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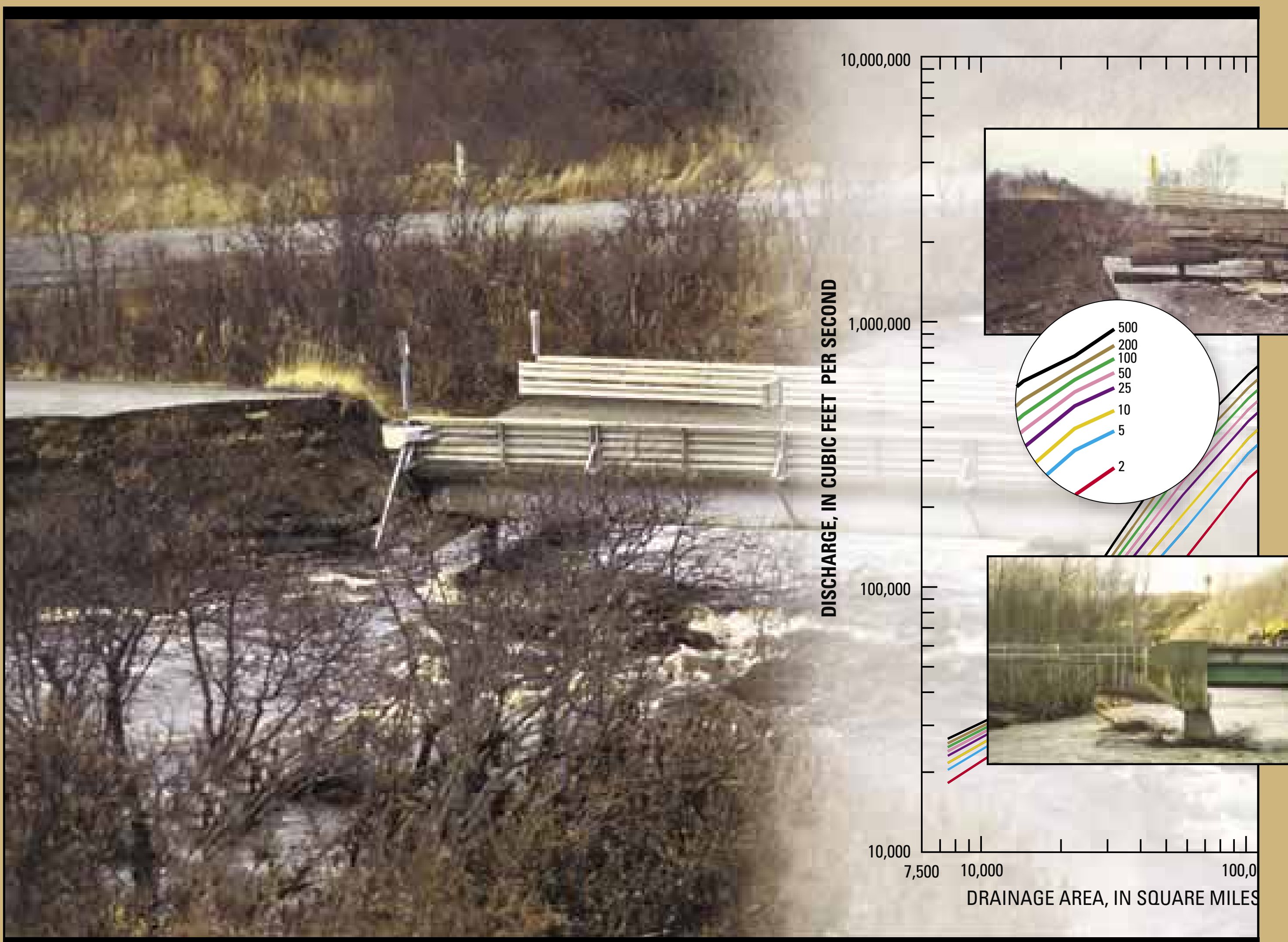
Estimating the Magnitude and Frequency of Peak Streamflows for Ungaged Sites on Streams in Alaska and Conterminous Basins in Canada

Water-Resources Investigations Report 03-4188

Prepared in cooperation with the
ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES



Cover: Photograph of damage to Ninilchik Village Road bridge over Ninilchik River (large photograph and top inset) and Sterling Highway bridge over Deep Creek (bottom inset), Alaska, incurred during an October 2002 flood with a recurrence interval greater than 100 years. The left bridge abutment was washed out at both bridges. (Photograph taken by David Meyer, USGS, on October 26, 2002.)

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

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U.S. DEPARTMENT OF THE INTERIOR
GALE A. NORTON, *Secretary*

U.S. GEOLOGICAL SURVEY
Charles G. Groat, *Director*

For additional information write to:

Chief, Water Resources Office
U.S. Geological Survey
Alaska Science Center
4230 University Drive, Suite 201
Anchorage, AK 99508-4664
http://alaska.usgs.gov

Copies of this report can be obtained from:

U.S. Geological Survey
Information Services
Building 810
Box 25286, Federal Center
Denver, CO 80225-0286

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PLATE

[Plate is in pocket]

FIGURES

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CONVERSION FACTORS AND DATUMS

CONVERSION FACTORS

Multiply	By	To obtain
foot (ft)	0.3048	meter (m)
inch (in.)	25.4	millimeter (mm)
mile (mi)	1.609	kilometer (km)
square mile (mi^2)	2.590	square kilometer (km^2)
foot per mile (ft/mi)	0.1894	meter per kilometer (m/km)
cubic foot per second (ft^3/s)	0.02832	cubic meter per second (m^3/s)

Temperature in degrees Fahrenheit (ºF) may be converted to degrees Celsius (ºC) as follows:

$$^{\circ}C=(^{\circ}F-32)/1.8.$$

DATUMS

Vertical coordinate information was referenced to the National Geodetic Vertical Datum of 1929 (NGVD 29).

Horizontal coordinate information was referenced to the North American Datum of 1927 (NAD 27).

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ABSTRACT

Estimates of the magnitude and frequency of peak streamflow are needed across Alaska for floodplain management, cost-effective design of floodway structures such as bridges and culverts, and other water-resource management issues. Peak-streamflow magnitudes for the 2-, 5-, 10-, 25-, 50-, 100-, 200-, and 500-year recurrence-interval flows were computed for 301 streamflow-gaging and partial-record stations in Alaska and 60 stations in conterminous basins of Canada. Flows were analyzed from data through the 1999 water year using a log-Pearson Type III analysis. The State was divided into seven hydrologically distinct streamflow analysis regions for this analysis, in conjunction with a concurrent study of low and high flows. New generalized skew coefficients were developed for each region using station skew coefficients for stations with at least 25 years of systematic peak-streamflow data.

Equations for estimating peak streamflows at ungaged locations were developed for Alaska and conterminous basins in Canada using a generalized least-squares regression model. A set of predictive equations for estimating the 2-, 5-, 10-, 25-, 50-, 100-, 200-, and 500-year peak streamflows was developed for each streamflow analysis region from peak-streamflow magnitudes and physical and climatic basin characteristics. These equations may be used for unregulated streams without flow diversions, dams, periodically releasing glacial impoundments, or other streamflow conditions not correlated to basin characteristics. Basin characteristics should be obtained using methods similar to those used in this report to preserve the statistical integrity of the equations.

INTRODUCTION

Floods in Alaska have historically caused damage to towns and villages, highway infrastructure, and aquatic biota. To minimize this damage and protect the health and safety of humans and wildlife, estimates of flood frequency are incorporated in engineering design and land management. Estimates of peak streamflow (flood) magnitudes for specified frequencies at surface-water data-collection stations are compiled using standardized statistical procedures. These statistics can be coupled with physical and climatic characteristics of the drainage basins upstream from the data-collection stations to develop equations for estimating peak streamflows at sites where little or no data have been collected. Estimating equations are used across the State for critical applications including floodplain management and the cost-effective design of structures such as bridges and culverts that convey flood flows and accommodate fish passage.

Improving peak streamflow estimates requires updating the analysis as more stations become available and record lengths at existing stations increase, as improved estimates of basin characteristics become available, or as improved methods for developing the equations become available. Streamflow data for Alaska are collected by the USGS, under cooperative agreements with Federal, State, and local agencies, and by the Water Survey of Canada.

This streamflow-gaging network is relatively sparse for the land area it covers, and all but seven of its stations have records shorter than 50 years. Many stations have records shorter than 10 years. The most recent flood-frequency analysis, completed for data through water year 1990 (Jones and Fahl, 1994), relaxed the record length criterion to 8 years from the more typical 10 years in order to include data for small streams—those with drainage areas less than 50 mi^2 (square miles)—collected under a cooperative study begun in 1962. By the end of water year 1999, enough additional years of data were available at existing stations, and enough additional stations were available, to increase the record-length criterion to 10 years and update the analysis. For this reason, the U.S. Geological Survey (USGS), in cooperation with the Alaska Department of Transportation and Public Facilities, began a study to update the peak-streamflow frequency statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada and to update the regression equations for estimation of peak-streamflow frequency at ungaged sites. Although improved methods of estimating basin characteristics are also available, primarily by means of a Geographic Information System (GIS), existing digital data for Alaska and Canada are not yet extensive and these methods could not yet be implemented across the study area. GIS methods for determination of basin characteristics were implemented only for basins included in the analysis for the first time, all of which were in areas with available digital data. The results of a companion study of high-duration and low-duration flow statistics based on mean daily discharge are described in a separate report (Wiley and Curran, 2003).

Purpose and Scope

This report presents new peak-streamflow statistics for 361 streamflow-gaging stations and partial-record stations in Alaska and conterminous basins in Canada that have at least 10 years of maximum instantaneous discharge data through water year 1999 or that have 8 or 9 years of data and were used in the most recent USGS peak-streamflow analysis (Jones and Fahl, 1994). Generalized-skew coefficients developed using station skew coefficients from stations with at least 25 years of data and regression equations for estimating peak streamflow are presented for seven streamflow analysis regions spanning the State and conterminous Canadian basins. The estimating equations were developed using peak-streamflow magnitudes from 355 stations where streamflow regulation, streamflow diversion, urbanization, and natural damming and releasing of water do not affect the streamflow data. Data from Canada were included to improve the analysis of the eastern regions of Alaska. This report supersedes previous reports describing peak-streamflow frequency statistics and methods for Alaska.

Previous Studies

Five previous analyses of annual peak streamflow in Alaska are summarized in reports by Berwick and others (1964), Childers (1970), Lamke (1978), Parks and Madison (1985), and Jones and Fahl (1994). All but the earliest study used log-Pearson Type III analysis of annual peaks and multiple regression analysis with basin characteristics as independent variables. Each study subdivided the State into regions and provided a method to estimate streamflow frequency and magnitude in each region. A common region for most studies was the coastal area along the southern edge of the State (or sometimes just the southeastern portion of the coast); other regions varied.

In the most recent study of Alaska peak-streamflow frequency, Jones and Fahl (1994) followed methods recommended in Bulletin 17B of the Interagency Advisory Committee for Water Data (Interagency Advisory Committee on Water Data, 1982) for individual station and regional flood-frequency analysis. To account for the shorter records of most Alaska stations, especially those of small streams, Jones and Fahl relaxed criteria for minimum years of record from 10 to 8 years for regional regression analysis and from 25 to 22 years for generalized skew analysis. The benefit of relaxing the record-length criteria was to increase the number of stations eligible for analysis; no assessment of the gain or loss of accuracy in estimating equations was provided.

Regional regression equations were presented for each of five flood-frequency areas using data through the 1990 water year for Alaskan stations and through the 1984 calendar year for Canadian stations. Causes and characteristics of floods were described for various regions within the State and conterminous basins of Canada. Maximum known floods were both tabulated by station and plotted against drainage area to create an envelope curve for each flood-frequency area.

Acknowledgments

The assistance of Lynne Campo, Water Survey of Canada, in providing updates to Canadian streamflow data is gratefully acknowledged. USGS student employees Brent Voorhees and Brian Winnestaffer digitized drainage-basin outlines and developed methods to determine drainage-basin characteristics from Geographic Information System (GIS) coverages. Portions of the comparison of previously obtained basin characteristics with basin characteristics obtained using modified methods appear in Brian Winnestaffer's senior thesis for Alaska Pacific University.

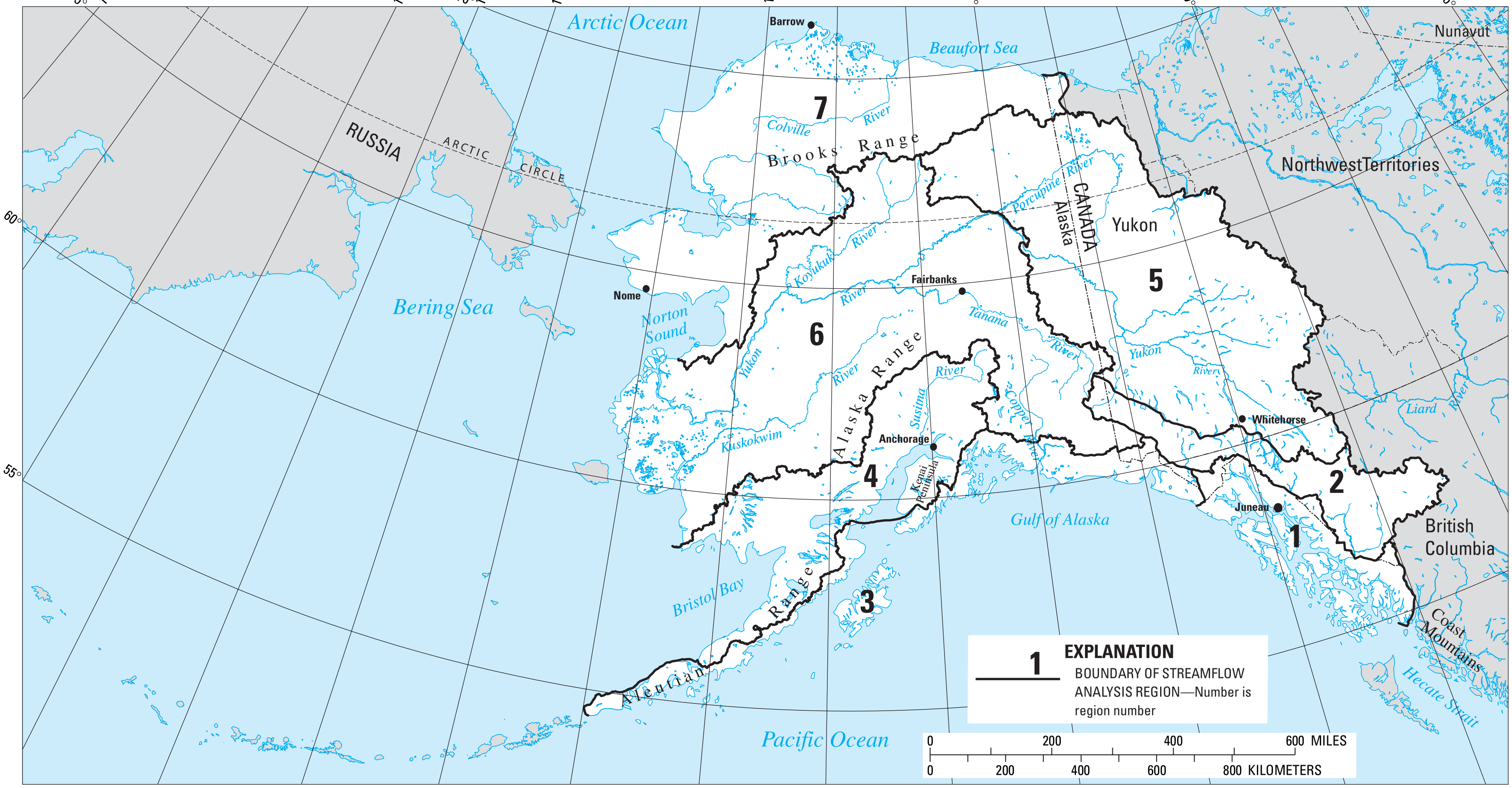
DESCRIPTION OF STUDY AREA

More than 586,000 mi^2 in area, Alaska encompasses geographical and climatic settings ranging from the moisture-laden, mountainous areas of the southeastern region to the dry, cold plains of the Arctic north. Alaska's streams drain the State and conterminous areas of Canada's Yukon and British Columbia provinces to the Arctic Ocean, Bering Sea, or Pacific Ocean (fig. 1). Drainage basins for stations used in regressions for this study ranged from less than 1 mi^2 to more than 300,000 mi^2; the median drainage basin was 44 mi^2.

Despite the relatively sparse network of data-collection sites in Alaska, broad patterns based on climate, geography, and geomorphology can be discerned that help explain Alaska hydrology. These patterns can largely be explained by the direction of dominant storm tracks, location of mountain ranges, and influence of coastal areas.

Most precipitation in Alaska results from storms that move northeastward from the Pacific Ocean (Lamke, 1991). Seasonal and geographic distribution of precipitation is affected by mountain ranges and variations in air temperature. The prolonged cold, dry Arctic airmass over interior Alaska in the winter decreases annual precipitation in this area of the State. Average annual precipitation ranges from more than 300 inches in southeastern Alaska, received mostly during fall and winter, to less than 10 inches in areas near the Arctic Ocean, received mostly in summer and fall, (Jones and Fahl, 1994, plate 1). Three major mountainous belts stretch across all or part of Alaska. Coastal mountains rise steeply from the southern coast; an extensive arc of high mountains consisting of the Aleutian Range, Alaska Range, and Coast Mountains spans the southern part of the State; and the Brooks Range extends across the northern part of the State near the Arctic Circle (fig. 1). Glaciers are most prevalent along the southern mountain ranges where precipitation is higher than in northern regions. Basins in coastal areas typically are small and receive large amounts of precipitation. Average basin elevations are low near the coast.

Climatic conditions that generate extended periods of high or low streamflow generally do not extend simultaneously across the State because of its size, so no statewide periods of floods or droughts have been documented. However, several regional floods have been identified since 1949, when widespread streamflow-gaging records became available. Major flooding occurred in interior Alaska in 1964, near Fairbanks in 1967 (Childers and others, 1972), in south-central Alaska in 1971 (Lamke, 1972) and 1986 (Lamke and Bigelow, 1988), along the Copper River in 1981, and in south-central Alaska and the Kenai Peninsula in 1995. Flood conditions persisted for at least 3 days during each of these major events. Maximum known floods for selected stations in Alaska through 1990 and in conterminous basins of Canada through 1984 are listed in table 6 of the report by Jones and Fahl (1994).



Base map modified from U.S. Geological Survey Digital Line Graphs published at 1:2,000,000.
Canadian Land Inventory Level I Digital Data published at 1:2,000,000. Publication projection is Albers Equal Area.
Standard Parallels are 55° and 65°, central meridian -154° west, latitude of projection origin 50°.
Eastern Russian coastline from U.S. Geological Survey, Geologic Investigations Series I-2679, published at 1:7,500,000.
Projection is Albers Equal Area, Standard Parallels are 55° and 65°, central meridian 160° west.
Koryak Highlands coastline, 160°-175° modified from U.S. Geological Survey Open-File Report 96-727, published at 1:1,000,000.
Projection is Lambert Azimuthal Equal Area, central meridian 165° west.

Figure 1. Physical features and streamflow analysis regions of Alaska and conterminous basins in Canada.

DETERMINATION OF DRAINAGE-BASIN CHARACTERISTICS

Physical and climatic features of the watershed upstream of a given stream location, termed basin characteristics, can be used as independent variables to estimate streamflow statistics (Thomas and Benson, 1970). Nine basin characteristics used in the previous statewide flood-frequency analysis (Jones and Fahl, 1994) were available for all stations: drainage area, main channel slope, main channel length, mean basin elevation, area of lakes and ponds, area of forests, area of glaciers, mean annual precipitation, and mean minimum January temperature. Although all nine variables were included in the present analysis, only drainage area, mean basin elevation, area of lakes and ponds, area of forests, mean annual precipitation, and mean minimum January temperature were used in the final equations.

Previously determined basin characteristics were available for most of the stations used in the present analysis (Jones and Fahl, 1994). Definitions of the basin characteristics and the manual methods used to determine them are described by Jones and Fahl (1994) and the U.S. Geological Survey (1978) and are summarized in table 1. Basin characteristics for stations not in the Jones and Fahl (1994) report were obtained using modified methods, which are also summarized in table 1. Automated procedures for determining selected basin characteristics for new stations were created using the AML programming language with Arc/Info GIS software (Environmental Systems Research Institute, 1997). Only basin characteristics used in final equations are presented in this report; additional basin characteristics are available from the Alaska Science Center at the address shown in the front of this report.

For a statistical analysis such as the regressions performed for the present study, all data ideally should be collected in a similar manner to minimize error within individual variables. Although new methods of estimation or new sources of data for basin characteristics may produce values that more accurately represent the basin, it is best to avoid mixing such data with previously obtained data in the same analysis. However, in an effort to apply GIS technology to data-collection methods, some fundamental variations in methods and data sources were necessary. A comparison between the original and modified methods used in this and a companion study of flow-duration statistics noted statistically significant differences in some basin characteristics (Wiley and Curran, 2003). Although the variability introduced into the regression analysis by using the modified methods for a few stations is small, the user should be aware that using modified methods for an individual site could introduce significant error. In general, methods used for determining basin characteristics at an ungaged site should be as consistent as possible with the methods described by Jones and Fahl (1994) and the U.S. Geological Survey (1978) and summarized in table 1.

DETERMINATION OF STREAMFLOW ANALYSIS REGIONS

Dividing areas as large and geographically and climatically diverse as Alaska into smaller regions for analysis usually improves the accuracy of estimation equations. Stations within a region should have similar hydrologic characteristics, but a balance must be struck between isolating hydrologically similar regions and meeting minimum sample-size requirements for statistical analysis. Streamflow analysis regions were developed simultaneously for this study and for high-duration and low-duration flow analyses (Wiley and Curran, 2003). Initial placement of stations into streamflow analysis regions was guided by hydrologic unit boundaries (U.S. Geological Survey, 1987) and regional boundaries used in previous reports, in particular the peak- flow analysis by Jones and Fahl (1994). Refinement of regional boundaries was based on the geographic distribution of basin characteristics and residuals from regression analysis of selected streamflow statistics against specific basin characteristics. Specifically, dependent variables Q_{100} and other variables from high-duration and low-duration flow analysis (Wiley and Curran, 2003) were regressed against independent variables drainage area and mean annual precipitation. On the basis of these analyses, the State was divided into seven hydrologically distinct streamflow analysis regions (fig. 1, plate 1) for both this analysis and the flow-duration analyses of Wiley and Curran. Stations physically located in one region but draining a large area in a neighboring region may be classified in the neighboring region if they are more hydrologically similar to that region.

Table 1. Description and methods of estimation of basin characteristics used in regression analysis

Basin characteristic name and unit	Description	Estimating technique for stations included in Jones and Fahl (1994)	Estimating technique for stations added to analysis since Jones and Fahl (1994)
Drainage area, in square miles	Area of the drainage basin upstream from the site	Basin outlined on topographic maps of various scales; area determined by planimeter	Basin outlined on paper topographic maps of various scales; outline digitized; area estimated using Arc/Info AML application
Main channel length, in miles	Length of the main channel between the site and the basin divide measured along the channel that drains the largest basin	Length measured manually along topographic map blue lines and extension to basin divide	Sum of lengths of line segments representing stream on digital hydrography data (http://agdc.usgs.gov/data/usgs/to_geo.html), plus length of line extended digitally from stream end to basin divide
Main channel slope, in feet per mile	Average slope between points 10 percent and 85 percent of the distance along the main channel from the site to the basin divide	Main channel length measured from topographic map as described separately; elevation at specified points estimated from topographic contours	Main channel length measured from digital hydrography data as described separately; elevation at specified points estimated from digital elevation data (http://agdc.usgs.gov/data/usgs/to_geo.html)
Mean basin elevation, in feet	Mean elevation of the drainage basin upstream from the site	Grid sampling from topographic maps	Arc/Info AML application applied to digital elevation data (http://agdc.usgs.gov/data/usgs/to_geo.html)
Area of lakes and ponds, in percent	Percentage of the total drainage area shown as lakes and ponds on topographic map	Planimeter measurement or grid sampling of blue areas on topographic map	Sum of areas of lake and pond polygons from digital hydrography coverage (http://agdc.usgs.gov/data/usgs/to_geo.html)
Area of forests, in percent	Percentage of total drainage area shown as forested on topographic map	Planimeter measurement or grid sampling of green areas on topographic map	Digitized green areas on topographic map
Area of glaciers, in percent	Percentage of total drainage area shown as perennial snow or ice on topographic map	Planimeter measurement or grid sampling of areas marked as snow or ice on topographic map	Sum of areas of glacier or permanent snowfield polygons from digital hydrography coverage (http://agdc.usgs.gov/data/usgs/water/statewide.html)
Mean annual precipitation, in inches	Mean annual precipitation averaged over drainage basin	Grid sampling from plate 2, Jones and Fahl (1994) (http://ak.water.usgs.gov/Publications/pdf.reps/wrir93.4179.plate2.pdf)	Arc/Info AML application applied to Arc/Info coverage of plate 2, Jones and Fahl (1994) (http://agdc.usgs.gov/data/usgs/water/statewide.html/)
Mean minimum January temperature, in degrees Fahrenheit	Mean minimum January temperature averaged over drainage basin	Grid sampling from plate 1, Jones and Fahl (1994) (http://ak.water.usgs.gov/Publications/pdf.reps/wrir93.4179.plate1.pdf)	Visual estimation from plate 1, Jones and Fahl (1994) for small basins (http://ak.water.usgs.gov/Publications/pdf.reps/wrir93.4179.plate1.pdf)

Certain neighboring regions were hydrologically similar to one another for peak-flow analysis and high-duration flow analysis but not for low-duration flow analysis. To avoid the confusion of multiple sets of regions, a single set of regions was used for all streamflow analyses. However, hydrologically similar regions were grouped together for development of regional equations. Grouping of regions was based on examination of regression residuals and on comparison of the standard error of the resulting equations. Specifically, Region 3 was grouped with Region 1 for peak flows and high-duration flows and with Region 4 for low-duration flows. Regions 2 and 7 each contain only 25 stations but could not logically be combined with adjoining regions.

ESTIMATING PEAK STREAMFLOWS AT GAGED SITES

Peak-streamflow frequency estimates are computed from an annual series of peak-flow data and reported as T-year discharges, where T is a recurrence interval, or the number of years during which the discharge is expected to be exceeded once, on average. Peak-streamflow frequency is perhaps better understood as an exceedance probability, which is the reciprocal of the recurrence interval. In other words, the probability that the T-year flood will be exceeded is 1/T in every year. For example, every year the 50-year flood has a 1 in 50, or 2 percent, chance of being exceeded.

Estimates of peak-streamflow frequency are prepared by fitting the logarithms of the annual peak flows to a known statistical distribution, from which three statistics—the mean, standard deviation, and skew—are obtained. These statistics describe the mid-point, slope, and curvature of the peak-flow frequency curve, respectively. The skew coefficient measures the symmetry of the frequency distribution and is strongly influenced by the presence of one or more particularly high or low flows. The skew is positive when the mean exceeds the median, typically as a result of particularly high flows. The skew is negative when the mean is less than the median, typically as a result of particularly low flows. From the three statistics of the fitted frequency distribution, estimates of peak-streamflow magnitude for a given recurrence interval are computed using the equation:

$$\log Q_T = \bar{X} + KS \,, \qquad (1)$$

where

- Q_T is the magnitude of the T-year recurrence interval discharge, in ft^3/s;
- $\bar{X}$ is the mean of the logarithms of the annual peak streamflows;
- K is a factor based on the skew coefficient and the given recurrence interval; and
- S is the standard deviation of the logarithms of the annual peak streamflows

The Interagency Advisory Committee on Water Data (IACWD) reviewed several analysis methods and recommended a standard procedure, the log-Pearson Type III frequency distribution analysis, for federal studies of peak-streamflow frequency (Interagency Advisory Committee on Water Data, 1982). IACWD's Bulletin 17B summarizes the recommendations and discusses adjustments to the distribution that take advantage of additional information regarding the station record and the characteristics of nearby stations having long periods of record. The USGS computer program PEAKFQ automates many of the analysis procedures recommended in Bulletin 17B, including identifying high and low outliers, adjusting for historic periods and low outliers, weighting station skews with generalized skew, and fitting a log-Pearson Type III distribution to the streamflow data. PEAKFQ and the software used to load input data and display output data—IOWDM and ANNIE (Flynn and others, 1995)—are available at http://water.usgs.gov/software/surface_water.html.

PEAKFQ was used to compute streamflow magnitudes for the 2-, 5-, 10-, 25-, 50-, 100-, 200-, and 500-year recurrence intervals for 301 stations in Alaska and 60 stations in conterminous basins in Canada. These stations had at least 10 years of record, except for 22 stations that had 8 or 9 years of record but were included in the most recent statewide analysis (Jones and Fahl, 1994). Station locations are shown in plate 1 and station information and streamflow statistics are presented in table 4 (at back of report). The specific water years for peaks used in the analyses of this report are listed in Appendix A. The following sections discuss data collection; adjustment for historic peaks, low outliers, and conditions not correlated to basin characteristics; and development and application of generalized skew for the present study.

Data Collection

Streamflow data for Alaska were collected by the USGS in accordance with methods described by Rantz and others (1982). Streamflow data for Canada were collected by the Water Survey of Canada. Canadian data-collection methods are described in a series of internal manuals referred to collectively as the Hydrometric Data Computation Procedures Manual (Lynne Campo, Water Survey of Canada, written communication, 2002). These methods are similar or equivalent to USGS methods. Daily mean discharge and annual peak streamflows for USGS streamflow-gaging stations in Alaska are available at http://waterdata.usgs.gov/ak/nwis/ or by contacting the Alaska Science Center at the address listed at the front of this report. Canadian streamflow data are available from Environment Canada (Environment Canada, 2002).

Data were collected at two types of station—streamflow-gaging stations and partial-record stations. At streamflow-gaging stations, stage (water-level) data are collected on a continuous basis or at time intervals short enough to determine daily mean discharge. At partial-record stations, also termed crest-stage partial-record stations, stage data are collected as discrete measurements on an infrequent basis. At both types of stations, a rating curve developed from discharge measurements over a range of flows relates the stage data collected, regardless of frequency, to discharge. Annual peak discharge is determined from the maximum instantaneous stage recorded in a year.

For all Alaskan stations, data typically consisted of annual maximum instantaneous discharge for each water year (October 1 through September 30). Canadian data are collected on a calendar-year basis but were converted to a water-year basis to develop the annual series. For many or all years for 10 large Canadian rivers, maximum instantaneous discharge is not available. For these rivers, annual maximum daily mean discharge is within 5 to 10 percent of maximum instantaneous peak discharge, based on comparisons for years when both values were available, and was used as its surrogate. This bias toward smaller discharge for selected stations is expected to be minor relative to other errors in the analysis.

Data Adjustment

Data from stations having at least 10 years of systematic record, or 8 or 9 years of record for stations included in the most recent statewide analysis (Jones and Fahl, 1994), were carefully inspected for data quality and omitted if unsuitable. Preliminary plots of the fit of the log-Pearson Type III frequency distribution to the data then were visually inspected for outliers, non-homogeneities, and trends that would invalidate statistical procedures. Data adjustments included omission of selected peak flows, omission of entire stations, adjustments for historic peaks and high and low outliers, estimation of peaks noted as less than a known value, separation of parts of records affected by regulation or glacial phenomena, and weighting station and generalized skew as described in the following sections. Appendix A lists the water years for peaks used in the final analyses.

Station 15236900, Wolverine Creek near Lawing, Alaska, was included in a previous study (Jones and Fahl, 1994) but was omitted from the present study after a review indicated that streamflow data had a quality rating of "poor" because of changing streambed conditions. Nine Canadian stations from Jones and Fahl's (1994) study—stations 15305040, 15305380, 15305385, 15305405, 15305411, 15305545, 15305673, 15305692, and 15305693—were omitted because the streamflow data could not be verified.

Standard flood-frequency analyses assume that streamflow data are from a single statistical population. Floods in Alaska are most commonly caused by snowmelt or rainfall, but they also can be caused by glacier icemelt, rainfall on snow, rapid melting of snow and ice during volcanic eruptions, periodic release and damming of water behind glacial ice, and the sudden release of water from breached dams of glacial ice, river ice, avalanche debris, or rock and debris. A distinction between (1) snowmelt or icemelt and (2) rainfall or rain-on-snow floods has only been recorded since 1989, making an analysis of the extent of separation between these populations impractical. Visual inspection of frequency distributions for selected representative stations with both types of peaks did not show a break in the curve that would suggest the presence of a mixed population.

Peaks from volcanic eruptions have occurred but have not been captured in gaged records. Isolated natural dam breaks were omitted from the record unless they affected less than about 5 percent of the flow. Stations with repeated natural dam breaks, such as those with regular glacial outbursts, were few and were included in the flood-frequency analysis but were omitted from regional regressions as discussed in a following section.

High Outliers and Historic Peak Discharges

Large peak discharges that occur within the systematic record, defined as the period over which streamflow data are collected regularly without regard to streamflow conditions, are termed high outliers. Large peak discharges also can occur outside the systematic record but within the historical record, defined as the systematic record plus any period over which streamflow data are collected on a one-time basis for specific events. These isolated measurements are termed historic peaks. If it is known that a historic peak is the largest peak in a period extending beyond the length of the systematic record, the frequency distribution can be adjusted, resulting in an appropriately longer recurrence interval for the highest discharges. For the purposes of this historical adjustment, high outliers are treated as historic peaks, except that high outliers are also treated as part of the systematic record. For example, if it is known that the largest peak (either a historic peak or high outlier) at a station with 20 years of peak-streamflow data exceeded all other floods in the preceding 50 years, the historic period of 50 years will be used to lengthen the recurrence interval for that discharge, drawing down the frequency curve. Conversely, the estimate of the 100-year flood at that site will be decreased relative to that expected without the historic period information.

All Alaska stations with high outliers and historic peaks were reviewed and historic periods were assigned or revised wherever possible. Where flooding affected a widespread area, the historic period determined for one station was extended to others in the vicinity. Historic periods assigned to historic peaks and high outliers are shown in Appendix A. Canadian stations could not be adjusted for historic peaks and high outliers because no data regarding historic periods were available. Where no historic period could be established for a historic peak, or where historic peaks were smaller than peaks within the systematic record, the peak was dropped from analysis. Where no historic period could be established for a high outlier, the peak was retained in the systematic record but no adjustments were made.

Low Outliers

Peak discharges below a station-specific threshold value are termed low outliers. Low outliers can disproportionately influence the statistics of the frequency distribution by increasing standard deviation (slope) and decreasing skew coefficients (curvature). Bulletin 17B (Interagency Advisory Committee on Water Data, 1982) recommends censoring low outliers and applying a conditional-probability calculation to the remaining peaks. Low outliers were treated using the default options in PEAKFQ, which automatically screens for low outliers and applies the recommended adjustments.

Discharges Recorded as Less Than a Known Value

Selected peaks at stations 15283500, 15303010, and 15518100 were flagged as less than the indicated value, a condition that typically occurs when a minimum recordable value is not exceeded. Although these flagged peaks could be omitted, this results in a selective censoring of low discharges. Based on estimates of likely ranges of actual values, these peaks were reduced by 10 percent and kept in the systematic record. Sensitivity to this reduction was analyzed for each station involved. Lower Panguingue Creek near Lignite, Alaska, (station 15518100) was omitted from the final analysis because results were strongly affected by the reduction in peak magnitude.

Data Not Correlated to Basin Characteristics

Peaks regulated by dams or diversions, controlled by certain glacial phenomena, or in basins with indeterminate drainage areas cannot be correlated to basin characteristics. Flows at these stations can still be analyzed by fitting to a frequency distribution but cannot be related to adjacent stations or used to develop predictive equations based on physical and climatic characteristics of the basin. Stations subject to these conditions are footnoted in the “Station No.” column of table 4. Station skew is not weighted with generalized skew to compute flood-frequency statistics for these stations. Equation-based or weighted estimates of peak streamflow statistics are not appropriate for these stations.

Specific treatment of regulated stations depended on the nature, length, and timing of regulation. If streamflow regulation or diversion affected low flows but not peak flows, regulated stations were included as if unregulated. For peak records affected by regulation, known dates of regulation were used to segregate the period of record. Any period, regulated or unregulated, with at least 10 years of record was analyzed separately. Unregulated periods were included in the regression analysis. Only one station, Kenai River (station 15258000), met the record-length requirement for both a regulated and unregulated period. Two entries are given for this station in table 4. Kenai River is also subject to glacial-outburst floods, so its unregulated period was not included in the regression analysis. All presently regulated stations are noted with an "R" in the "Station No." column of table 4, regardless of whether regulation was in effect during the period of record.

Glacier-related controls on streamflow include glacial-outburst floods, caused when ice dams ponding water suddenly burst, and periods of low flow caused as ice-dammed lakes fill. The effect of these phenomena depends on factors such as the location of bedrock constrictions and relative positions of main and tributary glaciers, which cannot be summarized by the available basin characteristic, the area of the basin covered by glaciers. As for streamflow regulation, known dates of glacier-controlled streamflow were used to segregate the period of record when possible. Glacier-controlled peaks were treated as for peaks from snowmelt or precipitation because a visual examination suggested that they fit a log-Pearson Type III distribution. Periods controlled by glaciers were analyzed, but because the peak streamflows lack correlation with basin characteristics, these periods were omitted from regression analysis. Uncontrolled periods were included in the regression analysis. Only one station, Knik River (station 15281000), met the record-length requirement for both a glacier-controlled and uncontrolled period. Two entries are given for this station in table 4.

Generalized Skew Coefficients

The skew coefficient for an individual station is sensitive to particularly high or low streamflows in the record, especially for stations with short periods of record. To improve the estimate of the skew coefficient for an individual station, the IACWD's Bulletin 17B recommends that a generalized skew computed from nearby long-term stations be used to weight individual station skews within that region (Interagency Advisory Committee on Water Data, 1982). Although generalized skew can be obtained from Bulletin 17B's national generalized skew coefficient map, improved estimates can be obtained by one of three methods recommended by the IACWD: (1) a more detailed map developed from study-specific station skews, (2) a prediction equation developed by regressing station skews against basin characteristics, and (3) an average of station skews within a region. As with the most recent Alaska peak-streamflow frequency analysis (Jones and Fahl, 1994), no contours could be developed from plotted station skews and adequate prediction equations could not be developed from regression. The third method, averaging station skews, was adopted for each region across the study area.

Station skews for stations with at least 25 years of systematic peak-streamflow data were averaged to obtain generalized skews within each of the seven streamflow analysis regions defined for this study. The IACWD recommends that at least 20 stations be used to develop generalized skew within a region. Because station skews from fewer than 20 stations were used for Regions 2 and 7, streamflow statistics for these sparsely represented regions should be interpreted cautiously.

Station skews used to compute regional averages reflect adjustments for historic peaks and high and low outliers, as described previously. Station skews also were adjusted for bias resulting from record length in accordance with procedures described by Tasker and Stedinger (1986). A nearly unbiased estimate of the population skew coefficient, G_g, can be obtained from the station skew, G, and the record length, n, using the following equation:

$$G_g = \left(1 + \frac{6}{n}\right) G \qquad (2)$$

The standard error of the generalized skew was computed as the standard deviation of G_g for stations with at least 25 years of record within each region.

All stations shown in table 4 with 25 or more years of record, with the exception of station 15485500, which has an indeterminate drainage area, were included in the generalized skew analysis. Of the 134 stations meeting the criteria, 99 stations are located in Alaska and 35 are in Canada. The number of stations used in each region, the range of G_g, and the generalized skew and standard error of the generalized skew are summarized in table 2.

Weighted skew coefficients are computed by weighting the generalized skew coefficient and the station skew coefficient in inverse proportion to their mean square errors (Interagency Advisory Committee on Water Data, 1982). This provides a better estimate of the skew coefficient for basins that can be correlated to basin characteristics (that is, those not regulated or subject to glacier-affected flow phenomena). The station skew is not weighted for regulated or glacier-controlled stations because the generalized skew is not representative of these sites. The generalized skew and standard error of the generalized skew shown in table 2 were used in the PEAKFQ program to weight skews automatically.

Table 2. Generalized skew and summary statistics for Regions 1-7, Alaska and conterminous basins in Canada

Streamflow analysis region	Number of stations with at least 25 systematic peaks	Minimum unbiased station skew (G_g)	Maximum unbiased station skew (G_g)	General-ized skew ($\bar{G}$)	Standard error of the general-ized skew ($SE_{\bar{G}}$)
1 and 3	23	-0.646	2.09	0.16	0.62
2	14	-1.20	2.62	.31	.96
4	26	-.905	2.05	.60	.81
5	25	-.696	1.22	.28	.48
6	39	-1.41	2.10	.13	.76
7	7	-1.90	.336	-.52	.70

REGIONAL EQUATIONS FOR ESTIMATING PEAK STREAMFLOWS

Estimated flow statistics are often needed for streams where no data have been collected. If sufficient records are available from a group of streamflow-gaging stations within a region, a regression model can be developed from flow statistics and basin characteristics for the stations. Regression equations can then be used to estimate flow statistics at ungaged sites where basin characteristics can be measured.

Regression Analysis

Multiple-linear regression analysis is used to determine which of several basin characteristics (the independent variables) best explain, statistically, the variations in the flow statistic (the dependent variable). Regression analysis is also used to develop the final equations that relate the dependent and selected independent variables. Ordinary-least-squares regression (OLS), a common form of regression analysis, was used for preliminary analyses in this study. Generalized-least-squares regression (GLS), a more specialized method of regression that accounts for time-sampling error (a function of record length) and cross-correlation between stations close together, was used to develop final equations. GLS assigns different weights to each observation based on its contribution to total variance (Tasker and Stedinger, 1989).

Streamflow data and basin characteristics generally are log-normally distributed, so all data were log-transformed (base 10) before analysis. This required the addition of a constant value of 1 percent to all percentage data and 32 degrees (Fahrenheit) to temperature data because values equal to or less than 0 cannot be log-transformed. The commercial statistics and data-management software S-Plus (MathSoft, Inc., 1999) was used to perform a backward and forward stepwise multiple-linear regression of the 100-year flood, Q_{100}, against all available basin characteristics (table 1) to determine suitable independent variables for each streamflow analysis region. An independent analysis using an all-subsets regression in S-Plus produced the same suite of independent variables.

Independent variables were further screened for statistical significance, logical relation to streamflow in that area, and correlation with other variables. Variables were dropped if the equation's standard error fell by less than 5 percent (arbitrarily chosen as the point of diminishing returns), or if the variable could not be correlated logically to streamflow in that particular area. Correlation with other variables was not a concern once the other two criteria were met.

GLS regression was used to evaluate the models suggested by the preliminary OLS regressions. The computer program GLSNET, available at http://water.usgs.gov/software/surface_water.html, was used for all GLS regressions. Independent variables were dropped or retained on the basis of the results of GLS regression, with a bias toward dropping variables where improvement was marginal. Final equations were developed with GLS for the 2-, 5-, 10-, 25-, 50-, 100-, 200-, and 500-year recurrence-interval peak streamflow in each region using one to four independent variables (table 3). Ranges of variables used in the final equations are shown in table 3.

Accuracy and Limitations of Estimating Equations

The adequacy of the estimating equations can be evaluated by two measures, the average standard error of prediction and the equivalent years of record (table 3). The standard error of prediction is a measure of the accuracy of a streamflow statistic for an ungaged site estimated from the regression equations. Errors in the estimates for about two-thirds of the ungaged sites will be within the given standard errors. The standard error of prediction is derived from the model error and sampling error as the square root of the sum of the mean-square error of the model and the mean-square sampling error. The model error is associated with the entire model and remains constant for each site. The sampling error results from estimating model parameters from samples of the population, and therefore varies from site to site. The standard error of prediction error for an ungaged site can be computed from the matrices and matrix algebra procedures described in Appendix B or from a computer program available at http://pubs.water.usgs.gov/wri034188. The average standard error of prediction for an equation can be computed by assuming that the gaged sites within a region form a representative sample of all sites and then averaging their sampling error. The average standard error of prediction is computed in log units and converted to percent error for each equation in each region (table 3). Average standard errors of prediction for individual equations ranged from 27 to 66 percent. Maximum and minimum standard errors for each regression equation, in percent, can be computed from the following equations:

$$\text{maximum average standard error of prediction} = 100(10^{ASEP} - 1) \qquad (3)$$

$$\text{minimum average standard error of prediction} = 100(10^{-ASEP} - 1)\ , \qquad (4)$$

where

$ASEP$ is the average standard error of prediction, in log units.

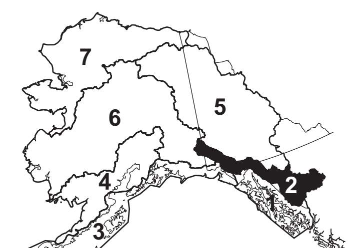
A second measure of predictive ability of each equation is the equivalent years of record, or the number of years of systematic streamflow data that would have to be collected for a given site to estimate the streamflow statistic with accuracy equivalent to the estimate from the regression equation (see Appendix B). Average equivalent years of record for individual equations ranged from 0.35 to 7.4 years (table 3).

The adequacy of a prediction for an ungaged site can be evaluated by the site-specific standard error of prediction, equivalent years of record, and a third measure, the confidence limits of the prediction, or prediction interval (see Appendix B). Along with the first two site-specific values, the 5-percent and 95-percent confidence limits (the 90-percent prediction interval) must be generated for a particular prediction. A computer program is provided at http://pubs.water.usgs.gov/wri035188 to compute these values.

Table 3. Regression equations for estimating 2-, 5-, 10-, 25-, 50-, 100-, 200-, and 500-year peak streamflows for unregulated streams in Regions 1-7, Alaska and conterminous basins in Canada

[Q_T, *T*-year peak streamflow, in cubic feet per second; *A*, drainage area, in square miles; *ST*, area of lakes and ponds (storage), in percent; *P*, mean annual precipitation, in inches; *J*, mean minimum January temperature, in degrees Fahrenheit; *E*, elevation, in feet; *F*, area of forest, in percent]

Regression equation for specified recurrence interval Q_T	Average standard error of prediction (log units)	Average standard error of prediction (percent)	Average equivalent years of record
Region 1, Region 3 (93 gaging stations)			
Applicable range of variables:			
***A*: 0.720–571; *ST*: 0–26; *P*: 70–300; *J*: 0–32**			
$Q_2 = 0.004119\, A^{0.8361}\, (ST+1)^{-0.3590}\, P^{0.9110}\, (J+32)^{1.635}$	0.158	38	0.88
$Q_5 = 0.009024\, A^{0.8322}\, (ST+1)^{-0.3670}\, P^{0.8128}\, (J+32)^{1.640}$	.156	37	1.3
$Q_{10} = 0.01450\, A^{0.8306}\, (ST+1)^{-0.3691}\, P^{0.7655}\, (J+32)^{1.622}$	.157	37	1.8
$Q_{25} = 0.02522\, A^{0.8292}\, (ST+1)^{-0.3697}\, P^{0.7165}\, (J+32)^{1.588}$	.161	38	2.4
$Q_{50} = 0.03711\, A^{0.8286}\, (ST+1)^{-0.3693}\, P^{0.6847}\, (J+32)^{1.559}$	.166	40	2.8
$Q_{100} = 0.05364\, A^{0.8281}\, (ST+1)^{-0.3683}\, P^{0.6556}\, (J+32)^{1.527}$	.171	41	3.1
$Q_{200} = 0.07658\, A^{0.8276}\, (ST+1)^{-0.3669}\, P^{0.6284}\, (J+32)^{1.495}$	.178	43	3.4
$Q_{500} = 0.1209\, A^{0.8272}\, (ST+1)^{-0.3646}\, P^{0.5948}\, (J+32)^{1.449}$	.188	45	3.6
Region 2 (25 gaging stations)			
Applicable range of variables:			
***A*: 92.7–19,900; *ST*: 0–9; *P*: 12–100**			
$Q_2 = 0.7479\, A^{0.9580}\, (ST+1)^{-0.03292}\, P^{0.9284}$	.121	28	.82
$Q_5 = 1.021\, A^{0.9449}\, (ST+1)^{-0.03603}\, P^{0.9359}$	.116	27	1.5
$Q_{10} = 1.184\, A^{0.9368}\, (ST+1)^{-0.03813}\, P^{0.9500}$	.119	28	2.0
$Q_{25} = 1.374\, A^{0.9274}\, (ST+1)^{-0.04074}\, P^{0.9713}$	.129	30	2.5
$Q_{50} = 1.506\, A^{0.9209}\, (ST+1)^{-0.04263}\, P^{0.9887}$	.141	33	2.7
$Q_{100} = 1.628\, A^{0.9147}\, (ST+1)^{-0.04448}\, P^{1.007}$	.154	37	2.7
$Q_{200} = 1.742\, A^{0.9086}\, (ST+1)^{-0.04629}\, P^{1.027}$	.168	40	2.7
$Q_{500} = 1.880\, A^{0.9008}\, (ST+1)^{-0.04864}\, P^{1.056}$	.189	46	2.6
Region 4 (71 gaging stations)			
Applicable range of variables:			
***A*: 1.07–19,400; *ST*: 0–28; *P*: 20–158**			
$Q_2 = 0.2535\, A^{0.9462}\, (ST+1)^{-0.1981}\, P^{1.201}$	.177	42	.98
$Q_5 = 0.5171\, A^{0.9084}\, (ST+1)^{-0.2128}\, P^{1.162}$	.162	39	2.2
$Q_{10} = 0.7445\, A^{0.8887}\, (ST+1)^{-0.2204}\, P^{1.147}$	.159	38	3.5
$Q_{25} = 1.091\, A^{0.8686}\, (ST+1)^{-0.2273}\, P^{1.131}$	.164	39	5.0
$Q_{50} = 1.395\, A^{0.8563}\, (ST+1)^{-0.2313}\, P^{1.120}$	.172	41	5.9
$Q_{100} = 1.738\, A^{0.8457}\, (ST+1)^{-0.2347}\, P^{1.109}$	.183	44	6.6
$Q_{200} = 2.124\, A^{0.8363}\, (ST+1)^{-0.2377}\, P^{1.099}$	.194	47	7.1
$Q_{500} = 2.704\, A^{0.8253}\, (ST+1)^{-0.2413}\, P^{1.088}$	.212	52	7.4



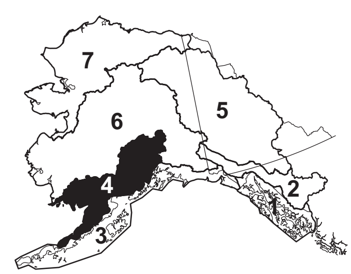
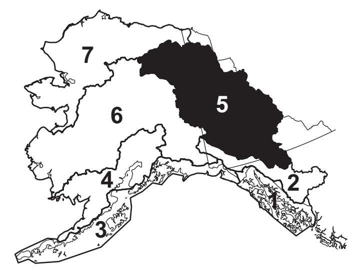
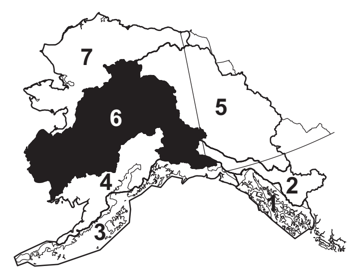


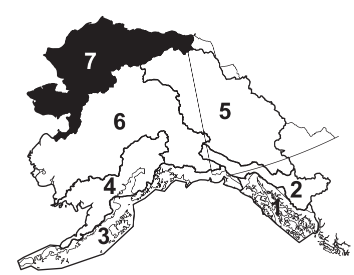
Table 3. Regression equations for estimating 2-, 5-, 10-, 25-, 50-, 100-, 200-, and 500-year peak streamflows for unregulated streams in Regions 1-7, Alaska and conterminous basins in Canada—*Continued*

[Q_T, *T*-year peak streamflow, in cubic feet per second; *A*, drainage area, in square miles; *ST*, area of lakes and ponds (storage), in percent; *P*, mean annual precipitation, in inches; *J*, mean minimum January temperature, in degrees Fahrenheit; *E*, elevation, in feet; *F*, area of forest, in percent]

Regression equation for specified recurrence interval Q_T	Average standard error of prediction (log units)	Average standard error of prediction (percent)	Average equivalent years of record
Region 5 (44 gaging stations)			
Applicable range of variables:			
***A*: 1.02–114,000; *ST*: 0–30; *E*: 1,200–4,540; *F*: 12–100**			
$Q_2 = 13{,}640\ A^{1.032}\ (ST+1)^{-0.5391}\ E^{-0.5970}\ (F+1)^{-0.7154}$	0.260	66	0.35
$Q_5 = 126{,}000\ A^{0.9885}\ (ST+1)^{-0.5702}\ E^{-0.8275}\ (F+1)^{-0.6327}$	.234	58	.67
$Q_{10} = 395{,}300\ A^{0.9641}\ (\mathrm{ST}+1)^{-0.5856}\ E^{-0.9496}\ (F+1)^{-0.5769}$	.221	54	1.1
$Q_{25} = 1{,}256{,}000\ A^{0.9384}\ (ST+1)^{-0.6004}\ E^{-1.075}\ (F+1)^{-0.5128}$	.210	51	1.7
$Q_{50} = 2{,}518{,}000\ A^{0.9228}\ (ST+1)^{-0.6088}\ E^{-1.150}\ (F+1)^{-0.4708}$	.210	51	1.7
$Q_{100} = 4{,}532{,}000\ A^{0.9095}\ (ST+1)^{-0.6158}\ E^{-1.215}\ (F+1)^{-0.4329}$	.202	49	2.8
$Q_{200} = 7{,}526{,}000\ A^{0.8979}\ (ST+1)^{-0.6219}\ E^{-1.270}\ (F+1)^{-0.3981}$	.201	49	3.3
$Q_{500} = 13{,}440{,}000\ A^{0.8846}\ (ST+1)^{-0.6292}\ E^{-1.335}\ (F+1)^{-0.3554}$	.203	49	4.0
Region 6 (97 gaging stations)			
Applicable range of variables:			
***A*: 1.29–321,000; *ST*: 0–15; *F*: 0–100**			
$Q_2 = 52.87\ A^{0.8929}\ (ST+1)^{-0.2676}\ (F+1)^{-0.3076}$	.172	41	1.8
$Q_5 = 88.08\ A^{0.8479}\ (ST+1)^{-0.2596}\ (F+1)^{-0.2648}$	.176	42	2.5
$Q_{10} = 115.7\ A^{0.8253}\ (ST+1)^{-0.2579}\ (F+1)^{-0.2443}$	.185	45	3.2
$Q_{25} = 154.8\ A^{0.8026}\ (ST+1)^{-0.2585}\ (F+1)^{-0.2243}$	.199	48	3.9
$Q_{50} = 186.7\ A^{0.7885}\ (ST+1)^{-0.2599}\ (F+1)^{-0.2124}$	.211	52	4.3
$Q_{100} = 220.6\ A^{0.7764}\ (ST+1)^{-0.2616}\ (F+1)^{-0.2023}$	.223	55	4.6
$Q_{200} = 256.6\ A^{0.7656}\ (ST+1)^{-0.2636}\ (F+1)^{-0.1935}$	.235	58	4.8
$Q_{500} = 307.7\ A^{0.7530}\ (ST+1)^{-0.2662}\ (F+1)^{-0.1833}$	.252	63	5.0
Region 7 (25 gaging stations)			
Applicable range of variables:			
***A*: 1.13–9,520**			
$Q_2 = 28.07\ A^{0.8916}$	.212	52	1.3
$Q_5 = 47.51\ A^{0.8691}$	.204	50	1.5
$Q_{10} = 61.00\ A^{0.8588}$	.203	49	1.9
$Q_{25} = 78.33\ A^{0.8486}$	.205	50	2.5
$Q_{50} = 91.29\ A^{0.8424}$	.208	51	3.0
$Q_{100} = 104.2\ A^{0.8370}$	.211	52	3.3
$Q_{200} = 117.1\ A^{0.8322}$	.216	53	3.6
$Q_{500} = 134.2\ A^{0.8266}$	.223	55	3.9







These accuracies are applicable for use of the equations within the limitations of the causes of peak streamflows and the ranges of basin characteristics used for equation development. The estimating equations presented in table 3 can be used for estimating flow in streams in Alaska and conterminous basins in Canada that are not affected by natural or anthropogenic streamflow regulation. Streamflow in basins with urbanization, flow diversions, dams, periodically releasing glacial impoundments, or other streamflow conditions not correlated to basin characteristics cannot be estimated accurately with these equations. The accuracy given for each equation is only valid when the equations are used for sites with values of independent variables that fall within the ranges in table 3.

Additional data collection and careful interpretation may be required for use of the equations in sparsely represented regions. Equations for Region 7 (the Arctic north and northwest Alaska) must be used with particular caution because the equations were developed using a small number of stations over a very wide area, which limits their statistical validity. These equations most closely represent the hydrologic conditions that have occurred at existing gaging stations; however, gaging-station conditions may not be representative of ungaged sites in the region. Sites with a short period of record may be weighted with the regional estimating equations to provide an improved estimate. Equations for neighboring regions may be used to perform a sensitivity analysis for critical applications.

Estimates have been provided for long recurrence-interval peaks (that is, the 200-year and 500-year peak streamflow) to help users comply with design requirements. However, these values should be used with caution in all regions because record lengths may not be long enough to fully support extrapolation to this long a recurrence interval. Additional site-specific studies, such as a survey of paleoflood indicators, may be required to support these estimates for critical applications.

PROCEDURES FOR ESTIMATING PEAK STREAMFLOW MAGNITUDE AND FREQUENCY

Within the limitations previously described, the flow statistics and equations presented in this report can be used to estimate peak-streamflow magnitude for the 2-, 5-, 10-, 25-, 50-, 100-, 200-, and 500-year flows for gaged and ungaged streams throughout the State. Procedures for using this report to estimate peak streamflow at streamflow-gaging or partial-record stations and several types of ungaged sites follow.

1. Gaged Sites. Estimates of peak-streamflow magnitude for a given recurrence interval T can be read directly from table 4 for the streamflow-gaging or partial-record stations. Three estimates are provided: the value obtained using observed station data with a weighted skew coefficient (Q_{Tsta}), the value obtained using the regional regression equations (Q_{Treg}), and a weighted value (Q_{Twtd}), where weights are based on the years of observed data at the station (N) and the equivalent years of record for the regional regression equation (EYR) based on the following formula:

$$\log Q_{Twtd} = \frac{\log Q_{Tsta} N + \log Q_{Treg} EYR}{N + EYR} \qquad (5)$$

   In general, the weighted value provides the best estimate of peak streamflow, especially for stations with a short period of record.

   For gaged sites with at least 5 years of record, formula 5 may be used to weight the observed data with the regression equation. The equivalent years of record for a particular site can be computed from procedures and information in Appendix B or from the computer program available at http://pubs.water.usgs.gov/wri034188.

   For gaged sites with less than 5 years of record, the site should be treated as an ungaged site (Jones and Fahl, 1994). The appropriate regression equations for the given streamflow analysis region should be applied using one of the methods below.

2. Ungaged sites. The regression equations developed for this study from many hydrologically similar stations over a range of years are recommended for estimating discharge at ungaged sites. The errors presented for these equations are valid only if the equations are used according to the procedures described in this report. For ungaged sites having a drainage area in only one region and that are not near a streamflow-gaging station on the same stream, basin characteristics can be determined from a topographic map (or from digital data, as described in table 1) and from the precipitation map on plate 2 of Jones and Fahl (1994), available at: http://ak.water.usgs.gov/Publications/pdf.reps/wrir93.4179.plate2.pdf in PDF form and at http://agdc.usgs.gov/data/usgs/water/statewide.html as a GIS polygon coverage. If basin characteristics for the ungaged site are within the range of the basin characteristics shown in table 3, they can then be substituted into the equations from table 3 for the appropriate region.

3. Ungaged sites in two regions. For ungaged sites having a drainage area that falls in two regions, basin characteristics for the entire basin can be determined as described in (2) and substituted into equations from table 3 for each region. The two estimates then should be weighted by the respective drainage area in each region using the equation:

$$Q_T = \frac{Q_{T1}A_1 + Q_{T2}A_2}{A_1 + A_2} \qquad (6)$$

where

- Q_T is the area-weighted flow statistic;
- Q_{T1} is the value for the flow statistic if the entire basin were located in Region 1;
- A_1 is the drainage area in Region 1;
- Q_{T2} is the value for flow statistic if the entire basin were located in Region 2; and
- A_2 is the drainage area in Region 2.

4. Ungaged sites on gaged streams. For ungaged sites on a gaged stream having a drainage area between 50 and 150 percent of the drainage area of the streamflow-gaging station, the estimate from the streamflow-gaging station obtained as for (1) and the estimate for the ungaged site obtained as for (2) or (3) can be weighted for an improved estimate (Guimaraes and Bohman, 1991; Stamey and Hess, 1993). The weighted estimate for the ungaged site is computed as:

$$Q_{T(u)wtd} = \frac{2\Delta A}{A_g} Q_{T(u)reg} + \left(1 - \frac{2\Delta A}{A_g}\right)\frac{A_u}{A_g} Q_{T(g)wtd} \qquad (7)$$

where

- $Q_{T(u)wtd}$ is the weighted estimate of peak-flow magnitude Q_T for recurrence interval T at the ungaged site;
- ΔA is the absolute value of the difference between the drainage area for the gaged site (A_g) and the drainage area for the ungaged site (A_u), $|A_g - A_u|$;
- $Q_{T(u)reg}$ is the estimate of Q_T for the ungaged site computed from the regression equations in table 3 and methods 2 or 3 above for the appropriate streamflow analysis region(s); and
- $Q_{T(g)wtd}$ is the weighted estimate of Q_T for the gaged site, obtained from the "*Wtd*" row in table 4.

This procedure was adopted to remain consistent with methods used by the National Flood Frequency program (Ries and Crouse, 2002). It produces results similar to those obtained using the procedure in Jones and Fahl (1994).

5. Sites along the Yukon River. Although the regression equations are valid for sites along the Yukon River, determining the full suite of basin characteristics for an ungaged site with such a large drainage area requires considerable effort. In addition, the overwhelming influence of drainage area for basins this large limits the usefulness of other basin characteristics for predicting flood frequency. As an alternative, the graphical relation of peak streamflow to drainage area (fig. 2) may be used to estimate peak-streamflow statistics for sites along the Yukon River. These curves were developed from data for Yukon River streamflow-gaging stations with at least 20 years of record.

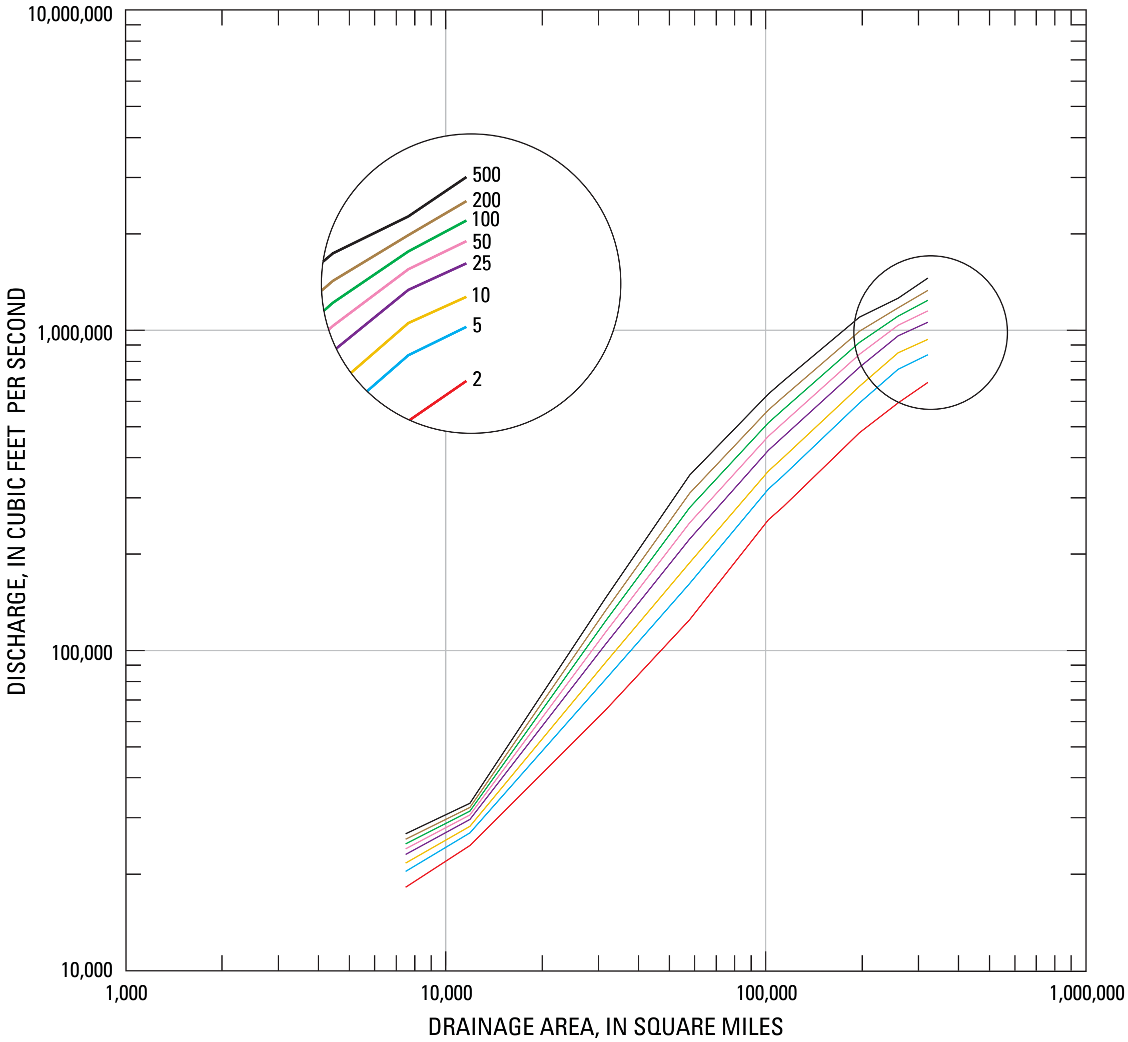


Figure 2. Relation of discharge to drainage area for selected recurrence intervals for the Yukon River, Alaska and Canada.

Example Applications

Examples of computation of peak-streamflow statistics for a selected recurrence interval are provided for a gaged site, an ungaged site, an ungaged site in two regions, and an ungaged site on a gaged stream. For each example, it is assumed that the user has determined that the hydrologic characteristics of the stream are within the limitations of the regional regression equations described in the "Accuracy and Limitations" section.

Example 1 - Gaged Site

Determine the peak discharge having a 50-year recurrence interval for the Nenana River near Healy, gaging station 15518000.

From table 4, the weighted 50-year peak discharge is: Q_{50wtd} = 41,800 ft^3/s

This value was computed from formula 5, which weights the 50-year peak discharge based on station observations (42,100 ft^3/s) with the 50-year peak discharge based on the regional regression equations for Region 6 (37,800 ft^3/s), in proportion to the 29 years of record at the station (from table 4) and the 1.9 equivalent years of record for the regression equation (from the computer program). Note that substituting the published Q_{50sta} and Q_{50reg} into formula 5 will result in a slightly different value than the published Q_{50wtd} because of differences in rounding.

Example 2 - Ungaged Site

Determine the 100-year peak discharge for the Tok River at the Alaska Highway bridge, which has the following basin characteristics:

Latitude 63º19'4", longitude 142º50'0"

Drainage area = 912 mi^2

Area of lakes and ponds = 2 percent

Area of forests = 38 percent

From Plate 1 and the site's latitude and longitude, this site is in Streamflow Analysis Region 6. From table 3, the basin characteristics for the Tok River are within the range of values used to develop equations for Region 6. The 100-year peak discharge is estimated by substituting the basin characteristics into the appropriate equation from table 3:

$$Q_{100} = 220.6\ (912)^{0.7764}\ (2+1)^{-0.2616}\ (38+1)^{-0.2023}$$
$$= 15{,}700\ ft^3/s$$

Example 3 - Ungaged Site in Two Streamflow Analysis Regions

Determine the peak discharge having a 25-year recurrence interval for Quill Creek near Burwash Flats, an ungaged site with the following basin characteristics:

Latitude 61º30'10", longitude 139º19'27"

Drainage area = 27.1 mi^2

Mean annual precipitation = 15 in.

Area of lakes and ponds = 0 percent

Mean basin elevation = 4,000 ft

Area of forest = 34 percent

From Plate 1, the site's latitude and longitude, and an outline of the site's drainage basin, this site is in Streamflow Analysis Region 5 but has 77.1 percent of its drainage area in Streamflow Analysis Region 2. The discharge for the ungaged site is estimated as if it were entirely in first one basin, then the other, and weighting based on the respective drainage areas.

From table 3, the basin characteristics are within the range of values used to develop equations for Regions 2 and 5. If the basin were entirely within Region 2, the 25-year peak discharge estimate would be

$$Q_{25(2)} = 1.374\ (27.1)^{0.9274}\ (0+1)^{-0.04074}\ (15)^{0.9713}$$
$$= 407\ ft^3/s$$

If the basin were entirely within Region 5, the 25-year peak discharge estimate would be

$$Q_{25(5)} = 1{,}256{,}000\ (27.1)^{0.9384}\ (0+1)^{-0.6004}\ (4{,}000)^{-1.075}\ (34+1)^{-0.5128}$$
$$= 602\ ft^3/s$$

Weight the two estimates based on the respective drainage area within each basin using formula 6:

$$Q_{25} = \frac{Q_{25(2)}A_2 + Q_{25(5)}A_5}{(A_2 + A_5)}$$

$$= \frac{407(20.9) + 602(6.2)}{(20.9 + 6.2)}$$

$$= 451\ ft^3/s$$

Example 4 - Ungaged Site on a Gaged Stream

Determine the 50-year peak discharge for the Nenana River at Healy, which is a gaging station (station 15518040) but has fewer than 5 years of peak-streamflow record. The Nenana River is also gaged at another location, the Nenana River near Healy (gaging station 15518000), which has more than 10 years of record and is included in table 4. The Nenana River at Healy site (considered the ungaged site) has the following basin characteristics:

Latitude 63º51'55", longitude148º57'20"

Drainage area = 2,100 mi²

Area of lakes and ponds = 0 percent

Area of forests = 8 percent

From table 4, the gaged site has a drainage area of 1,910 mi². The ungaged site's drainage area is 110 percent of the gaged site's drainage area, so formula 7 for an ungaged site on a gaged stream may be used. (If the ungaged site's drainage area was larger than 150 percent or smaller than 50 percent of the gaged site's drainage area, it should be treated simply as an ungaged site, as for Example 2.)

Determine $Q_{50(u)reg}$, the regression-based estimate for the ungaged site, from the appropriate equation from table 3. This step is the same procedure as for Example 2. From Plate 1 and the site's latitude and longitude, the ungaged site is in Streamflow Analysis Region 6. From table 3, the basin characteristics of the ungaged site are within the range of the variables used to develop equations for Region 6. The 50-year peak discharge is estimated for this ungaged site in region 6 as:

$$Q_{50(u)reg} = 186.7\ (2100)^{0.7885}\ (0+1)^{-0.2599}\ (8+1)^{-0.2124}$$
$$= 48{,}800 \text{ ft}^3/\text{s}$$

Next determine $Q_{50(g)wtd}$, the weighted estimate for the gaged site, from table 4 or from formula 5. From Example 1, $Q_{50(g)wtd}$ for the Nenana River near Healy is 41,800 ft³/s.

The regression-based estimate for the ungaged site is weighted with the estimate for the gaged site using the sites' respective drainage areas in formula 7:

$$Q_{T(u)wtd} = \frac{2\Delta A}{A_g} Q_{T(u)reg} + \left(1 - \frac{2\Delta A}{A_g}\right)\frac{A_u}{A_g} Q_{T(g)wtd}$$
$$= \left(\frac{2|1910 - 2100|}{1910}\right)\ (48{,}800)$$
$$+ \left(1 - \frac{2|1910 - 2100|}{1910}\right)\left(\frac{2100}{1910}\right)(41{,}800)$$
$$= 46{,}500 \text{ ft}^3/\text{s}$$

Computer Program

For a particular site, estimates of standard error of prediction, confidence limits (prediction intervals) on the estimate of peak-streamflow magnitude, and equivalent years of record can be computed using the matrices and procedures in Appendix B. A computer program is available at http://pubs.water.usgs.gov/wri034188 that automates the complex matrix computations required for these site-specific estimates of accuracy. The program first computes peak-streamflow frequencies for an ungaged site in one or two streamflow analysis regions using methods (2) or (3) described above, then provides positive and negative standard error of prediction, 5-percent and 95-percent confidence limits, and equivalent years of record for each T-year streamflow estimate for that site.

SUMMARY

Estimates of the magnitude and frequency of peak streamflows generally can be improved as additional peak-streamflow data become available. To provide the most accurate information possible for engineering and water-resource management applications in Alaska, the U.S. Geological Survey, in cooperation with the Alaska Department of Transportation and Public Facilities, updated estimates of peak-streamflow magnitude and frequency for gaged sites in Alaska and conterminous basins in Canada and updated regression equations for estimating peak-streamflow magnitude and frequency at ungaged sites.

Estimates of peak-streamflow magnitude for selected frequencies were computed for 361 streamflow-gaging stations and partial-record stations in Alaska and conterminous basins in Canada using data through the 1999 water year. Stations presented have at least 10 years of systematic record, or 8 or 9 years of record for stations included in the most recent previous statewide analysis. Streamflow data were adjusted using additional information where available and were analyzed using log-Pearson Type III analysis as recommended in Bulletin 17B of the Interagency Committee on Water Data. Station skew coefficients for 134 stations with at least 25 years of systematic record were averaged within each of seven streamflow analysis regions to determine generalized skew coefficients. Streamflow analysis regions are hydrologically distinct regions that were defined in conjunction with an analysis of high and low flows that was concurrent with this study. For most stations, generalized skew coefficients were weighted with station skew coefficients to compute estimates of the 2-, 5-, 10-, 25-, 50-, 100-, 200-, and 500-year peak streamflows. For stations where streamflow is not correlated to basin characteristics, station skew coefficients were used alone instead of in combination with generalized skew coefficients to estimate the peak-flow statistics.

Regional equations for estimating peak streamflows for the selected frequencies were developed from peak-streamflow estimates and physical and climatic basin characteristics at 355 stations. Basin characteristics were obtained from previous studies or by modified methods described in this report; users should obtain basin characteristics using similar methods. Ordinary-least-squares regression was used to establish a preliminary suite of basin characteristics as independent variables. Generalized-least-squares regression was used to refine this list of variables and develop final equations. Drainage area was used in final equations for all regions and all recurrence intervals; the other basin characteristics used in the final equations were mean annual precipitation, area of lakes and ponds, mean basin elevation, area of forests, and mean minimum January temperature. Average standard errors of prediction, a measure of the accuracy of the estimating equations, range from 27 to 66 percent. Procedures are provided for using the data and equations in this report to estimate peak streamflow at gaged and ungaged sites. Digital versions of data and a computer program for estimating peak streamflow and site-specific errors are provided at http://pubs.water.usgs.gov/wri034188.

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Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada

[Rounding differences may cause values in this table to vary by less than 1 percent from those computed using equations in table 3 or by the computer program available at http://pubs.water.usgs.gov/wri034188. **Station No.:** R, presently regulated. **Station name:** AK, Alaska; BC, British Columbia; YT, Yukon. **Region**: See figure 1 for location of regions. **Latitude and Longitude** are given in degrees, minutes, and seconds. **Mean basin elevation**: Elevations are given in feet above NGVD of 1929. **Skew coefficient used for analysis**: weighted skew except where noted in footnote. **Peak streamflow analysis type:** Sta, value of Q_T from analysis of observed station data using weighted skew coefficient; Reg, value of Q_T estimated from regression equation (table 3); Wtd, value of Q_T estimated by weighting Sta and Reg based on the years of record for station data and equivalent years of record for the equation. **Peak streamflow:** Q_T, peak streamflow having a recurrence interval of T years. –, not available; ft, foot; mi^2, square mile; in., inch; °F, degree Fahrenheit]

Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin eleva-tion (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipi-tation (in.)	Mean minimum January temper-ature (°F)
15008000[1]	Salmon River near Hyder, AK	1	56 01 34	130 03 55	94.1	3,840	2	15	110	26
15010000	Davis River near Hyder, AK	1	55 45 00	130 12 00	80.0	3,400	0	26	175	27
15011500	Red River near Metlakatla, AK	1	55 08 29	130 31 50	45.3	1,700	1	64	200	28
15012000	Winstanley Creek near Ketchikan, AK	1	55 24 59	130 52 03	15.5	1,730	5	84	160	28
15015590	Unuk River near Stewart, BC	1	56 21 05	130 41 30	571	3,880	4	28	100	25
15022000	Harding River near Wrangell, AK	1	56 12 48	131 38 12	67.4	2,400	1	40	175	26
15024200	Klappan River near Telegraph Creek, BC	2	57 54 00	129 42 14	1,370	4,800	0	60	25	4
15024300	Stikine River above Grand Canyon near Telegraph Creek, BC	2	58 02 38	129 56 45	7,260	4,300	0	60	20	-6
15024400	Tanzilla River near Telegraph Creek, BC	2	58 17 37	130 30 44	618	3,900	1	70	12	-6
15024500	Tuya River near Telegraph Creek, BC	2	58 04 20	130 49 27	1,390	3,800	1	83	15	-8
15024600	Stikine River at Telegraph Creek, BC	2	57 54 03	131 09 16	11,300	4,200	1	65	15	-6
15024640	Stikine River above Butterfly Creek, BC	2	57 29 10	131 45 00	13,900	4,250	1	50	22	8

[1] Record includes glacial outbursts. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[3] Drainage area is indeterminate. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Number of syste-matic peaks	Skew coeffi-cient used for analysis	Peak stream-flow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15008000[1]	10	-0.448	Sta	34,100	109,000	189,000	325,000	450,000	595,000	758,000	1,000,000
15010000	10	.0668	Sta	11,700	16,400	19,600	23,800	27,000	30,300	33,700	38,300
			Reg	14,000	18,500	21,400	25,100	27,700	30,300	32,800	36,000
			Wtd	11,800	16,600	19,900	24,100	27,200	30,300	33,500	37,700
15011500	15	-.184	Sta	8,280	10,400	11,600	13,000	14,000	15,000	15,900	17,000
			Reg	7,860	10,200	11,800	13,700	15,100	16,400	17,700	19,400
			Wtd	8,260	10,400	11,600	13,100	14,200	15,200	16,200	17,500
15012000	30	.669	Sta	1,180	1,710	2,130	2,760	3,300	3,910	4,610	5,670
			Reg	1,760	2,340	2,720	3,190	3,540	3,890	4,230	4,690
			Wtd	1,190	1,730	2,160	2,790	3,320	3,910	4,570	5,550
15015590	21	.0881	Sta	25,100	35,100	41,900	50,800	57,600	64,600	71,700	81,600
			Reg	23,000	31,500	37,300	44,700	50,300	56,000	61,700	69,400
			Wtd	25,000	34,900	41,600	50,200	56,800	63,500	70,400	79,900
15022000	48	.393	Sta	6,590	8,780	10,300	12,400	14,000	15,800	17,600	20,100
			Reg	9,180	12,100	14,000	16,400	18,100	19,800	21,500	23,700
			Wtd	6,630	8,860	10,400	12,600	14,200	16,000	17,800	20,300
15024200	32	-.0858	Sta	14,700	17,000	18,200	19,700	20,600	21,600	22,400	23,500
			Reg	15,000	19,100	21,900	25,400	28,100	30,800	33,700	37,600
			Wtd	14,700	17,100	18,400	20,100	21,200	22,200	23,200	24,400
15024300	35	.244	Sta	61,500	76,200	85,700	97,700	106,000	115,000	124,000	136,000
			Reg	60,300	75,000	84,400	96,000	105,000	113,000	122,000	133,000
			Wtd	61,500	76,200	85,700	97,600	106,000	115,000	124,000	136,000
15024400	8	.606	Sta	4,310	5,560	6,460	7,700	8,680	9,730	10,800	12,400
			Reg	3,280	4,170	4,730	5,420	5,920	6,410	6,910	7,560
			Wtd	4,200	5,310	6,060	7,070	7,870	8,720	9,640	11,000
15024500	37	.0785	Sta	12,200	16,400	19,200	22,700	25,400	28,100	30,800	34,400
			Reg	8,780	11,100	12,500	14,300	15,600	16,900	18,100	19,900
			Wtd	12,100	16,200	18,800	22,100	24,500	27,100	29,700	33,200
15024600	45	-.0745	Sta	82,500	100,000	111,000	123,000	132,000	140,000	148,000	158,000
			Reg	65,400	80,100	89,000	99,700	107,000	115,000	122,000	131,000
			Wtd	82,200	99,700	110,000	122,000	131,000	139,000	147,000	157,000
15024640	23	-.0859	Sta	113,000	135,000	148,000	163,000	174,000	183,000	193,000	205,000
			Reg	114,000	139,000	156,000	175,000	190,000	204,000	218,000	237,000
			Wtd	113,000	136,000	149,000	164,000	175,000	185,000	195,000	207,000

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin elevation (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipitation (in.)	Mean minimum January temperature (^{o}F)
15024670	Iskut River at outlet of Kinaskan Lake, BC	2	57 32 00	130 12 28	483	4,000	5	50	20	4
15024684	More Creek near mouth, BC	2	57 02 27	130 24 05	326	4,270	1	29	70	20
15024690	Forrest Kerr Creek near Wrangell, BC	2	56 54 56	130 43 15	120	3,540	0	19	100	24
15024695	Iskut River above Snippaker Creek, BC	2	56 41 55	130 52 23	2,790	3,500	1	35	60	16
15024700	Iskut River below Johnson River, BC	2	56 44 20	131 40 25	3,610	3,500	1	35	60	18
15024750	Goat Creek near Wrangell, AK	1	56 39 40	131 58 14	17.3	2,560	6	31	175	25
15024800	Stikine River near Wrangell, AK	2	56 42 29	132 07 49	19,900	4,310	1	42	40	14
15026000	Cascade Creek near Petersburg, AK	1	57 00 21	132 46 45	23.0	3,160	4	22	175	24
15028300	Farragut River near Petersburg, AK	1	57 10 24	133 06 36	151	2,540	5	37	175	24
15031000	Long River above Long Lake near Juneau, AK	1	58 10 56	133 53 06	8.29	3,020	0	3	175	20
15034000R	Long River near Juneau, AK	1	58 10 00	133 41 50	32.5	2,400	9	15	180	20
15036000	Speel River near Juneau, AK	1	58 12 10	133 36 40	226	3,100	1	5	175	20

[1] Record includes glacial outbursts. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[3] Drainage area is indeterminate. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Number of syste-matic peaks	Skew coeffi-cient used for analysis	Peak stream-flow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15024670	30	0.334	Sta	2,300	2,920	3,280	3,690	3,960	4,220	4,460	4,750
			Reg	3,080	3,830	4,300	4,870	5,280	5,690	6,090	6,640
			Wtd	2,320	2,960	3,340	3,780	4,070	4,340	4,590	4,900
15024684	17	.992	Sta	10,900	16,200	20,900	28,200	35,100	43,200	53,000	68,900
			Reg	9,150	11,900	13,900	16,600	18,800	21,100	23,600	27,400
			Wtd	10,800	15,800	19,900	26,300	32,000	38,900	47,100	60,400
15024690	18	-.329	Sta	5,640	6,470	6,910	7,390	7,710	7,990	8,240	8,560
			Reg	5,280	7,010	8,340	10,200	11,700	13,400	15,300	18,100
			Wtd	5,630	6,510	7,050	7,700	8,150	8,580	8,970	9,450
15024695	22	.832	Sta	52,400	67,700	79,200	95,500	109,000	124,000	140,000	163,000
			Reg	62,000	78,200	89,600	105,000	116,000	129,000	142,000	161,000
			Wtd	52,700	68,200	79,900	96,300	110,000	124,000	140,000	163,000
15024700	33	1.11	Sta	80,300	115,000	145,000	193,000	237,000	290,000	353,000	456,000
			Reg	79,400	99,700	114,000	133,000	148,000	163,000	179,000	203,000
			Wtd	80,200	114,000	144,000	189,000	230000	279,000	338,000	433,000
15024750	10	.426	Sta	1,560	2,840	3,990	5,880	7,640	9,750	12,300	16,400
			Reg	1,830	2,390	2,770	3,250	3,600	3,940	4,290	4,750
			Wtd	1,580	2,780	3,780	5,230	6,460	7,820	9,350	11,700
15024800	23	.666	Sta	209,000	248,000	274,000	308,000	334,000	361,000	388,000	426,000
			Reg	280,000	343,000	385,000	437,000	477,000	517,000	558,000	616,000
			Wtd	211,000	251,000	279,000	315,000	343,000	370,000	399,000	438,000
15026000	35	.299	Sta	1,610	2,080	2,390	2,800	3,110	3,420	3,750	4,190
			Reg	2,540	3,330	3,860	4,530	5,020	5,500	5,980	6,620
			Wtd	1,630	2,110	2,450	2,880	3,220	3,560	3,910	4,380
15028300	16	-.382	Sta	13,000	17,100	19,500	22,200	24,100	25,800	27,400	29,400
			Reg	11,500	14,900	17,200	20,200	22,300	24,400	26,600	29,400
			Wtd	12,900	16,900	19,200	21,900	23,800	25,600	27,300	29,400
15031000	10	.592	Sta	1,600	2,120	2,510	3,050	3,480	3,950	4,450	5,180
			Reg	1,710	2,280	2,660	3,130	3,480	3,820	4,150	4,600
			Wtd	1,610	2,140	2,530	3,060	3,480	3,920	4,370	5,020
15034000[R]	29	.442	Sta	3,080	4,140	4,910	5,940	6,770	7,640	8,570	9,890
			Reg	2,400	3,120	3,610	4,230	4,700	5,160	5,630	6,250
			Wtd	3,070	4,100	4,830	5,810	6,580	7,390	8,250	9,460
15036000	17	.503	Sta	17,700	23,800	28,300	34,400	39,300	44,600	50,200	58,300
			Reg	21,100	27,700	32,100	37,600	41,600	45,700	49,700	55,000
			Wtd	17,900	24,100	28,600	34,800	39,600	44,700	50,100	57,800

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

[Rounding differences may cause values in this table to vary by less than 1 percent from those computed using equations in table 3 or by the computer program available at http://pubs.water.usgs.gov/wri034188. **Station No.:** R, presently regulated. **Station name:** AK, Alaska; BC, British Columbia; YT, Yukon. **Region**: See figure 1 for location of regions. **Latitude and Longitude** are given in degrees, minutes, and seconds. **Mean basin elevation**: Elevations are given in feet above NGVD of 1929. **Skew coefficient used for analysis**: weighted skew except where noted in footnote. **Peak streamflow analysis type:** Sta, value of Q_T from analysis of observed station data using weighted skew coefficient; Reg, value of Q_T estimated from regression equation (table 3); Wtd, value of Q_T estimated by weighting Sta and Reg based on the years of record for station data and equivalent years of record for the equation. **Peak streamflow:** Q_T, peak streamflow having a recurrence interval of *T* years. –, not available; ft, foot; mi^2, square mile; in., inch; ^{o}F, degree Fahrenheit]

Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin elevation (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipitation (in.)	Mean minimum January temperature (^{o}F)
15038000[R]	Crater Creek near Juneau, AK	1	58 08 15	133 46 15	11.4	2,590	7	4	175	20
15039900	Dorothy Lake outlet near Juneau, AK	1	58 14 56	133 58 54	11.0	3,450	13	1	160	20
15040000	Dorothy Creek near Juneau, AK	1	58 13 40	134 02 25	15.2	3,100	12	13	150	20
15041000	Sloko River near Atlin, BC	2	59 06 20	133 39 40	165	4,800	2	3	28	2
15041100	Taku River near Tulsequah, BC	2	58 38 20	133 32 25	6,000	3,800	1	40	24	5
15041200[1]	Taku River near Juneau, AK	1	58 32 19	133 42 00	6,600	3,790	1	37	35	6
15044000	Carlson Creek near Juneau, AK	1	58 19 00	134 10 15	24.3	2,200	0	68	200	22
15048000	Sheep Creek near Juneau, AK	1	58 16 30	134 18 50	4.57	1,900	0	44	150	22
15049900[R]	Gold Creek near Juneau, AK	1	58 18 26	134 23 12	8.41	2,280	0	9	140	22
15050000[R]	Gold Creek at Juneau, AK	1	58 18 25	134 24 05	9.76	2,400	0	29	150	22
15052000	Lemon Creek near Juneau, AK	1	58 23 30	134 25 15	12.1	3,430	0	4	180	22
15052500	Mendenhall River near Auke Bay, AK	1	58 25 47	134 34 22	85.1	3,260	3	8	180	22
15052800	Montana Creek near Auke Bay, AK	1	58 23 53	134 36 34	14.1	1,500	0	64	100	22

[1] Record includes glacial outbursts. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[3] Drainage area is indeterminate. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

[Rounding differences may cause values in this table to vary by less than 1 percent from those computed using equations in table 3 or by the computer program available at http://pubs.water.usgs.gov/wri034188. **Station No.:** R, presently regulated. **Station name:** AK, Alaska; BC, British Columbia; YT, Yukon. **Region**: See figure 1 for location of regions. **Latitude and Longitude** are given in degrees, minutes, and seconds. **Mean basin elevation**: Elevations are given in feet above NGVD of 1929. **Skew coefficient used for analysis**: weighted skew except where noted in footnote. **Peak streamflow analysis type:** Sta, value of Q_T from analysis of observed station data using weighted skew coefficient; Reg, value of Q_T estimated from regression equation (table 3); Wtd, value of Q_T estimated by weighting Sta and Reg based on the years of record for station data and equivalent years of record for the equation. **Peak streamflow:** Q_T, peak streamflow having a recurrence interval of T years. –, not available; ft, foot; mi^2, square mile; in., inch; ^{o}F, degree Fahrenheit]

Station No.	Number of syste-matic peaks	Skew coeffi-cient used for analysis	Peak stream-flow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15038000[R]	9	0.153	Sta	1,950	2,530	2,910	3,390	3,750	4,120	4,480	4,980
			Reg	1,060	1,390	1,610	1,890	2,100	2,310	2,520	2,800
			Wtd	1,860	2,340	2,640	3,000	3,260	3,540	3,820	4,200
15039900	13	-.0092	Sta	692	847	941	1,050	1,130	1,210	1,280	1,380
			Reg	773	1,020	1,190	1,400	1,560	1,720	1,880	2,110
			Wtd	696	862	968	1,100	1,200	1,290	1,390	1,510
15040000	37	.183	Sta	840	1,170	1,410	1,720	1,960	2,210	2,470	2,840
			Reg	981	1,300	1,520	1,800	2,010	2,220	2,430	2,720
			Wtd	842	1,180	1,410	1,720	1,960	2,210	2,470	2,830
15041000	22	.896	Sta	1,860	2,470	2,960	3,660	4,250	4,920	5,660	6,780
			Reg	1,890	2,440	2,810	3,300	3,680	4,060	4,470	5,040
			Wtd	1,860	2,470	2,940	3,610	4,170	4,790	5,480	6,520
15041100	32	.186	Sta	48,600	59,300	66,200	74,500	80,600	86,600	92,600	101,000
			Reg	55,200	68,400	76,900	87,500	95,300	103,000	111,000	122,000
			Wtd	48,700	59,700	66,700	75,300	81,600	87,700	93,800	102,000
15041200[1]	13	.482	Sta	75,800	91,400	102,000	115,000	125,000	135,000	146,000	160,000
15044000	10	.0878	Sta	3,800	4,460	4,850	5,320	5,650	5,960	6,270	6,660
			Reg	5,040	6,620	7,650	8,930	9,850	10,800	11,600	12,800
			Wtd	3,900	4,660	5,190	5,860	6,360	6,850	7,320	7,920
15048000	30	.237	Sta	459	610	714	848	951	1,060	1,170	1,320
			Reg	959	1,300	1,530	1,820	2,030	2,230	2,440	2,710
			Wtd	470	630	746	899	1,020	1,140	1,260	1,430
15049900[R]	13	-.0088	Sta	1,510	2,060	2,420	2,870	3,210	3,550	3,890	4,340
			Reg	1,500	2,050	2,410	2,870	3,200	3,540	3,870	4,300
			Wtd	1,510	2,060	2,420	2,870	3,210	3,550	3,880	4,340
15050000[R]	43	.338	Sta	1,380	1,880	2,240	2,730	3,120	3,520	3,950	4,560
			Reg	1,810	2,450	2,880	3,410	3,800	4,180	4,570	5,070
			Wtd	1,390	1,900	2,270	2,760	3,160	3,570	3,990	4,600
15052000	22	.915	Sta	1,490	1,980	2,370	2,930	3,410	3,950	4,550	5,460
			Reg	2,560	3,400	3,950	4,640	5,140	5,630	6,120	6,750
			Wtd	1,520	2,030	2,450	3,050	3,550	4,100	4,710	5,600
15052500	34	.0104	Sta	8,400	10,800	12,400	14,300	15,700	17,000	18,400	20,200
			Reg	7,940	10,400	12,000	14,000	15,500	17,000	18,500	20,500
			Wtd	8,390	10,800	12,400	14,300	15,700	17,000	18,400	20,200
15052800	18	.481	Sta	1,380	1,990	2,460	3,120	3,680	4,290	4,960	5,960
			Reg	1,700	2,390	2,860	3,460	3,900	4,350	4,800	5,400
			Wtd	1,390	2,010	2,490	3,160	3,710	4,300	4,940	5,860

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

[Rounding differences may cause values in this table to vary by less than 1 percent from those computed using equations in table 3 or by the computer program available at http://pubs.water.usgs.gov/wri034188. **Station No.:** R, presently regulated. **Station name:** AK, Alaska; BC, British Columbia; YT, Yukon. **Region**: See figure 1 for location of regions. **Latitude and Longitude** are given in degrees, minutes, and seconds. **Mean basin elevation**: Elevations are given in feet above NGVD of 1929. **Skew coefficient used for analysis**: weighted skew except where noted in footnote. **Peak streamflow analysis type:** Sta, value of Q_T from analysis of observed station data using weighted skew coefficient; Reg, value of Q_T estimated from regression equation (table 3); Wtd, value of Q_T estimated by weighting Sta and Reg based on the years of record for station data and equivalent years of record for the equation. **Peak streamflow:** Q_T, peak streamflow having a recurrence interval of T years. –, not available; ft, foot; mi^2, square mile; in., inch; ^oF, degree Fahrenheit]

Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin elevation (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipitation (in.)	Mean minimum January temperature (^oF)
15053800	Lake Creek at Auke Bay, AK	1	58 23 40	134 37 50	2.50	1,170	0	70	80	22
15054000	Auke Creek at Auke Bay, AK	1	58 22 56	134 38 10	3.96	1,160	8	68	80	22
15054500	Bessie Creek near Auke Bay, AK	1	58 35 30	134 54 00	1.35	1,100	0	99	80	22
15056100	Skagway River at Skagway, AK	1	59 28 02	135 17 00	145	3,900	0	11	100	0
15056200	West Creek near Skagway, AK	1	59 31 35	135 21 10	43.2	3,400	0	18	100	0
15056210	Taiya River near Skagway, AK	1	59 30 43	135 20 40	179	3,400	0	20	90	0
15056560	Klehini River near Klukwan, AK	1	59 24 47	135 59 49	284	3,480	0	24	80	0
15057500	William Henry Creek near Auke Bay, AK	1	58 44 46	135 14 25	1.58	1,720	0	42	110	21
15058000	Purple Lake outlet near Metlakatla, AK	1	55 06 00	131 26 00	6.67	860	20	62	150	30
15059500	Whipple Creek near Ward Cove, AK	1	55 26 30	131 47 38	5.29	880	0	99	125	29
15060000	Perseverance Creek near Wacker, AK	1	55 24 40	131 40 05	2.81	1,340	11	87	190	29
15067900	Upper Mahoney Lake outlet near Ketchikan, AK	1	55 24 50	131 33 16	2.03	2,500	6	0	200	29

[1] Record includes glacial outbursts. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[3] Drainage area is indeterminate. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Number of systematic peaks	Skew coefficient used for analysis	Peak streamflow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15053800	10	0.206	Sta	446	665	828	1,050	1,230	1,430	1,640	1,930
			Reg	327	473	574	702	799	897	997	1,130
			Wtd	433	639	783	973	1,120	1,280	1,440	1,670
15054000	16	-.0166	Sta	167	231	273	327	368	408	449	503
			Reg	218	310	374	456	520	585	651	743
			Wtd	169	236	282	341	387	432	478	540
15054500	14	-.246	Sta	166	241	289	349	393	435	477	532
			Reg	195	283	344	421	480	539	598	680
			Wtd	168	244	295	359	406	453	499	560
15056100	23	.604	Sta	4,790	7,310	9,390	12,500	15,300	18,500	22,100	27,800
			Reg	5,070	7,060	8,490	10,400	11,900	13,500	15,100	17,400
			Wtd	4,800	7,300	9,330	12,400	15,000	17,900	21,200	26,300
15056200	16	.729	Sta	2,590	3,690	4,560	5,870	6,990	8,260	9,690	11,900
			Reg	1,840	2,580	3,100	3,810	4,370	4,940	5,550	6,390
			Wtd	2,540	3,600	4,410	5,590	6,580	7,680	8,900	10,800
15056210	8	.695	Sta	8,960	11,900	14,100	17,200	19,800	22,600	25,600	30,100
			Reg	5,500	7,720	9,330	11,500	13,200	15,000	16,800	19,500
			Wtd	8,630	11,400	13,400	16,200	18,500	20,900	23,600	27,500
15056560	12	-.374	Sta	7,090	8,240	8,860	9,530	9,960	10,300	10,700	11,100
			Reg	7,260	10,300	12,500	15,500	17,800	20,300	22,900	26,600
			Wtd	7,110	8,390	9,190	10,200	10,900	11,600	12,300	13,200
15057500	8	.249	Sta	381	512	603	721	813	908	1,010	1,140
			Reg	289	406	485	585	660	735	810	910
			Wtd	370	495	579	687	769	854	941	1,060
15058000	8	.170	Sta	480	604	684	784	857	931	1,000	1,100
			Reg	553	733	853	1,000	1,120	1,230	1,340	1,490
			Wtd	485	621	712	829	918	1,010	1,090	1,210
15059500	12	-.0920	Sta	1,030	1,690	2,170	2,840	3,360	3,910	4,480	5,280
			Reg	1,120	1,550	1,830	2,180	2,440	2,690	2,940	3,270
			Wtd	1,040	1,670	2,130	2,710	3,160	3,610	4,070	4,710
15060000	23	-.0752	Sta	440	539	598	668	717	763	808	866
			Reg	396	517	597	696	769	841	912	1,010
			Wtd	439	538	598	671	722	772	821	884
15067900	12	.0702	Sta	609	816	953	1,130	1,260	1,390	1,520	1,700
			Reg	384	501	578	673	742	810	877	964
			Wtd	593	777	893	1,030	1,140	1,240	1,340	1,480

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin elevation (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipitation (in.)	Mean minimum January temperature (°F)
15068000	Mahoney Creek near Ketchikan, AK	1	55 25 34	131 30 40	5.70	1,680	8	40	200	29
15070000R	Swan Lake near Ketchikan, AK	1	55 36 54	131 20 14	36.5	1,800	5	61	200	28
15072000	Fish Creek near Ketchikan, AK	1	55 23 31	131 11 38	32.1	1,300	14	72	180	28
15074000	Ella Creek near Ketchikan, AK	1	55 30 20	131 01 25	19.7	900	16	66	175	28
15076000	Manzanita Creek near Ketchikan, AK	1	55 36 00	130 59 00	33.9	1,300	9	68	200	27
15078000	Grace Creek near Ketchikan, AK	1	55 39 28	130 58 14	30.2	1,500	9	67	200	27
15080000	Orchard Creek near Bell Island, AK	1	55 50 00	131 27 00	59.0	1,600	3	68	150	27
15081490	Yatuk Creek near Klawock, AK	1	55 53 57	133 08 42	5.80	390	2	98	100	29
15081497	Staney Creek near Klawock, AK	1	55 48 05	133 06 31	50.6	882	1	94	100	30
15081500	Staney Creek near Craig, AK	1	55 48 57	133 07 58	51.6	850	0	95	100	29
15081580	Black Bear Lake outlet near Klawock, AK	1	55 33 25	132 52 33	1.82	2,300	17	0	100	30
15081890	Natzuhini Creek near Hydaburg, AK	1	55 17 18	132 49 18	9.10	1,030	0	84	140	31

[1] Record includes glacial outbursts. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[3] Drainage area is indeterminate. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Number of syste-matic peaks	Skew coeffi-cient used for analysis	Peak stream-flow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15068000	25	-0.168	Sta	1,180	1,720	2,080	2,540	2,870	3,210	3,540	3,990
			Reg	832	1,080	1,240	1,440	1,590	1,740	1,880	2,070
			Wtd	1,170	1,680	2,010	2,410	2,700	2,990	3,280	3,660
15070000[R]	28	.0945	Sta	3,040	3,830	4,330	4,940	5,390	5,830	6,270	6,850
			Reg	4,420	5,720	6,570	7,620	8,390	9,150	9,890	10,900
			Wtd	3,070	3,900	4,440	5,110	5,610	6,100	6,590	7,230
15072000	80	.108	Sta	2,850	3,540	3,970	4,500	4,890	5,270	5,640	6,140
			Reg	2,600	3,370	3,880	4,530	5,000	5,480	5,950	6,570
			Wtd	2,850	3,540	3,970	4,500	4,890	5,270	5,650	6,150
15074000	22	.172	Sta	1,180	1,410	1,550	1,720	1,840	1,960	2,070	2,230
			Reg	1,610	2,090	2,420	2,830	3,130	3,430	3,720	4,120
			Wtd	1,190	1,440	1,600	1,800	1,950	2,100	2,240	2,430
15076000	30	-.163	Sta	2,780	3,520	3,970	4,490	4,860	5,210	5,550	5,980
			Reg	3,370	4,340	4,980	5,780	6,370	6,950	7,520	8,280
			Wtd	2,790	3,550	4,020	4,580	4,970	5,350	5,720	6,190
15078000	16	-.0085	Sta	2,770	3,370	3,730	4,150	4,450	4,740	5,010	5,370
			Reg	3,060	3,940	4,520	5,250	5,790	6,310	6,840	7,530
			Wtd	2,790	3,410	3,800	4,280	4,630	4,960	5,290	5,720
15080000	11	.205	Sta	4,290	5,670	6,610	7,820	8,740	9670	10,600	11,900
			Reg	5,720	7,620	8,870	10,400	11,600	12,800	13,900	15,400
			Wtd	4,380	5,850	6,880	8,230	9,250	10,300	11,300	12,700
15081490	9	-.211	Sta	693	892	1,010	1,150	1,250	1,340	1,430	1,550
			Reg	666	933	1,110	1,340	1,510	1,680	1,840	2,070
			Wtd	690	897	1,030	1,190	1,310	1,420	1,540	1,690
15081497	10	.223	Sta	11,100	15,100	17,900	21,500	24,300	27,200	30,300	34,500
			Reg	4,840	6,750	8,010	9,620	10,800	12,000	13,200	14,800
			Wtd	10,400	13,800	15,900	18,500	20,500	22,500	24,600	27,600
15081500	17	-.278	Sta	7,790	12,200	15,300	19,100	22,000	24,900	27,700	31,500
			Reg	6,140	8,610	10,200	12,300	13,800	15,300	16,900	18,900
			Wtd	7,690	11,900	14,700	18,200	20,700	23,100	25,600	28,900
15081580	11	.419	Sta	225	298	350	419	474	532	593	679
			Reg	136	189	225	271	305	340	375	423
			Wtd	219	284	330	389	435	483	534	605
15081890	9	.0490	Sta	1,710	2,270	2,640	3,100	3,440	3,780	4,120	4,580
			Reg	2,060	2,820	3,310	3,910	4,350	4,780	5,200	5,740
			Wtd	1,740	2,330	2,740	3,250	3,640	4,020	4,400	4,900

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

[Rounding differences may cause values in this table to vary by less than 1 percent from those computed using equations in table 3 or by the computer program available at http://pubs.water.usgs.gov/wri034188. **Station No.:** R, presently regulated. **Station name:** AK, Alaska; BC, British Columbia; YT, Yukon. **Region**: See figure 1 for location of regions. **Latitude and Longitude** are given in degrees, minutes, and seconds. **Mean basin elevation**: Elevations are given in feet above NGVD of 1929. **Skew coefficient used for analysis**: weighted skew except where noted in footnote. **Peak streamflow analysis type:** Sta, value of Q_T from analysis of observed station data using weighted skew coefficient; Reg, value of Q_T estimated from regression equation (table 3); Wtd, value of Q_T estimated by weighting Sta and Reg based on the years of record for station data and equivalent years of record for the equation. **Peak streamflow:** Q_T, peak streamflow having a recurrence interval of T years. –, not available; ft, foot; mi^2, square mile; in., inch; °F, degree Fahrenheit]

Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin elevation (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipitation (in.)	Mean minimum January temperature (°F)
15083500	Perkins Creek near Metlakatla, AK	1	54 56 48	132 10 15	3.38	730	0	81	150	32
15085100	Old Tom Creek near Kasaan, AK	1	55 23 44	132 24 25	5.90	1,000	4	85	100	30
15085600	Indian Creek near Hollis, AK	1	55 26 58	132 41 41	8.82	1,000	0	77	100	30
15085700	Harris River near Hollis, AK	1	55 27 47	132 42 11	28.7	1,400	0	84	120	30
15085800	Maybeso Creek at Hollis, AK	1	55 29 26	132 40 31	15.1	1,120	0	88	120	30
15086600	Big Creek near Point Baker, AK	1	56 07 54	133 08 56	11.2	680	5	90	110	28
15086900	Red Creek near Point Baker, AK	1	56 15 36	133 19 34	11.2	980	6	88	125	28
15087250	Twin Creek near Petersburg, AK	1	56 43 13	132 55 33	3.01	1,110	0	96	100	25
15087545	Municipal Watershed Creek near Petersburg, AK	1	56 46 40	132 55 07	2.20	1,400	0	97	100	26
15087570	Hamilton Creek near Kake, AK	1	56 52 21	133 40 30	65.0	493	0	91	70	26
15087585	Twelvemile Creek near Petersburg, AK	1	56 58 07	133 04 05	9.39	960	1	80	120	25
15087590	Rocky Pass Creek near Point Baker, AK	1	56 37 10	133 44 10	2.72	358	2	98	100	27

[1] Record includes glacial outbursts. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[3] Drainage area is indeterminate. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

[Rounding differences may cause values in this table to vary by less than 1 percent from those computed using equations in table 3 or by the computer program available at http://pubs.water.usgs.gov/wri034188. **Station No.:** R, presently regulated. **Station name:** AK, Alaska; BC, British Columbia; YT, Yukon. **Region**: See figure 1 for location of regions. **Latitude and Longitude** are given in degrees, minutes, and seconds. **Mean basin elevation**: Elevations are given in feet above NGVD of 1929. **Skew coefficient used for analysis**: weighted skew except where noted in footnote. **Peak streamflow analysis type:** Sta, value of Q_T from analysis of observed station data using weighted skew coefficient; Reg, value of Q_T estimated from regression equation (table 3); Wtd, value of Q_T estimated by weighting Sta and Reg based on the years of record for station data and equivalent years of record for the equation. **Peak streamflow:** Q_T, peak streamflow having a recurrence interval of *T* years. –, not available; ft, foot; mi^2, square mile; in., inch; °F, degree Fahrenheit]

Station No.	Number of systematic peaks	Skew coefficient used for analysis	Peak streamflow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15083500	17	-0.0410	Sta	1,380	1,920	2,270	2,720	3,050	3,380	3,720	4,170
			Reg	984	1,340	1,570	1,850	2,060	2,250	2,450	2,700
			Wtd	1,360	1,870	2,190	2,590	2,880	3,170	3,460	3,850
15085100	49	-.0577	Sta	855	1,040	1,160	1,290	1,390	1,480	1,560	1,680
			Reg	577	806	959	1,150	1,300	1,440	1,590	1,790
			Wtd	850	1,040	1,150	1,290	1,380	1,470	1,570	1,680
15085600	13	.395	Sta	2,170	3,390	4,370	5,810	7,050	8,440	9,990	12,300
			Reg	1,440	2,030	2,430	2,920	3,280	3,640	4,000	4,480
			Wtd	2,110	3,240	4,070	5,220	6,150	7,150	8,240	9,840
15085700	15	.202	Sta	4,650	6,660	8,110	10,100	11,600	13,200	14,900	17,300
			Reg	4,560	6,290	7,430	8,850	9,890	10,900	11,900	13,200
			Wtd	4,650	6,630	8,030	9,880	11,300	12,800	14,300	16,400
15085800	14	.144	Sta	2,200	2,920	3,410	4,020	4,490	4,960	5,440	6,090
			Reg	2,670	3,690	4,360	5,200	5,810	6,410	7,000	7,790
			Wtd	2,230	2,980	3,500	4,180	4,690	5,200	5,720	6,420
15086600	18	-.296	Sta	1,030	1,270	1,400	1,560	1,660	1,760	1,850	1,960
			Reg	956	1,320	1,560	1,860	2,090	2,320	2,550	2,870
			Wtd	1,020	1,270	1,420	1,590	1,710	1,830	1,950	2,090
15086900	10	.0736	Sta	1,170	1,370	1,500	1,650	1,750	1,850	1,950	2,080
			Reg	1,020	1,380	1,620	1,930	2,160	2,390	2,620	2,920
			Wtd	1,160	1,380	1,520	1,700	1,840	1,970	2,100	2,280
15087250	13	.0536	Sta	449	582	668	774	852	930	1,010	1,110
			Reg	511	724	867	1,050	1,180	1,320	1,450	1,630
			Wtd	453	594	690	813	905	997	1,090	1,210
15087545	10	-.302	Sta	648	943	1,130	1,370	1,530	1,690	1,850	2,060
			Reg	404	574	687	830	936	1,040	1,150	1,290
			Wtd	621	889	1,050	1,240	1,370	1,500	1,630	1,810
15087570	21	-.379	Sta	8,800	12,500	14,800	17,500	19,400	21,200	22,900	25,100
			Reg	4,960	7,190	8,700	10,700	12,100	13,600	15,100	17,200
			Wtd	8,570	12,100	14,200	16,700	18,400	20,100	21,700	23,800
15087585	9	.125	Sta	1,040	1,240	1,360	1,510	1,620	1,720	1,820	1,950
			Reg	1,220	1,680	1,980	2,370	2,660	2,950	3,230	3,610
			Wtd	1,060	1,290	1,450	1,670	1,830	1,990	2,140	2,350
15087590	12	.410	Sta	424	636	802	1,040	1,240	1,460	1,710	2,070
			Reg	335	470	562	678	764	851	938	1,060
			Wtd	417	617	765	967	1,130	1,300	1,490	1,760

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

[Rounding differences may cause values in this table to vary by less than 1 percent from those computed using equations in table 3 or by the computer program available at http://pubs.water.usgs.gov/wri034188. **Station No.:** R, presently regulated. **Station name:** AK, Alaska; BC, British Columbia; YT, Yukon. **Region**: See figure 1 for location of regions. **Latitude and Longitude** are given in degrees, minutes, and seconds. **Mean basin elevation**: Elevations are given in feet above NGVD of 1929. **Skew coefficient used for analysis**: weighted skew except where noted in footnote. **Peak streamflow analysis type:** Sta, value of Q_T from analysis of observed station data using weighted skew coefficient; Reg, value of Q_T estimated from regression equation (table 3); Wtd, value of Q_T estimated by weighting Sta and Reg based on the years of record for station data and equivalent years of record for the equation. **Peak streamflow:** Q_T, peak streamflow having a recurrence interval of T years. –, not available; ft, foot; mi^2, square mile; in., inch; °F, degree Fahrenheit]

Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin elevation (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipitation (in.)	Mean minimum January temperature (°F)
15087690	Indian River near Sitka, AK	1	57 04 01	135 17 42	10.1	1,340	0	79	140	28
15088000[R]	Sawmill Creek near Sitka, AK	1	57 03 05	135 13 40	39.0	2,400	3	23	150	28
15093400	Sashin Creek near Big Port Walter, AK	1	56 22 32	134 39 40	3.72	1,130	7	21	300	30
15094000	Deer Lake outlet near Port Alexander, AK	1	56 31 10	134 40 10	7.41	1,300	26	38	300	28
15098000	Baranof River at Baranof, AK	1	57 05 15	134 50 30	32.0	2,000	9	60	180	27
15100000	Takatz Creek near Baranof, AK	1	57 08 35	134 51 50	17.5	2,300	5	43	180	27
15101490[R]	Greens Creek at Greens Creek Mine near Juneau, AK	1	58 05 00	134 37 54	8.62	2,452	1	42	98	23
15101500	Greens Creek near Juneau, AK	1	58 05 18	134 44 49	22.8	1,880	1	64	80	22
15102000	Hasselborg Creek near Angoon, AK	1	57 39 40	134 14 55	56.2	1,200	11	68	100	24
15106920	Kadashan River above Hook Creek near Tenakee, AK	1	57 39 46	135 11 06	10.2	1,020	0	94	100	26
15106940	Hook Creek above tributary near Tenakee, AK	1	57 40 39	135 07 42	4.48	1,260	0	99	100	26
15106960	Hook Creek near Tenakee, AK	1	57 40 22	135 10 40	8.00	1,160	0	99	100	26
15106980	Tonalite Creek near Tenakee, AK	1	57 40 42	135 13 17	14.5	950	0	88	100	26

[1] Record includes glacial outbursts. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[3] Drainage area is indeterminate. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

[Rounding differences may cause values in this table to vary by less than 1 percent from those computed using equations in table 3 or by the computer program available at http://pubs.water.usgs.gov/wri034188. **Station No.:** R, presently regulated. **Station name:** AK, Alaska; BC, British Columbia; YT, Yukon. **Region**: See figure 1 for location of regions. **Latitude and Longitude** are given in degrees, minutes, and seconds. **Mean basin elevation**: Elevations are given in feet above NGVD of 1929. **Skew coefficient used for analysis**: weighted skew except where noted in footnote. **Peak streamflow analysis type:** Sta, value of Q_T from analysis of observed station data using weighted skew coefficient; Reg, value of Q_T estimated from regression equation (table 3); Wtd, value of Q_T estimated by weighting Sta and Reg based on the years of record for station data and equivalent years of record for the equation. **Peak streamflow:** Q_T, peak streamflow having a recurrence interval of T years. –, not available; ft, foot; mi^2, square mile; in., inch; ^{o}F, degree Fahrenheit]

Station No.	Number of systematic peaks	Skew coefficient used for analysis	Peak streamflow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15087690	15	-0.148	Sta	3,540	4,950	5,860	6,990	7,820	8,640	9,440	10,500
			Reg	2,080	2,830	3,330	3,950	4,390	4,830	5,270	5,840
			Wtd	3,420	4,730	5,520	6,460	7,130	7,800	8,460	9,340
15088000R	28	.0965	Sta	3,390	4,860	5,890	7,250	8,300	9,390	10,500	12,100
			Reg	4,160	5,550	6,460	7,610	8,460	9,290	10,100	11,200
			Wtd	3,410	4,890	5,920	7,280	8,320	9,380	10,500	12,000
15093400	14	.297	Sta	1,220	1,620	1,900	2,260	2,540	2,830	3,130	3,550
			Reg	902	1,130	1,270	1,450	1,580	1,700	1,820	1,970
			Wtd	1,210	1,570	1,820	2,120	2,350	2,580	2,820	3,150
15094000	16	.355	Sta	580	765	893	1,060	1,200	1,330	1,480	1,680
			Reg	983	1,210	1,370	1,560	1,700	1,830	1,960	2,140
			Wtd	590	790	930	1,110	1,260	1,400	1,550	1,750
15098000	25	.766	Sta	2,790	3,770	4,520	5,610	6,530	7,550	8,670	10,400
			Reg	2,920	3,790	4,380	5,110	5,650	6,180	6,710	7,410
			Wtd	2,790	3,770	4,510	5,570	6,440	7,380	8,410	9,920
15100000	18	-.379	Sta	1,540	1,670	1,730	1,800	1,840	1,880	1,920	1,960
			Reg	2,110	2,770	3,200	3,740	4,140	4,530	4,910	5,420
			Wtd	1,560	1,730	1,830	1,970	2,060	2,150	2,230	2,330
15101490R	10	-.0174	Sta	338	482	579	705	800	896	994	1,130
			Reg	889	1,250	1,490	1,810	2,040	2,280	2,510	2,830
			Wtd	367	539	671	850	988	1,130	1,270	1,460
15101500	14	-.131	Sta	1,390	2,130	2,650	3,320	3,840	4,360	4,900	5,630
			Reg	1,620	2,310	2,780	3,400	3,860	4,330	4,820	5,470
			Wtd	1,400	2,140	2,660	3,330	3,840	4,360	4,880	5,600
15102000	17	.528	Sta	1,380	1,670	1,860	2,120	2,310	2,510	2,710	2,990
			Reg	2,350	3,230	3,830	4,600	5,190	5,790	6,400	7,230
			Wtd	1,400	1,740	1,990	2,320	2,580	2,840	3,110	3,480
15106920	29	.140	Sta	1,010	1,350	1,580	1,880	2,110	2,330	2,570	2,890
			Reg	1,460	2,060	2,460	2,960	3,340	3,710	4,090	4,590
			Wtd	1,020	1,380	1,620	1,950	2,190	2,440	2,700	3,040
15106940	13	-.144	Sta	715	1,080	1,330	1,650	1,900	2,150	2,400	2,730
			Reg	733	1,040	1,240	1,500	1,690	1,880	2,070	2,320
			Wtd	716	1,080	1,320	1,630	1,860	2,090	2,320	2,630
15106960	13	-.358	Sta	980	1,470	1,800	2,190	2,470	2,740	3,010	3,360
			Reg	1,190	1,680	2,010	2,420	2,730	3,030	3,340	3,750
			Wtd	994	1,490	1,820	2,220	2,520	2,800	3,080	3,440
15106980	20	-.365	Sta	1,940	2,870	3,460	4,190	4,700	5,200	5,680	6,300
			Reg	1,960	2,760	3,290	3,970	4,470	4,970	5,470	6,130
			Wtd	1,940	2,860	3,450	4,160	4,670	5,170	5,650	6,280

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin elevation (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipitation (in.)	Mean minimum January temperature (°F)
15107000	Kadashan River near Tenakee, AK	1	57 41 43	135 12 59	37.7	970	0	93	100	26
15108000	Pavlof River near Tenakee, AK	1	57 50 30	135 02 09	24.3	920	1	90	100	24
15108250	Game Creek near Hoonah, AK	1	58 03 02	135 29 21	42.8	1,100	0	80	80	24
15109000	Fish Creek near Auke Bay, AK	1	58 19 50	134 35 20	13.6	1,600	0	72	80	24
15120000	Aishihik River near Whitehorse, YT	5	60 51 40	137 03 40	1,660	4,190	7	46	12	-3
15120500[R]	Dezadeash River at Haines Junction,YT	5	60 44 54	137 30 19	3,280	3,870	5	50	10	-17
15120600	Alsek River above Bates River near Haines Junction, YT	2	60 07 09	137 58 27	6,250	4,630	3	40	16	-12
15120720	Takhanne River near Haines Junction, YT	2	60 05 50	136 55 00	147	4,430	1	53	20	-6
15129500	Situk River near Yakutat, AK	3	59 35 00	139 29 31	36.0	370	7	74	140	19
15195000	Dick Creek near Cordova, AK	3	60 20 32	144 18 10	7.95	890	0	63	200	16
15198500	Station Creek near Mentasta, AK	6	62 55 56	143 40 06	15.3	3,370	0	29	30	-16
15199000	Copper River tributary near Slana, AK	6	62 43 12	144 14 26	4.32	3,370	0	29	22	-17

[1] Record includes glacial outbursts. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[3] Drainage area is indeterminate. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Number of syste-matic peaks	Skew coeffi-cient used for analysis	Peak stream-flow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15107000	16	0.239	Sta	4,760	5,910	6,650	7,590	8,280	8,970	9,660	10,600
			Reg	4,350	6,100	7,280	8,760	9,860	11,000	12,100	13,500
			Wtd	4,730	5,920	6,710	7,730	8,490	9,260	10,000	11,100
15108000	24	.235	Sta	1,960	2,630	3,080	3,680	4,140	4,610	5,100	5,780
			Reg	2,220	3,100	3,690	4,450	5,020	5,590	6,170	6,940
			Wtd	1,970	2,650	3,120	3,740	4,230	4,720	5,230	5,920
15108250	10	.419	Sta	8,150	11,800	14,600	18,500	21,700	25,300	29,100	34,800
			Reg	3,730	5,340	6,440	7,840	8,900	9,960	11,000	12,500
			Wtd	7,580	10,800	12,900	15,700	18,000	20,300	22,900	26,600
15109000	20	.131	Sta	1,320	1,720	1,970	2,300	2,540	2,780	3,020	3,350
			Reg	1,430	2,060	2,480	3,030	3,440	3,860	4,280	4,840
			Wtd	1,330	1,740	2,010	2,360	2,630	2,900	3,180	3,540
15120000	17	-.0572	Sta	2,240	3,000	3,500	4,110	4,550	4,990	5,430	6,010
			Reg	4,100	5,160	5,860	6,740	7,390	8,040	8,690	9,550
			Wtd	2,260	3,060	3,600	4,280	4,800	5,320	5,840	6,530
15120500[R]	45	.673	Sta	5,220	7,590	9,490	12,300	14,800	17,600	20,700	25,500
			Reg	9,560	12,100	13,800	15,800	17,400	19,000	20,500	22,600
			Wtd	5,240	7,630	9,560	12,400	14,900	17,600	20,700	25,300
15120600	23	.520	Sta	34,500	41,500	46,200	52,200	56,700	61,400	66,100	72,700
			Reg	33,800	41,200	45,600	50,800	54,500	58,000	61,400	65,900
			Wtd	34,500	41,500	46,100	52,100	56,500	61,000	65,700	72,000
15120720	13	.658	Sta	1,360	1,670	1,880	2,160	2,390	2,620	2,860	3,190
			Reg	1,330	1,730	2,000	2,350	2,610	2,890	3,170	3,560
			Wtd	1,360	1,680	1,900	2,200	2,430	2,670	2,920	3,260
15129500	11	.0462	Sta	1,930	2,430	2,750	3,150	3,430	3,710	3,980	4,340
			Reg	2,180	2,920	3,410	4,050	4,540	5,020	5,520	6,180
			Wtd	1,940	2,480	2,840	3,290	3,630	3,960	4,300	4,740
15195000	11	.318	Sta	1,960	2,180	2,320	2,480	2,590	2,700	2,800	2,940
			Reg	1,630	2,150	2,500	2,930	3,250	3,560	3,870	4,280
			Wtd	1,930	2,180	2,340	2,550	2,710	2,870	3,030	3,230
15198500	22	-.414	Sta	176	291	371	471	545	617	688	781
			Reg	212	362	479	645	779	921	1,070	1,290
			Wtd	179	300	386	499	585	672	759	876
15199000	28	-.286	Sta	58.3	122	176	255	321	392	469	578
			Reg	68.6	124	169	234	287	345	407	496
			Wtd	59.2	122	175	251	314	382	455	559

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin eleva-tion (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipi-tation (in.)	Mean minimum January temper-ature (°F)
15200000	Gakona River at Gakona, AK	6	62 18 06	145 18 20	620	3,030	8	18	25	-9
15200270	Sourdough Creek at Sourdough, AK	6	62 31 46	145 30 52	68.0	2,290	12	26	20	-10
15200280	Gulkana River at Sourdough, AK	6	62 31 15	145 31 51	1,770	2,780	15	24	18	-6
15201000	Dry Creek near Glennallen, AK	6	62 08 49	145 28 31	11.4	1,700	1	81	10	-12
15201100	Little Nelchina River tributary near Eureka Lodge, AK	6	61 59 17	147 00 34	7.81	2,940	0	99	15	0
15201900	Moose Creek tributary at Glennallen, AK	6	62 06 32	145 30 57	7.11	1,600	4	49	10	-12
15202000[1]	Tazlina River near Glennallen, AK	6	62 03 20	145 25 34	2,670	3,450	5	30	30	4
15206000	Klutina River at Copper Center, AK	6	61 57 10	145 18 20	880	3,500	4	36	30	-7
15208000	Tonsina River at Tonsina, AK	6	61 39 41	145 11 02	420	3,600	4	27	30	-2
15208100	Squirrel Creek at Tonsina, AK	6	61 40 05	145 10 26	70.5	3,100	4	58	15	-10
15208200	Rock Creek near Tonsina, AK	6	61 45 32	145 09 14	14.3	2,680	1	70	15	-10
15209000	Chititu Creek near May Creek, AK	6	61 22 12	142 40 50	30.9	4,150	0	28	30	0
15209100	May Creek near May Creek, AK	6	61 20 42	142 41 49	10.4	2,450	0	92	20	0

[1] Record includes glacial outbursts. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[3] Drainage area is indeterminate. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

[Rounding differences may cause values in this table to vary by less than 1 percent from those computed using equations in table 3 or by the computer program available at http://pubs.water.usgs.gov/wri034188. **Station No.:** R, presently regulated. **Station name:** AK, Alaska; BC, British Columbia; YT, Yukon. **Region**: See figure 1 for location of regions. **Latitude and Longitude** are given in degrees, minutes, and seconds. **Mean basin elevation**: Elevations are given in feet above NGVD of 1929. **Skew coefficient used for analysis**: weighted skew except where noted in footnote. **Peak streamflow analysis type:** Sta, value of Q_T from analysis of observed station data using weighted skew coefficient; Reg, value of Q_T estimated from regression equation (table 3); Wtd, value of Q_T estimated by weighting Sta and Reg based on the years of record for station data and equivalent years of record for the equation. **Peak streamflow:** Q_T, peak streamflow having a recurrence interval of *T* years. –, not available; ft, foot; mi^2, square mile; in., inch; ^{o}F, degree Fahrenheit]

Station No.	Number of syste-matic peaks	Skew coeffi-cient used for analysis	Peak stream-flow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15200000	25	0.240	Sta	4,800	6,840	8,300	10,300	11,900	13,500	15,300	17,800
			Reg	3,700	5,320	6,450	7,900	8,980	10,100	11,200	12,700
			Wtd	4,760	6,750	8,170	10,100	11,600	13,200	14,800	17,200
15200270	12	-.0773	Sta	308	679	1,020	1,570	2,060	2,640	3,290	4,300
			Reg	418	677	869	1,130	1,330	1,530	1,740	2,040
			Wtd	318	679	992	1,460	1,870	2,320	2,820	3,560
15200280	14	-.399	Sta	7,370	9,990	11,600	13,400	14,600	15,800	16,900	18,200
			Reg	7,430	10,400	12,400	14,900	16,700	18,500	20,300	22,700
			Wtd	7,370	10,000	11,600	13,500	14,800	16,100	17,300	18,700
15201000	36	-.154	Sta	97.6	190	266	378	472	575	687	849
			Reg	99.5	180	246	340	417	499	587	713
			Wtd	97.7	189	264	373	464	563	670	825
15201100	25	-.476	Sta	51.0	88.3	114	147	171	195	218	248
			Reg	80.4	149	205	287	355	429	508	622
			Wtd	53.3	94.3	125	166	197	229	262	305
15201900	12	-.100	Sta	34.1	101	175	312	452	628	847	1,210
			Reg	59.5	109	148	205	251	301	354	429
			Wtd	38.3	103	166	269	362	470	594	786
15202000[1]	22	.545	Sta	24,600	37,400	47,800	63,300	76,700	91,900	109,000	135,000
15206000	17	.0131	Sta	6,930	7,760	8,240	8,780	9,140	9,490	9,810	10,200
			Reg	4,820	6,990	8,520	10,500	12,000	13,500	15,000	17,000
			Wtd	6,810	7,710	8,260	8,930	9,420	9,880	10,300	10,900
15208000	32	-.0034	Sta	4,550	5,980	6,900	8,030	8,860	9,680	10,500	11,600
			Reg	2,710	4,020	4,950	6,160	7,090	8,030	8,980	10,300
			Wtd	4,480	5,880	6,770	7,890	8,720	9,540	10,400	11,500
15208100	19	.0008	Sta	321	510	650	842	995	1,160	1,330	1,570
			Reg	438	727	946	1,250	1,480	1,730	1,980	2,340
			Wtd	329	530	682	894	1,060	1,240	1,430	1,690
15208200	27	.138	Sta	55.4	94.8	127	173	213	257	306	379
			Reg	127	227	307	421	514	613	718	868
			Wtd	59.0	104	141	198	246	298	357	442
15209000	11	.646	Sta	327	423	494	591	669	752	842	971
			Reg	402	662	863	1,140	1,370	1,600	1,850	2,200
			Wtd	337	463	565	710	829	955	1,090	1,280
15209100	11	-.328	Sta	51.5	79.6	98.4	122	139	156	172	194
			Reg	106	193	264	367	452	543	641	782
			Wtd	59	98.7	130	175	210	246	284	334

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin eleva-tion (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipi-tation (in.)	Mean minimum January temper-ature (°F)
15211700	Streina Creek near Chititu, AK	6	61 30 40	144 04 00	23.8	3,350	0	31	25	-8
15211900	O’Brien Creek near Chititu, AK	6	61 28 59	144 27 23	44.8	4,120	0	18	30	-6
15212000	Copper River near Chitina, AK	6	61 27 56	144 27 21	20,600	3,620	3	22	25	-7
15212500	Boulder Creek near Tiekel, AK	6	61 20 08	145 18 26	9.80	4,300	0	3	40	0
15212800	Ptarmigan Creek tributary near Valdez, AK	3	61 08 12	145 44 32	.720	3,290	0	0	100	4
15213400	Stuart Creek near Valdez, AK	6	61 15 32	145 16 54	37.4	4,060	3	13	80	3
15216000	Power Creek near Cordova, AK	3	60 35 14	145 37 05	20.5	2,000	0	29	160	16
15219000	West Fork Olsen Bay Creek near Cordova, AK	3	60 45 41	146 10 20	4.78	1,400	0	43	120	16
15219100	Control Creek near Cordova, AK	3	60 45 00	146 14 00	4.22	1,200	0	48	120	16
15227500	Mineral Creek near Valdez, AK	3	61 08 30	146 21 42	44.0	3,270	0	20	100	6
15236200	Shakespeare Creek at Whittier, AK	3	60 46 35	148 43 35	1.61	1,580	0	0	180	13
15237360	San Juan River near Seward, AK	3	59 49 05	147 53 00	12.4	652	10	47	220	20

[1] Record includes glacial outbursts. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[3] Drainage area is indeterminate. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Number of systematic peaks	Skew coefficient used for analysis	Peak streamflow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15211700	26	-0.0046	Sta	211	320	397	501	582	666	754	875
			Reg	309	517	679	906	1,090	1,280	1,490	1,770
			Wtd	217	336	425	547	644	746	851	998
15211900	24	.010	Sta	763	1,230	1,570	2,050	2,440	2,850	3,280	3,900
			Reg	637	1,010	1,300	1,690	2,000	2,330	2,670	3,140
			Wtd	753	1,200	1,540	2,000	2,370	2,760	3,170	3,760
15212000	37	1.06	Sta	166,000	198,000	222,000	255,000	281,000	310,000	340,000	385,000
			Reg	98,900	122,000	137,000	155,000	169,000	182,000	195,000	212,000
			Wtd	165,000	197,000	220,000	252,000	277,000	305,000	335,000	377,000
15212500	36	.740	Sta	228	349	452	612	756	925	1,120	1,440
			Reg	265	423	543	709	841	980	1,130	1,330
			Wtd	230	355	461	623	767	933	1,120	1,420
15212800	11	.272	Sta	31.9	52.0	68.3	92.2	113	136	161	200
			Reg	72.9	104	125	154	176	199	223	256
			Wtd	33.9	55.7	73.8	100	122	147	173	211
15213400	10	.496	Sta	1,110	1,620	2,020	2,590	3,070	3,600	4,190	5,080
			Reg	411	659	844	1,100	1,290	1,500	1,710	2,000
			Wtd	947	1,340	1,630	2,020	2,350	2,710	3,110	3,690
15216000	48	-.221	Sta	2,980	4,290	5,150	6,210	6,980	7,740	8,480	9,470
			Reg	2,940	3,950	4,620	5,480	6,110	6,740	7,370	8,210
			Wtd	2,980	4,280	5,130	6,170	6,930	7,670	8,410	9,370
15219000	16	-.0554	Sta	563	750	870	1,020	1,130	1,230	1,340	1,480
			Reg	670	930	1,110	1,330	1,500	1,670	1,840	2,080
			Wtd	569	763	892	1,060	1,180	1,300	1,420	1,580
15219100	11	.388	Sta	552	787	962	1,210	1,410	1,620	1,850	2,190
			Reg	604	839	998	1,200	1,350	1,510	1,660	1,870
			Wtd	556	792	967	1,210	1,390	1,590	1,800	2,100
15227500	16	.159	Sta	2,880	3,920	4,630	5,560	6,280	7,000	7,760	8,790
			Reg	2,480	3,470	4,170	5,090	5,800	6,530	7,280	8,330
			Wtd	2,850	3,890	4,590	5,500	6,210	6,930	7,670	8,710
15236200	27	-.226	Sta	439	533	587	648	690	728	765	810
			Reg	351	470	551	652	728	803	878	978
			Wtd	435	530	584	648	693	736	777	829
15237360	10	.171	Sta	3,880	4,490	4,860	5,300	5,610	5,910	6,200	6,580
			Reg	1,250	1,590	1,830	2,120	2,340	2,560	2,780	3,070
			Wtd	3,610	3,990	4,200	4,450	4,640	4,840	5,060	5,360

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin elevation (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipitation (in.)	Mean minimum January temperature (°F)
15237400	Chalmers River near Cordova, AK	3	60 13 10	147 13 30	6.32	1,230	0	11	200	20
15238000	Lost Creek near Seward, AK	3	60 11 54	149 22 42	8.42	2,210	7	4	100	12
15238600	Spruce Creek near Seward, AK	3	60 04 10	149 27 08	9.26	1,990	0	22	120	12
15238820	Barabara Creek near Seldovia, AK	3	59 28 50	151 38 42	20.7	1,610	0	6	70	20
15239000[R]	Bradley River near Homer, AK	3	59 45 30	150 51 02	56.1	2,800	6	7	120	16
15239050	Middle Fork Bradley River tributary near Homer, AK	3	59 46 42	150 45 15	9.25	3,920	1	0	70	16
15239500	Fritz Creek near Homer, AK	4	59 42 30	151 20 35	10.4	880	0	68	25	16
15239800	Diamond Creek near Homer, AK	4	59 40 10	151 40 00	5.35	890	0	37	25	16
15239900	Anchor River near Anchor Point, AK	4	59 44 50	151 45 11	137	1,120	0	60	25	14
15240000	Anchor River at Anchor Point, AK	4	59 46 21	151 50 05	224	970	0	53	25	14
15240500	Cook Inlet tributary near Ninilchik, AK	4	59 58 45	151 43 20	5.19	175	0	60	20	13
15241600	Ninilchik River at Ninilchik, AK	4	60 02 56	151 39 48	131	670	1	95	20	11

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[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
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Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Number of syste-matic peaks	Skew coeffi-cient used for analysis	Peak stream-flow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15237400	13	-0.367	Sta	2,720	3,160	3,390	3,650	3,810	3,960	4,090	4,260
			Reg	1,540	2,030	2,350	2,750	3,040	3,330	3,610	3,980
			Wtd	2,610	3,030	3,250	3,490	3,660	3,830	3,990	4,190
15238000	11	.738	Sta	341	597	838	1,250	1,650	2,150	2,770	3,840
			Reg	375	519	621	755	859	965	1,080	1,230
			Wtd	342	592	819	1,190	1,530	1,940	2,440	3,250
15238600	33	-.305	Sta	1,640	2,340	2,790	3,330	3,720	4,090	4,450	4,920
			Reg	1,010	1,400	1,670	2,010	2,270	2,530	2,800	3,160
			Wtd	1,620	2,300	2,720	3,220	3,580	3,930	4,270	4,710
15238820	20	.111	Sta	757	1,180	1,490	1,920	2,270	2,640	3,040	3,600
			Reg	1,590	2,320	2,820	3,470	3,960	4,470	4,980	5,690
			Wtd	785	1,220	1,560	2,040	2,430	2,830	3,260	3,870
15239000[R]	31	.139	Sta	2,950	4,430	5,510	6,990	8,180	9,430	10,800	12,700
			Reg	2,610	3,540	4,170	5,000	5,630	6,280	6,930	7,830
			Wtd	2,940	4,390	5,440	6,840	7,950	9,110	10,300	12,100
15239050	20	.355	Sta	485	730	919	1,190	1,410	1,660	1,930	2,330
			Reg	556	806	982	1,210	1,390	1,570	1,760	2,020
			Wtd	488	734	923	1,190	1,410	1,650	1,900	2,280
15239500	37	.0123	Sta	113	214	299	427	539	664	803	1,010
			Reg	111	183	240	318	381	447	518	620
			Wtd	113	211	291	407	505	613	732	909
15239800	19	.752	Sta	64.0	106	145	208	268	342	431	581
			Reg	59.1	100	133	179	216	255	297	358
			Wtd	63.7	105	142	199	249	308	375	482
15239900	19	.995	Sta	1,500	2,240	2,900	3,950	4,920	6,090	7,510	9,820
			Reg	1,270	1,900	2,370	2,990	3,460	3,960	4,480	5,210
			Wtd	1,490	2,210	2,820	3,760	4,580	5,540	6,650	8,410
15240000	22	1.10	Sta	2,170	3,200	4,120	5,600	6,990	8,670	10,700	14,100
			Reg	2,020	2,970	3,670	4,580	5,280	6,000	6,750	7,810
			Wtd	2,160	3,190	4,070	5,440	6,670	8,110	9,810	12,500
15240500	16	.378	Sta	51.6	76.3	95.2	122	144	169	195	234
			Reg	43.9	75.1	100	135	164	194	227	274
			Wtd	50.9	76.1	96.4	126	151	178	208	251
15241600	24	.244	Sta	568	839	1,040	1,320	1,540	1,780	2,040	2,410
			Reg	813	1,220	1,510	1,910	2,210	2,530	2,860	3,330
			Wtd	575	861	1,080	1,390	1,640	1,900	2,180	2,580

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin elevation (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipitation (in.)	Mean minimum January temperature (°F)
15242000	Kasilof River near Kasilof, AK	4	60 19 05	151 15 35	738	1,810	15	39	50	10
15243950	Porcupine Creek near Primrose, AK	4	60 20 24	149 22 30	16.8	2,300	0	34	80	10
15244000	Ptarmigan Creek at Lawing, AK	4	60 24 20	149 21 45	32.6	2,800	6	46	90	10
15246000	Grant Creek near Moose Pass, AK	4	60 27 25	149 21 15	44.2	2,900	10	20	90	10
15248000	Trail River near Lawing, AK	4	60 26 01	149 22 19	181	2,470	2	9	90	10
15250000	Falls Creek near Lawing, AK	4	60 25 50	149 22 10	11.8	3,480	0	19	80	10
15251800	Quartz Creek at Gilpatricks, AK	4	60 35 45	49 32 35	9.41	3,260	0	11	60	10
15254000	Crescent Creek near Cooper Landing, AK	4	60 29 49	149 40 38	31.7	2,700	13	38	50	8
15258000[1,R]	Kenai River at Cooper Landing, AK	4	60 29 34	149 48 28	634	2,650	5	13	70	10
15258000[1,2,R]	Kenai River at Cooper Landing, AK, regulated years	4	61 29 34	150 48 28	634	2,650	5	13	70	10
15260000	Cooper Creek near Cooper Landing, AK	4	60 26 00	149 49 15	31.8	2,400	16	44	60	8
15266300	Kenai River at Soldotna, AK	4	60 28 39	151 04 46	1,950	1,750	5	29	50	8
15266500	Beaver Creek near Kenai, AK	4	60 33 50	151 07 03	51.0	140	15	67	20	6

[1] Record includes glacial outbursts. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[3] Drainage area is indeterminate. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

[Rounding differences may cause values in this table to vary by less than 1 percent from those computed using equations in table 3 or by the computer program available at http://pubs.water.usgs.gov/wri034188. **Station No.:** R, presently regulated. **Station name:** AK, Alaska; BC, British Columbia; YT, Yukon. **Region**: See figure 1 for location of regions. **Latitude and Longitude** are given in degrees, minutes, and seconds. **Mean basin elevation**: Elevations are given in feet above NGVD of 1929. **Skew coefficient used for analysis**: weighted skew except where noted in footnote. **Peak streamflow analysis type:** Sta, value of Q_T from analysis of observed station data using weighted skew coefficient; Reg, value of Q_T estimated from regression equation (table 3); Wtd, value of Q_T estimated by weighting Sta and Reg based on the years of record for station data and equivalent years of record for the equation. **Peak streamflow:** Q_T, peak streamflow having a recurrence interval of *T* years. –, not available; ft, foot; mi^2, square mile; in., inch; ^oF, degree Fahrenheit]

Station No.	Number of syste-matic peaks	Skew coeffi-cient used for analysis	Peak stream-flow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15242000	25	0.158	Sta	8,080	9,890	11,000	12,400	13,400	14,400	15,400	16,700
			Reg	8,300	10,900	12,700	15,000	16,800	18,500	20,300	22,700
			Wtd	8,080	9,930	11,100	12,700	13,800	14,900	16,000	17,500
15243950	27	.939	Sta	772	1,290	1,790	2,640	3,490	4,550	5,900	8,250
			Reg	706	1,090	1,390	1,800	2,110	2,440	2,780	3,270
			Wtd	769	1,270	1,730	2,460	3,140	3,960	4,940	6,580
15244000	10	.380	Sta	523	703	832	1,000	1,140	1,280	1,430	1,650
			Reg	1,040	1,510	1,870	2,350	2,710	3,080	3,470	4,010
			Wtd	558	815	1,040	1,350	1,590	1,830	2,080	2,430
15246000	10	.962	Sta	936	1,330	1,660	2,170	2,620	3,140	3,760	4,730
			Reg	1,260	1,810	2,220	2,760	3,170	3,590	4,020	4,620
			Wtd	961	1,410	1,790	2,350	2,810	3,310	3,860	4,690
15248000	29	.609	Sta	3,670	4,840	5,700	6,890	7,860	8,890	10,000	11,600
			Reg	6,200	8,600	10,400	12,600	14,300	16,000	17,800	20,300
			Wtd	3,720	4,990	5,980	7,370	8,490	9,660	10,900	12,700
15250000	8	.349	Sta	242	452	642	951	1,240	1,580	1,990	2,650
			Reg	505	793	1,020	1,320	1,560	1,810	2,070	2,440
			Wtd	266	519	749	1,090	1,380	1,690	2,030	2,540
15251800	8	.867	Sta	166	319	478	773	1,090	1,510	2,060	3,100
			Reg	289	462	599	785	932	1,090	1,250	1,480
			Wtd	176	343	508	777	1,020	1,310	1,660	2,240
15254000	34	.750	Sta	331	519	682	939	1,180	1,460	1,790	2,330
			Reg	434	643	799	1,010	1,170	1,330	1,510	1,750
			Wtd	334	526	692	948	1,170	1,430	1,730	2,210
15258000[1,R]	13	1.42	Sta	9,960	12,900	15,400	19,200	22,600	26,500	31,000	38,000
15258000[1,2,R]	39	.372	Sta	11,100	14,800	17,400	20,800	23,500	26,400	29,300	33,500
15260000	10	.952	Sta	294	413	512	662	796	950	1,130	1,410
			Reg	521	764	947	1,190	1,370	1,560	1,760	2,040
			Wtd	310	465	605	812	982	1,170	1,360	1,660
15266300	35	.788	Sta	18,900	24,000	27,700	32,800	37,000	41,400	46,300	53,200
			Reg	25,300	32,500	37,500	43,700	48,400	53,000	57,800	64,300
			Wtd	19,000	24,200	28,100	33,400	37,700	42,300	47,200	54,200
15266500	25	.0559	Sta	188	357	501	721	914	1,130	1,380	1,750
			Reg	221	332	414	524	610	699	793	925
			Wtd	189	355	490	685	849	1,030	1,230	1,530

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin elevation (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipitation (in.)	Mean minimum January temperature (°F)
15267900	Resurrection Creek near Hope, AK	4	60 53 40	149 38 13	149	2,750	0	24	30	6
15269500	Granite Creek near Portage, AK	4	60 43 40	149 17 00	28.2	2,220	0	36	70	10
15270400	Donaldson Creek near Wibel, AK	4	60 45 40	149 27 20	4.07	2,580	0	31	40	10
15271000	Sixmile Creek near Hope, AK	4	60 49 15	149 25 31	234	2,460	1	31	60	8
15271900	Cub Creek near Hope, AK	4	60 52 12	149 26 02	1.80	2,670	0	11	40	8
15272280	Portage Creek at Portage Lake outlet near Whittier, AK	4	60 47 07	148 50 20	40.5	2,172	5	10	158	12
15272530	California Creek at Girdwood, AK	4	60 57 45	149 08 23	7.19	2,480	0	36	70	8
15272550	Glacier Creek at Girdwood, AK	4	60 56 29	149 09 44	58.2	2,610	0	28	70	10
15273900	South Fork Campbell Creek at canyon mouth near Anchorage, AK	4	61 08 52	149 43 12	25.2	2,760	1	8	25	6
15274000	South Fork Campbell Creek near Anchorage, AK	4	61 10 02	149 46 14	29.2	2,530	1	26	22	6
15274300	North Fork Campbell Creek near Anchorage, AK	4	61 10 10	149 45 43	13.4	2,670	2	30	22	6
15276000[R]	Ship Creek near Anchorage, AK	4	61 13 32	149 38 06	90.5	3,100	1	13	30	6

[1] Record includes glacial outbursts. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[3] Drainage area is indeterminate. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Number of syste-matic peaks	Skew coeffi-cient used for analysis	Peak stream-flow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15267900	18	0.585	Sta	1,230	1,870	2,390	3,180	3,880	4,670	5,570	6,970
			Reg	1,710	2,540	3,150	3,950	4,570	5,200	5,870	6,800
			Wtd	1,240	1,920	2,480	3,310	4,010	4,780	5,640	6,920
15269500	14	-.0635	Sta	1,010	1,530	1,890	2,360	2,720	3,090	3,480	4,000
			Reg	981	1,500	1,900	2,430	2,830	3,260	3,700	4,330
			Wtd	1,010	1,520	1,890	2,380	2,760	3,150	3,550	4,110
15270400	10	.0763	Sta	67.0	108	140	185	221	260	302	363
			Reg	80.3	135	179	240	289	341	396	477
			Wtd	68.7	115	153	208	253	300	350	423
15271000	13	.588	Sta	4,820	6,180	7,150	8,450	9,490	10,600	11,800	13,400
			Reg	5,260	7,390	8,940	10,900	12,400	14,000	15,600	17,800
			Wtd	4,840	6,290	7,400	8,930	10,100	11,400	12,700	14,500
15271900	15	.292	Sta	28.6	38.8	46.0	55.5	62.9	70.7	78.8	90.1
			Reg	37.1	64.2	86.5	118	144	171	200	243
			Wtd	29.5	43.3	55.7	74.1	89.2	105	122	145
15272280	11	1.03	Sta	7,680	9,240	10,400	12,000	13,300	14,700	16,200	18,400
			Reg	2,580	3,660	4,480	5,550	6,350	7,170	8,010	9,190
			Wtd	7,100	8,060	8,710	9,720	10,600	11,600	12,700	14,400
15272530	26	.481	Sta	202	340	459	645	815	1,010	1,240	1,610
			Reg	269	433	563	740	879	1,030	1,180	1,400
			Wtd	205	349	474	664	830	1,020	1,230	1,550
15272550	13	.266	Sta	2,670	4,900	6,850	9,940	12,700	16,000	19,800	25,800
			Reg	1,950	2,890	3,610	4,550	5,270	6,010	6,790	7,870
			Wtd	2,620	4,570	6,060	8,150	9,890	11,800	14,000	17,400
15273900	14	.0255	Sta	237	329	391	471	531	591	653	737
			Reg	223	353	452	586	692	804	921	1,090
			Wtd	236	332	404	501	578	658	740	853
15274000	26	1.03	Sta	204	312	409	567	718	902	1,130	1,500
			Reg	220	348	445	577	681	790	906	1,070
			Wtd	205	315	413	569	710	875	1,070	1,380
15274300	18	-.208	Sta	68.5	88.5	101	115	125	134	143	155
			Reg	97.3	157	204	267	318	372	429	510
			Wtd	70.1	96.0	116	145	166	188	210	238
15276000[R]	53	.0614	Sta	851	1,110	1,290	1,500	1,660	1,810	1,970	2,180
			Reg	932	1,390	1,730	2,190	2,540	2,900	3,280	3,810
			Wtd	853	1,120	1,310	1,550	1,720	1,900	2,080	2,330

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin elevation (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipitation (in.)	Mean minimum January temperature (°F)
15277100	Eagle River at Eagle River, AK	4	61 18 28	149 33 32	192	3,120	0.5	15	40	6
15277200	Meadow Creek at Eagle River, AK	4	61 19 14	149 32 11	7.43	2,980	0	20	20	6
15277410	Peters Creek near Birchwood, AK	4	61 25 08	149 29 20	87.8	3,150	0	23	35	6
15280000[R]	Eklutna Creek near Palmer, AK	4	61 24 15	149 08 30	119	3,700	3	7	50	7
15281000	Knik River near Palmer, AK	4	61 30 18	149 01 50	1,180	4,000	4	11	100	9
15281000[1]	Knik River near Palmer, AK	4	61 30 18	149 01 50	1,180	4,000	4	11	100	9
15281500	Camp Creek near Sheep Mountain Lodge, AK	4	61 50 20	147 24 31	1.07	4,780	0	0	25	2
15282000	Caribou Creek near Sutton, AK	4	61 48 12	147 40 57	289	4,190	0	10	25	2
15282400	Purinton Creek near Sutton, AK	4	61 48 42	148 08 01	8.51	3,000	1	45	25	3
15283500	Eska Creek near Sutton, AK	4	61 43 44	148 54 31	13.4	2,560	0	50	30	4
15284000	Matanuska River at Palmer, AK	4	61 36 34	149 04 16	2,070	4,000	0	14	35	4
15285000	Wasilla Creek near Palmer, AK	4	61 38 47	149 11 45	16.8	1,530	0	67	25	6
15290000	Little Susitna River near Palmer, AK	4	61 42 37	149 13 47	61.9	3,700	0	16	50	4

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[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[3] Drainage area is indeterminate. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Number of systematic peaks	Skew coefficient used for analysis	Peak streamflow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15277100	15	1.36	Sta	3,270	4,490	5,570	7,290	8,890	10,800	13,100	16,900
			Reg	2,840	4,100	5,020	6,210	7,130	8,060	9,040	10,400
			Wtd	3,250	4,460	5,500	7,090	8,510	10,200	12,100	15,100
15277200	10	1.12	Sta	24.3	47.3	72.9	124	182	264	380	612
			Reg	61.7	104	138	185	222	263	306	369
			Wtd	27.4	57.6	90.6	147	200	263	340	469
15277410	10	1.08	Sta	610	1,010	1,390	2,050	2,720	3,580	4,690	6,640
			Reg	1,250	1,880	2,350	2,970	3,450	3,950	4,470	5,200
			Wtd	635	1,080	1,520	2,240	2,900	3,680	4,620	6,150
15280000[R]	8	.776	Sta	1,680	2,090	2,390	2,800	3,130	3,480	3,850	4,390
			Reg	1,940	2,790	3,410	4,220	4,840	5,480	6,130	7,050
			Wtd	1,690	2,170	2,560	3,110	3,540	4,000	4,480	5,140
15281000	23	1.35	Sta	34,800	48,800	61,300	81,600	101,000	124,000	152,000	199,000
			Reg	37,500	47,900	55,300	64,500	71,300	78,000	84,900	94,300
			Wtd	34,800	48,800	61,000	80,500	98,400	120,000	145,000	187,000
15281000[1]	41	.266	Sta	77,200	182,000	293,000	494,000	701,000	967,000	1,310,000	1,900,000
15281500	14	-.339	Sta	17.9	32.5	43.4	58.0	69.4	81.1	93.0	109
			Reg	12.9	23.2	31.8	44.1	54.3	65.4	77.4	94.9
			Wtd	17.2	29.8	38.9	51.4	61.7	72.7	84.4	101
15282000	24	.0674	Sta	4,510	6,060	7,090	8,390	9,360	10,300	11,300	12,700
			Reg	2,580	3,750	4,600	5,710	6,560	7,440	8,360	9,640
			Wtd	4,440	5,890	6,810	7,990	8,890	9,810	10,800	12,100
15282400	25	-.343	Sta	43.6	84.4	116	160	195	232	270	322
			Reg	80.0	132	172	228	273	321	372	445
			Wtd	45.1	88.8	124	174	213	254	297	356
15283500	25	1.00	Sta	158	272	384	583	786	1,050	1,390	2,000
			Reg	175	285	370	487	580	678	783	932
			Wtd	159	273	382	561	730	935	1,190	1,610
15284000	28	.104	Sta	23,900	30,200	34,100	39,000	42,600	46,200	49,700	54,400
			Reg	24,900	33,200	38,900	46,200	51,600	57,100	62,800	70,600
			Wtd	23,900	30,200	34,300	39,500	43,300	47,000	50,700	55,700
15285000	24	.844	Sta	108	168	220	304	383	476	589	773
			Reg	175	283	367	483	574	671	774	921
			Wtd	110	176	236	331	416	515	628	807
15290000	51	.437	Sta	1,830	2,760	3,500	4,570	5,480	6,500	7,630	9,330
			Reg	1,380	2,070	2,590	3,280	3,810	4,360	4,940	5,740
			Wtd	1,820	2,730	3,430	4,440	5,290	6,220	7,250	8,790

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin eleva-tion (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipi-tation (in.)	Mean minimum January temper-ature (^{o}F)
15290200	Nancy Lake tributary near Willow, AK	4	61 41 17	149 57 58	8.00	550	2.3	68	20	2
15291000	Susitna River near Denali, AK	4	63 06 14	147 30 57	950	4,510	1	1	50	-6
15291100	Raft Creek near Denali, AK	4	63 03 04	147 16 22	4.33	4,700	0	12	30	-6
15291200	Maclaren River near Paxson, AK	4	63 07 10	146 31 45	280	4,520	1	0	50	-6
15291500	Susitna River near Cantwell, AK	4	62 41 55	147 32 42	4,140	3,560	2	5	30	-6
15292000	Susitna River at Gold Creek, AK	4	62 46 04	149 41 28	6,160	3,420	1	7	30	-5
15292392	Byers Creek near Talkeetna, AK	4	62 42 33	150 11 30	50.2	1,830	3	51	38	-4
15292400	Chulitna River near Talkeetna, AK	4	62 33 31	150 14 02	2,570	3,760	1	22	55	-5
15292700	Talkeetna River near Talkeetna, AK	4	62 20 49	150 01 01	2,000	3,630	0	25	35	-2
15292800	Montana Creek near Montana, AK	4	62 06 32	150 03 12	164	1,930	3	54	30	0
15293000	Caswell Creek near Caswell, AK	4	61 56 55	150 03 14	19.6	400	3	72	25	0
15293700	Little Willow Creek near Kashwitna, AK	4	61 48 37	150 05 42	155	1,840	1	46	30	2

[1] Record includes glacial outbursts. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[3] Drainage area is indeterminate. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

[Rounding differences may cause values in this table to vary by less than 1 percent from those computed using equations in table 3 or by the computer program available at http://pubs.water.usgs.gov/wri034188. **Station No.:** R, presently regulated. **Station name:** AK, Alaska; BC, British Columbia; YT, Yukon. **Region**: See figure 1 for location of regions. **Latitude and Longitude** are given in degrees, minutes, and seconds. **Mean basin elevation**: Elevations are given in feet above NGVD of 1929. **Skew coefficient used for analysis**: weighted skew except where noted in footnote. **Peak streamflow analysis type:** Sta, value of Q_T from analysis of observed station data using weighted skew coefficient; Reg, value of Q_T estimated from regression equation (table 3); Wtd, value of Q_T estimated by weighting Sta and Reg based on the years of record for station data and equivalent years of record for the equation. **Peak streamflow:** Q_T, peak streamflow having a recurrence interval of T years. –, not available; ft, foot; mi^2, square mile; in., inch; °F, degree Fahrenheit]

Station No.	Number of systematic peaks	Skew coefficient used for analysis	Peak streamflow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15290200	16	0.489	Sta	99.2	177	247	361	469	598	753	1,010
			Reg	52.2	86.3	113	150	180	211	245	294
			Wtd	94.4	158	206	277	338	409	492	621
15291000	26	1.27	Sta	16,300	19,600	22,100	25,800	28,900	32,200	35,900	41,300
			Reg	15,900	21,300	25,200	30,000	33,700	37,300	41,100	46,300
			Wtd	16,200	19,600	22,300	26,200	29,300	32,800	36,500	42,000
15291100	37	-.436	Sta	94.2	120	135	151	162	172	181	192
			Reg	60.2	102	136	183	221	261	304	367
			Wtd	92.4	118	135	156	173	189	205	226
15291200	28	.550	Sta	5,490	6,750	7,610	8,730	9,600	10,500	11,400	12,700
			Reg	5,010	7,040	8,510	10,400	11,800	13,300	14,800	16,900
			Wtd	5,480	6,760	7,680	8,910	9,870	10,900	11,900	13,300
15291500	18	.510	Sta	30,400	39,800	46,500	55,600	62,800	70,400	78,400	89,900
			Reg	32,000	41,200	47,400	55,200	61,000	66,900	72,900	81,100
			Wtd	30,500	39,900	46,600	55,500	62,600	69,900	77,700	88,600
15292000	47	.445	Sta	44,800	58,700	68,600	81,800	92,200	103,000	115,000	131,000
			Reg	50,600	64,400	73,800	85,500	94,200	103,000	112,000	124,000
			Wtd	44,800	58,800	68,700	82,000	92,300	103,000	115,000	131,000
15292392	10	.106	Sta	478	919	1,300	1,900	2,440	3,060	3,760	4,850
			Reg	618	926	1,160	1,460	1,700	1,950	2,200	2,570
			Wtd	490	920	1,260	1,740	2,120	2,540	2,990	3,660
15292400	27	.958	Sta	39,800	48,800	55,400	64,700	72,200	80,300	89,000	102,000
			Reg	45,800	58,900	68,000	79,400	87,800	96,300	105,000	117,000
			Wtd	39,900	49,100	56,000	65,700	73,500	81,700	90,500	103,000
15292700	36	.747	Sta	25,800	36,800	45,600	58,800	70,200	83,100	97,800	120,000
			Reg	24,000	32,100	37,700	44,800	50,100	55,400	60,900	68,500
			Wtd	25,800	36,700	45,300	57,900	68,600	80,600	94,100	115,000
15292800	10	1.13	Sta	3,200	4,690	6,020	8,170	10,200	12,600	15,600	20,500
			Reg	1,430	2,060	2,530	3,130	3,600	4,080	4,570	5,270
			Wtd	3,080	4,320	5,280	6,710	7,990	9,480	11,300	14,100
15293000	25	.995	Sta	89.1	153	215	325	437	581	768	1,100
			Reg	153	242	310	403	476	552	633	749
			Wtd	91.4	160	227	339	445	574	730	991
15293700	8	1.19	Sta	1,360	1,950	2,460	3,300	4,070	5,000	6,120	7,970
			Reg	1,550	2,270	2,800	3,490	4,020	4,570	5,140	5,950
			Wtd	1,380	2,000	2,550	3,360	4,050	4,820	5,690	7,010

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin eleva-tion (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipi-tation (in.)	Mean minimum January temper-ature (^{o}F)
15294005	Willow Creek near Willow, AK	4	61 46 51	149 53 04	166	2,890	1	24	30	2
15294010	Deception Creek near Willow, AK	4	61 44 52	149 56 14	48.0	1,310	2	76	30	2
15294025	Moose Creek near Talkeetna, AK	4	62 19 00	150 26 30	52.3	800	9	77	35	-3
15294100	Deshka River near Willow, AK	4	61 46 05	150 20 13	591	492	5	56	25	-2
15294300	Skwentna River near Skwentna, AK	4	61 52 23	151 22 01	2,250	2,810	5	34	45	-5
15294350	Susitna River at Susitna Station, AK	4	61 32 41	150 30 45	19,400	3,200	2	21	35	0
15294450	Chuitna River near Tyonek, AK	4	61 06 31	151 15 07	131	1,120	2	44	45	2
15294500[1]	Chakachatna River near Tyonek, AK	4	61 12 44	152 21 26	1,120	3,900	4	17	80	0
15295600[R]	Terror River near Kodiak, AK	3	57 39 05	153 01 46	15.0	2,300	3	8	130	22
15296000	Uganik River near Kodiak, AK	3	57 41 06	153 25 10	123	1,830	2	13	75	21
15297200	Myrtle Creek near Kodiak, AK	3	57 36 12	152 24 12	4.74	700	0	0	130	24
15297475	Red Cloud Creek tributary near Kodiak, AK	3	57 49 00	152 37 20	1.51	720	0	0	120	24
15297900	Eskimo Creek at King Salmon, AK	4	58 41 08	156 40 08	16.1	140	5	14	20	8

[1] Record includes glacial outbursts. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[3] Drainage area is indeterminate. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Number of systematic peaks	Skew coefficient used for analysis	Peak streamflow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15294005	15	0.793	Sta	3,010	4,210	5,170	6,600	7,830	9,220	10,800	13,200
			Reg	1,650	2,420	2,970	3,710	4,270	4,840	5,450	6,290
			Wtd	2,920	3,970	4,740	5,830	6,750	7,780	8,920	10,700
15294010	8	-.109	Sta	520	674	770	885	966	1,050	1,120	1,220
			Reg	472	718	903	1,150	1,340	1,540	1,750	2,050
			Wtd	515	683	806	975	1,110	1,240	1,380	1,560
15294025	25	1.17	Sta	1,160	1,670	2,120	2,840	3,520	4,330	5,300	6,920
			Reg	485	719	892	1,120	1,300	1,480	1,680	1,950
			Wtd	1,130	1,560	1,910	2,430	2,900	3,450	4,110	5,160
15294100	10	1.49	Sta	6,130	8,940	11,600	16,100	20,600	26,300	33,500	46,100
			Reg	3,560	4,900	5,850	7,080	8,000	8,950	9,930	11,300
			Wtd	5,950	8,330	10,300	13,300	16,000	19,300	23,200	29,700
15294300	23	.605	Sta	33,200	41,700	47,700	55,600	61,900	68,500	75,400	85,200
			Reg	25,500	32,700	37,700	43,900	48,600	53,200	58,000	64,500
			Wtd	33,100	41,300	47,000	54,600	60,500	66,700	73,200	82,400
15294350	18	.611	Sta	187,000	223,000	247,000	279,000	303,000	328,000	353,000	388,000
			Reg	166,000	200,000	223,000	251,000	272,000	293,000	314,000	343,000
			Wtd	187,000	222,000	246,000	277,000	300,000	324,000	349,000	384,000
15294450	12	.364	Sta	3,560	4,670	5,450	6,480	7,280	8,110	8,970	10,200
			Reg	1,990	2,860	3,510	4,350	4,990	5,650	6,340	7,300
			Wtd	3,430	4,370	4,990	5,830	6,500	7,220	7,980	9,060
15294500[1]	13	.430	Sta	15,200	18,000	19,800	22,100	23,800	25,500	27,200	29,500
15295600[R]	10	.0791	Sta	1,710	2,450	2,960	3,640	4,160	4,690	5,240	6,010
			Reg	1,380	1,880	2,210	2,630	2,950	3,260	3,580	4,010
			Wtd	1,690	2,390	2,860	3,460	3,920	4,380	4,860	5,510
15296000	27	.229	Sta	5,530	8,130	10,000	12,700	14,800	17,000	19,500	22,900
			Reg	5,230	7,450	8,980	11,000	12,500	14,000	15,600	17,800
			Wtd	5,520	8,100	9,980	12,500	14,600	16,700	19,000	22,300
15297200	37	-.190	Sta	848	1,050	1,170	1,300	1,390	1,480	1,570	1,670
			Reg	921	1,270	1,500	1,790	2,000	2,210	2,420	2,700
			Wtd	850	1,060	1,180	1,330	1,430	1,530	1,630	1,750
15297475	28	-.151	Sta	393	539	632	746	828	909	988	1,090
			Reg	329	459	546	655	735	815	894	1,000
			Wtd	391	535	626	738	819	899	977	1,080
15297900	18	-.159	Sta	83.2	162	228	324	404	492	588	726
			Reg	89.9	143	184	240	285	332	382	453
			Wtd	83.6	160	219	300	365	435	510	618

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin elevation (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipitation (in.)	Mean minimum January temperature (^{o}F)
15300000	Newhalen River near Iliamna, AK	4	59 51 34	154 52 24	3,480	2,160	6	46	40	8
15300200	Roadhouse Creek near Iliamna, AK	4	59 45 26	154 50 49	20.8	321	7	69	30	8
15300500	Kvichak River at Igiugig, AK	4	59 19 44	155 53 57	6,500	1,790	20	64	40	8
15302000	Nuyakuk River near Dillingham, AK	4	59 56 08	158 11 16	1,490	1,100	14	14	60	4
15302500	Nushagak River at Ekwok, AK	4	59 20 57	157 28 23	9,850	988	4	36	30	4
15302900	Moody Creek at Aleknagik, AK	4	59 16 34	158 35 42	1.28	480	3	78	40	8
15303000	Wood River near Aleknagik, AK	4	59 16 30	158 35 37	1,110	690	22	26	60	5
15303010	Silver Salmon Creek near Aleknagik, AK	4	59 13 34	158 40 21	4.46	380	2	78	40	8
15303011	Wood River tributary near Aleknagik, AK	4	59 12 26	158 40 02	3.35	722	1	66	35	9
15303150	Snake River near Dillingham, AK	4	59 08 54	158 53 14	113	540	28	40	50	6
15303600	Kuskokwim River at McGrath, AK	6	62 57 10	155 35 11	11,700	1,850	4	57	23	-12
15303660	Gold Creek at Takotna, AK	6	62 59 20	156 04 08	6.31	999	0	97	40	-12
15303700	Tatalina River near Takotna, AK	6	62 53 06	155 56 22	76.9	890	0	96	20	-12

[1] Record includes glacial outbursts. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[3] Drainage area is indeterminate. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Number of systematic peaks	Skew coefficient used for analysis	Peak streamflow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15300000	31	0.357	Sta	25,300	30,500	33,900	38,100	41,200	44,400	47,500	51,800
			Reg	32,400	41,000	46,900	54,200	59,600	65,100	70,700	78,300
			Wtd	25,400	30,800	34,400	39,000	42,400	45,800	49,200	53,800
15300200	10	.568	Sta	106	173	231	321	404	500	613	793
			Reg	176	273	346	445	523	604	690	811
			Wtd	112	191	260	364	450	544	647	802
15300500	21	-.0657	Sta	32,500	40,300	45,100	50,700	54,700	58,500	62,100	66,900
			Reg	47,200	57,300	64,100	72,700	79,000	85,400	91,800	101,000
			Wtd	32,700	40,800	45,900	52,100	56,500	60,700	64,700	69,900
15302000	43	-.168	Sta	19,600	23,800	26,200	28,900	30,800	32,600	34,200	36,400
			Reg	20,400	25,900	29,700	34,500	38,100	41,700	45,300	50,300
			Wtd	19,600	23,800	26,300	29,200	31,200	33,100	35,000	37,300
15302500	16	.234	Sta	71,000	91,300	105,000	122,000	135,000	148,000	161,000	180,000
			Reg	65,700	81,200	91,500	104,000	114,000	123,000	133,000	147,000
			Wtd	70,900	90,800	104,000	120,000	133,000	145,000	158,000	175,000
15302900	28	.727	Sta	26.0	32.9	37.9	44.8	50.3	56.2	62.6	71.7
			Reg	20.4	35.1	47.1	64.0	77.8	92.5	108	131
			Wtd	25.6	33.2	39.7	49.4	57.6	66.3	75.7	89.0
15303000	13	.636	Sta	13,500	18,000	21,300	26,000	29,800	33,900	38,300	44,800
			Reg	14,200	18,100	20,800	24,300	26,800	29,400	32,000	35,600
			Wtd	13,500	18,000	21,300	25,700	29,200	33,000	37,000	42,700
15303010	27	-.0200	Sta	109	175	224	291	345	401	461	546
			Reg	70.4	116	152	202	242	284	330	394
			Wtd	106	166	209	267	313	363	416	492
15303011	14	.333	Sta	113	181	237	320	391	471	561	697
			Reg	49.6	83.4	111	149	179	212	247	297
			Wtd	103	153	187	237	279	327	380	460
15303150	10	.402	Sta	1,590	2,040	2,350	2,750	3,070	3,390	3,730	4,200
			Reg	1,250	1,750	2,110	2,570	2,930	3,290	3,670	4,190
			Wtd	1,560	1,990	2,290	2,700	3,020	3,360	3,710	4,190
15303600	11	-.171	Sta	51,600	66,900	76,300	87,400	95,200	103,000	110,000	119,000
			Reg	42,300	55,700	64,600	75,600	83,700	91,700	99,600	110,000
			Wtd	51,200	66,200	75,300	86,200	94,000	101,000	109,000	118,000
15303660	13	.661	Sta	53.2	72.6	87.4	108	126	145	166	198
			Reg	66.8	125	173	243	301	365	433	532
			Wtd	55.4	82.3	105	140	169	201	236	287
15303700	12	-.330	Sta	695	952	1,110	1,290	1,420	1,550	1,660	1,810
			Reg	625	1,040	1,360	1,810	2,170	2,550	2,940	3,500
			Wtd	687	966	1,150	1,400	1,580	1,760	1,940	2,170

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin elevation (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipitation (in.)	Mean minimum January temperature (^{o}F)
15304000	Kuskokwim River at Crooked Creek, AK	6	61 52 16	158 06 03	31,100	1,480	3	44	22	-12
15304200	Kisarlik River near Akiak, AK	6	60 21 10	159 55 00	265	2,130	5	0	50	2
15304293	Browns Creek near Bethel, AK	6	60 48 20	161 49 22	4.79	82	7	1	17	-2
15304298	Browns Creek at Bethel, AK	6	60 47 56	161 46 25	10.5	66	9	1	17	-2
15304520	Lubbock River near Atlin, BC	5	60 04 52	133 51 30	683	4,190	6	84	11	-14
15304600	Atlin River near Atlin, BC	2	59 35 57	133 48 48	2,630	3,500	9	62	12	-8
15304650	Wann River near Atlin, BC	2	59 25 55	134 12 20	104	5,310	4	31	32	0
15304700	Fantail River at outlet of Fantail Lake near Atlin, BC	2	59 35 40	134 23 26	277	5,030	2	21	32	-6
15304750	Tutshi River at outlet of Tutshi Lake near Atlin, BC	2	59 56 48	134 19 29	320	4,290	7	43	24	-9
15304800	Lindeman River near Bennett, BC	2	59 50 12	135 00 44	92.7	4,840	2	22	52	-5
15304850	Wheaton River near Carcross, YT	2	60 08 05	134 53 45	338	4,620	2	27	12	-10
15304855	Watson River near Carcross, YT	2	60 13 00	134 43 50	444	4,000	2	60	12	-12

[1] Record includes glacial outbursts. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[3] Drainage area is indeterminate. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Number of systematic peaks	Skew coefficient used for analysis	Peak streamflow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15304000	47	-0.148	Sta	163,000	217,000	250,000	291,000	321,000	349,000	377,000	413,000
			Reg	116,000	145,000	163,000	186,000	202,000	219,000	235,000	256,000
			Wtd	162,000	216,000	249,000	289,000	318,000	345,000	372,000	408,000
15304200	8	-.366	Sta	4,280	5,030	5,430	5,870	6,160	6,410	6,650	6,940
			Reg	4,770	6,270	7,290	8,580	9,540	10,500	11,500	12,800
			Wtd	4,340	5,210	5,750	6,400	6,860	7,290	7,700	8,220
15304293	10	-.257	Sta	60.9	98.0	124	158	183	209	235	270
			Reg	99.2	161	208	272	323	375	430	507
			Wtd	67.6	112	146	192	227	264	301	352
15304298	10	.234	Sta	176	246	296	362	415	469	527	607
			Reg	188	296	376	482	566	651	740	862
			Wtd	178	257	316	397	461	527	597	693
15304520	29	.0229	Sta	348	479	567	678	762	846	931	1,050
			Reg	1,150	1,590	1,910	2,340	2,670	3,010	3,360	3,840
			Wtd	353	493	593	728	837	950	1,070	1,230
15304600	50	-.111	Sta	7,970	9,210	9,920	10,700	11,300	11,800	12,200	12,800
			Reg	7,170	8,440	9,110	9,800	10,200	10,600	11,000	11,400
			Wtd	7,960	9,190	9,890	10,700	11,200	11,700	12,200	12,800
15304650	35	.349	Sta	1,250	1,540	1,730	1,970	2,150	2,330	2,520	2,770
			Reg	1,180	1,510	1,740	2,030	2,250	2,480	2,720	3,060
			Wtd	1,250	1,540	1,730	1,980	2,160	2,350	2,530	2,790
15304700	35	.828	Sta	3,780	4,720	5,410	6,350	7,120	7,940	8,820	10,100
			Reg	3,510	4,510	5,190	6,080	6,760	7,460	8,200	9,250
			Wtd	3,780	4,710	5,390	6,330	7,090	7,890	8,760	10,000
15304750	39	.172	Sta	2,250	2,760	3,080	3,470	3,760	4,040	4,320	4,690
			Reg	2,110	2,610	2,910	3,290	3,560	3,820	4,080	4,440
			Wtd	2,250	2,750	3,070	3,460	3,740	4,020	4,300	4,670
15304800	37	1.42	Sta	1,810	2,550	3,220	4,320	5,360	6,650	8,220	10,900
			Reg	1,930	2,520	2,950	3,530	3,990	4,470	5,000	5,760
			Wtd	1,820	2,550	3,200	4,250	5,240	6,430	7,890	10,300
15304850	39	.0866	Sta	1,950	2,430	2,740	3,110	3,390	3,650	3,920	4,260
			Reg	1,710	2,170	2,460	2,820	3,080	3,330	3,590	3,930
			Wtd	1,940	2,420	2,720	3,090	3,360	3,630	3,890	4,240
15304855	14	-.124	Sta	871	1,270	1,540	1,890	2,150	2,410	2,670	3,020
			Reg	2,220	2,810	3,180	3,630	3,960	4,280	4,600	5,020
			Wtd	921	1,380	1,700	2,100	2,390	2,660	2,940	3,290

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin elevation (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipitation (in.)	Mean minimum January temperature (^oF)
15304950	Maclintock River near Whitehorse, YT	5	60 36 45	134 27 27	656	3,560	1	81	12	-17
15305000	Yukon River at Whitehorse, YT	5	60 42 50	135 02 35	7,490	3,680	8	57	15	-10
15305030	Takhini River at Kusawa Lake at Whitehorse, YT	5	60 36 46	136 07 26	1,570	4,540	5	23	16	-11
15305050	Takhini River near Whitehorse, YT	5	60 51 08	135 44 21	2,700	4,270	4	36	14	-13
15305100	Yukon River above Frank Creek, YT	5	61 26 04	135 11 18	11,900	3,800	6	57	14	-12
15305150	Swift River near Swift River, BC	5	59 55 50	131 46 04	1,280	4,230	1	49	18	-16
15305200	Gladys River at outlet of Gladys Lake near Atlin, BC	5	59 54 20	132 54 50	737	4,000	5	57	12	-12
15305250	Teslin River near Teslin, YT	5	60 29 07	133 18 04	11,700	3,920	3	69	13	-16
15305260	Teslin River near Whitehorse, YT	5	61 29 25	134 46 35	14,100	3,880	3	70	12	-17
15305300	Big Salmon River near Carmacks, YT	5	61 52 22	134 50 00	2,610	4,140	1	73	13	-20
15305350	Yukon River at Carmacks, YT	5	62 05 45	136 16 18	31,600	4,000	4	57	12	-16
15305360	Big Creek near mouth near Minto, YT	5	62 34 07	137 00 58	676	3,340	0	88	12	-12

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[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[3] Drainage area is indeterminate. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Number of systematic peaks	Skew coefficient used for analysis	Peak streamflow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15304950	39	0.243	Sta	1,790	2,430	2,880	3,470	3,930	4,410	4,900	5,590
			Reg	2,460	3,660	4,570	5,800	6,770	7,770	8,810	10,300
			Wtd	1,790	2,450	2,920	3,560	4,070	4,610	5,170	5,970
15305000	53	-.0464	Sta	18,200	20,400	21,600	23,000	24,000	24,800	25,700	26,700
			Reg	16,900	20,900	23,400	26,600	29,000	31,500	33,900	37,100
			Wtd	18,200	20,400	21,600	23,100	24,100	25,100	26,000	27,200
15305030	30	.0125	Sta	6,970	8,370	9,210	10,200	10,900	11,600	12,200	13,100
			Reg	6,970	8,250	8,980	9,840	10,500	11,100	11,700	12,400
			Wtd	6,970	8,360	9,200	10,200	10,900	11,500	12,200	13,000
15305050	51	.494	Sta	7,600	9,360	10,600	12,100	13,300	14,500	15,800	17,600
			Reg	10,200	12,500	13,900	15,600	16,900	18,100	19,300	21,000
			Wtd	7,610	9,390	10,600	12,200	13,400	14,700	16,000	17,800
15305100	42	-.0680	Sta	24,600	26,900	28,200	29,600	30,600	31,500	32,300	33,300
			Reg	30,700	37,100	41,100	46,200	50,000	53,800	57,600	62,700
			Wtd	24,600	27,000	28,400	30,000	31,100	32,200	33,200	34,600
15305150	39	.244	Sta	8,850	11,200	12,700	14,600	16,000	17,400	18,900	20,900
			Reg	6,300	8,400	9,820	11,600	13,000	14,300	15,700	17,500
			Wtd	8,820	11,100	12,600	14,400	15,800	17,200	18,600	20,500
15305200	35	.0088	Sta	2,060	2,650	3,020	3,470	3,790	4,110	4,430	4,850
			Reg	1,830	2,480	2,940	3,530	3,980	4,430	4,890	5,510
			Wtd	2,060	2,640	3,010	3,470	3,810	4,140	4,470	4,920
15305250	48	.240	Sta	36,900	45,800	51,700	59,000	64,400	69,800	75,300	82,700
			Reg	35,000	43,400	48,900	5,5900	61,100	66,400	71,700	78,900
			Wtd	36,800	45,800	51,600	58,900	64,300	69,700	75,100	82,500
15305260	18	.199	Sta	40,800	51,600	58,600	67,400	73,900	80,400	87,000	95,900
			Reg	42,200	52,200	58,700	66,900	73,000	79,200	85,400	93,800
			Wtd	40,800	51,600	58,600	67,300	73,800	80,300	86,800	95,600
15305300	38	.335	Sta	11,500	14,700	16,900	19,800	21,900	24,200	26,500	29,600
			Reg	10,100	13,500	15,900	19,000	21,400	23,700	26,200	29,500
			Wtd	11,500	14,700	16,900	19,700	21,900	24,100	26,400	29,600
15305350	44	.194	Sta	65,200	81,300	91,700	105,000	114,000	124,000	133,000	146,000
			Reg	97,700	113,000	122,000	134,000	143,000	151,000	160,000	172,000
			Wtd	65,300	81,500	92,100	105,000	115,000	125,000	134,000	147,000
15305360	24	-.169	Sta	3,430	5,330	6,660	8,390	9,700	11,000	12,400	14,200
			Reg	3,610	5,600	7,150	9,290	11,000	12,800	14,600	17,200
			Wtd	3,440	5,340	6,680	8,450	9,820	11,200	12,700	14,700

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin elevation (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipitation (in.)	Mean minimum January temperature (^{o}F)
15305390	Ross River at Ross River, YT	5	61 59 40	132 22 40	2,800	3,590	3	89	12	-30
15305400	Pelly River at Ross River, YT	5	61 59 12	132 26 54	7,100	3,870	2	83	12	-26
15305406	Pelly River at Faro,YT	5	62 13 20	133 22 40	8,530	3,780	1	79	12	-24
15305412	South MacMillan River at Canol Road near Ross River, YT	5	62 55 20	130 32 00	385	4,540	1	57	24	-21
15305420	Pelly River at Pelly Crossing, YT	5	62 49 47	136 34 50	18,900	3,660	2	82	20	-20
15305450	Yukon River above White River near Dawson, YT	5	63 05 02	139 29 40	57,900	3,770	4	67	10	-18
15305500	Kluane River at outlet of Kluane Lake, YT	2	61 25 37	139 02 56	1,910	4,390	8	35	20	-20
15305540	White River at Alaska Highway near Koidern, BC	2	61 58 41	140 33 10	2,410	6,180	0	19	22	-18
15305582	Stewart River above Fraser Falls near Mayo,YT	5	63 29 17	135 08 06	11,800	3,800	2	74	14	-10
15305590	Stewart River at Mayo, YT	5	63 35 26	135 53 48	12,200	3,780	2	74	15	-12
15305620	Stewart River at Stewart Crossing, YT	5	63 22 56	136 40 59	13,500	3,660	2	73	15	-12
15305650	Stewart River at mouth, YT	5	63 16 55	139 14 56	19,700	3,600	1	73	12	-13

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[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
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Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Number of systematic peaks	Skew coefficient used for analysis	Peak streamflow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15305390	37	0.295	Sta	14,100	18,100	20,700	24,100	26,700	29,300	32,000	35,700
			Reg	7,040	9,690	11,600	14,100	16,100	18,000	20,100	22,900
			Wtd	14,100	17,900	20,400	23,600	26,000	28,400	30,900	34,300
15305400	19	.277	Sta	37,700	49,600	57,700	68,300	76,400	84,800	93,400	105,000
			Reg	21,600	28,100	32,600	38,400	42,800	47,200	51,800	57,900
			Wtd	37,400	48,900	56,400	65,900	72,900	79,900	87,100	97,000
15305406	26	.253	Sta	35,800	43,300	48,100	54,000	58,400	62,700	67,000	72,800
			Reg	34,100	44,700	51,900	61,200	68,200	75,300	82,500	92,300
			Wtd	35,800	43,300	48,200	54,300	58,900	63,500	68,200	74,500
15305412	22	.558	Sta	4,430	5,290	5,860	6,600	7,170	7,740	8,330	9,140
			Reg	1,570	2,200	2,650	3,240	3,690	4,140	4,600	5,230
			Wtd	4,340	5,110	5,600	6,190	6,630	7,090	7,560	8,220
15305420	46	.441	Sta	66,500	88,600	104,000	126,000	143,000	161,000	180,000	207,000
			Reg	61,800	78,100	89,000	103,000	113,000	124,000	134,000	149,000
			Wtd	66,500	88,500	104,000	125,000	142,000	159,000	178,000	203,000
15305450	42	.500	Sta	125,000	162,000	188,000	223,000	251,000	280,000	310,000	354,000
			Reg	169,000	195,000	212,000	232,000	247,000	263,000	279,000	300,000
			Wtd	125,000	162,000	188,000	223,000	251,000	279,000	309,000	351,000
15305500	43	-.777	Sta	10,200	11,900	12,800	13,600	14,100	14,500	14,800	15,200
			Reg	9,150	10,900	12,000	13,100	13,900	14,700	15,400	16,400
			Wtd	10,200	11,900	12,700	13,600	14,100	14,500	14,900	15,300
15305540	22	.0837	Sta	29,000	36,400	41,000	46,600	50,700	54,700	58,700	64,000
			Reg	22,900	28,900	32,900	37,900	41,600	45,400	49,300	54,700
			Wtd	28,800	35,800	40,200	45,700	49,700	53,600	57,600	62,900
15305582	13	.247	Sta	75,000	98,300	114,000	134,000	150,000	166,000	182,000	204,000
			Reg	40,000	50,700	57,800	66,900	73,700	80,600	87,500	96,900
			Wtd	74,200	96,100	110,000	127,000	139,000	151,000	163,000	179,000
15305590	30	.314	Sta	79,800	101,000	115,000	133,000	147,000	161,000	175,000	194,000
			Reg	41,500	52,600	60,000	69,400	76,400	83,500	90,700	100,000
			Wtd	79,400	99,900	113,000	130,000	142,000	154,000	167,000	184,000
15305620	13	.394	Sta	88,500	112,000	127,000	148,000	163,000	179,000	196,000	218,000
			Reg	47,400	60,200	68,700	79,500	87,600	95,800	104,000	115,000
			Wtd	87,600	109,000	123,000	141,000	153,000	166,000	178,000	196,000
15305650	36	.524	Sta	83,900	111,000	131,000	158,000	179,000	202,000	226,000	261,000
			Reg	88,000	112,000	127,000	147,000	162,000	177,000	192,000	212,000
			Wtd	83,900	111,000	131,000	157,000	178,000	201,000	224,000	258,000

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin elevation (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipitation (in.)	Mean minimum January temperature (^{o}F)
15305670	Yukon River at Stewart, YT	5	63 18 42	139 25 43	96,900	3,640	3	72	12	-18
15305695	North Klondike River near mouth near Dawson, YT	5	64 01 16	138 34 58	425	3,730	0	34	16	-22
15305698	Klondike River above Bonanza Creek near Dawson, YT	5	64 02 34	139 24 28	3,010	3,230	0	62	16	-24
15305700	Yukon River at Dawson, YT	5	64 04 12	139 25 30	102,000	3,590	3	72	10	-18
15305900	Dennison Fork near Tetlin Junction, AK	5	63 25 24	142 29 00	2.93	3,000	0	97	10	-22
15305920	West Fork tributary near Tetlin Junction, AK	5	63 40 03	142 16 00	1.02	4,240	0	12	15	-22
15305950	Taylor Creek near Chicken, AK	5	63 54 27	142 12 58	38.4	2,500	0	99	15	-22
15344000	King Creek near Dome Creek, AK	5	64 23 38	141 24 43	5.87	2,391	0	94	15	-22
15348000	Fortymile River near Steele Creek, AK	5	64 18 33	141 24 08	5,880	2,940	4	77	15	-22
15355000	Fortymile River near mouth near Eagle, YT	5	64 23 50	140 36 40	6,410	2,900	3	77	15	-24
15356000	Yukon River at Eagle, AK	5	64 47 22	141 11 52	114,000	3,340	1	78	12	-19
15365000	Discovery Fork of American Creek near Eagle, AK	5	64 39 40	141 18 00	5.53	2,930	0	75	15	-22
15367500	Bluff Creek near Eagle, AK	5	64 45 08	141 13 41	3.38	2,260	0	100	15	-21

[1] Record includes glacial outbursts. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[3] Drainage area is indeterminate. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Number of syste-matic peaks	Skew coeffi-cient used for analysis	Peak stream-flow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15305670	9	0.248	Sta	265,000	357,000	421,000	504,000	568,000	635,000	704,000	799,000
			Reg	314,000	363,000	393,000	431,000	459,000	488,000	517,000	557,000
			Wtd	266,000	357,000	419,000	498,000	556,000	615,000	674,000	753,000
15305695	24	-.0068	Sta	3,530	4,810	5,640	6,700	7,480	8,260	9,050	10,100
			Reg	4,080	5,830	7,050	8,620	9,790	11,000	12,100	13,700
			Wtd	3,540	4,830	5,710	6,830	7,680	8,550	9,430	10,600
15305698	33	.0121	Sta	14,300	18,000	20,300	23,200	25,200	27,200	29,100	31,700
			Reg	22,000	31,400	38,000	46,700	53,300	60,100	66,900	76,300
			Wtd	14,300	18,200	20,700	23,800	26,200	28,600	31,000	34,300
15305700	33	.583	Sta	256,000	319,000	363,000	422,000	467,000	515,000	565,000	635,000
			Reg	334,000	387,000	419,000	459,000	489,000	520,000	551,000	593,000
			Wtd	257,000	320,000	364,000	423,000	468,000	515,000	564,000	633,000
15305900	36	.311	Sta	29.3	49.1	65.5	90.3	112	137	164	207
			Reg	13.1	26.6	39.5	60.2	78.4	99.0	122	156
			Wtd	28.6	47.5	62.9	86.0	106	129	155	194
15305920	26	.0339	Sta	32.6	54.2	70.9	94.5	114	135	157	189
			Reg	15.2	25.2	33.0	43.4	51.5	59.7	68.0	79.2
			Wtd	31.7	51.5	65.5	83.7	97.6	112	126	147
15305950	25	.352	Sta	139	294	449	721	991	1,330	1,760	2,490
			Reg	205	388	554	810	1,030	1,270	1,540	1,920
			Wtd	140	298	456	730	997	1,320	1,710	2,350
15344000	24	.135	Sta	50.5	93.4	130	186	236	293	357	456
			Reg	31.4	65.0	97.4	150	196	249	307	395
			Wtd	49.6	91.2	126	180	228	282	344	438
15348000	9	.687	Sta	36,200	48,500	57,900	71,100	82,000	93,800	107,000	126,000
			Reg	16,800	22,900	27,300	33,000	37,400	41,900	46,400	52,700
			Wtd	35,800	47,400	55,800	67,000	75,900	85,200	95,100	109,000
15355000	11	.428	Sta	37,200	48,400	56,300	66,800	75,000	83,500	92,500	105,000
			Reg	20,800	28,700	34,300	41,600	47,200	52,900	58,700	66,600
			Wtd	36,700	47,300	54,400	63,500	70,400	77,400	84,800	95,000
15356000	52	.520	Sta	281,000	352,000	401,000	465,000	515,000	567,000	620,000	696,000
			Reg	535,000	644,000	713,000	798,000	862,000	926,000	991,000	1080,000
			Wtd	282,000	353,000	403,000	468,000	520,000	573,000	628,000	705,000
15365000	10	.440	Sta	7.36	16.7	26.8	45.5	65.4	91.6	126	188
			Reg	30.6	59.6	86.2	128	163	203	246	309
			Wtd	8.33	20.3	34.7	62.7	91.6	128	171	241
15367500	10	.452	Sta	5.94	15.3	26.3	48.6	73.8	109	158	251
			Reg	17.6	38.0	58.3	91.8	122	157	196	256
			Wtd	6.54	17.6	31.4	59.3	89.0	127	174	253

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin eleva-tion (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipi-tation (in.)	Mean minimum January temper-ature (^{o}F)
15388944	Porcupine River below Bell River, YT	5	67 26 25	137 47 01	13,900	1,900	3	55	10	-30
15388948	Old Crow River near mouth near Old Crow, YT	5	67 38 04	139 41 47	5,370	1,200	30	30	10	-21
15388950	Porcupine River at Old Crow, YT	5	67 33 50	139 53 00	21,400	1,810	3	55	10	-30
15388960	Porcupine River near International Boundary, YT	5	67 25 27	140 53 28	23,100	1,800	3	57	10	-30
15389000	Porcupine River near Fort Yukon, AK	5	66 59 26	143 08 16	29,500	1,800	2	65	10	-29
15389500	Chandalar River near Venetie, AK	5	67 05 49	147 11 04	9,330	3,160	2	17	10	-18
15438500	Bedrock Creek near Central, AK	6	65 33 28	145 05 26	9.94	2,910	0	50	15	-24
15439800	Boulder Creek near Central, AK	6	65 34 05	144 53 13	31.3	2,570	0	73	15	-24
15442500	Quartz Creek near Central, AK	6	65 37 09	144 28 55	17.2	1,270	0	98	15	-24
15453481	West Fork Dall River tributary near Stevens Village, AK	6	66 17 53	150 23 10	4.18	1,968	0	73	15	-16
15453500	Yukon River near Stevens Village, AK	6	65 52 32	149 43 04	196,000	2,830	3	70	15	-21
15453610	Ray River tributary near Stevens Village, AK	6	65 56 57	150 55 00	8.00	1,500	0	88	10	-16

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[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[3] Drainage area is indeterminate. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Number of systematic peaks	Skew coefficient used for analysis	Peak streamflow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15388944	20	0.154	Sta	111,000	141,000	160,000	185,000	203,000	221,000	239,000	263,000
			Reg	75,500	108,000	131,000	160,000	183,000	206,000	230,000	261,000
			Wtd	110,000	140,000	159,000	184,000	202,000	220,000	238,000	263,000
15388948	22	-.156	Sta	25,100	36,800	44,600	54,600	62,000	69,400	76,800	86,700
			Reg	18,800	27,900	34,300	42,700	49,100	55,500	62,000	70,800
			Wtd	25,000	36,600	44,300	54,000	61,200	68,400	75,600	85,200
15388950	34	-.188	Sta	139,000	188,000	219,000	256,000	282,000	308,000	333,000	365,000
			Reg	121,000	172,000	207,000	253,000	288,000	324,000	360,000	409,000
			Wtd	139,000	188,000	219,000	256,000	283,000	309,000	334,000	368,000
15388960	13	.380	Sta	125,000	168,000	198,000	238,000	270,000	303,000	338,000	388,000
			Reg	129,000	182,000	220,000	269,000	306,000	344,000	383,000	435,000
			Wtd	125,000	168,000	199,000	240,000	273,000	307,000	343,000	394,000
15389000	15	.0426	Sta	158,000	230,000	280,000	346,000	396,000	449,000	503,000	578,000
			Reg	176,000	252,000	306,000	377,000	430,000	485,000	541,000	618,000
			Wtd	158,000	230,000	281,000	347,000	399,000	452,000	507,000	582,000
15389500	11	-.112	Sta	44,400	58,200	66,800	77,100	84,600	91,800	98,800	108,000
			Reg	97,200	115,000	125,000	136,000	144,000	151,000	158,000	167,000
			Wtd	45,100	59,600	69,000	80,800	89,400	97,800	106,000	117,000
15438500	11	-.277	Sta	119	250	360	521	656	802	959	1,180
			Reg	123	218	295	405	495	592	696	844
			Wtd	120	244	344	488	607	735	871	1,070
15439800	36	.156	Sta	278	524	738	1,070	1,370	1,720	2,120	2,730
			Reg	305	522	694	935	1,130	1,340	1,560	1,870
			Wtd	279	524	734	1,060	1,340	1,670	2,030	2,600
15442500	20	.280	Sta	147	270	377	548	703	884	1,100	1,430
			Reg	163	291	394	542	663	793	931	1,130
			Wtd	149	272	380	547	695	865	1,060	1,360
15453481	13	.294	Sta	76.4	118	150	197	235	278	325	394
			Reg	50.4	94.8	132	186	231	280	334	410
			Wtd	70.6	112	145	193	234	279	328	400
15453500	23	.402	Sta	479,000	593,000	669,000	767,000	841,000	917,000	994,000	1,100,000
			Reg	523,000	611,000	667,000	736,000	785,000	833,000	880,000	942,000
			Wtd	479,000	593,000	669,000	766,000	840,000	915,000	991,000	1,100,000
15453610	23	.0198	Sta	62.3	115	159	224	280	342	411	514
			Reg	85.1	156	215	300	371	447	529	647
			Wtd	64.3	120	167	237	297	363	436	544

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin elevation (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipitation (in.)	Mean minimum January temperature (°F)
15457700	Erickson Creek near Livengood, AK	6	65 34 30	148 56 18	26.3	1,500	0	99	15	-16
15457800	Hess Creek near Livengood, AK	6	65 39 55	149 05 47	662	1,400	0	49	15	-16
15468000	Yukon River at Rampart, AK	6	65 30 25	150 10 15	199,000	2,810	3	69	15	-21
15469900	Silver Creek near Northway Junction, AK	6	62 59 01	141 40 07	11.7	2,400	1	98	10	-24
15470000	Chisana River at Northway Junction, AK	6	63 00 23	141 48 17	3,280	3,730	2	50	20	-23
15470300	Little Jack Creek near Nabesna, AK	6	62 32 39	143 19 22	6.73	4,677	1	30	30	-20
15470330	Chalk Creek near Nabesna, AK	6	62 30 19	143 09 24	14.8	3,964	3	73	30	-20
15470340	Jack Creek near Nabesna, AK	6	62 27 49	143 05 59	115	4,345	1	41	30	-20
15471000	Bitters Creek near Northway Junction, AK	6	63 09 38	142 05 20	15.4	2,430	0	99	10	-24
15471500	Tanana River tributary near Tetlin Junction, AK	6	63 16 45	142 30 27	2.43	2,600	0	100	10	-24
15473600	Log Cabin Creek near Log Cabin Inn, AK	6	63 01 48	143 20 36	10.7	3,730	0	58	20	-16
15473950	Clearwater Creek near Tok, AK	6	63 10 19	143 12 03	36.4	4,300	0	31	20	-20

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Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Number of systematic peaks	Skew coefficient used for analysis	Peak streamflow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15457700	25	-0.122	Sta	281	431	537	675	781	888	999	1,150
			Reg	238	416	558	760	925	1,100	1,290	1,550
			Wtd	277	430	539	687	802	922	1,050	1,210
15457800	12	.425	Sta	5,110	6,830	8,060	9,730	11,000	12,400	13,900	16,000
			Reg	5,240	7,700	9,480	11,800	13,600	15,500	17,400	20,000
			Wtd	5,120	6,920	8,230	10,000	11,400	12,900	14,500	16,700
15468000	12	-.195	Sta	523,000	653,000	730,000	819,000	880,000	938,000	993,000	1,060,000
			Reg	533,000	622,000	678,000	748,000	797,000	846,000	893,000	955,000
			Wtd	524,000	652,000	728,000	815,000	875,000	932,000	987,000	1,060,000
15469900	10	.436	Sta	32.3	91.5	166	325	514	787	1,180	1,950
			Reg	96.1	175	240	332	409	490	578	702
			Wtd	40.1	108	185	328	473	657	890	1,290
15470000	22	.958	Sta	7,660	8,900	9,770	10,900	11,900	12,800	13,800	15,300
			Reg	16,200	22,400	26,600	32,000	36,000	40,100	44,100	49,600
			Wtd	7,810	9,190	10,200	11,600	12,700	13,800	14,900	16,500
15470300	25	.105	Sta	87.5	139	178	232	277	324	375	449
			Reg	83.8	149	202	277	338	404	473	573
			Wtd	87.1	140	181	240	288	340	396	476
15470330	18	.264	Sta	128	206	267	357	434	518	612	753
			Reg	108	193	261	358	437	521	609	735
			Wtd	125	204	266	358	435	519	612	748
15470340	11	-.105	Sta	821	1,420	1,880	2,520	3,040	3,590	4,170	5,000
			Reg	962	1,530	1,950	2,520	2,970	3,440	3,920	4,590
			Wtd	837	1,440	1,890	2,520	3,020	3,550	4,100	4,880
15471000	25	.429	Sta	109	203	289	433	568	733	932	1,260
			Reg	147	264	359	495	606	726	854	1,040
			Wtd	112	209	298	442	575	731	916	1,210
15471500	26	.294	Sta	15.0	26.3	36.0	51.0	64.3	79.7	97.4	125
			Reg	28.2	55.1	78.0	112	141	173	207	258
			Wtd	16.2	29.5	41.6	60.6	77.4	96.7	118	152
15473600	26	-.368	Sta	140	259	348	469	562	658	756	888
			Reg	125	223	302	416	509	609	716	868
			Wtd	139	254	341	459	552	648	747	884
15473950	17	-.111	Sta	309	625	895	1,310	1,660	2,050	2,490	3,140
			Reg	451	741	964	1,270	1,520	1,780	2,060	2,440
			Wtd	321	639	906	1,300	1,630	1,990	2,390	2,960

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin elevation (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipitation (in.)	Mean minimum January temperature (^{o}F)
15476000	Tanana River near Tanacross, AK	6	63 23 18	143 44 47	8,550	3,860	2	45	18	-22
15476049	Tanana River tributary near Cathedral Rapids, AK	6	63 24 24	143 48 28	3.09	3,400	0	62	15	-15
15476050	Tanana River tributary near Tanacross, AK	6	63 24 27	143 47 54	3.32	3,300	0	63	15	-15
15476200	Tanana River tributary near Dot Lake, AK	6	63 41 40	144 17 40	11.0	2,000	1	82	15	-15
15476300	Berry Creek near Dot Lake, AK	6	63 41 23	144 21 47	65.1	3,200	1	40	18	-14
15476400	Dry Creek near Dot Lake, AK	6	63 41 32	144 34 16	57.6	3,100	1	35	18	-13
15478000	Tanana River at Big Delta, AK	6	64 09 20	145 51 00	13,500	3,440	2	50	22	-14
15478010	Rock Creek near Paxson, AK	6	63 04 16	146 06 17	50.3	4,200	7	0	30	-6
15478040	Phelan Creek near Paxson, AK	6	63 14 27	145 28 03	12.2	5,800	0	0	80	-7
15478050	McCallum Creek near Paxson, AK	6	63 13 27	145 38 56	15.5	4,880	0	0	60	-7
15478093	Suzy Q Creek near Pump Station 10, AK	6	63 29 43	145 51 27	1.29	4,191	0	0	40	-6
15478499	Ruby Creek above Richardson Highway near Donnelly, AK	6	63 37 54	145 52 14	4.89	3,447	1	14	25	-7
15478500	Ruby Creek near Donnelly, AK	6	63 37 52	145 53 03	5.32	3,300	0	12	30	-8

[1] Record includes glacial outbursts. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[3] Drainage area is indeterminate. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

[Rounding differences may cause values in this table to vary by less than 1 percent from those computed using equations in table 3 or by the computer program available at http://pubs.water.usgs.gov/wri034188. **Station No.:** R, presently regulated. **Station name:** AK, Alaska; BC, British Columbia; YT, Yukon. **Region**: See figure 1 for location of regions. **Latitude and Longitude** are given in degrees, minutes, and seconds. **Mean basin elevation**: Elevations are given in feet above NGVD of 1929. **Skew coefficient used for analysis**: weighted skew except where noted in footnote. **Peak streamflow analysis type:** Sta, value of Q_T from analysis of observed station data using weighted skew coefficient; Reg, value of Q_T estimated from regression equation (table 3); Wtd, value of Q_T estimated by weighting Sta and Reg based on the years of record for station data and equivalent years of record for the equation. **Peak streamflow:** Q_T, peak streamflow having a recurrence interval of *T* years. –, not available; ft, foot; mi^2, square mile; in., inch; ^{o}F, degree Fahrenheit]

Station No.	Number of syste-matic peaks	Skew coeffi-cient used for analysis	Peak stream-flow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15476000	38	0.583	Sta	30,500	34,700	37,400	40,900	43,400	45,900	48,500	51,900
			Reg	39,400	51,800	60,200	70,700	78,400	86,100	93,800	104,000
			Wtd	30,600	35,000	37,900	41,600	44,300	47,000	49,800	53,400
15476049	25	-.644	Sta	46.1	117	177	264	332	403	474	568
			Reg	40.5	76.5	107	151	188	229	273	337
			Wtd	45.4	109	161	232	289	348	409	492
15476050	8	-.478	Sta	99.9	219	317	456	567	683	802	965
			Reg	42.9	81.0	113	160	199	241	288	354
			Wtd	78.3	153	207	281	340	403	471	567
15476200	17	-.128	Sta	66.6	99.2	121	150	172	194	216	245
			Reg	96.0	174	238	329	404	484	570	692
			Wtd	69.8	109	139	181	214	248	283	331
15476300	36	.267	Sta	673	1,120	1,480	2,030	2,490	3,020	3,610	4,500
			Reg	583	949	1,230	1,610	1,910	2,220	2,550	3,010
			Wtd	669	1,110	1,460	1,980	2,430	2,920	3,470	4,290
15476400	26	-.426	Sta	841	1,400	1,790	2,270	2,630	2,980	3,330	3,780
			Reg	544	886	1,140	1,500	1,780	2,070	2,380	2,810
			Wtd	818	1,350	1,710	2,160	2,490	2,830	3,160	3,600
15478000	8	.0584	Sta	48,800	55,800	59,800	64,600	67,800	70,900	73,900	77,600
			Reg	57,300	74,300	85,500	99,600	110,000	120,000	130,000	144,000
			Wtd	49,300	57,100	62,000	68,000	72,200	76,300	80,200	85,200
15478010	25	-.374	Sta	719	1,140	1,420	1,770	2,030	2,280	2,530	2,850
			Reg	1,000	1,420	1,720	2,100	2,390	2,680	2,980	3,380
			Wtd	733	1,160	1,450	1,810	2,070	2,330	2,590	2,920
15478040	23	.396	Sta	902	1,260	1,520	1,880	2,170	2,480	2,810	3,290
			Reg	493	734	912	1,150	1,340	1,540	1,740	2,020
			Wtd	854	1,180	1,410	1,730	1,990	2,260	2,550	2,970
15478050	25	.242	Sta	462	646	777	952	1,090	1,240	1,390	1,600
			Reg	611	900	1,110	1,400	1,620	1,850	2,090	2,420
			Wtd	472	669	813	1,010	1,160	1,320	1,490	1,730
15478093	11	-.269	Sta	98.5	247	389	618	824	1,060	1,330	1,730
			Reg	66.4	109	143	190	228	269	312	373
			Wtd	91.5	203	293	422	529	645	773	959
15478499	13	.992	Sta	292	429	548	737	911	1,120	1,360	1,760
			Reg	78.8	138	185	252	307	365	427	515
			Wtd	228	326	402	519	622	741	878	1,090
15478500	17	-.477	Sta	133	275	387	540	661	784	909	1,080
			Reg	107	184	246	333	404	481	562	677
			Wtd	129	256	350	477	577	680	786	933

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin eleva-tion (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipi-tation (in.)	Mean minimum January temper-ature (^{o}F)
15480000	Banner Creek at Richardson, AK	6	64 17 24	146 20 56	20.2	1,730	0	95	10	-16
15484000	Salcha River near Salchaket, AK	6	64 28 22	146 55 26	2,170	2,520	0	59	15	-19
15485500[3]	Tanana River at Fairbanks, AK	6	64 47 34	147 50 20	—	—	—	—	—	—
15490000	Monument Creek at Chena Hot Springs, AK	6	65 03 17	146 03 05	26.7	2,660	0	44	16	-20
15493000	Chena River near Two Rivers, AK	6	64 54 10	146 21 25	937	2,270	0	58	16	-19
15493500[R]	Chena River near North Pole, AK	6	64 47 47	147 11 56	1,440	1,930	0	58	15	-20
15511000	Little Chena River near Fairbanks, AK	6	64 53 10	147 14 50	372	1,480	0	94	15	-18
15514000[R]	Chena River at Fairbanks, AK	6	64 50 45	147 42 04	2,000	1,770	2	80	15	-18
15514500	Wood River near Fairbanks, AK	6	64 26 06	148 12 46	855	2,720	0	28	15	-12
15515500	Tanana River at Nenana, AK	6	64 33 55	149 05 30	25,600	3,920	4	56	16	-15
15515800	Seattle Creek near Cantwell, AK	6	63 19 32	148 14 49	36.2	3,400	2	6	20	-6
15515900	Lily Creek near Cantwell, AK	6	63 19 54	148 16 16	5.63	3,590	0	13	20	-6
15516000	Nenana River near Windy, AK	6	63 27 28	148 48 11	710	3,470	2	5	30	-7

[1] Record includes glacial outbursts. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
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Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Number of systematic peaks	Skew coefficient used for analysis	Peak streamflow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15480000	36	-0.103	Sta	200	431	638	964	1,250	1,580	1,960	2,530
			Reg	190	336	453	621	757	904	1,060	1,280
			Wtd	199	422	618	917	1,180	1,470	1,800	2,290
15484000	49	.128	Sta	15,600	25,500	33,200	44,300	53,500	63,600	74,600	90,600
			Reg	14,300	20,100	24,100	29,400	33,400	37,500	41,600	47,200
			Wtd	15,500	25,400	32,900	43,700	52,700	62,300	72,900	88,200
15485500[3]	27	.523	Sta	69,800	81,900	89,900	100,000	108,000	115,000	123,000	133,000
15490000	25	-.302	Sta	381	676	896	1,190	1,420	1,660	1,900	2,230
			Reg	308	521	687	920	1,110	1,310	1,520	1,820
			Wtd	375	659	867	1,150	1,370	1,590	1,830	2,150
15493000	32	-.174	Sta	7,270	11,900	15,300	19,800	23,300	27,000	30,700	35,800
			Reg	6,790	9,900	12,100	15,100	17,300	19,600	22,000	25,200
			Wtd	7,260	11,800	15,100	19,500	22,900	26,400	30,000	34,900
15493500[R]	9	-.189	Sta	5,630	9,210	11,800	15,200	17,900	20,600	23,400	27,300
			Reg	10,000	14,300	17,300	21,300	24,400	27,400	30,600	34,900
			Wtd	5,910	9,690	12,400	16,100	18,900	21,800	24,700	28,700
15511000	33	.708	Sta	1,620	2,440	3,120	4,180	5,110	6,200	7,450	9,430
			Reg	2,570	3,990	5,030	6,450	7,550	8,690	9,880	11,500
			Wtd	1,640	2,490	3,210	4,300	5,260	6,370	7,630	9,590
15514000[R]	33	.156	Sta	9,300	14,700	18,800	24,700	29,500	34,700	40,300	48,400
			Reg	9,020	13,000	15,800	19,400	22,100	24,800	27,600	31,300
			Wtd	9,300	14,700	18,700	24,500	29,200	34,200	39,700	47,600
15514500	10	.296	Sta	4,030	4,740	5,190	5,740	6,140	6,530	6,920	7,430
			Reg	7,790	11,100	13,400	16,400	18,700	21,100	23,500	26,800
			Wtd	4,270	5,230	5,930	6,840	7,510	8,180	8,840	9,700
15515500	38	.866	Sta	79,400	95,800	108,000	123,000	136,000	150,000	164,000	184,000
			Reg	85,600	109,000	124,000	142,000	156,000	169,000	182,000	199,000
			Wtd	79,500	95,900	108,000	124,000	137,000	150,000	164,000	184,000
15515800	25	.874	Sta	488	839	1,170	1,750	2,330	3,060	3,980	5,590
			Reg	534	829	1,050	1,340	1,570	1,810	2,060	2,400
			Wtd	491	838	1,160	1,690	2,190	2,810	3,560	4,820
15515900	15	-.408	Sta	87.5	147	188	241	280	318	356	406
			Reg	110	190	253	343	416	495	578	697
			Wtd	90.8	155	203	267	317	368	420	490
15516000	28	.216	Sta	6,670	8,320	9,390	10,700	11,700	12,700	13,700	15,000
			Reg	7,980	10,800	12,700	15,100	17,000	18,800	20,700	23,200
			Wtd	6,710	8,420	9,560	11,000	12,100	13,100	14,200	15,600

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin elevation (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipitation (in.)	Mean minimum January temperature (^{o}F)
15516050	Jack River near Cantwell, AK	6	63 23 41	148 55 13	325	3,670	1	18	30	-5
15516200	Slime Creek near Cantwell, AK	6	63 30 34	148 48 39	6.90	3,950	0	4	30	-8
15518000	Nenana River near Healy, AK	6	63 50 43	148 56 37	1,910	3,500	1	8	25	-8
15518080	Lignite Creek above mouth near Healy, AK	6	63 54 17	148 59 01	48.1	2,460	0	84	25	-10
15518200	Rock Creek near Ferry, AK	6	64 01 56	149 08 40	8.17	2,450	0	40	25	-12
15518250	Birch Creek near Rex, AK	6	64 10 35	149 17 26	4.10	1,490	0	100	20	-14
15518350	Teklanika River near Lignite, AK	6	63 55 14	149 29 51	490	3,420	0	65	25	-8
15519000	Bridge Creek near Livengood, AK	6	65 27 52	148 15 13	12.6	1,000	0	14	15	-16
15519200	Brooks Creek tributary near Livengood, AK	6	65 23 02	148 56 12	7.81	1,410	0	98	10	-16
15520000	Idaho Creek near Miller House, AK	6	65 21 13	146 09 33	5.31	2,920	0	28	18	-20
15530000	Faith Creek near Chena Hot Springs, AK	6	65 17 32	146 22 48	61.1	2,800	0	48	18	-20
15535000	Caribou Creek near Chatanika, AK	6	65 09 00	147 33 05	9.19	1,640	0	97	15	-18

[1] Record includes glacial outbursts. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[3] Drainage area is indeterminate. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

[Rounding differences may cause values in this table to vary by less than 1 percent from those computed using equations in table 3 or by the computer program available at http://pubs.water.usgs.gov/wri034188. **Station No.:** R, presently regulated. **Station name:** AK, Alaska; BC, British Columbia; YT, Yukon. **Region**: See figure 1 for location of regions. **Latitude and Longitude** are given in degrees, minutes, and seconds. **Mean basin elevation**: Elevations are given in feet above NGVD of 1929. **Skew coefficient used for analysis**: weighted skew except where noted in footnote. **Peak streamflow analysis type:** Sta, value of Q_T from analysis of observed station data using weighted skew coefficient; Reg, value of Q_T estimated from regression equation (table 3); Wtd, value of Q_T estimated by weighting Sta and Reg based on the years of record for station data and equivalent years of record for the equation. **Peak streamflow:** Q_T, peak streamflow having a recurrence interval of *T* years. –, not available; ft, foot; mi^2, square mile; in., inch; °F, degree Fahrenheit]

Station No.	Number of systematic peaks	Skew coefficient used for analysis	Peak streamflow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15516050	9	0.226	Sta	2,550	3,490	4,130	4,990	5,650	6,330	7,040	8,030
			Reg	3,110	4,550	5,580	6,940	7,980	9,040	10,100	11,600
			Wtd	2,610	3,630	4,370	5,360	6,130	6,930	7,750	8,880
15516200	33	.732	Sta	161	247	320	433	536	656	797	1,020
			Reg	181	296	385	509	608	713	825	981
			Wtd	162	251	327	444	547	666	802	1,010
15518000	29	.105	Sta	20,700	27,500	32,000	37,800	42,100	46,400	50,700	56,700
			Reg	19,000	24,900	28,900	34,000	37,800	41,600	45,400	50,500
			Wtd	20,700	27,400	31,900	37,600	41,800	46,000	50,400	56,200
15518080	14	.0117	Sta	608	1,090	1,470	2,040	2,510	3,030	3,610	4,450
			Reg	428	725	956	1,280	1,540	1,820	2,110	2,520
			Wtd	584	1,020	1,360	1,840	2,240	2,670	3,140	3,830
15518200	10	.207	Sta	159	425	729	1,320	1,950	2,790	3,890	5,880
			Reg	110	196	264	363	444	531	625	757
			Wtd	148	354	548	869	1,170	1,530	1,970	2,680
15518250	26	-.255	Sta	93.7	184	258	363	450	542	641	781
			Reg	45.1	85.8	120	171	213	259	309	382
			Wtd	86.7	166	226	312	382	458	539	654
15518350	10	1.03	Sta	4,830	8,100	11,300	16,800	22,400	29,500	38,700	55,000
			Reg	3,680	5,550	6,910	8,730	10,100	11,600	13,100	15,100
			Wtd	4,710	7,710	10,400	14,900	19,100	24,200	30,400	40,800
15519000	10	.410	Sta	191	438	702	1,190	1,710	2,390	3,290	4,880
			Reg	221	368	483	644	774	912	1,060	1,260
			Wtd	197	419	628	968	1,280	1,660	2,100	2,830
15519200	25	-.0631	Sta	61.7	98.5	126	162	191	221	252	296
			Reg	80.6	149	205	288	356	429	509	623
			Wtd	63.3	104	135	180	215	253	293	350
15520000	27	.624	Sta	108	214	320	510	705	956	1,280	1,850
			Reg	83.3	149	202	278	341	408	480	583
			Wtd	106	204	298	457	610	799	1,030	1,430
15530000	10	.808	Sta	1,210	1,840	2,380	3,220	3,990	4,890	5,960	7,670
			Reg	628	1,030	1,330	1,750	2,090	2,440	2,820	3,340
			Wtd	1,100	1,640	2,080	2,740	3,310	3,960	4,710	5,850
15535000	17	-.130	Sta	78.1	132	172	228	272	318	366	434
			Reg	93.5	172	236	328	405	488	577	705
			Wtd	80.0	138	184	249	302	358	418	501

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin elevation (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipitation (in.)	Mean minimum January temperature (°F)
15541600	Globe Creek near Livengood, AK	6	65 17 08	148 07 56	23.0	1,590	0	90	15	-16
15541650	Globe Creek tributary near Livengood, AK	6	65 16 31	148 06 58	9.01	1,710	0	100	15	-16
15541800	Washington Creek near Fox, AK	6	65 09 04	147 55 22	46.7	1,500	0	94	15	-16
15564600	Melozitna River near Ruby, AK	6	64 47 34	155 33 39	2,690	1,410	2	57	15	-17
15564800	Yukon River at Ruby, AK	6	64 44 28	155 29 22	259,000	2,640	4	62	15	-19
15564868	Snowden Creek near Wiseman, AK	6	67 44 20	149 44 24	16.7	3,620	0	4	28	-18
15564872	Nugget Creek near Wiseman, AK	6	67 29 25	149 52 20	9.47	3,036	0	16	25	-18
15564875	Middle Fork Koyukuk River near Wiseman, AK	6	67 26 18	150 04 30	1,200	3,390	0.6	4	25	-16
15564877	Wiseman Creek at Wiseman, AK	6	67 24 38	150 06 21	49.2	2,930	0	3	25	-17
15564879	Slate Creek at Coldfoot, AK	6	67 15 17	150 10 24	73.4	2,204	0	51	20	-18
15564884	Prospect Creek near Prospect Camp, AK	6	66 46 56	150 41 06	110	1,780	0	48	18	-18
15564885	Jim River near Bettles, AK	6	66 47 10	150 52 23	465	2,080	0	10	18	-16
15564887	Bonanza Creek tributary near Prospect Camp, AK	6	66 36 52	150 41 24	11.7	1,674	0	89	20	-18

[1] Record includes glacial outbursts. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[3] Drainage area is indeterminate. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

[Rounding differences may cause values in this table to vary by less than 1 percent from those computed using equations in table 3 or by the computer program available at http://pubs.water.usgs.gov/wri034188. **Station No.:** R, presently regulated. **Station name:** AK, Alaska; BC, British Columbia; YT, Yukon. **Region**: See figure 1 for location of regions. **Latitude and Longitude** are given in degrees, minutes, and seconds. **Mean basin elevation**: Elevations are given in feet above NGVD of 1929. **Skew coefficient used for analysis**: weighted skew except where noted in footnote. **Peak streamflow analysis type:** Sta, value of Q_T from analysis of observed station data using weighted skew coefficient; Reg, value of Q_T estimated from regression equation (table 3); Wtd, value of Q_T estimated by weighting Sta and Reg based on the years of record for station data and equivalent years of record for the equation. **Peak streamflow:** Q_T, peak streamflow having a recurrence interval of *T* years. –, not available; ft, foot; mi^2, square mile; in., inch; °F, degree Fahrenheit]

Station No.	Number of systematic peaks	Skew coefficient used for analysis	Peak streamflow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15541600	35	0.0068	Sta	294	552	767	1,090	1,370	1,680	2,020	2,540
			Reg	217	381	511	697	849	1,010	1,180	1,430
			Wtd	289	537	739	1,040	1,290	1,570	1,880	2,340
15541650	9	.397	Sta	136	244	340	494	636	804	1,000	1,330
			Reg	91.0	167	230	321	396	478	565	691
			Wtd	125	221	301	424	531	654	794	1,010
15541800	10	.138	Sta	623	1,310	1,940	3,000	3,980	5,160	6,560	8,800
			Reg	403	686	908	1,220	1,470	1,740	2,020	2,410
			Wtd	583	1,150	1,620	2,330	2,950	3,660	4,460	5,700
15564600	12	-.600	Sta	21,500	27,600	31,000	34,500	36,800	38,900	40,700	42,800
			Reg	13,100	18,300	21,900	26,500	30,000	33,500	37,000	41,800
			Wtd	20,900	26,700	29,900	33,500	35,900	38,100	40,100	42,700
15564800	22	-.264	Sta	593,000	755,000	851,000	961,000	1,040,000	1,110,000	1,180,000	1,260,000
			Reg	655,000	753,000	816,000	891,000	946,000	999,000	1,050,000	1,120,000
			Wtd	594,000	755,000	850,000	960,000	1,030,000	1,110,000	1,170,000	1,260,000
15564868	23	-.232	Sta	365	500	584	686	759	829	897	985
			Reg	398	626	798	1,030	1,220	1,420	1,620	1,910
			Wtd	367	513	610	734	826	917	1,010	1,130
15564872	24	.460	Sta	164	271	361	501	626	771	940	1,200
			Reg	165	280	370	498	602	712	829	995
			Wtd	164	272	363	501	621	758	914	1,150
15564875	14	.111	Sta	11,800	17,000	20,700	25,600	29,500	33,500	37,600	43,400
			Reg	16,000	20,800	24,100	28,300	31,400	34,600	37,800	42,100
			Wtd	11,900	17,200	20,900	25,900	29,700	33,600	37,700	43,300
15564877	9	.471	Sta	447	709	925	1,250	1,540	1,860	2,240	2,810
			Reg	1,120	1,660	2,050	2,590	3,000	3,430	3,870	4,480
			Wtd	492	798	1,060	1,440	1,770	2,140	2,540	3,150
15564879	19	.361	Sta	1,260	2,560	3,830	6,000	8,130	10,800	14,000	19,500
			Reg	727	1,180	1,530	2,010	2,390	2,790	3,200	3,790
			Wtd	1,200	2,360	3,390	5,060	6,600	8,440	10,600	14,200
15564884	25	-.194	Sta	1,530	2,300	2,830	3,500	4,000	4,500	5,000	5,670
			Reg	1,060	1,690	2,160	2,810	3,320	3,860	4,420	5,190
			Wtd	1,500	2,250	2,760	3,410	3,910	4,410	4,920	5,600
15564885	7	.718	Sta	9,010	12,100	14,400	17,800	20,600	23,600	27,000	32,000
			Reg	6,090	8,530	10,200	12,500	14,200	16,000	17,800	20,200
			Wtd	8,640	11,500	13,600	16,600	19,000	21,600	24,400	28,500
15564887	25	-.274	Sta	158	221	260	308	341	374	405	446
			Reg	119	215	294	406	499	599	706	859
			Wtd	154	220	265	323	367	411	455	514

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin elevation (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipitation (in.)	Mean minimum January temperature (^{o}F)
15564900	Koyukuk River at Hughes, AK	6	66 02 51	154 15 30	18,400	2,200	1	36	16	-17
15565200	Yukon River near Kaltag, AK	6	64 19 40	158 43 10	296,000	2,490	4	59	15	-18
15565447	Yukon River at Pilot Station, AK	6	61 56 04	162 52 50	321,000	2,337	4	57	16	-17
15585000	Goldengate Creek near Nome, AK	7	64 26 03	165 02 46	1.55	300	0	0	15	-2
15619000	Dexter Creek near Nome, AK	7	64 35 11	165 16 39	2.99	512	0	0	22	-2
15621000	Snake River near Nome, AK	7	64 33 51	165 30 26	85.7	632	0	4	30	-2
15624998	Arctic Creek above tributary near Nome, AK	7	64 38 16	165 42 42	1.13	784	0	0	25	-3
15625000	Arctic Creek near Nome, AK	7	64 38 15	165 42 46	1.76	820	0	2	25	-3
15633000	Washington Creek near Nome, AK	7	64 42 52	165 49 13	6.34	860	0	3	25	-3
15635000	Eldorado Creek near Teller, AK	7	64 57 38	166 11 59	5.83	1,310	0	0	18	-3
15637000	Gold Run Creek near Teller, AK	7	65 02 30	166 10 06	24.2	783	0	0	18	-3
15668100	Star Creek near Nome, AK	7	64 55 40	164 57 39	3.78	1,500	0	1	30	-4

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[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[3] Drainage area is indeterminate. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Number of systematic peaks	Skew coefficient used for analysis	Peak streamflow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15564900	22	0.235	Sta	122,000	171,000	206,000	252,000	289,000	328,000	368,000	426,000
			Reg	93,000	117,000	133,000	152,000	167,000	181,000	196,000	215,000
			Wtd	121,000	169,000	203,000	248,000	283,000	320,000	359,000	413,000
15565200	10	-.108	Sta	747,000	921,000	1,020,000	1,150,000	1,230,000	1,310,000	1,390,000	1,490,000
			Reg	749,000	854,000	921,000	1,000,000	1,060,000	1,120,000	1,170,000	1,250,000
			Wtd	747,000	918,000	1,020,000	1,140,000	1,220,000	1,300,000	1,370,000	1,470,000
15565447	21	.307	Sta	688,000	839,000	937,000	1,060,000	1,150,000	1,240,000	1,330,000	1,460,000
			Reg	814,000	923,000	993,000	1,080,000	1,140,000	1,200,000	1,260,000	1,330,000
			Wtd	689,000	840,000	938,000	1,060,000	1,150,000	1,240,000	1,330,000	1,450,000
15585000	22	-.850	Sta	35.5	51.7	60.7	70.2	76.1	81.3	85.7	90.7
			Reg	41.5	69.5	88.9	114	132	150	169	193
			Wtd	35.8	52.9	63.0	74.5	82.3	89.4	95.9	104
15619000	10	-.372	Sta	88.4	116	132	150	163	174	185	199
			Reg	74.5	123	156	198	230	261	291	332
			Wtd	86.3	117	137	161	179	197	214	237
15621000	27	-.544	Sta	2,710	3,430	3,820	4,250	4,520	4,770	4,990	5,260
			Reg	1,490	2,270	2,790	3,420	3,880	4,320	4,760	5,320
			Wtd	2,640	3,360	3,750	4,180	4,460	4,720	4,970	5,260
15624998	21	-.270	Sta	51.9	95.2	128	174	211	249	289	343
			Reg	31.3	52.8	67.8	86.9	101	115	130	148
			Wtd	49.9	90.3	120	158	187	217	248	290
15625000	10	-.184	Sta	63.1	111	148	198	238	281	325	388
			Reg	46.5	77.6	99.1	127	147	167	187	214
			Wtd	60.3	104	136	176	207	239	271	315
15633000	36	-.412	Sta	72.9	155	223	319	397	479	565	683
			Reg	146	236	298	375	433	489	545	618
			Wtd	75.0	159	227	323	400	480	562	675
15635000	14	-.0798	Sta	239	373	468	594	693	794	899	1,040
			Reg	135	220	277	350	403	456	508	576
			Wtd	226	350	433	539	619	700	782	895
15637000	10	-.258	Sta	774	1,210	1,510	1,890	2,180	2,470	2,750	3,140
			Reg	481	757	941	1,170	1,340	1,500	1,660	1,870
			Wtd	731	1,130	1,390	1,710	1,940	2,160	2,390	2,680
15668100	24	-.507	Sta	71.1	111	137	169	191	212	231	256
			Reg	91.9	151	191	242	280	317	354	403
			Wtd	72.2	114	141	176	200	224	247	276

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

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Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin elevation (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipitation (in.)	Mean minimum January temperature (^{o}F)
15668200	Crater Creek near Nome, AK	7	64 55 48	164 52 12	21.9	1,620	1	3	35	-4
15712000	Kuzitrin River near Nome, AK	7	65 13 17	164 37 15	1,720	700	1	2	15	-8
15743850	Dahl Creek near Kobuk, AK	7	66 56 46	156 54 32	11.0	1,500	0	55	18	-15
15744000	Kobuk River at Ambler, AK	7	67 05 13	157 50 51	6,570	1,610	1	34	25	-16
15744500	Kobuk River near Kiana, AK	7	66 58 25	160 07 51	9,520	1,450	1	32	25	-16
15747000	Wulik River below Tutak Creek near Kivalina, AK	7	67 52 34	163 40 28	705	830	0	1	15	-14
15798700	Nunavak Creek near Barrow, AK	7	71 15 35	156 46 57	2.79	40	22	0	8	-23
15896000	Kuparuk River near Deadhorse, AK	7	70 16 54	148 57 35	3,130	900	2	0	9	-18
15896700	Putuligayuk River near Deadhorse, AK	7	70 16 03	148 37 41	176	135	8	0	8	-18
15904900	Atigun River tributary near Pump Station 4, AK	7	68 22 25	149 18 48	32.6	5,100	0	0	25	-16
15906000	Sagavanirktok River tributary near Pump Station 3, AK	7	68 41 13	149 05 42	28.4	2,869	4	0	18	-16
15908000	Sagavanirktok River near Pump Station 3, AK	7	69 00 54	148 49 02	1,860	3,580	1	0	18	-16

[1] Record includes glacial outbursts. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[3] Drainage area is indeterminate. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

[Rounding differences may cause values in this table to vary by less than 1 percent from those computed using equations in table 3 or by the computer program available at http://pubs.water.usgs.gov/wri034188. **Station No.:** R, presently regulated. **Station name:** AK, Alaska; BC, British Columbia; YT, Yukon. **Region**: See figure 1 for location of regions. **Latitude and Longitude** are given in degrees, minutes, and seconds. **Mean basin elevation**: Elevations are given in feet above NGVD of 1929. **Skew coefficient used for analysis**: weighted skew except where noted in footnote. **Peak streamflow analysis type:** Sta, value of Q_T from analysis of observed station data using weighted skew coefficient; Reg, value of Q_T estimated from regression equation (table 3); Wtd, value of Q_T estimated by weighting Sta and Reg based on the years of record for station data and equivalent years of record for the equation. **Peak streamflow:** Q_T, peak streamflow having a recurrence interval of T years. –, not available; ft, foot; mi^2, square mile; in., inch; °F, degree Fahrenheit]

Station No.	Number of syste-matic peaks	Skew coeffi-cient used for analysis	Peak stream-flow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15668200	25	-0.261	Sta	872	1,360	1,690	2,120	2,440	2,750	3,070	3,490
			Reg	440	694	864	1,070	1,230	1,380	1,530	1,720
			Wtd	843	1,310	1,610	1,980	2,260	2,530	2,800	3,150
15712000	10	-.465	Sta	19,800	30,500	37,400	45,600	51,500	57,100	62,400	69,200
			Reg	21,500	30,800	36,600	43,600	48,500	53,200	57,700	63,500
			Wtd	19,900	30,500	37,300	45,300	51,000	56,400	61,500	68,000
15743850	14	-.546	Sta	352	698	957	1,300	1,560	1,820	2,070	2,410
			Reg	238	382	478	599	688	775	862	974
			Wtd	339	652	868	1,130	1,320	1,510	1,690	1,920
15744000	13	-.489	Sta	62,500	86,100	100,000	116,000	127,000	137,000	146,000	157,000
			Reg	71,100	98,700	116,000	136,000	150,000	163,000	176,000	192,000
			Wtd	62,800	86,800	101,000	118,000	129,000	140,000	149,000	162,000
15744500	23	-.609	Sta	105,000	139,000	158,000	178,000	192,000	204,000	214,000	227,000
			Reg	99,000	136,000	159,000	186,000	205,000	223,000	240,000	261,000
			Wtd	104,000	139,000	158,000	179,000	192,000	205,000	216,000	229,000
15747000	15	-.0612	Sta	17,700	25,800	31,300	38,400	43,800	49,200	54,700	62,200
			Reg	9,720	14,200	17,000	20,500	22,900	25,200	27,500	30,400
			Wtd	17,100	24,800	29,700	35,800	40,300	44,800	49,400	55,500
15798700	28	.0449	Sta	39.7	74.1	103	146	184	227	274	346
			Reg	70.1	116	147	187	217	246	275	313
			Wtd	41.0	76.3	106	150	188	229	274	340
15896000	29	-.223	Sta	45,100	68,600	84,500	105,000	120,000	135,000	150,000	170,000
			Reg	36,700	51,800	61,300	72,500	80,300	87,800	95,000	104,000
			Wtd	44,900	68,000	83,500	103,000	117,000	131,000	145,000	164,000
15896700	25	-.497	Sta	3,160	4,530	5,350	6,310	6,960	7,570	8,140	8,840
			Reg	2,820	4,250	5,170	6,300	7,110	7,900	8,660	9,640
			Wtd	3,140	4,510	5,340	6,310	6,980	7,600	8,200	8,940
15904900	24	.108	Sta	637	866	1,020	1,220	1,370	1,520	1,680	1,900
			Reg	627	981	1,220	1,510	1,720	1,930	2,130	2,390
			Wtd	637	873	1,040	1,250	1,410	1,570	1,740	1,960
15906000	21	-.577	Sta	331	574	738	941	1,090	1,220	1,360	1,520
			Reg	555	871	1,080	1,340	1,530	1,720	1,900	2,130
			Wtd	342	591	764	980	1,140	1,290	1,430	1,610
15908000	17	.0880	Sta	17,300	25,300	30,900	38,400	44,300	50,400	56,700	65,500
			Reg	23,100	33,000	39,200	46,600	51,800	56,800	61,600	67,700
			Wtd	17,600	25,700	31,400	39,100	45,000	51,000	57,300	65,800

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

[Rounding differences may cause values in this table to vary by less than 1 percent from those computed using equations in table 3 or by the computer program available at http://pubs.water.usgs.gov/wri034188. **Station No.:** R, presently regulated. **Station name:** AK, Alaska; BC, British Columbia; YT, Yukon. **Region**: See figure 1 for location of regions. **Latitude and Longitude** are given in degrees, minutes, and seconds. **Mean basin elevation**: Elevations are given in feet above NGVD of 1929. **Skew coefficient used for analysis**: weighted skew except where noted in footnote. **Peak streamflow analysis type:** Sta, value of Q_T from analysis of observed station data using weighted skew coefficient; Reg, value of Q_T estimated from regression equation (table 3); Wtd, value of Q_T estimated by weighting Sta and Reg based on the years of record for station data and equivalent years of record for the equation. **Peak streamflow:** Q_T, peak streamflow having a recurrence interval of T years. –, not available; ft, foot; mi^2, square mile; in., inch; ^{o}F, degree Fahrenheit]

Station No.	Station name	Region	Latitude	Longitude	Drainage area (mi^2)	Mean basin elevation (ft)	Area of lakes and ponds (storage) (percent)	Area of forest (percent)	Mean annual precipitation (in.)	Mean minimum January temperature (^{o}F)
15910000	Sagavanirktok River near Sagwon, AK	7	69 05 24	148 45 34	2,200	3,220	0	0	18	-16
15910200	Happy Creek at Happy Valley Camp near Sagwon, AK	7	69 08 50	148 49 50	34.5	1,510	2	0	10	-16
15918200	Sagavanirktok River tributary near Deadhorse, AK	7	69 57 14	148 43 48	12.0	223	5	0	8	-20
15999900	Firth River near mouth near Herschel, YT	7	69 19 00	139 34 00	2,200	2,630	0	0	18	-22

[1] Record includes glacial outbursts. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[2] Record includes regulated years. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.
[3] Drainage area is indeterminate. Station not included in regression analysis. Station skew coefficient used to calculate Q_T.

Table 4. Station information and peak-streamflow statistics for streamflow-gaging and partial-record stations in Alaska and conterminous basins in Canada—*Continued*

[Rounding differences may cause values in this table to vary by less than 1 percent from those computed using equations in table 3 or by the computer program available at http://pubs.water.usgs.gov/wri034188. **Station No.:** R, presently regulated. **Station name:** AK, Alaska; BC, British Columbia; YT, Yukon. **Region**: See figure 1 for location of regions. **Latitude and Longitude** are given in degrees, minutes, and seconds. **Mean basin elevation**: Elevations are given in feet above NGVD of 1929. **Skew coefficient used for analysis**: weighted skew except where noted in footnote. **Peak streamflow analysis type:** Sta, value of Q_T from analysis of observed station data using weighted skew coefficient; Reg, value of Q_T estimated from regression equation (table 3); Wtd, value of Q_T estimated by weighting Sta and Reg based on the years of record for station data and equivalent years of record for the equation. **Peak streamflow:** Q_T, peak streamflow having a recurrence interval of T years. –, not available; ft, foot; mi^2, square mile; in., inch; °F, degree Fahrenheit]

Station No.	Number of systematic peaks	Skew coefficient used for analysis	Peak streamflow analysis type	Peak streamflow, in cubic feet per second, for given recurrence interval, in years							
				Q_2	Q_5	Q_{10}	Q_{25}	Q_{50}	Q_{100}	Q_{200}	Q_{500}
15910000	11	-0.639	Sta	20,500	28,300	32,800	37,700	40,900	43,700	46,300	49,400
			Reg	26,900	38,300	45,400	53,900	59,900	65,600	71,100	78,000
			Wtd	20,800	29,000	33,900	39,400	43,200	46,600	49,800	53,600
15910200	26	-1.02	Sta	832	1,220	1,420	1,620	1,740	1,840	1,920	2,010
			Reg	660	1,030	1,280	1,580	1,800	2,020	2,230	2,510
			Wtd	823	1,210	1,410	1,620	1,750	1,860	1,960	2,070
15918200	12	-.268	Sta	73.7	112	138	171	195	219	243	274
			Reg	257	412	515	645	740	834	926	1,050
			Wtd	83.7	131	168	219	258	298	337	389
15999900	21	-.210	Sta	18,000	26,500	32,000	39,000	44,100	49,200	54,200	60,900
			Reg	26,800	38,200	45,300	53,700	59,700	65,400	70,800	77,800
			Wtd	18,300	26,900	32,600	39,900	45,200	50,500	55,700	62,500

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APPENDIXES

APPENDIX A. YEARS OF RECORD FOR ANNUAL PEAK STREAMFLOWS USED IN THIS REPORT

[Refer to table 4 for number of systematic peaks used; AK, Alaska; BC, British Columbia; YT, Yukon]

Station No.	Station name	Water years for peak streamflows (systematic and historic) used in this report	Water years for historic peaks used in this report	Length of historic period (years)
15008000	Salmon River near Hyder, AK	1964-73	–	–
15010000	Davis River near Hyder, AK	1931-40	–	–
15011500	Red River near Metlakatla, AK	1964-78	–	–
15012000	Winstanley Creek near Ketchikan, AK	1937-38, 1948-75	–	–
15015590	Unuk River near Stewart, BC	1961, 1967-68, 1970, 1972, 1973, 1975-76, 1978-81, 1983, 1985, 1987-90, 1992, 1994-95	–	–
15022000	Harding River near Wrangell, AK	1952-99	–	–
15024200	Klappan River near Telegraph Creek, BC	1963-77, 1979-95	–	–
15024300	Stikine River above Grand Canyon near Telegraph Creek, BC	1959, 1961-94	–	–
15024400	Tanzilla River near Telegraph Creek, BC	1959-66	–	–
15024500	Tuya River near Telegraph Creek, BC	1962-85, 1987-99	–	–
15024600	Stikine River at Telegraph Creek, BC	1955-99	–	–
15024640	Stikine River above Butterfly Creek, BC	1972-94	–	–
15024670	Iskut River at outlet of Kinaskan Lake, BC	1965-73, 1975-95	–	–
15024684	More Creek near mouth, BC	1973, 1975, 1977, 1979-85, 1987-92, 1994	–	–
15024690	Forrest Kerr Creek near Wrangell, BC	1973, 1975-77, 1979-85, 1987-92, 1994	–	–
15024695	Iskut River above Snippaker Creek, BC	1967-71, 1973, 1975-77, 1979, 1981-85, 1987-92, 1994	–	–
15024700	Iskut River below Johnson River,, BC	1959-60, 1962-68, 1970-73, 1975, 1977, 1979-81, 1983-85, 1987-92, 1994-99	–	–
15024750	Goat Creek near Wrangell, AK	1977-86	–	–
15024800	Stikine River near Wrangell, AK	1977-99	–	–
15026000	Cascade Creek near Petersburg, AK	1918-20, 1923-24, 1926-28, 1947-73	–	–
15028300	Farragut River near Petersburg, AK	1978-93	–	–
15031000	Long River above Long Lake near Juneau, AK	1966-75	–	–
15034000	Long River near Juneau, AK	1916-18, 1920-22, 1927-32, 1952-68	–	–
15036000	Speel River near Juneau, AK	1917-18, 1961-75	–	–
15038000	Crater Creek near Juneau, AK	1915, 1917, 1918, 1920, 1927-30, 1932	–	–
15039900	Dorothy Lake outlet near Juneau, AK	1987-99	–	–
15040000	Dorothy Creek near Juneau, AK	1930-41, 1943-67	–	–
15041000	Sloko River near Atlin, BC	1954, 1955, 1959-62, 1964-79	–	–
15041100	Taku River near Tulsequah, BC	1953-73, 1975-77, 1979-82, 1984-87	–	–
15041200	Taku River near Juneau, AK	1987-99	–	–
15044000	Carlson Creek near Juneau, AK	1952-61	–	–
15048000	Sheep Creek near Juneau, AK	1918-20, 1947-73	–	–

Appendix A. Years of record for annual peak streamflows used in this report—*Continued*
[Refer to table 4 for number of systematic peaks used; AK, Alaska; BC, British Columbia; YT, Yukon]

Station No.	Station name	Water years for peak streamflows (systematic and historic) used in this report	Water years for historic peaks used in this report	Length of historic period (years)
15049900	Gold Creek near Juneau, AK	1985-97	–	–
15050000	Gold Creek at Juneau, AK	1917-20, 1947-48, 1950-82, 1991, 1994, 1996, 1998, 1999	1996	50
15052000	Lemon Creek near Juneau, AK	1952-73, 1999	1999	48
15052500	Mendenhall River near Auke Bay, AK	1966-99	–	–
15052800	Montana Creek near Auke Bay, AK	1966-75, 1984-87, 1996-99	–	–
15053800	Lake Creek at Auke Bay, AK	1964-73	–	–
15054000	Auke Creek at Auke Bay, AK	1948-50, 1963-75	–	–
15054500	Bessie Creek near Auke Bay, AK	1967-80	–	–
15056100	Skagway River at Skagway, AK	1964-86	–	–
15056200	West Creek near Skagway, AK	1962-77	–	19
15056210	Taiya River near Skagway, AK	1967, 1970-77	1967	19
15056560	Klehini River near Klukwan, AK	1982-93	–	–
15057500	William Henry Creek near Auke Bay, AK	1967-70, 1972, 1974-76	–	–
15058000	Purple Lake outlet near Metlakatla, AK	1948-52, 1954-56	–	–
15059500	Whipple Creek near Ward Cove, AK	1969-80	–	–
15060000	Perseverance Creek near Wacker, AK	1947-69	–	–
15067900	Upper Mahoney Lake outlet near Ketchikan, AK	1978-89	–	–
15068000	Mahoney Creek near Ketchikan, AK	1922-25, 1928-33, 1948-58, 1978-81	–	–
15070000	Swan Lake near Ketchikan, AK	1917-25, 1928-33, 1947-59	–	–
15072000	Fish Creek near Ketchikan, AK	1916-24, 1926-35, 1939-99	–	–
15074000	Ella Creek near Ketchikan, AK	1928-38, 1948-58	–	–
15076000	Manzanita Creek near Ketchikan, AK	1928-37, 1948-67	–	40
15078000	Grace Creek near Ketchikan, AK	1928-37, 1964-69	–	–
15080000	Orchard Creek near Bell Island, AK	1916-26	–	–
15081490	Yatuk Creek near Klawock, AK	1972-80	–	–
15081497	Staney Creek near Klawock, AK	1990-99	–	–
15081500	Staney Creek near Craig, AK	1965-81	–	–
15081580	Black Bear Lake outlet near Klawock, AK	1981-91	–	–
15081890	Natzuhini Creek near Hydaburg, AK	1971-74, 1976-80	–	–
15083500	Perkins Creek near Metlakatla, AK	1977-93	–	–
15085100	Old Tom Creek near Kasaan, AK	1950, 1952-99	–	–
15085600	Indian Creek near Hollis, AK	1950-53, 1955-63	–	–
15085700	Harris River near Hollis, AK	1950-64	–	–
15085800	Maybeso Creek at Hollis, AK	1950-63	–	–
15086600	Big Creek near Point Baker, AK	1964-81	–	–
15086900	Red Creek near Point Baker, AK	1972-81	–	–
15087250	Twin Creek near Petersburg, AK	1967-77, 1979-80	–	–
15087545	Municipal Watershed Creek near Petersburg, AK	1979-88	–	–
15087570	Hamilton Creek near Kake, AK	1972-73, 1975-86, 1989-95	–	–
15087585	Twelvemile Creek near Petersburg, AK	1973-77, 1979-82	–	–
15087590	Rocky Pass Creek near Point Baker, AK	1977-88	–	–
15087690	Indian River near Sitka, AK	1981-94, 1999	–	–

Appendix A. Years of record for annual peak streamflows used in this report—*Continued*
[Refer to table 4 for number of systematic peaks used; AK, Alaska; BC, British Columbia; YT, Yukon]

Station No.	Station name	Water years for peak streamflows (systematic and historic) used in this report	Water years for historic peaks used in this report	Length of historic period (years)
15088000	Sawmill Creek near Sitka, AK	1921-22, 1929-42, 1946-57	–	–
15093400	Sashin Creek near Big Port Walter, AK	1966-73, 1975-80	–	–
15094000	Deer Lake outlet near Port Alexander, AK	1952-67	–	–
15098000	Baranof River at Baranof, AK	1915-22, 1926-27, 1959, 1961-74	–	–
15100000	Takatz Creek near Baranof, AK	1952-69	–	–
15101490	Greens Creek at Greens Creek Mine near Juneau, AK	1990-99	–	–
15101500	Greens Creek near Juneau, AK	1979-92	–	–
15102000	Hasselborg Creek near Angoon, AK	1952-68	–	–
15106920	Kadashan River above Hook Creek near Tenakee , AK	1969-78, 1981-99	–	–
15106940	Hook Creek above tributary near Tenakee, AK	1968-80	–	–
15106960	Hook Creek near Tenakee, AK	1968-80	–	–
15106980	Tonalite Creek near Tenakee, AK	1969-88	–	–
15107000	Kadashan River near Tenakee, AK	1965-80	–	–
15108000	Pavlof River near Tenakee, AK	1958-81	–	–
15108250	Game Creek near Hoonah, AK	1970-77, 1979-80	–	–
15109000	Fish Creek near Auke Bay, AK	1959-78	–	–
15120000	Aishihik River near Whitehorse, YT	1969-85	–	–
15120500	Dezadeash River at Haines Junction, YT	1953-74, 1976-96, 1998-99	–	–
15120600	Alsek River above Bates River near Haines Junction, YT	1975, 1977-82, 1984-99	–	–
15120720	Takhanne River near Haines Junction, YT	1984, 1987-93, 1995-99	–	–
15129500	Situk River near Yakutat, AK	1989-99	–	–
15195000	Dick Creek near Cordova, AK	1971-81	–	–
15198500	Station Creek near Mentasta, AK	1970-77, 1979-80, 1982, 1984-90, 1992-94, 1997	–	27
15199000	Copper River tributary near Slana, AK	1963-90	–	–
15200000	Gakona River at Gakona, AK	1950-74	–	–
15200270	Sourdough Creek at Sourdough, AK	1970-81	–	–
15200280	Gulkana River at Sourdough, AK	1973-78, 1989-93, 1997-99	–	–
15201000	Dry Creek near Glennallen, AK	1963-76, 1978-99	–	–
15201100	Little Nelchina River tributary near Eureka Lodge, AK	1965-89	–	–
15201900	Moose Creek tributary at Glennallen, AK	1963-74	–	–
15202000	Tazlina River near Glennallen, AK	1950, 1952-72	–	–
15206000	Klutina River at Copper Center, AK	1950-66	–	–
15208000	Tonsina River at Tonsina, AK	1950-54, 1956-82	–	–
15208100	Squirrel Creek at Tonsina, AK	1964-82	–	–
15208200	Rock Creek near Tonsina, AK	1966-92	–	–
15209000	Chititu Creek near May Creek, AK	1973-83	–	45
15209100	May Creek near May Creek, AK	1973-83	–	45
15211700	Strelna Creek near Chitina, AK	1971-96	–	–
15211900	O’Brien Creek near Chitina, AK	1970-77, 1979-82, 1984-90, 1992-96	–	–
15212000	Copper River near Chitina, AK	1951-52, 1956-90	–	45
15212500	Boulder Creek near Tiekel, AK	1964-99	–	49
15212800	Ptarmigan Creek tributary near Valdez, AK	1965-70, 1995-99	–	–
15213400	Stuart Creek near Valdez, AK	1972-81	–	–

Appendix A. Years of record for annual peak streamflows used in this report—*Continued*
[Refer to table 4 for number of systematic peaks used; AK, Alaska; BC, British Columbia; YT, Yukon]

Station No.	Station name	Water years for peak streamflows (systematic and historic) used in this report	Water years for historic peaks used in this report	Length of historic period (years)
15216000	Power Creek near Cordova, AK	1948-95	–	–
15219000	West Fork Olsen Bay Creek near Cordova, AK	1965-80	–	–
15219100	Control Creek near Cordova, AK	1964-74	–	–
15227500	Mineral Creek near Valdez, AK	1976-81, 1990-99	–	–
15236200	Shakespeare Creek at Whittier, AK	1970-80, 1984-99	–	–
15237360	San Juan River near Seward, AK	1987-96	–	–
15237400	Chalmers River near Cordova, AK	1967-73, 1975-80	–	–
15238000	Lost Creek near Seward, AK	1949, 1963-72, 1976, 1987	1976, 1987	51
15238600	Spruce Creek near Seward, AK	1966-86, 1988-99	–	–
15238820	Barabara Creek near Seldovia, AK	1973-92	–	–
15239000	Bradley River near Homer, AK	1958-88	–	–
15239050	Middle Fork Bradley River tributary near Homer, AK	1980-99	–	–
15239500	Fritz Creek near Homer, AK	1963-99	–	–
15239800	Diamond Creek near Homer, AK	1963-81	–	–
15239900	Anchor River near Anchor Point, AK	1966-74, 1979-87, 1992	–	48
15240000	Anchor River at Anchor Point, AK	1954-66, 1984-92	–	48
15240500	Cook Inlet tributary near Ninilchik, AK	1966-81	–	–
15241600	Ninilchik River at Ninilchik, AK	1963-85, 1999	–	–
15242000	Kasilof River near Kasilof, AK	1950-74, 1977	1977	28
15243950	Porcupine Creek near Primrose, AK	1963-89	–	–
15244000	Ptarmigan Creek at Lawing, AK	1948-50, 1952-58	–	–
15246000	Grant Creek near Moose Pass, AK	1948-50, 1952-58	–	–
15248000	Trail River near Lawing, AK	1948-50, 1952-77	–	–
15250000	Falls Creek near Lawing, AK	1963-70	–	–
15251800	Quartz Creek at Gilpatricks, AK	1963-70, 1987	1987	25
15254000	Crescent Creek near Cooper Landing, AK	1950-83	–	–
15258000	Kenai River at Cooper Landing, AK	1948-60	–	–
15258000	Kenai River at Cooper Landing, AK, regulated years	1961-99	–	–
15260000	Cooper Creek near Cooper Landing, AK	1950-59	–	–
15266300	Kenai River at Soldotna, AK	1965-99	–	47
15266500	Beaver Creek near Kenai, AK	1968-78, 1980-83, 1985-94	–	–
15267900	Resurrection Creek near Hope, AK	1968-85	–	–
15269500	Granite Creek near Portage, AK	1967-80	–	–
15270400	Donaldson Creek near Wibel, AK	1963-72	–	–
15271000	Sixmile Creek near Hope, AK	1980-90, 1998-99	–	–
15271900	Cub Creek near Hope, AK	1965-79	–	–
15272280	Portage Creek at Portage Lake outlet near Whittier, AK	1989-99	–	–
15272530	California Creek at Girdwood, AK	1967-84, 1986-93, 1995	1995	28
15272550	Glacier Creek at Girdwood, AK	1966-78	–	–
15273900	South Fork Campbell Creek at canyon mouth near Anchorage, AK	1967-79, 1981	–	–
15274000	South Fork Campbell Creek near Anchorage, AK	1948-72, 1999	–	–
15274300	North Fork Campbell Creek near Anchorage, AK	1967-84	–	–

Appendix A. Years of record for annual peak streamflows used in this report—*Continued*
[Refer to table 4 for number of systematic peaks used; AK, Alaska; BC, British Columbia; YT, Yukon]

Station No.	Station name	Water years for peak streamflows (systematic and historic) used in this report	Water years for historic peaks used in this report	Length of historic period (years)
15276000	Ship Creek near Anchorage, AK	1947-99	–	–
15277100	Eagle River at Eagle River, AK	1966-80, 1995	1995	35
15277200	Meadow Creek at Eagle River, AK	1965-74	–	–
15277410	Peters Creek near Birchwood, AK	1974-83, 1995	1995	35
15280000	Eklutna Creek near Palmer, AK	1947-54	–	–
15281000	Knik River near Palmer, AK	1963, 1967-87, 1989, 1992, 1995	1989, 1995	33
15281000	Knik River near Palmer, AK, with glacial outbursts	1948-87, 1992	–	–
15281500	Camp Creek near Sheep Mountain Lodge, AK	1968-69, 1971, 1989-99	–	–
15282000	Caribou Creek near Sutton, AK	1955-78	–	–
15282400	Purinton Creek near Sutton, AK	1963-66, 1968-81, 1988-94	–	–
15283500	Eska Creek near Sutton, AK	1966, 1971-94	–	46
15284000	Matanuska River at Palmer, AK	1949-70, 1972-74, 1985-86, 1992, 1995	1995	51
15285000	Wasilla Creek near Palmer, AK	1971, 1976-99	1971	51
15290000	Little Susitna River near Palmer, AK	1949-99	–	–
15290200	Nancy Lake tributary near Willow, AK	1983-87, 1989-99	–	–
15291000	Susitna River near Denali, AK	1957-65, 1969-85	–	51
15291100	Raft Creek near Denali, AK	1963-99	–	–
15291200	Maclaren River near Paxson, AK	1958-85	–	–
15291500	Susitna River near Cantwell, AK	1961-72, 1980-85	–	–
15292000	Susitna River at Gold Creek, AK	1950-96	–	–
15292392	Byers Creek near Talkeetna, AK	1972-81	–	–
15292400	Chulitna River near Talkeetna, AK	1958-62, 1965-77, 1979-87	–	–
15292700	Talkeetna River near Talkeetna, AK	1964-99	–	–
15292800	Montana Creek near Montana, AK	1963-72, 1987	1987	40
15293000	Caswell Creek near Caswell, AK	1963-87	–	40
15293700	Little Willow Creek near Kashwitna, AK	1980-87	–	40
15294005	Willow Creek near Willow, AK	1979-93	–	40
15294010	Deception Creek near Willow, AK	1978-85	–	
15294025	Moose Creek near Talkeetna, AK	1972-96	–	40
15294100	Deshka River near Willow, AK	1979-87, 1999	–	40
15294300	Skwentna River near Skwentna, AK	1960-82, 1987	1987	35
15294350	Susitna River at Susitna Station, AK	1975-92	–	–
15294450	Chuitna River near Tyonek, AK	1976-87	–	35
15294500	Chakachatna River near Tyonek, AK	1959-70, 1972	–	–
15295600	Terror River near Kodiak, AK	1963-68, 1979-82	–	–
15296000	Uganik River near Kodiak, AK	1952-78	–	–
15297200	Myrtle Creek near Kodiak, AK	1963-99	–	–
15297475	Red Cloud Creek tributary near Kodiak, AK	1963-90	–	–
15297900	Eskimo Creek at King Salmon, AK	1965-67, 1969-76, 1978-84	–	–
15300000	Newhalen River near Iliamna, AK	1951-67, 1969-77, 1982-86	–	–
15300200	Roadhouse Creek near Iliamna, AK	1973-76, 1978-83	–	–
15300500	Kvichak River at Igiugig, AK	1967-87	–	–

Appendix A. Years of record for annual peak streamflows used in this report—*Continued*

[Refer to table 4 for number of systematic peaks used; AK, Alaska; BC, British Columbia; YT, Yukon]

Station No.	Station name	Water years for peak streamflows (systematic and historic) used in this report	Water years for historic peaks used in this report	Length of historic period (years)
15302000	Nuyakuk River near Dillingham, AK	1954-96	–	–
15302500	Nushagak River at Ekwok, AK	1978-93	–	–
15302900	Moody Creek at Aleknagik, AK	1969-73, 1975-85, 1988-99	–	–
15303000	Wood River near Aleknagik, AK	1958-70, 1972	1972	15
15303010	Silver Salmon Creek near Aleknagik, AK	1965-67, 1969-88, 1991-94	–	–
15303011	Wood River tributary near Aleknagik, AK	1985-98	–	–
15303150	Snake River near Dillingham, AK	1974-83	–	–
15303600	Kuskokwim River at McGrath, AK	1963-73	–	–
15303660	Gold Creek at Takotna, AK	1987-99	–	–
15303700	Tatalina River near Takotna, AK	1987-88, 1990-99	–	–
15304000	Kuskokwim River at Crooked Creek, AK	1952-94, 1996-99	–	–
15304200	Kisarlik River near, AKiak, AK	1980-87	–	–
15304293	Browns Creek near Bethel, AK	1985-94	–	–
15304298	Browns Creek at Bethel, AK	1985-94	–	–
15304520	Lubbock River near Atlin, BC	1960-61, 1964-81, 1983-85, 1987-90, 1992-93	–	–
15304600	Atlin River near Atlin, BC	1950-99	–	–
15304650	Wann River near Atlin, BC	1958-73, 1975-93	–	–
15304700	Fantail River at outlet of Fantail Lake near Atlin, BC	1958-77, 1979-93	–	–
15304750	Tutshi River at outlet of Tutshi Lake near Atlin, BC	1958-61, 1963-97	–	–
15304800	Lindeman River near Bennett, BC	1955-77, 1979-86, 1988-93	–	–
15304850	Wheaton River near Carcross, YT	1958-76, 1978-96, 1999	–	–
15304855	Watson River near Carcross, YT	1956-61, 1966-73	–	–
15304950	Maclintock River near Whitehorse, YT	1956-60, 1962-95	–	–
15305000	Yukon River at Whitehorse, YT	1944-93, 1995-96, 1998	–	–
15305030	Takhini River at Kusawa Lake at Whitehorse, YT	1953-54, 1956, 1958-60, 1962-67, 1969-86	–	–
15305050	Takhini River near Whitehorse, YT	1949-99	–	–
15305100	Yukon River above Frank Creek, YT	1953-94	–	–
15305150	Swift River near Swift River, BC	1958-69, 1971-94, 1996, 1998-99	–	–
15305200	Gladys River at outlet of Gladys Lake near Atlin, BC	1958-61, 1963-93	–	–
15305250	Teslin River near Teslin, YT	1944, 1948-94	–	–
15305260	Teslin River near Whitehorse, YT	1956-73	–	–
15305300	Big Salmon River near Carmacks, YT	1953, 1955-57, 1962, 1964-96	–	–
15305350	Yukon River at Carmacks, YT	1952-95	–	–
15305360	Big Creek near mouth near Minto, YT	1975-94, 1996-99	–	–
15305390	Ross River at Ross River, YT	1962-63, 1965-99	–	–
15305400	Pelly River at Ross River, YT	1955-58, 1960-74	–	–
15305406	Pelly River at Faro, YT	1973-98	–	–
15305412	South MacMillan River at Canol Road near Ross River, YT	1975-96	–	–
15305420	Pelly River at Pelly Crossing, YT	1953-58, 1960-99	–	–
15305450	Yukon River above White River near Dawson, YT	1957-64, 1966-99	–	–
15305500	Kluane River at outlet of Kluane Lake, YT	1953-95	–	–
15305540	White River at Alaska Highway near Koidern, BC	1975-79, 1981-93, 1995-96, 1998-99	–	–

Appendix A. Years of record for annual peak streamflows used in this report—*Continued*
[Refer to table 4 for number of systematic peaks used; AK, Alaska; BC, British Columbia; YT, Yukon]

Station No.	Station name	Water years for peak streamflows (systematic and historic) used in this report	Water years for historic peaks used in this report	Length of historic period (years)
15305582	Stewart River above Fraser Falls near Mayo, YT	1981-84, 1986-87, 1989-95	–	–
15305590	Stewart River at Mayo, YT	1949-51, 1953-79	–	–
15305620	Stewart River at Stewart Crossing, YT	1961-73	–	–
15305650	Stewart River at mouth, YT	1964-99	–	–
15305670	Yukon River at Stewart, YT	1957-65	–	–
15305695	North Klondike River near mouth near Dawson, YT	1975-97, 1999	–	–
15305698	Klondike River above Bonanza Creek near Dawson, YT	1966-72, 1974-99	–	–
15305700	Yukon River at Dawson, YT	1945-52, 1956-80	–	–
15305900	Dennison Fork near Tetlin Junction, AK	1964-99	–	–
15305920	West Fork tributary near Tetlin Junction, AK	1967-84, 1990-97	–	–
15305950	Taylor Creek near Chicken, AK	1967-91	–	–
15344000	King Creek near Dome Creek, AK	1975-96, 1998-99	–	–
15348000	Fortymile River near Steele Creek, AK	1911-12, 1964, 1976-82	1964	50
15355000	Fortymile River near mouth near Eagle, YT	1982-85, 1987-89, 1993-96	–	–
15356000	Yukon River at Eagle, AK	1911-12, 1950-99	–	–
15365000	Discovery Fork of American Creek near Eagle, AK	1963, 1965-73	–	–
15367500	Bluff Creek near Eagle, AK	1963-72	–	–
15388944	Porcupine River below Bell River, YT	1975, 1977-95	–	–
15388948	Old Crow River near mouth near Old Crow, YT	1976-81, 1983-91, 1993-99	–	–
15388950	Porcupine River at Old Crow, YT	1962-95	–	–
15388960	Porcupine River near International Boundary, YT	1987-99	–	–
15389000	Porcupine River near Fort Yukon, AK	1965-79	–	–
15389500	Chandalar River near Venetie, AK	1964-74	–	–
15438500	Bedrock Creek near Central, AK	1964-74, 1989	1989	36
15439800	Boulder Creek near Central, AK	1964-99	–	–
15442500	Quartz Creek near Central, AK	1969-73, 1975-77, 1979, 1989-99	–	–
15453481	West Fork Dall River tributary near Stevens Village, AK	1982-94	–	–
15453500	Yukon River near Stevens Village, AK	1964, 1977-99	1964	50
15453610	Ray River tributary near Stevens Village, AK	1977-99	–	–
15457700	Erickson Creek near Livengood, AK	1973-97	–	–
15457800	Hess Creek near Livengood, AK	1971-78, 1983-86	–	–
15468000	Yukon River at Rampart, AK	1956-67	–	50
15469900	Silver Creek near Northway Junction, AK	1963-72	–	–
15470000	Chisana River at Northway Junction, AK	1950-71, 1997	1997	50
15470300	Little Jack Creek near Nabesna, AK	1975-99	–	–
15470330	Chalk Creek near Nabesna, AK	1975-92	–	–
15470340	Jack Creek near Nabesna, AK	1975-83, 1992-93	–	–
15471000	Bitters Creek near Northway Junction, AK	1964-86, 1989-90	–	46
15471500	Tanana River tributary near Tetlin Junction, AK	1965-90	–	–
15473600	Log Cabin Creek near Log Cabin Inn, AK	1966-91	–	–
15473950	Clearwater Creek near Tok, AK	1964-80	–	–
15476000	Tanana River near Tanacross, AK	1953-90	–	–
15476049	Tanana River tributary near Cathedral Rapids, AK	1973-97	–	–
15476050	Tanana River tributary near Tanacross, AK	1964-68, 1970-72	–	–

Appendix A. Years of record for annual peak streamflows used in this report—*Continued*

[Refer to table 4 for number of systematic peaks used; AK, Alaska; BC, British Columbia; YT, Yukon]

Station No.	Station name	Water years for peak streamflows (systematic and historic) used in this report	Water years for historic peaks used in this report	Length of historic period (years)
15476200	Tanana River tributary near Dot Lake, AK	1964-80	–	–
15476300	Berry Creek near Dot Lake, AK	1964-99	–	–
15476400	Dry Creek near Dot Lake, AK	1964-87, 1989-90	–	–
15478000	Tanana River at Big Delta, AK	1949-52, 1954-57	–	–
15478010	Rock Creek near Paxson, AK	1963-87	–	–
15478040	Phelan Creek near Paxson, AK	1967-78, 1984-85, 1990-93, 1995-99	–	–
15478050	McCallum Creek near Paxson, AK	1967-91	–	–
15478093	Suzy Q Creek near Pump Station 10, AK	1987, 1989-99	1987	37
15478499	Ruby Creek above Richardson Highway near Donnelly, AK	1987-99	–	37
15478500	Ruby Creek near Donnelly, AK	1963-79	–	–
15480000	Banner Creek at Richardson, AK	1964-99	–	–
15484000	Salcha River near Salchaket, AK	1949-51, 1953-59, 1961-99	–	–
15485500	Tanana River at Fairbanks, AK	1967, 1973-99	1967	62
15490000	Monument Creek at Chena Hot Springs, AK	1970-77, 1979-95	–	–
15493000	Chena River near Two Rivers, AK	1968-99	–	–
15493500	Chena River near North Pole, AK	1972-80	–	–
15511000	Little Chena River near Fairbanks, AK	1967-99	–	100
15514000	Chena River at Fairbanks, AK	1948-80	–	100
15514500	Wood River near Fairbanks, AK	1969-78	–	–
15515500	Tanana River at Nenana, AK	1948, 1962-99	1948	62
15515800	Seattle Creek near Cantwell, AK	1964-77, 1979-89	–	–
15515900	Lily Creek near Cantwell, AK	1966-77, 1979-81	–	–
15516000	Nenana River near Windy, AK	1951-56, 1959-77, 1979-81	–	–
15516050	Jack River near Cantwell, AK	1973-81	–	–
15516200	Slime Creek near Cantwell, AK	1966-91, 1993-99	–	–
15518000	Nenana River near Healy, AK	1951-79	–	–
15518080	Lignite Creek above mouth near Healy, AK	1986-99	–	–
15518200	Rock Creek near Ferry, AK	1970-75, 1977-80	–	–
15518250	Birch Creek near Rex, AK	1965-67, 1969-91	–	–
15518350	Teklanika River near Lignite, AK	1965-74	–	35
15519000	Bridge Creek near Livengood, AK	1963-72	–	–
15519200	Brooks Creek tributary near Livengood, AK	1964-81, 1983-88, 1990	–	–
15520000	Idaho Creek near Miller House, AK	1963-77, 1979-90	–	–
15530000	Faith Creek near Chena Hot Springs, AK	1963-72	–	21
15535000	Caribou Creek near Chatanika, AK	1970-86	–	–
15541600	Globe Creek near Livengood, AK	1964-67, 1969-99	–	–
15541650	Globe Creek tributary near Livengood, AK	1963-67, 1969-72	–	–
15541800	Washington Creek near Fox, AK	1963-72	–	–
15564600	Melozitna River near Ruby, AK	1962-73	–	–
15564800	Yukon River at Ruby, AK	1957-78	–	–
15564868	Snowden Creek near Wiseman, AK	1977-99	–	–
15564872	Nugget Creek near Wiseman, AK	1975-88, 1990-99	–	–
15564875	Middle Fork Koyukuk River near Wiseman, AK	1971-80, 1984-87, 1994	1994	42
15564877	Wiseman Creek at Wiseman, AK	1971-79, 1994	1994	33

Appendix A. Years of record for annual peak streamflows used in this report—*Continued*

[Refer to table 4 for number of systematic peaks used; AK, Alaska; BC, British Columbia; YT, Yukon]

Station No.	Station name	Water years for peak streamflows (systematic and historic) used in this report	Water years for historic peaks used in this report	Length of historic period (years)
15564879	Slate Creek at Coldfoot, AK	1981-99	–	–
15564884	Prospect Creek near Prospect Camp, AK	1975-99	–	–
15564885	Jim River near Bettles, AK	1967, 1971-77	1967	12
15564887	Bonanza Creek tributary near Prospect Camp, AK	1975-99	–	–
15564900	Koyukuk River at Hughes, AK	1961-82, 1994	1994	63
15565200	Yukon River near Kaltag, AK	1957-66	–	–
15565447	Yukon River at Pilot Station, AK	1976-96	–	–
15585000	Goldengate Creek near Nome, AK	1965, 1977-84, 1986-99	1965	35
15619000	Dexter Creek near Nome, AK	1978, 1981-89	–	–
15621000	Snake River near Nome, AK	1965-91	–	–
15624998	Arctic Creek above tributary near Nome, AK	1979-99	–	–
15625000	Arctic Creek near Nome, AK	1969-78	–	–
15633000	Washington Creek near Nome, AK	1964-99	–	–
15635000	Eldorado Creek near Teller, AK	1986-99	–	–
15637000	Gold Run Creek near Teller, AK	1986-95	–	–
15668100	Star Creek near Nome, AK	1964-69, 1972-89	–	–
15668200	Crater Creek near Nome, AK	1964, 1966-89	–	–
15712000	Kuzitrin River near Nome, AK	1910, 1963, 1966-73	–	–
15743850	Dahl Creek near Kobuk, AK	1986-99	–	–
15744000	Kobuk River at Ambler, AK	1966-78	–	–
15744500	Kobuk River near Kiana, AK	1977-99	–	–
15747000	Wulik River below Tutak Creek near Kivalina, AK	1985-99	–	–
15798700	Nunavak Creek near Barrow, AK	1972-99	–	–
15896000	Kuparuk River near Deadhorse, AK	1971-99	–	–
15896700	Putuligayuk River near Deadhorse, AK	1970-80, 1982-95	–	–
15904900	Atigun River tributary near Pump Station 4, AK	1976-99	–	–
15906000	Sagavanirktok River tributary near Pump Station 3, AK	1979-99	–	–
15908000	Sagavanirktok River near Pump Station 3, AK	1983-99	–	–
15910000	Sagavanirktok River near Sagwon, AK	1969-79	–	–
15910200	Happy Creek at Happy Valley Camp near Sagwon, AK	1972-97	–	–
15918200	Sagavanirktok River tributary near Deadhorse, AK	1988-99	–	–
15999900	Firth River near mouth near Herschel, YT	1972-73, 1975-80, 1982-94	–	–

APPENDIX B. ACCURACY OF ESTIMATING EQUATIONS

Site-Specific Standard Error of Prediction

The uncertainty in a prediction of streamflow at a site can be expressed by the standard error of prediction. Actual peak streamflows for about two-thirds of the ungaged sites with basin characteristics identical to those for the specified site will be within the noted standard error of prediction. The standard error of prediction, may be estimated from the mean square error of the model, γ^2, and the mean square sampling error, MSE_s (Tasker and Stedinger, 1989). The mean square error of prediction, in square log (base 10) units, at a specific ungaged site can be estimated as

$$MSE_p = \gamma^2 + MSE_s \qquad (1)$$

The mean square error of the model, γ^2, is constant for all sites for a given region and given recurrence interval (table B1 at end of Appendix B). It is large relative to the mean square sampling error for the sites in this study.

The mean square sampling error at an individual site can be estimated using the covariance matrix for the corresponding estimating equation (table B1) and the following procedures. Let $\boldsymbol{Y}$ be a column vector of n logarithms of observed peak-streamflow statistics at n sites in a streamflow analysis region. For example,

$$\boldsymbol{Y} = \begin{bmatrix} \log Q_{50,\,1} \\ \log Q_{50,\,2} \\ \ldots \\ \log Q_{50,\,n} \end{bmatrix} \qquad (2)$$

where

$Q_{50,i}$ is the observed peak with a recurrence interval of 50 years at the ith streamflow-gaging station in the region.

Let $\boldsymbol{X}$ be an n by p matrix of p-1 basin characteristics and a column of ones at n streamflow-gaging stations. For example,

$$\boldsymbol{X} = \begin{bmatrix} 1 & \log A_1 & \log ST_1 & \log P_1 \\ 1 & \log A_2 & \log ST_2 & \log P_2 \\ \ldots & \ldots & \ldots & \ldots \\ 1 & \log A_n & \log ST_n & \log P_n \end{bmatrix} \qquad (3)$$

where A (drainage area), ST (area of lakes and ponds), and P (mean annual precipitaiton) are the basin characteristics used in the regression equation for the subject region. Let $\boldsymbol{B}$ be a column vector of p regression coefficients.

$$\boldsymbol{B} = \begin{bmatrix} a \\ b_1 \\ b_2 \\ b_3 \end{bmatrix} \qquad (4)$$

The linear model can be written in matrix notation as $\boldsymbol{Y} = \boldsymbol{XB}$.

Next, let $\boldsymbol{x}_0$ be a row vector of basin characteristics for an ungaged site. For the example region, the row vector is of the form $\boldsymbol{x}_0 = [1 \quad \log(A_0) \quad \log(ST_0) \quad \log(P_0)]$. The mean square sampling error for the ungaged site, MSE_s, is calculated as

$$MSE_s = \boldsymbol{x}_0 \left\{ \boldsymbol{X}^T \Lambda^{-1} \boldsymbol{X} \right\}^{-1} \boldsymbol{x}_0^T \qquad (5)$$

where

Λ is the n by n covariance matrix for $\boldsymbol{Y}$.

The diagonal elements of Λ are model error variance, γ^2, plus the time sampling error for each site i, (i = 1, 2, 3, …, n), which is estimated as a function of a regional estimate of the standard deviation of annual peaks at site i, the recurrence interval of the dependent variable, and the number of years of record at site i. The off-diagonal elements of Λ are the sample covariance of the estimated T-year peaks at sites i and j. These off-diagonal elements are estimated as a function of a regional estimate of the standard deviation of annual peaks at sites i and j, the recurrence interval of the dependent variable, and the number of concurrent years of record at sites i and j (Tasker and Stedinger, 1989). The p by p matrix $[\boldsymbol{X}^T\Lambda^{-1}\boldsymbol{X}]^{-1}$ and along with the values of γ^2 for each equation in table 3 are shown in table B1.

Average Standard Error of Prediction

The average standard error of prediction (ASEP) for a region is estimated by computing the site-specific MSE_p for each gaged site in the region, then averaging these values and taking the square root of the result. The ASEP is computed in log (base 10) units and converted to percentages. The average standard error of prediction for each of the estimating equations is presented in table 3.

Equivalent Years of Record

The uncertainty in a prediction of peak streamflow at an ungaged site can also be expressed as the number of years of record needed at the site to achieve an estimate of equal accuracy. The equivalent years of record (Hardison, 1971) can be calculated at an ungaged site by equating the variance of prediction, V_p, to the variance of the Pearson III quantile estimated from a sample of annual peaks, *Var(y)*. According to Hardison (1971), the variance of a predicted response at ungaged site k with basin characteristics $\boldsymbol{x}_k = (1, x_{k,1}, x_{k,2}, ..., x_{k,p})$ is

$$V_p = \hat{\gamma}^2 + \boldsymbol{x}_k \boldsymbol{X}'\Lambda^{-1}\boldsymbol{X}^{-1}\boldsymbol{x}'_k \ . \qquad (6)$$

Note that equation B6 is the combination of equations B1 and B5.

The variance of the Pearson III quantile, *Var(y)*, is approximated by

$$Var(y) = \frac{\sigma^2}{N}\left\{1 + \frac{k^2}{2}(1 + 0.75g^2) + kg\right\} \ , \qquad (7)$$

where

- σ is the standard deviation of logs of annual peaks;
- k is the Pearson III standard deviate for the recurrence interval T; and
- g is the skew coefficient for logs of annual peaks (Bobee, 1973).

Substituting regional skew for g and a regional estimate of σ into the above equation, equating it to V_p, and solving for N provides for an equivalent years of record as a measure of accuracy. The computer program available at http://pubs.water.usgs.gov/wri034188 computes V_p, uses the regional skew coefficient for g, and computes a regional estimate for σ from a regression of sample standard deviation at gaged sites on basin characteristics.

Average Equivalent Years of Record

The average equivalent years of record (AEYR) can be computed for a particular equation in a particular region. The equivalent years of record are first computed for all gaged sites within a region as if they were ungaged sites. The average of these site-specific values is the average equivalent of years of record for the regression equation for that region. Average equivalent years of record are presented in table 3.

Confidence Limits

The average standard error of prediction provides a measure of the accuracy of the overall analysis, but is not a measure of the error at a particular site. A measure of the error in a particular prediction is the confidence limits of a prediction. This can also be expressed as the range between the confidence limits, or prediction interval. The prediction interval can be computed from the row vector of basin characteristics, $\boldsymbol{x}_0$, and the predicted value, $\hat{y}_0 = \boldsymbol{x}_0\boldsymbol{B}$. The 100 (1-$\alpha$) prediction interval would be

$$\hat{y}_0 - T \le y_0 \le \hat{y}_0 + T \ , \qquad (8)$$

where

$$T = t_{\frac{\alpha}{2}, n-p'}\sqrt{(\hat{\gamma}_0^2 + \boldsymbol{x}_0(\boldsymbol{X}'\hat{\Lambda}^{-1}\boldsymbol{X})^{-1}\boldsymbol{x}'_0)} \ , \qquad (9)$$

where

- $t_{\frac{\alpha}{2}, n-p'}$ is the critical value from a t-distribution for n-p' degrees of freedom.

If a log transform is made so that $y_0 = \log_{10}(q_0)$, then the prediction interval is

$$10^{\hat{y}_0 - T} \le q_0 \le 10^{\hat{y}_0 + T} \quad . \qquad (10)$$

The computer program available at http://pubs.water.usgs.gov/wri034188 automates computations for the 5-percent and 95-percent confidence limits (the 90-percent prediction interval) for a particular site.

Converting Errors from Log Units to Percentages

Using the assumption that the errors computed in log (base 10) units follow a normal distribution, the error may be expressed in percent of the predicted value. The error in log units may be converted to percentages as

$$error_{percent} = 100\sqrt{(e^{5.3019\sigma^2} - 1)} \ , \qquad (11)$$

where σ^2 is the mean square error in log (base 10) units.

Sometimes it is said in ordinary-least-squares regression that two-thirds of the points lie within one standard error of the regression function. This is true for the error as expressed in log units because the errors in log space are symmetrically distributed, but not for $error_{percent}$ because the errors in percentage space are skewed. The positive and negative percent errors may be calculated as:

$$\text{Positive } error_{percent} = 100(10^{\sigma} - 1) \qquad (12)$$

$$\text{Negative } error_{percent} = 100(10^{-\sigma} - 1). \qquad (13)$$

For example, the average standard error of prediction (ASEP) for the 2-year recurrence interval for Region 1 and Region 3 is 0.158 in log (base 10) units (table 3). This can be expressed as 38 percent, or plus 44 percent and minus 30 percent.

Table B1. Covariance matrix $[\mathbf{X}^T \lambda^{-1} \mathbf{X}]^{-1}$ and values of mean square error of the model (γ^2) for regression equations in table 3

[These matrices and γ^2 can be used to compute the standard error of prediction and prediction intervals for estimates from regression equations (table 3), as explained in the text. *A*, drainage area, in square miles; *ST*, area of lakes and ponds (storage), in percent; *P*, mean annual precipitation, in inches; *J*, mean minimum January temperature, in degrees Fahrenheit; *F*, area of forest, in percent; *E*, mean basin elevation, in feet. Numbers are given in scientific notation: for example, 0.27192E-02 = 0.0027192]

Region 1 and 3

2-year recurrence interval; γ^2 = 2.3519E-02

	Constant	A	ST	P	J
Constant	2.7768E-01	-4.7425E-03	7.9807E-03	-2.4493E-02	-1.2887E-01
A	-4.7425E-03	8.9854E-04	-1.7202E-04	1.0338E-04	2.0427E-03
ST	7.9807E-03	-1.7202E-04	1.7719E-03	-1.9553E-03	-2.5456E-03
P	-2.4493E-02	1.0338E-04	-1.9553E-03	1.6404E-02	-5.5337E-03
J	-1.2887E-01	2.0427E-03	-2.5456E-03	-5.5337E-03	8.0433E-02

5-year recurrence interval; γ^2 = 2.2760E-02

	Constant	A	ST	P	J
Constant	2.8307E-01	-4.7569E-03	7.7244E-03	-2.4510E-02	-1.3186E-01
A	-4.7569E-03	8.9280E-04	-1.7631E-04	1.2303E-04	2.0296E-03
ST	7.7244E-03	-1.7631E-04	1.7658E-03	-1.9304E-03	-2.4087E-03
P	-2.4510E-02	1.2303E-04	-1.9304E-03	1.6297E-02	-5.4072E-03
J	-1.3186E-01	2.0296E-03	-2.4087E-03	-5.4072E-03	8.1970E-02

10-year recurrence interval; γ^2 = 2.2997E-02

	Constant	A	ST	P	J
Constant	3.0423E-01	-4.9977E-03	7.9269E-03	-2.5488E-02	-1.4274E-01
A	-4.9977E-03	9.3011E-04	-1.8511E-04	1.4074E-04	2.1225E-03
ST	7.9269E-03	-1.8511E-04	1.8437E-03	-1.9878E-03	-2.4691E-03
P	-2.5488E-02	1.4074E-04	-1.9878E-03	1.7010E-02	-5.7167E-03
J	-1.4274E-01	2.1225E-03	-2.4691E-03	-5.7167E-03	8.8583E-02

25-year recurrence interval; γ^2 = 1.3939E-02

	Constant	A	ST	P	J
Constant	3.4383E-01	-5.4806E-03	8.4980E-03	-2.7663E-02	-1.6272E-01
A	-5.4806E-03	1.0123E-03	-2.0365E-04	1.6998E-04	2.3124E-03
ST	8.4980E-03	-2.0365E-04	2.0127E-03	-2.1364E-03	-2.6455E-03
P	-2.7663E-02	1.6998E-04	-2.1364E-03	1.8572E-02	-6.3592E-03
J	-1.6272E-01	2.3124E-03	-2.6455E-03	-6.3592E-03	1.0082E-01

Region 1 and 3—*Continued*

50-year recurrence interval; γ^2 = 2.5427E-02

	Constant	A	ST	P	J
Constant	3.8092E-01	-5.9502E-03	9.1226E-03	-2.9879E-02	-1.8122E-01
A	-5.9502E-03	1.0952E-03	-2.2217E-04	1.9541E-04	2.4992E-03
ST	9.1226E-03	-2.2217E-04	2.1822E-03	-2.2960E-03	-2.8391E-03
P	-2.9879E-02	1.9541E-04	-2.2960E-03	2.0139E-02	-6.9779E-03
J	-1.8122E-01	2.4992E-03	-2.8391E-03	-6.9779E-03	1.1219E-01

100-year recurrence interval; γ^2 = 2.7161E-02

	Constant	A	ST	P	J
Constant	4.2335E-01	-6.4992E-03	9.8921E-03	-3.2533E-02	-2.0224E-01
A	-6.4992E-03	1.1937E-03	-2.4414E-04	2.2330E-04	2.7192E-03
ST	9.8921E-03	-2.4414E-04	2.3831E-03	-2.4915E-03	-3.0774E-03
P	-3.2533E-02	2.2330E-04	-2.4915E-03	2.1997E-02	-7.6916E-03
J	-2.0224E-01	2.7192E-03	-3.0774E-03	-7.6916E-03	1.2511E-01

200-year recurrence interval; γ^2 = 2.9258E-02

	Constant	A	ST	P	J
Constant	4.7065E-01	-7.1213E-03	1.0793E-02	-3.5590E-02	-2.2556E-01
A	-7.1213E-03	1.3065E-03	-2.6929E-04	2.5348E-04	2.9696E-03
ST	1.0793E-02	-2.6929E-04	2.6128E-03	-2.7200E-03	-3.3560E-03
P	-3.5590E-02	2.5348E-04	-2.7200E-03	2.4118E-02	-8.4897E-03
J	-2.2556E-01	2.9696E-03	-3.3560E-03	-8.4897E-03	1.3945E-01

500-year recurrence interval; γ^2 = 3.2547E-02

	Constant	A	ST	P	J
Constant	5.4013E-01	-8.0479E-03	1.2171E-02	-4.0206E-02	-2.5966E-01
A	-8.0479E-03	1.4759E-03	-3.0712E-04	2.9672E-04	3.3441E-03
ST	1.2171E-02	-3.0712E-04	2.9578E-03	-3.0689E-03	-3.7810E-03
P	-4.0206E-02	2.9672E-04	-3.0689E-03	2.7299E-02	-9.6624E-03
J	-2.5966E-01	3.3441E-03	-3.7810E-03	-9.6624E-03	1.6041E-01

Table B1. Covariance matrix $[\mathbf{X}^T \lambda^{-1}\mathbf{X}]^{-1}$ and values of mean square error of the model (γ^2) for regression equations in table 3—*Continued*

[These matrices and γ^2 can be used to compute the standard error of prediction and prediction intervals for estimates from regression equations (table 3), as explained in the text. *A*, drainage area, in square miles; *ST*, area of lakes and ponds (storage), in percent; *P*, mean annual precipitation, in inches; *J*, mean minimum January temperature, in degrees Fahrenheit; *F*, area of forest, in percent; *E*, mean basin elevation, in feet. Numbers are given in scientific notation: for example, 0.27192E-02 = 0.0027192]

Region 2

2-year recurrence interval; γ^2 = 1.2543E-02

	Constant	A	ST	P
Constant	4.2134E-02	-4.9437E-03	-8.7010E-04	-1.7493E-02
A	-4.9437E-03	1.1455E-03	6.2703E-05	9.3291E-04
ST	-8.7010E-04	6.2703E-05	9.8829E-05	3.2504E-04
P	-1.7493E-02	9.3291E-04	3.2504E-04	9.9407E-03

5-year recurrence interval; γ^2 = 1.1327E-02

	Constant	A	ST	P
Constant	4.0671E-02	-4.7689E-03	-8.1557E-04	-1.6924E-02
A	-4.7689E-03	1.0896E-03	5.7959E-05	9.2358E-04
ST	-8.1557E-04	5.7959E-05	9.0885E-05	3.0700E-04
P	-1.6924E-02	9.2358E-04	3.0700E-04	9.6240E-03

10-year recurrence interval; γ^2 = 1.1873E-02

	Constant	A	ST	P
Constant	4.4934E-02	-5.2657E-03	-8.8276E-04	-1.8739E-02
A	-5.2657E-03	1.1933E-03	6.2450E-05	1.0330E-03
ST	-8.8276E-04	6.2450E-05	9.6788E-05	3.3381E-04
P	-1.8739E-02	1.0330E-03	3.3381E-04	1.0679E-02

25-year recurrence interval; γ^2 = 1.3939E-02

	Constant	A	ST	P
Constant	5.5381E-02	-6.4897E-03	-1.0690E-03	-2.3147E-02
A	-6.4897E-03	1.4618E-03	7.5717E-05	1.2831E-03
ST	-1.0690E-03	7.5717E-05	1.1524E-04	4.0552E-04
P	-2.3147E-02	1.2831E-03	4.0552E-04	1.3231E-02

Region 2—*Continued*

50-year recurrence interval; γ^2 = 1.6380E-02

	Constant	A	ST	P
Constant	6.6439E-02	-7.7881E-03	-1.2735E-03	-2.7798E-02
A	-7.7881E-03	1.7511E-03	9.0527E-05	1.5421E-03
ST	-1.2735E-03	9.0527E-05	1.3611E-04	4.8352E-04
P	-2.7798E-02	1.5421E-03	4.8352E-04	1.5918E-02

100-year recurrence interval; γ^2 = 1.9532E-02

	Constant	A	ST	P
Constant	8.0060E-02	-9.3894E-03	-1.5296E-03	-3.3518E-02
A	-9.3894E-03	2.1102E-03	1.0920E-04	1.8581E-03
ST	-1.5296E-03	1.0920E-04	1.6259E-04	5.8081E-04
P	-3.3518E-02	1.8581E-03	5.8081E-04	1.9219E-02

200-year recurrence interval; γ^2 = 2.3384E-02

	Constant	A	ST	P
Constant	9.6209E-02	-1.1290E-02	-1.8366E-03	-4.0291E-02
A	-1.1290E-02	2.5384E-03	1.3169E-04	2.2304E-03
ST	-1.8366E-03	1.3169E-04	1.9458E-04	6.9716E-04
P	-4.0291E-02	2.2304E-03	6.9716E-04	2.3125E-02

500-year recurrence interval; γ^2 = 2.9561E-02

	Constant	A	ST	P
Constant	1.2145E-01	-1.4264E-02	-2.3211E-03	-5.0866E-02
A	-1.4264E-02	3.2109E-03	1.6732E-04	2.8088E-03
ST	-2.3211E-03	1.6732E-04	2.4537E-04	8.8035E-04
P	-5.0866E-02	2.8088E-03	8.8035E-04	2.9221E-02

Table B1. Covariance matrix $[\mathbf{X}^T \lambda^{-1} \mathbf{X}]^{-1}$ and values of mean square error of the model (γ^2) for regression equations in table 3—*Continued*

[These matrices and γ^2 can be used to compute the standard error of prediction and prediction intervals for estimates from regression equations (table 3), as explained in the text. *A*, drainage area, in square miles; *ST*, area of lakes and ponds (storage), in percent; *P*, mean annual precipitation, in inches; *J*, mean minimum January temperature, in degrees Fahrenheit; *F*, area of forest, in percent; *E*, mean basin elevation, in feet. Numbers are given in scientific notation: for example, 0.27192E-02 = 0.0027192]

Region 4

2-year recurrence interval; γ^2 = 2.9348E-02

	Constant	A	ST	P
Constant	3.0627E-02	-5.1602E-04	1.0701E-03	-1.8486E-02
A	-5.1602E-04	4.9703E-04	-3.3418E-04	-2.2531E-04
ST	1.0701E-03	-3.3418E-04	3.0252E-03	-1.1428E-03
P	-1.8486E-02	-2.2531E-04	-1.1428E-03	1.2247E-02

5-year recurrence interval; γ^2 = 2.4193E-02

	Constant	A	ST	P
Constant	2.8203E-02	-3.8176E-04	7.9076E-04	-1.7014E-02
A	-3.8176E-04	4.4139E-04	-2.8632E-04	-2.7320E-04
ST	7.9076E-04	-2.8632E-04	2.7474E-03	-9.7060E-04
P	-1.7014E-02	-2.7320E-04	-9.7060E-04	1.1368E-02

10-year recurrence interva; γ^2 = 2.3181E-02

	Constant	A	ST	P
Constant	2.9726E-02	-3.2273E-04	7.2146E-04	-1.7990E-02
A	-3.2273E-04	4.5159E-04	-2.8719E-04	-3.4015E-04
ST	7.2146E-04	-2.8719E-04	2.8448E-03	-9.6869E-04
P	-1.7990E-02	-3.4015E-04	-9.6869E-04	1.2110E-02

25-year recurrence interval; γ^2 = 2.4439E-02

	Constant	A	ST	P
Constant	3.4580E-02	-2.8040E-04	7.4910E-04	-2.1057E-02
A	-2.8040E-04	5.0978E-04	-3.2070E-04	-4.5361E-04
ST	7.4910E-04	-3.2070E-04	3.2424E-03	-1.0764E-03
P	-2.1057E-02	-4.5361E-04	-1.0764E-03	1.4290E-02

Region 4—*Continued*

50-year recurrence interval; γ^2 = 2.6755E-02

	Constant	A	ST	P
Constant	3.9842E-02	-2.6387E-04	8.2449E-04	-2.4371E-02
A	-2.6387E-04	5.7796E-04	-3.6355E-04	-5.5543E-04
ST	8.2449E-04	-3.6355E-04	3.6939E-03	-1.2141E-03
P	-2.4371E-02	-5.5543E-04	-1.2141E-03	1.6609E-02

100-year recurrence interval; γ^2 = 2.9957E-02

	Constant	A	ST	P
Constant	4.6215E-02	-2.5480E-04	9.3063E-04	-2.8380E-02
A	-2.5480E-04	6.6244E-04	-4.1836E-04	-6.7010E-04
ST	9.3063E-04	-4.1836E-04	4.2498E-03	-1.3871E-03
P	-2.8380E-02	-6.7010E-04	-1.3871E-03	1.9398E-02

200-year recurrence interval; γ^2 = 3.3919E-02

	Constant	A	ST	P
Constant	5.3587E-02	-2.5040E-04	1.0607E-03	-3.3015E-02
A	-2.5040E-04	7.6127E-04	-4.8381E-04	-7.9732E-04
ST	1.0607E-03	-4.8381E-04	4.8988E-03	-1.5897E-03
P	-3.3015E-02	-7.9732E-04	-1.5897E-03	2.2611E-02

500-year recurrence interval; γ^2 = 4.0221E-02

	Constant	A	ST	P
Constant	6.4772E-02	-2.4938E-04	1.2639E-03	-4.0046E-02
A	-2.4938E-04	9.1238E-04	-5.8576E-04	-9.8463E-04
ST	1.2639E-03	-5.8576E-04	5.8908E-03	-1.8979E-03
P	-4.0046E-02	-9.8463E-04	-1.8979E-03	2.7472E-02

Table B1. Covariance matrix $[\mathbf{X}^T \lambda^{-1}\mathbf{X}]^{-1}$ and values of mean square error of the model (γ^2) for regression equations in table 3—*Continued*

[These matrices and γ^2 can be used to compute the standard error of prediction and prediction intervals for estimates from regression equations (table 3), as explained in the text. *A*, drainage area, in square miles; *ST*, area of lakes and ponds (storage), in percent; *P*, mean annual precipitation, in inches; *J*, mean minimum January temperature, in degrees Fahrenheit; *F*, area of forest, in percent; *E*, mean basin elevation, in feet. Numbers are given in scientific notation: for example, 0.27192E-02 = 0.0027192]

Region 5

2-year recurrence interval; γ^2 = 6.0539E-02

	Constant	A	ST	F	E
Constant	1.3848E+00	4.6255E-03	-4.5679E-02	-1.0564E-01	-3.3768E-01
A	4.6255E-03	1.4659E-03	-3.3640E-03	-2.0076E-03	-1.2690E-03
ST	-4.5679E-02	-3.3640E-03	2.2719E-02	1.0514E-02	7.7761E-03
F	-1.0564E-01	-2.0076E-03	1.0514E-02	4.5321E-02	7.4793E-03
E	-3.3768E-01	-1.2690E-03	7.7761E-03	7.4793E-03	9.2360E-02

5-year recurrence interval; γ^2 = 2.4193E-02

	Constant	A	ST	F	E
Constant	1.1461E+00	3.3535E-03	-3.8393E-02	-8.5841E-02	-2.7967E-01
A	3.3535E-03	1.2316E-03	-2.6992E-03	-1.6867E-03	-9.4401E-04
ST	-3.8393E-02	-2.6992E-03	1.8573E-02	8.5506E-03	6.6198E-03
F	-8.5841E-02	-1.6867E-03	8.5506E-03	3.7112E-02	6.0076E-03
E	-2.7967E-01	-9.4401E-04	6.6198E-03	6.0076E-03	7.6454E-02

10-year recurrence interval; γ^2 = 4.3116E-02

	Constant	A	ST	F	E
Constant	1.0475E+00	2.6278E-03	-3.5623E-02	-7.7067E-02	-2.5578E-01
A	2.6278E-03	1.1424E-03	-2.3868E-03	-1.5601E-03	-7.6737E-04
ST	-3.5623E-02	-2.3868E-03	1.6756E-02	7.6799E-03	6.2153E-03
F	-7.7067E-02	-1.5601E-03	7.6799E-03	3.3561E-02	5.3326E-03
E	-2.5578E-01	-7.6737E-04	6.2153E-03	5.3326E-03	6.9884E-02

25-year recurrence interval; γ^2 = 3.8484E-02

	Constant	A	ST	F	E
Constant	9.8160E-01	1.9228E-03	-3.4046E-02	-7.0492E-02	-2.3991E-01
A	1.9228E-03	1.0913E-03	-2.1324E-03	-1.4803E-03	-6.0471E-04
ST	-3.4046E-02	-2.1324E-03	1.5404E-02	7.0207E-03	6.0329E-03
F	-7.0492E-02	-1.4803E-03	7.0207E-03	3.0968E-02	4.8169E-03
E	-2.3991E-01	-6.0471E-04	6.0329E-03	4.8169E-03	6.5495E-02

Region 5—*Continued*

50-year recurrence interval; γ^2 = 3.6463E-02

	Constant	A	ST	F	E
Constant	9.6557E-01	1.5376E-03	-3.3930E-02	-6.8185E-02	-2.3615E-01
A	1.5376E-03	1.0873E-03	-2.0253E-03	-1.4660E-03	-5.2212E-04
ST	-3.3930E-02	-2.0253E-03	1.4936E-02	6.7820E-03	6.0760E-03
F	-6.8185E-02	-1.4660E-03	6.7820E-03	3.0116E-02	4.6295E-03
E	-2.3615E-01	-5.2212E-04	6.0760E-03	4.6295E-03	6.4436E-02

100-year recurrence interval; γ^2 = 3.5354E-02

	Constant	A	ST	F	E
Constant	9.7016E-01	1.2448E-03	-3.4465E-02	-6.7502E-02	-2.3743E-01
A	1.2448E-03	1.1045E-03	-1.9708E-03	-1.4807E-03	-4.6438E-04
ST	-3.4465E-02	-1.9708E-03	1.4805E-02	6.7019E-03	6.2288E-03
F	-6.7502E-02	-1.4807E-03	6.7019E-03	2.9945E-02	4.5642E-03
E	-2.3743E-01	-4.6438E-04	6.2288E-03	4.5642E-03	6.4759E-02

200-year recurrence interval; γ^2 = 3.4936E-02

	Constant	A	ST	F	E
Constant	9.9042E-01	1.0195E-03	-3.5497E-02	-6.8041E-02	-2.4254E-01
A	1.0195E-03	1.1381E-03	-1.9559E-03	-1.5182E-03	-4.2469E-04
ST	-3.5497E-02	-1.9559E-03	1.4931E-02	6.7415E-03	6.4653E-03
F	-6.8041E-02	-1.5182E-03	6.7415E-03	3.0292E-02	4.5886E-03
E	-2.4254E-01	-4.2469E-04	6.4653E-03	4.5886E-03	6.6133E-02

500-year recurrence interval; γ^2 = 3.5204E-02

	Constant	A	ST	F	E
Constant	1.0359E+00	7.9563E-04	-3.7457E-02	-7.0188E-02	-2.5388E-01
A	7.9563E-04	1.2025E-03	-1.9831E-03	-1.5961E-03	-3.9189E-04
ST	-3.7457E-02	-1.9831E-03	1.5401E-02	6.9352E-03	6.8798E-03
F	-7.0188E-02	-1.5961E-03	6.9352E-03	3.1371E-02	4.7223E-03
E	-2.5388E-01	-3.9189E-04	6.8798E-03	4.7223E-03	6.9206E-02

Table B1. Covariance matrix $[\mathbf{X}^T \lambda^{-1} \mathbf{X}]^{-1}$ and values of mean square error of the model (γ^2) for regression equations in table 3—*Continued*

[These matrices and γ^2 can be used to compute the standard error of prediction and prediction intervals for estimates from regression equations (table 3), as explained in the text. *A*, drainage area, in square miles; *ST*, area of lakes and ponds (storage), in percent; *P*, mean annual precipitation, in inches; *J*, mean minimum January temperature, in degrees Fahrenheit; *F*, area of forest, in percent; *E*, mean basin elevation, in feet. Numbers are given in scientific notation: for example, 0.27192E-02 = 0.0027192]

Region 6

2-year recurrence interval; γ^2 = 2.7981E-02

	Constant	A	ST	F
Constant	4.3415E-03	-2.9401E-04	-9.4147E-04	-1.8094E-03
A	-2.9401E-04	2.9302E-04	-6.3723E-04	-1.5684E-04
ST	-9.4147E-04	-6.3723E-04	4.8646E-03	6.6586E-04
F	-1.8094E-03	-1.5684E-04	6.6586E-04	1.3279E-03

5-year recurrence interval; γ^2 = 2.9151E-02

	Constant	A	ST	F
Constant	4.8885E-03	-3.2277E-04	-1.0440E-03	-2.0177E-03
A	-3.2277E-04	3.1501E-04	-6.9969E-04	-1.6551E-04
ST	-1.0440E-03	-6.9969E-04	5.3494E-03	7.1975E-04
F	-2.0177E-03	-1.6551E-04	7.1975E-04	1.4581E-03

10-year recurrence interval; γ^2 = 3.2018E-02

	Constant	A	ST	F
Constant	5.6697E-03	-3.6658E-04	-1.1866E-03	-2.3433E-03
A	-3.6658E-04	3.5669E-04	-8.0792E-04	-1.8669E-04
ST	-1.1866E-03	-8.0792E-04	6.1555E-03	8.1755E-04
F	-2.3433E-03	-1.8669E-04	8.1755E-04	1.6815E-03

25-year recurrence interval; γ^2 = 3.6987E-02

	Constant	A	ST	F
Constant	6.9036E-03	-4.3498E-04	-1.4191E-03	-2.8677E-03
A	-4.3498E-04	4.2557E-04	-9.8406E-04	-2.2322E-04
ST	-1.4191E-03	-9.8406E-04	7.4597E-03	9.8254E-04
F	-2.8677E-03	-2.2322E-04	9.8254E-04	2.0462E-03

Region 6—*Continued*

50-year recurrence interval; γ^2 = 4.1393E-02

	Constant	A	ST	F
Constant	7.9411E-03	-4.9144E-04	-1.6211E-03	-3.3137E-03
A	-4.9144E-04	4.8473E-04	-1.1342E-03	-2.5527E-04
ST	-1.6211E-03	-1.1342E-03	8.5696E-03	1.1271E-03
F	-3.3137E-03	-2.5527E-04	1.1271E-03	2.3579E-03

100-year recurrence interval; γ^2 = 4.6269E-02

	Constant	A	ST	F
Constant	9.0513E-03	-5.5083E-04	-1.8431E-03	-3.7947E-03
A	-5.5083E-04	5.4879E-04	-1.2962E-03	-2.9039E-04
ST	-1.8431E-03	-1.2962E-03	9.7664E-03	1.2861E-03
F	-3.7947E-03	-2.9039E-04	1.2861E-03	2.6946E-03

200-year recurrence interval; γ^2 = 5.1585E-02

	Constant	A	ST	F
Constant	1.0227E-02	-6.1266E-04	-2.0841E-03	-4.3076E-03
A	-6.1266E-04	6.1728E-04	-1.4689E-03	-3.2826E-04
ST	-2.0841E-03	-1.4689E-03	1.1042E-02	1.4584E-03
F	-4.3076E-03	-3.2826E-04	1.4584E-03	3.0540E-03

500-year recurrence interval; γ^2 = 5.9264E-02

	Constant	A	ST	F
Constant	1.1878E-02	-6.9773E-04	-2.4309E-03	-5.0325E-03
A	-6.9773E-04	7.1425E-04	-1.7128E-03	-3.8231E-04
ST	-2.4309E-03	-1.7128E-03	1.2845E-02	1.7056E-03
F	-5.0325E-03	-3.8231E-04	1.7056E-03	3.5621E-03

Table B1. Covariance matrix $[\mathbf{X}^T \lambda^{-1} \mathbf{X}]^{-1}$ and values of mean square error of the model (γ^2) for regression equations in table 3—*Continued*

[These matrices and γ^2 can be used to compute the standard error of prediction and prediction intervals for estimates from regression equations (table 3), as explained in the text. *A*, drainage area, in square miles; *ST*, area of lakes and ponds (storage), in percent; *P*, mean annual precipitation, in inches; *J*, mean minimum January temperature, in degrees Fahrenheit; *F*, area of forest, in percent; *E*, mean basin elevation, in feet. Numbers are given in scientific notation: for example, 0.27192E-02 = 0.0027192]

Region 7		
2-year recurrence interval; γ^2 = 4.1007E-02		
	Constant	**A**
Constant	6.2090E-03	-2.2143E-03
A	-2.2143E-03	1.1777E-03
5-year recurrence interval; γ^2 = 3.7861E-02		
	Constant	**A**
Constant	5.8639E-03	-2.0905E-03
A	-2.0905E-03	1.1067E-03
10-year recurrence interval; γ^2 = 3.7420E-02		
	Constant	**A**
Constant	6.0660E-03	-2.1512E-03
A	-2.1512E-03	1.1276E-03
25-year recurrence interval; γ^2 = 3.7916E-02		
	Constant	**A**
Constant	6.5303E-03	-2.2990E-03
A	-2.2990E-03	1.1899E-03

Region 7—*Continued*		
50-year recurrence interval; γ^2 = 3.8863E-02		
	Constant	**A**
Constant	6.9639E-03	-2.4400E-03
A	-2.4400E-03	1.2528E-03
100-year recurrence interval; γ^2 = 4.0211E-02		
	Constant	**A**
Constant	7.4462E-03	-2.5990E-03
A	-2.5990E-03	1.3258E-03
200-year recurrence interval; γ^2 = 4.1910E-02		
	Constant	**A**
Constant	7.9675E-03	-2.7728E-03
A	-2.7728E-03	1.4072E-03
500-year recurrence interval; γ^2 = 4.4635E-02		
	Constant	**A**
Constant	8.7068E-03	-3.0218E-03
A	-3.0218E-03	1.5262E-03

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