	49	187	10	18	10
15	208	954	64	187	12	30	30	437	47	108	11	14	9
							31	------	437	------	10	10	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
April 7-30	5,950	145	1,490	3.37	3.01
May	1,400	47	282	.638	.74
June	4,100	39	844	1.91	2.13
July	482	10	112	.253	.29
August	90	4	20.2	.046	.05
September	518	5	72.3	.164	.18

CHARITON RIVER BASIN

CHARITON RIVER AT ELMER, MO.

LOCATION.—Chain gage in SW. ¼ SW. ¼ sec. 2, T. 59 N., R. 16 W., at Atchison, Topeka & Santa Fe Railway bridge three-fourths mile southwest of Elmer. Zero of gage is 687.85 feet above mean sea level.

DRAINAGE AREA.—1,660 square miles.

RECORDS AVAILABLE.—July, 1921, to September, 1929.

EXTREMES.—Maximum discharge during year, 22,500 second-feet Nov. 17 (gage height, 24.06 feet); minimum, 77 second-feet Sept. 4 (gage height, 2.72 feet). 1921–1929: Maximum discharge, that of Nov. 17, 1928: maximum gage height, 27.56 feet Sept. 21, 1926; minimum discharge, 14 second-feet Sept. 26, 1927.

REMARKS.—Records fair except those for periods of ice effect, Jan. 2 to Feb. 25, and for high stages, which are poor.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	394	3,230	1,090	410	587	[a] 5,200	6,200	6,520	3,280	220	206	105
2	331	4,590	1,220	342	515	5,360	4,950	5,630	6,880	264	191	98
3	331	6,500	1,830	309	410	[a] 6,180	3,800	4,790	7,750	234	176	84
4	293	6,000	1,830	278	342	7,000	3,410	3,160	8,500	206	147	77
5	257	5,000	1,540	249	278	7,600	3,160	1,680	8,800	193	140	112
6	293	4,510	1,360	220	249	7,750	3,160	1,320	8,200	180	350	119
7	274	4,350	955	220	249	7,600	1,830	1,090	7,000	1,830	726	119
8	331	4,040	665	193	249	7,360	1,540	955	5,630	3,160	[a] 492	133
9	274	3,900	665	193	249	7,000	1,000	865	4,420	3,670	257	2,370
10	257	3,290	587	193	249	6,200	1,090	745	2,130	1,830	191	3,550
11	240	1,220	625	168	249	5,030	1,140	665	1,180	825	154	2,480
12	223	1,140	587	168	249	6,400	1,140	2,980	955	1,500	133	1,300
13	198	940	2,570	168	249	6,000	910	1,540	745	2,400	126	498
14	191	790	4,490	193	249	5,630	1,000	2,130	625	2,520	112	350
15	240	662	3,930	193	249	6,520	1,360	1,830	550	4,870	105	223
16	860	1,350	[a] 4,600	193	249	6,000	1,140	1,360	515	5,110	98	168
17	940	22,500	5,270	193	249	5,270	865	1,000	445	5,360	91	161
18	3,170	13,300	4,560	220	278	4,790	705	955	445	6,300	98	147
19	3,290	16,900	3,540	220	278	4,140	2,030	785	1,000	6,000	91	524
20	3,290	15,600	2,740	220	309	3,740	9,420	665	[a] 610	5,630	98	2,100
21	2,420	13,500	1,580	249	342	3,160	13,200	515	445	4,430	98	1,020
22	2,590	12,500	910	249	375	[a] 2,220	16,200	515	825	2,870	105	524
23	2,930	10,500	665	955	445	1,270	14,000	480	410	1,540	133	[a] 374
24	3,620	9,100	587	1,450	665	1,180	11,800	445	355	662	184	223
25	3,970	7,120	587	1,450	1,540	1,040	12,600	410	290	472	214	184
26	4,110	6,300	587	1,450	6,200	910	11,700	392	240	331	274	161
27	3,830	4,490	550	1,360	5,030	785	12,000	445	220	274	331	140
28	2,930	3,670	550	1,270	5,030	665	10,900	445	325	240	274	126
29	1,890	2,180	550	1,140	-------	625	8,650	410	392	214	240	112
30	1,640	1,450	[a] 498	955	-------	550	7,240	392	290	184	168	112
31	1,590	-------	445	785	-------	3,160	-------	1,360	-------	198	98	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	4,110	191	1,520	0.916	1.06
November	22,500	662	6,350	3.83	4.27
December	5,270	445	1,680	1.01	1.16
January	1,450	168	511	.308	.36
February	6,200	249	915	.551	.57
March	7,750	550	4,400	2.65	3.06
April	16,200	705	5,600	3.37	3.76
May	6,520	392	1,500	.904	1.04
June	8,800	220	2,450	1.48	1.65
July	6,300	180	2,060	1.24	1.43
August	726	91	197	.119	.14
September	3,550	77	590	.355	.40
The year	22,500	77	2,310	1.39	18.90

[a] Estimated.

CHARITON RIVER NEAR KEYTESVILLE, MO.

LOCATION.—Chain gage in SE. ¼ sec. 25, T. 54 N., R. 18 W., 4½ miles northeast of Keytesville.

DRAINAGE AREA.—1,950 square miles.

RECORDS AVAILABLE.—April to September, 1929.

EXTREMES.—Maximum discharge during period, 18,700 second-feet Apr. 25 (gage height, 21.66 feet); minimum, 85 second-feet Sept. 4 (gage height, 2.89 feet).

Maximum stage known, 22.54 feet Nov. 18, 1928.

REMARKS.—Records good. Discharge estimated Sept. 7–9 and 19.

Daily and monthly discharge, in second-feet, 1928–29

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	-------	8,760	1,520	334	356	111	16	1,340	2,100	584	3,630	183	312
2	-------	7,840	5,890	312	334	102	17	1,090	1,250	512	4,840	147	260
3	-------	6,800	7,680	270	290	96	18	870	1,860	466	5,540	138	220
4	-------	5,400	8,220	270	270	85	19	818	1,700	1,110	6,200	129	215
5	-------	2,960	8,760	230	250	96	20	3,810	922	2,640	6,700	116	210
6	-------	1,660	9,100	230	270	129	21	7,400	688	1,370	6,700	120	2,320
7	-------	1,310	8,760	488	714	140	22	11,000	610	766	5,680	120	1,250
8	-------	1,110	8,760	2,190	1,030	150	23	13,000	536	1,060	3,900	120	610
9	3,680	948	7,020	3,180	740	170	24	15,100	512	714	1,860	120	400
10	3,500	818	4,900	3,000	422	1,600	25	18,100	512	922	974	230	290
11	2,910	766	2,100	1,280	334	3,540	26	16,900	466	488	714	260	240
12	1,860	4,360	1,310	974	270	2,500	27	15,100	444	378	560	201	210
13	1,310	4,100	1,060	1,860	230	1,200	28	13,500	488	610	488	356	174
14	1,110	3,630	792	2,600	201	636	29	12,000	466	714	444	290	156
15	1,230	3,000	662	1,820	183	444	30	11,000	512	444	400	210	147
							31	-------	1,140	-------	378	147	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
April 9–30	18,100	818	7,120	3.65	2.99
May	8,760	444	2,180	1.12	1.29
June	9,100	378	2,980	1.53	1.71
July	6,700	230	2,200	1.14	1.31
August	1,030	116	283	.145	.17
September	3,540	85	600	.308	.34

LAMINE RIVER BASIN

LAMINE RIVER AT CLIFTON CITY, MO.

LOCATION.—Chain gage in NW. ¼ sec. 16, T. 46 N., R. 19 W., at highway bridge 300 feet above Missouri, Kansas & Texas Railway bridge and three-fourths mile east of Clifton City. Zero of gage is 622.60 feet above mean sea level.

DRAINAGE AREA.—598 square miles.

RECORDS AVAILABLE.—June, 1922, to September, 1929.

EXTREMES.—Maximum discharge during year, 33,000 second-feet May 19 (gage height, 29.00 feet); minimum, 3 second-feet Aug. 25, 28–31, and Sept. 1 (gage height, 1.5 feet).

1922–1929: Maximum discharge, that of May 19, 1929; minimum, 1 second-foot Sept. 27, 1924.

Maximum stage known, 35.3 feet Sept. 18, 1905.

REMARKS.—Records good except those for period of ice effect, Jan. 25 to Feb. 17, which are poor.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	8	33	127	95	47	440	3,010	82	212	74	15	3
2	8	66	99	99	47	337	920	10,400	5,840	66	14	4
3	8	55	99	95	47	272	510	11,000	11,500	55	11	5
4	8	51	90	90	33	257	337	1,600	11,500	51	9	31
5	1,120	39	82	475	33	272	272	1,930	760	47	8	2,240
6	272	33	74	3,140	33	304	212	3,010	510	44	6	257
7	108	31	66	1,680	33	337	184	2,920	422	58	6	144
8	62	29	62	1,520	33	272	6,580	920	388	36	388	84
9	36	25	58	1,520	33	212	12,300	720	288	127	16	51
10	25	22	58	5,140	33	184	12,900	510	212	212	10	32
11	20	20	58	3,190	33	162	6,110	371	179	118	16	24
12	17	20	62	1,440	33	257	1,280	7,400	1,000	104	34	22
13	15	22	422	1,200	33	580	650	21,700	5,670	95	14	20
14	14	22	1,480	960	33	510	510	9,950	3,550	66	8	18
15	13	20	510	960	47	1,080	440	2,880	440	44	6	16
16	405	5,140	405	800	66	7,330	337	1,760	304	95	5	14
17	212	10,400	4,040	580	212	6,980	288	880	212	39	4	12
18	242	11,000	4,790	1,200	1,360	960	242	18,200	162	31	4	12
19	176	1,240	880	3,140	304	650	212	21,700	2,470	25	4	11
20	90	510	545	1,280	212	510	920	3,940	2,060	20	4	46
21	51	337	371	720	152	422	2,380	760	1,360	16	4	21
22	86	272	288	580	113	337	880	545	388	15	4	14
23	242	212	227	1,120	95	272	510	405	475	14	4	21
24	179	173	198	371	86	242	2,740	320	580	14	4	20
25	90	152	179	184	3,640	212	9,100	272	272	12	3	17
26	58	132	168	132	4,640	2,920	3,320	242	242	12	5	14
27	41	113	162	108	1,120	720	880	354	168	10	4	12
28	33	108	157	86	510	440	720	304	118	9	3	11
29	27	104	152	66	-------	320	475	212	99	9	3	10
30	23	108	137	47	-------	272	108	212	82	11	3	10
31	22	-------	122	47	-------	1,200	-------	320	-------	9	3	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,120	8	120	0.201	0.23
November	11,000	20	1,020	1.71	1.91
December	4,790	58	522	.873	1.01
January	5,140	47	1,030	1.72	1.98
February	4,640	33	466	.779	.81
March	7,330	162	944	1.58	1.82
April	12,900	108	2,310	3.86	4.31
May	21,700	82	4,060	6.79	7.83
June	11,500	82	1,720	2.88	3.21
July	212	9	49.6	.083	.10
August	388	3	20.1	.034	.04
September	2,240	3	107	.179	.20
The year	21,700	3	1,030	1.72	23.45

OSAGE (MARAIS DES CYGNES) RIVER BASIN

OSAGE RIVER NEAR QUENEMO, KANS.

LOCATION.—Chain gage in NW. ¼ sec. 7, T. 17 S., R. 18 E., 2½ miles below Dragoon Creek and 3 miles east of Quenemo.

DRAINAGE AREA.—1,030 square miles.

RECORDS AVAILABLE.—June, 1922, to September, 1929.

EXTREMES.—Maximum gage height during year, 38.38 feet Nov. 17 (discharge not determined); minimum discharge, 3 second-feet Nov. 2 (gage height, 2.46 feet).

1922–1929: Maximum discharge, that of Nov. 17, 1928; no flow for days in July and August, 1926.

REMARKS.—Records good below 3,000 second-feet and fair to poor above. Stage-discharge relation affected by ice Jan. 4–30 and Feb. 18–21.

Daily and monthly discharge, in second-feet, 1928–29.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7	9	847	247	211	975	6,600	396	4,680	109	44	15
2	6	3	556	247	184	556	2,750	1,670	4,500	116	36	12
3	7	22	416	247	184	476	1,040	1,060	5,040	109	32	11
4	6	28	320	229	193	436	436	516	5,360	94	30	9
5	7	22	283	175	193	556	396	476	1,270	94	28	8
6	7	20	265	190	211	377	358	396	975	80	27	11
7	8	17	247	210	193	416	301	358	784	73	25	13
8	7	14	229	220	175	396	211	320	2,140	80	23	15
9	6	13	247	850	175	339	247	283	889	536	132	11
10	5	15	247	5,600	157	283	2,100	265	516	1,270	396	10
11	5	15	229	4,600	157	247	3,050	847	496	5,310	436	11
12	6	13	229	1,600	140	679	1,180	1,200	416	7,730	265	12
13	7	11	679	1,300	157	1,820	596	13,600	358	3,820	124	13
14	8	15	5,040	1,000	157	1,250	436	8,120	283	721	80	13
15	8	13	2,100	700	157	637	1,110	2,600	211	377	64	12
16	9	7,050	1,380	450	175	416	616	953	184	229	47	11
17	12	17,800	5,750	340	166	358	456	679	157	193	37	10
18	80	14,600	3,960	640	155	320	358	931	140	157	34	8
19	94	12,500	1,270	1,150	160	283	358	2,170	157	132	29	12
20	11	6,450	910	600	170	247	5,800	910	358	116	22	17
21	9	1,020	536	300	200	229	11,000	556	377	102	20	15
22	9	616	476	265	283	229	6,600	496	436	77	21	12
23	9	476	436	250	247	211	1,760	476	596	73	20	10
24	8	396	396	240	247	193	868	516	1,080	66	19	8
25	9	339	396	250	1,640	193	1,150	396	396	64	17	8
26	9	301	377	260	6,100	211	805	301	265	56	17	10
27	8	301	358	270	3,360	193	616	320	229	52	20	10
28	8	320.	339	280	1,580	157	416	283	175	48	17	9
29	8	358	320	290	-------	140	377	283	140	44	16	8
30	7	700	283	300	-------	140	320	721	116	47	15	9
31	8	-------	265	283	-------	2,460	-------	4,680	-------	43	15	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	94	5	12.8	787
November	17,800	3	2,120	126,000
December	5,750	229	948	583,000
January	5,600	175	761	46,800
February	6,100	140	612	34,000
March	2,460	140	498	30,600
April	11,100	211	1,750	104,000
May	13,600	265	1,510	92,800
June	5,360	116	1,090	64,900
July	7,730	43	711	43,700
August	436	15	68	4,180
September	17	8	11.1	660
The year	17,800	3	838	607,000

OSAGE RIVER NEAR OTTAWA, KANS.

LOCATION.—Water-stage recorder in NW. ¼ sec. 6, T. 17 S., R. 20 E., three-fourths mile below Skunk Creek and 1½ miles southeast of Ottawa. Zero of gage is 852.6 feet above mean sea level.

DRAINAGE AREA.—1,250 square miles.

RECORDS AVAILABLE.—October, 1918, to September, 1929. August, 1902, to October, 1905, at Main Street Bridge in Ottawa.

EXTREMES.—Maximum discharge during year, about 58,400 second-feet Nov. 17 (gage height, 38.65 feet); minimum, 6 second-feet Sept. 7–12 (gage height, 1.3 feet).

1918–1929: Maximum discharge, that of Nov. 17, 1928; no flow June 27 and 28, 1920.

REMARKS.—Records good except those for period of ice effect, Jan. 5 to Feb. 10, which are fair. Diversion above station for water supply of Ottawa. Regulation caused by operations at dams upstream.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	11	58	986	360		1,190	6,440	473	3,760	130	58	14
2	10	102	833	307		765	3,440	1,370	3,670	127	62	15
3	11	86	577	346	280	607	986	1,690	3,570	122	52	14
4	13	60	488	360		547	638	799	4,000	110	42	14
5	15	44	430	345		517	532	638	4,250	100	42	10
6	16	38	388	330		517	458	562	716	88	40	8
7	17	33	360	315		517	388	532	748	79	36	6
8	15	32	333	300	250	473	374	473	2,160	79	32	6
9	13	31	322	1,700		402	388	416	1,330	307	132	6
10	12	30	322	5,400		346	1,730	374	700	1,550	302	6
11	12	29	325	5,600	243	346	2,000	1,510	532	3,620	473	6
12	12	26	328	3,500	197	502	1,840	9,660	430	5,610	360	6
13	12	26	1,050	2,400	187	1,660	884	11,600	430	5,230	175	7
14	12	25	4,250	1,400	197	1,770	684	12,200	360	1,620	103	7
15	13	28	3,530	400	187	850	1,620	6,970	277	444	64	8
16	22	7,500	2,400		238	622	1,190	1,330	238	297	50	10
17	19	39,700	5,390		360	532	748	700	200	223	41	10
18	54	46,300	5,010		502	473	607	562	189	183	36	11
19	30	28,000	2,200		532	416	782	1,690	292	158	24	11
20	20	18,600	1,090		532	374	3,000	1,020	748	134	20	11
				350								
21	16	8,210	799		430	346	9,410	473	684	116	18	12
22	17	1,190	684		312	312	8,320	323	1,120	103	16	10
23	15	716	607		247	292	3,440	257	4,100	91	16	10
24	16	668	577		302	272	1,410	205	1,440	88	17	8
25	15	592	562		1,260	247	1,190	171	765	76	15	8
26	17	517	547		5,230	223	884	219	402	74	16	7
27	20	473	547		4,050	207	700	320	323	68	16	7
28	19	473	517	300	1,880	200	607	179	243	64	13	8
29	19	488	473		-------	198	547	137	183	60	11	10
30	18	488	430		-------	205	502	333	148	61	13	9
31	18	-------	402		-------	2,830	-------	3,000	-------	61	13	-------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	54	10	17.1	1,050
November	46,300	25	5,150	306,000
December	5,390	322	1,190	72,200
January	5,600	----------	915	56,300
February	5,230	187	698	38,800
March	2,830	198	605	37,200
April	9,410	374	1,860	111,000
May	12,200	137	1,940	119,000
June	4,250	148	1,270	75,600
July	5,610	60	680	41,800
August	473	11	74.5	4,580
September	15	6	9.17	546
The year	46,300	6	1,190	865,000

OSAGE RIVER AT TRADING POST, KANS.

Location.—Chain gage in SE. ¼ sec. 5, T. 21 S., R. 25 E., at Trading Post, 1 mile above mouth of Big Sugar Creek.

Drainage area.—2,880 square miles.

Records available.—August, 1921, to December, 1923; October, 1928, to September, 1929.

Extremes.—Maximum discharge during year, about 120,000 second-feet Nov. 18 (gage height, 34.45 feet); minimum, 11 second-feet Sept. 30 (gage height, 1.07 feet).

1921–1923, 1928–29: Maximum discharge, that of Nov. 18, 1929; minimum, 2 second-feet Oct. 29, 1922 (gage height, 0.84 foot).

Remarks.—Records good except those for Nov. 15 to Feb. 10, and for estimated periods, which are fair. Stage-discharge relation affected by ice Jan. 5–14, 19–30, Feb. 3, and 8–10.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1		67	1,620	*966	965	5,600	8,860	1,520	4,220	445	80	24
2		81	1,730	922	725	4,220	10,500	2,900	6,650	445	85	18
3		1,090	1,730	800	670	1,620	9,420	5,120	10,300	415	64	12
4		615	1,270	840	615	1,270	5,960	4,760	14,000	368	62	21
5		368	1,050	922	615	1,140	1,830	2,580	14,900	308	58	41
6		251	880	1,050	615	1,090	1,420	1,830	10,700	236	54	48
7		202	800	1,050	615	1,140	1,180	1,620	4,260	*236	56	38
8		174	725	1,500	600	1,140	1,920	1,420	2,900	1,520	48	31
9		139	688	2,080	550	1,050	3,440	1,220	4,880	922	54	33
10		117	725	10,600	*400	880	2,720	1,090	4,700	1,920	85	157
11	*40	101	688	12,100	445	800	7,520	1,010	1,320	5,420	382	66
12		93	*634	12,400	477	763	7,880	10,900	5,000	7,880	*498	39
13		93	580	12,700	477	1,220	6,600	19,800	2,960	8,590	614	35
14		83	3,860	11,300	415	2,380	5,660	22,100	1,270	5,840	382	35
15		60	6,650	6,950	*430	3,140	4,580	22,800	*1,050	2,000	216	18
16		9,210	7,640	3,320	445	2,720	6,500	23,400	840	1,280	164	23
17		65,800	10,200	2,160	840	2,160	5,780	22,100	725	728	101	21
18		114,000	12,800	2,380	1,620	1,520	1,620	18,700	580	540	70	19
19		113,000	12,800	2,200	1,420	1,220	2,160	19,600	1,620	472	64	18
20		76,100	10,200	2,050	1,220	1,090	6,500	18,200	2,720	382	48	16
21		54,600	6,450	1,900	1,220	965	10,500	9,350	4,340	313	44	14
22		34,700	2,310	1,750	1,010	840	14,500	5,180	2,240	280	38	12
23	210	29,500	1,830	1,600	*1,010	800	16,800	*3,340	7,240	220	38	18
24	148	25,600	1,620	1,450	*1,010	725	18,200	1,520	7,640	194	30	18
25	106	15,600	*1,520	1,300	4,220	650	16,200	1,220	5,300	171	31	14
26	107	7,840	1,420	1,200	4,280	840	9,420	1,180	2,580	143	33	14
27	112	4,940	1,420	1,150	5,660	725	4,520	1,180	1,270	129	30	14
28	76	2,310	1,320	1,100	7,200	*650	2,160	1,620	880	120	29	13
29	65	1,180	1,220	1,050	-------	580	1,830	1,320	763	95	33	*12
30	63	1,270	1,140	1,010	-------	580	1,520	1,050	*604	95	27	11
31	40	-------	1,010	*990	-------	2,160	-------	1,320	-------	75	27	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
October	-------	-------	58.3	3,580
November	114,000	60	18,600	1,110,000
December	12,800	580	3,180	196,000
January	12,700	800	3,320	204,000
February	7,200	400	1,420	78,900
March	5,600	580	1,470	90,400
April	18,200	1,180	6,590	392,000
May	23,400	1,010	7,450	457,000
June	14,900	580	4,280	255,000
July	8,590	75	1,350	83,000
August	614	27	114	7,010
September	157	11	28.4	1,690
The year	114,000	11	3,980	2,880,000

* Estimated.

OSAGE RIVER AT WARSAW, MO.

LOCATION.—Staff gage in NE. ¼ SW. ¼ sec. 17, T. 40 N., R. 22 W., at Warsaw. Zero of gage is 631.54 feet above mean sea level.

DRAINAGE AREA.—11,500 square miles.

RECORDS AVAILABLE.—October, 1925, to September, 1929.

EXTREMES.—Maximum discharge during year, 89,700 second-feet May 19 (gage height, 34.8 feet); minimum, 100 second-feet Sept. 4 and 16–18 (gage height, 1.3 feet).

1925–1929: Maximum discharge, that of May 19, 1929; minimum, 90 second-feet Aug. 12, 1926 (gage height, 1.2 feet).

Maximum stage known, 44.4 feet in June, 1844 (discharge, about 135,000 second-feet).

REMARKS.—Records fair. Gage-height record furnished by United States Weather Bureau.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	330	485	36,900	3,840	3,840	19,800	9,180	25,500	10,600	4,280	580	220
2	330	485	27,500	3,400	3,620	18,400	10,600	22,900	14,900	3,840	580	145
3	330	485	14,900	3,180	3,400	14,000	18,200	29,400	24,300	3,180	580	120
4	270	400	6,040	2,960	3,180	9,180	23,100	29,400	22,200	2,740	485	100
5	1,240	400	4,280	4,940	3,180	6,920	22,700	23,100	23,600	2,540	485	120
6	580	580	3,400	13,100	2,960	6,920	15,600	20,300	27,000	2,340	485	145
7	485	1,000	2,960	21,000	2,740	6,700	8,490	40,700	27,000	2,160	580	220
8	400	1,000	2,340	21,200	2,540	6,040	22,900	49,900	24,100	1,980	485	145
9	330	780	2,160	18,400	2,340	5,600	49,600	43,700	19,100	4,060	485	120
10	330	680	1,800	25,100	2,960	4,940	59,500	39,700	14,500	5,160	1,640	145
11	270	580	1,640	29,400	2,740	4,500	57,500	30,200	10,300	6,260	1,640	145
12	270	485	1,640	27,000	2,740	4,280	54,600	33,400	11,700	9,410	1,120	145
13	270	400	1,800	25,300	2,740	4,280	46,700	54,600	18,400	14,500	1,640	145
14	270	400	2,740	26,000	2,340	4,060	33,600	64,800	15,600	16,100	1,000	120
15	270	400	4,940	25,500	2,160	4,940	26,000	69,900	17,000	15,400	1,000	120
16	330	5,160	5,600	24,600	2,160	22,900	24,100	72,000	17,500	11,700	1,120	100
17	330	15,200	18,600	21,200	3,180	21,500	23,900	73,000	12,200	9,180	1,120	100
18	270	23,400	30,400	17,500	3,620	17,500	21,500	77,100	5,820	6,040	890	100
19	270	30,900	34,400	13,300	3,400	15,400	17,500	89,700	4,500	3,180	580	120
20	270	49,300	30,400	12,400	4,500	11,000	15,400	88,300	8,490	2,540	485	120
21	580	60,200	27,200	12,400	5,820	7,140	31,200	86,200	18,800	1,800	485	120
22	680	63,800	24,300	11,000	5,380	7,360	40,200	84,800	23,400	1,360	400	120
23	890	65,500	20,000	9,640	4,500	5,600	39,400	81,300	31,600	1,240	400	400
24	1,000	66,500	13,100	9,410	3,400	4,940	34,600	73,700	34,200	1,120	400	220
25	1,980	65,900	7,360	8,030	8,490	5,380	39,200	62,500	30,400	1,000	330	180
26	1,800	64,500	5,820	10,100	13,600	9,180	38,900	51,400	34,200	890	270	145
27	1,240	57,200	5,380	8,490	16,300	12,400	36,200	40,200	33,900	780	220	120
28	890	53,000	4,940	6,480	17,900	10,800	35,200	28,900	21,700	780	220	120
29	680	49,000	4,720	5,600	-------	8,950	32,600	16,500	4,500	680	220	180
30	580	43,900	4,500	4,940	-------	7,140	29,200	12,200	5,380	680	270	180
31	485	-------	4,280	4,720	-------	6,260	-------	11,900	-------	580	270	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	1,980	270	589	0.051	0.06
November	66,500	400	24,100	2.10	2.34
December	36,900	1,640	11,500	1.00	1.15
January	29,400	2,960	13,900	1.21	1.40
February	17,900	2,160	4,850	.422	.44
March	22,900	4,060	9,480	.824	.95
April	59,500	9,180	30,600	2.66	2.97
May	89,700	11,900	49,300	4.29	4.95
June	34,200	4,500	18,900	1.64	1.83
July	16,100	580	4,440	.386	.44
August	1,640	220	660	.067	.08
September	400	100	149	.013	.01
The year	89,700	100	14,100	1.23	16.62

OSAGE RIVER NEAR BAGNELL, MO.

LOCATION.—Staff gage in N. ½ SE. ¼ sec. 21, T. 40 N., R. 15 W., 1½ miles above Bagnell. Zero of gage is 549.75 feet above mean sea level.

DRAINAGE AREA.—14,000 square miles.

RECORDS AVAILABLE.—May, 1925, to September, 1929.

EXTREMES.—Maximum discharge during year, 106,000 second-feet May 21 (gage height, 36.6 feet); minimum, 610 second-feet Sept. 19 (gage height, 4.71 feet).

1925–1929: Maximum discharge, 106,000 second-feet Apr. 17, 1927, and May 21, 1929 (gage height. 36.6 feet); minimum, 324 second-feet Sept. 10–12, 1925.

Maximum stage known, 43.1 feet in June, 1844 (discharge, about 150,000 second-feet).

REMARKS.—Records good.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,010	1,250	48,500	4,770	5,500	21,100	9,380	31,600	15,200	6,760	1,300	735
2	965	1,200	39,300	4,530	5,010	21,700	12,200	36,600	14,600	5,500	1,360	735
3	965	1,150	27,600	4,050	4,530	19,800	14,600	44,700	28,600	4,770	1,300	770
4	965	1,100	14,300	3,810	4,050	15,200	22,100	41,000	33,500	4,290	1,250	735
5	1,010	1,100	8,320	4,530	4,290	11,100	25,300	35,900	26,900	3,810	1,360	735
6	1,060	1,060	4,770	10,200	4,050	9,100	23,300	34,200	28,300	3,580	1,300	735
7	1,420	1,060	4,050	17,000	3,810	9,100	16,100	50,900	30,200	3,810	1,300	702
8	1,200	1,150	3,580	24,000	3,580	8,580	15,200	61,700	29,900	3,350	1,300	735
9	1,100	1,420	3,120	22,400	3,350	7,540	49,800	63,100	26,600	3,120	1,820	805
10	1,010	1,540	2,790	24,000	2,580	6,760	67,400	56,800	22,400	3,580	3,810	805
11	965	1,360	2,580	30,200	2,790	6,000	73,500	48,500	16,700	5,750	3,810	770
12	922	1,250	2,370	32,600	2,900	6,000	71,700	37,900	13,100	7,540	3,810	735
13	880	1,150	2,470	29,600	2,900	5,500	67,000	51,200	17,900	11,600	2,470	702
14	880	1,150	2,680	27,600	2,900	5,250	57,800	69,500	21,100	15,800	2,580	702
15	842	1,060	3,810	28,300	2,900	6,250	41,300	75,600	18,200	17,000	2,370	702
16	842	1,250	4,530	28,300	2,790	20,800	30,200	77,800	19,500	15,800	1,990	670
17	842	13,400	8,840	25,600	2,790	31,900	27,600	78,600	18,200	12,500	1,990	670
18	965	21,100	25,600	22,400	3,350	26,600	26,300	84,900	12,800	9,660	1,990	640
19	1,010	26,000	35,200	19,800	4,050	21,100	23,300	96,400	7,540	6,760	1,900	610
20	965	34,200	36,900	14,900	3,810	17,600	19,200	104,000	6,000	5,010	1,670	770
21	922	48,500	33,200	14,000	5,250	13,100	26,900	106,000	11,900	3,580	1,420	922
22	922	57,200	29,200	14,000	6,000	9,660	41,300	103,000	22,700	2,900	1,200	842
23	1,010	62,400	25,300	12,500	5,500	8,320	45,100	99,600	26,300	2,470	1,150	770
24	1,250	65,200	20,500	11,300	5,010	7,540	44,700	98,000	34,200	2,180	1,100	735
25	1,420	67,000	13,400	11,100	4,770	6,760	46,800	90,800	35,600	1,990	1,060	702
26	1,820	67,700	8,840	11,300	12,500	12,800	47,800	82,700	34,200	1,820	1,010	670
27	2,470	67,700	7,020	11,300	17,300	19,500	44,700	70,200	37,300	1,670	1,010	770
28	2,080	64,200	6,250	10,200	19,800	17,000	41,000	53,000	33,500	1,600	922	805
29	1,670	59,600	5,750	8,060	-------	14,300	39,000	34,200	21,100	1,480	842	702
30	1,480	54,700	5,250	7,020	-------	11,900	35,600	20,100	10,500	1,420	805	670
31	1,300	-------	4,770	6,250	-------	8,580	-------	16,100	-------	1,360	735	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	2,470	842	1,170	0.08	0.09
November	67,700	1,060	24,300	1.74	1.94
December	48,500	2,370	14,200	1.01	1.16
January	32,600	3,810	16,000	1.14	1.31
February	19,800	2,480	5,290	.378	.39
March	31,900	5,250	13,100	.936	1.08
April	73,500	9,380	36,900	2.64	2.94
May	106,000	16,100	63,100	4.51	5.20
June	37,300	6,000	22,500	1.61	1.80
July	17,000	1,360	5,560	.397	.46
August	3,810	735	1,680	.120	.14
September	922	610	735	.05	.06
The year	106,000	610	17,100	1.22	16.57

LITTLE OSAGE RIVER AT STOTESBURY, MO.

LOCATION.—Chain gage in NE. ¼ sec. 21, T. 37 N., R. 33 W., at highw half a mile north of Stotesbury.
DRAINAGE AREA.—427 square miles.
RECORDS AVAILABLE.—April to September, 1929.
EXTREMES.—Maximum discharge during period, 1[illegible],600 second-feet May height, 28.29 feet); minimum discharge, 0.2 second-foot Sept. 29 minimum gage height, 1.38 feet September 30.
Maximum stage known, 30.7 feet Oct. 4, 1927 (discharge, abou second-feet).
REMARKS.—Records fair.

Daily and monthly discharge, in second-feet, 1929.

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug
1	89	199	167	27	6	0.4	16	362	2,330	57	60	14
2	85	382	960	23	6	.4	17	255	1,280	30	40	11
3	93	474	2,330	20	5	.3	18	231	6,620	18	32	7
4	78	263	1,040	20	5	.3	19	280	17,400	1,580	29	5
5	68	207	298	24	6	.4	20	2,870	5,780	832	26	4
6	60	1,480	199	22	6	.4	21	4,220	1,720	1,500	23	3
7	60	1,460	191	24	5	.4	22	1,750	524	414	20	2
8	1,360	362	183	23	12	.4	23	538	316	215	21	2
9	1,220	289	151	48	7	.3	24	960	263	159	19	1.7
10	3,000	231	135	800	5	.3	25	4,630	215	135	16	.7
11	2,170	199	99	524	12	.3	26	2,330	566	113	13	.6
12	636	12,400	92	382	9	.3	27	678	307	85	10	.6
13	307	10,700	106	239	7	4	28	362	223	66	10	.5
14	247	5,400	92	127	6	3	29	289	207	51	9	.4
15	768	2,600	72	85	15	2	30	231	159	34	7	.4
							31		159		9	.4

Month	Maximum	Minimum	Mean	Per square mile	Run-off inches
April	4,630	60	1,010	2.37	2.[illegible]
May	12,400	159	2,180	5.11	5.[illegible]
June	2,330	18	389	.890	.9[illegible]
July	800	7	87.1	.206	.2[illegible]
August	15	.4	5.33	.012	.0[illegible]
September	4	.2	.65	.0015	.00[illegible]

MARMATON RIVER NEAR FORT SCOTT, KANS.

LOCATION.—Chain gage in NW. ¼ sec. 21, T. 25 S., R. 25 E., 2 miles northeast of Fort Scott and 2½ miles west of Kansas-Missouri State line.

DRAINAGE AREA.—411 square miles.

RECORDS AVAILABLE.—August, 1921, to June, 1925; April to September, 1929.

EXTREMES.—Maximum discharge during year, 24,400 second-feet May 12 (gage height, 37.04 feet); minimum, 1 second-foot Sept. 8–30.

1921–1925, 1929: Maximum discharge, that of May 12, 1929; minimum, 1 second-foot several days in 1922, 1923, and 1929.

Maximum stage known, 42.34 feet in 1915.

REMARKS.—Records good except those for extremely high stages, which are fair. Slight regulation caused by operations at dam at Fort Scott.

Daily and monthly discharge, in second-feet, 1929.

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	------	454	98	8	25	2	16	394	3,530	57	57	2	1
2	------	924	364	8	21	2	17	334	2,620	30	42	2	1
3	------	394	324	8	18	2	18	434	4,520	14	34	2	1
4	------	324	282	8	13	2	19	520	10,800	688	25	2	1
5	------	1,150	238	8	10	2	20	6,200	2,770	1,630	18	2	
6	------	6,440	204	8	7	2	21	5,300	1,330	937	14	2	
7	------	2,020	166	8	5	2	22	1,410	748	497	11	2	
8	------	1,140	154	8	3	1	23	616	344	324	9	2	
9	------	676	126	131	2	1	24	846	271	204	6	2	
10	------	304	83	414	2	1	25	4,110	227	126	4	2	1
11	------	424	58	444	2	1	26	1,490	216	58	2	2	1
12	------	22,900	43	344	2	1	27	580	192	32	2	2	1
13	------	10,000	34	260	2	1	28	374	179	20	2	2	1
14	------	2,440	114	166	2	1	29	293	154	14	29	2	1
15	------	1,330	83	216	2	1	30	227	126	9	63	2	1
							31	------	109	------	32	2	------

Month	Maximum	Minimum	Mean	Run-off in acre-feet
April 16–30	6,200	227	1,540	45,800
May	22,900	109	2,550	157,000
June	1,630	9	234	13,900
July	444	2	77.1	4,740
August	25	2	4.77	293
September	2	1	1.23	73
The period				222,000

SAC RIVER NEAR STOCKTON, MO.

LOCATION.—Chain gage in W. ½ sec. 11, T. 34 N., R. 26 W., at bridge on State highway No. 54, 2½ miles east of Stockton.

DRAINAGE AREA.—1,160 square miles.

RECORDS AVAILABLE.—July, 1921, to September, 1929.

EXTREMES.—Maximum discharge during year, 18,700 second-feet May 19 (gage height, 20.85 feet); minimum, 66 second-feet Sept. 30 (gage height, 2.50 feet).

1921–1929: Maximum discharge, 34,800 second-feet Apr. 1, 1927 (gage height, 24.95 feet); minimum, 25 second-feet Sept. 10, 1925 (gage height, 1.62 feet).

Maximum stage known, 29.3 feet in July, 1909.

REMARKS.—Records fair.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	174	129	129	481	875	1,230	1,710	1,350	1,530	930	[a] 242	108
2	174	129	143	444	875	1,170	1,710	4,930	1,410	870	234	106
3	174	129	138	408	770	1,110	1,710	6,180	1,530	815	234	104
4	174	129	134	390	720	1,050	1,470	3,740	1,290	815	234	101
5	174	129	129	2,250	675	990	1,350	2,550	1,170	760	234	104
6	174	129	124	1,770	675	1,110	1,230	13,300	1,110	710	220	108
7	169	129	119	1,530	675	990	1,170	14,700	990	710	494	135
8	164	129	114	1,350	630	930	7,230	9,640	1,170	660	415	180
9	161	129	110	1,590	[a] 609	875	17,800	8,700	2,740	585	343	144
10	158	129	110	2,800	[a] 588	770	11,500	5,420	1,590	710	279	126
11	156	129	110	2,010	[a] 566	770	5,860	4,160	1,410	1,170	[a] 347	117
12	151	129	105	1,710	[a] 544	770	4,230	5,780	1,290	815	415	104
13	143	158	119	1,110	[a] 523	770	3,320	17,100	1,170	514	326	99
14	134	153	131	1,230	[a] 502	675	3,190	14,700	1,590	474	264	101
15	129	148	126	1,110	481	675	3,060	8,600	1,890	434	206	112
16	126	148	3,670	990	462	1,230	2,610	6,260	1,170	415	180	108
17	202	143	6,820	875	520	1,410	2,130	4,300	[a] 1,050	396	[a] 174	108
18	174	202	3,740	1,470	1,110	1,350	1,770	7,230	990	378	167	108
19	148	216	2,610	1,350	990	1,230	1,590	17,800	870	360	154	101
20	138	202	1,710	990	770	1,110	7,590	11,400	870	343	154	99
21	[a] 154	202	1,290	875	675	990	8,800	6,420	870	326	154	99
22	171	174	1,110	770	562	990	5,420	3,880	1,590	310	149	99
23	158	164	930	770	540	875	3,000	[a] 3,450	2,670	294	144	99
24	153	153	820	675	[a] 525	820	2,670	[a] 3,020	3,600	279	140	78
25	146	119	770	675	1,110	770	2,550	[a] 2,580	8,900	264	130	78
26	138	129	720	770	1,470	1,470	2,430	2,150	2,930	264	135	78
27	138	129	675	1,470	1,650	1,890	2,130	1,960	2,090	264	130	78
28	138	129	630	1,410	1,470	1,710	1,830	1,590	1,530	249	126	76
29	134	129	562	1,110	-------	1,350	1,590	1,230	1,290	234	121	74
30	129	129	520	990	-------	1,410	1,470	1,890	1,110	234	117	66
31	129	-------	481	990	-------	1,710	-------	1,650	-------	249	112	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	202	126	154	0.133	0.15
November	216	119	146	.126	.14
December	6,820	105	932	.803	.93
January	2,800	390	1,170	1.01	1.16
February	1,650	462	770	.664	.69
March	1,890	675	1,100	.948	1.09
April	17,800	1,170	3,800	3.28	3.66
May	17,800	1,230	6,380	5.50	6.34
June	8,900	870	1,770	1.53	1.71
July	1,170	234	511	.441	.51
August	494	112	219	.189	.22
September	180	66	103	.089	.10
The year	17,800	66	1,430	1.23	16.70

[a] Estimated.

LITTLE SAC RIVER NEAR SPRINGFIELD, MO.

LOCATION.—Staff gage in SW. ¼ sec. 26, T. 30 N., R. 22 W., half a mile above South Dry Sac Creek and 6 miles northwest of Springfield. Zero of gage is about 1,162 feet above mean sea level.

DRAINAGE AREA.—40 square miles.

RECORDS AVAILABLE.—May, 1927, to September, 1929.

EXTREMES.—Maximum discharge during year, about 1,630 second-feet May 6; minimum, 0.1 second-foot Sept. 3–5 and 21.

1927–1929: Maximum discharge, 7,000 second-feet June 28, 1928 (gage height, 12.30 feet); minimum, that of Sept. 3–5, and 21, 1929.

REMARKS.—Records fair above 5 second-feet and poor below. Mean discharge estimated Apr. 6–18. Flow regulated after Apr. 5 by storage in McDaniel Lake.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2	4	8	10	26	49	100	14	50	26	7	0.2
2	3	4	8	10	24	43	67	41	56	21	4	.2
3	2	4	7	9	20	42	55	48	30	16	3	.1
4	2	4	7	9	22	50	46	224	35	17	3	.1
5	4	5	7	83	20	48	41	236	34	15	.8	.1
6	3	4	6	55	20	44		725	33	16	7	6
7	3	4	6	38	19	39		260	133	14	11	5
8	4	4	6	31	18	35		388	150	13	7	.8
9	4	4	6	41	17	32		224	75	14	4	.6
10	5	5	6	58	15	30		160	59	14	3	4
11	4	8	5	48	15	28		125	53	11	20	.2
12	3	8	5	39	14	30	85	388	75	10	7	5
13	3	7	10	34	14	28		272	90	10	4	7
14	4	8	11	31	14	26		212	62	9	6	5
15	4	9	10	27	13	41		212	50	8	6	2
16	5	8	24	24	12	83		125	41	8	3	1
17	5	10	130	23	12	68		110	34	9	1	3
18	4	10	58	29	12	55		150	31	8	5	.2
19	4	8	41	40	17	48	21	321	31	13	9	.2
20	4	8	33	36	17	43	31	160	29	4	2	.2
21	3	7	27	33	17	35	39	117	24	4	.3	.1
22	4	7	23	33	17	33	39	103	87	4	.2	.6
23	4	6	20	29	19	31	39	87	53	5	.3	.8
24	3	6	16	62	19	30	39	75	82	5	.8	.7
25	3	6	16	87	37	28	38	72	125	5	4	.2
26	3	5	14	61	94	45	37	66	62	4	2	.2
27	3	6	13	49	73	39	37	110	48	3	3	.5
28	3	6	12	40	61	39	34	96	41	3	6	.8
29	3	9	12	34	------	53	17	77	35	4	2	3
30	2	9	11	32	------	57	15	60	28	7	.2	2
31	2	------	10	29	------	57	------	46	------	7	.8	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	5	2	3.39	0.085	0.10
November	10	4	6.43	.161	.18
December	130	5	18.3	.458	.53
January	87	9	37.5	.938	1.08
February	94	12	24.2	.605	.63
March	83	26	42.2	1.06	1.22
April	100	15	60.0	1.50	1.67
May	725	14	171	4.28	4.93
June	150	24	57.9	1.45	1.62
July	26	3	9.90	.248	.29
August	20	.2	4.27	.107	.12
September	7	.1	1.66	.041	.05
The year	725	.1	36.6	.915	12.42

SOUTH GRAND RIVER NEAR BROWNINGTON, MO.

LOCATION.—Chain gage in NW. ¼ sec. 17, T. 40 N., R. 25 W., at highway bridge 500 feet below Deepwater Creek and 1 mile north of Brownington. Zero of gage is about 686.5 feet above mean sea level. Chain gage at railroad bridge 200 feet upstream used Nov. 24, 1928, to Jan. 16, 1929.

DRAINAGE AREA.—1,660 square miles.

RECORDS AVAILABLE.—June, 1921, to September, 1929.

EXTREMES.—Maximum discharge during year, 40,000 second-feet Nov. 19 (gage height, from high-water mark, 39.9 feet); minimum, 2 second-feet Sept. 25–30. 1921–1929: Maximum discharge, that of Nov. 19, 1929; minimum, 0.5 second-foot several days during September, 1925.

REMARKS.—Records fair except those above 30,000 second-feet, which are poor. Discharge estimated Nov. 20–22.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	14	40	416	306	436	5,740	2,760	550	2,320	290	28	7
2	13	39	395	290	416	3,360	4,780	1,990	2,160	233	26	6
3	13	44	376	196	260	1,220	8,740	2,100	4,840	208	26	5
4	12	322	322	274	220	875	7,780	2,100	6,940	164	25	4
5	118	260	290	675	220	1,440	4,660	1,080	9,910	208	19	174
6	54	154	246	3,420	208	1,120	1,080	2,480	9,340	145	19	81
7	30	110	220	2,920	208	1,020	600	1,990	6,820	118	55	42
8	18	81	174	3,090	208	825	19,800	1,080	3,310	1,500	28	110
9	10	69	174	3,420	196	625	9,700	875	1,280	2,760	23	81
10	6	38	174	5,500	196	480	20,000	525	775	2,920	21	69
11	6	32	174	4,540	164	357	8,320	436	480	3,640	25	36
12	5	44	174	4,720	136	260	7,540	9,980	395	3,920	19	30
13	5	44	376	6,460	127	502	6,520	16,900	5,320	4,780	19	21
14	3	43	1,220	6,220	127	1,120	3,040	19,300	5,860	4,660	47	17
15	3	42	1,770	3,800	136	1,330	1,220	19,000	8,140	1,550	39	15
16	11	5,320	1,220	1,440	164	6,100	1,380	15,600	6,640	502	30	12
17	17	8,500	6,100	875	525	4,600	1,180	11,700	2,320	274	23	9
18	56	16,200	6,580	1,330	1,220	5,680	725	11,700	525	196	17	7
19	340	38,800	6,100	2,600	1,500	4,540	525	12,100	1,220	174	14	6
20	233	33,600	6,700	2,650	1,120	1,500	2,870	14,400	5,020	145	8	5
21	136	27,700	4,360	2,210	775	875	4,300	12,600	8,920	127	10	10
22	174	22,100	1,600	1,220	600	675	3,750	10,100	10,500	110	9	6
23	322	17,000	1,380	2,160	357	550	4,140	6,820	11,300	88	8	5
24	975	12,000	825	2,380	233	436	3,310	875	11,300	75	7	3
25	775	8,620	575	2,760	2,650	357	5,980	725	11,400	75	6	2
26	260	825	550	2,870	4,960	1,330	5,380	436	9,980	55	5	2
27	127	480	525	1,660	3,530	575	5,620	416	7,300	52	5	2
28	88	458	502	775	5,140	436	3,970	395	2,480	44	5	2
29	64	416	436	550	-------	376	1,280	395	775	28	6	2
30	52	416	416	357	-------	322	725	725	376	36	6	2
31	42	-------	340	290	-------	306	-------	1,220	-------	34	7	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	975	3	128	0.077	0.09
November	38,800	32	6,460	3.89	4.34
December	6,700	174	1,440	.867	1.00
January	6,460	196	2,320	1.40	1.61
February	5,140	127	930	.560	.58
March	6,100	260	1,580	.952	1.10
April	20,000	525	5,060	3.05	3.40
May	19,300	416	5,830	3.51	4.05
June	11,400	376	5,260	3.17	3.54
July	4,780	28	939	.566	.65
August	55	5	18.9	.011	.01
September	174	2	25.8	.016	.02
The year	38,800	2	2,490	1.50	20.39

NIANGUA RIVER NEAR ROACH, MO.

Location.—Staff gage in SW. ¼ sec. 20, T. 38 N., R. 17 W., at bridge on State highway No. 54, 4 miles northeast of Roach. Zero of gage is 615.15 feet above mean sea level.

Drainage area.—698 square miles.

Records available.—November, 1922, to September, 1929.

Extremes.—Maximum discharge during year, 15,900 second-feet May 7 (gage height, 13.12 feet); minimum discharge, 300 second-feet Oct. 7, 9–21, 25–31, and Nov. 1; minimum gage height, 1.75 feet Sept. 30.

1922–1929: Maximum discharge, 27,200 second-feet Aug. 9, 1927 (gage height, 17.00 feet); minimum, 160 second-feet Aug. 26 to Sept. 2, 1923.

Maximum stage known, 23.8 feet in September, 1914.

Remarks.—Records good below 4,000 second-feet and fair above.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	320	300	320	400	550	1,180	1,040	708	1,380	680	452	362
2	320	320	320	380	525	980	1,110	1,240	1,380	652	452	362
3	320	340	320	380	525	855	1,530	3,030	1,610	600	430	340
4	340	340	340	385	500	795	1,310	4,280	1,610	575	708	340
5	320	340	340	452	475	765	1,110	2,330	1,380	550	550	340
6	320	340	340	625	475	855	980	4,500	1,110	550	475	362
7	300	320	320	708	452	855	855	14,800	1,040	550	430	362
8	320	320	320	795	452	765	1,180	15,600	1,110	525	525	385
9	300	320	320	680	452	708	5,720	4,060	1,530	500	2,010	408
10	300	320	320	795	452	680	8,320	4,610	1,850	525	3,220	385
11	300	320	320	980	430	625	4,720	2,850	1,240	550	1,310	362
12	300	320	320	1,040	430	600	2,850	2,330	1,110	550	430	340
13	300	320	340	855	430	575	2,090	3,950	1,040	525	1,180	362
14	300	320	380	652	408	575	1,690	6,680	915	652	1,450	362
15	300	320	360	600	408	600	1,450	4,720	915	600	680	340
16	300	340	360	550	430	1,610	1,380	3,420	855	550	600	340
17	300	340	550	550	408	2,250	1,240	2,500	795	500	550	362
18	300	360	760	550	408	1,930	1,180	2,330	765	500	525	340
19	300	360	1,690	550	408	1,530	1,040	6,200	708	475	475	340
20	300	360	1,080	855	408	1,180	980	7,080	735	452	475	340
21	300	340	760	765	408	980	2,090	4,610	708	452	452	362
22	320	340	650	735	475	915	1,850	3,120	708	430	430	340
23	320	340	575	680	475	855	1,450	1,930	680	430	430	385
24	320	320	525	652	452	765	1,180	1,770	708	430	430	408
25	300	320	500	625	475	708	1,110	1,690	980	430	408	362
26	300	320	475	652	625	2,010	1,040	1,530	1,110	408	430	340
27	300	320	450	855	1,240	1,450	980	1,380	1,310	408	408	340
28	300	320	425	795	1,530	1,850	855	1,690	915	408	408	340
29	300	320	400	680	------	1,380	795	2,250	795	385	385	320
30	300	320	400	625	------	1,180	735	1,850	735	385	385	320
31	300	------	400	600	------	1,040	------	1,690	------	385	362	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	340	300	307	0.440	0.51
November	360	300	329	.471	.53
December	1,690	320	483	.692	.80
January	1,040	380	660	.946	1.09
February	1,530	408	525	.752	.78
March	2,250	575	1,070	1.53	1.76
April	8,320	735	1,800	2.58	2.88
May	15,600	708	3,890	5.57	6.42
June	1,850	680	1,060	1.52	1.70
July	680	385	504	.722	.83
August	3,220	362	692	.991	1.14
September	408	320	355	.509	.57
The year	15,600	300	977	1.40	19.01

BENNETT SPRING AT BRICE, MO.

LOCATION.—Staff gage in sec. 1, T. 34 N., R. 18 W., at Brice.
RECORDS AVAILABLE.—October, 1928, to September, 1929.
EXTREMES.—Maximum gage height during year, 4.35 feet May 6 (discharge not determined); minimum discharge, 133 second-feet Oct. 17, Nov. 21–24, Dec. 4–6, and Sept. 24–30; minimum gage height, 0.84 feet July 10 and 11. Maximum stage known, about 7 feet during June, 1928.
REMARKS.—Records poor prior to May 5 and fair thereafter. Discharge during high stages includes surface water from valley above spring.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	160	146	149	149	172	292	350	305	176	152	143
2	-------	160	140	149	136	172	292	335	280	176	160	143
3	-------	160	140	143	136	172	280	320	255	176	152	143
4	-------	160	133	143	136	172	267	320	232	176	152	140
5	-------	160	133	136	136	172	267	320	222	176	152	140
6	-------	160	133	136	136	164	242	1,050	222	176	146	140
7	-------	168	140	136	136	164	280	860	222	168	152	140
8	-------	160	140	172	136	164	292	624	232	172	160	140
9	-------	160	146	172	136	164	740	523	232	164	320	140
10	-------	160	146	172	136	164	475	499	222	156	280	140
11	-------	160	146	172	136	164	399	399	222	156	267	140
12	-------	160	146	172	136	164	380	365	212	188	232	140
13	-------	168	152	172	136	217	380	624	202	176	222	140
14	-------	168	152	172	136	274	380	770	202	168	202	140
15	-------	168	152	172	136	274	380	571	212	168	192	140
16	-------	152	152	172	136	274	350	475	212	168	184	140
17	133	149	160	172	136	274	320	399	202	168	176	140
18	136	149	168	172	136	242	305	380	202	168	168	140
19	136	156	172	172	136	197	305	954	202	168	160	140
20	140	156	164	172	136	180	292	770	202	168	160	140
21	140	133	164	172	136	180	292	624	202	152	160	140
22	140	133	164	172	136	184	280	523	202	152	160	140
23	140	133	156	172	136	172	267	437	212	152	160	140
24	146	133	156	172	149	176	255	399	212	152	160	133
25	146	140	149	172	180	176	255	365	202	152	160	133
26	152	140	149	172	172	176	242	320	192	152	152	133
27	160	140	149	164	172	222	232	280	184	152	152	133
28	160	140	143	164	172	242	232	365	176	168	149	133
29	160	140	143	156	-------	280	232	320	176	160	143	133
30	152	140	143	149	-------	292	232	280	168	160	143	133
31	152	-------	143	149	-------	292	-------	292	-------	160	143	-------

Month	Maximum	Minimum	Mean	Month	Maximum	Minimum	Mean
October 17–31	160	133	146	April	740	232	315
November	168	133	152	May	1,050	280	488
December	172	133	149	June	305	168	214
January	172	136	163	July	188	152	165
February	180	136	142	August	320	143	176
March	292	164	204	September	143	133	139

GASCONADE RIVER BASIN

GASCONADE RIVER NEAR HAZLEGREEN, MO.

LOCATION.—Chain gage in SE. ¼ SE. ¼ sec. 15, T. 35 N., R. 14 W., at bridge on State Highway No. 66, 1 mile below Osage Fork and 1½ miles west of Hazlegreen.

DRAINAGE AREA.—1,250 square miles.

RECORDS AVAILABLE.—April to September, 1929.

EXTREMES.—Maximum discharge during period, 19,000 second-feet May 7 (gage height, 16.21 feet); minimum, 98 second-feet Sept. 4 (gage height, 1.66 feet).

Maximum stage known, 31.8 feet in January, 1916.

REMARKS.—Records good.

Daily and monthly discharge, in second-feet, 1929

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1	2,010	680	1,050	470	500	120	16	3,900	4,500	1,660	380	440	182
2	2,490	1,240	985	470	500	110	17	2,740	3,300	1,180	325	380	182
3	1,940	2,740	800	410	500	110	18	2,090	5,000	920	303	320	160
4	1,590	3,010	740	380	320	101	19	1,800	7,400	985	276	292	150
5	1,310	2,090	680	352	248	120	20	1,520	5,320	800	259	264	140
6	1,180	12,500	620	380	204	150	21	1,590	3,300	680	226	248	140
7	1,050	17,100	740	320	237	135	22	1,590	2,490	590	210	259	140
8	4,100	7,400	920	303	770	120	23	1,380	2,010	560	188	198	130
9	11,300	8,380	1,450	314	3,010	130	24	1,120	1,660	1,520	182	237	120
10	15,200	6,100	1,240	314	860	130	25	1,120	1,450	1,450	176	171	120
11	7,680	3,800	920	440	985	130	26	1,050	1,310	1,120	171	160	110
12	4,100	3,300	770	985	1,450	140	27	920	1,240	800	171	150	110
13	2,830	8,100	1,120	590	1,050	160	28	860	1,660	650	160	145	104
14	2,250	12,900	3,800	470	740	160	29	770	2,010	560	150	130	104
15	2,330	7,820	1,870	440	560	160	30	710	1,520	530	182	130	101
							31	------	1,180	------	140	120	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
April	15,200	710	2,820	2.26	2.52
May	17,100	680	4,600	3.68	4.24
June	3,800	530	1,060	.848	.95
July	985	140	327	.262	.30
August	3,010	120	502	.402	.46
September	182	101	132	.106	.12

GASCONADE RIVER NEAR WAYNESVILLE, MO.

LOCATION.—Chain gage in SE. ¼ sec. 3, T. 36 N., R. 12 W., at bridge on State Highway No. 17, 4 miles north of Waynesville. Zero of gage is 739.34 feet above mean sea level.

DRAINAGE AREA.—1,680 square miles.

RECORDS AVAILABLE.—June, 1921, to September, 1929.

EXTREMES.—Maximum discharge during year, 21,400 second-feet May 7 (gage height, 15.35 feet); minimum, 141 second-feet Nov. 2 (gage height, 2.26 feet).

1921–1929: Maximum discharge, 27,300 second-feet June 10, 1928 (gage height, 18.20 feet); minimum, 77 second-feet Sept. 27, 1922.

Maximum stage known, 25 feet Aug. 22, 1915.

REMARKS.—Records good.

Daily and monthly discharge, in second-feet, 1928–29.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept
1	176	147	246	430	1,060	2,780	3,040	980	1,480	718	246	198
2	179	141	455	405	1,140	2,260	3,170	1,390	1,390	662	540	186
3	190	161	570	382	905	1,840	3,040	2,520	1,220	600	405	186
4	190	147	482	382	830	1,650	2,520	4,420	1,060	540	570	176
5	198	151	455	360	718	1,740	2,140	3,440	1,020	510	382	183
6	186	158	405	405	662	1,650	1,740	11,100	942	482	360	186
7	198	179	382	540	630	1,650	1,560	20,000	905	760	315	176
8	198	234	382	630	600	1,390	3,300	16,800	942	455	315	183
9	190	222	430	1,060	540	1,140	11,700	9,700	1,140	405	1,300	186
10	198	206	405	980	482	1,060	17,200	10,700	1,560	405	2,030	202
11	202	198	382	942	455	1,060	15,100	6,100	1,300	430	980	168
12	190	190	360	980	510	980	6,820	4,420	1,140	600	1,140	194
13	190	198	360	942	510	868	6,460	10,900	980	905	1,840	218
14	183	198	338	830	455	868	3,580	14,900	1,390	662	1,140	210
15	198	198	338	760	455	1,020	2,910	13,700	3,170	570	830	222
16	183	222	360	718	455	8,700	3,580	8,100	2,140	540	662	222
17	190	230	630	662	430	9,500	4,280	4,860	1,650	482	570	210
18	186	262	1,060	600	455	5,380	3,170	6,820	1,300	405	482	242
19	198	338	2,140	695	455	3,580	2,520	12,100	1,140	360	405	218
20	194	338	1,930	718	455	2,910	2,260	8,900	1,220	338	382	238
21	190	315	1,480	1,390	600	2,390	2,030	5,380	1,020	315	338	238
22	198	388	1,220	1,140	630	2,030	1,930	3,720	905	315	315	222
23	202	315	1,020	1,060	662	1,650	1,840	2,910	760	302	315	206
24	190	310	830	1,480	600	1,480	1,740	2,390	1,220	279	292	202
25	194	288	760	2,650	695	1,390	1,560	2,030	2,780	258	288	206
26	190	279	630	3,170	1,480	1,930	1,390	1,840	1,840	270	238	198
27	198	270	600	4,700	3,720	2,140	1,300	1,740	1,390	262	234	190
28	206	302	570	2,520	4,420	1,930	1,220	2,030	1,140	254	222	183
29	198	274	510	1,930	-------	1,560	1,140	2,390	905	246	214	176
30	202	230	482	1,560	-------	1,480	1,020	2,140	795	360	202	183
31	202	-------	455	1,300	-------	1,390	-------	1,840	-------	234	190	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	206	176	193	0.115	0.13
November	388	141	236	.140	.16
December	2,140	246	667	.397	.46
January	4,700	360	1,170	.696	.80
February	4,420	430	904	.538	.55
March	9,500	868	2,300	1.37	1.58
April	17,200	1,020	3,840	2.29	2.56
May	20,000	980	6,460	3.85	4.44
June	3,170	760	1,330	.792	.88
July	905	234	449	.267	.31
August	2,030	190	572	.340	.39
September	242	168	200	.119	.13
The year	20,000	141	1,530	.911	12.39

GASCONADE RIVER AT JEROME, MO.

LOCATION.—Staff gage in S. ½ sec. 13, T. 37 N., R. 10 W., at Jerome, half a mile below Little Piney Creek. Zero of gage is 658.12 feet above mean sea level. Prior to Nov. 20, 1928, staff gage 400 feet downstream was used.

DRAINAGE AREA.—2,840 square miles.

RECORDS AVAILABLE.—April, 1903, to July, 1906; January, 1923, to September, 1929.

EXTREMES.—Maximum discharge during year, 32,700 second-feet May 7 (gage height, 16.60 feet); minimum, 680 second-feet several days during October, November, and September.

1903–1906, 1923–1929: Maximum discharge, 51,800 second-feet June 10, 1928 (gage height, 23.25 feet); minimum, 300 second-feet June 15, 1905. Maximum stage known, about 31 feet Jan. 5, 1897.

REMARKS.—Records good.

Daily and monthly discharge, in second-feet, 1928–29.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	680	720	1,100	1,050	2,160	4,980	3,940	2,040	3,020	1,800	850	720
2	680	720	1,100	1,000	1,920	3,940	4,820	3,540	5,140	1,680	1,000	680
3	680	680	1,000	950	1,800	3,280	4,820	4,820	5,140	1,570	1,050	680
4	680	720	1,200	950	1,680	3,150	4,080	5,940	3,020	1,460	1,100	680
5	680	720	1,150	1,000	1,680	2,890	3,540	5,780	2,520	1,350	1,100	720
6	680	720	1,100	1,050	1,460	2,890	3,020	17,500	2,280	1,350	950	720
7	680	680	1,150	1,350	1,350	2,640	2,760	31,300	2,640	1,250	950	720
8	680	680	1,050	1,460	1,350	2,400	4,980	26,200	2,640	1,250	950	720
9	680	680	1,100	1,920	1,250	2,160	14,800	20,000	2,400	1,200	1,570	720
10	680	680	1,050	1,920	1,250	1,920	23,800	15,200	2,760	1,200	3,670	720
11	680	680	1,000	1,800	1,200	1,800	24,600	11,800	2,760	1,250	3,020	680
12	680	680	950	1,800	1,150	1,800	14,300	8,500	2,400	1,250	3,800	760
13	680	680	1,000	1,800	1,150	1,680	8,500	15,000	2,890	1,800	2,890	805
14	680	680	950	1,680	1,150	1,680	6,460	22,100	5,620	1,570	2,520	805
15	680	680	1,100	1,570	1,100	4,820	6,640	22,100	6,100	1,460	1,920	805
16	760	680	1,250	1,460	1,100	14,500	9,120	15,000	5,140	1,350	1,570	760
17	720	720	1,350	1,350	1,050	12,400	8,100	9,340	3,670	1,460	1,350	760
18	720	680	1,800	1,350	1,100	10,000	6,280	9,560	3,020	1,200	1,200	760
19	680	720	2,760	1,460	1,150	6,460	4,980	16,200	2,640	1,150	1,100	720
20	680	805	3,540	1,460	1,250	4,980	4,220	12,900	2,400	1,100	1,050	760
21	680	850	2,640	1,800	1,250	4,080	3,940	9,560	2,280	1,050	1,000	720
22	680	850	2,280	2,040	1,350	3,540	3,800	6,820	2,040	1,000	950	720
23	680	850	1,920	2,040	1,350	3,150	3,540	5,460	1,920	950	900	720
24	680	850	1,680	1,920	1,350	2,760	3,280	4,500	3,150	950	850	680
25	680	805	1,570	2,160	1,460	2,520	3,020	3,940	4,980	900	850	680
26	680	805	1,460	5,620	2,280	4,080	2,760	3,540	3,800	900	805	680
27	680	760	1,350	7,360	4,980	3,800	2,520	3,540	2,890	850	760	680
28	680	760	1,250	4,500	7,180	3,280	2,400	4,080	2,520	850	760	680
29	680	805	1,150	3,410	-------	2,890	2,280	3,670	2,160	850	760	680
30	680	805	1,100	2,890	-------	2,640	2,040	3,940	1,920	900	720	680
31	680	-------	1,100	2,400	-------	2,640	-------	3,540	-------	900	720	-------

Month	Maximum	Minimum	Mean	Per square miles	Run-off in inches
October	760	680	685	0.241	0.28
November	850	680	738	.260	.29
December	3,540	950	1,430	.504	.58
January	7,360	950	2,080	.732	.84
February	7,180	1,050	1,730	.609	.63
March	14,500	1,680	4,060	1.43	1.65
April	24,600	2,040	6,440	2.27	2.53
May	31,300	2,040	10,600	3.73	4.30
June	6,100	1,920	3,200	1.13	1.26
July	1,800	850	1,220	.430	.50
August	3,800	720	1,380	.486	.56
September	805	680	720	.254	.28
The year	31,300	680	2,860	1.01	13.70

GASCONADE RIVER NEAR RICH FOUNTAIN, MO.

LOCATION.—Chain gage in SE. ¼ sec. 16, T. 42 N., R. 8 W., at bridge on Belle-Rich Fountain Road just above Swan Creek and 4 miles east of Rich Fountain. Zero of gage is 554.24 feet above mean sea level.

DRAINAGE AREA.—3,180 square miles.

RECORDS AVAILABLE.—October, 1921, to September, 1929.

EXTREMES.—Maximum discharge during year, 27,900 second-feet May 9 (gage height, 17.15 feet); minimum, 689 second-feet Oct. 16.

1921–1929: Maximum discharge, 51,000 second-feet June 11, 1928 (gage height, 22.83 feet); minimum, 410 second-feet Sept. 29 and 30, 1922.

REMARKS.—Records good except those for August, which are fair. Discharge estimated Oct. 1–3, 7, 14, 23, 30, 31, July 30, and Sept. 3.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	710	710	832	1,050	2,720	6,710	4,730	2,260	3,820	1,960	860	780
2	710	750	1,230	1,000	2,480	4,730	5,250	4,990	7,990	1,780	860	710
3	710	750	1,140	1,000	2,370	3,950	5,520	6,400	5,520	1,690	980	728
4	710	710	1,100	960	1,930	3,560	5,250	5,660	4,990	1,600	1,020	745
5	710	710	1,230	1,320	1,820	3,440	4,470	9,000	3,440	1,520	980	820
6	710	710	1,230	1,420	1,720	3,440	4,080	14,100	2,840	1,430	940	820
7	710	710	1,100	1,230	1,620	3,200	3,440	22,600	4,210	1,960	940	780
8	710	710	1,140	1,230	1,520	2,960	6,100	27,700	3,820	1,870	940	780
9	710	710	1,140	1,620	1,420	2,720	10,100	26,000	3,200	1,340	1,520	745
10	710	710	1,140	2,150	1,320	2,370	19,200	18,800	2,720	1,260	1,780	780
11	710	710	1,100	2,150	1,420	2,150	23,300	15,300	3,080	1,260	3,690	745
12	710	710	1,050	1,930	1,720	2,150	23,300	14,500	3,560	1,430	2,840	780
13	710	710	1,100	1,930	1,420	2,260	13,400	15,300	3,080	1,340	3,440	900
14	710	710	1,050	1,820	1,140	2,150	7,990	17,600	3,440	1,180	2,840	860
15	710	710	1,000	1,820	1,140	6,400	5,520	21,700	5,120	1,870	2,270	860
16	710	750	1,230	1,720	1,140	15,600	8,660	17,400	7,670	1,430	1,870	860
17	750	832	1,620	1,620	1,100	15,100	9,180	12,100	4,860	1,430	1,520	820
18	750	832	1,520	1,420	1,100	12,600	7,670	14,500	3,690	1,430	1,430	780
19	750	875	2,150	1,820	1,100	9,360	6,100	17,800	3,200	1,260	1,260	745
20	710	832	2,370	1,520	1,230	7,030	5,380	17,000	2,720	1,180	1,180	860
21	710	875	2,720	1,720	1,320	5,380	5,380	13,000	2,720	1,100	1,180	860
22	710	875	2,600	2,040	1,320	4,470	4,730	10,800	2,380	1,020	1,100	820
23	710	875	2,260	2,260	1,420	3,950	4,340	6,710	2,160	1,020	1,020	820
24	710	875	2,040	2,600	1,520	3,440	3,950	5,380	2,490	980	980	780
25	710	875	1,820	3,080	1,820	3,200	3,690	4,860	4,340	980	940	745
26	710	832	1,620	4,210	2,480	8,660	3,320	6,550	6,100	940	900	745
27	710	832	1,520	5,950	3,080	5,250	3,080	5,250	3,690	900	1,180	745
28	710	790	1,420	7,030	5,660	4,470	2,840	4,600	2,960	860	860	745
29	710	790	1,230	4,340	-------	3,820	2,720	4,600	2,490	860	820	710
30	710	832	1,230	3,690	-------	3,560	2,480	4,080	2,160	860	820	710
31	710	-------	1,140	3,080	-------	2,960	-------	4,210	-------	860	780	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	750	710	714	0.225	0.26
November	875	710	777	.244	.27
December	2,720	832	1,450	.456	.53
January	7,030	960	2,280	.717	.83
February	5,660	1,100	1,790	.563	.59
March	15,600	2,150	5,190	1.63	1.88
April	23,300	2,480	7,170	2.25	2.51
May	27,700	2,260	12,000	3.77	4.35
June	7,990	2,160	3,810	1.20	1.34
July	1,960	860	1,310	.412	.48
August	3,690	780	1,410	.443	.51
September	900	710	786	.247	.28
The year	27,700	710	3,230	1.02	13.83

PINEY CREEK NEAR BIG PINEY, MO.

LOCATION.—Chain gage in NE. ¼ sec. 8, T. 34 N., R. 10 W., at Ross highway bridge 3 miles east of Big Piney.

DRAINAGE AREA.—560 square miles.

RECORDS AVAILABLE.—October, 1921, to September, 1929.

EXTREMES.—Maximum discharge during year, 8,100 second-feet May 6 (gage height, 10.66 feet); minimum, 138 second-feet Sept. 26 and 29 (gage height, 1.90 feet).

1921–1929: Maximum discharge, 15,200 second-feet June 9, 1928 (gage height, 16.30 feet); minimum, 76 second-feet July 30 and 31, 1926 (gage height, 1.60 feet).

REMARKS.—Records good.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	192	192	750	240	440	950	600	330	465	292	181	175
2	192	192	415	240	392	750	690	630	440	330	175	164
3	192	192	392	240	370	660	570	1,400	392	311	164	175
4	195	195	330	257	350	600	542	1,020	392	292	181	159
5	189	195	370	257	311	542	515	810	311	257	186	186
6	189	195	440	350	311	415	490	7,190	292	274	175	192
7	192	195	370	515	292	465	440	4,440	330	257	240	181
8	198	192	330	465	330	370	1,480	2,700	330	240	224	175
9	198	202	292	465	292	370	7,300	5,100	415	224	570	159
10	192	202	292	440	292	350	6,860	2,240	350	240	1,880	164
11	181	192	274	440	274	330	3,000	1,800	330	257	950	154
12	181	189	257	415	274	350	1,880	1,560	311	350	1,560	181
13	181	189	292	311	240	350	1,400	6,860	750	292	570	224
14	181	189	292	311	257	370	1,160	3,900	1,720	257	465	224
15	181	189	570	311	257	2,330	4,550	2,700	3,400	257	350	164
16	192	189	515	311	257	5,870	2,510	1,800	1,160	392	292	170
17	198	195	490	311	240	2,060	1,720	1,560	880	257	292	164
18	198	205	1,090	330	240	1,560	1,240	1,240	630	240	224	170
19	192	205	750	350	330	1,090	1,090	1,320	542	198	224	154
20	192	257	690	542	311	950	950	1,160	465	224	224	164
21	186	224	630	570	292	810	880	1,020	440	170	198	154
22	189	214	415	490	330	750	810	750	392	164	181	170
23	189	205	415	465	330	690	690	660	392	205	186	154
24	189	202	350	440	311	600	660	630	950	192	181	159
25	189	205	330	5,870	330	515	630	660	690	175	192	154
26	189	205	292	1,640	2,800	515	570	600	465	170	186	138
27	198	205	274	1,160	2,600	490	515	660	392	164	181	148
28	195	205	257	720	1,240	465	330	720	350	186	192	148
29	192	211	257	660	------	440	415	630	311	164	164	138
30	192	810	240	600	------	415	415	490	274	198	181	143
31	192	------	240	515	------	440	------	490	------	186	170	------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
October	198	181	190	0.339	0.39
November	810	189	221	.395	.44
December	1,090	240	416	.743	.86
January	5,870	240	653	1.17	1.35
February	2,800	240	510	.911	.95
March	5,870	330	867	1.55	1.79
April	7,300	330	1,500	2.68	2.99
May	7,190	330	1,840	3.29	3.79
June	3,400	274	619	1.11	1.24
July	330	164	239	.427	.49
August	1,880	164	359	.641	.74
September	224	138	167	.298	.33
The year	7,300	138	633	1.13	15.36

LITTLE PINEY CREEK AT NEWBURG, MO.

LOCATION.—Chain gage in SE. ¼ sec. 22, T. 37 N., R. 9 W., at highway bridge in Newburg. Zero of gage is 696.99 feet above mean sea level.
DRAINAGE AREA.—200 square miles.
RECORDS AVAILABLE.—October, 1928, to September, 1929.
EXTREMES.—Maximum discharge during period, 8,860 second-feet May 6 (gage height, 7.22 feet); minimum, 58 second-feet Sept. 27–30 (gage height, 1.24 feet).
Maximum stage known, 13.7 feet Aug. 20, 1915.
REMARKS.—Records good. Discharge estimated Aug. 8–10.

Daily and monthly discharge, in second-feet, 1928–29

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-------	79	71	72	86	123	612	115	166	145	77	63
2	-------	74	71	77	80	104	351	940	785	145	74	63
3	-------	71	69	69	79	120	262	425	750	128	76	63
4	-------	69	72	71	79	185	217	310	395	123	74	63
5	-------	71	72	97	77	148	230	257	315	115	72	66
6	-------	71	72	106	82	131	162	7,420	252	115	72	66
7	-------	71	68	79	76	109	148	900	455	112	72	66
8	-------	71	69	72	76	99	860	680	373	109	80	63
9	-------	71	69	84	79	93	985	548	257	99	100	61
10	-------	71	69	80	77	79	715	455	209	104	180	61
11	-------	72	68	80	76	79	580	384	189	101	135	61
12	-------	69	66	77	74	104	425	645	185	104	93	66
13	-------	71	76	76	72	99	425	1,230	384	95	90	72
14	-------	71	79	71	71	99	580	785	295	93	86	66
15	-------	76	76	71	71	1,030	395	580	209	92	76	63
16	-------	80	77	74	71	785	340	455	177	93	76	61
17	-------	97	104	79	77	515	300	395	155	95	76	61
18	-------	92	84	86	84	368	252	515	138	90	72	61
19	-------	72	84	135	79	295	217	485	138	90	72	61
20	-------	71	71	95	82	243	209	373	125	84	72	76
21	-------	71	69	93	84	196	226	305	115	82	72	66
22	-------	74	68	101	79	181	192	262	112	82	69	61
23	-------	68	71	92	71	159	173	234	109	82	66	61
24	-------	71	74	106	71	131	162	209	860	82	66	61
25	-------	69	72	145	123	123	162	192	515	79	66	61
26	-------	68	71	128	230	548	142	181	310	76	66	61
27	-------	72	71	123	162	285	128	425	248	76	66	58
28	-------	71	71	99	135	217	123	335	204	76	66	58
29	69	92	71	92	-------	196	115	252	166	76	63	58
30	71	80	71	82	-------	230	112	213	148	79	63	58
31	66	-------	69	85	-------	267	-------	189	-------	84	63	-------

Month	Maximum	Minimum	Mean	Per square mile	Run-off in inches
November	97	68	74.2	0.371	0.41
December	104	66	73.1	.366	.42
January	145	69	90.2	.451	.52
February	230	71	89.4	.447	.47
March	1,030	79	237	1.18	1.36
April	985	112	327	1.64	1.83
May	7,420	115	668	3.34	3.85
June	860	109	291	1.46	1.63
July	145	76	97	.485	.56
August	180	63	79.1	.396	.46
September	76	58	62.8	.314	.35

MISCELLANEOUS DISCHARGE MEASUREMENTS

Measurements of the flow of streams in the Missouri River Basin at points other than regular gaging stations are recorded in the following table:

Miscellaneous discharge measurements in the Missouri River drainage basin during the year ending September 30, 1929

Date	Stream	Tributary to—	Locality	Gage height	Discharge
				Feet	*Sec.-ft.*
Aug. 17	Firehole River	Madison River	100 yards north of old Faithful Lodge, Yellowstone National Park, Wyo.		46.5
17	do	do	200 yards northeast of Sapphire Pool and 2½ miles northwest of Old Faithful Inn, Yellowstone National Park, Wyo.		133
Sept. 2	do	do	do		131
Aug. 17	Unnamed creek	Firehole River	Just across road from old Faithful Inn, Yellowstone National Park, Wyo.		[a] 1.0
17	Iron Creek	do	100 yards above Green Springs and 1½ miles northwest of Old Faithful Inn, Yellowston National Park, Wyo.		31.9
Sept. 2	do	do	do		33.5
2	do	do	200 yards from mouth, just below mouth of Little Firehole River, and 2 miles northwest of Old Faithful Inn, Yellowstone National Park, Wyo.		78.8
Aug. 17	Niobe Creek	Iron Creek	200 feet above mouth, and 1½ miles northwest of Old Faithful Inn, Yellowstone National Park, Wyo.		[a] 2.7
Sept. 2	do	do	40 feet above mouth, and 1½ miles northwest of Old Faithful Inn, Yellow-Stone National Park, Wyo.		4.7
2	Spring inflow	do	From left bank, between Niobe Creek and Yellow Bell Brook, 2 miles northwest of Old Faithful Inn, Yellowstone National Park, Wyo.		4.2
Aug. 17	Little Firehole River	do	200 yards above mouth, and 2 miles northwest of Old Falthful Inn, Yellowstone National Park, Wyo.		25.1
Oct. 4	Gardiner River	Yellowstoue River	Above mouth of Panther Creek and 6 miles southwest of Mammoth Hotel, Yellowstone National Park, Wyo.		23.3
4	Panther Creek	Gardiner River	At mouth, 6 miles southwest of Mammoth Hotel, Yellowstone National Park, Wyo.		6.3
4	Glen Creek	do	One-eighth mile above Rustic Falls, 3 miles southwest of Mammoth Hotel, Yellowstone National Park, Wyo.		18.3
4	End of pipe line	Glen Creek	One-quarter mile above Rustic Falls, 3 miles southwest of Mammoth Hotel, Yellowstone National Park, Wyo.		14.9
June 20	Rapid Creek	Cheyenne River	Big Bend power plant, S. Dak.	2.97	291
July 26	do	do	do	2.05	117
Aug. 1	do	do	do	2.19	139
Sept. 7	do	do	do	1.80	94

[a] Estimated.

Miscellaneous discharge measurements in the Missouri River drainage basin during the year ending September 30, 1929—Continued

Date	Stream	Tributary to—	Locality	Gage height	Discharge
				Feet	*Sec.-ft.*
Apr. 5	Elk Creek	Cheyenne River	Near Elm Springs, S. Dak.		175
25	do	do	do		55
May 20	do	do	do		63
June 14	do	do	do		146
July 24	do	do	do		26
May 11	Laramie River	North Platte River	Bosler, Wyo.		518
June 18	North Boulder Creek	Boulder Creek	2 miles below Silver Lake, Colo.		77
1	Chambers Lake outlet	Cache la Poudre River.	3 miles above mouth, near Home, Colo.		208
May 20	do	do	One-quarter mile above mouth, near Home, Colo.		23
23	South Fork of Cache la Poudre River.	do	Derbys ranch, near Estes, Colo.	.82	70
29	do	do	do	.90	95
13	Smoky Hill River	Kansas River	Salina, Kans.	20.79	4.640
Oct. 3	Osage River	Missouri River	6 miles southeast of Arnoret, Mo.	1.11	19
23	do	do	do	3.54	412
Aug. 30	do	do	At Lock and Dam No. 1, 10 miles east of Jefferson City, Mo.	[b] 5.20	960
Sept. 10	do	do	do	[b] 4.85	864

[b] Refers to gage just below lock.

INDEX

A — Page

Accuracy of data and computed results 4–5
Acre-foot, definition of 2
Agency, Mo., Platte River at 223
Akron, Iowa, Big Sioux River at 164
Alder, Mont., Ruby River near 34
Allens Park, Colo., Middle St. Vrain Creek near 206
North St. Vrain Creek near 204
Alton, Kans., South Fork of Solomon River at 243
Alzada, Mont., Little Missouri River near 135
American Fork near Harlowton, Mont 65
Appropriations, record of 1
Arvada, Wyo, Clear Creek near 134
Powder River at 127
Ashland, Nebr., Platte River near 178

B

Bad River near Fort Pierre, S. Dak 153
Bagnell, Mo., Osage River near 269
Barnum, Wyo., Red Fork near 131
Barratts, Mont., Beaverhead River at 14
Battle Creek at international boundary 79
East Fork of, near international boundary 81
Beaver Creek at Ludell, Kans 234
near Burdock, S. Dak 145
Beaverhead River at Barratts, Mont 14
Belle Fourche River at Hulett, Wyo 149
near Belle Fourche, S. Dak 150
near Elm Springs, S. Dak 151
near Moorcroft, Wyo 148
Beloit, Kans., Solomon River at 244
Bennett Spring at Brice, Mo 276
Berthoud, Colo., Little Thompson River near 211
Beulah, Wyo., Redwater Creek near 152
Big Blue River at Hull, Kans 247
at Randolph, Kans 248
Big Hole River near Melrose, Mont 35
Big Horn River at Kane, Wyo 111
at Thermopolis, Wyo 110
near Hardin, Mont 112
Big Piney, Mo., Piney Creek near 281
Big Sandy Creek near Boxelder, Mont 76
Big Sioux River at Akron, Iowa 164
near Flandreau, S. Dak 163
Billings, Mont., Yellowstone River at 96
Birch Creek at Swift Dam, near Dupuyer, Mont 53
near Dupuyer, Mont 54
Bismarck, N. Dak., Missouri River at 20
Bloomington, Nebr., Republican River near 225
Bonner Springs, Kans., Kansas River at 231
Boonville, Mo , Missouri River at 30

Page

Boulder, Colo., Lefthand Creek near 207
Boulder River near Boulder, Mont 36
near Contact, Mont 103
Boxelder, Mont., Big Sandy Creek near 76
Boxelder Creek near Careyhurst, Wyo 187
Brice, Mo., Bennett Spring at 276
Brinkman, Mont., Marias River near 52
Browning, Mont., North Fork of Milk River near 74
Brownington, Mo., South Grand River near 274
Buffalo, Wyo., Crazy Woman Creek near 133
Bull Lake Creek near Lenore, Wyo 116
Burdock, S. Dak., Beaver Creek near 145
Burlington Junction, Mo., Nodaway River near 221
Burris, Wyo., Dinwoody Creek near 113
Dry Creek near 114
Byron, Wyo., Shoshone River at 122

C

Cache la Poudre River above Chambers Lake outlet, Colo 212
near Log Cabin, Colo 213
North Fork of, at Livermore, Colo 215
South Fork of, discharge measurements of 284
near Eggers, Colo 214
Canadian River at Cowdrey, Colo 182
Cannonball River near Timmer, N. Dak 139
Careyhurst, Wyo., Boxelder Creek near 187
Carlin, S. Dak., Cheyenne River near 144
Casper, Wyo., North Platte River at 172
Chamberlain, S. Dak., Missouri River at 22
Chambers Lake outlet, Colo., Cache la Poudre River above 212
discharge measurements of 284
Chance, Mont., Clark Fork at 106
Chariton River at Elmer, Mo 262
near Keytesville, Mo 263
Checkerboard Creek at Delpine, Mont 64
Cheyenne River at Edgemont, S. Dak 142
near Carlin, S. Dak 144
near Wasta, S. Dak 143
Cheyenne River Basin, S. Dak.-Wyo., gaging-station records in 142–152
Chinook, Mont., Matheson Canal near 83
Clancy, Mont., Prickly Pear Creek near 44
Clark Fork at Chance, Mont 106
at Edgar, Mont 107
below Crandall Creek, Wyo 105
Clear Creek near Arvada, Wyo 134
near Golden, Colo 203
West Fork of, near Empire, Colo 202
Clemons, Mont., Dearborn River near 48
Clifton City, Mo., Lamine River at 264
Clyde Park, Mont., Shields River at 102

Page

Computations, results of, accuracy of 4–5
Conception Junction, Mo., Platte River at 222
Contact, Mont., Boulder River near 103
Control, definition of 2
Cooperation, record of 10
Correctionville, Iowa, Little Sioux River at 165
Corwin Springs, Mont., Yellowstone River at 94
Cottonwood Creek at Wendover, Wyo 193
Cowdrey, Colo., Canadian River at 182
Crandall, Creek Wyo., Clark Fork below 105
Crazy Woman Creek near Buffalo, Wyo 133
Creston, S. Dak., Rapid Creek at 147
Crow Agency, Mont., Little Horn River near 123
Crow Creek near Radersburg, Mont 43
Crowheart, Wyo., Willow Creek near 115

D

Data, accuracy of 4–5
explanation of 2–4
Dayton, Wyo., Tongue River near 124
Dearborn River near Clemons, Mont 48
Decker, Mont., Tongue River near 125
Deer Creek at Glenrock, Wyo 186
Delaware River at Valley Falls, Kans 252
Delpine, Mont., Checkerboard Creek at 64
North Fork of Musselshell River at 60
Dillon, Mont., Grasshopper Creek near 33
Dinwoody Creek near Burris, Wyo 113
Douglas, Wyo., La Prele Creek near 188
North Platte River at 173
Drake, Colo., Thompson River near 209–210
Dry Creek near Burris, Wyo 114
Duncan, Nebr., Platte River near 177
Dupuyer, Mont., Birch Creek near 53–54
Dupuyer Creek near Valier, Mont 55

E

Edgar, Mont., Clark Fork at 107
Edgemont, S. Dak., Cheyenne River at 142
Eggers, Colo., South Fork of Cache la Poudre River near 214
Elk Creek, S. Dak., discharge measurements of 284
Elkhorn River at Waterloo, Nebr 219
Ellsworth, Kans., Smoky Hill River at 238
Elm Springs, S. Dak., Belle Fourche River near 151
Elmer, Mo., Chariton River at 262
Empire, Colo., West Fork of Clear Creek near 202
Encampment River at Encampment, Wyo 183
Endicott, Nebr., Little Blue River near 249

F

Fairfax, Mo., Tarkio River at 220
Firehole River, Wyo., discharge measurements of 283
Flandreau, S. Dak., Big Sioux River near 163
Flatwillow Creek at Petrolia, Mont 68
near Flatwillow, Mont 67
Fort Benton, Mont., Missouri River at 17
Teton River near 57
Fort Laramie, Wyo., Laramie River at 196
Fort Pierre, S. Dak., Bad River near 153

Page

Fort Scott, Kans., Marmaton River near 271
Fort Washakie, Wyo., Little Wind River near 117
North Fork of Little Wind River at 118
Fowler, Mont., Dry Fork of Marias River at 56
Frenchman Canal near Saco, Mont 86
Frenchman Creek near Hamlet, Nebr 232
Frenchman River at international boundary 85

G

Gallatin, Mo., Grand River near 255
Gallatin River at Logan, Mont 42
Galt, Mo., Medicine Creek near 258
Gardiner River at Mammoth Hotel, Yellowstone National Park 101
discharge measurement of 283
Gasconade River at Jerome, Mo 279
near Hazlegreen, Mo 277
near Rich Fountain, Mo 280
near Waynesville, Mo 278
Gasconade River Basin, Mo., gaging-station records in 277–282
Genoa, Nebr., Loup River near 217
Glen Creek, Wyo., discharge measurement of 283
Glendevey, Colo., Laramie River near 194
Glendo, Wyo., Horseshoe Creek near 192
Glenrock, Wyo., Deer Creek at 186
Golden Colo., Clear Creek near 203
Gordon, Nebr., Niobrara River near 157
Grand River near Gallatin, Mo 255
Grand River Basin, Mo., gaging-station records in 255–261
near Sumner, Mo 256
Grand River near Wakpala, S. Dak 140
Grasshopper Creek near Dillon, Mont 33
Greybull River at Meeteetse, Wyo 120
Grizzzly Creek near Walden, Colo 166
Guernsey Reservoir, Wyo., North Platte River below 174

H

Hamlet, Nebr., Frenchman Creek near 232
Hardin, Mont., Big Horn River near 112
Harlowton, Mont., American Fork near 65
Lebo Creek near 66
Musselshell River at 61
Havre, Mont., Milk River above 72
North Chinook Canal near 78
Hazlegreen, Mo., Gasconade River near 277
Hazen, N. Dak., Knife River at 137
Heart River at Sunny, N. Dak 138
Helena, Mont., Missouri River near 16
Tenmile Creek near 46
Henry, Nebr., Katzer Drain near 198
Hermann, Mo., Missouri River at 32
Horse Creek at international boundary 88
Horse Creek near Yoder, Wyo 199
Horseshoe Creek near Glendo, Wyo 192
Hulett, Wyo., Belle Fourche River at 149
Hull, Kans., Big Blue River at 247
Huron, S. Dak., James River at 161

I

Page

Illinois Creek at Walden, Colo 181
Intake, Mont., Yellowstone River at 98
Interior, S. Dak., White River near 154
International boundary, Battle Creek at 79
East Fork of Battle Creek near 81
Frenchman River at 85
Horse Creek at 88
Lodge Creek at 77
Lyons Coulee at 82
McEachern Creek at 89
McRea Coulee at 77
Milk River at eastern crossing of 71
North Fork of Milk River near 75
Rock Creek at 87
South Fork at Milk River near 69
Whitewater Creek near 84
Woodpile Coulee near 80
Iron Creek, Wyo., discharge measurements of 283
Isbell, Mo., Missouri River at 31

J

James River at Huron, S. Dak 161
at Jamestown, N. Dak 160
near Scotland, S. Dak 162
Jamestown, N. Dak., James River at 160
Jefferson Island, Mont., South Boulder Creek near 37
Jefferson River near Silverstar, Mont 15
Jelm, Wyo., Laramie River near 195
Jerome, Kans., Smoky Hill River at 236
Jerome, Mo., Gasconade River at 279
Judith River near Utica, Mont 58
near Winifred, Mont 59

K

Kane, Wyo., Big Horn River at 111
Kansas City, Mo., Missouri River at 28
Kansas River at Bonner Springs, Kans 231
at Ogden, Kans 228
at Topeka, Kans 230
at Wamego, Kans 229
Kansas River Basin, Nebr.-Kans., gaging-station records in 224–254
Katzer Drain near Henry, Nebr 198
Kaycee, Wyo., Middle Fork of Powder River at 130
North Fork of Powder River near 132
Keytesville, Mo., Chariton River near 263
Kirwin, Kans., North Fork of Solomon River at 246
Knife River at Hazen, N. Dak 137

L

La Bonte, Wyo., Wagonhound Creek near 190
La Bonte Creek near La Bonte, Wyo 191
La Prele Creek near Douglas, Wyo 188
near Orpha, Wyo 189
Lamar River near Tower Falls ranger station, Yellowstone National Park 100
Lamine River at Clifton City, Mo 264
Laramie River at Fort Laramie, Wyo 196
discharge measurement of 284
near Glendevey, Colo 194
near Jelm, Wyo 195

Page

Lawrence, Kans., Wakarusa River near 253
Leavenworth, Kans., Missouri River at 27
Lebo Creek near Harlowton, Mont 66
Lefthand Creek near Boulder, Colo 207
Lenore, Wyo., Bull Lake Creek near 116
Lingle, Wyo., Rawhide Creek near 197
Linneus, Mo., Locust Creek near 260
Little Blue River at Waterville, Kans 250
near Endicott, Nebr 249
Little Firehold River, Wyo., discharge measurement of 283
Little Horn River near Crow Agency, Mont 123
Little Missouri River at Medora, N. Dak 136
near Alzada, Mont 135
Little Osage River at Stotesbury, Mo 270
Little Piney Creek at Newburg, Mo 282
Little Prickly Pear Creek near Marysville, Mont 47
Little Sac River near Springfield, Mo 273
Little Sioux River at Correctionville, Iowa 165
Little Thompson River near Berthoud, Colo 211
Little Wind River near Fort Washakie, Wyo 117
North Fork of, at Fort Washakie, Wyo 118
Livermore, Colo, North Fork of Cache la Poudre River at 215
Livingston, Mont., Yellowstone River near 95
Locust Creek near Linneus, Mo 260
near Milan, Mo 259
Lodge Creek at international boundary 77
Log Cabin, Colo., Cache la Poudre River near 213
Logan, Mont., Gallatin River at 42
Loup River near Genoa, Nebr 217
Ludell, Kans., Beaver Creek at 234
Lyon, Mont., Madison River at 40
Lyons Coulee at international boundary 82

M

McEachern Creek at international boundary 89
McRea Coulee at international boundary 77
Madison River at Lyon, Mont 40
near Three Forks, Mont 41
near West Yellowstone, Mont 39
Marias River, Dry Fork of, at Fowler, Mont 56
near Brinkman, Mont 52
near Shelby, Mont 51
Marias River Basin, Mont, gaging-station records in 51–57
Marmaton River near Fort Scott, Kans 271
Marysville, Mont., Little Prickly Pear Creek near 47
Matheson Canal near Chinook, Mont 83
Max, Nebr., Republican River at 224
Medicine Creek near Galt, Mo 258
Medora, N. Dak., Little Missouri River at 136
Meeteetse, Wyo., Greybull River at 120
Melrose, Mont., Big Hole River near 35
Mentor, Kans., Smoky Hill River near 239
Michigan River at Walden, Colo 180
Middle Loup River at St. Paul, Nebr 216
Middle St. Vrain Creek near Allens Park, Colo 206
Milan, Mo., Locust Creek near 259
Miles City, Mont., Tongue River near 126
Yellowstone River at 97

Page

Milk River above Havre, Mont. 72
at eastern crossing of international boundary 71
at Milk River, Alberta 70
near Vandalia, Mont. 73
North Fork of, above St. Mary Canal, near Browning, Mont. 74
near international boundary 75
South Fork of, near international boundary 69
Milk River Basin, Alberta, Mont., gaging-station records in 69-89
Missouri River at Bismarck, N. Dak. 20
at Boonville, Mo. 30
at Chamberlain, S. Dak. 22
at Fort Benton, Mont. 17
at Hermann, Mo. 32
at Isbell, Mo. 31
at Kansas City, Mo. 28
at Leavenworth, Kans. 27
at Nebraska City, Nebr. 25
at Omaha, Nebr. 24
at St. Joseph, Mo. 26
at Sanish, N. Dak. 19
at Sioux City, Iowa 23
at Waverly, Mo. 29
below Hauser Lake Dam, near Helena, Mont. 16
near Mobridge, S. Dak. 21
near Williston, N. Dak. 18
Mizpah, Mont., Powder River near 129
Mobridge, S. Dak., Missouri River near 21
Monida, Mont., Red Rock River near 12-13
Moorcroft, Wyo., Belle Fourche River near 148
Moorhead, Mont., Powder River at 128
Moreau River at Promise, S. Dak. 141
Mosby, Mont., Musselshell River at 63
Musselshell River at Harlowton, Mont. 61
at Mosby, Mont. 63
at Musselshell, Mont. 62
North Fork of, at Delpine, Mont. 60
Musselshell River Basin, Mont., gaging-station records in 60-68

N

Nebraska City, Nebr., Missouri River at 25
Nederland, Colo., North Boulder Creek near 208
Newburg, Mo., Little Piney Creek at 282
Niangua River near Roach, Mo. 275
Niles, Kans., Solomon River at 245
Niobe Creek, Wyo., discharge measurements of 283
Niobrara River near Gordon, Nebr. 157
near Spencer, Nebr. 159
near Valentine, Nebr. 158
Nodaway River near Burlington Junction, Mo. 221
North Boulder Creek, Colo., discharge measurement of 284
near Nederland, Colo. 208
North Chinook Canal near Havre, Mont. 78
North Loup River near St. Paul, Nebr. 218
North Platte River above Pathfinder Reservoir, Wyo. 170
at Casper, Wyo. 172
at Saratoga, Wyo. 169

Page

North Platte River at Douglas, Wyo. 173
at Wyoming-Nebraska line 176
below Guernsey Reservoir, Wyo. 174
below Pathfinder Reservoir, Wyo. 171
below Whalen, Wyo. 175
near Northgate, Colo. 168
near Walden, Colo. 167
North St. Vrain Creek near Allens Park, Colo. 204
Northgate, Colo., North Platte River near 168
Nye, Mont., Stillwater River near 104

O

Oacoma, S. Dak., White River near 155
Oberlin, Kans., Sappa Creek near 233
Ogden, Kans., Kansas River at 228
Omaha, Nebr., Missouri River at 24
Orpha, Wyo., La Prele Creek near 189
Osage River at Trading Post, Kans. 267
at Warsaw, Mo. 268
discharge measurements of 284
near Bagnell, Mo. 269
near Ottawa, Kans. 266
near Quenemo, Kans. 265
Osage (Marais des Cygnes) River Basin, Kans.-Mo., gaging-station records in 265-276
Ottawa, Kans., Osage River near 266
Owl Creek, South Fork of, near Thermopolis, Wyo. 119

P

Pactola, S. Dak., Rapid Creek near 145-146
Painter, Wyo., Sunlight Creek near 108
Panther Creek, Wyo., discharge measurement of 283
Pass Creek near Saratoga, Wyo. 184
Pathfinder Reservoir, Wyo., North Platte River above 170
North Platte River below 171
Petrolia, Mont., Flatwillow Creek at 68
Pfeifer, Kans., Smoky Hill River at 237
Piney Creek near Big Piney, Mo. 281
Platte River at Agency, Mo. 223
at Conception Junction, Mo. 222
near Ashland, Nebr. 178
near Duncan, Nebr. 177
Platte River Basin, Colo.-Wyo.-Nebr., gaging-station records in 166-219
Powder River at Arvada, Wyo. 127
at Moorhead, Mont. 128
Middle Fork of, at Kaycee, Wyo. 130
near Mizpah, Mont. 129
North Fork of, near Kaycee, Wyo. 132
Prairie Dog Creek near Woodruff, Kans. 235
Prickly Pear Creek near Clancy, Mont. 44
Prickly Pear Creek Basin, Mont., gaging-station records in 44-46
Promise, S. Dak., Moreau River at 141
Publications, information concerning 5-9
obtaining or consulting of 6
on stream flow, lists of 7, 9

Q

Quenemo, Kans., Osage River near 265

R Page

Radersburg, Mont., Crow Creek near 43
Randolph, Kans., Big Blue River at 248
Rapid Creek at Creston, S. Dak 147
discharge measurements of 283
near Pactola, S. Dak 145-146
Rawhide Creek near Lingle, Wyo 197
Red Fork near Barnum, Wyo 131
Red Rock River at Metzel Ford, near Monida, Mont 12
below Red Rock Reservoir, near Monida, Mont 13
Redwater Creek near Beulah, Wyo 152
Republican River at Max, Nebr 224
at Scandia, Kans 226
at Wakefield, Kans 227
near Bloomington, Nebr 225
Rich Fountain, Mo., Gasconade River near 280
Rimini, Mont., Tenmile Creek near 45
Riverton, Wyo., Wind River at 109
Roach, Mo., Niangua River near 275
Roaring Fork near Walden, Colo 179
Rock Creek at international boundary 87
Rock Creek near Rock River, Wyo 185
Rock River, Wyo., Rock Creek near 185
Rothville, Mo., Yellow Creek near 261
Ruby River near Alder, Mont 34
Run-off in inches, definition of 2

S

Sac River near Stockton, Mo 272
Saco, Mont., Frenchman Canal near 86
St. Joseph, Mo., Missouri River at 26
St. Paul, Nebr., Middle Loup River at 216
North Loup River near 218
Saline River at Tescott, Kans 242
near Wilson, Kans 241
Sanish, N. Dak., Missouri River at 19
Sappa Creek near Oberlin, Kans 233
Saratoga, Wyo., North Platte River at 169
Pass Creek near 184
Scandia, Kans., Republican River at 226
Scotland, S. Dak., James River near 162
Second-feet per square mile, definition of 2
Second-foot, definition of 2
Shelby, Mont., Marias River near 51
Shields River at Clyde Park, Mont 102
Shoshone Reservoir, Wyo., Shoshone River below 121
Shoshone River at Byron, Wyo 122
below Shoshone Reservoir, Wyo 121
Silverstar, Mont., Jefferson River near 15
Sioux City, Iowa, Missouri River at 23
Smith River at Truly, Mont 50
near White Sulphur Springs, Mont 49
Smoky Hill River at Ellsworth, Kans 238
at Jerome, Kans 236
at Pfeifer, Kans 237
at Solomon, Kans 240
discharge measurement of 284
near Mentor, Kans 239
Soldier Creek at Topeka, Kans 251
Solomon, Kans., Smoky Hill River at 240
Solomon River at Beloit, Kans 244
at Niles, Kans 245
North Fork of, at Kirwin, Kans 246
South Fork of, at Alton, Kans 243

Page

South Boulder Creek near Jefferson Island, Mont 87
South Grand River near Browningtor, Mo 274
South Platte, Colo., North Fork of South Platte River at 201
South Platte River at South Platte, Colo 200
North Fork of, at South Platte, Colo 201
South St. Vrain Creek near Ward, Colo 205
Spencer, Nebr., Niobrara River near 159
Springfield, Mo., Little Sac River near 273
Stage-discharge relation, definition of 2
Stillwater River near Nye, Mont 104
Stotesbury, Mo., Little Osage River at 270
Stockton, Mo., Sac River near 272
Stranger Creek near Tonganoxie, Kans 254
Sumner, Mo., Grand River near 256
Sunlight Creek near Painter, Wyo 108
Sunny, N. Dak., Heart River at 138

T

Tarkio River at Fairfax, Mo 220
Tenmile Creek near Helena, Mont 46
near Rimini, Mont 45
Terms, definition of 2
Tescott, Kans., Saline River at 242
Teton River near Fort Benton, Mont 57
Thermopolis, Wyo., Big Horn River at 110
South Fork of Owl Creek near 119
Thompson River at mouth of canyon, near Drake, Colo 210
at Trenton, Mo 257
below power house, near Drake, Colo 209
Three Forks, Mont., Madison River near 41
Timmer, N. Dak., Cannonball River near 139
Tonganoxie, Kans., Stranger Creek near 254
Tongue River near Dayton, Wyo 124
near Decker, Mont 125
near Miles City, Mont 126
Topeka, Kans., Kansas River at 230
Soldier Creek at 251
Tower Creek at Tower Falls, Yellowstone National Park 99
Trading Post, Kans., Osage River at 267
Trenton, Mo., Thompson River at 257
Truly, Mont., Smith River at 50

U

Utica, Mont., Judith River near 58

V

Valentine, Nebr., Niobrara River near 158
Valier, Mont., Dupuyer Creek near 55
Valley Falls, Kans., Delaware River at 252
Vandalia, Mont., Milk River near 73

W

Wagonhound Creek near La Bonte, Wyo 190
Wakarusa River near Lawrence, Kans 253
Wakefield, Kans., Republican River at 227
Wakpala, S. Dak., Grand River near 140
Walden, Colo., Grizzly Creek near 166
Illinois Creek at 181
Michigan River at 180
North Platte River near 167
Roaring Fork near 179

Page

Wamego, Kans., Kansas River at 229
Ward, Colo., South St. Vrain Creek near 205
Warsaw, Mo., Osage River at 268
Wasta, S. Dak., Cheyenne River near 143
Waterloo, Nebr., Elkhorn River at 219
Waterville, Kans., Little Blue River at 250
Waverly, Mo., Missouri River at 29
Waynesville, Mo., Gasconade River near 278
Wendover, Wyo., Cottonwood Creek at 193
West Yellowstone, Mont., Madison River near 39
Whalen, Wyo., North Platte River below 175
White River near Interior, S. Dak 154
near Oacoma, S. Dak 155
South Fork of, near White River, S. Dak 156
White Sulphur Springs, Mont., Smith River near 49
Whitewater Creek near international boundary 84
Williston, N. Dak., Missouri River near 18
Willow Creek near Crowheart, Wyo 115
near Willow Creek, Mont 38
Wilson, Kans., Saline River near 241
Wind River at Riverton, Wyo 109
Winifred, Mont., Judith River near 59
Woodpile Coulee near international boundary 80
Woodruff, Kans., Prairie Dog Creek near 235
Work, authorization of 1
division of 10–11
scope of 1–2

Y

Yellow Creek near Rothville, Mo 261
Yellowstone Lake at Lake Hotel, Yellowstone National Park 90
Yellowstone National Park, Gardiner River in 101
Lamar River in 100
Tower Creek in 99
Yellowstone Lake in 90
Yellowstone River in 91–93
Yellowstone River at Billings, Mont 96
at Corwin Springs, Mont 94
at Intake, Mont 98
near Livingston, Mont 95
at Miles City, Mont 97
at Yellowstone Lake outlet, Yellowstone National Park 91–92
near Canyon Hotel, Yellowstone National Park 93
Yellowstone River Basin, Mont.-Wyo., gaging-station records in 90–134
Yoder, Wyo., Horse Creek near 199

O