

Quantity and Quality of Surface Waters of Alaska, 1957

*Prepared under the direction of J. V. B. WELLS, Chief, Surface Water Branch, S. K. LOVE,
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PREFACE

This report was prepared by the Geological Survey in the Water Resources Division, L. B. Leopold, chief. The streamflow records were prepared under the general direction of J. V. B. Wells, chief, Surface Water Branch, and F. J. Flynn, chief, Basic Records Section, the data being collected and computed under the supervision of R. E. Marsh, district engineer, Surface Water Branch, Juneau, Alaska. The quality of water records were prepared under the general direction of S. K. Love, chief, Quality of Water Branch, and W. H. Durum, chief, Reports Section, the data being collected and computed under supervision of F. B. Walling, district chemist, Quality of Water Branch, Palmer, Alaska.

CALENDAR FOR WATER YEAR 1957

OCTOBER 1956

S	M	T	W	T	F	S
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NOVEMBER 1956

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DECEMBER 1956

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JANUARY 1957

S	M	T	W	T	F	S
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FEBRUARY 1957

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MARCH 1957

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31						

APRIL 1957

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MAY 1957

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JUNE 1957

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JULY 1957

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AUGUST 1957

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11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

SEPTEMBER 1957

S	M	T	W	T	F	S
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14	15	16	17	18	19	20
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QUANTITY AND QUALITY OF SURFACE WATERS OF ALASKA, 1957

SCOPE OF WORK

This volume contains results of measurements of the flow and the chemical and physical quality of streams in the Territory of Alaska during the water year ending September 30, 1957. Since the beginning of stream-gaging work in Alaska in 1906, records of flow of streams and ditches have been obtained at about 320 gaging stations for periods ranging from a few months to 40 years. On Sept. 30, 1957, the Geological Survey was maintaining 61 gaging stations. Discharge measurements only were made at many other points in the 1957 water year; these are published near the end of the report.

Prior to 1948, records of chemical and physical composition of surface waters in Alaska consisted of a few turbidity measurements of the Copper River near Copper Center, in 1913, and chemical analyses of some surface waters of the Seward Peninsula, in 1914, of Yukon River basin, in 1915, and of the Yukon River at Anvik, 1915 to 1916. In 1948 a continuing chemical-quality program was started by the Geological Survey. Several miscellaneous samples were collected and analyzed that year, and regular sampling stations were established in 1949. During the 1957 water year records of chemical composition of surface waters were obtained at about 69 sites including 5 sites at which daily samples were collected during the open-water period. Sediment records were obtained at 9 sites during the same period.

COOPERATION

Assistance in the form of funds or services was given by the Corps of Engineers, Department of Army, in collecting streamflow records published herein for 5 gaging stations.

Assistance was also furnished by the Bureau of Reclamation of the United States Department of the Interior in the operation of one gaging station.

The city of Seward financed the operation of one gaging station.

DIVISION OF WORK

The stream-gaging work was done by the Water Resources Division of the Geological Survey under the direction of the personnel shown in the preface. The streamflow data were collected and prepared for publication in the Surface Water Branch district office, the address of which is 117 Federal and Territorial Building, Juneau.

The collection of samples for chemical and suspended sediment analyses and water-temperature measurements was under the direction of personnel of Quality of Water Branch assisted by the Surface Water Branch. Chemical and sediment analyses, computation of data, and preparation of records was done by the Quality of Water district office, Palmer, Alaska.

Information of a more detailed nature than that published for most of the gaging stations or sampling stations given in this report is on file in the district offices shown above. Provisional records of discharge prior to publication and other unpublished data concerning the records may usually be obtained from the district offices.

DEFINITION OF TERMS AND ABBREVIATIONS

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

Cubic foot per second (cfs) is the rate of discharge of a stream whose channel is 1 square foot in cross-sectional area and whose average velocity is 1 foot per second.

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

Runoff in inches is the depth to which an area would be covered if all the water draining from it in a given period were uniformly distributed on its surface. The term is used for comparing runoff with rainfall, which is also usually expressed in inches.

Acre-foot is the quantity of water required to cover an acre to the depth of 1 foot and is equivalent to 43,560 cubic feet. The term is commonly used in relation to storage for irrigation.

Cfs-day is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, 1.983471 acre-feet, or 646,317 gallons, and represents a runoff of 0.0372 inch from 1 square mile.

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

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

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

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

Part per million (ppm) is a unit weight of constituent in a million unit weights of solution. The unit has a slightly different meaning when applied to sediment concentrations. A part per million of sediment is computed as one million times the ratio of the weight of sediment of the weight of water-sediment mixture.

Hardness as CaCO₃ is the calcium and magnesium expressed as an equivalent amount of calcium carbonate.

Carbonate hardness is the hardness caused by calcium and magnesium equivalent to the carbonate and bicarbonate.

Noncarbonate hardness is the hardness caused by calcium and magnesium in excess of the carbonate hardness.

Particle-size analyses are expressed in percentages finer than indicated sizes in millimeters. The size classification used in this report is that recommended by the American Geophysical Union Subcommittee on sediment terminology.¹

Specific conductance (micromhos at 25°C) is one million times the reciprocal of specific resistance, at 25°C. Specific resistance is the resistance in ohms of a column of water 1 cm long and 1 square cm in cross section.

¹Lane, E. W., et al., 1947, Report of the Subcommittee on Terminology: Am. Geophys. Union Trans., V. 28, p. 937.

Suspended sediment or suspended load is sediment that moves in suspension in water and is maintained in suspension by the upward components of turbulent currents or as a colloid. Daily sediment loads are expressed in tons per day, and except for subdivided days are usually obtained by multiplying daily mean sediment concentration in parts per million by the daily mean discharge, and the appropriate conversion factor, normally 0.0027.

pH is the negative logarithm of the hydrogen-ion concentration expressed in grams-moles per liter. However, when determined with a pH meter, which is the procedure normally used in Geological Survey laboratories, pH is an expression of the hydrogen-ion activity or the effective hydrogen-ion concentration.

DOWNSTREAM ORDER OF LISTING GAGING AND SAMPLING STATIONS

Gaging and sampling stations in this report are listed in a downstream direction along the main stem. All stations on a tributary entering above a main-stem station are listed before that station. If a tributary enters between two main-stem stations, it is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. To indicate the rank of any tributary on which a gaging or sampling station is situated and the stream to which it is immediately tributary, each indention in the listing of stations in the table of contents of this report represents one rank. This downstream order and system of indention show which gaging or sampling stations are on tributaries between any two stations on a main stem and the rank of the tributary on which each station is situated.

EXPLANATION OF DATA

SURFACE WATER

The base data collected at gaging stations consist of records of stage and measurements of discharge. In addition, observations of factors affecting the stage-discharge relation, weather records, and other information are used to supplement base data in determining the daily flow. The records of stage are obtained either from direct readings on a nonrecording gage or from a water-stage recorder that gives a continuous record of fluctuations. Measurements of discharge are made with a current meter by the general methods adopted by the Geological Survey on the basis of experience in stream gaging since 1888. These methods are described in Water-Supply Paper 888 and are also outlined in standard textbooks on the measurement of stream discharge.

Rating tables giving the discharge for any stage are prepared from stage-discharge relation curves defined by discharge measurements. If extensions to the rating curves are necessary to define the extremes of discharge, they are made on the basis of indirect determinations of peak discharge (such as slope-area or contracted-opening determinations, computation of flow over dams or weirs, and by other methods), velocity-area studies, and logarithmic plotting. The application of the daily mean gage height to those rating tables gives the daily mean discharge, from which the monthly and the yearly mean discharge are computed. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the shifting-control method, in which correction factors based on individual discharge measurements and notes by engineers and observers are used in applying the gage heights to the rating tables. If the stage-discharge relation for

a station is temporarily changed by the presence of aquatic growth or debris on the control, the daily mean discharge is computed by what is essentially the shifting-control method.

At many gaging stations in Alaska the stage-discharge relation is affected by ice during the winter, and it becomes impossible to compute the discharge in the usual manner. Discharge for periods of ice effect is computed on the basis of the gage-height record and occasional winter discharge measurements, consideration being given to the available information on temperature and precipitation, notes by gage observers and engineers, and comparable records of discharge for other stations in the same or nearby basins. If the stage-discharge relation is affected by ice, this information is given in a note to the table. No mention is made of occasional days of ice effect if the degree of accuracy of daily records is not changed.

The streamflow data presented herein comprise a description of the station and a table showing the daily discharge and the monthly and yearly discharge and runoff of the stream. Records are published on basis of the water year which begins on October 1 and ends on September 30.

The description of the station gives the location, drainage area, records available, type and history of gages, average discharge, extremes of discharge, general remarks, and notations of revisions of the previously published record. The location of the gaging station and the drainage area are obtained from the most accurate maps available. Under "Records available" are given the periods for which there are published records generally equivalent to those at the present site. Under "Gage" are given the type of gage currently in use and the datum of the present gage above mean sea level, and a condensed history of the types, locations, and datums of previous gages used during the period of records available. Under "Average discharge" is given the average discharge for the number of years indicated. It is not given for stations having fewer than five complete years of record or for stations where changes in water development during the period of record cause the figure to have little significance. Under "Extremes" are given the maximum discharge and gage height; the minimum discharge if there is little or no regulation; the minimum daily discharge if there is extensive regulation (also the minimum discharge if useful); and the minimum gage height (unless it is of no importance). In the first paragraph the data given are for the complete current year unless otherwise specified. In the second paragraph the data given are for the periods of record within the calendar year dates in the heading (not necessarily those for the complete years indicated by the heading dates). Reliable information concerning major floods that have occurred outside the period of record are given in the third or last paragraph under "Extremes." Unless otherwise qualified, the maximum discharge corresponds to the crest stage obtained by use of a water-stage recorder, a crest-stage indicator, or a nonrecording gage read at the time of the crest. If the maximum gage height did not occur at the same time as the maximum discharge, it is given separately. Information pertaining to the accuracy of the records and conditions which affect the natural flow at the gaging station is given under "Remarks."

Previously published records of some stations have been found to be in error on the basis of data or information later obtained. Revisions of such records are usually published in a subsequent report. In order to make it easier to find such revised records, a paragraph headed "Revisions (water years)" has been added to the description of all stations for which revised records have been published. In this paragraph are listed the

reports in which revisions of daily discharge have been published, each followed by the water years for which figures are revised in that report. In listing the water years only one number is given; for instance, 1933 stands for the water year October 1, 1932, to September 30, 1933. If no daily, monthly, or annual figures of discharge are concerned in the revision, that fact is brought out by notations after the year dates as follows:

"(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. For stations in Alaska, however, monthly discharge for all stations prior to October 1950, were published in Water-Supply Paper 1372. Revisions of many monthly discharges as well as of previously published daily discharges were included in that report. The periods for which monthly discharge only is available and published in Water-Supply Paper 1372, are noted in the "Records available" paragraph. Therefore, the years for which revisions of monthly discharge only were made are not indicated under the "Revisions (water years)" paragraph. If the drainage area has been revised, the report in which the revised figure was first published is given. It should be noted that for all stations for which cubic feet per second per square mile and runoff in inches are published, a revision of the drainage area necessitates corresponding revision of all figures based on the drainage area. /Revised figures of cubic feet per second per square mile and runoff in inches resulting from a revision of the drainage area only are usually not published.

For stations equipped with water-stage recorders, except those on streams subject to sudden or rapid fluctuation, the daily table gives the discharge corresponding to the daily mean gage height. For stations subject to such fluctuation the daily mean gage height may not indicate the true daily mean discharge, which must be obtained by averaging the discharge for parts of the day. For stations equipped with nonrecording gages, the table of daily discharge gives the discharge corresponding to once-daily readings of the gage, or to the mean of twice-daily readings, or to the mean gage height determined from gage-height graphs based on gage readings. For periods of rapidly changing stage, the daily mean discharge is determined from gage-height graphs based on gage readings, the frequency of which is stated in the station description.

In the table of daily discharge, the figures for the maximum day and the minimum day for each month are underlined. If the figure is repeated, it is underlined only on the first day of its occurrence.

In the monthly summary below the daily table, the line headed "Total" gives the sum of the daily figures; it is the total cfs-days for the month. The line headed "Mean" gives the average flow in cubic feet per second during the month. Runoff for the month may be expressed in cubic feet per second per square mile (line headed "Cfsm"), or in inches (line headed "In."), or in acre-feet (line headed "Ac-ft"). Figures of cubic feet per second per square mile and runoff in inches are omitted if the drainage area includes large noncontributing areas, or if the average annual rainfall over the drainage basin is usually less than 20 inches.

In the yearly summary below the monthly summary, the figures of maximum are the maximum daily discharges, not the momentary discharges when the water was at crest stage. Likewise, the minimums in this summary are the minimum daily discharges.

Peak discharges and the times of their occurrence and corresponding gage heights of most stations are listed below the table of daily and monthly discharge. All independent peaks above the selected base are given. The base discharge, which is given in

parentheses, is selected so that an average of about three peaks a year will be presented. Peak discharges are not published for canals, ditches, drains, or for any stream for which the peaks are subject to substantial control by man.

Footnotes to the table of daily discharge indicate periods when discharge was computed or estimated by unusual or special methods during periods of no gage-height record and ice effect, or by other effects that reduce the degree of accuracy of the records. Days on which discharge measurements were made are indicated by asterisk and footnote unless they were made at frequent regular intervals, in which instance the general frequency of discharge measurements is given under "Remarks" in the station description.

QUALITY OF WATER

In general samples for chemical analysis were collected daily at five of the regular sampling stations during the open-water period, and periodically during the period of ice cover. For the daily stations analyses were made of 10-day composites of daily samples. Three composites were prepared each month by combining equal volumes of daily samples collected from the 1st to the 10th, from the 11th to the 20th, and for the remainder of the month. Samples were collected less frequently at many other stations in Alaska.

Samples collected for chemical analysis were analyzed according to methods regularly used by the Geological Survey. The methods are essentially the same as or are modifications of methods described in authoritative publications, for mineral analysis of water.^{1, 2}

The value reported for dissolved solids is usually the residue on evaporation after drying at 180°C for 1 hour. Specific conductance is given for most of the analyses and was determined by means of a conductance bridge using a standard potassium chloride solution as reference.

The streamflow data are reported in two ways: For regular daily stations the daily mean discharge is reported, whereas values given for discharge in the tables of miscellaneous analyses are normally the discharge at the time the sample was collected.

Suspended-sediment samples were collected daily during the open-water season at 4 stations, and periodically at 5 stations. Samples were collected periodically during periods of ice cover at all stations. Daily samples were collected with a US D-49 depth-integrating sampler from a fixed point at one vertical in the cross section. Depth-integrated samples at three or more verticals in the cross section were collected periodically at all sediment stations. Occasionally point-integrated samples were taken with a US P-46 sampler.

Sediment concentrations were determined by weighing the solid residue after filtration or evaporation of the samples. For stations where samples were collected periodically, the concentrations reported are instantaneous concentrations or concentration of composites of several samples. For regular daily stations daily mean concentrations were obtained for the periods during which samples were taken, by plotting the instantaneous concentration on a copy of the gage-height-recorder chart. The plotted concentrations were connected by a continuous curve. Daily mean concentrations were estimated from

¹ American Public Health Assoc., Standard methods for the examination of water and sewage, 9th ed. p. 1-112, 1946.

² Collins, W. D., Notes on practical water analysis; U. S. Geological Survey Water-Supply Paper 596-H, 1928.

the graph. Footnotes to daily values in the tables are used to indicate methods of computation.

In addition to sediment concentrations and loads, records of particle size are reported also for most of the sediment stations. Generally particle size was determined by a combination of sieve analysis and bottom-withdrawal tube analysis (U. S. Inter-agency, 1943). Sizes larger than 0.062 mm (sand-size) were determined by sieve analysis and those smaller than 0.062 mm were determined by bottom-withdrawal tube or pipette analysis. Native or distilled water, as noted in the tables of analyses, was used as the settling medium. Usually distilled water with a dispersing agent was used. Results obtained with distilled water and a dispersing agent as a settling medium approximate the ultimate particle size of the finer fractions, whereas results obtained with native water as the settling medium more nearly simulate the particle size existing in the stream.

For most daily stations, water temperatures were obtained at the time the samples for chemical quality were collected. Where practicable, the water temperatures at a station were determined at about the same time each day in order to minimize diurnal variation of temperature. The thermometer used for temperature determinations was accurate to plus or minus 0.5°F.

The description of the station includes a statement giving the periods for which there are published records of water quality. Extremes for constituents, suspended sediment, and temperature are not given for regular stations owing to the short period of continuous records.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS

The accuracy of streamflow data depends primarily on (1) the stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements, and (2) the accuracy of observations of stage, measurements of discharge, and interpretation of records.

The station description states the degree of accuracy of the discharge records. "Excellent" indicates that, in general, the error in the daily records is believed to be less than 5 percent; "good," less than 10 percent; "fair," less than 15 percent; and "poor," probably more than 15 percent. The records of monthly and yearly mean discharge and runoff are, in general, more nearly accurate than the daily records.

Figures of cubic feet per second per square mile and runoff in inches are published only for stations in southeastern Alaska; they are not published for stations in the rest of the Territory, because the annual precipitation is generally less than 20 inches. Runoff varies widely in Alaska due to great differences in precipitation not only between sections of the Territory, but also at different elevations in the same areas. Generally speaking, annual precipitation is much greater in southeastern Alaska and along the coast to Seward than in the rest of the Territory. Even in southeastern Alaska annual precipitation may range from about 25 inches in the vicinity of Skagway in the northern part to about 150 inches near Ketchikan in the southern part, and may be as high as 180 inches at the southern tip of Baranof Island, all measured at or near sea level. However, precipitation increases with altitude, reaching a maximum at about 4,000 feet elevation. Consequently, runoff in inches as measured at low elevations on streams draining mountainous areas often totals nearly twice the precipitation measured at or near sea level in the same drainage basin. At nearly every gaging station in southeastern Alaska the measured

annual runoff in inches exceeds the annual precipitation as measured at the nearest Weather Bureau station.

PUBLICATIONS

A compilation of records of streamflow in Alaska through September 1950 has been published as WSP 1372. Records prior to 1946 were published in Geological Survey bulletins or water-supply papers or in reports of other agencies. Summary tables in WSP 1372 indicate the reports in which this data was originally published. In some cases the earlier reports contain more detailed information than is published in WSP 1372. That report contains a summary of monthly and annual discharges through September 1946 for all previously published records as well as records of daily and monthly discharge for the years 1946-50, which had not been published previously. All records prior to 1946 were re-examined and revised where warranted. Estimates of discharge were made to fill short gaps whenever practical.

Daily discharge records for water years 1951-53 have been published in WSP 1466.

Daily discharge records for water years 1954-56 have been published in WSP 1486.

The reports referred to above contain, in addition to records of daily discharge at gaging stations, the results of discharge measurements at many points other than regular gaging stations.

Geological Survey reports containing data on quality of surface waters in Alaska prior to 1948 include the following:

Professional Paper 135, Composition of river and lake waters of the United States, 1924.

Bulletin 770, The data of geochemistry, 1924.

Water-Supply Paper 372, A water-power reconnaissance in south-central Alaska, 1915.

Water-Supply Paper 418, Mineral springs of Alaska, 1917.

Records of chemical quality and water temperature obtained from 1948 to September 1950 are presented in WSP 1372.

Records of chemical quality, water temperature, and suspended sediment for water years 1951-53 have been published in WSP 1466.

Records of chemical quality, water temperature, and suspended sediment for water years 1954-56 have been published in WSP 1486.

SOUTHEASTERN ALASKA

Winstanley Creek near Ketchikan

Location.--Lat 55°25', long 130°52', on right bank 0.3 mile downstream from Lower Winstanley Lake, 1.1 miles upstream from mouth, and 31 miles east of Ketchikan.

Drainage area.--13 sq mi, approximately.

Records available.--August 1936 to September 1938, August 1947 to September 1957. Monthly discharge only for some periods, published in WSP 1372.

Gage.--Water-stage recorder. Altitude of gage is 290 ft (by barometer).

Average discharge.--12 years, 152 cfs (110,000 acre-ft per year).

Extremes.--Maximum discharge during year, 814 cfs Dec. 25 (gage height, 3.46 ft); minimum, 10 cfs Feb. 7, 8 (gage height, 0.72 ft).

1936-38, 1947-57: Maximum discharge, 1,900 cfs Feb. 7 or 8, 1954 (gage height, 5.1 ft); minimum, 6.0 cfs Jan. 12, 1956 (gage height, 0.58 ft).

Flood sometime during period October 1938 to July 1947 reached a stage of 4.85 ft, from high-water mark in gage well (discharge, about 1,800 cfs).

Remarks.--Records good. Upper and Lower Winstanley Lakes above gage have areas of 465 and 175 acres, respectively.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	198	65	126	255	12	25	58	191	244	224	112	55
2	220	77	241	201	12	23	93	201	227	182	95	59
3	207	241	214	150	12	22	142	224	217	155	83	56
4	281	255	160	119	11	20	152	224	210	160	72	51
5	323	194	121	104	11	18	140	207	201	168	68	54
6	640	148	93	110	11	18	117	182	201	155	110	81
7	521	114	80	102	10	18	99	*163	194	142	145	114
8	*331	124	68	85	10	18	86	168	180	124	133	135
9	248	355	60	70	11	18	77	198	163	*112	112	142
10	238	577	*52	59	12	20	71	220	145	108	93	133
11	292	433	46	51	13	*21	67	220	145	110	80	112
12	446	428	41	45	19	22	62	207	234	128	89	95
13	433	360	41	39	59	21	59	191	312	128	177	80
14	372	255	39	35	106	21	54	185	277	119	191	70
15	327	227	35	*33	106	20	59	194	230	128	160	60
16	285	220	32	29	95	20	70	194	194	148	128	*51
17	266	227	47	28	89	20	72	198	174	148	102	46
18	368	182	112	25	86	23	80	227	165	133	83	40
19	327	148	201	23	77	28	86	259	160	117	71	36
20	277	182	259	22	66	39	85	248	155	106	60	33
21	230	500	210	20	58	46	81	252	158	97	52	32
22	188	598	174	18	48	48	102	248	180	142	49	31
23	150	389	194	18	44	51	121	227	227	214	51	30
24	148	285	350	16	38	53	119	198	266	220	55	29
25	168	227	759	14	33	51	114	191	259	300	59	28
26	142	180	770	14	31	48	140	296	312	331	56	26
27	112	142	715	13	29	44	207	402	347	270	51	30
28	99	119	683	12	27	39	252	442	323	201	47	42
29	88	97	488	17	-	36	262	376	270	158	43	298
30	78	86	385	13	-----	39	217	315	248	130	39	478
31	70	-----	315	13	-----	46	-----	270	-----	126	40	-----
Total	8,073	7,435	7,111	1,748	1,136	936	3,342	7,318	6,619	4,982	2,706	2,527
Mean	260	248	229	56.4	40.8	30.2	111	236	221	161	87.3	84.2
Cfsm	20.0	19.1	17.6	4.34	3.12	2.32	8.54	18.2	17.0	12.4	6.72	6.48
In.	23.09	21.27	20.34	5.00	3.25	2.68	9.56	20.94	18.94	14.25	7.74	7.23
Ac-ft	16,010	14,750	14,100	3,470	2,250	1,860	6,630	14,520	13,130	9,880	5,370	5,010

Calendar year 1956: Max 1,490 Min 6.5 Mean 160 Cfsm 12.3 In. 187.59 Ac-ft 116,200
 Water year 1956-57: Max 770 Min 10 Mean 148 Cfsm 11.4 In. 154.29 Ac-ft 107,000

Peak discharge (base, 650 cfs).--Oct. 6 (2 p.m.) 693 cfs (3.28 ft); Nov. 22 (1 a.m.) 683 cfs (3.24 ft); Dec. 25 (12 m.) 814 cfs (3.46 ft).

* Discharge measurement made on this day.

Harding River near Wrangell

Location.--Lat 56°13', long 131°38', on right bank 1 mile upstream from mouth on north shore of Bradfield Canal, 4 miles downstream from Fall Lake, and 34 miles southeast of Wrangell.

Drainage area.--95 sq mi, approximately.

Records available.--August 1951 to September 1957.

Gage.--Water-stage recorder. Altitude of gage is 20 ft (by barometer).

Average discharge.--6 years, 700 cfs (506,800 acre-ft per year).

Extremes.--Maximum discharge during year, 8,090 cfs Sept. 30 (gage height, 12.65 ft); minimum not determined.

1951-57: Maximum discharge, 9,820 cfs Oct. 2, 1952 (gage height, 13.84 ft), from rating curve extended above 4,500 cfs; minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Fall Lake, at elevation 182 ft, has an area of 170 acres.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,020	165	1,570	514				498	1,360	1,250	966	898
2	610	238	952	380				840	1,550	1,120	854	604
3	628	338	460	313				861	1,660	1,040	952	536
4	*1,240	285		265				805	1,660	1,450	1,140	574
5	896	207		242				666	1,610	1,930	1,220	826
6	2,910	183		228				588	1,840	1,270	1,300	1,420
7	1,150	172		201				804	1,750	*1,320	1,100	1,370
8	705	289				(*)		661	1,410	952	952	1,100
9	1,470	1,220						1,000	1,250	856	1,060	1,150
10	1,300	1,180						1,090	1,180	1,310	1,060	994
11	1,650	628	160				190	*1,040	1,240	1,160	1,000	1,440
12	1,300	889						987	1,990	1,570	1,200	889
13	889	481						924	1,800	1,530	1,090	744
14	875	352						1,040	1,490	1,150	875	*640
15	698	375			90	80		1,220	1,340	1,150	826	508
16	580	380						1,240	1,220	1,100	854	425
17	764	390						1,160	1,280	1,040	784	361
18	1,290	273						1,540	1,330	1,150	770	313
19	640	234		85				1,690	1,170	1,100	718	297
20	503	508						1,450	1,180	1,060	660	352
21	455	2,190						1,240	1,160	1,020	616	430
22	390	1,350					400	1,090	1,170	1,300	712	580
23	317	692	950				366	966	1,770	1,900	784	460
24	293	622					321	903	1,180	2,080	686	390
25	289	547					366	847	1,090	2,520	580	352
26	238	574					380	1,120	1,560	1,690	520	361
27	204	542	1,260				654	1,100	2,010	1,150	481	492
28	204	430	1,740				592	1,200	2,020	854	465	2,140
29	192	370	1,120				542	938	1,640	819	455	4,750
30	178	508	882				425	1,020	1,670	840	455	4,990
31	172	-----	679		-----		-----	1,180	-----	963	660	-----
Total	23,950	16,612	17,873	4,183	2,520	2,480	8,016	31,706	44,580	39,347	25,795	30,384
Mean	773	554	577	135	90	80	267	1,023	1,486	1,263	832	1,013
Cfsm	8.14	5.85	6.07	1.42	0.947	0.942	2.61	10.8	15.6	15.4	8.76	10.7
In.	9.38	6.50	7.00	1.64	0.99	0.97	3.14	12.41	17.45	15.40	10.10	11.89
Ac-ft	47,500	32,950	35,450	8,300	5,000	4,920	15,900	62,890	88,420	78,040	51,160	60,270

Calendar year 1956: Max 4,260 Min - Mean 722 Cfsm 7.60 In. 103.47 Ac-ft 524,200
 Water year 1956-57: Max 4,990 Min - Mean 678 Cfsm 7.14 In. 96.87 Ac-ft 490,800

Peak discharge (base, 3,500 cfs).--Oct. 6 (6:30 a.m.) 4,200 cfs (9.75 ft); Sept. 30 (8:30 p.m.) 8,090 cfs (12.65 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 4-26, Jan. 8 to Feb. 23. No gage-height record Feb. 24 to Apr. 21 (stage-discharge relation affected by ice during most of period); discharge estimated on basis of 1 discharge measurement, weather records, and records for stations on nearby streams.

Cascade Creek near Petersburg

Location.--Lat 57°01', long 132°47', on right bank 0.25 mile upstream from mouth on east shore of south arm of Thomas Bay, $2\frac{1}{2}$ miles downstream from Swan Lake, and 15 miles northeast of Petersburg.

Drainage area.--23.0 sq mi.

Records available.--October 1917 to November 1928, October 1946 to September 1957. Monthly discharge only for some periods, published in WSP 1372. Prior to October 1920, published as "at Thomas Bay, near Petersburg."

Gage.--Water-stage recorder. Altitude of gage is 120 ft (by barometer). Prior to October 1946, at different datum.

Average discharge.--22 years, 244 cfs (176,600 acre-ft per year).

Extremes.--Maximum discharge during year, 2,350 cfs Sept. 30 (gage height, 8.58 ft), from rating curve extended above 1,000 cfs; minimum, 30 cfs Mar. 28, caused by temporary storage behind ice jam upstream.
1917-28, 1946-57: Maximum discharge, 3,280 cfs Sept. 11, 1947 (gage height, 10.0 ft, from floodmarks), from rating curve extended above 1,000 cfs; minimum, 11 cfs Mar. 27, 1948, Mar. 27, 1954, and Mar. 20, 21, 1956, caused by temporary storage behind ice jam upstream; minimum gage height, 0.68 ft Mar. 27, 1948.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Swan Lake, at elevation about 1,500 ft, has an area of 614 acres and a drainage area of 18.9 sq mi.

Revisions.--WSP 1372: Drainage area.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	277	78	616	201			38	23	362	418	352	370
2	231	95	395	182	a38		55	104	436	398	352	328
3	*191	93	275	139			63	92	505	390	360	289
4	213	84	193	125	38	a35	55	114	553	514	388	285
5	225	80	156	117	38		52	99	565	583	418	320
6	378	78	134	105	37		41	100	598	*517	418	511
7	320	80	120	94	62	*34	41	114	598	445	392	586
8	305	117	111		44	34	53	153	559	382	365	481
9	580	157	102		42	34	48	195	514	342	392	487
10	550	151	94		42	34	45	240	481	352	410	592
11	535	140	89		69	35	42	269	478	380	427	620
12	430	154	87		54	34	40	*271	606	439	445	490
13	311	133	83		45	34	38	271	577	439	436	*430
14	287	124	79		43	34	37	293	511	415	395	390
15	255	117	75		41	34	44	345	460	398	370	320
16	213	111	74		51	34	50	365	427	378	368	265
17	206	104	85		49	34	47	370	460	370	365	223
18	236	95	101		38	38	48	421	478	378	358	196
19	187	104	97		36	36	49	493	457	382	358	198
20	158	203	93	a50	36	34	48	520	457	385	318	210
21	146	499	85		36	34	49	505	433	405	305	251
22	132	400	83		36	34	56	451	421	457	328	283
23	117	348	92		36	33	52	598	508	538	355	285
24	108	338	214		36	32	53	362	454	718	345	236
25	102	382	216		36	32	59	380	410	809	315	220
26	95	511	251			32	62	448	410	630	295	223
27	90	385	481		a35	32	84	421	496	490	279	420
28	88	291	499			31	69	433	520	392	261	1,280
29	86	231	430		-	32	70	365	514	345	251	1,650
30	84	477	352		-----	34	62	340	454	342	246	2,040
31	82	-----	269		-----	36	-----	348	-----	340	281	-----
Total	7,218	6,160	6,011	2,143	1,164	1,055	1,550	9,363	14,722	13,771	10,928	14,439
Mean	233	205	194	69.1	41.6	34.0	51.7	302	491	444	353	481
Cfs/m	10.1	8.91	8.43	3.00	1.81	1.48	2.25	13.1	21.3	19.3	15.3	20.9
In.	11.67	9.96	9.72	3.47	1.88	1.71	2.51	15.14	23.80	22.27	17.67	23.35
Ac-ft	14,320	12,220	11,920	4,250	2,310	2,090	3,070	18,570	29,200	27,310	21,680	28,640

Calendar year 1956: Max 1,100 Min 13 Mean 252 Cfs/m 11.0 In. 149.40 Ac-ft 183,300
Water year 1956-57: Max 2,040 Min 31 Mean 243 Cfs/m 10.6 In. 143.15 Ac-ft 175,600

Peak discharge (base, 1,100 cfs).--Sept. 30 (5:30 a.m.) 2,350 cfs (8.58 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage, weather records, and records for stations on nearby streams.

Long River near Juneau

Location.--Lat 58°10'00", long 133°41'50", on right bank three-eighths of a mile upstream from Indian Lake, 1 mile downstream from Long Lake, and 27 miles southeast of Juneau.

Drainage area.--32.5 sq mi.

Records available.--October 1915 to September 1924, October to December 1926, June 1927 to May 1933, October 1951 to September 1957. Monthly discharge only for some periods, published in WSP 1372. Prior to January 1921, published as "below Second Lake, at Port Snettisham."

Gage.--Water-stage recorder. Altitude of gage is 183 ft (from topographic map). Prior to Oct. 1, 1929, at site 600 ft upstream at different datum.

Average discharge.--20 years (1915-24, 1927-32, 1951-57), 455 cfs (329,400 acre-ft per year).

Extremes.--Maximum discharge during year, 5,310 cfs Sept. 30 (gage height, 10.56 ft), from rating curve extended above 2,100 cfs by logarithmic plotting; minimum observed, 28 cfs Mar. 28 (discharge measurement).

1915-24, 1927-33, 1951-57: Maximum discharge, 6,000 cfs Sept. 10, 1927 (gage height, 10.2 ft, site and datum then in use), from rating curve extended above 1,700 cfs by logarithmic plotting; minimum recorded, 22 cfs Mar. 22, 1933.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor.

Revisions.--WSP 1372: Drainage area.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	618	114	1,140	427				166	555	706	798	1,070
2	506	136	766	323			45	188	625	734	782	917
3	450	196	516	262				206	698	770	766	750
4	464	175	368	227			64	257	774	899	834	667
5	420	152	285	216			59	285	850	1,060	886	664
6	538	155	233				59	283	944	935	866	770
7	474	159	196				74	285	971	794	794	917
8	424	186	171				100	307	953	698	790	908
9	568	325					100	328	926	650	866	1,200
10	632	356					83	353	874	850	944	1,820
11	854	312					90	368	810	702	958	1,780
12	702	345					79	368	930	904	917	1,280
13	520	290					74	374	*971	917	862	1,050
14	510	253					64	414	866	810	786	894
15	499	225					70	450	822	746	762	723
16	402	220	100		45	35	70	530	822	726	778	604
17	331	196					74	611	814	720	786	499
18	380	171		90			75	628	778	730	770	411
19	312	186					76	730	758	774	766	359
20	262	235					80	806	762	810	802	356
21	246	698					84	734	842	790	826	569
22	216	766					103	684	810	786	958	826
23	186	786					101	639	758	935	953	953
24	168	994					96	576	712	1,510	858	790
25	146	1,190	320				116	548	684	1,510	766	646
26	128	1,200	380				128	608	702	1,040	702	576
27	118	976	704				122	674	786	858	656	712
28	125	738	1,510				101	667	798	750	628	1,490
29	130	594	1,170				162	566	738	716	639	2,020
30	136	706					175	499	709	730	688	4,510
31	127	---	597				---	492	---	770	842	---
Total	11,590	13,035	10,758	3,795	1,260	1,085	2,614	14,824	24,042	25,730	25,029	30,731
Mean	374	434	347	122	45.0	35.0	87.1	472	801	830	807	1,024
Cfs/m	11.5	13.4	10.7	3.75	1.38	1.08	2.68	14.5	24.6	25.5	24.8	31.5
In.	13.26	14.92	12.31	4.34	1.44	1.24	2.99	16.73	27.51	29.44	28.64	35.17
Ac-ft	22,990	25,850	21,340	7,530	2,500	2,150	5,180	29,010	47,690	51,030	49,640	60,950

Calendar year 1956: Max 2,250 Min - Mean 456 Cfs/m 14.0 In. 191.13 Ac-ft 331,300
 Water year 1956-57: Max 4,510 Min - Mean 450 Cfs/m 13.8 In. 187.99 Ac-ft 325,900

Peak discharge (base, 2,000 cfs).--Sept. 10 (7 p.m.) 2,080 cfs (6.45 ft); Sept. 30 (9 a.m.) 5,310 cfs (10.56 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 9-11, Jan. 6-11. No gage-height record Dec. 12-24, Jan. 12 to Apr. 3 (stage-discharge relation affected by ice during most of period); discharge estimated on basis of 1 discharge measurement, weather records, and records for Dorothy Creek near Juneau.

Dorothy Creek near Juneau

Location.--Lat 58°13'40", long 134°02'25", on left bank 0.7 mile downstream from Lake Bart, 0.8 mile upstream from mouth, 3 miles downstream from Lake Dorothy, and 14 miles south-east of Juneau.

Drainage area.--15.2 sq mi.

Records available.--October 1929 to October 1941, September 1942 to December 1943, June 1944 to September 1957. Monthly discharge only for some periods, published in WSP 1372.

Gage.--Water-stage recorder. Altitude of gage is 350 ft (from topographic map). Prior to Sept. 14, 1937, at site 100 ft upstream from mouth at different datum.

Average discharge.--26 years (1929-41, 1942-43, 1944-57), 143 cfs (103,500 acre-ft per year).

Extremes.--Maximum discharge during year, 898 cfs Sept. 30 (gage height, 4.58 ft); minimum observed, 12 cfs Mar. 27 (discharge measurement).
1929-41, 1942-57: Maximum discharge, 1,780 cfs Nov. 3, 1949 (gage height, 5.85 ft), from rating curve extended above 560 cfs; minimum recorded, 6 cfs Mar. 23, 25, 28, 1933.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Dorothy Lake (area, 952 acres) lies at an altitude of 2,423 ft, less than 4 miles from mouth of Dorothy Creek; Lieuy Lake (area, 80 acres) lies at an altitude of 1,711 ft; and Bart Lake (area, 250 acres) lies at an altitude of 986 ft.

Revisions.--WSP 1372: Drainage area.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	154	52		150	19			23	152	233	240	258
2	150	52		130	19			28	154	233	237	268
3	145	51		*124	19			32	160	240	230	261
4	141	49		120	18			37	164	261	230	247
5	134	47		117	18			39	172	300	233	233
6	134	45		108	18		b15	40	183	311	240	237
7	128	43		101	17			43	195	300	247	261
8	128	46		94	17			48	214	279	247	275
9	141	52		88	17			53	227	258	247	297
10	143	49		80	17			60	240	237	250	398
11	150			70		b15		65	244	227	258	515
12	154			63				71	258	230	261	472
13	152			57				74	275	233	264	411
14	157			51				80	293	233	261	366
15	152			47				88	307	227	254	323
16	145	55	60			b16		97	311	220	244	289
17	143			42				104	304	214	237	254
18	139			36				119	297	210	233	227
19	130			33		b17		130	286	210	230	207
20	122			30				143	272	217	230	192
21	117		45	28			19	152	275	224	233	186
22	108		44	28			19	157	268	233	250	186
23	102		48	26			20	160	264	244	279	195
24	94	130	60	25			21	*162	254	*286	300	204
25	86		90	24			21	162	247	346	297	207
26	80		140	23		b13	21	162	240	358	282	204
27	72	*167	200	22		(*)	24	164	237	334	261	207
28	67	170	230	21			22	164	240	304	240	230
29	62	170	210	20			22	162	240	279	230	310
30	60	165	190	20			22	157	233	258	227	708
31	56		170	20				154		247	237	
Total	3,746	2,488	3,127	1,837	485	443	521	3,130	7,206	7,986	7,709	8,628
Mean	121	82.9	101	59.3	17.3	14.3	17.4	101	240	258	249	288
Cfsm	7.96	5.45	6.64	3.90	1.14	0.941	1.14	6.64	15.8	17.0	16.4	18.9
In.	9.17	6.09	7.65	4.49	1.19	1.08	1.27	7.66	17.63	19.54	18.86	21.11
Ac-ft	7,430	4,930	6,200	3,640	962	879	1,030	6,210	14,290	15,840	15,290	17,110

Calendar year 1956: Max 792 Min - Mean 136 Cfsm 8.95 In. 121.93 Ac-ft 98,810
Water year 1956-57: Max 708 Min - Mean 130 Cfsm 8.55 In. 115.74 Ac-ft 93,810

Peak discharge (base, 400 cfs).--Sept. 11 (1 p.m.) 525 cfs (3.90 ft); Sept. 30 (11 p.m.) 698 cfs (4.58 ft).

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 10-26, Nov. 29 to Jan. 2; discharge estimated on basis of recorded range in stage, weather records, and records for Gold Creek at Juneau.

Carlson Creek near Juneau

Location.--Lat 58°19'00", long 134°10'15", on left bank between two unnamed tributaries, $\frac{1}{2}$ miles upstream from mouth, $\frac{1}{2}$ miles downstream from Sheep Fork, and $8\frac{3}{4}$ miles east of Juneau.

Drainage area.--24.3 sq mi.

Records available.--July 1951 to September 1957.

Gage.--Water-stage recorder. Altitude of gage is 130 ft (from topographic map).

Average discharge.--6 years, 320 cfs (231,700 acre-ft per year).

Extremes.--Maximum discharge during year, 4,500 cfs Sept. 30 (gage height, 9.55 ft), from rating curve extended above 2,000 cfs; minimum not determined.
1951-57: Maximum discharge, that of Sept. 30, 1957; minimum not determined.

Remarks.--Records good except those for periods of no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	529	66	950	210				108	644	568	445	400
2	388	86	340	167				180	727	599	394	267
3	350	112	200	*152				238	850	596	409	215
4	372	76	150	113				261	885	1,040	470	205
5	297	68	100	143			(*)	234	975	784	430	253
6	541	88		108				202	980	536	394	352
7	316	93						251	940	473	352	456
8	311	140					50	385	880	459	406	476
9	635	382						382	852	459	480	885
10	674	342						372	723	543	448	1,520
11	959	210	50	60				372	644	727	380	679
12	430	215						360	1,110	798	365	394
13	302	150						352	856	543	333	375
14	309	118						385	699	445	278	302
15	355	97						456	727	470	297	232
16	285	94			25	17		36	613	703	522	295
17	241	79						40	610	648	522	293
18	403	72						42	885	616	522	269
19	247	140						46	930	654	630	290
20	185	283						53	766	655	532	257
21	169	1,750	30					63	687	861	522	293
22	136	687						72	613	627	560	557
23	113	771						75	494	806	1,060	394
24	103	1,420		28				85	*439	610	*1,260	318
25	88	1,670						102	462	667	703	271
26	76	*1,440	150					126	695	667	574	238
27	79	955	430					224	675	789	436	224
28	89	560	2,170		(*)	(*)		160	596	638	424	207
29	78	532	880					108	466	550	462	271
30	74	719	433					97	439	560	470	284
31	68		302					522		494	571	
Total	9,182	13,414	6,905	1,861	700	527	2,079	14,430	22,303	18,633	10,913	16,016
Mean	296	447	223	60.0	25	17	69.3	465	743	602	352	534
Cfsm	12.2	18.4	9.18	2.47	1.03	0.700	2.85	19.1	30.6	24.8	14.5	22.0
In.	14.05	20.53	10.57	2.85	1.07	0.81	3.18	22.08	34.13	28.55	16.70	24.51
Ac-ft	18,210	26,610	13,700	3,690	1,390	1,050	4,120	28,620	44,240	37,000	21,650	31,770

Calendar year 1956: Max 2,170 Min - Mean 329 Cfsm 13.5 In. 184.51 Ac-ft 239,100
Water year 1956-57: Max 2,170 Min - Mean 321 Cfsm 13.2 In. 179.03 Ac-ft 232,000

Peak discharge (base, 2,500 cfs).--Nov. 21 (2 p.m.) 2,790 cfs (7.04 ft); Dec. 28 (8:30 a.m.) 2,690 cfs (6.87 ft); Sept. 30 (3 a.m.) 4,500 cfs (9.55 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Dec. 2-25, Jan. 7 to Apr. 15 (stage-discharge relation affected by ice during most of period); discharge estimated on basis of 3 discharge measurements, weather records, and records for Gold Creek at Juneau.

Sheep Creek near Juneau

Location.--Lat 58°16'30", long 134°18'50", on right bank 0.3 mile upstream from diversion dam of Alaska-Juneau Gold Mining Co.'s Sheep Creek powerplant, 1 mile northeast of Thane, 1½ miles upstream from mouth, and 4 miles southeast of Juneau.

Drainage area.--4.30 sq mi.

Records available.--January 1911 to December 1913, August 1916 to December 1920, October 1946 to September 1957. Monthly discharge only for some periods, published in WSP 1372. Prior to 1946, published as "near Thane."

Gage.--Water-stage recorder and wooden control. Datum of gage is 643.5 ft above mean sea level (levels by Conservation Division, U. S. Geological Survey). Prior to August 1916, staff gage at same site and datum.

Average discharge.--17 years, 46.3 cfs (33,520 acre-ft per year).

Extremes.--Maximum discharge during year, 466 cfs Sept. 30 (gage height, 2.52 ft); no flow Mar. 21-31.

1911-13, 1916-20, 1946-57: Maximum discharge, 840 cfs Sept. 8, 1948 (gage height, 3.60 ft); no flow at times at gage site but probably some flow at all times at diversion dam 0.3 mile downstream (records for period 1916-20 based on measurements at diversion dam).

Remarks.--Records good except those for periods of no gage-height record, which are poor.

Revisions.--WSP 1372: Drainage area.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	66	17	139	64				22	87	66	49	29
2	55	18		53				33	89	68	41	22
3	53	16		45				43	94	66	43	19
4	62	16		36				46	97	97	53	19
5	53	15		36				41	104	89	45	23
6	75	14	52	30				36	115	72	39	27
7	57	14		26				41	107	66	35	27
8	66	14		23		(*)		46	99	62	*39	30
9	94	34		21				55	97	80	45	66
10	92	35		*19				55	82	60	43	175
11	107	33					1.5	55	75	70	38	97
12	82	45						51	123	94	33	64
13	68	33						49	99	64	27	53
14	82	28						53	87	51	24	43
15	82	25						70	84	49	27	36
16	*68	24	15		4.0			82	82	45	27	31
17	60	22						82	77	45	25	26
18	68	19						112	77	48	24	23
19	55	21						117	77	51	25	24
20	46	38						112	77	46	23	24
21	43	142		11				94	107	53	23	64
22	36	94					10	80	84	64	29	89
23	33	84	12				*11	68	80	102	26	89
24	28	184					14	62	82	94	24	55
25	25	213	33				16	66	82	72	22	43
26	23	231	41			0	20	77	*84	60	20	39
27	22	172	82				34	80	97	53	19	60
28	21	120	280				26	80	80	49	18	72
29	19	102	136				23	68	70	55	29	141
30	19	*117	102				22	68	66	55	32	216
31	18		82					75		55	35	
Total	1,678	1,948	1,561	586	112.0	30.0	260.5	2,019	2,661	1,983	983	1,724
Mean	54.1	64.9	50.4	18.9	4.0	0.97	8.68	65.1	88.7	64.0	31.7	57.5
Cfs/m	12.6	15.1	11.7	4.40	0.930	0.226	2.02	15.1	20.6	14.9	7.37	13.4
In.	14.51	16.85	13.50	5.07	0.97	0.26	2.25	17.46	23.01	17.15	8.50	14.91
Ac-ft	3,330	3,860	3,100	1,160	222	60	517	4,000	5,280	3,930	1,950	3,420

Calendar year 1956: Max 280 Min 0 Mean 45.2 Cfs/m 10.5 In. 143.10 Ac-ft: 32,820
 Water year 1956-57: Max 280 Min 0 Mean 42.6 Cfs/m 9.91 In. 134.44 Ac-ft: 30,830

Peak discharge (base, 460 cfs).-- Sept. 30 (4:30 a.m.) 466 cfs (2.52 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Dec. 2-24, Jan. 7 to Apr. 22; discharge estimated on basis of 2 discharge measurements, weather records, and records for Gold Creek at Juneau.

Gold Creek at Juneau

Location.--Lat 58°18'25", long 134°24'05", on left bank 10 ft downstream from highway bridge, 150 ft upstream from Alaska Electric Light and Power Co. dam and diversion, half a mile northeast of Juneau, and 1 mile upstream from mouth.

Drainage area.--9.76 sq mi.

Records available.--July 1916 to December 1920, October 1946 to September 1948, October 1949 to September 1957.

Gage.--Water-stage recorder. Altitude of gage is 245 ft (from topographic map). July 20, 1916, to Dec. 31, 1920, water-stage recorder at site 50 ft upstream at different datum. Sept. 11, 1946, to Sept. 30, 1948, staff gage at site 0.7 mile downstream at different datum.

Average discharge.--14 years (1916-20, 1946-48, 1949-57), 104 cfs (75,290 acre-ft per year).

Extremes.--Maximum discharge during year, 1,320 cfs Sept. 30 (gage height, 5.83 ft); minimum daily, 2.3 cfs Mar. 28, 29.
1916-20, 1946-48, 1949-57: Maximum discharge, 2,600 cfs Sept. 26, 1918 (gage height, 6.8 ft, site and datum then in use), from rating curve extended above 520 cfs; no flow at times during 1951 and 1956.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. One small diversion above station for domestic water supply.

Revisions.--WSP 1372: Drainage area.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	146	20	347	89	7.2	3.0	3.9	27	230	201	146	104
2	118	24	203	69			(*)	13	46	260	211	125
3	110	26	140	58			23	*72	277	208	134	60
4	112	22	110	50			23	83	290	319	176	65
5	94	*20	90	48			15	70	327	273	152	85
6	141	24	75	38	5.4	2.7	11	60	339	195	140	104
7	103	23	60	b33			9.4	63	315	170	117	109
8	110	31	52	*28			9.4	92	298	158	128	128
9	197	98	45	26			9.4	101	290	158	161	221
10	191	90	40	25			9.1	104	260	167	161	*466
11	270	77	35	20	4.4	2.5	8.8	106	244	247	131	221
12	158	108	31				8.1	104	359	290	106	128
13	130	70	28				7.8	101	284	195	92	117
14	141	55	*26				7.5	122	247	152	*78	94
15	133	46	23				7.5	170	247	146	89	74
16	110	39	21	11	2.5	2.5	9.1	214	247	143	92	61
17	98	31	20				10	224	234	149	87	52
18	122	28	19				11	298	230	152	83	45
19	92	35	18				12	312	230	195	89	50
20	77	100	17				13	273	237	158	74	60
21	72	*526	16	11	2.5	2.5	16	*234	315	170	83	170
22	58	262	15				21	195	250	195	146	234
23	54	224	20				19	155	237	300	104	232
24	48	467	30				21	140	224	304	83	101
25	40	615	b50				24	155	234	*217	74	81
26	32	610	b90	11	2.5	2.5	26	214	240	161	63	81
27	29	426	b130				2.5	63	221	*277	134	61
28	29	298	*633				38	214	237	125	*60	204
29	26	273	273				29	179	201	146	109	464
30	24	290	167				2.5	25	170	195	158	112
31	23	-----	*122	-----	-----	-----	2.8	-----	188	-----	161	152
Total	5,098	4,958	2,946	785	161.2	85.4	503.0	4,707	7,855	5,958	3,408	4,635
Mean	99.9	165	95.0	25.3	5.76	2.75	16.8	152	262	192	110	154
Cfs/m	10.2	16.9	9.73	2.59	0.590	0.282	1.72	15.6	26.8	19.7	11.3	15.8
In.	11.80	18.69	11.23	2.99	0.61	0.33	1.92	17.94	29.93	22.70	12.99	17.66
Ac-ft	6,140	9,830	5,840	1,560	320	169	998	9,340	15,580	11,820	6,760	9,190

Calendar year 1956: Max 633 Min 0 Mean 109 Cfs/m 11.2 In. 151.88 Ac-ft 79,050
Water year 1956-57: Max 633 Min 2.3 Mean 107 Cfs/m 11.0 In. 148.99 Ac-ft 77,550

Peak discharge (base, 600 cfs).--Nov. 21 (2:15 p.m.) 686 cfs (4.21 ft); Nov. 25 (8 p.m.) 806 cfs (4.43 ft); Dec. 28 (10 a.m.) 875 cfs (4.93 ft); Sept. 10 (12:30 p.m.) 750 cfs (4.48 ft); Sept. 30 (3 a.m.) 1,320 cfs (5.83 ft).

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 3-24, Jan. 8 to Mar. 25 (stage-discharge relation affected by ice during most of period); discharge estimated on basis of 11 discharge measurements, weather records, and records for stations on nearby streams.

Lemon Creek near Juneau

Location.--Lat 58°23'30", long 134°25'15", on left bank a quarter of a mile upstream from Canyon Creek, 4½ miles upstream from mouth, and 6 miles north of Juneau.

Drainage area.--12.1 sq mi.

Records available.--August 1951 to November 1953, July 1954 to September 1957.

Gage.--Water-stage recorder. Altitude of gage is 650 ft (from topographic map).

Average discharge.--5 years, 147 cfs (106,400 acre-ft per year).

Extremes.--Maximum discharge during year, 1,970 cfs Sept. 30 (gage height, 3.97 ft), from rating curve extended above 650 cfs by logarithmic plotting; minimum not determined.
1951-57: Maximum discharge, 2,080 cfs Sept. 14, 1952 (gage height, 4.08 ft), from rating curve extended above 650 cfs by logarithmic plotting; minimum not determined.

Remarks.--Records good except those for periods of no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	76		118						162	306	387	476
2	62								195	330	344	348
3	63								215	327	404	338
4	65								231	422	520	400
5	43	9						35	279	413	422	472
6	60		40						320	327	391	449
7	43								310	296	395	449
8	54	24							306	299	485	436
9	158	36					6	51	306	296	626	720
10	152	23					(*)	56	279	282	644	1,180
11	160	22						58	264	391	495	783
12	96	24						58	310	436	408	500
13	66							61	355	348	387	568
14	62							76	338	306	367	422
15	53							95	352	279	444	327
16	42	15	10	14	5	3		120	334	*276	426	264
17	39							178	330	310	383	220
18	44							270	310	313	355	172
19	32							296	302	413	355	185
20	27	38						240	296	387	341	295
21	27	202						198	313	395	387	540
22	24	118						172	292	379	540	858
23	21	95						148	292	426	480	734
24	19	254	15				13	124	292	602	444	418
25	*17	310						120	310	525	391	359
26	15	172						*142	310	371	327	418
27	14	158	100					134	313	316	*315	880
28	12	140	292					120	306	327	296	776
29	11	178	110					99	282	395	338	898
30	10	168	75					96	296	451	371	1,430
31	9		55					124		454	579	
Total	1,576	2,110	1,300	434	140	93	285	3,531	8,800	11,378	13,045	16,305
Mean	50.8	70.3	41.8	14	5	3	9.50	107	293	367	421	544
Cfsm	4.20	5.81	3.46	1.16	0.413	0.249	0.785	8.84	24.2	30.3	34.8	45.0
In.	4.84	6.49	4.00	1.33	0.43	0.29	0.88	10.24	27.05	34.97	40.09	50.11
Ac-ft	3,130	4,190	2,580	861	278	184	565	6,610	17,450	22,570	25,870	32,340

Calendar year 1956: Max 1,160 Min - Mean 147 Cfsm 12.1 In. 165.34 Ac-ft: 106,700

Water year 1956-57: Max 1,430 Min - Mean 161 Cfsm 13.3 In. 180.72 Ac-ft: 116,600

Peak discharge (base, 1,200 cfs).--Sept. 10 (11:30 a.m.) 1,440 cfs (3.40 ft); Sept. 27 (1:30 p.m.) 1,200 cfs (3.12 ft); Sept. 30 (2 a.m.) 1,970 cfs (3.97 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 22 to Nov. 7, Nov. 13-19, Dec. 2-27, Dec. 30 to May 7 (stage-discharge relation affected by ice during most of period); discharge estimated on basis of 1 discharge measurement, weather records, and records for Gold Creek at Juneau.

Perseverance Creek near Wacker

Location.--Lat 55°24'40", long 131°40'05", on Revillagigedo Island, on right bank 500 ft downstream from Perseverance Lake, half a mile upstream from Connell Lake, 2 miles east of Wacker, and 4 miles north of Ketchikan.

Drainage area.--2.81 sq mi.

Records available.--October 1931 to September 1938, November 1938, June to September 1939, October 1946 to September 1957. Monthly discharge only for some periods, published in WSP 1372.

Gage.--Water-stage recorder and wooden control. Altitude of gage is 600 ft (from topographic map). Prior to October 1946, at site 100 ft upstream at different datum.

Average discharge.--18 years (1931-38, 1946-57), 36.5 cfs (26,420 acre-ft per year).

Extremes.--Maximum discharge during year, 387 cfs Dec. 24 (gage height, 4.38 ft), from rating curve extended above 150 cfs; minimum daily, 0.4 cfs Sept. 26.
1931-39, 1946-57: Maximum discharge, 543 cfs Oct. 30, 1949 (gage height, 5.26 ft), from rating curve extended above 150 cfs; minimum daily, that of Sept. 26, 1957.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor.

Revisions.--WSP 1372: Drainage area.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1			14	158	54		28	34	25	21	7.0	46
2			43	81	32		44	45	21	16	6.4	27
3		50	99	37	23		55	48	20	13	5.2	16
4			61	18	17		48	49	18	47	4.0	9.5
5			37	8.5	16		35	44	16	37	3.5	18
6		*85	27	5.5	22		24	34	16	24	11	38
7		46	23	4.6	17		17	31	13	16	23	43
8		28	50	5.2	10		13	36	11	11	20	39
9		50	161	4.0		(*)	12	40	10	9.5	12	28
10		54	99	3.5		4.5	13	39	8.0	9.0	7.5	19
11		52	70	3.0			13	36	13	7.5	5.8	12
12		49	134	2.8			12	33	29	*8.5	4.6	9.0
13		60	62	2.8			10	29	26	8.0	3.8	6.7
14		79	46	2.5			11	29	21	6.4	3.5	5.5
15		54	62	*2.2			17	31	16	5.8	3.0	4.3
16		54	68	2.0	8.0		20	37	11	4.9	2.5	3.8
17		131	65	39			18	40	12	4.3	2.2	2.8
18		126	40	101			18	49	13	3.5	2.0	2.5
19		67	58	114			17	41	11	3.2	1.8	*2.2
20		50	110	101	2.5	27	16	35	10	2.8	1.4	2.2
21		42	271	49		21	20	33	13	2.2	1.2	2.0
22		35	115	38		16	53	29	40	11	1.2	1.8
23		27	50	47		16	54	25	65	28	3.2	1.4
24		38	35	157		17	41	22	48	83	3.8	1.1
25		44	24	234		13	41	46	34	129	3.8	.6
26		30	22	181			72	106	55	66	3.5	.4
27		21	18	167			165	86	59	34	3.2	1.8
28		23	13	143		8.0	94	121	47	20	2.8	11
29		20	10	75			61	60	30	12	2.5	108
30		18	13	64			40	40	25	9.0	2.2	120
31		15	74			18		30		8.5	33	
Total	1,548	1,880	1,924.6	248.5	224.0	253.5	1,082	1,358	738.0	661.1	190.6	582.6
Mean	49.9	62.7	62.1	8.02	8.00	8.18	36.1	43.8	24.6	21.3	8.15	19.4
Cfsm	17.8	22.3	22.1	2.85	2.85	2.91	12.8	15.6	8.75	7.58	2.19	6.90
In.	20.49	24.98	25.47	3.29	2.96	3.36	14.32	17.37	9.77	8.75	2.52	7.71
Ac-ft	3,070	3,730	3,820	493	444	503	2,150	2,690	1,460	1,310	378	1,160

Calendar year 1956: Max 336 Min - Mean 39.1 Cfsm 13.9 In. 189.43 Ac-ft 28,400
Water year 1956-57: Max 271 Min 0.4 Mean 29.3 Cfsm 10.4 In. 141.49 Ac-ft 21,210

Peak discharge (base, 250 cfs).--Nov. 21 (12:30 p.m.) 330 cfs (4.05 ft); Dec. 24 (11:30 p.m.) 387 cfs (4.38 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1-5, Jan. 9 to Mar. 12, Mar. 26-30 (stage-discharge relation affected by ice during part of period); discharge estimated on basis of 1 discharge measurement, recorded range in stage, weather records, and records for stations on nearby streams. Stage-discharge relation affected by ice Mar. 13-19.

Ward Creek near Wacker

Location.--Lat 55°25'50", long 131°40'00". On Revillagigedo Island, on right bank three-quarters of a mile downstream from Connell Lake Dam, 2½ miles northeast of Wacker, and 5½ miles north of Ketchikan.

Drainage area.--14.0 sq mi.

Records available.--October 1948 to September 1957.

Gage.--Water-stage recorder. Altitude of gage is 150 ft (from topographic map). Prior to June 20, 1952, water-stage recorder at several sites three-quarters of a mile upstream at various datums. June 20 to Dec. 11, 1952, staff gage at present site and datum.

Extremes.--Maximum discharge during year, 971 cfs Dec. 25 (gage height, 6.97 ft), from rating curve extended above 230 cfs; minimum, 0.6 cfs June 16, 17, 18.
1948-57: Maximum discharge, 2,600 cfs Apr. 16, 1952 (gage height, 6.83 ft, site and datum then in use); minimum daily, 0.5 cfs Aug. 28 to Sept. 5, 1954.

Remarks.--Records good except those for periods of ice effect, and those above 350 cfs, which are poor. Flow regulated by Lake Connell starting in October 1953 (capacity, 11,510 acre-ft). Water diverted above station from Lake Connell by 60-inch pipeline for use by Ketchikan Pulp Co. at Ward Cove.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	27	22	198	136	2.5	3.7	14	56	9.5	35	42	19
2	29	40	176	64	2.4	3.7	16	57	9.0	24	28	16
3	50	138	58	47	2.0	3.4	12	60	8.3	28	18	16
4	46	114	23	46	1.9	3.1	9.0	59	8.0	55	18	15
5	62	45	19	45	1.9	2.8	7.6	57	7.6	48	18	27
6	*56	20	18	48	1.9	2.8	7.2	*28	7.2	46	20	34
7	49	12	18	25	1.8	3.1	6.2	6.2	6.9	45	20	26
8	48	51	18	9.0	1.9	5.2	5.8	6.6	6.6	58	19	22
9	64	521	18	6.6	3.5	4.6	5.5	5.8	6.2	25	18	22
10	54	275	19	6.6	24	11	6.2	4.9	2.2	24	18	29
11	54	281	18	8.6	4.9	6.9	5.5	4.6	1.2	24	17	29
12	56	309	18	10	27	5.2	4.9	4.3	1.3	*24	17	29
13	127	167	18	8.3	109	5.8	4.3	4.6	1.0	23	17	22
14	216	52	18	4.3	7.2	7.6	4.6	4.3	.9	23	16	8.6
15	185	94	*18	9.0	6.6	5.2	6.2	4.0	.7	22	16	8.3
16	259	192	17	10	12	4.3	6.2	4.3	.6	22	16	8.3
17	413	177	37	11	9.5	4.3	5.2	8.3	.8	22	16	8.3
18	393	76	42	8.0	6.6	9.5	4.9	22	.6	22	16	8.0
19	153	53	37	4.3	b3.7	8.3	4.6	20	1.0	22	16	*8.0
20	54	222	162		b2.8	20	4.3	20	3.4	22	16	8.0
21	69	619	97		b2.5	8.0	4.9	20	4.3	22	16	8.0
22	71	296	62		b2.2	6.2	33	19	42	37	16	9.8
23	48	142	125		b2.0	8.0	20	18	87	46	18	13
24	87	42	383		b8.5	22	12	10	109	63	17	13
25	119	41	649	b4.5	24	7.2	12	9.5	68	61	17	13
26	51	32	395		18	5.5	17	22	162	49	16	15
27	35	21	319		4.9	4.9	35	41	153	47	16	13
28	37	20	351		3.7	4.3	20	159	109	45	16	12
29	36	19	179		-	4.9	27	110	57	45	15	27
30	34	24	141		-----	7.2	52	72	50	45	15	116
31	34	-----	219	5.2	-----	12	-----	39	-----	47	25	-----
Total	3,016	4,147	3,870	561.4	298.9	210.7	373.1	956.4	924.3	1,101	569	607.3
Mean	97.3	138	125	18.1	10.7	6.80	12.4	30.9	30.8	38.5	18.4	20.2
Ac-ft	5,980	8,230	7,680	1,110	593	418	740	1,900	1,830	2,180	1,130	1,200
Calendar year 1956: Max	679				Min 0.8	Mean 61.5		Ac-ft 44,680				
Water year 1956-57: Max	649				Min 0.6	Mean 45.6		Ac-ft 32,990				

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Mahoney Creek near Ketchikan

Location.--Lat 55°25'30", long 131°30'45", on Revillagigedo Island, on right bank an eighth of a mile upstream from mouth, an eighth of a mile downstream from Mahoney Lake, and 8 miles northeast of Ketchikan.

Drainage area.--5.70 sq mi.

Records available.--September 1920 to October 1925, September 1926 to October 1933, October 1947 to September 1957. Monthly discharge only for some periods, published in WSP 1372. Prior to January 1921 published as "at George Inlet."

Gage.--Water-stage recorder. Altitude of gage is 45 ft (by barometer). Prior to October 1947, at different datum.

Average discharge.--22 years, 107 cfs (77,460 acre-ft per year).

Extremes.--Maximum discharge during year, 838 cfs Dec. 25 (gage height, 3.35 ft), minimum, 8.6 cfs Feb. 1-10 (gage height, 0.55 ft).
1920-25, 1926-33, 1947-57: Maximum discharge, 2,530 cfs Feb. 2, 1954 (gage height, 4.66 ft), from rating curve extended above 1,100 cfs; minimum daily, 1.5 cfs Jan. 30 to Feb. 1, 1950.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are fair. Mahoney Lake at elevation 76 ft has an area of 163 acres.

Revisions.--WSP 1372: Drainage area.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	152	26	409	125	8.6				115	91	56	165
2	107	66	258	70	8.6				121	76	49	83
3	226	189	107	52	8.6				130	74	44	54
4	246	130	56	41	8.6				132	212	43	43
5	*189	68	40	36	8.6			140	134	174	46	66
6	306	46	34	38	8.6	b10			142	101	110	168
7	140	38	30	36	8.6				130	74	140	320
8	71	82	27	32	8.6				111	63	93	198
9	111	404	25	27	8.6			*109	97	59	68	101
10	142	292	23	24	8.6	23		113	89	*62	54	66
11	115	183	22	22	9.0	24		103	134	61	48	50
12	117	242	21	20	10	*22		105	242	70	44	43
13	134	132	20	19	24	21		99	226	71	43	38
14	177	88	*19	19	32			103	158	67	40	33
15	123	130	18	18	31			111	111	66	38	30
16	117	111	18	17	29			130	93	67	36	27
17	202	127	21	16	28			152	117	68	35	25
18	279	64	88	15	26			202	136	70	33	*24
19	171	52	206	14	23			155	115	71	32	23
20	109	101	152	13	21			123	96	71	30	22
21	62	494	83	13	20			123	89	67	28	21
22	70	292	62	12	19			119	280	153	28	21
23	54	136	73	11		19		109	512	174	30	20
24	61	91	216	11				89	315	342	33	19
25	73	69	590	10				172	183	480	34	19
26	52	59	450	9.6	b15			376	284	220	32	19
27	40	58	320	9.6				317	292	111	30	19
28	40	47	382	9.4				392	230	69	28	25
29	32	40	216	9.2	-			195	132	56	26	220
30	30	37	162	9.0	-----			136	105	53	25	209
31	28	-----	192	8.8	-----			117	-----	58	104	-----
Total	3,796	3,894	4,330	766.6	448.0	522	1,500	4,770	5,051	3,451	1,480	2,171
Mean	122	130	140	24.7	16.0	16.8	50.0	154	168	111	47.7	72.4
Cfsm	21.4	22.8	24.6	4.33	2.81	2.95	8.77	27.0	29.5	19.5	8.37	12.7
In.	24.77	25.41	28.25	5.00	2.92	3.41	9.79	31.12	32.96	22.52	9.66	14.16
Ac-ft	7,530	7,720	8,580	1,520	889	1,040	2,980	9,460	10,020	6,840	2,940	4,310

Calendar year 1956: Max 601 Min - Mean 97.0 Cfsm 17.0 In. 231.74 Ac-ft 70,440
Water year 1956-57: Max 590 Min 8.6 Mean 88.2 Cfsm 15.5 In. 209.97 Ac-ft 63,840

Peak discharge (base, 950 cfs).--No peak above base.

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Dec. 5-13, Mar. 14 to May 8; discharge estimated on basis of recorded range in stage, weather records, and records for stations on nearby streams.

Falls Creek near Ketchikan

Location.--Lat 55°36'50", long 131°20'55", on Revillagigedo Island, on left bank 1,100 ft upstream from mouth on east shore of Carroll Inlet, 1.1 miles downstream from Swan Lake, and 22 miles northeast of Ketchikan.

Drainage area.--36.5 sq mi.

Records available.--August 1916 to January 1926, September 1927 to December 1933, October 1946 to September 1957. Monthly discharge only for some periods, published in WSP 1372. Prior to January 1921, published as Swan Lake Outlet at Carroll Inlet.

Gage.--Water-stage recorder. Altitude of gage is 130 ft (from topographic map). August 1916 to January 1926 and September 1927 to November 1933, at site about 1,000 ft upstream at different datum.

Average discharge.--26 years (1916-25, 1927-33, 1946-57), 460 cfs (333,000 acre-ft per year).

Extremes.--Maximum discharge during year, 1,750 cfs Nov. 21 (gage height, 4.69 ft); minimum, 49 cfs Feb. 9 (gage height, 2.00 ft).

1916-26, 1927-33, 1946-57: Maximum discharge, about 5,500 cfs Nov. 1, 1917; minimum daily, 19 cfs Feb. 21-25, 1925.

Remarks.--Records good. Swan Lake has an area of 1,050 acres.

Revisions (water years).--WSP 1372: 1918, drainage area.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	415	174	779	695	58	67	156	518	634	513	324	141
2	436	238	943	508	58	64	220	608	614	425	273	141
3	723	480	647	400	56	62	306	709	621	370	231	135
4	1,120	469	452	319	56	62	294	898	595	469	210	123
5	*925	380	337	273	53	60	302	632	571	518	201	168
6	1,320	315	269	265	53	58	261	660	583	458	253	579
7	952	265	220	249	51	58	220	559	553	395	311	889
8	614	361	201	201	51	58	198	563	496	342	289	785
9	654	997	174	171	51	58	189	634	458	324	245	602
10	695	1,100	159	156	53	62	189	654	425	342	214	452
11	744	880	150	135	56	67	186	634	436	342	195	366
12	848	1,030	141	126	58	*69	180	595	595	366	192	298
13	751	800	135	115	126	71	171	553	640	385	198	238
14	751	602	120	108	150	71	168	530	571	361	195	198
15	688	614	108	102	153	71	163	553	508	342	180	174
16	716	595	102	98	147	71	207	565	452	337	171	153
17	1,090	595	126	95	147	71	220	602	442	315	159	138
18	1,390	464	231	90	141	90	242	688	447	294	147	126
19	1,010	385	415	85	132	105	257	709	430	273	138	115
20	744	553	474	85	120	135	242	660	415	245	126	108
21	608	1,400	400	85	112	147	245	621	430	231	120	102
22	513	1,350	337	83	100	144	342	583	621	333	118	98
23	420	916	319	81	93	150	390	524	1,090	464	138	95
24	385	702	535	76	88	156	370	469	1,010	876	150	90
25	375	559	1,500	71	76	150	352	513	779	1,330	156	83
26	324	464	1,630	69	73	138	356	997	934	1,040	150	78
27	269	410	1,450	64	71	123	547	1,140	961	716	138	75
28	231	342	1,520	62	69	112	660	1,290	824	513	126	134
29	214	294	1,120	62	-	108	667	968	647	405	118	565
30	195	285	925	60	-----	112	585	779	595	347	110	737
31	183	-----	856	58	-----	129	-----	674	-----	361	115	-----
Total	20,303	18,019	16,775	5,047	2,452	2,899	8,885	21,312	18,377	14,032	5,691	7,988
Mean	655	601	541	163	87.6	93.5	296	687	613	453	184	266
Cfsm	17.9	16.5	14.8	4.47	2.40	2.56	8.11	18.8	16.8	12.4	5.04	7.29
In.	20.69	18.36	17.09	5.14	2.50	2.95	9.05	21.71	18.72	14.30	5.80	8.14
Ac-ft	40,270	35,740	33,270	10,010	4,860	5,750	17,620	42,270	36,450	27,630	11,290	15,840

Calendar year 1956: Max 2,460 Min 33 Mean 421 Cfsm 11.5 In. 156.96 Ac-ft 305,600
 Water year 1956-57: Max 1,630 Min 51 Mean 388 Cfsm 10.6 In. 144.45 Ac-ft 281,200

Peak discharge (base, 1,800 cfs).--No peak above base.

* Discharge measurement made on this day.

Fish Creek near Ketchikan

Location.--Lat 55°23'30", long 131°11'40", on Revillagigedo Island, on right bank 50 ft upstream from outlet of Low Lake, 600 ft upstream from mouth at head of Thorne Arm, and 18 miles east of Ketchikan.

Drainage area.--32.1 sq mi, excludes that of Granite Lake drainage basin.

Records available.--May 1915 to October 1935, October 1938 to September 1957. Monthly discharge only for some periods, published in WSP 1372. Prior to January 1921, published as "near sea level, Revillagigedo Island."

Gage.--Water-stage recorder. Altitude of gage is 20 ft (by barometer). May 1915 to November 1935 at same site at different datum.

Average discharge.--39 years, 416 cfs (301,200 acre-ft per year).

Extremes.--Maximum discharge during year, 1,960 cfs Dec. 26 (gage height, 3.18 ft); minimum, 29 cfs Feb. 7 (gage height, 0.49 ft).
1915-35, 1938-57: Maximum discharge, 4,600 cfs Nov. 1, 1917 (gage height, 5.33 ft, datum then in use), from rating curve extended above 1,400 cfs; minimum daily, 20 cfs Sept. 9, 10, 1928.

Remarks.--Records good. Lakes in the basin are as follows: Basin Lake (240 acres), Mirror Lake (1,350 acres), Third Lake (180 acres), Big Lake (358 acres), and Low Lake (55 acres).

Revisions (water years).--WSP 1372: 1918.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	462	156	379	811	37	62	156	535	528	469	240	96
2	535	256	960	558	37	59	251	512	476	374	205	110
3	589	490	757	427	36	57	295	605	455	307	173	116
4	838	565	498	325	33	54	331	802	434	331	148	110
5	960	455	343	268	31	53	319	856	407	462	130	124
6	1,280	337	240	313	30	50	278	662	400	462	195	343
7	990	268	190	273	30	51	240	520	394	381	331	890
8	662	273	177	215	32	56	200	476	362	307	355	1,010
9	558	838	152	165	38	57	182	505	325	278	290	748
10	*565	1,110	138	134	48	68	169	528	295	284	230	528
11	605	1,020	120	106	53	*83	165	520	284	*278	182	388
12	766	1,180	108	96	64	81	156	512	400	284	165	290
13	820	1,000	*100	83	182	81	144	441	565	301	173	215
14	865	730	93	75	319	84	141	414	558	290	173	169
15	766	679	84	70	337	79	156	407	476	273	152	*137
16	730	670	83	67	290	75	182	414	400	251	134	116
17	883	730	120	62	235	74	200	441	349	230	113	100
18	1,170	542	319	57	205	83	210	498	331	205	100	90
19	1,100	420	704	54	173	108	220	542	313	182	93	81
20	802	490	920	53	144	173	220	528	295	165	84	77
21	845	1,130	713	49	116	177	225	505	307	152	79	72
22	565	1,540	542	46	100	177	414	476	427	200	79	68
23	434	1,070	542	42	86	190	476	434	645	381	88	67
24	434	757	892	39	75	190	420	388	784	629	110	64
25	407	573	1,840	36	70	177	388	381	704	1,140	120	60
26	337	427	1,910	34	68	156	400	722	739	1,100	116	59
27	262	343	1,860	31	64	130	550	1,200	838	757	108	67
28	225	284	1,750	30	64	108	775	1,460	775	512	96	79
29	205	230	1,330	30	-	100	829	1,100	629	381	86	503
30	182	195	1,030	34	-----	100	870	793	565	295	79	1,070
31	169	-----	970	37	-----	113	-----	613	-----	273	81	-----
Total	19,811	18,758	19,864	4,620	2,997	3,106	9,362	18,790	14,460	11,934	4,708	7,947
Mean	639	625	641	149	107	100	312	606	482	385	152	265
Cfsm	19.9	19.5	20.0	4.64	3.33	3.12	9.72	18.9	15.0	12.0	4.74	8.26
In.	22.95	21.73	23.01	5.35	3.47	3.60	10.85	21.77	16.75	13.83	5.45	9.21
Ac-ft	39,290	37,210	39,400	9,160	5,940	6,160	18,570	37,270	28,680	23,670	9,340	15,760

Calendar year 1956: Max 2,660 Min 29 Mean 412 Cfsm 12.8 In. 174.64 Ac-ft 299,000
Water year 1956-57: Max 1,910 Min 30 Mean 374 Cfsm 11.7 In. 157.97 Ac-ft 270,400

Peak discharge (base, 1,800 cfs).--Dec. 26 (9 p.m.) 1,960 cfs (3.18 ft).

* Discharge measurement made on this day.

Ella Creek near Ketchikan

Location.--Lat 55°30'20", long 131°01'25", on Revillagigedo Island, on left bank 1 mile downstream from Lower Ella Lake, 1.5 miles upstream from mouth at Ella Bay, and 28 miles northeast of Ketchikan.

Drainage area.--19.7 sq mi.

Records available.--October 1927 to September 1938, August 1947 to September 1957. Monthly discharge only for some periods, published in WSP 1372.

Gage.--Water-stage recorder. Altitude of gage is 150 ft (by barometer). Prior to August 1947, at different datum.

Average discharge.--21 years, 245 cfs (177,400 acre-ft per year).

Extremes.--Maximum discharge during year, 1,000 cfs Dec. 25 (gage height, 4.33 ft); minimum, 22 cfs Feb. 6, 7 (gage height, 1.26 ft).
1927-38, 1947-57: Maximum discharge recorded, 1,720 cfs Dec. 7, 1930 (gage height, 5.60 ft, datum then in use); minimum daily, 12 cfs Sept. 7-12, 1930, Jan. 30 to Feb. 2, 1950.

Remarks.--Records good. Ella Lake, 1 mile above station, has an area of 1,930 acres.

Revisions.--WSP 1372: Drainage area.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Avg.	Sept.
1	206	151	351	507	29	51	110	324	264	225	180	90
2	198	186	316	427	28	49	151	354	240	196	143	83
3	270	310	258	359	26	44	186	344	214	176	129	76
4	344	273	212	299	24	40	190	423	190	206	115	69
5	395	237	178	264	23	36	183	391	176	201	109	86
6	542	209	153	261	22	35	169	344	166	186	153	315
7	435	183	136	234	22	34	155	*310	149	169	166	352
8	*359	217	134	196	26	35	145	302	140	*153	149	352
9	363	479	122	171	30	37	143	292	129	147	138	315
10	359	451	110	147	42	*44	142	279	117	145	122	267
11	407	471	98	130	46	57	136	258	124	142	110	231
12	407	668	*90	118	56	57	127	240	147	142	107	203
13	419	515	87	105	199	56	120	220	158	140	107	173
14	463	447	80	94	178	57	120	212	153	127	99	153
15	443	455	71	86	155	56	132	201	145	122	90	136
16	463	475	67	78	147	54	142	198	136	113	83	*120
17	515	495	124	70	143	51	140	193	134	105	76	107
18	569	399	264	63	138	69	143	201	127	96	69	96
19	524	344	379	57	125	81	143	198	117	87	62	86
20	471	451	475	52	112	105	138	198	115	80	56	86
21	427	722	387	46	101	107	143	198	122	74	51	78
22	387	618	348	42	90	105	243	188	169	104	51	74
23	334	507	371	39	80	110	255	176	240	170	60	67
24	344	443	618	35	75	115	246	162	255	302	77	62
25	334	367	890	33	67	113	249	190	243	344	77	56
26	285	313	915	31	63	107	270	348	299	324	71	54
27	246	270	925	30	60	96	379	363	299	279	66	60
28	220	234	855	27	56	87	415	443	279	240	60	87
29	198	198	718	27	-	83	395	379	255	214	54	258
30	178	180	623	29	-----	83	341	330	252	193	49	299
31	168	-----	610	30	-----	92	-----	296	-----	180	56	-----
Total	11,291	11,268	10,955	4,087	2,159	2,146	5,851	8,555	5,554	5,382	2,913	4,491
Mean	364	376	353	132	77.1	69.2	195	275	185	174	94.0	150
Cfsm	18.5	19.1	17.9	6.70	3.91	3.51	9.90	14.0	9.39	8.83	4.77	7.61
In.	21.32	21.27	20.68	7.72	4.08	4.05	11.05	16.11	10.48	10.16	5.50	8.48
Ac-ft	22,400	22,350	21,730	8,110	4,280	4,260	11,610	16,930	11,020	10,680	5,780	8,910

Calendar year 1956: Max 1,130 Min 16 Mean 225 Cfsm 11.4 In. 155.74 Ac-ft 163,600
Water year 1956-57: Max 925 Min 22 Mean 204 Cfsm 10.4 In. 140.90 Ac-ft 148,100

Peak discharge (base, 700 cfs).--Nov. 12 (4 a.m.) 755 cfs (3.83 ft); Nov. 21 (2 p.m.) 865 cfs (4.05 ft); Dec. 25 (2 a.m.) 1,000 cfs (4.33 ft).

* Discharge measurement made on this day.

Manzanita Creek near Ketchikan

Location.--Lat 55°36', long 130°59', on Revillagigedo Island, on right bank a quarter of a mile upstream from mouth at Manzanita Bay, East Behm Canal, 2 miles downstream from Manzanita Lake, and 31 miles northeast of Ketchikan.

Drainage area.--33.9 sq mi.

Records available.--October 1927 to September 1937, August 1947 to September 1957. Monthly discharge only for some periods, published in WSP 1372.

Gage.--Water-stage recorder. Altitude of gage is 140 ft (by barometer).

Average discharge.--20 years, 462 cfs (334,500 acre-ft per year).

Extremes.--Maximum discharge during year, 2,890 cfs Sept. 6 (gage height, 7.26 ft); minimum, 105 cfs Mar. 7 (gage height, 1.55 ft).
1927-37, 1947-57: Maximum discharge, 3,870 cfs Oct. 13, 1949 (gage height, 8.19 ft), from rating curve extended above 1,600 cfs by logarithmic plotting; minimum not determined.
A discharge of 4,480 cfs occurred sometime during the period 1938-47 (gage height, 8.7 ft, from floodmark in well).

Remarks.--Records good. There are two lakes above gage, Manzanita Lake (1,610 acres) and January Lake on North Fork Manzanita Creek.

Revisions.--WSP 1372: Drainage area.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	464	329	1,090	925	126	118	182	522	696	518	355	206
2	397	445	748	788	122	115	236	572	665	474	329	164
3	590	612	627	700	119	114	247	597	631	448	309	154
4	638	445	543	615	116	112	226	728	600	586	289	148
5	748	391	484	557	113	109	220	653	582	501	284	188
6	894	364	435	572	111	107	200	608	561	481	376	838
7	688	343	394	488	110	106	188	593	525	435	337	474
8	586	491	373	426	110	106	186	*615	491	403	302	426
9	*657	925	349	382	111	108	194	631	467	368	281	362
10	623	716	323	355	114	113	206	615	458	422	269	334
11	824	736	*307	320	114	121	198	593	471	394	253	312
12	748	988	294	302	117	117	186	572	572	413	260	289
13	748	724	279	284	320	114	182	561	518	391	258	267
14	800	661	262	269	208	116	202	564	481	355	236	253
15	752	708	251	251	176	115	247	546	454	352	226	240
16	804	752	240	236	169	115	238	554	426	332	216	228
17	930	688	294	228	178	114	230	561	432	315	206	*218
18	970	579	481	214	175	135	240	597	406	302	196	210
19	864	550	532	206	160	146	240	586	388	289	188	200
20	816	840	575	194	151	178	236	572	397	276	180	196
21	740	1,400	448	182	143	146	253	550	397	267	173	190
22	692	1,020	419	175	136	142	373	539	561	400	175	184
23	604	884	495	169	130	148	337	508	582	498	188	178
24	615	804	1,000	157	128	145	307	484	564	712	186	171
25	572	716	1,380	151	126	138	312	586	557	760	173	164
26	498	642	1,420	146	124	131	358	974	776	619	164	160
27	448	572	1,540	146	121	126	586	934	712	529	156	182
28	416	518	1,450	136	121	121	604	1,010	642	467	149	337
29	388	467	1,300	133	-	126	543	880	597	432	145	608
30	364	464	1,160	131	-----	140	498	792	631	400	140	635
31	349	-----	1,120	128	-----	154	-----	740	-----	391	171	-----
Total	20,227	19,774	20,613	9,966	3,949	3,896	8,455	19,817	16,220	13,550	7,170	8,536
Mean	652	659	665	321	141	126	282	639	541	437	231	285
Cfsm	19.2	19.4	19.6	9.47	4.16	3.72	8.32	18.8	16.0	12.9	6.81	8.41
In.	22.19	21.69	22.61	10.93	4.33	4.27	9.28	21.74	17.79	14.87	7.87	9.36
Ac-ft	40,120	39,220	40,890	19,770	7,830	7,730	16,770	39,510	32,170	26,880	14,220	16,930

Calendar year 1956: Max 1,740 Min - Mean 440 Cfsm 13.0 In. 176.72 Ac-ft 319,500
Water year 1956-57: Max 1,540 Min 106 Mean 417 Cfsm 12.3 In. 166.95 Ac-ft 301,800

Peak discharge (base, 1,700 cfs).--Nov. 21 (2 p.m.) 1,800 cfs (5.95 ft); Dec. 24 (11:30 p.m.) 2,540 cfs (6.88 ft); Dec. 27 (6 p.m.) 1,940 cfs (6.15 ft); Sept. 6 (12 m.) 2,890 cfs (7.26 ft).

* Discharge measurement made on this day.

Sawmill Creek near Sitka

Location.--Lat 57°03'05", long 135°13'40", on Baranof Island, on left bank 100 ft downstream from Sitka Public Utilities abandoned hydroelectric plant, 500 ft upstream from mouth, 1½ miles downstream from Blue Lake, and 4 miles east of Sitka.

Drainage area.--39.0 sq mi.

Records available.--September 1920 to December 1922, February 1928 to September 1942, October 1945 to September 1957. Monthly discharge only for some periods, published in WSP 1372.

Gage.--Water-stage recorder. Altitude of gage is about 4 ft above mean sea level. Prior to Apr. 12, 1947, staff gages or water-stage recorders at several sites within 1,500 ft of present site at various datums.

Average discharge.--28 years, 485 cfs (351,100 acre-ft per year).

Extremes.--Maximum discharge during year, 4,630 cfs Sept. 30 (gage height, 8.17 ft); minimum, 48 cfs Mar. 10-17 (gage height, 1.11 ft).
1920-22, 1928-42, 1945-57: Maximum discharge, 7,100 cfs Sept. 8, 1948 (gage height, 10.20 ft), from rating curve extended above 2,800 cfs by logarithmic plotting; minimum, 9.1 cfs Mar. 4, 1951 (gage height, 0.47 ft).

Remarks.--Records good except those for periods of no gage-height record, which are fair. Blue Lake, 1.6 miles upstream, has an area of 495 acres.

Cooperation.--Water-stage recorder inspected by employees of Sitka Public Utilities.

Revisions (water years).--WSP 1372: 1929(M).

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Avg.	Sept.
1	1,030	150	3,270	458		88	54	190	574	546	466	479
2	755	158	1,640	342		78	84	202	672	546	454	413
3	705	178	800	286		71	132	310	785	538	434	358
4	1,270	175	488	240		67	148	426	780	605	462	342
5	870	161	362	264		61	148	390	780	632	502	614
6	775	158	289	240		60	140	322	870	546	484	810
7	690	156	240	196		51	132	303	855	462	466	659
8	659	172	202	170	60	51	128	358	780	406	462	510
9	745	378	172	150		49	121	446	735	390	515	484
10	614	605	158	140		49	118	497	710	390	546	868
11	715	551	150	130		48	114	510	710	422	542	1,100
12	682	755	140	120		48	110	502	770	584	488	735
13	520	574	130	110		48	107	470	710	596	426	569
14	755	422	118	100		*48	105	438	628	524	394	479
15	890	390	110	95	76	48	103	492	632	470	390	406
16	632	366	105	90	99	48	101	582	614	434	410	350
17	578	296	110	85	128	48	101	686	705	422	414	300
18	690	244	130	80	130	63	101	961	775	462	418	268
19	542	240	156	76	121	61	105	928	710	533	394	261
20	398	303	211	72	110	58	112	*770	636	618	354	314
21	322	1,310	202	69	105	58	121	636	628	664	326	566
22	264	1,440	172	66		58	142	560	592	659	406	*785
23	221	906	153	*63		58	153	524	632	795	515	668
24	193	934	161			56	153	466	636	820	479	450
25	172	1,400	350		100	56	164	438	569	615	410	322
26	153	1,960	479			54	167	479	587	705	354	286
27	145	1,200	618		59	53	221	538	632	551	318	454
28	221	830	2,250		97	51	250	546	632	446	292	832
29	218	725	1,680		-	49	234	474	578	406	300	1,250
30	190	1,260	939		---	53	208	442	538	414	358	3,790
31	170	---	632		---	54	---	479	---	450	410	---
Total	16,784	18,397	16,617	4,114	2,306	1,743	4,077	15,365	20,435	16,831	13,169	19,727
Mean	541	613	536	133	82.4	56.2	136	496	681	543	425	658
Cfsm	13.9	15.7	13.7	3.41	2.11	1.44	3.49	12.7	17.5	13.9	10.9	16.9
In.	16.01	17.54	15.85	3.92	2.20	1.66	3.89	14.65	19.49	16.05	12.56	18.81
Ac-ft	33,290	36,490	32,960	8,160	4,570	3,460	8,090	30,480	40,530	33,380	26,120	39,130

Calendar year 1956: Max 3,270 Min 24 Mean 461 Cfsm 11.8 In. 160.98 Ac-ft 334,900
Water year 1956-57: Max 3,790 Min 48 Mean 410 Cfsm 10.5 In. 142.63 Ac-ft 296,700

Peak discharge (base, 2,700 cfs).--Dec. 1 (10 a.m.) 3,690 cfs (6.99 ft); Sept. 30 (8 a.m.) 4,630 cfs (8.17 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Jan. 8 to Feb. 14, Feb. 22-27; discharge estimated on basis of 1 discharge measurement, weather records, and records for stations on nearby streams.

Deer Lake Outlet near Port Alexander

Location.--Lat 56°31', long 134°40', on Baranof Island, on right bank at tidewater at Mist Cove, an eighth of a mile downstream from Deer Lake and 19 miles north of Port Alexander.

Drainage area.--9.2 sq mi, approximately.

Records available.--June 1951 to September 1957.

Gage.--Water-stage recorder. Altitude of gage is about 1 ft above mean sea level.

Average discharge.--6 years, 159 cfs (115,100 acre-ft per year).

Extremes.--Maximum discharge during year, 463 cfs Dec. 1 (gage height, 3.16 ft); minimum daily, 30 cfs Feb. 5-8.
1951-57: Maximum discharge, 642 cfs Oct. 22, 1953 (gage height, 3.47 ft); minimum, 9.4 cfs Mar. 23, 1956 (gage height, 0.73 ft), caused by temporary storage behind ice jam upstream.

Remarks.--Records fair. There are two lakes above gage, Deer Lake (968 acres), and Deer Upper Lake (139 acres).

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	142	130	436	336	36	49	47	*98	196	227	147	102
2	147	134	414	310	34	47	32	105	192	216	140	101
3	199	130	342	285	33	45	76	130	189	206	134	99
4	261	125	295	248	32	43	79	154	186	216	125	95
5	275	119	257	224	30	42	76	157	*181	210	119	110
6	300	114	227	210	30	42	75	154	175	199	117	134
7	285	110	206	189	30	40	75	150	172	186	114	152
8	280	123	196	172	30	51	74	152	170	178	109	154
9	266	147	181	159	32	57	71	152	187	170	105	132
10	244	157	167	147	34	58	70	154	162	162	101	147
11	*227	178	154	136	34	57	68	157	159	157	98	134
12	216	210	145	127	35	56	65	154	164	150	95	*132
13	210	206	136	119	41	55	63	152	162	145	91	127
14	236	202	127	110	42	55	62	150	159	140	85	121
15	231	216	117	102	49	*53	60	147	157	134	82	114
16	227	213	110	95	55	51	58	159	152	130	78	109
17	253	202	110	89	60	50	56	178	162	125	73	102
18	270	189	114	84	61	56	55	189	170	119	70	96
19	261	192	119	78	60	55	54	192	170	116	67	92
20	240	196	123	71	57	51	54	192	152	114	63	87
21	227	248	121	67	55	49	62	189	159	110	61	84
22	210	270	119	60	47	47	76	184	172	116	73	79
23	202	270	119	57	41	49	82	178	236	123	78	74
24	192	275	125	51	45	50	83	170	280	159	75	69
25	184	285	145	48	51	49	85	170	270	186	71	67
26	167	326	159	45	51	47	91	184	257	192	69	71
27	159	326	172	43	49	46	101	210	266	186	65	73
28	162	295	253	41	50	45	102	224	275	178	62	76
29	157	266	310	40	-	44	101	220	261	170	60	89
30	147	280	320	38	-----	43	99	213	240	162	59	127
31	140	-----	348	36	-----	43	-----	202	-----	154	32	-----
Total	6,717	6,134	6,167	3,817	1,204	1,525	2,182	5,220	5,813	5,036	2,778	3,169
Mean	217	204	199	123	43.0	49.2	72.7	168	194	162	89.6	106
Cfsm	23.6	22.2	21.6	13.4	4.67	5.35	7.90	18.3	21.1	17.6	9.74	11.5
In.	27.15	24.80	24.93	15.43	4.87	6.16	8.82	21.10	23.50	20.36	11.23	12.81
Ac-ft	13,320	12,170	12,230	7,570	2,390	3,020	4,330	10,350	11,530	9,990	5,510	6,290

Calendar year 1956: Max 512 Min 27 Mean 153 Cfsm 16.6 In. 225.72 Ac-ft 110,700
Water year 1956-57: Max 436 Min 30 Mean 136 Cfsm 14.8 In. 201.16 Ac-ft 98,700

Peak discharge (base, 350 cfs).--Dec. 1 (4 p.m.) 463 cfs (3.16 ft); Dec. 31 (3 p.m.) 358 cfs (2.97 ft).

* Discharge measurement made on this day.

Takatz Creek near Baranof

Location.--Lat 57°08'35", long 134°51'50", on Baranof Island, on left bank at tidewater at Takatz Bay, 2 miles downstream from Takatz Lake, and 4 miles north of Baranof.

Drainage area.--17.5 sq mi.

Records available.--July 1951 to September 1957.

Gage.--Water-stage recorder. Altitude of gage is about 4 ft above mean sea level.

Average discharge.--6 years, 261 cfs (189,000 acre-ft per year).

Extremes.--Maximum discharge during year, 3,990 cfs Sept. 30 (gage height, 5.52 ft), from rating curve extended above 660 cfs by logarithmic plotting; minimum, 24 cfs Feb. 7, 8 (gage height, 1.51 ft).

1951-57: Maximum discharge, 4,820 cfs Sept. 14, 1952 (gage height, 5.79 ft), from rating curve extended above 660 cfs by logarithmic plotting; minimum not determined.

Remarks.--Records good. Takatz Lake has an area of 425 acres.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	376	55	1,560	246	27	35	58	*78	358	461	364	428
2	294	95	563	198	26	32	67	188	416	461	358	316
3	1,060	105	322	154	25	30	70	266	494	461	352	272
4	1,020	74	246	113	25	29	63	277	*500	592	383	266
5	402	63	196	111	25	28	56	203	528	480	396	974
6	376	62	160	97	25	28	52	168	585	370	448	851
7	280	82	150	90	24	25	51	196	563	328	402	585
8	282	97	124	84	25	27	51	232	521	294	396	376
9	299	250	101	74	28	46	51	250	500	299	428	322
10	246	186	68	66	41	40	53	246	480	322	435	409
11	255	182	81	60	46	38	52	246	474	364	422	416
12	232	203	78	55	45	35	48	250	521	480	383	299
13	224	136	71	52	68	33	45	250	454	422	352	288
14	322	121	65	49	80	36	44	246	422	364	334	250
15	272	196	61	47	65	34	42	255	442	358	334	219
16	237	139	58	46	62	32	45	370	435	364	340	206
17	346	103	64	45	58	32	48	500	542	364	340	186
18	266	88	64	43	51	36	52	521	549	376	334	154
19	232	97	81	40	44	35	58	494	500	442	322	151
20	182	133	95	39	39	31	62	428	454	521	294	163
21	151	435	72	38	37	28	88	370	435	507	299	*192
22	118	299	70	36	35	28	97	346	507	704	558	219
23	95	282	74	35	49	31	83	316	830	630	487	214
24	99	370	85	33	41	32	81	288	800	1,200	358	196
25	85	528	151	32	44	30	78	328	480	760	310	182
26	72	704	160	31	38	30	83	376	494	507	282	200
27	65	500	163	29	37	32	145	422	845	358	260	214
28	63	340	428	28	37	32	95	364	662	316	255	272
29	74	266	402	25	-	32	79	299	514	299	253	503
30	64	507	340	28	-----	32	72	282	454	322	260	2,830
31	60	-----	316	28	-----	37	-----	304	-----	352	528	-----
Total	8,149	6,678	6,469	2,053	1,127	1,034	1,968	9,325	15,359	14,078	11,267	12,153
Mean	263	223	209	66.2	40.2	33.4	65.6	301	512	454	363	405
Cfsm	15.0	12.7	11.9	3.78	2.30	1.91	3.75	17.2	29.3	25.9	20.7	23.1
In.	17.32	14.19	13.75	4.36	2.40	2.20	4.18	19.82	32.64	29.32	23.94	25.83
Ac-ft	16,160	13,250	12,850	4,070	2,240	2,050	3,900	18,500	30,460	27,920	22,350	24,110

Calendar year 1956: Max 1,850 Min 16 Mean 255 Cfsm 14.6 In. 198.40 Ac-ft 185,200
 Water year 1956-57: Max 2,830 Min 24 Mean 246 Cfsm 14.1 In. 190.55 Ac-ft 177,800

Peak discharge (base, 2,300 cfs).--Oct. 3 (9 p.m.) 2,780 cfs (4.84 ft); Sept. 30 (8 a.m.) 3,990 cfs (5.52 ft).

* Discharge measurement made on this day.

Hasselborg Creek near Angoon

Location.--Lat 57°39'40", long 134°14'55", on Admiralty Island, on right bank at outlet of Hasselborg Lake, 16 miles northeast of Angoon.

Drainage area.--56.2 sq mi.

Records available.--June 1951 to September 1957.

Gage.--Water-stage recorder. Altitude of gage is 295 ft (from topographic map).

Average discharge.--6 years, 311 cfs (225,200 acre-ft per year).

Extremes.--Maximum discharge during year, 1,610 cfs Dec. 28 (gage height, 3.24 ft), from rating curve extended above 780 cfs; minimum not determined.
1951-57: Maximum discharge, 2,400 cfs Oct. 23, 1953 (gage height, 3.78 ft), from rating curve extended above 780 cfs; minimum not determined.

Remarks.--Records good except those for period of no gage-height record, which are poor. Hasselborg Lake has an area of 3,500 acres.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	441	180	1,260	861			68	399	462	309	238	180
2	441	200	1,100	708			91	420	470	315	216	170
3	455	255	861	594		a55	128	492	492	322	200	155
4	602	261	642	485			165	554	500	434	185	146
5	610	244	508	427		48	206	562	508	522	170	150
6	618	228	413	371		45	211	522	508	508	175	216
7	570	216	357	315		43	216	508	508	462	170	309
8	546	238	309	255		45	222	538	485	406	170	322
9	594	315	281	228		45	228	578	470	357	*160	315
10	626	364	228	206		45	233	610	434	315	155	322
11	666	413	200			45	222	610	406	303	141	336
12	666	500	180			45	211	586	406	315	136	322
13	602	492	165			45	190	554	*406	336	128	291
14	634	462	150			48	170	515	399	309	118	261
15	666	478	132		a55	45	165	500	385	285	114	228
16	610	485	132			45	165	530	371	267	110	206
17	594	448	146			43	165	570	364	244	102	175
18	626	399	146			48	170	594	357	233	98	155
19	594	350	141			50	185	642	343	228	98	141
20	508	378	150			*50	200	658	322	216	98	136
21	462	850	146	a100		50	222	658	336	211	105	141
22	420	735	146			52	303	618	350	216	141	141
23	364	717	146			58	357	562	357	255	175	146
24	322	930	170			62	378	508	343	364	185	141
25	285	1,080	267			62	399	478	336	500	175	132
26	244	1,190	343			62	399	500	315	508	165	128
27	216	1,060	634			62	462	538	329	448	150	136
28	211	861	1,430			65	492	586	315	392	136	180
29	195	726	1,470			62	462	546	309	336	138	255
30	195	854	1,240			62	420	500	303	297	141	726
31	190	-----	1,060			62	-----	470	-----	267	165	-----
Total	14,773	15,689	14,533	6,550	1,540	1,614	7,505	16,906	11,889	10,480	4,656	6,662
Mean	477	523	469	211	55	52.1	250	545	396	338	150	222
Cfsm	8.49	9.31	8.35	3.75	0.979	0.927	4.45	9.70	7.05	6.01	2.67	3.95
In.	9.78	10.38	9.62	4.33	1.02	1.07	4.97	11.19	7.87	6.94	3.08	4.41
Ac-ft	29,300	31,120	28,830	12,990	3,050	3,200	14,890	33,530	23,580	20,790	9,240	13,210

Calendar year 1956: Max 1,470 Min - Mean 336 Cfsm 5.98 In. 81.30 Ac-ft 243,600
Water year 1956-57: Max 1,470 Min - Mean 309 Cfsm 5.50 In. 74.66 Ac-ft 223,700

Peak discharge (base, 1,000 cfs).--Nov. 26 (4 a.m.) 1,240 cfs (2.95 ft); Dec. 1 (11 a.m.) 1,310 cfs (3.01 ft); Dec. 28 (10 p.m.) 1,610 cfs (3.24 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of recorded range in stage, weather records, and records for stations on nearby streams.

Pavlof River near Tenakee

Location.--Lat 57°50'30", long 135°02'10", on Chichagof Island, on left bank 140 ft upstream from falls at outlet of Pavlof Lake and 8 miles northeast of Tenakee.

Drainage area.--24.3 sq mi.

Records available.--June to September 1957.

Gage.--Water-stage recorder. Altitude of gage is about 15 ft.

Extremes.--Maximum discharge during period June to September, 2,070 cfs Sept. 30 (gage height, 6.79 ft), from rating curve extended above 250 cfs by logarithmic extension; minimum, 22 cfs Aug. 16-18 (gage height, 3.97 ft).

Remarks.--Records good.

Discharge, in cubic feet per second, June to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1									*262	76	45	96
2									267	74	43	58
3									286	69	40	43
4									282	117	38	38
5									244	110	40	43
6									253	86	43	107
7									226	71	43	94
8									192	60	37	71
9									184	58	35	83
10									158	56	34	120
11									140	56	31	120
12									192	116	30	88
13									161	130	28	71
14									136	78	27	60
15									136	74	24	52
16									120	67	22	47
17									126	60	22	42
18									114	56	22	36
19									104	54	30	35
20									96	52	35	34
21									120	51	28	42
22									107	52	86	63
23									101	96	143	*67
24									86	161	94	52
25									86	176	56	45
26									66	110	43	45
27									99	78	37	91
28									91	65	32	117
29									76	56	37	379
30									74	52	43	1,500
31										51	60	-----
Total									4,565	2,468	1,328	3,741
Mean									153	79.6	42.8	125
Cfsm									6.30	3.28	1.76	5.14
In.									7.02	3.78	2.03	5.73
Ac-ft									9,090	4,900	2,630	7,420

Calendar year	: Max	Min	Mean	Cfsm	In.	Ac-ft
Water year	: Max	Min	Mean	Cfsm	In.	Ac-ft

Peak discharge (base, 1,000 cfs).--Sept. 30 (6:30 a.m.) 2,070 cfs (6.79 ft).

* Discharge measurement made on this day.

Gakona River at Gakona

Location.--Lat 62°18'05", long 145°18'20", near center of span on downstream side of bridge on Glenn Highway at Gakona, 500 ft upstream from mouth and 1.9 miles northeast of junction of Richardson and Glenn Highways.

Drainage area.--620 sq mi, approximately.

Records available.--Discharge: August to September 1948, October 1949 to September 1957.

Chemical analyses: February 1952 to September 1954.

Water temperatures: October 1952 to September 1954.

Sediment records: 1953-57 (periodic).

Gage.--Wire-weight gage read once daily. Datum of gage is 1,403.03 ft above mean sea level. Aug. 8 to Sept. 13, 1948, staff gage at same site and datum.

Average discharge.--8 years, 947 cfs (685,600 acre-ft per year).

Extremes.--Maximum discharge during year, 5,800 cfs May 20 (gage height, 6.50 ft, from graph based on gage readings); minimum not determined.

1948, 1949-57: Maximum discharge, 10,300 Aug. 1, 1956 (gage height, 7.92 ft, from graph based on gage readings), from rating curve extended above 5,700 cfs by logarithmic plotting; no flow for part of Mar. 25, 1953, caused by temporary storage behind ice jam upstream.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor. Some diurnal fluctuation caused by glacier melt at the source. Records of specific conductance of daily samples available in district office, Quality of Water Branch, at Palmer, Alaska.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	791							310	2,250	3,400	2,490	2,600
2	773							320	2,230	2,900	*2,620	*2,720
3	802							340	2,360	2,640	2,620	
4	779							370	2,380	2,460	3,080	
5	661							400	2,630	2,910	3,210	
6	*539	150	360					430	2,860	3,080	2,940	
7	440		(*)					460	2,970	3,030	2,880	
8	381			120	90	170	220	503	3,380	3,190	2,820	
9	350							538	3,570	3,030	3,030	3,000
10	321							622	3,330	2,900	3,300	
11	309							727	3,080	2,900	3,380	
12	301							904	3,210	3,050	3,470	
13	301							1,540	3,190	3,210	3,470	
14	289							2,290	3,350	3,400	3,050	
15	278							3,000	*3,570	3,380	2,900	
16	263	140	120					3,600	3,590	3,190	2,800	
17	252							4,390	3,470	2,900	2,800	
18	238							5,220	3,380	2,760	3,000	
19	228							5,550	3,310	2,740	3,000	
20	218							5,600	3,590	2,690	2,900	
21	215							5,340	3,570	2,700	2,700	
22	206				100			4,630	3,470	2,790	2,500	
23	199			91		200	240	4,120	3,240	2,700	2,300	2,300
24	190							3,350	2,730	2,570	2,100	
25	190							3,080	2,460	2,730	2,000	
26	199	280	140					3,510	2,340	3,100	1,900	
27	206					(*)		3,470	2,290	3,460	1,900	
28	199							3,210	2,490	3,080	2,000	
29	190							3,030	2,640	2,790	2,100	
30	176							2,690	3,280	2,740	2,200	
31	170							2,600		2,570	2,400	
Total	10,654	5,700	6,340	3,256	2,650	5,750	6,900	76,144	90,410	90,990	83,960	78,820
Mean	344	190	205	105	94.6	185	230	2,456	3,014	2,935	2,708	2,627
Ac-ft	21,130	11,910	12,580	6,460	5,260	11,400	13,690	151,000	179,300	180,500	166,500	156,300
Calendar year 1956: Max		8,860			Min -		Mean 1,044	Ac-ft 758,100				
Water year 1956-57: Max		5,600			Min -		Mean 1,265	Ac-ft 915,400				

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice from Oct. 6 to May 15 (no gage-height record Oct. 29, Oct. 31 to Nov. 5, Nov. 19, Nov. 21 to May 7; discharge estimated on basis of 2 discharge measurements, weather records, and records for other stations). No gage-height record July 10, 11, Aug. 15-26, Aug. 28 to Sept. 1, Sept. 3-30; discharge interpolated or estimated on basis of 1 discharge measurement, weather records, and records for other stations.

GAKONA RIVER AT GAKONA--Continued

Chemical analyses, in parts per million, March to August 1957

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-magnesium			
Mar. 29, 1957	200	11	0.00	44	10	12	2.3	171	28	10	0.2	0.1	202	151	11	547	7.5	0
May 23	3,330	6.2	.08	25	3.1	2.7	1.6	83	11	2.0	.1	.7	93	75	7	157	7.8	40
Aug. 1	2,390	5.9	--	27	5.2	3.1	1.8	81	30	2.0	.0	.5	116	89	22	188	7.5	20

a Daily mean discharge.

Periodic determinations of suspended-sediment discharge, May to September 1957

Date	Discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Discharge (tons per day)
May 23, 1957	3,330	1,970	17,700
July 10	2,340	2,450	15,500
Aug. 1	2,390	2,000	12,900
Sept. 17	1,350	329	1,200

Particle-size analyses of suspended sediment, July to September 1957
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of Collection	Time	Discharge (cfs)	Water temperature (°F)	Suspended sediment											Methods of analysis	
				Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000
July 10, 1957	7:00 p. m.	2,340	61	2,450	3,600	23	31	43	58	70	80	86	95	100	BSWCM	
Aug. 1		2,390		2,020	5,750	15	23	35	48	59	70	80	94	99	100	BSWCM
Sept. 17		1,350		329	1,620	10	30	51	70	87	99	99	100	--		BSWCM

Tazlina River near Glennallen

Location.--Lat 62°03'20", long 145°25'35", in W $\frac{1}{2}$ sec. 9, T. 3 N., R. 1 W., near left bank on downstream side of bridge on Richardson Highway, 2 miles upstream from mouth, 4 miles downstream from Moose Creek, and 5 miles southeast of Glennallen.

Drainage area.--2,670 sq mi, approximately.

Records available.--Discharge: August 1949 to September 1950, October 1951 to September 1957. Discharge measurements only in 1951.

Chemical analyses: February 1952 to August 1953, January to September 1954, May to August 1956.

Sediment records: 1953-57 (periodic).

Gage.--Wire-weight gage read twice daily. Datum of gage is 1,109.13 ft above mean sea level, adjustment of 1952.

Average discharge.--7 years, 4,301 cfs (3,114,000 acre-ft per year).

Extremes.--Maximum discharge during year, 37,300 cfs Sept. 8 (gage height, 11.24 ft, from graph based on gage readings); minimum not determined.
1949-50, 1951-57: Maximum discharge, 47,000 cfs Aug. 31, 1955 (gage height, 12.25 ft, from graph based on gage readings); minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,630	1,320						500	5,510	13,200	12,000	13,700
2	4,360							500	5,580	13,400	12,600	13,900
3	a4,100							800	5,690	*13,800	12,100	14,100
4	4,030							1,100	5,870	13,600	12,100	15,400
5	a3,900							1,600	6,030	13,900	12,100	17,000
6	3,730	1,100	980					*2,150	6,620	14,300	12,300	20,300
7	a3,500							2,760	6,970	14,400	12,600	26,500
8	3,370			470		390	370	3,550	7,660	17,500	12,100	35,200
9	3,200					(*)		5,010	8,170	18,500	12,300	34,700
10	a3,100							6,200	8,760	17,600	*12,800	29,500
11	3,110							a5,700	9,280	18,000	13,200	25,200
12	a2,900							a6,600	9,700	17,700	13,200	23,000
13	2,820							a5,900	9,940	17,500	13,300	20,900
14	a2,700							*5,210	11,300	16,600	13,500	20,300
15	2,610	830	510		260			4,610	11,500	16,000	13,200	19,000
16	2,510							4,240	11,700	15,600	13,100	17,000
17	2,420							4,140	12,100	15,100	13,100	15,200
18	a2,300							4,220	12,600	15,000	13,100	13,700
19	2,360							4,340	12,800	15,200	12,900	*13,100
20	2,150							4,650	13,500	15,400	12,400	11,700
21	a2,100							4,990	14,600	14,700	12,200	11,000
22	2,010							5,130	15,000	14,000	11,600	9,840
23	1,880			270		370	420	5,170	15,000	14,300	11,400	9,510
24	a1,800							5,170	14,600	14,200	11,200	9,120
25	1,700	1,500	590					5,150	14,400	13,500	10,900	8,610
26	1,640							5,170	14,000	13,500	11,000	8,550
27	1,580							5,360	13,700	13,300	11,300	8,290
28	1,500							5,360	13,400	12,900	11,700	8,110
29	*1,460							5,430	12,800	12,800	12,000	8,020
30	1,410							5,490	13,100	12,100	12,300	7,800
31	1,370							5,450	-----	12,300	13,300	-----
Total	82,250	34,520	21,390	11,370	7,280	11,770	11,850	132,750	321,880	459,700	382,900	488,250
Mean	2,653	1,151	690	367	260	380	395	4,282	10,750	14,850	12,350	16,280
Ac-ft	163,100	68,470	42,430	22,550	14,440	23,350	23,500	263,300	638,400	911,800	759,500	968,400
Calendar year 1956:	Max	15,100	Min	-	Mean	3,889	Ac-ft	2,823,000				
Water year 1956-57:	Max	35,200	Min	-	Mean	5,386	Ac-ft	3,899,000				

* Discharge measurement made on this day.

a No gage-height record; discharge interpolated or estimated on basis of 1 discharge measurement and records for nearby stations.

Note.--Stage-discharge relation affected by ice Oct. 25 to May 10 (no gage-height record Oct. 28, Nov. 2 to May 5; discharge estimated on basis of 4 discharge measurements, weather records, and records for nearby stations).

TAZLINA RIVER NEAR GLENNALLEN--Continued

Chemical analyses, in parts per million, March to August 1957

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium-Magnesium	Non-carbonate			
Mar. 9, 1957.....	412	4.4	0.00	23	0.5	5.5	0.8	67	13	6.0	0.0	0.3	86	59	5	162	7.2	20
May 25.....	5,090	4.2	.05	18	3.0	3.2	1.1	60	11	2.0	.1	.9	74	58	8	126	7.1	25
Aug. 2.....	12,300	3.6	.10	17	3.6	2.1	.7	54	16	.7	.0	.2	71	57	13	117	7.2	25

Periodic determinations of suspended-sediment discharge, May to September 1957

Date	Discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Discharge (tons per day)
May 25, 1957.....	5,090	397	5,460
Aug. 2.....	12,300	93	3,090
Sept. 17.....	15,800	220	9,380

Particle-size analyses of suspended sediment, August to September 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of Collection	Time	Discharge (cfs)	Water temperature (°F)	Suspended sediment												Methods of analysis	
				Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000	BSWCM	BSWCM
Aug. 2, 1957	10:00 a. m.	12,300	93	627	69	70	76	82	86	91	93	96	96	99	100		
Sept. 17	8:00 a. m.	15,800	220	2,800	56	67	77	86	92	96	98	98	99	100	100		

Klutina River at Copper Center

Location.--Lat 61°57'10", long 145°18'20", in SW¹ sec. 18, T. 2 N., R. 1 E., near center of span on downstream side of bridge on Richardson Highway, 0.7 mile south of Copper Center, three-quarters of a mile upstream from mouth, and 24 miles downstream from Klutina Lake.

Drainage area.--880 sq mi, approximately.

Records available.--Discharge: May to August 1908 (gage heights only), June to October 1913, August 1949 to September 1957.

Chemical analyses: March 1952 to September 1954, May to August 1956.

Water temperatures: October 1952 to September 1953.

Sediment records: 1953-54, 1956-57 (periodic).

Gage.--Wire-weight gage read once daily. Datum of gage is 1,011.26 ft above mean sea level. May 19 to Aug. 31, 1908, and June 17 to Oct. 31, 1913, staff gages at sites a quarter of a mile downstream at different datums.

Average discharge.--8 years (1949-57), 1,719 cfs (1,245,000 acre-ft per year).

Extremes.--Maximum discharge observed during year, 8,250 cfs June 18 (gage height, 8.10 ft), maximum gage height observed, 9.31 ft Dec. 12 (backwater from ice); minimum discharge not determined.

1913, 1949-57: Maximum discharge observed, 9,040 cfs June 29, 1953 (gage height, 9.24 ft); maximum gage height observed, 15.55 ft May 9, 1953 (backwater from ice); minimum discharge not determined.

Remarks.--Records fair except those for periods of ice effect, which are poor.

Revisions.--WSP 1372: Drainage area.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,750							310	2,230	5,400	4,360	5,340
2	1,720	(*)						330	2,170	5,540	4,250	5,700
3	1,700							360	2,490	*6,250	4,360	6,020
4	1,640							450	3,430	6,100	4,360	6,380
5	1,600							640	4,130	4,730	4,480	7,260
6	1,500	380	460	360				860	4,660	5,820	4,480	7,500
7	1,400							1,100	5,180	5,960	4,360	7,020
8	1,300				170	260	240	1,400	5,720	5,680	4,360	6,670
9	1,300					(*)		1,600	7,200	5,120	*4,480	5,880
10	1,200							1,600	7,890	5,250	4,730	5,290
11	1,200							1,500	7,550	5,380	5,000	4,360
12	1,200		(*)					1,200	7,550	5,120	5,120	4,960
13	1,100							980	6,670	4,730	5,000	5,090
14	1,100							*838	6,020	4,600	4,870	5,360
15	1,000							820	6,360	5,120	4,600	5,320
16	980	300	240	220				826	7,430	5,540	4,730	5,440
17	950							876	7,720	5,820	4,730	5,620
18	930							980	7,820	5,680	4,710	6,020
19	900							1,100	7,720	5,120	4,960	*5,180
20	860							1,260	8,030	5,250	5,200	4,600
21	820							1,410	7,500	5,120	4,960	4,540
22	780				180			1,460	6,580	5,380	4,840	4,380
23	740					250	280	1,620	6,400	4,730	4,430	4,360
24	700							1,580	6,430	4,870	4,110	4,420
25	660							1,580	6,020	4,480	3,960	4,300
26	620	560	440	180				1,710	5,900	4,600	3,860	4,360
27	600							1,920	5,540	4,730	3,910	4,300
28	570							2,040	5,560	4,660	3,860	4,350
29	550							2,080	5,120	4,360	3,960	4,040
30	520							2,130	5,200	4,480	4,840	3,880
31	490							2,210		4,600	4,960	
Total	32,380	12,400	11,840	7,780	4,890	7,900	7,800	38,770	178,220	160,220	140,830	157,960
Mean	1,045	413	382	251	175	255	260	1,251	5,941	5,166	4,543	5,265
Ac-ft	64,220	24,600	23,480	15,430	9,700	15,670	15,470	76,900	353,500	317,800	279,300	313,300
Calendar year 1956: Max		7,310		Min	-	Mean	1,632	Ac-ft	1,185,000			
Water year 1956-57: Max		8,030		Min	-	Mean	2,085	Ac-ft	1,509,000			

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 7 to about May 20 (no gage-height record Oct. 13, 14, Nov. 5, 7, 9, Nov. 13 to May 13 except occasional readings, May 19; discharge estimated on basis of 4 discharge measurements, weather records, and records for nearby stations.

KLUTINA RIVER AT COPPER CENTER--Continued

Chemical analyses, in parts per million, March to May 1957

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- nesium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (residue on evap- oration at 180°C)	Hardness as CaCO ₃		Specific conduct- ance (micro- mhos at 25°C)	pH	Color
														Calcium, magnesium	Non-carbonate			
Mar. 9, 1957.....	277	5.0	0.11	16	3.3	2.8	0.8	63	7.0	1.5	0.1	0.2	68	53	2	119	7.3	5
May 25.....	1,550	7.0	.05	15	1.0	1.9	.8	46	6.0	.0	.1	.5	55	42	4	98	7.5	25

Periodic determinations of suspended-sediment discharge, May to September 1957

Date	Discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Discharge (tons per day)
May 25, 1957.....	1,550	89	370
Sept. 16.....	6,180	121	2,020

Particle-size analysis of suspended sediment, September 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of Collection	Time	Discharge (cfs)	Water temperature (° F)	Suspended sediment											Methods of analysis
				Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Sept. 16	4:45 p. m.	6, 180		121	569	57	67	74	83	91	99	99	100		BSWCM

Tonsina River at Tonsina

Location.--Lat 61°39'50", long 145°10'50", near center of span on downstream side of bridge on Richardson Highway at Tonsina, 0.5 mile upstream from Bernard Creek and 0.7 mile upstream from Squirrel Creek.

Drainage area.--420 sq mi, approximately.

Records available.--Discharge: May 1950 to December 1954, January to September 1955 (fragmentary), October 1955 to September 1957.

Chemical analyses: February 1952 to September 1953, January to September 1954, May to August 1956.

Water temperatures: October 1952 to September 1953.

Sediment records: 1953-54, 1956-57 (periodic).

Gage.--Wire-weight gage read once daily. Altitude of gage is 1,500 ft (from topographic map).

Average discharge.--6 years (1950-54, 1955-57), 921 cfs (666,800 acre-ft per year).

Extremes.--Maximum discharge during year, 7,910 cfs June 8 (gage height, 7.00 ft, from graph based on gage readings); minimum not determined.
1950-54, 1955-57: Maximum discharge that of June 8, 1957; minimum not determined.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	438	99	500	150	60	98	120	190	2,270	2,380	a1,800	2,610
2	443							210	2,840	2,610	1,840	2,800
3	459							250	2,800	*2,740	a1,900	2,640
4	413							300	3,880	2,600	a1,900	2,310
5	375							350	4,680	2,070	a1,900	2,130
6	329	74	190	82	63	110	140	480	4,830	1,620	a1,900	2,070
7	307							*920	5,790	1,630	a2,000	2,090
8	296							1,000	7,580	1,650	2,190	1,880
9	283							1,100	6,500	1,600	*2,080	2,030
10	276							1,100	5,600	2,010	2,360	2,430
11	270	300	170	65	63	110	140	1,100	5,330	1,890	2,500	2,460
12	260							920	5,250	2,070	2,340	2,820
13	257							770	4,220	2,660	2,210	3,660
14	251							606	4,220	2,700	2,170	4,080
15	248							*726	3,880	2,620	2,130	4,120
16	240	300	170	65	63	110	140	774	3,700	1,840	2,120	3,880
17	234							742	3,700	2,060	2,200	3,090
18	231							790	3,820	2,090	2,240	a2,400
19	226							866	3,590	2,030	1,980	*1,770
20	218							911	3,520	2,030	1,980	1,660
21	208	300	170	65	63	110	140	1,050	2,680	2,050	1,980	1,410
22	201							1,140	2,780	1,670	1,890	1,530
23	189							1,170	2,750	a1,700	1,800	1,660
24	180							1,230	2,170	1,650	1,650	1,800
25	166							1,390	2,300	1,530	1,680	1,980
26	158	300	170	65	63	110	140	1,530	2,240	1,420	1,790	2,000
27	150							1,600	2,300	1,550	1,830	a2,100
28	144							1,710	2,580	1,430	2,200	a2,200
29	135							1,680	2,420	a1,500	2,610	2,130
30	128							1,880	2,380	a1,600	2,640	1,760
31	122							2,050	---	a1,700	2,590	---
Total	7,835	4,730	8,770	3,035	1,719	3,230	3,900	30,535	112,400	60,700	64,480	71,300
Mean	253	158	283	97.9	61.4	104	130	985	3,747	1,958	2,080	2,377
Ac-ft	15,540	9,380	17,400	6,020	3,410	6,410	7,740	60,570	222,900	120,400	127,900	141,400
Calendar year 1956: Max			4,360		Min	-	Mean	796	Ac-ft	578,100		
Water year 1956-57: Max			7,580		Min	-	Mean	1,021	Ac-ft	739,100		

* Discharge measurement made on this day.

a No gage-height record; discharge interpolated or estimated on basis of records for nearby stations.

Note.--Stage-discharge relation affected by ice Oct. 7 to May 13 (no gage-height record Nov. 1, Nov. 13 to May 4; discharge estimated on basis of 3 discharge measurements, weather records, and records for nearby streams.

TONSINA RIVER AT TONSINA--Continued

Chemical analyses, in parts per million, March to August 1957

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, magnesium	Non-carbonate			
Mar. 7, 1957	96.8	7.1	0.00	17	2.7	3.3	1.0	60	7.0	0.8	0.0	0.1	69	54	4	113	7.4	8
May 25	1,390	6.0	.06	13	.3	1.5	.7	37	5.0		.1	.9	46	34	3	78	7.2	20
Aug. 2	1,840	4.1	.00	9.1	1.9	.6	.4	30	7.5	.8	.0	.2	39	30	6	64	6.7	15

Periodic determinations of suspended-sediment discharge, May to September 1957

Date	Discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Discharge (tons per day)
May 25, 1957	1,390	48	180
Aug. 2	a1,840	35	170
Sept. 16	a3,880	65	680

a Daily mean discharge.

Particle-size analysis of suspended sediment, September 1957
 (Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
 W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of Collection	Time	Discharge (cfs)	Water temperature (° F)	Suspended sediment										Methods of analysis	
				Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters									
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500	1.000
Sept. 16, 1957 ..	3:30 p.m.	a 3,880		65	1,100	83	87	91	92	94	97	98	98	99	100
a Daily mean discharge.															

a Daily mean discharge.

Copper River near Chitina

Location.--Lat 61°28', long 144°28', on right bank at head of Woods Canyon, half a mile downstream from Taral Creek and abandoned Indian village of Taral, 2¼ miles upstream from Tenas Creek, and 3¼ miles south of Chitina.

Drainage area.--20,600 sq mi, approximately.

Records available.--Discharge: July to September 1950, May to November 1952, October 1955 to September 1957.

Chemical analyses: June to November 1950, January 1954 to September 1957.

Water temperatures: June to September 1957.

Sediment records: 1954-56 (periodic), June to September 1957.

Gage.--Water-stage recorder. Altitude of gage is 400 ft (from topographic map). Prior to June 2, 1952, staff gage at site a quarter of a mile upstream at datum 1.4 ft higher. June 2 to Nov. 30, 1952, water-stage recorder at same site and datum.

Extremes.--Maximum discharge during year, 148,000 cfs Aug. 12 (gage height, 20.08 ft); minimum not determined.

1950, 1952, 1955-57: Maximum discharge recorded, 159,000 cfs July 30, 1952 (gage height, 22.56 ft); minimum not determined.

Maximum stage known since 1950, 28.3 ft in July 1951, at present datum, from flood-marks (discharge, 220,000 cfs). Minimum discharge observed, 3,830 cfs Feb. 25, 1954 (discharge measurement).

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Some diurnal fluctuation caused by glacier melt at the source. Records of specific conductance of daily samples available in district office, Quality of Water Branch, Palmer, Alaska.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1								a8,200	a64,000	132,000	117,000	107,000
2								a9,000	a68,000	133,000	120,000	106,000
3								a11,000	a72,000	124,000	a120,000	95,800
4								a15,000	a78,000	119,000	a130,000	94,800
5								a21,000	a86,000	115,000	132,000	94,700
6	a33,000		a9,900			(*)		a29,000	a95,000	114,000	125,000	100,000
7								a39,000	a100,000	117,000	118,000	103,000
8		a10,000		a5,800		a6,100	a6,200	a48,000	a120,000	117,000	*121,000	102,000
9								*59,600	a130,000	118,000	128,000	99,800
10								73,800	a130,000	120,000	136,000	101,000
11								78,500	a130,000	117,000	a140,000	97,400
12								77,000	a120,000	120,000	147,000	91,800
13								66,000	a120,000	127,000	142,000	103,000
14								53,300	a120,000	a130,000	136,000	99,400
15	a23,000		a5,400		a3,700			*45,400	a120,000	136,000	134,000	90,500
16								44,000	a130,000	135,000	137,000	a82,000
17								43,300	137,000	134,000	140,000	73,700
18								48,400	146,000	140,000	135,000	*66,300
19								57,400	136,000	139,000	124,000	61,300
20								64,800	134,000	a130,000	110,000	59,200
21								67,600	141,000	a120,000	103,000	58,800
22								67,600	a140,000	121,000	101,000	61,100
23		a13,000		a3,800		a6,000	a7,100	63,600	a130,000	121,000	99,500	62,900
24								58,100	119,000	113,000	97,200	60,700
25								56,000	106,000	109,000	97,900	62,600
26	a16,000		a6,600					57,400	106,000	106,000	99,000	74,700
27								58,400	110,000	a110,000	99,400	76,900
28								57,200	111,000	a110,000	105,000	77,500
29								55,500	a120,000	110,000	115,000	78,900
30	(*)							56,200	a130,000	109,000	112,000	74,000
31		-----			-----		-----	60,000	-----	109,000	105,000	-----
Total	736,000	345,000	225,600	147,800	103,600	187,500	199,500	1,548,3	#3,449	#3,755	#3,726	*2,516.8
Mean	23,740	11,500	7,277	4,768	3,700	6,048	6,650	49,950	115,000	121,100	120,200	65,890
Ac-ft	#1,480	684,300	447,500	293,200	205,500	371,900	395,700	#3,071	#6,841	#7,448	#7,390	*4,992
Calendar year 1956: Max	-	-	-	-	-	-	-	-	-	-	-	-
Water year 1956-57: Max	147,000											
Calendar year 1956: Mean	34,410											
Water year 1956-57: Mean	46,410											

* Discharge measurement made on this day.

Expressed in thousands.

a No gage-height record; discharge estimated on basis of 4 discharge measurements, weather records, and records for stations on tributary streams.

COPPER RIVER NEAR CHITINA--Continued

Chemical analyses, in parts per million, March to September 1957

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (calculated)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, mg-nesium	Non-carbonate			
Mar. 5, 1957.....	6,100	14	0.00	36	9.3	12	1.6	116	26	18	0.2	0.4	174	128	33	294	7.2	5
June 18-20.....	139,000	7.9	.00	23	2.6	3.4	1.9	73	13	2.5	.2	.6	91	68	8	152	7.6	3
June 21-30.....	121,000	7.9	.00	27	3.1	4.3	2.0	88	17	3.0	.1	.4	108	80	8	181	7.7	0
July 1-10.....	121,000	7.8	.00	28	2.7	4.4	2.4	88	17	4.0	.1	1.3	111	81	9	176	7.8	0
July 11-20.....	131,000	5.8	.00	27	2.6	4.1	2.7	85	17	3.0	.1	1.1	105	78	8	166	7.7	0
July 21-31.....	112,000	5.8	.00	27	2.6	4.5	2.8	84	18	3.5	.1	.8	106	78	9	169	7.6	0
Aug. 1-10.....	125,000	5.6	.00	27	4.7	3.5	2.4	83	18	3.0	.1	4.8	110	87	19	179	7.4	0
Aug. 11-20.....	134,000	5.0	.00	28	3.4	3.4	2.8	83	18	2.5	.1	2.9	107	84	16	182	7.4	0
Aug. 21-31.....	103,000	4.7	.00	25	2.8	3.1	2.2	76	18	3.0	.1	1.7	98	74	12	165	7.5	0
Sept. 1-10.....	100,000	6.7	.00	27	4.3	3.8	2.7	90	18	3.0	.0	.3	110	85	11	186	7.7	0

Temperature (°F) of water, June to September 1957

Day	June			July			Aug.			Sept.			Oct.		
	Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1	--	--	53	53	--	11	--	--	--	--	21	--	--	47	--
2	--	50	52	--	--	12	--	54	51	--	22	48	45	45	--
3	--	49	--	--	46	13	--	--	51	--	23	47	47	47	--
4	--	--	--	--	46	14	--	--	50	--	24	--	47	--	--
5	--	--	--	50	47	15	--	--	50	--	25	51	50	--	--
6	--	--	--	50	50	16	--	52	50	--	26	52	48	48	--
7	--	--	--	51	--	17	--	52	--	--	27	52	47	47	--
8	--	--	51	53	--	18	--	50	--	--	28	52	--	47	--
9	--	--	52	51	--	19	--	47	46	--	29	--	52	48	--
10	--	--	53	--	--	20	--	--	47	--	30	--	54	47	--
											31	--	--	--	--

COPPER RIVER NEAR CHITINA--Continued

Suspended sediment, June to September 1957

Day	June			July			August		
	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day
1.....	--	--	--	132,000	3,220	150,000	117,000	3,140	992,000
2.....	--	--	--	133,000	2,980	1,070,000	120,000	3,050	988,000
3.....	--	--	--	124,000	2,650	887,000	120,000	3,110	a 1,010,000
4.....	--	--	--	119,000	2,400	771,000	130,000	3,220	a 1,130,000
5.....	--	--	--	115,000	2,200	683,000	132,000	3,320	1,180,000
6.....	--	--	--	114,000	2,090	a 643,000	125,000	3,140	1,060,000
7.....	--	--	--	117,000	2,000	a 632,000	118,000	2,880	918,000
8.....	--	--	--	117,000	1,900	600,000	121,000	2,790	911,000
9.....	--	--	--	118,000	1,810	577,000	128,000	3,280	1,130,000
10.....	--	--	--	120,000	1,860	603,000	136,000	3,520	a 1,290,000
11.....	--	--	--	117,000	2,220	701,000	140,000	3,720	a 1,410,000
12.....	--	--	--	120,000	2,820	914,000	147,000	3,840	1,520,000
13.....	--	--	--	127,000	2,940	a 1,010,000	142,000	3,490	1,340,000
14.....	--	--	--	130,000	2,990	a 1,050,000	136,000	3,410	1,250,000
15.....	--	--	--	136,000	3,120	1,140,000	134,000	3,510	1,270,000
16.....	--	--	--	135,000	3,480	1,270,000	137,000	3,680	1,360,000
17.....	137,000	2,280	--	134,000	3,380	1,220,000	140,000	3,380	a 1,280,000
18.....	146,000	2,740	1,080,000	140,000	3,800	1,440,000	135,000	3,020	a 1,100,000
19.....	136,000	2,580	947,000	139,000	3,260	1,220,000	124,000	2,680	897,000
20.....	134,000	2,510	908,000	130,000	3,080	a 1,080,000	110,000	2,320	689,000
21.....	141,000	3,120	1,190,000	120,000	2,950	956,000	103,000	2,090	581,000
22.....	140,000	2,820	a 1,060,000	121,000	2,840	928,000	101,000	2,010	548,000
23.....	130,000	2,400	a 842,000	121,000	2,680	876,000	99,500	1,660	446,000
24.....	119,000	2,110	678,000	113,000	2,460	750,000	97,200	1,780	a 467,000
25.....	106,000	2,240	641,000	109,000	2,050	603,000	97,900	1,980	a 523,000
26.....	106,000	2,050	587,000	106,000	1,840	527,000	99,000	2,100	561,000
27.....	110,000	1,880	558,000	110,000	1,880	a 558,000	99,400	1,960	526,000
28.....	111,000	1,940	581,000	110,000	1,940	a 576,000	105,000	2,320	658,000
29.....	120,000	2,380	a 771,000	110,000	2,020	600,000	115,000	3,250	1,010,000
30.....	130,000	2,850	a 1,000,000	109,000	2,250	662,000	112,000	2,780	841,000
31.....	--	--	--	109,000	2,680	789,000	105,000	2,620	a 743,000
Total..	1,766,000	--	11,686,000	3,755,000	--	26,486,000	3,726,000	--	29,629,000
September									
1.....				107,000	2,520	a 728,000			
2.....				106,000	2,480	a 710,000			
3.....				95,800	2,340	605,000			
4.....				94,800	1,900	486,000			
5.....				94,700	1,950	498,000			
6.....				100,000	2,100	567,000			
7.....				--	--	--			
8.....				--	--	--			
9.....				--	--	--			
10.....				--	--	--			
11.....				--	--	--			
12.....				--	--	--			
13.....				--	--	--			
14.....				--	--	--			
15.....				--	--	--			
16.....				--	--	--			
17.....				--	--	--			
18.....				--	--	--			
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22.....				--	--	--			
23.....				--	--	--			
24.....				--	--	--			
25.....				--	--	--			
26.....				--	--	--			
27.....				--	--	--			
28.....				--	--	--			
29.....				--	--	--			
30.....				--	--	--			
31.....				--	--	--			
Total..				598,300	--	3,594,000			

Total discharge for period June 17 to Sept. 6 (cfs-days)..... 9,845,300

Percent of annual discharge during period..... 58.1

Total load for period June 17 to Sept. 6 (tons)..... 71,395,000

a Computed from estimated concentration graph.

COPPER RIVER NEAR CHITINA--Continued

Particle-size analyses of suspended sediment, July 1957
(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of Collection	Time	Discharge (cfs)	Water temperature per- ature (°F)	Suspended sediment												Methods of analysis
				Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500		1.000
July 11, 1957	12:00 m.	107,000		1,970	7,280	20	26	34	46	56	70	81	94		BSWCM	
July 31,	2:00 p.m.	109,000	54	2,430	3,510	16	22	31	42	55	68	78	91	100	BSWCM	

Power Creek near Cordova

Location.--Lat 60°35'15", long 145°37'05", on left bank at old bridge site, 1 mile upstream from Eyak Lake and $5\frac{1}{2}$ miles northeast of Cordova.

Drainage area.--20.5 sq mi.

Records available.--July to November 1913 (fragmentary), August 1947 to September 1957.

Gage.--Water-stage recorder. Datum of gage is 33.5 ft above mean sea level (river profile survey). July to November 1913, staff gage half a mile upstream at different datum.

Average discharge.--10 years, 252 cfs (182,400 acre-ft per year).

Extremes.--Maximum discharge during year, 4,270 cfs Sept. 12 (gage height, 6.96 ft), from rating curve extended above 1,450 cfs by logarithmic plotting; minimum not determined. 1947-57: Maximum discharge recorded, 5,540 cfs Sept. 25, 1949 (gage height, 7.65 ft), from rating curve extended above 1,450 cfs by logarithmic plotting; minimum recorded, 13 cfs Apr. 29, 1950 (gage height, 1.50 ft), but may have been less during periods of no gage-height record.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	158	71	269	111		20	21	32	296	475	410	1,210
2	202	68	218	120		19	22	32	386	490	390	610
3	189	68	187	*98		19	23	37	460	450	370	878
4	152	63	162	98		*19	23	38	445	395	360	798
5	132	63	144	94		19	22	41	435	*374	350	592
6	122	*61	132	79		20	22	43	520	*362	340	425
7	114	60	122	73		21	22	46	592	350	340	350
8	106	59	114	67	26	21	22	72	582	350	340	400
9	117	64	106	61		23	22	146	526	382	350	1,640
10	299	60	99	56		23	22	173	465	410	370	973
11		59	92			24	22	194	430	410	380	586
12	402	57	88			30	22	202	455	430	*362	2,160
13	180	56	83			33	22	187	425	450	390	2,540
14	148	57	78			26	22	171	420	430	390	1,210
15	133	54	76			24	22	*251	415	430	400	600
16	120	53	75	38		24	22	260	374	405	410	450
17	112	53	70			23	22	248	410	400	415	380
18	109	50	68			27	22	269	425	405	366	350
19	99	72	67			27	22	292	420	400	470	450
20	95	72	65			23	22	266	410	358	1,140	*490
21	90	246	63			23	23	251	400	310	982	1,230
22	84	598	62		20	22	24	233	370	303	526	1,340
23	80	562	60			22	24	215	338	303	390	1,040
24	77	395	59			22	27	218	338	318	382	1,610
25	72	675	57			22	29	227	338	363	350	1,590
26	71	413	62	25		21	31	227	378	614	342	1,380
27	132	1,370	59			21	30	224	405	1,570	995	745
28	106	762	82			20	21	239	362	838	1,120	1,770
29	90	687	90			21	38	224	395	538	544	941
30	80	446	98			21	33	245	460	460	445	465
31	73		95			20		272		440	556	
Total	4,168	7,394	3,102	1,512	650	702	721	5,575	12,655	14,153	14,995	29,201
Mean	134	246	100	48.8	25.2	22.6	24.0	180	422	457	464	973
Cfsm	5.54	12.0	4.88	2.38	1.13	1.10	1.17	8.78	20.8	22.3	23.6	47.5
In.	7.56	13.41	5.63	2.74	1.18	1.27	1.31	10.11	22.96	25.68	27.20	52.97
Ac-ft	8,270	14,670	6,150	3,000	1,290	1,390	1,430	11,060	25,100	28,070	29,740	57,920

Calendar year 1956: Max 1,640 Min - Mean 239 Cfsm 11.7 In. 159.00 Ac-ft 173,800
 Water year 1956-57: Max 2,540 Min - Mean 260 Cfsm 12.7 In. 172.02 Ac-ft 188,100

Peak discharge (base, 2,000 cfs).--Sept. 9 (4 p.m.) 3,070 cfs (6.14 ft); Sept. 12 (1 p.m.) 4,270 cfs (6.96 ft); Sept. 21 (6:30 p.m.) 2,150 cfs (5.42 ft); Sept. 24 (2:30 p.m.) 2,250 cfs (5.52 ft); Sept. 28 (7:30 p.m.) 3,340 (6.33 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Jan. 8 to Feb. 14 (stage-discharge relation affected by ice during part of period), July 31 to Aug. 11, Aug. 13-15, Sept. 15-19; discharge estimated on basis of 2 discharge measurements and weather records. Stage-discharge relation affected by ice Feb. 15-28.

Anchor River at Anchor Point

Location.--Lat 59°46'10", long 151°50'00", in SE $\frac{1}{4}$ sec. 4, T. 5 S., R. 15 W., near right bank on downstream side of Sterling Highway bridge at Anchor Point, 0.1 mile downstream from North Fork and 1 mile upstream from mouth.

Drainage area.--226 sq mi.

Records available.--Discharge: June 1953 to September 1957.

Chemical analyses: January 1953, May 1953 to September 1954.

Water temperatures: May 1953 to September 1954.

Sediment records: July 1953 to August 1954 (periodic).

Gage.--Wire-weight gage read once daily. Datum of gage is 24 ft above mean sea level (river-profile survey).

Extremes.--Maximum discharge during year, 1,620 cfs May 9 (gage height, 4.30 ft, from graph based on gage readings), maximum gage height observed, 5.90 ft Dec. 7 (ice jam); minimum discharge, 45 cfs July 16.

1953-57: Maximum discharge, 2,320 cfs May 7, 1954 (gage height, 4.95 ft, from graph based on gage readings), from rating curve extended above 880 cfs by logarithmic plotting; maximum gage height, 6.38 ft Apr. 29, 1956, from graph based on gage readings (ice jam); minimum discharge observed, 28 cfs July 28, 1953 (gage height, 1.81 ft), but may have been less during periods of no gage-height record.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	326	b149	120				130	*559	216	67	103	308
2	246							552	195	80	96	354
3	304							559	195	119	89	898
4	344							649	195	134	85	642
5	321							710	*185	195	113	516
6	254	87		69	73	100	150	794	178	202	155	458
7	239							955	178	145	129	368
8	239							1,260	162	113	89	330
9	239							1,520	146	105	87	286
10	266							1,000	131	105	85	226
11	295	(*)				(*)	150	780	131	85	81	498
12	299							675	131	67	75	1,210
13	290							649	128	49	68	965
14	231							642	122	52	68	610
15	178							572	128	47	*73	492
16	162	(*)					150	492	134	49	58	452
17	216							425	128	96	65	414
18	*185							388	122	185	69	469
19	125							414	116	202	89	480
20	b110							420	134	178	108	458
21	b99	280	62		75	110	300	378	131	270	430	469
22	b93							399	128	239	469	597
23	b88							399	116	266	304	534
24	b85							349	99	202	208	*845
25	b82							344	67	185	198	766
26	b80	b581						330	62	*165	238	546
27	b581							290	69	128	559	480
28	696							278	72	99	591	616
29	516							254	69	93	420	591
30	274							246	67	105	414	441
31	192							235	-----	107	344	-----
Total	7,665	4,602	2,502	2,139	2,070	3,260	5,800	17,497	3,939	4,132	5,960	16,319
Mean	247	153	80.7	69	73.9	105	193	564	131	133	192	544
Cfs/m	1.09	0.677	0.357	0.305	0.327	0.465	0.854	2.50	0.580	0.588	0.850	2.41
In.	1.26	0.76	0.41	0.35	0.34	0.54	0.95	2.88	0.65	0.68	0.98	2.69
Ac-ft	15,200	9,130	4,960	4,240	4,110	6,470	11,500	34,700	7,810	8,200	11,820	32,370
Calendar year 1956: Max	1,300	Min	-	Mean	256	Cfs/m	1.13	In.	15.38	Ac-ft	185,500	
Water year 1956-57: Max	1,520	Min	47	Mean	208	Cfs/m	0.920	In.	12.49	Ac-ft	150,500	

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Nov. 2 to Apr. 30 (stage-discharge relation affected by ice during most of period); discharge estimated on basis of 3 discharge measurements and weather records.

Kasilof River near Kasilof

Location.--Lat 60°19'05", long 151°15'35", in SW $\frac{1}{4}$ sec. 30, T. 3 N., R. 11 W., near center of span on downstream side of bridge on Sterling Highway, 0.9 mile upstream from Crooked Creek, 4 miles downstream from Moosehead Rapids, 5 miles south of Kasilof, and 10 miles downstream from Tustumena Lake.

Drainage area.--738 sq mi.

Records available.--Discharge: July 1949 to September 1957.

Chemical analyses: March to September 1952.

Sediment records: June 1953 to August 1954 (periodic).

Gage.--Wire-weight gage read once daily. Datum of gage is 23.37 ft above mean sea level (Corps of Engineers bench mark).

Average discharge.--8 years, 2,324 cfs (1,683,000 acre-ft per year).

Extremes.--Maximum discharge during year, 12,300 cfs Sept. 14 (gage height, 7.90 ft, from graph based on gage readings); minimum not determined.

1949-57: Maximum discharge, that of Sept. 14, 1957; maximum gage height observed, 8.62 ft Nov. 25, 1955 (backwater from ice); minimum discharge not determined.

Remarks.--Records good except those for periods of ice effect, which are poor.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	4,860	2,070	1,200				353	525	852	3,270	5,970	8,150
2	4,780	1,990	1,100				353	515	884	3,430	6,040	8,320
3	4,580	1,940	994				356	510	900	3,590	6,060	8,390
4	4,500	1,870	916				363	505	932	3,670	6,080	9,130
5	4,380	1,790	860				370	505	*985	3,810	6,110	10,000
6	4,230	1,770				420	378	515	1,030	3,870	6,110	10,700
7	4,130	1,700	836				381	520	1,080	3,940	6,150	10,900
8	4,000	1,660		500	420		385	541	1,130	4,000	6,240	10,600
9	3,940	1,610					388	552	1,190	4,100	6,280	10,700
10	3,870	1,560					388	547	1,250	4,230	6,350	10,900
11	3,740	1,520	740				385	557	1,310	4,420	6,370	10,900
12	3,580	1,450				(*)	381	547	1,380	4,560	6,440	11,200
13	3,560	1,400					381	552	1,450	4,700	6,500	11,600
14	3,450	1,340					388	563	1,530	4,780	6,550	12,200
15	3,290	1,300				500	392	563	1,610	4,880	*6,610	11,600
16	3,180	1,250					396	579	1,700	4,960	6,590	11,400
17	3,120	1,210					400	603	1,760	5,040	6,630	11,300
18	*3,000	1,170					408	639	1,880	5,210	6,630	11,200
19	2,910	1,140	(*)				412	646	2,010	5,300	6,680	11,100
20	2,850	1,130					416	666	2,170	5,420	6,680	10,800
21	2,790	1,130					420	672	2,190	5,590	6,700	10,600
22	2,690	1,140			380		428	686	2,260	5,630	6,700	10,600
23	2,610	1,180					436	693	2,330	5,650	6,750	10,500
24	2,520	1,220	620	410			445	706	2,490	5,740	6,720	*11,400
25	2,480	1,260					467	713	2,610	*5,760	6,820	11,200
26	2,460	1,280				370	466	743	2,710	5,780	6,950	10,400
27	2,430	1,290					510	758	2,820	5,780	7,040	10,100
28	2,380	1,310					525	788	2,950	5,840	7,300	9,880
29	2,290	1,300					520	804	3,100	5,820	7,460	9,500
30	2,250	1,260					*500	828	3,220	5,860	7,670	9,180
31	2,140							836		5,890	8,000	-----
Total	103,090	43,240	22,486	14,060	11,240	13,270	12,411	19,377	53,713	150,510	205,180	314,450
Mean	3,325	1,441	725	454	401	428	414	625	1,790	4,855	6,619	10,480
Cfsm	4.51	1.95	0.982	0.615	0.543	0.580	0.561	0.847	2.43	6.58	8.37	14.2
In.	5.20	2.18	1.13	0.71	0.57	0.67	0.63	0.98	2.71	7.58	10.34	15.85
Ac-ft	204,500	85,770	44,600	27,890	22,290	26,320	24,620	38,430	106,500	298,500	407,000	623,700
Calendar year 1956: Max			7,880	Min -		Mean 1,989	Cfsm 2.70	In. 36.68	Ac-ft 1,444,000			
Water year 1956-57: Max			12,200	Min -		Mean 2,638	Cfsm 3.57	In. 48.55	Ac-ft 1,910,000			

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 7-26, Nov. 30 to Apr. 29 (no gage-height record Dec. 7 to Mar. 31 except once-weekly readings; discharge estimated on basis of 2 discharge measurements and weather records).

Ptarmigan Creek at Lawing

Location.--Lat 60°24'20", long 149°21'45", on right bank 200 ft upstream from bridge on Seward-Anchorage Highway, 0.2 mile north of Lawing, 0.3 mile upstream from mouth, and 3 miles downstream from Ptarmigan Lake.

Drainage area.--32.6 sq mi.

Records available.--Discharge: May 1947 to September 1957.

Chemical analyses: February to September 1952.

Gage.--Water-stage recorder. Altitude of gage is 500 ft (from topographic map). Prior to June 11, 1952, staff gage at site 200 ft downstream at different datum.

Average discharge.--10 years, 109 cfs (78,910 acre-ft per year).

Extremes.--Maximum discharge during year, 796 cfs Sept. 3 (gage height, 2.80 ft); maximum gage height recorded, 4.38 ft Dec. 18 (backwater from ice); minimum daily discharge, 13 cfs Mar. 25-30.

1947-57: Maximum discharge, 980 cfs June 29, 1953 (gage height, 3.28 ft); maximum gage height recorded, that of Dec. 18, 1956; minimum discharge not determined.

Remarks.--Records good except those for periods of ice effect, which are poor.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1	62	37				15	15	26	190	221	164	179	
2	60	37				15	15	26	212	221	162	228	
3	59	36				15	15	27	252	209	162	677	
4	58	36				15	16	28	286	195	159	735	
5	56	35				15	16	28	323	179	150	670	
6	55	35				16	16	28	334	164	141	530	
7	54	34				16	16	30	346	154	143	404	
8	52	34				17	17	32	390	157	164	327	
9	52	34				17	17	35	378	172	182	304	
10	51	34				17	17	36	346	192	192	286	
11	51	34				18	17	39	300	204	192	265	
12	49	34				17	17	48	282	201	184	540	
13	48	34				*17	17	59	242	204	164	708	
14	47	34				16	18	65	*236	212	154	585	
15	46	33				15	18	82	227	221	172	448	
16	46	33				15	19	86	212	227	182	346	
17	*47	32				17	19	106	198	218	*190	282	
18	46	32				16	20	111	195	212	179	255	
19	45	32				17	21	130	192	192	164	252	
20	44	32				16	22	152	182	166	154	227	
21	44	34				15	24	157	169	148	198	221	
22	42	37				14	24	154	164	136	195	224	
23	41	36				14	26	145	162	126	182	206	
24	41	35				14	26	136	157	*123	174	252	
25	40	38				13	26	134	157	126	166	297	
26	39	52				13	26	134	162	136	174	286	
27	41	74				13	27	136	166	138	283	*249	
28	41	82				13	27	141	174	132	366	218	
29	40	85				13	27	148	184	138	289	192	
30	38	80				13	*26	164	204	150	224	164	
31	37	-----				14	-----	176	-----	157	190	-----	
Total	1,472	1,235	1,042	601	448	471	607	2,799	7,022	5,431	5,795	10,557	
Mean	47.5	41.2	33.6	19.4	16	15.2	20.2	90.3	234	175	187	352	
Cfs/m	1.46	1.26	1.03	0.595	0.491	0.466	0.620	2.77	7.18	5.37	5.74	10.8	
In.	1.68	1.41	1.19	0.69	0.51	0.54	0.69	3.19	8.01	6.20	6.61	12.04	
Ac-ft	2,920	2,450	2,070	1,190	889	934	1,200	5,550	13,930	10,770	11,490	20,940	
Calendar year 1956: Max	382			Min	-	Mean	85.2	Cfs/m	2.61	In.	35.60	Ac-ft	61,880
Water year 1956-57: Max	735			Min	13	Mean	103	Cfs/m	3.16	In.	42.76	Ac-ft	74,330

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Nov. 5 to about Mar. 12 (no gage-height record Nov. 22 to Dec. 17, Dec. 22 to Mar. 12; discharge estimated on basis of 2 discharge measurements, weather records, and records for stations on nearby streams), Mar. 22 to Apr. 21.

Grant Creek near Moose Pass

Location.--Lat 60°27'25", long 149°21'15", on right bank 0.3 mile upstream from mouth, 0.8 mile downstream from Grant Lake, and 2.3 miles south of Moose Pass.

Drainage area.--44.2 sq mi.

Records available.--September 1947 to September 1957.

Gage.--Water-stage recorder. Datum of gage is 491 ft above mean sea level (river-profile survey). Prior to July 1, 1952, staff gage at site 0.1 mile downstream at datum 7.23 ft lower.

Average discharge.--10 years, 193 cfs (139,700 acre-ft per year).

Extremes.--Maximum discharge during year, 1,700 cfs Sept. 3 (gage height, 4.06 ft), from rating curve extended above 1,100 cfs by logarithmic plotting; minimum not determined.
1947-57: Maximum discharge, 2,230 cfs June 28, 1953 (gage height, 4.46 ft), from rating curve extended above 1,100 cfs by logarithmic plotting; minimum not determined.

Remarks.--Records good except those for period of no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1	94	44	119			20	19	46	288	423	327	363	
2	91	45	108				19	46	327	431	327	435	
3	88	44	98				19	49	407	427	327	1,390	
4	87	44	89				20	52	492	423	327	1,500	
5	84	43	83				20	55	543	399	305	1,410	
6	79	42	76	26		20	60	569	363	288	1,000		
7	75	41	71				66	627	341	291	712		
8	71	41	65				80	687	334	320	564		
9	69	42	60				100	687	352	352	502		
10	69	41	58				20	115	651	383	371	452	
11	70	41	54		19	21	20	135	585	403	375	419	
12	69	41	51				20	149	549	403	363	853	
13	67	41	49				21	172	*488	397	331	1,020	
14	66	41	46				23	167	479	407	320	817	
15	64	40	44				25	204	466	423	338	621	
16	65	39	41			21	25	210	448	423	356	488	
17	*63	38	39				26	195	423	419	*367	399	
18	62	38	*37				27	190	415	403	349	359	
19	60	38	36				28	204	403	383	323	345	
20	59	38	35				30	237	391	341	305	309	
21	57	41	34	19		18	36	259	359	316	423	295	
22	54	44	34				38	253	352	303	466	298	
23	51	43	33				40	240	345	*285	427	275	
24	49	42	32				43	227	341	272	387	334	
25	49	47	32				44	218	345	273	356	371	
26	48	70	31				45	212	345	291	349	363	
27	52	130	31				45	218	345	293	474	*323	
28	51	145	30				45	221	349	285	575	281	
29	49	151	30				*45	230	367	291	520	243	
30	47	134	30				45	253	399	303	435	207	
31	45	---	29	---	---	---	269	---	316	383	---		
Total	2,004	1,669	1,605	694	532	608	868	5,132	13,472	11,116	11,457	16,948	
Mean	64.6	55.6	51.8	22.4	19	19.6	28.9	166	44.9	359	370	565	
Cfs/m	1.46	1.26	1.17	0.507	0.430	0.443	0.654	3.76	10.2	8.12	8.37	12.8	
In.	1.69	1.40	1.35	0.58	0.45	0.51	0.73	4.32	11.34	9.35	9.64	14.26	
Ac-ft	3,970	3,310	3,180	1,380	1,060	1,210	1,720	10,180	26,720	22,050	22,720	33,620	
Calendar year 1956: Max			645	Min	-	Mean	149	Cfs/m	3.37	In.	45.78	Ac-ft	107,900
Water year 1956-57: Max			1,500	Min	-	Mean	181	Cfs/m	4.10	In.	55.62	Ac-ft	131,100

* Discharge measurement made on this day.

Note.--No gage-height record Dec. 12 to Mar. 31 except occasional days (stage-discharge relation affected by ice during most of period); discharge estimated on basis of 2 discharge measurements, weather records, and records for nearby streams.

Trail River near Lawing

Location.--Lat 60°26'00", long 149°22'20", near center of stream on downstream end of pier at bridge site on old Seward-Anchorage Highway, 0.2 mile upstream from Falls Creek, 0.2 mile downstream from Lower Trail Lake, 1.9 miles upstream from mouth, and 2.1 miles north of Lawing.

Drainage area.--195 sq mi.

Records available.--Discharge: May 1947 to September 1957.

Chemical analyses: November 1951 to September 1952.

Gage.--Water-stage recorder. Altitude of gage is 460 ft (from topographic map). Prior to Sept. 13, 1952, staff gage at same site and datum.

Average discharge.--10 years, 782 cfs (566,100 acre-ft per year).

Extremes.--Maximum daily discharge during year, 4,700 cfs Sept. 4; minimum discharge, 79 cfs Mar. 31 (gage height, 2.89 ft).

1947-57: Maximum discharge, 5,860 cfs June 28, 1953 (gage height, 10.16 ft); minimum daily, 48 cfs Feb. 9, 10, 1949.

Remarks.--Records good except those for period of no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	395	174	535	130	100	88	83	241	1,300	1,970	1,590	a1,700
2	375	176	480	129	100	87	87	244	1,400	2,050	1,600	a2,400
3	361	174	420	126	99	88	90	*257	1,640	2,000	1,550	a4,300
4	356	172	366	126	98	93	93	268	2,010	2,010	1,550	a4,700
5	343	170	325	122	98	101	94	285	2,340	1,940	1,500	a4,200
6	317	167	297	120	97	107	97	313	2,480	1,760	1,390	a3,500
7	305	161	278	116	96	107	97	352	2,820	1,590	1,340	a2,700
8	293	158	257	113	94	107	97	390	2,810	1,550	1,500	a2,300
9	278	160	238	109	93	113	97	475	2,990	1,620	1,730	a2,200
10	274	161	223	108	92	118	98	576	2,900	1,780	1,900	a2,100
11	278	161	208	106	91	118	101	636	2,630	1,950	1,900	a2,000
12	278	160	195	107	90	116	105	696	2,400	1,940	1,830	a3,200
13	274	156	182	108	89	*113	112	768	*2,160	1,900	1,600	a3,600
14	268	153	172	107	88	111	125	796	2,060	1,930	1,490	a3,100
15	260	151	163	106	89	111	134	808	2,010	2,030	1,560	a2,400
16	257	148	154	103	89	120	142	886	1,940	2,070	1,640	a2,000
17	*250	145	*151	100	89	108	146	874	1,830	2,060	1,710	a1,800
18	244	143	146	97	89	103	150	844	1,810	1,980	*1,680	a1,600
19	235	142	140	92	89	101	158	862	1,790	1,900	1,540	a1,500
20	229	143	137	90	89	99	169	946	1,730	1,690	1,430	a1,400
21	229	156	136	88	89	96	184	1,020	1,630	1,490	1,770	a1,300
22	212	172	134	86	88	94	198	1,030	1,570	1,430	2,220	a1,300
23	200	176	133	84	88	92	208	994	1,560	*1,380	2,120	a1,300
24	198	176	132	82	88	91	223	940	1,530	1,310	1,880	a1,600
25	191	182	130	82	88	89	238	910	1,530	1,310	1,740	a2,000
26	180	210	129	83	88	86	244	898	1,550	1,430	1,720	*1,850
27	202	440	129	85	87	85	244	886	1,570	1,440	a2,500	1,720
28	208	647	129	87	88	82	241	904	1,590	1,360	a2,700	1,430
29	202	713	132	93	-	81	244	940	1,680	1,370	a2,400	1,210
30	193	658	130	98	-----	81	241	1,040	1,830	1,430	a2,100	1,010
31	184	-----	130	99	-----	80	-----	1,180	-----	1,520	a1,900	-----
Total	8,069	6,705	6,511	3,182	2,563	3,066	4,538	22,259	58,890	53,190	54,870	67,620
Mean	260	224	210	103	91.5	98.9	151	718	1,963	1,716	1,770	2,254
Cfs/m	1.33	1.15	1.08	0.528	0.469	0.507	0.774	3.68	10.1	8.80	9.08	11.6
In.	1.54	1.28	1.24	0.61	0.49	0.58	0.97	4.25	11.23	10.14	10.46	12.90
Ac-ft	16,000	13,300	12,910	6,310	5,080	6,080	9,000	44,150	116,800	105,500	108,800	134,100
Calendar year 1956: Max	2,990	Min	64	Mean	654	Cfs/m	3.35	In.	45.68	Ac-ft	475,100	
Water year 1956-57: Max	4,700	Min	80	Mean	799	Cfs/m	4.10	In.	55.59	Ac-ft	578,000	

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of 1 discharge measurement, recorded range in stage, weather records, and records for nearby stations.

Note.--Stage-discharge relation affected by ice Dec. 11-31.

Crescent Creek near Moose Pass

Location.--Lat 60°28'45", long 149°34'25", on left bank 90 ft downstream from Crescent Lake Outlet and 7 miles west of Moose Pass.

Drainage area.--21.4 sq mi.

Records available.--May to September 1957.

Gage.--Water-stage recorder. Datum of gage is 1,452.5 ft above mean sea level (river-profile survey).

Extremes.--Maximum discharge during period May to September, 210 cfs June 9; maximum gage height, 2.85 ft Sept. 15; minimum discharge, 31 cfs Aug. 19, 20 (gage height, 1.62 ft).

Remarks.--Records good except those for period of shifting-control, which are fair.

Discharge, in cubic feet per second, May to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1								-	104	84	40	59
2								-	114	80	38	65
3								-	130	80	38	119
4								-	150	79	38	100
5								-	167	77	37	86
6								-	179	74	36	80
7								-	188	71	36	76
8								-	203	68	35	74
9								-	210	65	35	72
10								-	197	66	35	66
11								-	179	64	35	74
12								-	*170	64	35	128
13								-	156	62	34	128
14								-	150	62	34	123
15	†29							-	145	61	33	114
16								-	130	61	*33	104
17								-	126	58	33	96
18								-	108	58	32	98
19								-	104	57	32	98
20								-	106	54	32	89
21								-	104	52	38	91
22								-	96	50	38	92
23								-	94	48	38	91
24								-	91	*45	38	108
25								-	87	44	38	*110
26								-	84	44	37	104
27								-	82	44	48	96
28								-	82	42	59	92
29					-			-	96	82	41	86
30					-----			*98	82	41	59	76
31					-----			102	-----	40	58	-----
Total								-	3,900	1,836	1,213	2,795
Mean								-	130	59.2	59.1	93.2
Cfsm								-	6.07	2.77	1.83	4.36
In.								-	6.78	3.19	2.11	4.86
Ac-ft								-	7,740	3,640	2,410	5,540
Calendar year	: Max		Min		Mean		Cfsm		In.		Ac-ft	
Water year	: Max		Min		Mean		Cfsm		In.		Ac-ft	

* Discharge measurement made on this day.

† Result of discharge measurement

Note.--Shifting-control method used Sept. 4-30.

Crescent Creek near Cooper Landing

Location.--Lat 60°29'50", long 149°40'40", on left bank at bridge on old Seward-Kenai Highway, 0.3 mile upstream from mouth and 5.3 miles east of Cooper Landing.

Drainage area.--31.7 sq mi.

Records available.--Discharge: July 1949 to September 1957.
Chemical analyses: April to September 1952.

Gage.--Water-stage recorder. Altitude of gage is 550 ft (from topographic map). Prior to Aug. 19, 1949, staff gage at same site and datum.

Average discharge.--8 years, 70.4 cfs (50,970 acre-ft per year).

Extremes.--Maximum discharge during year, 342 cfs June 7 (gage height, 1.90 ft); maximum gage height recorded, 2.20 ft Nov. 2 (backwater from ice); minimum discharge recorded, 6 cfs Mar. 17, caused by storage behind ice jam upstream.
1949-57: Maximum discharge, 820 cfs June 28, 1953; maximum gage height, 2.85 ft June 27, 1953; minimum discharge observed, 2.7 cfs Mar. 8, 1954 (discharge measurement), caused by storage behind ice jam upstream.

Remarks.--Records good except those for periods of backwater from debris or ice effect, which are fair, and those for period of no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	54	30				17	15	21	153	120	67	80
2	54	29				17	14	*22	180	115	64	97
3	52					17	10	26	213	108	58	191
4	52					18	14	30	247	101	58	142
5	50					18	14	35	280	101	55	125
6	47					18	14	41	300	99	53	117
7	45					19	14	50	320	97	52	110
8	43		59	25		19	13	60	337	95	55	108
9	42					19	14	73	315	97	57	106
10	44					19	14	76	280	97	55	99
11	45					19	14	82	256	93	55	106
12	44	27				19	14	93	243	91	55	194
13	43					*18	15	97	*217	90	54	194
14	41					18	15	95	210	93	54	176
15	42					18	16	108	194	95	56	163
16	42				18	18	16	108	180	91	*57	153
17	*40				10	16	110	170	91	56	147	
18	37				15	16	115	163	90	53	144	
19	35				17	16	133	153	88	51	144	
20	34		(*)		17	16	142	144	80	52	136	
21	34				17	16	142	142	77	68	136	
22	33				17	16	139	136	76	64	133	
23	34				17	17	136	130	72	65	130	
24	35		31	19	17	18	130	128	*69	64	147	
25	33				18	16	130	120	67	64	*147	
26	35	56			18	18	128	117	73	65	142	
27	37				18	18	130	117	69	93	133	
28	35				16	18	130	117	66	86	130	
29	34				15	19	133	117	66	84	120	
30	32				15	20	*136	120	66	84	106	
31	31				15	15	142		67	82		
Total	1,259	1,105	1,381	679	504	533	466	2,993	5,799	2,700	1,937	4,056
Mean	40.6	36.8	44.5	21.9	18	17.2	15.5	96.5	193	87.1	62.5	135
Cfsm	1.28	1.16	1.40	0.691	0.568	0.543	0.489	3.04	6.09	2.75	1.97	4.26
In.	1.48	1.30	1.62	0.80	0.59	0.63	0.55	3.51	6.80	3.17	2.27	4.76
Ac-ft	2,500	2,190	2,740	1,350	1,000	1,060	924	5,940	11,500	5,360	3,840	8,040

Calendar year 1956: Max 212 Min - Mean 65.0 Cfsm 2.05 In. 27.91 Ac-ft 47,190
Water year 1956-57: Max 337 Min 10 Mean 64.1 Cfsm 2.02 In. 27.48 Ac-ft 46,440

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 29 to Nov. 2. No gage-height record Nov. 3 to Mar. 12 (stage-discharge relation affected by ice during most of period); discharge estimated on basis of 2 discharge measurements, weather records, and records for Cooper Creek near Cooper Landing. Backwater from debris Oct. 1-28, May 18 to June 11, Aug. 3-29.

Kenai River at Cooper Landing

Location.--Lat 60°29'35", long 149°48'25", near center of span on downstream side of bridge on Sterling Highway, 0.9 mile east of Cooper Landing, 0.9 mile upstream from Bean Creek, and 1.2 miles downstream from Snug Harbor.

Drainage area.--634 sq mi.

Records available.--Discharge: May 1947 to September 1957.

Chemical analyses: October 1949, July to September 1950, April to September 1952.

Gage.--Wire-weight gage read once daily. Datum of gage is 429.27 ft above mean sea level (river-profile survey). May 11, 1947, to Mar. 10, 1949, staff gage and Mar. 11, 1949, to Apr. 13, 1950, wire-weight gage, at bridge 0.9 mile downstream at different datum.

Average discharge.--10 years, 2,666 cfs (1,930,000 acre-ft per year).

Extremes.--Maximum discharge during year, 16,300 cfs Sept. 6 (gage height, 11.15 ft), from rating curve extended above 10,000 cfs by logarithmic plotting; minimum daily, 260 cfs Mar. 29-31.

1947-57: Maximum discharge, 20,600 cfs June 29, 1953 (gage height, 12.36 ft, from graph based on gage readings), from rating curve extended above 10,000 cfs by logarithmic plotting; minimum daily, 190 cfs Mar. 15-24, 1951.

Remarks.--Records good except those for periods of ice effect, which are fair.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,200	4,970	1,640	572	349	280	265	*515	3,140	5,640	4,810	5,460
2	2,020	4,050	1,820	572	352	280	272	*534	3,240	5,800	4,880	6,440
3	1,880	3,350	1,440	568	352	285	280	581	3,670	5,980	4,900	10,300
4	1,780	2,940	1,420	545	349	291	291	580	4,360	6,120	4,920	14,000
5	1,750	2,540	1,440	530	340	299	299	595	4,790	6,080	4,830	15,400
6	1,700	2,160	1,450	515	334	310	310	614	5,320	6,020	4,720	16,200
7	1,650	1,930	1,380	498	322	322	316	645	5,780	5,800	4,580	14,900
8	1,590	1,700	1,340	484	316	334	313	682	6,180	5,590	4,780	12,800
9	1,590	1,460	1,260	476	313	343	313	719	6,930	5,620	5,050	11,300
10	1,580	1,390	1,200	462	310	340	316	840	7,320	5,680	5,280	10,400
11	1,480	1,380	1,130	448	305	*346	316	934	7,370	5,740	5,480	10,200
12	1,410	1,380	1,090	445	299	343	319	1,030	*7,520	5,820	5,480	10,200
13	1,400	1,340	1,040	442	296	346	316	1,150	8,580	5,940	5,420	12,500
14	1,380	1,260	986	438	294	349	313	1,230	8,800	6,000	5,370	13,700
15	1,370	1,180	939	434	288	346	340	1,420	8,970	6,040	5,390	12,100
16	1,350	1,090	906	431	285	346	346	1,620	6,660	6,140	*5,390	10,600
17	1,330	1,060	875	417	283	346	362	1,750	6,500	6,280	5,420	9,420
18	1,350	1,040	849	404	283	334	378	1,890	6,400	6,220	5,390	8,320
19	*1,360	1,020	818	368	283	322	394	2,020	6,160	6,160	5,370	7,370
20	1,370	982	*774	372	283	308	404	2,170	5,940	5,680	5,350	6,640
21	1,430	958	744	356	280	299	414	2,320	5,640	5,640	5,330	6,300
22	1,520	981	723	334	280	294	420	2,430	5,500	5,420	5,800	5,620
23	1,670	934	699	325	280	288	428	2,530	5,460	5,140	6,280	5,600
24	1,930	910	674	313	280	285	431	2,580	5,420	4,920	6,580	5,680
25	2,260	934	658	310	280	280	438	2,630	5,280	*4,830	6,500	5,660
26	2,970	1,050	641	305	280	272	445	2,690	5,190	4,790	6,710	*5,660
27	3,880	1,240	629	310	280	267	452	2,760	5,210	4,760	7,010	5,500
28	5,170	1,460	618	316	280	262	459	2,810	5,230	4,710	7,810	5,390
29	6,680	1,620	599	328	-	260	476	2,880	5,230	4,660	8,390	4,920
30	7,310	1,610	587	337	-----	260	494	2,940	5,350	4,710	7,910	4,450
31	6,200	-----	576	346	-----	260	-----	3,040	-----	4,760	7,190	-----
Total	72,560	49,899	30,743	13,021	8,476	9,467	10,920	51,109	174,940	172,870	178,320	273,010
Mean	2,341	1,663	992	420	303	306	364	1,649	5,831	5,576	5,752	9,100
Cfsm	3.69	2.62	1.56	0.662	0.478	0.483	0.574	2.60	9.20	8.75	9.07	14.4
In.	4.26	2.93	1.80	0.76	0.50	0.58	0.64	3.00	10.26	10.14	10.46	16.01
Ac-ft	143,900	98,970	60,980	25,830	16,810	18,840	21,680	101,400	347,000	342,900	353,700	541,500

Calendar year 1956: Max 8,950 Min 214 Mean 2,324 Cfsm 3.67 In. 49.86 Ac-ft 1,687,000
 Water year 1956-57: Max 16,200 Min 260 Mean 2,864 Cfsm 4.52 In. 61.32 Ac-ft 2,073,000

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Dec. 12 to Mar. 8, Mar. 21 to Apr. 3.

Cooper Creek near Cooper Landing

Location.--Lat 60°26'00", long 149°49'15", on left bank 125 ft downstream from Cooper Lake Outlet, 1.4 miles upstream from Stetson Creek, and 4 miles south of Cooper Landing.

Drainage area.--31.8 sq mi.

Records available.--August 1949 to September 1957.

Gage.--Water-stage recorder. Datum of gage is 1,165.5 ft above mean sea level (river-profile survey).

Average discharge.--8 years, 86.0 cfs (62,260 acre-ft per year).

Extremes.--Maximum discharge during year, 316 cfs Sept. 4 (gage height, 2.67 ft); minimum not determined.
1949-57: Maximum discharge, 729 cfs June 29, 1953 (gage height, 4.02 ft); minimum not determined.

Remarks.--Records good except those for periods of no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	
1	68	35	93	32				a25	143	161	90	110	
2	65	35	90	32				a27	159	163	87	137	
3	65	34	85	32				a30	181	159	84	272	
4	64	33	81					a34	205	154	84	306	
5	63	33	76					a38	227	150	84	306	
6	60	31	72				a43	241	145	81	290		
7	58	30	68				a49	259	139	78	267		
8	57	30	65				a58	285	130	78	241		
9	55	31	61				a72	298	130	79	222		
10	55	32	59				a76	266	130	79	203		
11	54	32	58				a81	260	130	79	200		
12	54	31	55				a86	*272	126	81	267		
13	52	31	53				87	259	124	78	308		
14	51	30	52				89	256	122	75	301		
15	*49	30	a49				94	249	120	75	277		
16	48	30	a46					97	241	120	*75	256	
17	46	31	a43					97	229	118	73	236	
18	46	32	*40					99	227	120	72	217	
19	44	32	a39					106	217	120	69	208	
20	44	31	a37					116	210	114	70	198	
21	44	39	a36					124	200	110	62	186	
22	43	41	a35					126	193	108	81	179	
23	42	40	a34					124	168	105	79	170	
24	40	40	a33					122	181	*99	79	174	
25	38	45	a33					122	174	97	81	*174	
26	39	63	a32					122	167	99	81	172	
27	44	84	a32					122	165	96	99	165	
28	43	92	a32					124	159	92	112	156	
29	41	104	a32					128	156	92	114	148	
30	39	100						132	156	90	112	134	
31	38		32					139		90	110		
Total	1,549	1,282	1,585	796	588	628	570	2,789	6,465	3,753	2,601	6,480	
Mean	50.0	42.7	51.1	25.7	21	20.3	19	90.0	216	121	83.9	216	
Cfsm	1.57	1.34	1.61	0.808	0.660	0.638	0.597	2.63	6.79	3.81	2.64	6.79	
In.	1.81	1.50	1.85	0.93	0.89	0.73	0.67	3.26	7.56	4.39	3.04	7.58	
Ac-ft	3,070	2,540	3,140	1,580	1,170	1,250	1,130	5,530	12,820	7,440	5,160	12,850	
Calendar year 1956: Max	283			Min	-	Mean	80.2	Cfsm	2.52	In.	34.33	Ac-ft	58,230
Water year 1956-57: Max	308			Min	-	Mean	79.7	Cfsm	2.51	In.	34.01	Ac-ft	57,680

* Discharge measurement made on this day.

a No gage-height record; discharge estimated on basis of 2 discharge measurements, weather records, and records for Crescent Creek near Cooper Landing and Trail River near Lawing.

South Fork Campbell Creek near Anchorage

Location.--Lat 61°09'55", long 149°46'00", in NW¼ sec. 2, T. 12 N., R. 3 W., on right bank 20 ft downstream from bridge, 0.1 mile northeast of Campbell Airstrip, 2.2 miles upstream from North Fork Campbell Creek, and 5½ miles southeast of Anchorage.

Drainage area.--29.4 sq mi.

Records available.--July 1947 to September 1957.

Gage.--Water-stage recorder. Altitude of gage is 300 ft (from topographic map). Prior to Aug. 20, 1952, at site 70 ft upstream at different datum.

Average discharge.--10 years, 38.2 cfs (27,660 acre-ft per year).

Extremes.--Maximum discharge during year, 181 cfs Sept. 19 (gage height, 1.85 ft); maximum gage height observed, 2.70 ft Dec. 21 (backwater from ice); minimum daily, 6 cfs Jan. 22-25, Mar. 6-12.

1947-57: Maximum discharge, 891 cfs June 21, 1949 (gage height, 3.30 ft, site and datum then in use), from rating curve extended above 110 cfs by logarithmic plotting; minimum not determined.

Remarks.--Records good except those for periods of ice effect, which are fair.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	40	17	18	14	12	8	7	12	76	46	39	40
2	40	20	19	13	12	9	7	13	86	47	39	38
3	39	22	20	12	11	8	7	*14	97	*45	36	38
4	36	23	*20	11	11	7	7	16	112	43	36	38
5	35	23	18	11	10	7	*7	18	122	56	35	40
6	35	*22	17	11	10	*6	7	20	125	49	40	36
7	35	20	16	11	*9	8	7	21	*129	45	36	36
8	*32	17	16	11	9	6	7	30	123	42	34	34
9	31	15	15	11	8	6	7	39	122	39	34	34
10	31	14	15	*10	8	6	7	*43	114	36	33	*35
11	31	13	15	10	8	6	7	52	108	36	32	41
12	27	13	14	11	8	6	*8	54	95	*35	31	84
13	26	13	14	11	9	*7	9	54	*84	33	30	72
14	24	12	14	*12	*9	7	9	47	81	31	30	61
15	22	12	14	12	10	7	9	61	74	32	29	54
16	20	13	15	12	10	8	9	*56	73	32	*28	49
17	19	13	15	11	10	8	9	46	70	32	29	47
18	18	14	16	10	9	8	10	53	74	44	34	64
19	18	16	16	9	9	9	*10	66	64	84	51	126
20	19	18	16	8	9	9	10	72	67	52	45	*120
21	20	*20	*16	7	*8	*9	10	74	*64	42	41	110
22	*21	22	15	6	8	8	11	82	73	*48	40	114
23	22	23	14	6	7	8	12	57	61	43	49	101
24	20	23	13	*6	7	8	12	*54	54	41	42	127
25	17	22	12	6	7	8	11	56	53	51	38	120
26	14	23	12	7	*8	8	*10	66	51	129	36	112
27	12	*24	*13	8	8	*8	10	64	51	83	54	102
28	11	24	15	9	8	7	11	62	48	60	*76	104
29	11	21	14	10	-	7	11	68	47	52	58	93
30	12	19	15	*11	-----	7	11	74	48	46	48	79
31	*14	-----	14	11	-----	7	-----	73	-----	*41	42	-----
Total	750	551	474	308	252	229	269	1,499	2,452	1,495	1,225	2,149
Mean	24.2	18.4	15.3	9.9	9.0	7.4	9.0	48.4	81.7	48.2	39.5	71.6
Ac-ft	1,490	1,090	940	611	500	454	534	2,970	4,860	2,970	2,430	4,260

Calendar year 1956: Max 197 Min - Mean 31.9 Ac-ft 23,180

Water year 1956-57: Max 129 Min 6 Mean 31.9 Ac-ft 23,110

Peak discharge (base, 150 cfs).--July 26 (10 a.m.) 155 cfs (1.69 ft); Sept. 19 (8:30 p.m.) 181 cfs (1.85 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 13 to Nov. 26, Nov. 29 to Apr. 30 (no gage-height record Oct. 17-21, Nov. 3-5, 7-20, 25, 26, Dec. 2 to Apr. 11, except on days of discharge measurements; discharge estimated on basis of 18 discharge measurements, weather records, and records for Ship Creek near Anchorage and Little Susitna River near Palmer).

Ship Creek near Anchorage

Location.--Lat 61°13'25", long 149°38'00", in Fort Richardson Military Reservation, at new diversion dam and Fort Richardson water-supply intake building, 0.2 mile upstream from abandoned dam and water-supply intake building, 3.5 miles upstream from North Fork Ship Creek, and 8½ miles east of Anchorage.

Drainage area.--91.2 sq mi.

Records available.--Discharge: October 1946 to September 1957.

Chemical analyses: April 1949 to July 1951.

Water temperatures: May 1949 to September 1950.

Gage.--Water-stage recorder and masonry dam. Datum of gage is 530 ft above mean sea level (levels by Corps of Engineers). Oct. 1, 1946, to Apr. 30, 1947, staff gage and May 1, 1947, to Apr. 19, 1954, water-stage recorder, at site 0.2 mile downstream at different datum. June 18, 1953, to Sept. 30, 1954, supplementary water-stage recorder at site 2.7 miles downstream at different datum.

Average discharge.--11 years, 142 cfs (102,800 acre-ft per year).

Extremes.--Maximum discharge during year, 712 cfs June 4 (gage height, 2.99 ft); no flow for parts of several days.

1946-57: Maximum discharge, 1,860 cfs June 21, 1949 (gage height, 3.44 ft, site and datum then in use); no flow at times.

Remarks.--Records fair except those for period of ice effect, which are poor. Discharge data represent net flow remaining after diversion for water supply of Fort Richardson, Elmendorf Air Force Base, and city of Anchorage. Average diversion, 22.1 cfs.

Cooperation.--Gage inspected and records of diversion furnished by Office of Post Engineers, Fort Richardson.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	116	30	42	28	21	10	9	35	440	175	161	152
2	116	44	44	27	20	11	8	38	502	175	152	150
3	113	45	45	26	19	11	8	*46	589	*166	142	176
4	106	46	*42	*23	18	9	7	55	645	168	140	195
5	102	45	40	23	17	8	*4	64	670	189	136	211
6	97	*42	39	22	16	*8	5	64	670	164	136	195
7	97	37	38	22	*15	7	6	72	*673	157	125	170
8	*92	34	37	22	14	7	4	99	666	151	120	157
9	89	32	36	22	13	6	5	117	610	141	116	152
10	86	31	36	*22	13	7	7	*132	526	145	116	*146
11	88	30	*35	21	13	7	9	164	462	141	116	146
12	82	29	34	21	14	7	*13	215	406	*135	111	234
13	82	28	34	21	15	*6	18	232	*344	133	105	238
14	76	27	34	*22	16	7	19	210	322	132	103	238
15	69	27	35	23	17	6	16	240	302	126	102	211
16	60	27	36	23	17	7	15	*224	288	123	*98	188
17	56	28	37	21	16	7	15	210	274	127	100	170
18	54	30	38	19	15	6	17	232	285	148	110	181
19	56	37	37	17	14	6	*16	277	263	165	136	283
20	58	45	34	15	13	6	16	305	266	138	116	*297
21	59	*54	34	14	*12	*5	20	322	*252	129	120	303
22	60	69	31	13	12	6	23	302	252	*135	120	317
23	*63	76	28	12	11	5	26	*285	235	120	120	295
24	56	76	25	*12	10	7	26	294	212	115	113	339
25	45	69	23	12	9	6	24	322	202	152	111	331
26	37	80	22	13	*9	10	*23	347	194	320	111	331
27	29	*90	*23	14	9	*10	28	341	186	272	140	323
28	22	90	24	16	9	9	29	347	184	231	*170	328
29	21	70	25	18	-	8	31	390	184	200	167	303
30	21	54	27	*20	-	9	32	421	189	181	163	267
31	*24	-----	28	21	-----	9	-----	418	-----	*167	159	-----
Total	2,132	1,418	1,043	605	397	233	479	6,818	11,293	5,017	3,935	7,027
Mean	68.8	47.3	33.6	19.5	14.2	7.5	16.0	220	376	162	127	234
Ac-ft	4,230	2,810	2,070	1,200	787	462	950	13,520	22,400	9,950	7,800	13,940

Calendar year 1956: Max 512 Min 0 Mean 109 Ac-ft 79,100
 Water year 1956-57: Max 673 Min 4 Mean 111 Ac-ft 80,120

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 13 to Apr. 23 (no gage-height record Feb. 15-20, 24, 25, 27, 28; discharge estimated on basis of 2 discharge measurements and weather records).

Eklutna Lake near Palmer

Location.--Lat 61°24'05", long 149°09'00", 100 ft upstream from dam at outlet of Eklutna Lake, 8 miles upstream from abandoned Eklutna power diversion dam, 11 miles upstream from mouth of Eklutna Creek, and 14 miles south of Palmer.

Drainage area.--119 sq mi.

Records available.--November 1946 to September 1957 (fragmentary since January 1955).

Gage.--Staff gage. Datum of gage is 859.8 ft above mean sea level (Corps of Engineers bench mark). Prior to May 5, 1947, reference point at same site and datum.

Extremes.--Maximum gage height observed during year, 10.63 ft Sept. 5; minimum observed, -22.45 ft May 17.
1946-57: Maximum gage height observed, 12.00 ft Sept. 18, 1951; minimum observed, that of May 17, 1957.

Remarks.--Outflow from lake controlled by stoplogs and sluice gates in dam at outlet. Gates fully open during flood season each year. Prior to December 1954, stored water released during winter period for power purposes. Since December 1954, direct withdrawals from Eklutna Lake for power purposes; flow then diverted into Knik River basin.

Gage height, in feet, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	-	-	-	-	-7.81	-	-	-	-	-	-	-
2	-	-	-	-	-	-	-	-	-	-	9.97	-
3	-	-	-	-	-	-	-	-	-	-	-	10.20
4	8.72	-	-	-3.11	-	-	-	-	-	-	-	10.42
5	-	-	-	-	-	-	-18.22	-	-	-4.23	-	10.63
6	-	-	-	-	-	-	-	-	-	-	10.15	10.61
7	-	-	1.32	-	-	-	-	-	-20.47	-	10.09	-
8	-	-	-	-	-8.95	-13.63	-	-	-	-	10.18	-
9	-	4.87	-	-	-	-	-	-	-	-	10.35	10.21
10	8.21	-	-	-	-	-	-	-21.93	-	-	-	10.20
11	-	-	-	-4.34	-	-	-	-	-	-	-	10.08
12	-	-	-	-	-	-	-19.24	-	-	-5.1	10.45	-
13	-	-	-	-	-	-	-	-	-	-	10.34	10.51
14	-	-	.17	-	-	-	-	-	-15.43	-	-	10.46
15	-	-	-	-	-10.19	-14.80	-	-	-	-	-	10.31
16	-	3.91	-	-	-	-	-	-	-	-	10.30	10.14
17	-	-	-	-	-	-	-	-22.45	-	-	-	9.96
18	-	-	-	-5.46	-	-	-	-	-	-	-	9.92
19	7.46	-	-	-	-	-	-	-	-	4.34	10.27	9.92
20	-	-	-	-	-	-	-	-	-11.60	-	10.17	9.92
21	-	-	-9.96	-	-11.16	-	-	-	-	-	10.09	9.86
22	-	-	-	-	-	-16.06	-20.18	-	-	-	10.02	9.92
23	-	3.09	-	-	-	-	-	-22.40	-	-	-	9.96
24	-	-	-	-	-	-	-	-	-	-	-	10.01
25	-	-	-	-6.77	-	-	-	-	-	6.91	-	10.13
26	6.67	-	-	-	-	-	-20.67	-	-	-	-	10.26
27	-	-	-	-	-	-	-	-	-	-	-	10.27
28	-	-	-2.05	-	-12.30	-	-	-	-8.43	-	10.43	10.26
29	-	-	-	-	-	-17.22	-	-	-	-	10.38	10.26
30	-	2.44	-	-	-	-	-21.17	-	-	9.15	10.21	10.22
31	6.11	-	-	-	-	-	-	-21.68	-	9.6	-	-

Eklutna Creek near Palmer

Location.--Lat 61°24'05". long 149°09'00". on right bank 200 ft downstream from dam at outlet of Eklutna Lake, 8 miles upstream from abandoned Eklutna power diversion dam, 11 miles upstream from mouth, and 14 miles south of Palmer.

Drainage area.--119 sq mi.

Records available.--Discharge: October 1946 to September 1957.

Chemical analyses: April 1949 to September 1950, December 1950 to August 1952.

Water temperatures: May 1949 to September 1950, December 1950 to July 1951.

Gage.--Water-stage recorder. Datum of gage is 856.53 ft above mean sea level (Corps of Engineers bench mark). Prior to Aug. 31, 1948, staff gage at site 100 ft upstream at datum 1.96 ft higher. Aug. 31, 1948, to Sept. 30, 1953, at datum 1.96 ft higher.

Average discharge.--8 years (1946-54), 346 cfs (250,500 acre-ft per year), unadjusted.

Extremes.--Maximum discharge during year, 1,250 cfs Sept. 5 (gage height, 4.74 ft); no flow Oct. 8 to July 18.

1946-57: Maximum discharge, 2,530 cfs Sept. 18, 1951 (gage height, 8.06 ft in gage well, present datum); no flow for long periods since December 1954.

Remarks.--Records good except those for periods of no gage-height record, which are fair. Flow regulated by Eklutna Lake, usable capacity, 160,000 acre-ft. Since December 1954, entire flow, except for periods of spilling, diverted from Eklutna Lake into Knik River basin by Eklutna powerplant.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	a6									0	*502	534
2	a5									0	552	572
3	a4									0	710	614
4	a3									0	746	996
5	**2									0	730	1,200
6	a1									0	686	1,140
7	a1									0	686	920
8	0									0	774	794
9	0									0	*920	762
10	0									0	1,000	674
11	0									0	1,000	562
12	*0									0	969	814
13	0									0	897	1,070
14	0									0	866	1,010
15	0									0	*888	830
16	0									0	888	624
17	0									0	897	447
18	0									0	870	378
19	0									a1	822	378
20	0									a1	678	*298
21	0									**1	621	196
22	0									a2	579	156
23	0									a3	586	101
24	*0									a5	628	48
25	0									6	678	23
26	0									a7	770	72
27	0									a8	870	120
28	0									a9	1,000	96
29	0									*10	897	53
30	0									*28	*738	*30
31	0									*240	596	--
Total	22	0	0	0	0	0	0	0	0	321	24,144	15,712
Mean	0.71	0	0	0	0	0	0	0	0	10.4	779	524
Ac-ft	44	0	0	0	0	0	0	0	0	637	47,890	31,160
(†)	16,640	18,060	19,200	18,920	16,780	17,640	14,540	13,970	18,240	21,870	21,290	20,840

Calendar year 1956: Max 1,210 Min 0 Mean 81.5 Ac-ft 59,140 (†) 180,000

Water year 1956-57: Max 1,200 Min 0 Mean 110 Ac-ft 79,730 (†) 218,000

* Discharge measurement or observation of no flow made on this day.

† Diversion above station, in acre-ft, for Eklutna powerplant; records furnished by Bureau of Reclamation.

** Field estimate made on this day.

a No gage-height record; discharge estimated on basis of 2 field estimates and 1 discharge measurement.

Caribou Creek near Sutton

Location.--Lat 61°48'10", long 147°41'00", on downstream side of left pier of bridge on Glenn Highway, 1.4 miles downstream from Dan Creek, 1 $\frac{1}{4}$ miles upstream from mouth, and 40 miles east of Sutton.

Drainage area.--289 sq mi.

Records available.--May 1955 to September 1957.

Gage.--Water-stage recorder. Datum of gage is 1,767 ft above mean sea level.

Extremes.--Maximum discharge recorded during year, 3,760 cfs June 2 (gage height, 5.37 ft), from rating curve extended by logarithmic plotting; minimum not determined.
1955-57: Maximum discharge, 5,060 cfs June 18, 1955 (gage height, 5.92 ft), from rating curve extended above 1,500 cfs by logarithmic plotting; minimum observed, 0.23 cfs Mar. 9, 1956 (discharge measurement), caused by temporary storage upstream.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	215	56					25	*59	1,590	496	a490	328
2	202						25	92	2,180	471	a470	*311
3	197						24	119	*2,260	486	*451	291
4	192						23	156	a2,400	*446	410	288
5	187						23	313	a2,500	1,010	394	278
6	145		49	37		31	22	565	a2,600	1,730	386	328
7	141						22	616	a2,600	1,090	354	321
8	140						22	820	a2,300	794	335	301
9	*158						23	910	a1,900	669	321	294
10	165						24	*1,020	a1,500	570	311	284
11	158		50		26		*26	1,290	a1,000	486	294	275
12	141						26	1,360	a800	446	284	272
13	127						30	910	a600	512	278	268
14	125						34	*506	*512	570	272	268
15	109						37	482	a490	592	262	262
16	86	60				24	37	464	529	648	256	*250
17	76						35	483	*512	529	253	244
18	100						34	1,020	1,480	535	247	247
19	66						33	1,500	1,230	546	247	294
20	67						32	2,010	1,900	595	244	275
21	83		41	30			33	1,780	*2,020	551	235	272
22	61						34	1,300	958	507	259	284
23	*78						37	*922	786	692	325	291
24	71						43	*1,030	620	877	328	294
25	64						*46	1,170	540	1,010	301	297
26	60						48	1,190	456	886	288	328
27	56						52	1,110	446	958	284	365
28	53						50	1,150	461	940	284	343
29	51						46	1,480	424	754	275	321
30	50						50	1,380	471	620	291	268
31	50	-----	-----	-----	-----	-----	-----	1,340	-----	a520	318	-----
Total	3,474	1,660	1,391	1,035	728	849	996	28,547	38,055	21,536	9,747	8,742
Mean	112	55.3	44.9	33.4	26	27.4	33.2	921	1,268	695	314	291
Ac-ft	6,890	3,290	2,760	2,050	1,440	1,680	1,980	56,620	75,480	42,720	19,330	17,340

Calendar year 1956: Max 3,100 Min - Mean 362 Ac-ft 262,500
Water year 1956-57: Max 2,600 Min - Mean 320 Ac-ft 231,600

Peak discharge (base, 2,000 cfs).--May 20 (9:30 p.m.) 2,130 cfs (4.47 ft); May 29 (10 p.m.) 2,290 cfs (4.57 ft); June 2 (8 p.m.) 3,760 cfs (5.37 ft); June 6 or 7 (time and discharge unknown); June 20 (11 p.m.) 3,420 cfs (5.20 ft); July 6 (2 a.m.) 2,790 cfs (4.85 ft).

* Discharge measurement made on this day.
a No gage-height record; discharge estimated on basis of 3 discharge measurements, weather records, and records for nearby streams.

Note.--Stage-discharge relation affected by ice Oct. 6 to May 13 (no gage-height records Oct. 8, Oct. 28 to Apr. 10, except occasional staff-gage readings, May 9; discharge estimated on basis of 9 discharge measurements, weather records, and records for nearby streams).

Matanuska River at Palmer

Location.--Lat 61°36'35", long 149°04'15", in N½ sec. 34, T. 18 N., R. 2 E., or left bank 100 ft downstream from bridge on Glenn Highway and 1 mile east of Palmer.

Drainage area.--2,070 sq mi, approximately.

Records available.--Discharge: April 1949 to September 1957.

Chemical analyses: May 1949 to September 1950, April to June 1951, March to September 1952, April to July 1953.

Water temperatures: May 1949 to September 1950, March to August 1952, April to September 1953.

Sediment records: April to September 1953, April to September 1954.

Gage.--Water-stage recorder. Datum of gage is 170.92 ft above mean sea level (Alaska Road Commission bench mark). Prior to Nov. 2, 1950, wire-weight gage at bridge 120 ft upstream at same datum. Nov. 2, 1950, to Apr. 30, 1952, wire-weight gage at bridge 100 ft upstream at same datum.

Average discharge.--8 years, 4,143 cfs (2,999,000 acre-ft per year).

Extremes.--Maximum discharge during year, 25,900 cfs June 20 (gage height, 10.90 ft); minimum not determined.

1949-57: Maximum discharge, that of June 20, 1957; maximum gage height observed, 12.03 ft July 11, 1949; minimum daily discharge, 234 cfs Apr. 25, 1956.

Remarks.--Records fair except those for period of ice effect, which are poor. Large diurnal fluctuation caused by glacier melt at the source.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,760						602	1,140	8,140	16,100	13,600	9,200
2	2,830			(*)			530	1,240	3,920	14,700	13,400	7,900
3	2,550						*575	1,310	*13,400	12,800	12,300	7,540
4	2,440						602	1,460	13,600	12,100	13,000	7,670
5	2,340		(*)				513	1,650	14,800	14,700	12,600	7,870
6	2,190						445	1,820	16,300	16,500	11,800	8,940
7	2,060						513	2,080	18,200	15,800	*12,100	8,380
8	2,000	680	620	670	620		504	*3,160	19,100	*14,800	13,100	7,670
9	1,960						530	4,640	17,700	12,800	13,800	7,450
10	*1,940						557	4,430	16,900	12,200	14,300	*7,350
11	1,950						522	4,850	17,400	14,000	13,600	6,920
12	1,880						557	5,320	*18,400	14,200	12,500	7,290
13	1,810	(*)					639	4,900	18,300	15,300	11,700	8,070
14	1,810						677	3,580	18,200	15,600	11,400	8,760
15	1,670					(*)	*668	2,870	18,300	14,700	*11,500	7,930
16	1,570					440	648	3,010	18,000	14,700	11,600	6,540
17	1,480						677	2,680	17,600	14,200	11,400	5,800
18	1,420				(*)		745	3,480	18,900	12,800	10,900	5,930
19	1,350						795	4,870	18,300	12,700	9,760	9,010
20	1,290						765	5,560	22,500	13,000	8,690	*8,140
21	1,240		(*)				755	*6,920	*19,200	13,800	7,740	6,740
22	1,200				550		846	6,510	18,000	*13,900	7,800	6,420
23	1,160	700	680	(*)	650		*975	5,280	15,100	13,700	8,240	5,770
24	*1,140						975	4,980	12,500	14,200	8,440	5,590
25	1,100						920	5,090	11,600	15,500	8,410	5,460
26	1,000					540	942	5,870	11,500	15,300	8,340	6,040
27	980				(*)		1,020	5,690	12,200	13,700	8,620	6,170
28	930						1,010	5,640	*12,700	12,500	9,460	5,460
29	890			(*)			1,040	6,450	15,500	12,300	*9,350	4,940
30	850						*1,130	7,410	15,400	*12,500	9,610	4,320
31	820							7,410		12,900	10,100	
Total	50,410	20,700	20,180	20,450	16,450	16,140	21,677	131,300	475,660	434,000	539,160	211,270
Mean	1,626	690	651	660	588	521	723	4,235	15,860	14,000	10,940	7,042
Ac-ft	99,990	41,060	40,030	40,560	32,630	32,010	43,000	260,400	943,500	860,800	672,700	419,000

Calendar year 1956: Max 19,600 Min 234 Mean 3,976 Ac-ft 2,887,000

Water year 1956-57: Max 22,500 Min - Mean 4,815 Ac-ft 3,486,000

Peak discharge (base, 16,500 cfs)--June 8 (5 a.m.) 21,500 cfs (10.52 ft); June 20 (1 p.m.) 25,900 cfs (10.90 ft); July 1 (2 a.m.) 17,400 cfs (9.88 ft); July 14 (4 a.m.) 17,300 cfs (9.91 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 16 to Apr. 30 (no gage-height record Oct. 25 to Nov. 12, Nov. 14 to Dec. 4, Dec. 6 to Jan. 1, Jan. 4-7, 12, 13, 24-27, Feb. 2, 6, 9, 10, 16, 17, 22-24, 27, Mar. 2-4, 7, 9-11, 23, 30, 31; discharge estimated on basis of 9 discharge measurements and weather records).

Little Susitna River near Palmer

Location.--Lat 61°42'40", long 149°13'40", in NW¼ sec. 26, T. 19 N., R. 1 E., on left bank 15 ft downstream from highway bridge on Wasilla-Fishhook Road, 1.5 miles north of road junction, 1.8 miles downstream from unnamed tributary, and 8 miles northwest of Palmer.

Drainage area.--61.9 sq mi.

Records available.--July 1948 to September 1957.

Chemical analyses: February to August 1952.

Gage.--Water-stage recorder. Datum of gage is 920.6 ft above mean sea level (river-profile survey). Prior to Aug. 16, 1948, staff gage at same site and datum.

Average discharge.--9 years, 208 cfs (150,600 acre-ft per year).

Extremes.--Maximum discharge during year, 2,510 cfs Sept. 19 (gage height, 6.11 ft); minimum daily, 8 cfs Mar. 11, 12.

1948-57: Maximum discharge, 3,070 cfs June 21, 1949 (gage height, 6.33 ft); minimum not determined.

Remarks.--Records good except those for period of ice effect, which are poor. Large diurnal fluctuation caused by glacier melt at the source.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	154	41	41	30	31	15	9	41	815	413	275	214
2	151	50	41	29	30	15	9	48	945	350	259	199
3	146	62	41	28	28	15	9	53	1,040	285	352	182
4	137	74	39	26	26	15	*9	62	*1,170	270	244	175
5	130	76	37	25	24	14	9	69	1,230	*408	232	179
6	124	76	35	24	22	13	9	82	1,290	323	225	229
7	121	70	34	24	21	11	10	119	1,330	304	*223	186
8	116	62	33	23	19	10	10	*194	1,270	275	232	167
9	115	58	32	*23	18	9	10	234	1,070	259	239	226
10	*114	55	32	23	17	9	11	249	945	270	234	*275
11	111	53	32	23	17	8	11	313	822	272	225	236
12	104	51	*32	23	18	8	12	383	684	272	205	280
13	103	*50	32	24	19	9	16	383	560	330	190	594
14	98	48	32	25	20	9	16	304	550	313	194	987
15	87	47	32	28	*21	9	17	285	520	294	*203	545
16	80	46	33	28	22	9	17	291	462	278	199	387
17	73	46	34	26	21	10	17	312	492	262	199	313
18	66	47	35	24	20	10	18	383	607	332	184	612
19	66	49	36	23	19	*10	18	422	*467	300	201	*1,880
20	68	52	36	22	18	10	20	476	570	262	165	1,210
21	70	55	35	*21	17	11	21	510	440	252	171	880
22	72	59	33	19	16	11	*23	*476	602	*316	173	737
23	72	60	30	17	14	10	26	456	490	291	173	565
24	56	59	28	17	13	10	28	444	395	285	186	758
25	*48	57	26	18	12	10	27	472	367	371	171	809
26	42	59	26	20	12	10	27	515	351	515	160	980
27	35	62	26	22	13	9	28	555	368	355	250	809
28	30	*62	*27	25	*14	9	28	596	391	307	294	662
29	30	55	29	27	-	9	31	690	391	294	*270	520
30	32	48	30	*29	-----	9	*34	684	422	285	221	413
31	35	-----	31	30	-----	9	-----	713	-----	285	196	-----
Total	2,686	1,689	1,020	746	542	325	530	10,794	21,056	9,606	6,745	16,189
Mean	86.6	56.3	32.9	24.1	19.4	10.5	17.7	348	702	310	218	540
Ac-ft	5,330	3,350	2,020	1,480	1,080	645	1,050	21,410	41,760	19,050	13,580	32,110

Calendar year 1956: Max 1,500 Min - Mean 178 Ac-ft 129,200
 Water year 1956-57: Max 1,880 Min 8 Mean 197 Ac-ft 142,700

Peak discharge (base, 1,500 cfs)--Sept. 19 (9 a.m.) 2,510 cfs (6.11 ft).

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 16 to May 5 (no gage-height record Nov. 4-12, 14-26, Dec. 3 to Apr. 3, except occasional days; discharge estimated on basis of 11 discharge measurements, weather records, and records for Ship Creek near Anchorage).

Susitna River near Denali, Alaska

Location.--Lat 63°04'40", long 147°31'20", on left bank 1.4 miles upstream from Butte Creek, 2.3 miles downstream from bridge on Denali Highway, 2.6 miles downstream from Windy Creek, and 7½ miles south of Denali.

Drainage area.--950 sq mi, approximately.

Records available.--May to September 1957.

Gage.--Water-stage recorder. Altitude of gage is 2,450 ft (from topographic map).

Extremes.--Maximum gage height during period, 5.54 ft from floodmarks (discharge not determined); minimum not determined.

Remarks.--Records poor.

Discharge, in cubic feet per second, May to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1								-	4,810			5,400
2								-	5,470			5,400
3								-	7,870			5,180
4					+136			-				5,470
5								-		12,000		5,560
6								-				5,340
7								-			11,000	5,500
8								-				5,530
9							+164	-				5,400
10								-	14,000	*11,700		5,340
11								-				4,910
12								-				4,970
13								-			*10,300	4,810
14								-				4,810
15								-				4,600
16								-				4,570
17								-		11,000		3,500
18								-				3,000
19								-				3,770
20								-			9,100	3,240
21								-				2,530
22								-				2,130
23								-	12,000			1,800
24								-		*10,800		1,910
25								-		12,700		2,780
26								-				3,220
27								-			6,950	3,140
28								-			11,100	2,740
29								-		10,000	10,700	2,130
30								*5,280			8,140	1,820
31								4,970			5,340	
Total								-	366,150	346,200	302,830	120,500
Mean								-	12,200	11,170	9,769	4,017
Ac-ft								-	726,200	686,700	600,700	239,000
Calendar year	: Max				Min		Mean		Ac-ft			
Water year	: Max				Min		Mean		Ac-ft			

* Discharge measurement made on this day.

† Result of discharge measurement.

Note.--No gage-height record June 4 to July 9, July 11-23, July 26 to Aug. 12, Aug. 14-26; discharge estimated on basis of 3 discharge measurements, weather records, and records for station at Gold Creek.

Susitna River at Gold Creek

Location.--Lat 62°46'15", long 149°41'20", on right bank 0.2 mile upstream from Gold Creek, 0.3 mile upstream from Alaska Railroad bridge, 1 mile north of Gold Creek Railroad Station, and 1.7 miles downstream from Indian River. Prior to June 6, 1957, at site 0.3 mile downstream.

Drainage area.--6,160 sq mi, approximately (includes that of Gold Creek).

Records available.--Discharge: August 1949 to September 1957.

Chemical analyses: May 1951 to October 1952, October to November 1953, June to September 1955, June 1956, June to September 1957.

Water temperatures: June to September 1957.

Sediment records: April to September 1952; 1953, 1955-57 (periodic).

Gage.--Water-stage recorder. Datum of gage is 676.50 ft above mean sea level. Prior to June 6, 1957, wire-weight gage at site 0.3 mile downstream at same datum.

Average discharge.--8 years, 9,816 cfs (7,106,000 acre-ft per year).

Extremes.--Maximum discharge during year, 42,200 cfs June 8 (gage height, 13.68 ft); minimum not determined.

1949-57: Maximum discharge observed, 58,100 cfs Aug. 26, 1955 (gage height, 14.20 ft), site then in use; maximum gage height observed, 24.48 ft May 10, 1954 (ice jam) site then in use; minimum discharge not determined.

Flood in May 1919 reached a stage of 19.2 ft, result of ice jam, from information by Bureau of Reclamation.

Remarks.--Records fair except those for periods of no gage-height record, which are poor. Large diurnal fluctuation caused by glacier melt at source. Records of specific conductance of daily samples available in district office, Quality of Water Branch, Palmer, Alaska.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1									32,000	21,500	20,000	22,400
2									33,000	24,000	21,600	21,600
3									34,100	25,800	21,600	21,600
4									34,600	23,500	21,800	17,600
5									35,800	22,000	22,200	16,300
6								4,300	37,800	22,600	22,100	16,600
7									40,400	23,100	20,400	18,000
8	7,200	3,200	2,400						40,600	22,700	18,600	20,700
9									38,800	21,700	19,300	18,100
10				(*)					38,800	19,700	21,000	18,700
11									36,500	18,900	23,000	20,000
12									34,300	20,200	22,700	18,100
13									34,800	*21,900	21,900	19,200
14		(*)				(*)			31,000	24,200	19,600	26,200
15									28,300	24,400	*18,400	24,200
16				1,700	1,500	1,200	1,200	9,400	27,900	24,500	19,800	21,000
17	(*)								26,600	22,300	21,500	17,000
18							(*)		28,600	21,400	21,900	19,000
19									30,500	26,900	20,500	22,000
20									28,700	25,500	18,500	25,000
21									28,700	22,400	17,600	20,000
22									32,900	20,700	19,300	16,500
23									29,500	19,400	20,800	14,700
24	4,500	2,900	1,900					22,000	24,200	21,400	19,200	14,200
25									21,000	28,100	17,800	16,000
26									28,000	18,500	34,500	17,200
27									30,300	18,700	31,200	16,900
28									*31,000	19,400	26,300	16,700
29									30,100	19,600	22,400	23,200
30									30,000	19,300	20,000	26,600
31									30,000	-----	19,300	25,000
Total	180,000	91,500	66,400	52,700	42,000	37,200	36,000	426,400	904,900	722,500	636,700	594,000
Mean	5,806	3,050	2,142	1,700	1,500	1,200	1,200	13,750	30,160	23,310	20,540	19,800
Ac-ft	357,000	181,500	131,700	104,500	83,310	73,790	71,400	845,800	*1,795	*1,433	*1,263	*1,178
Calendar year 1956: Max	51,500								11,680	Ac-ft	8,482,000	
Water year 1956-57: Max	40,600								10,380	Ac-ft	7,518,000	

Peak discharge (base, 35,000 cfs).--June 8 (10 a.m.) 42,200 cfs (13.68 ft); July 26 (6 p.m.) 35,600 cfs (13.12 ft).

* Discharge measurement made on this day.

Expressed in thousands.

Note.--No gage-height record Oct. 1 to May 26, except occasional readings (stage-discharge relation affected by ice during most of period), May 30 to June 2, Sept. 18-20, 25-27; discharge estimated on basis of 5 discharge measurements, weather records, and records for Mataruska River at Palmer.

SUSITNA RIVER AT GOLD CREEK—Continued

Chemical analyses, in parts per million, January to September 1957

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (calculated)	Hardness as CaCO ₃ Calcium, magnesium	Hardness as CaCO ₃ Non-carbonate	Specific conductance (micro-mhos at 25°C)	pH	Color
Jan. 10, 1957.....	7,200	13	0.00	32	3.9	14	3.0	98	15	25	0.2	0.4	154	95	14	262	7.0	5
Feb. 14.....	1,500	13	.00	24	4.4	14	2.7	75	14	27	.2	.4	137	78	17	244	7.6	0
May 28.....	31,000	5.4	.00	11	1.2	2.9	1.3	35	5.0	3.8	.1	.7	48	32	4	85	7.0	20
June 3.....	34,100	5.7	.00	12	1.4	3.1	1.3	36	6.0	4.0	.1	.6	52	35	6	90	6.8	15
June 21-30.....	23,200	5.6	.00	23	1.2	4.0	3.2	64	15	5.5	.2	.6	89	62	10	133	7.5	10
July 1-10.....	22,700	5.6	.00	21	2.2	3.8	2.2	65	16	6.0	.1	.4	90	62	8	145	7.4	5
July 11-20.....	23,000	5.3	.00	22	3.0	3.9	3.8	71	18	5.5	.1	.2	97	68	10	156	7.6	5
July 21-31.....	24,200	5.8	.00	21	3.1	4.3	3.1	66	17	6.0	.1	.7	93	65	11	147	7.6	5
Aug. 1-10.....	20,900	5.6	.04	24	1.5	3.8	3.1	66	15	6.0	.1	.3	93	66	12	155	7.0	0
Aug. 11-20.....	20,800	4.5	.02	25	2.4	3.6	3.5	68	20	5.5	.0	.2	98	72	17	166	7.3	0
Aug. 21-31.....	22,000	5.7	.05	23	2.9	3.8	2.9	65	22	6.0	.1	.3	99	70	16	162	7.2	0
Sept. 1-10.....	19,200	6.2	.11	24	3.7	4.2	2.8	63	22	11	.1	.4	106	75	24	277	6.8	7

Temperature (°F) of water, June to September 1957

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1	--	--	59	49	16	55	--	--	58
2	--	56	--	49	17	--	--	--	57
3	--	57	58	49	18	--	--	--	55
4	48	56	58	--	19	--	--	--	54
5	49	57	57	--	20	56	56	50	--
6	49	58	58	52	21	56	55	53	--
7	51	--	57	--	22	52	55	52	--
8	50	53	58	--	23	52	59	54	--
9	52	--	57	--	24	55	57	53	--
10	52	--	57	--	25	--	52	54	--
11	53	--	59	--	26	56	48	--	--
12	--	--	59	--	27	59	50	52	--
13	52	63	55	--	28	59	57	--	--
14	--	59	57	--	29	58	--	52	--
15	52	--	--	--	30	57	--	49	--
Average.....					31	--	60	48	--
						--	--	55	--

SUSITNA RIVER AT GOLD CREEK--Continued

Suspended sediment, June to September 1957

Day	June Suspended sediment			July Suspended sediment			August Suspended sediment		
	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day	Mean dis- charge (cfs)	Mean concen- tration (ppm)	Tons per day
1.....	32,000	418	36,100	21,500	1,750	102,000	20,000	735	39,700
2.....	33,000	470	41,900	24,000	2,000	130,000	21,600	1,000	58,300
3.....	34,100	525	48,300	25,800	1,760	123,000	21,600	1,210	70,600
4.....	34,600	654	61,100	23,500	1,250	79,300	21,800	1,410	83,000
5.....	35,800	748	72,300	22,000	1,120	66,500	22,200	1,660	99,500
6.....	37,800	862	88,000	22,600	1,200	73,200	22,100	1,740	104,000
7.....	40,400	1,120	122,000	23,100	1,610	100,000	20,400	1,420	78,200
8.....	40,600	1,220	134,000	22,700	1,570	96,200	18,600	1,140	57,200
9.....	38,800	1,080	113,000	21,700	1,420	83,200	19,300	1,430	74,500
10.....	38,800	1,130	118,000	19,700	1,030	54,800	21,000	1,830	104,000
11.....	36,500	1,400	138,000	18,900	902	46,000	23,000	2,450	152,000
12.....	34,300	1,380	128,000	20,200	1,440	78,500	22,700	2,450	150,000
13.....	34,800	2,190	206,000	21,900	1,960	116,000	21,900	1,970	116,000
14.....	31,000	2,070	173,000	24,200	2,850	186,000	19,600	1,650	87,300
15.....	28,300	1,380	105,000	24,400	2,910	192,000	18,400	1,830	90,900
16.....	27,900	1,310	98,700	24,500	2,730	181,000	19,800	2,060	110,000
17.....	26,600	1,180	84,700	22,300	2,220	134,000	21,500	2,350	136,000
18.....	28,600	1,220	94,200	21,400	1,670	96,500	21,900	2,140	127,000
19.....	30,500	1,800	148,000	26,900	2,600	189,000	20,500	1,490	82,500
20.....	28,700	1,670	129,000	25,500	1,910	132,000	18,500	1,490	74,400
21.....	28,700	1,490	115,000	22,400	1,580	95,600	17,600	1,260	59,900
22.....	32,900	1,430	127,000	20,700	1,340	74,900	19,300	1,490	77,600
23.....	29,500	1,250	99,600	19,400	1,140	59,700	20,800	1,270	71,300
24.....	24,200	1,020	66,600	21,400	1,110	64,100	19,200	865	44,800
25.....	21,000	909	51,500	28,100	1,760	134,000	17,800	781	37,500
26.....	18,500	792	39,600	34,500	2,340	218,000	17,200	754	35,000
27.....	18,700	792	40,000	31,200	1,700	143,000	16,900	736	33,600
28.....	19,400	1,010	52,900	26,300	753	53,500	16,700	856	38,600
29.....	19,600	1,150	60,900	22,400	549	33,200	23,200	2,050	134,000
30.....	19,300	1,390	72,400	20,000	512	27,600	26,600	2,620	188,000
31.....	--	--	--	19,300	549	28,600	25,000	1,800	122,000
Total.	904,900	--	2,864,800	722,500	--	3,191,400	636,700	--	2,737,400
September									
1.....				22,400	1,220	73,800			
2.....				21,600	1,010	58,900			
3.....				21,600	1,130	65,900			
4.....				17,600	948	45,000			
5.....				16,300	690	30,400			
6.....				16,600	534	23,900			
7.....				--	--	--			
8.....				--	--	--			
9.....				--	--	--			
10.....				--	--	--			
11.....				--	--	--			
12.....				--	--	--			
13.....				--	--	--			
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24.....				--	--	--			
25.....				--	--	--			
26.....				--	--	--			
27.....				--	--	--			
28.....				--	--	--			
29.....				--	--	--			
30.....				--	--	--			
31.....				--	--	--			
Total.				--	--	--			

Total discharge for period June 1 to Sept. 6, (cfs-days) 2,380,200

Percent of annual discharge during period 62.8

Total load for period June 1 to Sept. 6 (tons) 9,091,500

s Computed by subdividing day.

SUSITNA RIVER AT GOLD CREEK--Continued

Particle-size analyses of suspended sediment, June to September 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of Collection	Time	Discharge (cfs)	Water temperature (° F)	Suspended sediment												Methods of analysis	
				Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters											
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500		1.000
June 3, 1957.....	2:20 p. m.	33, 400	--	548	1, 433	14	16	17	24	30	47	62	84		98		BSWCM
June 20	6:30 p. m.	29, 300	56	1, 474	2, 965	24	33	40	53	67	83	90	97		100		BSWCM
July 2	11:00 a. m.	25, 500	56	2, 179	4, 191	18	25	32	47	65	83	91	97		100		BSWCM
July 10	11:00 a. m.	20, 200	--	1, 004	1, 709	29	34	44	56	70	84	91	97		100		BSWCM
Aug. 8	8:30 p. m.	17, 700	55	1, 200	3, 660	20	27	38	50	63	81	90	96		100		PSWCM
Aug. 17	10:30 a. m.	21, 600	57	2, 200	3, 310	14	20	28	42	59	72	88	96		100		PSWCM
Aug. 29	4:30 p. m.	23, 500	52	2, 405	2, 778	13	17	22	31	45	63	82	95		100		PSWCM
Sept. 6	7:45 a. m.	16, 700	52	582	2, 100	19	24	28	38	47	64	77	92		99		BSWCM

Uganik River near Kodiak

Location.--Lat 57°41'05", long 153°25'10", on Kodiak Island, on right bank half a mile upstream from tidewater of East Arm Uganik Bay, 1 mile downstream from Mush Lake tributary, 4 miles downstream from Uganik Lake, and 40 miles west of Kodiak.

Drainage area.--123 sq mi.

Records available.--May 1951 to September 1957.

Gage.--Water-stage recorder. Altitude of gage is 20 ft (from topographic map).

Average discharge.--6 years, 598 cfs (432,900 acre-ft per year).

Extremes.--Maximum discharge during year, 5,680 cfs June 10 (gage height, 8.41 ft), from rating curve extended above 1,400 cfs by logarithmic plotting; minimum not determined. 1951-57: Maximum discharge, 13,700 cfs Oct. 3, 1952 (gage height, 10.65 ft), from rating curve extended above 2,500 cfs by logarithmic plotting; minimum not determined.

Remarks.--Records good except those above 1,400 cfs and those for period of doubtful gage-height record, which are fair, and those for periods of ice effect or no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	267	140	244		(*)	76	206	315	2,060	985	356	486
2	254	b140	b200			90	262	300	2,170	850	340	4,070
3	240	b130	b220			110	262	300	2,130	764	315	3,890
4	*222	b130	b160			140	251	296	2,050	830	315	3,340
5	211	b130	b130			160	240	305	1,950	1,100	345	3,400
6	204	b130				185	236	330	*1,700	910	350	2,050
7	196	b120	b110			182	233	368	1,630	764	362	1,240
8	185	b120				160	219	431	1,700	870	350	1,030
9	179	b120		95	100	162	212	520	1,600	985	345	952
10	192	b120				162	209	699	3,650	996	335	840
11	204	b120		98		154	206	1,010	4,680	1,010	310	1,080
12	200	b110				147	212	1,120	2,800	1,050	287	4,520
13	200	b110				144	216	1,250	1,870	860	287	5,060
14	200	b100				135	219	1,190	1,580	690	305	1,470
15	200	b98				126	216	1,060	1,400	628	296	952
16	204	b90				130	209	1,190	1,260	628	287	782
17	196	b92				168	206	1,700	1,320	663	296	708
18	189	b95				184	209	1,530	1,420	*628	283	744
19	182	b93				170	240	1,470	1,320	560	*262	645
20	175	b89				157	266	1,420	1,170	636	287	560
21	159	b85				147	315	1,400	1,040	735	362	611
22	153	b82			74	137	380	1,300	1,050	636	350	560
23	159	b83				130	*410	1,260	1,080	520	315	*594
24	153	b87	110	81		122	417	1,080	1,140	445	287	1,950
25	142	95				117	438	920	1,210	424	373	2,950
26	148	119				113	452	1,010	1,320	424	830	1,300
27	182	410				107	417	1,220	1,240	451	1,110	900
28	163	579				108	374	1,220	1,180	424	708	754
29	166	451				106	345	1,200	1,200	431	488	628
30	150	313				115	325	1,320	1,090	410	398	520
31	145					170		1,530		380	368	
Total	5,820	4,581	3,706	2,721	2,462	4,272	8,402	30,264	50,990	21,667	11,902	45,686
Mean	188	153	120	87.8	87.9	138	280	976	1,700	699	384	1,523
Cfs/m	1.53	1.24	0.976	0.714	0.715	1.12	2.28	7.93	13.8	5.68	3.12	12.4
In.	1.76	1.39	1.12	0.82	0.74	1.29	2.54	9.15	15.42	6.55	3.60	13.81
Ac-ft	11,540	9,090	7,350	5,400	4,880	8,470	16,670	60,030	101,100	42,980	23,610	90,620

Calendar year 1956: Max 3,300 Min - Mean 554 Cfs/m 4.50 In. 61.36 Ac-ft 402,400
 Water year 1956-57: Max 4,680 Min - Mean 527 Cfs/m 4.28 In. 58.19 Ac-ft 381,700

Peak discharge (base, 3,400 cfs).--June 10 (11 p.m.) 5,680 cfs (8.41 ft); Sept. 2 (7:30 a.m.) 5,530 cfs (8.29 ft); Sept. 12 (4 p.m.) 5,530 cfs (8.25 ft).

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--Doubtful gage-height record Mar. 4 to Apr. 22; discharge computed from recorded graph and weather records. No gage-height record Dec. 7 to Mar. 3 (stage-discharge relation affected by ice during part of period); discharge estimated on basis of 1 discharge measurement and weather records.

Newhalen River near Iliamna

Location.--Lat 59°52', long 154°52', on left bank 1 mile upstream from rapids, 1 mile downstream from old portage dock, 8 miles downstream from Fish Village, 8 miles downstream from outlet of Sixmile Lake, and 8 miles north of Iliamna.

Drainage area.--3,300 sq mi, approximately.

Records available.--July 1951 to September 1957.

Gage.--Water-stage recorder. Altitude of gage is 210 ft (from topographic map).

Average discharge.--6 years, 8,865 cfs (6,418,000 acre-ft per year).

Extremes.--Maximum discharge during year, 25,100 cfs Sept. 15 (gage height, 7.05 ft); minimum not determined.

1951-57: Maximum discharge, 29,600 cfs July 1, 1953 (gage height, 8.03 ft); minimum not determined.

Remarks.--Records good except those for period of no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13,200								8,200	18,900	17,100	17,200
2	12,900								8,900	19,000	17,200	17,500
3	*12,500								9,500	19,100	17,300	17,800
4	12,000								10,000	19,000	17,200	19,300
5	11,500								11,000	18,700	17,200	20,500
6	11,200								12,000	18,500	17,200	21,100
7	10,900								*13,000	18,500	17,100	21,500
8	10,700	4,000	3,900	2,100	1,600		1,600	2,500	13,800	18,700	16,900	21,500
9	10,400								14,700	18,700	16,900	21,500
10	10,200								15,500	18,700	17,200	21,500
11	9,870								16,200	18,700	17,400	21,400
12	9,560								16,700	19,300	17,600	21,800
13	9,310								17,000	19,400	17,800	23,100
14	9,130								17,400	19,400	17,800	24,500
15	8,990								17,800	19,300	17,700	25,100
16	8,660					1,400			18,100	19,400	17,600	24,800
17	8,380								18,300	19,500	17,800	24,300
18	8,090								18,400	*19,800	18,000	24,000
19	7,700								18,500	19,700	*18,200	24,100
20	7,390								18,500	19,500	18,000	24,300
21	7,120								18,500	19,000	17,600	24,100
22	6,880					1,500			18,700	19,000	17,000	23,600
23	6,600	3,900	2,500	1,900			1,900	4,600	18,800	18,600	16,700	23,000
24	6,400								18,800	18,400	16,300	*22,600
25	6,200								18,900	17,900	16,100	21,700
26	6,000								18,900	17,800	16,100	20,900
27	5,800								18,900	17,700	16,300	20,300
28	5,600								18,700	17,400	16,900	19,500
29	5,400								18,700	17,300	17,400	18,700
30	5,200								18,900	17,200	17,500	18,100
31	5,100									17,100	17,400	
Total	268,880	118,500	98,500	61,900	43,500	43,400	52,500	111,100	481,300	579,200	534,500	649,300
Mean	8,674	3,950	3,177	1,997	1,554	1,400	1,750	3,584	16,040	18,680	17,240	21,640
Ac-ft	533,300	235,000	195,400	122,800	86,280	86,080	104,100	220,400	954,600	1,149,000	1,060,000	1,288,000
Calendar year 1956: Max	25,400								Ac-ft	5,938,000		
Water year 1956-57: Max	25,100								Mean	8,336	Ac-ft	6,035,000

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 23 to June 6 (stage-discharge relation affected by ice during most of period); discharge estimated on basis of 2 discharge measurements, weather records, and records for nearby streams.

Nuyakuk River near Dillingham

Location.--Lat 59°56', long 158°12', on left bank 1,000 ft downstream from outlet of Tikchik Lake, half a mile upstream from unnamed tributary, and 62 miles north of Dillingham.

Drainage area.--1,490 sq mi, approximately.

Records available.--May 1953 to September 1957.

Gage.--Water-stage recorder. Altitude of gage is 350 ft (from topographic map).

Extremes.--Maximum discharge during year, 16,000 cfs Sept. 18 (gage height, 4.61 ft); minimum not determined.

1953-57: Maximum discharge, 22,400 cfs July 15, 1955 (gage height, 6.11 ft); minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7,930							1,900	11,100	10,600	4,600	4,100
2	7,810							1,900	11,500	10,500	4,500	4,500
3	*7,600						(*)	2,000	11,800	10,100	4,400	5,040
4	7,260							2,000	12,100	9,940	4,300	6,280
5	6,890							2,000	12,500	9,680	4,300	7,160
6	6,700							2,100	13,000	9,430	4,200	7,400
7	6,510							2,100	13,400	9,140	4,100	7,640
8	6,300		3,300					2,200	*13,700	8,830	4,100	8,020
9	6,120							2,200	13,900	8,560	4,000	*9,480
10	6,050							2,300	14,100	8,080	4,000	10,400
11	5,880	3,200						2,400	14,300	7,810	3,900	10,700
12	5,710							2,600	14,300	7,750	3,900	12,500
13	5,570							2,700	14,300	7,570	3,800	14,000
14	5,460							2,800	14,300	7,420	3,800	14,700
15	5,350							3,000	14,300	7,230	3,700	15,200
16	5,200							3,300	14,300	6,920	3,700	15,400
17	5,100							3,700	14,300	6,640	3,700	15,400
18	5,000							4,200	14,000	*6,340	3,600	15,700
19	4,800							4,800	13,900	6,410	3,600	15,800
20	4,700							5,450	13,800	6,220	*3,610	15,600
21	4,600							6,050	13,500	6,120	3,600	15,200
22	4,500							6,570	13,400	6,020	3,600	14,900
23	4,400							7,070	13,200	5,780	3,500	14,400
24	4,300		2,200					7,610	12,800	5,620	3,500	*14,000
25	4,200							8,180	12,400	5,460	3,500	13,400
26	4,100	3,600						8,600	12,300	5,310	3,500	12,800
27	4,000							9,000	12,000	5,200	3,500	12,400
28	3,900							9,440	11,700	5,100	3,600	11,900
29	3,800							9,930	11,300	4,900	3,700	11,400
30	3,800							10,300	10,900	4,800	3,800	10,900
31	3,700							10,600		4,700	3,900	
Total	167,240	100,000	84,700	55,800	39,200	43,400	51,000	149,000	392,400	224,180	119,510	346,320
Mean	5,395	3,333	2,732	1,800	1,400	1,400	1,700	4,806	13,080	7,232	3,855	11,540
Ac-ft	331,700	198,300	168,000	110,700	77,750	86,080	101,200	295,500	778,300	444,700	237,000	686,900
Calendar year 1956: Max	19,000				Min	-	Mean	5,456	Ac-ft	3,961,000		
Water year 1956-57: Max	15,800				Min	-	Mean	4,857	Ac-ft	3,516,000		

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 16 to May 18 (stage-discharge relation affected by ice during part of period), July 28 to Sept. 2; discharge estimated on basis of 3 discharge measurements and weather records.

Kuskokwim River at Crooked Creek

Location.--Lat 61°52', long 158°07', on right bank at Parent's Trading Post, 0.2 mile upstream from Crooked Creek and 0.7 mile upstream from village of Crooked Creek.

Drainage area.--31,100 sq mi, approximately.

Records available.--Discharge: June 1951 to September 1957.

Chemical analyses: May to September 1957.

Water temperatures: May to September 1957.

Gage.--Staff gage read twice daily. Altitude of gage is 200 ft (from topographic map).

Average discharge.--6 years, 42,550 cfs (30,800,000 acre-ft per year).

Extremes.--Maximum discharge not determined, occurred May 7; minimum not determined.

1951-57: Maximum discharge not determined; maximum daily discharge, 260,000 cfs May 7, 1957; maximum gage height, 25.4 ft May 1, 1953 (ice jam), from floodmarks; minimum discharge not determined.

Remarks.--Records fair except those above 120,000 cfs and those for periods of ice effect or no gage-height record, which are poor. Records of specific conductance of daily samples available in district office, Quality of Water Branch, Palmer, Alaska.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	56,000							80,000	88,200	53,300	39,400	41,000
2	*56,500							120,000	88,600	53,000	39,400	42,000
3	56,300							160,000	89,900	52,000	39,600	43,600
4	54,900						(*)	210,000	90,000	51,700	39,700	43,000
5	53,000							240,000	89,500	52,300	39,500	41,000
6	50,000							250,000	87,500	52,100	40,000	40,600
7	48,000							260,000	84,300	51,900	41,700	39,800
8	46,000	16,000					11,000	250,000	85,300	50,400	42,800	39,100
9	43,000							250,000	*86,200	49,600	42,500	40,300
10	41,200							240,000	87,300	49,600	42,000	40,900
11		40,700						230,000	87,400	46,300	42,900	41,500
12								223,000	86,100	47,100	44,200	43,500
13								215,000	88,800	47,200	44,200	45,400
14								203,000	86,500	47,000	43,500	47,500
15								188,000	84,200	47,200	44,000	52,900
16		32,000	10,000	9,300	9,600	10,000		169,000	82,100	47,400	45,000	57,900
17								154,000	80,000	48,600	45,100	60,000
18								139,000	79,200	*48,900	45,400	62,000
19				(*)				128,000	77,700	49,500	46,000	61,000
20								121,000	78,000	51,600	*46,100	61,200
21								120,000	80,000	51,800	46,000	65,400
22								122,000	78,700	51,400	45,600	63,000
23		12,000					19,000	127,000	75,800	53,400	44,600	59,400
24								125,000	74,600	53,600	44,200	57,800
25								118,000	70,700	51,000	41,000	*55,300
26		22,000						108,000	65,900	48,600	36,900	51,400
27								99,000	63,600	48,000	36,000	49,000
28								93,700	60,400	48,200	35,400	45,300
29								91,400	57,100	46,000	36,400	42,200
30								90,300	55,300	43,100	38,000	40,000
31								89,000	-----	41,100	40,000	-----
Total	\$1,075.6	420,000	310,000	288,300	268,800	310,000	450,000	\$5,011.4	\$2,389.1	\$1,533.1	\$1,297.1	\$1,473
Mean	34,700	14,000	10,000	9,300	9,600	10,000	15,000	161,700	79,640	49,450	41,840	49,100
Ac-ft	\$2,135	833,100	614,900	571,800	533,200	614,900	892,600	\$9,940	\$4,739	\$3,041	\$2,573	\$2,922
Calendar year 1956: Max	-	-	-	-	-	-	-	Mean 43,690	Ac-ft 31,720,000			
Water year 1956-57: Max	-	260,000	-	-	-	-	-	Mean 40,620	Ac-ft 29,410,000			

* Discharge measurement made on this day.

* Expressed in thousands.

Note.--No gage-height record Oct. 5-9, Oct. 12 to May 11 (stage-discharge relation affected by ice during most of period), July 14, 25, 27, 29, Aug. 16, 25, 27, 30, Sept. 2, 4, 5, 17-19, 22, 30; discharge interpolated or estimated on basis of 2 discharge measurements, observer's notes, and weather records.

KUSKOKWIM RIVER AT CROOKED CREEK--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (calculated)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25° C)	pH	Color
														Calcium	Non-carbonate			
Oct. 2, 1956.....	56,500	9.2	0.11	26	5.6	1.8	0.7	94	14	0.5	0.0	0.4	104	91	14	177	7.8	20
Jan. 19, 1957.....	9,300	11	.00	38	7.7	2.2	1.0	139	17	.2	.3	.5	146	126	13	258	7.4	5
Apr. 4.....	11,000	12	.75	31	7.3	3.0	1.0	120	13	.5	.2	.8	128	107	9	217	7.2	5
May 12-20.....	171,000	5.9	.13	17	3.4	1.1	.7	66	9.0	.2	.2	1.3	69	56	7	116	7.2	40
May 21-31.....	108,000	7.8	.13	20	3.7	1.5	.7	63	12	.5	.2	1.6	82	65	8	136	7.3	20
June 1-10.....	87,700	8.4	.08	23	4.3	2.2	.7	77	11	1.0	.3	1.5	91	75	12	158	7.3	20
June 11-16.....	83,000	8.6	.00	30	5.1	2.0	1.0	99	19	.8	.3	1.5	117	96	15	191	7.5	5
June 21-30.....	68,200	8.9	.00	30	6.0	2.4	1.4	100	22	2.0	.2	1.2	111	100	18	195	7.7	5
July 1-10.....	51,600	9.8	.00	29	6.6	3.0	1.5	101	25	1.5	.2	.2	127	100	17	198	7.8	5
July 11-20.....	48,100	8.2	.00	31	6.4	2.3	1.3	104	22	1.5	.2	1.3	125	104	19	204	7.8	5
July 21-31.....	48,700	8.7	.00	31	6.4	2.2	1.3	103	25	2.0	.3	1.3	129	104	20	205	7.8	5
Aug. 1-10.....	40,700	9.6	.01	31	7.3	2.0	1.1	103	26	1.5	.2	1.0	131	108	23	218	7.2	5
Aug. 11-20.....	44,600	9.5	.00	33	6.4	2.3	1.1	100	26	1.0	.2	1.3	133	109	27	220	7.3	0
Aug. 21-31.....	40,400	8.7	.00	32	7.0	2.3	.8	102	26	1.0	.2	1.3	132	109	26	220	7.4	0
Sept. 1-10.....	41,100	8.2	.06	32	8.4	2.5	1.1	102	30	2.0	.2	2.8	138	114	31	229	7.0	13
Sept. 11-20.....	53,300	8.5	.09	31	8.1	2.1	1.3	97	30	1.5	.2	2.5	133	111	32	219	7.2	15
Sept. 21-30.....	52,900	9.2	.00	33	6.6	2.6	1.8	110	22	2.0	.2	3.3	135	110	20	230	7.2	25
Weighted average ^a	40,620	8.4	--	26	5.4	2.0	1.0	90	17	0.9	--	--	105	87	13	179	--	--

^a Represents 100 percent of runoff for water year. Concentrations estimated for period Oct. 1, 1956 to May 11, 1957 from previous records and represents 36 percent of annual runoff.

Temperature (°F) of water, May to September 1957

Day	Temperature (°F) of water, May to September 1957										Temperature (°F) of water, May to September 1957										Temperature (°F) of water, May to September 1957									
	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.							
1	--	50	61	60	40	11	--	63	61	61	42	21	45	60	59	56	43													
2	--	50	60	61	42	12	41	63	62	59	54	22	45	60	59	57	49													
3	--	52	60	66	42	13	40	63	61	59	53	23	45	60	59	59	--													
4	--	54	60	61	--	14	40	60	61	59	53	24	46	61	56	59	40													
5	--	57	60	60	42	15	41	60	58	61	45	25	48	62	56	59	37													
6	--	60	62	60	42	16	41	60	58	59	50	26	49	64	53	56	40													
7	--	60	60	61	41	17	42	--	60	60	57	27	51	63	50	50	34													
8	--	63	60	62	50	18	44	--	61	59	50	28	51	62	56	49	42													
9	--	63	60	61	--	19	45	--	60	59	49	29	51	62	58	50	48													
10	--	63	--	61	46	20	45	--	60	58	42	31	51	61	59	50	35													
Average.....	--	--	--	--	--	--	--	--	--	--	--	--	--	60	59	58	45													

Yukon River at Eagle

Location.--Lat 64°47'30", long 141°12'00", on left bank at Eagle, an eighth of a mile upstream from Mission Creek, 1.1 miles downstream from Castalia Creek, and 11 miles downstream from international boundary.

Drainage area.--113,500 sq mi, approximately.

Records available.--Discharge: January 1911 to December 1913, June 1950 to September 1957.

Monthly discharge only for some periods, published in WSP 1372.

Chemical analyses: April to October 1951, June to September 1952.

Water temperatures: May to October 1951, June to August 1952.

Sediment records: July and October 1954, April and August 1955 (periodic).

Gage.--Water-stage recorder. Altitude of gage is 750 ft (from topographic map). January

1911 to December 1913 staff gage at site half a mile downstream at different datum.

June 22, 1950, to Sept. 30, 1955, staff gage at site 1.1 miles upstream at present

datum. Oct. 1, 1955, to Aug. 10, 1957, staff gage at present site and datum.

Average discharge.--9 years, 70,970 cfs (51,380,000 acre-ft per year).

Extremes.--Maximum discharge during year, 561,000 cfs May 30 (gage height, 23.01 ft), from rating curve extended above 230,000 cfs by logarithmic plotting; minimum not determined. 1911-13, 1950-57: Maximum discharge, that of May 30, 1957; minimum not determined.

Remarks.--Records fair except those for period of no gage-height record, which are poor.

Revisions (water years).--WSP 1372: 1911-14, drainage area.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	80,700								467,000	244,000	144,000	118,000
2	80,000								462,000	234,000	136,000	116,000
3	79,300								455,000	228,000	134,000	113,000
4	*77,600								447,000	228,000	132,000	109,000
5	76,200								399,000	226,000	131,000	105,000
6	75,500							25,000	367,000	222,000	130,000	102,000
7	74,000								323,000	217,000	130,000	101,000
8	72,100						14,000		327,000	213,000	128,000	101,000
9	70,000								330,000	214,000	128,000	101,000
10	67,000								332,000	225,000	129,000	98,800
11	62,000								334,000	233,000	126,000	96,300
12	57,000								320,000	217,000	123,000	94,700
13	54,000								300,000	201,000	123,000	94,200
14	51,000								290,000	200,000	122,000	93,000
15	48,000	34,000	27,000	21,000	16,000	14,000		70,000	270,000	190,000	121,000	92,500
16	47,000								250,000	190,000	119,000	93,000
17	45,000								235,000	180,000	117,000	95,000
18	44,000								*232,000	180,000	116,000	100,000
19	42,000								224,000	170,000	119,000	110,000
20	42,000								220,000	170,000	121,000	120,000
21	41,000								228,000	170,000	126,000	130,000
22	40,000								239,000	160,000	121,000	130,000
23	40,000						(*)	15,000	245,000	160,000	119,000	120,000
24	39,000								257,000	160,000	119,000	120,000
25	39,000								276,000	150,000	122,000	110,000
26	39,000								322,000	272,000	150,000	110,000
27	38,000								387,000	260,000	150,000	100,000
28	38,000								428,000	255,000	150,000	98,000
29	38,000								485,000	251,000	160,000	94,000
30	38,000	(*)							553,000	246,000	160,000	90,000
31	37,000								511,000		*153,000	118,000
Total	*1,671.4	*1,020	837,000	651,000	449,000	434,000	435,000	*4,736	*9,113	*5,905	*3,858	*3,155.5
Mean	53,920	34,000	27,000	21,000	16,000	14,000	14,500	152,800	303,800	190,500	124,500	105,200
Ac-ft	*3,315	*2,023	*1,660	*1,291	888,600	860,800	862,800	*9,394	*18,080	*11,710	*7,652	*6,259
Calendar year 1956: Max	230,000						Mean 69,050	Ac-ft 50,120,000				
Water year 1956-57: Max	553,000						Mean 88,390	Ac-ft 64,000,000				

* Discharge measurement made on this day.

* Expressed in thousands.

Note.--No gage-height record Oct. 9 to May 25 (stage-discharge relation affected by ice during most of period), June 12-16, July 14-30, Sept. 17-30; discharge estimated on basis of 4 discharge measurements, weather records, and records for stations at Rampart, Ruby, and near Kaltag.

Yukon River at Rampart

Location.--Lat 65°31', long 150°11', on left bank at Rampart, half a mile downstream from Squaw Creek, 1½ miles downstream from Minook Creek, and 3¼ miles upstream from Russian Creek.

Drainage area.--199,400 sq mi, approximately.

Records available.--Discharge: June 1955 to September 1957.

Chemical analyses: June to September 1954, June to October 1955, June to September 1956.

Water temperatures: June to August 1954, June, August, September 1955, May to September 1956.

Gage.--Staff gage read twice daily. Altitude of gage is 300 ft (from topographic map).

Extremes.--Maximum discharge during year, 686,000 cfs June 2 (gage height, 46.40 ft, from graph based on gage readings), from rating curve extended above 350,000 cfs by logarithmic plotting; minimum not determined.

1955-57: Maximum discharge, that of June 2, 1957; minimum not determined.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	160,000							24,000	680,000	282,000	200,000	170,000
2	149,000		(*)					25,000	685,000	277,000	198,000	164,000
3	135,000							26,000	676,000	271,000	192,000	161,000
4	128,000							28,000	645,000	265,000	187,000	157,000
5	122,000							30,000	589,000	261,000	181,000	157,000
6	116,000							33,000	531,000	256,000	175,000	159,000
7	110,000							36,000	489,000	260,000	169,000	160,000
8	100,000						17,000	40,000	475,000	266,000	167,000	161,000
9	95,000							45,000	474,000	267,000	165,000	159,000
10	88,000							50,000	476,000	267,000	162,000	156,000
11	82,000							55,000	477,000	268,000	160,000	152,000
12	74,000							62,000	461,000	270,000	159,000	149,000
13	68,000							70,000	446,000	272,000	158,000	147,000
14	62,000							82,000	426,000	280,000	161,000	145,000
15	57,000							98,000	408,000	283,000	165,000	141,000
16	54,000	34,000	27,000	23,000	19,000	17,000		120,000	387,000	285,000	158,000	142,000
17	52,000							150,000	359,000	270,000	157,000	146,000
18	50,000							190,000	330,000	253,000	155,000	151,000
19	49,000							240,000	305,000	245,000	153,000	160,000
20	47,000							300,000	291,000	239,000	150,000	165,000
21	46,000							345,000	282,000	233,000	148,000	170,000
22	45,000					(*)		367,000	275,000	228,000	148,000	177,000
23	44,000						19,000	419,000	270,000	222,000	150,000	198,000
24	44,000							487,000	262,000	216,000	157,000	199,000
25	43,000							536,000	261,000	210,000	161,000	197,000
26	42,000							570,000	265,000	204,000	165,000	180,000
27	42,000							600,000	266,000	199,000	176,000	172,000
28	41,000							625,000	271,000	196,000	186,000	163,000
29	41,000							645,000	279,000	193,000	187,000	148,000
30	40,000							659,000	285,000	195,000	182,000	144,000
31	39,000	-----					-----	669,000	-----	197,000	175,000	-----
Total	\$2,265	\$1,020	\$37,000	\$713,000	\$532,000	\$527,000	\$40,000	\$7,626	\$12,326	\$7,630	\$5,207	\$4,850
Mean	73,060	34,000	27,000	23,000	19,000	17,000	18,000	246,000	410,900	246,100	168,000	161,700
Ac-ft	\$4,493	\$2,023	\$1,660	\$1,414	\$1,055	\$1,045	\$1,071	\$15,130	\$24,450	\$15,130	\$10,330	\$9,620
Calendar year 1956: Max	415,000						Mean	101,500	Ac-ft	73,650,000		
Water year 1956-57: Max	685,000						Mean	120,700	Ac-ft	87,420,000		

* Discharge measurement made on this day.

† Expressed in thousands.

Note.--Stage-discharge relation affected by ice Oct. 6-31. No gage-height record Nov. 1 to May 20 (stage-discharge relation affected by ice during most of period); discharge estimated on basis of 2 discharge measurements, weather records, and records for other stations on the Yukon River.

Tanana River at Northway Junction

Location.--Lat 63°00', long 141°48', near left bank on downstream side of bridge on highway from Northway Junction to Northway, half a mile southwest of Northway Junction and 4 miles upstream from Nabesna River.

Drainage area.--3,280 sq mi, approximately.

Records available.--Discharge: July 1949 to September 1957.
Sediment records: 1953-57 (periodic).

Gage.--Wire-weight gage read once daily. Datum of gage is 1,682.85 ft above mean sea level.

Average discharge.--8 years, 2,221 cfs (1,608,000 acre-ft per year).

Extremes.--Maximum discharge during year, 8,670 cfs July 12 (gage height, 11.70 ft); minimum not determined.

1949-57: Maximum discharge observed, 8,860 cfs Aug. 9, 1953 (gage height, 12.10 ft); minimum discharge not determined.

Remarks.--Records good except those for period of ice effect, which are poor. Large diurnal fluctuation caused by glacier melt at the source.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,680							980	5,340	6,140	6,940	*5,460
2	1,600							990	5,280	6,450	*6,710	5,030
3	1,530							1,020	5,280	6,650	6,650	4,580
4	1,510							1,120	5,500	6,610	6,550	4,200
5	1,480							1,340	5,600	6,560	6,480	4,080
6	*1,500		(*)					1,540	5,780	6,560	6,410	4,100
7	1,440							1,980	6,120	7,180	6,100	3,870
8	1,340	790	770			720	770	2,620	6,400	7,080	5,810	3,880
9	1,260							3,780	6,620	7,320	5,500	3,850
10	1,200							4,770	6,710	7,580	5,440	3,580
11	1,100							5,640	6,740	8,210	5,650	3,570
12	1,100							6,200	6,550	8,580	6,020	3,460
13	1,100							6,680	6,510	8,560	6,270	3,380
14	1,000							6,580	6,190	8,400	6,350	3,570
15	1,000			720	720			6,680	6,090	8,210	6,380	3,550
16	1,000							6,450	*6,060	8,100	6,330	3,270
17	990							6,160	5,810	7,880	6,270	2,940
18	970							6,170	5,720	7,760	6,140	2,490
19	950					(*)		6,340	5,880	7,580	6,140	2,490
20	940						820	6,440	6,200	7,480	6,120	2,520
21	920							6,560	6,620	7,240	5,910	2,480
22	910							6,760	6,820	7,000	5,780	2,410
23	900	850	720			760		7,070	6,740	6,860	5,490	2,290
24	880							7,130	6,820	7,300	5,530	2,190
25	870							7,040	6,780	7,300	5,790	1,990
26	860							860	6,880	6,510	7,460	5,930
27	850							870	6,900	6,170	7,670	6,270
28	850							880	6,260	5,930	7,970	6,660
29	840							900	5,930	5,740	8,150	6,260
30	840							920	5,710	5,810	7,970	6,200
31	830							5,500		7,420	5,910	
Total	34,240	24,600	23,070	22,320	20,180	22,960	24,180	155,200	184,320	231,210	189,990	96,910
Mean	1,105	820	744	720	720	741	806	5,006	6,144	7,458	6,129	3,230
Ac-ft	67,910	48,790	45,760	44,270	39,890	45,540	47,960	307,600	365,600	458,600	376,800	192,200
Calendar year 1956: Max 7,350 Min - Mean 2,010 Ac-ft 1,459,000												
Water year 1956-57: Max 8,580 Min - Mean 2,820 Ac-ft 2,041,000												

* Discharge measurement made on this day.

Note.--Stage-discharge relation affected by ice Oct. 7 to May 1 (no gage-height record Oct. 10 to Apr. 27; discharge estimated on basis of 2 discharge measurements, weather records, and records for station at Big Delta).

TANANA RIVER AT NORTHWAY JUNCTION--Continued

Chemical analyses, in parts per million, May to September 1957

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium, mag-nesium	Non-carbonate			
May 8, 1957.....	2,600	10	0.24	33	5.9	4.0	1.4	111	20	0.2	0.0	0.7	130	107	16	207	7.4	70
May 23.....	7,130	8.3	.08	33	5.9	2.6	1.6	111	13	.2	.1	.9	120	106	16	210	7.5	45
July 10.....	7,580	8.3	.00	38	8.4	4.6	1.3	134	30	1.0	.2	1.0	159	129	19	249	7.9	20
Aug. 1.....	6,940	8.7	.18	34	6.7	4.3	1.0	110	25	1.0	.1	.4	135	112	22	226	7.1	20
Sept. 17.....	2,910	9.4	.03	35	8.5	4.9	1.0	134	25	1.5	.1	.2	152	122	12	253	7.5	0

Periodic determinations of suspended-sediment discharge May to September 1957

Date	Discharge (cfs)	Suspended sediment	
		Mean concentration (ppm)	Discharge (tons per day)
May 8, 1957.....	2,600	1,770	12,400
May 23.....	7,130	2,460	47,400
July 10.....	7,580	1,620	33,200
Aug. 1.....	6,940	1,160	21,700
Aug. 29.....	6,200	1,850	31,000
Sept. 17.....	2,910	620	4,870

Particle-size analysis of suspended sediment, August 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of Collection	Time	Discharge (cfs)	Water temperature (°F)	Suspended sediment											Methods of analysis	
				Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000
Aug. 29, 1957	9:00 a. m.	6,200		1,850	4,980	22	28	39	50	62	79	91	99	100		BSWCM

Tanana River near Tanacross

Location.--Lat 63°23'15", long 143°44'45", on left bank a quarter of a mile downstream from unnamed tributary, a quarter of a mile north of Cathedral Rapids, 8 miles upstream from Robertson River, and 13 miles west of Tanacross.

Drainage area.--8,550 sq mi, approximately.

Records available.--Discharge: June 1953 to September 1957.

Chemical analyses: December 1953 to October 1954, May to September 1957.

Water temperatures: June to September 1954, May to September 1957.

Sediment records: October 1953 to September 1954, October 1954 to September 1956 (periodic); May to September 1957.

Gage.--Water-stage recorder. Datum of gage is 1,489.58 ft above mean sea level.

Extremes.--Maximum discharge during year, 31,100 cfs July 26 (gage height, 10.23 ft); minimum not determined.

1953-57: Maximum discharge, 35,500 cfs Aug. 9, 1953 (gage height, 11.04 ft); minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Some diurnal fluctuation caused by glacier melt at the source. Records of specific conductance of daily samples available in district office of Quality of Water Branch, Palmer, Alaska.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	7,000								13,800	21,600	22,400	*20,600
2	6,500								13,800	23,100	22,300	19,600
3	6,200								14,000	24,000	22,800	19,000
4	6,000								14,200	24,800	23,400	18,000
5	*5,800		(*)						16,000	23,600	23,400	16,300
6	5,600							5,800	16,500	22,800	24,100	15,700
7	b5,300								18,700	24,900	24,200	16,200
8	b5,100	2,700	2,500				2,300		20,500	28,500	23,300	17,000
9	b4,900								21,500	30,300	21,800	16,800
10	b4,700								22,900	29,300	21,700	15,500
11	b4,500								22,900	27,500	22,600	14,200
12	b4,380								23,400	24,900	24,200	13,700
13	b4,250								23,800	25,800	*26,400	13,300
14	b4,100								25,600	27,200	27,400	13,000
15	b3,960			2,200	2,200	2,200		15,000	25,400	28,300	28,000	13,500
16	3,800								23,100	29,500	28,200	13,600
17	3,700								*22,600	29,300	26,600	13,300
18	3,600						(*)		22,200	28,100	25,200	12,700
19	3,500								22,600	27,700	26,100	11,700
20	3,400								23,400	28,500	26,100	11,000
21	3,300							17,000	24,200	28,700	23,100	10,700
22	3,300							18,600	27,800	28,400	21,100	10,500
23	3,200	2,800	2,200				2,500	19,900	26,800	26,200	20,000	10,300
24	3,200							21,000	25,200	25,600	19,100	10,000
25	3,100							19,400	24,900	29,000	19,900	9,550
26	3,100							18,200	23,600	30,800	20,900	9,180
27	3,000							18,100	23,900	28,400	22,200	9,040
28	3,000							17,600	20,900	25,800	23,300	8,980
29	2,900							16,500	20,000	24,100	23,600	8,980
30	2,900							15,400	19,900	*23,200	23,200	8,980
31	2,900	-----			-----		-----	14,500	-----	22,800	22,300	-----
Total	130,190	82,500	72,700	68,200	61,600	68,200	72,000	404,200	644,100	822,900	728,900	400,920
Mean	4,200	2,750	2,345	2,200	2,200	2,200	2,400	13,040	21,470	26,550	23,510	13,360
Ac-ft	258,200	163,600	144,200	135,300	122,200	135,500	142,800	801,700	*1,278	*1,632	*1,446	795,200
Calendar year 1956: Max	26,800						Mean 7,373	Ac-ft 5,353,000				
Water year 1956-57: Max	30,800			Min -			Mean 9,744	Ac-ft 7,054,000				

* Discharge measurement made on this day.

† Expressed in thousands.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 1-6, Oct. 16 to May 21 (stage-discharge relation affected by ice during most of period); discharge estimated on basis of 3 discharge measurements, weather records, and records for station at Big Delta.

TANANA RIVER NEAR TANACROSS--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (calculated)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			
Oct. 5, 1956	5,800	16	0.00	38	10	7.8	1.3	151	29	3.3	0.3	0.7	180	136	12	289	8.1	5
Dec. 6	2,500	17	0.00	35	8.5	6.0	1.8	133	25	2.8	0	9	163	123	13	255	7.6	5
Mar. 29, 1957	2,200	16	0.00	46	10	5.4	1.6	170	22	1.5	2	3	187	156	17	308	7.4	5
May 22-31	17,900	9.5	0.00	29	4.3	4.0	1.2	98	16	2.0	3	1.2	115	90	10	187	7.7	55
June 1-10	17,200	10	0.00	29	5.2	4.6	1.3	98	18	3.2	2	9	120	94	13	199	7.5	25
June 11-20	23,500	11	0.00	30	4.1	5.5	1.3	102	17	3.2	2	9	124	201	8	201	7.8	3
June 21-30	23,700	12	0.00	29	4.1	5.6	1.3	102	17	2.5	2	9	123	89	6	202	7.8	8
July 1-10	25,300	11	0.00	29	6.2	5.7	1.2	104	18	3.5	1	9	127	98	13	196	7.7	5
July 11-20	27,700	11	0.00	30	5.8	5.8	1.4	110	17	3.0	1	1.0	129	99	9	205	7.7	5
July 21-31	26,800	10	0.00	30	6.3	5.9	1.2	110	19	3.0	1	1.0	130	101	11	208	7.7	5
Aug. 1-10	22,900	9.8	0.00	29	4.7	5.6	1.6	98	19	2.5	1	2.1	121	82	12	201	7.4	0
Aug. 11-20	26,100	9.7	0.00	25	4.3	5.7	1.6	89	15	2.5	1	2.0	109	80	7	177	7.5	0
Aug. 21-31	21,700	10	0.06	29	4.7	5.7	1.8	97	20	4.5	1	1.0	124	92	12	200	7.3	7
Sept. 1-10	17,900	10	0.05	27	7.4	6.0	1.6	102	22	4.0	1	1.4	128	98	14	207	7.3	7
Sept. 11-20	13,000	12	0.00	32	6.5	7.3	1.8	118	20	3.5	0	5	142	105	10	233	7.7	0
Sept. 21-30	9,820	13	0.00	36	7.9	6.8	1.2	138	25	3.5	0	7	164	128	14	268	7.8	5
Weighted average ^a	9,744	12	--	32	6.2	5.8	1.2	115	20	2.9	--	--	137	105	12	222	--	--

^a Represents 100 percent of runoff for water year. Concentrations were estimated for the period Oct. 1, 1956 to May 21, 1957 from previous records and represent 22 percent of annual runoff.

Temperature (°F) of water, May to September 1957

Day	Temperature (°F) of water, May to September 1957										Day	Temperature (°F) of water, May to September 1957									
	May	June	July	Aug.	Sept.	May	June	July	Aug.	Sept.		May	June	July	Aug.	Sept.	May	June	July	Aug.	Sept.
1	--	57	58	62	50	11	37	60	58	58	21	51	--	56	50	34	51	--	56	50	34
2	--	56	56	60	48	12	35	60	58	58	22	48	--	55	48	34	48	--	54	48	34
3	--	56	56	60	50	13	36	55	57	58	23	47	--	45	48	34	47	--	45	48	34
4	--	61	58	60	48	14	38	56	58	58	24	46	--	54	50	36	46	--	54	50	36
5	--	62	58	58	50	15	41	56	60	56	25	48	--	50	50	36	48	--	50	50	36
6	--	64	56	54	50	16	46	57	60	56	26	49	--	48	52	38	49	--	48	52	38
7	--	64	55	54	49	17	47	--	58	54	27	50	--	50	54	--	50	--	50	54	--
8	--	64	50	56	50	18	49	--	60	52	28	51	--	52	52	--	51	--	52	52	--
9	42	64	50	60	49	19	49	--	50	52	29	55	--	54	50	--	55	--	54	50	--
10	38	60	56	60	--	20	49	--	56	50	30	53	--	56	48	--	53	--	56	48	--
Average											31	54	--	55	54	43					

TANANA RIVER NEAR TANACROSS--Continued

Suspended sediment, May to September 1957

Day	May			June			July		
	Suspended sediment			Suspended sediment			Suspended sediment		
	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day	Mean discharge (cfs)	Mean concentration (ppm)	Tons per day
1.....	--	--	--	13,800	715	26,600	21,600	1,350	78,700
2.....	--	--	--	13,800	677	25,200	23,100	1,710	107,000
3.....	--	--	--	14,000	826	31,200	24,000	1,850	120,000
4.....	--	--	--	14,200	950	36,400	24,800	1,830	129,000
5.....	--	--	--	16,000	1,150	49,700	23,800	1,700	109,000
6.....	--	--	--	16,500	1,340	59,700	22,800	1,520	93,600
7.....	--	--	--	18,700	1,610	81,300	24,900	1,860	125,000
8.....	--	--	--	20,500	1,950	108,000	26,500	2,580	199,000
9.....	--	--	--	21,500	2,090	121,000	30,300	2,870	235,000
10.....	5,800	1,390	21,800	22,900	2,190	135,000	29,300	2,230	176,000
11.....	15,000	1,880	76,100	22,900	2,160	134,000	27,500	1,680	125,000
12.....		2,130	86,300	23,400	2,080	131,000	24,900	1,380	92,800
13.....		1,880	76,100	23,800	2,000	128,000	25,800	1,480	103,000
14.....		1,580	64,000	25,600	2,510	173,000	27,200	1,610	118,000
15.....		1,970	79,800	25,400	2,180	150,000	28,300	1,910	146,000
16.....	17,000	1,320	53,500	23,100	1,710	107,000	29,500	1,920	153,000
17.....		1,080	43,700	22,600	1,630	99,500	29,300	1,710	135,000
18.....		1,000	40,500	22,200	1,760	105,000	28,100	1,690	128,000
19.....		910	36,800	22,600	1,520	92,800	27,700	1,690	126,000
20.....		1,170	47,400	23,400	1,580	99,800	28,500	1,840	142,000
21.....	17,000	1,490	60,300	24,200	1,780	116,000	28,700	1,840	142,000
22.....	18,600	1,530	62,000	27,800	2,450	184,000	28,400	1,760	135,000
23.....	19,900	1,570	84,400	26,800	2,010	145,000	26,200	1,760	124,000
24.....	21,000	1,510	85,600	25,200	1,660	113,000	25,600	1,820	126,000
25.....	19,400	1,210	63,400	24,900	1,490	100,000	29,000	2,100	164,000
26.....	18,200	974	47,900	23,600	1,370	87,300	30,800	2,070	172,000
27.....	18,100	950	46,400	23,900	1,130	72,900	28,400	1,550	119,000
28.....	17,600	855	40,600	20,900	1,220	66,600	25,800	1,290	89,900
29.....	16,500	749	33,400	20,000	1,170	63,200	24,100	1,180	76,800
30.....	15,400	706	29,400	19,900	1,170	62,900	23,200	1,060	66,400
31.....	14,500	710	27,800	--	--	--	22,800	1,040	64,000
Total.	352,000	--	1,207,200	644,100	--	2,907,300	822,900	--	3,920,200
Day	August			September					
1.....	22,400	1,070	64,700	20,600	1,360	75,600			
2.....	22,300	1,160	69,800	19,600	1,260	66,700			
3.....	22,800	1,280	78,800	19,000	1,290	66,200			
4.....	23,400	1,430	90,300	18,000	1,240	60,300			
5.....	23,400	1,480	93,500	16,300	1,250	55,000			
6.....	24,100	1,530	99,600	15,700	1,030	43,700			
7.....	24,200	1,560	102,000	16,200	931	40,700			
8.....	23,300	1,390	87,400	17,000	836	38,400			
9.....	21,800	1,190	70,000	16,800	831	37,700			
10.....	21,700	1,140	66,800	15,500	874	36,600			
11.....	22,600	1,380	84,200	14,200	917	35,200			
12.....	24,200	1,940	127,000	13,700	936	34,600			
13.....	26,400	2,740	195,000	13,300	830	29,800			
14.....	27,400	2,420	179,000	13,000	787	27,600			
15.....	28,000	2,170	164,000	13,500	787	28,700			
16.....	28,200	2,020	154,000	13,600	883	32,400			
17.....	26,600	1,840	132,000	13,300	850	30,500			
18.....	25,200	1,850	126,000	12,700	859	29,400			
19.....	26,100	1,860	131,000	11,700	797	25,200			
20.....	26,100	1,750	123,000	11,000	523	15,500			
21.....	23,100	1,300	81,100	10,700	533	15,400			
22.....	21,100	1,270	72,400	10,500	523	14,800			
23.....	20,000	1,220	65,900	10,300	475	13,200			
24.....	19,100	1,170	60,300	10,000	542	14,600			
25.....	19,900	1,210	65,000	9,550	485	12,500			
26.....	20,900	1,280	72,200	9,190	445	10,000			
27.....	22,200	1,470	88,100	9,040	450				
28.....	23,300	1,460	91,800	8,980	450				
29.....	23,600	1,350	86,000	8,980	450				
30.....	23,200	1,330	83,300	8,980	450				
31.....	22,300	1,340	80,700	--	--	--			
Total.	728,900	--	3,084,900	400,920	--	932,300			

Total discharge for period May 10 to Sept. 30 (cfs-days) 2,948,820
Percent of annual discharge during period 83.0
Total load for period May 10 to Sept. 30 (tons) 12,051,900

a Computed from estimated concentration graph.

TANANA RIVER NEAR TANACROSS--Continued

Particle-size analyses of suspended sediment, June to September 1957
 (Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water;
 W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of Collection	Time	Discharge (cfs)	Water temperature (° F)	Suspended sediment												Methods of analysis
				Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters										
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350	0.500		1.000
June 18, 1957, . . .	12:00 m.	a 22,200	--	1,240	1,880	30	36	51	47	65	79	89	98		100	BSWCM
Aug. 1,	12:00 m.	21,800	62	1,050	1,460	26	33	40	48	57	72	83	95		100	BSWCM
Aug. 29,	1:30 p. m.	23,400	50	1,270	987	27	35	46	56	66	79	86	97		100	BSWCM
Sept. 18,	--	a 12,700	44	882	614	27	35	42	50	55	70	80	96		100	BSWCM

a Daily mean discharge.

Tanana River at Big Delta

Location.--Lat 64°09'20", long 145°51'00", on line between secs. 6 and 7, T. 9 S., R. 10 E., near left bank on downstream side of bridge on Richardson Highway, 0.5 mile northwest of Big Delta, half a mile upstream from Delta River, 8 miles downstream from Goodpastor River, and 75 miles southeast of Fairbanks.

Drainage area.--13,500 sq mi, approximately.

Records available.--Discharge: September 1948 to September 1952, October 1953 to September 1957 (discontinued).

Chemical analyses: May 1949 to September 1952.

Water temperatures: May 1949 to September 1951.

Gage.--Wire-weight gage read once daily. Datum of gage is 962.95 ft above mean sea level.

Average discharge.--8 years, 14,950 cfs (10,820,000 acre-ft per year).

Extremes.--Maximum discharge observed during year, 44,000 cfs July 16 (gage height, 21.99 ft); minimum daily, 3,720 cfs Apr. 7.

1948-52, 1953-57: Maximum discharge observed, 62,800 cfs July 29, 1949 (gage height, 23.57 ft); minimum daily, that of Apr. 7, 1957.

Remarks.--Records poor. Diurnal fluctuation caused by glacier melt at the source.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	13,400	6,380	7,200	4,280	4,160	4,080	4,100	5,990	33,300	36,000	34,600	35,700
2	*13,900	6,250	6,800	4,280	4,160	4,080	4,080	6,500	33,300	35,300	34,900	34,500
3	14,000	6,160	6,300	4,280	4,160	4,080	4,080	7,100	34,000	34,800	36,200	31,800
4	13,300	6,060	5,800	4,280	4,160	4,080	4,160	7,990	34,000	35,200	36,200	30,800
5	12,100	5,990	5,400	4,280	4,160	4,080	4,140	9,010	38,500	35,400	36,400	30,000
6	11,600	5,920	5,170	4,260	4,160	4,080	3,840	10,500	38,000	35,700	36,100	29,100
7	17,100	5,870	4,940	4,260	4,160	4,080	3,720	12,400	38,000	36,400	35,900	29,100
8	10,700	5,820	4,740	4,260	4,140	4,060	3,840	14,400	42,800	36,900	35,900	28,600
9	10,400	5,770	4,630	4,260	4,140	4,060	4,060	16,600	42,400	36,500	37,000	28,300
10	10,000	5,700	4,520	4,240	4,140	4,060	4,160	19,400	41,700	36,300	39,800	28,200
11	9,600	5,650	4,480	4,240	4,140	4,060	4,200	23,000	42,000	36,300	40,300	28,000
12	9,290	5,610	4,430	4,240	4,140	4,060	4,220	26,100	40,600	37,300	40,400	28,000
13	9,010	5,580	4,390	4,220	4,140	4,060	4,220	28,000	39,100	39,400	40,400	27,000
14	8,800	5,540	4,370	4,220	4,120	4,060	4,260	29,500	38,800	39,700	40,300	27,300
15	8,460	5,490	4,370	4,220	4,120	4,060	4,240	30,000	39,500	41,800	40,000	27,600
16	8,350	5,450	4,350	4,200	4,120	4,040	4,260	30,000	42,200	44,000	39,800	26,400
17	8,200	5,400	4,350	4,200	4,120	4,040	4,280	29,600	*40,700	41,500	38,300	23,500
18	8,020	5,380	4,350	4,200	4,120	4,040	4,300	29,700	40,000	41,100	39,600	23,300
19	7,890	5,350	4,350	4,200	4,120	4,040	4,300	30,600	40,200	40,000	38,800	22,700
20	7,730	5,310	4,350	4,200	4,120	4,040	4,320	34,400	38,500	39,000	36,700	20,800
21	7,600	5,280	4,320	4,200	4,100	4,040	4,350	37,500	38,200	38,800	36,100	18,900
22	7,450	5,280	4,320	4,180	4,100	4,040	4,460	38,800	36,900	38,800	35,100	18,600
23	7,300	5,400	4,320	4,180	4,100	4,040	4,460	38,800	35,600	39,400	34,500	17,800
24	7,150	5,800	4,320	4,180	4,100	4,020	4,430	37,700	34,500	41,100	33,600	17,200
25	7,000	6,400	4,320	4,180	4,100	4,020	4,610	36,100	33,600	*40,800	33,600	17,000
26	6,900	6,700	4,300	4,180	4,100	*4,020	4,740	33,700	33,400	41,500	34,700	16,800
27	6,800	*6,850	4,300	4,180	4,100	4,000	4,740	34,400	34,000	35,700	36,200	16,500
28	6,700	7,100	4,300	4,180	4,100	4,020	4,940	35,400	34,800	34,600	38,800	16,100
29	6,600	7,200	4,300	4,200	-	4,040	5,310	34,400	34,500	34,900	43,300	15,500
30	6,520	7,300	4,300	4,180	-----	4,140	5,630	33,600	35,300	34,600	39,800	15,200
31	6,450	-----	4,300	4,180	-----	4,060	-----	31,400	-----	34,400	37,400	-----
Total	282,320	177,990	146,690	130,840	115,600	125,680	130,450	792,590	*1,128.4	*1,173.2	*1,160.7	730,300
Mean	9,107	5,933	4,732	4,221	4,129	4,054	4,348	25,570	37,610	37,850	37,440	24,340
Ac-ft	560,000	353,000	291,000	259,500	229,300	249,300	258,700	1,572	*2,238	*2,327	*2,302	*1,449

Calendar year 1956: Max 48,300 Min 5,200 Mean 16,060 Ac-ft 11,660,000
 Water year 1956-57: Max 44,000 Min 3,720 Mean 16,700 Ac-ft 12,090,000

* Discharge measurement made on this day.

† Expressed in thousands.

Note.--Stage-discharge relation affected by ice Oct. 9 to about May 13.

Salcha River near Salchaket

Location.--Lat 64°28'15", long 146°55'45", in sec. 22, T. 5 S., R. 4 E., near right bank on downstream side of bridge on Richardson Highway, half a mile east of Aurora Lodge, 2 miles upstream from mouth, and 6 miles southeast of Salchaket.

Drainage area.--2,170 sq mi, approximately.

Records available.--July 1909 to August 1910 (no winter records), published as "at mouth," October 1948 to September 1957.

Gage.--Water-stage recorder. Datum of gage is 631.85 ft above mean sea level. July 1909 to August 1910, staff gage at site $1\frac{1}{4}$ miles downstream at different datum. Sept. 7, 1948, to Apr. 24, 1953, wire-weight gage at present site and datum.

Average discharge.--9 years (1948-57), 1,741 cfs (1,260,000 acre-ft per year).

Extremes.--Maximum discharge during year, 28,200 cfs May 21 (gage height, 14.9 ft, from graph based on gage readings); minimum not determined.
1909-10, 1948-57: Maximum discharge, 36,500 cfs June 23, 1956 (gage height, 16.13 ft), from rating curve extended above 16,000 cfs by logarithmic plotting; minimum not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	1,800							493	1,700	1,140	1,190	889
2	*1,670							542	1,700	1,210	1,130	916
3	1,600							600	1,800	1,217	1,090	925
4	1,500		(*)					705	1,900	1,237	1,050	907
5	1,480							898	2,000	1,220	1,020	889
6								1,500	2,100	1,470	1,020	864
7								2,500	2,300	1,680	1,020	848
8		370	360	220			290	6,000	2,400	1,550	1,030	864
9								9,450	2,500	1,647	997	934
10	1,300							13,000	2,700	2,250	970	934
11								11,500	2,600	2,067	943	925
12								7,800	2,400	1,690	916	907
13								5,090	2,200	1,450	907	889
14								3,540	2,000	1,300	889	898
15					230	270		2,990	2,000	1,197	864	916
16								4,780	2,140	1,127	848	961
17								8,920	2,400	1,087	832	979
18								11,600	2,800	1,047	824	988
19								14,400	*3,310	1,027	816	937
20						(*)		19,300	3,980	1,067	816	970
21								26,300	2,780	1,197	864	943
22								21,000	2,160	1,150	880	907
23		340					360	14,000	1,860	1,107	907	872
24	730		220	230				8,000	1,680	1,047	898	856
25								5,000	1,500	1,030	872	856
26								3,500	1,360	*1,090	864	864
27								2,800	1,260	1,300	848	872
28								2,300	1,190	1,650	*840	848
29					-			2,000	1,170	1,580	832	816
30					-----			1,800	1,130	1,410	848	800
31		-----			-----			1,700	-----	1,290	864	-----
Total	32,730	10,850	8,920	6,980	6,440	8,370	9,750	214,008	63,020	41,460	28,689	27,034
Mean	1,058	355	288	225	230	270	325	6,903	2,101	1,337	925	901
Ac-ft	64,920	21,120	17,690	13,840	12,770	16,800	19,340	424,500	125,000	82,230	56,900	53,620
Calendar year 1956: Max			25,600	Min -		Mean	2,128	Ac-ft	1,545,000			
Water year 1956-57: Max			26,300	Min -		Mean	1,255	Ac-ft	908,500			

Peak discharge (base, 10,000 cfs).--May 10 (6 p.m.) 14,100 cfs (11.73 ft); May 21 (time unknown) 28,200 cfs (14.9 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Oct. 1, 3, 4, Oct. 6 to Apr. 9 (stage-discharge relation affected by ice during most of period), May 22 to June 15, June 17, 18; discharge estimated on basis of 4 discharge measurements, weather records, and records for Chena River at Fairbanks. Stage-discharge relation affected by ice Apr. 10 to May 9.

Chena River at Fairbanks

Location.--Lat 64°50'40", long 147°43'10", in NE $\frac{1}{4}$ sec. 10, T. 1 S., R. 1 W., near right bank on upstream side of bridge on Cushman Street in Fairbanks, 0.4 mile downstream from Noyes Slough, 10 miles upstream from mouth, and 12 miles downstream from Chena Slough.

Drainage area.--1,980 sq mi, approximately (includes that of Noyes Slough).

Records available.--Discharge: July 1947 to September 1948 (no winter records), October 1948 to September 1957.

Chemical analyses: May to September 1953, April to September 1955.

Water temperatures: May to September 1953.

Sediment records: January to August 1954, April to September 1955 (periodic).

Gage.--Wire-weight gage read twice daily. Datum of gage is 423.68 ft above mean sea level. Prior to May 3, 1948, staff gage at same site and datum.

Average discharge.--9 years, 1,452 cfs (1,051,000 acre-ft per year).

Extremes.--Maximum discharge during year, 13,600 cfs May 23 (gage height, 9.12 ft); minimum not determined.

1947-57: Maximum discharge, 24,200 cfs May 21, 1948 (gage height, 14.17 ft, from graph based on gage readings); minimum not determined.

Flood in August 1930 reached a stage of about 14.2 ft, from information by local residents.

Flood of May 11-14, 1937, reached a stage of 14.9 ft, ice jam, from floodmarks.

Remarks.--Records good except those for periods of ice effect, no gage-height record, or shifting-control, which are poor. Records include flow in Noyes Slough, which diverts small quantity upstream from gage.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	2,210						380	1,070	1,400	1,080	830	630
2	2,190						380	1,090	1,300	1,130	812	630
3	*2,110		(*)				380	1,100	1,400	1,140	800	630
4	2,020						380	1,110	1,400	1,130	776	625
5	1,950						380	1,140	1,500	1,110	770	620
6	1,930						380	1,300	1,500	1,100	764	608
7	1,920						380	1,700	1,800	1,140	746	592
8	1,800						380	2,660	1,800	1,150	734	576
9	1,700	470	340	260	280	370	385	4,640	1,700	1,150	722	581
10	1,640						385	8,060	1,700	1,140	716	586
11	1,570						390	10,000	1,890	1,160	704	581
12	1,530						390	9,920	1,670	1,200	692	586
13	1,470						390	6,980	1,590	1,150	674	598
14	1,420						390	5,240	1,530	1,100	669	598
15	1,360						395	3,870	1,430	1,060	669	614
16	1,310						395	3,550	1,400	1,010	658	608
17	1,280						395	4,710	1,400	972	647	625
18	1,200						400	8,010	1,370	916	647	636
19	1,140						405	10,300	*1,370	937	636	642
20	1,080						410	11,600	1,430	916	630	652
21	1,020					(*)	420	12,300	1,510	895	630	647
22	972						430	12,700	1,430	888	636	642
23	950	380	260	280	300	380	440	13,400	1,350	867	630	636
24	888						460	11,500	1,270	860	630	630
25	854						500	7,560	1,220	860	614	636
26	806						542	4,500	1,150	*867	603	630
27	776						620	3,000	1,130	874	614	636
28	746						722	2,200	1,100	888	625	620
29	710						842	1,800	1,080	888	*614	581
30	686						1,000	1,600	1,060	868	625	581
31	652							1,400		848	630	---
Total	41,870	12,750	9,260	8,380	8,100	11,630	13,746	170,010	42,280	31,314	21,147	18,457
Mean	1,351	425	299	270	289	375	458	5,484	1,409	1,010	682	615
Ac-ft	83,060	25,290	18,370	16,620	16,070	23,070	27,260	337,200	85,860	62,110	41,940	36,610
Calendar year 1956: Max		11,700					Mean	1,719	Ac-ft	1,248,000		
Water year 1956-57: Max		13,400					Mean	1,066	Ac-ft	771,400		

Peak discharge (base, 5,000 cfs).--May 11 (11:30 p.m.) 10,500 cfs (8.77 ft); May 23 (11:40 a.m.) 13,600 cfs (9.12 ft).

* Discharge measurement made on this day.

Note.--No gage-height record Nov. 1 to Apr. 8 (stage-discharge relation affected by ice during entire period) May 26 to June 10; discharge estimated on basis of 2 discharge measurements, weather records, and records for Salcha River near Salchaket. Stage-discharge relation affected by ice Oct. 9-31, Apr. 9-30. Shifting-control method used Oct. 1-13, May 1-13.

Nenana River near Healy

Location.--Lat 63°50'40", long 148°56'35", in W $\frac{1}{2}$ sec. 28, T. 12 S., R. 7 W., on right bank half a mile upstream from Healy Creek, 1.1 miles southeast of Healy, and 1.2 miles upstream from railroad bridge.

Drainage area.--1,910 sq mi, approximately.

Records available.--Discharge: October 1950 to September 1957.

Chemical analyses: October 1953 to September 1955, May 1956 to September 1957.

Water temperatures: May to September 1957.

Sediment records: 1953-57 (summer months only).

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

Average discharge.--7 years, 3,608 cfs (2,612,000 acre-ft per year).

Extremes.--Maximum discharge during year, 21,000 cfs June 8 (gage height, 9.70 ft); minimum not determined.

1950-57: Maximum discharge, 28,500 cfs July 29, 1952; maximum gage height, 10.86 ft Aug. 25, 1955; minimum discharge not determined.

Remarks.--Records good except those for periods of ice effect or no gage-height record, which are poor. Some diurnal fluctuation caused by glacier melt at the source. Records of specific conductance of daily samples available in district office, Quality of Water Branch, Palmer, Alaska.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	3,850							870	7,950	8,960	6,480	6,120
2	3,860							820	8,540	8,350	6,570	6,530
3	3,510							980	10,900	8,620	6,700	5,960
4	3,180							1,000	12,800	8,340	6,830	5,760
5	3,210							1,100	15,300	7,700	6,670	5,420
6	3,050							1,300	17,800	7,780	6,220	5,370
7	b2,900							1,500	19,000	7,590	6,090	6,090
8	b2,730							1,800	19,100	7,180	6,120	5,890
9	b2,630	890	700	710 (*)	640	560	420	2,200	17,700	7,420	6,530	5,890
10	b2,630							2,900	17,500	7,180	7,180	7,070
11	b2,590							3,500	16,800	*7,560	7,290	6,480
12	b2,500							3,700	16,000	7,920	7,050	6,530
13	b2,430				(*)			3,600	14,900	8,540	6,200	7,980
14	b2,370							3,500	14,200	8,930	*6,070	9,170
15	b2,300							3,240	13,600	9,050	6,610	9,350
16	b2,200	(*)						3,810	12,700	8,420	7,150	7,670
17	b2,090							4,720	12,200	7,750	7,050	6,480
18	b1,970						(*)	5,790	12,300	8,450	6,510	6,200
19	b1,860							7,070	13,000	8,730	5,740	8,140
20	b1,760							9,530	12,300	7,980	4,810	7,750
21	b1,670							10,300	10,800	7,400	5,490	6,480
22	b1,610							10,600	10,600	6,700	6,670	5,620
23	1,600	860	730	670	570		600	10,700	8,900	6,480	6,270	4,940
24	1,500							9,620	7,780	6,590	5,660	4,600
25	1,400							8,900	7,370	7,210	5,470	5,010
26	b1,390							9,500	7,670	7,670	5,540	5,230
27	b1,340							9,320	8,930	6,720	5,790	5,350
28	b1,260							9,650	8,370	5,760	7,720	4,850
29	b1,210							*9,290	8,370	5,540	7,980	4,160
30	1,100							9,440	8,200	5,650	7,070	3,450
31	1,100							8,620		5,990	6,330	
Total	68,600	26,250	22,180	21,370	17,010	15,920	15,300	168,970	370,980	234,750	199,960	185,540
Mean	2,213	875	715	689	608	514	510	5,451	12,370	7,573	6,450	6,185
Ac-ft	136,100	52,070	43,990	42,390	33,740	31,580	30,350	335,100	735,800	465,600	396,600	368,000

Calendar year 1956: Max 17,200 Min - Mean 3,929 Ac-ft 2,852,000

Water year 1956-57: Max 19,100 Min - Mean 3,690 Ac-ft 2,671,000

Peak discharge (base, 12,000 cfs).--June 8 (6 a.m.) 21,000 cfs (9.70 ft).

* Discharge measurement made on this day.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 23-25, Oct. 30 to May 14, except occasional staff-gage readings (stage-discharge relation affected by ice during most of period); discharge estimated on basis of 4 discharge measurements, weather records, and records for Matanuska River at Palmer.

NENANA RIVER NEAR HEALY--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957

Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (calculated)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25° C)	pH	Color
														Calcium magnesium	Non-carbonate			
Oct. 1-10, 1956	3,140	7.1	0.00	31	7.6	3.8	1.3	92	43	2.0	0.0	0.2	141	109	33	241	6.8	0
Jan. 9, 1957	710	8.7	.00	43	8.9	6.1	2.4	130	43	4.2	.2	.4	181	144	37	310	7.3	5
Feb. 13	640	8.2	.00	38	8.1	5.7	2.1	114	43	3.2	.1	.4	165	128	35	288	7.3	0
Apr. 17	600	7.7	.00	39	9.7	5.8	2.7	123	55	2.5	.3	.4	184	137	36	298	7.8	0
June 22	10,200	5.6	.00	23	6.0	2.2	2.3	62	38	1.0	.2	.2	109	81	30	171	7.2	5
Aug. 1-10	6,550	6.3	.00	27	4.3	2.4	2.4	67	34	1.0	.1	.4	111	85	30	186	7.8	5
Aug. 11-20	6,450	5.5	.00	29	5.9	2.5	2.4	69	44	1.5	.1	.7	126	96	40	212	7.7	5
Aug. 21-31	6,350	5.4	.00	29	5.7	2.5	2.2	65	45	1.5	.1	1.8	125	96	43	212	7.7	0
Sept. 1-10	6,010	5.7	.00	29	6.6	2.8	1.8	67	47	1.5	.2	1.0	129	100	44	219	7.7	0
Sept. 11-20	7,580	6.2	.00	29	6.9	2.7	1.6	70	44	1.0	.2	.5	126	101	44	218	--	0
Sept. 21-26	5,310	6.8	.00	29	7.3	3.1	1.2	76	42	2.0	.2	.5	129	102	40	222	7.7	5

NENANA RIVER NEAR HEALY--Continued

Temperature (°F) of water, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	33								47	49	52	44
2	36								47	49	51	45
3	35								48	49	51	44
4	34								48	49	48	44
5	34								48	49	50	46
6	34								48	50	50	44
7	34								49	--	50	45
8	33								50	51	48	46
9	33								50	50	56	48
10	33								50	50	52	46
11									51	51	54	47
12									52	50	50	46
13					32				52	51	48	45
14									52	51	--	44
15									53	51	--	45
16									52	51	54	44
17							32		52	51	53	44
18									50	50	50	43
19								45	50	50	48	44
20								45	50	49	45	43
21								45	50	48	47	42
22								45	51	--	48	40
23								45	52	49	50	42
24								45	50	50	46	41
25								45	50	50	48	39
26								45	50	49	48	38
27								46	50	50	48	--
28								46	51	49	47	--
29								46	50	52	44	--
30								--	50	50	45	--
31								46	--	51	45	--
Average	--				--		--	--	50	50	49	44

NENANA RIVER NEAR HEALY --Continued

Particle-size analyses of suspended sediment, June to August 1957

(Methods of analysis: B, bottom withdrawal tube; D, decantation; P, pipette; S, sieve; N, in native water; W, in distilled water; C, chemically dispersed; M, mechanically dispersed)

Date of Collection	Time	Discharge (cfs)	Water temperature (° F)	Suspended sediment											Methods of analysis			
				Concentration of sample (ppm)	Concentration of suspension analyzed (ppm)	Percent finer than indicated size, in millimeters												
						0.002	0.004	0.008	0.016	0.031	0.062	0.125	0.250	0.350		0.500	1.000	
June 22,		10,200		905		2,540	15	22	33	42	52	66	74	86		96	100	BSWCM
July 12,		7,110	47	1,660		1,990	19	25	33	42	54	68	77	89		98	100	BSWCM
Aug. 15,		2,680		2,030		2,260	13	20	29	40	49	64	73	86		95	100	BSWCM

Yukon River at Ruby

Location.--Lat 64°44'25", long 155°29'55", on left bank at Ruby, 300 ft downstream from Ruby Creek, 2 miles downstream from Melozitna River, and 2½ miles upstream from Ruby Slough.

Drainage area.--259,000 sq mi, approximately.

Records available.--October 1956 to September 1957.

Gage.--Staff gage read twice daily. Altitude of gage is 150 ft (from topographic map).

Extremes.--Maximum discharge during year, 753,000 cfs June 3 or 4 (gage height, 32.4 ft, from floodmarks), from rating curve extended above 570,000 cfs by logarithmic plotting; minimum not determined.

Remarks.--Records fair except those for periods of ice effect or no gage-height record, which are poor.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	*247,000								730,000	342,000	276,000	263,000
2	241,000								740,000	343,000	276,000	262,000
3	236,000								750,000	341,000	274,000	260,000
4	b220,000								750,000	338,000	271,000	257,000
5	b200,000								740,000	333,000	269,000	252,000
6	b190,000							56,000	720,000	328,000	267,000	248,000
7	b180,000						(*)		680,000	324,000	266,000	246,000
8	b170,000						29,000		640,000	323,000	262,000	245,000
9	b160,000								610,000	326,000	260,000	244,000
10	b150,000								580,000	329,000	257,000	243,000
11	b150,000								*563,000	331,000	255,000	243,000
12	b140,000								566,000	332,000	254,000	242,000
13	b130,000								562,000	334,000	253,000	239,000
14	b120,000								548,000	338,000	252,000	238,000
15	b120,000	57,000	45,000	36,000	30,000	29,000		260,000	528,000	345,000	252,000	236,000
16	b110,000								507,000	353,000	253,000	235,000
17	b110,000								485,000	352,000	256,000	233,000
18	b100,000								460,000	347,000	252,000	235,000
19	b96,000								431,000	*359,000	252,000	239,000
20	b93,000								405,000	329,000	253,000	242,000
21	b88,000								386,000	321,000	253,000	244,000
22	b86,000								374,000	315,000	252,000	248,000
23	b82,000			(*)			31,000		366,000	311,000	251,000	254,000
24	b79,000								361,000	307,000	248,000	259,000
25	77,000								352,000	301,000	247,000	260,000
26	75,000							630,000	343,000	296,000	248,000	*257,000
27	73,000								337,000	289,000	249,000	253,000
28	71,000								333,000	284,000	252,000	247,000
29	70,000								332,000	280,000	258,000	239,000
30	70,000								336,000	277,000	261,000	231,000
31	69,000								-----	277,000	263,000	-----
Total	*4,003	*1,710	*1,395	*1,116	840,000	899,000	900,000	*10,080	*15,515	*9,985	*7,991	*7,394
Mean	129,100	57,000	45,000	36,000	30,000	29,000	30,000	325,500	517,200	322,100	257,800	246,500
Ac-ft	*7,940	*3,392	*2,767	*2,214	*1,668	*1,783	*1,785	*20,010	*30,770	*19,800	*15,850	*14,670
Calendar year 1956: Max	-	-	-	-	Min -	-	Mean -	-	Ac-ft -	-	-	-
Water year 1956-57: Max	750,000	-	-	-	Min -	-	Mean 169,400	-	Ac-ft 122,600,000	-	-	-

* Discharge measurement made on this day.

† Expressed in thousands.

b Stage-discharge relation affected by ice.

Note.--No gage-height record Oct. 25 to June 10 (stage-discharge relation affected by ice during most of period); discharge estimated on basis of 3 discharge measurements, weather records, and records for other Yukon River stations.

Yukon River at Kaltag

Location.--Lat 64°16'00", long 158°41'45", on right bank at Civil Aeronautics Authority station airstrip, 1 mile downstream from Rodo River and 4.3 miles south of Kaltag.

Drainage area.--296,000 sq mi, approximately.

Records available.--October 1956 to September 1957.

Gage.--Staff gage read twice daily. Altitude of gage is 50 ft (from topographic map).

Extremes.--Maximum discharge during year, 1,020,000 cfs June 5 (gage height, 30.02 ft, from graph based on gage readings), from rating curve extended above 860,000 cfs by logarithmic plotting; minimum not determined.

Remarks.--Records poor.

Discharge, in cubic feet per second, water year October 1956 to September 1957

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1	310,000								917,000	425,000	297,000	308,000
2	*292,000								928,000	425,000	297,000	310,000
3	276,000								957,000	417,000	296,000	310,000
4	258,000								971,000	412,000	291,000	308,000
5	236,000								996,000	402,000	288,000	301,000
6	220,000							(*)	997,000	393,000	287,000	291,000
7	210,000								968,000	381,000	289,000	283,000
8	200,000						32,000	110,000	936,000	371,000	289,000	276,000
9	190,000								902,000	363,000	288,000	273,000
10	180,000								*969,000	354,000	284,000	273,000
11	170,000								844,000	362,000	280,000	272,000
12	160,000								836,000	363,000	275,000	272,000
13	160,000								837,000	369,000	272,000	275,000
14	150,000								832,000	384,000	271,000	270,000
15	140,000	65,000	50,000	41,000	34,000	32,000			822,000	388,000	270,000	269,000
16	130,000								796,000	387,000	271,000	264,000
17	120,000								771,000	383,000	270,000	260,000
18	120,000								735,000	381,000	272,000	258,000
19	110,000								701,000	*363,000	272,000	263,000
20	110,000								664,000	359,000	*271,000	269,000
21	100,000								614,000	348,000	272,000	278,000
22	100,000								559,000	339,000	274,000	295,000
23	97,000								541,000	334,000	277,000	308,000
24	93,000								519,000	332,000	277,000	320,000
25	90,000								497,000	328,000	276,000	*336,000
26	88,000								479,000	320,000	277,000	336,000
27	85,000								466,000	315,000	279,000	356,000
28	83,000								449,000	311,000	281,000	327,000
29	82,000								836,000			
30	81,000								841,000	439,000	306,000	283,000
31	79,000								866,000	431,000	300,000	292,000
									896,000		298,000	304,000
Total	*4,720	*1,950	*1,550	*1,271	952,000	992,000	*1,005	*12,289	*22,273	*11,213	*8,722	*8,754
Mean	152,300	65,000	50,000	41,000	34,000	32,000	33,500	396,400	742,400	361,700	281,400	291,800
Ac-ft	*9,362	*3,868	*3,074	*2,521	*1,888	*1,968	*1,993	*24,370	*44,180	*22,240	*17,300	*17,360
Calendar year 1956: Max - Min - Mean - Ac-ft -												
Water year 1956-57: Max 997,000 Min - Mean 207,400 Ac-ft 150,100,000												

* Discharge measurement made on this day.

† Expressed in thousands.

Note.--No gage-height record Oct. 1, Oct. 6 to May 27; discharge estimated on basis of 3 discharge measurements, weather records, and records for stations at Ruby and Rampart.

Measurements of streamflow in Alaska made at points other than regular gaging stations are given in the following table. Most of these measurements were made during periods of base flow when streamflow is primarily from ground-water storage. Measurements believed to have been made under base-flow conditions are identified by an asterisk (*) to the left of the discharge figure. These measurements when correlated with the simultaneous discharge of a nearby stream where continuous records are available will give a picture of the low-flow potentiality of stream. The column headed, "Measured previously" shows the water years in which measurements were made at the same, or practically the same, site.

Discharge measurements made in Alaska at points other than gaging stations during water year 1957

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
Southeastern Alaska						
Delta (Ruth) Creek.	Thomas Bay...	Lat 56°48', long 132°47', at mouth, 13 miles northeast of Petersburg.	10.3	1947-53, 1955-56	Mar. 7	*7.01
Sheep Creek..	Gastineau Channel.	Lat 58°18'20", long 134°19'10", 50 ft above diversion dam, 1.0 mile above mouth, and 4 miles southeast of Juneau.	4.57	1951-53, 1954	Mar. 8	*6.81
Do.....	....do.....	Lat 58°15'40", long 134°19'25", at mouth, 4½ miles southeast of Juneau.	5.96	1952, 1954, 1956	Jan. 10 Feb. 7 Mar. 8	*28.2 *11.6 *7.27
Lemon Creek..	....do.....	Lat 58°21'35", long 134°29'50", at highway bridge, 5 miles northwest of Juneau.	24.4	1951-56	Oct. 25 Jan. 9 Feb. 7 Mar. 7	*70.1 *57.5 *28.6 *15.8
Auke Creek...	Auke Bay....	Lat 58°23'05", long 134°38'00", at Auke Lake Outlet, 0.4 mile above mouth and ½ mile east of Auke Bay.	3.75	1948-52, 1953, 1956	Jan. 9 Feb. 7 Mar. 7	*4.53 *5.83 *1.65
Lena Cove Creek.	Lena Cove....	Lat 58°23'45", long 134°44'45", at mouth, at highway bridge, ½ mile west of Auke Bay.	.5		Feb. 6 Mar. 7 Mar. 20	*.04 *.04 *.09
Peterson Creek.	Favorite Channel.	Lat 58°29'10", long 134°46'30", at highway bridge, ½ mile above mouth and 8 miles northwest of Auke Bay.	8.6	1948-51	Mar. 7	*1.82
Bear Cove....	Stephens Passage.	Lat 58°17', long 134°47', on Admiralty Island, 14 miles west of Juneau.	12.7		Nov. 15	*17.8
Cowe Creek...	Gastineau Channel.	Lat 58°17'50", long 134°28'00", on Douglas Island, at mouth, ½ mile southwest of Juneau.	-		Feb. 19	*1.30
Eagle Creek..	....do.....	Lat 58°18'45", long 134°27'25", on Douglas Island, at mouth, 2 miles northwest of Juneau.	-		Feb. 19	*1.39
Unnamed creek	Gastineau Channel.	Lat 58°20', long 134°30', on Douglas Island, at mouth, 4 miles northwest of Juneau.	-		Feb. 19	*1.29
Do.....	....do.....	Lat 58°21', long 134°32', on Douglas Island, at mouth, 5 miles northwest of Juneau.	-		Feb. 19	*.62
Do.....	....do.....	Lat 58°20', long 134°34', on Douglas Island, at mouth, 6½ miles northwest of Juneau.	-		Feb. 19	*.40
Fish Creek...	Fritz Cove...	Lat 58°19'50", long 134°35'25", on Douglas Island, at mouth, 7 miles northwest of Juneau.	13.6		Oct. 26 Jan. 9 Feb. 19 Aug. 1 Aug. 14	*21.4 *22.4 *5.85 19.6 *11.2
Alaska west of longitude 141°						
Gulkana River	Copper River.	Lat 62°16'10", long 145°22'50", at bridge on Richardson Highway, at Gulkana.	al980	1948-50, 1954	June 15 Aug. 2 Sept. 2	2,580 1,100 967
Solomon Gulch	Prince William Sound.	Lat 61°05', long 146°19', at tide-water, ½ mile downstream from small lake and 3 miles southwest of Valdez (at site of former gaging station).	al9	1948-56†	Nov. 1 May 7	40.0 34.9
Bradley River	Katchemak Bay	Lat 59°45'20", long 150°51'00", at outlet of Bradley Lake, 26 miles northeast of Homer.	54.0	1955	Mar. 12 July 15 Aug. 19 Sept. 28	*25.7 810 780 542
Quartz Creek.	Kenai River..	Lat 60°30'05", long 149°41'20", 0.2 mile above Crescent Creek and 5 miles east of Cooper Landing.	-		Dec. 20	*58.4
Do.....	....do.....	Lat 60°28'50", long 149°43'05", at old highway bridge, about ½ mile above mouth and about 4 miles east of Cooper Landing.	-	1947-50	Mar. 13 May 2 June 13 July 24 Sept. 28	*56.6 117 832 223 479

* Base flow.

† Period of record as a continuous-record gaging station.

a Approximately.

DISCHARGE MEASUREMENTS AT POINTS OTHER THAN GAGING STATIONS

Discharge measurements made in Alaska at points other than gaging stations during water year 1957--Continued

Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Date	Discharge (cfs)
Alaska west of longitude 141°--Continued						
Russian Jack Springs.	Chester Creek	In NE½ sec. 22, T. 13 N., R. 3 W., at Anchorage prison farm, 5½ miles east of Anchorage.	-	1948-49, 1952-56	Oct. 8 Dec. 27 Mar. 27 Apr. 26 July 3	6.99 5.43 4.75 6.83 5.34
Knik River...	Cook Inlet...	In SE½ sec. 2, T. 16 N., R. 2 E., at bridge on Glenn Highway, 7 miles south of Palmer.	-	1948-56	July 15 July 17 July 18 July 22	90,500 174,000 306,000 32,100
Deception Creek.	Willow Creek.	Lat 61°45'55", long 150°02'10", in sec. 5, T. 19 N., R. 4 W., at bridge, 0.3 mile above mouth and 1.3 miles north of Willow.	-		July 5	42.1
Willow Creek.	Susitna River	Lat 61°45'55", long 150°02'50", in sec. 5, T. 19 N., R. 4 W., at Alaska Railroad bridge, 1.3 miles north of Willow.	-	1948	July 5	951
Maclaren River.	....do.....	Lat 63°06'55", long 146°31'35", at bridge on Denali Highway, 1.7 miles below Boulder Creek and 34 miles west of Paxson.	a290		July 24	3,360
Monashka Creek.	Monashka Bay.	Lat 57°50'25", long 152°26'35", 75 ft below small tributary, 500 ft above mouth, and about 4 miles northwest of Kodiak.	-		Oct. 5	25.8
Tanalian River.	Newhalen River.	Lat 60°11', long 154°15', 100 ft below outlet of Kontrashibuna Lake, 1 mile above small tributary, and 2½ miles southeast of Port Alsworth.	a200	1951-56†	June 7	2,030
Wood River...	Nushagak River.	Lat 59°17', long 158°34', at outlet of Lake Aleknagik, 1½ miles east of Aleknagik.	-		Sept. 24	8,490
West Fork....	Denison Fork.	Lat 63°54', long 142°08', at bridge on Taylor Highway, 5 miles above mouth and 15 miles southwest of Chicken.	-	1954-55	July 30	97.1
Mosquito Fork	South Fork...	Lat 64°04', long 141°57', at bridge on Taylor Highway, 1 mile west of Chicken and 2½ miles above mouth.	-	1954-55	July 30	178
South Fork...	Forty Mile River.	Lat 64°06', long 141°47', at bridge on Taylor Highway, 5 miles east of Chicken.	-	1954-55	Aug. 1	408
Forty Mile River.	Yukon River..	Lat 64°18', long 141°24', at bridge on Taylor Highway, ¼ mile below O'Brien Creek and 4½ miles northwest of Steel Creek.	a5,880	1954-56	July 31	1,100
Birch Creek..	....do.....	Lat 65°43', long 144°20', at bridge on Steese Highway, 12 miles southwest of Circle.	-	1954-55	July 28	447
Chatanika River.	Tolovana River.	Lat 65°05'05", long 147°43'25", at bridge on Elliott Highway, 1½ miles northwest of Olmes and 16½ miles north of Fairbanks.	-	1948-49, 1954-55	July 28 Aug. 30	140 111
Melozitna River.	Yukon River..	Lat 64°46', long 155°29', ½ mile above mouth and 2 miles north-east of Ruby.	-		Sept. 26	2,210

* Base flow.

† Period of record as a continuous-record gaging station.

a Approximately.

MISCELLANEOUS ANALYSES OF STREAMS IN ALASKA

Chemical analyses, in parts per million, water year October 1956 to September 1957

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Color
														Calcium	Non-carbonate			

TWELVEMILE CREEK NEAR HOLLIS (PRINCE OF WALES ISLAND)

Oct. 23, 1956	1.9	0.00	19	1.5	1.4	0.2	61	4.0	3.0	0.0	0.1	61	54	4	112	7.5	10
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INDIAN CREEK NEAR HOLLIS

Oct. 24, 1956	1.8	0.00	3.2	0.5	1.5	0.2	11	0.2	3.5	0.0	0.1	16	10	1	30	6.6	40
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MAYBESO CREEK NEAR HARRIS

Oct. 23, 1956	3.1	0.00	7.5	0.3	1.4	0.2	20	3.5	2.0	0.1	0.0	28	20	4	49	7.0	25
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OLD TOM CREEK NEAR KASAAN

Oct. 26, 1956	2.8	0.00	7.1	0.8	7.12	0.4	15	6.7	10	0.1	0.1	42	21	9	81	6.5	25
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SAWMILL CREEK NEAR SITKA

Oct. 30, 1956	1.8	0.00	4.4	0.2	1.2	0.5	10	2.0	2.5	0.0	0.1	18	12	4	35	6.1	5
Jan. 24, 1957	.....	60	2.3	0.00	5.2	2.3	.6	15	1.3	3.0	.1	.5	22	13	1	48	6.7	0
Feb. 20	.....	110	2.3	.06	4.4	.7	1.7	.3	15	2.5	.1	.5	22	14	2	40	7.0	5
May 20	.....	770	2.0	.00	5.6	1.2	.2	11	5.0	2.0	.0	.0	22	17	8	44	6.4	--
Sept. 22	.....	785	1.5	.00	4.0	.9	.1	10	5.0	1.0	.0	.2	19	14	6	27	6.0	5

SLANA RIVER NEAR SLANA

Mar. 29, 1957	.....	11	0.03	40	16	3.2	1.3	155	39	0.8	0.2	0.4	188	166	39	332	7.5	0
May 23	.....	7.3	.05	37	5.9	2.1	1.6	104	33	1.8	.1	1.0	141	116	32	238	7.6	5
July 10	.....	6.5	.00	39	12	2.4	1.0	119	47	1.5	.3	.7	169	147	47	282	7.5	0
Aug. 1	.....	6.2	.03	33	14	1.9	1.0	104	53	.2	.2	.1	161	140	55	280	7.4	0
Sept. 17	.....	7.8	.06	44	10	2.2	.5	118	58	1.5	.1	.0	182	151	54	304	7.4	3

MISCELLANEOUS ANALYSES OF STREAMS IN ALASKA--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

Chemical analyses, in parts per million, water year October 1955 to September 1957—Continued

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (residue on evaporation at 180°C)	Hardness as CaCO ₃		Specific conductance (micro- mhos at 25°C)	pH	Color
														Calcium, mesium	Non-carbonate			
AHTLE CREEK NEAR SLANA																		
Aug. 1, 1957		11	0.00	23	4.3	1.6	0.4	69	17	0.5	0.1	0.1	92	75	19	155	7.2	5
Sept. 17		11	.07	29	4.0	2.0	.1	75	30	1.5	.1	.0	115	89	28	181	7.3	0
INDIAN RIVER NEAR CHISTOCHINA																		
Mar. 29, 1957		14	0.00	28	4.9	2.7	0.8	105	10	0.5	0.3	0.1	113	90	4	186	7.4	0
Aug. 1		15	.04	19	4.5	1.6	.6	74	4.0	.2	.0	.2	81	66	5	130	7.2	5
BOULDER CREEK NEAR CHISTOCHINA																		
Mar. 29, 1957		22	0.03	9.1	4.1	7.8	0.8	57	7.0	3.8	0.2	0.1	83	40	0	113	7.1	0
COPPER RIVER NEAR CHISTOCHINA																		
Mar. 17, 1957		21	0.04	26	7.2	12	1.6	105	24	8.8	0.4	0.1	153	94	8	245	7.3	0
CHISTOCHINA RIVER NEAR CHISTOCHINA																		
Mar. 29, 1957		11	0.03	44	5.5	3.0	1.5	129	31	1.2	0.2	0.1	163	132	27	269	7.7	0
May 23		7.3	.06	23	4.3	2.1	1.6	71	17	1.0	.1	.4	92	75	17	156	7.4	20
Aug. 1		5.6	.07	33	8.8	1.6	1.1	83	48	.0	.1	.2	139	119	51	238	7.6	5
Sept. 17		7.6	.10	31	12	2.2	.6	98	52	2.5	.1	.1	156	127	46	264	7.4	3
SANFORD RIVER NEAR GAKONA																		
Mar. 5, 1957		26	0.08	9.9	5.5	13	0.9	73	6.0	3.3	0.3	0.1	106	47	0	157	7.4	0
COPPER RIVER NEAR GAKONA																		
Aug. 1, 1957		11		23	7.1	6.6	1.5	74	32	4.0	0.0	0.3	122	87	26	188	7.3	30

MISCELLANEOUS ANALYSES OF STREAMS IN ALASKA--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957 --Continued

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- nesium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (residue on evap- oration at 180°C)	Hardness as CaCO ₃		Specific conduct- ance (micro- mhos at 25°C)	pH	Color
														Calcium	Non- carbon- ate			
GULKANA RIVER NEAR PAXSON																		
Sept. 19, 1957.....		7.8	0.00	12	4.2	1.9	0.7	56	4.0	1.0	0.0	0.1	60	43	0	93	7.3	0
GULKANA RIVER AT GULKANA																		
Mar. 27, 1957.....		11	0.03	25	6.2	8.3	1.3	99	5.0	12	0.1	0.3	118	88	7	209	7.2	5
July 10		7.0	.05	17	5.5	5.6	1.0	73	3.0	7.5	.1	.7	83	65	5	147	6.9	20
Aug. 1		6.7	.00	18	6.3	5.7	.7	75	8.0	8.2	.1	.7	91	71	9	153	7.0	40
Sept. 17		7.8	.00	18	6.1	5.8	.8	78	4.0	9.1	.5	.5	90	70	6	153	7.3	30
Mar. 5, 1957																		
NADINA RIVER NEAR COPPER CENTER																		
Mar. 5, 1957		32	0.04	27	7.8	12	1.4	98	39	5.3	0.3	0.1	173	99	19	257	7.4	5
CHETASLINA RIVER NEAR CHITINA																		
Mar. 5, 1957		36	0.00	22	4.6	25	2.9	62	51	19	0.6	0.4	192	74	23	277	7.2	5
CHITINA RIVER NEAR MCCARTHY																		
Mar. 5, 1957		5.2	0.03	40	16	3.7	3.2	176	32	1.8	0.2	0.1	189	166	21	333	7.9	0
TANA RIVER NEAR MCCARTHY																		
Mar. 5, 1957.....		6.8	0.00	27	1.9	2.0	3.3	75	22	0.5	0.0	0.6	101	75	14	174	7.3	0
NIZINA RIVER NEAR MCCARTHY																		
Mar. 5, 1957		6.8	0.04	36	18	8.9	1.5	158	41	6.3	0.3	0.5	197	164	34	348	7.9	5
KUSKULANA RIVER NEAR CHITINA																		
Mar. 5, 1957		8.9	0.03	39	6.6	3.7	1.4	124	27	0.8	0.2	0.4	149	124	23	250	7.6	5

MISCELLANEOUS ANALYSES OF STREAMS IN ALASKA--Continued
Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- nesium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (residue on evap- oration at 180°C)	Hardness as CaCO ₃		Specific conduct- ance (micro- mhos at 25°C)	pH	Color
														Calcium, mag- nesium	Non- carbon- ate			
BRADLEY RIVER NEAR HOMER																		
July 15, 1957	810	1.7	0.15	8.3	1.4	0.8	0.4	25	5.5	0.8	0.0	0.2	31	26	6	57	6.9	10
RUSSIAN RIVER AT UPPER RUSSIAN LAKE NEAR COOPER LANDING																		
June 3, 1957		2.4	0.03	9.1	2.4	1.1	0.2	33	3.2	1.5	0.0	0.6	36	32	6	65	7.0	10
SUSITNA RIVER NEAR DENALI																		
Apr. 9, 1957	164	12	0.00	51	6.8	15	6.5	163	37	19	0.2	0.3	228	155	22	382	7.5	5
Aug. 27	6,950	3.2	.04	23	6.2	3.8	3.6	70	31	3.8	.0	.0	109	84	26	194	7.4	5
UGANIK RIVER NEAR KODIAK																		
Oct. 4, 1956	213	3.8	0.00	5.2	0.9	2.0	0.2	16	3.0	2.5	0.0	0.3	26	17	4	45	6.9	3
July 18, 1957	663	2.8	.03	4.0	1.4	1.3	.2	17	2.5	1.5	.0	.3	22	16	2	36	6.6	10
TANALIAN RIVER NEAR PORT ALSWORTH																		
Oct. 3, 1956	462	4.7	0.00	6.4	0.7	1.0	0.4	15	5.0	1.2	0.0	0.4	27	19	7	48	6.8	5
NEWHALEN RIVER NEAR ILIADNA																		
Oct. 3, 1956	12,200	4.7	0.00	7.5	0.3	1.1	0.7	23	3.3	0.2	0.0	0.2	29	20	1	52	6.8	5
July 18, 1957	19,300	5.3	.05	6.7	1.9	1.1	.8	29	3.5	.5	.0	.1	34	24	1	55	6.3	0
KVICHAK RIVER NEAR IGIUGIG																		
Apr. 3, 1957		1.8	0.00	6.0	0.7	1.7	0.5	19	3.5	1.2	0.1	0.2	25	18	2	45	7.1	0
NUYAKUK RIVER NEAR DILLINGHAM																		
Oct. 3, 1956	7,440	4.6	0.00	8.3	0.7	0.8	0.2	26	4.0	1.5	0.0	0.3	33	24	2	59	7.1	5
Apr. 3, 1957	1,630	4.0	.00	9.5	1.4	.9	.1	30	5.5	.0	.1	.3	37	29	5	66	7.2	0
a Daily mean discharge.																		

a Daily mean discharge.

MISCELLANEOUS ANALYSES OF STREAMS IN ALASKA--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957.

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- nesium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (residue on evap- oration at 180° C)	Hardness as CaCO ₃		Specific conduct- ance (micro- mhos at 25° C)	pH	Color
														Calcium, mag- nesium	Non- carbon- ate			
NUSHAGAK RIVER NEAR EKWAK																		
Oct. 10, 1956		7.4	0.15	7.1	1.0	1.4	0.5	25	3.5	0.8	0.0	0.1	34	22	2	53	7.1	5
Oct. 17		7.9	.00	6.7	1.5	1.6	.2	26	4.0	1.2	.0	.2	36	23	2	54	7.0	3
Nov. 7		11	.00	8.3	1.4	2.0	.5	30	3.0	1.0	.0	.2	42	26	2	64	6.5	5
TOKOTNA RIVER NEAR McGRATH																		
Apr. 7, 1957		18	1.1	43	13	4.8	1.2	199	3.0	0.5	0.1	0.4	182	161	0	311	7.0	25
STONY RIVER NEAR STONY RIVER																		
Apr. 4, 1957		10	0.28	16	2.5	2.2	1.0	57	8.0	0.0	0.2	0.4	68	50	4	112	6.8	5
HOLITNA RIVER NEAR SLEETMUTE																		
Apr. 4, 1957		15	0.86	17	3.6	2.6	0.5	72	4.0	0.5	0.1	0.3	79	57	0	124	6.9	10
ANIAK RIVER AT ANIAK																		
Apr. 4, 1957		10	0.42	9.9	3.1	4.9	0.6	44	8.0	1.0	0.1	0.6	61	37	1	97	6.9	5
WEST FORK FORTYMILE RIVER NEAR CHICKEN																		
July 30, 1957	97.1	14	0.19	7.9	4.1	3.0	1.2	28	14	1.5	0.3	3.6	64	36	14	83	7.0	90
MOSQUITO FORK FORTYMILE RIVER NEAR CHICKEN																		
July 30, 1957	178	11	0.11	15	5.8	4.7	1.3	55	26	0.5	0.3	2.6	94	61	16	129	7.0	60
SOUTH FORK FORTYMILE RIVER NEAR CHICKEN																		
Aug. 1, 1957	408	14	0.17	15	4.3	3.6	0.9	57	11	1.0	0.2	2.2	78	55	8	111	7.5	80

MISCELLANEOUS ANALYSES OF STREAMS IN ALASKA--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (residue on evap- oration at 180°C)	Hardness as CaCO ₃		Specific conduct- ance (micro- mhos at 25°C)	pH	Color
														Calcium, mag- nesium	Non- carbon- ate			

FORTY-MILE RIVER NEAR BOUNDARY

July 31, 1957.....	1,100	11	0.08	20	7.5	4.6	1.2	65	37	0.5	0.3	2.1	116	81	28	166	7.4	50
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YUKON RIVER AT EAGLE

Mar. 23, 1957.....	13,900	6.6	0.00	28	11	2.8	1.3	114	24	0.5	0.2	0.4	131	115	22	231	7.5	5
June 18.....	229,000	6.2	.16	31	6.6	2.0	1.3	108	19	.5	.2	.4	120	104	16	211	7.5	10
July 31.....	155,000	6.7	.05	25	7.4	2.2	1.2	90	25	.2	.2	.3	112	93	19	189	7.7	5
Aug. 29.....	118,000	4.7	.03	27	9.5	3.4	1.7	106	27	.5	.0	.2	126	106	19	221	7.5	5

BIRCH CREEK AT CIRCLE

July 28, 1957.....	447	6.4	0.08	25	7.1	6.0	1.5	63	45	2.8	0.2	0.3	125	92	40	209	6.9	20
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YUKON RIVER AT RAMPART

Oct. 1-10, 1956.....	120,000	7.1	0.00	30	6.5	3.0	1.0	97	24	0.5	0.0	0.4	120	102	22	206	7.6	20
Oct. 11-20.....	59,500	9.7	.00	38	8.6	5.0	1.3	134	29	.8	.0	.4	159	130	20	266	7.1	5
Oct. 21-28.....	43,400	9.7	.00	45	11	4.8	1.8	159	35	1.2	.1	.4	187	156	27	315	7.4	0
Dec. 2.....	29,400	7.4	.00	27	6.6	2.3	1.0	46	20	.8	.2	.3	113	94	16	188	7.8	3
Mar. 22, 1957.....	16,800	7.0	.00	31	11	3.2	1.6	128	26	1.0	.2	.3	144	123	18	253	7.3	0
July 27.....	198,000	6.1	.08	31	11	2.8	1.3	110	33	.2	.2	.3	140	123	32	238	7.7	5
Aug. 30.....	189,000	4.9	.03	28	10	3.0	1.1	104	29	.2	.1	.5	128	111	26	223	7.3	20

LITTLE TOK RIVER NEAR TOK JUNCTION

May 23, 1957.....		10	0.06	35	7.3	2.1	1.3	104	34	2.0	0.1	1.6	145	120	34	246	7.7	20
Aug. 1.....		8.7	.03	38	11	2.9	.9	133	35	.2	.1	.2	163	140	31	278	7.4	5
Sept. 17.....		10	.00	43	11	3.2	.4	148	38	2.5	.1	.1	182	152	31	304	7.3	0

a Daily mean discharge.

MISCELLANEOUS ANALYSES OF STREAMS IN ALASKA--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957.--Continued

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (residue on evaporation at 180° C)	Hardness as CaCO ₃		Specific conductance (micro- mhos at 25° C)	pH	Color
														Calcium, magnesium	Non-carbonate			
TOK RIVER AT BRIDGE ON GLENN HIGHWAY NEAR TOK JUNCTION																		
May 23, 1957		7.3	0.05	39	6.6	2.0	1.6	109	36	0.2	0.1	1.2	148	124	35	251	7.7	20
July 10		7.9	.00	45	12	2.6	1.4	140	45	.5	.2	.7	184	162	47	306	7.0	5
Aug. 1		7.8	.04	41	16	2.3	1.2	141	58	.7	.1	.3	196	168	53	329	7.7	0
Sept. 17		8.3	.00	54	14	2.3	.7	155	65	2.5	.1	.0	223	192	65	368	7.5	0
ROBERTSON RIVER NEAR TANACROSS																		
Sept. 18, 1957		3.3	0.00	49	16	1.7	1.7	111	97	1.5	0.0	0.2	225	188	97	354	7.8	5
JOHNSON RIVER NEAR DOT LAKE																		
Sept. 18, 1957		3.3	0.00	40	12	1.7	2.4	98	70	1.0	0.0	0.1	178	149	69	306	7.6	0
LITTLE GERSTLE RIVER NEAR BIG DELTA																		
Sept. 18, 1957		5.1	0.00	40	14	1.7	2.4	131	59	0.5	0.1	0.3	188	157	50	313	7.8	0
GERSTLE RIVER NEAR BIG DELTA																		
Sept. 18, 1957		3.0	0.00	35	13	2.1	2.0	92	71	1.5	0.1	0.3	173	141	65	291	7.7	0
DELTA RIVER NEAR RAPIDS																		
Sept. 19, 1957		5.7	0.00	23	8.6	2.4	1.2	83	33	1.0	0.1	0.1	116	93	25	200	7.5	0
DELTA RIVER AT BIG DELTA																		
Sept. 19, 1957		5.6	0.00	28	12	2.7	3.4	98	47	1.0	0.1	0.1	148	119	39	252	7.8	0

MISCELLANEOUS ANALYSES OF STREAMS IN ALASKA--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957--Continued

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- nesium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids (residue on evap- oration at 180°C)	Hardness as CaCO ₃		Specific conduct- ance (micro- mhos at 25°C)	pH	Color
														Calcium, mag- nesium	Non- carbon- ate			
SHAW CREEK NEAR BIG DELTA																		
Sept. 18, 1957.....		15	0.00	19	10	3.6	1.6	98	12	0.5	0.1	0.3	110	88	8	174	7.3	10
SALCHA RIVER NEAR SLACHAKET																		
Sept. 18, 1957	a 988	6.7	0.00	18	6.6	1.9	1.3	65	20	1.0	0.1	0.3	88	72	18	142	7.2	0
CHENA RIVER AT FAIRBANKS																		
July 26, 1957.....	864	10	0.05	26	6.8	2.9	1.5	95	16	0.2	0.1	0.3	111	93	15	186	7.0	5
Aug. 29.....	610	9.2	.05	24	8.4	3.1	1.1	101	16	.2	.1	.3	112	94	11	197	7.2	5
Sept. 18.....	a 636	11	.00	27	7.1	2.9	1.5	104	17	1.0	.2	.2	119	96	11	196	7.1	5
CHATANIKA RIVER ON ELLIOT HIGHWAY NEAR FAIRBANKS																		
July 26, 1957	140	7.7	0.12	19	7.2	1.6	0.9	60	28	0.2	0.1	0.3	95	77	28	159	7.0	10
HEALY CREEK AT SUNTRANA																		
May 24, 1958		3.0	0.00	38	23	3.1	0.9	144	70	2.8	0.0	1.8	237	189	71	364	7.5	
YUKON RIVER AT RUBY																		
Apr. 7, 1957.....	28,400	11	0.00	46	8.6	4.4	2.2	160	25	2.0	0.2	0.6	179	150	19	297	7.7	0
July 19	336,000	7.2	.08	31	7.3	2.5	2.1	108	23	.2	.1	.2	137	107	19	214	7.5	0
YUKON RIVER NEAR KALTAG																		
Oct. 2, 1956	283,000	8.7	0.11	20	3.9	2.6	0.4	72	10	0.5	0.0	0.5	82	66	7	140	7.6	25
Jan. 22, 1957	39,200	11	.00	39	9.4	4.0	1.8	143	25	1.8	.2	.2	162	136	19	278	7.7	5
Apr. 6.....	32,300	10	.00	47	8.7	3.8	1.7	166	23	.5	.2	.6	178	153	17	301	7.2	0
July 19.....	364,000	6.9	.05	28	6.8	2.4	1.2	103	19	.2	.1	.1	116	98	13	196	7.5	10
a Daily mean discharge.																		

a Daily mean discharge.

MISCELLANEOUS ANALYSES OF STREAMS IN ALASKA--Continued

Chemical analyses, in parts per million, water year October 1956 to September 1957.--Continued

Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Mag- nesium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Calcium Nitrate (NO ₃)	Dissolved solids (residue on evap- oration at 180°C)	Hardness as CaCO ₃		Specific conduct- ance (micro- mhos at 25°C)	pH	Color
														Calcium, magnesium	Non-carbonate			
INNOKO RIVER AT SHAGELUK																		
Oct. 4, 1956		0.1	0.33	11	2.7	1.8	0.4	40	6.0	0.8	0.0	0.4	44	39	7	78	7.1	155
INNOKO RIVER NEAR HOLY CROSS																		
Apr. 5, 1957		25	11	29	7.4	4.4	1.4	136	2.0	1.0	0.1	0.3	139	103	0	220	6.5	8
UNNAMED CREEK NEAR SAYOONGA (SAINT LAWRENCE ISLAND)																		
July 27, 1957		0.3	0.06	1.2	4.0	4.0	0.6	24	2.0	4.5	0.2	0.3	29	19	0	45	6.6	30

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