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TECHNIQUES FOR ESTIMATING FLOOD DISCHARGES FOR OKLAHOMA STREAMS

Techniques For Calculating Magnitude And Frequency Of Floods In Oklahoma From Rural And Urban Areas Under 2500 Square Miles, With Compilations Of Flood Data Through 1975

U. S. GEOLOGICAL SURVEY

Water Resources Investigation 77-54

UNITED STATES DEPARTMENT OF THE INTERIOR

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by W. O. Thomas, Jr. and R. K. Corley

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Prepared in cooperation with
STATE OF OKLAHOMA
DEPARTMENT OF TRANSPORTATION
and
U. S. DEPARTMENT OF TRANSPORTATION
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June 1977

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COVER PHOTOGRAPH -- Turkey Creek at Dover, flood of Oct. 12, 1973. Photograph furnished by Daily Oklahoman - Al McLaughlin, photographer. Copyright 1973 by Oklahoma Publishing Co.

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CONVERSION FACTORS FOR ENGLISH UNITS AND METRIC UNITS

English units	Conversion factor	Metric units
inches (in)	25.4	millimeters (mm)
square miles (mi^2)	2.59	square kilometers (km^2)
feet per mile (ft/mi)	0.189	meters per kilometers (m/km)
cubic feet per second (ft^3/s)	0.0283	cubic meters per second (m^3/s)

Multiply English units by the conversion factor to obtain metric units.
Divide metric units by the conversion factor to obtain English units.

TECHNIQUES FOR ESTIMATING FLOOD DISCHARGES FOR OKLAHOMA STREAMS

by

Wilbert O. Thomas, Jr., and Robert K. Corley

ABSTRACT

Statewide regression equations are defined for estimating peak discharges of floods having recurrence intervals ranging from 2 to 500 years. Contributing drainage area, main-channel slope and mean annual precipitation are the independent variables required for estimating flood discharges for rural streams. For urban streams the percentage of the basin that is impervious and served by storm sewers also is required. The regression equations are applicable for watersheds draining less than 2,500 mi^2 (6,500 km^2) that are not significantly affected by regulation. For the rural streams, the regression equations are presented in graphical form for easy application.

Calibration of a U.S. Geological Survey rainfall-runoff model and synthesis of long-term annual peak data for 60 small watersheds is discussed. Synthetic frequency curves, generated using six long-term rainfall stations, are combined into one frequency curve and weighted with the observed frequency curve at each site. Use of the rainfall-runoff model parameters to estimate flood discharges reduces the standard error for selected frequencies by 9-12 percent. However, collection of the necessary rainfall-runoff data to determine the model parameters is time consuming and expensive.

Annual peak data, basin and climatic characteristics, log-Pearson Type III statistics, and the flood-frequency relations are presented for 188 gaging stations.

INTRODUCTION

The design of highway bridges, culverts, embankments, dams, levees, and other structures near streams, requires a knowledge of the magnitude and frequency of floods. Flood-plain management programs and flood-insurance rates also are based on information on flood magnitude and frequency.

The purpose of this report is to provide methods for estimating the magnitude and frequency of floods for Oklahoma streams draining less than 2,500 mi^2 (6,500 km^2). Flood discharge records at 165 gaging stations throughout the State were used to define the flood-frequency curve for each site. Estimates of selected frequency floods were related to basin, climatic, and channel-geometry characteristics by multiple regression techniques. These analyses indicated that contributing drainage area, main-channel slope and mean annual precipitation were the most significant variables for estimating flood discharges for rural streams in Oklahoma. The regression equations derived in these analyses are presented in graphical form and provide a simple and reliable technique for estimating flood frequency for rural streams. The methods developed for calculating the magnitude and frequency of floods do not apply to streams significantly affected by regulation. Procedures given by Sauer (1974b) for adjusting flood discharges for the effect of urbanization were compared with the results of modeling three urban watersheds in Oklahoma City using a U.S. Geological Survey rainfall-runoff model. This comparison indicated there was not sufficient justification for revising Sauer's earlier report (1974b). For completeness the equations from Sauer's report (1974b) are given in this report so that flood discharges may be adjusted for urbanization.

The calibration of the rainfall-runoff model and generation of long-term synthetic data for these 3 urban watersheds and 57 rural watersheds are discussed in this report. Procedures are given for combining synthetically derived flood-frequency curves with flood-frequency curves based on observed data. Possible applications of the model parameters in estimating flood magnitude and frequency are illustrated. Flood data for 188 stations (including 23 stations not used in the analysis) are given in appendices A, B, and C. The majority of the 23 stations not used in the analysis were watersheds draining

less than 100 mi^2 (260 km^2) with less than 8 years of annual peak data or obvious time-sampling bias.

This report should be used in preference to an earlier report by Sauer (1974a) for estimating flood discharges for rural streams draining less than 2,500 mi^2 (6,500 km^2) because (1) it is based on 4 years of additional data and many additional gaging station records, (2) it utilizes long-term synthetic data generated at 57 small-stream sites (excluding 3 urban sites) by rainfall-runoff modeling procedures, and (3) it uses methods outlined in U.S. Water Resources Council Bulletin 17 (1976) for computing station flood-frequency curves. This report does not provide techniques for estimating flood discharges for streams draining more than 2,500 mi^2 (6,500 km^2) and, therefore, Sauer's report (1974a) should be used for estimating flood frequency for the large streams.

The contents of this report do not necessarily reflect the official views or policies of the Federal Highway Administration. The report is the result of a cooperative agreement among the Oklahoma Department of Transportation, the Federal Highway Administration, and the U.S. Geological Survey. Most of the small-stream data used in this report were collected under this cooperative agreement. The large watershed data were collected for many years (beginning about 1930) as part of cooperative programs with various State and Federal agencies. Data on the main-channel width and depth, on basin slope for the large watersheds, and on annual flood peaks for several small watersheds were obtained from the Agricultural Research Service, U.S. Department of Agriculture, Chickasha, Okla. Long-term daily precipitation records and storm precipitation reductions to 5-minute increments were obtained from the National Oceanic and Atmospheric Administration.

ESTIMATING TECHNIQUES

This section briefly outlines the procedures to use when estimating flood magnitude and frequency for an unregulated site draining less than 2,500 mi^2 (6,500 km^2) in Oklahoma. A detailed discussion of the data base, the computation of the station flood-frequency curves, and the multiple regression

analysis are discussed in subsequent sections of this report. The reader interested in the justification of the relations or the analytical techniques should consult these sections.

RURAL GAGED SITES

When estimating flood magnitude and frequency for rural gaged sites, first check figure 1 for gage location and station number. Using this station number determine the appropriate flood discharge value from appendix A. This is a weighted estimate, $Q_{x(w)}$, for recurrence interval x based on the station data (app. B) and the regression estimate, $Q_{x(r)}$. This weighting procedure is explained later in the report and illustrated in the section on "Application of Techniques." This section is entitled "Rural Gaged Sites" because at the present time (1977), there are no urban gaged sites in Oklahoma with sufficient record to define a flood-frequency curve. Appendix A does contain flood-frequency curves for three urban sites (07159450, 07242200, 07242220) but these frequency curves were estimated using a rainfall-runoff model.

UNGAGED RURAL SITES

Multiple regression techniques were used to relate estimates of the 2-, 5-, 10-, 25-, 50-, 100-, and 500-year floods (app. B) to basin, climatic and channel-geometry parameters. Of all the parameters investigated, drainage area, main-channel slope, and mean annual precipitation were the most significant for estimating flood peaks for ungaged rural sites. The three parameters used in the regression equations are listed in appendix A for each station and defined as follows:

(1) Drainage area, (A) - The contributing draining area of the basin, in square miles (mi^2).

(2) Main-channel slope, (S) - The slope, in feet per mile (ft/mi), determined from elevations at points 10 and 85 percent of the distance along the channel from the gaging station to drainage basin divide.

(3) Mean annual precipitation, (P) - The mean annual precipitation for the basin, in inches (in), during the period 1931-60. See figure 2.

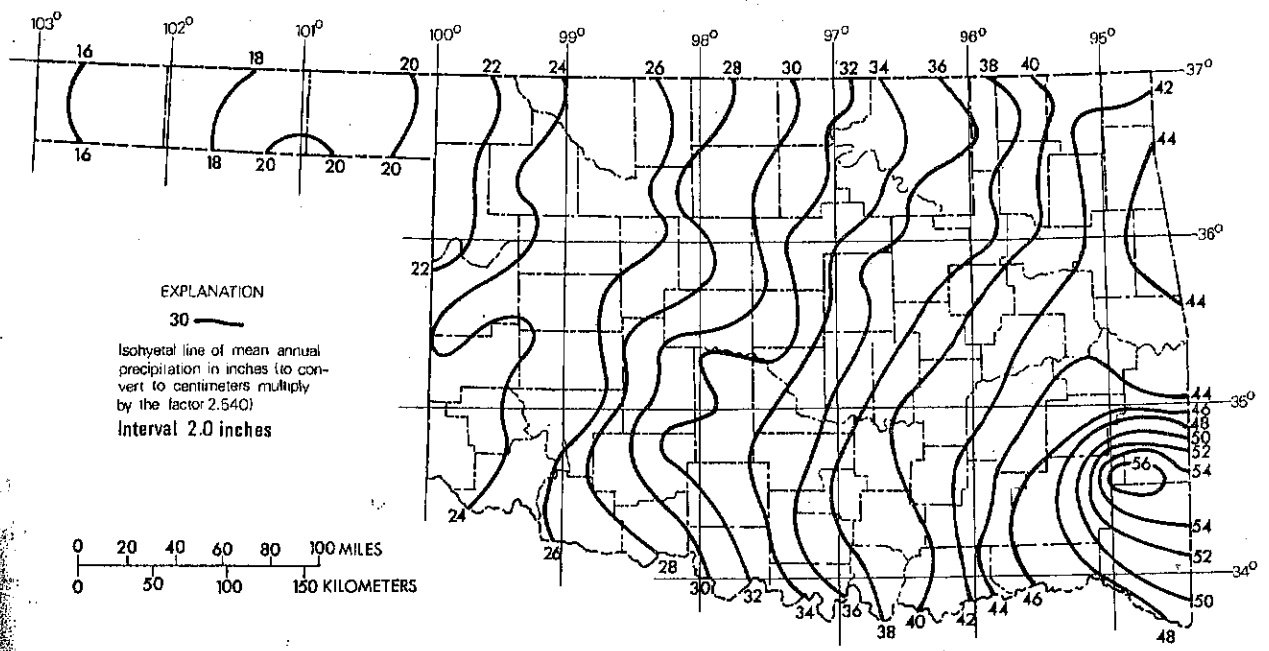

Figure 2.--Mean annual precipitation for the period 1931-60.

The model used in the regression analysis has the following form:

$$Q_x = a\, A^b\, S^c\, P^d \quad (1)$$

where Q_x = peak discharge, in cubic feet per second (ft^3/s) for recurrence interval x,

a = regression constant

b, c, and d = regression coefficients, and

A, S, and P = basin and climatic parameters as defined above.

The following equations were computed by regression analyses.

$$Q_2 = 0.111\, A^{0.66}\, S^{0.23}\, P^{1.92} \quad (2)$$

$$Q_5 = 1.00\, A^{0.67}\, S^{0.26}\, P^{1.45} \quad (3)$$

$$Q_{10} = 2.99\, A^{0.68}\, S^{0.28}\, P^{1.22} \quad (4)$$

$$Q_{25} = 9.49\, A^{0.69}\, S^{0.30}\, P^{0.97} \quad (5)$$

$$Q_{50} = 20.0\, A^{0.69}\, S^{0.31}\, P^{0.81} \quad (6)$$

$$Q_{100} = 38.6\, A^{0.70}\, S^{0.32}\, P^{0.67} \quad (7)$$

$$Q_{500} = 140\, A^{0.71}\, S^{0.33}\, P^{0.40} \quad (8)$$

The above equations are based on English units of measurements. They are not applicable for use with metric units. To convert the final answers of discharge from cubic feet per second to the metric equivalent of cubic meters per second, multiply by the factor, 0.0283. Equations 2-8 are shown graphically in figures 3, 4, 5, 6, 7, 8, and 9 respectively.

To estimate flood magnitude and frequency for ungaged rural sites, first determine the drainage area and main-channel slope (as defined above) from the best available map or field survey. The mean annual precipitation can be determined from figure 2. Enter figures 3-9 with drainage area along the top scale and move downward vertically to the appropriate main-channel slope curve. Move horizontally across to the appropriate mean annual precipitation curve and downward vertically to the discharge scale to obtain $Q_{x(r)}$, the regression estimate. Use of figures 3-9 is illustrated in the section on "Application of Techniques."

Figure 3.--Relation of 2-year flood peak to drainage area, main-channel slope and mean annual precipitation.

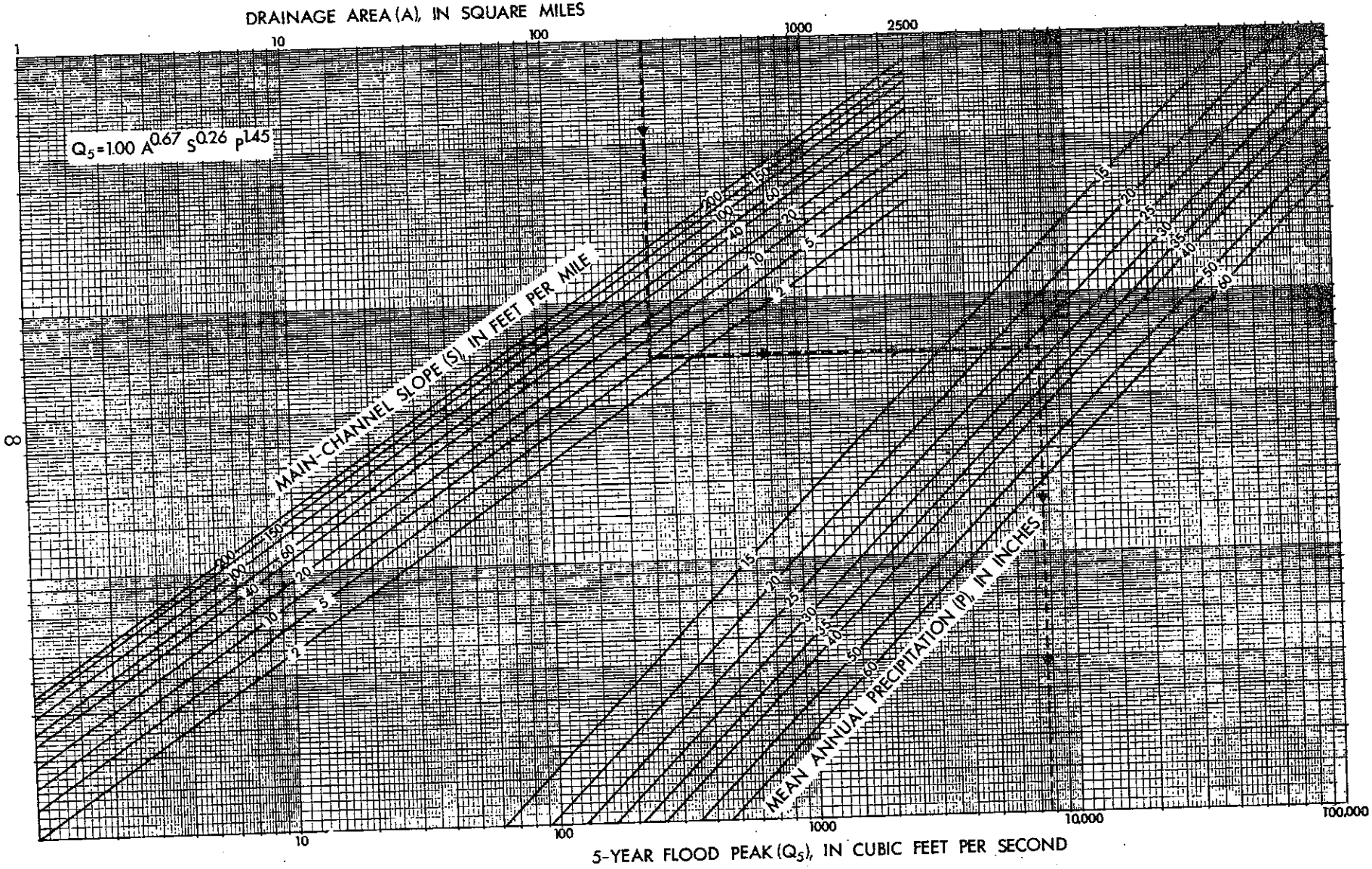

Figure 4.--Relation of 5-year flood peak to drainage area, main-channel slope and mean annual precipitation.

Figure 4.--Relation of 5-year flood peak to drainage area, main-channel slope and mean annual precipitation.

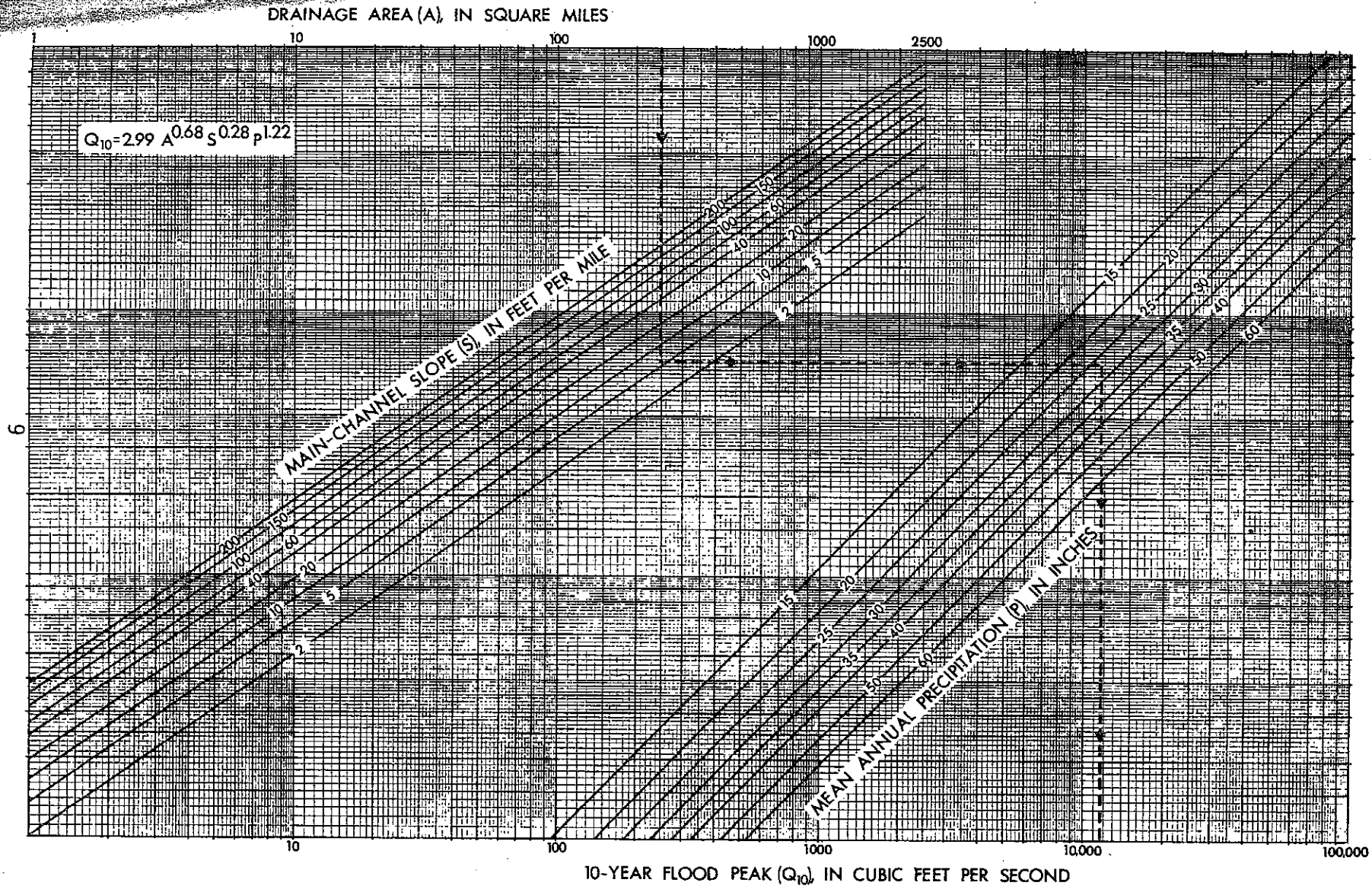

Figure 5.--Relation of 10-year flood peak to drainage area, main-channel slope and mean annual precipitation.

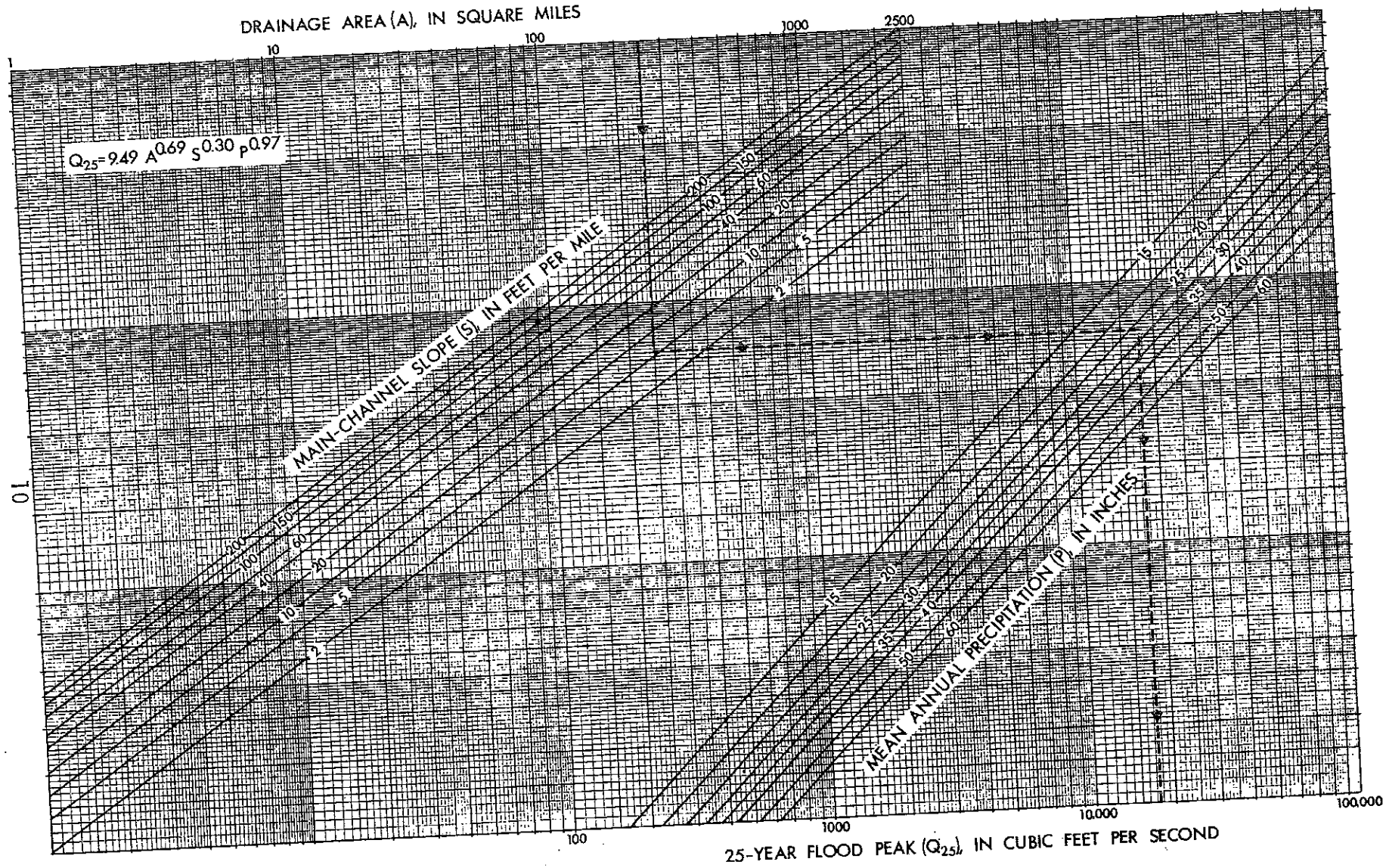

Figure 6.--Relation of 25-year flood peak to drainage area, main-channel slope and mean annual precipitation.

Figure 6.--Relation of 25-year flood peak to drainage [illegible] mean annual precipitation.

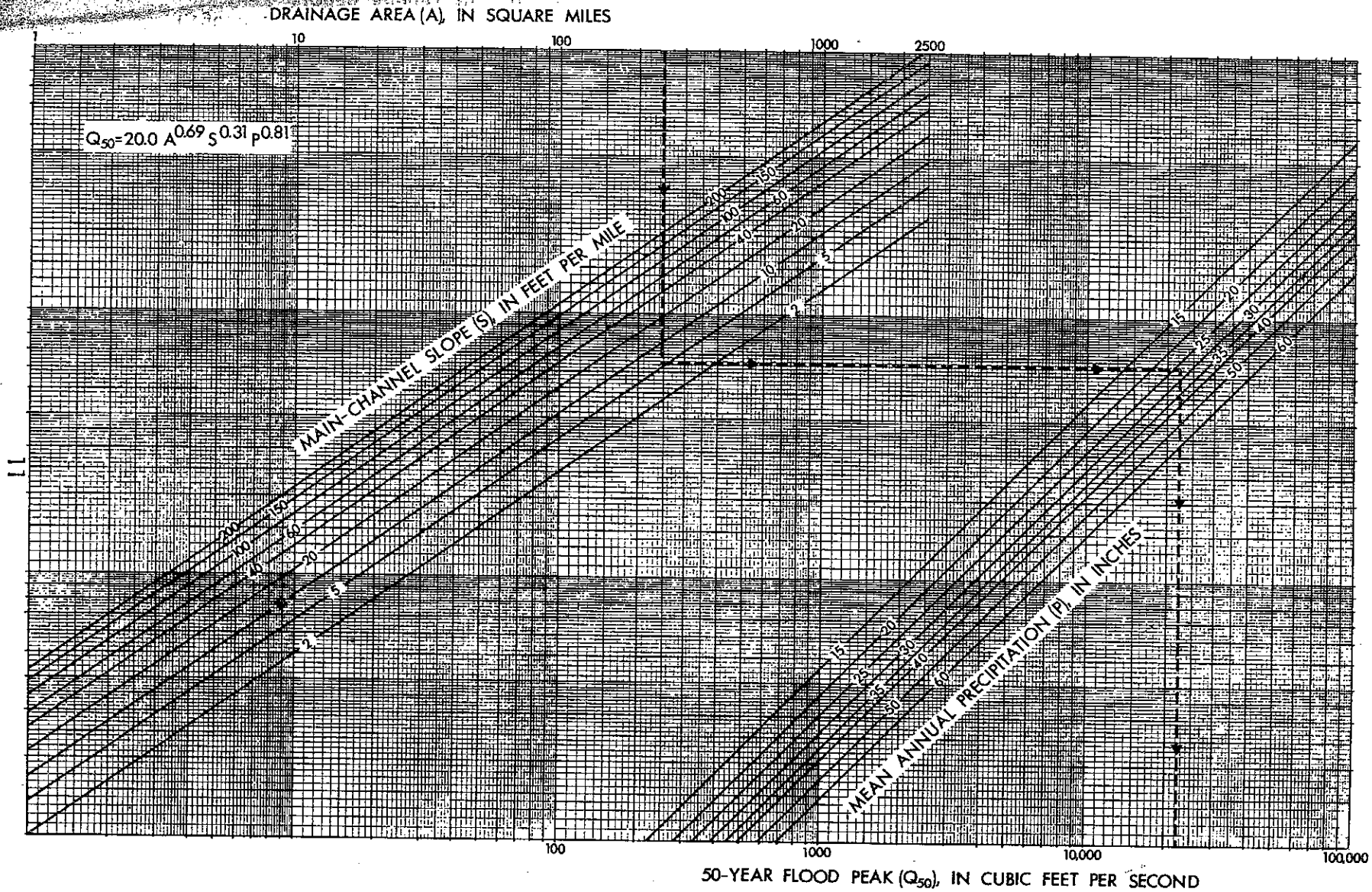

Figure 7.--Relation of 50-year flood peak to drainage area, main-channel slope and mean annual precipitation.

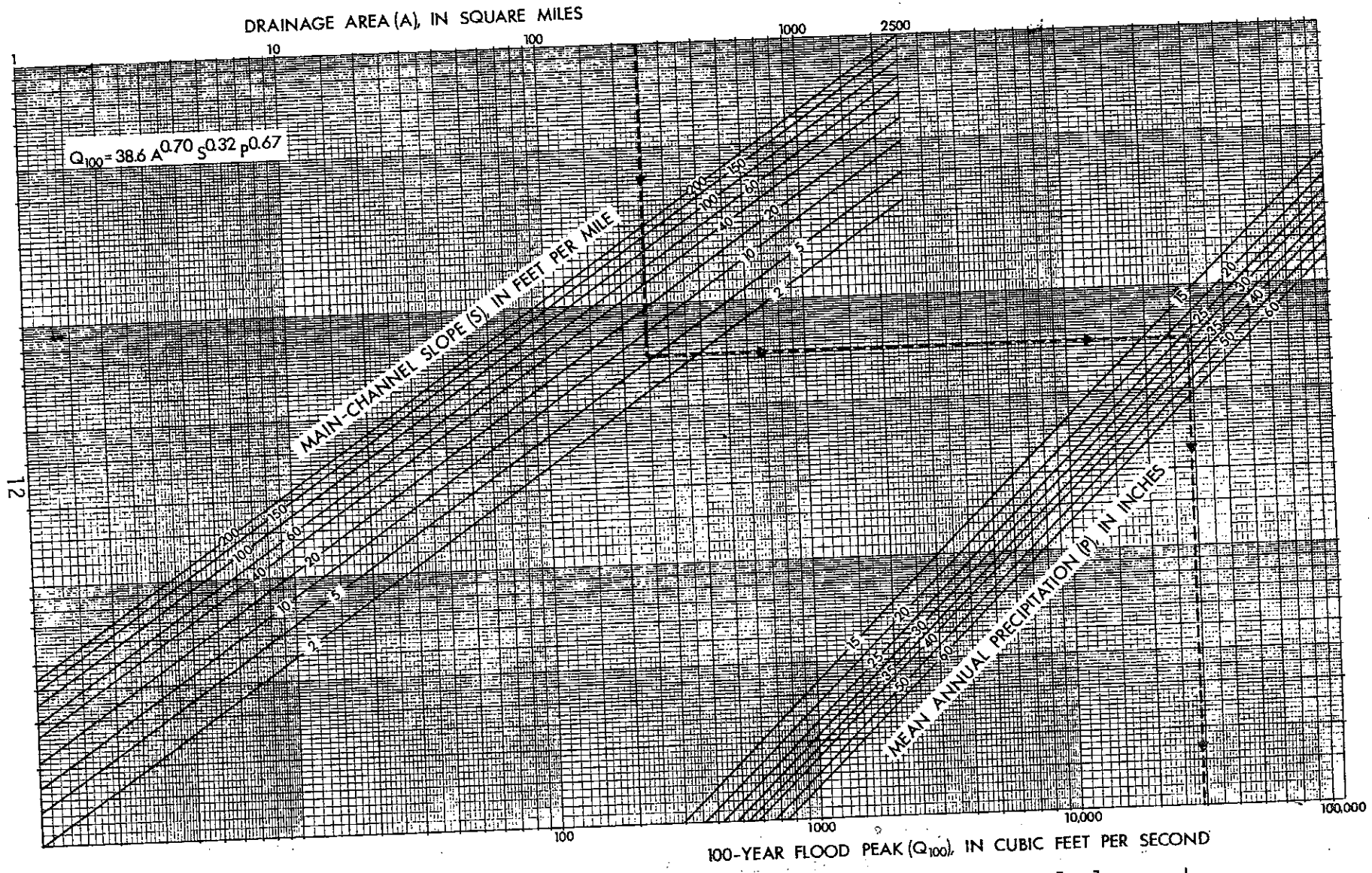

Figure 8.--Relation of 100-year flood peak to drainage area, main-channel slope and mean annual precipitation.

Figure 8.--Relation of 100-year flood peak to drainage area, main-channel slope and mean annual precipitation.

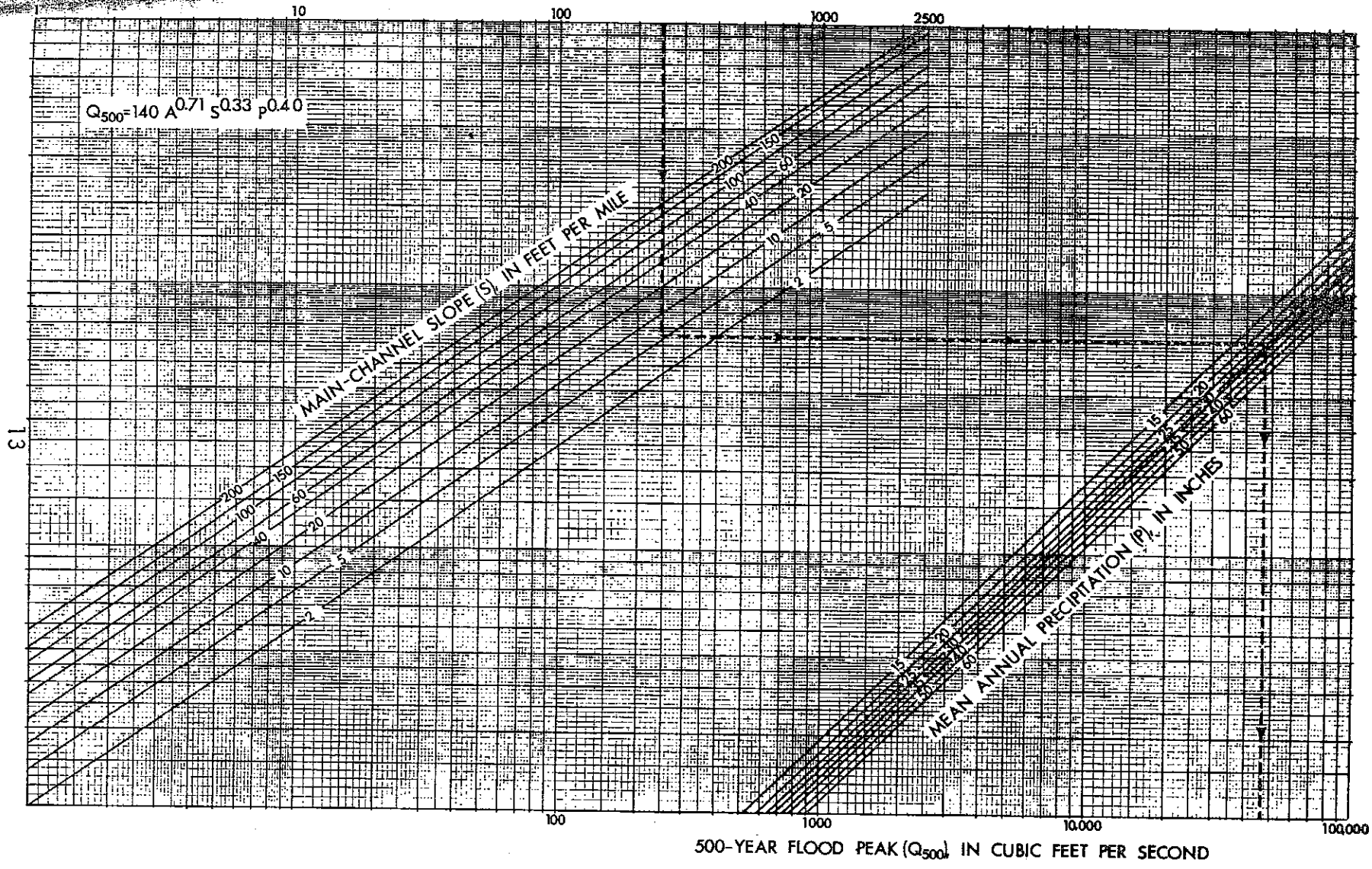

Figure 9.--Relation of 500-year flood peak to drainage area, main-channel slope and mean annual precipitation.

UNGAGED SITES NEAR GAGING STATIONS

The combined use of the regression equations or graphs (figs. 3-9) and the station data can be used for estimating the magnitude and frequency of floods for ungaged sites near gaging stations and on the same stream. The following procedure is suggested for use if the site has a drainage area within 50 percent of the drainage area of the gaging station. Define the ratio $R = \frac{Q_{x(w)}}{Q_{x(r)}}$, where $Q_{x(w)}$ is the weighted estimate (app. A) and $Q_{x(r)}$ is the regression estimate (figs. 3-9). This ratio represents the correction needed to adjust the regression estimate, $Q_{x(r)}$, to the weighted estimate, $Q_{x(w)}$, at the gaged site. The following equation derived by Sauer (1974a) gives the correction factor R', for an ungaged site that is near a gaged site on the same stream,

$$R' = R - \frac{\Delta A}{0.5A_g}(R - 1.00) \qquad (9)$$

where ΔA is the difference between the drainage areas of the gaged and ungaged sites, and A_g is the drainage area of the gaged site. The correction factor R' is multiplied times the regression estimate, $Q_{x(r)}$, for the ungaged site to make adjustment for the nearby station data. If the drainage area of the ungaged site is 50 percent more than or less than the gaged site, that is, $\Delta A/A_g$ is greater than 0.5, equation 9 should not be used and the regression equations 2-8 should be used without adjustment. If the drainage area of the ungaged site is within 50 percent of two gaged sites, the frequency calculations for the ungaged site can be made by interpolation of the weighted station values ($Q_{x(w)}$) for each gaged site. Interpolation should be on the basis of drainage area. If the flood discharges for the ungaged site are affected by urbanization, they should be modified by techniques given in the following section.

UNGAGED URBAN SITES

For estimating flood magnitude and frequency for ungaged urban sites, the percentage of the basin impervious and served by storm sewers is required in addition to the variables needed for rural sites. The percentage of the basin impervious can be determined from aerial photographs, recent U.S. Geological Survey topographic maps or field surveys. The percentage of the basin served by storm sewers should be determined from the best available storm sewer and

drainage map. After determining the percentage of the basin impervious and served by storm sewers, obtain R_L, the urban adjustment factor, from figure 10 (Leopold, 1968). The urban adjustment factor R_L, is the ratio of the mean annual flood under urban conditions to rural conditions. The following equations computed by Sauer (1974b) can be used to adjust estimates from equations 2-8 to urban conditions:

$$Q_{2(u)} = R_L Q_2 \quad (10)$$

$$Q_{5(u)} = 1.60 (R_L-1) Q_2 + 0.167 (7-R_L) Q_5 \quad (11)$$

$$Q_{10(u)} = 1.87 (R_L-1) Q_2 + 0.167 (7-R_L) Q_{10} \quad (12)$$

$$Q_{25(u)} = 2.21 (R_L-1) Q_2 + 0.167 (7-R_L) Q_{25} \quad (13)$$

$$Q_{50(u)} = 2.46 (R_L-1) Q_2 + 0.167 (7-R_L) Q_{50} \quad (14)$$

$$Q_{100(u)} = 2.72 (R_L-1) Q_2 + 0.167 (7-R_L) Q_{100} \quad (15)$$

$$Q_{500(u)} = 3.30 (R_L-1) Q_2 + 0.167 (7-R_L) Q_{500} \quad (16)$$

To apply the above equations, use the R_L value determined from figure 10, determine Q_2 from figure 3, and the appropriate value of Q_x from figures 4-9. Sauer (1974b) provides more information on the assumptions made in computing equations 10-16.

ACCURACY AND LIMITATIONS

The accuracy of the regression equations 2-8 can be expressed in two ways, percent or equivalent years of record. The accuracy in percent referred to as the standard error of estimate, is the accuracy to be expected, on the average, two-thirds of the time. Hardison (1969) related the standard error of estimate and streamflow variability to equivalent years of record. When converted to equivalent years of record, the standard error of estimate is expressed as the number of actual years of streamflow records needed at the ungaged site to provide an estimate equal in accuracy to the standard error of estimate. The accuracy of the regression equations 2-8 is summarized in table 1. The accuracy of the urban equations 10-16 could not be determined because of the paucity of actual urban runoff data to compare with the computed values.

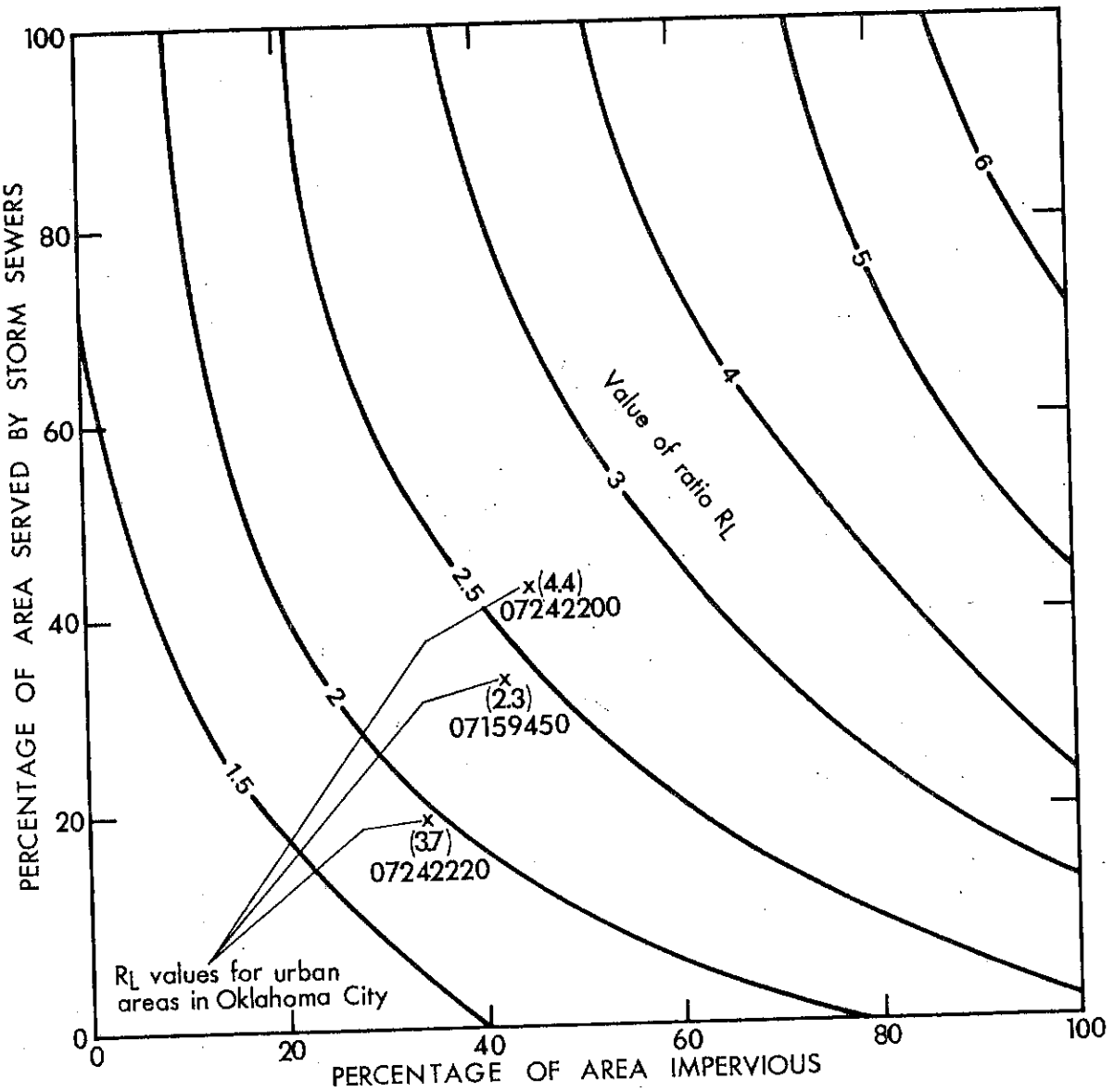

Figure 10.--Relationship of the urban adjustment factor, R_L, to the percentage of the area impervious and served by storm sewer (Adapted from Leopold, 1968).

Table 1.--Accuracy of regression equations

Recurrence interval in years	Standard error of estimate, in percent	Equivalent years of record
2	48*	3
5	40	6
10	39	8
25	40	10
50	42	11
100	45	12
500	53	12

*Variables other than A, S, and P are significant for estimating Q_2. Inclusion of these variables in the regression equation reduces the standard error of Q_2.

The increase in the standard error of estimate as the recurrence interval increases is indicative of the larger time-sampling error for the higher recurrence interval floods. This increase in time-sampling error simply means that it is more difficult to predict the larger floods with the same years of actual record. Because the time-sampling error increases more than the standard error of estimate, the equivalent years of record increases with recurrence interval. The 12 years equivalent record for Q_{100} means that the regression estimate is as accurate as an estimate of Q_{100} based on 12 years of actual record.

Split-sampling techniques were used to verify that the standard errors of estimate given in table 1 were indicative of the true predictive accuracy of the regression equations. Regression equations were computed using 83 gaging stations randomly distributed about the State. Estimates of Q_{10}, Q_{50}, Q_{100}, and Q_{500} from these equations were compared to station estimates from the remaining 82 stations not used to compute the equations. The resultant standard errors agreed closely with those in table 1.

The regression equations should not be used to predict flood discharges on drainage basins in excess of 2,500 mi^2 (6,500 km^2) or those basins having values of S and P outside the range of values used to define the equations. In defining equations 2-8 values of S ranged from 2.6 - 246 ft/mi (0.49 - 4.65 m/km) and P ranged from 15.4 - 54.0 in (391.2 - 1,371.6 mm). Equations 2-8 should not be used for those basins significantly affected by regulation. Estimates from equations 2-8 can be adjusted by equations 10-16 to account for urbanization effect.

Extreme local conditions such as deep sandy soils, shallow clay soils or variations in vegetative cover may cause discharge estimates to vary from regionalized values. Engineering judgment should be used when applying equations 2-8.

APPLICATION OF TECHNIQUES

Estimates of flood magnitude and frequency for rural gaged sites are combinations of station data and regression estimates. The equivalent years of record concept is used to combine station estimates with regression estimates of peak flow to obtain a weighted estimate at the gaged site. This procedure was described by Sauer (1974a) and is expressed in the following equation:

$$Q_{x(w)} = \frac{Q_{x(s)}\ (N) + Q_{x(r)}\ (E)}{N + E} \qquad (17)$$

where $Q_{x(w)}$ is the weighted estimate for recurrence interval x (app. A), $Q_{x(s)}$ and $Q_{x(r)}$ are the station (app. B), and regression estimate (figs. 3-9) for recurrence interval x, N is the number of actual years of record at the gaged site and E is the equivalent years of record for recurrence interval x (table 1). The weighted estimate is considered more reliable than either the regression or station data when making an estimate of flood frequency at gaged sites. The following example illustrates how a weighted estimate is calculated and how to use figures 3-9. The example computation is for the station 07159000 Turkey Creek near Drummond.

Table 2.--Computation of a weighted flood-frequency curve for Turkey Creek near Drummond (07159000)

Recurrence interval, x (years)	$Q_{x(s)}$ (ft^3/s)	N years	$Q_{x(r)}$ (ft^3/s)	E years	$Q_{x(w)}$ (ft^3/s)
2	2730	28	3580	3	2810
5	7260	28	7600	6	7320
10	11900	28	11600	8	11800
25	20000	28	17700	10	19400
50	27800	28	22200	11	26300
100	37200	28	29200	12	34800
500	66200	28	46700	12	60400

The columns $Q_{x(s)}$ and N reflect the computed frequency curved defined from the 28-year record at station 07159000. The column labeled $Q_{x(r)}$ was computed by using figures 3-9 and the following basin and climatic characteristics for station 07159000:

$A = 248\ mi^2\ (642\ km^2)$

$S = 5.70\ ft/mi\ (1.08\ m/km)$

$P = 27.2\ in\ (690.9\ mm)$

Enter the figures with drainage area ($248\ mi^2$) along the top scale. Move downward (following the dotted lines) to the main-channel slope curves to 5.70 ft/mi. Move horizontally across to the mean annual precipitation curves to 27.2 in. Move downward to the discharge scale to obtain $Q_{x(r)}$ given above in table 2. The weighted estimates, $Q_{x(w)}$, were computed from equation 17 using values of E from table 1.

To utilize some of the information in table 2, assume an estimate of the 100-year flood is needed upstream from station 07159000 on Turkey Creek. Assume the following hypothetical basin and climatic characteristics:

$A = 150\ mi^2\ (388\ km^2)$

$S = 10.00\ ft/mi\ (1.89\ m/km)$

$P = 27.0\ in\ (685.8\ mm)$

The following data and calculations are needed to estimate Q_{100} at the ungaged site.

(1) Gaged site, 07159000 Turkey Creek near Drummond

$A_g = 248\ mi^2\ (642\ km^2)$

$Q_{100(r)} = 29{,}200\ ft^3/s\ (826\ m^3/s)$, from figure 8 or equation 7

$Q_{100(w)} = 34{,}800\ ft^3/s\ (985\ m^3/s)$, from appendix A or the previous example

$R = Q_{100(w)}/Q_{100(r)} = 1.19$

(2) Ungaged site on Turkey Creek

$A = 150\ mi^2\ (388\ km^2)$

$Q_{100(r)} = 24{,}500\ ft^3/s\ (693\ m^3/s)$, from figure 8 or equation 7

$\Delta A = 98\ mi^2\ (254\ km^2)$

$\frac{\Delta A}{A_g}$ = 0.40 (This is less than 0.5, therefore, R' should be computed from equation 9 and used to adjust $Q_{100(r)}$)

$$R' = 1.19 - \frac{98}{0.5(248)} (1.19 - 1.00) = 1.04$$

$$Q_{100} = Q_{100(r)} (R') = 24{,}500 (1.04) = 25{,}500 \text{ ft}^3/\text{s} (722 \text{ m}^3/\text{s})$$

Therefore, the estimate of the 100-year flood at the ungaged site on Turkey Creek is 25,500 ft^3/s (722 m^3/s) after the regression estimate is adjusted for the station data at station 07159000.

For the sake of illustration, assume the ungaged site on Turkey Creek is an urban site and an estimate of Q_{100} is needed under urban conditions. Assume the basin is 40 percent impervious and that 20 percent of the basin is served by storm sewers. The following data and calculations are needed to estimate Q_{100} for this urban site:

Q_{100} (rural conditions) = 25,500 ft^3/s (722 m^3/s), from previous example

Q_2 (rural conditions) = 2,880 ft^3/s (81.5 m^3/s), from figure 3 or equation 2

R_L = 2.1, from figure 10

$Q_{100(u)}$ = 29,500 ft^3/s (835 m^3/s), from equation 15

Therefore, the estimate of the 100-year flood under urban conditions for this ungaged watershed is 29,500 ft^3/s (835 m^3/s). This is an increase of 16 percent over the 100-year flood for rural conditions.

ANNUAL PEAK DATA

The first step in a flood-frequency analysis is to assemble and review all the pertinent annual peak discharge data. The flood-frequency analysis for streams of less than 2,500 mi^2 (6,500 km^2) presented in this report is based on annual peak data collected through September 30, 1975, at 165 gaging stations. These gaging stations plus all stations less than 100 mi^2 (260 km^2) and all stations less than 2,500 mi^2 (6,500 km^2) with 8 or more years of unregulated record are shown in figure 1. For this analysis, only those stations with at

least 8 years of flood peak data free of significant regulation and man-made effects were used. Annual peak stages and discharges are given in appendix C for those gaging stations shown in figure 1. A summary of the distribution of drainage areas, average observed length of record per station and effective record length for those stations used in the regression analysis is given in table 3. Effective record length is the resultant record length after combining the observed and synthetic data. Computation of effective record length is discussed in a later section of this report.

Table 3.--Summary of drainage area distribution, average observed length of record and effective length of record

Drainage area (square miles)	Number of stations	Average observed length of record (years)	Effective length of record (years)
Less than 1	17	15	17
1 to 5	29	12	15
5 to 10	21	12	17
10 to 50	33	13	17
50 to 100	6	18	18
100 to 500	27	22	22
500 to 1000	20	29	29
1000 to 2510	12	34	34
	165	19	21

A comparison of the above summary with a summary given in Sauer (1974a) shows that the number of stations less than 100 mi^2 (260 km^2) has been increased by 45 stations. The increase is due partly to obtaining annual peak data from the Agricultural Research Service. The number of stations greater than 100 mi^2 (260 km^2) is essentially the same as given by Sauer (1974a). The average observed length of record is closely related to the size of the basin corresponding to the early history of establishing streamflow stations on large streams. The longer record for the stations less than 1 mi^2 (2.6 km^2) is due to the inclusion of five long-term Agricultural Research Service stations. The Geological Survey small-stream data-collection program did not begin, on a large scale, until 1964 under a special project with the Federal Highway Administration and Oklahoma State Department of Transportation. The effective length of record for the small-streams stations indicates the increase in

record length due to the rainfall-runoff modeling results. Records ranging from 49 to 69 years in length were generated using long-term precipitation data at 6 National Weather Service stations in and around Oklahoma. The incorporation of these synthetic data with the observed flood records is discussed later in this report.

This report completes the data analysis of a small-streams project with the Federal Highway Administration and Oklahoma State Department of Transportation. The project originally had 99 gaging stations in the data collection network. Starting in 1972, the data-collection network was reduced annually to provide funds for data analysis. By September 1975 the network had been reduced to 36 gages which included 8 flood-hydrograph gages and 28 crest-stage gages. The last reduction in the data-collection network (September 1975) was based on a computer analysis (Carrigan and Golden, 1975) from which was determined the optimum subset of gages to be retained for a given level of annual operating costs with the information content of the reduced network being the factor optimized. The computer program determined which pairs of gages were highly correlated and identified those gages which contributed the least amount of information to the network. Operation of the optimum subset of gages for an additional 5-8 years should provide sufficient data to verify the rainfall-runoff modeling results and to provide long-term annual peak data to verify or to update equations given in this report.

ANALYTICAL TECHNIQUES

The earlier section on "Estimating Techniques" describes how to estimate flood discharges for Oklahoma streams without providing any documentation for the analysis. This section discusses the technical details of the analysis, namely the computation of the station flood-frequency relations, the regression analysis and the rainfall-runoff modeling results. Several by-products of the rainfall-runoff modeling are also discussed including the application of the model parameters to estimating flood discharges.

STATION FLOOD-FREQUENCY RELATIONS

The relation of flood-peak magnitude to probability of occurrence, or recurrence interval, is referred to as a flood-frequency relation or curve. Probability of occurrence is the percent chance of a given flood magnitude being exceeded in any one year. Recurrence interval is the reciprocal of probability of occurrence times 100, and is the average number of years between exceedances. For instance, a flood having a probability of occurrence of 2 percent has a recurrence interval of 50 years. This does not imply cyclic flood conditions, but only that a 50-year flood will be exceeded, about once in 50 years, on the average, over a very long time period. In fact, it may be exceeded in successive years.

Flood-frequency relations were defined for those gaging stations with 8 or more years of record, following guidelines in U.S. Water Resources Council Bulletin No. 17 (1976). Logarithms of annual peak discharges were fitted to the Pearson Type III distribution giving weight to historical peaks and high outliers, omitting low outliers and using the generalized skew map in Water Resources Council Bulletin No. 17 (1976). For those stations having less than 25 years of record, the value from the generalized skew map was used directly in computing the flood-frequency relation. For those stations having more than 25 years of record, the station skew was weighted with the generalized skew map to give a weighted skew as recommended in Water Resources Council Bulletin No. 17 (1976). Estimates of the 2-, 5-, 10-, 25-, 50-, 100-, and 500-year floods and the log-Pearson Type III statistics for these estimates are given for each station in appendix B. The small watersheds for which synthetic annual peak data were generated are indicated in appendix B with an asterisk. For these stations the station frequency curve is a weighted average of the observed and synthetic frequency curves. The generation of synthetic annual peak data and the weighting of synthetic and observed frequency curves are discussed in subsequent sections of this report.

REGRESSION ANALYSIS

Estimates of the magnitude and frequency of flooding commonly are needed at ungaged sites. Therefore, it is necessary to transfer flood frequency data

from gaged sites to ungaged sites. This can be accomplished by defining the relations between peak discharges of selected frequencies and basin or climatic characteristics measured from maps or taken from readily available reports. Multiple regression techniques were used to relate estimates of the 2-, 5-, 10-, 25-, 50-, 100-, and 500-year floods (given in app. B) to basin, climatic, and channel-geometry parameters.

Many parameters were investigated in the multiple regression analysis in an attempt to find the best relations for estimating flood discharges. The following parameters were investigated as possible predictors of flood discharge: contributing drainage area, main-channel slope, main-channel length, main-channel elevation (average of elevations at 10 and 85 percent of channel length), a soils index, mean annual precipitation, the 2-year, 24-hour rainfall, gage slope (slope of streambed in immediate vicinity of gage), basin shape factor (length divided by the square root of drainage area), basin slope (computed perpendicular to main channel from drainage area divide), main-channel depth, main-channel width, and main-channel cross-sectional area. Of all the parameters investigated, the three found statistically significant were contributing drainage area, main-channel slope, and mean annual precipitation. The equations using the 2-year, 24-hour rainfall in place of the mean annual precipitation could be used with little loss in accuracy because the two climatic variables are so highly correlated. Mean annual precipitation was selected as the predictor parameter because it is based on a denser raingage network with a longer period of record. The channel-geometry characteristics were investigated because of the applicability of main-channel width for estimating flood discharges in Kansas (Hedman, Kastner, and Hejl, 1974). For Oklahoma, however, channel-geometry characteristics presently available are no better predictors of flood discharges than basin and climatic characteristics that are more readily determined. Channel-geometry characteristics for the small watersheds less than 100 mi^2 (260 km^2) were determined from cross sections run for contracted-opening measurements, slope-area measurements, culvert measurements, and step-backwater surveys. If the small watershed channel-geometry characteristics had been determined in the field, then main-channel width might have been more useful in estimating flood discharges. The

use of channel-geometry characteristics, determined from field measurements, should be considered in future analyses.

TESTING OF ASSUMPTIONS AND APPLICABILITY OF REGRESSION EQUATIONS

A nonlinear regression equation of the form $Q_x = a\ A^{bA^c}\ S^d\ P^e$ was also investigated. For a value of c=0, the nonlinear equation reduces to the same form as equation 1. Several trials were made using the above equation, each time changing the value of c. The minimum value of the standard error of estimates occurred at c=-0.01, but this standard error was not significantly lower than the linear equation (1) of the form $Q_x = a\ A^b\ S^c\ P^d$. As a further check on linearity of the regression relations the residuals (deviations of observed data from regression relation) for Q_{10} and Q_{100} were plotted against drainage area and main-channel slope. The drainage area-residual plot and the main-channel slope-residual plot indicated a linear trend throughout the range of variables used in the analysis. The hypothesis of linearity of the regression relation was accepted.

The residuals from equations 4 and 7 were plotted on maps to check for regional bias. These plots did not indicate any significant regional trends. As a further check for regional trends, the State was divided into three regions and regression equations were computed for each region. The approximate boundaries were those stations west of latitude 98° 30' (Region 1), those stations east of latitude 96° 00' (Region 3), and the remaining stations in the central part of the State (Region 2). The significant parameters in these regional equations were either drainage area and main-channel slope or drainage area alone. The standard errors of the regional equations were within five percent of the statewide equations. The following table indicates the average percent difference between estimates from the statewide equations and the regional equations for the 10- and 100-year floods. The percent difference is the statewide equation estimate minus the regional equation estimate.

	Region 1	Region 2	Region 3
10-year flood	+5	-3	+4
100-year flood	+9	-3	+5

There is essentially little difference in the flood frequency estimates or the standard errors between the statewide equations and the regional equations. The above tests and comparisons indicate that there are no significant advantages in using regional equations. Therefore, equations 2-8 are considered applicable statewide within the limitations given in an earlier section of this report.

Comparisons of estimates from equations 2-7 with estimates from equations 3-8 in Sauer's report (1974a), indicate a considerable difference for small watersheds. For watersheds less than 100 mi^2 (260 km^2) the difference is generally 20-30 percent less than Sauer's equations. For watersheds over 100 mi^2 (260 km^2) the estimates from equations 2-8 average within $\pm$ 11 percent of Sauer's equations for all recurrence intervals.

The primary reason for this difference for the small watersheds is Sauer's adjustment of the short-term frequency curves (figs. 2 and 3 in Sauer's report (1974a)). Sauer assumed (correctly) that the small watershed flood frequency data were not representative of long-term flood records because of below normal rainfall for the period 1962-71 (the period of record for most small watersheds). The adjustment increased the small watershed flood frequency data to remove the bias of the time-sampling error. The rainfall-runoff modeling, described in the next section of this report, indicated that this adjustment was too large for the small watersheds.

RAINFALL-RUNOFF MODEL CALIBRATION AND SYNTHESIS

A long-term record of synthetic flood peaks was generated to provide "independent" estimates of selected frequency floods by using a rainfall-runoff model developed by the Geological Survey (Dawdy, Lichty, and Bergmann, 1972). These synthetic estimates of selected frequency floods were combined with similar estimates from actual data at each site to increase the effective length of record for the small watersheds.

The rainfall-runoff model was calibrated and synthetic flood peaks were generated for 60 small watersheds (including three urban sites in Oklahoma City) in Oklahoma (fig. 11). Data for five small watersheds were obtained from the annual reports of the Agricultural Research Service (Hydrologic Data for Experimental Agricultural Watersheds in the United States 1956-67) or directly from Agricultural Research Service, Chickasha, Okla. All concurrent rainfall and runoff data required to calibrate the model are stored in the data files of the Geological Survey. In the calibration phase optimal values for the model parameters were determined by minimizing the sum of the squared differences between the computed and actual runoff utilizing concurrent rainfall and runoff at the gaging station. The optimal values of the model parameters gave the best fit of hydrograph shape and volume between actual and computed hydrographs. During the synthesis phase the optimal values of the model parameters were used in conjunction with long-term rainfall and daily evaporation data to synthesize a long record of flood peaks. The logarithms of the annual peak series were fit to a Pearson Type III distribution to provide a synthetic flood-frequency curve for each long-term rainfall station. The 10 model parameters and their application in the modeling process are given in table 4 and the values of the parameters derived for the 60 small watersheds are given in table 5. The parameters DRN and TP (equal to 0.5 TC) were held constant during the calibration and synthesis phase. All other parameters were constrained within the range of reasonable occurrence in the field or within values computed from observed hydrographs. The rainfall-runoff model is described in greater detail by Thomas and Corley (1974) and Dawdy, Lichty, and Bergmann (1972).

The evaporation data at Canton Dam were used for all sites west of Oklahoma City and evaporation data at Fort Gibson Dam were used for all sites east of Oklahoma City in both the calibration and synthesis phase (see fig. 11). The sensitivity of the model to daily evaporation inputs did not justify transposing the evaporation data at Canton or Fort Gibson Dams to the small watershed being modeled. Long-term rainfall data at six National Weather Service sites were used - Oklahoma City, Dallas, Tex., Amarillo, Tex., Springfield, Mo., Wichita, Kans., and Shreveport, La. (fig. 11). Based on

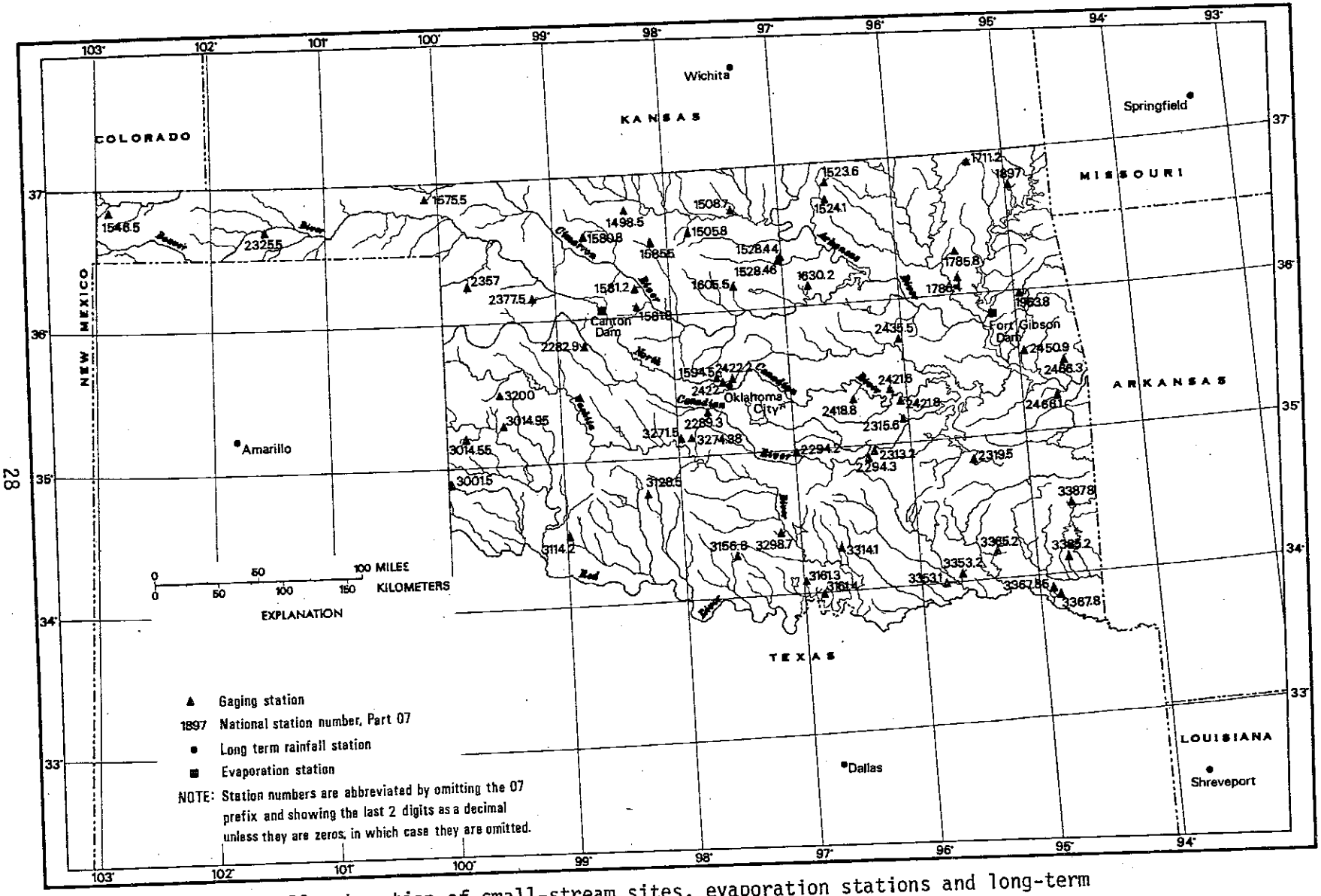

Figure 11.--Location of small-stream sites, evaporation stations and long-term rainfall stations used in the rainfall-runoff model.

Table 4.--The 10 model parameters and their application in the modeling process

Parameter identifier	Units	Application
PSP	inches	The combined effect of initial moisture content and soil suction at the wetted front at field capacity - functions of soil type
RFG	-	Ratio of the suction at the wetted front for soil moisture at wilting point to that at field capacity - function of hydrologic conditions in basin
KSAT	inches per hour	The minimum (saturated) value of hydraulic conductivity used to determine infiltration soil rates - function of soil type
BMSM	inches	Soil moisture storage volume at field capacity - function of average depth of soil zone
EVC	-	Coefficient to convert pan evaporation to potential evapotranspiration values
DRN	inches per hour	A constant drainage rate for redistribution of soil moisture - function of soil type
RR	-	Proportion of daily rainfall that infiltrates the soil - function of hydrologic conditions in basin
KSW	hours	Time storage coefficient for linear reservoir routing - function of basin characteristics
TC	minutes	Base time of unit translation hydrograph which is the time of concentration - function of basin characteristics
TP	minutes	Location of the unit translation hydrograph peak - function of basin characteristics

Figure 11.--Location of small-stream sites, evaporation stations and long-term rainfall stations used in the rainfall-runoff model.

Table 5.--Summary of optimal model parameters and drainage areas

Station Name	Station Number	PSP (in)	KSAT (in/hr)	DRN (in/hr)	RGF	BMSM (in)	EVC	RR	KSW (hrs)	TC (mins)	TP (mins)	Drainage area (mi^2)
Watershed No. 13 nr Cherokee	07149850	2.304	0.151	1.000	4.014	4.030	0.607	0.934	0.101	10.77	5.383	0.003
Sand Creek trib. nr Kremlin	07150580	0.455	0.038	1.000	6.142	5.581	0.603	0.942	2.883	675.7	337.8	7.21
Salt Fork Arkansas River trib. nr Eddy	07150870	1.184	0.052	1.000	9.465	4.298	0.617	0.937	1.719	147.5	73.73	2.35
Elm Creek nr Foraker	07152360	0.359	0.020	1.000	17.02	8.033	0.642	0.927	3.563	259.6	129.8	18.2
Rock Creek nr Shilder	07152410	1.717	0.030	1.000	6.617	1.216	0.626	0.949	2.407	134.8	67.40	9.13
Watershed No. 1 nr Stillwater	07152844	0.306	0.046	1.000	3.862	4.943	0.691	0.830	0.303	16.89	8.44	0.026
Watershed No. 3 nr Stillwater	07152846	1.154	0.044	1.000	4.134	2.432	0.899	0.719	0.513	30.72	15.36	0.144
Tesesquite Creek nr Kenton	07154650	3.422	0.060	1.000	8.707	1.585	0.842	0.778	0.607	54.00	27.00	25.4
West Fork Creek nr Knowles	07157550	2.844	0.331	1.000	9.379	10.18	0.841	0.703	0.450	78.00	39.00	4.22
Sand Creek trib. nr Waynoka	07158080	1.803	0.150	1.000	2.076	1.192	0.602	0.950	1.232	154.1	77.03	1.61
Cimarron River trib. nr Isabella	07158120	1.668	0.182	1.000	2.604	4.354	0.654	0.821	1.389	60.00	30.00	0.62
Salt Creek trib. nr Okeene	07158180	1.731	0.061	1.000	6.771	2.614	0.823	0.868	2.494	358.9	179.4	8.23
Turkey Creek trib. nr Goltry	07158550	1.100	0.030	1.000	6.448	7.264	0.606	0.934	2.586	365.4	182.7	5.08
Bluff Creek at Oklahoma City *	07159450	1.883	0.081	1.000	19.908	17.46	0.899	0.921	0.851	20.19	10.09	1.64
West Beaver Creek nr Orlando	07160550	1.666	0.120	1.000	8.074	8.932	0.712	0.932	2.504	270.0	135.0	13.9
Corral Creek nr Yale	07163020	1.309	0.050	1.000	9.367	4.349	0.600	0.044	1.530	104.3	52.17	2.89
Clear Creek trib. nr Hollow	07171120	0.302	0.024	1.000	7.605	6.782	0.637	0.918	2.832	234.1	117.0	2.19
Otter Creek nr Tiawah	07178580	1.035	0.059	1.000	4.870	5.597	0.601	0.884	4.385	281.8	140.9	15.2
Bull Creek nr Inola	07178640	0.384	0.020	1.000	6.699	7.170	0.601	0.936	6.952	450.0	225.0	10.7
Horse Creek at Afton	07189700	1.228	0.024	1.000	27.56	2.774	0.601	0.948	5.381	626.5	313.3	21.9
Illinois River trib. nr Tahlequah	07196380	0.997	0.030	1.000	7.995	4.487	0.694	0.720	1.333	130.0	65.0	3.59

Horse Creek at Afton	07196380	0.997	0.030	1.000	7.995	4.487	0.694	0.720				
Illinois River trib. nr Tahlequah												

Table 5.--Summary of optimal model parameters and drainage areas - Continued

Station Name	Station Number	PSP (in)	KSAT (in/hr)	DRN (in/hr)	RGF	BMSM (in)	EVC	RR	KSW (hrs)	TC (mins)	TP (mins)	Drainage area (mi^2)
Rough Creek nr Thomas	07228290	2.035	0.158	1.000	7.192	2.650	0.602	0.950	0.844	62.21	31.11	10.4
Worely Creek nr Tuttle	07228930	2.717	0.103	1.000	11.624	3.724	0.600	0.827	1.488	132.3	66.15	11.2
Julian Creek trib. nr Asher	07229420	1.057	0.097	1.000	7.725	4.725	0.883	0.928	1.375	98.11	49.05	2.28
Arbeca Creek nr Allen	07229430	1.000	0.064	1.000	9.988	8.720	0.783	0.875	1.865	117.7	58.87	2.26
Leader Creek trib. nr Atwood	07231320	1.339	0.057	1.000	10.45	7.205	0.882	0.885	0.614	53.32	26.66	.72
Middle Creek nr Carson	07231560	2.035	0.030	1.000	9.939	5.070	0.601	0.948	2.757	192.6	96.20	7.40
Pine Creek nr Higgins	07231950	0.886	0.041	1.000	4.958	7.623	0.697	0.776	1.264	146.9	73.43	9.99
South Fork trib. nr Guymon	07232550	2.515	0.200	1.000	7.574	1.571	0.608	0.946	0.763	63.20	31.60	.26
Little Wolf Creek trib. nr Gage	07235700	3.016	0.325	1.000	2.709	6.955	0.727	0.918	1.833	222.2	111.1	17.6
Cotton Wood Creek nr Vici	07237750	3.034	0.174	1.000	9.745	42.24	0.778	0.780	1.013	156.0	78.0	11.5
Sand Creek nr Cromwell	07241880	1.313	.059	1.000	12.53	14.55	0.693	0.845	2.175	149.1	74.53	9.48
Alabama Creek nr Weleetka	07242160	1.472	0.063	1.000	9.988	6.961	0.601	0.948	2.666	147.2	73.58	16.5
Stidham Creek nr Dustin	07242180	0.668	0.080	1.000	5.912	1.674	0.623	0.942	1.791	260.0	130.0	2.56
Deep Fork at Portland Ave., Oklahoma City*	07242200	1.743	0.072	1.000	5.008	19.22	0.601	0.864	0.700	30.46	15.23	2.99
Deep Fork at Eastern Ave., Oklahoma City*	07242220	2.574	0.070	1.000	6.520	19.91	0.709	0.703	2.214	151.9	75.94	28.2
Adams Creek nr Beggs	07243550	1.000	0.045	1.000	7.989	4.664	0.705	0.832	1.536	155.5	77.76	5.90
Vian Creek nr Vian	07245090	1.024	0.042	1.000	10.320	8.127	0.602	0.950	6.414	288.8	144.4	19.6
Pecan Creek nr Spiro	07246610	1.989	0.078	1.000	1.528	19.65	0.898	0.712	1.426	144.4	72.21	.90
Big Black Fox Creek nr Long	07246630	3.572	.062	1.000	8.968	2.984	0.794	0.939	2.174	133.3	66.66	5.32
Salt Fork Red River trib. nr Vinson	07300150	1.708	0.179	1.000	3.179	4.722	0.889	0.705	1.496	110.7	55.35	7.49

Table 5.--Summary of optimal model parameters and drainage areas - Continued

Station Name	Station Number	PSP (in)	KSAT (in/hr)	DRN (in/hr)	RGF	BMSM (in)	EVC	RR	KSW (hrs)	TC (mins)	TP (mins)	Drainage area (mi2)
Turkey Creek nr Erick	07301455	1.635	0.134	1.000	5.643	1.224	0.602	0.950	2.402	300.7	150.4	19.8
Indian Creek nr Carter	07301495	2.457	0.306	1.000	18.33	17.59	0.606	0.798	1.092	87.65	43.82	24.9
Deadman Creek trib. at Manitou	07311420	0.890	0.063	1.000	6.909	3.448	0.602	0.938	1.350	302.2	151.1	2.57
Nine Mile Beaver Creek nr Elgin	07312850	2.239	0.090	1.000	18.50	2.601	0.608	0.946	0.922	136.1	68.04	6.29
Cottonwood Creek trib. nr Loco	07315680	1.112	0.060	1.000	3.795	7.717	0.601	0.950	1.108	82.62	41.31	1.74
Wilson Creek trib. nr McMillan	07316130	2.095	0.310	1.000	1.753	3.844	0.835	0.818	0.600	77.76	38.88	2.97
Brier Creek nr Powell	07316140	3.637	0.028	1.000	8.087	7.886	0.804	0.760	1.514	181.5	90.76	12.0
Subwater Shed 10A	07320000	2.012	0.251	1.000	5.040	5.184	0.642	0.911	0.506	42.75	21.38	2.87
Salt Creek nr Possacet	07327150	2.822	0.122	1.000	10.746	1.364	0.609	0.943	3.170	500.0	250.0	23.8
Rangeland No. 5 nr Chickasha	07327438	2.045	0.125	1.000	10.84	5.690	0.602	0.949	0.658	61.31	30.66	0.037
Honey Creek nr Davis	07329870	1.790	0.135	1.000	6.694	6.443	0.605	0.950	3.912	272.1	136.1	18.7
Buzzard Creek nr Reagan	07331410	3.921	0.125	1.000	6.047	4.997	0.605	0.947	2.523	192.6	96.30	4.30
Rock Creek nr Boswell	07335310	0.217	0.014	1.000	1.963	4.520	0.618	0.946	2.278	133.3	66.66	0.94
Bokchito Creek nr Soper	07335320	1.311	.041	1.000	8.642	1.247	0.608	0.863	3.737	212.6	106.3	16.6
Frazier Creek nr Oleta	07336520	2.926	0.037	1.000	9.765	2.253	0.614	0.837	4.429	360.0	180.0	19.4
Perry Creek nr Idabel	07336780	0.990	0.030	1.000	7.998	4.033	0.602	0.926	2.616	243.0	121.5	7.53
Bokchito Creek nr Garjin	07336785	2.529	0.065	1.000	2.614	9.699	0.602	0.774	1.969	121.5	60.75	2.96
Yanubbee Creek nr Broken Bow	07338520	3.616	0.034	1.000	13.55	14.96	0.603	0.715	4.195	249.2	124.6	9.10
Mountain Fork trib. nr Smithville	07338780	2.649	0.047	1.000	7.305	7.465	0.844	0.713	2.533	150.0	75.0	0.85

* Urban site - each basin calibrated using 20 percent impervious cover

rainfall input at each long-term rainfall station, six synthetic flood frequency curves were computed for each small watershed. A weighted average of the six synthetic frequency curves was obtained for each small watershed by procedures discussed in the next section of this report.

WEIGHTING OF FLOOD-FREQUENCY CURVES FOR THE MODELED WATERSHEDS

Two separate weightings of data from frequency curves were necessary to incorporate the synthetic flood-frequency data from the rainfall-runoff model with the actual flood-frequency data. First, the six synthetic frequency curves were combined into one. Then the weighted synthetic curve was combined with the frequency curve derived from observed data at each of the 57 rural small-stream sites.

In the first weighting process two methods of combining the six synthetic curves were investigated. In the first method the synthetic estimate of Q_x using rainfall at each long-term rainfall station was related to a combination of model parameters given in table 5 (R. W. Lichty, oral commun., 1976). The second method involved weighting the synthetic estimate of Q_x for each long-term rainfall station inversely proportional to the distance from the small watershed site to the long-term raingage. To illustrate the first process, the equations derived for the 100-year flood are given below for each long-term rainfall station:

Oklahoma City

$$\frac{Q_{100}}{A} = 1433\ LAG^{-.736}\ FR^{-.106} \qquad \text{Standard error } 8\% \qquad (18)$$

Dallas

$$\frac{Q_{100}}{A} = 1703\ LAG^{-.711}\ FR^{-.078} \qquad \text{Standard error } 9\% \qquad (19)$$

Amarillo

$$\frac{Q_{100}}{A} = 1207\ LAG^{-.803}\ FR^{-.139} \qquad \text{Standard error } 10\% \qquad (20)$$

* Urban site - each basin calibrated using 20 percent impervious cover

Springfield — Standard error 11% (21)

$$\frac{Q_{100}}{A} = 1083\ LAG^{-.726}\ FR^{-.134}$$

Shreveport — Standard error 8% (22)

$$\frac{Q_{100}}{A} = 1232\ LAG^{-.641}\ FR^{-.093}$$

Wichita — Standard error 9% (23)

$$\frac{Q_{100}}{A} = 1450\ LAG^{-.762}\ FR^{-.102}$$

where Q_{100} = the synthetic 100-year flood estimated based on rainfall data at the respective rainfall station

A = contributing drainage area, in square miles

LAG = basin lag, in hours, defined as time from centroid of rainfall excess to centroid of runoff

LAG = KSW + TC/2 for a triangular-shaped translation hydrograph as used in the model (see table 4 for definitions of TC and KSW)

FR = infiltration rate, in inches per hour

FR = KSAT [1 + PSP/3 (0.8 RGF + 0.2)] (Simplification of equations 5 and 6 in Dawdy, Lichty, and Bergmann (1972) - see table 4 for definitions of KSAT, PSP, and RGF)

The form of FR was determined by changing the constants and coefficients in the FR expression until the minimum standard error was obtained for equations 18-23. The constant and coefficients in equations 18-23 were then plotted on maps and lines of equal values were drawn as illustrated in figures 12-14. The determination of the weighted estimate of Q_{100} (synthetic) is illustrated as follows using station 07242160: (1) determine the regression constant (a_{100}) from figure 12 (1350), (2) determine the coefficient of LAG (b_{100}) from figure 13 (-0.723), (3) determine the coefficient of FR from figure 14 (-0.108), (4) compute $\frac{Q_{100}}{A} = a_{100}\ LAG^{b100}\ FR^{c100} = \frac{Q_{100}}{A} = 1350\ LAG^{-0.723}\ FR^{-0.108} = 572.258$, (5) multiply $\frac{Q_{100}}{A}$ by A to get the weighted estimate of 9440 ft^3/s.

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Figure 12.--Regression constant for computing the weighted synthetic 100-year flood.

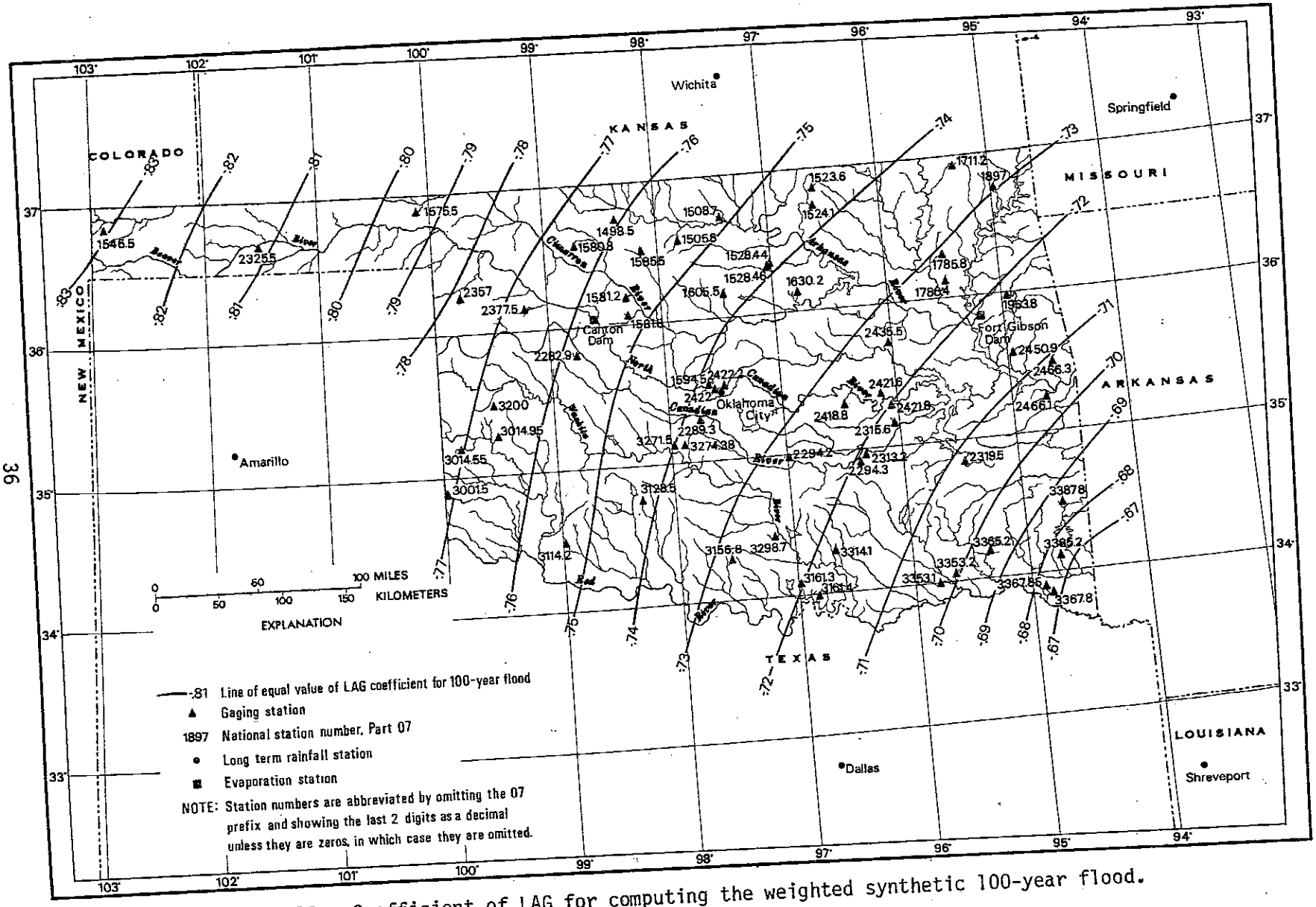

Figure 13.--Coefficient of LAG for computing the weighted synthetic 100-year flood.

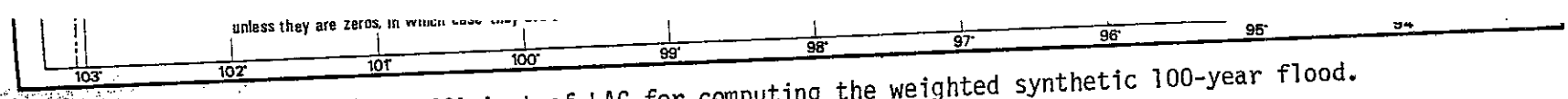

Figure 13.--Coefficient of LAG for computing the weighted synthetic 100-year flood.

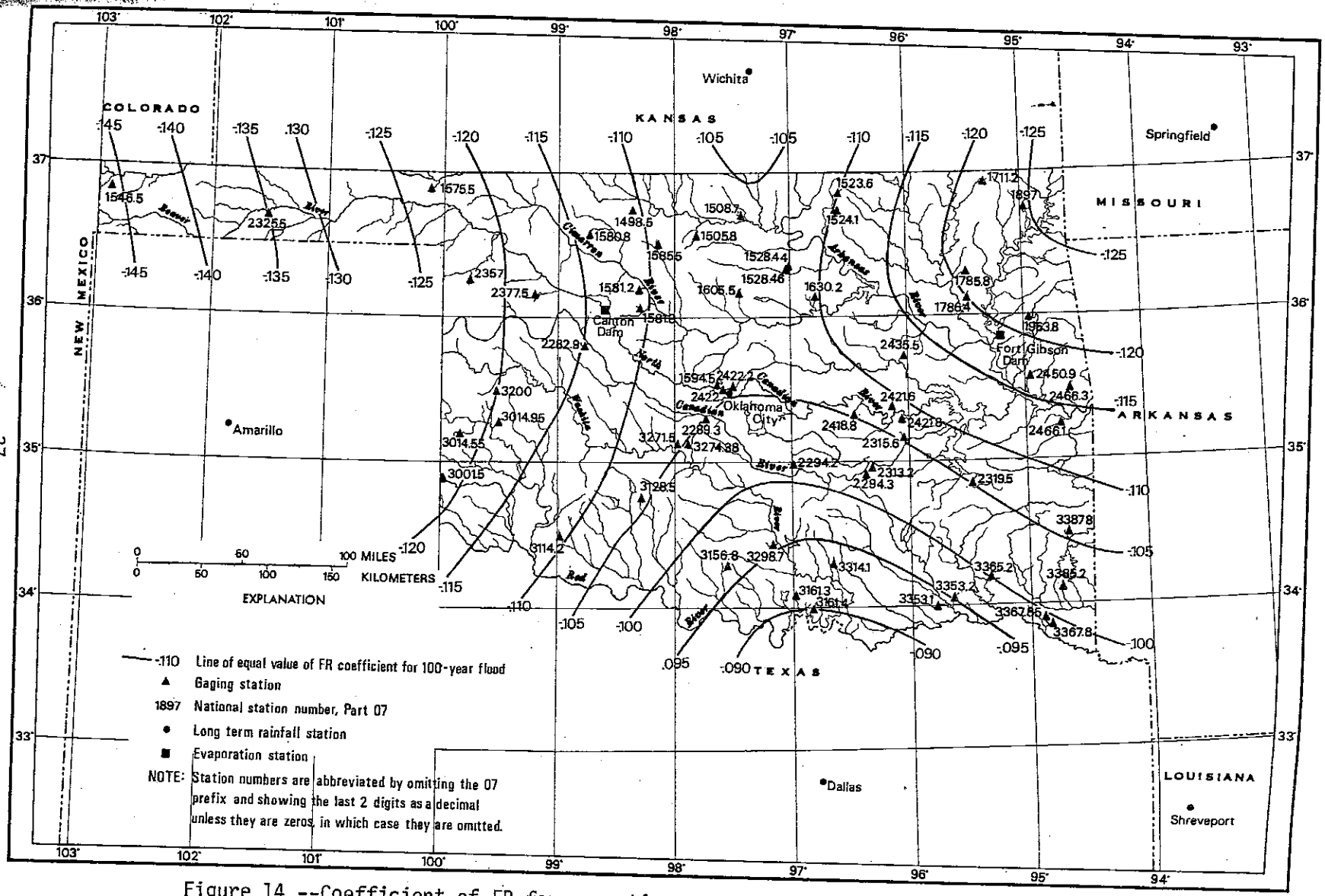

Figure 14.--Coefficient of FR for computing the weighted synthetic 100-year flood.

In the second method of combining the six synthetic curves a weighted estimate was calculated by weighting the estimate of Q_x from each long-term rainfall station with the reciprocal of the distance from the small watershed site to the rainfall station. Oklahoma City, Dallas, Springfield, and Shreveport were used to determine the weighted estimate in the southeast quarter of the State; Oklahoma City, Springfield, and Wichita were used in the northeast quarter; Oklahoma City, Wichita, and Amarillo were used in the northwest quarter; and Oklahoma City, Dallas, and Amarillo were used in the southwest quarter. The distance weighting method proved to give virtually the same estimates of flood discharges as the earlier method of relating Q_x to LAG and FR. Since the distance weighting procedure was simpler and easier to apply, it was used for all recurrence intervals. However, one advantage of the "LAG-FR Method" is that once equations like 18-23 are computed for a given State or region, estimates of Q_x can be made for a new site after the model parameters have been determined in the calibration phase. It would not be necessary then to generate synthetic flood peaks from each of the long-term rainfall stations.

After the weighted synthetic Q_x was estimated for each small watershed, this estimate was weighted with Q_x from the flood-frequency curve based on recorded data. The final weighting factors were determined by evaluating the following equation (R. W. Lichty, oral commun., 1976)

$$V_{tot} = \overline{V}_{model} + \overline{V}_T (1 - r), \tag{24}$$

where V_{tot} = total variance between observed and synthetic estimates of Q_x
$\overline{V}_{model}$ = average variance of synthetic estimate of Q_x
$\overline{V}_T$ = average time-sampling variance of the observed estimate of Q_x
r = the average interstation correlation coefficient for annual peaks.

The average time-sampling variance and average interstation correlation coefficient are described by Hardison (1971). If r = 0 then the total variance is simply the sum of the modeling variance and the time-sampling variance. An r value of 0.25 was computed for the Oklahoma stations. Equation 24 is based on the assumptions that (1) the observed and synthetic estimates of flood discharge are independent and (2) the observed values of Q_x and $\overline{V}_T$ are unbiased. Because basin and climatic characteristics of a given watershed undoubtedly

influence the computation of both estimates of flood discharge, the two estimates are truly not independent. However, since the correlation of the two estimates cannot be computed, they are assumed to be independent. The second assumption is more defensible. The average standard deviation of the logarithms of annual peaks for the small watersheds modeled was 0.34 log units compared to 0.37 log units for the 165 stations used in the regression analysis. The mean of the annual peaks for the small watersheds modeled was 2.8749 log units. This compares favorably to a mean annual flood of 2.8572 log units computed by substituting the average basin and climatic characteristics of the model watersheds in equation 2. Although equation 24 cannot be rigorously defended, it does provide an objective procedure for combining the observed and synthetic estimates. Equation 24 was evaluated for recurrence intervals of 2, 10, and 100. The total variance, V_{tot}, was computed as

$$\sum_{i=1}^{N} \frac{(Q_x \text{ (observed)} - Q_x \text{ (synthetic)})^2}{N}$$

where N is the number of stations modeled (57). The weighting factors for the observed and synthetic estimates are given below.

Recurrence Interval, in years	Weighting Factors	
	Observed	Synthetic
2	0.8	0.2
10	0.6	0.4
100	0.5	0.5

The final weighted estimate of Q_x for each station was determined by the sum of the observed and synthetic estimates multiplied by the appropriate weighting factors in the table above. The weighting factors give more weight to the observed results at the 2-year recurrence interval and equal weight to the two estimates at the 100-year recurrence interval. The values of Q_2, Q_{10}, and Q_{100} were plotted on log-probability paper and a curve drawn through them to determine Q_5, Q_{25}, Q_{50}, and Q_{500}. The final weighted flood-frequency relations are shown in appendix B as the station flood-frequency relations.

The average length of record for those stations modeled was 11 years. At the 100-year recurrence interval equal weight was given to the synthetic and observed estimates. This indicates that the rainfall-runoff modeling doubled the record length by adding the equivalence of 11 years of information for

estimating the 100-year flood. The effective length of record given in table 3 was computed using the weighting factors above for the 10-year recurrence interval and procedures described by Hardison (1976). The observed and synthetic estimates of flood discharges were assumed to be independent in computing the effective length of record.

APPLICATION OF MODEL PARAMETERS IN ESTIMATING FLOOD FREQUENCY

Equations 18-23 were based on estimates of Q_x based on synthetic data from each long-term rainfall station. The standard errors of these equations are low because the most important model parameters used to generate $\frac{Q_{100}}{A}$ were represented in LAG and FR. A step-backward regression of the final weighted discharges (computed in the previous section) versus the model parameters was made to determine the applicability of the model parameters in estimating flood frequency. This analysis indicated that in addition to drainage area, KSW and FR were the most significant model parameters. Hydrologically LAG should be a better estimator than KSW because LAG involves the time of concentration of the basin. A regression analysis of final weighted discharge versus A, LAG, and FR (same form as defined earlier) for 57 stations yielded the following equations:

	Standard error	
$Q_{10} = 575\ A^{0.91}\ LAG^{-0.59}\ FR^{-0.32}$	31%	(25)
$Q_{50} = 1060\ A^{0.92}\ LAG^{-0.64}\ FR^{-0.28}$	33%	(26)
$Q_{100} = 1293\ A^{0.92}\ LAG^{-0.65}\ FR^{-0.27}$	35%	(27)
$Q_{500} = 1905\ A^{0.92}\ LAG^{-0.68}\ FR^{-0.24}$	40%	(28)

A similar regression analysis for the same 57 stations was made using basin and climatic characteristics as independent variables. This analysis yielded the following equations:

	Standard error	
$Q_{10} = 44.8\ A^{0.74}\ S^{0.22}\ P^{0.51}$	42%	(29)
$Q_{50} = 404\ A^{0.76}\ S^{0.24}$	44%	(30)
$Q_{100} = 457\ A^{0.76}\ S^{0.25}$	47%	(31)
$Q_{500} = 585\ A^{0.75}\ S^{0.27}$	49%	(32)

In this analysis P was not a significant variable for Q_{50}, Q_{100}, and Q_{500}. A comparison of equations 25-28 with equations 29-32 indicates that the standard error can be reduced by 9-12 percent by using model parameters in place of customary basin and climatic characteristics. However, to determine LAG and FR a concurrent record of rainfall and runoff must be collected. Equations 25-28 can only be used to estimate flood discharges for those basins which have been calibrated with the Geological Survey Rainfall-Runoff Model. Equations 29-32 give essentially the same answers as equations 4, 6-8.

Because of the importance of the hydrograph shape parameters in hydrology, a regression analysis was also made relating TC, KSW, and LAG (in hours) to basin and climatic characteristics. The following equations were computed in this analysis:

	Standard error	
$KSW = 0.093\ A^{0.229}\ S^{-0.345}\ I^{2.92}$	38%	(33)
$TC = 0.388\ L^{0.440}\ S^{-0.452}\ I^{2.20}$	40%	(34)
$LAG = 0.206\ A^{0.239}\ S^{-0.280}\ I^{2.54}$	40%	(35)

where A is drainage area and S is main-channel slope as defined earlier, L is the main-channel length and I is the 2-year, 24-hour rainfall (fig. 15). The computed values of KSW and TC from equations 33 and 34 are compared to the observed values in figures 16 and 17. Equations 33-35 can be used to estimate the hydrograph shape parameters required in certain rainfall-runoff procedures for computing design hydrographs. Equations 33-35 are applicable for A ranging from 0.003 - 25.4 mi^2 (0.008 - 65.8 km^2), S ranging from 9.2 - 154 ft/mi (1.74 - 29.1 m/km), L ranging from 0.072 - 11.5 mi (0.116 - 18.5 km), and I ranging from 2.40 - 4.25 in (61.0 - 108.0 mm).

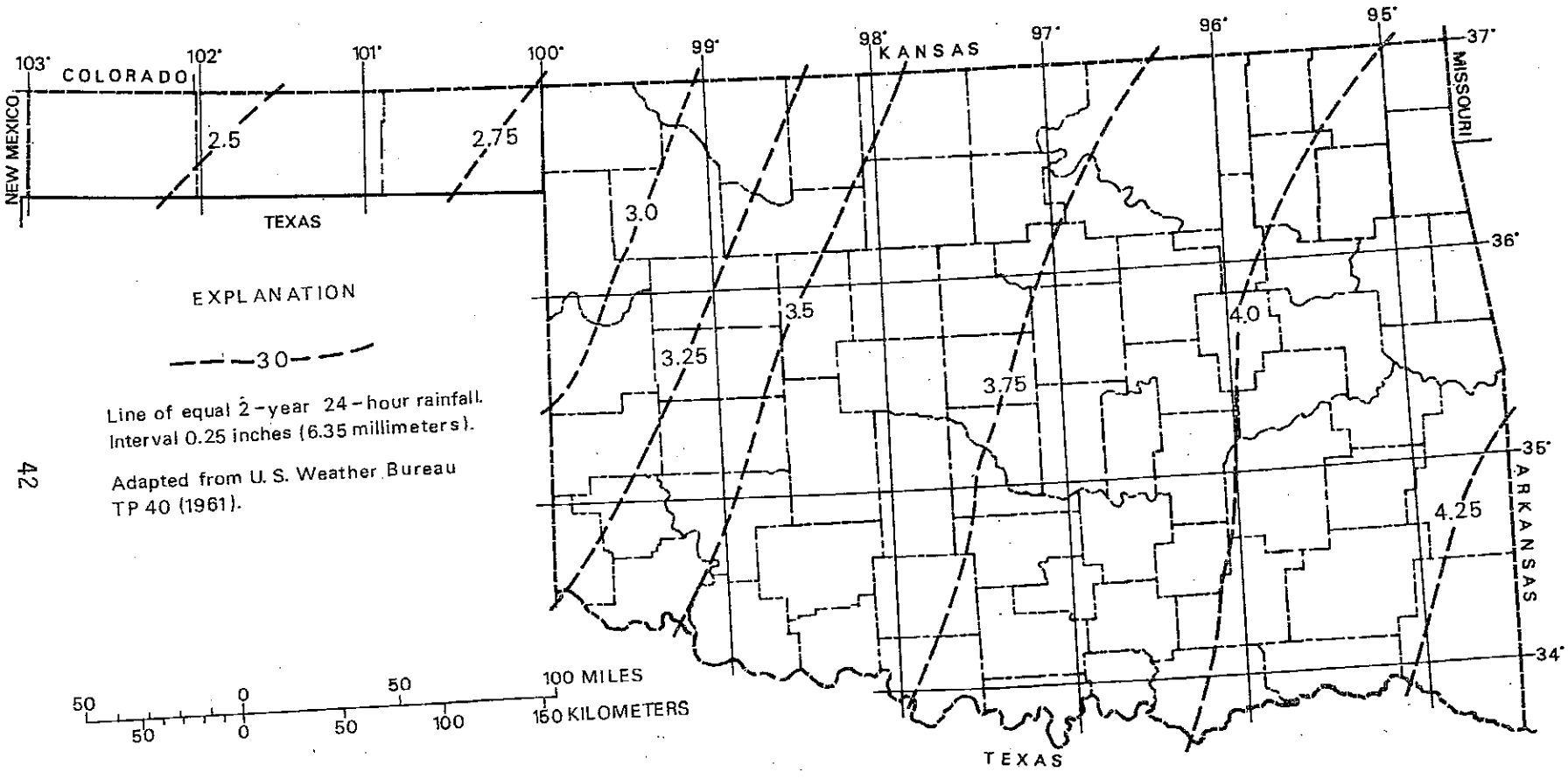

Figure 15.--The 2-year 24-hour rainfall for the period 1940-58.

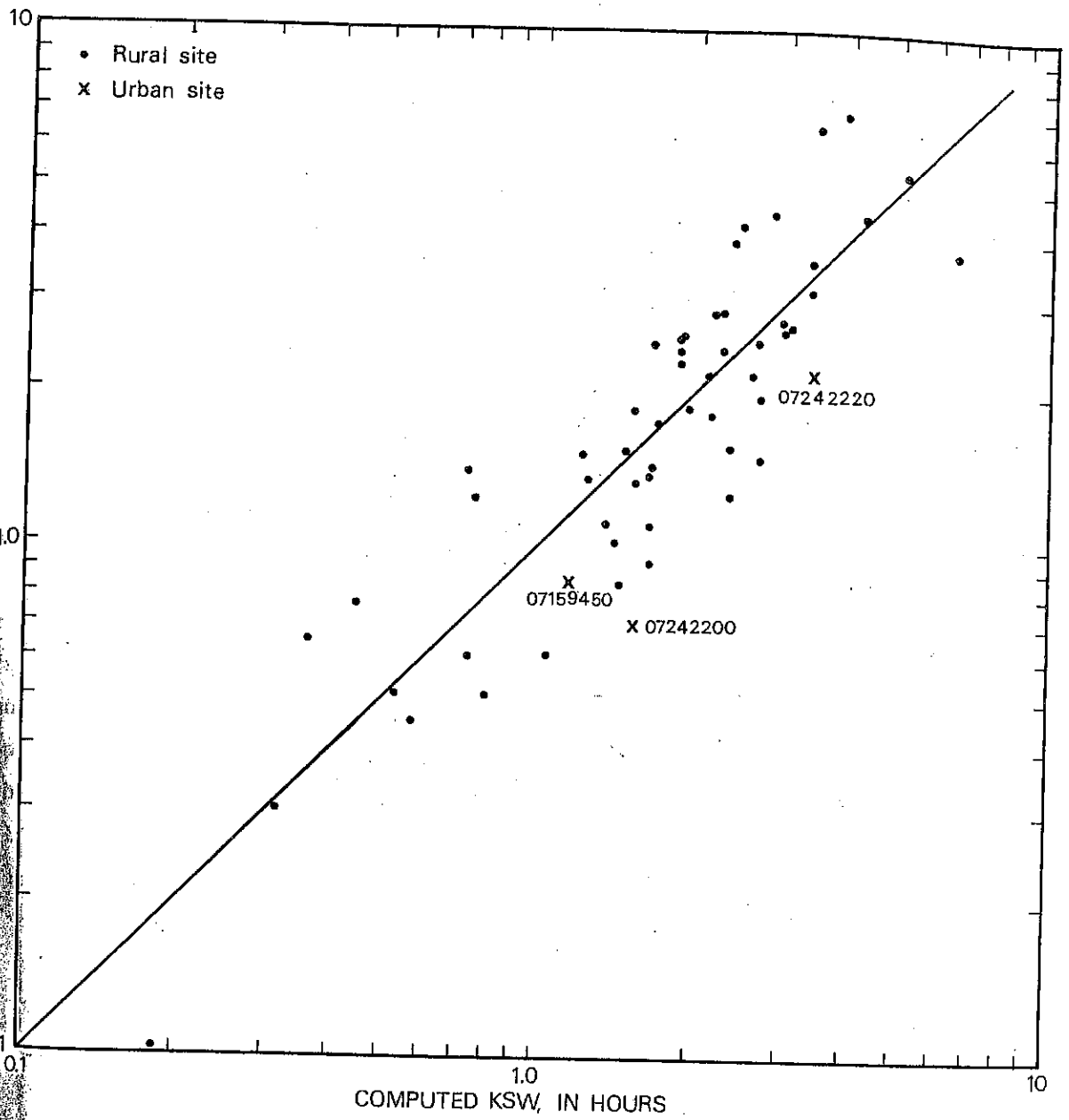

Figure 16.--Comparison of observed and computed values of the linear storage routing coefficient.

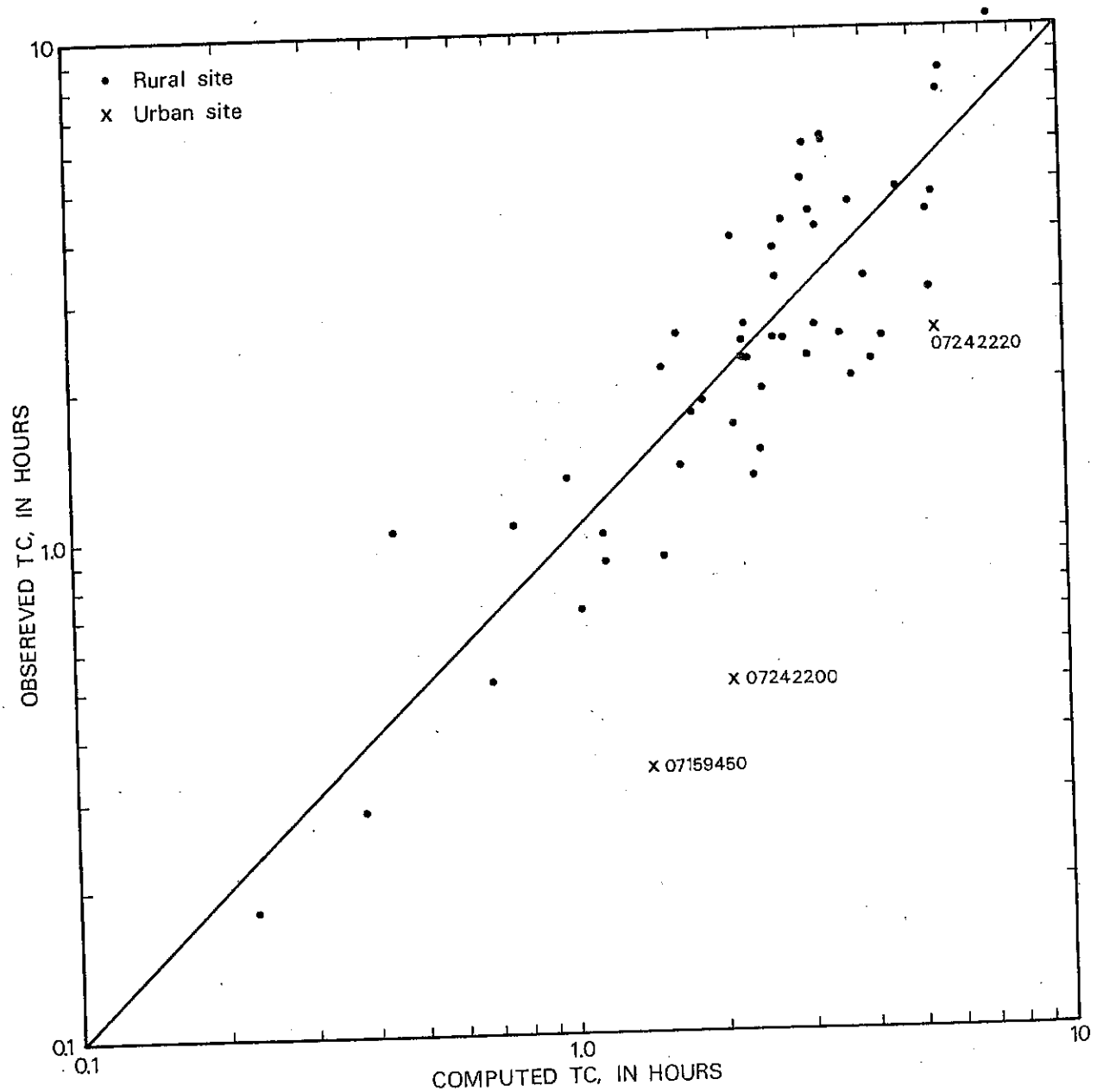

Figure 17.--Comparison of observed and computed values of the time of concentration.

The runoff volume parameters in the model are not used in any other rainfall-runoff estimating procedure. Furthermore, the interaction of the runoff volume parameters during calibration tends to obscure their true values. Therefore, no attempt was made to regionalize or relate the runoff volume parameters to basin and climatic characteristics.

EFFECT OF URBANIZATION ON FLOOD DISCHARGES

Equations 10-16 given earlier in this report are applicable for estimating flood frequency for basins affected by urbanization. These equations were partly based on figure 10 which was derived by Leopold (1968) from urban studies throughout the country. Rainfall-runoff modeling results for three urban watersheds in Oklahoma City were compared to results derived by Leopold (1968) in figure 10. The rainfall-runoff model was calibrated for the three urban basins and flood-frequency curves were synthesized using 61 years of rainfall data in Oklahoma City. These urban flood-frequency curves are plotted in figures 18-20 along with the flood-frequency curves representing conditions before urbanization. For stations 07242200 and 07242220 the "before urbanization" flood-frequency curves were computed using equations 2-8 presented earlier in this report. For station 07159450 the "before urbanization" flood-frequency curve is a weighted average of the frequency curve of equations 2-8 and the station frequency curve for station 07159500. Station 07159500 was operated just a few hundred feet downstream from station 07159450 from 1950-58 which was before the basin became urbanized. The ratios of the mean annual flood after urbanization to before urbanization are plotted in figure 10 for the three urban basins. As observed in figure 10, the rainfall-runoff modeling results indicate a greater increase in the mean annual flood than Leopold's results in two out of three cases. Station 07159450 agrees with Leopold's results but stations 07242200 and 07242220 indicate a somewhat greater effect for urbanization. One possible reason that station 07159450 shows less effect for urbanization is the storage effect of a large pond and several undersized culverts in the basins. However, there is not sufficient evidence from the rainfall-runoff modeling to warrant changing figure 10 for urban basins in Oklahoma and the urban equations computed by Sauer (1974b) and presented

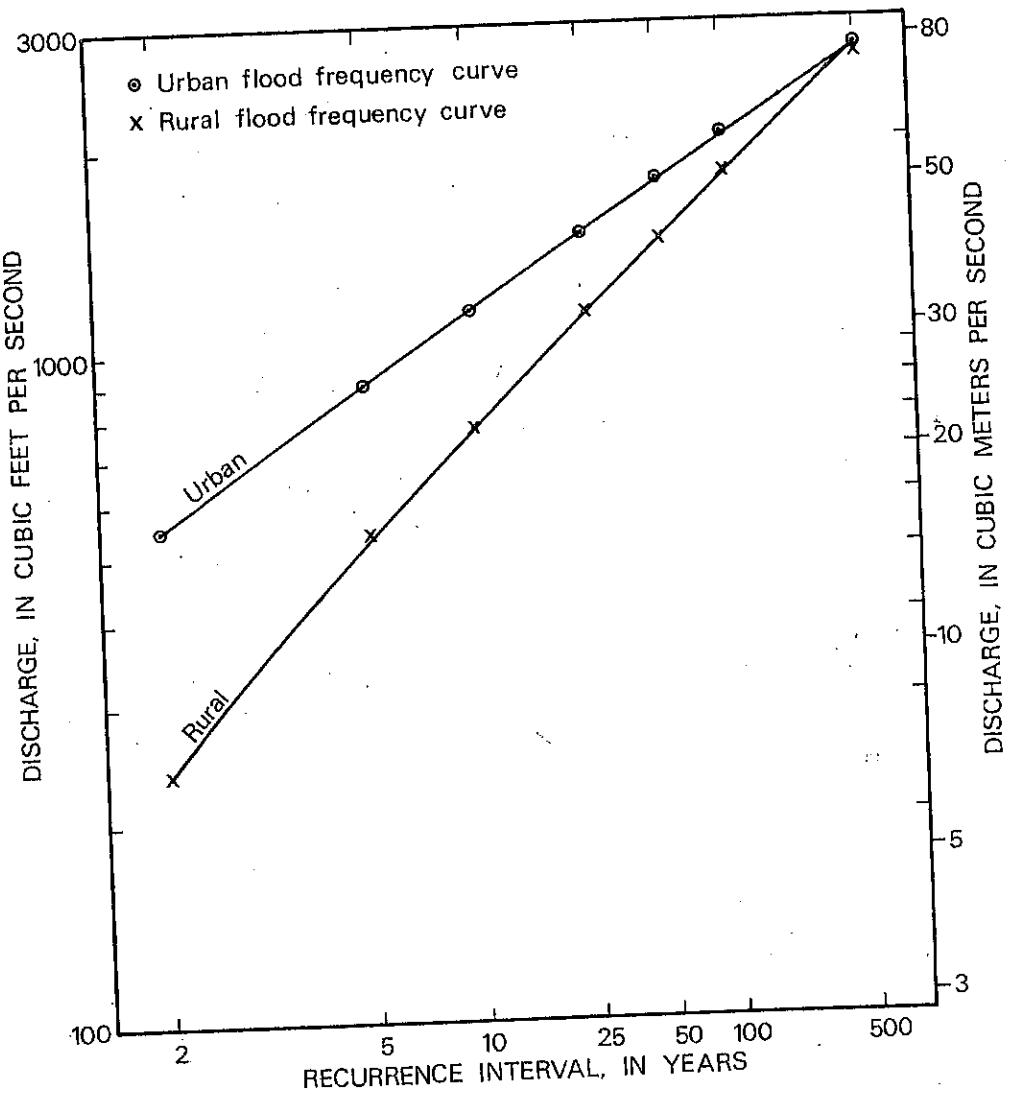

Figure 18.--Comparison of flood-frequency curves for Bluff Creek at Oklahoma City (07159450).

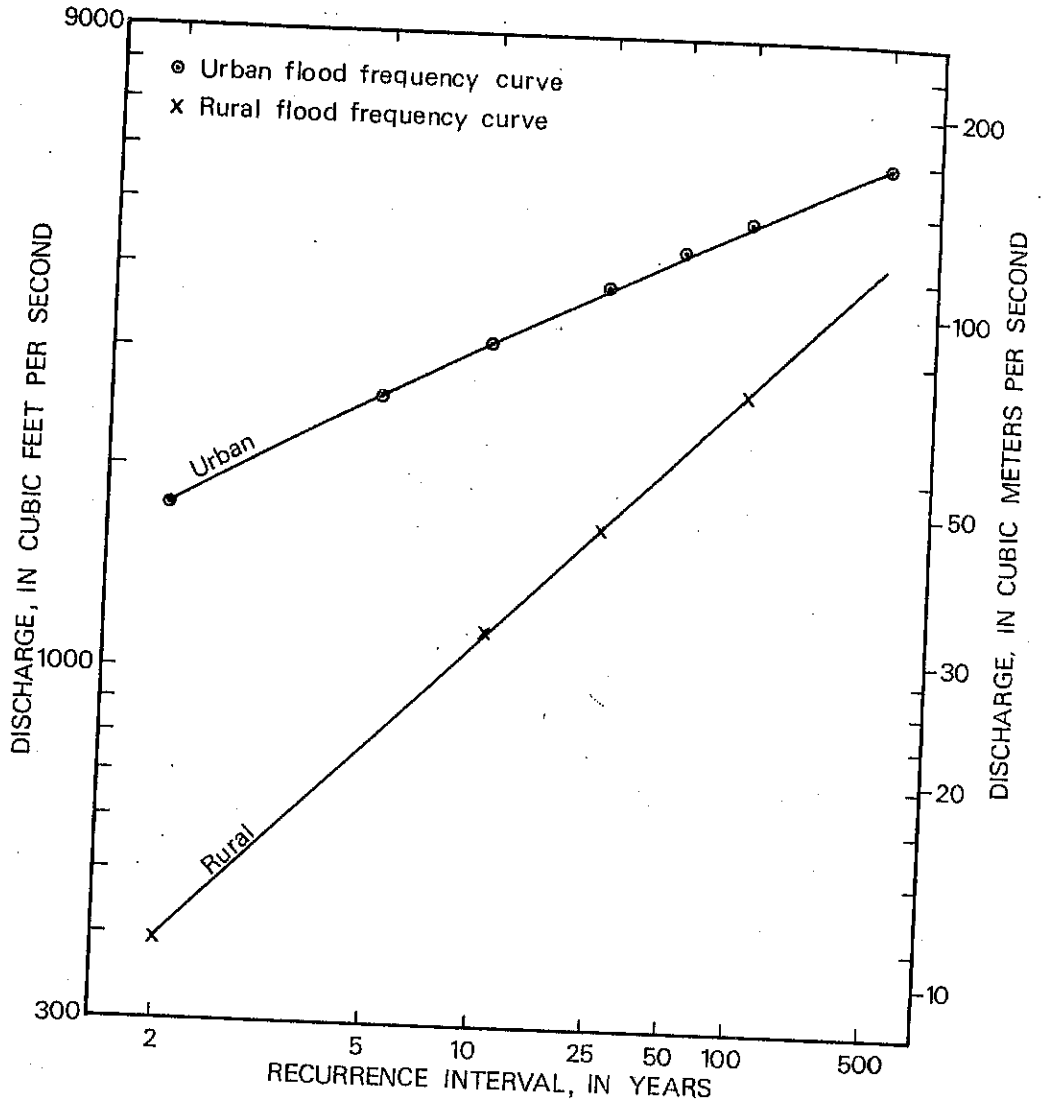

Figure 19.--Comparison of flood-frequency curves for Deep Fork at Portland Ave., Oklahoma City (07242200).

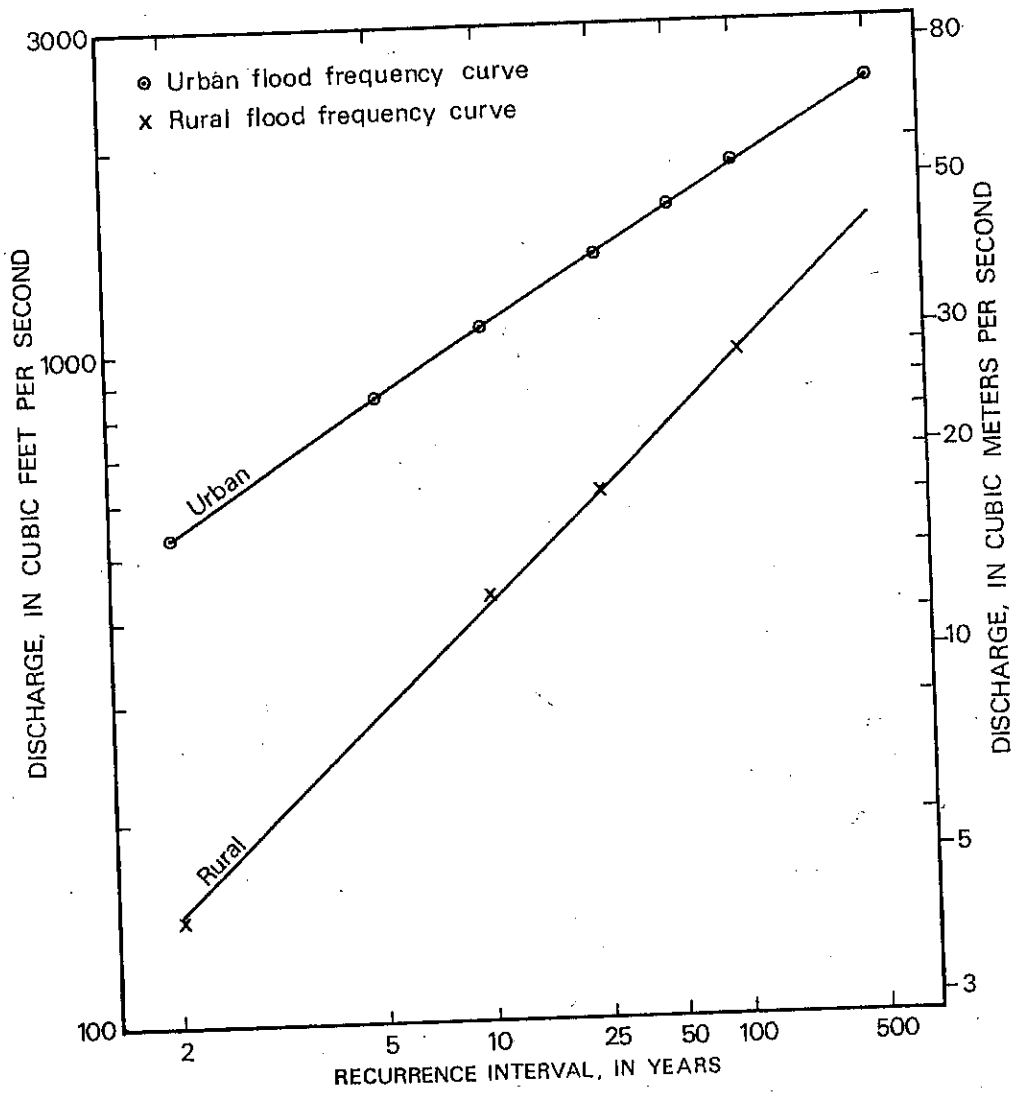

Figure 20.--Comparison of flood-frequency curves for Deep Fork at Eastern Ave., Oklahoma City (07242220).

earlier in this report (equations 10-16) are still considered the best estimates of urban flood frequency for Oklahoma.

The hydrograph parameters, TC and KSW, are also affected by urbanization. This effect may sometimes be obscured by the surcharging effect of the storm sewers and ponding effect of undersized culverts that usually exists in an urban watershed. The observed (modeling results) and computed values (from equations 33 and 34) of KSW and TC for three urban watersheds (07159450, 07242200, 07242220) in Oklahoma City are plotted in figures 16 and 17 respectively. As noted in these figures, the values of KSW and TC are reduced by urbanization, particularly the values of TC. Values of KSW are reduced less than TC probably because of the surcharging and ponding effect mentioned earlier.

Obviously, there is insufficient urban runoff data in Oklahoma upon which to base more rigorous estimating relations. At present (1977) urban data collection is underway at 15 sites in Oklahoma City. Urban data collection to date indicates that earlier results derived by Leopold (1968) might be underestimating the effects of urbanization in Oklahoma. However, in the absence of sufficient data indicating otherwise, the results of Leopold (1968) are assumed to be applicable for estimating urban flood-frequency curves in Oklahoma.

SUMMARY

The results of rainfall-runoff modeling for 57 small watersheds were combined with observed data at 165 sites to compute regression equations for estimating flood discharges at sites draining less than 2,500 mi^2 (6,500 km^2). These equations are not applicable to basins significantly affected by regulation. Methods are given for estimating flood discharges for urban areas in Oklahoma.

The results of rainfall-runoff modeling for 57 rural watersheds and 3 urban watersheds are summarized. The model parameters are shown to have applicability in estimating flood discharges, but considerable data-collection effort is required.

Data collection should continue for both rural and urban small watersheds. A rural data-collection program for an additional 5- to 8-year period would provide sufficient long-term data to verify or to update the equations given in this report. Urban data collection is needed to improve present methods of estimating flood discharges. Until sufficient data are available indicating otherwise, equations given in this report and Sauer's (1974b) should be used for estimating flood-frequency curves for urban areas in Oklahoma.

SELECTED REFERENCES

Carrigan, P. H., Jr., and Golden, H. G., 1975, Optimizing information transfer in a stream-gaging network: U.S. Geol. Survey Water-Resources Inv. 30-75, 25 p.

Dawdy, D. R., Lichty, R. W., and Bergmann, J. M., 1972, A rainfall-runoff simulation model for estimation of flood peaks for small drainage basins: U.S. Geol. Survey Prof. Paper 506-B, p. B1-B28.

Hardison, C. H., 1969, Accuracy of streamflow characteristics: U.S. Geol. Survey Prof. Paper 650-D, p. D210-D214.

_____, 1971, Prediction error of regression estimates of streamflow characteristics at ungaged sites: U.S. Geol. Survey Prof. Paper 750-C, p. C228-C236.

_____, 1976, Estimates of 100-year floods and the need for appraising their accuracy: Presented at Second Annual Meeting AGU Midwestern Region.

Hedman, E. R., Kastner, W. M., and Hejl, H. R., 1974, Selected streamflow characteristics as related to active-channel geometry of streams in Kansas: Kansas Water Resources Board Tech. Rept. No. 10, 21 p.

Leopold, L. B., 1968, Hydrology for urban and land-use planning--a guide book on the hydrologic effects of urban land use: U.S. Geol. Survey Circ. 554, 18 p.

Sauer, V. B., 1974a, Flood characteristics of Oklahoma streams: U.S. Geol. Survey Water-Resources Inv. 52-73, 301 p.

_____, 1974b, An approach to estimating flood frequency for urban areas in Oklahoma: U.S. Geol. Survey Water-Resources Inv. 23-74, 10 p.

Thomas, W. O., Jr., and Corley, R. K., 1974, Flood flows from small drainage areas in Oklahoma - Progress report and data compilation: U.S. Geol. Survey open-file report, 50 p.

U.S. Department of Agriculture, Hydrologic data for experimental agricultural watersheds in the United States, 1956-67.

U.S. Water Resources Council, 1976, Guidelines for determining flood flow frequency: Water Resources Council Bull. No. 17.

U.S. Weather Bureau, 1961, Rainfall frequency atlas of the United States for durations from 30 minutes to 24 hours and return periods from 1 to 100 years: Tech. Paper No. 40, Washington, D.C., 115 p.

APPENDIX A -- BASIN AND CLIMATIC CHARACTERISTICS AND WEIGHTED FLOOD FREQUENCY RELATIONS FOR GAGED STREAMS --

STATION NUMBER	BASIN AND CLIMATIC CHARACTERISTICS			PEAK DISCHARGES IN CFS FOR INDICATED RECURRENCE INTERVAL, IN YEARS						
	DRAINAGE AREA (SQ MI)	CHANNEL SLOPE (FT/MI)	MEAN ANNUAL PRECIP (IN)	2	5	10	25	50	100	500
07148350	856.000	15.100	23.50	8696	21100	33162	52745	69645	91488	151904
07148400	1009.000	14.800	23.80	12901	20236	27973	41078	51979	67800	107396
07149850	0.003	96.300	26.00	3	6	8	11	14	18	25
07149652	0.013	63.400	26.00	9	18	26	36	47	57	83
07150580	7.210	19.300	28.00	610	1311	1887	2707	3432	4287	6524
07150870	2.350	19.800	28.00	349	726	1005	1407	1750	2125	3134
07152000	1859.000	7.250	28.10	18271	40353	60157	90635	116321	147416	230956
07152360	18.200	17.500	33.00	2086	4193	5860	8242	10102	12119	17039
07152410	9.130	35.800	33.00	1574	2233	2813	3669	4335	5179	7166
07152520	0.970	42.300	28.00	98	309	535	923	1305	1768	3318
07152842	0.320	74.900	31.00	130	235	320	443	545	655	933
07152844	0.026	154.000	31.00	24	51	75	110	141	172	262
07152846	0.144	104.000	31.00	70	175	274	430	573	733	1216
07153000	576.000	4.050	30.20	5959	11244	15827	22699	28089	34929	51615
07154400	111.000	38.000	15.40	1930	5016	8233	13902	19451	26552	48917
07154500	1038.000	26.200	16.00	5747	14096	22807	38247	52558	71979	128581
07154650	25.400	36.500	16.00	2579	5132	6935	9610	11970	14572	22623
07155100	11.000	29.100	16.00	108	561	1278	2991	5178	8548	24741
07155510	5.150	61.000	16.50	612	1075	1490	2179	2821	3614	5948

APPENDIX A -- BASIN AND CLIMATIC CHARACTERISTICS AND WEIGHTED FLOOD FREQUENCY RELATIONS FOR GAGED STREAMS -- CONTINUED.

STATION NUMBER	BASIN AND CLIMATIC CHARACTERISTICS			PEAK DISCHARGES IN CFS FOR INDICATED RECURRENCE INTERVAL, IN YEARS						
	DRAINAGE AREA (SQ MI)	CHANNEL SLOPE (FT/MI)	MEAN ANNUAL PRECIP (IN)	2	5	10	25	50	100	500
07157500	813.000	5.350	18.50	2373	6388	10698	18184	25090	34213	60336
07157550	4.220	59.200	20.00	217	565	909	1486	2016	2619	4334
07158020	4.260	37.100	25.50	494	760	1014	1413	1755	2186	3227
07158080	1.610	62.400	25.00	192	431	637	944	1204	1474	2181
07158120	0.620	76.000	26.00	103	207	300	457	561	693	1014
07158180	8.230	30.000	26.50	768	1842	2777	4335	5614	7039	11109
07158500	14.500	14.800	27.00	355	1107	1928	3341	4673	6357	11642
07158550	5.080	19.500	27.00	416	976	1451	2192	2815	3513	5220
07159000	248.000	5.700	27.20	2812	7320	11840	19392	26266	34807	60354
07159200	159.000	12.000	29.00	2710	7098	11477	18446	24472	32234	54465
07159450*	1.640	65.700	31.00	551	893	1140	1480	1750	2030	2720
07159500	1.620	60.000	31.00	236	512	765	1140	1458	1821	2748
07159810	0.148	116.200	31.00	38	99	157	246	326	414	652
07160500	410.000	8.400	29.00	5004	12498	20014	32504	43776	58132	101211
07160550	13.900	23.800	30.00	951	1971	2844	4150	5186	6397	9336
07163000	31.000	17.300	32.50	2256	4730	6958	10470	13608	17290	28251
07163020	2.890	53.900	33.50	629	1015	1317	1762	2111	2508	3443
07164940	2.280	30.100	36.00	285	557	807	1155	1433	1759	2500
07165550	50.000	24.300	38.00	3738	6377	8572	11661	14072	17002	23979
07171120	2.190	23.400	41.00	385	706	964	1305	1566	1847	2468

07165550	[illegible]	[illegible]								
07171120	2,190	23,400	41.00	385	706	964	1305	1566	1847	2468

APPENDIX A.--BASIN AND CLIMATIC CHARACTERISTICS AND WEIGHTED FLOOD FREQUENCY RELATIONS FOR GAGED STREAMS -- CONTINUED.

STATION NUMBER	BASIN AND CLIMATIC CHARACTERISTICS			PEAK DISCHARGES IN CFS FOR INDICATED RECURRENCE INTERVAL, IN YEARS						
	DRAINAGE AREA (SQ MI)	CHANNEL SLOPE (FT/MI)	MEAN ANNUAL PRECIP (IN)	2	5	10	25	50	100	500
07172000	445.000	10.900	36.00	13174	26855	38040	53942	66632	81058	117506
07174200	502.000	8.800	37.00	9304	18777	26817	38481	47744	58875	86344
07174570	1.670	83.000	34.00	328	662	959	1389	1739	2148	3133
07174600	139.000	13.500	35.00	6034	10464	14196	19363	23361	28344	40256
07174720	0.940	58.200	36.00	353	580	762	1013	1220	1445	1991
07175000	2.390	55.000	35.00	970	2014	2867	4138	5223	6422	10266
07176500	364.000	6.220	34.00	11383	19733	25988	34570	41234	48829	67437
07177000	340.000	7.200	34.50	8510	14603	19394	26044	31074	40415	51225
07177500	905.000	4.140	34.50	16280	29610	40217	55156	66933	80668	115220
07178580	15.200	12.200	40.00	1443	2465	3240	4402	5272	6268	8650
07178640	10.700	12.200	40.00	961	1636	2191	2905	3445	4080	5363
07178650	5.710	12.200	41.00	507	966	1359	1879	2270	2735	3753
07188000	2510.000	5.930	44.20	31682	59317	82970	117648	144475	177773	265571
07188140	4.900	59.500	42.00	932	1724	2377	3266	3955	4750	6575
07188500	42.000	25.200	42.50	1228	3857	6682	11408	15765	21206	37445
07189000	872.000	8.050	44.00	21106	41969	58942	82950	101668	123155	178237
07189480	7.210	17.800	43.00	1340	2245	2941	3861	4565	5366	7416
07189700	21.900	9.200	42.00	1604	2544	3340	4426	5265	6250	8559
07189720	0.810	42.600	42.00	187	347	496	694	851	1027	1417
07190600	71.100	8.000	41.00	4522	8179	10989	14924	17899	21441	30228

APPENDIX A -- BASIN AND CLIMATIC CHARACTERISTICS AND WEIGHTED FLOOD FREQUENCY RELATIONS FOR GAGED STREAMS -- CONTINUED.

STATION NUMBER	BASIN AND CLIMATIC CHARACTERISTICS			PEAK DISCHARGES IN CFS FOR INDICATED RECURRENCE INTERVAL, IN YEARS						
	DRAINAGE AREA (SQ MI)	CHANNEL SLOPE (FT/MI)	MEAN ANNUAL PRECIP (IN)	2	5	10	25	50	100	500
07191000	466.000	5.520	41.50	16625	29603	39507	53006	63360	74999	103913
07191220	133.000	20.000	44.00	3920	9983	15754	24500	31698	40644	64965
07191260	16.000	31.200	44.00	1225	2834	4256	6222	7740	9569	13984
07192000	229.000	5.520	41.20	5607	11999	17455	25276	31411	38783	57507
07194515	2.570	107.000	42.00	685	1249	1754	2500	3115	3844	5735
07195500	635.000	8.500	45.00	18242	35044	48592	67258	81318	98074	138906
07196000	110.000	19.400	44.50	4844	11548	17698	26766	34508	43642	69191
07196380	3.590	110.000	43.00	650	1804	2930	4698	6282	8160	13839
07196500	959.000	5.330	44.50	20798	42678	61239	88537	111379	136929	207737
07196900	46.000	40.300	46.00	6269	12014	16613	22885	27802	33317	47492
07197000	307.000	13.400	43.90	14313	24952	32864	43510	51370	60652	82184
07228290	10.400	41.000	25.00	1181	2678	3974	5800	7241	8927	12854
07228450	2.310	59.000	27.00	292	555	818	1238	1622	2083	3390
07228600	11.800	22.700	27.50	486	1579	2692	4427	6055	8162	14553
07228930	11.200	19.200	31.00	1259	2049	2751	3766	4669	5725	8661
07228960	3.320	49.100	31.00	673	1085	1433	1941	2360	2847	4046
07229220	1.260	70.800	32.00	363	619	837	1155	1416	1719	2459
07229300	202.000	7.720	33.00	8352	12995	16864	22393	26682	32183	45621
07229420	2.280	35.000	37.00	517	951	1302	1758	2122	2503	3385
07229430	2.260	26.600	40.00	578	1063	1452	1959	2353	2782	3792

07229420	2.260	33.000								
07229430	2.260	26.600	40.00	578	1063	1452	1959	2353	2782	3792

APPENDIX A---BASIN AND CLIMATIC CHARACTERISTICS AND WEIGHTED FLOOD FREQUENCY RELATIONS FOR GAGED STREAMS -- CONTINUED.

STATION NUMBER	BASIN AND CLIMATIC CHARACTERISTICS DRAINAGE AREA (SQ MI)	CHANNEL SLOPE (FT/MI)	MEAN ANNUAL PRECIP (IN)	PEAK DISCHARGES IN CFS FOR INDICATED RECURRENCE INTERVAL, IN YEARS 2	5	10	25	50	100	500
07230500	456.000	4.300	35.00	8213	14286	20575	31600	42265	56620	108081
07231000	865.000	3.660	36.30	11061	21004	29204	40984	50128	61108	87921
07231320	0.720	75.200	40.00	421	755	1013	1363	1647	1948	2731
07231560	7.400	21.700	41.50	1356	2710	3754	5265	6412	7597	10595
07231950	9.990	62.400	45.00	3812	5465	6701	8281	9440	10674	13763
07232000	588.000	4.980	43.70	12389	22313	30994	43580	53575	66183	99115
07232500	1175.000	14.800	16.10	6945	18361	29403	47056	62569	81605	133962
07232550	0.260	15.000	19.50	19	50	80	130	173	223	355
07232650	31.000	23.000	16.00	207	860	1733	3495	5371	7992	17488
07233000	767.000	11.400	18.50	2875	8019	13728	23949	33453	46366	84283
07233850	1.000	12.000	17.50	35	86	138	226	308	407	680
07234050	4.220	29.100	20.00	108	401	766	1469	2208	3202	6846
07234290	8.570	34.700	22.00	301	896	1543	2669	3746	5119	9486
07235700	17.800	23.000	23.00	619	1750	2852	4686	6256	8119	13138
07236000	1386.000	8.960	22.00	4315	11778	20011	34292	47156	64631	114232
07237750	11.800	38.300	24.00	500	1312	2091	3364	4486	5799	9157
07237800	139.000	16.500	24.00	2762	5868	8880	13670	17742	23130	37276
07239050	0.520	112.000	26.00	96	235	370	585	778	1000	1633
07241880	9.480	30.600	39.00	1472	2229	2854	3769	4461	5318	7333
07242160	16.500	26.800	40.00	2232	3763	4950	6522	7726	9154	12288

APPENDIX A -- BASIN AND CLIMATIC CHARACTERISTICS AND WEIGHTED FLOOD FREQUENCY RELATIONS FOR GAGED STREAMS -- CONTINUED.

STATION NUMBER	BASIN AND CLIMATIC CHARACTERISTICS			PEAK DISCHARGES IN CFS FOR INDICATED RECURRENCE INTERVAL, IN YEARS						
	DRAINAGE AREA (SQ MI)	CHANNEL SLOPE (FT/MI)	MEAN ANNUAL PRECIP (IN)	2	5	10	25	50	100	500
07242180	2.560	26.200	41.50	433	730	960	1278	1525	1789	2359
07242200*	2.980	44.000	31.00	1760	2580	3130	3820	4320	4820	5980
07242220*	28.200	19.900	31.00	5410	8470	10700	13700	16100	18600	24800
07243000	69.000	11.900	34.00	3382	6015	8575	12777	16682	21640	37971
07243500	2018.000	2.600	35.50	10926	24114	36362	54934	70049	89052	137902
07243550	5.900	32.200	38.50	1424	2286	2917	3742	4385	5087	6621
07244790	5.660	40.500	42.50	1742	2890	3752	4912	5821	6820	9348
07245090	19.600	36.500	42.50	2724	4199	5341	7072	8312	9830	13201
07245500	182.000	15.200	43.50	9855	19787	28071	40254	50158	61622	92446
07246600	20.600	14.000	43.00	1690	2668	3585	4845	5782	6977	9557
07246610	0.900	42.000	43.00	272	421	554	730	873	1023	1371
07246630	5.320	68.500	44.00	995	1835	2515	3439	4148	4932	6652
07247500	122.000	3.910	43.90	6269	11780	16202	22328	27243	32655	47036
07249000	1240.000	3.600	48.00	34287	58268	75253	96669	110999	128944	169091
07299705	11.100	40.800	21.50	220	668	1175	2032	2801	3810	6471
07299720	3.840	27.600	23.00	587	927	1218	1675	2074	2551	3839
07300150	7.240	41.900	22.00	752	1572	2227	3202	3973	4866	6934
07300500	1357.000	13.800	21.00	13934	26097	36641	53114	66994	84613	131489
07301455	19.800	17.700	24.00	1064	2218	3157	4598	5757	7047	10436
07301480	9.120	31.100	24.00	482	934	1369	2063	2660	3410	5292

07301480

APPENDIX A -- BASIN AND CLIMATIC CHARACTERISTICS AND WEIGHTED FLOOD FREQUENCY RELATIONS FOR GAGED STREAMS -- CONTINUED.

STATION NUMBER	BASIN AND CLIMATIC CHARACTERISTICS: DRAINAGE AREA (SQ MI)	CHANNEL SLOPE (FT/MI)	MEAN ANNUAL PRECIP (IN)	PEAK DISCHARGES IN CFS FOR INDICATED RECURRENCE INTERVAL, IN YEARS: 2	5	10	25	50	100	500
07301485	0.930	101.000	24.00	383	519	663	904	1123	1385	2090
07301495	24.900	39.700	23.50	780	1679	2637	4180	5590	7374	12518
07301500	1938.000	12.500	24.10	7912	16424	25405	40250	52563	69902	112109
07303400	416.000	19.400	22.00	5172	9698	14196	21519	27758	36408	58235
07303450	27.800	34.000	23.00	891	1876	2863	4455	5826	7613	12186
07303500	838.000	14.100	23.80	7781	16848	25365	39123	50698	65785	105519
07304500	549.000	9.560	23.90	4204	8401	12805	20503	27416	36795	64348
07309480	3.350	59.100	29.50	875	1403	1831	2456	2979	3585	5132
07311000	675.000	6.750	30.00	6712	13628	19798	29014	36435	45780	68476
07311200	24.600	36.400	27.00	1077	2512	3883	6031	7869	10159	16291
07311410	6.120	36.000	28.00	209	616	1044	1721	2308	3037	4969
07311420	2.570	46.700	25.50	376	727	1021	1471	1835	2239	3255
07311500	617.000	8.510	27.00	5903	13038	19711	30108	38769	49727	78318
07312850	6.290	42.200	31.00	885	1750	2461	3487	4338	5333	7662
07312950	35.400	23.800	32.00	1082	2635	4143	6439	8319	10703	16628
07313000	158.000	12.100	31.50	10281	23773	35115	51831	65877	81632	136605
07313500	563.000	4.790	31.00	4680	11475	18766	31845	44671	62327	125120
07313600	193.000	5.000	31.00	3042	6934	10541	15920	20279	25817	40474
07315680	1.740	50.600	34.50	510	1003	1409	1946	2398	2865	3983
07315700	572.000	6.500	33.00	5747	13564	20990	32243	41225	52954	82677

APPENDIX A -- BASIN AND CLIMATIC CHARACTERISTICS AND WEIGHTED FLOOD FREQUENCY RELATIONS FOR GAGED STREAMS -- CONTINUED.

STATION NUMBER	BASIN AND CLIMATIC CHARACTERISTICS			PEAK DISCHARGES IN CFS FOR INDICATED RECURRENCE INTERVAL, IN YEARS						
	DRAINAGE AREA (SQ MI)	CHANNEL SLOPE (FT/MI)	MEAN ANNUAL PRECIP (IN)	2	5	10	25	50	100	500
07315880	5.740	43.400	35.50	1644	1926	2264	2806	3261	3836	5139
07316130	2.970	47.500	37.00	808	1288	1665	2181	2598	3051	4120
07316140	12.000	13.600	38.00	2908	4151	5044	6268	7188	8152	10746
07317500	5.160	57.600	24.00	455	1031	1573	2440	3214	4136	6748
07318500	1.020	147.000	24.00	275	590	875	1329	1737	2204	3580
07319000	10.100	53.200	24.00	987	2060	3004	4481	5774	7291	11525
07320000	2.870	58.000	24.00	611	1294	1859	2686	3368	4101	5892
07321500	0.620	94.100	24.00	309	582	810	1146	1447	1777	2761
07324000	5.330	60.700	24.00	950	2036	2998	4510	5867	7433	12123
07326520	26.000	28.600	31.00	519	1323	2180	3499	4553	5951	9022
07327040	40.100	24.600	31.00	605	1631	2728	4425	5775	7594	11603
07327150	23.800	15.900	32.00	1040	2253	3318	4960	6260	7798	11552
07327210	52.000	15.900	32.00	808	2143	3513	5596	7234	9419	14409
07327420	60.400	12.300	32.00	1966	3705	5270	7580	9391	11717	17190
07327438	0.037	146.900	32.00	15	39	63	97	128	160	244
07327439	0.030	174.000	32.00	30	51	69	96	119	142	198
07327440	35.200	17.400	32.00	1804	3138	4329	6087	7472	9236	13357
07327490	227.000	6.800	31.50	3620	7647	11316	16821	21373	26956	41437
07328030	7.570	24.500	32.00	436	997	1519	2289	2932	3697	5616
07328040	0.880	82.000	32.00	153	294	426	621	784	972	1400

07328040	0.880	82.000	32.00	153	294	426	621	784	972	1400

APPENDIX A--- BASIN-AND CLIMATIC CHARACTERISTICS AND WEIGHTED FLOOD FREQUENCY RELATIONS FOR GAGED STREAMS -- CONTINUED.

STATION NUMBER	BASIN AND CLIMATIC CHARACTERISTICS			PEAK DISCHARGES IN CFS FOR INDICATED RECURRENCE INTERVAL, IN YEARS						
	DRAINAGE AREA (SQ MI)	CHANNEL SLOPE (FT/MI)	MEAN ANNUAL PRECIP (IN)	2	5	10	25	50	100	500
07329000	145.000	10.500	33.50	9468	14117	17602	22543	26308	30971	42414
07329500	206.000	9.000	34.00	7107	12846	17573	24251	29519	35791	51566
07329870	18.700	49.800	37.00	1938	3684	5202	7334	9054	11033	15819
07329900	138.000	20.900	37.50	4970	12392	19157	29092	37128	46797	72542
07330500	298.000	8.390	36.20	8785	14956	20042	27272	32727	39760	56163
07331410	4.300	44.800	38.50	496	917	1292	1844	2280	2805	4021
07332070	0.720	35.600	40.00	375	593	754	970	1144	1325	1787
07332400	203.000	12.800	38.50	8983	15403	20702	28105	33657	40745	57535
07332500	476.000	5.990	38.80	9403	17306	23661	32464	39150	47178	65807
07333330	3.190	108.000	42.00	1384	2516	3406	4639	5632	6731	9642
07333500	32.700	24.200	42.00	6611	10157	12706	16026	18557	21326	28282
07333800	86.600	8.330	43.00	6247	9004	11088	13851	15806	18302	23672
07334000	1087.000	3.730	41.00	20385	30785	38579	49019	56487	65773	85997
07335000	720.000	6.260	39.20	13525	24211	32866	45046	54244	65485	92048
07335310	0.940	22.600	42.50	262	457	609	808	965	1132	1526
07335320	16.600	4.600	46.00	2804	4282	5462	6702	7770	8881	12119
07335700	40.100	58.900	52.00	8881	13199	16516	20855	23949	27738	36072
07335760	1.430	246.000	50.00	420	974	1465	2120	2623	3193	4437
07336000	68.000	15.400	44.10	3856	5709	7332	9578	11185	13309	17497
07336500	1423.000	3.080	46.50	33895	48242	57782	71303	80378	91224	114476

APPENDIX A -- BASIN AND CLIMATIC CHARACTERISTICS AND WEIGHTED FLOOD FREQUENCY RELATIONS FOR GAGED STREAMS -- CONTINUED.

STATION NUMBER	BASIN AND CLIMATIC CHARACTERISTICS			PEAK DISCHARGES IN CFS FOR INDICATED RECURRENCE INTERVAL, IN YEARS						
	DRAINAGE AREA (SQ MI)	CHANNEL SLOPE (FT/MI)	MEAN ANNUAL PRECIP (IN)	2	5	10	25	50	100	500
07336520	19.400	57.600	47.50	2640	4418	5931	7886	9303	11082	14568
07336710	3.390	34.400	45.50	818	1265	1635	2115	2486	2904	3801
07336780	7.530	31.600	47.00	1952	2831	3489	4364	5013	5738	7281
07336785	2.960	26.300	47.00	763	1160	1471	1873	2169	2498	3231
07337220	1.990	84.800	48.00	528	1050	1478	2051	2489	2977	4079
07337500	675.000	7.500	51.00	30526	48074	60750	77151	88753	102786	133758
07337900	315.000	14.300	54.00	29637	49324	63459	81988	95670	111520	150516
07337920	1.230	70.000	48.00	403	942	1401	2055	2602	3214	4945
07338500	1226.000	5.130	52.00	28746	47663	62021	80802	94366	110177	146021
07338520	9.100	66.000	52.00	1538	2580	3451	4609	5445	6463	8486
07338780	0.680	91.400	54.00	247	467	649	876	1044	1225	1578
07339000	787.000	6.630	54.00	39666	65320	83329	106503	123243	140713	184056

* Urban Watersheds

APPENDIX B -- LOG-PEARSON TYPE III STATISTICS AND STATION FLOOD FREQUENCY RELATIONS FOR GAGED STREAMS --

STATION NUMBER	LOG-PEARSON TYPE III STATISTICS, IN LOGARITHMIC UNITS			PEAK DISCHARGE IN CFS FOR INDICATED RECURRENCE INTERVAL, IN YEARS						
	MEAN	STD. DEV.	SKEW	2	5	10	25	50	100	500
07148350	3.9290	0.4903	-0.247	8890	22200	34900	55500	74100	95500	156000
07148400	4.1497	0.1869	0.352	13800	20100	24800	31500	37000	42900	58600
07149850*	0.5052	0.2653	0.050	3	6	8	10	12	15	20
07149852	0.8762	0.6383	-0.170	10	19	26	36	45	54	77
07150580*	2.7783	0.4078	-0.300	629	1400	2030	2920	3720	4640	7000
07150870*	2.5529	0.3570	-0.200	367	800	1120	1580	1970	2380	3450
07152000	4.2517	0.4310	-0.230	18500	41500	62000	93600	121000	152000	236000
07152360*	3.3266	0.3951	-0.300	2220	4750	6840	9900	12300	14800	20400
07152410*	3.2323	0.1896	-0.100	1720	2430	2930	3580	4020	4530	5700
07152520	1.9096	0.6704	-0.190	85	301	567	1090	1650	2370	4850
07152842	2.1166	0.3180	-0.220	134	243	327	445	538	637	685
07152844*	1.3736	0.4128	-0.220	25	53	78	116	149	184	283
07152846*	1.8358	0.5115	-0.220	71	186	300	491	668	875	1490
07153000	3.7605	0.3174	-0.143	5860	10700	14500	20000	24400	29200	41600
07154400	3.3040	0.5192	-0.100	2050	5540	9190	15600	22000	29800	54400
07154500	3.7614	0.4604	-0.100	5870	14200	22200	35600	48100	62900	107400
07154650*	3.4505	0.3591	-0.200	2900	6300	8840	12500	15600	18800	27900
07155100	1.8567	1.0049	-0.100	75	509	1360	3810	7350	13200	42400

APPENDIX B -- LOG-PEARSON TYPE III STATISTICS AND STATION FLOOD FREQUENCY RELATIONS FOR GAGED STREAMS -- CONTINUED.

STATION NUMBER	LOG-PEARSON TYPE III STATISTICS, IN LOGARITHMIC UNITS			PEAK DISCHARGE IN CFS FOR INDICATED RECURRENCE INTERVAL, IN YEARS						
	MEAN	STD. DEV.	SKEW	2	5	10	25	50	100	500
07155510	2.8832	0.3456	-0.100	774	1500	2100	2990	3750	4590	6860
07157500	3.3406	0.4991	-0.147	2250	5810	9370	15400	21200	28000	48600
07157550*	2.3246	0.4632	-0.100	215	560	886	1430	1930	2440	3940
07158020	2.7234	0.1931	-0.170	535	771	927	1120	1260	1410	1740
07158080*	2.2578	0.4201	-0.400	193	432	625	900	1120	1310	1820
07158120*	1.9820	0.3385	-0.400	101	190	255	370	408	464	600
07158180*	2.8981	0.4504	-0.100	805	2050	3180	5150	6780	8560	13500
07158500	2.4519	0.6373	-0.180	296	984	1800	3370	4990	7070	14000
07158550*	2.6139	0.4382	-0.200	425	1040	1570	2420	3140	3920	5700
07159000	3.4233	0.5164	-0.142	2730	7260	11900	20000	27800	37200	66200
07159200	3.3670	0.5496	-0.180	2420	6820	11500	19700	27700	37400	67500
07159500	2.3265	0.3970	-0.200	218	461	670	985	1260	1550	2360
07159810	1.4939	0.4959	-0.210	32	82	131	212	286	372	625
07160500*	3.6828	0.4859	-0.053	4870	12400	20100	33500	46400	62300	112000
07160550	2.9624	0.3978	-0.300	960	2010	2880	4180	5200	6300	8900
07163000	3.3631	0.3934	0.008	2300	4940	7370	11300	14900	19100	31600
07163020*	2.8149	0.2194	0.0	653	1040	1300	1660	1920	2180	2800
07164940	2.3460	0.2410	-0.113	224	355	449	574	671	771	1020
07165550	3.5750	0.2780	-0.240	3840	6480	8410	11000	13100	15200	20600

APPENDIX B -- LOG-PEARSON TYPE III STATISTICS AND STATION FLOOD FREQUENCY RELATIONS FOR GAGED STREAMS -- CONTINUED.

STATION NUMBER	LOG-PEARSON TYPE III STATISTICS, IN LOGARITHMIC UNITS			PEAK DISCHARGE IN CFS FOR INDICATED RECURRENCE INTERVAL, IN YEARS						
	MEAN	STD. DEV.	SKEW	2	5	10	25	50	100	500
07171120*	2.5422	0.3226	-0.400	366	655	869	1150	1360	1560	2000
07172000	4.1074	0.3985	-0.333	13400	28000	40000	57200	71300	86300	124000
07174200	3.9448	0.3725	-0.240	9110	18300	25800	36700	45800	55600	81000
07174570	2.4792	0.3555	-0.240	311	605	840	1180	1450	1750	2510
07174600	3.7843	0.2997	-0.240	6260	10900	14500	19200	22900	26800	36300
07174720	2.5669	0.2692	-0.250	378	625	801	1030	1210	1390	1820
07175000	3.0131	0.4518	-0.250	1080	2500	3780	5800	7560	9550	15600
07176500	4.0576	0.3068	-0.314	11800	20900	27500	36300	43200	50100	66800
07177000	3.9270	0.2899	-0.309	8620	14700	19100	24900	29300	38300	44400
07177500	4.2080	0.3266	-0.224	16600	30600	41500	56700	69000	82000	115000
07178580*	3.1832	0.1884	0.700	1450	2450	3100	4150	4940	5700	7650
07178640*	2.9400	0.3172	-0.600	936	1530	1970	2490	2880	3280	4000
07178650	2.5802	0.2693	-0.270	391	645	825	1060	1240	1420	1850
07188000	4.4880	0.3190	-0.016	30800	57000	78600	111000	138000	168000	255000
07188140	2.9391	0.3234	-0.290	900	1640	2200	2960	3560	4190	5720
07188500	2.9492	0.6630	-0.285	956	3270	5970	11000	16100	22500	42600
07189000	4.3058	0.3780	-0.273	21000	42500	60000	85300	106000	128000	186000
07189480	3.1470	0.3110	-0.290	1450	2580	3420	4550	5430	6330	8770
07189700*	3.1966	0.2029	0.150	1560	2320	2870	3600	4200	4780	6400

APPENDIX B -- LOG-PEARSON TYPE III STATISTICS AND STATION FLOOD FREQUENCY RELATIONS FOR GAGED STREAMS -- CONTINUED.

STATION NUMBER	LOG-PEARSON TYPE III STATISTICS, IN LOGARITHMIC UNITS			PEAK DISCHARGE IN CFS FOR INDICATED RECURRENCE INTERVAL, IN YEARS						
	MEAN	STD. DEV.	SKEW	2	5	10	25	50	100	500
07189720	2.1612	0.1849	0.591	139	200	255	331	395	467	670
07190600	3.6587	0.3475	-0.270	4720	9010	12300	17100	20900	25000	35100
07191000	4.2159	0.3237	-0.272	17000	31000	41700	56400	68000	80100	110000
07191220	3.4801	0.5286	-0.223	3160	8500	13900	23100	31700	41900	72400
07191260	2.9142	0.4837	-0.290	866	2120	3290	5140	6780	8620	13700
07192000	3.7089	0.4215	-0.270	5340	11700	17200	25500	32500	40300	60900
07194515	2.8357	0.2746	0.407	656	1150	1570	2250	2860	3590	5770
07195500	4.2381	0.3686	-0.300	18100	35700	49800	69800	86000	103000	146000
07196000	3.6357	0.4894	-0.221	4500	11300	17900	28400	38200	49400	82000
07196380*	2.7062	0.6355	-0.280	544	1770	3160	5690	8200	11300	20900
07196500	4.3051	0.3914	-0.164	20700	43400	63000	92800	119000	147000	226000
07196900	3.7981	0.4161	-0.300	6470	13100	18600	26400	32800	39600	57000
07197000	4.1628	0.2945	-0.298	14500	25600	33500	44000	52000	60300	80000
07228290*	3.0378	0.5688	-0.700	1270	3080	4720	7050	8850	10900	15100
07228450	2.4972	0.2848	0.519	297	533	749	1100	1440	1840	3140
07228600	2.8290	0.5840	-0.180	424	1673	3140	5670	8280	11800	22600
07228930*	3.1382	0.2718	0.110	1360	2250	2990	4020	4980	6020	9100
07228960	2.8595	0.2538	-0.210	738	1190	1510	1930	2250	2570	3350
07229220	2.5879	0.2835	-0.210	396	674	879	1160	1370	1600	2150

APPENDIX B -- LOG-PEARSON TYPE III STATISTICS AND STATION FLOOD FREQUENCY RELATIONS FOR GAGED STREAMS -- CONTINUED.

STATION NUMBER	LOG-PEARSON TYPE III STATISTICS, IN LOGARITHMIC UNITS			PEAK DISCHARGE IN CFS FOR INDICATED RECURRENCE INTERVAL, IN YEARS						
	MEAN	STD. DEV.	SKEW	2	5	10	25	50	100	500
07229300	3.9639	0.2544	-0.220	9400	15100	19200	24500	28600	32700	42500
07229420*	2.6837	0.4017	-0.600	529	990	1360	1830	2200	2560	3350
07229430*	2.7414	0.3905	-0.550	594	1130	1570	2150	2600	3080	4150
07230500	3.9673	0.2531	1.271	8220	14100	20200	31600	43600	59600	121000
07231000	4.0228	0.3390	-0.235	10900	20500	28000	38700	47400	56500	79900
07231320*	2.6320	0.3354	-0.240	442	827	1130	1550	1890	2250	3160
07231560*	3.1337	0.3755	-0.200	1400	2970	4240	6180	7680	9160	12800
07231950*	3.5961	0.2364	-0.450	4090	6080	7490	9200	10400	11500	14300
07232000	4.0869	0.2989	0.211	12000	21300	29200	41200	51800	63900	98800
07232500	3.8333	0.5367	-0.425	7130	19200	30700	48500	64000	81200	127000
07232550*	1.2584	0.4981	-0.300	19	48	75	120	158	200	310
07232650	2.1550	0.7881	-0.100	147	663	1430	3220	5400	8520	21300
07233000	3.4259	0.5179	-0.100	2720	7310	12100	20600	28900	39100	71400
07233850	1.5219	0.3764	-0.100	33	69	100	147	188	234	362
07234050	1.9223	0.7499	-0.100	86	360	750	1620	2640	4090	9770
07234290	2.4283	0.6050	-0.110	274	871	1570	2910	4310	6120	12300
07235700*	2.7630	0.5598	-0.300	618	1840	3070	5200	7050	9170	14700
07236000	3.5901	0.5014	-0.097	3960	10300	16900	28300	39200	52600	94300
07237750*	2.6722	0.4909	-0.200	488	1300	2070	3350	4500	5760	8900

APPENDIX B -- LOG-PEARSON TYPE III STATISTICS AND STATION FLOOD FREQUENCY RELATIONS FOR GAGED STREAMS -- CONTINUED.

STATION NUMBER	LOG-PEARSON TYPE III STATISTICS, IN LOGARITHMIC UNITS			PEAK DISCHARGE IN CFS FOR INDICATED RECURRENCE INTERVAL, IN YEARS						
	MEAN	STD. DEV.	SKEW	2	5	10	25	50	100	500
07237800	3.4468	0.3903	-0.160	2865	6000	8710	12800	16400	20400	31200
07239050	1.9556	0.4796	-0.170	93	230	363	584	787	1020	1730
07241880*	3.1853	0.1915	0.200	1510	2230	2740	3470	4000	4620	6180
07242160*	3.3438	0.3004	-0.400	2310	3950	5140	6650	7800	9040	11600
07242180*	2.6214	0.1992	0.100	415	658	812	1020	1180	1320	1640
07243000	3.5789	0.2752	0.844	3470	6200	8860	13500	18200	24100	45000
07243500	3.9964	0.4086	-0.150	10200	22000	32600	49000	63400	79700	125000
07243550*	3.1606	0.2791	-0.400	1510	2500	3190	4050	4700	5340	6580
07244790	3.2686	0.3120	-0.270	1920	3420	4550	6090	7300	8550	11600
07245090*	3.4541	0.2118	-0.200	2800	4150	4900	6060	6850	7580	9400
07245500	3.9859	0.3839	-0.169	9930	20500	29500	43200	54800	67800	103000
07246600	3.2069	0.1430	0.511	1570	2100	2490	3020	3450	3910	5100
07246610*	2.4163	0.2130	-0.100	263	373	460	568	658	739	970
07246630*	2.9640	0.3157	-0.300	955	1720	2290	3060	3660	4250	5600
07247500	3.7910	0.3533	-0.206	6360	12300	17200	24200	30000	36200	52500
07249000	4.5212	0.3285	-0.554	35600	63500	82800	107000	124000	141000	178000
07299705	2.1881	0.5200	-0.150	140	364	591	980	1350	1790	3140
07299720	2.8493	0.2745	-0.150	718	1210	1570	2070	2460	2870	3880
07300150*	2.8822	0.4059	-0.450	811	1780	2550	3660	4480	5360	7050

07300150* 2.8822 0.4059 -0.450 811 1700 [illegible]

APPENDIX B -- LOG-PEARSON TYPE III STATISTICS AND STATION FLOOD FREQUENCY RELATIONS FOR GAGED STREAMS -- CONTINUED.

STATION NUMBER	LOG-PEARSON TYPE III STATISTICS, IN LOGARITHMIC UNITS			PEAK DISCHARGE IN CFS FOR INDICATED RECURRENCE INTERVAL, IN YEARS						
	MEAN	STD. DEV.	SKEW	2	5	10	25	50	100	500
07300500	4.1533	0.3281	-0.116	14400	27000	37100	51800	64000	77300	113000
07301455*	3.0374	0.3900	-0.300	1140	2480	3530	5100	6300	7420	10200
07301480	2.6788	0.3028	-0.150	485	862	1150	1560	1890	2240	3130
07301485	2.7290	0.1840	0.083	532	763	925	1140	1300	1470	1890
07301495*	2.8721	0.4111	-0.100	757	1520	2270	3420	4530	5800	10100
07301500	3.8441	0.3421	-0.134	7400	13600	18900	26700	33300	40400	59400
07303400	3.7175	0.2935	-0.150	5310	9260	12300	16400	19800	23300	32300
07303450	2.9377	0.3524	-0.150	884	1720	2420	3440	4290	5230	7720
07303500	3.8809	0.3987	-0.165	7800	16600	24200	36000	46100	57500	88800
07304500	3.6419	0.2987	0.606	4090	7600	10900	16700	22300	29200	52700
07309480	2.9655	0.4024	-0.190	1000	1690	2200	2890	3430	4000	5370
07311000	3.8000	0.3614	-0.239	6520	12800	17900	25200	31300	37800	54500
07311200	3.0081	0.4523	-0.200	1050	2470	3780	5860	7720	9850	15900
07311410	2.0699	0.5502	-0.180	122	344	577	984	1380	1850	3410
07311420*	2.5940	0.3431	-0.200	403	800	1110	1570	1910	2240	3000
07311500	3.7477	0.4104	-0.199	5770	12500	18400	27400	35200	43800	67600
07312850*	2.9455	0.3847	-0.300	922	1880	2660	3780	4710	5760	8050
07312950	2.9313	0.4511	-0.200	883	2060	3150	4890	6440	8230	13200
07313000	4.0220	0.5300	-0.422	11500	29900	47100	73900	97100	123000	209000

APPENDIX B -- LOG-PEARSON TYPE III STATISTICS AND STATION FLOOD FREQUENCY RELATIONS FOR GAGED STREAMS -- CONTINUED.

STATION NUMBER	LOG-PEARSON TYPE III STATISTICS, IN LOGARITHMIC UNITS			PEAK DISCHARGE IN CFS FOR INDICATED RECURRENCE INTERVAL, IN YEARS						
	MEAN	STD. DEV.	SKEW	2	5	10	25	50	100	500
07313500	3.6678	0.4341	0.472	4300	10500	17400	31100	46200	66900	147000
07313600	3.4350	0.4517	-0.210	2820	6590	10100	15600	20500	26000	41700
07315680*	2.6917	0.4318	-0.500	534	1100	1580	2220	2760	3300	4500
07315700	3.6860	0.4494	-0.220	5040	11700	17800	27400	35900	45500	72500
07315880	3.2752	0.0718	-0.230	1900	2170	2320	2480	2590	2690	2900
07316130*	2.9195	0.2551	-0.200	847	1360	1730	2210	2590	2960	3820
07316140*	3.5001	0.2172	-0.100	3190	4820	5970	7500	8600	9640	12300
07317500	2.6590	0.4425	-0.150	467	1080	1650	2570	3400	4360	7120
07318500	2.4691	0.4375	-0.150	302	692	1050	1630	2150	2740	4460
07319000	3.0150	0.4048	-0.150	1050	2280	3360	5040	6510	8160	12700
07320000*	2.7876	0.4128	-0.300	643	1420	2080	3050	3840	4670	6550
07321500	2.5430	0.3863	-0.150	357	742	1080	1580	2020	2500	3840
07324000	3.0099	0.4456	-0.150	1050	2440	3740	5840	7740	9930	16200
07326520	2.4561	0.2971	-0.190	292	511	676	904	1090	1270	1750
07327040	2.4961	0.3587	-0.190	321	632	886	1260	1570	1910	2800
07327150*	2.9934	0.3585	0.0	985	2110	3040	4540	5750	7020	10200
07327210	2.6490	0.4194	-0.190	459	1010	1500	2270	2930	3680	5750
07327420	3.2682	0.2959	-0.190	1890	3310	4370	5840	7000	8220	11300
07327438*	1.0207	0.4875	-0.200	11	27	43	69	93	121	202

07327420	3.2882	0.2737								
07327438*	1.0207	0.4875	-0.200	11	27	43	69	93	121	202

APPENDIX B -- LOG-PEARSON TYPE III STATISTICS AND STATION FLOOD FREQUENCY RELATIONS FOR GAGED STREAMS -- CONTINUED.

STATION NUMBER	LOG-PEARSON TYPE III STATISTICS, IN LOGARITHMIC UNITS			PEAK DISCHARGE IN CFS FOR INDICATED RECURRENCE INTERVAL, IN YEARS						
	MEAN	STD. DEV.	SKEW	2	5	10	25	50	100	500
07327439	1.5004	0.2255	-0.200	32	49	61	76	87	98	124
07327440	3.2522	0.2594	-0.190	1820	2970	3790	4890	5730	6600	8700
07327490	3.5330	0.3855	-0.148	3490	7240	10500	15400	19700	24400	37500
07328030	2.5663	0.4159	-0.210	380	831	1230	1830	2360	2940	4550
07328040	2.1348	0.2629	-0.210	139	228	292	377	442	510	673
07329000	4.0163	0.2339	-0.220	10500	16400	20400	25600	29400	33300	42400
07329500	3.8539	0.3276	-0.220	7340	13500	18400	25200	30700	36500	51300
07329870*	3.2698	0.3596	-0.300	1940	3680	5100	7050	8700	10300	14400
07329900	3.6306	0.5625	-0.418	4670	12900	21000	33900	45300	58100	93000
07330500	3.9451	0.2767	-0.230	9030	15200	19600	25500	30100	34800	46200
07331410*	2.6643	0.2488	0.200	453	758	991	1340	1620	1940	2800
07332070	2.6082	0.3729	-0.230	416	693	890	1150	1350	1550	2040
07332400	3.9642	0.2969	-0.250	9470	16500	21700	28700	34200	39800	53000
07332500	3.9524	0.3238	-0.286	9280	16900	22700	30600	36800	43400	59300
07333330	3.1747	0.3817	-0.270	1560	3160	4480	6400	7980	9690	14100
07333500	3.8423	0.2625	-0.270	7150	11600	14800	18900	22000	25100	32500
07333800	3.8024	0.1943	-0.280	6480	9290	11100	13300	14800	16400	19800
07334000	4.3037	0.2106	-0.254	20500	30400	36900	45000	50900	56700	70000
07335000	4.1163	0.3036	-0.204	13400	23700	31500	42300	50800	59800	82300

APPENDIX B -- LOG-PEARSON TYPE III STATISTICS AND STATION FLOOD FREQUENCY RELATIONS FOR GAGED STREAMS -- CONTINUED.

STATION NUMBER	LOG-PEARSON TYPE III STATISTICS, IN LOGARITHMIC UNITS			PEAK DISCHARGE IN CFS FOR INDICATED RECURRENCE INTERVAL, IN YEARS						
	MEAN	STD. DEV.	SKEW	2	5	10	25	50	100	500
07335310*	2.3934	0.2894	-0.270	254	436	568	744	881	1020	1360
07335320*	3.4264	0.3841	-0.800	3000	4840	6370	7980	9400	10800	14800
07335700	3.9719	0.2337	-0.300	9630	14800	18300	22700	25900	29100	36300
07335760	2.3524	0.4522	-0.290	236	546	824	1250	1620	2030	3130
07336000	3.5613	0.1485	-0.270	3700	4880	5580	6410	6990	7540	8720
07336500	4.5279	0.1863	-0.241	34300	48600	57100	68900	76900	84700	102000
07336520*	3.3735	0.3169	-0.600	2540	4050	5200	6590	7600	8760	11000
07336710	2.8988	0.2009	-0.280	809	1170	1410	1690	1910	2110	2570
07336780*	3.3044	0.1853	-0.100	2030	2940	3530	4280	4820	5330	6380
07336785*	2.8698	0.2202	-0.300	760	1120	1370	1680	1900	2120	2650
07337220	2.6359	0.3571	-0.290	449	871	1200	1670	2050	2450	3460
07337500	4.4822	0.2542	-0.287	31200	50000	63000	79700	92100	105000	133700
07337900	4.4855	0.3151	-0.290	31700	56800	75500	101000	121000	142000	192000
07337920	2.4940	0.5595	-0.290	332	936	1550	2600	3580	4740	8110
07338500	4.4386	0.2686	-0.250	28280	46500	59600	76700	89900	103000	135000
07338520*	3.1423	0.2232	-0.100	1400	2150	2680	3380	3900	4480	5780
07338780*	2.2419	0.2687	-0.300	180	295	377	482	561	641	828
07339000	4.5899	0.2847	-0.353	40400	68100	87600	113000	132000	150000	195000

* STATION flood frequency relation is a weighted estimate of the observed and synthetic flood frequency relations.

* STATION flood frequency relation is a weighted estimate of the observed and synthetic flood frequency relations.

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS

STATION NO. - 07148350
DRAINAGE AREA - 856 SQ MI
STATION NAME - SALT FORK ARKANSAS RIVER NR WINCHESTER OKLA
GAGE DATUM - 1,409.60 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1957	05- -57	15.4	80,000
1960	08-26-60	10.91	18,000
1961	08-19-61	13.95	52,200
1962	09-20-62	9.50	8,380
1963	06-23-63	10.90	17,400
1964	05-06-64	6.99	1,200
1965	06-13-65	10.82	18,200
1966	10-18-65	7.12	1,380
1967	06-29-67	8.93	6,110
1968	04-03-68	10.50	14,200
1969	10-17-68	10.86	17,100
1970	04-18-70	7.85	2,740
1971	04-23-71	7.10	1,350
1972	06-24-72	9.83	10,100
1973	03-30-73	11.74	24,700
1974	10-11-73	12.31	10,000
1975	06-07-75	11.06	6,560

STATION NO. - 07148400
DRAINAGE AREA - 1,009 SQ MI
STATION NAME - SALT FORK ARKANSAS RIVER NEAR ALVA, OKLA.
GAGE DATUM - 1,297.04 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1922	05-08-22	10.3	---
1938	08-16-38	8.90	25,300
1939	06-27-39	6.10	9,900
1940	09-24-40	6.00	9,500
1941	09-01-41	6.43	8,150
1942	10-23-41	9.08	27,000
1943	10-03-42	7.00	14,000
1944	04-22-44	7.60	13,500
1945	09-28-45	8.65	16,200
1946	06-18-46	6.60	8,330
1947	06-21-47	7.10	10,100
1948	08-14-48	8.20	15,200
1949	05-16-49	9.43	26,200
1950	07-28-50	7.65	10,700
1951	06-30-51	8.52	21,700
1957	05-16-57	10.6	---

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07149850 STATION NAME - WATERSHED W-7 AND W-13 NEAR CHEROKEE,OKLA
DRAINAGE AREA - .0031 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1942	--------	---	2
1943	--------	---	.5
1944	--------	---	5
1945	--------	---	5
1946	--------	---	3
1947	--------	---	3
1948	--------	---	10
1949	--------	---	5
1950	--------	---	10
1951	--------	---	5
1952	--------	---	1
1953	--------	---	.1
1954	--------	---	3
1955	--------	---	6
1956	--------	---	0
1957	--------	---	9
1958	--------	---	3
1959	--------	---	5
1961	06-02-61	---	6
1962	09-14-62	---	1
1963	06-23-63	---	4
1964	10-25-63	---	3
1965	05-13-65	---	.3
1966	02-08-66	---	.4
1967	09-03-67	---	8

STATION NO. - 07149852 STATION NAME - WATERSHED W-9 NEAR CHEROKEE,OKLA
DRAINAGE AREA - .013 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1942	--------	---	10
1943	--------	---	.2
1944	--------	---	17
1945	--------	---	13
1946	--------	---	8
1947	--------	---	11
1948	--------	---	39
1949	--------	---	21
1950	--------	---	8
1951	--------	---	15
1952	--------	---	.4
1953	--------	---	.7
1954	--------	---	9
1955	--------	---	13
1956	--------	---	0
1957	--------	---	29
1958	--------	---	9
1959	--------	---	17
1960	--------	---	11

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07150580 STATION NAME - SAND CREEK TRIBUTARY NR KREMLIN, OKLA
DRAINAGE AREA - 7.21 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	06-06-64	6.84	920
1965	11-17-64	5.56	368
1966	04-22-66	1.41	6
1967	06-20-67	6.20	600
1968	08-17-68	5.25	290
1969	06-17-69	6.65	825
1970	04-01-70	5.40	320
1971	09-17-71	4.77	200
1972	09-09-72	4.95	230
1973	03-10-73	5.69	407
1974	10-11-73	11.2	12,000
1975	--------	5.26	292

STATION NO. - 07150870 STATION NAME - SALT FORK ARKANSAS RIVER TRIB NR EDDY, OKLA
DRAINAGE AREA - 2.35 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	08-25-64	11.63	100
1965	11-17-64	12.73	265
1966	07-23-66	12.38	210
1967	06-20-67	11.60	98
1968	08-17-68	14.08	489
1969	09-16-69	18.44	1,800
1970	04-01-70	13.06	315
1971	06-02-71	13.05	313
1972	--------	---	<8
1973	03-10-73	13.97	470
1974	08-14-74	16.91	1,080
1975	05-15-75	14.99	663

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07152000 STATION NAME - CHIKASKIA RIVER NEAR BLACKWELL, OKLA.
DRAINAGE AREA - 1,859 SQ MI GAGE DATUM - 967.41 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1923	06-10-23	---	100,000
1936	06-06-36	---	10,800
1937	05-31-37	---	12,900
1938	05-20-38	---	26,800
1939	11-04-38	---	8,340
1940	06-09-40	---	6,040
1941	04-16-41	---	8,820
1942	06-22-42	---	85,000
1943	05-20-43	---	12,200
1944	04-23-44	---	82,000
1945	04-17-45	---	35,800
1946	04-16-46	---	6,200
1947	04-14-47	---	31,000
1948	08-14-48	---	23,100
1949	01-25-49	---	15,300
1950	08-02-50	---	8,070
1951	05-18-51	---	53,000
1952	06-05-52	20.90	8,130
1953	08-04-53	19.65	7,280
1954	05-25-54	12.33	3,120
1955	05-27-55	---	39,300
1956	10-03-55	28.19	14,600
1957	05-18-57	32.56	55,000
1958	06-26-58	23.15	9,050
1959	07-23-59	29.58	20,000
1960	10-03-59	32.15	48,000
1961	05-06-61	31.87	36,500
1962	11-02-61	30.59	27,000
1963	07-12-63	27.97	15,500
1964	08-26-64	23.38	8,460
1965	11-17-64	33.08	64,000
1966	12-25-65	6.21	1,200
1967	07-20-67	18.68	5,650
1968	08-18-68	31.00	31,000
1969	06-25-69	30.50	26,000
1970	04-19-70	32.26	45,200
1971	08-23-71	17.48	5,350
1972	10-30-71	20.04	6,380
1973	03-11-73	* 30.95	36,000
1974	10-11-73	33.85	63,500
1975	11-03-74	31.83	30,300

* DENOTES ANNUAL PEAK GAGE HEIGHT OCCURRED AT A TIME DIFFERENT THAN THAT OF PEAK DISCHARGE

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07152360
DRAINAGE AREA - 18.2 SQ MI
STATION NAME - ELM CREEK NEAR FORAKER, OKLAHOMA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	05-11-64	3.10	180
1965	04-02-65	7.00	1,700
1966	06-07-66	5.90	1,120
1967	06-11-67	7.05	1,740
1968	10-07-67	6.90	1,640
1969	06-24-69	14.0	9,200
1970	04-01-70	7.00	1,700
1971	07-04-71	2.98	145
1972	12-14-71	6.50	1,410
1973	04-15-73	8.34	2,670
1974	08-14-74	12.0	6,500
1975	11-03-74	13.95	9,130

STATION NO. - 07152410
DRAINAGE AREA - 9.13 SQ MI
STATION NAME - ROCK CREEK NEAR SHIDLER, OKLAHOMA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	05-18-65	10.05	2,780
1966	09-02-66	9.15	1,750
1967	06-11-67	8.96	1,560
1968	05-13-68	9.00	1,600
1969	06-24-69	9.00	1,600
1970	10-12-69	9.28	1,880
1971	07-04-71	8.82	1,420
1972	12-14-71	8.30	950

STATION NO. - 07152520
DRAINAGE AREA - .97 SQ MI
STATION NAME - BLACK BEAR CREEK TRIB NR GARBER, OKLA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	08-18-64	1.75	63
1965	11-17-64	2.53	124
1966	04-22-66	1.19	29
1967	06-11-67	1.22	31
1968	05-13-68	1.55	50
1969	09-16-69	3.19	180
1970	04-01-70	.70	8
1971	04-26-71	4.60	333
1972	--------	---	<50
1973	03-10-73	4.15	282
1974	08-14-74	9.6	1,310
1975	11-02-74	3.05	172

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07152842 STATION NAME - WATERSHED W-4 NEAR MURRISON,OKLA
DRAINAGE AREA - .32 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1951	07-15-51	---	336
1952	06-05-52	---	174
1953	05-12-53	---	127
1954	05-01-54	---	64
1955	05-26-55	---	289
1956	07-05-56	---	94
1957	04-18-57	---	496
1958	03-28-58	---	81
1959	--------	---	339
1960	05-28-60	---	208
1961	05-21-61	---	262
1962	06-07-62	---	239
1963	09-04-63	---	106
1964	05-10-64	---	35
1965	09-20-65	---	8
1966	07-23-66	---	116
1967	06-24-67	---	177
1968	04-03-68	---	117
1969	05-07-69	---	106
1970	04-30-70	---	61
1971	06-02-71	---	80
1972	06-19-72	---	111

STATION NO. - 07152844 STATION NAME - WATERSHED W-1 NEAR MURRISON,OKLA
DRAINAGE AREA - .026 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1951	07-15-51	---	99
1952	06-05-52	---	21
1953	05-12-53	---	29
1954	05-01-54	---	24
1955	05-26-55	---	51
1956	--------	---	<1
1957	04-18-57	---	118
1958	03-28-58	---	9
1959	--------	---	45
1960	05-28-60	---	51
1961	05-21-61	---	49
1962	06-07-62	---	52
1963	09-04-63	---	7
1964	04-04-64	---	11
1965	05-13-65	---	2
1966	07-23-66	---	6
1967	06-26-67	---	22
1968	04-03-68	---	23
1969	05-07-69	---	23
1970	04-03-70	---	24
1971	09-24-71	---	11
1972	--------	---	5
1973	08-08-73	---	101
1974	09-20-74	---	58
1975	05-14-75	---	24

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07152846 STATION NAME - WATERSHED W-3 NEAR MORRISON,OKLA
DRAINAGE AREA - .14 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1951	07-15-51	---	440
1952	06-04-52	---	80
1953	05-12-53	---	56
1954	05-01-54	---	39
1955	05-26-55	---	218
1956	07-05-56	---	1
1957	04-18-57	---	419
1958	03-28-58	---	38
1959	--------	---	162
1960	05-28-60	---	132
1961	05-21-61	---	173
1962	06-07-62	---	133
1963	09-04-63	---	20
1964	05-10-64	---	28
1965	05-14-65	---	1
1966	07-23-66	---	11
1967	09-26-67	---	68
1968	04-03-68	---	91
1969	05-07-69	---	52
1970	04-30-70	---	47
1971	09-24-71	---	35
1972	--------	---	13
1973	08-08-73	---	440
1974	09-20-74	---	252
1975	05-14-75	---	91

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07153000 STATION NAME - BLACK BEAR CREEK AT PAWNEE, OKLA.
DRAINAGE AREA - 576 SQ MI GAGE DATUM - 802.73 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1908	05-25-08	27.30	15,600
1943	05-19-43	28.19	17,800
1945	09-30-45	28.11	17,500
1946	06-29-46	15.43	4,900
1947	04-16-47	22.55	9,390
1948	08-08-48	16.45	4,890
1949	05-27-49	16.16	4,790
1950	08-03-50	13.58	3,830
1951	07-03-51	14.76	4,280
1952	06-07-52	16.18	4,790
1953	07-14-53	10.56	2,610
1954	05-02-54	11.16	2,810
1955	05-28-55	21.78	8,720
1956	10-05-55	16.96	5,430
1957	05-18-57	25.26	12,200
1958	07-12-58	13.97	3,880
1959	09-27-59	19.21	6,890
1960	10-03-59	31.43	30,200
1961	09-14-61	27.16	15,400
1962	10-12-61	21.68	8,880
1963	09-16-63	12.84	3,620
1964	08-28-64	8.96	2,250
1965	11-19-64	9.73	2,520
1966	07-25-66	13.48	4,100
1967	06-26-67	7.81	1,780
1968	04-03-68	10.39	3,040
1969	04-17-69	12.70	4,440
1970	04-30-70	10.89	3,490
1971	09-06-71	10.18	3,050
1972	12-16-71	8.54	2,220
1973	03-10-73	18.03	6,920
1974	03-12-74	24.43	11,500
1975	11-04-74	26.87	17,100

STATION NO. - 07154400
STATION NAME - CARRIZOZO CREEK NEAR KENTON OKLA.
DRAINAGE AREA - 111 SQ MI
GAGE DATUM - 4,380 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1953	--------	---	9,160
1954	08- -54	5.99	2,180
1955	05-19-55	7.35	3,280
1956	08-18-56	9.52	6,230
1957	08-18-57	7.64	3,600
1958	07-06-58	12.22	15,600
1959	08- -59	3.83	1,060
1960	09-08-60	3.64	990
1961	06- -61	3.47	920
1962	07- -62	1.56	245
1963	08- -63	5.99	2,180
1964	--------	---	<100
1965	06-17-65	---	5,950
1966	10-17-65	11.85	14,000
1967	07-12-67	7.54	3,640
1968	07-24-68	3.24	840
1969	07-05-69	2.38	520
1970	--------	---	<100
1971	08- -71	---	100
1972	07-03-72	5.81	2,050
1973	08-03-73	8.46	4,700
1974	08-03-74	7.82	3,800
1975	--------	---	<60

STATION NO. - 07154500
STATION NAME - CIMARRON RIVER NEAR KENTON, OKLA.
DRAINAGE AREA - 1,106 SQ MI
GAGE DATUM - 4,267.08 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1951	08-21-51	10.96	2,850
1952	08-23-52	11.12	3,130
1953	08-17-53	13.00	6,610
1954	08-13-54	15.67	14,100
1955	05-20-55	15.02	11,800
1956	08-18-56	14.35	10,000
1957	08-18-57	12.78	6,780
1958	07-06-58	18.67	26,300
1959	07-13-59	11.26	3,160
1960	09-09-60	13.64	7,970
1961	06-03-61	14.43	10,000
1962	07-30-62	10.59	2,530
1963	08-10-63	15.30	12,800
1964	08-08-64	11.58	4,000
1965	06-17-65	20.92	23,400
1966	10-17-65	22.32	43,400
1967	07-18-67	12.76	4,040
1968	08-28-68	12.81	4,100
1969	09-17-69	14.17	6,240
1970	08-08-70	7.81	418
1971	08-07-71	9.16	960
1972	06-23-72	14.09	6,100
1973	09-24-73	17.81	15,000
1974	07-31-74	12.87	4,180
1975	06-23-75	9.59	1,180

STATION NO. - 07154650
DRAINAGE AREA - 25.4 SQ MI
STATION NAME - TESESQUITE CREEK NEAR KENTON, OKLA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	08-08-64	12.75	700
1965	08-21-65	16.00	2,950
1966	10-17-65	19.40	6,720
1967	08-14-67	11.60	230
1968	07-24-68	13.40	1,040
1969	06-17-69	17.50	4,450
1970	10-12-69	---	<5
1971	08-06-71	19.81	6,020
1972	06-23-72	18.10	3,800
1973	09-23-73	17.71	3,410
1974	08-09-74	15.68	1,780
1975	06-23-75	20.42	7,240

STATION NO. - 07155100
DRAINAGE AREA - 11.0 SQ MI
STATION NAME - COLD SPRINGS CREEK NEAR WHEELESS, OKLA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	08-08-64	12.06	239
1965	08-21-65	18.83	2,520
1966	10-17-65	12.36	300
1967	--------	---	<7
1968	--------	---	<7
1969	07-04-69	10.74	38
1970	--------	---	<7
1971	04-30-71	15.40	1,160
1972	06-23-72	15.00	1,020
1973	09-24-73	10.92	57
1974	08-09-74	10.50	17
1975	08-09-75	10.50	17

STATION NO. - 07155510
DRAINAGE AREA - 5.15 SQ MI
STATION NAME - FLAGG SPRINGS TRIB NEAR BOISE CITY, OKLA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	08-21-65	9.62	2,700
1966	07-23-66	6.72	1,400
1967	07-25-67	5.40	740
1968	--------	---	<3
1969	09-16-69	5.45	760
1970	--------	---	<3
1971	--------	---	<3
1972	05-11-72	6.15	1,270

STATION NO. - 07157500 STATION NAME - CROOKED CREEK NEAR NYE, KANS.
DRAINAGE AREA - 1,157 SQ MI GAGE DATUM - 2,163.79 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1943	08-05-43	2.03	118	1960	06-08-60	3.81	748
1944	04-29-44	3.68	1,360	1961	06-06-61	5.83	3,090
1945	06-26-45	4.65	2,310	1962	07-24-62	7.00	5,680
1946	08-27-46	4.78	2,530	1963	08-31-63	9.00	12,100
1947	04-12-47	6.13	4,950	1964	06-15-64	5.53	2,280
1948	08-14-48	5.12	3,330	1965	06-10-65	4.20	770
1949	04-26-49	6.93	7,100	1966	10-16-65	4.02	630
1950	07-27-50	7.15	6,360	1967	07-12-67	4.60	1,130
1951	05-23-51	7.59	10,000	1968	06-09-68	3.37	255
1952	04-29-52	5.98	3,730	1969	06-11-69	5.24	1,840
1953	07-11-53	5.68	3,210	1970	04-18-70	4.63	1,050
1954	07-23-54	4.47	1,320	1971	08-06-71	3.81	486
1955	05-20-55	8.01	13,600	1972	11-17-71	6.98	2,680
1956	07-03-56	4.38	1,640	1973	04-02-73	8.21	4,240
1957	05-16-57	6.24	4,220	1974	08-13-74	4.38	438
1958	08-20-58	7.94	13,200	1975	05-30-75	3.53	205
1959	05-04-59	5.43	2,450	1976	05-27-76	4.09	342

STATION NO. - 07157550 STATION NAME - WEST FORK CREEK NEAR KNOWLES, OKLA
DRAINAGE AREA - 4.22 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	07-18-64	11.56	14	1970	08-22-70	14.2	185
1965	05-14-65	14.58	105	1971	07-22-71	10.80	9
1966	08-09-66	17.05	242	1972	06-10-72	13.70	140
1967	08-14-67	18.24	1,150	1973	09-05-73	17.19	389
1968	06-15-68	14.15	180	1974	06-01-74	14.25	179
1969	08-22-69	18.0	500				

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07158020 STATION NAME - CIMARRON RIVER TRIB NR LONE WOLF, OKLA
DRAINAGE AREA - 4.07 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	07-17-64	3.75	236	1970	04-18-70	5.24	880
1965	09-18-65	5.00	760	1971	06-11-71	4.21	404
1966	09-02-66	4.84	680	1972	05-12-72	4.63	579
1967	07-04-67	3.98	310	1973	09-24-73	4.46	504
1968	08-28-68	4.50	520	1974	08-27-74	5.05	785
1969	06-17-69	4.01	325	1975	11-02-74	5.32	921

STATION NO. - 07158080 STATION NAME - SAND CREEK TRIB NR WAYNOKA, OKLA
DRAINAGE AREA - 1.61 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	05-30-64	2.65	42	1970	08-21-70	6.32	587
1965	11-03-64	4.12	220	1971	06-09-71	2.92	69
1966	07-22-66	2.50	27	1972	07-01-72	3.20	100
1967	06-09-67	4.52	280	1973	03-30-73	3.70	160
1968	08-28-68	2.60	37	1974	08-27-74	4.82	327
1969	04-17-69	5.30	410	1975	11-02-74	4.00	172

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07158120 STATION NAME - CIMARRON RIVER TRIB NR ISABELLA, OKLA
DRAINAGE AREA - .62 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	05-10-64	4.50	41	1969	05-07-69	7.2	207
1965	11-15-64	6.00	125	1970	04-18-70	6.08	130
1966	08-01-66	5.19	76	1971	06-02-71	5.88	118
1967	04-12-67	4.18	28	1972	07-19-72	5.74	109
1968	08-18-68	4.60	46				

STATION NO. - 07158180 STATION NAME - SALT CREEK TRIB NR OKEENE, OKLA
DRAINAGE AREA - 8.23 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	05-10-64	3.65	148	1970	09-22-70	3.60	140
1965	11-16-64	6.40	1,420	1971	06-11-71	4.55	328
1966	09-12-66	4.14	228	1972	06-11-72	7.82	3,000
1967	06-10-67	7.25	2,300	1973	08-09-73	7.05	2,060
1968	08-18-68	3.63	144	1974	09-20-74	8.24	4,500
1969	05-07-69	4.72	408	1975	05-13-75	7.07	2,080

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07158500 STATION NAME - PREACHER CREEK NEAR DOVER, OKLA
DRAINAGE AREA - 14.5 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1952	04-22-52	---	9
1953	07-24-53	---	431
1954	05-24-54	---	32
1955	05-26-55	---	512
1956	10-04-55	---	118
1957	05-15-57	---	6,420
1964	08-07-64	6.77	502
1965	07-04-65	6.40	410
1966	04-22-66	---	<200
1967	06-11-67	8.05	925
1968	06-22-68	6.80	630
1969	05-07-69	4.89	240
1970	04-18-70	---	<200
1971	06-02-71	3.90	120
1972	--------	---	<30
1973	03-30-73	4.50	190
1974	08-14-74	6.07	454
1975	06-10-75	9.00	1,540

STATION NO. - 07158550 STATION NAME - TURKEY CREEK TRIBUTARY NEAR GOLTRY, OKLA
DRAINAGE AREA - 5.08 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	06-05-64	7.59	381
1965	05-13-65	9.08	560
1966	04-22-66	4.82	56
1967	06-20-67	4.60	38
1968	08-18-68	5.5	130
1969	06-17-69	7.9	418
1970	04-18-70	10.6	1,070
1971	06-02-71	4.80	54
1972	10-29-71	6.20	214
1973	03-08-73	9.32	592
1974	08-14-74	10.8	1,200
1975	11-03-74	11.06	1,460

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07159000 STATION NAME - TURKEY CREEK NEAR DRUMMOND, OKLA.
DRAINAGE AREA - 248 SQ MI GAGE DATUM - 1,148.22 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1932	--------	24.6	30,000	1961	09-24-61	7.03	1,900
1948	05-10-48	5.92	1,620	1962	11-02-61	13.85	5,660
1949	05-28-49	11.69	4,390	1963	07-13-63	11.82	4,370
1950	07-29-50	20.44	16,300	1964	05-10-64	8.97	2,900
1951	06-21-51	8.31	2,710	1965	11-17-64	13.36	5,380
1952	04-22-52	2.35	254	1966	06-05-66	2.85	263
1953	06-05-53	4.94	1,230	1967	09-04-67	10.05	3,420
1954	05-25-54	4.25	908	1968	08-18-68	8.55	2,480
1955	06-18-55	13.30	5,320	1969	04-16-69	9.53	3,120
1956	10-02-55	6.23	1,750	1970	04-27-70	9.88	3,190
1957	05-16-57	21.61	18,800	1971	06-03-71	4.11	473
1958	11-17-57	3.93	695	1972	10-29-71	9.88	988
1959	09-25-59	6.32	1,590	1973	03-10-73	13.28	5,300
1960	05-28-60	14.18	5,950	1974	10-11-73	25.98	36,300

STATION NO. - 07159200 STATION NAME - KINGFISHER CREEK NEAR KINGFISHER, OKLA
DRAINAGE AREA - 157 SQ MI GAGE DATUM - 1,050 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1967	06-11-67	27.88	17,600	1972	11-29-71	16.42	826
1968	05-14-68	17.87	1,160	1973	03-30-73	25.13	9,320
1969	05-07-69	19.66	1,960	1974	09-20-74	20.43	3,000
1970	09-23-70	12.30	341	1975	11-03-74	23.51	5,900
1971	09-24-71	17.58	1,080				

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07159500 STATION NAME - BLUFF CR AB LAKE HEFNER NR OKLA. CITY, OKLA.
DRAINAGE AREA - 1.62 SQ MI GAGE DATUM - 1,199.86 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1951	05-27-51	3.49	452
1952	05-23-52	1.78	47
1953	07-20-53	2.28	136
1954	05-01-54	2.45	170
1955	06-16-55	4.95	1,070
1956	10-02-55	2.58	199
1957	06-22-57	2.37	154
1958	04-19-58	2.82	255

STATION NO. - 07159810 STATION NAME - WATERSHED W-VI NEAR GUTHRIE,OKLA
DRAINAGE AREA - .148 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1942	--------	---	40
1943	--------	---	18
1944	--------	---	30
1945	--------	---	124
1946	--------	---	17
1947	--------	---	91
1948	--------	---	23
1949	--------	---	271
1950	--------	---	32
1951	--------	---	70
1952	--------	---	3
1953	--------	---	29
1954	--------	---	8
1955	--------	---	22

STATION NO. - 07160500 STATION NAME - SKELETON CREEK NEAR LOVELL, OKLA.
DRAINAGE AREA - 410 SQ MI GAGE DATUM - 914.76 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1932	08-17-32	32.0	---	1962	11-03-61	23.03	5,180
1949	05-20-49	24.01	---	1963	07-12-63	26.64	8,810
1950	07-30-50	27.57	8,970	1964	05-12-64	22.34	5,120
1951	07-02-51	18.44	2,550	1965	11-18-64	23.28	5,290
1952	08-09-52	10.20	638	1966	09-14-66	14.52	1,690
1953	06-07-53	13.56	1,400	1967	06-11-67	16.76	2,470
1954	12-04-53	13.90	1,430	1968	07-01-68	26.70	13,300
1955	05-26-55	28.72	11,100	1969	04-18-69	20.23	4,040
1956	10-04-55	27.10	7,960	1970	09-23-70	10.81	888
1957	05-16-57	34.58	75,200	1971	09-26-71	11.29	970
1958	06-25-58	19.42	2,710	1972	12-16-71	14.82	2,160
1959	09-25-59	25.10	5,900	1973	03-11-73	23.56	6,980
1960	10-04-59	28.60	14,600	1974	10-11-73	29.75	27,900
1961	09-13-61	29.95	28,300	1975	11-03-74	29.40	22,700

STATION NO. - 07160550 STATION NAME - WEST BEAVER CREEK NR ORLANDO, OKLA
DRAINAGE AREA - 13.9 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	05-10-64	2.55	195	1970	09-22-70	3.01	270
1965	05-19-65	9.10	2,600	1971	06-02-71	4.55	612
1966	07-22-66	2.95	260	1972	12-14-71	6.11	1,100
1967	06-24-67	6.20	1,130	1973	03-10-73	6.54	885
1968	07-01-68	10.4	3,500	1974	03-10-74	6.90	975
1969	04-16-69	5.65	950	1975	11-03-74	6.89	1,430

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07163000 STATION NAME - COUNCIL CREEK NEAR STILLWATER, OKLA.
DRAINAGE AREA - 31.0 SQ MI GAGE DATUM - 838.28 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1912	04-27-12	16.6	14,400
1934	09-10-34	7.78	1,410
1935	06-21-35	11.92	2,900
1936	09-20-36	4.66	656
1937	09-07-37	8.79	1,480
1938	03-28-38	13.34	5,000
1939	06-28-39	3.9	461
1940	04-11-40	6.02	822
1941	06-09-41	9.60	2,050
1942	08-14-42	17.54	18,000
1943	05-18-43	15.31	9,890
1944	06-13-44	9.30	1,940
1945	09-30-45	11.20	2,690
1946	06-29-46	8.35	1,630
1947	05-16-47	11.01	2,590
1948	07-10-48	12.67	4,050
1949	05-19-49	12.69	4,050
1950	07-21-50	11.22	2,690
1951	05-01-51	9.44	1,970
1952	06-05-52	8.34	1,600
1953	07-23-53	8.07	1,530
1954	05-01-54	7.89	1,470
1955	05-19-55	8.18	1,560
1956	10-04-55	4.17	524
1957	05-20-57	17.10	16,400
1958	03-29-58	8.20	1,560
1959	09-24-59	14.75	8,390
1960	10-02-59	18.9	25,000
1961	09-13-61	12.27	3,560
1962	11-02-61	9.32	1,930
1963	07-27-63	8.50	1,660
1964	08-18-64	6.77	1,130
1965	09-21-65	15.46	6,850
1966	05-16-66	9.99	2,180
1967	06-25-67	5.68	846
1968	03-19-68	12.72	3,580
1969	09-16-69	8.53	1,670
1970	04-30-70	8.83	1,770
1971	10-08-70	6.62	1,080
1972	12-14-71	4.98	696
1973	03-10-73	9.53	2,010
1974	09-02-74	8.74	1,880
1975	11-03-74	12.87	4,400

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07163020 STATION NAME - CORRAL CREEK NR YALE, OKLA
DRAINAGE AREA - 2.89 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	08-18-64	9.80	510	1970	04-30-70	10.93	736
1965	09-21-65	13.08	1,260	1971	10-08-70	8.95	353
1966	05-16-66	11.42	834	1972	12-14-71	7.88	220
1967	06-24-67	10.05	560	1973	09-05-73	11.58	1,000
1968	03-18-68	9.90	530	1974	09-01-74	9.48	500
1969	09-16-69	9.38	426	1975	11-03-74	12.28	1,100

STATION NO. - 07164940 STATION NAME - DEEP CREEK NEAR OLIVE, OKLA
DRAINAGE AREA - 3.25 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1967	06-24-67	7.99	132	1970	04-18-70	9.91	300
1968	04-19-68	7.69	111	1971	09-05-71	11.21	433
1969	06-14-69	8.60	180	1972	12-14-71	10.42	350

STATION NO. - 07165550 STATION NAME - SNAKE CREEK NEAR BIXBY, OKLA.
DRAINAGE AREA - 5.0 SQ MI GAGE DATUM - 625 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1962	09-15-62	15.89	1,720	1969	01-29-69	19.61	5,460
1963	04-27-63	15.83	1,540	1970	04-30-70	18.94	4,480
1964	04-05-64	17.00	2,050	1971	09-06-71	19.53	5,350
1965	04-15-65	16.86	2,020	1972	12-15-71	20.76	7,570
1966	03-12-66	7.45	242	1973	06-02-73	17.98	3,430
1967	04-13-67	21.13	8,310	1974	06-09-74	21.55	9,280
1968	04-19-68	17.32	2,770	1975	11-04-74	18.60	4,070

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07171120
DRAINAGE AREA - 2.19 SQ MI

STATION NAME - CLEAR CREEK TRIBUTARY NEAR HOLLOW, OKLA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1967	06-29-67	7.20	500
1968	03-18-68	6.70	260
1969	06-24-69	6.85	390
1970	05-15-70	6.93	340
1971	01-03-71	6.10	50
1972	12-14-71	6.80	300
1973	05-06-73	6.80	305
1974	03-08-74	7.22	1,040
1975	11-04-74	7.15	570

STATION NO. - 07172000
DRAINAGE AREA - 445 SQ MI

STATION NAME - CANEY RIVER NEAR ELGIN, KANS.
GAGE DATUM - 763.32 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1939	05-21-39	6.39	4,280
1940	06-10-40	4.10	2,020
1941	06-09-41	15.38	14,700
1942	06-21-42	16.02	15,500
1943	05-19-43	24.51	29,000
1944	04-10-44	29.80	35,500
1945	09-30-45	25.05	26,100
1946	03-23-46	7.55	5,580
1947	04-13-47	21.33	20,700
1948	06-26-48	15.13	12,500
1949	09-18-49	17.10	15,000
1950	07-16-50	23.28	23,400
1951	06-30-51	26.22	30,000
1952	03-10-52	15.76	13,500
1953	05-16-53	4.82	2,240
1954	05-01-54	17.80	16,300
1955	05-26-55	17.80	16,300
1956	06-23-56	5.30	2,720
1957	06-12-57	26.40	32,500
1958	04-03-58	19.29	17,900
1959	07-15-59	22.90	23,600
1960	10-13-59	22.91	23,600
1961	09-13-61	34.70	62,000
1962	11-02-61	21.48	21,100
1963	01-05-63	5.54	2,160
1964	08-28-64	5.40	1,930
1965	04-03-65	20.68	19,900
1966	06-07-66	23.90	25,800
1967	06-11-67	13.16	10,100
1968	05-25-68	16.27	13,800
1969	06-24-69	22.74	23,200
1970	04-19-70	19.23	17,800
1971	09-25-71	6.71	2,940
1972	07-19-72	11.87	8,650
1973	03-10-73	17.32	15,300
1974	03-10-74	21.23	20,600
1975	11-03-74	21.36	20,900
1976	07-04-76	20.14	19,100

1957	06-12-57	26.40	32,500

STATION NO. - 07174200
STATION NAME - LITTLE CANEY R BLW COTTON C NR COPAN, OKLA.
DRAINAGE AREA - 502 SQ MI
GAGE DATUM - 672.23 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1944	04- -44	29.3	43,100
1945	--------	---	17,600
1946	--------	---	15,300
1947	--------	---	9,890
1948	--------	---	14,400
1949	--------	---	8,390
1950	--------	---	19,100
1951	--------	---	43,000
1952	--------	---	9,960
1953	--------	---	2,420
1954	--------	---	12,800
1955	--------	---	7,250
1956	--------	---	3,110
1957	--------	---	18,500
1958	--------	---	11,700
1959	07-17-59	23.55	8,000
1960	10-15-59	23.93	12,200
1961	05-09-61	24.94	23,700
1962	11-03-61	23.72	11,100
1963	01-06-63	18.57	2,160
1964	06-13-64	15.93	1,530
1965	04-04-65	24.04	13,500
1966	06-09-66	22.35	4,600
1967	06-13-67	22.74	5,600
1968	05-26-68	19.91	2,770
1969	06-25-69	22.97	6,550
1970	04-30-70	22.72	5,480
1971	01-03-71	18.12	2,520
1972	12-16-71	22.23	4,500
1973	04-16-73	23.13	7,480
1974	03-10-74	25.30	33,200
1975	11-04-74	23.80	12,100

STATION NO. - 07174570
STATION NAME - DRY HOLLOW NEAR PAWHUSKA, OKLA
DRAINAGE AREA - 1.67 SQ MI
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	07-14-65	8.43	660
1966	07-22-66	6.44	86
1967	07-25-67	8.42	657
1968	05-25-68	7.00	215
1969	06-24-69	8.05	528
1970	09-22-70	8.44	644
1971	01-03-71	6.67	133
1972	12-14-71	6.89	188

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07174600 STATION NAME - SAND CREEK AT OKESA, OKLA.
DRAINAGE AREA - 139 SQ MI GAGE DATUM - 689.20 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1960	10-02-59	23.37	10,400	1968	05-25-68	13.93	4,550
1961	09-13-61	27.7	14,700	1969	06-24-69	19.50	8,470
1962	11-15-61	17.52	6,620	1970	04-30-70	17.82	6,230
1963	05-05-63	9.40	1,810	1971	09-05-71	11.80	3,120
1964	08-28-64	18.00	6,950	1972	12-15-71	15.55	5,700
1965	05-19-65	17.09	6,720	1973	04-15-73	21.20	9,800
1966	06-07-66	8.74	1,570	1974	03-10-74	28.6	19,500
1967	09-27-67	12.30	3,450	1975	11-03-74	19.53	9,370

STATION NO. - 07174720 STATION NAME - HOGSHOOTER CREEK TRIB. NR BARTLESVILLE, OKLA.
DRAINAGE AREA - .94 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	09-21-65	8.32	351	1971	10-08-70	8.11	318
1966	07-22-66	6.20	74	1972	09-21-72	7.95	293
1967	05-30-67	8.40	364	1973	10-22-72	8.35	356
1968	03-19-68	9.60	500	1974	03-08-74	9.12	481
1969	06-24-69	11.30	919	1975	10-30-74	9.34	525
1970	10-12-69	9.07	473				

APPENDIX C--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07175000 STATION NAME - DOUBLE CR SUBWATERSHED NO.5 NR RAMONA, OKLA.
DRAINAGE AREA - 2.39 SQ MI GAGE DATUM - 688.00 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1955	05-21-55	---	297	1962	09-15-62	---	1,980
1956	06-03-56	---	45	1963	03-04-63	---	288
1957	06-23-57	---	3,580	1965	09-21-65	---	1,570
1958	03-13-58	---	123	1966	09-03-66	---	561
1959	07-22-59	---	830	1967	04-12-67	---	2,080
1960	10-02-59	---	2,810	1968	04-19-68	---	2,030
1961	08-14-61	---	2,500	1969	06-27-69	---	883

STATION NO. - 07176500 STATION NAME - BIRD CREEK AT AVANT, OKLA.
DRAINAGE AREA - 364 SQ MI GAGE DATUM - 651.28 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1943	05- -43	29.6	---	1961	09-13-61	27.72	24,600
1946	05-09-46	7.21	6,920	1962	09-15-62	22.71	15,200
1947	05-16-47	14.97	10,400	1963	01-05-63	4.44	2,740
1948	06-26-48	20.47	14,500	1964	04-04-64	11.88	8,690
1949	05-19-49	14.80	10,300	1965	09-21-65	17.63	13,100
1950	08-01-50	20.28	14,300	1966	09-02-66	5.00	3,780
1951	06-21-51	16.17	11,200	1967	07-25-67	14.45	9,200
1952	11-12-51	13.71	9,700	1968	03-19-68	24.32	17,800
1953	05-12-53	17.15	11,900	1969	06-27-69	25.88	19,500
1954	05-02-54	16.72	11,500	1970	04-30-70	25.86	18,200
1955	05-20-55	14.24	9,970	1971	09-06-71	14.91	9,150
1956	10-05-55	3.69	1,320	1972	12-15-71	21.90	14,500
1957	06-12-57	29.00	25,400	1973	04-16-73	23.22	15,700
1958	03-23-58	5.25	4,100	1974	03-11-74	32.03	32,300
1959	07-15-59	17.21	12,800	1975	11-03-74	29.78	23,900
1960	10-02-59	31.40	32,400				

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07177000 STATION NAME - HOMINY CREEK NEAR SKIATOOK, OKLA.
DRAINAGE AREA - 340 SQ MI GAGE DATUM - 619.66 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1943	05- -43	35.0	14,000
1944	04-11-44	27.41	8,210
1945	03-15-45	28.00	8,690
1946	10-01-45	33.60	12,900
1947	05-16-47	30.64	8,360
1948	06-22-48	32.61	10,800
1949	07-10-49	35.06	14,200
1950	07-11-50	31.04	8,800
1951	06-22-51	31.30	9,160
1952	11-12-51	24.35	5,140
1953	05-13-53	24.07	5,000
1954	05-02-54	25.47	5,640
1955	05-21-55	23.92	4,920
1956	10-05-55	11.30	1,240
1957	05-21-57	34.42	13,200
1958	03-24-58	22.60	3,630
1959	09-30-59	26.92	6,440
1960	10-03-59	38.82	35,600
1961	07-15-61	34.25	13,000
1962	09-15-62	29.01	7,950
1963	01-05-63	12.88	1,370
1964	04-05-64	30.04	8,720
1965	09-21-65	30.28	8,960
1966	09-04-66	30.43	8,450
1967	07-26-67	31.27	9,080
1968	03-20-68	31.82	9,750
1969	03-24-69	28.37	7,360
1970	05-01-70	32.92	11,200
1971	09-06-71	36.62	15,400
1972	12-15-71	30.94	9,350
1973	04-16-73	30.78	7,980
1974	03-12-74	35.11	16,200
1975	11-04-74	37.03	24,800

STATION NO. - 07177500 STATION NAME - BIRD CREEK NEAR SPERRY, OKLA.
DRAINAGE AREA - 905 SQ MI GAGE DATUM - 579.43 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1939	05-13-39	17.48	10,100	1958	03-24-58	15.84	7,180
1940	09-05-40	19.53	11,300	1959	07-16-59	20.20	10,300
1941	06-11-41	28.46	23,000	1960	10-03-59	32.60	90,000
1942	10-31-41	30.14	45,700	1961	09-15-61	29.09	32,100
1943	05-18-43	31.68	72,200	1962	09-16-62	24.81	13,800
1944	04-11-44	28.22	22,000	1963	07-27-63	8.09	3,810
1945	07-02-45	28.73	25,200	1964	04-05-64	26.29	15,700
1946	10-01-45	28.84	24,300	1965	09-22-65	22.24	11,500
1947	05-17-47	25.48	14,200	1966	09-05-66	15.63	6,750
1948	06-23-48	27.29	16,600	1967	07-26-67	22.88	11,000
1949	05-20-49	26.55	15,000	1968	03-20-68	27.01	15,700
1950	05-11-50	26.65	15,000	1969	03-25-69	25.34	12,500
1951	06-23-51	25.58	13,400	1970	05-01-70	28.63	18,900
1952	03-11-52	19.33	8,790	1971	09-07-71	29.02	18,900
1953	05-13-53	20.90	9,640	1972	12-16-71	28.23	16,800
1954	05-03-54	23.10	11,800	1973	04-17-73	28.58	21,000
1955	05-21-55	20.40	10,600	1974	03-12-74	30.75	45,600
1956	10-05-55	4.70	1,930	1975	11-04-74	31.45	54,700
1957	06-13-57	29.03	31,400				

STATION NO. - 07178580 STATION NAME - OTTER CREEK NEAR TIAWAH, OKLA
DRAINAGE AREA - 15.2 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1966	04-23-66	9.99	640	1970	04-30-70	12.60	1,380
1967	04-13-67	12.23	1,210	1971	10-05-70	11.90	1,100
1968	02-01-68	14.20	3,310	1972	12-14-71	12.60	1,380
1969	01-29-69	12.95	1,610				

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07178640 STATION NAME - BULL CREEK NEAR INOLA, OKLA.
DRAINAGE AREA - 11.1 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	07-14-65	7.90	445	1971	10-05-70	10.00	1,000
1966	04-23-66	7.30	290	1972	12-14-71	11.25	1,400
1967	04-13-67	7.20	265	1973	06-03-73	13.25	1,570
1968	01-28-68	9.54	910	1974	11-25-73	10.70	1,310
1969	03-23-69	9.75	950	1975	11-04-74	11.43	1,370
1970	04-30-70	10.50	1,100				

STATION NO. - 07178650 STATION NAME - BILLY CREEK TRIB NR WAGONER, OKLA
DRAINAGE AREA - 5.71 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1966	05-12-66	9.04	163	1970	04-30-70	11.0	365
1967	04-13-67	9.16	173	1971	06-03-71	11.10	377
1968	03-31-68	13.10	680	1972	12-15-71	12.60	598
1969	01-29-69	13.38	730				

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07188000 STATION NAME - SPRING RIVER NEAR QUAPAW, OKLA.
DRAINAGE AREA - 2,510 SQ MI GAGE DATUM - 746.25 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1935	03-13-35	30.0	---	1958	07-25-58	21.70	36,000
1940	07-24-40	11.60	8,480	1959	03-05-59	17.14	20,200
1941	04-20-41	29.66	63,200	1960	10-03-59	25.35	49,600
1942	11-01-41	29.31	56,200	1961	05-09-61	29.12	66,200
1943	05-19-43	43.4	190,000	1962	09-22-62	17.66	23,500
1944	06-21-44	22.77	36,100	1963	06-16-63	11.59	8,480
1945	04-16-45	29.60	67,900	1964	06-14-64	25.03	49,100
1946	05-31-46	22.26	37,000	1965	04-04-65	22.25	37,900
1947	04-26-47	26.46	53,000	1966	06-07-66	13.73	12,800
1948	06-23-48	30.20	74,600	1967	07-06-67	16.70	21,200
1949	02-16-49	17.16	21,300	1968	02-03-68	18.00	24,400
1950	08-29-50	27.59	54,800	1969	03-25-69	17.80	24,000
1951	02-21-51	21.52	33,800	1970	05-02-70	24.20	44,300
1952	02-03-52	19.72	28,900	1971	09-07-71	13.34	11,900
1953	04-24-53	12.90	11,500	1972	12-15-71	19.22	28,100
1954	09-30-54	12.34	9,400	1973	11-02-72	24.69	47,900
1955	06-28-55	20.20	29,800	1974	03-12-74	30.24	78,400
1956	07-24-56	14.10	12,700	1975	11-05-74	26.41	57,000
1957	06-11-57	27.00	56,000				

STATION NO. - 07188140 STATION NAME - FLINT BRANCH NEAR PEORIA, OKLA
DRAINAGE AREA - 4.90 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	06-13-64	17.42	4,400	1970	10-12-69	14.40	825
1965	04-03-65	14.27	722	1971	01-03-71	13.79	400
1966	05-15-66	13.60	285	1972	12-14-71	14.40	825
1967	06-25-67	14.1	600	1973	11-13-72	14.76	1,140
1968	05-25-68	14.87	1,250	1974	06-08-74	15.52	1,910
1969	06-21-69	13.81	412	1975	11-03-74	8.00	1,120

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07188500 STATION NAME - LOST CREEK AT SENECA, MO.
DRAINAGE AREA - 42.0 SQ MI GAGE DATUM - 839.96 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1943	05-16-43	11.7	---
1945	09- -45	11.7	---
1949	02-15-49	2.79	361
1950	08-27-50	6.78	3,280
1951	06-30-51	8.05	4,600
1952	05-23-52	3.18	472
1953	04-24-53	1.77	107
1954	09-30-54	2.04	274
1955	10-26-54	2.33	296
1956	05-31-56	1.49	132
1957	05-25-57	8.21	5,760
1958	07-25-58	4.46	1,420
1959	09-30-59	3.01	555
1960	10-02-59	12.98	20,000
1961	05-07-61	4.67	1,370
1962	11-05-61	2.24	348
1963	03-08-63	1.17	128
1964	06-12-64	9.69	8,690
1965	04-02-65	5.61	2,000
1966	05-16-66	1.49	113
1967	06-29-67	3.55	600
1968	05-25-68	5.17	1,650
1969	03-23-69	2.35	265
1970	04-30-70	4.43	1,200
1971	10-08-70	1.20	110
1972	12-15-71	2.41	388
1973	11-13-72	9.14	7,290
1974	06-08-74	7.71	4,520
1975	11-04-74	6.55	3,000

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07189000 STATION NAME - ELK RIVER NEAR TIFF CITY, MO.
DRAINAGE AREA - 872 SQ MI GAGE DATUM - 750.61 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1940	04-12-40	11.62	9,480	1958	07-26-58	18.53	26,000
1941	04-19-41	28.4	137,000	1959	05-18-59	10.60	8,320
1942	10-31-41	19.69	36,400	1960	05-21-60	12.07	10,900
1943	05-18-43	23.60	62,900	1961	05-07-61	21.48	40,500
1944	04-11-44	15.36	18,500	1962	06-03-62	7.27	3,480
1945	04-15-45	23.5	63,200	1963	10-08-62	11.07	9,170
1946	02-14-46	13.79	15,200	1964	06-14-64	22.58	48,600
1947	04-25-47	16.10	21,400	1965	04-03-65	18.63	29,000
1948	08-15-48	10.50	8,410	1966	02-10-66	14.63	15,700
1949	05-20-49	11.29	9,860	1967	04-14-67	6.92	2,820
1950	05-11-50	21.72	45,900	1968	02-02-68	17.68	23,400
1951	02-19-51	17.00	22,000	1969	01-30-69	18.14	24,900
1952	08-22-52	11.85	10,300	1970	05-01-70	21.03	33,200
1953	03-15-53	10.06	7,270	1971	10-27-70	13.90	12,700
1954	05-03-54	11.06	9,030	1972	-22-72	12.54	10,600
1955	02-20-55	14.69	16,100	1973	03-11-73	19.37	26,500
1956	05-15-56	23.14	49,900	1974	06-09-74	22.32	40,000
1957	05-21-57	24.72	70,800	1975	11-04-74	23.32	53,200

STATION NO. - 07189480 STATION NAME - WOLF CREEK NEAR GROVE, OKLA
DRAINAGE AREA - 7.21 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1943	05- -43	---	7,500	1969	03-23-69	6.94	840
1966	05-15-66	6.94	840	1970	09-03-70	7.45	1,420
1967	04-10-67	7.05	955	1971	10-26-70	7.10	1,010
1968	02-01-68	7.52	1,500	1972	12-14-71	---	1,390

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07189700 STATION NAME - HORSE CREEK AT AFTON, OKLA
DRAINAGE AREA - 21.9 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1966	04-20-66	8.54	740	1971	01-03-71	10.25	1,280
1967	06-25-67	9.07	880	1972	12-15-71	11.20	1,620
1968	03-19-68	11.29	1,570	1973	11-13-72	11.40	1,700
1969	06-26-69	11.78	1,850	1974	06-08-74	12.71	2,270
1970	04-30-70	11.95	1,920	1975	11-03-74	13.55	2,680

STATION NO. - 07189720 STATION NAME - HORSE CREEK TRIB NR AFTON, OKLA
DRAINAGE AREA - .81 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1966	04-20-66	5.92	85	1970	09-03-70	6.42	132
1967	07-25-67	6.03	94	1971	10-26-70	6.57	148
1968	02-01-68	7.73	307	1972	12-14-71	6.69	163
1969	06-26-69	6.76	172				

STATION NO. - 07190600 STATION NAME - BIG CABIN CREEK NR PRYAMID CORNERS, OKLA
DRAINAGE AREA - 71.1 SQ MI GAGE DATUM - 740.00 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	06-13-64	15.52	4,420	1970	04-30-70	18.02	7,940
1965	04-02-65	16.45	5,540	1971	01-03-71	8.31	1,220
1966	05-21-66	4.01	284	1972	12-15-71	16.79	6,010
1967	06-29-67	13.32	3,010	1973	03-10-73	15.00	4,000
1968	03-19-68	14.85	3,910	1974	03-08-74	21.58	18,800
1969	06-24-69	15.01	4,010	1975	11-04-74	19.56	11,700

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07191000 STATIUN NAME - BIG CABIN CREEK NEAR BIG CABIN, OKLA.
DRAINAGE AREA - 466 SQ MI GAGE DATUM - 622.00 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1935	06-06-35	30.9	41,000	1958	07-13-58	30.58	33,900
1941	06-10-41	27.7	28,000	1959	07-16-59	22.24	12,800
1942	10-05-41	31.1	42,000	1960	10-03-59	34.55	52,000
1943	05-18-43	34.96	63,000	1961	05-20-61	* 26.66	22,200
1944	04-09-44	25.0	19,300	1962	09-16-62	19.81	9,960
1945	09-25-45	25.5	20,800	1963	10-07-62	19.57	9,720
1946	05-31-46	19.5	9,410	1964	06-14-64	20.26	12,000
1947	04-25-47	28.25	29,900	1965	04-03-65	25.32	21,700
1948	06-23-48	28.78	33,800	1966	04-24-66	13.04	3,580
1949	05-20-49	21.43	12,000	1967	06-29-67	18.28	8,280
1950	05-30-50	20.95	11,400	1968	03-20-68	21.82	14,800
1951	06-30-51	30.76	40,700	1969	06-28-69	20.94	12,500
1952	03-11-52	17.50	6,920	1970	06-01-70	27.23	27,900
1953	04-24-53	19.84	9,670	1971	01-03-71	16.81	6,890
1954	05-01-54	14.13	3,930	1972	12-15-71	21.80	13,400
1955	03-21-55	18.30	7,880	1973	05-07-73	39.19	22,000
1956	04-15-56	14.74	4,350	1974	03-11-74	40.42	25,400
1957	05-25-57	27.81	25,500	1975	11-04-74	44.58	40,100

* DENOTES ANNUAL PEAK GAGE HEIGHT OCCURRED AT A TIME DIFFERENT THAN THAT OF PEAK DISCHARGE

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07191220 STATION NAME - SPAVINAW CREEK NR SYCAMORE, OKLA.
DRAINAGE AREA - 133 SQ MI GAGE DATUM - 875.00 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1960	05-06-60	---	7,530
1961	05-19-61	15.61	15,000
1962	07-10-62	5.74	595
1963	10-07-62	8.66	1,940
1964	06-17-64	7.25	1,210
1965	04-15-65	11.76	4,910
1966	02-10-66	8.78	2,020
1967	04-14-67	4.25	242
1968	02-01-68	9.62	2,580
1969	01-30-69	11.39	4,470
1970	04-30-70	14.95	12,000
1971	10-27-70	6.96	1,020
1972	07-03-72	8.45	1,820
1973	03-10-73	12.32	5,670
1974	06-08-74	17.54	19,100
1975	07-27-75	22.07	39,800

STATION NO. - 07191260 STATION NAME - BRUSH CREEK NR JAY, OKLA.
DRAINAGE AREA - 15.8 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	04-03-65	6.23	550
1966	02-09-66	5.98	460
1967	04-10-67	4.17	270
1968	02-01-68	5.80	480
1969	01-30-69	5.03	258
1970	04-30-70	9.15	3,050
1971	10-08-70	6.00	540
1972	07-02-72	9.60	3,700
1974	11-24-73	11.36	4,640

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07192000 STATION NAME - PRYOR CREEK NEAR PRYOR, OKLA.
DRAINAGE AREA - 229 SQ MI GAGE DATUM - 578.06 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1943	05-10-43	20.4	19,000	1954	05-01-54	7.99	1,000
1944	03-16-44	17.10	4,400	1955	09-30-55	11.93	2,120
1945	04-14-45	19.6	17,500	1956	05-15-56	13.82	2,580
1946	02-19-46	13.8	2,540	1957	05-25-57	19.41	15,700
1947	04-25-47	18.4	8,800	1958	03-24-58	11.77	2,100
1948	06-23-48	18.95	11,600	1959	07-23-59	10.69	1,810
1949	05-19-49	18.32	8,300	1960	10-03-59	23.10	32,000
1950	05-11-50	18.21	7,900	1961	07-15-61	19.62	14,000
1951	07-02-51	16.60	3,890	1962	04-10-62	15.24	3,160
1952	03-11-52	13.94	2,610	1963	03-05-63	9.74	1,500
1953	04-24-53	17.15	4,400				

STATION NO. - 07194515 STATION NAME - MILL CREEK NEAR PARK HILL, OKLA.
DRAINAGE AREA - 2.57 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	04-03-65	6.98	480	1971	10-08-70	11.18	1,470
1966	04-19-66	6.56	387	1972	10-18-71	11.24	1,480
1967	06-25-67	8.15	744	1973	11-01-72	8.88	915
1968	04-19-68	12.70	1,860	1974	--------	6.28	330
1969	12-27-68	6.34	342	1975	11-03-74	6.68	414
1970	10-12-69	7.75	652				

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07195500 STATION NAME - ILLINOIS RIVER NEAR WATTS, OKLA.
DRAINAGE AREA - 635 SQ MI GAGE DATUM - 893.78 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1956	05-15-56	13.05	8,650	1966	02-09-66	20.54	26,800
1957	04-03-57	24.73	49,000	1967	04-14-67	8.21	3,430
1958	07-12-58	18.25	18,200	1968	02-02-68	17.35	16,800
1959	07-23-59	15.46	12,600	1969	01-30-69	21.90	31,400
1960	07-25-60	25.96	68,000	1970	05-01-70	19.37	21,100
1961	05-07-61	24.32	51,600	1971	10-27-70	20.48	25,200
1962	08-01-62	12.97	8,630	1972	07-13-72	17.11	15,700
1963	10-08-62	9.69	4,770	1973	03-11-73	18.28	18,400
1964	05-11-64	8.98	4,100	1974	11-25-73	23.96	47,600
1965	04-06-65	14.57	11,100	1975	11-04-74	21.50	25,500

STATION NO. - 07196000 STATION NAME - FLINT CREEK NEAR KANSAS, OKLA.
DRAINAGE AREA - 110 SQ MI GAGE DATUM - 854.59 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1956	05-15-56	8.42	1,370	1966	02-09-66	8.98	2,930
1957	05-25-57	11.52	8,780	1967	06-25-67	8.05	1,210
1958	07-12-58	12.55	12,000	1968	02-01-68	9.32	3,980
1959	07-23-59	9.44	3,530	1969	01-29-69	14.20	17,500
1960	05-06-60	12.47	11,700	1970	04-30-70	10.85	6,960
1961	08-14-61	15.66	23,600	1971	10-27-70	8.76	2,430
1962	08-01-62	9.10	3,140	1972	05-01-72	8.33	1,560
1963	10-07-62	7.68	680	1973	03-10-73	11.40	8,520
1964	04-05-64	7.58	580	1974	06-08-74	19.42	43,600
1965	04-06-65	9.07	3,040	1975	11-04-74	13.70	16,000

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07196380 STATION NAME - ILLINOIS RIVER TRIB NR TAHLEQUAH, OKLA.
DRAINAGE AREA - 3.59 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	04-03-65	5.30	520	1971	10-08-70	7.45	1,620
1966	04-23-66	4.40	240	1972	04-19-72	3.60	90
1967	06-25-67	3.1	33	1973	06-16-73	5.80	750
1968	02-01-68	4.52	276	1974	06-08-74	12.4	5,000
1969	01-29-69	7.05	825	1975	11-03-74	5.90	400
1970	05-10-70	9.30	2,860				

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07196500 STATION NAME - ILLINOIS RIVER NEAR TAHLEQUAH, OKLA.
DRAINAGE AREA - 959 SQ MI GAGE DATUM - 664.14 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1916	01- -16	26.	112,000	1955	03-22-55	13.55	14,800
1927	04- -27	22.3	60,000	1956	05-16-56	11.40	8,350
1935	--------	15.	18,500	1957	04-04-57	21.60	55,400
1936	12-07-35	---	9,000	1958	07-13-58	16.89	25,800
1937	01-16-37	13.65	14,500	1959	07-24-59	12.70	10,600
1938	02-18-38	19.67	39,400	1960	07-26-60	20.72	48,600
1939	02-21-39	10.8	6,400	1961	05-08-61	21.38	54,200
1940	04-12-40	10.39	5,600	1962	08-02-62	10.99	7,900
1941	04-20-41	19.56	41,400	1963	10-09-62	8.12	3,660
1942	11-01-41	17.71	30,000	1964	05-12-64	7.75	3,180
1943	05-11-43	25.37	93,200	1965	04-07-65	13.15	12,400
1944	03-21-44	15.82	23,200	1966	02-11-66	17.58	26,000
1945	04-15-45	23.60	68,800	1967	04-15-67	8.67	4,270
1946	05-26-46	15.99	25,800	1968	02-03-68	15.38	17,300
1947	12-13-46	14.36	19,800	1969	01-31-69	19.09	31,900
1948	08-15-48	19.21	41,400	1970	05-02-70	14.50	14,400
1949	05-20-49	13.36	16,700	1971	10-28-70	16.91	20,300
1950	05-10-50	27.94	150,000	1972	12-12-71	12.94	9,190
1951	02-21-51	18.22	38,000	1973	03-12-73	15.89	18,200
1952	04-13-52	10.24	7,980	1974	06-09-74	23.02	66,400
1953	05-14-53	11.21	10,100	1975	11-04-74	18.58	31,700
1954	05-03-54	13.13	16,000				

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07196900 STATION NAME - BARON FORK AT DUTCH MILLS,ARK
DRAINAGE AREA - 46.0 SQ MI GAGE DATUM - 986.47 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1958	07-12-58	12.80	14,800	1967	04-13-67	5.53	1,140
1959	07-23-59	11.02	9,750	1968	07-01-68	8.75	4,620
1960	05-05-60	12.12	12,800	1969	01-29-69	9.52	5,540
1961	07-16-61	11.96	12,600	1970	05-10-70	7.51	2,610
1962	11-02-61	5.96	1,850	1971	10-26-70	13.24	15,400
1963	08-10-63	3.04	174	1972	07-13-72	13.74	17,100
1964	05-11-64	6.30	1,950	1973	04-22-73	12.86	14,200
1965	01-02-65	5.71	1,360	1974	09-20-74	13.48	16,200
1966	02-09-66	8.89	5,950	1975	11-03-74	12.07	11,800

STATION NO. - 07197000 STATION NAME - BARON FORK AT ELDON, OKLA.
DRAINAGE AREA - 307 SQ MI GAGE DATUM - 701.14 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1945	04-15-45	23.8	---	1962	11-03-61	9.50	3,950
1948	08-14-48	19.8	34,400	1963	04-28-63	5.75	365
1949	02-14-49	12.85	10,600	1964	05-11-64	10.24	5,020
1950	05-10-50	19.51	31,000	1965	04-06-65	10.72	5,850
1951	02-20-51	18.65	27,800	1966	02-09-66	16.19	19,100
1952	05-23-52	11.03	6,840	1967	04-14-67	10.00	3,640
1953	05-12-53	12.03	9,240	1968	02-01-68	14.65	11,500
1954	05-02-54	16.78	21,600	1969	01-30-69	17.50	17,200
1955	06-15-55	14.96	16,200	1970	05-01-70	16.10	17,200
1956	05-15-56	10.70	6,300	1971	10-27-70	21.13	36,200
1957	04-03-57	20.33	37,600	1972	07-13-72	13.74	17,100
1958	07-13-58	14.75	15,700	1973	03-10-73	17.77	18,900
1959	07-23-59	14.07	12,200	1974	11-25-73	21.23	28,200
1960	05-06-60	17.18	24,000	1975	11-03-74	17.16	17,500
1961	05-07-61	16.39	20,800				

STATION NO. - 07228290 STATION NAME - ROUGH CREEK NEAR THOMAS, OKLA.
DRAINAGE AREA - 10.4 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	05-10-64	4.79	63
1965	06-12-65	6.85	330
1966	07-24-66	10.97	1,590
1967	06-10-67	17.80	5,940
1968	08-18-68	5.99	209
1969	05-05-69	10.26	1,300
1970	09-22-70	6.60	300
1971	07-29-71	8.90	840
1972	10-29-71	10.50	1,400
1973	09-04-73	9.88	1,160
1974	08-14-74	13.40	2,700
1975	06-10-75	10.49	1,400

STATION NO. - 07228450 STATION NAME - DEER CREEK TRIB NR HYDRO, OKLA
DRAINAGE AREA - 2.31 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	05-10-64	10.15	480
1965	09-21-65	14.54	1,050
1966	09-27-66	6.69	140
1967	09-14-67	7.65	220
1968	07-01-68	11.54	650
1969	05-05-69	6.84	158
1970	05-29-70	7.23	189
1971	06-08-71	11.23	610
1972	10-29-71	7.29	194
1973	09-04-73	10.10	472
1974	08-14-74	7.38	201
1975	11-02-74	8.22	274

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07228600 STATION NAME - CANYON VIEW CREEK NR GEARY, OKLA
DRAINAGE AREA - 11.8 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	05-10-64	12.65	1,900	1969	11-02-68	7.67	256
1965	09-21-65	14.75	6,150	1970	05-29-70	5.81	5
1966	08-18-66	6.35	15	1971	06-03-71	8.85	650
1967	04-19-67	8.15	398	1972	--------	---	<100
1968	04-03-68	9.2	820				

STATION NO. - 07228930 STATION NAME - WORLEY CREEK NR TUTTLE, OKLA
DRAINAGE AREA - 11.2 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	07-27-65	12.90	1,760	1969	06-14-69	13.15	1,840
1966	09-13-66	10.70	1,140	1970	05-14-70	12.55	1,660
1967	04-12-67	13.35	1,900	1971	06-03-71	10.60	1,300
1968	05-31-68	8.06	552	1972	07-03-72	10.10	985

STATION NO. - 07228960 STATION NAME - CANADIAN RIVER TRIB NR NEWCASTLE, OKLA
DRAINAGE AREA - 3.32 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	04-14-65	21.62	1,460	1971	06-03-71	19.78	860
1966	06-15-66	21.12	1,350	1972	07-03-72	18.07	291
1967	04-12-67	20.27	1,050	1973	06-02-73	21.26	1,400
1968	08-15-68	18.5	420	1974	08-09-74	18.28	354
1969	06-14-69	18.75	500	1975	06-17-75	20.06	961
1970	09-22-70	19.56	550				

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07229220
DRAINAGE AREA - 1.26 SQ MI
STATION NAME - WALNUT CREEK NEAR BLANCHARD, OKLA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	11-20-63	16.9	887
1965	09-20-65	13.86	495
1966	06-15-66	11.64	264
1967	04-12-67	15.91	640
1968	09-04-68	10.45	150
1969	05-06-69	14.88	624
1970	09-22-70	12.13	313
1971	06-03-71	10.44	150
1972	10-03-71	15.52	600

STATION NO. - 07229300
DRAINAGE AREA - 202 SQ MI
STATION NAME - WALNUT CREEK AT PURCELL, OKLA
GAGE DATUM - 1,017.68 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1966	06-16-66	9.88	6,900
1967	04-12-67	13.42	10,000
1968	07-01-68	9.53	3,860
1969	05-07-69	13.25	9,700
1970	09-23-70	15.35	17,200
1971	06-03-71	14.14	11,900
1972	10-03-71	10.82	4,960
1973	05-25-73	13.62	10,500
1974	04-30-74	11.47	5,820
1975	05-23-75	16.80	27,200

STATION NO. - 07229420
DRAINAGE AREA - 2.28 SQ MI
STATION NAME - JULIAN CREEK TRIB NEAR ASHER, OKLA.
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	05-10-64	13.76	500
1965	11-17-64	13.83	530
1966	08-11-66	11.22	45
1967	04-12-67	14.90	840
1968	05-13-68	18.14	2,000
1969	09-16-69	12.04	150
1970	07-12-70	15.05	900
1971	10-08-70	16.36	1,330
1972	12-14-71	12.74	278
1973	06-02-73	13.31	398
1974	05-25-74	13.97	536
1975	03-26-75	12.78	286

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07229430 STATION NAME - ARBECA CREEK NEAR ALLEN, OKLA.
DRAINAGE AREA - 2.26 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	05-10-64	9.0	1,330	1970	10-12-69	7.79	1,040
1965	05-26-65	5.14	510	1971	10-08-70	13.86	2,600
1966	04-22-66	2.35	100	1972	12-09-71	4.12	348
1967	04-12-67	2.65	140	1973	06-02-73	5.62	594
1968	06-25-68	6.64	800	1974	11-24-73	7.50	977
1969	04-17-69	5.63	600				

STATION NO. - 07230500 STATION NAME - LITTLE RIVER NEAR TECUMSEH, OKLA.
DRAINAGE AREA - 456 SQ MI GAGE DATUM - 898.52 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1932	06- -32	25.58	60,000	1960	07-23-60	15.61	10,100
1944	05-27-44	14.06	6,720	1961	07-21-61	12.85	5,860
1945	04-14-45	18.00	25,100	1962	06-09-62	13.2	6,340
1946	06-29-46	13.38	6,380	1963	04-27-63	12.78	5,860
1947	05-12-47	* 14.75	10,300	1964	05-11-64	15.05	8,920
1948	06-21-48	16.43	17,000	1965	11-17-64	13.95	7,400
1949	05-18-49	19.68	32,300	1966	08-31-66	13.32	# 6,220
1950	05-11-50	17.20	20,600	1967	04-12-67	13.90	# 5,590
1951	05-01-51	12.93	6,370	1968	05-13-68	14.68	# 6,660
1952	05-23-52	12.11	6,140	1969	01-29-69	14.10	# 5,960
1953	07-20-53	12.25	6,280	1970	09-23-70	16.49	# 8,190
1954	04-30-54	12.82	6,310	1971	10-08-70	15.27	# 6,870
1955	05-19-55	14.87	8,700	1972	05-12-72	12.90	# 3,700
1956	10-05-55	12.00	5,640	1973	10-31-72	14.91	# 5,990
1957	05-25-57	18.84	32,400	1974	11-24-73	15.27	# 5,090
1958	06-21-58	13.05	7,220	1975	05-23-75	15.30	# 4,750
1959	09-25-59	12.66	5,890				

* DENOTES ANNUAL PEAK GAGE HEIGHT OCCURRED AT A TIME DIFFERENT THAN THAT OF PEAK DISCHARGE
# DENOTES ANNUAL PEAK DISCHARGE AFFECTED BY KNOWN REGULATION OR DIVERSION

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07231000 STATION NAME - LITTLE RIVER NEAR SASAKWA, OKLA.
DRAINAGE AREA - 865 SQ MI GAGE DATUM - 749.21 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1939	06- -39	31.2	33,000
1943	05-11-43	30.8	27,100
1944	05-28-44	25.54	11,700
1945	04-15-45	32.50	39,000
1946	10-01-45	27.50	16,000
1947	06-02-47	26.60	14,800
1948	06-24-48	30.63	28,000
1949	05-19-49	30.80	29,800
1950	05-11-50	33.48	44,600
1951	05-20-51	19.40	4,770
1952	04-23-52	22.88	8,150
1953	07-21-53	26.41	15,400
1954	05-02-54	25.20	12,200
1955	05-21-55	24.29	10,200
1956	10-07-55	13.51	2,630
1957	05-18-57	29.80	26,500
1958	08-21-58	28.24	23,100
1959	05-10-59	22.10	9,420
1960	10-04-59	26.70	18,600
1961	03-30-61	16.74	6,000
1962	04-23-62	11.70	3,120
1963	04-27-63	17.38	7,250
1964	05-11-64	16.56	6,610
1965	11-19-64	16.48	6,530
1966	08-31-66	8.66	1,860
1967	04-13-67	20.52	10,100
1968	05-14-68	25.89	15,800
1969	05-17-69	14.27	3,940
1970	09-23-70	18.40	7,950
1971	10-09-70	24.4	15,600
1972	12-10-71	12.89	3,910
1973	04-22-73	20.35	9,150
1974	04-30-74	22.84	10,900
1975	05-14-75	18.50	7,480

STATION NO. - 07231320 STATION NAME - LEADER CREEK TRIB NR ATWOOD, OKLA
DRAINAGE AREA - .72 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	05-10-64	13.19	685
1965	05-27-65	9.94	265
1966	04-22-66	8.24	105
1967	04-12-67	9.13	185
1968	06-25-68	12.8	450
1969	05-16-69	15.83	1,220
1970	10-12-69	11.38	435
1971	10-08-70	16.10	1,470
1972	10-20-71	10.8	365
1973	06-02-73	12.44	580
1974	11-24-73	13.17	682
1975	05-22-75	9.45	215

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. = 07231560 STATION NAME = MIDDLE CREEK NR CARSON, OKLA
DRAINAGE AREA = 7.40 SQ MI GAGE DATUM = FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	05-10-64	12.20	1,690	1970	10-12-69	13.75	2,440
1965	05-26-65	10.40	980	1971	09-06-71	12.14	1,660
1966	04-25-66	6.70	143	1972	10-03-71	13.90	2,520
1967	09-16-67	7.60	278	1973	10-31-72	12.30	1,740
1968	05-13-68	18.2	5,460	1974	05-28-74	16.78	4,350
1969	05-07-69	10.36	966				

STATION NO. = 07231950 STATION NAME = PINE CREEK NR HIGGINS, OKLA
DRAINAGE AREA = 9.99 SQ MI GAGE DATUM = FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	08-15-64	12.35	5,770	1970	04-17-70	11.32	2,820
1965	05-26-65	13.80	8,600	1971	10-23-70	10.50	2,120
1966	04-23-66	13.80	8,600	1972	10-20-71	13.04	5,110
1967	09-16-67	13.40	5,800	1973	04-23-73	11.22	2,720
1968	03-31-68	10.20	1,880	1974	11-24-73	14.54	8,100
1969	11-26-68	10.50	2,120	1975	10-31-74	12.05	3,620

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07232000
DRAINAGE AREA - 588 SQ MI

STATION NAME - GAINES CREEK NEAR KREBS, OKLA.
GAGE DATUM - 551.22 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1938	02-18-38	31.9	70,000
1943	05-11-43	31.7	62,000
1944	05-04-44	24.8	9,100
1945	02-22-45	29.6	24,300
1946	06-02-46	24.72	9,400
1947	12-13-46	29.82	21,600
1948	02-28-48	24.20	9,140
1949	06-16-49	22.45	7,450
1950	09-17-50	* 30.62	25,200
1951	06-14-51	24.86	9,460
1952	04-14-52	24.73	10,200
1953	05-14-53	27.46	13,400
1954	05-04-54	26.49	8,110
1955	03-22-55	29.38	10,800
1956	05-25-56	14.76	3,570
1957	04-27-57	* 28.72	17,400
1958	05-04-58	26.14	12,200
1959	05-12-59	26.18	10,900
1960	05-20-60	32.93	36,200
1961	04-01-61	20.92	6,010
1962	11-24-61	27.74	14,700
1963	10-29-62	* 19.17	5,150

* DENOTES ANNUAL PEAK GAGE HEIGHT OCCURRED AT A TIME DIFFERENT THAN THAT OF PEAK DISCHARGE

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07232500
STATION NAME - BEAVER RIVER NEAR GUYMON, OKLA
DRAINAGE AREA - 2,139 SQ MI
GAGE DATUM - 2,970.93 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1937	06- -37	11.4	28,600
1938	09-05-38	7.58	9,020
1939	06-23-39	9.45	17,100
1940	08-07-40	8.10	11,000
1941	09-23-41	13.82	44,000
1942	04-20-42	8.00	16,700
1943	08-06-43	5.15	1,470
1944	07-20-44	5.15	1,470
1945	07-07-45	6.32	4,800
1946	08-19-46	8.60	13,200
1947	06-25-47	6.98	6,240
1948	06-24-48	8.70	13,900
1949	05-17-49	5.58	3,380
1950	07-19-50	7.96	11,200
1951	05-17-51	7.56	9,970
1952	07-16-52	6.95	6,930
1953	07-20-53	4.44	1,240
1954	10-21-53	6.31	4,650
1955	05-25-55	10.90	25,300
1956	05-25-56	9.50	17,700
1957	08-04-57	10.30	21,700
1958	09-05-58	11.12	22,600
1959	08-06-59	8.90	13,400
1960	09-09-60	5.10	1,260
1961	07-08-61	5.62	1,860
1962	06-26-62	8.14	10,100
1963	07-28-63	5.18	572
1964	06-15-64	13.68	55,400
1965	07-14-65	12.28	34,400
1966	10-16-65	10.87	17,800
1967	07-12-67	8.77	5,980
1968	06-16-68	10.32	13,700
1969	08-25-69	9.99	11,800
1970	04-17-70	5.11	264
1971	07-19-71	10.25	2,100
1972	11-16-71	10.97	2,650
1973	07-10-73	6.92	569
1974	08-09-74	9.21	1,120
1975	05-30-75	9.40	1,570

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07232550 STATION NAME - SOUTH FORK TRIB NR GUYMON, OKLA
DRAINAGE AREA - .26 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	06-14-64	7.18	42
1965	07-14-65	6.78	25
1966	07-24-66	6.80	25
1967	07-12-67	6.95	32
1968	06-16-68	7.30	48
1969	08-31-69	5.98	3
1970	04-17-70	6.10	5
1971	05-29-71	6.14	6
1972	05-11-72	6.49	14
1973	07-31-73	6.75	24
1974	08-09-74	6.73	23
1975	--------	---	<4

STATION NO. - 07232650 STATION NAME - AQUA FRIO CREEK NR FELT, OKLA
DRAINAGE AREA - 31.0 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	--------	---	<10
1965	08-19-65	13.85	1,900
1966	09-16-66	9.9	18
1967	09-19-67	10.14	27
1968	07-24-68	10.40	62
1969	08-24-69	13.00	1,110
1970	04-17-70	---	<10
1971	07-01-71	12.86	1,000
1972	07-24-72	10.50	74
1973	07-24-73	11.90	465
1974	08-09-74	12.50	770
1975	08-14-75	10.80	123

STATION NO. - 07233000
DRAINAGE AREA - 1,967 SQ MI

STATION NAME - COLDWATER CREEK NEAR HARDESTY, OKLA.
GAGE DATUM - 751.32 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1939	07-02-39	6.70	10,600
1940	05-18-40	7.35	14,500
1941	05-22-41	5.95	6,640
1942	06-08-42	4.87	2,330
1943	07-09-43	4.57	1,550
1944	05-11-44	5.49	3,570
1945	06-24-45	4.13	501
1946	07-04-46	6.37	8,720
1947	06-25-47	9.07	21,500
1948	06-27-48	3.80	440
1949	07-10-49	5.84	6,080
1950	07-18-50	9.12	10,500
1951	05-16-51	7.68	7,250
1952	07-17-52	5.18	837
1953	07-23-53	5.15	845
1954	06-15-54	3.98	95
1955	06-18-55	8.80	8,670
1956	05-02-56	6.15	1,460
1957	06-23-57	8.65	5,860
1958	08-20-58	7.80	4,810
1959	07-15-59	6.69	2,530
1960	09-25-60	5.28	652
1961	10-20-60	6.97	2,900
1962	06-08-62	6.17	1,390
1963	07-29-63	5.37	535
1964	06-15-64	4.08	87

STATION NO. - 07233850
DRAINAGE AREA - 1.0 SQ MI

STATION NAME - SHARP CREEK TRIB NR TURPIN, OKLA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	--------	---	<3
1965	07-04-65	11.88	41
1966	09-17-66	11.86	40
1967	06-27-67	11.29	20
1968	06-16-68	11.74	36
1969	05-10-69	12.70	72
1970	08-22-70	11.84	15
1971	08-08-71	11.70	13
1972	05-11-72	13.13	90
1973	03-23-73	13.76	120
1974	03-09-74	11.30	11
1975	08-14-75	12.85	78

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07234050
STATION NAME - NORTH FORK CLEAR CREEK TRIB NR BALKO,OKLA
DRAINAGE AREA - 4.0 SQ MI
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	09-10-64	11.82	145
1965	08-22-65	14.52	1,800
1966	--------	---	<2
1967	08-09-67	11.52	93
1968	08-28-68	12.10	210
1969	06-10-69	12.50	340
1970	06-14-70	11.47	86
1971	09-18-71	10.09	3
1972	11-16-71	13.05	590
1973	03-23-73	10.50	11
1974	--------	---	<2
1975	--------	---	<2

STATION NO. - 07234290
STATION NAME - CLEAR CREEK TRIB NR CATESBY, OKLA
DRAINAGE AREA - 9.18 SQ MI
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1966	06-07-66	7.64	1,140
1967	08-09-67	3.60	137
1968	06-09-68	7.98	1,480
1969	10-16-68	5.39	372
1970	09-07-70	4.1	187
1971	08-06-71	2.48	25
1972	11-16-71	2.95	72
1973	09-12-73	3.06	83
1974	08-05-74	7.65	1,160
1975	05-13-75	6.71	688

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07235700
DRAINAGE AREA - 18.4 SQ MI
STATION NAME - LITTLE WOLF CREEK TRIB NR GAGE, OKLA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	08-17-64	4.36	185
1965	09-20-65	---	<20
1966	06-07-66	5.30	900
1967	05-05-67	5.10	700
1968	06-09-68	3.60	125
1969	05-13-69	6.60	5,200
1970	09-21-70	4.40	460
1971	07-01-71	3.80	140
1972	06-13-72	5.45	1,150
1973	03-23-73	5.70	1,400
1974	10-10-73	4.65	490

STATION NO. - 07236000
DRAINAGE AREA - 1,624 SQ MI
STATION NAME - WOLF CREEK NEAR FARGO, OKLA.
GAGE DATUM - 2,054.35 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1943	10-15-42	---	4,500
1944	07-25-44	16.93	8,900
1945	10-02-44	17.65	10,800
1946	07-01-46	13.20	1,150
1947	05-16-47	17.18	9,530
1948	04-22-48	15.10	4,400
1949	05-16-49	17.00	8,880
1950	08-02-50	* 16.65	9,750
1951	05-16-51	18.19	23,500
1952	05-24-52	13.86	2,910
1953	06-07-53	13.86	3,660
1954	10-15-53	16.00	8,950
1955	06-17-55	14.96	6,540
1956	08-19-56	13.58	3,100
1957	06-23-57	20.0	81,600
1958	08-01-58	14.10	6,400
1959	07-13-59	13.27	3,410
1960	08-18-60	13.22	3,260
1961	06-04-61	13.53	4,280
1962	09-20-62	13.01	2,680
1963	06-01-63	14.18	5,000
1964	06-16-64	11.84	790
1965	06-12-65	13.53	4,280
1966	06-08-66	16.80	9,320
1967	07-05-67	12.92	1,710
1968	08-28-68	12.73	1,650
1969	10-17-68	13.61	2,820
1970	09-23-70	12.94	1,710
1971	06-12-71	10.97	271
1972	11-18-71	13.46	2,520
1973	04-01-73	11.95	720
1974	03-11-74	12.19	911
1975	05-13-75	12.30	1,000

* DENOTES ANNUAL PEAK GAGE HEIGHT OCCURRED AT A TIME DIFFERENT THAN THAT OF PEAK DISCHARGE

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07237750
STATION NAME - COTTONWOOD CREEK NR VICI, OKLA
DRAINAGE AREA - 11.5 SQ MI
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	06-14-64	5.32	145
1965	06-24-65	8.35	950
1966	10-18-65	5.05	55
1967	05-05-67	5.47	90
1968	05-06-68	6.23	200
1969	05-04-69	7.15	420
1970	04-18-70	8.25	900
1971	06-11-71	6.70	300
1972	07-09-72	8.50	1,060
1973	04-30-73	6.95	358
1974	04-20-74	8.89	1,290
1975	05-13-75	9.90	2,050

STATION NO. - 07237800
STATION NAME - BENT CREEK NR SEILING, OKLA
DRAINAGE AREA - 139 SQ MI
GAGE DATUM - 1,710.60 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1967	05-05-67	14.91	1,970
1968	05-11-68	14.2	1,700
1969	04-26-69	8.95	442
1970	04-18-70	18.32	4,810
1971	06-11-71	14.81	1,930
1972	07-09-72	18.10	4,460
1973	03-30-73	16.79	3,030
1974	08-27-74	20.04	9,120
1975	11-03-74	18.95	6,200

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07239050 STATION NAME - N CANADIAN RIVER TRIB NR EAGLE CITY, OKLA
DRAINAGE AREA - .52 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	05-10-64	1.85	51	1970	09-15-70	2.70	112
1965	08-22-65	6.43	461	1971	06-03-71	1.76	45
1966	08-09-66	1.50	30	1972	--------	---	<45
1967	06-11-67	6.76	501	1973	--------	---	<45
1968	09-04-68	2.80	120	1974	08-14-74	2.88	126
1969	05-07-69	2.70	112	1975	11-02-74	3.86	207

STATION NO. - 07241880 STATION NAME - SAND CREEK NR CROMWELL, OKLA.
DRAINAGE AREA - 9.48 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	05-10-64	11.43	1,100	1970	04-30-70	14.48	2,110
1965	11-17-64	9.77	670	1971	07-01-71	11.92	1,260
1966	07-24-66	12.79	1,520	1972	12-09-71	13.58	1,770
1967	04-12-67	12.95	1,560	1973	06-02-73	14.64	2,180
1968	05-13-68	14.05	1,940	1974	10-12-73	13.02	1,590
1969	05-16-69	13.45	1,730	1975	05-22-75	11.21	1,040

STATION NO. - 07242160
DRAINAGE AREA - 16.5 SQ MI
STATION NAME - ALABAMA CREEK NR WELEEKA, OKLA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	08-27-65	7.74	522
1966	07-24-66	10.51	1,610
1967	04-12-67	15.37	4,560
1968	05-13-68	11.60	2,160
1969	05-16-69	9.75	1,270
1970	10-12-69	12.85	3,000
1971	09-05-71	11.00	1,850
1972	10-20-71	12.50	2,700
1973	06-03-73	14.32	3,820
1974	11-24-73	12.94	2,960

STATION NO. - 07242180
DRAINAGE AREA - 2.56 SQ MI
STATION NAME - STIDHAM CREEK TRIB NR DUSTIN, OKLA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	04-04-64	9.11	404
1965	05-26-65	7.10	183
1966	08-21-66	7.50	227
1967	08-04-67	7.35	210
1968	05-13-68	10.95	622
1969	11-26-68	7.60	238
1970	10-12-69	10.13	524
1971	09-05-71	10.34	550
1972	10-20-71	9.60	460
1973	06-02-73	10.14	525
1974	06-08-74	9.9	496
1975	05-14-75	7.98	280

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07243000
STATION NAME - DRY CREEK NEAR KENDRICK, OKLA.
DRAINAGE AREA - 69.0 SQ MI
GAGE DATUM - 825.00 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1956	05-14-56	10.18	2,330
1957	05-25-57	13.13	4,410
1958	06-25-58	13.63	5,020
1959	05-09-59	13.07	4,410
1960	10-04-59	12.68	4,010
1961	06-14-61	13.32	4,640
1962	06-09-62	13.38	4,760
1963	04-26-63	6.25	1,100
1964	05-11-64	12.88	4,200
1965	09-21-65	13.15	4,520
1966	07-23-66	11.46	3,180
1967	05-06-67	9.52	2,320
1968	02-01-68	8.28	1,830
1969	03-23-69	8.97	2,100
1970	09-22-70	12.48	3,820
1971	10-08-70	10.85	2,830
1972	12-15-71	11.42	3,110
1973	03-10-73	12.75	3,490
1974	06-08-74	18.48	15,000
1975	11-02-74	19.20	18,000

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07243500
DRAINAGE AREA - 2,018 SQ MI

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1939	07-08-39	12.50	2,280
1940	09-05-40	20.94	4,870
1941	06-11-41	29.76	31,000
1942	11-03-41	28.79	27,100
1943	05-11-43	34.55	66,800
1944	05-11-44	19.90	4,600
1945	04-15-45	34.11	60,900
1946	10-05-45	24.50	13,400
1947	05-18-47	25.90	17,700
1948	06-24-48	33.35	53,400
1949	05-24-49	27.80	23,200
1950	05-12-50	26.65	20,200
1951	06-17-51	20.35	5,780
1952	05-30-52	19.60	6,200
1953	04-26-53	19.00	4,710
1954	05-04-54	18.88	4,660
1955	05-25-55	23.18	11,100
1956	10-05-55	12.82	2,400
1957	05-26-57	29.75	30,300

STATION NAME - DEEP FORK NEAR BEGGS, OKLA.
GAGE DATUM - 632.55 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1958	06-27-58	25.22	16,600
1959	07-28-59	23.33	12,100
1960	10-09-59	24.89	15,800
1961	07-27-61	16.63	3,690
1962	06-11-62	21.08	7,930
1963	04-27-63	14.86	3,130
1964	04-06-64	21.03	7,130
1965	11-26-64	17.10	4,680
1966	05-18-66	11.27	2,280
1967	04-25-67	20.10	6,550
1968	04-22-68	20.22	6,250
1969	03-26-69	17.43	4,440
1970	05-02-70	19.31	5,540
1971	09-06-71	19.42	5,620
1972	12-16-71	22.09	8,350
1973	06-05-73	23.99	11,600
1974	06-13-74	30.69	30,900
1975	11-06-74	30.36	29,800

STATION NO. - 07243550
DRAINAGE AREA - 5.90 SQ MI

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	04-07-65	10.29	1,100
1966	06-06-66	5.30	22
1967	04-13-67	10.51	1,210
1968	02-01-68	7.15	210
1969	01-29-69	8.40	470
1970	04-29-70	13.55	3,350

STATION NAME - ADAMS CREEK NR BEGGS, OKLA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1971	09-05-71	12.77	2,640
1972	12-14-71	12.48	2,490
1973	06-03-73	10.80	1,570
1974	06-08-74	13.69	3,390
1975	11-03-74	10.84	1,590

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07244790 STATION NAME - BROOKEN CREEK NR ENTERPRISE, OKLA
DRAINAGE AREA - 5.66 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	05-11-64	11.70	3,080	1970	04-23-70	14.12	3,100
1965	05-26-65	7.30	630	1971	10-26-70	12.71	3,690
1966	04-23-66	12.68	3,670	1972	12-09-71	7.49	725
1967	07-05-67	8.24	1,100	1973	06-02-73	8.98	1,630
1968	05-13-68	16.32	4,200	1974	11-24-73	10.58	2,410
1969	04-27-69	7.72	840				

STATION NO. - 07245090 STATION NAME - VIAN CREEK NR VIAN, OKLA
DRAINAGE AREA - 19.6 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1966	04-20-66	13.16	7,320	1970	10-12-69	10.70	3,540
1967	05-06-67	9.09	1,980	1971	10-26-70	10.20	3,000
1968	05-13-68	10.80	3,660	1972	12-10-71	9.45	2,300
1969	12-27-68	8.45	1,500	1974	12-03-73	10.40	3,200

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07245500
DRAINAGE AREA - 182 SQ MI

STATION NAME - SALLISAW CREEK NEAR SALLISAW, OKLA.
GAGE DATUM - 474.78 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1942	10- -41	17.4	28,400
1943	05-10-43	---	38,000
1944	05-02-44	---	7,870
1945	04-15-45	---	110,000
1946	05-23-46	---	14,900
1947	12-10-46	---	14,900
1948	06-24-48	---	8,820
1949	05-01-49	---	12,400
1950	05-10-50	---	35,000
1951	06-09-51	---	14,900
1952	05-23-52	---	5,360
1953	05-12-53	---	7,690
1954	05-02-54	17.50	30,000
1955	03-20-55	13.59	9,630
1956	04-29-56	8.83	3,420
1957	04-03-57	18.50	38,400
1958	06-25-58	13.46	8,090
1959	05-11-59	15.00	13,000
1960	05-06-60	14.27	10,200
1961	05-05-61	16.86	23,400
1962	11-22-61	8.55	2,390
1963	04-27-63	8.25	2,430
1964	05-11-64	13.22	7,880
1965	04-15-65	8.51	2,960
1966	04-24-66	12.02	6,560
1967	05-06-67	8.52	2,960
1968	05-14-68	10.10	4,970
1969	12-27-68	9.05	4,110
1970	10-13-69	10.25	5,050
1971	10-26-70	13.83	10,400
1972	12-10-71	11.52	6,680
1973	06-03-73	10.80	5,890
1974	11-24-73	13.17	9,260
1975	11-03-74	11.35	6,950

STATION NO. - 07246600
DRAINAGE AREA - 20.6 SQ MI

STATION NAME - CACHE CREEK NR COWLINGTON, OKLA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	04-05-64	14.62	3,070
1965	05-26-65	9.60	1,000
1966	04-23-66	11.00	1,480
1967	04-13-67	9.91	1,100
1968	05-13-68	11.95	1,830
1969	12-28-68	11.19	1,540
1970	04-30-70	11.02	1,480
1971	10-26-70	11.89	1,810
1972	12-10-71	12.20	1,930

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07246610
DRAINAGE AREA - .90 SQ MI

STATION NAME - PECAN CREEK NR SPIRO, OKLA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	05-26-65	8.80	238
1966	05-11-66	8.90	249
1967	04-13-67	9.20	282
1968	05-13-68	11.82	602
1969	12-27-68	8.44	193
1970	04-26-70	7.77	113
1971	10-26-70	8.62	214
1972	12-09-71	8.87	244
1973	03-10-73	10.42	420
1974	11-25-73	10.74	461
1975	03-28-75	7.92	130

STATION NO. - 07246630
DRAINAGE AREA - 5.32 SQ MI

STATION NAME - BIG BLACK FOX CREEK NR LONG, OKLA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	04-04-64	9.32	1,690
1965	05-10-65	6.47	321
1966	02-09-66	9.11	1,570
1967	05-06-67	6.27	135
1968	04-19-68	9.40	1,220
1969	05-17-69	8.30	730
1970	10-12-69	10.25	1,720
1971	10-26-70	10.30	1,760
1972	12-10-71	9.35	1,200
1973	05-07-73	9.88	1,460
1974	11-25-73	10.22	1,700
1975	02-22-75	8.20	690

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07247500
DRAINAGE AREA - 122 SQ MI

STATION NAME - FOURCHE MALINE NEAR RED OAK, OKLA.
GAGE DATUM - 540.80 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1935	06- -35	25.4	---
1939	04-16-39	16.60	3,630
1940	04-11-40	17.47	5,850
1941	04-16-41	16.53	3,470
1942	04-25-42	22.34	26,300
1943	12-27-42	21.34	21,600
1944	02-28-44	17.80	6,790
1945	02-21-45	21.01	17,600
1946	02-13-46	17.32	5,190
1947	12-10-46	19.34	11,300
1948	02-27-48	16.32	3,200
1949	02-14-49	16.38	3,330
1950	07-29-50	20.72	16,400
1951	02-18-51	17.60	5,990
1952	04-12-52	17.36	5,450
1953	04-24-53	19.47	12,800
1954	05-02-54	11.89	1,460
1955	03-21-55	17.28	5,190
1956	02-17-56	12.55	1,490
1957	04-26-57	19.02	14,300
1958	05-02-58	18.19	8,200
1959	05-11-59	18.58	8,950
1960	05-19-60	24.79	41,500
1961	03-26-61	14.90	2,280
1962	11-22-61	18.50	8,710
1963	04-28-63	13.33	1,820
1964	08-15-64	17.72	6,320
1965	05-27-65	17.68	6,320
1966	04-24-66	18.27	8,530
1967	07-05-67	12.50	1,580
1968	03-20-68	17.64	6,370
1969	12-28-68	17.15	5,350
1970	04-17-70	15.65	2,890
1971	10-09-70	16.95	4,780
1972	12-10-71	17.64	6,210
1973	04-23-73	17.69	6,470
1974	11-24-73	20.55	17,800
1975	11-04-74	15.05	2,690

STATION NO. - 07249000
STATION NAME - POTEAU RIVER AT POTEAU, OKLA.
DRAINAGE AREA - 1,240 SQ MI
GAGE DATUM - 409.40 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1923	09- -23	29.0	21,000
1926	09- -26	32.5	40,000
1927	04-15-27	34.0	51,000
1929	05-20-29	29.0	21,000
1930	05-12-30	31.8	37,000
1932	02-18-32	31.0	32,000
1935	06-18-35	39.0	100,000
1938	02-19-38	36.3	73,000
1939	04-17-39	36.20	68,200
1940	04-12-40	22.40	7,540
1941	01-03-41	24.87	9,260
1942	04-10-42	29.63	22,700
1943	05-11-43	37.00	58,100
1944	05-04-44	29.51	20,300
1945	05-16-45	36.42	66,300

STATION NO. - 07299705
STATION NAME - BITTER CREEK NR HOLLIS, OKLA
DRAINAGE AREA - 11.3 SQ MI
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	06-12-64	3.80	58
1965	06-25-65	5.90	250
1966	09-27-66	6.90	420
1967	07-03-67	3.50	19
1968	06-01-68	8.3	830
1969	08-26-69	6.25	282
1970	--------	---	<10
1971	06-10-71	4.88	100
1972	05-12-72	5.10	118

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07299720
DRAINAGE AREA - 3.84 SQ MI

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	09-20-65	8.20	1,740
1966	10-19-65	7.97	1,480
1967	05-05-67	5.82	92
1968	06-01-68	6.77	390

STATION NO. - 07300150
DRAINAGE AREA - 7.49 SQ MI

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	06-12-64	6.99	159
1965	06-03-65	10.64	956
1966	09-18-66	8.71	442
1967	07-03-67	9.72	656
1968	06-01-68	10.13	779
1969	07-22-69	5.40	42

STATION NAME - MULE CREEK NR ELDORADO, OKLA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1969	09-22-69	7.4	800
1970	--------	---	<10
1971	09-18-71	7.57	950
1972	04-30-72	7.42	830

STATION NAME - BEAR CREEK NEAR VINSON,OKLA.
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1970	04-18-70	5.75	56
1971	06-10-71	10.20	800
1972	05-27-72	12.70	2,340
1973	04-24-73	11.3	1,220
1974	05-21-74	13.2	2,800
1975	06-22-75	8.38	376

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07300500 STATION NAME - SALT FORK RED RIVER AT MANGUM, OKLA.
DRAINAGE AREA - 1,566 SQ MI GAGE DATUM - 1,490.87 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1938	06-16-38	14.7	60,000	1957	05-16-57	14.55	72,000
1939	06-21-39	10.44	15,400	1958	05-13-58	12.18	32,500
1940	07-12-40	8.71	6,850	1959	05-26-59	10.06	12,300
1941	06-08-41	12.20	32,500	1960	06-09-60	10.62	11,900
1942	10-23-41	9.47	8,370	1961	06-03-61	11.30	17,200
1943	10-15-42	10.45	15,800	1962	04-27-62	10.93	14,400
1944	06-13-44	10.95	16,900	1963	09-16-63	10.00	8,270
1945	06-05-45	8.77	6,160	1964	06-14-64	10.11	8,820
1946	04-29-46	9.68	10,500	1965	06-04-65	12.38	27,500
1947	05-12-47	11.35	21,400	1966	10-18-65	10.17	10,200
1948	06-21-48	11.77	21,500	1967	07-04-67	9.40	6,600
1949	05-18-49	10.56	11,900	1968	08-28-68	11.52	19,200
1950	09-11-50	9.31	5,690	1969	05-04-69	9.56	7,300
1951	05-17-51	10.79	13,200	1970	04-19-70	9.86	8,800
1952	04-21-52	8.62	3,030	1971	06-11-71	9.16	3,080
1953	07-19-53	13.75	44,800	1972	05-12-72	10.67	6,550
1954	06-10-54	13.30	38,100	1973	04-24-73	13.17	30,700
1955	05-19-55	10.77	16,600	1974	09-20-74	11.75	14,200
1956	05-27-56	12.20	35,900	1975	06-24-75	13.10	29,900

STATION NO. - 07301455 STATION NAME - TURKEY CREEK NR ERICK, OKLA
DRAINAGE AREA - 19.8 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	06-13-64	7.15	2,520	1969	05-24-69	3.50	510
1965	06-25-65	3.48	500	1970	--------	---	<50
1966	10-18-65	5.50	1,460	1971	06-08-71	2.53	189
1967	04-12-67	4.20	800	1972	05-12-72	6.28	1,930
1968	04-03-68	5.45	1,430	1974	--------	7.88	3,040

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07301480
DRAINAGE AREA - 9.12 SQ MI

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	05-10-64	15.45	830
1965	06-25-65	13.31	380
1966	10-18-65	12.49	200
1967	04-11-67	14.08	580
1968	04-03-68	14.20	620
1969	10-09-68	18.33	1,900

STATION NO. - 07301485
DRAINAGE AREA - .93 SQ MI

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1968	08-17-68	12.26	640
1969	10-09-68	11.98	610
1970	05-28-70	14.41	927

STATION NO. - 07301495
DRAINAGE AREA - 24.9 SQ MI

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	09-20-65	8.70	780
1966	08-23-66	9.40	920
1967	06-25-67	5.78	290
1968	04-02-68	9.86	1,000
1969	10-09-68	14.50	2,350
1970	05-29-70	9.12	860

STATION NAME - SHORT CREEK NR SAYRE, OKLA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1970	05-29-70	12.47	185
1971	06-08-71	12.95	300
1972	06-13-72	14.20	570
1973	03-30-73	14.00	570
1974	09-19-74	14.98	864
1975	05-28-75	12.54	208

STATION NAME - SPRING CREEK NR ELK CITY, OKLA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1971	06-09-71	9.74	351
1972	06-13-72	9.69	346

STATION NAME - INDIAN CREEK NR CARTER, OKLA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1971	06-10-71	9.60	955
1972	06-13-72	12.90	1,800
1973	03-30-73	6.52	389
1974	04-29-74	6.92	448
1975	--------	---	<200

STATION NO. - 07301500
STATION NAME - NORTH FORK RED RIVER NEAR CARTER, OKLA.
DRAINAGE AREA - 2,337 SQ MI
GAGE DATUM - 1,673.71 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1945	06-21-45	8.63	6,360
1946	05-31-46	6.54	1,580
1947	05-12-47	10.37	15,000
1948	06-21-48	8.33	7,010
1949	05-07-49	9.30	10,400
1950	05-18-50	10.34	16,400
1951	05-18-51	9.45	18,300
1952	04-22-52	6.62	2,010
1953	07-20-53	8.20	4,190
1954	05-24-54	11.24	12,700
1955	05-19-55	9.59	6,910
1956	10-04-55	10.14	9,450
1957	05-17-57	11.95	25,300
1958	06-21-58	8.63	6,660
1959	05-26-59	13.42	53,400
1960	07-22-60	9.28	7,800
1961	06-07-61	10.15	11,200
1962	04-27-62	10.72	12,400
1963	06-03-63	7.02	2,220
1964	06-14-64	8.59	6,000
1965	06-05-65	7.81	3,780
1966	10-18-65	8.67	6,600
1967	04-13-67	7.37	2,980
1968	06-11-68	7.7	3,560
1969	10-09-68	9.87	7,830
1970	04-19-70	8.23	4,790
1971	06-11-71	8.26	4,860
1972	06-14-72	9.48	6,620
1973	04-25-73	10.04	8,520
1974	10-11-73	6.91	1,710
1975	05-30-75	10.51	10,600

STATION NO. - 07303400
STATION NAME - ELM FK OF N FK RED RIVER NR CARL, OKLA
DRAINAGE AREA - 416 SQ MI
GAGE DATUM - 1,714.95 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1960	08-24-60	5.74	4,230
1961	10-11-60	5.85	4,550
1962	04-27-62	11.45	17,900
1963	05-30-63	5.12	2,060
1964	06-13-64	7.93	7,460
1965	06-04-65	9.40	11,400
1966	10-17-65	7.03	5,510
1967	07-04-67	7.71	7,000
1968	07-15-68	8.84	9,780
1969	10-09-68	5.15	2,130
1970	05-30-70	3.27	325
1971	06-09-71	5.78	3,090
1972	05-12-72	7.08	5,580
1973	04-24-73	8.44	8,760
1974	05-21-74	5.33	2,380
1975	06-22-75	8.22	8,240

STATION NO. - 07303450
DRAINAGE AREA - 27.8 SQ MI

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	06-13-64	6.80	435
1965	06-13-65	8.85	1,060
1966	10-18-65	8.40	890
1967	07-05-67	10.50	1,740
1968	05-13-68	6.50	365
1969	05-25-69	11.50	2,200

STATION NO. - 07303500
DRAINAGE AREA - 838 SQ MI

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1905	05-27-05	---	23,000
1906	09-17-06	---	6,200
1907	06-09-07	---	10,900
1908	10-03-07	---	17,500
1921	--------	26.4	---
1930	05-06-30	15.48	2,860
1931	10-14-30	14.78	2,440
1938	06-16-38	19.15	18,600
1939	05-26-39	19.00	17,200
1940	09-23-40	14.93	1,690
1941	05-21-41	21.17	21,200
1942	04-27-42	21.18	27,800
1943	10-15-42	17.66	5,050
1944	07-13-44	18.12	6,200

STATION NAME - DEER CREEK NR PLAINVIEW, OKLA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1970	08-22-70	5.38	158
1971	06-09-71	7.32	560
1972	09-02-72	8.92	1,070
1973	06-02-73	12.38	2,680
1974	04-29-74	8.40	890
1975	06-22-75	9.69	1,380

STATION NAME - ELM FORK OF N FK RED R NR MANGUM, OKLA.
GAGE DATUM - 1,520.77 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1945	06-16-45	18.70	7,580
1946	05-31-46	16.07	2,670
1947	05-12-47	23.52	30,600
1965	06-04-65	21.66	10,500
1966	10-18-65	23.30	13,600
1967	07-04-67	21.42	10,000
1969	05-05-69	19.03	5,490
1970	05-29-70	13.59	830
1971	06-09-71	15.99	2,340
1972	05-12-72	20.81	6,770
1973	06-02-73	21.88	8,270
1974	05-01-74	21.53	7,780
1975	08-15-75	23.14	10,300

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07304500
DRAINAGE AREA - 549 SQ MI

STATION NAME - ELK CREEK NEAR HOBART, OKLA.
GAGE DATUM - 1,429.40 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1905	05-28-05	---	3,500
1906	07-11-06	---	1,310
1949	05- -49	28.63	8,400
1950	07-22-50	21.15	3,320
1951	05-18-51	27.89	6,090
1952	04-22-52	17.5	2,040
1953	06-06-53	25.2	4,050
1954	10-23-53	19.64	2,240
1955	05-19-55	23.30	3,270
1956	10-04-55	30.75	22,400
1957	05-05-57	25.78	4,570
1958	06-21-58	18.50	2,220
1959	07-28-59	27.19	4,720
1960	10-04-59	23.60	3,630
1961	10-18-60	23.54	3,600
1962	11-03-61	28.28	6,000
1963	06-07-63	20.46	2,920
1964	10-24-63	20.03	2,610
1965	09-20-65	28.6	7,550
1966	10-18-65	28.6	7,550
1967	04-13-67	20.00	2,420
1968	06-02-68	22.17	3,110
1969	05-04-69	29.89	12,400
1970	09-23-70	17.26	1,760
1971	09-04-71	30.17	17,400
1972	10-30-71	25.62	4,450
1973	09-04-73	29.01	9,460
1974	05-02-74	19.25	2,340
1975	07-24-75	29.50	8,400

STATION NO. - 07309480
DRAINAGE AREA - 3.35 SQ MI

STATION NAME - CANYON CREEK NR MEDICINE PARK, OKLA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	11-03-64	9.89	2,060
1966	03-27-66	5.6	18
1967	07-03-67	10.51	2,280
1968	07-01-68	6.7	400
1969	06-13-69	6.72	410
1970	03-06-70	6.2	125
1971	09-24-71	8.10	1,230
1972	04-27-72	8.5	1,430
1973	03-30-73	7.9	1,120
1974	03-09-74	8.19	1,280
1975	07-24-75	9.41	1,860

STATION NO. - 07311000
DRAINAGE AREA - 675 SQ MI

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1906	- -06	29.6	---
1939	08-09-39	8.90	657
1940	07-23-40	18.41	2,240
1941	06-08-41	28.18	11,300
1942	10-02-41	26.28	5,570
1943	05-28-43	28.06	11,100
1944	04-12-44	25.76	5,240
1945	03-12-45	27.45	9,500
1946	06-02-46	26.87	7,100
1947	05-17-47	29.62	25,600
1948	04-26-48	25.03	4,420
1949	05-31-49	25.42	4,760
1950	05-12-50	27.56	6,420
1951	05-18-51	29.72	28,200
1952	05-18-52	28.07	11,800
1953	06-07-53	26.52	5,350

STATION NAME - EAST CACHE CREEK NEAR WALTERS, OKLA.
GAGE DATUM - 938.20 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1954	05-13-54	27.80	10,200
1955	05-20-55	28.38	14,200
1956	10-06-55	27.79	10,200
1957	05-26-57	28.80	15,000
1958	05-04-58	24.24	3,120
1959	05-28-59	26.72	4,540
1960	10-05-59	28.00	10,100
1961	10-19-60	27.79	7,700
1962	06-09-62	28.50	13,000
1963	04-28-63	24.10	3,860
1970	09-24-70	20.08	1,920
1971	08-16-71	25.49	3,300
1972	04-28-72	16.05	1,230
1973	10-31-72	27.94	10,400
1974	09-25-74	25.15	3,160
1975	05-29-75	28.38	9,110

STATION NO. - 07311200
DRAINAGE AREA - 24.6 SQ MI

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	04-03-65	10.78	1,740
1966	04-25-66	7.09	103
1967	07-03-67	8.56	451
1968	05-31-68	12.15	3,030
1969	05-06-69	12.17	3,050
1970	04-16-70	8.92	588

STATION NAME - BLUE BEAVER CREEK NR CACHE, OKLA
GAGE DATUM - 1,215.26 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1971	09-24-71	8.59	461
1972	04-27-72	9.94	937
1973	03-30-73	11.58	2,430
1974	05-01-74	11.20	2,080
1975	05-29-75	10.20	1,280

...CREEK NR SNYDER, OKLA.
...LEVEL

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07311410
DRAINAGE AREA - 6.12 SQ MI

STATION NAME - RED CREEK NR SNYDER, OKLA.
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	11-18-64	6.13	300
1966	06-26-66	5.25	200
1967	07-03-67	3.50	35
1968	07-01-68	8.90	800
1969	06-13-69	5.27	160
1970	05-15-70	2.96	17
1971	09-05-71	5.50	180
1972	04-27-72	6.10	254
1973	05-30-73	5.00	130
1974	--------	---	<18

STATION NO. - 07311420
DRAINAGE AREA - 2.57 SQ MI

STATION NAME - DEADMAN CREEK TRIB. AT MANITOU, OKLA.
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	11-18-64	5.06	176
1966	10-18-65	7.00	960
1967	04-12-67	5.75	370
1968	07-13-68	7.05	980
1969	09-21-69	6.80	840
1970	09-22-70	4.92	145
1971	08-29-71	5.73	365
1972	04-27-72	4.63	88
1975	--------	6.90	900

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07311500
DRAINAGE AREA - 617 SQ MI

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1950	05-11-50	24.18	9,400
1951	05-18-51	27.10	30,000
1952	05-18-52	24.92	12,800
1953	04-01-53	15.91	1,290
1954	05-13-54	23.98	7,590
1955	05-20-55	23.99	8,190
1956	10-06-55	24.44	10,800
1957	05-20-57	23.74	8,050
1958	05-04-58	20.23	2,330
1959	06-24-59	21.3	2,760
1960	10-05-59	24.28	10,300
1961	10-19-60	26.06	18,900
1962	06-11-62	22.94	5,660

STATION NAME - DEEP RED RUN NEAR RANDLETT, OKLA.
GAGE DATUM - 924.49 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1963	04-29-63	18.00	1,710
1964	05-08-64	14.56	1,160
1965	11-20-64	21.34	2,760
1966	08-30-66	23.11	6,280
1967	04-14-67	18.36	1,800
1968	06-01-68	23.79	6,070
1969	09-22-69	27.51	48,700
1970	03-08-70	20.47	2,420
1971	08-15-71	24.62	12,500
1972	12-16-71	14.33	1,130
1973	10-31-72	24.82	13,700
1974	09-25-74	23.66	8,650
1975	06-23-75	23.93	8,120

STATION NO. - 07312850
DRAINAGE AREA - 6.29 SQ MI

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	05-10-64	10.33	2,330
1965	05-28-65	5.42	490
1966	10-18-65	2.07	60
1967	04-12-67	3.88	230
1968	05-31-68	8.38	1,290
1969	06-14-69	6.23	680

STATION NAME - NINE MILE BEAVER CREEK NR ELGIN, OKLA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1970	09-22-70	1.28	17
1971	05-31-71	9.05	1,500
1972	10-04-71	6.08	641
1973	07-29-73	11.39	3,290
1974	08-10-74	7.37	1,010
1975	07-24-75	9.63	1,920

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07312950
DRAINAGE AREA - 35.4 SQ MI
STATION NAME - LITTLE BEAVER CREEK NR MARLOW, OKLA.
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	09-22-64	3.98	870
1965	11-18-64	3.73	720
1966	10-18-65	2.70	285
1967	04-12-67	2.64	265
1968	05-31-68	8.40	6,400
1969	05-16-69	4.71	1,300
1970	05-29-70	6.00	2,400
1971	08-15-71	5.00	1,550
1972	04-21-72	2.28	164
1973	06-18-73	3.61	660
1974	03-09-74	3.31	520
1975	07-24-75	5.28	1,820

STATION NO. - 07313000
DRAINAGE AREA - 158 SQ MI
STATION NAME - LITTLE BEAVER CREEK NEAR DUNCAN, OKLA.
GAGE DATUM - 1,001.39 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1949	05-18-49	15.19	1,880
1950	05-11-50	18.03	12,200
1951	05-17-51	18.87	25,200
1952	05-17-52	18.40	15,000
1953	06-06-53	18.20	10,200
1954	05-02-54	19.14	32,000
1955	05-19-55	19.46	39,800
1956	06-03-56	16.03	2,120
1957	05-25-57	19.74	47,500
1958	05-03-58	17.43	3,500
1959	09-25-59	15.37	1,930
1960	05-20-60	18.68	20,500
1961	08-19-61	15.66	2,050
1962	06-09-62	19.42	38,500
1963	10-28-62	18.54	17,200

STATION NO. - 07313500
DRAINAGE AREA - 563 SQ MI
STATION NAME - BEAVER CREEK NEAR WAURIKA, OKLA.
GAGE DATUM - 879.17 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1951	05-18-51	27.7	65,300
1953	06-08-53	24.70	4,820
1954	10-24-53	26.34	13,900
1955	05-20-55	27.42	32,200
1956	07-04-56	25.14	6,870
1957	05-26-57	26.82	22,500
1958	05-05-58	22.92	2,560
1959	05-10-59	18.98	1,530
1960	10-05-59	24.38	4,250
1961	06-09-61	20.83	1,680
1962	06-10-62	26.57	21,800
1963	03-31-63	23.55	3,140
1964	05-11-64	17.73	1,350
1965	11-19-64	19.32	1,610
1966	08-22-66	20.81	1,880
1967	07-04-67	24.90	5,550
1968	06-02-68	25.24	6,520
1969	05-08-69	24.91	5,580
1970	09-24-70	23.02	2,640
1971	08-16-71	23.20	2,260
1972	05-01-72	16.63	1,180
1973	04-23-73	22.01	6,400
1974	09-26-74	22.44	2,480
1975	05-24-75	26.15	17,100

STATION NO. - 07313600
DRAINAGE AREA - 193 SQ MI
STATION NAME - COW CREEK AT WAURIKA,OKLA.
GAGE DATUM - 858.60 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1955	05-19-55	26.1	29,500
1966	08-30-66	16.83	1,170
1967	04-12-67	21.30	3,430
1968	06-02-68	21.08	2,920
1969	05-07-69	22.52	4,650
1970	09-23-70	21.50	3,650
1971	08-15-71	12.46	528
1972	12-10-71	12.30	512
1973	04-24-73	22.01	4,220
1974	11-26-73	21.85	4,040
1975	05-24-75	23.38	7,420

... NR LOCO, OKLA

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07315680
DRAINAGE AREA - 1.74 SQ MI
STATION NAME - COTTONWOOD CREEK TRIB NR LOCO, OKLA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	08-26-64	6.50	94
1965	06-22-65	14.45	2,100
1966	08-21-66	6.73	150
1967	04-12-67	8.68	250
1968	05-31-68	9.63	800
1969	04-16-69	9.30	740
1970	09-22-70	12.11	1,420
1971	10-08-70	8.18	470
1972	12-09-71	6.31	76
1973	06-04-73	10.22	1,030
1974	04-29-74	9.02	705
1975	05-23-75	8.48	560

STATION NO. - 07315700
DRAINAGE AREA - 572 SQ MI
STATION NAME - MUD CREEK NR COURTNEY, OKLA
GAGE DATUM - 730.00 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1957	05- -57	30.6	30,000
1961	03-31-61	24.48	2,570
1962	06-03-62	22.35	1,330
1963	11-27-62	23.13	1,500
1964	08-28-64	25.45	3,810
1965	11-21-64	25.62	4,100
1966	04-24-66	22.59	1,400
1967	04-13-67	29.32	10,900
1968	06-03-68	26.46	5,590
1969	05-07-69	27.11	5,520
1970	09-23-70	27.58	6,460
1971	10-24-70	21.69	1,240
1972	12-11-71	24.81	2,960
1973	04-23-73	29.92	11,100
1974	05-01-74	31.37	33,400
1975	05-24-75	28.96	13,100

STATION NO. - 07315880
DRAINAGE AREA - 5.74 SQ MI
STATION NAME - DEMIJOHN CREEK NR WILSON, OKLA.
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	08-26-64	9.43	1,860
1965	06-20-65	9.47	1,880
1966	04-23-66	9.90	2,160
1967	04-12-67	10.20	2,300
1968	05-11-68	10.08	2,100
1969	05-06-69	9.22	1,460
1970	05-30-70	9.12	1,390
1971	10-26-70	9.82	1,920
1972	10-20-71	9.73	1,850
1973	10-31-72	10.13	2,150

STATION NO. - 07316130
DRAINAGE AREA - 2.97 SQ MI
STATION NAME - WILSON CREEK TRIB. NR MC MILLAN, OKLA.
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	05-26-65	3.89	475
1966	04-23-66	3.41	387
1967	05-20-67	6.16	925
1968	05-12-68	6.93	1,090
1969	05-06-69	3.90	477
1970	06-11-70	4.82	654
1971	10-26-70	6.30	956
1972	10-19-71	4.54	599
1973	09-05-73	7.02	1,110
1974	05-25-74	7.18	1,150
1975	05-23-75	8.18	1,380

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07316140 STATION NAME - BRIER CREEK NEAR POWELL, OKLA.
DRAINAGE AREA - 12.0 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	11-18-64	10.18	2,010
1966	02-09-66	10.90	2,340
1967	04-20-67	13.49	4,150
1968	05-17-68	14.79	5,260
1969	04-27-69	14.09	4,630
1970	12-29-69	8.48	1,150
1971	08-14-71	13.80	4,390
1972	12-14-71	10.40	2,040
1973	10-30-72	11.40	2,560
1974	06-06-74	14.66	5,290
1975	10-30-74	14.97	5,570

STATION NO. - 07317500 STATION NAME - SANDSTONE CR WATERSHED 16A NR CHEYENNE,OKLA
DRAINAGE AREA - 8.78 SQ MI GAGE DATUM - 2,069.14 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1952	04-23-52	---	196
1953	06-06-53	---	856
1954	05-23-54	---	2,110
1955	06-17-55	---	782
1956	05-26-56	---	186
1957	04-26-57	---	552
1958	06-21-58	---	465
1959	05-26-59	---	2,710
1960	07-22-60	---	459
1961	06-04-61	---	843
1962	07-31-62	---	469
1963	--------	---	---
1964	06-15-64	---	2,250
1965	09-20-65	---	390
1966	10-17-65	---	87
1967	04-12-67	---	116
1968	10-06-67	---	189
1969	10-08-68	---	396
1970	04-18-70	---	152
1971	06-10-71	---	2,140
1972	07-10-72	---	230
1973	04-15-73	---	214

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07318500
DRAINAGE AREA - 1.02 SQ MI
STATION NAME - SANDSTONE CR WATERSHED 14 NR CHEYENNE,OKLA
GAGE DATUM - 1,896.32 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1953	--------	---	---
1954	05-23-54	---	1,090
1955	06-15-55	---	922
1956	--------	---	---
1957	04-18-57	---	1,160
1958	--------	---	---
1959	05-26-59	---	590
1960	07-22-60	---	150
1961	06-04-61	---	404
1962	09-20-62	---	138
1963	--------	---	---
1964	--------	---	---
1965	06-24-65	---	306
1966	10-17-65	---	46
1967	--------	---	---
1968	--------	---	---
1969	10-08-68	---	173
1970	--------	---	---
1971	06-10-71	---	138
1972	04-29-72	---	575
1973	05-22-73	---	113

STATION NO. - 07319000
DRAINAGE AREA - 10.13 SQ MI
STATION NAME - SANDSTONE CR WATERSHED 17 NR CHEYENNE,OKLA
GAGE DATUM - 1,888.17 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1953	06-06-53	---	1,440
1954	04-29-54	---	6,030
1955	06-17-55	---	4,940
1956	07-10-56	---	641
1957	04-18-57	---	2,300
1958	07-05-58	---	2,800
1959	--------	---	---
1960	07-22-60	---	1,250
1961	10-11-60	---	748
1962	04-26-62	---	919
1963	06-23-63	---	620
1964	04-16-64	---	1,860
1965	09-20-65	---	944
1966	10-18-65	---	148
1967	04-13-67	---	45
1968	08-16-68	---	123
1969	10-09-68	---	969
1970	04-18-70	---	1,080
1971	06-10-71	---	1,710
1972	05-29-72	---	275
1973	03-08-73	---	1,420

STATION NO. - 07320000
DRAINAGE AREA - 2.87 SQ MI

STATION NAME - SANDSTONE CR WATERSHED 10A NR ELK CITY,OKLA
GAGE DATUM - 1,921.13 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1952	10-05-51	---	446
1953	--------	---	---
1954	05-23-54	---	806
1955	06-17-55	---	1,480
1956	05-27-56	---	659
1957	04-18-57	---	1,380
1958	07-20-58	---	813
1959	05-26-59	---	1,670
1960	07-22-60	---	1,340
1961	06-04-61	---	1,080
1962	07-31-62	---	576
1963	08-13-63	---	113
1964	05-05-64	---	135
1965	06-24-65	---	324
1966	10-17-65	---	48
1967	04-11-67	---	1,220
1968	08-16-68	---	1,700
1969	10-09-68	---	530
1970	04-16-70	---	743
1971	06-10-71	---	767
1972	08-21-72	---	364
1973	--------	---	---

STATION NO. - 07321500
DRAINAGE AREA - .62 SQ MI

STATION NAME - SANDSTONE CR WATERSHED 3 NR ELK CITY,OKLA
GAGE DATUM - 1,828.43 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1953	--------	---	---
1954	--------	---	---
1955	09-22-55	---	323
1956	10-02-55	---	353
1957	04-18-57	---	1,780
1958	--------	---	---
1959	05-25-59	---	620
1960	--------	---	---
1961	06-04-61	---	380
1962	07-31-62	---	690
1963	06-23-63	---	712
1964	--------	---	---
1965	06-24-65	---	138
1966	10-18-65	---	17
1967	--------	---	---
1968	08-16-68	---	318
1969	10-08-68	---	138
1970	--------	---	---
1971	06-09-71	---	905
1972	05-11-72	---	119
1973	06-29-73	---	330

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07324000
DRAINAGE AREA - 5.33 SQ MI

STATION NAME - SANDSTONE CR WATERSHED 1 NR CHEYENNE,OKLA
GAGE DATUM - 1,777.20 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1952	04-20-52	---	207
1953	06-06-53	---	2,870
1954	--------	---	---
1955	--------	---	---
1956	--------	---	---
1957	04-18-57	---	4,280
1958	--------	---	---
1959	05-26-59	---	2,020
1960	09-23-60	---	828
1961	06-04-61	---	1,590
1962	09-20-62	---	2,520
1963	06-23-63	---	3,630
1964	05-05-64	---	450
1965	06-04-65	---	1,600
1966	10-17-65	---	146
1967	06-01-67	---	566
1968	05-31-68	---	3,280
1969	10-08-68	---	370
1970	04-18-70	---	489
1971	07-23-71	---	880
1972	--------	---	---
1973	06-29-73	---	767

STATION NO. - 07326520
DRAINAGE AREA - 25.99 SQ MI

STATION NAME - UPPER TONKAWA CREEK NR ANADARKO, OKLA. NO111
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1962	09-15-62	11.16	489
1963	04-26-63	9.09	137
1964	05-10-64	5.75	772
1965	04-05-65	4.33	346
1966	09-27-66	2.99	80
1967	04-12-67	5.12	639
1968	10-09-67	4.17	284
1969	04-26-69	5.10	538
1970	06-11-70	3.13	101
1971	05-31-71	4.58	400
1972	04-27-72	4.40	355
1973	06-02-73	4.24	317
1974	03-08-74	3.75	216
1975	05-02-75	3.52	177

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

DELAWARE CREEK NR ANADARKO, OKLA. NO.131

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07327040
DRAINAGE AREA - 40.1 SQ MI
STATION NAME - DELAWARE CREEK NR ANADARKO, OKLA. NO.131
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1962	09-15-62	11.79	131
1963	04-26-63	11.55	177
1964	05-10-64	5.04	430
1965	05-09-65	5.03	459
1966	05-21-66	2.94	60
1967	04-12-67	4.62	340
1968	05-09-68	7.25	733
1969	04-16-69	6.01	555
1970	06-20-70	3.82	171
1971	06-01-71	6.57	602
1972	04-27-72	3.43	121
1973	06-02-73	10.47	1,080
1974	03-10-74	5.45	272
1975	06-24-75	8.49	635

STATION NO. - 07327150
DRAINAGE AREA - 23.76 SQ MI
STATION NAME - SALT CREEK NO 311 NR POCASSET,OKLA.
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1967	04-12-67	16.10	4,900
1968	04-19-68	8.04	348
1969	05-06-69	13.27	1,150
1970	05-29-70	14.03	1,370
1971	06-03-71	10.00	859
1972	10-31-71	6.27	278
1973	06-02-73	10.38	925
1974	05-31-74	11.58	1,150
1975	07-25-75	7.30	455

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07327210
DRAINAGE AREA - 52.0 SQ MI
STATION NAME - LINE CREEK NO.411 AT CHICKASHA, OKLA.
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1963	04-26-63	14.46	408
1964	11-19-63	15.10	403
1965	08-28-65	19.45	2,010
1966	09-14-66	12.92	92
1967	04-12-67	17.23	869
1968	10-09-67	13.68	135
1969	05-06-69	20.42	440
1970	04-30-70	15.34	110
1971	10-03-70	17.49	1,210
1972	10-31-71	19.29	477
1973	06-02-73	21.76	832
1974	04-30-74	20.27	741

STATION NO. - 07327420
DRAINAGE AREA - 59.4 SQ MI
STATION NAME - WEST BITTER CREEK NO.511 NR TABLER, OKLA.
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1963	06-23-63	9.64	1,180
1964	11-19-63	6.96	633
1965	08-08-65	16.41	3,120
1966	09-14-66	15.69	2,880
1967	04-12-67	16.21	3,300
1968	10-09-67	5.26	382
1969	06-14-69	15.32	2,760
1970	05-29-70	14.95	2,840
1971	10-31-70	11.31	1,330
1972	10-03-71	16.51	3,070
1973	06-05-73	16.05	2,920
1974	03-10-74	12.88	1,960
1975	07-28-75	11.70	1,980

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07327438
DRAINAGE AREA - .037 SQ MI
STATION NAME - WATERSHED R-5 NEAR TABLER,OKLA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1967	--------	---	21
1968	--------	---	2
1969	--------	---	17
1970	--------	---	3
1971	--------	---	10
1972	--------	---	5
1973	--------	---	63
1974	--------	---	8
1975	--------	---	21

STATION NO. - 07327439
DRAINAGE AREA - .030 SQ MI
STATION NAME - WATERSHED R-7 NEAR TABLER,OKLA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1967	--------	---	29
1968	--------	---	23
1969	--------	---	42
1970	--------	---	16
1971	--------	---	39
1972	--------	---	25
1973	--------	---	98
1974	--------	---	22
1975	--------	---	33

STATION NO. - 07327440
DRAINAGE AREA - 35.2 SQ MI
STATION NAME - EAST BITTER CREEK NO.512 NR TABLER,OKLA.
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	05-10-64	8.75	1,790
1965	08-08-65	10.73	3,050
1966	08-21-66	8.42	1,630
1967	04-12-67	9.99	2,490
1968	07-01-68	5.95	533
1969	06-14-69	9.53	2,150
1970	09-22-70	7.82	1,230
1971	10-02-70	10.15	2,560
1972	10-31-71	6.82	825
1973	05-24-73	12.57	4,620
1974	04-30-74	8.00	1,310
1975	05-22-75	10.28	2,660

STATION NO. - 07327490
STATION NAME - LITTLE WASHITA RIVER NR NINNEKAH, OKLA.
DRAINAGE AREA - 208 SQ MI
GAGE DATUM - 1,065.94 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1947	05-16-47	---	36,000
1952	--------	---	3,950
1953	--------	---	1,590
1954	--------	---	2,730
1955	--------	---	4,860
1956	--------	---	3,480
1957	--------	---	25,200
1958	--------	---	910
1959	--------	---	7,050
1960	--------	---	9,140
1961	--------	---	1,720
1962	--------	---	3,840
1963	--------	---	1,540
1964	05-10-64	20.62	7,560
1965	08-28-65	15.86	2,610
1966	03-12-66	11.77	811
1967	04-10-67	13.77	1,710
1968	05-31-68	19.14	5,280
1969	05-06-69	19.39	5,050
1970	04-30-70	13.55	1,460
1971	06-01-71	14.94	1,680
1972	10-03-71	20.50	3,900
1973	07-23-73	23.84	5,950
1974	04-30-74	14.32	1,600
1975	07-29-75	22.26	4,420

STATION NO. - 07328030
STATION NAME - BIG DRY CREEK NR ALEX, OKLA.
DRAINAGE AREA - 7.57 SQ MI
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1962	06-09-62	2.28	281
1963	04-26-63	2.96	658
1964	05-09-64	8.50	2,450
1965	05-26-65	3.34	124
1966	06-16-66	4.52	348
1967	04-12-67	3.08	92
1968	07-01-68	4.90	451
1969	09-21-69	7.27	1,520
1970	09-22-70	5.53	706
1971	09-24-71	3.60	176
1972	10-02-71	3.46	153
1973	06-02-73	4.08	269
1974	05-25-74	4.48	365

STATION NO. - 07328040
DRAINAGE AREA - .88 SQ MI
STATION NAME - LITTLE DRY CR NEAR ALEX, OKLA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1962	04-27-62	1.80	180
1963	06-23-63	2.26	231
1964	05-10-64	2.63	160
1965	08-07-65	1.71	30
1966	07-24-66	2.20	86
1967	04-12-67	2.67	123
1968	07-01-68	3.29	280
1969	09-21-69	2.75	184
1970	09-22-70	3.00	230
1971	08-14-71	2.24	91
1972	10-02-71	2.14	78
1973	06-02-73	2.75	184
1974	05-25-74	2.70	173

STATION NO. - 07329000
DRAINAGE AREA - 145 SQ MI
STATION NAME - RUSH CREEK AT PURDY, OKLA.
GAGE DATUM - 989.70 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1940	07-03-40	---	10,400
1941	06-06-41	---	15,200
1942	10-30-41	---	10,300
1943	05-10-43	26.10	15,300
1944	06-09-44	17.40	8,250
1945	06-08-45	19.43	9,820
1946	05-23-46	15.60	6,900
1947	12-11-46	11.92	6,400
1948	06-24-48	15.25	6,600
1949	05-01-49	11.60	3,950
1950	05-10-50	27.0	30,000
1951	05-01-51	19.90	18,400
1952	05-17-52	14.1	11,200
1953	07-20-53	10.10	6,110
1954	10-22-53	20.19	20,000

STATION NO. - 07329500
DRAINAGE AREA - 206 SQ MI

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1954	05-01-54	15.40	12,400
1955	05-19-55	16.12	13,700
1956	10-05-55	7.78	2,790
1957	05-18-57	23.62	38,500
1958	05-03-58	9.75	5,060
1959	09-25-59	16.40	14,500
1960	05-20-60	17.50	16,800
1961	05-17-61	8.39	4,090
1962	06-09-62	14.40	11,200
1963	10-28-62	13.3	9,490
1964	05-10-64	11.86	7,450

STATION NO. - 07329870
DRAINAGE AREA - 18.7 SQ MI

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	05-09-64	6.58	580
1965	11-18-64	6.71	690
1966	09-30-66	7.29	1,100
1967	04-12-67	8.55	2,500
1968	05-13-68	17.76	3,000
1969	04-17-69	12.45	3,500

STATION NAME - RUSH CREEK NEAR MAYSVILLE, OKLA.
GAGE DATUM - 903.04 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	11-17-64	11.30	6,620
1966	04-26-66	7.03	2,100
1967	05-30-67	6.61	1,690
1968	05-13-68	13.54	9,850
1969	05-06-69	9.69	4,670
1970	09-23-70	15.28	12,600
1971	10-08-70	8.31	3,290
1972	10-03-71	13.30	9,490
1973	10-31-72	10.84	3,260
1974	11-24-73	16.08	9,160
1975	05-23-75	14.67	6,600

STATION NAME - HONEY CREEK NR DAVIS, OKLA.
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1970	09-22-70	13.20	4,600
1971	10-08-70	14.8	7,000
1972	12-10-71	9.50	520
1973	10-30-72	11.20	1,890
1974	11-24-73	12.76	3,960
1975	10-30-74	10.97	1,640

STATION NO. - 07329900
DRAINAGE AREA - 138 SQ MI

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1956	05-25-56	5.60	2,260
1957	05-17-57	* 13.76	25,600
1958	03-29-58	7.75	6,030
1959	05-10-59	4.57	1,350
1960	05-06-60	10.90	15,200
1961	09-28-61	6.48	3,280

STATION NO. - 07330500
DRAINAGE AREA - 298 SQ MI

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1937	08-22-37	---	7,000
1938	02-16-38	27.94	18,800
1939	06-12-39	11.79	710
1940	05-22-40	25.16	9,700
1941	11-26-40	22.2	3,930
1942	10-05-41	26.90	14,800
1943	05-10-43	27.6	17,500

STATION NAME - ROCK CREEK AT DOUGHERTY, OKLA.
GAGE DATUM - 743.87 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1962	06-10-62	8.95	9,100
1963	04-28-63	7.40	5,160
1964	05-10-64	8.09	6,740
1965	11-18-64	6.58	3,080
1966	08-11-66	2.41	210
1971	10-08-70	---	80,000

STATION NAME - CADDO CREEK NEAR ARDMORE, OKLA.
GAGE DATUM - 709.48 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1944	02-28-44	21.50	3,280
1945	03-15-45	28.60	22,300
1946	01-05-46	25.90	11,600
1947	12-11-46	26.00	11,900
1948	07-12-48	20.31	2,650
1949	06-13-49	26.00	11,900
1950	04-29-50	23.83	6,440

* DENOTES ANNUAL PEAK GAGE HEIGHT OCCURRED AT A TIME DIFFERENT THAN THAT OF PEAK DISCHARGE

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07331410
DRAINAGE AREA - 4.30 SQ MI
STATION NAME - BUZZARD CREEK NEAR REAGAN, OKLA
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	11-18-64	7.23	330
1966	02-09-66	6.82	260
1967	04-12-67	8.95	700
1968	05-13-68	10.25	1,040
1969	05-07-69	6.90	270
1970	10-12-69	7.52	390
1971	10-08-70	9.15	750
1972	12-09-71	6.7	232
1973	06-03-73	8.62	609
1974	11-24-73	8.69	626
1975	10-30-74	7.81	432

STATION NO. - 07332070
DRAINAGE AREA - .72 SQ MI
STATION NAME - ROCK CREEK NR ACHILLE, OKLA.
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	06-17-65	4.71	322
1966	04-23-66	9.32	748
1967	04-21-67	10.15	1,090
1968	05-12-68	4.04	275
1969	05-06-69	6.31	445
1970	04-25-70	4.30	293
1971	02-21-71	2.76	176
1972	12-09-71	3.43	232
1973	10-22-72	10.00	1,000
1974	11-24-73	4.60	314

STATION NO. - 07332400
DRAINAGE AREA - 203 SQ MI
STATION NAME - BLUE CREEK AT MILBURN, OKLA.
GAGE DATUM - 650.00 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1966	02-09-66	16.34	2,610
1967	06-26-67	26.47	13,100
1968	05-13-68	26.24	12,400
1969	05-17-69	23.47	6,860
1970	10-12-69	24.31	7,960
1971	10-08-70	27.87	35,100
1972	12-10-71	18.93	3,760
1973	06-03-73	26.13	14,800
1974	11-24-73	26.45	22,900
1975	10-31-74	24.81	12,500

STATION NO. - 07332500
DRAINAGE AREA - 476 SQ MI
STATION NAME - BLUE RIVER NEAR BLUE, OKLA.
GAGE DATUM - 503.36 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1937	01-15-37	---	3,370
1938	02-17-38	---	34,400
1939	04-16-39	---	3,320
1940	05-23-40	---	9,000
1941	04-23-41	---	5,170
1942	04-25-42	---	33,600
1943	05-11-43	---	15,300
1944	02-28-44	---	10,100
1945	06-17-45	---	28,900
1946	02-19-46	---	9,530
1947	12-12-46	---	19,200
1948	05-26-48	---	6,650
1949	05-18-49	---	5,000
1950	05-02-50	---	8,770
1951	06-13-51	---	5,270
1952	04-23-52	---	8,530
1953	07-20-53	---	8,090
1954	05-12-54	---	7,260
1955	05-21-55	---	4,350
1956	06-01-56	---	978
1957	09-22-57	---	19,900
1958	05-02-58	---	26,000
1959	07-27-59	---	3,100
1960	10-14-59	---	4,210
1961	03-31-61	20.00	4,230
1962	06-02-62	25.75	8,100
1963	11-27-62	28.47	12,000
1964	06-17-64	23.08	5,770
1965	11-19-64	23.26	6,100
1966	02-10-66	29.21	13,500
1967	04-14-67	25.70	8,340
1968	05-17-68	32.00	20,400
1969	05-07-69	27.30	10,700
1970	10-14-69	22.90	5,560
1971	10-10-70	29.45	14,700
1972	12-10-71	28.33	12,500
1973	10-31-72	28.16	12,200
1974	11-26-73	29.33	15,300
1975	10-31-74	31.78	18,900

STATION NO. - 07333330
DRAINAGE AREA - 3.19 SQ MI
STATION NAME - CHICKASAW CREEK TRIB NR STRINGTOWN, OKLA.
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	11-18-64	9.88	620
1966	04-23-66	14.43	3,540
1967	04-12-67	11.24	1,640
1968	05-13-68	12.52	2,510
1969	05-07-69	10.25	830
1970	06-11-70	11.34	1,740
1971	04-20-71	16.80	4,930
1972	12-10-71	12.38	388

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07333500
DRAINAGE AREA - 32.70 SQ MI

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1956	05-24-56	10.12	1,620
1957	04-26-57	20.18	12,300
1958	05-09-58	15.20	4,720
1959	07-26-59	18.80	9,530
1960	05-20-60	16.53	6,060
1961	12-10-60	10.47	1,770
1962	11-22-61	18.78	9,160
1963	10-14-62	21.54	18,800
1964	04-03-64	18.93	9,330
1965	11-19-64	16.11	5,610

STATION NAME - CHICKASAW CREEK NEAR STRINGTOWN, OKLA.
GAGE DATUM - 540.26 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1966	04-23-66	18.97	9,450
1967	04-12-67	19.32	10,100
1968	05-14-68	18.00	7,900
1969	04-27-69	17.60	7,380
1970	06-12-70	19.18	9,860
1971	04-20-71	19.50	10,500
1972	12-10-71	16.2	5,720
1973	05-01-73	16.72	6,290
1974	08-10-74	19.50	10,500
1975	06-09-75	13.92	3,720

STATION NO. - 07333800
DRAINAGE AREA - 86.60 SQ MI

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1956	05-25-56	6.18	1,620
1957	04-26-57	16.79	10,200
1958	11-07-57	12.38	6,020
1959	07-16-59	14.89	8,300
1960	05-19-60	14.99	8,400
1961	03-31-61	8.09	2,870
1962	11-22-61	14.33	7,700
1963	10-14-62	13.65	7,040
1964	04-04-64	10.45	4,480
1965	05-27-65	10.38	4,480

STATION NAME - MCGEE CREEK NEAR STRINGTOWN, OKLA.
GAGE DATUM - 623.18 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1966	02-09-66	15.60	8,800
1967	04-12-67	15.85	9,250
1968	03-21-68	13.38	6,840
1969	05-17-69	13.58	7,020
1970	06-12-70	13.50	6,950
1971	04-20-71	14.30	7,700
1972	12-10-71	11.96	5,670
1973	05-01-73	12.30	5,940
1974	11-24-73	17.68	11,100
1975	10-30-74	13.1	6,590

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07334000 STATION NAME - MUDDY BOGGY CREEK NEAR FARRIS, OKLA.
DRAINAGE AREA - 1,087. SQ MI GAGE DATUM - 444.58 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1938	02-17-38	45.10	52,500	1957	09-22-57	43.00	28,200
1939	04-16-39	34.64	14,200	1958	05-02-58	41.79	25,100
1940	04-07-40	38.6	19,600	1959	07-27-59	37.10	16,000
1941	04-16-41	38.3	18,400	1960	05-20-60	40.43	21,900
1942	04-25-42	44.19	41,200	1961	12-11-60	29.32	9,250
1943	05-13-43	42.00	28,800	1962	11-23-61	38.68	18,500
1944	05-02-44	36.50	16,200	1963	10-14-62	* 30.15	12,800
1945	06-17-45	46.94	61,900	1964	04-03-64	* 24.70	12,000
1946	02-19-46	36.92	16,600	1965	11-19-64	29.45	10,800
1947	12-12-46	41.57	29,500	1966	02-09-66	42.35	25,100
1948	07-12-48	29.90	9,710	1967	04-13-67	39.67	21,400
1949	05-01-49	37.91	19,200	1968	03-20-68	39.58	19,700
1950	09-16-50	39.81	23,400	1969	05-18-69	38.92	18,000
1951	06-12-51	43.78	38,800	1970	06-12-70	40.77	22,900
1952	04-13-52	34.17	13,000	1971	04-20-71	42.50	27,600
1953	07-21-53	42.37	27,000	1972	12-10-71	41.99	23,900
1954	05-10-54	38.86	19,600	1973	06-06-73	39.17	19,300
1955	03-22-55	* 32.88	12,200	1974	06-08-74	42.72	33,900
1956	05-25-56	21.26	5,240	1975	10-31-74	39.93	22,400

* DENOTES ANNUAL PEAK GAGE HEIGHT OCCURRED AT A TIME DIFFERENT THAN THAT OF PEAK DISCHARGE

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07335000 STATION NAME - CLEAR BUGGY CREEK NEAR CANEY, OKLA.
DRAINAGE AREA - 720 SQ MI GAGE DATUM - 485.05 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1938	02- -38	26.91	54,600
1942	04- -42	26.8	52,800
1943	05-11-43	26.30	46,000
1944	03-19-44	23.60	9,870
1945	06-18-45	25.20	31,100
1946	02-20-46	23.76	14,700
1947	12-11-46	26.77	52,800
1948	05-25-48	24.28	20,200
1949	05-03-49	24.00	16,600
1950	05-13-50	23.75	14,600
1951	06-12-51	23.63	12,800
1952	04-22-52	23.21	10,000
1953	07-21-53	22.68	8,050
1954	05-03-54	23.30	11,000
1955	03-22-55	21.93	6,220
1956	02-18-56	15.86	2,540
1957	09-23-57	24.54	21,700
1958	05-02-58	23.14	10,200
1959	06-30-59	21.02	4,800
1960	05-22-60	23.43	14,000
1961	03-31-61	21.34	5,440
1962	11-24-61	22.30	7,830
1963	11-26-62	22.90	10,600
1964	09-27-64	20.54	4,490
1965	11-19-64	22.21	7,480
1966	02-09-66	22.98	11,200
1967	04-13-67	23.35	13,300
1968	05-17-68	23.82	15,300
1969	04-27-69	23.31	12,000
1970	10-14-69	23.50	13,200
1971	10-09-70	24.25	19,500
1972	12-10-71	23.23	11,800
1973	06-04-73	23.54	13,800
1975	10-31-74	23.35	14,200

STATION NO. - 07335310 STATION NAME - ROCK CREEK NR BOSWELL, OKLA.
DRAINAGE AREA - .94 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	09-21-65	3.72	135
1966	04-23-66	5.60	340
1967	04-20-67	5.12	305
1968	05-13-68	7.56	550
1969	05-05-69	5.02	250
1970	04-18-70	4.12	115
1971	07-23-71	2.35	65
1972	12-09-71	4.75	220
1973	05-06-73	7.47	546
1974	08-10-74	5.34	308
1975	10-30-74	6.24	399

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07335320 STATION NAME - BOKCHITO CREEK NR SUPER, OKLA.
DRAINAGE AREA - 16.6 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	11-18-64	5.16	1,590	1971	02-21-71	3.46	590
1966	04-23-66	8.87	5,320	1972	10-19-71	7.51	3,710
1967	05-31-67	5.66	1,990	1973	10-31-72	8.95	5,430
1968	05-16-68	8.10	4,300	1974	06-07-74	7.96	4,160
1969	03-23-69	7.8	4,000	1975	10-30-74	9.24	5,840
1970	04-25-70	5.30	1,700				

STATION NO. - 07335700 STATION NAME - KIAMICHI RIVER NR BIG CEDAR, OKLA.
DRAINAGE AREA - 40.1 SQ MI GAGE DATUM - 886.97 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1966	02-09-66	14.10	9,210	1971	10-27-70	15.56	13,700
1967	07-05-67	11.81	4,830	1972	12-10-71	17.08	21,500
1968	10-30-67	16.16	16,300	1973	03-10-73	15.68	14,200
1969	06-24-69	13.08	6,990	1974	06-07-74	13.90	8,710
1970	11-18-69	11.34	4,150	1975	08-15-75	12.92	6,840

STATION NO. - 07335760 STATION NAME - KIAMICHI RIVER TRIB NR ALBION, OKLA.
DRAINAGE AREA - 1.50 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	03-29-65	5.2	900	1969	02-21-69	3.35	240
1966	04-23-66	2.35	73	1970	02-23-70	3.48	271
1967	05-05-67	2.45	83	1971	04-22-71	2.48	86
1968	05-13-68	3.19	202	1972	12-09-71	5.54	1,070

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07336000 STATION NAME - TENMILE CREEK NEAR MILLER, OKLA.
DRAINAGE AREA - 68.0 SQ MI GAGE DATUM - 475.89 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1956	04-29-56	12.79	1,620
1957	09-22-57	19.90	4,950
1958	05-02-58	20.69	5,930
1959	07-26-59	16.88	2,660
1960	05-20-60	17.85	3,400
1961	07-23-61	15.62	2,530
1962	11-22-61	17.78	3,400
1963	10-14-62	19.84	4,850
1964	04-04-64	18.21	3,350
1965	11-19-64	16.44	2,790
1966	02-09-66	20.68	5,900
1967	04-13-67	17.15	3,100
1968	03-20-68	17.63	3,320
1969	05-18-69	18.42	3,740
1970	06-12-70	18.55	3,830
1971	10-23-70	17.52	3,260
1972	12-10-71	19.63	4,720
1973	05-01-73	17.28	3,140
1974	11-24-73	21.12	6,550

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07336500
DRAINAGE AREA - 1,423 SQ MI

STATION NAME - KIAMICHI RIVER NEAR BELZONI, OKLA.
GAGE DATUM - 389.91 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1916	10- -15	44.2	72,000
1926	05-07-26	29.9	22,200
1927	04-15-27	39.60	43,800
1928	12-14-27	41.24	51,600
1929	05-14-29	36.65	32,700
1930	05-04-30	33.16	25,800
1931	02-09-31	25.6	16,700
1932	02-17-32	41.0	50,400
1933	12-24-32	34.37	31,400
1934	04-05-34	35.00	32,500
1935	06-18-35	42.2	57,800
1936	12-07-35	36.81	36,700
1937	01-09-37	31.53	23,900
1938	02-18-38	44.00	71,400
1939	04-18-39	36.53	35,500
1940	04-07-40	24.10	14,700
1941	04-16-41	32.55	26,000
1942	04-25-42	39.75	45,200
1943	05-11-43	41.60	55,300
1944	05-02-44	36.40	31,000
1945	06-17-45	43.90	70,600
1946	02-13-46	34.45	27,800
1947	12-12-46	40.33	46,900
1948	05-17-48	32.77	25,200
1949	01-25-49	42.93	67,200
1950	09-17-50	40.02	47,000
1951	06-12-51	40.05	49,400
1952	04-23-52	33.20	27,800
1953	04-24-53	36.52	37,200
1954	05-10-54	26.06	18,700
1955	09-26-55	32.22	27,600
1956	02-18-56	20.00	12,000
1957	09-22-57	38.23	42,300
1958	05-03-58	40.78	55,200
1959	07-27-59	27.84	21,300
1960	05-22-60	41.60	61,600
1961	05-06-61	37.39	39,900
1962	11-23-61	33.37	30,100
1963	10-14-62	28.27	23,200
1964	09-29-64	27.36	20,800
1965	11-19-64	28.96	23,400
1966	02-11-66	35.43	34,400
1967	04-13-67	* 31.97	27,900
1968	05-13-68	37.97	46,700
1969	02-22-69	33.91	32,300
1970	04-26-70	30.86	25,600
1971	10-27-70	28.00	21,200
1972	12-10-71	41.90	61,700

* DENOTES ANNUAL PEAK GAGE HEIGHT OCCURRED AT A TIME DIFFERENT THAN THAT OF PEAK DISCHARGE

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07336520
DRAINAGE AREA - 19.4 SQ MI

STATION NAME - FRAZIER CREEK NR OLETA, OKLA.
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	08-28-64	15.45	4,200
1965	11-18-64	10.00	1,260
1966	04-24-66	9.50	1,110
1967	05-06-67	12.00	2,040
1968	03-20-68	11.55	1,840
1969	05-07-69	12.40	2,240
1970	04-25-70	11.4	1,780
1971	04-23-71	9.55	1,120
1972	12-10-71	17.00	5,700
1973	10-31-72	17.04	5,740
1974	06-08-74	16.78	5,480
1975	10-30-74	15.74	4,470

STATION NO. - 07336710
DRAINAGE AREA - 3.39 SQ MI

STATION NAME - ROCK CREEK NR SAWYER, OKLA.
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	04-23-64	5.9	995
1965	02-09-65	4.94	560
1966	04-30-66	5.18	670
1967	05-20-67	4.64	430
1968	05-17-68	5.6	860
1969	01-29-69	5.45	790
1970	04-25-70	5.00	590
1971	07-22-71	4.62	419
1972	12-09-71	7.16	1,560
1973	10-31-72	7.10	1,540
1974	06-08-74	6.33	1,190

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07336780 STATION NAME - PERRY CREEK NR IDABEL, OKLA.
DRAINAGE AREA - 7.53 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	04-22-64	11.2	4,400	1969	01-30-69	9.75	2,250
1965	01-09-65	9.31	1,800	1970	04-25-70	9.60	2,100
1966	04-25-66	9.90	2,000	1971	03-12-71	6.90	640
1967	04-13-67	8.91	1,540	1972	12-09-71	10.85	3,780
1968	10-30-67	9.80	2,400	1973	10-31-72	9.60	2,100

STATION NO. - 07336785 STATION NAME - BOKCHITO CREEK NR GARVIN, OKLA.
DRAINAGE AREA - 2.96 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	02-09-65	6.29	725	1971	01-03-71	4.55	230
1966	04-25-66	5.73	495	1972	12-09-71	7.3	1,270
1967	04-13-67	6.37	765	1973	04-20-73	---	1,220
1968	05-17-68	6.36	760	1974	09-10-74	6.70	930
1969	01-30-69	6.69	925	1975	12-06-74	6.0	680
1970	04-25-70	6.30	730				

STATION NO. - 07337220
DRAINAGE AREA - 1.99 SQ MI
STATION NAME - BIG BRANCH NR RINGOLD, OKLA.
GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	04-23-64	---	560
1965	02-09-65	---	460
1966	02-09-66	---	150
1967	05-06-67	---	120
1968	05-17-68	---	1,460
1969	01-29-69	9.16	325
1970	08-21-70	8.67	271
1971	10-26-70	8.66	305
1972	10-09-71	11.52	820
1973	10-31-72	14.42	1,540
1974	12-23-73	9.75	430

STATION NO. - 07337500
DRAINAGE AREA - 645 SQ MI
STATION NAME - LITTLE RIVER NEAR WRIGHT CITY, OKLA.
GAGE DATUM - 346.76 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1930	12-16-29	---	30,000
1931	02-13-31	---	18,000
1945	03-29-45	43.65	54,800
1946	05-25-46	39.90	33,300
1947	12-12-46	42.40	47,000
1948	05-12-48	39.70	32,400
1949	01-25-49	45.04	69,000
1950	09-16-50	45.77	75,400
1951	06-12-51	41.51	43,200
1952	04-22-52	39.62	32,300
1953	07-20-53	43.30	55,800
1954	05-29-54	35.79	21,400
1955	10-01-54	35.00	18,000
1956	02-18-56	32.62	15,200
1957	09-22-57	39.92	35,200
1958	05-02-58	41.63	44,600
1959	07-27-59	26.01	8,840
1960	05-20-60	44.71	69,100
1961	05-06-61	45.60	78,200
1962	11-22-61	38.10	26,600
1963	03-19-63	31.11	14,500
1964	04-24-64	31.51	16,000
1965	02-09-65	35.15	19,900
1966	02-10-66	37.24	24,000
1967	05-06-67	37.78	26,700
1968	05-17-68	32.66	16,400
1969	01-30-69	28.94	# 6,500
1970	03-27-70	20.23	# 5,690
1971	10-28-70	* 20.87	# 4,980
1972	12-10-71	35.68	# 11,200
1973	05-12-73	26.55	# 7,260
1974	09-25-74	25.53	# 8,570
1975	11-10-74	24.81	# 8,210

* DENOTES ANNUAL PEAK GAGE HEIGHT OCCURRED AT A TIME DIFFERENT THAN THAT OF PEAK DISCHARGE
# DENOTES ANNUAL PEAK DISCHARGE AFFECTED BY KNOWN REGULATION OR DIVERSION

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07337900 STATION NAME - GLOVER CREEK NEAR GLOVER, OKLA.
DRAINAGE AREA - 315 SQ MI GAGE DATUM - 378.70 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1961	05- -61	28.84	88,200	1969	01-30-69	21.40	33,100
1962	11-22-61	19.30	23,000	1970	04-26-70	15.80	17,100
1963	04-28-63	11.82	7,920	1971	10-27-70	20.46	30,000
1964	03-09-64	15.37	13,500	1972	12-10-71	29.72	98,600
1965	02-09-65	20.95	26,400	1973	10-31-72	28.66	86,300
1966	02-09-66	16.82	16,000	1974	03-11-74	23.88	55,500
1967	05-06-67	19.70	23,800	1975	10-31-74	20.44	35,700
1968	05-13-68	20.72	30,700				

STATION NO. - 07337920 STATION NAME - FIFTEEN CREEK NR GLOVER, OKLA.
DRAINAGE AREA - 1.23 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1967	04-13-67	5.60	207	1971	02-11-71	4.0	26
1968	05-17-68	9.70	885	1972	12-09-71	9.64	860
1969	01-29-69	6.88	362	1973	10-31-72	9.83	968
1970	03-17-70	5.50	200				

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07338500 STATION NAME - LITTLE R BELOW LUKFATA CR NR IDABEL, OKLA.
DRAINAGE AREA - 1,226 SQ MI GAGE DATUM - 312.08 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1930	--------	---	25,200	1953	07-22-53	34.07	34,000
1931	--------	---	10,600	1954	05-31-54	25.27	10,100
1932	--------	---	42,800	1955	03-23-55	29.55	14,900
1933	--------	---	25,200	1956	02-20-56	27.98	12,600
1934	--------	---	31,600	1957	04-26-57	33.34	29,100
1935	--------	---	55,000	1958	05-04-58	35.01	40,700
1936	--------	---	27,000	1959	07-28-59	23.62	8,940
1937	--------	---	13,900	1960	05-21-60	* 36.65	57,900
1938	02- -38	39.7	86,000	1961	05-07-61	36.30	53,800
1939	--------	---	44,600	1962	11-25-61	30.00	15,700
1940	--------	---	19,900	1963	04-30-63	23.47	9,380
1941	--------	---	14,500	1964	04-26-64	29.87	15,800
1942	--------	---	32,800	1965	02-11-65	32.70	26,000
1943	--------	---	26,300	1966	05-02-66	31.10	18,800
1944	--------	---	35,500	1967	05-08-67	29.38	15,400
1945	--------	---	71,000	1968	05-17-68	32.95	27,900
1946	--------	---	25,700	1969	01-31-69	32.64	# 23,600
1947	12-13-46	36.35	56,100	1970	04-27-70	25.24	# 11,200
1948	01-03-48	32.80	25,100	1971	10-29-70	24.07	# 10,400
1949	01-26-49	39.22	82,000	1972	12-10-71	39.39	#103,000
1950	09-17-50	37.30	66,100	1973	11-01-72	32.46	# 23,600
1951	07-03-51	34.08	34,000	1974	09-13-74	28.65	# 15,000
1952	04-23-52	35.04	40,800	1975	11-12-74	27.80	# 12,400

* DENOTES ANNUAL PEAK GAGE HEIGHT OCCURRED AT A TIME DIFFERENT THAN THAT OF PEAK DISCHARGE
# DENOTES ANNUAL PEAK DISCHARGE AFFECTED BY KNOWN REGULATION OR DIVERSION

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07338520 STATION NAME - YANUBBEE CREEK NR BROKEN BOW, OKLA
DRAINAGE AREA - 9.10 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1964	04-23-64	12.3	2,250	1970	08-20-70	9.38	893
1965	02-09-65	9.90	1,120	1971	03-12-71	8.20	525
1966	04-25-66	8.78	703	1972	12-10-71	13.45	3,040
1967	05-31-67	11.97	2,080	1973	10-31-72	12.40	2,300
1968	05-17-68	12.38	2,290	1974	09-10-74	9.42	927
1969	01-30-69	13.49	3,060	1975	05-03-75	11.62	1,910

STATION NO. - 07338780 STATION NAME - MOUNTAIN FORK TRIB NR SMITHVILLE, OKLA
DRAINAGE AREA - .85 SQ MI GAGE DATUM - FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1965	09-22-65	4.53	215	1971	10-26-70	4.62	226
1966	02-09-66	3.30	80	1972	12-09-71	6.9	500
1967	05-19-67	3.32	82	1973	10-31-72	4.49	211
1968	10-30-67	3.84	136	1974	04-22-74	4.10	165
1969	05-06-69	3.25	75	1975	05-03-75	4.56	219
1970	11-12-69	5.80	370				

APPENDIX C.--ANNUAL PEAK DATA AT GAGING STATIONS--CONTINUED

STATION NO. - 07339000 STATION NAME - MOUNTAIN FORK RIVER NEAR EAGLETOWN, OKLA.
DRAINAGE AREA - 787 SQ MI GAGE DATUM - 333.87 FT ABOVE MEAN SEA LEVEL

WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)	WATER YEAR	DATE	GAGE HEIGHT (FT)	DISCHARGE (CFS)
1915	08-18-15	---	92,000	1952	04-22-52	21.08	57,400
1925	06-13-25	---	67,500	1953	04-29-53	20.24	51,500
1930	05-11-30	21.0	56,000	1954	05-03-54	17.07	34,100
1931	07-26-31	12.75	18,200	1955	10-01-54	14.89	24,100
1932	02-17-32	22.50	65,800	1956	02-18-56	14.38	23,800
1933	12-24-32	17.49	36,100	1957	04-25-57	17.50	36,000
1934	04-05-34	14.0	21,700	1958	05-03-58	18.52	41,300
1935	05-05-35	22.68	67,100	1959	11-17-58	17.34	34,100
1936	12-07-35	17.54	36,100	1960	05-20-60	26.73	101,000
1937	08-23-37	15.0	25,200	1961	05-06-61	21.12	57,600
1938	01-24-38	25.4	85,700	1962	11-23-61	17.52	36,000
1939	04-17-39	23.0	69,100	1963	04-29-63	10.74	13,100
1940	05-18-40	17.93	38,200	1964	03-09-64	17.50	35,900
1941	06-11-41	11.40	14,500	1965	02-11-65	8.73	9,760
1942	10-31-41	19.90	49,400	1966	04-26-66	9.28	12,200
1943	12-27-42	15.98	28,400	1967	05-07-67	8.12	8,560
1944	05-02-44	18.33	40,500	1968	05-17-68	13.48	21,400
1945	03-29-45	25.80	88,500	1969	01-30-69	10.86	# 13,400
1946	05-25-46	23.30	71,100	1970	08-31-70	7.81	# 7,880
1947	08-28-47	25.7	87,800	1971	11-24-70	7.78	# 7,770
1948	01-01-48	21.73	60,600	1972	01-04-72	8.02	# 7,740
1949	01-24-49	24.77	81,400	1973	03-24-73	8.34	# 9,330
1950	02-12-50	25.66	91,500	1974	05-04-74	10.63	# 14,900
1951	02-16-51	15.34	26,400	1975	11-29-74	7.82	# 8,490

# DENOTES ANNUAL PEAK DISCHARGE AFFECTED BY KNOWN REGULATION OR DIVERSION

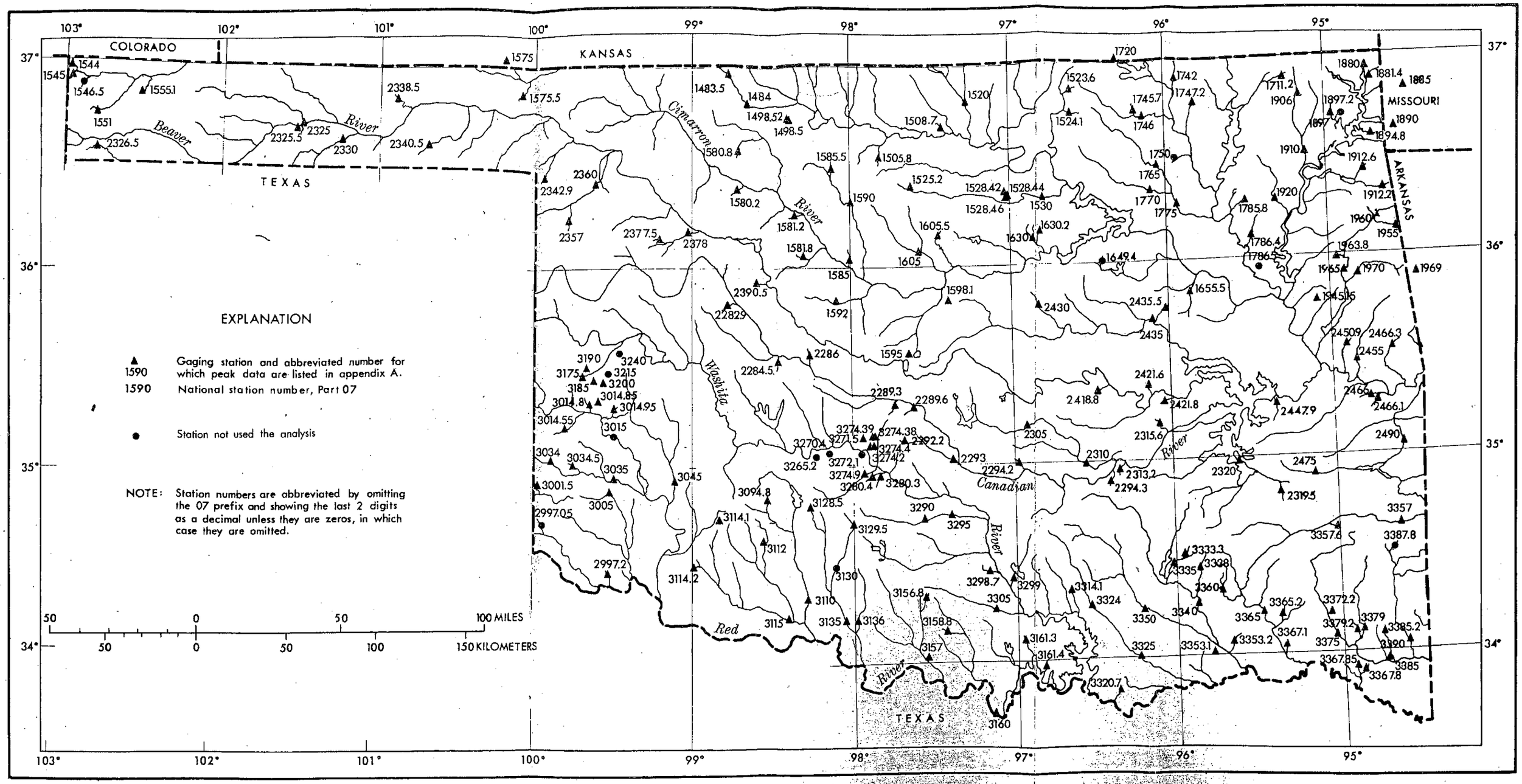

Figure 1.--Location of gaging stations.