APPENDIX B

GLOSSARY

These definitions have been collected from four major sources: (1) Guidelines for Determining Flood Flow Frequency (17B), reference 46; (2) International Glossary of Hydrology (WMO), reference 48; (3) General Introduction and Hydrologic Definitions (USGS), reference 18; and (4) Mathematics Dictionary (MD), reference 16.

TERM	DEFINITION
Analytical Frequency Analysis	A predefined method of estimating the parameters that define a selected theoretical frequency distribution.
Annual Event	The most extreme event, either maximum or minimum, in the year. (17B)
Annual Series	A general term for a set of any kind of data in which each item is the maximum or minimum in a year. (17B)
Array	A list of data in order of magnitude; in flood- frequency analysis it is customary to list the largest value first, in a low-frequency analysis, the smallest first. (17B)
Autocorrelation	See "Serial Correlation."
Base Discharge	Usually refers to the discharge above which independent instantaneous peak flows are collected for a partial duration frequency analysis.
Biased	The expected value of a statistic obtained from random sampling is not equal to the parameter or quantity being estimated. (MD)
Broken Record	A systematic record which is divided into separate continuous segments because of deliberate discontinuation of recording for significant periods of time. (17B)
Chi-Square Distribution	The distribution of sample variances drawn from a normal distribution. Used to compute confidence intervals for the population variance estimated from a sample.
Class Interval	A convenient sized interval into which data may be grouped. The upper and lower bounds of the class interval are called "class limits." (MD)

Climatic Year	A continuous 12-month period during which a complete annual cycle occurs, arbitrarily selected for the presentation of data relative to hydrologic or meteorologic phenomena. The climatic year is usually designated by the calendar year during which most of the 12 months occur. See "Water Year." (USGS)
Coefficient of Skewness	A numerical measure or index of the lack of symmetry in a frequency distribution. Function of the third moment of magnitudes about their mean, a measure of asymetry. Also called "coefficient of skew" or "skew coefficient." (17B)
Coefficient of Variation	Statistical parameter describing the change of a stochastic variable in time or space, expressed as the ratio of the standard deviation to the mean. (WMO)
Confidence Limits	Computed values on both sides of an estimate of a parameter that show for a specified probability the range in which the true value of the parameter lies. (17B)
Correlation	The interdependence between two sets of numbers. (MD)
Covariance	The first product moment of two variates normalized by their respective mean values. (WMO)
Cumulative Frequency Curve	Relation of event magnitude to percentage of events exceeding (or not exceeding) that magnitude.
Deviation	The difference between the magnitude of an event and the mean of all the events in the sample.
Depth-Duration-Frequency	Curve showing the frequency relationship of precipitation depth for a given storm duration.
Distribution	Function describing the relative frequency with which events of various magnitudes occur. (17B)
Double Mass Curve	Plot of successive accumulated values of one variable against the contemporaneous accumulated values of another variable. (WMO)
Drought	A period of abnormally dry weather sufficiently prolonged for the lack of precipitation to cause a serious hydrological imbalance. (WMO)
Duration Curve	A cumulative frequency curve that shows the percent of time that specific values are equalled or exceeded. (USGS)
Error Variance	Square of the standard error.
Exceedance Frequency	See "Percent chance exceedance."
Exceedance Interval	See "Recurrence interval."

Exceedance Probability	Probability that a random event will exceed a specified magnitude in a given time period, usually one year unless otherwise indicated. (17B)
Expected Probability	The average of the true probabilities of all magnitude estimates for any specified flood frequency that might be made from successive samples of a specified size. (17B)
F Distribution	The random sampling distribution of the ratio of two independent estimates of the variance of a normal distribution. (MD)
Flow-Duration Curve	See "Duration Curve."
Frequency	The number of events in a sample (or the population) that meet specified criteria.
Frequency Analysis	Procedure involved in interpreting a record of events in terms of future probabilities of occurrence. (WMO)
Frequency Curve	A graphical representation of a frequency distribution. Usually a cumulative frequency curve with the abscissa a probability grid and the ordinate the event magnitude.
Generalized Skew	A skew coefficient derived by a procedure which integrates values obtained at many locations. (17B)
Geometric Mean	The Nth root of the product of N values or the antilogarithm of the mean logarithm of a set of values.
Graphical Frequency Analysis	The development of a frequency curve by drawing a smooth curve through plotted points while considering known constraints. Plotting positions are computed based on the order number and the total number of values represented, and then plotted on the appropriate probability paper.
Histogram	Univariate frequency diagram with rectangles proportional in area to the class frequency, erected on a horizontal axis with width equal to the class interval. (WMO)
Historic Data	Information about significant events before or after the period of "systematic" data collection. (derived from 17B)
Homogeneity	Records (samples) from the same population. (17B)
Incomplete Record	A streamflow record in which some peak flows are missing because they were too low or high to record or the gage was out of operation for a short period because of flooding. (17B)
Level of Significance	The probability of rejecting a hypothesis when it is in fact true, At a "10-percent" level of significance the probability is 1/10. (17B)

Log-Pearson Type III Distribution	Application of the Pearson Type III distribution to the logarithms of the data.
Mass Curve	Curve of an accumulative quantity versus time. (WMO)
Mean	The expected value of a random variable, the first moment. The arithmic mean (or average) of a sample is an estimate of the population mean.
Mean Daily	The mean of daily values in a specified period, or the mean of values within one day. (derived from WMO)
Median	The value at which one-half of ordered observations lie on either side. If there is no middle value, the median is the average of the two middle values.
Method of Moments	A standard statistical computation for estimating the moment of a distribution from the data of a sample. (17B)
Mixed Populations	A sample whose events have come from two or more different populations, i.e., data not homogenous.
Mode	The most frequent value of a set of numbers. (MD)
Non-Central t Distribution	A distribution that combines the probable error in the mean and the standard deviation for samples from a normal distribution. Used in the development of confidence limit curves about a frequency curve computed from sample statistics.
Nonstationary	Not stationary with respect to time. See "Stationary Process."
Normal Distribution	A probability distribution that is symmetrical about the mean, median, and mode (bell shaped). It is the most studied distribution in statistics, even though most data are not exactly normally distributed, because of its value in theoretical work and because many other distributions can be transformed into the normal. It is also known as Gaussian, the Laplacean, the Gauss-Laplace, or the Laplace-Gauss distribution, or the Second Law of Laplace. (17B)
Outlier	Outliers (extreme events) are data points which depart from the trend of the rest of the data. (17B)
Parameter	A characteristic descriptor of the population, such as mean or standard deviation. Parameter estimates are called statistics.
Parent Population	See "Population".
Partial-Duration Series	A list of flood peaks that exceed a chosen base stage or discharge, regardless of the number of peaks occurring in a year. (USGS)

Pearson Type III Distribution	Family of asymmetrical, theoretical frequency distributions of which the normal distribution is a special case.
Percent Chance Exceedance	The probability, expressed as a percentage, with which values exceed a specified magnitude.
Percent Chance Non-Exceedance	The probability, expressed as a percentage, with which values will not exceed a specified magnitude.
Plotting Position	Percent chance of exceedance (or non-exceedance) of an observed value estimated from its position in the array.
Population	The entire (usually infinite in hydrologic application) number of data from which a sample is taken or collected. For example, total number of past, present, and future floods at a location on a river is the population of floods for that location even if the floods are not measured or recorded. (17B)
Probability	The ratio of the number of random events with some particular size or other attribute to the total number of equally likely events.
Random	Any event in the population has an equal chance of being selected.
Recurrence Interval	The average time interval between actual occurrences of a hydrological event of a given or greater magnitude. In an annual flood series, the average interval in which a flood of a given size is exceeded as an annual maximum. In a partial duration series, the average interval between floods of a given size, regardless of their relationship to the year or any other period of time. The distinction holds even though for large floods, recurrence intervals are nearly the same for both series. (17B)
Regional Analysis	Extension of the results of the frequency analysis of point data to an area. (WMO)
Regression	An analytical procedure that derives estimation or prediction equations for a variable (dependent) based on given values of one or more other variables (independent). Commonly, the principle of minimum squared error (least squares) is used in the derivation.
Return Period	See "Recurrence Interval."
Risk	The probability of a potential outcome (success) being realized within a specified number of events (trials). In a hydrologic context, the probability that one or more events will exceed a given annual event, that has an assumed "true" percent chance exceedance, during a specified number of years. Risk is computed by the binomial distribution. (For contrast, see uncertainty.)
Sample	An element, part, or fragment of a "population." Every hydrologic record is a sample of a much longer record. (17B)

Sampling Error	The difference between a random sampling statistic and the parameter of the population from which the random sample was drawn. (MD)
Serial Correlation	A measure of the interdependence between an observation at a given time period and that of a preceeding time period. Also called autocorrelation.
Skew Coefficient	See "Coefficient of Skewness."
Stage	The height of a water surface above an established datum plane. (USGS)
Standard Deviation	A measure of the dispersion or precision of a series of statistical values such as precipitation or stream flow. It is the square root of the sum of squares of the deviations from the arithmetic mean divided by the number of values or events in the series. It is now standard practice in statistics to divide by the number of values minus one in order to get an unbiased estimate of the variance from the sample data. (17B)
Standard Error	Standard deviation of the sampling distribution of a statistical parameter. (WMO)
Stationary Process	All of the generating moments of the frequency distribution remain fixed with respect to time.
Statistic	An estimate of a population parameter obtained from a sample of the population.
Stochastic Process	Process in which both the probability and the sequence of occurrence of the variables are taken into account. (WMO)
Student's t-Distribution	A distribution used in evaluation of variables which involve sample standard deviation rather than population standard deviation. (17B)
Systematic Record	Information collected by a systematic data collection program. (derived from 17B)
t-Distribution	See "Student's t-Distribution."
Test of Significance	A test mode to learn the probability that a result is accidental or that a result differs from another result. For all the many types of tests, there are standard formulae and tables. (17B)
Transformation	The change of numerical values of data to make later computations easier, to linearize a plot or to normalize a skewed distribution by making it more nearly a normal distribution. The most common transformations are those changing ordinary numerical values into their logarithms, square roots or cube roots; many others are possible. (17B)

Trend	A statistical term referring to the direction or rate of increase or decrease in magnitude of the individual members of a time series of data when random fluctuations of individual members are disregarded. (USGS)
Unbiased	The expected value of a statistic obtained from random sampling is equal to the parameter or quantity being estimated. (MD)
Uncertainty	The inherent error in an analysis caused by not knowing either the true model or the model parameters. In frequency analysis, model uncertainty comes from assuming a theoretical frequency distribution and parameter uncertainty comes from estimating the parameters for the selected distribution by sample statistics.
Variance	A measure of the amount of spread or dispersion of a set of values around their mean, obtained by calculating the mean value of the squares of the deviations from the mean, and hence equal to the square of the standard deviation. (17B)
Watershed	The divide separating one drainage basin from another and in the past has been generally used to convey this meaning. However, over the years, use of the term to signify drainage basin or catchment area has come to predominate, although drainage basin is preferred. (USGS)
Water Year	Continuous twelve-month period selected in such a way that all solid and liquid precipitation runs off during this period. Thus, carryover is reduced to a minimum. (WMO) In U.S. Geological Survey reports, it is the twelve-month period. October 1 through September 30. The water year is designated by the calendar year within which most of the twelve-months occur. (USGS)