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METHODS FOR ESTIMATING THE MAGNITUDE AND FREQUENCY OF FLOODS IN ARIZONA

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BY R. H. ROESKE

Prepared by:
United States Geological Survey
Water Resources Division
301 W. Congress
Tucson, Arizona 85701
September 1978

Prepared for:
Arizona Department of Transportation
206 South 17th Avenue
Phoenix, Arizona 85007

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16. Abstract

Regression equations for estimating flood magnitudes at ungaged sites for recurrence intervals of 2, 5, 10, 25, 50, 100 and 500 years were developed for six flood-frequency regions. The equations relate flood magnitudes to one or more of the following statistically independent variables: size of drainage area, mean basin elevation, and mean annual precipitation. The regression equations are based on annual peak-discharge data collected at 221 gaging stations having 10 or more years of record. Flood magnitudes for selected recurrence intervals were determined for each station from a log-Pearson Type III frequency distribution, and multiple-regression analyses were used to relate flood magnitudes to basin characteristics. The regression equations apply to streams that are not affected significantly by regulation, diversion, or urbanization.

Flood magnitudes and frequencies for the main stem of the Little Colorado River from the Zuni River to the mouth and for the main stem of the Gila River can be estimated from graphs in which discharge is related to size of drainage area for the Little Colorado River and to miles upstream and downstream from Coolidge Dam for the Gila River.

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Final Report

METHODS FOR ESTIMATING THE MAGNITUDE AND FREQUENCY OF FLOODS IN ARIZONA

by

R. H. Roeske

Submitted to

The Arizona Department of Transportation
Highway Division
Phoenix, Arizona 85007

for

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Sponsored by

The Arizona Department of Transportation
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"The Contents of this report reflect the views of the authors who are responsible for the facts and the accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the Arizona Department of Transportation or the Federal Highway Administration. This report does not constitute a standard, specification, or regulation."

U.S. Geological Survey
Water Resources Division
301 West Congress
Tucson, Arizona 85701

September, 1978

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CONVERSION FACTORS

For use of those readers who may prefer to use metric units rather than U.S. customary units, the conversion factors for the terms used in this report are listed below:

Multiply U.S. customary unit	By	To obtain metric unit
inch (in.)	25.4	millimeters (mm)
foot (ft)	.3048	meter (m)
mile (mi)	1.609	kilometers (km)
square mile (mi^2)	2.590	square kilometers (km^2)
cubic foot per second (ft^3/s)	.02832	cubic meter per second (m^3/s)

METHODS FOR ESTIMATING THE MAGNITUDE AND FREQUENCY OF FLOODS IN ARIZONA

By

R. H. Roeske

ABSTRACT

Regression equations for estimating flood magnitudes at ungaged sites for recurrence intervals of 2, 5, 10, 25, 50, 100, and 500 years were developed for six flood-frequency regions. The equations relate flood magnitudes to one or more of the following statistically independent variables: size of drainage area, mean basin elevation, and mean annual precipitation. The regression equations are based on annual peak-discharge data collected at 221 gaging stations having 10 or more years of record. Flood magnitudes for selected recurrence intervals were determined for each station from a log-Pearson Type III frequency distribution, and multiple-regression analyses were used to relate flood magnitudes to basin characteristics. The regression equations apply to streams that are not affected significantly by regulation, diversion, or urbanization.

Flood magnitudes and frequencies for the main stem of the Little Colorado River from the Zuni River to the mouth and for the main stem of the Gila River can be estimated from graphs in which discharge is related to size of drainage area for the Little Colorado River and to miles upstream and downstream from Coolidge Dam for the Gila River.

INTRODUCTION

Estimates of the magnitude and frequency of floods are needed to design safe and economical bridges, culverts, dams, and other structures on, over, or near streams. The estimates also are needed to establish flood-insurance rates and for flood-plain management. This study was undertaken to define the best methods for estimating the magnitude and frequency of floods for most streams in Arizona.

Multiple-regression analyses were used to correlate flood magnitudes with physiographic and climatic basin characteristics and to develop regional flood-frequency relations. The report presents equations for estimating flood magnitudes at ungaged sites for recurrence intervals of 2, 5, 10, 25, 50, 100, and 500 years. Recurrence intervals are intervals of time, in years, in which a given discharge can be expected on the average to be exceeded once as an annual maximum. In terms of probability, the 100-year flood has one chance in 100 (1-percent probability) of being exceeded in a given year, and the 50-year flood has one chance in 50 (2-percent probability) of being exceeded in a given year. The regression equations apply to streams that are not affected significantly by regulation, diversion, or urbanization. The peak discharge at any site can be computed using the equations, but the experienced user will recognize that judgment must be used in the application of the appropriate equations.

The regression equations do not apply to the main stem of the Little Colorado River from the Zuni River to the mouth or to the main stem of the Gila River. Methods for estimating the magnitudes and frequencies of floods on these rivers are given in the section of the report entitled "Little Colorado and Gila Rivers." Flood-frequency information for gaged sites and maximum discharge data for gaged and ungaged sites are given in the section entitled "Streamflow Data."

Methods for estimating the magnitude and frequency of floods in Arizona were described in earlier studies by Patterson and Somers (1966), B. N. Aldridge and Alberto Condes de la Torre (written commun., 1970), Moosburner (1970), and the Arizona Water Commission (1973). This study was based on many more years of gaging-station data than were available for previous studies, especially for streams that drain areas of less than 100 mi^2, and the flood-frequency equations used in computing the peak discharges given in this report are considered to be the best that can be derived at the present time.

The study was conducted by the U.S. Geological Survey in cooperation with the Arizona Department of Transportation and the Federal Highway Administration. The basic flood data collected during the study are supplemented by flood data being collected for programs in cooperation with Pima County, Tucson, and the Flood Control District of Maricopa County. Additional flood data for small streams were furnished by the Southwest Watershed Research Center of the U.S. Agricultural Research Service in Tucson and by the Rocky Mountain Forest and Range

Experiment Stations of the U.S. Forest Service in Flagstaff and Tempe. The opinions, findings, and conclusions expressed in this report are not necessarily those of the Arizona Department of Transportation or the Federal Highway Administration.

METHODS FOR ESTIMATING THE MAGNITUDE AND FREQUENCY OF FLOODS

Ungaged Sites

Flood magnitudes at ungaged sites can be computed for recurrence intervals of 2, 5, 10, 25, 50, 100, and 500 years using the regression equations given in table 1. The equations define the relations of flood magnitudes to basin characteristics for the six flood-frequency regions shown in figure 1. Regions 1 to 5 (numbered regions) are contiguous, and region HE (high-elevation region) includes several noncontiguous areas that have a mean basin elevation equal to or greater than 7,500 ft above mean sea level. The areas in figure 1 that have an elevation greater than 7,500 ft are only a guide to the high-elevation flood-frequency region as defined in this report because the high-elevation region is defined using mean basin elevation.

The following methods should be used to determine the basin characteristics that were selected for use in the final analysis:

Drainage area (A), in square miles, is the area, measured in a horizontal plane, enclosed by a topographic divide from which direct runoff from precipitation normally drains by gravity into the stream above a specified point. The drainage

Table 1.--Regression equations for flood magnitudes at selected recurrence intervals and corresponding standard error of estimate

Q: Flood magnitude in cubic feet per second for indicated recurrence interval.
A: Drainage area in square miles.
E: Mean basin elevation in thousands of feet above mean sea level.
P: Mean annual precipitation in inches.

Equation	Standard error of estimate, in percent
REGION 1—NORTHWEST PLATEAU AREA (17 STATIONS)	
$Q_2 = 19.0A^{0.660}$	93
$Q_5 = 66.3A^{0.600}$	81
$Q_{10} = 127A^{0.566}$	80
$Q_{25} = 252A^{0.532}$	83
$Q_{50} = 393A^{0.510}$	86
$Q_{100} = 584A^{0.490}$	91
$Q_{500} = 1,300A^{0.451}$	105
REGION 2—SOUTHWEST DESERT AREA (26 STATIONS)	
$Q_2 = 87.0A^{0.433}$	76
$Q_5 = 218A^{0.462}$	53
$Q_{10} = 352A^{0.475}$	53
$Q_{25} = 586A^{0.487}$	62
$Q_{50} = 815A^{0.494}$	72
$Q_{100} = 1,100A^{0.499}$	83
$Q_{500} = 2,000A^{0.509}$	111

Table 1.--Regression equations for flood magnitudes at selected recurrence intervals and corresponding standard error of estimate—Continued

Equation	Standard error of estimate, in percent
REGION 3—CENTRAL MOUNTAIN AREA (87 STATIONS)	
$Q_2 = 5.66A^{0.673}E^{-0.605}P^{1.03}$	81
$Q_5 = 31.6A^{0.650}E^{-0.868}P^{0.987}$	64
$Q_{10} = 74.7A^{0.638}E^{-1.00}P^{0.971}$	58
$Q_{25} = 186A^{0.626}E^{-1.14}P^{0.944}$	58
$Q_{50} = 329A^{0.617}E^{-1.22}P^{0.933}$	61
$Q_{100} = 553A^{0.610}E^{-1.30}P^{0.915}$	66
$Q_{500} = 1,530A^{0.595}E^{-1.45}P^{0.886}$	78
REGION 4—NORTHEAST PLATEAU AREA (21 STATIONS)	
$Q_2 = 1.38A^{0.491}E^{2.25}$	83
$Q_5 = 0.319A^{0.446}E^{3.60}$	74
$Q_{10} = 0.143A^{0.423}E^{4.31}$	75
$Q_{25} = 0.0590A^{0.398}E^{5.10}$	80
$Q_{50} = 0.0327A^{0.383}E^{5.60}$	85
$Q_{100} = 0.0188A^{0.369}E^{6.09}$	91
$Q_{500} = 0.0062A^{0.342}E^{7.04}$	107

Table 1.--Regression equations for flood magnitudes at selected recurrence intervals and corresponding standard error of estimate—Continued

Equation	Standard error of estimate, in percent
REGION 5—SOUTHEAST MOUNTAIN AREA (61 STATIONS)	
$Q_2 = 96.6A^{0.555}$	58
$Q_5 = 256A^{0.513}$	58
$Q_{10} = 416A^{0.492}$	63
$Q_{25} = 685A^{0.471}$	72
$Q_{50} = 937A^{0.458}$	79
$Q_{100} = 1{,}230A^{0.447}$	86
$Q_{500} = 2{,}120A^{0.425}$	102
REGION HE—HIGH-ELEVATION REGION (16 STATIONS)	
$Q_2 = 8.78A^{0.853}$	43
$Q_5 = 19.9A^{0.826}$	33
$Q_{10} = 29.6A^{0.816}$	33
$Q_{25} = 44.9A^{0.805}$	38
$Q_{50} = 58.2A^{0.799}$	42
$Q_{100} = 72.9A^{0.795}$	45
$Q_{500} = 113A^{0.787}$	55

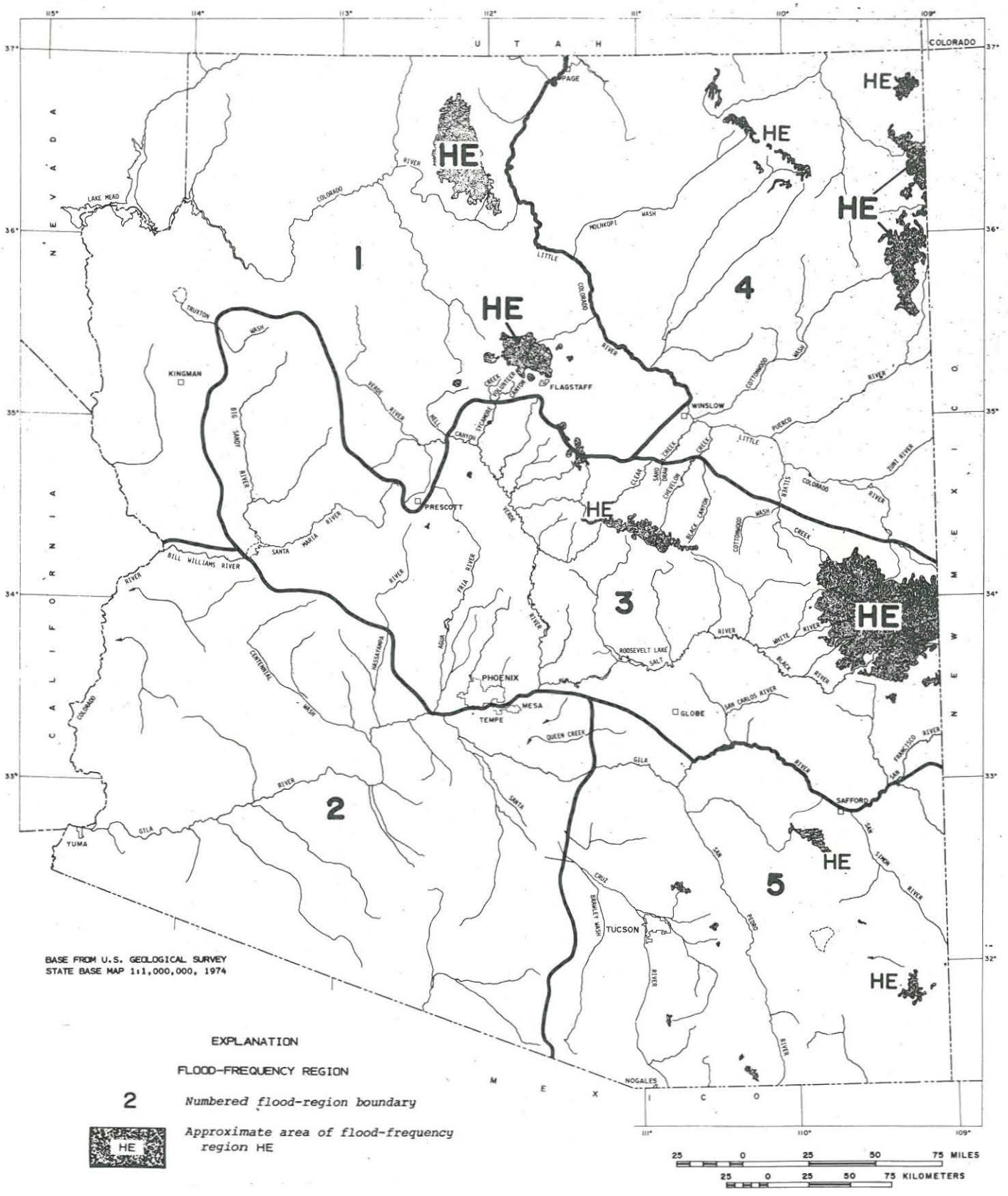

Figure 1.--Flood-frequency regions.

area should be measured by planimetering from the best available topographic maps.

Mean basin elevation (E), in thousands of feet above mean sea level, is obtained from topographic maps by placing a transparent grid over the area of the drainage basin, determining the elevation at each grid intersection, averaging the elevations, and dividing by 1,000. The grid size should be chosen so that at least 20 elevation points are sampled in the basin.

Mean annual precipitation (P), in inches, is determined from the normal annual precipitation map for Arizona, which was prepared by the U.S. Weather Bureau and published by the University of Arizona (1965) at a scale of 1:500,000. A smaller scale map (fig. 2) showing the same data is given in this report (U.S. Weather Bureau, no date). The mean annual precipitation is obtained by outlining the drainage basin on the precipitation map, placing a transparent grid over the basin, determining the precipitation at each grid intersection, and averaging the values. The grid size should be chosen to insure that an adequate number of precipitation points are sampled in the basin. Although the number will be governed by basin size, at least 10 points are recommended except in small basins. For small basins that fall between two precipitation lines and for those crossed by only one line, the precipitation value can be interpolated.

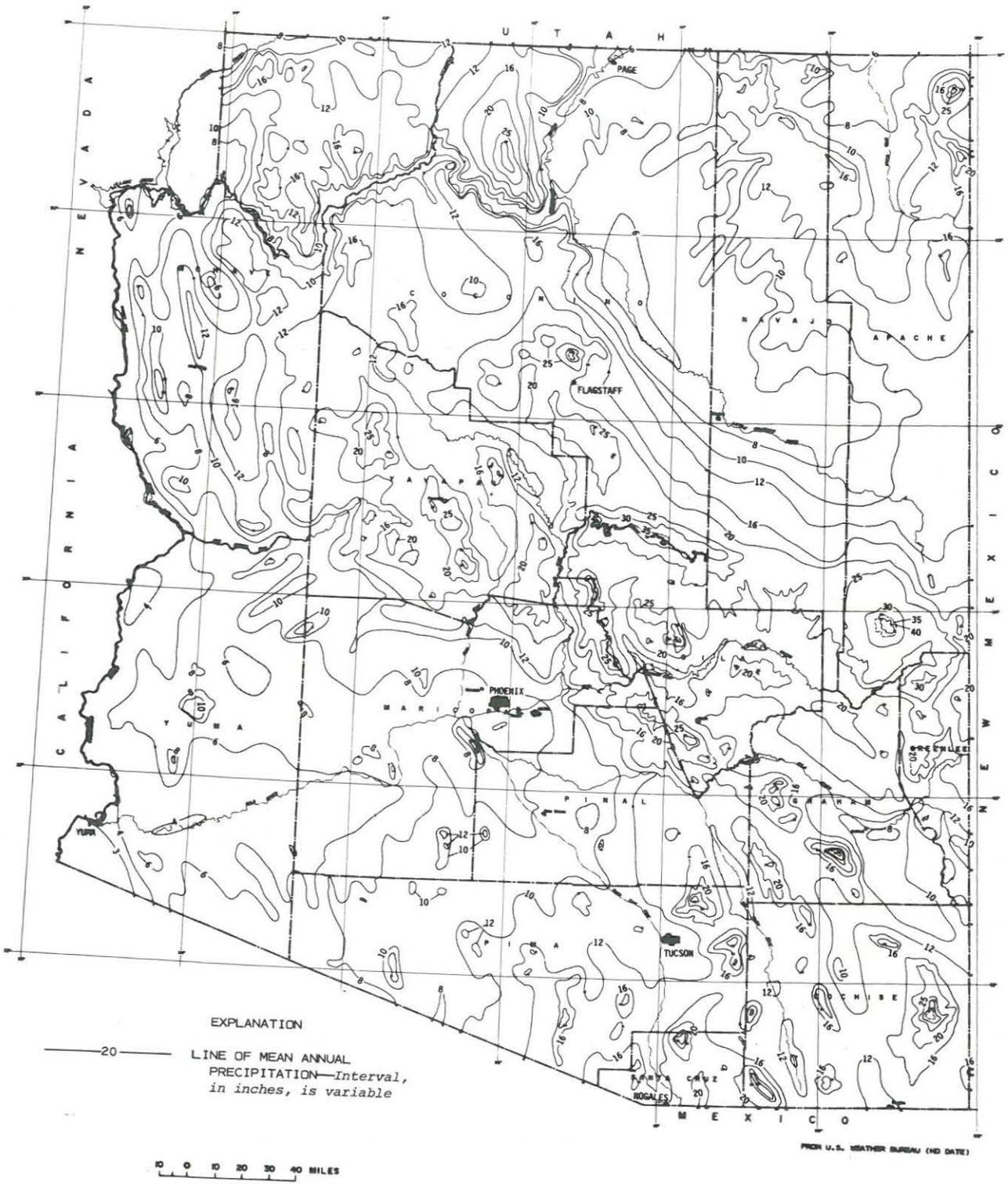

Figure 2.--Mean annual precipitation, 1931-60.

A transition zone between the high-elevation flood-frequency region and the numbered flood-frequency regions is defined for sites where the mean basin elevation is between 7,300 and 7,500 ft (see example 3 in the following section). In the transition zone discharge should be computed using the equation for the numbered flood-frequency region in which the site is located and the equation for the high-elevation flood-frequency region. The characteristics for the entire basin should be used in both computations, and then a weighted discharge should be computed on the basis of the mean basin elevation as

$$Q_{T(W)} = Q_{T(R)} \frac{7,500-\bar{E}}{200} + Q_{T(HE)} \frac{\bar{E}-7,300}{200},$$

where

$Q_{T(W)}$ = weighted discharge, in cubic feet per second, for recurrence interval T, in years;

$Q_{T(R)}$ = discharge from numbered flood-frequency region equation for recurrence interval T, in years;

$Q_{T(HE)}$ = discharge from high-elevation flood-frequency region equation for recurrence interval T, in years; and

$\bar{E}$ = mean elevation of basin, in feet.

At a site where the stream flows from one numbered flood-frequency region to another, the discharge should be computed using the equations for both regions. The characteristics for the entire basin should be used in both computations, and then a weighted average should be computed on the basis of the amount of the drainage area in each region. (See example 2 in the following section.)

If a stream flows from one numbered flood-frequency region to another and the mean basin elevation of the site is between 7,300 and 7,500 ft, the following method should be applied:

1. Compute the discharge for each of the numbered flood-frequency regions.
2. Compute a weighted discharge on the basis of the amount of drainage area in each region.
3. Compute the discharge for the high-elevation region.
4. Use the discharges obtained in steps 2 and 3, and compute a weighted discharge on the basis of the mean basin elevation.

Examples

Three examples illustrate the application of the method for estimating the magnitude of floods at ungaged sites.

EXAMPLE 1: Estimate of the magnitude of the 50-year flood in Olsen Wash at U.S. Highway 80-89, 35 mi northwest of Tucson.

1. The drainage basin is shown on U.S. Geological Survey 15-minute topographic maps—Tortolita Mountains and Oracle quadrangles—and the drainage area is 6.64 mi^2.
2. Using the topographic maps and figure 1, the basin is in region 5 and is not in the high-elevation region or in the transition zone.
3. The basin characteristic required for region 5 is drainage area.

4. From table 1, the equation for the 50-year flood in region 5 is

$$Q_{50} = 937A^{0.458}.$$

Substituting the basin-characteristic value in the equation,

$$Q_{50} = 937(6.64)^{0.458} = 2{,}230 \text{ ft}^3/\text{s}.$$

EXAMPLE 2: Estimate of the magnitude of the 50-year flood in Jacks Canyon at State Highway 87, 13 mi southeast of Winslow.

1. The drainage area is 267 mi^2 and is shown on the following U.S. Geological Survey topographic maps:

   Sunset Pass, 15-minute

   Chavez Mountain NE, 7½-minute

   Chavez Mountain East, 7½-minute

   Quayle Hill, 7½-minute

   Hay Lake, 7½-minute

   Chavez Mountain West, 7½-minute

   Turkey Mountain, 7½-minute

   Blue Ridge Reservoir, 7½-minute

   Long Valley, 7½-minute

2. Using the grid-sampling technique on the topographic maps, the mean basin elevation is 6,530 ft; therefore, the basin is not in the high-elevation region or the transition zone. Using the topographic maps and figure 1, the basin is in regions 3 and 4.

3. The basin characteristics required for region 3 are drainage area, mean basin elevation, and mean annual precipitation. The basin characteristics required for region 4 are drainage area and mean basin elevation.
4. The total drainage area is 267 mi^2, of which 222 mi^2 is in region 3 and 45 mi^2 is in region 4.
5. Using the grid-sampling technique on the precipitation map, the mean annual precipitation is 20 in.
6. The mean basin elevation, in thousands of feet, is 6.53.
7. From table 1, the equation for the 50-year flood in region 3 is

$$Q_{50} = 329A^{0.617}E^{-1.22}P^{0.933},$$

and the equation for the 50-year flood in region 4 is

$$Q_{50} = 0.0327A^{0.383}E^{5.60}.$$

Substituting the basin-characteristics values in the equations for regions 3 and 4, respectively,

$$Q_{50} = 329(267)^{0.617}(6.53)^{-1.22}(20)^{0.933} = 17{,}100\ ft^3/s$$

and

$$Q_{50} = 0.0327(267)^{0.383}(6.53)^{5.60} = 10{,}200\ ft^3/s.$$

8. The magnitude of the 50-year flood was computed by weighting the discharge computed for each region on the basis of the amount of drainage area in each region, and

$$Q_{50} = \frac{(10{,}200)45 + (17{,}100)222}{267} = 15{,}900\ ft^3/s.$$

EXAMPLE 3: Estimate of the magnitude of the 100-year flood in Slate Mountain Wash at U.S. Highway 180, 24 mi northwest of Flagstaff.

1. The drainage basin is shown on U.S. Geological Survey topographic maps—Ebert Mountain, 15-minute, and Kendrick Peak, 7½-minute—and the drainage area is 5.49 mi^2.
2. Using the grid-sampling technique on the topographic maps, the mean basin elevation is 7,350 ft; therefore, the basin is in the transition zone between the high-elevation region and one of the numbered regions. Using the topographic maps and figure 1, the basin is in region 1.
3. The basin characteristic required for region 1 is drainage area. Drainage area also is the only basin characteristic required for the high-elevation region.
4. From table 1, the equation for the 100-year flood in region 1 is

   $$Q_{100} = 584A^{0.490},$$

   and the equation for the 100-year flood in the high-elevation region is

   $$Q_{100} = 72.9A^{0.795}.$$

   Substituting the basin-characteristic value in the equations for region 1 and the high-elevation region, respectively,

$$Q_{100} = 584(5.49)^{0.490} = 1{,}350 \text{ ft}^3/\text{s}$$

and

$$Q_{100} = 72.9(5.49)^{0.795} = 282 \text{ ft}^3/\text{s}.$$

5. The magnitude of the 100-year flood was computed by weighting the discharge computed for each region on the basis of mean basin elevation, and

$$Q_{100} = 1{,}350 \frac{7{,}500-7{,}350}{200} + 282 \frac{7{,}350-7{,}300}{200} = 1{,}080 \text{ ft}^3/\text{s}.$$

Engineering judgment should be used in the application of the equations given in this report. The preceding recommendations for application of the equations where basins cross regional boundaries are examples. Many other possibilities exist that cannot be discussed in this report, and these must be considered on an individual basis.

Limitations and Accuracy

The regression equations for estimating the magnitude and frequency of floods are not applicable to streams where reservoirs, diversions, or urbanization have a significant effect on flood discharges. For example, the equations do not apply to the Santa Cruz River downstream from Greene Canal 40 mi downstream from Tucson because at this point the channel divides, and most of the water flows into Greene Canal. The equations also do not apply to the main stem of the Little Colorado River from the Zuni River to the mouth and to the main stem of the Gila River; the methods for estimating the magnitudes and

frequencies of floods for these streams are given in the section entitled "Little Colorado and Gila Rivers."

A potential hazard in using regression equations is the estimation of the peak discharge at a site having basin characteristics outside the range of values used in the regression analysis. Extrapolation beyond the observed range of the independent variable can be risky, and the applicability of the equations beyond the range of these values is unknown. The extreme values for each basin characteristic used in obtaining the equations are given in table 2. Caution and judgment should be used where a basin characteristic is outside the range of values used in the regression analysis, and the accuracy of the estimated peak discharge should be lowered.

A measure of the accuracy of a regression equation is the magnitude of the standard error of estimate. The standard error of estimate is a measure of how well the peak discharge estimated from the regression equation approximates the observed peak discharge used in the regression analysis. About 68 percent of the observed values used in a regression are within one standard error of the estimated value of the peak discharge. Standard errors for each regression equation were calculated in log units and converted to percentages for convenience. (See table 1.) Much of the error can be attributed to the extreme time and spatial variability of the annual peak discharges in Arizona; the variability of the annual peak discharges in Arizona is greater than that in most other States.

Table 2.--Extreme values for the basin characteristics used in the regression equations

Basin characteristics	Extremes	
	Maximum	Minimum
REGION 1		
Drainage area	5,090 mi^2	1.84 mi^2
REGION 2		
Drainage area	1,810 mi^2	0.09 mi^2
REGION 3		
Drainage area	5,499 mi^2	0.065 mi^2
Mean basin elevation	7,400 ft	1,780 ft
Mean annual precipitation	30.0 in.	10.0 in.
REGION 4		
Drainage area	3,300 mi^2	0.17 mi^2
Mean basin elevation	6,920 ft	5,150 ft
REGION 5		
Drainage area	3,610 mi^2	0.15 mi^2
HIGH-ELEVATION REGION		
Drainage area	747 mi^2	1.61 mi^2
Mean basin elevation	9,400 ft	7,390 ft

Another measure of the accuracy of a regression equation was introduced by Hardison (1971) and is expressed in terms of the equivalent years of record, which takes into account the regional variability of annual peak discharge. Equivalent years of record is the number of years of record that would be required at a previously ungaged site to obtain an estimate of peak discharge having an accuracy equal to that of the regression estimate. The main use of equivalent years of record is for the weighting of discharges from the record for a gaged site with the regional estimates for the site to obtain a better estimate of discharge. The procedure is discussed in the section entitled "Gaged Sites."

The equivalent years of record for the regression estimates of peak discharge for each recurrence interval on a statewide basis are:

Recurrence interval, in years	Equivalent years of record
2	3
5	5
10	7
25	8
50	9
100	9
500	10

Gaged Sites

Flood-frequency information for gaged sites is given in table 3 (see the section entitled "Streamflow Data"), and the locations

of the gaged sites are shown in figure 3. For each gaged site, two values of peak discharge are given for recurrence intervals of 2, 5, 10, 25, 50, 100, and 500 years. The first value is the flood discharge determined from the frequency analysis of the station data, and the second value is the adjusted station discharge determined from a procedure described by Sauer (1974). The adjusted station discharge values should be used for the gaged sites. The adjusted station value is a weighted average of the station value and the regression value computed from the equation

$$Q_{T(A)} = \frac{Q_{T(S)}N + Q_{T(R)}M}{N + M},$$

where

$Q_{T(A)}$ = adjusted flood discharge, in cubic feet per second, for recurrence interval T, in years;

$Q_{T(S)}$ = flood discharge from the station data for recurrence interval T, in years;

$Q_{T(R)}$ = flood discharge from the regression equation for recurrence interval T, in years;

N = number of years of record; and

M = equivalent years of record for the regression equation.

The discharge values for the 500-year flood at all the gaged sites have a low reliability; the flood-frequency relation for each gaged site was extended far beyond the years of record. Historical data were available for some sites and were helpful in making the extensions.

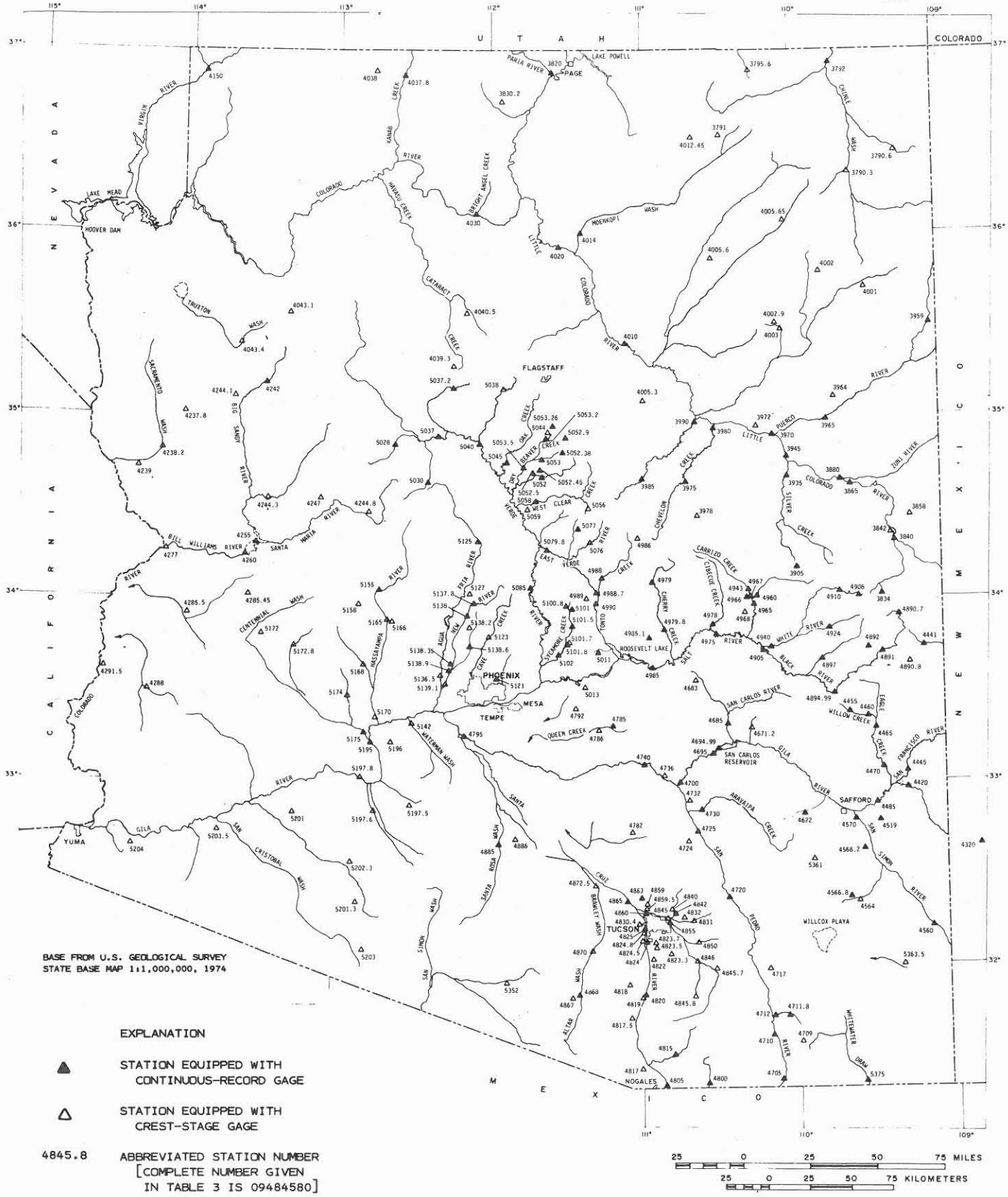

Figure 3.--Location of gaging stations used in the regression and Little Colorado and Zuni Rivers analyses.

The discharge values for the 500-year flood are included in this report because they are useful in flood-insurance studies.

Little Colorado and Gila Rivers

The Little Colorado and Gila Rivers are large streams that drain areas in several flood-frequency regions. Flow in the rivers is affected by regulation and diversions, and the rivers have flood-frequency characteristics different from those of tributary streams. Therefore, the regional regression equations do not apply to the main stem of the Little Colorado River from the Zuni River to the mouth or to the main stem of the Gila River.

Flood-frequency analyses for the Little Colorado and Gila Rivers were based on the flood-frequency relations for several gaged sites along the rivers, and the relations were adjusted for the effects of regulation and diversions. The relation between discharge for selected recurrence intervals and drainage area for the Little Colorado River from the Zuni River to the mouth is shown in figure 4. For the Gila River, the relation between discharge for selected recurrence intervals and distance in miles upstream and downstream from Coolidge Dam is shown in figures 5 and 6, respectively. Flood-frequency analyses for the Gila River below Coolidge Dam are based on discharges that were adjusted to the regulated conditions in 1975.

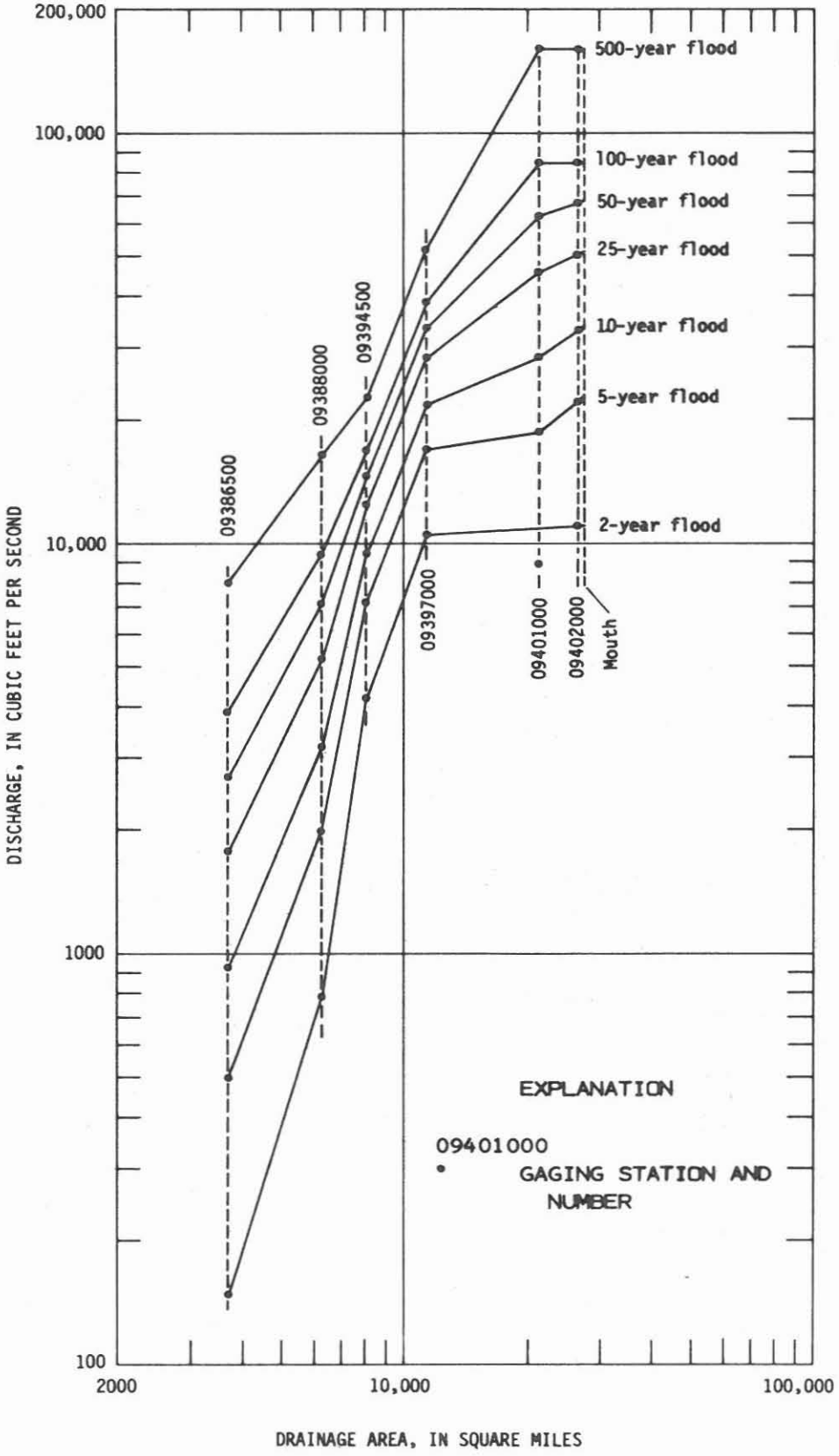

Figure 4.--Relation of discharge to drainage area for selected recurrence intervals for the Little Colorado River from the Zuni River to the mouth.

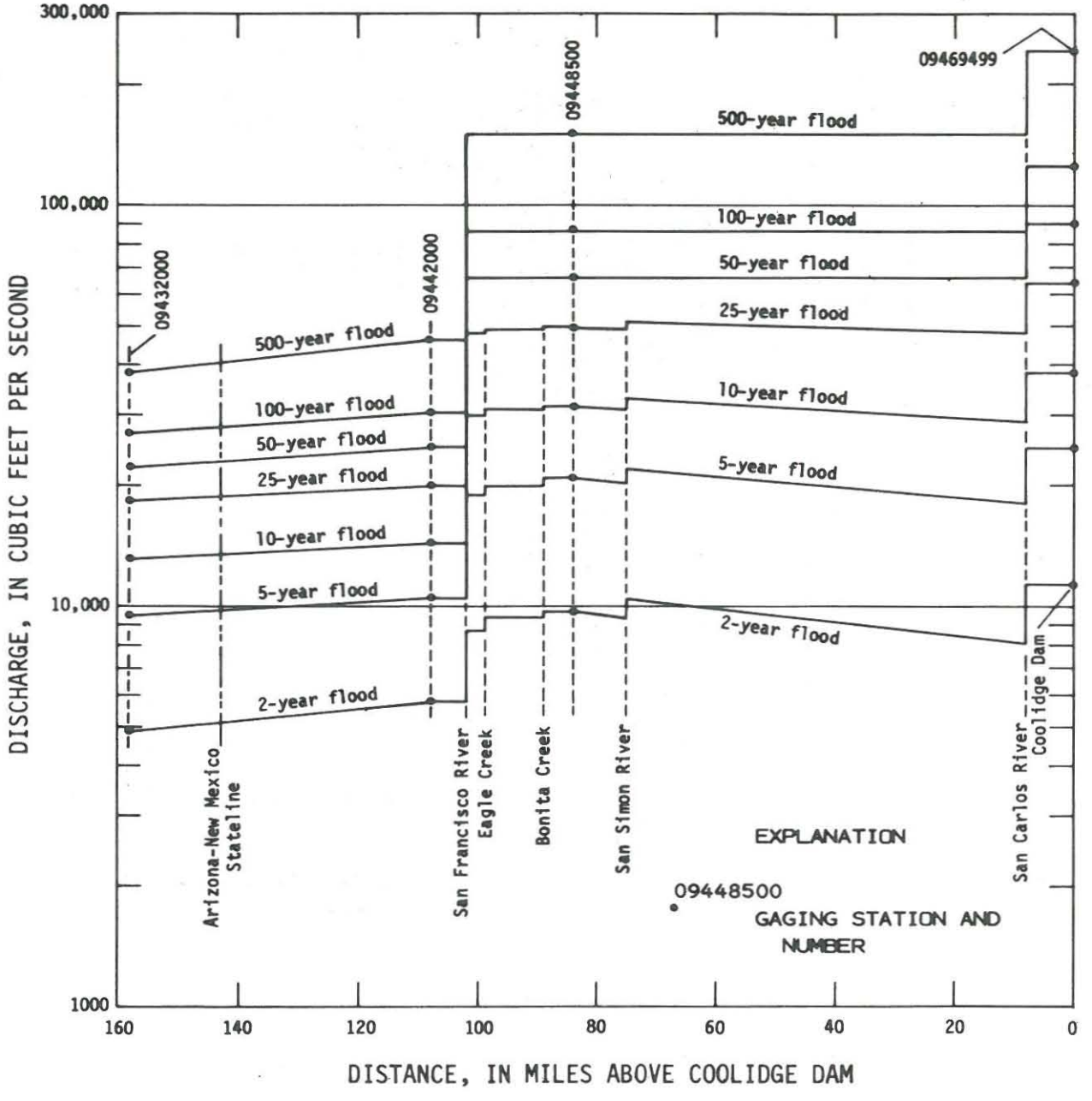

Figure 5.--Relation of discharge to miles above Coolidge Dam, Gila River main stem, for selected recurrence intervals.

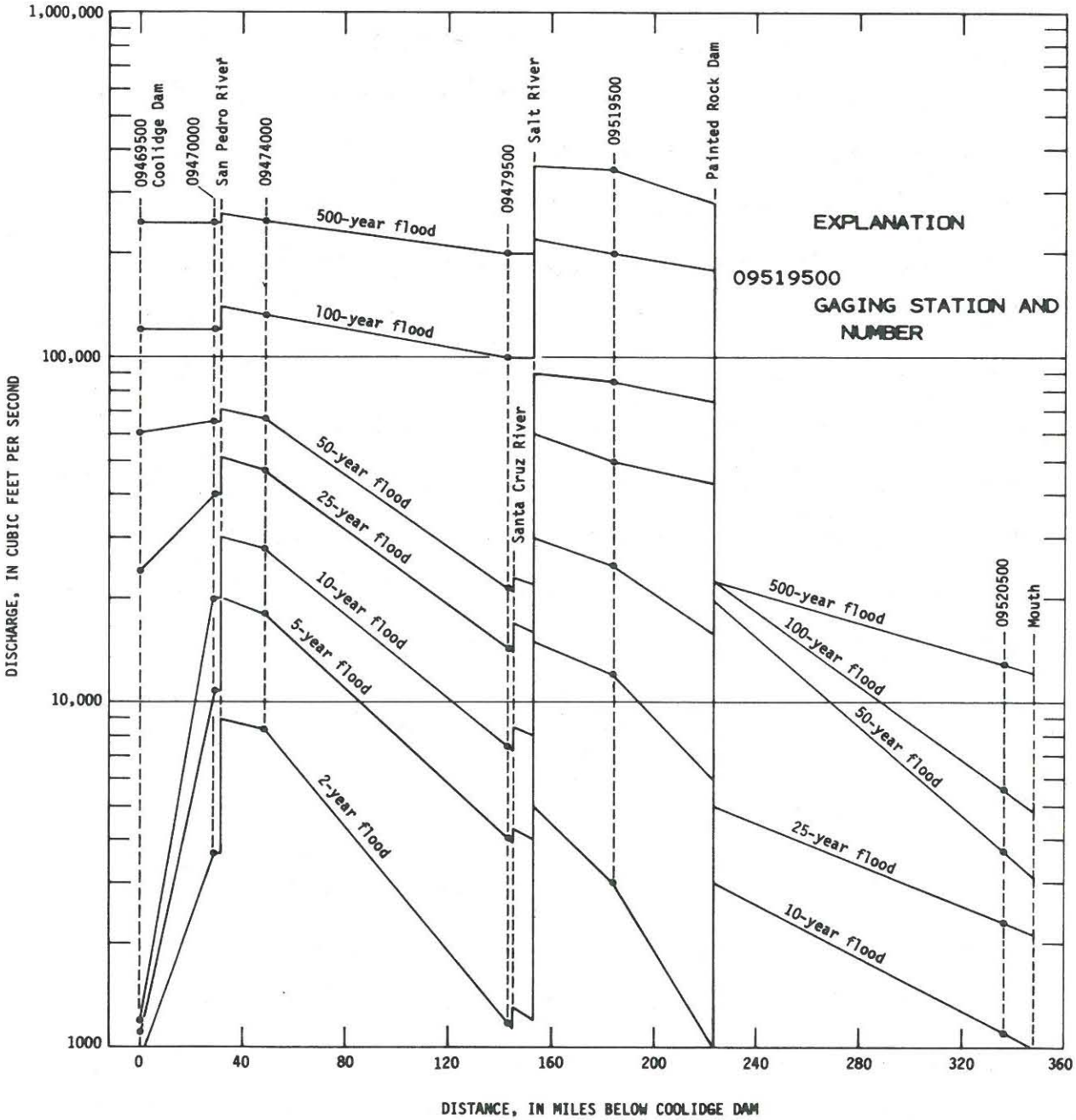

Figure 6.--Relation of discharge to miles below Coolidge Dam, Gila River main stem, for selected recurrence intervals.

MAXIMUM KNOWN FLOODS

The maximum known peak discharges at sites in Arizona having drainage areas of about 0.06 to 8,000 mi^2 are shown in figure 7. The discharge values shown were selected from tables 4 and 5, which give the maximum observed discharge at gaging stations and peak-discharge measurements at ungaged sites, respectively. An enveloping curve (H. F. Matthai, written commun., 1977) of maximum known discharges in the United States is shown for comparison. The curve reflects the additional data that have become available since Matthai (1969, p. 6) presented his original enveloping curve. The enveloping curve shown in figure 7 can be used to determine the potential or upper limit of peak discharge. As more streamflow data become available for Arizona, more peak discharges will be nearer the enveloping curve.

ANALYTICAL TECHNIQUES

Flood Records

Annual peak-discharge data collected through September 30, 1975, from 110 continuous-record and 111 crest-stage gaging stations were used in the regression analyses. The gaging stations are on streams that are not affected significantly by regulation, diversion, or urbanization. Installation of the crest-stage gages was begun in 1963; most of the crest-stage gages were installed to provide peak-discharge data for drainage areas of less than 100 mi^2, but some were installed

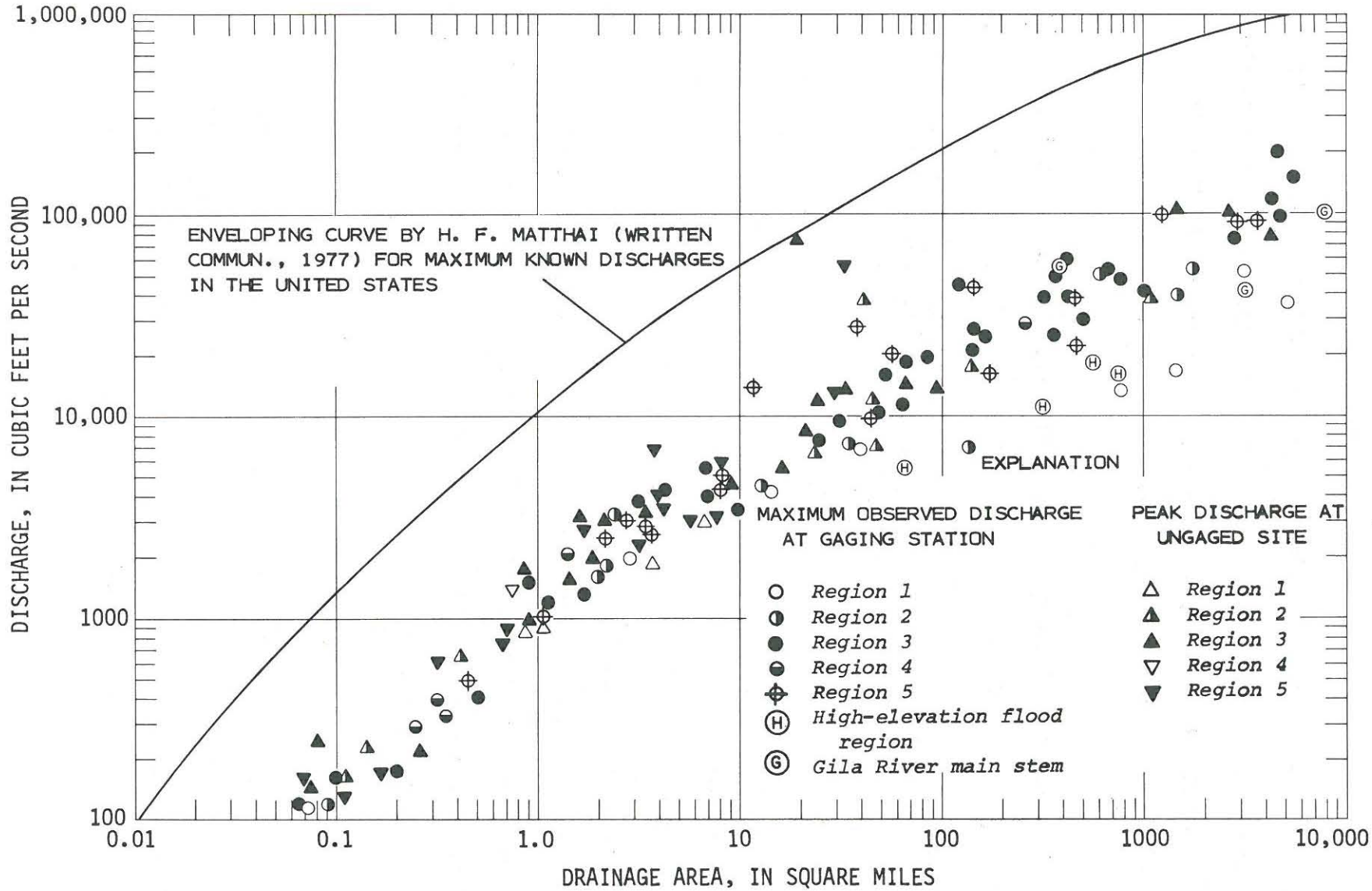

Figure 7.--Relation of maximum discharge to size of drainage area.

to provide data for drainage areas of more than 100 mi^2 in areas of the State where no data were available. Gaging stations used in the analysis were limited to those having 10 or more years of record and those at which flow events occurred in at least 75 percent of the years of record.

A summary of the distribution of average length of gaging-station record for drainage areas of different sizes is:

Drainage area, in square miles	Number of stations	Average length of record, in years
Less than 1	27	14
1-10	55	14
10-100	50	15
100-500	43	18
500-1,000	18	31
More than 1,000	28	33

The summary indicates that the stations are fairly evenly distributed in relation to size of drainage area. The strong relation between size of drainage area and average length of record reflects the recent emphasis on the collection of data for small streams.

Flood-Frequency Relations

The annual peak-discharge data for each gaging station were fitted to a log-Pearson Type III frequency distribution in accordance with the guidelines recommended by the U.S. Water Resources Council (1976). Generalized skew coefficients determined from the map by the

U.S. Water Resources Council (1976) were used for stations having 25 or less years of record, and weighted skew coefficients were used for stations having more than 25 years of record. Weighted skew coefficients were computed from the generalized values and the station values with years of record as the weighting factors. The flood-frequency distributions were adjusted, where applicable, for high and low outliers and for years having no flood events. Adjustments also were made for historic peak data according to the procedure adopted by the Water Resources Council (written commun.) in December 1976. The flood discharges determined from the computed frequency distributions for recurrence intervals of 2, 5, 10, 25, 50, 100, and 500 years (table 3) were used in the regression analyses.

Basin Characteristics

Physiographic and climatic characteristics of drainage basins are used to transfer flood-frequency information from gaged sites to ungaged sites by multiple-regression techniques. Initially, basin characteristics were selected on the basis of their possible effect on flood peaks, on the availability of data for defining the characteristics, and on the ease of measuring the characteristics. The basin characteristics measured and used in the initial analysis of data are as follows:

Drainage area (A), in square miles, is the area, measured in a horizontal plane, enclosed by a topographic divide from which

direct runoff from precipitation normally drains by gravity into the stream above a specified point. The drainage area was measured by planimetering from the best available topographic maps.

Main channel slope (S), in feet per mile, is the slope between two points at 10 and 85 percent of the distance from the gaging station to the basin divide (main channel length) and was computed by dividing the difference in altitude, in feet, by the distance, in miles, between the two points (Benson, 1964).

Main channel length (L), in miles, is the length of the main channel between the gaging station and the basin divide and was measured, on the best available topographic maps, along the channel that drains the largest basin.

Mean basin elevation (E), in thousands of feet above mean sea level, was obtained from topographic maps by placing a transparent grid over the drainage basin, determining the elevation at each grid intersection, averaging the elevations, and dividing by 1,000. The grid size was chosen so that at least 20 elevation points were sampled in the basin.

Soils index (Si), in inches, is a numerical index proportional to the long-term infiltration rate and was derived from a map of hydrologic soil groups (U.S. Soil Conservation Service, 1969).

Mean annual precipitation (P), in inches, was determined from the normal annual precipitation map for Arizona, which was prepared by the U.S. Weather Bureau and published by the University of Arizona (1965) at a scale of 1:500,000. The mean annual precipitation was obtained by outlining the drainage basin on the precipitation map, placing a transparent grid over the basin, determining the precipitation at each grid intersection, and averaging the values. For small basins between two precipitation lines and those crossed by only one line, the precipitation value was interpolated.

Precipitation intensity index (I), in inches, is the 50-year 24-hour precipitation, and was determined from an isohyetal map prepared by the U.S. Weather Bureau (1967).

Mean annual snowfall (Sn), in inches, was determined from Sellers (1960).

Only drainage area, mean basin elevation, and mean annual precipitation were found to be significant in the regression analyses (see table 3 for values). Selected basin characteristics for all U.S. Geological Survey gaging stations in the United States are stored in the basin-characteristics file at U.S. Geological Survey National Headquarters in Reston, Virginia.

Regression Analyses

Standard multiple-regression techniques are used to develop equations relating peak discharges at selected recurrence intervals to basin characteristics. Previous studies show that transforming all variables to logarithms tends to normalize the variables and residuals and tends to make the residuals homoscedastic as required in standard multiple-regression analysis. The equations resulting from the regression analysis are of the general form

$$Q_T = aC_1^{b_1}C_2^{b_2}C_3^{b_3} \ldots,$$

where

Q_T = discharge, in cubic feet per second, for selected recurrence interval T, in years;

a = regression constant;

C_1, C_2, and C_3 = basin characteristics; and

b_1, b_2, and b_3 = regression coefficients estimated by correlating logarithms of observed T-year peak discharges with logarithms of basin characteristics for the network of gaged sites.

The most important facets in the development of regression equations for predicting peak discharges are the variable selection and regionalization or grouping of data into hydrologic regions to provide the best predictive equations. The initial variable selection is made by the backward elimination procedure (Draper and Smith, 1966). The

procedure is a statistical technique that eliminates variables one by one according to their statistical significance in explaining variation in the dependent variable (T-year peak discharge). The procedure continues to eliminate variables until only those that are significant at a predetermined level remain in the analysis. The significance level that is traditionally used—and the one used in this report—is the 5-percent level. The following tabulation summarizes the backward elimination procedure for the 50-year peak discharge in the high-elevation region.

Basin characteristic used in equation	Variance in 50-year peak explained by equation, in percent	Standard error of estimate	
		Log units	Percent
A, S, L, E, Si, P, I, Sn	96	0.186	45
A, S, E, Si, P, I, Sn	96	.176	42
A, S, Si, P, I, Sn	96	.167	40
A, S, Si, P, I	95	.161	38
A, S, P, I	95	.155	37
A, S, I	94	.174	42
A, S	93	.172	41
A	92	.175	42

The only variable found to be statistically significant at the 5-percent level in the preceding table is drainage area (A).

After the initial runs were made using the backward elimination procedure, other possible combinations of variables were tested. The

selection of basin characteristics for the final equations (table 1) was made using the following guidelines:

1. Each variable selected significantly contributed to explaining the spatial variation in the T-year peak discharge.
2. The seven equations in each region contained the same basin characteristics in order to preserve the intercorrelation that exists among peak discharges of different recurrence intervals.
3. No equation contained two or more variables that are highly correlated because this can reduce the effectiveness of the predictive equation.

The predictive ability of regression equations often can be improved by dividing an area into hydrologic regions in which the basin characteristics in each region are similar but are collectively different from those of all other regions. Accordingly, plots were made of residuals from the statewide regression against mean basin elevation (fig. 8) and drainage area (fig. 9). Figure 8 shows that the stations having mean basin elevations greater than 7,500 ft have similar flood characteristics and that they differ from those for the remaining stations; figure 9 shows no such relation for drainage area.

After the high-elevation stations were removed from the analysis, the remaining stations were analyzed by regions. Many different regional configurations were tested using map plots of residuals and

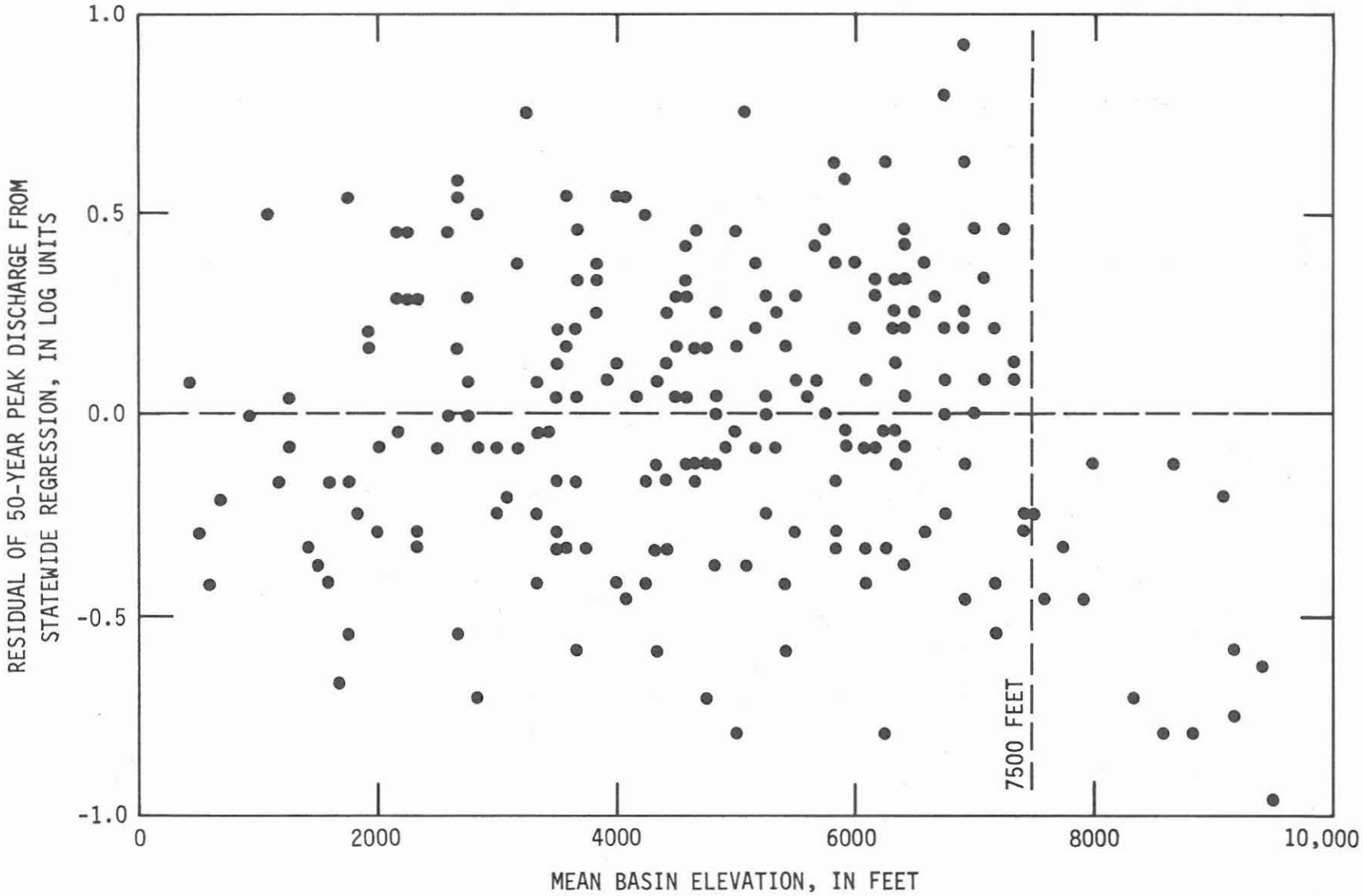

Figure 8.--Relation of residuals for 50-year peak discharge to mean basin elevation.

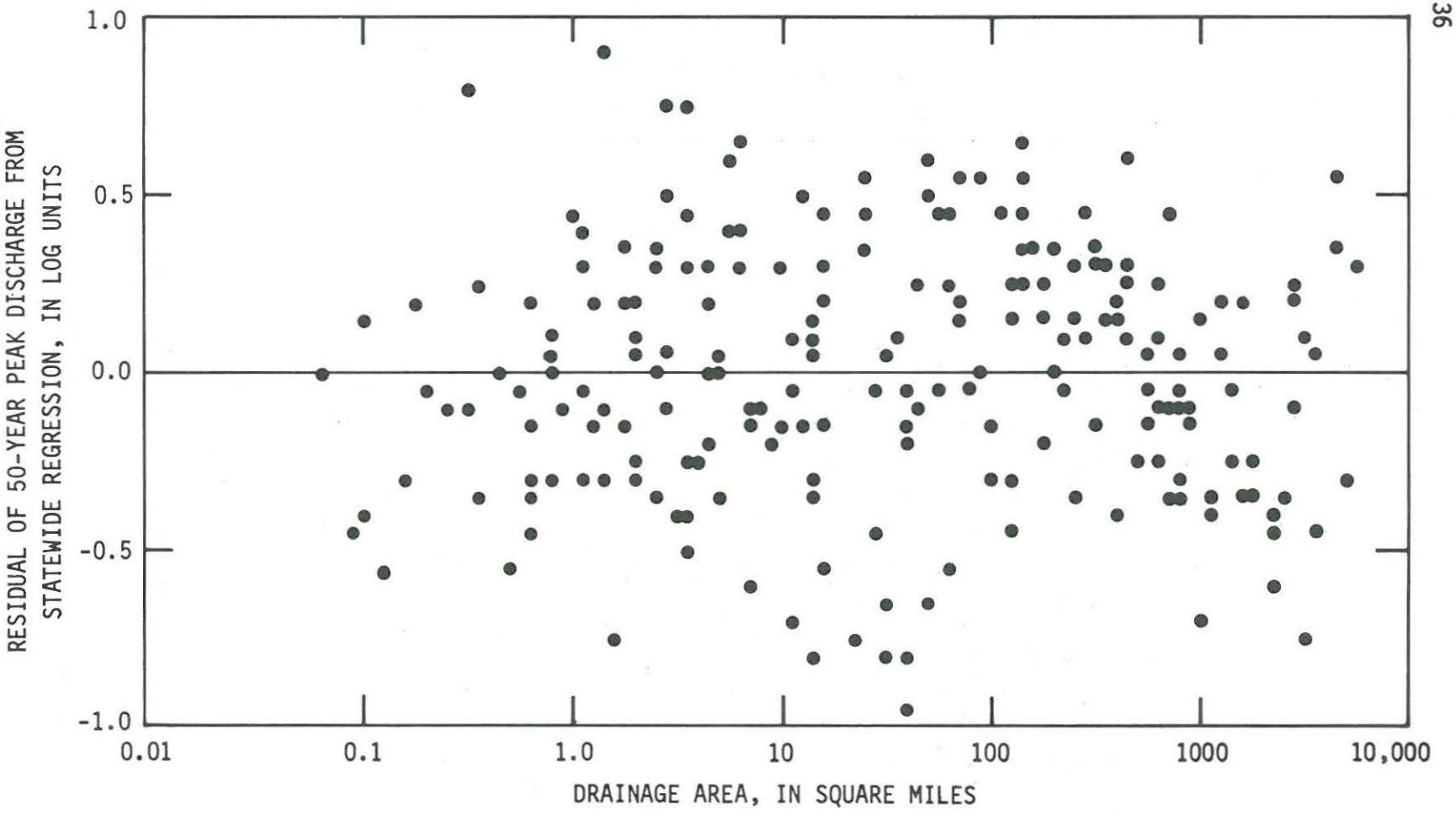

Figure 9.--Relation of residuals for 50-year peak discharge to size of drainage area.

general topographic and meteorologic regions. The five numbered flood-frequency regions selected for the final analyses are shown in figure 1, and the number of stations used in the regression analyses for each region is shown in table 1. Where a regional boundary crosses the drainage basin above a gaging station, the station was used in the regression analyses for both regions (see table 3).

Stations having a mean basin elevation greater than 7,500 ft were used in the analyses for the high-elevation region, stations having a mean basin elevation of less than 7,400 ft were used in the analyses for the numbered regions, and two stations having mean basin elevations of 7,390 and 7,400 ft were used in both analyses. In order to provide a smooth transition between the equations for the high-elevation region and those for the numbered regions, mean basin elevations between 7,300 and 7,500 ft were designated as a transition zone. The high-elevation region, therefore, was designated for basins having a mean elevation equal to or greater than 7,500 ft. In the transition zone flood magnitudes were computed using the equations for the appropriate regions, and the results were weighted (see example 3).

In the analyses for the high-elevation region 13 of the 16 stations used are in the east-central part of the State. Although most of the high-elevation data are for this area, data for the three stations in other parts of the State indicate that the equations for the high-elevation region also apply to other parts of the State.

SUMMARY

Regression equations were developed to estimate flood magnitudes at ungaged sites in Arizona for recurrence intervals of 2, 5, 10, 25, 50, 100, and 500 years for six flood-frequency regions. The equations relate flood magnitudes to one or more of the following statistically independent variables: size of drainage area, mean basin elevation, and mean annual precipitation. The regression equations apply to streams that are not affected significantly by regulation, diversion, or urbanization. Separate methods were developed to estimate flood magnitudes and frequencies for the main stem of the Little Colorado River from the Zuni River to the mouth and for the main stem of the Gila River; discharge is related to size of drainage area for the Little Colorado River and to miles upstream and downstream from Coolidge Dam for the Gila River.

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STREAMFLOW DATA

Table 3.--Basin characteristics and flood-frequency data for gaging stations used in regression analyses

REGION: HE, high-elevation flood-frequency region.

YR: Number of years of record.

BASIN CHAR: Basin characteristics. DA, drainage area in square miles; EL, mean basin elevation in feet above mean sea level; PR, mean annual precipitation in inches.

FLOOD DISCHARGES: Q, discharge, in cubic feet per second, for indicated recurrence interval in years. First line, discharge used in regression analysis; second line, weighted averages of values from frequency distributions and values from regression equations.

STA NO.	STATION NAME	REGION	YR	BASIN CHAR DA	EL	PR	FLOOD DISCHARGES Q2	Q5	Q10	Q25	Q50	Q100	Q500
09379030	BLACK MOUNTAIN WASH NEAR CHINLE, AZ	4	13	80.70	5920	10.9	597	1310	1970	3060	4050	5230	8750
							607	1320	1960	3020	3910	5050	8260
09379060	LUKACHUKAI CREEK TRIB NR LUKACHUKAI, AZ	4	13	1.37	5820	9.8	13	44	83	161	248	366	803
							26	89	167	302	436	609	1180
09379100	LONG HOUSE WASH NEAR KAYENTA, AZ	4	14	1.38	6920	12.0	323	915	1580	2810	4090	5730	11300
							288	776	1280	2260	3220	4570	8960
09379200	CHINLE WASH NR MEXICAN WATER, AZ	4	12	3300.00	6260	10.9	1190	2210	3060	4320	5410	6610	9940
							1870	4130	6330	9440	12100	15100	23700
09379560	EL CAPITAN WASH NEAR KAYENTA, AZ	4	13	5.88	5690	9.0	497	1010	1470	2180	2810	3540	5640
							434	831	1150	1670	2110	2680	4210
09382000	PARIA RIVER AT LEES FERRY, AZ	1	52	1410.00	6150	12.0	4270	8030	11000	15100	18400	21800	30600
							2380	5390	8090	12400	16200	20600	33600
09383020	HOUSE ROCK WASH TRIB NR MARBLE CANYON, AZ	1	14	3.54	5290	9.6	26	84	156	308	480	719	1650
							40	126	225	426	643	941	2030
09383400	LITTLE COLORADO RIVER AT GREER, AZ	HE	15	30.90	9400	31.2	176	341	475	669	829	1000	1450
							174	340	479	683	857	1040	1540
09384000	LITTLE COLORADO R ABV LYMAN RES NR ST. JOHNS, AZ	HE	36	747.00	7760	20.0	976	2360	3720	6030	8220	10900	19000
							1090	2650	4180	6610	8880	11500	19400
09384200	LYMAN RES TRIB NR ST. JOHNS, AZ	4	13	0.24	6100	11.6	26	58	86	130	168	211	329
							28	73	122	209	292	400	745
09385800	LITTLE COLORADO R TRIB NR ST. JOHNS, AZ	4	13	0.35	6350	11.1	49	138	236	414	593	815	1540
							49	142	246	440	630	885	1710
09390500	SHOW LOW CREEK NEAR LAKESIDE, AZ	3,HE	22	68.60	7320	23.7	277	1120	2260	4670	7360	11000	24100
							330	1260	2450	4760	7250	10500	21600
09393500	SILVER CREEK NEAR SNOWFLAKE, AZ	3,4	46	886.00	6400	16.7	2970	5950	8470	12300	15500	19200	29000
							2980	6150	9060	13600	17700	22300	35600
09395900	BLACK CREEK NEAR LUPTON, AZ	HE	12	500.00	7500	15.8	2730	4180	5230	6650	7750	8910	11800
							2540	3940	5040	6660	8000	9460	13300

STA NO.	STATION NAME	REGION	YR	BASIN CHAR DA	EL	PR	FLOOD DISCHARGES Q2	Q5	Q10	Q25	Q50	Q100	Q500
09396400	DEAD WASH TRIB NEAR HOLBROOK, AZ	4	13	1.00	5740	7.9	188 165	387 327	560 457	825 677	1060 864	1320 1100	2040 1750
09396500	PUERCO RIVER NEAR ADAMANA, AZ	4	10	2760.00	6730	12.6	11600 10100	20900 17400	28300 22900	39000 31900	47700 39100	57100 48300	81900 72400
09397200	PENZANCE WASH NEAR JOSEPH CITY, AZ	4	13	0.17	5150	7.8	30 28	72 66	113 101	183 160	247 211	324 277	555 464
09397500	CHEVELON CR BLW WILDCAT CANYON NR WINSLOW, AZ	3	23	275.00	7030	24.0	2470 2420	7310 6930	12700 11700	22800 20400	33100 29100	46000 40000	89000 75000
09397800	BROOKBANK CANYON NEAR HEBER, AZ	3	12	27.60	6950	22.1	111 168	304 531	502 982	845 1720	1170 2510	1560 3340	2750 6180
09398000	CHEVELON CREEK NEAR WINSLOW, AZ	3,4	48	794.00	6440	18.4	2440 2480	5940 6120	9490 9870	15700 16400	21800 22800	29400 30500	53700 55300
09398500	CLEAR CR BLW WILLOW CR NR WINSLOW, AZ	3	28	321.00	7100	25.8	2420 2420	6810 6700	11600 11200	20100 19200	28600 27000	39200 36600	73300 67000
09399000	CLEAR CREEK NEAR WINSLOW, AZ	3,4	46	607.00	6500	18.7	2610 2620	6990 6980	11700 11600	20500 20200	29500 28800	40900 39600	79700 75800
09400100	GANADO WASH TRIB NEAR GANADO, AZ	4	13	11.10	6770	11.8	223 243	535 639	845 1080	1380 1860	1890 2620	2510 3620	4450 6840
09400200	STEAMBOAT WASH TRIB NR GANADO, AZ	4	13	0.32	6750	12.1	30 35	171 175	426 392	1130 941	2110 1630	3710 2760	11600 7810
09400290	TESHBITO WASH TRIB NR HOLBROOK, AZ	4	13	16.40	6420	8.2	368 366	934 923	1500 1470	2480 2430	3410 3310	4520 4460	7970 7900
09400300	TESHBITO WASH NEAR HOLBROOK, AZ	4	13	57.40	6280	9.2	601 606	1200 1270	1710 1870	2470 2850	3130 3710	3870 4770	5890 7790
09400530	COW CANYON NEAR WINSLOW, AZ	1	14	3.53	5380	10.0	47 44	109 132	168 228	263 409	350 592	451 835	750 1650
09400560	ORAIBI WASH TRIB NEAR ORAIBI, AZ	4	12	1.76	6020	10.2	108 107	300 289	511 476	902 820	1300 1150	1810 1590	3530 2980

STA NO.	STATION NAME	REGION	YR	BASIN CHAR DA	EL	PR	FLOOD DISCHARGES Q2	Q5	Q10	Q25	Q50	Q100	Q500
09400565	POLACCA WASH TRIB NEAR CHINLE, AZ	4	12	6.17	6890	12.3	227 233	903 857	1860 1640	4020 3330	6620 5170	10400 7950	25600 18100
09401245	KLETHLA VALLEY TRIB NR KAYENTA, AZ	4	14	0.77	6730	10.2	129 121	192 213	236 315	296 511	341 709	389 973	505 1890
09401400	MOENKOPI WASH NEAR, TUBA CITY, AZ	4	35	2500.00	5820	8.7	3870 3830	6120 6100	7760 7760	9950 10100	11700 11900	13400 13800	17900 18800
09403000	BRIGHT ANGEL CREEK NEAR GRAND CANYON, AZ	1,HE	50	101.00	7390	19.8	430 430	1000 999	1570 1560	2550 2540	3500 3460	4660 4620	8370 8250
09403780	KANAB CREEK NEAR FREDONIA, AZ	1	11	1085.00	6100	12.0	884 1690	2260 3730	3700 5490	6240 8640	8750 11600	11900 15200	22000 26400
09403800	BITTER SEEPS WASH TRIB NR FREDONIA, AZ	1	13	2.85	5120	12.0	126 116	560 456	1220 898	2810 1930	4810 3130	7810 4990	20800 12500
09403930	WEST CATARACT CREEK NR WILLIAMS, AZ	1	12	3.18	7190	23.5	25 37	80 117	146 207	274 389	409 580	585 838	1190 1740
09404050	SPRING VALLEY WASH TRIB NR WILLIAMS, AZ	1	13	3.93	6750	12.2	11 40	54 124	121 221	283 430	488 666	791 998	2070 2260
09404310	YAMPAI CANYON TRIB NR PEACH SPRINGS, AZ	3	12	0.20	5360	12.2	15 14	43 39	72 66	126 118	179 172	246 239	461 466
09404340	TRUXTON WASH AT VALENTINE, AZ	3	11	370.00	4630	12.1	1240 1310	4320 4400	7860 7880	14300 14100	20600 20300	28200 27800	51300 51100
09415000	VIRGIN RIVER AT LITTLEFIELD, AZ	1	46	5090.00	5200	11.0	5050 5290	10000 11000	14400 15700	21300 23200	27500 30000	34700 37600	55600 60000
09423780	WALNUT CREEK NEAR KINGMAN, AZ	1	11	31.30	5040	13.9	258 199	410 487	520 747	666 1190	781 1600	899 2140	1190 3780
09423820	SACRAMENTO WASH NEAR YUCCA, AZ	1	11	787.00	3400	10.1	2390 1730	5610 4240	8770 6790	14100 11000	19200 15100	25300 19800	44300 34900
09423900	SACRAMENTO WASH TRIB NR TOPOCK, AZ	1	13	14.70	1450	6.2	41 98	182 291	399 517	920 1000	1580 1560	2570 2340	6860 5450

STA NO.	STATION NAME	REGION	YR	BASIN CHAR DA	EL	PR	FLOOD DISCHARGES Q2	Q5	Q10	Q25	Q50	Q100	Q500
09424200	COTTONWOOD WASH NO.1 NR	3	12	143.00	5350	14.0	2870	6390	9610	14800	19400	24800	40300
	KINGMAN, AZ						2470	5250	7650	11900	15700	20400	34100
09424410	BIG SANDY RIVER TRIB NR	3	13	1.99	3700	12.0	19	99	229	551	965	1590	4310
	KINGMAN, AZ						25	123	271	599	994	1550	3790
09424430	KAISER SPRING CANYON TRIB NR	3	13	1.70	3520	11.2	59	244	506	1090	1770	2740	6520
	WIKIEUP, AZ						56	221	438	906	1430	2170	4940
09424480	ASH CREEK NEAR KIRKLAND, AZ	3	13	6.95	4680	10.4	96	293	518	942	1380	1940	3810
							95	293	524	960	1420	1990	3940
09424700	IRON SPRING WASH TRIB NR	3	12	0.64	3470	12.1	8	40	89	208	356	574	1490
	BAGDAD, AZ						12	56	123	269	444	679	1610
09425500	SANTA MARIA RIVER NR ALAMO,	3	28	1520.00	3650	14.4	2880	10500	20200	40200	62300	91900	200000
	AZ						3140	11400	22000	42800	65400	94600	199000
09426000	BILL WILLIAMS RIVER BELOW	3	43	4730.00	4120	13.7	10500	43700	84500	161000	235000	325000	589000
	ALAMO DAM, AZ						10500	42300	79800	150000	216000	298000	536000
09427700	MONKEYS HEAD WASH NEAR PARKER,	2	12	1.84	1130	5.5	18	87	197	470	824	1360	3790
	AZ						94	229	369	661	982	1430	3210
09428545	CUNNINGHAM WASH TRIB NEAR	2	12	0.77	2330	8.1	45	98	147	225	298	382	634
	WENDEN, AZ						71	165	250	399	536	715	1240
09428550	BOUSE WASH TRIB NEAR BOUSE,	2	13	14.60	1230	6.5	292	858	1510	2750	4060	5750	11700
	AZ						280	781	1350	2390	3470	4830	9510
09428800	TYSON WASH TRIB NR QUARTZSITE,	2	13	13.70	1520	6.0	329	587	794	1100	1350	1630	2380
	AZ						281	691	1070	1720	2310	3070	5320
09429150	CREOSOTE WASH NEAR EHRENBERG,	2	11	1.98	509	5.5	76	226	401	737	1090	1560	3190
	AZ						108	276	453	783	1120	1550	3000
09444100	CAMPBELL BLUE CREEK NR ALPINE,	HE	17	11.60	8300	20.0	32	89	147	247	343	458	806
	AZ (USFS)						38	103	168	271	367	477	796
09444500	SAN FRANCISCO RIVER AT	3	69	2766.00	6880	18.1	7230	17600	28000	45900	63200	84100	150000
	CLIFTON, AZ						7230	17600	28000	45900	63100	83600	148000

STA NO.	STATION NAME	REGION	YR	BASIN CHAR DA	EL	PR	FLOOD DISCHARGES Q2	Q5	Q10	Q25	Q50	Q100	Q500
09445500	WILLOW CR NR POINT OF PINES NR	3	23	102.00	6340	19.8	629	1510	2330	3670	4870	6250	10200
	MORENCI, AZ						660	1680	2740	4500	6230	8130	14100
09446000	WILLOW CR NR DOUBLE CIRCLE	3	25	149.00	6310	19.2	1040	3220	5630	9980	14300	19500	35800
	RANCH NR MORENCI, AZ						1050	3190	5510	9630	13700	18600	33700
09446500	EAGLE CR NR DOUBLE CIRCLE	3	25	377.00	6410	20.0	2500	6330	10000	16200	21800	28400	47500
	RANCH NR MORENCI, AZ						2470	6230	9870	16100	21800	28400	48300
09447000	EAGLE CR ABV PUMPING PLANT NR	3	33	613.00	6060	19.2	2330	6200	10100	16700	22800	30100	51700
	MORENCI, AZ						2390	6430	10600	17700	24400	32200	56000
09451900	AGRIC RSCH SERV WATERSHED W-I	5	29	0.81	3350	8.0	83	194	297	460	606	773	1240
	NR SAFFORD, AZ						83	199	312	494	664	854	1420
09456000	SAN SIMON RIVER NR SAN SIMON,	5	12	814.00	4830	14.9	2670	4680	6200	8290	9950	11700	16000
	AZ						2930	5650	8060	11400	14300	17200	25400
09456400	GOLD GULCH NEAR BOWIE, AZ	5	13	15.00	5170	10.9	572	1270	1900	2880	3730	4690	7360
							546	1200	1790	2720	3530	4460	7070
09456680	AGRIC RSCH SERV WATERSHED W-V	5	29	1.13	4550	10.0	78	236	410	721	1030	1400	2560
	NR SAFFORD, AZ						80	241	416	722	1020	1380	2480
09456820	AGRIC RSCH SERV WATERSHED W-IV	5	28	1.19	3650	9.0	73	154	224	330	421	522	795
	NR SAFFORD, AZ						76	173	269	421	565	718	1190
09457000	SAN SIMON RIVER NR SOLOMON,	5	45	2192.00	4270	12.2	4840	7830	9950	12700	14900	17100	22300
	AZ						4970	8370	11100	14700	17700	20600	28400
09462200	AGRIC RSCH SERV WATERSHED W-II	5	29	1.07	3800	12.0	275	583	845	1240	1570	1940	2920
	NR SAFFORD, AZ						258	536	764	1120	1430	1780	2730
09467120	SALT CREEK NR PERIDOT, AZ	3	12	30.30	3490	16.0	584	1700	2910	5050	7140	9700	17700
							559	1650	2870	5120	7430	10300	19700
09468300	SEVENMILE WASH TRIB NEAR	3	14	0.83	4410	19.0	18	93	209	483	817	1300	3230
	GLOBE, AZ						22	106	227	487	790	1210	2790
09468500	SAN CARLOS RIVER NEAR PERIDOT,	3	46	1027.00	4480	17.2	7220	15400	22500	33400	42700	53000	81200
	AZ						7060	15200	22400	34100	44600	56300	90600

STA NO.	STATION NAME	REGION	YR	BASIN CHAR DA	EL	PR	FLOOD DISCHARGES Q2	Q5	Q10	Q25	Q50	Q100	Q500
09470500	SAN PEDRO RIVER AT PALOMINAS,	5	36	741.00	4950	17.9	6390	10100	12800	16300	19000	21800	28500
	AZ						6190	9790	12500	16100	19100	22200	29900
09470900	SAN PEDRO RIVER TRIB NR	5	13	7.12	4770	16.0	544	921	1200	1570	1870	2170	2910
	BISBEE, AZ						495	859	1160	1630	2050	2490	3770
09471000	SAN PEDRO RIVER AT CHARLESTON,	5	60	1219.00	4840	16.5	6950	12500	17500	26000	34100	43900	75900
	AZ						6860	12300	17100	25200	32800	42000	71300
09471180	AGRIC RSCH SERV WATERSHED	5	14	3.47	4550	14.0	215	635	1090	1910	2710	3700	6790
	W-III NR TOMBSTONE, AZ						211	595	982	1660	2300	3090	5460
09471200	AGRIC RSCH SERV WATERSHED W-I	5	11	57.70	4700	14.0	2590	6780	9850	13500	15900	17900	21500
	NR TOMBSTONE, AZ						2230	5300	7210	9760	11400	13200	16900
09471700	FENNER WASH NEAR BENSON, AZ	5	13	2.71	4180	12.3	165	432	699	1150	1570	2070	3550
							165	430	692	1130	1530	2010	3410
09472000	SAN PEDRO RIVER NEAR REDINGTON,	5	34	2939.00	4660	15.5	7750	15200	21400	30900	39000	48100	73000
	AZ						7780	15200	21400	30600	38400	47200	70800
09472400	MAMMOTH WASH NEAR MAMMOTH,	5	13	2.40	3700	13.8	145	532	1020	2000	3050	4430	9190
	AZ						147	495	887	1630	2370	3360	6530
09472500	SAN PEDRO RIVER NR MAMMOTH,	5	11	3610.00	4550	15.3	16400	29300	39200	52800	63800	75300	104000
	AZ						14800	25500	33100	44200	53000	63000	87300
09473000	ARAVAIPA CREEK NEAR MAMMOTH,	5	24	541.00	4530	16.2	4980	9530	13200	18400	22700	27400	39400
	AZ						4780	9000	12300	17100	21100	25500	36900
09473200	GREEN LANTERN WASH NR	5	12	3.63	2590	14.0	426	1400	2530	4660	6850	9620	18700
	WINKELMAN, AZ						380	1130	1890	3300	4640	6440	11900
09473600	TAM O'SHANTER WASH NR HAYDEN,	5	13	4.37	3050	15.6	347	644	877	1210	1470	1760	2490
	AZ						323	616	870	1270	1620	2010	3130
09478200	DURHAM WASH NEAR FLORENCE,	5	17	15.60	3670	12.1	515	1640	2920	5310	7720	10700	20600
	AZ						504	1510	2540	4410	6190	8450	15500
09478500	QUEEN CR AT WHITLOW DAMSITE NR	5	16	144.00	3180	17.9	4050	10600	17000	27900	38100	50100	85800
	SUPERIOR, AZ						3650	8860	13300	21000	27700	36100	59500

STA NO.	STATION NAME	REGION	YR	BASIN CHAR DA	EL	PR	FLOOD DISCHARGES Q2	Q5	Q10	Q25	Q50	Q100	Q500
09478600	QUEEN CREEK TRIB NO.3 AT	5	10	0.37	2320	12.0	67	130	181	256	317	384	558
	WHITLOW DAM, AZ						64	138	211	332	448	575	973
09479200	QUEEN CREEK TRIB AT APACHE	2	15	0.51	1760	10.5	65	117	156	211	255	301	417
	JUNCTION, AZ						65	149	224	348	460	604	1020
09480000	SANTA CRUZ RIVER NEAR LOCHIEL,	2	27	82.20	5150	18.2	1530	2760	3710	5020	6080	7190	10000
	AZ						1490	2710	3700	5120	6320	7600	11000
09480500	SANTA CRUZ RIVER NEAR NOGALES,	5	46	533.00	4850	18.7	4100	7140	9480	12700	15400	18200	25400
	AZ						4040	7070	9430	12800	15600	18600	26300
09481500	SONOITA CREEK NEAR PATAGONIA,	5	43	209.00	4800	19.3	2710	5320	7420	10400	12800	15400	21900
	AZ						2660	5180	7190	10100	12500	15100	21600
09481700	CALABASAS CANYON NEAR NOGALES,	5	12	10.30	4360	15.8	298	618	889	1300	1640	2020	3040
	AZ						308	685	1040	1600	2110	2650	4250
09481750	SOPORI WASH AT AMADO, AZ	5	18	176.00	3840	15.5	1630	4740	8080	14000	19800	26900	49000
							1640	4500	7300	12100	16500	22100	38300
09481800	DEMETRIE WASH TRIB NR	5	13	0.15	3620	14.5	25	57	86	131	171	217	343
	CONTINENTAL, AZ						26	68	113	187	261	343	605
09481900	OCOTILLO WASH NEAR CONTINENTAL,	5	10	3.60	3280	14.1	100	669	1730	4600	8510	14600	42400
	AZ						122	610	1340	3110	5280	8720	23000
09482000	SANTA CRUZ RIVER AT CONTINENTAL,	5	32	1662.00	4350	18.1	4270	8020	11000	15200	18600	22200	31400
	AZ						4410	8490	11900	16700	20700	24800	35700
09482200	FLATO WASH NR SAHUARITA, AZ	5	11	8.25	2820	11.6	529	889	1150	1510	1780	2060	2760
							482	847	1160	1650	2090	2550	3920
09482330	PUMPING WASH NEAR VAIL, AZ	5	10	0.54	3010	11.2	112	227	323	464	584	714	1060
							102	213	316	485	642	818	1350
09482350	SOUTH FORK AIRPORT WASH NEAR	5	10	4.38	2740	11.0	172	679	1350	2740	4280	6340	13700
	TUCSON, AZ						182	634	1150	2130	3130	4460	8840
09482370	NORTH FORK AIRPORT WASH NEAR	5	12	5.28	2780	10.8	175	566	1020	1870	2740	3830	7420
	TUCSON, AZ						188	576	991	1720	2430	3300	6000

STA NO.	STATION NAME	REGION	YR	BASIN CHAR DA	EL	PR	FLOOD DISCHARGES Q2	Q5	Q10	Q25	Q50	Q100	Q500
09482400	AIRPORT WASH AT TUCSON, AZ	5	10	15.20	2700	10.8	320	572	764	1030	1240	1470	2030
							347	726	1100	1670	2200	2740	4380
09482450	WEST BRANCH SANTA CRUZ RIVER AT TUCSON, AZ	5	10	23.60	2800	11.2	173	319	432	592	721	858	1210
							261	644	1070	1680	2270	2850	4670
09482480	BIG WASH AT TUCSON, AZ	5	11	2.75	2850	11.0	174	756	1580	3370	5430	8280	18900
							172	654	1230	2420	3660	5420	11500
09482500	SANTA CRUZ RIVER AT TUCSON, AZ	5	61	2222.00	4050	16.9	5160	8700	11300	14800	17500	20300	27200
							5240	9050	12000	16100	19400	22600	31300
09483040	WEST SPEEDWAY WASH NEAR TUCSON, AZ	5	11	0.46	2750	11.8	104	231	344	518	671	842	1320
							95	212	320	499	664	854	1420
09483100	TANQUE VERDE CREEK NEAR TUCSON, AZ	5	16	43.00	4780	17.0	1180	2200	3010	4150	5080	6080	8620
							1120	2100	2900	4110	5140	6270	9340
09483200	AGUA CALIENTE WASH TRIB NEAR TUCSON, AZ	5	11	2.04	3300	14.0	91	235	378	617	840	1100	1880
							102	276	460	760	1050	1370	2350
09484000	SABINO CREEK NEAR TUCSON, AZ	5	43	35.50	6300	22.6	1030	2390	3650	5670	7490	9560	15500
							1010	2310	3480	5360	7030	8960	14400
09484200	BEAR CREEK NEAR TUCSON, AZ	5	15	16.30	5860	20.6	264	700	1140	1890	2590	3420	5920
							295	793	1300	2120	2880	3740	6330
09484500	TANQUE VERDE CREEK AT TUCSON, AZ	5	16	219.00	4340	16.7	2050	5410	8790	14500	19900	26200	45200
							2030	5090	7910	12600	16700	21700	35900
09484570	MESCAL ARROYO NEAR PANTANO, AZ	5	11	38.40	4260	15.0	806	1660	2390	3480	4400	5410	8130
							790	1660	2430	3620	4660	5800	9020
09484580	BARREL CANYON NEAR SONOITA, AZ	5	14	14.10	5000	16.0	473	1100	1690	2610	3440	4380	7050
							463	1070	1640	2530	3330	4240	6830
09484600	PANTANO WASH NEAR VAIL, AZ	5	18	457.00	4500	15.4	4330	10800	17000	27300	36600	47600	79400
							4120	9740	14600	22700	29600	38100	61300
09485000	RINCON CREEK NEAR TUCSON, AZ	5	23	44.80	4850	19.2	1060	2980	5010	8550	12000	16100	28800
							1030	2770	4470	7400	10100	13500	23300

STA NO.	STATION NAME	REGION	YR	BASIN CHAR DA	EL	PR	FLOOD DISCHARGES Q2	Q5	Q10	Q25	Q50	Q100	Q500
09485500	PANTANO WASH AT TUCSON, AZ	5	13	602.00	4560	17.1	1710	4920	8340	14400	20200	27300	49300
							2020	5450	8810	14200	19100	24900	41900
09485900	PIMA WASH NEAR TUCSON, AZ	5	12	4.93	4430	16.0	92	145	182	231	268	306	396
							89	300	552	973	1400	1880	3440
09485950	GERONIMO WASH NEAR TUCSON, AZ	5	12	2.08	3600	15.0	126	307	479	760	1010	1310	2160
							104	365	669	1240	1840	2610	5140
09486000	RILLITO CREEK NEAR TUCSON, AZ	5	61	892.00	4400	15.5	4980	9130	12300	16700	20200	23800	32800
							4940	9070	12200	16700	20300	24000	33500
09486300	CANADA DEL ORO NEAR TUCSON, AZ	5	10	250.00	4000	16.4	2010	5410	8870	14800	20400	27100	47100
							2020	5060	7810	12300	16300	21100	34600
09486500	SANTA CRUZ RIVER AT CORTARO, AZ	5	34	3503.00	4000	16.3	8140	12700	15900	19900	22800	25800	32700
							8210	13200	17100	22200	26300	30300	40700
09486700	CHILTEPINES WASH NEAR SASABE, AZ	5	13	7.13	3660	13.0	143	236	305	400	476	555	753
							170	365	580	905	1220	1540	2550
09486800	ALTAR WASH NEAR THREE POINTS, AZ	5	10	463.00	3920	15.6	5310	10100	14100	19900	24800	30100	44600
							4760	8720	11800	16500	20400	24900	36700
09487000	BRAWLEY WASH NEAR THREE POINTS, AZ	5	12	776.00	3710	14.6	4150	6680	8520	11000	12900	15000	20000
							4100	7000	9430	12900	15800	18900	27200
09487250	LOS ROBLES WASH NEAR MARANA, AZ	5	11	1170.00	3350	11.8	1080	3010	5040	8590	12000	16200	29100
							1890	5070	8310	13000	17300	21900	35600
09488500	SANTA ROSA WASH NR VAIVA VO, AZ	2	20	1782.00	2340	10.2	1450	4490	8000	14700	21600	30400	60400
							2120	6440	11200	20200	29400	41200	80300
09488600	SILVER REEF WASH NEAR CASA GRANDE, AZ	2	13	12.80	1620	8.5	274	667	1050	1700	2300	3020	5180
							264	696	1140	1900	2640	3550	6390
09489070	NORTH FORK OF EAST FORK BLACK RIVER NR ALPINE, AZ	HE	10	38.10	9060	27.5	218	603	1000	1690	2360	3150	5570
							213	536	826	1310	1750	2280	3780
09489080	HANNAGAN CREEK NR HANNAGAN MEADOW, AZ	HE	11	1.61	9160	30.0	16	39	60	95	126	162	264
							15	36	54	83	108	137	217

STA NO.	STATION NAME	REGION	YR	BASIN CHAR DA	EL	PR	FLOOD DISCHARGES Q2	Q5	Q10	Q25	Q50	Q100	Q500
09489100	BLACK RIVER NEAR MAVERICK,	HE	13	315.00	8700	27.2	1450	3090	4520	6690	8560	10600	16300
	AZ						1400	2870	4070	5900	7420	9150	13800
09489200	PACHETA CREEK NEAR MAVERICK,	HE	18	14.80	8810	30.3	101	182	244	330	399	472	655
	AZ						99	182	250	349	433	522	758
09489499	BLACK R ABV WILLOW CR DIV NR	HE	22	560.00	8000	25.3	1990	4350	6440	9640	12400	15600	24100
	POINT OF PINES, AZ						1980	4230	6130	9020	11500	14300	21700
09489700	BIG BONITO CREEK NR FORT	HE	18	119.00	7920	27.9	611	1150	1570	2180	2680	3200	4560
	APACHE, AZ						598	1120	1540	2160	2670	3220	4670
09490500	BLACK RIVER NEAR FORT APACHE,	3	18	1232.00	7200	23.4	4850	12300	19600	31800	43000	56100	94600
	AZ						4910	12500	19900	32200	43800	56900	96000
09490800	NORTH FORK WHITE RIVER NEAR	HE	10	39.00	9500	36.7	196	291	354	433	492	551	687
	GREER, AZ						197	331	450	622	774	925	1350
09491000	NORTH FORK WHITE RIVER NEAR	HE	29	66.00	9190	32.2	390	683	906	1210	1460	1720	2370
	MCNARY, AZ						383	676	906	1230	1510	1800	2550
09492400	EAST FORK WHITE RIVER NR FORT	HE	18	38.80	8580	31.2	241	376	471	593	685	778	1000
	APACHE, AZ						235	383	503	673	817	964	1360
09494000	WHITE RIVER NEAR FORT APACHE,	3,HE	18	632.00	7400	25.4	3270	5340	6830	8810	10300	11900	15700
	AZ						3220	5620	7720	10900	13800	16700	25500
09494300	CARRIZO CR ABV CORDUROY CR NR	3	13	225.00	6370	22.5	1960	3870	5440	7730	9650	11700	17200
	SHOW LOW, AZ						1920	4080	6210	9630	13000	16500	27700
09496000	CORDUROY CREEK NEAR MOUTH,	3	24	203.00	6370	21.7	1020	3810	7350	14500	22200	32300	67600
	NEAR, SHOW LOW, AZ						1080	3870	7250	13800	20500	29300	58800
09496500	CARRIZO CREEK NEAR SHOW LOW,	3	24	459.00	6320	22.0	2840	7320	11800	19200	26100	34200	58100
	AZ						2830	7310	11800	19300	26400	34600	59400
09496600	CIBECUE 1 TRIB TO CARRIZO CR	3	13	0.10	5390	18.0	45	96	140	206	263	327	500
	NR SHOW LOW, AZ						38	77	109	165	217	280	472
09496700	CIBECUE 2 TRIB TO CARRIZO CR	3	13	0.06	5240	18.0	42	71	93	122	146	170	229
	NR SHOW LOW, AZ						35	57	75	105	135	170	283

STA NO.	STATION NAME	REGION	YR	BASIN CHAR DA	EL	PR	FLOOD DISCHARGES Q2	Q5	Q10	Q25	Q50	Q100	Q500
09496800	CARRIZO CREEK TRIB NR SHOW LOW, AZ	3	13	2.55	5810	20.0	310 267	729 594	1120 878	1740 1370	2300 1820	2940 2370	4750 3970
09497500	SALT RIVER NEAR CHRYSOTILE, AZ	3	52	2849.00	6730	22.8	9170 9190	21000 21200	32300 32900	51100 52200	68700 70400	89700 91800	154000 157000
09497800	CIBECUE CREEK NEAR CHRYSOTILE, AZ	3	17	295.00	5700	20.7	3630 3390	6920 6620	9560 9500	13300 14100	16500 18500	19800 23200	28400 37500
09497900	CHERRY CREEK NEAR YOUNG, AZ	3	13	62.10	6030	24.8	1380 1280	3220 2970	4930 4570	7640 7250	10100 9810	12800 12700	20700 21600
09497980	CHERRY CREEK NEAR GLOBE, AZ	3	10	200.00	5600	24.0	1970 1950	4300 4570	6360 7280	9530 11800	12300 16200	15300 21000	23800 36500
09498500	SALT RIVER NEAR ROOSEVELT, AZ	3	52	4306.00	6190	22.0	12800 12800	31800 31800	51500 51400	86500 85800	121000 120000	164000 161000	304000 294000
09498510	UPPER PARKER CR NR GLOBE, AZ (USFS)	3	33	1.09	6600	22.0	26 28	88 94	162 176	300 324	441 480	618 667	1190 1290
09498600	CRISTOPHER CREEK TRIB NR KOHL'S RANCH, AZ	3	10	0.66	6080	29.0	31 34	71 94	108 166	164 288	215 422	271 566	431 1080
09498800	TONTO CREEK NEAR GISELA, AZ	3	11	430.00	5810	24.7	8920 7680	21600 17500	33500 25900	52900 40400	70500 53300	90700 69100	149000 114000
09498870	RYE CREEK NEAR GISELA, AZ	3	11	122.00	4390	24.2	2840 2570	6390 5830	9580 8990	14600 14400	19000 19700	23900 25700	37700 44800
09498900	GOLD CREEK NEAR PAYSON, AZ	3	13	6.44	4590	21.0	226 218	845 769	1640 1430	3240 2720	4970 4070	7240 5850	15200 11900
09499000	TONTO CREEK ABOVE GUN CR, NR ROOSEVELT, AZ	3	35	675.00	5020	23.9	9680 9270	21800 20600	32700 30700	49900 47100	65000 61800	82200 78900	130000 127000
09501100	THREE BAR D WATERSHED NR ROOSEVELT, AZ (USFS)	3	19	0.12	4300	16.0	4 5	14 18	27 38	52 75	79 118	115 171	238 366
09501300	TORTILLA CREEK AT TORTILLA FLAT, AZ	3	10	24.30	2690	15.0	1930 1580	5540 4210	9380 6730	16200 11600	22800 16200	30800 22200	55700 41200

STA NO.	STATION NAME	REGION	YR	BASIN CHAR DA	EL	PR	FLOOD DISCHARGES Q2	Q5	Q10	Q25	Q50	Q100	Q500
09502800	WILLIAMSON VALLEY WASH NR	1	11	255.00	5120	17.3	735	1750	2720	4340	5830	7590	12900
	PAULDEN, AZ						735	1810	2840	4610	6270	8270	14400
09503000	GRANITE CREEK NR PRESCOTT,	1	15	39.60	5900	22.1	715	1660	2560	4040	5390	6970	11700
	AZ						298	867	1510	2570	3630	4830	8780
09503700	VERDE RIVER NEAR PAULDEN,	1	13	2160.00	5410	16.3	982	2510	4060	6730	9280	12400	21900
	AZ						1230	3450	5970	10200	14300	19100	34400
09503720	HELL CANYON NEAR WILLIAMS,	1	10	14.90	7110	24.1	341	865	1390	2290	3150	4190	7370
	AZ						300	709	1080	1730	2320	3090	5310
09503800	VOLUNTEER WASH NR BELLEMONT,	HE	10	131.00	7620	25.7	375	860	1310	2050	2720	3510	5800
	AZ						418	945	1420	2150	2790	3510	5520
09504000	VERDE RIVER NR CLARKDALE,	1,3	10	3150.00	5490	19.1	5140	13600	22700	39000	55400	75900	144000
	AZ						4600	11400	18100	30100	41500	56500	103000
09504400	MUNDS CANYON TRIB NR SEDONA,	3	12	1.19	6880	26.0	64	213	394	752	1140	1640	3410
	AZ						63	199	355	652	963	1360	2700
09504500	OAK CREEK NEAR CORNVILLE,	3	34	357.00	6200	22.6	4320	9690	14600	22400	29400	37400	60200
	AZ						4170	9270	13900	21500	28400	36300	59400
09505200	WET BEAVER CREEK NEAR RIMROCK,	3	14	111.00	6410	24.8	2320	5890	9500	15700	21600	28700	50700
	AZ						2120	5180	8110	13200	18000	23900	41800
09505238	BEAVER CREEK NO 5 NR	3	16	0.10	6420	24.0	6	18	31	53	76	104	194
	FLAGSTAFF, AZ (USFS)						7	21	39	71	106	146	288
09505245	BEAVER CREEK NO 3 NR	3	18	0.60	5160	22.0	10	63	165	450	854	1510	4710
	FLAGSTAFF, AZ (USFS)						13	74	178	431	763	1280	3610
09505250	RED TANK DRAW NEAR RIMROCK,	3	18	49.40	5910	21.6	507	2340	5130	11700	19700	31400	79700
	AZ						525	2220	4540	9690	15600	24200	57700
09505290	S FORK RATTLESNAKE CN NR	3,HE	18	2.80	7320	25.0	78	245	441	815	1210	1710	3430
	STONEMAN LK, AZ (USFS)						80	249	443	801	1170	1630	3180
09505300	RATTLESNAKE CANYON NEAR	3	18	24.60	6560	22.8	542	1660	2940	5370	7870	11100	21900
	RIMROCK, AZ						521	1530	2630	4680	6720	9370	17900

STA NO.	STATION NAME	REGION	YR	BASIN CHAR DA	EL	PR	FLOOD DISCHARGES Q2	Q5	Q10	Q25	Q50	Q100	Q500
09505320	BAR M CANYON NR STONEMAN LAKE,	3	14	25.70	7260	25.0	571	1870	3420	6460	9690	13900	28600
	AZ (USFS)						544	1670	2900	5240	7610	10700	21000
09505326	BEAVER CREEK NO 15 NR	3	13	0.30	6950	27.0	11	41	80	162	253	376	830
	FLAGSTAFF, AZ (USFS)						13	49	95	183	280	400	832
09505350	DRY BEAVER CREEK NEAR RIMROCK,	3	15	142.00	6220	23.1	2880	8550	14900	26700	38700	53900	104000
	AZ						2620	7310	12100	20900	29500	40700	75700
09505600	DIRTY NECK CANYON NR CLINTS	3	11	3.42	7140	26.0	57	123	182	274	356	449	713
	WELL, AZ						69	184	322	550	796	1050	1940
09505800	WEST CLEAR CREEK NR CAMP	3	11	241.00	6680	23.4	2750	6560	10200	16300	21900	28600	48400
	VERDE, AZ						2560	6020	9310	14900	20200	26400	45200
09505900	COTTONWOOD WASH NR CAMP VERDE,	3	12	0.64	3540	14.5	20	79	158	329	525	796	1830
	AZ						22	88	178	365	578	858	1910
09507600	EAST VERDE RIVER NEAR PINE,	3	13	6.65	6430	30.0	302	968	1760	3280	4900	6980	14200
	AZ						286	871	1510	2720	3960	5560	10800
09507700	WEBBER CR ABV W FK WEBBER CR	3	16	4.92	6980	27.5	94	295	529	977	1450	2050	4110
	NR PINE, AZ						104	328	593	1070	1580	2190	4240
09507980	EAST VERDE RIVER NR CHILDS,	3	14	328.00	5140	24.7	2740	8240	14500	26200	38100	53400	104000
	AZ						2750	8130	14100	24800	35600	49100	92600
09508500	VERDE RIVER BLW TANGLE CR ABV	3	53	5499.00	5470	18.4	15800	37700	58400	92100	123000	158000	261000
	HORSESHOE DAM, AZ						15700	37400	58200	92100	124000	159000	265000
09510080	W FK SYCAMORE CR NR SUNFLOWER,	3	13	9.80	5260	24.5	63	394	988	2550	4640	7850	22000
	AZ						100	500	1120	2500	4180	6600	16400
09510100	E FK SYCAMORE CR NR SUNFLOWER,	3	14	4.49	5760	24.5	30	158	362	850	1460	2340	5910
	AZ						50	230	493	1030	1650	2460	5540
09510150	SYCAMORE CR NR SUNFLOWER,	3	14	52.30	4260	23.5	971	3560	6820	13300	20300	29500	61200
	AZ						954	3320	6110	11500	17200	24600	49200
09510170	CAMP CREEK NEAR SUNFLOWER,	3	13	2.60	3520	20.0	92	207	310	472	614	775	1220
	AZ						95	255	452	814	1220	1680	3380

STA NO.	STATION NAME	REGION	YR	BASIN CHAR DA	EL	PR	FLOOD DISCHARGES Q2	Q5	Q10	Q25	Q50	Q100	Q500
09510180	ROCK CR NR SUNFLOWER, AZ	3	10	15.20	3680	16.0	489	1330	2200	3690	5100	6800	11900
							441	1190	2000	3470	4950	6780	12800
09510200	SYCAMORE CREEK NEAR FORT MCDOWELL, AZ	3	15	165.00	3820	21.2	1660	5650	10400	19600	29100	41400	82200
							1690	5630	10200	18900	27900	39300	76700
09512100	INDIAN BEND WASH NEAR SCOTTSDALE, AZ	3	15	142.00	1780	10.9	288	2450	7340	23200	48300	92800	342000
							459	3110	8220	22300	42300	75900	247000
09512300	CAVE CREEK NR CAVE CREEK, AZ	3	18	121.00	3470	15.7	2010	4900	7730	12500	16900	22200	38100
							1890	4630	7430	12400	17300	23300	42400
09512500	AGUA FRIA RIVER NEAR MAYER, AZ	3	36	588.00	5000	16.7	5400	9600	12800	17300	20900	24800	34500
							5200	9400	12900	18300	23300	28600	44400
09512700	AGUA FRIA RIVER TRIB NO 2 NR ROCK SPRINGS, AZ	3	13	1.11	2140	16.2	317	583	796	1100	1360	1640	2370
							270	497	713	1120	1570	2120	4110
09513650	AGUA FRIA RIVER AT EL MIRAGE, AZ	3	13	178.00	1790	10.0	419	1750	3650	7870	12800	19900	47500
							602	2760	6100	13100	21400	32300	74900
09513780	NEW RIVER NR ROCK SPRINGS, AZ	3	14	67.30	3970	20.0	1580	5760	11100	22300	34700	51500	113000
							1460	4990	9090	17500	26400	38600	80900
09513800	NEW RIVER AT NEW RIVER, AZ	3	15	85.70	3600	19.5	2100	7220	13600	26400	40300	58800	125000
							1940	6290	11300	21300	31600	45700	93800
09513820	DEADMAN WASH NEAR NEW RIVER, AZ	3	16	11.10	1980	11.0	317	888	1510	2620	3730	5110	9570
							302	889	1600	2990	4520	6460	13500
09513835	NEW RIVER AT BELL ROAD, NR PEORIA, AZ	3	12	187.00	2700	15.6	1470	5110	9650	18800	28800	42100	89700
							1530	5380	10200	19800	30200	43600	91200
09513860	SKUNK CREEK NR PHOENIX, AZ	3	16	64.60	2180	12.2	1200	4750	9600	20100	32100	48900	113000
							1130	4300	8370	17100	26700	40400	90400
09513890	NEW RIVER AT PEORIA, AZ	3	13	317.00	2320	13.3	3060	10100	18500	35000	52300	74900	153000
							2930	9590	17500	33200	49700	71400	146000
09513910	NEW RIVER NEAR GLENDALE, AZ	3	17	323.00	2130	13.8	2390	8380	15900	31100	47600	69600	148000
							2420	8600	16500	32400	49600	72300	153000

STA NO.	STATION NAME	REGION	YR	BASIN CHAR DA	EL	PR	FLOOD DISCHARGES Q2	Q5	Q10	Q25	Q50	Q100	Q500
09514200	WATERMAN WASH NEAR BUCKEYE, AZ	2	12	403.00	1570	9.2	1360 1360	3030 3250	4560 5260	7020 8760	9230 12200	11800 16400	19200 30000
09515500	HASSAYAMPA R. AT BOX DAMSITE, NR. WICKENBURG,AZ	3	33	417.00	4750	19.3	3090 3060	8220 8150	13600 13500	23200 23100	32700 32600	44500 44300	82500 81800
09515800	HARTMAN WASH NEAR WICKENBURG, AZ	3	12	5.57	2690	11.0	238 214	972 814	2000 1580	4260 3240	6890 5080	10600 7730	24900 17400
09516500	HASSAYAMPA RIVER NR MORRISTOWN, AZ	3	21	774.00	3190	16.9	1930 2260	6320 7830	11100 14700	19300 26700	27000 39200	36000 53400	61700 101000
09516600	OX WASH NEAR MORRISTOWN, AZ	3	13	6.31	2290	12.2	200 192	730 694	1410 1340	2830 2680	4400 4170	6520 6190	14300 13600
09516800	JACK RABBIT WASH NR TONOPAH, AZ	2	12	137.00	2260	9.2	481 524	2710 2470	6550 5310	16600 12200	29900 20400	50700 33500	145000 88100
09517000	HASSAYAMPA RIVER NR ARLINGTON, AZ	2,3	15	1470.00	3010	15.9	1220 1390	4480 4840	8450 8890	16100 16300	24000 23800	34000 33200	66600 63100
09517200	CENTENNIAL WASH TRIB NR WENDEN, AZ	2	13	2.79	2480	8.0	132 124	329 304	532 485	886 809	1230 1120	1660 1520	3020 2790
09517280	TIGER WASH NEAR AGUILA, AZ	2	13	85.20	2590	9.6	760 716	2260 2020	3950 3390	7090 5920	10300 8410	14400 11700	27900 22000
09517400	WINTERS WASH NEAR TONOPAH, AZ	2	14	47.80	1630	9.1	787 725	1180 1190	1460 1670	1810 2480	2080 3320	2350 4270	3020 7530
09517500	CENTENNIAL WASH NEAR ARLINGTON, AZ	2	15	1810.00	1870	8.2	1890 2040	5590 6150	9730 10900	17400 19400	25200 28100	35000 38800	67700 74500
09519600	RAINBOW WASH TRIB NR BUCKEYE, AZ	2	13	2.43	950	7.6	440 378	852 702	1190 964	1700 1430	2140 1850	2610 2360	3910 3950
09519750	BENDER WASH NEAR GILA BEND, AZ	2	13	68.80	1900	8.5	498 500	2000 1830	4070 3480	8580 6890	13800 10600	21100 15800	49000 34400
09519760	SAUCEDA WASH NEAR GILA BEND, AZ	2	13	126.00	1980	8.2	617 630	1510 1620	2420 2700	3990 4590	5510 6500	7360 8800	13300 16400

STA NO.	STATION NAME	REGION	YR	BASIN CHAR DA	EL	PR	FLOOD DISCHARGES Q2	Q5	Q10	Q25	Q50	Q100	Q500
09519780	WINDMILL WASH NR GILA BEND,	2	12	12.90	1050	6.1	242	1420	3530	9140	16800	28800	84600
	AZ						243	1210	2690	6380	11000	18400	50200
09520100	MILITARY WASH NEAR SENTINEL,	2	13	8.70	674	5.0	117	453	917	1950	3170	4900	11900
	AZ						138	518	1020	2060	3220	4800	10800
09520130	DARBY ARROYO NEAR AJO, AZ	2	10	4.72	1920	8.1	521	1010	1440	2080	2650	3280	5080
							430	788	1090	1600	2080	2670	4430
09520230	CRATER RANGE WASH NEAR AJO,	2	13	1.49	1280	6.6	104	290	496	879	1270	1780	3480
	AZ						99	270	453	797	1140	1600	3110
09520300	ALAMO WASH TRIB NEAR AJO,	2	13	0.90	2040	9.7	179	318	428	589	723	870	1270
	AZ						155	269	361	522	668	845	1390
09520350	MOHAWK PASS WASH AT MOHAWK,	2	13	0.09	601	4.9	17	45	73	124	174	237	439
	AZ						18	51	88	158	233	325	655
09520400	LIGURTA WASH AT LIGURTA, AZ	2	13	1.99	395	4.0	111	410	826	1760	2890	4530	11400
							113	403	780	1590	2510	3830	9030
09535200	SELLS WASH TRIB AT SELLS,	2	14	26.80	3360	11.4	1900	2410	2710	3080	3340	3580	4130
	AZ						1610	1960	2190	2670	3100	3630	5230
09536100	PITCHFORK CANYON TRIB NR FORT	5	13	0.81	5210	15.0	123	235	325	454	560	674	968
	GRANT, AZ						118	243	362	554	735	932	1540
09536350	SURPRISE CANYON NEAR DOS	5	12	0.65	6280	18.0	39	91	138	212	279	354	567
	CABEZAS, AZ						51	144	252	428	606	795	1420
09537500	WHITEWATER DRAW NEAR DOUGLAS,	5	51	1023.00	4740	14.8	1940	2970	3660	4510	5140	5760	7170
	AZ						2050	3400	4530	6020	7310	8470	11800

Table 4.--Maximum observed discharge at gaging stations in Arizona

REGION OR MAIN STEM STREAM: HE, high-elevation flood-frequency region; LCR, Little Colorado River main stem from Zuni River to mouth; GR, Gila River main stem.

PERIOD OF RECORD: Water years.

SEE FOOTNOTES AT END OF TABLE

STATION NUMBER	STATION NAME	REGION OR MAIN STEM STREAM	PERIOD OF RECORD	DRAINAGE AREA (SQ MI)	PEAK DISCHARGE DATE	PEAK DISCHARGE FT³/S
09371100	TEEC NOS POS WASH NEAR TEEC NOS POS, AZ	HE	1967-75	16.00	9-12-70	1350
09371200	TSTIAH WASH NEAR TEEC NOS POS, AZ	4	1968-75	24.50	8- -71	2580
09379030	BLACK MOUNTAIN WASH NEAR CHINLE, AZ	4	1963-75	80.70	8- -71	2180
09379060	LUKACHUKAI CREEK TRIB NR LUKACHUKAI, AZ	4	1963-75	1.37	1- 6-65	227
09379080	CHINLE WASH TRTB NR ROCK POINT, AZ	4	1964-71	2.50	9- 5-70	216
09379100	LONG HOUSE WASH NEAR KAYENTA, AZ	4	1962-75	1.38	7-30-67	2060
09379200	CHINLE WASH NR MEXICAN WATER, AZ	4	1964-75	3300.00	9- 7-70	9880
09379560	EL CAPITAN WASH NEAR KAYENTA, AZ	4	1963-75	5.88	8-26-71	2340
09379980	JACK BENCH WASH TRTB NEAR PAGE, AZ	4	1962-75	0.98	- -62	200
09382000	PARIA RIVER AT LEES FERRY, AZ	1	1924-75	1410.00	10- 5-25	16100
09383020	HOUSE ROCK WASH TRTB NR MARBLE CANYON, AZ	1	1963-75	3.54	UNKNOWN	1610
09383200	LEE VALLEY CK ABV LEE VALLEY RES NR GREER, AZ	HE	1967-72	1.30	9-11-69	8
09383220	LEE VALLEY CR TRTB NR GREER, AZ	HE	1967-72	0.50	8-28-67	5
09383400	LITTLE COLORADO RIVER AT GREER, AZ	HE	1961-75	30.90	10-20-72	615
09383500	NUTRIOSO CR ABV NELSON RES NR SPRINGERVILLE, AZ	HE	1968-75	83.40	4-28-73	439
09383600	FISH CREEK NEAR EAGAR, AZ	HE	1963-75	15.90	8- 1-64	236
09384000	LITTLE COLORADO R ABV LYMAN RES NR ST. JOHNS, AZ	HE	1940-75	747.00	7-25-40	16000
09384200	LYMAN RES TRTB NR ST. JOHNS, AZ	4	1963-75	0.24	8-26-63	101
09385800	LITTLE COLORADO R TRTB NR ST. JOHNS, AZ	4	1963-75	0.35	9- 4-65	326
09386500	LITTLE COLORADO R ABV ZUNI R NR HUNT, AZ	LCR	1940-72	1/ 3680.00	9- 3-71	2/1310
09387600	BEACON DRAW NEAR SAUNDERS, AZ	4	1963-71	0.85	8- 2-63	423
09387980	ZUNI RIVER AT MOUTH NR HUNT, AZ	4	1940-72	1000.00	8- 9-49	3610
09388000	LITTLE COLORADO RIVER NEAR HUNT, AZ	LCR	1929-33,1940-72	6280.00	7-28-29	8000
09390500	SHOW LOW CREEK NEAR LAKESIDE, AZ	3,HE	1954-75	68.60	12-26-71	5450
09392500	SHOW LOW CREEK AT SHOW LOW, AZ	3	1941-54	87.00	1-18-52	6250
09392800	LONG LAKE TRTB NEAR SHOW LOW, AZ	3	1965-75	5.18	12-26-71	530
09393500	SILVER CREEK NEAR SNOWFLAKE, AZ	3,4	1920,1929-75	886.00	12- 5-19	25000
09394500	LITTLE COLORADO R AT WOODRUFF, AZ	LCR	1917,1919-20,1929-75	8100.00	12- 5-19	25000
09395100	CARR LAKE TRTB NR HOLBROOK, AZ	4	1964-75	1.19	8-12-66	140
09395850	BLACK CREEK TRTB NR WINDOW ROCK, AZ	4	1963-75	0.28	8- -68	171
09395900	BLACK CREEK NEAR LUPTON, AZ	HE	1964-75	500.00	8- 1-64	5470
09396400	DEAD WASH TRTB NEAR HOLBROOK, AZ	4	1963-75	1.00	8- -67	743
09396500	PUERCO RIVER NEAR ADAMANA, AZ	4	1940-49	2760.00	8-12-46	30000
09397000	LITTLE COLORADO RIVER AT HOLBROOK, AZ	LCR	1923,1950-75	11300.00	9-19-23	60000
09397200	PENZANCE WASH NEAR JOSEPH CITY, AZ	4	1963-75	0.17	9- 9-64	120

STATION NUMBER	STATION NAME	REGION OR MAIN STEM STREAM	PERIOD OF RECORD	DRAINAGE AREA (SQ MI)	PEAK DISCHARGE DATE	PEAK DISCHARGE FT^3/S
09397500	CHEVELON CR BLW WILDCAT CANYON NR WINSLOW, AZ	3	1948-70	275.00	1-18-52	19800
09397800	BROOKBANK CANYON NEAR HEBER, AZ	3	1964-75	27.60	8- -64	666
09398000	CHEVELON CREEK NEAR WINSLOW, AZ	3,4	1916-20,1929-72	794.00	1-19-52	25300
09398500	CLEAR CR BLW WILLOW CR NR WINSLOW, AZ	3	1948-75	321.00	1-18-52	16400
09399000	CLEAR CREEK NEAR WINSLOW, AZ	3,4	1929-34,1936-75	607.00	4- 4-29	50000
09399250	JACKS CANYON TRIB NO. 2 NR WINSLOW, AZ	3	1963-75	321.60	8-21-63	9330
09399300	JACKS CANYON TRIB NR WINSLOW, AZ	4	1963-68	0.29	2- -68	192
09399400	JACKS CANYON CREEK NR WINSLOW, AZ	4	1970-75	280.00	10-20-72	2600
09399420	JACKS CANYON TRIB NO. 3 NR WINSLOW, AZ	4	1970-75	0.25	7-16-72	285
09400100	GANADO WASH TRIB NEAR GANADO, AZ	4	1963-75	11.10	7-17-65	1680
09400200	STEAMBOAT WASH TRIB NR GANADO, AZ	4	1963-75	0.32	8-13-64	383
09400290	TESHBITO WASH TRIB NR HOLBROOK, AZ	4	1963-75	16.40	9- 5-70	890
09400300	TESHBITO WASH NEAR HOLBROOK, AZ	4	1963-75	57.40	- -67	1580
09400530	COW CANYON NEAR WINSLOW, AZ	1	1963-75	3.53	7-30-64	253
09400560	ORAIBI WASH TRIB NEAR ORAIBI, AZ	4	1963-75	1.76	9-19-65	383
09400565	POLACCA WASH TRIB NEAR CHINLE, AZ	4	1964-75	6.17	9- 7-75	1130
09400580	CASTLE BUTTE WASH NR WINSLOW, AZ	4	1964-75	5.53	7-15-75	860
09400590	RIO DE FLAG AT HIDDEN HOLLOW RD AT FLAGSTAFF, AZ	HE	1970-75	31.60	4-28-73	153
09400595	SCHULTZ CANYON AT FLAGSTAFF, AZ	HE	1970-75	6.09	4-28-73	48
09400600	RIO DE FLAG AT FLAGSTAFF, AZ	HE	1956-75	51.00	4-28-73	235
09400650	SINCLAIR WASH AT FLAGSTAFF, AZ	1	1970-75	8.16	9- 5-70	401
09400660	BOW AND ARROW WASH AT FLAGSTAFF, AZ	1	1969-75	2.14	8-15-71	73
09400680	SWITZER CANYON AT FLAGSTAFF, AZ	1	1969-75	1.87	9-12-69	112
09400700	SWITZER CANYON TRIB AT FLAGSTAFF, AZ	1	1968-75	1.20	8- 2-68	262
09400730	LOCKETT FANNING DIVERSION AT FLAGSTAFF, AZ	HE	1969-75	1.05	9-12-69	85
09400740	HABENBERG WASH AT FLAGSTAFF, AZ	HE	1969-75	2.41	9-12-69	183
09400910	FAY CANYON NEAR FLAGSTAFF, AZ	1	1964-75	2.76	12-30-65	87
09401000	LITTLE COLORADO R AT GRAND FALLS, AZ	LCR	1923,1926-60,1970,1972	21200.00	9-19-23	120000
09401100	DINNEBITO WASH NR ORAIBI, AZ	4	1968-72	261.00	9- 5-70	28900
09401210	SLATE MOUNTAIN WASH NR FLAGSTAFF, AZ	1,HE	1962-75	5.49	4- -73	88
09401220	CEDAR WASH NEAR CAMERON, AZ	1	1967-75	556.00	9-11-69	10400
09401242	BECASHIBITO WASH NEAR SHONTO, AZ	4	1968-75	82.40	10-19-72	1870
09401245	KLETHLA VALLEY TRIB NR KAYENTA, AZ	4	1962-75	0.77	8- -71	290
09401300	HAMBLIN WASH TRIB NR CEDAR RIDGE, AZ	4	1963-75	0.10	10-19-72	37
09401370	HAMBLIN WASH TRIB NO. 2 NR TUBA CITY, AZ	4	1963-75	1.09	10-19-72	350

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09401400	MOENKOPI WASH NEAR TUBA CITY, AZ	4	1941-75	2500.00	10-19-72	12100
09402000	LITTLE COLORADO R NR CAMERON, AZ	LCR	1947-75	26500.00	1-21-52	24900
09402100	FOREST BOUNDARY WASH NEAR CAMERON, AZ	1	1963-75	0.72	9-11-69	1150
09403000	BRIGHT ANGEL CREEK NEAR GRAND CANYON, AZ	1,HE	1924-73	101.00	8-19-36	4400
09403750	SAGEBRUSH DRAW NEAR FREDONIA, AZ	1	1963-75	0.68	UNKNOWN	150
09403780	KANAB CREEK NEAR FREDONIA, AZ	1	1964-75	1085.00	8-18-70	4630
09403800	BITTER SEEPS WASH TRIB NR FREDONIA, AZ	1	1963-75	2.85	8-23-71	1950
09403930	WEST CATARACT CREEK NR WILLIAMS, AZ	1	1964-75	3.18	12- 6-66	151
09404050	SPRING VALLEY WASH TRIB NR WILLIAMS, AZ	1	1963-75	3.93	- -68	190
09404070	LITTLE RED HORSE WASH NR GRAND CANYON, AZ	1	1963-75	21.80	- -67	62
09404100	CATARACT CREEK NEAR GRAND CANYON, AZ	1	1968-75	1200.00	10- -72	1400
09404310	YAMPAI CANYON TRIB NR PEACH SPRINGS, AZ	3	1964-75	0.20	7-30-66	177
09404340	TRUXTON WASH AT VALENTINE, AZ	3	1904,1965-75	370.00	7-30-04	49000
09404350	VALENTINE WASH AT VALENTINE, AZ	3	1963-75	3.15	8-20-67	3800
09415000	VIRGIN RIVER AT LITTLEFIELD, AZ	1	1930-75	5090.00	12- 6-66	35200
09415050	BIG BEND WASH TRIB NR LITTLEFIELD, AZ	1	1963-75	7.27	- -70	250
09419590	DETRITAL WASH TRIB NR CHLORIDE, AZ	1	1963-75	1.23	8-12-71	470
09421800	RINGBOLT WASH NEAR HOOVER DAM, AZ	1	1964-75	1.21	8-19-75	250
09423760	LITTLE MEADOW CREEK NR DATMAN, AZ	1	1965-75	8.47	8- -70	869
09423780	WALNUT CREEK NEAR KINGMAN, AZ	1	1965-75	31.30	8- -71	715
09423820	SACRAMENTO WASH NEAR YUCCA, AZ	1	1965-75	787.00	8-12-71	13000
09423900	SACRAMENTO WASH TRIB NR TOPOCK, AZ	1	1963-75	14.70	- -72	500
09424200	COTTONWOOD WASH NO.1 NR KINGMAN, AZ	3	1964-75	143.00	7-31-64	7000
09424407	MCCARRYS WASH NEAR KINGMAN, AZ	3	1968-75	13.50	9-19-72	1000
09424410	BIG SANDY RIVER TRIB NR KINGMAN, AZ	3	1963-75	1.99	8- 2-64	353
09424430	KAISER SPRING CANYON TRIB NR WIKIEUP, AZ	3	1963-75	1.70	8-22-63	1310
09424450	BIG SANDY RIVER NEAR WIKIEUP, AZ	3	1967-75	2800.00	12- 7-66	28000
09424480	ASH CREEK NEAR KIRKLAND, AZ	3	1963-75	6.95	UNKNOWN	4000
09424700	IRON SPRING WASH TRIB NR BAGDAD, AZ	3	1964-75	0.64	9-25-64	150
09424900	SANTA MARIA RIVER NR BAGDAD, AZ	3	1967-75	1210.00	12- 7-66	13500
09425500	SANTA MARIA RIVER NR ALAMO, AZ	3	1939-66	1520.00	8-29-51	33600
09425910	BULLARD WASH TRIB NO.2 NR ALAMO, AZ	3	1968-75	1.40	7-17-69	432
09426000	BILL WILLIAMS RIVER BELOW ALAMO DAM, AZ	3	3/1891,1916,1927,1929-68	4730.00	2-21-91	200000
09427700	MONKEYS HEAD WASH NEAR PARKER, AZ	2	1963-75	1.84	8-13-68	320
09428545	CUNNINGHAM WASH TRIB NEAR WENDEN, AZ	2	1964-75	0.77	8- 2-64	173

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09428550	BOUSE WASH TRIB NEAR BOUSE, AZ	2	1963-75	14.60	8-10-71	2920
09428800	TYSON WASH TRIB NR QUARTZSITE, AZ	2	1963-75	13.70	8- 3-74	980
09429150	CREOSOTE WASH NEAR EHRENBERG, AZ	2	1965-75	1.98	8-10-71	580
09429400	INDIAN WASH TRIB NR YUMA, AZ	2	1963-75	2.56	9-13-66	90
09429510	MITTRY LAKE TRIB NR YUMA, AZ	2	1965-75	0.30	8-16-73	165
09432000	GILA R BLW BLUE CR NR VIRDEN, N. MEX.	GR	1927-75	3203.00	9-29-41	41700
09442000	GILA RIVER NEAR CLIFTON, AZ	GR	1911-17,1928-46,1948-75	4010.00	10-21-72	33000
09444100	CAMPBELL BLUE CREEK NR ALPINE, AZ (USFS)	HE	1959-75	11.60	10-20-72	342
09444200	BLUE RIVER NEAR CLIFTON, AZ	3	1966,1968-75	506.00	10-20-72	30000
09444400	CHASE CREEK NR CLIFTON, AZ	3	1964-75	1.37	7-25-64	600
09444500	SAN FRANCISCO RIVER AT CLIFTON, AZ	3	1891,1905-07,1911-75	2766.00	12- 3-06	70000
09445500	WILLOW CR NR POINT OF PINES NR MORENCI, AZ	3	1945-67	102.00	12-30-65	3710
09446000	WILLOW CR NR DOUBLE CIRCLE RANCH NR MORENCI, AZ	3	1944-67,1973	149.00	10-20-72	6500
09446500	EAGLE CR NR DOUBLE CIRCLE RANCH NR MORENCI, AZ	3	1944-67,1973	377.00	12-30-65	13600
09447000	EAGLE CR ABV PUMPING PLANT NR MORENCI, AZ	3	1932,1944-75	613.00	12-30-65	21000
09448500	GILA R AT HEAD OF SAFFORD VALLEY NR SOLOMON, AZ	GR	1914-75	7896.00	1-19-16	100000
09451800	TOLLGATE WASH TRIB NR CLIFTON, AZ	5	1963-75	0.12	10-19-72	63
09451900	AGRIC RSCH SERV WATERSHED W-I NR SAFFORD, AZ	5	1938-67	0.81	9- 5-44	434
09456000	SAN SIMON RIVER NR SAN SIMON, AZ	5	1923,1931-41	814.00	7-21-23	5350
09456400	GOLD GULCH NEAR BOWIE, AZ	5	1963-75	15.00	8-18-71	2550
09456680	AGRIC RSCH SERV WATERSHED W-V NR SAFFORD, AZ	5	1939-67	1.13	7-22-55	671
09456820	AGRIC RSCH SERV WATERSHED W-IV NR SAFFORD, AZ	5	1939-65,1967	1.19	8-16-58	508
09457000	SAN SIMON RIVER NR SOLOMON, AZ	5	1931-75	2192.00	8- 9-31	27500
09458200	DEADMAN CREEK NEAR SAFFORD, AZ	HE	1967-75	4.78	10-19-72	119
09460150	FRYE CREEK NEAR THATCHER, AZ	HE	1967-74	3.91	10-19-72	51
09462200	AGRIC RSCH SERV WATERSHED W-II NR SAFFORD, AZ	5	1939-67	1.07	9-28-41	997
09466500	GILA RIVER AT CALVA, AZ	GR	1916,1930-75	11470.00	1-20-16	100000
09467120	SALT CREEK NR PERIDOT, AZ	3	1964-75	30.30	10-19-72	3200
09468300	SEVENMILE WASH TRIB NEAR GLOBE, AZ	3	1962-75	0.83	UNKNOWN	526
09468500	SAN CARLOS RIVER NEAR PERIDOT, AZ	3	1916,1930-75	1027.00	3-14-41	40600
09469499	GILA RIVER ABOVE COOLIDGE DAM, AZ	GR	1906,1914-75	12900.00	11-28-05	150000
09470000	GILA R AT WINKELMAN, AZ (INFLOW)	GR	1942-75	4/ 382.00	8- 9-44	54500
09470500	SAN PEDRO RIVER AT PALOMINAS, AZ	5	1930-33,1935-40,1950-75	741.00	8-14-40	22000
09470800	GARDEN CANYON NR FORT HUACHUCA, AZ	5	1960-64	8.38	9- 5-60	81
09470900	SAN PEDRO RIVER TRIB NR BISBEE, AZ	5	1963-75	7.12	9- 4-65	1460

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09471000	SAN PEDRO RIVER AT CHARLESTON, AZ	5	1916-75	1219.00	9-28-26	98000
09471180	AGRIC RSCH SERV WATERSHED W-III NR TOMBSTONE, AZ	5	1954-67	3.47	7-19-55	2860
09471200	AGRIC RSCH SERV WATERSHED W-I NR TOMBSTONE, AZ	5	1957-67	57.70	8-17-57	20000
09471550	SAN PEDRO RIVER NR TOMBSTONE, AZ	5	1967-75	1740.00	7-20-74	18500
09471600	CANARY WASH NEAR BENSON, AZ	5	1963-75	0.79	- -63	84
09471700	FENNER WASH NEAR BENSON, AZ	5	1963-75	2.71	UNKNOWN	950
09472000	SAN PEDRO RIVER NEAR REDINGTON, AZ	5	1926,1943-75	2939.00	9-28-26	90000
09472100	PECK CANYON TRTB NR REDINGTON, AZ	5	1968-75	8.02	8-12-72	4340
09472400	MAMMOTH WASH NEAR MAMMOTH, AZ	5	1963-75	2.40	UNKNOWN	3200
09472500	SAN PEDRO R NR MAMMOTH, AZ	5	1926,1931-40	3610.00	9-28-26	90000
09473000	ARAVAIPA CREEK NEAR MAMMOTH, AZ	5	1919-21,1931-41,1966-75	541.00	8- 2-19	20000
09473200	GREEN LANTERN WASH NR WINKELMAN, AZ	5	1964-75	3.63	7-17-67	2650
09473500	SAN PEDRO RIVER AT WINKELMAN, AZ	5	1963-75	4471.00	12-22-65	16800
09473600	TAN OISHANTER WASH NR HAYDEN, AZ	5	1963-75	4.37	8- 2-74	1570
09474000	GILA R AT KELVIN, AZ	GR	1891,1906,1907,1912-75	18010.00	11-28-05	5/190000
					8- 8-30	6/42800
09478200	DURHAM WASH NEAR FLORENCE, AZ	5	1954-57,1963-75	15.60	8-20-71	3500
09478500	QUEEN CR AT WHITLOW DAMSITE NR SUPERIOR, AZ	5	1917-20,1948-59	144.00	8-19-54	42900
09478600	QUEEN CREEK TRTB NO.3 AT WHITLOW DAM, AZ	5	1966-75	0.37	9-13-66	280
09479200	QUEEN CREEK TRTB AT APACHE JUNCTION, AZ	5	1961-75	0.51	9-30-71	262
09480000	SANTA CRUZ RIVER NEAR LOCHIEL, AZ	5	1949-75	82.20	9-12-65	4810
09480500	SANTA CRUZ RIVER NEAR NOGALES, AZ	5	1930-75	533.00	8- 1-74	17100
09481500	SONOITA CREEK NEAR PATAGONIA, AZ	5	1930-72	209.00	9-30-46	14000
09481700	CALABASAS CANYON NEAR NOGALES, AZ	5	1963-65,1967-75	10.30	9- -69	1000
09481750	SOPORI WASH AT AMADO, AZ	5	1948,1954-58,1964-75	176.00	8-15-48	16000
09481800	DEMETRIE WASH TRTB NR CONTINENTAL, AZ	5	1963-75	0.15	9- 7-75	110
09481900	OCOTILLO WASH NEAR CONTINENTAL, AZ	5	1954-57,1963-68,1970-74	3.60	7- -64	1840
09482000	SANTA CRUZ RIVER AT CONTINENTAL, AZ	5	1940-47,1952-75	1662.00	12-20-67	18000
09482200	FLATO WASH NR SAHUARITA, AZ	5	1965-75	8.25	7- 7-74	1170
09482330	PUMPING WASH NEAR VAIL, AZ	5	1966-75	0.54	7- -71	337
09482370	NORTH FORK AIRPORT WASH NEAR TUCSON, AZ	5	1961-75	5.28	8-22-61	1350
09482400	AIRPORT WASH AT TUCSON, AZ	5	1966-75	15.20	7-20-70	823
09482410	RODEO WASH AT TUCSON, AZ	5	1970-75	5.92	7-20-70	898
09482420	JULIAN WASH AT TUCSON, AZ	5	1970-75	5.92	7-19-70	1270
09482450	WEST BRANCH SANTA CRUZ RIVER AT TUCSON, AZ	5	1966-75	23.60	8-17-71	540
09482480	BIG WASH AT TUCSON, AZ	5	1965-75	2.75	8-17-71	3000

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09482500	SANTA CRUZ RIVER AT TUCSON, AZ	5	1915-75	2222.00	8-23-61	16600
09483000	TUCSON ARROYO AT VINE AVE, AT TUCSON, AZ	5	1956-75	8.20	8-22-61	5000
09483025	SILVERCROFT WASH AT TUCSON, AZ	5	1969-75	2.74	7-20-70	1500
09483030	ANKLAM WASH AT TUCSON, AZ	5	1965-75	2.11	8-17-71	2420
09483040	WEST SPEEDWAY WASH NEAR TUCSON, AZ	5	1965-75	0.46	7- -73	238
09483100	TANQUE VERDE CREEK NEAR TUCSON, AZ	5	1960-75	43.00	12-20-67	3080
09483200	AGUA CALIENTE WASH TRIB NEAR TUCSON, AZ	5	1965-75	2.04	8-19-71	430
					8- -72	430
09483300	SABINO CREEK NEAR MT LEMMON, AZ	HE	1951-59	3.19	3-23-54	344
09484000	SABINO CREEK NEAR TUCSON, AZ	5	1933-75	35.50	9- 6-70	7730
09484200	BEAR CREEK NEAR TUCSON, AZ	5	1960-74	16.30	12-22-65	1150
09484500	TANQUE VERDE CREEK AT TUCSON, AZ	5	1940-45,1966-75	219.00	12-22-65	12200
09484510	VENTANA CANYON WASH NEAR TUCSON, AZ	5	1965-75	6.46	12-22-65	260
09484560	CIENEGA CREEK NEAR PANTANO, AZ	5	1968-75	289.00	7-19-74	2570
09484570	MESCAL ARROYO NEAR PANTANO, AZ	5	1965-75	38.40	UNKNOWN	27000
09484580	BARREL CANYON NEAR SONOITA, AZ	5	1962-75	14.10	8- -71	1900
09484590	DAVIDSON CANYON WASH NR VAIL, AZ	5	1968-75	50.50	7-20-70	6860
09484600	PANTANO WASH NEAR VAIL, AZ	5	1958-75	457.00	8-11-58	38000
09485000	RINCON CREEK NEAR TUCSON, AZ	5	1953-75	44.80	8-19-71	9660
09485100	SAGUARO CORNERS WASH NEAR TUCSON, AZ	5	1965-74	0.17	8- -68	49
09485500	PANTANO WASH AT TUCSON, AZ	5	1940,1958,1965-75	602.00	8-12-58	20000
09485900	PIMA WASH NEAR TUCSON, AZ	5	1964-75	4.93	9- -64	195
					10-19-72	195
09485950	GERONIMO WASH NEAR TUCSON, AZ	5	1964-75	2.08	8-12-71	705
09486000	RILLITO CREEK NEAR TUCSON, AZ	5	1915-75	892.00	9-23-29	24000
09486300	CANADA DEL ORO NEAR TUCSON, AZ	5	1966-75	250.00	12-20-67	13900
09486500	SANTA CRUZ RIVER AT CORTARO, AZ	5	1940-47,1950-75	3503.00	8-14-40	17000
09486700	CHILTEPINES WASH NEAR SASABE, AZ	5	1963-75	7.13	9-10-64	560
09486800	ALTAR WASH NEAR THREE POINTS, AZ	5	1966-75	463.00	9- 4-70	22000
09487000	BRAWLEY WASH NEAR THREE POINTS, AZ	5	1940-75	776.00	9- 4-70	13700
09487100	LITTLE BRAWLEY WASH NR THREE POINTS, AZ	5	1962,1968-75	11.90	9-26-62	13800
09487140	SAN JOAQUIN WASH NEAR TUCSON, AZ	5	1969-75	0.45	7-19-70	487
09487250	LOS ROBLES WASH NEAR MARANA, AZ	5	1962-75	1170.00	9-26-62	32000
09487400	OUTJOTDA WASH TRIB NR OUTJOTDA, AZ	2	1963-75	2.44	7-24-64	715
09488500	SANTA ROSA WASH NR VAIVA VO, AZ	2	1955-75	1782.00	9-27-62	53100
09488600	SILVER REEF WASH NEAR CASA GRANDE, AZ	2	1963-75	12.80	8- 3-71	1400
09489000	SANTA CRUZ RIVER NEAR LAVEEN, AZ	2	1940-46,1948-75	8581.00	9-29-62	9200

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09489070	N. FORK OF E. FORK BLACK RIVER NR ALPINE, AZ	HE	1966-75	38.10	4-17-73	1070
09489080	HANNAGAN CREEK NR HANNAGAN MEADOW, AZ	HE	1965-75	1.61	10-19-72	70
09489100	BLACK RIVER NEAR MAVERICK, AZ	HE	1963-75	315.00	10-20-72	11100
09489200	PACHETA CREEK NEAR MAVERICK, AZ	HE	1958-75	14.80	5-13-73	323
09489499	BLACK R ABV WILLOW CR DIV NR POINT OF PINES, AZ	HE	1954-75	560.00	10-19-72	17900
09489700	BIG BONITO CREEK NR FORT APACHE, AZ	HE	1958-75	119.00	10-20-72	1870
09490500	BLACK RIVER NEAR FORT APACHE, AZ	3	1958-75	1232.00	10-20-72	28400
09490800	NORTH FORK WHITE RIVER NEAR GREER, AZ	HE	1966-75	38.00	4-28-73	510
09491000	NORTH FORK WHITE RIVER NEAR MCNARY, AZ	HE	1946,1948-75	66.00	9-19-46	1290
09491800	NORTH FORK WHITE RIVER TRIB NR WHITE RIVER, AZ	3	1965-75	2.27	8- -71	110
09492400	EAST FORK WHITE RIVER NR FORT APACHE, AZ	HE	1958-75	38.80	8-17-61	663
09494000	WHITE RIVER NEAR FORT APACHE, AZ	3,HE	1958-75	632.00	7-22-67	11600
09494300	CARRIZO CR ABV CORDUROY CR NR SHOW LOW, AZ	3	1954-66	225.00	12-30-65	10000
09494500	CORDUROY CR ABV FORESTDALE CR, NR SHOW LOW, AZ	3	1953-61	57.00	11- 2-59	2210
09495500	FORESTDALE CR NEAR SHOW LOW, AZ	3	1953-60	33.40	11- 2-59	1290
09496000	CORDUROY CREEK NEAR MOUTH, NEAR SHOW LOW, AZ	3	1952-75	203.00	1-18-52	10900
					12-30-65	10900
09496500	CARRIZO CREEK NEAR SHOW LOW, AZ	3	1952-75	459.00	12-30-65	23000
09496600	CIBECUE 1 TRIB TO CARRIZO CR NR SHOW LOW, AZ	3	1958-70	0.10	7-27-67	165
09496700	CIBECUE 2 TRIB TO CARRIZO CR NR SHOW LOW, AZ	3	1958-70	0.06	8-20-63	120
09496800	CARRIZO CREEK TRIB NR SHOW LOW, AZ	3	1963-75	2.55	7-31-64	1260
09497500	SALT RIVER NEAR CHRYSOTILE, AZ	3	1916,1925-75	2849.00	1-19-16	74000
09497800	CIBECUE CREEK NEAR CHRYSOTILE, AZ	3	1959-75	295.00	12-30-65	8800
09497900	CHERRY CREEK NEAR YOUNG, AZ	3	1963-75	62.10	10-19-72	7290
09497980	CHERRY CREEK NEAR GLOBE, AZ	3	1966-75	200.00	10-19-72	8300
09498500	SALT RIVER NEAR ROOSEVELT, AZ	3	1916,1925-75	4306.00	3-14-41	117000
09498510	UPPER PARKER CR NR GLOBE, AZ (USFS)	3	1935-67	1.09	12-23-45	270
09498600	CRISTOPHER CREEK TRIB NR KOHL'S RANCH, AZ	3	1966-75	0.66	9- 5-70	265
09498800	TONTO CREEK NEAR GISELA, AZ	3	1965-75	430.00	9- 5-70	38000
09498870	RYE CREEK NEAR GISELA, AZ	3	1963,1966-75	122.00	9- 5-70	44400
09498900	GOLD CREEK NEAR PAYSON, AZ	3	1963-75	6.44	9- 5-70	2800
09499000	TONTO CREEK ABOVE GUN CR, NR ROOSEVELT, AZ	3	1941-75	675.00	9- 5-70	53000
09501100	THREE BAR D WATERSHED NR ROOSEVELT, AZ (USFS)	3	1957-75	0.12	8- 4-59	99
09501200	MESQUITE CREEK NR MORMON FLAT DAM, AZ	3	1963-67	4.26	9-13-66	4360
09501300	TORTILLA CREEK AT TORTILLA FLAT, AZ	3	1966-75	24.30	9- 1-71	7500
09502800	WILLIAMSON VALLEY WASH NR PAULDEN, AZ	1	1965-75	255.00	12-30-65	3630

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09503000	GRANITE CREEK NR PRESCOTT, AZ	1	1933-47,1963,1966	39.60	8-19-63	6660
09503700	VERDE RIVER NEAR PAULDEN, AZ	1	1963-75	2160.00	12-30-65	6130
09503720	HELL CANYON NEAR WILLIAMS, AZ	1	1966-75	14.90	11-25-65	1080
09503740	HELL CANYON TRIB NR ASH FORK, AZ	1	1969-75	0.75	- -69	84
09503750	LIMESTONE CANYON NR PAULDEN, AZ	1	1969-75	14.50	8-12-71	4100
09503800	VOLUNTEER WASH NR BELLEMONT, AZ	HE	1966-75	131.00	12- 7-66	1430
09504000	VERDE RIVER NR CLARKDALE, AZ	1,3	1916,1918,1920,1966-75	3150.00	2-21-20	50600
09504100	HULL CANYON NR JEROME, AZ	3	1963-75	0.91	UNKNOWN	1500
09504400	MUNDS CANYON TRIB NR SEDONA, AZ	3	1964-75	1.19	9- 5-70	705
09504500	OAK CREEK NEAR CORNVILLE, AZ	3	1941-75	357.00	9- 5-70	24700
09504800	OAK CREEK TRIB NR CORNVILLE, AZ	3	1963-75	0.05	8- 8-69	53
09505200	WET BEAVER CREEK NEAR RIMROCK, AZ	3	1962-75	111.00	9- 5-70	7670
09505238	BEAVER CREEK NO 5 NR FLAGSTAFF, AZ	3	1958-73	0.10	9- 5-70	70
09505245	BEAVER CREEK NO 3 NR FLAGSTAFF, AZ (USFS)	3	1958-75	0.60	8- 3-64	405
09505250	RED TANK DRAW NEAR RIMROCK, AZ	3	1958-75	49.40	9- 5-70	10500
09505290	S FORK RATTLESNAKE CN NR STONEMAN LK, AZ (USFS)	3,HE	1958-75	2.80	9- 5-70	1210
09505300	RATTLESNAKE CANYON NEAR RIMROCK, AZ	3	1958-75	24.60	9- 5-70	3590
09505320	BAR M CANYON NR STONEMAN LAKE, AZ (USFS)	3	1962-75	25.70	9- 5-70	4100
09505326	BEAVER CREEK NO 15 NR FLAGSTAFF, AZ (USFS)	3	1963-75	0.30	9- 5-70	84
09505350	DRY BEAVER CREEK NEAR RIMROCK, AZ	3	1961-75	142.00	9- 5-70	26600
09505600	DIRTY NECK CANYON NR CLINTS WELL, AZ	3	1965-75	3.42	9- 5-70	210
					10-19-72	210
09505800	WEST CLEAR CREEK NR CAMP VERDE, AZ	3	1965-75	241.00	10-19-72	11300
09505900	COTTONWOOD WASH NR CAMP VERDE, AZ	3	1964-75	0.64	- -64	250
09506000	VERDE RIVER NR CAMP VERDE, AZ	3	1934-45	4680.00	3- 3-38	97000
09507600	EAST VERDE RIVER NEAR PINE, AZ	3	1962-74	6.65	9- 5-70	2820
09507700	WEBBER CR AB W FK WEBBER CR NR PINE, AZ	3	1959-74	4.92	9- 5-70	1220
09507980	EAST VERDE RIVER NR CHILDS, AZ	3	1961-66,1969-75	328.00	9- 5-70	23500
09508300	WET BOTTOM CREEK NR CHILDS, AZ	3	1968-75	36.40	12-19-67	5990
09508500	VERDE RIVER BLW TANGLE CR ABV HORSESHOE DAM, AZ	3	1891,1906,1925-75	5499.00	2-24-91	150000
09510070	W FK SYCAMORE CR AB MCFARLAND CN NR SUNFLOWER, AZ	3	1966-74	4.58	9- 5-70	1700
09510080	W FK SYCAMORE CR NR SUNFLOWER, AZ	3	1962-74	9.80	9- 5-70	3480
09510100	E FK SYCAMORE CR NR SUNFLOWER, AZ	3	1962-75	4.49	9- 5-70	1940
09510150	SYCAMORE CR NR SUNFLOWER, AZ	3	1962-75	52.30	9- 5-70	16100
09510170	CAMP CREEK NEAR SUNFLOWER, AZ	3	1963-75	2.60	8-16-63	391
09510180	ROCK CR NR SUNFLOWER, AZ	3	1963-72	15.20	12-22-65	1900

STATION NUMBER	STATION NAME	REGION OR MAIN STEM STREAM	PERIOD OF RECORD	DRAINAGE AREA (SQ MI)	PEAK DISCHARGE DATE	PEAK DISCHARGE FT^3/S
09510200	SYCAMORE CREEK NEAR FORT MCDOWELL, AZ	3	1961-75	165.00	9- 5-70	24200
09512100	INDIAN BEND WASH NEAR SCOTTSDALE, AZ	3	1961-75	142.00	6-22-72	21000
09512200	SALT R TRIB IN SOUTH MT PARK, AT PHOENIX, AZ	2	1961-75	1.75	9- 4-65	670
09512300	CAVE CREEK NR CAVE CREEK, AZ	3	1958-75	121.00	12-19-67	12400
09512420	LYNX CREEK TRIB NR PRESCOTT, AZ	3	1969-75	0.95	UNKNOWN	820
09512500	AGUA FRIA RIVER NEAR MAYER, AZ	3	1940-75	588.00	9- 5-70	19800
09512700	AGUA FRIA RIVER TRIB NO 2 NR ROCK SPRINGS, AZ	3	1963-75	1.11	8- 2-64	1200
09512800	AGUA FRIA RIVER NR ROCK SPRINGS, AZ	3	1970-75	1130.00	9- 5-70	40100
09513650	AGUA FRIA RIVER AT EL MIRAGE, AZ	3	1963-75	7/ 178.00	9- 5-70	5000
09513780	NEW RIVER NR ROCK SPRINGS, AZ	3	1962-75	67.30	9- 5-70	18600
09513800	NEW RIVER AT NEW RIVER, AZ	3	1961-75	85.70	9- 5-70	19500
09513820	DEADMAN WASH NEAR NEW RIVER, AZ	3	1960-75	11.10	12-25-59	1850
09513835	NEW RIVER AT BELL ROAD, NR PEORIA, AZ	3	1963,1965-75	187.00	12-19-67	14600
09513860	SKUNK CREEK NR PHOENIX, AZ	3	1960-75	64.60	8- 1-64	11500
09513890	NEW RIVER AT PEORIA, AZ	3	1960-72	317.00	9- 5-70	20000
09513910	NEW RIVER NEAR GLENDALE, AZ	3	1943,1955,1960-75	323.00	8- -43	38000
09513970	AGUA FRIA RIVER AT AVONDALE, AZ	3	1960-75	7/ 554.00	8- 6-70	20600
09514200	WATERMAN WASH NEAR BUCKEYE, AZ	2	1964-75	403.00	9- 3-67	6300
09514500	HASSAYAMPA RIVER NR WAGONER, AZ	3	1940-46	78.70	4-16-41	1700
09515500	HASSAYAMPA R. AT BOX DAMSITE, NR. WICKENBURG, AZ	3	1925,1927,1937-38,1946-75	417.00	9- 5-70	58000
09515800	HARTMAN WASH NEAR WICKENBURG, AZ	3	1964-75	5.57	8-14-67	2600
09516500	HASSAYAMPA RIVER NR MORRISTOWN, AZ	3	1939-47,1964-75	774.00	9- 5-70	47500
09516600	OX WASH NEAR MORRISTOWN, AZ	3	1963-75	6.31	8-26-64	2900
09516800	JACK RABBIT WASH NR TONOPAH, AZ	2	1964-75	137.00	10- 7-72	6840
09517000	HASSAYAMPA RIVER NR ARLINGTON, AZ	2,3	1961-75	1470.00	9- 5-70	39000
09517200	CENTENNIAL WASH TRIB NR WENDEN, AZ	2	1963-75	2.79	9- 5-70	720
09517280	TIGER WASH NEAR AGUILA, AZ	2	1963-75	85.20	8-20-70	4550
09517400	WINTERS WASH NEAR TONOPAH, AZ	2	1962-75	47.80	10- 6-72	2100
09517500	CENTENNIAL WASH NEAR ARLINGTON, AZ	2	1961-75	1810.00	7-23-61	14500
09519600	RAINBOW WASH TRIB NR BUCKEYE, AZ	2	1963-75	2.43	9- 3-67	1430
09519750	BENDER WASH NEAR GILA BEND, AZ	2	1963-75	68.80	8- -71	2670
09519760	SANCEDA WASH NEAR GILA BEND, AZ	2	1963-75	126.00	8- -70	2850
09519780	WINDMILL WASH NR GILA BEND, AZ	2	1964-75	12.90	12-19-67	4430
09520100	MILITARY WASH NEAR SENTINEL, AZ	2	1963-75	8.70	8- 2-74	1530
09520110	HOT SHOT ARROYO NEAR AJO, AZ	2	1966-75	0.44	9-13-66	215
					9-23-74	215

STATION NUMBER	STATION NAME	REGION OR MAIN STEM STREAM	PERIOD OF RECORD	DRAINAGE AREA (SQ MI)	PEAK DISCHARGE DATE	PEAK DISCHARGE FT^3/S
09520130	DARBY ARROYO NEAR AJO, AZ	2	1966-75	4.72	9- 6-67	1670
09520160	GIBSON ARROYO AT AJO, AZ	2	1967-75	2.18	8- 2-70	1800
09520170	RIO CORNEZ NEAR AJO, AZ	2	1967-75	243.00	8- 2-74	6000
09520200	BLACK GAP WASH NEAR AJO, AZ	2	1962-75	12.10	7-14-67	837
09520230	CRATER RANGE WASH NEAR AJO, AZ	2	1963-75	1.49	9- 4-69	590
09520300	ALAMO WASH TRIB NEAR AJO, AZ	2	1963-75	0.90	8-31-72	510
09520350	MOHAWK PASS WASH AT MOHAWK, AZ	2	1963-75	0.09	8- 1-70	117
09520400	LIGURTA WASH AT LIGURTA, AZ	2	1963-75	1.99	9-17-63	1590
09535200	SELLS WASH TRIB AT SELLS, AZ	2	1962-75	26.80	9-13-66	2800
09536100	PITCHFORK CANYON TRIB NR FORT GRANT, AZ	5	1963-75	0.81	8-15-65	375
09536350	SURPRISE CANYON NEAR DOS CABEZAS, AZ	5	1963-75	0.65	7-15-69	191
09537200	LESLIE CR NR MCNEAL, AZ	5	1970-75	79.10	8-12-71	1760
09537400	WHITEWATER DRAW TRIB NO.2 NR DOUGLAS, AZ	5	1968-75	12.40	7-20-74	580
09537500	WHITEWATER DRAW NEAR DOUGLAS, AZ	5	1916-20,1930-75	1023.00	8- 7-55	5060

1/ ABOUT 2,100 SQ MI IS NONCONTRIBUTING EXCEPT DURING YEARS OF HIGH RUNOFF.

2/ RESULT OF DAM FAILURE ON ZION RESERVOIR.

3/ RECORD COMBINED WITH STATION 09426500.

4/ DRAINAGE AREA BELOW COOLIDGE DAM.

5/ OCCURRED PRIOR TO REGULATION BY COOLIDGE DAM.

6/ MAXIMUM SINCE REGULATION BEGAN IN 1929.

7/ DRAINAGE AREA BELOW WADDELL DAM.

Table 5.--Peak-discharge measurements at ungaged sites in Arizona

REGION: HE, high-elevation flood-frequency region.

STREAM AND PLACE OF DETERMINATION	REGION	DRAINAGE AREA (SQ MI)	PEAK DISCHARGE DATE	PEAK DISCHARGE FT^3/S
SAN JUAN RIVER BASIN				
TSAILE CREEK AT TSAILE LAT. 36 16 45 LONG. 109 10 30	4	49.9	4- -73	535
THREE MILE WASH NEAR KAYENTA LAT. 36 42 55 LONG. 110 18 20	4	8.53	7 OR 8-68	2150
LITTLE COLORADO RIVER BASIN				
CARR LAKE DRAW TRIBUTARY NO. 2 NEAR HOLBROOK LAT. 34 50 53 LONG. 109 57 32	4	3.14	7-28-64	1150
TOLTEC WASH NEAR WINSLOW LAT. 35 02 13 LONG. 110 44 06	4	--	8-12-64	1130
WALNUT CREEK AT WINONA LAT. 35 12 43 LONG. 111 25 13	4	--	4-28-73	821
RTO OF FLAG TRIBUTARY NO. 3 AT EAST FLAGSTAFF LAT. 35 12 54 LONG. 111 36 00	1	0.51	8- 2-68	180
KLETHLA VALLEY TRIBUTARY NO. 2 NEAR TSEGI LAT. 36 28 40 LONG. 110 39 10	4	0.75	9- 2-72	1360
CLEAR CREEK BASIN				
WALHALLA GLADES WASH IN GRAND CANYON NATIONAL PARK LAT. 36 07 50 LONG. 111 56 55	HE,1	4.54	12- 6-66	66
BRIGHT ANGEL CREEK BASIN				
FULLER CANYON NEAR N. RIM RANGER STA. IN GRAND CANYON NAT. PARK LAT. 36 13 40 LONG. 112 03 30	HE	3.49	12- 6-66	167
OUTLET CANYON NEAR N. RIM RANGER STA. IN GRAND CANYON NAT. PARK LAT. 36 15 25 LONG. 112 06 05	HE	9.42	12- 6-66	414

STREAM AND PLACE OF DETERMINATION	REGION	DRAINAGE AREA (SQ MI)	PEAK DISCHARGE DATE	PEAK DISCHARGE FT^3/S
SHINUMO CREEK BASIN				
SHINUMO CREEK IN GRAND CANYON NATIONAL PARK LAT. 36 15 20 LONG. 112 19 20	HE,1	67.4	12- 6-66	1660
JUMBO WASH BASIN				
JUMBO WASH AT WILLOW BEACH LAT. 35 51 30 LONG. 114 39 07	1	34.6	9- 8-75	2850
PIMA WASH BASIN				
PIMA WASH AT LAKE HAVASU CITY LAT. 34 28 44 LONG. 114 19 27	1	1.07	7-19-74	895
DAYTONA WASH BASIN				
DAYTONA WASH AT LAKE HAVASU CITY LAT. 34 28 27 LONG. 114 18 48	1	0.86	7-19-74	859
SACRAMENTO WASH BASIN				
TENNESSEE WASH NEAR CHLORIDE LAT. 35 25 02 LONG. 114 11 07	1	4.5	6- -67	1430
SACRAMENTO WASH NEAR TOPOCK LAT. 34 43 48 LONG. 114 29 13	1	1430	9- 6-39	15000
BILL WILLIAMS RIVER BASIN				
BRONCO CREEK NEAR WICKIEUP LAT. 34 40 35 LONG. 113 35 45	3	19.0	8-18-71	73500
KIRKLAND CREEK AT YAVA LAT. 34 29 LONG. 112 53	3	335	3-14-41	4300

STREAM AND PLACE OF DETERMINATION	REGION	DRAINAGE AREA (SQ MI)	PEAK DISCHARGE DATE	PEAK DISCHARGE FT^3/S
BILL WILLIAMS RIVER BASIN (CONTINUED)				
BIG SANDY RIVER BELOW BURRO CREEK AT SIGNAL LAT. 34 29 LONG. 113 38	3	2670	9- 6-39	100000
BILL WILLIAMS RIVER AT CONFLUENCE OF SANTA MARIA & BIG SANDY RIVERS LAT. 34 17 50 LONG. 113 31 10	3	4330	9- 6-39	77000
TYSON WASH BASIN				
FRENCH CREEK NEAR QUARTZSITE LAT. 33 37 29 LONG. 114 12 59	2	61.5	9-17-63	1130
INDIAN WASH BASIN				
INDIAN WASH NEAR QUARTZSITE LAT. 33 17 55 LONG. 114 15 04	2	1.41	9-17-63	450
GILA RIVER BASIN				
RAILROAD WASH NEAR FRANKLIN LAT. 32 40 52 LONG. 109 04 55	5	190	9- 3-65	13100
CHASE CREEK NEAR METCALF TOWNSITE LAT. 33 06 58 LONG. 109 22 00	3	11.9	8-12-67	2930
EAGLE CREEK NEAR MORENCI LAT. 33 03 43 LONG. 109 26 04	3	--	2-10-32	13000
BONITA CREEK NEAR SOLOMON LAT. 32 56 30 LONG. 109 30 20	3	310	10-20-72	10000
SAN SIMON RIVER NEAR BOWIE LAT. 32 23 05 LONG. 109 19 35	5	995	8-10-54	7310
HOLYOKE WASH NEAR BRYCE LAT. 32 57 15 LONG. 109 47 57	3	0.85	7-17-74	1740

STREAM AND PLACE OF DETERMINATION	REGION	DRAINAGE AREA (SQ MI)	PEAK DISCHARGE DATE	PEAK DISCHARGE FT^3/S
GILA RIVER BASIN (CONTINUED)				
BIG SPRING WASH NEAR BRYCE LAT. 32 55 36 LONG. 109 48 30	3	1.97	7-17-74	2900
PECK WASH NEAR BRYCE LAT. 32 55 50 LONG. 109 49 10	3	16.2	8-13-40	5500
BILLINGSLEY CREEK NEAR BRYCE LAT. 32 56 40 LONG. 109 51 17	3	3.4	8-13-40	3300
SAN PEDRO RIVER TRIBUTARY NEAR CHARLESTON LAT. 31 38 15 LONG. 110 09 50	5	4.21	8-12-72	3410
BABOCOMARI RIVER TRIBUTARY NEAR SONOITA LAT. 31 41 57 LONG. 110 25 36	5	7.68	7 OR 8-55	3110
DRAGOON WASH AT ST. DAVID LAT. 31 55 33 LONG. 110 11 50	5	33.2	7-22-75	54000
SAN PEDRO RIVER TRIBUTARY NEAR BENSON LAT. 31 56 43 LONG. 110 17 07	5	6.57	7 OR 8-55	149
SAN PEDRO RIVER TRIBUTARY NO. 3 AT BENSON LAT. 31 57 23 LONG. 110 17 09	5	0.32	7-24-63	600
SAN PEDRO RIVER TRIBUTARY NEAR PUMERENE LAT. 32 11 05 LONG. 110 17 23	5	3.8	9-26-48	6700
QUEEN CREEK TRIBUTARY NO.2 NEAR APACHE JUNCTION LAT. 33 26 LONG. 111 38	2	--	8-22-63	484
UNNAMED WASH NEAR GUADALUPE LAT. 33 21 32 LONG. 111 58 09	2	0.14	9-14-69	228
SUFFERING (BUNYAN) WASH NEAR ORACLE JUNCTION LAT. 32 42 37 LONG. 111 05 50	5	14.6	7- -54	3900
OLSEN WASH NEAR ORACLE JUNCTION LAT. 32 41 36 LONG. 111 05 07	5	6.64	8-19-71	3960

STREAM AND PLACE OF DETERMINATION	REGION	DRAINAGE AREA (SQ MI)	PEAK DISCHARGE DATE	PEAK DISCHARGE FT^3/S
GILA RIVER BASIN (CONTINUED)				
TWENTY-SEVEN WASH TRIBUTARY NO.1 NEAR CATALINA LAT. 32 30 00 LONG. 110 54 00	5	0.64	7-19/20-74	461
TWENTY-SEVEN WASH TRIBUTARY NO.2 NEAR CATALINA LAT. 32 29 15 LONG. 110 55 22	5	0.01	7-18-74	25
TWENTY-SEVEN WASH NEAR CATALINA LAT. 32 28 42 LONG. 110 55 30	5	4.19	7-19/20-74	1320
SANTA CRUZ RIVER NEAR NOGALES LAT. 31 20 04 LONG. 110 59 23	5	1004	12-20-67	17500
PECK CANYON NEAR NOGALES LAT. 31 30 40 LONG. 111 00 45	5	47.8	12-20-67	7000
SANTA CRUZ RIVER AT TUMACACORI NAT. MONUMENT LAT. 31 33 50 LONG. 111 02 45	5	1178	12-20-67	28500
NIGGER CANYON NEAR TUMACACORI LAT. 31 32 35 LONG. 111 02 31	5	3.22	8-12-69	2240
SANTA CRUZ RIVER TRIBUTARY NO.1 NEAR AMADO LAT. 31 45 LONG. 111 02	5	5.65	7 OR 8-55	2940
SANTA CRUZ RIVER TRIBUTARY NO.2 NEAR AMADO LAT. 31 45 50 LONG. 110 59 58	5	10.3	9-26-48	2000
SANTA CRUZ RIVER TRIBUTARY NO.3 NEAR AMADO LAT. 31 46 00 LONG. 111 01 49	5	--	7- -54	1880
LEE MOORE WASH NEAR SAHUARITA LAT. 32 01 30 LONG. 110 57 07	5	142	7- 7-74	9150
DEMETRIE WASH TRIBUTARY NO. 2 NEAR CONTINENTAL LAT. 31 52 08 LONG. 111 05 44	5	0.67	8- 5-63	802
SANTA CRUZ RIVER TRIBUTARY NO. 4 NEAR AMADO LAT. 31 51 25 LONG. 110 59 31	5	1.2	7 OR 8-55	113

STREAM AND PLACE OF DETERMINATION	REGION	DRAINAGE AREA (SQ MI)	PEAK DISCHARGE DATE	PEAK DISCHARGE FT^3/S
GILA RIVER BASIN (CONTINUED)				
CHICKEN WASH NEAR SAHUARITA LAT. 31 59 34 LONG. 110 58 11	5	0.24	8-18-66	68
PANTANO WASH TRIBUTARY AT TUCSON LAT. 32 11 05 LONG. 110 47 05	5	0.70	7-16-75	886
ATTERBURY WASH TRIBUTARY AT TUCSON LAT. 32 09 07 LONG. 110 49 30	5	0.17	7-16-75	164
ATTERBURY WASH AT TUCSON LAT. 32 11 04 LONG. 110 48 55	5	18.2	7-16-75	3080
CHOLLA WASH AT TUCSON LAT. 32 12 12 LONG. 111 00 40	5	0.66	8-17-71	726
ST. MARYS WASH AT TUCSON LAT. 32 13 35 LONG. 110 00 15	5	2.44	8- -69	365
GREASEWOOD WASH AT TUCSON LAT. 32 10 09 LONG. 111 01 42	5	0.53	8- -69	432
GREASEWOOD WASH TRIBUTARY NO. 1 AT TUCSON LAT. 32 10 09 LONG. 111 01 56	5	0.04	8- -69	63
GREASEWOOD WASH TRIBUTARY NO. 2 AT TUCSON LAT. 32 10 09 LONG. 111 01 32	5	0.11	8- -69	127
SANTA CRUZ RIVER TRIBUTARY NO.1 NR. TUCSON LAT. 32 13 47 LONG. 111 03 44	5	2.69	7-20-70	1910
SANTA CRUZ RIVER TRIBUTARY NO.1 NR. SILVER BELL RD NR TUCSON LAT. 32 14 50 LONG. 111 03 00	5	5.31	9-26-62	2740
SANTA CRUZ RIVER TRIBUTARY NO.2 NEAR TUCSON LAT. 32 14 25 LONG. 111 05 10	5	1.26	9-26-62	940
SANTA CRUZ RIVER TRIBUTARY NO.3 NEAR TUCSON LAT. 32 16 20 LONG. 111 04 00	5	3.98	9-26-62	3980

STREAM AND PLACE OF DETERMINATION	REGION	DRAINAGE AREA (SQ MI)	PEAK DISCHARGE DATE	PEAK DISCHARGE FT^3/S
GILA RIVER BASIN (CONTINUED)				
ARCADIA WASH AT TUCSON LAT. 32 15 LONG. 110 53	5	3.49	7-19-66	658
RILLITO CREEK TRIBUTARY NO. 1 NEAR TUCSON LAT. 32 19 33 LONG. 110 58 31	5	0.07	9- 6-64	154
RILLITO CREEK TRIBUTARY NO. 2 NEAR TUCSON LAT. 32 19 30 LONG. 110 58 29	5	1.68	9- 6-64	2670
SANTA CRUZ RIVER TRIBUTARY NO.4 NEAR CORTARO LAT. 32 18 30 LONG. 111 04 55	5	2.77	9-26-62	1400
COTTONWOOD WASH NEAR MAPANA LAT. 32 31 10 LONG. 111 08 00	5	8.06	9-13-62	5700
BAILEY WASH NEAR SASABE LAT. 31 36 10 LONG. 111 31 23	5	30.4	9- 5-70	12900
BRAWLEY WASH TRIBUTARY NO.2 NEAR TUCSON LAT. 32 18 50 LONG. 111 10 56	5	0.008	9-26-62	69
BRAWLEY WASH NEAR TUCSON LAT. 32 15 45 LONG. 111 16 09	5	1077	9-26-62	38800
LOS ROBLES WASH NEAR MAPANA LAT. 32 28 00 LONG. 111 20 12	5	1350	9-26-62	32600
GREENE CANAL NEAR ELOY LAT. 32 35 17 LONG. 111 33 04	5	--	9-26/27-62	29100
GREENE WASH AT CHUICHU LAT. 32 45 08 LONG. 111 46 38	2,5	--	9-27-62	17200
SANTA CRUZ RIVER NEAR STANFIELD LAT. 32 52 LONG. 111 50	2	--	9-27/28-62	3080
GREENE WASH NEAR STANFIELD LAT. 32 52 46 LONG. 111 55 48	2,5	--	9-27/28-62	4300

STREAM AND PLACE OF DETERMINATION	REGION	DRAINAGE AREA (SQ MI)	PEAK DISCHARGE DATE	PEAK DISCHARGE FT^3/S
GILA RIVER BASIN (CONTINUED)				
SANTA ROSA WASH NEAR STANFIELD LAT. 32 52 46 LONG. 111 56 45	2	--	9-27-62	8430
EAST FORK BLACK RIVER NEAR ALPINE LAT. 33 45 35 LONG. 109 21 24	3	111	10-20-72	3780
WEST FORK BLACK RIVER NEAR ALPINE LAT. 33 45 36 LONG. 109 22 33	3	54.1	10-20-72	2050
AMOS WASH NEAR CEDAR CREEK LAT. 33 48 15 LONG. 110 07 35	3	21.1	8-12-71	8320
COPPER HILL WASH NEAR GLOBE LAT. 33 24 LONG. 110 47	3	1.6	8-17-04	3200
PINAL CREEK BELOW COPPER HILL WASH AT GLOBE LAT. 33 24 LONG. 110 48	3	33.4	8-17-04	13200
BLOODY TANKS WASH AT MIAMI LAT. 33 24 06 LONG. 110 51 47	3	18.2	7-20-54	2720
TONTO CREEK AT KOHL'S RANCH LAT. 34 19 15 LONG. 111 05 30	3	24.0	9- 5-70	18400
CHRISTOPHER CREEK NEAR KOHL'S RANCH LAT. 34 18 25 LONG. 111 02 45	3	24.4	9- 5-70	11900
HOUSTON CREEK NEAR GISELA LAT. 34 07 32 LONG. 111 15 26	3	56.2	12-22-65	4530
RYE CREEK NEAR PAYSON LAT. 34 06 08 LONG. 111 21 19	3	66.4	8-22-63	14300
BOONE MOORE WASH NEAR PAYSON LAT. 34 05 00 LONG. 111 21 19	3	3.10	8-22-63	1240
CLOVER WASH TRIBUTARY NEAR PAYSON LAT. 34 08 08 LONG. 111 21 30	3	0.89	8-22-63	355

STREAM AND PLACE OF DETERMINATION	REGION	DRAINAGE AREA (SQ MI)	PEAK DISCHARGE DATE	PEAK DISCHARGE FT^3/S
GILA RIVER BASIN (CONTINUED)				
SLATE CREEK NEAR SUNFLOWER LAT. 33 57 20 LONG. 111 24 30	3	8.8	9- 5-70	4480
DAVIS WASH TRIBUTARY NEAR ROOSEVELT LAT. 33 54 58 LONG. 111 13 11	3	0.09	8-18-67	55
CRABTREE WASH TRIBUTARY NEAR ROOSEVELT LAT. 33 37 48 LONG. 111 14 18	3	0.26	8-18-67	221
LEWIS AND BEAUTY CREEK NEAR TORTILLA FLAT LAT. 33 32 20 LONG. 111 16 15	3	13.4	8-18-67	3310
MANZANITA CREEK AT PRESCOTT LAT. 34 31 54 LONG. 112 28 43	1	2.20	8-19-63	1280
ASPEN CREEK AT PRESCOTT LAT. 34 31 54 LONG. 112 28 40	1	4.99	8-19-63	1160
GRANITE CREEK AT PRESCOTT LAT. 34 32 24 LONG. 112 28 15	1	17.2	8-19-63	2750
MILLER CREEK NEAR PRESCOTT LAT. 34 37 06 LONG. 112 31 15	1	2.64	8-19-63	1310
MILLER CREEK AT PRESCOTT LAT. 34 33 15 LONG. 112 29 05	1	4.75	8-19-63	1580
MILLER CREEK ABOVE BUTTE CREEK AT PRESCOTT LAT. 34 32 52 LONG. 112 28 28	1	6.60	8-19-63	2960
BUTTE CREEK AT PRESCOTT LAT. 34 32 33 LONG. 112 29 14	1	3.65	8-19-63	1830
SOLDIER WASH AT SEDONA LAT. 34 52 00 LONG. 111 46 03	3	--	7-14-75	2070
ROCKY GULCH NEAR RIMROCK LAT. 34 44 50 LONG. 111 29 39	3	1.42	9- 5-70	1550

STREAM AND PLACE OF DETERMINATION	REGION	DRAINAGE AREA (SQ MI)	PEAK DISCHARGE DATE	PEAK DISCHARGE FT^3/S
GILA RIVER BASIN (CONTINUED)				
ROCKY GULCH TRIBUTARY NEAR RIMROCK LAT. 34 40 55 LONG. 111 31 19	3	0.89	9- 5-70	980
FOSTER CANYON NEAR RIMROCK LAT. 34 45 27 LONG. 111 30 58	3	3.18	8- 5-70	2260
WOODS CANYON NEAR SEDONA LAT. 34 51 14 LONG. 111 33 06	3	16.7	9- 5-70	3900
SALT RIVER AT ARIZONA DAM LAT. 33 31 LONG. 111 41	3	12900	2-24-1891	300000
SHEA WASH TRIBUTARY NO. 1 NEAR SCOTTSDALE LAT. 33 38 56 LONG. 111 48 34	3	0.09	6-22-72	86
SHEA WASH TRIBUTARY NO. 2 NEAR SCOTTSDALE LAT. 33 38 56 LONG. 111 48 55	3	0.14	6-22-72	103
SHEA WASH TRIBUTARY NO. 3 NEAR SCOTTSDALE LAT. 33 38 56 LONG. 111 49 00	3	0.12	6-22-72	80
INDIAN BEND WASH TRIBUTARY NO. 1 AT PARADISE VALLEY LAT. 33 33 37 LONG. 111 58 33	3	0.026	6-22-72	88
INDIAN BEND WASH TRIBUTARY NO. 2 AT PARADISE VALLEY LAT. 33 33 20 LONG. 111 58 31	3	0.074	6-22-72	144
INDIAN BEND WASH AT PARADISE VALLEY LAT. 33 33 29 LONG. 111 56 07	3	90.5	6-22-72	13800
CUDIA CITY WASH AT PARADISE VALLEY LAT. 33 31 32 LONG. 111 58 43	3	2.16	6-22-72	3000
CUDIA CITY WASH TRIBUTARY AT PARADISE VALLEY LAT. 33 31 22 LONG. 111 59 42	3	0.08	6-22-72	244
DREAMY DRAW AT PHOENIX LAT. 33 33 12 LONG. 112 02 48	3	1.62	6-22-72	860

STREAM AND PLACE OF DETERMINATION	REGION	DRAINAGE AREA (SQ MI)	PEAK DISCHARGE DATE	PEAK DISCHARGE FT^3/S
GILA RIVER BASIN (CONTINUED)				
SWEETWATER WASH AT PHOENIX LAT. 33 36 14 LONG. 112 05 58	3	5.90	8- 5-74	2600
AGUA FRIA RIVER AT WADDELL DAM LAT. 33 51 20 LONG. 112 15 58	3	1459	1-18-16	105000
ASH CREEK NEAR CORDES JUNCTION LAT. 34 24 05 LONG. 112 04 25	3	118	9- 5-70	9000
GILA RIVER TRIBUTARY NO. 1 NEAR BUCKEYE LAT. 33 18 29 LONG. 112 37 30	2	0.41	9-13-66	650
GILA RIVER TRIBUTARY NO. 2 NEAR BUCKEYE LAT. 33 17 32 LONG. 112 37 38	2	0.11	9-13-66	160
POWDER HOUSE WASH AT WICKENBURG LAT. 33 58 17 LONG. 112 43 02	3	1.83	7-12-64	1980
SOLS WASH AT WICKENBURG LAT. 33 58 20 LONG. 112 44 00	3	139	8-17-71	11300
CENTENNIAL WASH TRIBUTARY NO. 3 NEAR WENDEN LAT. 33 50 15 LONG. 113 29 11	2	4.95	8- -63	328
CENTENNIAL WASH NEAR SALOME LAT. 33 45 58 LONG. 113 34 52	2	637	8-14-63	4480
DELANEY WASH NEAR WINTERSBURG LAT. 33 26 51 LONG. 112 54 52	2	57.5	9- 5-62	480
RAINBOW WASH NEAR GILA BEND LAT. 33 11 11 LONG. 112 42 11	2	45.0	9- 2/ 3-67	11900
SAND TANK WASH AT GILA BEND LAT. 32 56 52 LONG. 112 42 18	2	265	8-14-64	5910

STREAM AND PLACE OF DETERMINATION	REGION	DRAINAGE AREA (SQ MI)	PEAK DISCHARGE DATE	PEAK DISCHARGE FT^3/S
TRIBUTARIES TO ALL-AMERICAN CANAL				
WASH AT ALL-AMERICAN CANAL, NEAR YUMA LAT. 32 49 30 LONG. 114 35 30	2	35.3	9- 5-39	5000
PICACHO WASH AT ALL-AMERICAN CANAL, NEAR YUMA LAT. 32 47 45 LONG. 114 36 45	2	41.5	9- 5-39	37000
SAN SIMON WASH BASIN				
SAN JUAN WASH NEAR SELLS LAT. 31 56 15 LONG. 111 46 15	2	4.36	9-26-62	1600
ALI MOLINA WASH NEAR SELLS LAT. 31 55 40 LONG. 111 02 35	2	1.68	9-26-62	430
SELLS WASH AT SELLS LAT. 31 51 50 LONG. 111 53 55	2	140	9-26-62	17200
FORTUNA WASH NEAR YUMA LAT. 32 40 02 LONG. 114 23 56	2	23.3	9-17-63	6430